Subject: Response to Mr. Craig's Questions about my array
Posted by Marlboro on Mon, 30 Apr 2007 18:46:23 GMT
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Mr. Craig,You operate in a world of "use as much money as you want." I operate in a world of limited budgets, limited by a real world salary and living out in the country, with car loans, and college expenses for two kids etc. I'm not sure that you understand this concept based solely on your comments.I also believe that if I can hear a difference then there is a difference. If I cannot hear a difference or see a difference, then all the technical papers in the world don't matter. I also believe that just because I am too poor to afford your $4000 array kits that doesn't mean that I'm not entitled to build something that works for me. While technically my design may be inferior to the quality of your parts, my design beats out any other point source speaker I've ever heard, and allows me to feel through my listening experience that I'm right there in the concert hall using all the qualities of a line array. Can I ask for more than that? No, I think not.I chose several design goals that you don't care about. Just because YOU don't care about them, only means that they are not important to YOU. These design goals include:1. use a 3 way, not a 2 way2. NOT break up as much of the critical human hearing frequencies between 300hz and 3000hz as possible with the effects of a crossover3. Use electrical crossovers4. Separate the midranges in the array completely from each other and use a 4 lb/cu ft fiberglass stuffing, in a long tube to reduce the backwave sound radiation to almost nothing through absorption, and to prevent any interaction with any other speakers in that backwave.5. Keep the cost for all of this down below $1300.I was successful in all design parameters except that I couldn't get all the way to 3000hz. These are not your design parameters, they were mine.Now as to your questions:1. Room issues. I explored the issues of room issues with Dr. Griffin. My room has an 11.5 foot front and a 16 feet to the back. I am sitting about 9 feet from the speakers. This puts me entirely within the near field for the tweeter and midrange line, though of course not with the woofer. However, I was not able to find any references that said a woofer running below 165 or so would be a problem. However, at some point I am ready to implement a line array by adding two more woofers. Being entirely within the nearfield means that room reflections come too late for my brain/hearing to interpret them as part of the music, so they don't impact my hearing, and thus room issues are a non issue for me.2. Tweeters: The sensitivity of my tweeters is nearly 108db. Its 11 db above my mids which are 3 db above my woofers. Sensitivity is not an issue when you are using 60 tweeters, 30 on a side. Likewise when using 30 tweeters with the required sound volume developed in a 11.5 x 16 x 8 foot space or 1500 cu ft, and when each tweeter only needs to carry 3.3 % of the total volume of the treble volume, the tweeters are not being pushed at all. To say that each one is loafing along would be an understatement.Additionally, they are being used with a 24 db/octave L-R electronic crossover, and are crossing over at 2600hz. While their resonant Frequency is not a full octave down from their cross, the fact that the cross is so steep, that it's a stable crossover, and the fact that each one is outputting so little of the total load, as well as so little of the total watts(probably not exceeding 0.03 watts), the BAD THING that you describe is really not particularly BAD at all.I have spoken to others who used them in this was before I built them, and they found that the little Dayton ND20A's were up to the task without a problem.3. Jim Griffin and I have already spoken about the interference pattern of comb filter distortion. I have cut the flanges on these little domes(I have a word document that shows how to do this if you want it) so that the center to center distance is about 0.9 inch. This limits the start of comb filter distortion way way into the last octave and at about 15Khz. This is extremely difficult to hear. Using my equalizer in the loop, and raising the 15Khz and up made them sound

excessively “bright”. I satisfied that I, and my wife too, cannot hear this interference pattern in any music that we listen to. Additionally, in the room that we are in, we don’t move around. Comb filter distortion, as you know, is most noticeable when moving not when standing still, as one moves in and out of the fingers of cancellation.4. The B&G Neo3. I am notorious for disbelieving manufacturer specifications. They tend to use the most smoothing possible in their FR’s and basically try to put a good light on their item, which of course they should. So I tend top believe independent lab tests. I tend to believe John Krutke’s evaluations. His eval of the B&G neo3 put it up with the flattest frequency response, and lowest distortion of any ribbons or planars that he tested. It was the only one that beat out a quality standard high quality dome. You know that I don’t speak with experience about this since I’ve built a budget array so there is no need to be snide in your question. 5. The Rane crossover IS DATED. However, I needed an electronic crossover which would fit within my design goals. I was able to find one on ebay for $95. At some point, I will have more fund, possibly as early as this summer, and at that point I will sell my Rane AC-23 and purchase a digital Behringer Crossover. I do not run the op amps on the Rane at full power. When the system is not running a signal from the CD player, and is set at the full volume that I listen, I cannot hear any noise coming from the op amps of the Rane or the pre-amp, or the associated power amp through the speakers; they are dead silent.----------I hope this answers your questions. My design goal’s were quite different than yours. Jim stated that I would change my next version.Perhaps you would like to know what I might do if I had the funds:1. Upgrade the Sammi 3 inch mid woofs. At this point, I’m not sure what since my design goals require multiple 3 inch midranges(the 300-3000 range of no crossover).HiVi makes one that might work for me, though I'm not sure that it is an upgrade. 2. the digital crossover of course, but that will probably come this summer anyhow.3. Possibly a change in tweeter. Unfortunately I prefer the SOUND that is produced by domes to that which is produced by ribbons, so I’m not sure. And except for the B&G Neo 3, the FR of my domes is much flatter than any ribbon I've seen.Marlboro