Subject: Re: 3pi update / 6pi build
Posted by Wayne Parham on Tue, 02 Feb 2021 15:16:25 GMT
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Yes, standing waves occur at frequencies between 30Hz and 120Hz. That's what room modes are and they can be quite troublesome. It's what the multisub configuration is designed to mitigate.

But to create standing waves in the bass requires a large enclosure. Where we usually see standing waves in loudspeakers cabinets is in the midrange band, and that's a potential problem if the cabinet is presented those frequencies. Small cabinets usually only have standing waves high enough that damping material inside the cabinet is very effective at attenuating. But larger cabinets can have standing waves low enough that the damping material is less effective, which is why in some of my cabinets I have a sheet of insulation spanning the cross-section. It's more effective at reducing midrange energy than damping material attached to the walls. I also design the cabinets with driver and port locations specifically chosen to reduce the impact of any standing waves.

This isn't an issue in subwoofers, because cabinet dimensions aren't close to the wavelengths of the frequencies presented to them. Most subwoofers don't even have damping material inside because they just don't need it.

As to your cabinet, having dimensions of 45cm x 75cm x 45cm - 17.75" x 29.5" x 17.75" - the lowest standing wave mode it can suffer from is 230Hz. Most modes are in the 400Hz to 600Hz range and many are above 1kHz. So it really doesn't need damping material inside it at all.

Then again, there's no harm in adding damping material - it will actually make the cabinet act like a slightly larger box - so you could install it if you wanted to reduce any anomalies that might occur near the lowest standing wave modes. That would make the cabinet sound more natural if it were driven with midrange frequencies above 200Hz.