Subject: Woofer-tweeter
Posted by Mike Centracchio on Sun, 12 Jan 2003 18:08:50 GMT
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Could use help,I came across a woofer and a tweeter cheap, so I bought them.The woofer is a Selenium 8pw2, 8 inch, 8 ohm, 70-8000 Hz, 94 dB SPL.The tweeter is a KSN1036A 3000-40000 Hz SPL, 90 dBSelenium suggests a .66 cu/ft ported box (3 inch dia x 2 inch lg)I took a look at (basic piezo x-o) found on a link in this forum.I guess I could use these cap, and inductor figures for a cross at 3500 or so. Also had the idea to model it after 1Pi, using just a woofer inductor.My main question is how to compensate for the difference in the dB SPL between the woofer and tweeter.Any help is appreciatedThanks Mike

Subject: Re: Woofer-tweeter
Posted by Wayne Parham on Sun, 12 Jan 2003 18:52:21 GMT
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To attenuate a piezoelectric tweeter, use a capacitor in series. Since the tweeter is primarily capacitive, a series capacitor forms a voltage divider rather than a frequency splitter. There is no filter function when components having the same reactive properties are connected together. So a capacitor/capacitor network forms a simple voltage divider, much like a resistor/resistor network does.For a KSN-1038, you can expect attenuation in the following amounts:1.0uF 1dB0.5uF 2dB0.33uF 3dB0.22uF 4dB0.1uF 7dBThese values are what you'll get if you connect a capacitor in series with the tweeter, and do not use any other components. That gives broad-band attenuation only, and does not act as a crossover.See the post called "Pi implementations of quartz piezoelectric tweeters"

Subject: But Mike says the tweeter is the less efficient driver (nt)
Posted by Patrick Kopson on Mon, 13 Jan 2003 11:17:41 GMT
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Subject: Re: Woofer-tweeter
Posted by JLapaire on Mon, 13 Jan 2003 12:36:03 GMT
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Hi Mike,Your post came at a good time, as I'm playing with a piezo driver too. Wayne has posted links to piezo implementations in the past, and I think you're looking for a 70v matching

transformer to step up the voltage to your tweeter. Kind of takes the fun out of buying a really cheap tweeter if you have spend $6 more for a transformer, but there isn't any other way to boost them.On the other hand, the KSN 1038 that Wayne uses is also very cheap, has the "good" motor, and matches a 97 db driver. You'd only need a small cap in front of it to match yours.I'm trying to slap some manners into a KSN 1188 compression driver and a paper mache 400 hz tractrix horn - great fun indeed.Most of the piezos sound (to me) kind of tizzy and harsh, the 1038 does not.Now to paint some nice black roofing compound on the outside of the paper horn without destroying my clothes...John

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Subject: Re: Woofer-tweeter
Posted by DRC on Mon, 13 Jan 2003 16:32:16 GMT
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So John, if you haven't tarred yourself in place, are you thinkin' of bringing those homebrew horns on Saturday? Keep your ears and your mind open.

Subject: To attenuate the woofer, just use a resistor or L-Pad
Posted by Wayne Parham on Mon, 13 Jan 2003 19:18:38 GMT
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If a person wants to attenuate a voice coil driver, then use a resistor network or L-Pad. Usually a Zobel or some kind of impedance compensation is also desirable, so I would suggest combining the function of L-Pad and compensator. Usually, voice coil drivers have quite a bit of inductance in addition to resistance, so the system benefits from this kind of arrangement.Still, if I had to pad down a midwoofer in a two-way system, I'd probably consider using a different tweeter.

Subject: Re: To attenuate the woofer, just use a resistor or L-Pad
Posted by Mike C on Mon, 13 Jan 2003 20:27:39 GMT
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Thanks For getting back to my question Wayne and Patrick.Wayne should I use an inductor for the woofer in reference tohow you designed one into your 1 Pi design?Sorry for so many questions, but this should satisfy whatson my mind.Mike

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Subject: Electrical filters
Posted by Wayne Parham on Mon, 13 Jan 2003 20:57:27 GMT
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The coil that is used in this design is to compensate for rising on-axis response in the midwoofer. If the one you are using has this kind of response, then you might do the same thing. But the choice of reactive components in the signal path is something that you should examine on a case-by-case basis. It's not a "one size fits all" solution.

Subject: Re: Woofer-tweeter
Posted by JLapaire on Tue, 14 Jan 2003 09:20:17 GMT
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Hi Dave,If I can squeeze a little more HF out of them (it) I might bring it with a Karlson box or a 2-12" BR box I've been fooling with. The lower sensitivity of the BR allows more room for passive EQ, but that big piezo driver is kind of a strange beast to work with. I'll try a Zoebel on the transformer tonight.Might wind up just bringing some bottles (liquid refreshment type) and my ears.John