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Subject: Re: 4 Pi Design Questions

Posted by [Wayne Parham](#) on Sat, 02 Jun 2012 15:30:06 GMT

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measured in this manner. And yes, frankly, that's a very good chart. But below 200Hz, it's ambiguous because only room modes can be seen. That's where you would expect most changes due to the box modification to manifest themselves.

This brings us to the hypothetical question, which is, "How much does it matter?" My concern about box mods is always that they might make ripples in the midrange due to internal standing waves. But as long as they're all below the modal range, one might question how much they matter. If we use flanking subs to mitigate midbass and lower midrange anomalies, they'll tend to smooth that range, whether caused by standing waves inside the box or reflections outside, in the room. Still, my take is the less anomalies we can introduce, the better. Less problems to mitigate.

And of course, if we're using subs, we don't need the extra extension the larger box gives, and leaving it stock eliminates the possibility of introducing midrange ripple. The room is dominant below 200Hz, and the biggest peaks and valleys are from standing waves in the room, not in the loudspeaker box. So truly, the best approach is to use multisubs (flanking and distributed) to smooth this range, which will provide both extension and modal smoothing.

My conclusion is this: Since the mods have not introduced any additional ripple above 200Hz, I'd call it "verified". That's the main thing we're looking for here. We don't want any midrange ripple from internal standing waves. Of course, we can't see what it might be doing below 200Hz, but indoors, that almost doesn't matter.