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Subject: Corner Horn positioning "Sweet Spot" for listening...HELP

Posted by [Ed White](#) on Fri, 28 Apr 2006 03:29:38 GMT

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I'm nearing completion of my Theater Seven Pi corner speakers, and I'm wondering about positioning in my listening room. The room is approximately 14 by 18. Do I position the speakers on the shorter wall, and have the "Throne" at a direct 45 degree angle from each speaker? Does it matter if I sit further back from this "convergence point"? If I put them in the corners on the long side of the room, the 45 degrees from each one approximately coincides with a seat in the middle of the opposite wall. If it's the other way, it's more in the middle of the room. Any Suggestions?? I know you'd never place conventional speakers this far apart, but they stick out quite away from the corners. Ed White

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Subject: Re: Corner Horn positioning "Sweet Spot" for listening...HELP

Posted by [dB](#) on Fri, 28 Apr 2006 07:06:37 GMT

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I never tried out corner horns. Theoretically the long all is better (with the other speakers -- not corner horns), because it doesn't get in the tunnel effect. Better asking the pros... with some experience.

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Subject: Re: Corner Horn positioning "Sweet Spot" for listening...HELP

Posted by [Tobias](#) on Fri, 28 Apr 2006 15:33:20 GMT

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Ed, I have only positioned my Seven Pi on the short wall of my 16 x 20 room, so I can't make the comparison between short vs long. When seated my ears are currently ~5-6' back from the convergence point, although ideally I'd like to be a few feet closer. Sitting back to far from the convergence point flattens the soundstage, and makes the performance to far removed for my tastes. Sitting right at the convergence point is more like nearfield listening to conventional speakers. Actually very nice if you like to be immersed in the soundstage. A few feet back from the convergence point gives me the right balance. It will probably come down to your personal preferences. Even changing the angle of the high frequency compression driver can alter the presentation quite a bit, so experimentation is your best bet to finding what works for you.

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Subject: Re: Corner Horn positioning "Sweet Spot" for listening...HELP

The "sweet spot" is actually a very large area of the room. That's one of the biggest advantages

response is the same as on-axis response. The best listening places are those where the listener is equidistant from the speakers and where the angle between each speaker and the listener is the same. But there is a very wide area where stereo imaging is good and spectral balance is uniform throughout most of the room because of the nature of the design. When the forward axis

very large. The reason this happens is this arrangement tends to naturally balance stereo imaging. Side to side movement has less of a detrimental effect on imaging than it does in other arrangements because as you move closer to one speaker, you move further off-axis. The more distant speaker becomes closer to being straight on-axis. This tends to balance the SPL between each speaker even when you move from side to side. This has a huge positive effect on stereo

band. I know of no other loudspeaker that provides such uniform response at all horizontal angles over such a wide bandwidth. The crossover and the horns used are responsible for much of this, but the room's corner and the speaker's orientation is really key. If the walls from the corner apex continued on indefinitely, then the pattern would remain uniform down to the lowest frequencies but since rooms are confined spaces with boundaries, standing waves develop within the room. This affects how low the energy distribution within the room remains uniform before being modified by room modes. At midrange and higher frequencies, standing wave modes are so densely spaced that the sound in the room acts as a reverberent field. This is the range where the speaker is able to control directivity. There is a point where the standing wave nodes become spaced far enough apart to become distinguishable, and this is called the Schroeder frequency. Below this point, the room is largely responsible for setting the shape of the sound field. Homes with framed drywall construction usually have reasonably good damping at bass frequencies, but small rooms with rigid walls sometimes have noticeable peaks and dips in bass response. It is often beneficial to add a couple of subs to smooth the sound field in the modal range, to average the energy distribution throughout the room at very low frequencies. One thing you can do to gain a very good understanding is to use a room acoustics modeling tool like CARA to visualize how the room is energized at various frequencies. You'll see that there are large wide "pockets" where sound is good and uniform across the frequency band. Framed drywall construction and furnishings tend to damp the room and help make bass uniform. Having a 90° dispersion pattern on the sound sources reduces early reflections, and in fact, the walls become flare extensions, making the room and speaker act as a unit having constant directivity. The end result is a natural sound field that sounds good in a large area, not just in one sweet spot.

Computer Simulation of Room Acoustics

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Subject: Re: Corner Horn positioning "Sweet Spot" for listening...HELP

Posted by [Wayne Parham](#) on Fri, 28 Apr 2006 15:40:10 GMT

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Your speakers look excellent - Congratulations!

