Subject: Barzilay 4pi
Posted by Jeff V. on Sat, 09 May 2015 22:21:02 GMT
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Thought I would share my 4pi build. Although I am using the 4pi crossover & recommended drivers I am using some vintage Barzilay cabinets. Stuffed the cabinets come in at 4 cubic feet.

I started by cutting the baffle which is 3/4" mdf.

You may notice a frame around the baffle. This was needed to install speaker cloth.

Making a stereo pair I chose to build them mirrored.

I tried to keep my build as close as possible to to Wayne's 4pi. The bracing and port placement are based on the 4pi instructions.

I still need to do some cabinet sealing and add some insulation. Also need to properly mount the crossover & do some wire management.

Even though they are not finished I have them set up, playing music. Sound great! If they improve once finished all the better!

File Attachments

1) 4pi_Barz_01.jpg, downloaded 7457 times
2) 4pi_Barz_02.jpg, downloaded 7154 times
3) 4pi_Barz_03.jpg, downloaded 7214 times
4) 4pi_Barz_04.jpg, downloaded 7335 times
5) 4pi_Barz_05.jpg, downloaded 7245 times
6) 4pi_Barz_06.jpg, downloaded 7286 times

Subject: Re: Barzilay 4pi
Posted by Wayne Parham on Sun, 10 May 2015 14:19:25 GMT

Those are really cool looking!

Do you have any measurement equipment? From the driver and port positions, I expect they'll measure well. But it would be great to see confirmation.

Subject: Re: Barzilay 4pi
Posted by Jeff V. on Sun, 10 May 2015 15:14:43 GMT

Thanks Wayne! With your crossover the 2226H & DE250 blend nicely...very smooth.

I have a question regarding the 2226H. With several of my amps I get a mechanical hum. I believe 60 hz as the hum doesn't increase with added volume. At first I thought maybe I had some bad solder joints but the hum is still there when connected without the crossover. The amps are old vintage SET so I'm sure the SNR is nothing great. I also have a pair of Ncore mono blocks which are silent with my other speakers but still have a very low level hum with the 2226H. Might the crossover placement cause any hum? I purchased the JBL's used & I hope there is nothing wrong with them. They do sound very good. Any insight is appreciated.

Currently I don't have any measuring equipment. I have access to some good mics so I will hopefully get some measurements soon. Once done I will post the results.

Here is a pic of what lurks behind the wall of where the speakers are set up. Perhaps once cleaned up some of the hum will be reduced. Thanks again!

File Attachments
1) System.jpg, downloaded 6580 times

Subject: Re: Barzilay 4pi
Posted by Wayne Parham on Mon, 11 May 2015 01:53:07 GMT

Looks like a really nice system!

Hum cannot be caused by a passive loudspeaker. It's usually power supply noise but nearly as often, it's a ground loop. Sometimes it's induced AC line noise, usually the result of a lifted ground.

Do you have sound from cable TV connected to the system? If so, be sure to isolate the video system using a matching transformer on the cable line input. They're really designed to connect

on cable TV systems is usually at a slightly different potential that local earth ground. That's the definition of a ground loop, and it's exceedingly common.

There are other ways to create a ground loop too. Even having some devices connected to AC on one wall and other devices connected to sockets on another wall can sometimes create a ground loop. If the ground connection on one leg is sufficiently far from the connection on the other wall - if the wire in the wall is long enough - then there can be a slight difference in potential, and that's what causes a ground loop. The symptom of this condition is hum.

So start disconnecting stuff and see if you can isolate the noisy device and/or connection. Once you've found the culprit, you can further evaluate whether it is caused by a ground loop, power supply ripple or induced noise and solve the problem accordingly.

Subject: Re: Barzilay 4pi
Posted by Jeff V. on Mon, 11 May 2015 02:49:32 GMT
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Thanks Wayne! I think what I'm hearing has always been there, but more noticeable do to the efficiency of the speakers. Good to know it's not the speakers. I'll follow your advice & see if I can isolate the hum source. It very well may be the older amplifiers are producing some noise.

My home is fairly old and there is no ground connected. There are a lot of electronics in the room where my stereo is setup. Not sure if there is some type of interference going on. I believe everything is connected to the same wall socket but some equipment may be plugged into different power conditioners. No video sources are tied to my audio gear. I'll start by unplugging everything not in use and go from there.

The speakers sound awesome. Put several hours on them today. Seem to be getting better & better. Thanks again!

Subject: Re: Barzilay 4pi
Posted by Jeff V. on Sun, 07 Jun 2015 20:45:52 GMT
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Wayne, just wanted to update my thread. The hum issues are gone. For the most part is was the source equipment.

The speakers are sounding good. Currently running a Fisher 400C with them & the music sounds sweet!

I have the cabinets tuned to 38Hz. Should I shoot for 40Hz? I hope to pick up a microphone soon to get some measurements. I use a Macbook & wonder if REW is a good program to use?

Thanks!

Subject: Re: Barzilay 4pi
Posted by grindstone on Tue, 07 Jul 2015 06:42:31 GMT
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REW will get you home.

Nice-work and thanks for posting.

Subject: Re: Barzilay 4pi
Posted by Wayne Parham on Tue, 07 Jul 2015 15:42:02 GMT
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Sorry, I missed this earlier. The question was asked whether tuning at 38Hz should be modified and increased to 40Hz.

I designed the system for 38Hz tuning. But really, the difference in response that results from a Helmholtz frequency of 40Hz is so slight, it almost is undetectable. Just a smidge in the response below 100Hz. I'd consider the "difference" to be so small as to be overshadowed by tolerance, driver operating parameter shifts, etc. So don't worry about increasing the Helmholtz frequency a couple Hertz. It won't do anything.

What I am always concerned about are response anomalies caused by intermal standing waves. That's what I'd watch for, and why I would want measurements. These would likely be above 100Hz, in the 100Hz to 300Hz region. I'd look for blips and ripples in response. They can usually be mitigated by port and/or midwoofer driver placement, and by proper placement of damping material.

But we cannot really know how this modified Barzilay cabinet acts without measurements.

So if you have the time and inclination, get some measurement software, take the cabinets outside and measure one of them. Lie it on its back, facing upwards and hang the microphone above it. Put it in a pit or create a baffle extension, something that extends the face of the

speaker out a long way to prevent a delayed reflection off the ground under the speaker. Watch for ripple in the 100-300Hz region.