Subject: 2Pi Tower questions
Posted by Bill Epstein on Fri, 02 Dec 2011 23:07:46 GMT
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Wayne, it's been a long time since I built the Towers but IIRC the crossover is first order around 4K with a 1/2 mH coil on the woof?

First, in lite of the post you made recently about more complex crossovers for the comp drivers, how would you fel about
, say, 3rd order BW and lower down as my recent positive experience? Might the Alpha benefit from a lower cutoff?

Second, I'm thinking about stuffing Alpha 12s in the Utah boxes. The 10 & 12 are close enough That I could use them as 2pi tower woofers if the experiment flops?

Subject: Re: 2Pi Tower questions
Posted by Wayne Parham on Sat, 03 Dec 2011 02:09:41 GMT
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The coil is a 0.5mH, and the tweeter cap is 10uF. But the actual crossover frequency is really just south of 2kHz. You can see it pretty clearly in the impedance chart.

I tried a handful of crossovers, some with higher frequencies and slopes. I didn't like the higher crossover points as much as I did the lower ones. But there was a higher-slope filter I almost used. I think it was 4th/4th, pretty close to a Linkwitz-Riley but dialed in for driver reactance. In other words, it had a Zobel and some values were tweaked a smidge off the textbook values to obtain the best response.

I ended up choosing the first-order because I didn't feel the more complex crossover was worth the extra parts count. This kind of speaker really responds to a simple first-order crossover, in my opinion. The tweeter is able to handle frequencies down to about 700Hz, which makes it pretty happy with the 10uF cap.

Subject: Re: 2Pi Tower questions
Posted by Bill Epstein on Wed, 21 Dec 2011 17:37:17 GMT
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Isn't the Vifa DX-25 4 ohms and need 20 uF to crossover around 2000 Hz?

Subject: Re: 2Pi Tower questions
Posted by Wayne Parham on Wed, 21 Dec 2011 20:18:56 GMT

capacitor. But like so many other things in audio, sometimes textbook values don't apply or are only marginally applicable. Some things are downright counter-intuitive.

This one isn't too bizarre, it's more just the fact that any first-order crossover is really more of a blending of sources than a splitter of sources. The crossover point should more properly be seen as a crossover band with wide overlap. It's not so much a crossover point as it is a crossover range, and that range is pretty wide.

First-order networks have both adjacent drivers pretty much completely on for at least two octaves. In this case, the midwoofer and tweeter share the range from 1kHz to 4kHz. So it's really a crossover range of 1kHz to 4kHz, but if I had to pick a single frequency to call the crossover point, I'd split the difference and call it 2kHz. You can see the peak impedance happens about there too - An intersection where the midwoofer circuit impedance is rising but the tweeter circuit impedance is falling - they are equal around 2kHz.

Subject: Re: 2Pi Tower questions
Posted by Bill Epstein on Wed, 21 Dec 2011 22:54:35 GMT

Thanks Wayne.

I found that the vintage Utah woofers from Ron sound somewhat "muffled" even with the lower, 1200Hz, crossover. Certainly not what 2226 listeners are used to. Still, the quality of the SB-29 tweeter continues to knock me out, so today I decided to install 10" Alphas in place of the Utahs.

I'll make a Frankenspeaker first, retro-fitting the 10" Alphas to the current 12" sealed cabinets. If I hear more clarity, I'll go ahead and build the 2Pi Towers. I have all the drivers, including a pair of DX-25s, so comparisons will be fun. Since the existing c/o, 4th order L-R is for a 4 ohm woofer, I'll use the Tower crossover as you describe. Let you know how it goes.

Merry Christmas and a healthy and happy New Year to all.

Subject: Re: 2Pi Tower questions
Posted by Wayne Parham on Wed, 21 Dec 2011 23:05:03 GMT

Groovy cool, Bill, that sounds like a plan!

Subject: JBL 2226
Posted by spkrman57 on Sat, 24 Dec 2011 03:04:07 GMT
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I think it is the ultimate driver for a 2-way which plays low enough for me in my small living room using a SET amp.

And has a clean midrange response!

Ron sends...