Subject: Can I get some feedback on this design???
Posted by BillEpstein on Sun, 19 Dec 2004 00:56:52 GMT
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Why is it that whenever I read something called a "white paper" my brain freezes up?I have 2 large trapezoidal MDF panels, 12 4" 89 cent drivers and 1 15" JBL M115 woofer each. The woofer will go in the wide bottom of this OB and the 12 full rangers up an array with a bout 1" space between them. I'll let the woofer roll off and let the full-rangers run without any crossover. 8 ohms across the board.Waddya think?

Subject: Re: Can I get some feedback on this design???
Posted by lon on Sun, 19 Dec 2004 08:09:45 GMT
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I have my 50 cent 4" drivers mounted on a board 8 per paneland have tested them just straight, no chaser. Fitz ispromising to give us something to do with some added components.My 8 up line arrays give a nice effect, but I still don'tknow what optimal will be.signed,Yoder.

Subject: Re: Can I get some feedback on this design???
Posted by Jim Griffin on Sun, 19 Dec 2004 13:09:31 GMT
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Bill,You really need to have a line of tweeters for this project. The spacing that you envision for the mids indicate that comb line effects and loss of directivity will dominate above 5000 Hz. If you would run the frequency response of such a system, you would see that the on-axis response would fall from flat (the level between 200 to 3000 Hz) above 5000 Hz and would be down 10-20 dB in the 10-20 kHz octave. You would need serious equalization to flatten out such a response. Off axis it would sound phasey and in some locations in the room you would have dips and drop-outs.Depending on the width of the baffle you would have the dipole baffle shorting effects on the low end of the band but you already know about that issue. Again equalization can alleviate and help the transistion between the subwoofer and the mids. Bottom lineis that their is no easy way to achieve a full frequency range line array system without crossovers between bands. You can use a 31 band equalizer to cover some of the shortcomings but a properly designed system will sound better fromt he get go.White papers are kinda nice if they keep you from driving down blind alleys and dead end streets on the way to sonic perfection.Jim

Subject: TLAH is on the Billfitzmaurice.com site

Posted by Jim York on Tue, 21 Dec 2004 00:05:32 GMT
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He posted it today.

Subject: Re: TLAH is on the Billfitzmaurice.com site
Posted by lon on Tue, 21 Dec 2004 00:22:45 GMT
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I guess we will have to (as theuy say in the music biz) "sweat him for some licks" on this one. I'm not knowingwhere exactly the horn portion of the design is on this one. My ceiling is too high to effectively mount this. At firstI thought the *pic* was in there upside down. If this is a planned project for audio express, I don'tknow what I'll do. See message about subscription problemsin ART General which I am about to write.

Subject: Re: TLAH is on the Billfitzmaurice.com site
Posted by Bill Fitzmaurice on Tue, 21 Dec 2004 11:57:14 GMT
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Your ceiling height doesn't matter, the boxes are intended to mount at listening level or a bit higher, as they tilt downward, but they could be mounted upside down close to the floor as well. The horn loading, which is minimal, is accomplished via the corner placement, though that is optional. Mid wall or stand mounted away from the wall are other options.

Subject: Re: TLAH is on the Billfitzmaurice.com site
Posted by lon on Tue, 21 Dec 2004 15:00:28 GMT
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Hmmm. Ok.So that original *pic* which look a bit slanted is anaccuirate representation.I'm seeing just the 4 inchers and the tweets but no details ofthe casework. Well, I guess I'll have to wait for publication.I would guess from your other designs that the line array wouldfocus the energy from the backwave either up or to the sides ina mirror image and in a v-shape.The samples... or proof of concept I guess... that I have arejust the 4 inchers at the top end of a baffle with overall heightof 48 inches. The stand for them is jimmy rigged.

Subject: Re: Thanks, Jim.....I think.....
Posted by BillEpstein on Tue, 21 Dec 2004 21:56:37 GMT
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I guess I'll just have to buy a few dozen of the 24 cent mylar tweeters.I really tried to figure from your white paper how to compute the distance between drivers but got lost.I even considered milling a slot in the board but they're square and a diamond would be necessary to find the wood with a screw.Guess that project will have to sit awhile.

Subject: Re: Thanks, Jim.....I think.....
Posted by jdybnis on Tue, 21 Dec 2004 22:19:01 GMT
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Read some of the other posts on this board. I think you'll see that your question is answered over and over again.

Subject: Re: Thanks, Jim.....I think.....
Posted by Jim Griffin on Wed, 22 Dec 2004 12:10:30 GMT
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Bill,All of what I say below is explained in my white paper but this is the shorthand version on driver spacing. I suggest that you space the drivers center-to-center less than one wavelength apart at their highest frequency of operation (usually the crossover frequency or 20 kHz for tweeters). Thus if you have say a 4" driver with the outside frame dimension also 4", then the highest recommended frequency of operation is 3390 Hz when the frames are touching. In your case you are using 4" drivers spaced 5" c-t-c apart so you should crossover before 2712 Hz. For circular (dome or cone) tweeters the less than one wavelength spacing issues limits their upper frequency ability--one wavelength at 20,000 kHz is 0.68" so this would indicate a very small frame tweeter. As the ear is less sensitive to combing in the 10-20 kHz octave, you can get by with c-t-c spacing as close to twice the 0.68" but that would not be the best sound. The issue that occurs is that if you go to wider spacing than one wavelength then at a frequency equivalent to 2 wavelengths spacing would create comb lines. Above one wavelength spacing you will see loss of directivity and the frequency response will start to fall from flat. For most line array applications the drivers are located as close as practical to each other for this reason and a crossover no greater than a frequency of one wavelength spacing. This is the criteria suggested in several AES papers by JBL engineers. Other researchers (L'Acoustics for one) suggest spacing drivers c-t-c no greater than a half wavelength at their highest frequency of operation. That creates an even more restrictive criteria for practical implementation. Jim

Subject: Re: TLAH is on the Billfitzmaurice.com site
Posted by Bill Fitzmaurice on Thu, 23 Dec 2004 02:15:10 GMT
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The design of the TLAH is utter simplicity and utility. The rearwave is utilized via TL, with the bottom of the box open as the line output. While the DRs are perhaps the most complicated high efficiency speaker designs to construct, the TLAH may be the easiest.