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Subject: Re: H290C Horn/Waveguide

Posted by [Wayne Parham](#) on Sat, 28 Jul 2012 17:13:55 GMT

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Thanks for the thumbs up, guys. I'm really proud of it.

As many of you know, but some probably don't, this H290C horn is a molded plastic implementation of a horn I developed about ten years ago. It's the horn shape I always wanted. For many years, I've used horns that were close, mostly because they were available and gave me 95% of what I wanted. But this is exactly the right shape, without compromise.

My first go at a no-compromise horn/waveguide was what I now call the H390C. I made it out of wood, and it is as much aesthetically beautiful as it is acoustically correct. The thing is, since it is designed to be cradle mounted, it doesn't have the benefit of the baffle, and therefore had to be made a little larger.

This H290C is the exact same shape as the H390C from throat to about 70% the length of the horn - It has the OSEC (oblate spheroidal / elliptic cylindrical) flare profile in both horizontal and vertical planes, and also in the transition at the edges between them. This shape allows the wavefront to transition perfectly from the plane wave generated by the compression driver into a section of a sphere at the mouth. This transition from plane wave to spherical wave is one of the most important functions of a horn/waveguide.

The biggest difference between the H290C and the H390C (besides material) is the radius to the mouth. The H290C doesn't need as much of a radius, particularly in the vertical. The baffle provides some assistance here, reducing the size requirements. That is a welcome feature, since reduced vertical size allows center-to-center spacing between sound sources to be made smaller, increasing the size of the forward lobe. That has always been important to me.

This horn has been a long time coming. It really is the latest evolution of three decades of work. There are other waveguides out there, some from relative new comers, others from experts in the field. But none of them are as good as this waveguide, in my opinion. This one is the exact right shape and size for what we're trying to do. It's the horn I always wanted.

Notes for the DIYer

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