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Subject: Cornerhorns - what corners are "good enough"?

Posted by [rvsixer](#) on Wed, 23 Mar 2022 21:12:34 GMT

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I've had 3pi components collected for years now, but have kept putting off building them. Reason being knowing I would be moving at some point, and always wanting to try 6pi cornerhorns if a room in the new house supported them.

Well, we are closing on a house next week. One corner of my intended room has a perfect corner, the other not so perfect (side wall with a window, see attached layout/pics, 9' ceiling btw).

On this and other pages I have seen Pi cornerhorns with a side wall being a curtain (unknown what's behind the fabric), a side wall that only come out 3-4ft instead of the suggested 6' minimum, a side wall that is not full but knee height, etc.

I believe the room corner is the horn for the bass bin, yes (mid and compression driver having their own horns)? So how much side wall height is enough?

I'm certainly willing to do non-destructive room mods as necessary (i.e. the wood molding at the bottom sill stays). I could make a flush drywall "plug" to cover up the left-half of the window (making the side wall about 5 1/2 ft long, and retaining the right half of the window for light/ventilation). Worst case if necessary I could plug the entire window, would REALLY hate to lose the light/ventilation, but one does what one must :evil: .

Or are 3pi's with flanking subs a better/safer bet in this situation? I have no problem with that as I have four low distortion subs with individual DSP already, no problem configuring two of them as stereo flanking subs in addition to modal smoothing duty.

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### File Attachments

- 1) [room\\_corner.jpg](#), downloaded 609 times
  - 2) [room\\_front.jpg](#), downloaded 618 times
  - 3) [room\\_layout.jpg](#), downloaded 518 times
  - 4) [room\\_rear.jpg](#), downloaded 607 times
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Subject: Re: Cornerhorns - what corners are "good enough"?

Posted by [Wayne Parham](#) on Wed, 23 Mar 2022 23:58:17 GMT

I think that layout will work really nicely. It appears to satisfy all the requirements:

1. Unobstructed wall at least six feet from the apexes. The window won't violate this constraint unless it's open.
2. Symmetry. We need the left and right part of the room to be symmetrical to provide a balanced image. This is most important in the area ahead of the listening position, and much less important behind the listening position unless imbalance is extreme.
3. Distances that allow the forward axes to cross in front of the listening position.

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Subject: Re: Cornerhorns - what corners are "good enough"?

Posted by [rvsixer](#) on Thu, 24 Mar 2022 00:59:36 GMT

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Thank you Wayne! I wasn't sure about the window/window cavity vs. smooth flush drywall affecting things....

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Subject: Re: Cornerhorns - what corners are "good enough"?

Posted by [Wayne Parham](#) on Thu, 24 Mar 2022 14:47:23 GMT

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I've found that windows are OK as long as they're closed, don't rattle and the opposing wall isn't treated, making it vastly different.

I would have thought it would make more difference, but it doesn't seem so. I think the reason is the drywall - by itself - works more like a panel absorber than as an HF absorber. The window would seem to be more reflective at HF, but down low, it vibrates much like the drywall does. So they are not as different at midrange and low frequencies, and at high frequencies, the waveguide prevents them from getting much energy, at least not at an angle that would reflect towards the listeners.

I've even been in rooms with a lot of glass on one side - like a sliding glass door - and found it to be unnoticeable.

I would expect there comes a place where this no longer applies. Like one side totally glass and the other totally drywall. But I haven't run into that.

I would also expect that having the wall behind the speakers or behind the listeners completely glass might be a problem. I know brick can be - it's too reflective, so if the wall behind the listeners is brick, you get a slap echo from behind, which is unnatural. But these are different

walls, and those kinds of effects are somewhat to be expected.

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Subject: Re: Cornerhorns - what corners are "good enough"?

Posted by [rvsixer](#) on Thu, 24 Mar 2022 22:25:25 GMT

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Interesting observations and info!

I too have not had much of a problem with windows, sliders, etc. But then again, have never used them as part of a horn before :lol: .

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Subject: Re: Cornerhorns - what corners are "good enough"?

Posted by [rvsixer](#) on Wed, 13 Apr 2022 18:05:12 GMT

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Hi Wayne, sorry if I missed this in the AND search for "acoustic center 6pi" i did, but where is the appx 6pi acoustic center located?

IIRC for stereo listening most any listening position behind where the speaker axes cross is fine, but I also want to make sure my proposed room layout can support the correct 44-60 deg between LP/main speakers parameter for multichannel spatial separation.

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Subject: Re: Cornerhorns - what corners are "good enough"?

Posted by [Wayne Parham](#) on Wed, 13 Apr 2022 18:54:50 GMT

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The measurements I do don't tell me the position of the acoustic center. They tell me when each subsystem is aligned with one another. I'm always looking at the positions of the nulls, which is an indirect indication of the alignment of the acoustic centers.

As an aside, I've always despised the phrase "time aligned" when discussing loudspeakers or any other reactive system. The phase shifts and therefore the apparent position shifts too. But it's really just semantics. There is an approximate location that can be described and discussed, and phase shifts tend to move the acoustic center around that position.

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Subject: Re: Cornerhorns - what corners are "good enough"?

Posted by [rvsixer](#) on Thu, 14 Apr 2022 15:32:11 GMT

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My apologies, it appears I likely used the term acoustic center incorrectly. My question was

directed at the LP to R/L mains separation "triangle" (viewed as if your were looking down from the ceiling).

However I just ran the actual numbers based on my room setup, and there is only a 0.5 degree angular difference to the LP among the 6pi drivers. So basically of no concern.

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