Subject: Re: On axis measurements in nearfield listening
Posted by Wayne Parham on Wed, 16 Sep 2009 03:34:12 GMT
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What I'm saying is that a loudspeaker produces sound eminating all directions from it, not just straight forward. This goes without saying, I suppose, and you're aware of it or you wouldn't have brought it up here. What I'm also saying is that I believe (as do many others in the field) that the off-axis response is as important as the on-axis response, especially when used indoors. The reason is pretty simple - the sound going straight in front of the speaker is only a tiny fraction of the total sound radiated by the speaker (in all directions). You don't just hear the sound coming straight at you, but also you're enveloped by the sound reflected back at you from the walls. This is called the reverberent field, and it makes up a great deal of what each listener hears.

Off-axis sound also plays a part in the width of the sweet spot. If you have a speaker that only sounds good on-axis, then it has to be pointed directly at the listener. That doesn't leave much room for guests. If you want good seat-to-seat coverage, you have to use a speaker that generates a sound field that is spectrally balanced over a wide range of listening positions. What that means is it should sound pretty much the same 20° or 30° on each side as it does straight on. This allows a much wider range of listening positions.

I don't know what kind of spectral balance your speakers have off-axis, but I do know that arrays generally provide a pretty wide coverage area. If the speakers are spectrally balanced over a wide enough arc, I've found you can improve the speaker's imaging with toe-in. The idea is to cross the speakers in front of the listening area so that the stereo image is self-balancing. This requires reasonably uniform off-axis coverage to work. Here's a post about the technique: Imaging, placement and orientation