Subject: Is there a formula to determine the frequency that a 1" throat 90x40degree horn begins to beam
Posted by TimG on Thu, 10 Mar 2005 16:27:26 GMT
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I'm trying to determine the best frequency and supertweeter dispersion pattern for a 3-way system with a 15" woofer, a 90x40 CD horn or a 90x40 horn with a dispersion pattern similar to the Altec 511B, with 1" driver, and a supertweeter. The supertweeters I can choose from have 140x40 degree, 40 degree, and 90x40 degree dispersion.

Subject: Re: Is there a formula to determine the frequency that a 1" throat 90x40degree horn begins to b
Posted by Mike.e on Thu, 10 Mar 2005 22:09:29 GMT
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When the mouth is big enough for the walls to control the dispersion,This will happen when more than one wavelength can fit around the mouth perimeter(?)If you inspect the polar plots of horns from JBL etc youl see in detail.Some one else can respond in more detail.

Subject: link
Posted by Mike.e on Thu, 10 Mar 2005 22:27:39 GMT
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"If we now look at the polar plots for a couple of radial horns" scroll about halfway
Should be useful

Subject: Re: Is there a formula to determine the frequency that a 1" throat 90x40degree horn begins to b
Posted by Wayne Parham on Fri, 11 Mar 2005 03:10:31 GMT
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It depends on the shape of the horn. If it is a purely conical straight horn, then the directivity will match the horn flare up to the point where the wavelength roughly equals the diameter of the throat and down to the point where wavelength approximately equals the diameter of the mouth. At the upper point, directivity of a circular radiator narrows to about 90°, so if the flare angle is narrower, it will still set the pattern. Phase plugs raise the useable frequency too. So basically, a 1" exit driver with its 2" diaphragm and phase plug is not going to beam anywhere in its bandwidth

as a result of the driver. It's the horn that will set directivity.Horn shape is what you should focus on, and part of that is contained in the driver. The first part of the expansion is inside the driver itself, and it is usually a conical expansion with very little flare, almost a straight pipe. That will cause narrow directivity at very high frequencies. Bolt-on drivers are usually shorter than thread-on drivers. In either case, the beginning expansion of the horn is contained inside the driver. And then there is the horn shape that you can see. If it has a curved shape, then directivity will collapse with frequency as a result of the horn. That's designed-in beaming, used to provide acoustic EQ at the expense of polar response.