Subject: Going without a subwoofer.... even with smaller drivers?
Posted by GreggoEggo on Thu, 19 Nov 2009 11:24:39 GMT
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Anyone have experiences to share regarding bass coupling between multiple woofers and how an array of woofers performed in bass output that was or "sims" to be very different than one or two of said woofers in a more conventional design?

I am looking at possibly doing my own take of the dual line of woofers flanking a narrow line of tweeters (neo3) and was wondering if I could get away with 5 inch woofers versus 6 or 7 and still be able to run without a sub and not regret it. For instance, I am thinking about the SB Acoustics SB15NRXC30-8-UC which is a 5 inch woofer with an fs of 38 Hz, running 18 of them per side:

http://www.madisound.com/catalog/product_info.php?cPath=45_228_254&products_id=8675

But I would be interested in anyone's comments regarding any driver 7 inches or less in cone/surround diameter. I am sure that just about any array with 6 or more drivers with an fs of 60 Hz or less would have the potential for adequate bass response for general music via good crossover/cabinet design or via digital correction... but I am hoping to get more than adequate bass out of an array like this (for movies and music) and was curious as to any observations regarding how small drivers can perform greater feats of bass strength when allowed to operate as a team of many rather than stand alone, especially with digital correction taken to the point of delivery the great results with bass response but still not stressing the drivers to their very limits.

And finally, two points of clarification.... I did not mean to imply that good design and digital correction are exclusive to each other! And my own definition of good bass response is an "in room" measurement that shows 36 Hz no more than 2 db down and 24 Hz no more than 5 db down and I don't care about anything below that... but I would want the bass to be just as clear and dynamic as the rest of the range and compete with the top tier of commercial products out there in the high end audio world.

Regards,

Greg J.

Subject: Re: Going without a subwoofer.... even with smaller drivers?
Posted by selahaudio on Fri, 20 Nov 2009 07:50:56 GMT
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There really are very few 5" woofers that I would even consider running without a sub in an array and they are much more expensive than the SB Acoustics woofer. The option would be to add DSP equalization and if you have enough surface area the 5's might be acceptable. To get the extension you need it probably will take a 7". If you want a dual line of woofers flanking the tweeters the Neo3 isn't going to work well with 5"-7" drivers.

Also, in-room bass extension numbers can be very misleading. Most measurements you see don't

have enough resolution in the bottom octave and will tend to heavily overstate the extension. A prime example is a system I had measured nearfield -3db@60hz and the owner's DSP showed an in-room of -3db around 30hz! Listening without a sub it was clearly audible that the lower octave fundamentals were not very strong.

Subject: Re: Going without a subwoofer.... even with smaller drivers?
Posted by GreggoEggo on Fri, 20 Nov 2009 12:07:34 GMT
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Thanks for weighing in Rick... The more I have looked around for info on this the more I am convinced I have to move up to a 7 inch frame driver so that I can use DSP eq to manage things but hopefully have much less cause for concern about pushing the drivers too hard, even with 18 per side.

I don't get the warning abou the neo3 however, unless this has to do with your observations around dispersion (I am guessing in the horizontal plane but perhaps you are thinking vertical). Looking at what I percieve to be the starting point of the challenge, CTC horizontal spacing between the two woofer lines on each side of the tweeter, a tweeter flange width of 2.6 inches seems pretty darn attractive compared to the other ribbon/plannar options out there. It seems that most who go with a planar choose the neo8 for the lower crossover point and narrower vertical dispersion to help manage lobe/combing in the vertical plane. Still researching.... and someday early next year I will start testing.

Regards,

Greg J.

Subject: Re: Going without a subwoofer.... even with smaller drivers?
Posted by selahaudio on Fri, 20 Nov 2009 22:52:05 GMT
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GreggoEggo wrote on Fri, 20 November 2009 06:07Thanks for weighing in Rick... The more I have looked around for info on this the more I am convinced I have to move up to a 7 inch frame driver so that I can use DSP eq to manage things but hopefully have much less cause for concern about pushing the drivers too hard, even with 18 per side.

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dispersion to help manage lobe/combing in the vertical plane. Still researching.... and someday early next year I will start testing.

Regards,

Greg J.

Based on working with the Beo3PDR and symmetrical layouts the larger woofers need a much lower crossover point than possible with the Neo3PDR. A steep DSP slope will help but you'll still have some response issues. There's also going to be a large difference in sensitivity between the woofers and planars.

Subject: Re: Going without a subwoofer.... even with smaller drivers?
Posted by goldyrathore on Mon, 23 Nov 2009 07:03:09 GMT
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Good extension with smaller woofers? Doable.
Look at http://www.cordellaudio.com/eqss/

Subject: Re: Going without a subwoofer.... even with smaller drivers?
Posted by Marlboro on Mon, 23 Nov 2009 17:00:56 GMT
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The devil is in the details, and the details are proprietary:

"The EQSS™ technique is a patent-pending technology that is available for licensing. Custom design services for EQSS-based loudspeakers and systems are also available."

Since its proprietary, you cannot do this system yourself, and since its proprietary you are unlikely to be able to find out before you've Purchased it how it really compares to a system with a conventional woofer, or whether all this info in the article is really a lot of hot air.

Marlboro

Subject: Re: Going without a subwoofer.... even with smaller drivers?
Posted by selahaudio on Mon, 23 Nov 2009 17:13:50 GMT
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Marlboro wrote on Mon, 23 November 2009 11:00The devil is in the details, and the details are proprietary:

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Marlboro

Bob Cordell actually is a very talented engineer and a nice guy as well (met him a few years back at a DIY event). No hot air from him.

Subject: Re: Going without a subwoofer.... even with smaller drivers?
Posted by Marlboro on Mon, 23 Nov 2009 20:54:51 GMT
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Rick,

I know OF lots of people who are very talented designers and who are supposed to be very nice guys.

That doesn't deny the fact that some of them have produced line arrays which are less than terrific when compared to other people's arrays. I wasn't denigrating the designer. What I was saying is that its a proprietary design. No one can simply make this design and find out how it works. One must pay the designer for it.

All of your crossover designs are proprietary, so while you are often a very nice guy, and EVERYONE MUST ADMIT THAT you are a very talented designer, like this system, one has to buy your speakers to get the same quality.

So for the poster, just like your systems, THEY ARE NOT DOABLE because they are proprietary.

As this is mostly a DIY forum, we cannot know if it really is as it says it is without buying the system; we surely cannot build it ourselves.

Marlboro

Subject: Re: Going without a subwoofer.... even with smaller drivers?
Posted by Marlboro on Tue, 24 Nov 2009 19:47:31 GMT
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Perhaps someone has heard this little innovation in person and can verify this talented designer's work in the real world?

Subject: Re: Going without a subwoofer.... even with smaller drivers?
Posted by Wayne Parham on Tue, 24 Nov 2009 20:28:50 GMT
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I only scanned through his approach, so I may have missed some detail. But in general, I think he's using an overdamped vented alignment, one that gives a gradual rolloff, much like a sealed alignment. I'm cool with that, it's a very forgiving alignment. Then it looks like he uses EQ for extension. I would prefer addding subs, because it provides more sound sources a la the multisub approach. But assuming subs are off the table, and forgetting about room modes for a minute - just talking about extension, I suppose some EQ to bring up the low end of an overdamped vented cabinet would work. Gives adequate bass and let's you keep the box size down.