Subject: Standing waves inside cabinets
Posted by Wayne Parham on Tue, 05 Sep 2006 19:40:38 GMT
View Forum Message <> Reply to Message

Using non-parallel walls is one way of reducing standing waves, but another is to use dimensions that break them up. Damping is yet another way of reducing standing waves.A long, thin cabinet will develop pipe resonance. That's the tuning method used in a transmission line. You don't generally want transmission line behaviour in a bass-reflex box because the tuning mechanism in a bass-reflex box is Helmholtz resonation, not pipe mode resonation.There's nothing really wrong with having both mechanisms in play - Helmholtz resonantion and pipe mode resonation. You could design something that used both, but it is harder to model and usually the designer expects one mode or the other. In his models, he usually doesn't even consider the unwanted mode, and uses damping or position or geometry to get the desired results.In the case of a bass-reflex box, a long thin box may create standing wave modes that aren't expected. If they aren't damped with stuffing, there will be peaks and dips in response that aren't shown in Helmholtz models. That's why, if making the box tall and thin, I suggest analyzing the system from a standing wave point of view in addition to Helmholtz, so you can see what it is doing. If standing waves are present in the bass range, they may work in your favor, or they may hurt you. Either way, if the box is tall and thin, you won't know about them from a bass-reflex modeling program alone.