
Subject: Re: Finally Building Full Range Single Driver Speakers

Posted by [Duke](#) on Tue, 17 Nov 2009 21:26:40 GMT

[View Forum Message](#) <> [Reply to Message](#)

The main reason for the offset is to physically stagger the low frequency sources as much as possible, thereby approximating the delusion of being surrounded by swarms of tiny subs.

The offset also increases the boundary reinforcement the rear woofer gets, giving you a bit more bottom end. In addition this geometry helps fill in the floor-bounce notch, as the rear woofer's output will not be floor-bounce-notching at the same frequency as the front woofer.

The wrap-around notch (occurring at the frequency where the path length difference between rear woofer and front woofer equals $1/2$ wavelength) is only marginally mitigated by the offset. Various bipolar designers have used different techniques to deal with the wraparound notch. These include:

1. Lithium and group therapy.
2. Make the box about 1.5 times wider than it is deep (this is what I do).
3. Ignore it (works quite well, because it's not really audible for various reasons).
4. Use a side-firing woofer to cover the lower midrange and bass region (patented by Definitive Technology).
5. Use a rear-facing midwoofer wired in reverse polarity for that portion of the spectrum only (Genesis Model 5).
6. Notch the rear-woofer's output in that region (Mirage M-1, which also used the wide-and-shallow geometry; subsequent Mirage bipolars omitted the notch filter on the rear woofer).

In theory what you don't want is for the wrap-around notch to coincide with the floor-bounce notch. The offset geometry helps keep that from happening. It sounds like a lot of things to juggle and I guess it is, but it's not like a failure to geometrically optimize will ruin the design. Chances are nobody will ever notice.

Ah, here comes the nurse with my meds now...
