Subject: Re: 4 Pi and 7 Pi bass response- More similar or different?
Posted by Wayne Parham on Thu, 17 Dec 2009 15:44:11 GMT
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To me, they definitely sound more alike than different. All my speakers have basically the same tonal balance, and they're all designed to generate a uniform pattern. They all use the same

DE250 drivers, you have two speakers that sound very much alike. They're exactly the same above 2kHz and depending on placement, exactly the same from 50Hz to 200Hz too. The only real difference is between 200Hz and 2kHz. Of course, that's a real important region, arguably the most important one.

radiating 2226 sounds more like a very accurate FET. Without analyzing distortion or spectral balance, that's how I'd best describe them. The 2226 is very clear sounding when run through the midrange, no hint of breakup or anything like that. But the midhorn sounds silky smooth. Both are actually very low in distortion and smooth in response, so neither is a clear "winner" in terms of either metric. Both are excellent.

Remember too, the placement environment. That's actually the biggest thing, in my opinion, to influence the sound. Do a little experiment: Take a radio or speaker and listen to it when it is sitting out in the open, radiating into freespace. Now walk with it while still playing and sit it right next to the wall, perhaps on a window sill facing you. Listen to the difference in sound as you get close to the wall. Now take the same radio and sit it in a trihedral corner. Hear the big difference in sound? It gets louder, its tonal balance changes and even the ambient room "echo" is different.

When a speaker is put in the corner, it is louder overall and usually sounds like the bass is a bit more prominent. This is all a result of directivity, as the sound coming from the speaker is forced into a pattern set by the walls. It cannot radiate omnidirectionally, even at low frequencies, because the wall angles force it into the room, just like a horn. The smaller the speaker (baffle), the more pronounced the effect because on larger speakers, the baffle itself limits the radiating angle to at least half space, the larger the baffle, the lower the frequency before it becomes omnidirectional.

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The repercussions of this are profound. What it means is that when a speaker is designed to be placed in the corner, it should be voiced to compensate for the spectral shift that happens when placed in the corner, i.e. slight tilt upward in the bass. It also means that the sound at very low frequencies will have constant directivity all the way down, to the limits of the room. The room is

the largest acoustic feature in the listening envirnoment, and you're usually "fighting it" to get (waveguide and) matched-directivity two-way speakers can only provide constant directivity above only by the room modes below the Schroeder frequency.
