Subject: Re: Radian 475PB
Posted by Wayne Parham on Tue, 08 Sep 2020 18:02:52 GMT
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That's awesome, Bruce! The forward lobe is right where you want it to be! Nulls roughly equally spaced and far apart, outside the vertical beam.

As for the nearby boundaries - side and rear wall - give a helper woofer setup a try. It will provide two or three useful benefits for you:

1. Provide baffle step compensation. Down at the frequency where the baffle stops providing forward directivity for the woofer, on-axis (and off-axis everywhere in front of the speaker) will drop in amplitude because half the sound will radiate behind the speaker. So bring in the helper woofer with a gentle slope to augment that region. This is what the helper woofer does in a 2.5-way speaker like the JBL 4435.

2. Mitigate SBIR and higher-frequency room modes. At the same time the helper woofer is augmenting the lower midrange and upper midbass, it can be used to reduce the self-interference notches from nearby reflections. To gain this benefit, position the helper woofer two to three feet below, beside and behind the main midwoofer.

The JBL 4435 sets the helper woofer directly beside the main woofer. So it reduces SBIR from a nearby side wall because of the woofers' different locations in the horizontal plane. A reflection from the main woofer to the side wall reaches the listener at a different time than the reflection from the helper woofer. So the self-interference notches are also different for each woofer. Each woofer "fills in the hole" from the other.

But that only works on the side walls in the 4435. By placing a helper woofer slightly below and behind the main woofer, we can gain this same benefit in the vertical plane as well as the fore/aft plane. That will reduce SBIR from the wall behind the speakers, which is the strongest one. It will also reduce floor bounce in the overlap region, below baffle step.

3. If the helper woofer is capable of subwoofer frequencies, it will provide deep bass extension. In this case, I call it a flanking sub. It can also be part of a multisub setup, which mitigates room modes in the deep bass range.