
Subject: Help with Potential Line Array Project
Posted by [mayhem13](#) on Fri, 11 Sep 2009 03:20:00 GMT
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First Post and First potential attempt at a Line array project so please be kind.....and gentle.....

This dilemma arises from necessity as we just purchased a new home and a 'different' media space that will be used for HT and Critical 2 channel audio but i'm forced to make concessions....listening/stage wall will have built in cabinetry comprised of lower cubbards and upper bookshelves on either side of a centrally located flat screen above a bumped out low fireplace....free standing/space speakers won't fly.

Listening distance is 14.5 ft

If it matters, i've got a few conventional designs under my belt and lots of DIY subs.

So the thought is a 'built in' array of 55" or so in height but no more than 6" available width

1/3 lower portion will be 'wide baffle' in nature as cabinet doors will be on either side

Upper 2/3 line will be sided with open display shelving roughly 12" deep.

Available enclosure depth will be roughly 12"

Line will be actively crossed to stereo sealed subs of 12" at 120hz 2nd order...flexible placement. Unibox sim in the proposed volume shows F3 118hz sealed

I submit this driver for your considerations as it's priced attractively and response looks good.

http://www.madisound.com/catalog/product_info.php?products_id=8659

Drivers mounted frames touching, 12 per side.....C to C spacing 3.9 inches

I don't expect a response from Wayne considering my 'Newbie' status here but.....1st order XO at 8khz to a centrally mounted dome?...tapered line of course.

Lengthy post i know but it's more to shoot down....so enjoy!

Remember....be gentle.

Subject: Re: Help with Potential Line Array Project
Posted by [Marlboro](#) on Fri, 11 Sep 2009 16:46:41 GMT
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First follow-up question:

Have you read Dr. Griffin's Line array white paper. Its the research bible that we all use now to

make line arrays sound right?

Sounds like it could work. What tweeter are you using?

Marlboro

Subject: Re: Help with Potential Line Array Project
Posted by [mayhem13](#) on Fri, 11 Sep 2009 22:06:58 GMT
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Thanx for the Reply Marlboro and yes...i followed your link to the white paper and read it again...did so a few months ago when i first considered the idea.

I'd like to use the SB Acoustics SB29 as i have em already. With the faceplate removed the C to C spacing to the first two woofers would be 3.65 inches. I just haven't done the math on efficiency of the woofer line to see if the sensitivity will match up. Didn't want to waste the time if the overall idea was flawed beyond repair.

AS to the SB29, i'm doing some extensive waveguide testing with a group now and one option is rear mounted with a 1" deep DIY waveguide/horn load cut into the baffle but i'm not sure the added directivity would be a plus in an array arrangement.

Subject: Re: Help with Potential Line Array Project
Posted by [Marlboro](#) on Fri, 11 Sep 2009 23:56:32 GMT
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So.... you are planning to use a single b29 tweeter in each array, combined with the mid ranges.

OK.... all this is MY opinion.

I would caution using a 6 db/octave crossover at 8Khz. Your mid ranges will run out of room before they start screeching or simply drop out at 16Khz which is one octave above, and 6 db down won't cut them back enough for that. You need at least a Rane AC23 24 db/oct or behringer where you can dial up the crossover to 72 or 84 db/oct, in my opinion.

Comb filter distortion won't start until 3400hz on the mid ranges at that c-to-c, so there is no reason why you can't drop your tweeter down to 3400. You will still be covering the critical 120-3000 range with just one speaker, and giving your midranges better headroom, but i still don't like the 1st order cross on them.

The single tweeter use won't give you a problem with comb filter distortion, and if you use an electronic crossover and your tweeter amp has a volume control, you can just dial up its output. But without running the numbers on the 12 mids I suspect that their combination SPL will be in the

neighborhood of 104-108, way way way above the 94 db sensitivity of the tweeter, so you will be forced to either put the mids down(not a good idea) or ramp the tweeter up(an even worse idea).

