
Subject: Re: Golden ratio for loudspeaker cabinets
Posted by [Wayne Parham](#) on Thu, 22 Dec 2011 14:14:46 GMT
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The suggestion is to make height, width and depth in the ratios of 0.62 : 1 : 1.62.

I have found this to be aesthetically attractive, but of limited actual benefit in terms of acoustics. I mean, it doesn't hurt, but the truth is that internal standing waves can set up in a golden ratio box just as easily as they do in any other shape.

Another belief is that trapezoidal cabinets and other non-parallel shapes will help. The belief, in each case, is that these shapes will "break up" standing waves, preventing two or more dimensions from being the same or multiples of one another.

The problem is that "breaking them up" isn't usually all that helpful. It only takes one to cause a big, ugly peak. And the truth is, that's what you usually see when there are problems - one peak, one axial mode, usually from the longest dimension. So it doesn't matter all that much what the other panel surfaces, dimensions or shapes are.

Speakers are either acoustically small (in which case standing waves don't matter) or they are acoustically large, in which case they do. Standing wave modes that fall in the upper midbas and lower midrange are the hardest to deal with because they are too low in frequency for the damping material to be effective.

The good news is all the tools available to DIYers these days make finding anomalies from standing waves pretty easy. If you build a box that creates a peak from internal standing waves, you can usually move the woofer and/or port and it will go away. You just have to keep them away from pressure modes.