Subject: Room modes
Posted by Wayne Parham on Fri, 20 Jun 2008 17:13:09 GMT
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Basements are usually very difficult to get sounding right because the walls are so rigid. Room modes are pronounced, making a resonant condition that sounds like singing in a shower. Some bass and midbass notes are way over-represented, others aren't there at all. Also, the walls are usually pretty reflective at higher midrange and treble frequencies, so those can be pretty shrill.The speaker is directional enough to help some at the higher end, reducing ceiling slap and if positioned right, early sidewall reflections too. But in a lively room, that's not enough. The rear walls reflect as much as anywhere else. And nothing that the speaker does can tame room modes. You'll have to damp the room to reduce those.I'd suggest panel absorbers, as they'll do a lot for you. You can make them like false walls, so they aren't in the way. Damping is one of the best ways to reduce room modes, and in a basement, I'd say it is a requirement.Another thing that helps smooth room modes is to add subs. It may seem counterintuitive to add subs in a room that seems overpowered with a few strong bass notes. But careful placement of subs helps average the standing wave nodes that develop in a room. The smaller the number of bass sound sources, the more well defined the room modes are, creating peaks in certain places and nulls in others. By adding sound sources, there is some partial cancellation in the hotspots, and there is less total cancellation in the dead spots. So by adding subs, you can smooth the sound in the modal region and make the bass a lot more smooth.Smoothing room modes