Subject: Re: Questions about box tuning F3, F10, etc.
Posted by Wayne Parham on Tue, 03 Oct 2006 13:43:10 GMT
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A bass-reflex cabinet uses the box as a Helmholtz resonator, which doesn't really care what shape the port is. If it is very long and/or thin in one dimension then standing wave issues can come up, but baring that, the port can be circular or rectangular to the same effect. As for response, the Helmholtz frequency doesn't set the f3, f6 or f10 points but the interaction of the Helmholtz frequency, box size and electro-mechanical parameters sets the curve. It's an interaction between two resonators that sets system response, lower cutoff and Q. Experiment a little bit with WinISD, changing box size and tuning frequency and you'll see what I mean. If the box size is fixed, say your 4.0ft3 example, then box tuning between 35Hz and 40Hz gives the 2226 a nice flat curve. Set the Helmholtz frequency lower and the curve looks more like a sealed box, having a slower rolloff but a higher f3. Set the Helmholtz frequency higher and the response becomes underdamped, having a peak near the box frequency. Also try it with smaller and larger boxes to see what that does to response. You might be interested in the post called "Response curves of closed vs. vented systems", which shows various alignments and the response curves that result.