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Subject: Re: Corner Horn positioning "Sweet Spot" for listening...HELP

Posted by [Tobias](#) on Fri, 28 Apr 2006 16:55:35 GMT

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Thanks Wayne. The midhorns have not been sanded and finished yet, the back panels need to be installed, and I need to make a housing for the high frequency horn ... however I'm enjoying them so much I don't know when I'll find the time to complete them.

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Subject: Re: Corner Horn positioning "Sweet Spot" for listening...HELP

Posted by [Wayne Parham](#) on Fri, 28 Apr 2006 19:16:52 GMT

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I know what you mean. It's kind of like hotrod cars - You need a backup, one for use while the other one is being tricked out.

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Subject: Re: Corner Horn positioning "Sweet Spot" for listening...HELP

Posted by [mito](#) on Sun, 30 Apr 2006 14:06:56 GMT

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Really nice work Tom! May I ask what kind of material and thickness did you use for the midrange cabinet?Michael

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Subject: Re: Corner Horn positioning "Sweet Spot" for listening...HELP

Posted by [Tobias](#) on Sun, 30 Apr 2006 16:13:50 GMT

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Thanks Michael. Both the bass unit and mid horn are made from Grade A cherry veneered 3/4" plywood and solid cherry inlay and trim of various dimensions. The actual midhorn itself is the midhorn kit in cherry which Wayne sells. That saved me alot of head scratching and time. It's made of veneered mdf. Possibly 1" thick. I used 1.5" square maple cleats and joined the top, bottom and sides with deck screws and lots of glue from the interior. I trimmed out the midhorn

itself with mitred solid cherry to create a flange that could be glued to the midhorn opening. After the glue set I used some low expanding foam to fill the front interior perimeter of the horn with ~3" of foam. With the back plate joined to the horn and 2 12" 1.5" square maple cleats, and the back opening trimmed with 2" square cherry, the midhorn is very heavy and solid for it's size.

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Subject: Re: Corner Horn positioning "Sweet Spot" for listening...HELP

Posted by [mito](#) on Mon, 01 May 2006 15:39:10 GMT

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TomAre you using JBL or Eminence drivers?What kind of music are you into?Asking you because I thinking of building corner horn as well.

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Subject: Re: Corner Horn positioning "Sweet Spot" for listening...HELP

Posted by [Tobias](#) on Mon, 01 May 2006 19:58:27 GMT

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I listen to a fairly broad range of music, although primarily rock, blues, and large scale classical. The Seven Pi doesn't seem to favor one genre over another. They can definitely rock the house, but they also sound convincing on large scale classical and vocal recordings. I don't know what you have for speakers today, but just for reference the Seven Pi replaced a 6k pair of Von Schweikert VR-4 Gen III SEs in my system. While the VR-4s go lower and have a more focused soundstage, the Sevens are much more effortless at unraveling complex music and portraying more realistic dynamics, impact, and scale. These are things that make listening engaging for me. In other words they pass the foot tapping test.I bit the bullet and went for the all JBL (Professional) setup. I have no way of knowing how close the Audiophile series is, or the Stage series for that matter. Those options could have saved significant money, and I debated which way to go for a long time, but ultimately decided I didn't want to second guess down the road. If your budget allows I would also upgrade the crossovers. The difference imo is pretty dramatic.

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Subject: Re: Corner Horn positioning "Sweet Spot" for listening...HELP

Posted by [mito](#) on Tue, 02 May 2006 17:13:31 GMT

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Thank`s for shareing your impression.My music taste seems to be the same-blues,rock,country. Actually I have been a fan of Lowthers for a while,I running for the momemt construction from Bob Brines(LT-2000) and Fedelio horn. I have been thinking of the "Sevens" for while, but know it`s time to realize the project.JBL would be the way to go for, but as I don`t live in US it`s gonna cost a lot,you know for a pair of 2226 i have to pay aprox. \$1470.I know it`s cheaper to buy from US

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but with freight cost,tax etc.. I don't know! I will see!The only thing I'm concerning about is the midrange horn/cabinet.I need to look more into the plans.Do you recommend to order the midrange horn from Wayne ,would it be worth the cost to have it shipped to Sweden.According to the plan it looks like a simple construction.Am I wrong or..?

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Subject: Re: Corner horns without the triangular baffle  
Posted by [Bill Epstein](#) on Wed, 03 May 2006 09:13:53 GMT  
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Tom's great looking horns, like others we've seen here, dispense with the verticular(anybody wanna play scrabble?) triangular construction that mates with the corner.How important is it?I'm tempted to try reversing the Pro 4 cabinets and have them fire into the corners.

