Subject: Re: 4Pi - alternate compression driver mounting?
Posted by Wayne Parham on Wed, 10 Nov 2021 22:25:57 GMT
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There's the rub.

When flipping the box over, the waveguide and midwoofer are placed closer together than they would be if the woofer remained low in the box with the waveguide perched on top. So flipping the box over brings 'em closer together, pretty much the same distance apart as they are in the stock design.

I say "pretty much the same distance apart" but they're not exactly the same distance. Not that we need to split hairs about tenths of an inch or anything like that, but the difference is more than that - they're about an inch further apart.

That's not horrible, but it will draw the vertical nulls closer together making the forward lobe smaller. It's not what we want.

On the other hand, the forward lobe is pretty large and the nulls are spaced far enough apart we don't have to push it. That's why the stock design has a gap between the midwoofer and tweeter. If we needed, we could brings them closer together to get more distance between vertical nulls. But we really don't need that - the nulls are widely spaced.

Then we also have to consider the internal standing waves. If we move the midwoofer or the port, the standing waves will align differently inside the cabinet. So we cannot know for sure if modifications will create midrange anomalies without measuring the cabinet.

I moved stuff around for testing way back when I originally designed this cabinet, and I tried a lot of configurations both with mathematical models and then ultimately with measurements of physical loudspeakers. But that was a long time ago and I cannot remember what movements were OK and what weren't. I know this particular configuration measured well.

So for the person considering this mod, those are things to consider.