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Subject: Pi Corner Horn Bass Bins suitable for my horn?

Posted by [bigmattyevans](#) on Mon, 02 Dec 2013 03:34:24 GMT

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I recently stumbled across the Pi speakers website as I searched for pictures of corner horns. I don't know how I have missed it before

The reason that I was looking for images of corner horns is that I am currently involved in a group DIY project in Australia developing a constant directivity horn and I was looking for design idea to increase the WAF - not looking easy I have to say.

Here's a link to the project that I am involved in:

<http://redspade-audio.blogspot.com.au/2012/06/synergy-horn-flat-pack-kit.html>

The most recent post/images:

<http://redspade-audio.blogspot.com.au/2013/07/something-very-cool-is-coming.html>

Anyway, once I saw came across the Pi website I was interested in the whether the Pi bass bins for the corner horns would be a good match for my horns and room. Before, I was planning on having a simple direct radiator bass bin, but wondered about the applicability of the corner horns bass bins.

My questions are:

- 1) Would the corner horns match well with my mid/treble horns? Any potential issues?
- 2) I am placing my horns in "pseudo corners". Basically, each corner consists of a wall along one side and a small bit of wall and wooden shutter along the other. Will my corners be sufficient to create necessary horn? If not, would it be reasonable to extend the speakers side panels further from the back corner?
- 3) What is the usable frequency range of the corner horn bass bins?
- 4) I don't have much spare space in my room for multiple subs. Would the corner horn bass bins combine ok with direct radiating IB subs (built into the ceiling)?

Your thoughts are much appreciated,

Cheers

Matt

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Subject: Re: Pi Corner Horn Bass Bins suitable for my horn?

Posted by [Wayne Parham](#) on Mon, 02 Dec 2013 05:19:08 GMT

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As you may have already noticed, I'm a big fan of the constant directivity cornerhorn approach. In my opinion, there is no better loudspeaker implementation, because it uses the room itself to best advantage.

Every other loudspeaker implementation has to "work around the room", dealing with the problems created by the boundary reflections. Or they don't, in which case the room plays its usual havok on sound quality.

But the problem, of course, is that not every room has the right layout to take advantage of a constant directivity cornerhorn configuration. And there isn't really an "almost" - if it doesn't work, it doesn't work. Then you have to use one of the usual compromise solutions to limit the anomalies created by nearest boundaries.

The concept is simple, really, using the walls themselves as a waveguide. To take advantage of this, the corners have to be symmetrical, and they have to be unobstructed for several feet. It is also best if the listening position is back far enough that the axes of the two cornerhorns cross in front of the listeners. This gives the best imaging, and prevents having a soundstage that's artificially too wide or too narrow.

Another thing that's required is the sound sources have to be acoustically close to the apex of the corner. That isn't hard at low frequency, but is naturally more and more difficult as frequency rises. The obvious best solution is to mount the sources within the walls, because a soffit mounted speaker can maintain acoustic scale all the way up through the passband.

But most people want a non-permanent solution, and in this case, I find that having a large midhorn snuggled tightly in the corner having 80° to 90° pattern works best. The close proximity keeps it acoustically close at the lower end of its passband, and the horn gains control at the top end, limiting the sound that illuminates the walls. What does strike the walls is attenuated, and at a grazing angle that doesn't reach the listening area.

The HF source - acoustically distant just like the upper midrange - will not illuminate the sidewalls except as a grazing angle that doesn't reach the listeners. Some drapes or other acoustic absorbent material can be use to further attenuate higher frequencies at grazing angles, if desired.

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Subject: Re: Pi Corner Horn Bass Bins suitable for my horn?

Posted by [bigmattyevans](#) on Mon, 02 Dec 2013 07:30:30 GMT

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Thanks Wayne.

I think my walls should work. The room is effectively rectangular. The only issue is that the back wall (between the speakers) is effectively an opening (into a large open plan area). Potential for delay reflections but no early reflections.

What is the frequency response for the corner horn bass bins BTW?

Cheers

Matt

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Subject: Re: Pi Corner Horn Bass Bins suitable for my horn?  
Posted by [Wayne Parham](#) on Mon, 02 Dec 2013 14:16:16 GMT  
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The response is no different than what it would be as a direct radiator. It's sort of like a CD horn - Response isn't modified by the flare.

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