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Subject: 4pi - like

Posted by [vladimir4](#) on Sun, 02 May 2010 21:06:41 GMT

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Hello,

I'm trying to define my principal speakers based on 2225H and 2425H + 2370A and I'd like they covers 35Hz-16kHz in +- 3dB with an ability to shake the house for occasional parties.

For the 2225H I'm limited to dimension: 67" x 18" x 25" (w x h x d) and I plan to place the 2425H/2370A in a separate box on the top of this huge cabinet, at the ear level.

After a lot of reading my feeling is to build some kind of BLH or BIB - in order to get the adequate bass, and to cross the 2225/2425+2370A at 800Hz - to stay in great sounding area of both speakers.

As you are experts on use of the professional loudspeakers for the home hifi use, I'm open to any suggestion.

Thank you in advance,

vlad.

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Subject: Re: 4pi - like

Posted by [Wayne Parham](#) on Mon, 03 May 2010 01:23:12 GMT

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loudspeaker I could make with that driver complement. Spent a lot of time perfecting them, actually. Run subs below them in a multisub arrangement for extension and modal smoothing.

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Subject: Re: 4pi - like

Posted by [vladimir4](#) on Mon, 03 May 2010 14:02:42 GMT

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Wayne,

Thank you for the recommendation. Could be the 4Pi then built directly with components I already have (2225h/2425h/2370A) or shall I modify your crossover/recommended box size in some way?

How much of the quality will I lose against the combination you use (2226/DE250/H270)? Which is the most problematic component in my set?

Thank you in advance,  
Vlad

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Subject: Re: 4pi - like  
Posted by [Wayne Parham](#) on Mon, 03 May 2010 15:31:25 GMT  
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You can make the speakers using the drivers you have, but use the H290 instead of the 2370. I've used those 2370's a lot over the years, and they're pretty good horns but a little bit spitty

2370 won't fit. I know you said you were going to put the horn on top, but this is a better solution all the way around. Sell the 2370 horns on ebay and you'll get enough out of them to buy H290's. You'll probably have enough extra cash left over to buy yourself a nice steak dinner!

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Subject: Re: 4pi - like  
Posted by [vladimir4](#) on Mon, 03 May 2010 22:08:22 GMT  
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Thank you Wayne,  
If I will go your way - cross over at 1600Hz, what is the maximal distance between the 2225 and the 2425/H290? In my construction they will be at 20" center-to center, is it still OK?

Another question: which tweeter sounds better on the H290, 2425 or DE250?

Vlad

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Subject: Re: 4pi - like  
Posted by [Wayne Parham](#) on Tue, 04 May 2010 00:36:51 GMT  
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Crossover is not really at 1.6kHz, although I've called it that sometimes because that's the approximate corner frequency of the high-pass. Actual acoustic crossover is done where the horizontal directivity of the midwoofer and tweeter horn match, around 1.3kHz. There is naturally some overlap in that region where both woofer and tweeter are playing simultaneously, which is the cause of the vertical nulls, spaced about 25° above and below the forward axis. That's the

position of the nulls with the drivers mounted as shown in the plans. If you move the sound

loudspeaker performance data if you're going to mount the horn outboard, I'd suggest moving the woofer up in the box so its position is closer to the horn, maintaining the close vertical spacing between them. You can basically just flip the box over, and move the woofer up just a smidge, like an inch. This will allow you to position the tweeter directly over the woofer, instead of slightly offset to the left or the right to allow space for the port.

About the compression drivers, personally, I like the sound of the 2425 and 2426 but I think the DE250 sounds a little better. Both the JBL and the DE250 are very smooth sounding, but the JBL has a bit less output in the top octave. The DE250 is just as smooth to my ears but it has better reach. You get the shimmer without harshness, so its a win/win and since it costs less, I guess that makes it a win/win/win. Still, the JBL driver is very nice sounding and I've enjoyed several speakers with 2426 compression drivers.

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Subject: Re: 4pi - like

Posted by [vladimir4](#) on Wed, 05 May 2010 09:30:54 GMT

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Thank you Wayne for all those precisions. I've got another question before starting build the prototype - I hope I'm not abusing of your patience... I've read your responses on other topics and your position seems be that trying to get more bass from 4Pi bass reflex deteriorate the midrange quality. What about changing BR to Horn-like enclosure? Do you have any opinion/information on altering the 4Pi using something like JBL "scoop" (4530) or the JBL C34 ?

<http://www.audioheritage.org/vbulletin/showthread.php?1166-4530-plans>

<http://www.lansingheritage.org/images/jbl/plans/c34/page2.jpg>

Thank you in advance, Vlad

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Subject: Hornsubs verses direct radiators

Posted by [Wayne Parham](#) on Wed, 05 May 2010 14:28:13 GMT

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I love horns, as you may know. And I think basshorns are some of the most challenging and exciting to build. The problem is, they have to be large to be good. That makes them difficult to use in a home hifi environment. Maybe in a bachelor pad or man cave. But when you can't have an absolutely huge box (at least 20ft3), I'd prefer bass-reflex boxes. In my opinion, a good direct radiator is better than a compromised hornsub, especially when you run them in a multisub arrangement.

All the physically small horns I've seen come in two varieties: compromised efficiency or compromised response. Most of them have horribly peaky response, like 10dB peaks and valleys. I've seen a lot of horns like that, popular because they're small and easy to build. But the response is terrible. Others use a horn/pipe approach, more a transmission line than a horn. That's fine, better than peaky response, in my opinion, but it comes with lower efficiency. They're pretty much the same as a bass-reflex box in terms of performance, but larger and more complex. I'd personally rather have a nice simple Helmholtz resonator.

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Subject: Re: Hornsubs verses direct radiators  
Posted by [vladimir4](#) on Wed, 05 May 2010 16:19:04 GMT  
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Hi Wayne,  
thank you again for your reply.

Wayne Parham wrote on Wed, 05 May 2010 09:28  
But when you can't have an absolutely huge box (at least 20ft<sup>3</sup>), I'd prefer bass-reflex boxes.

This is exactly what is pushing me from the beginning to wondering about horns, TQWT, BIB, or other kind of design. The only place I dispose to put speakers in are two boxes, each of 15cu ft (67" x 18" x 25" w x h x d, they are indeed fixed on the rear wall at the 10" from floor). I'd like to use all available space to get a good bass out of 2225.

If I understand correctly your recommendation is then to use a classical 4Pi (slightly modified dimensions to fit in) and to use the remaining ~10 cuft per side for the additional sub-woofers? Any recommendation on such a subs? (I suppose we are talking completely different budget here...)

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Subject: Re: Hornsubs verses direct radiators  
Posted by [Wayne Parham](#) on Wed, 05 May 2010 17:56:36 GMT  
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system.

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