Subject: Re: LAB-12 as HT Subwoofer
Posted by Wayne Parham on Fri, 08 Sep 2006 23:22:56 GMT
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The LAB12 works very well in vented cabinets from 2.0ft3 to 6.0ft3 tuned to 22Hz. It also works well in a large sealed cabinet, particularly with boundary reinforcement. If out in the open, like placed as a coffee table, I'd run vented. If in the corner or near walls, either run an overdamped vented alignment or run sealed.For home hifi, I prefer the direct radiator subwoofer over the horn. It's smaller and you can tune it lower as a result. A horn run below cutoff is basically an undersized sealed cabinet with a horn that amplifies harmonics. So unless you have a lot of real estate, I prefer the LAB12 in a vented or sealed box for home hifi.As for comparison with other woofers, most of the really good parts have shorting rings and the LAB12 doesn't. But before writing it off, consider the fact that shoring rings don't really work below 100Hz. Theoretically, one could be made that reduced distortion at very low frequencies, but it's difficult. The ring has to be large, and that takes away from magnet space. From a practical design standpoint, it becomes prohibitively impractical to design a subwoofer with an effective shorting ring. That's why you see other technologies employed, things like differential voice coils and other forms of push-pull drive.If you really want to make the best small subwoofer you can make, look at implementening a pair of LAB12 or HL10 woofers in push-pull, perhaps driving a bandpass box that attenuates higher frequencies. The push-pull drive will cancel second harmonics, the front chamber will reduce third harmonics and both the push-pull drive and front chamber will reduce fourth harmonics. Above that, the front chamber will remove the higher harmonics.That's a very similar

harmonics and the front chamber and horn folds reduce higher harmonics. It's probably too large for home use, and if pushed below cutoff then the horn would amplify harmonics in its passband. But as long as it is used above its 30Hz cutoff, it generates almost no distortion.No matter what kind of system you run, if you push it below cutoff, distortion will rise. Excursion is lower in the passband than it is below cutoff. This applies to bass-reflex and bandpass systems as well as horns. So system tuning is very important. Don't tune the system for 30Hz cutoff and try and EQ down to 20Hz. If you want to run the subwoofer down to 20Hz, then tune it for 20Hz or below.