Subject: Re: Now with measurements.
Posted by Wayne Parham on Wed, 27 Feb 2008 18:48:37 GMT
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Good stuff, Ken. The peaking you're seeing is what we want, but there is a little bit too much of it.

near the crossover frequency. This is slightly underdamped, and we use it to boost the bottom end.The idea isn't to cover a hole from the midhorn or any other driver, it's to make the first octave flat when a bypassed attenuator is used to increase HF. If you added HF-bypassed padding like that withgout slightly underdamping the crossover, the resulting curve would be a diagonal line starting at the crossover frequency and rising straight away. We don't want output to start rising for an octave, so we peak the bottom of the curve just a smidge, in order to provide a response curve like shown below:Like you, I designed the circuit with Spice. It allowed me to model the compression driver/horn with voice coil resistance/inductance and a series of resonators. I was able to make a very good model that gave accurate results. But by including actual impedance measurements of the driver, I've been able to get even just a little bit closer.Spice models using ZMA filesI found the same thing you did, that my crossovers had a smidge more peaking than I wanted. Your chart is very close to what I've seen. It isn't objectionable, but I changed values as a result. Reducing C2 a little and increasing the size of L1 made an improvement.I'm not concerned about shifting the -6dB frequency by a couple hundred Hertz, in fact, the crossover has always been asymmetrical anyway. They're sloped filters, not brick wall filters, so in-band and out-of-band signals are separated by a relatively large overlap region. That's a grey area, so to speak, in that acoustic summing between drivers is in play, not just electrical slopes. Even if it appears that one crossover point is a few hundred Hertz different than the other, the only thing that matters is that summing results in a nice flat response curve. That's where the rubber hits the road, so to speak.