
Subject: Re: Questions on some mid horn alternatives...

Posted by [Adrian Mack](#) on Mon, 20 Sep 2004 01:16:34 GMT

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Hi Greggol noticed you say 'others are concerned about upper end response' - are you actually concerned with top end response yourself? What frequency did you want the crossover at for the upper end? As Wayne mentioned, I did a smaller conical midrange horn for the Alpha 6 with internal mouth dimensions 38.5cm*28.5cm (width*height). The upper -3db point is 2KHz. My design efforts were targeted for a 300Hz low-end cutoff and a top end cutoff around 1.6KHz or 2KHz, with steep acoustic rolloff at both ends. Generally choose smaller drivers with low cone mass and low inductance if you want it to go high. Graham (Centauri Audio) also built midrange horns with the Alpha 6 and got them going to about 2.5KHz without a phase plug. With a phase plug he made himself, I think he got it going close to 4KHz at the top end - a substantial increase. The horn itself is going to be the other factor determining upper end response. Smaller throats will load to a higher frequency so potentially higher cutoff. Phase cancellations in the front chamber (ie: path length differentials from different locations of the cone to the throat cancelling each other out) become the major factor which will stop you from getting as high as you should, unless you use a carefully designed phase plug. Without a phase plug though, you'll likely find a slightly larger throat than suggested by computer will work out best in reality rather than a smaller throat, as phase cancellations from path length differences are reduced, extending your top end range. A phase plug will also reduce the volume of your front chamber, raising the point where the front chamber (acts as a lowpass filter) starts to rolloff the high frequencies. Once the driver starts to enter breakup modes, on-axis HF response may be quite extended but off-axis will be poor. Various horn flares can also extend on-axis HF response (eg: radial horn with very narrow vertical dispersion) at the expense of off-axis response. Adrian

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