Subject: ART Array Test Results
Posted by FredT on Tue, 28 Nov 2006 10:03:51 GMT
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Wayne was busy over the Thanksgiving weekend auditioning the ART arrays and testing them with a couple of different crossover variations. He sent me an email with the test results for the 2nd order woofer/1st order tweeter crossover I had sent with the prototypes, and also for a 1st order woofer/1st order tweeter crossover, along with these words "I only measured the array with your crossover and with a 1st/1st, using the cap and resistor on the tweeter but removing the second order cap and Zobel from the woofer array, leaving just the coil in series. I wanted to test 4th/4th and maybe play with some asymmetrical slopes too. But to tell the truth, after seeing the data on the 1st/1st and 2nd/1st, I don't think it was necessary to go further anyway. The speakers sound great". The test results for the 1st/1st crossover are linked below.When I first viewed the test graph I was surprised, and my reaction was "If this is good I would hate to see what bad looks like". The graph looks very ragged to me, but on closer inspection it isn't as bad as it looks. Using 87dB as a reference level the response is +/- 3dB from 42hz to over 20khz, with the exception of a broad peak between 400hz and 1.2khz that exceeds the + 3dB. This peak is centered at 670hz, where the response is +7dB. To my ears the peak is audible but not objectionable.I had enjoyed the ART Arrays so much that I built a second pair after sending Wayne the prototypes. My pair had the 2nd order woofer crossover, so I quickly disconnected the shunt cap an the zoebel and listened with the 1st order version that Wayne prefers. The second order woofer xover results in a 6dB null centered at 2.5khz, an area where the 1st order response is flat on. Much to my surprise, I prefer the 2nd order woofer crossover. To my ears the 2nd order, with its "BBC dip" centered at 2.5khz sounds smoother, with massed strings sounding less aggressive, bad recordings less fatiguing, and female voices less forward. True, with the 1st order Norah Jones is actually whispering "come away with me" directly into my ear, but I already have a wife to do that with far fewer complictions. To each his own :)
ART Array Test Results

Subject: Re: ART Array Test Results
Posted by Wayne Parham on Tue, 28 Nov 2006 19:07:13 GMT
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I was pleased with your speakers, Fred. The measurements look good and the speaker sounds good. Average sensitivity is 90dB and it's flat +/-5dB from 40Hz to 25kHz outdoors, standing upright. Like you said, it's within a couple decibels over most of the range, with a graceful hump for a couple octaves in the vocal overtone range, adding just a hint of extra presence. I think you designed a real winner!ART Array Frequency Response at 2.83v/1M

Subject: Need Help With Crossover Schematic
Posted by FredT on Thu, 30 Nov 2006 14:14:05 GMT

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I'm completing the builder's directions for the ART arrays, and the final item I need is a crossover schematic I can attach to a word file. Can somebody out there do this and send it to me as an email attachment?Here's a verbal description of the crossover:Tweeter crossover: A 10uF cap followed by a 16 ohm shunt resistor across the tweeter.Woofer crossover: A 1.2mH inductor followed by a 4.7uF shunt cap, plus a zoebel consisting of a 12 ohm resistor and 4.7uF cap in series with the resistor.

Subject: Re: Need Help With Crossover Schematic
Posted by Wayne Parham on Thu, 30 Nov 2006 16:36:21 GMT
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I'll make a schematic for you tonight.Just one clarification though: The measured results are for a speaker with 1st order on both the tweeter and the woofer array. The tweeter has a 10uF cap followed by a 16 ohm shunt resistor across the tweeter. The woofer array has just a series 1.2mH inductor. I'll send a drawing of the crossover you've described too, but measurements of that configuration weren't as good as the pure first-order crossover.