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Subject: 4Pi crossover study

Posted by [Joe Sever](#) on Fri, 19 Jul 2013 02:17:55 GMT

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After having spent several months biamping with MiniDSP, I have for several reasons decided to go the passive route (or at least away from MiniDSP). Given that my "design" is inspired by the 4Pi, along with the flexibility of its crossover, I figured I'd give Wayne's crossover a shot. However, despite some reasonable success with the MiniDSP, the 4Pi crossover is not doing what I expect (or at least would like) it to do. A 45 SET amp supplies the input to the crossover.

The speakers:

5.5 cu. ft. box tuned to 39.5Hz

Omega Pro-15A

Radian 475PB on SEOS-12 waveguides

Crossover details:

R1 = single 30 ohm 10W resistor

R2 = single 13 ohm 10W resistor

Rs = none

C1 = none, though several values from 0.33uF to 6.8uF have been tried

Here's the problem: Measured 1M from the speaker baffle and midway between the LF & HF drivers, the frequency response rolls off in a linear fashion, beginning at 6KHz or so and ending about 12dB down at 20KHz. I would expect this without the compensation EQ in place, but not with it. I think the attenuation around 6KHz is correct - it's just the lack of rolloff compensation that has my stumped. To rule out a bad driver, I measured the other speaker with the same results.

I know that Wayne has compared the SEOS-12 and the H290C side by side on the DE250, and the SEOS-12 showed a steeper rolloff than his horn, but not to the degree that I'm seeing.

Here are what I see as my options:

- 1) Buy Wayne's horns and hope that that alone will solve the problem.
- 2) Try a different driver. I've tried the DE250 in the past and didn't like it. I have a Faital HF10AK on hand that I haven't listened to yet.
- 3) Scrap the 4Pi crossover and try something else.

I'm leaning toward #1, but deep down I don't believe that's the answer. There has to be something fundamental I'm missing, but I've been over the circuits and Wayne's various docs and I'm at a loss.

Even with its current shortcomings, this crossover blows the MiniDSP out of the water, so I'm hoping that with some tweaking I can come up with something I can live with.

Thanks in advance for any help anyone can lend.

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