Subject: Re: 3 Pi plans
Posted by Wayne Parham on Thu, 28 Feb 2019 14:59:47 GMT
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Those look stunning!

To improve the upper midbass and lower midrange, you have two options that come to mind right away:

1. Upgrade the midwoofer to the Definimax 4012HO. It's a drop-in swap, with only a single capacitor change on the crossover. Swap the 10uF capacitor in position C4 to a 20uF cap.

2. To mitigate room effects, incorporate flanking subs. They will improve the frequency response between 75Hz and 150Hz in most rooms. Without flanking subs, there is response ripple and almost always at least one huge notch in this range. It can make vocals sound throaty and guitars can sound weak or shrill, depending on the room. Sometimes the effects are subtle, sometimes they're huge. But flanking subs will always improve this range, reducing the intensity of the anomalies significantly, by at least 2x.

When adding flanking subs, you can put the hornsub at the opposite corner of the room and crossover very low using a summed LFE channnel. Let your hornsub handle the deepest bass - High-pass at 30Hz (24dB/octave) to prevent over-excursion and low-pass at 60Hz-80Hz (24dB/octave) to prevent localization. Placing the hornsub relatively far from the mains helps smooth low-frequency room modes.

Flanking subs are placed just beside, behind and below each of the mains. They are sent a low-passed copy of the signal sent to the mains they are flanking. Flanking subs are low-passed at 100Hz (12dB/octave) which allows plenty of upper midbass to reach the subs. In fact, they're even generating some lower midrange, up to around 150Hz, because of the gentle crossover slope.

Flanking subs are really like a woofer of a three-way setup, blended with the midwoofer in the mains. But since they are a couple of feet beside, behind and below the mains, they smooth higher-frequency room modes and self-interference from the nearest boundaries. The worst offender is generally the self-interference notch caused by the reflection from the wall behind the speakers.

By using both the hornsub and the flanking subs, you will have a multisub setup that will really make the bass smooth. The three subs in their different positions will all contribute to smooth the lower-frequency room modes, from 30Hz up to 100Hz. And as I said above, the flanking subs will smooth the region between 75Hz and 150Hz or so.

It's an upgrade path with incremental updates that you can do as time and finances permit.