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 natually 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.