Subject: Re: Been learnin' about crossovers
Posted by Wayne Parham on Tue, 06 Sep 2011 21:14:03 GMT
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I always start with textbook values. It's definitely the place to start. Then I manipulate them slightly, sort of fine-tuning the forward lobe.

If you scan through my Spice models, you'll see both the chosen values and a list of textbook figures, not even rounded to the nearest available component value. As an example, look at the

Crossover optimization for DI-matched two-way speakersThe lines that begin with an asterisk are comments. The ones that begin with a component value are actual circuit elements. You can see, for example, that the tweeter circuit uses 6.8uF, 1.0mH and 20uF components in the core high-pass splitter filter.

Now scroll down a little bit and you'll see a whole lot of commented out values. Those are textbook values for crossover between 1.0kHz and 2.0kHz, first-order through fourth-order. They're not even rounded to the nearest available component value. I always start off with one of those, and work through a process to find the best readily available component values, i.e. 1.0uF, 4.7uF, 6.8uF, etc.

The first thing I do is to measure a speaker with a filter having exact textbook values in the crossover, as a start, and see where the lobes and nulls fall. Then I manipulate the values to get the lobe and nulls precisely where I want them to be. After that, I round each textbook value to a readily available component value and measure again. If the lobe/nulls shift too much, I'll manipulate other values in the circuit until I find the best fit.