Subject: Re: Six Pi Review
Posted by Wayne Parham on Mon, 24 Sep 2012 20:24:46 GMT
View Forum Message <> Reply to Message

rkeman wrote on Mon, 24 September 2012 14:43The response curves are smoother below about 100Hz with the 6 Pis as a stereo pair and even more so if the subwoofers included, but I didn't want to muddy the waters in the review.
Understood and agreed. I think most people familiar with the multisub concept know that the more bass speakers you use, the smoother the modal range becomes. And under 100Hz, it almost doesn't matter where you put the woofers if you have four or more. Considering the woofers in the mains and in the subs - There are several bass sound sources running in most home theater and hifi setups - Just don't put them on top of one another and you have useful distribution.

But its a little harder to deal with the 100Hz - 200Hz region, which is where the constant directivity cornerhorns have an advantage, since they do not suffer from self-interference. I didn't want to hijack your thread, but I did find it useful to point out that your 1M and 3M measurements show no common features below 200Hz. This clearly indicates the response is dominated by modes, and not by direct radiation or by self-interference from first reflections. This is a key point, because preventing self-interference from the nearest boundaries is something no other free-standing loudspeaker configuration can do except for a constant directivity cornerhorn.

You rightly stated that in-room response below 300Hz is dominated by room modes, and that every room will measure differently. In fact, every position in every room will measure differently. A single speaker in the room is going to illustrate this starkly, because it will suffer most strongly from room modes no matter what configuration it is. Most speakers measured indoors have peaks and valleys greater than 20dB, but constant directivity cornerhorns actually reduce this by a factor of about 10x in terms of power. The improvement is great enough that most people with constant directivity cornerhorns don't even really notice modal problems. But still, 10dB ripple is more than one would want, and it can be reduced further with distributed bass sound sources.

That's why I wanted to make a few comments about the response curve posted. I wanted to point out that people should expect average in-room response to be smoother when a pair of speakers are used, especially if augmented with distributed subs. When measured outdoors in a trihedral corner, response is ruler flat. Indoors, room modes will kick in, but when a stereo pair of speakers is used, response below 200Hz smoothes out and even more so when distributed subs are added.

Also, to smooth the higher end of the modal region, the low-pass frequency of the subwoofers has to be set a little higher than normal. Most sound processors limit the subwoofer channel to 80Hz or 100Hz, and they usually use a fourth-order slope. But to get any smoothing above 100Hz, naturally, the woofers have to be blended through that region. Sometimes you can set the processor for a higher low-pass frequency. Another way is to bypass the built-in LPF, and go with an external second-order filter, set to rolloff around ~120Hz. More distant subs can use the built-in filter set to rolloff lower.