But I'm not sure that I would go so cheap on the tweeter if I'm not going for a line array for the tweeter line. To get the sensitivity you need you would need to go with a horn tweeter, but to get a horn decent enough for this application you would expect to pay around \$400 each, and due to the air in the throat its hard to get their FR as linear as your mid ranges even if you can get the sensitivity up to 104-108.

Were you planning on separate enclosures for each of the midranged or ganging them all on one big box?

Is any of this right?

Subject: Re: Help with Potential Line Array Project
Posted by [Marlboro](#) on Sat, 12 Sep 2009 00:09:43 GMT
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AND AGAIN this is more of my opinion....

Using the mid ranges and a 3.9 c to c, and 12 of them, your vertical height is only 55 inches. You need 70% of the distance from the floor to ceiling to get a line array coupling. Additionally listening at 14 feet won't put you in the nearfield for such a line array, and your one tweeter will not be enough to put listening in the nearfield.

The lack of coupling with the ceiling and floor, and the lack of nearfield listing, will make the whole system not a line array but a big point source system.

Your single tweeter will not give you the incredible low distortion that the multiple array tweeter does, nor will it give you the nearfield or coupling.

I would have to say that unless you make major modifications in your plan, I would go with a much less labor intensive standard HT system with a center channel.

Marlboro

Subject: Re: Help with Potential Line Array Project
Posted by [mayhem13](#) on Sat, 12 Sep 2009 07:01:30 GMT
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Thanx Marlboro.....a built in MMTMM with 5" drivers seems the more economical and effective approach given the limitations of placement options given your reply. While it is possible to simply abd inexpensively add more drivers to increase the line length to 70%, i have reservations to the performance of the lower part of the array as it will be presented as if on a very wide baffle which will alter the FR and probably bloat the midbass, requiring extensive equalization.....hardly worth

the trouble IMO. I'll follow up with a print drawing of the built in units and post it to see if anyone has an alternate suggestion that remains economically viable as compared to say a \$500 MMTMM such as the newer designs from Zaph using the Za-5 driver.

Subject: Re: Help with Potential Line Array Project
Posted by [Marlboro](#) on Sat, 12 Sep 2009 16:29:58 GMT
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Mayhem,

The line array is workable but would entail more than you want to do, I should like. You need to either spread out the mids or get more of them. You would need a couple of Foster super tweeter horns which have a 108 spl at 322 bucks a piece. You would need a Beringer crossover so you could cross from the mids at about 5000 with a 48 or 72 db/octave crossover. You would need to angle the system to avoid issues with angle dispersion.

It could work but I think its more than you want to do. And your other choice would probably be as effective, especially since you want it mostly for HT, not listening to Schubert or Beethoven symphonies.

Marlboro

Subject: Re: Help with Potential Line Array Project
Posted by [mayhem13](#) on Sat, 12 Sep 2009 21:26:17 GMT
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While not an avid fan of the classical, i do hope to enjoy critical listening in this space. I promise at some point i'll return to an Array project with greater fervor, probably free standing and portable....maybe a line of larger woofers and a Maggie tweeter or two. This case of a built in doesn't warrant an expensive outcome as the value will be lost when this house is sold.....we fix em and sell em quite often.

Side question of pure curiosity.. would it be possible to use two Maggie tweeters on either side of the woofers for the sake of efficiency?

Subject: Re: Help with Potential Line Array Project
Posted by [Marlboro](#) on Sat, 12 Sep 2009 22:33:04 GMT
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Got me on that one. I know nothing about using Maggie tweeters!

Subject: Re: Help with Potential Line Array Project
Posted by [mayhem13](#) on Sun, 13 Sep 2009 00:35:43 GMT
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While scouring the net looking for array info before landing here, i came across lot of talk about the 'ideal' HF transducer with no gaps in the line and an ability for close proximity to the mids and the magneplaners seemed encouraging. Granted, they're not very efficient and don't handle a lot of power BUT in Griffins theory, they'd provide the best performance by concept.....and they're not too expensive If you can get Magnepan to sell em to ya.