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Subject: Re: Corner horns without the triangular baffle  
Posted by [Tobias](#) on Wed, 03 May 2006 10:05:28 GMT  
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My 7Pi have the triangular extensions top and bottom per plan. I just never got around to adding the 'dog house roof' rear panels. I have the panels cut and finished, and ready to install. I myself am not sure what value they would add other then additional support. Even then the bottom plate is made up from doubled up 3/4 plywood, and I have cherry trim on top which makes the top plate more rigid then normal. The midhorn needs the extra depth for support.

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Subject: Re: Corner Horn positioning "Sweet Spot" for listening...HELP  
Posted by [Tobias](#) on Wed, 03 May 2006 10:16:48 GMT  
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The midhorn kit saved me a lot of time, and simply ensured that the horn dimensions were correct. I probably could have figured out how to make them, but it would have been time consuming and prone to error. I had the actual midhorns together in less than 2 hrs after receiving the flatpacks. Dowells are used to align the panels, but I also found 1.25" drywall screws useful for locking the panels tightly together and ensuring a strong glue bond.

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Subject: Re: Corner Horn positioning "Sweet Spot" for listening...HELP  
Posted by [GarMan](#) on Wed, 03 May 2006 12:12:31 GMT

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Tom,I have to agree that of all the qualities of a great pair of speakers, dynamics is very under-rated. For me, the ability for the sound to explode is more important for realistic reproduction than extension or tonal balance.Don't think too much about the premiums on JBL drivers. Although they do cost more, they hold their value in the used market much better than Eminence.Gar.

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Subject: Re: Didn't the 'doghouse' used to have a floor? Wayne?

Posted by [Bill Epstein](#) on Wed, 03 May 2006 15:46:15 GMT

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Thought I remembered it being closed in and the space filled with that expanding foam insulation?

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Subject: Re: Didn't the 'doghouse' used to have a floor? Wayne?

Posted by [Wayne Parham](#) on Wed, 03 May 2006 16:27:53 GMT

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Subject: Re: Corner Horn positioning "Sweet Spot" for listening...HELP

Posted by [dB](#) on Sun, 07 May 2006 13:15:06 GMT

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Hi mito,May I ask you how much you pay if you ask from Wayne?Is not \$1470 is it? Is the difference with mail (for Europe) and taxes worth the effort? I don't mean with the cabinets, just for speakers.Regards

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Subject: Re: Corner Horn positioning "Sweet Spot" for listening...HELP

Posted by [mito](#) on Mon, 08 May 2006 11:07:50 GMT

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Hi!! reckon that I only can by a complete speaker kit from Wayne. To by only a pair of speaker from ex. parts express it`s half the price compare to by it Sweden. But to ship it to Sweden I have to add 25% tax,freight cost and cost for custom and tax.I don`t know were it will end.

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Subject: Re: Corner Horn positioning "Sweet Spot" for listening...HELP  
Posted by [Kim Schultz](#) on Tue, 09 May 2006 21:49:59 GMT  
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Hi Michael.I live in Denmark and had the same worries about what speaker brand to choose. In the end I ended up buying Eminence for the midhorn and tweeter, you can get these at good prices from Germany.The woofers are old JBL 2225`s i got cheap from a local PA guy.I have thought of upgrading the tweeters to B&C drivers, as they get very good reviews, and are affordable.RegardsKim

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Subject: Re: Corner Horn positioning "Sweet Spot" for listening...HELP  
Posted by [Wayne Parham](#) on Wed, 10 May 2006 04:03:18 GMT  
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For what it's worth, I like the B&C woofers but not as much as the JBLs you already have. Just make sure the cones are original and in good shape and you'll have the best.

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Subject: Re: Corner horns without the triangular baffle  
Posted by [TomM](#) on Sun, 14 May 2006 12:30:58 GMT  
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I installed the rear panels yesterday, and also removed some of the fiberglass stuffing from the midhorns (i had them fully stuffed and wasn't sure I had allowed room for the midhorn to reach as low as it should). The bass, especially the midbass, now has better definition, and overall the sensitivity is noticeably higher. By higher sensitivity the bass is fuller at lower volumes now.

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Subject: Re: Corner horns without the triangular baffle  
Posted by [Wayne Parham](#) on Sun, 14 May 2006 17:57:34 GMT  
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Could be that the top and bottom sections vibrated a little bit like a diving board until you added the rear panels. The design is strong and rigid when all the panels are used, but if the back is omitted, it may leave the unbraced top and bottom sections free to vibrate.

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