
Subject: pictures 4 pi speakers

Posted by [Joep Ritterbex](#) on Wed, 04 Nov 2009 14:12:25 GMT

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I completed my speakerbuilding,
I made Pi4 speakers with small differences.

I use a JBL 2345 horn + JBL 2420 driver for the high freq. and Eminence Omega 15pro for the bass/mid freq.

The filter I made is a usual Pi4 filter.

This was my first speaker built with pro-drivers and I think the sound quality is very good.

I'm very happy with them.

Joep
The Netherlands

File Attachments

1) [SPEAKER.JPG](#), downloaded 6489 times

Subject: Re: pictures 4 pi speakers

Posted by [Wayne Parham](#) on Wed, 04 Nov 2009 17:28:46 GMT

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Very nice looking. What wood is that? Walnut?

Subject: Re: pictures 4 pi speakers

Posted by [Psychoacoustic](#) on Thu, 05 Nov 2009 03:53:33 GMT

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Great job. You've also deviated from the path! (
http://audioundtable.com/forum/index.php?t=msg&&th=12067&goto=60370#msg_60370)
So did I.(<http://audioundtable.com/forum/index.php?t=msg&th=11661&start=0&>)
Joep, would you please describe how/why you think the '...sound quality is good'. Interested to hear your opinion.
Ant

Subject: Re: pictures 4 pi speakers

Posted by [Wayne Parham](#) on Thu, 05 Nov 2009 16:50:21 GMT

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Yeah, I was kind of wondering the same thing. It's a pretty common theme on this forum, much like the eWave thread, for people to make mods and sort of roll their own. I'm all about DIY, so I support it as much as I can. For example, look through the photos people have sent me of their projects. Most are stock builds, but many are modified:

<http://www.PiSpeakers.com/DIY> For one thing, I always thought the external horn look was cool, sort of retro, especially if it's a beautiful wood horn. An ABS horn in a box can look good too. So I've usually suggested keeping the distance between woofer and tweeter the same as designed, which then puts the lobes and nulls in the same position as the stock design (if the drivers and horns are the same). I've done so much work to optimize the speaker, this is certainly something to take advantage of and not throw away. Keep the physical relationships the same and the crossover stays optimized and the pattern is good.

I've also supported a handful of drivers and horn flares over the years, all with a common theme of constant directivity and smooth flare shape (lacking sharp edges). However, I can't test them all so when one comes up that I haven't worked with, I always wonder what the pattern looks like. It is most likely different, and one can sometimes make assumptions based on flare shape and length, you can't really know for sure without measurements. But DIY'ers have a habit of using just about everything, so over time you see a lot of variants.

Subject: Re: pictures 4 pi speakers

Posted by [Joep Ritterbex](#) on Fri, 06 Nov 2009 18:16:04 GMT

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It's difficult for me to describe a relative abstract thing like "good sound" in English because it's not my language.

But I think I like the sound of the "4pi's" because vocals and instruments sound very natural, Very real. Everytime I'm surprissed how real drums sound. I'm convinced this can never be achieved with a BOSE home cinema set or something else with 2" speakers and thinplastic cabinets. But I think you all agree with me.

A disadvantage is that I became more selective according the music source. I can't understand why my friends are happy listening to music from youtube!

I tried the eminence psd2002 drivers first. They didn't sound bad at all but they sounded to me a little bit distorted, especially noticeable on a track where someone is whistling. Maybe I had defective units?

Now I use 30? year old JBL2420 compression drivers with new titanium diaphragm's.

The JBL 2345 horns are 9kg heavy alu radial horns and have a pattern of 40" x90" (like the H290). In the future I'm going to try the bigger JBL 2350 horn, because I think the horn can make a substantial change in sound.

I also recently bought a measurement mic. and I want to measure the freq. response.

Joep

Subject: Re: pictures 4 pi speakers

Posted by [Wayne Parham](#) on Fri, 06 Nov 2009 20:26:25 GMT

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Measurements can really help you fine tune a design, especially in regards to summing through the crossover region. This is where small details can make a big difference in the pattern, particularly things like crossover phase and horn length and its acoustic phase. Those set the position of the forward lobe, which affects both on-axis and off-axis response.

I agree with you about the PSD2002 compression driver. It's a great sounding unit for fifty bucks with plenty of extension and relatively smooth response. But you can definitely find drivers that are smoother. I used to put JBL 24xx compression drivers in my top-of-the-line speakers and still use their 22xx woofers in my best models. But I've switched to the B&C DE250 as my preferred compression driver. It has great extension and is very smooth, a better unit, in my opinion and not terribly expensive.
