Subject: Multisubs for pi7
Posted by panduro on Sat, 21 Jan 2023 18:30:20 GMT
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Hello Wayne and other cool People.

Having lived with my pi7 speakers for a while now, im still loving Them. im starting to ponder about my future multi sub plans.

I keep Reading online in different places, that alot recommend horn subs for speakers like la scalas, klipshhorns and such. Basicly what i gather from those subjective opinions is that horn Subs just match better in Sound with horn speakers and integrates better/easier than using sealed or reflex subs..

I have been Reading Old subwoofer threads here, which have lead me to some questions.

What do you Think, does horn subwoofers do better than sealed subs?
Im know that better is a very Big generalization. My focus is 2 Channel music. Every genre...
Looking for clean output to 30hz, but not needing concert level soundpressure. Eq and House curves are used in my system.

In a post by Wayne he writes that tapped or truncated horns is not the Way to go if going for low distortion. I dont understand what truncated horn is. Could some kind soul explain it to a complete noob :).

At some point there Will be either 4 identical sealed subs or 4 horn subs, although in my room it Will have to be 2 identical horn subs for front, and 2 identical horn subs for rear.

As far as i understand, if using non identical horn subs, they should be of same type and they should be as similar as possible in horn lenght to keep phase similar and make integration easier.

I need other dimensions than your pi12 hornsubs has, so im searching the web for other horn sub designs that comes with a plans and a bit of "credit".

Seems like most diy hornsubs designs are tapped horns.

Lilmikes designs seems to get good reviews although i Think its only his f20 that isnt a tapped horn, but sadly the fotoprint of the f20 also makes that impossible.

Then there is Bill fitzmaurice many horn sub designs, within his design range i could easily find what would fit.
When i read he gets both rave and shiite rewievs. As i dont know or understand horn design i have a hard time judging
What im looking at. Good/bad things about his design?

Have pispeakers made other horn subs in the past?

Best regards

Ben

Subject: Re: Multisubs for pi7
Posted by compaddict on Sat, 21 Jan 2023 20:04:40 GMT
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I run two sealed Stereo Integrity 18s in custom boxes with my Pi7's. I run with a single Behringer NU12000. I will replace with a big Sinbosen amp in the near future. Works very well!

Subject: Re: Multisubs for pi7
Posted by Wayne Parham on Sat, 21 Jan 2023 22:34:41 GMT
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I love basshorns, but they're just so big. Their size often makes it inconvenient to use hornsubs for multisubs.

The main benefit that hornsubs offer is maximum acoustic energy. But we really don't need maximum acoustic energy to make it ear-shatteringly loud in a small room.

The most problematic thing in a small room is usually room modes. That is best solved using a multisub approach. So if you can't fit hornsubs where you need them, be happy with direct-radiating subs.

Direct-radiating subs will solve the modal problem just as well hornsubs, and they're usually easier to place. Having a large number of them helps with the acoustic energy on tap as well.

I've also heard the argument that it's a phase thing. Some say they like horns 'cause of their relatively flat phase. Of course, this is only true for an appropriately-size well-designed horn, which is necessarily large for a basshorn.

I love hornsubs, so I'm not trying to disparage them by any means, but I will say that the phase argument doesn't have merit here. Outdoors, sure. Or in a very large room, like a theater, auditorium or concert hall where there is no modal problem. But this makes no sense in a small room.

Indoors, in the modal region, phase is all over the place. Using multisubs is a way of creating dense interference, creating even more phase relationships. The goal is to make the modal region act like the reverberent field.

We're trying to increase the numbers of sources, reflections and phase relationships. So we're not looking for a single in-phase wavefront but rather a lot of sources and reflections with multiple phase relationships.

Subject: Re: Multisubs for pi7
Posted by panduro on Sun, 22 Jan 2023 01:09:16 GMT
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Thank you for your reply compact, im sure your subs are awesome, but im afraid that here in Europe stereo integrety drivers is yet another brand Thats hard and very expesive to get here... other good brands are possible offcourse.

My cornerhorns has made me infatuated with horns, and if possible i would love trying bashorns, but only if it makes sence SQ wise.

Thank you for a comprehensive reply Wayne, always appriciated.

Do i understand you correctly, that faseshift when doing multisubs is a positive thing as Long as it is below crossover region?

Its not that i dont have good placement options for basshorns(to a certain extent) but foot print of my wanted placements just doesnt fit your pi12's footprint.

Wayne, could you explain in laymans terms how a truncated horn is different that a non truncated horn?

Best regards

Ben

Subject: Re: Multisubs for pi7
Posted by Wayne Parham on Sun, 22 Jan 2023 02:43:29 GMT

You are correct that subwoofer phase in a small room isn't terribly important. The phase response of the subwoofer is swamped by room response below the Schroeder frequency, around 200Hz.

I don't care if you use sealed or vented direct-radiators, or those with passive radiators, or a bandpass, transmission line or any sort of horn. The reason it isn't important is the room reflections and modes will modify everything. The reflections and modes are - by far - the biggest contributors to overall room response.

I suppose even having a little response ripple in a sub is probably OK since the woofer response will be swamped by the room response. But don't go too far with that. Don't choose a sub if you see measurements that show +/-10dB swings. You'll find that from some hornsubs that are too small.

And that makes for a nice segue into a discussion about a truncated horn. When I think of "truncated," I think of something that's too short. But where horns are concerned, the length is one thing, the mouth area is another, the horn profile is another and the rear chamber is yet another. And of course, one must also consider the electro-mechanical properties of the driver. All have an effect on the horn's characteristics.

Leaving out the profile and the rear-chamber for simplicity's sake, a horn has a best length and a best mouth area for a given low-frequency cutoff and passband. Too long will shift the horn's passband downward and too short will shifts its passband upward. A mouth that's too large is much better than one that's too small, but it generally still adversely affects performance. But too small is the real offender, 'cause it will make the horn peaky.

And since the length and mouth area are intertwined with the profile - which I said I would avoid for simplicity's sake - you really cannot overlook that, or the rear-chamber or the driver, for that matter. But the length/area/profile interaction is one that makes a horn with too small a mouth always seem to make for a device that has big peaks and dips in response. One could also see that as being a horn that's too long, but again, it's easiest to see the length as being a function of the passband, 'cause that fundamentally sets it. Set the length by the desired passband, and then set the mouth to suit.

I've also seen it go the other way, where the length was too short for its mouth area, but I see that more often in HF horns. When a horn is really short for its mouth, for one thing, it doesn't provide a good acoustic load. It starts to act more like a curved baffle than a horn. And for another thing, it can create response ripple with peaks at multiples of quarter-wavelengths set by its length.

To summarize, peaks at multiples of a quarter-wavelength is something I often see in basshorns with too little mouth area, and I also see it occasionally in tweeter horns that are too short for their mouth area.