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Subject: Notch Filter ?

Posted by [Patrick Kopson](#) on Mon, 03 Jan 2005 00:52:05 GMT

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Can someone provide a notch filter design to remove the Delta 12-LF's 4dB peak between 1.8kHz and 4.2kHz? Even better would be (a pointer to) an explanation of how to calculate this in general. Thanks.

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Subject: Response shaping

Posted by [Wayne Parham](#) on Mon, 03 Jan 2005 01:35:25 GMT

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interesting to you. The idea of the notch filter is pretty simple, but there are a couple of ways to do it. In your case, use a parallel resonant circuit because its impedance is highest at resonance. Then you put a resistor across the resonator to limit the impedance to whatever attenuation you want. So if the load is 8 ohms and you want 6dB attenuation, you'll use an 8 ohm resistor. That sets the depth of the notch. Then to set the bandwidth of the notch, choose coil and capacitor values so their reactive impedance drops past 8 ohms at the frequencies where you want attenuation to stop. The idea is that in the resonant range, where the impedance of the coil and capacitor are high, the resistor sets the power to the driver. At resonance, the impedance of the coil and cap approach infinity, but the resistor limits impedance to whatever value you've set it to be. Then at higher frequencies full power flows through the capacitor, and at lower frequencies full power flows through the coil. Since you're planning to modify the response at the extreme high end, I don't think you'll need the capacitor. By the time the capacitor would be passing energy, the driver just isn't capable of making sound anymore. So I would probably forego the capacitor, and let the driver rolloff. This will make your circuit be a coil and resistor in parallel, sort of like a baffle correction circuit. A coil and resistor connected this way will provide a shelved response, reducing output above a certain point, but not with a rolloff slope like a first-order filter. Since the voice coil of the driver itself is a coil, you will find that there are certain values of coils that will act this way, even without a resistor. Look up the "pseudo-first-order" network in the crossover document to see what I mean. A single coil of 0.5mH to 1.0mH might do what you want to do without any resistor connected across it at all.

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Subject: Thank you!

Posted by [Patrick Kopson](#) on Mon, 03 Jan 2005 14:46:36 GMT

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That is exactly the explanation and pointer I needed.

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