Subject: 3 Pi - Could it work for me?
Posted by Docere on Thu, 06 May 2010 03:06:40 GMT
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It has been a while... but I can finally foresee a time when I can make a new pair of speakers happen. I have eliminated "wide/full-range" drivers and Altec duplex units based on their various compromises and apparent challenges to getting them to present music in a way I would like.

Background
The 3 Pi with AE and B&C drivers would likely fit my needs and constraints, but I would like to confirm a few things. My amp will be a ~ 3W to 6W SET amp (with healthy overload behaviour). I have attached a layout of the room (red boxes = speakers, blue blob = listening position). The room is room 12.5(w) x 18.7(l) x 8.8 (h) feet. I will be listening across the short dimension at ~ 8 to 9 feet, with the speakers ~ 7 feet apart (driver ctr to driver ctr); speakers will be against the front wall and at least 3.5 feet from side walls. There are room openings along the front wall (long dimension) starting at the outer sides of each speaker, so the front wall does not provide a genuine quarter-space (I think?!) loading.

I generally listen at low to moderate levels, with occasional loud listening being at a volume where I can still hear someone talk with their voice a little raised; rarely louder. I listen to a wide range of music, but not so much heavy orchestral/opera or metal. Quite a lot of ambient, alt-folk, melodic indie, down-tempo; some jazz and alt-country... I like melody, foot-tapping, effortless flow and listening with friends while forgetting about hi-fi. Speaker size (within reason) is not really an issue as my long-term GF loves music and is supportive; she likes speakers that look functional and even prefers wide baffles to dainty narrow ones (though she thinks tubes are a little phallic especially 845s and 211s)!

Questions
So, given the room and amp power constraints, could the 3 Pi work well, or would I be better opting for the 4 Pi with 2226? Any suggestions for how I could get the most out of such a room/make the Pi spks more useable, eg. move the speakers closer together and or use flanking subs subs distributed around the room would be tougher, would be appreciated.

Are the impedance and phase graphs of the 3 and 4 Pi available for viewing this would help me determine suitability for a SET amp? That said, if you say it will work I will trust your opinion. Also, would I need to alter slightly the damping of the mid-bass driver to account for the high-ish output impedance of the SET amp?

Finally, I would love the option of being able to use those beautiful Pi wood horns at some later stage. How difficult is it to achieve the required distances between driver centres how precise do they need to be? Would it be practical to build the speaker with a separate Eminence horn module and then swap in the wood horns at some later date?

Apologies for asking so many questions Wayne, you are very generous with your time, but short answers are fine if you are busy. Here's hoping that a Pi speaker will be in my house for the next 10 years or so (or more!).

Cheers
Raymond

File Attachments

1) Room Layout v1-2.TIF, downloaded 540 times

Subject: Re: 3 Pi - Could it work for me?
Posted by Wayne Parham on Thu, 06 May 2010 03:59:40 GMT
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I run a 10 watt Audio Note amp for my main home stereo and home theater. It's plenty for either

but it is noticeable. With 10 watts, I'd say either will play louder than most middle aged adults want or need. With 5 watts, you might just be at full volume sometimes, but you'll definitely not be able to talk over the stereo at that level.

Your room layout is similar to mine with one exception. I think I have a little more room to the sides and places to put subs. You'll want to experiment with subs placement to find positions that simultaneously work with the decor and smooth room modes well. Shouldn't be too hard though, especially with two or more subs. The mains go pretty deep too, so with a couple subs you have four bass sound sources.

link below. I've been meaning to do the same thing for all my models rather than having a hodge-podge of measurements, mostly made during development. But for now, just take my word

Crossover optimization for DI-matched two-way speakersThe spacing between midwoofer and tweeter is precise, naturally, to position the forward lobe and vertical nulls. The electro-mechanical and directional characteristics of the drivers and horn, their positions and the electrical phase of the crossover all combine to set the pattern. You can move them only slightly without upsetting the pattern.

Fortunately, the wavelength of the overlap region isn't unmanageably small, approximately 10",

to surface mount or route the baffles for flush fit horns and midwoofers without a complete redesign. But I wouldn't be comfortable with much more than that.

If you want to put the horns outboard, then move the woofer up in the box to keep the physical spacing between drivers the same. Don't shift the fore/aft relationship, keep it as close as possible to stock, and don't make the woofer and tweeter more distant vertically either. You can put the H290 in a small attractive box to start with and then upgrade to a wood horn later.

Subject: Re: 3 Pi - Could it work for me?
Posted by Docere on Thu, 06 May 2010 06:07:49 GMT
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Hi Wayne

Thank you for the very prompt and thorough response.

I like the frequency response for some reason I generally prefer a speaker in which efficiency begins to tilt downward a little above the mids/lower treble.

Regarding efficiency, power, and loudness I will play it safe and ensure I have enough headroom, so perhaps 4 - 6W with the 4 Pi. Thanks for also confirming their SET-friendliness.

I am not sure what my options will be wrt sub placement. I would like to use distributed subs but cables across the floor could be problematic. I will probably enjoy the Pis on their own or with a front wall positioning of subs, but will see what I can do re: sub distribution.

Thanks for the info regarding driver to driver positioning kinda what I thought. The speaker design should be workable as a two-box (er, four box) solution. I'd love a pair of Pis with the wood horns sitting on top those little babies are a work of beauty.

What I am planning then, is a pair of 4 Pis - with JBL 2226 and B&C DE250 - in two boxes, with the H290 centred over the 2226 and maintaining the fore-aft alignment. Place the port on the bottom of the cabinet. Hopefully this will not be too unrealistically difficult when it comes to the details...

Questions:
Does removing the H290 from the box significantly affect box volume/2226 loading - should I decrease the box size or amend the port dimensions slightly to compensate?

If and when I decide to use the wood horns, will it be relatively easy to set the vertical and fore-aft position of the horn?

Thank again and kind regards
Raymond

Subject: Re: 4 Pi - Could it work for me?
Posted by Wayne Parham on Thu, 06 May 2010 13:12:38 GMT
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The small additional volume doesn't make a significant change when removing the horn. So don't reduce internal volume to compensate. Essentially, just flip the box over so the woofer is near the

with the baffle. That's where it goes for proper alignment, same as the H290.

Subject: Re: 4 Pi - Could it work for me?
Posted by Docere on Thu, 06 May 2010 21:03:11 GMT
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Thanks again Wayne. That all sounds achievable without much hassle.

I have had a look around for the various suppliers of parts; the ease of having them supplied in a kit will probably outweigh the cost of shipping. Now I just have to wait until the house is nearing completion...

Could you please send the plans so I can start moving on this in the meantime?

Cheers
Raymond

Subject: Re: 4 Pi - Could it work for me?
Posted by Wayne Parham on Thu, 06 May 2010 22:54:24 GMT
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Subject: Re: 3 Pi - Could it work for me?
Posted by Docere on Sat, 08 May 2010 02:27:05 GMT
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Hi Wayne

I can't seem to shrug the thought (gut-feel) that I might prefer the 3 Pi. Perhaps it is that rather attractive AE driver and the thought of supporting one of the small guys. I value the contribution these smaller road-less-travelled designers/ engineers/ manufacturers/ craftsmen (yourself included, of course) make to our lives...

If it is no trouble, could you please send me the plans for 3 Pi?

Thanks again
Raymond

Subject: Re: 3 Pi - Could it work for me?
Posted by Wayne Parham on Sat, 08 May 2010 04:03:24 GMT
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You've got mail!

Subject: Thanks heaps Wayne! nt.
Posted by Docere on Sat, 08 May 2010 21:57:49 GMT
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nt.