Subject: Pi push pull slot loaded subwoofers?
Posted by Norris Wilson on Sat, 05 Sep 2009 16:19:36 GMT
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Hi Wayne,

Do you offer a Push-Pull sub woofer design similar to your 12 Pi horn sub woofer, but with slot loaded cabinet?

If so, what are the dimensions of the box?

Would there be any special placement requirements over a single driver sub such as your Three Pi sub when doing a distributed arrangement of four different subs?

If you offer a PPSL sub design, could the cooling plugs and plates be adapted?

Would the cooling plugs and dissipation plates make a big difference in reducing distortion when being used for home duty at lower SPL's?

If all is doable with the PPSL design in a distributed form.

What power requirements would be needed?
Could one get away with a plate amp like the BASH 300 watt design with a 12db slope crossover per sub?
Or, would a steeper sloped crossover and higher power level be required to blend well with a pair of Four Pi monitors mounted up off the floor on risers?

If power requirements could easily be met for the subs. Would it be feasible to use a single BASH 500 watt plate amp with two Push-Pull subs per channel? I can only assume that the impedance might be a problem, with a possible two ohm load when using your 12" sub drivers at 8 ohms each.

Would there be a need of different crossover frequencies for the front and rear positioned subs?

And, how high of a frequency could this type of PPSL design work, 100Hz, 200Hz, or 250Hz with correct crossover and amplification?

Is there a possibility of using this distributed sub bass arrangement with a horn mid range, possibly as high as 250Hz in your corner mid-horn design?

As always, Thanks!

Norris

Subject: Re: Pi push pull slot loaded subwoofers?
Posted by Wayne Parham on Sat, 05 Sep 2009 18:14:56 GMT

detail, using measurements to guide my design choices, I realized it wouldn't offer as much benefit as I first thought. I initially thought the application was a perfect fit since the drivers are hidden from view, so the exposed magnet of the reversed driver would not be seen. But the truth

shorting rings work better.

range from the Schroeder frequency up to the crossover point with constant directivity, and in this range, the higher quality drivers with shorting rings offer very low distortion, and it's getting a little bit too high in frequency for summing between drivers in a push-pull configuration to provide distortion cancellation. So in reality, even though the cornerhorn bass bin operates lower than the Schroeder frequency where push-pull driver might offer some benefit, I think probably the benefits would be limited. I prefer to use shorting rings for this application.

sub would be a good canidate, and you could easily implement push-pull drive in a pair of

face them together. This would work just fine.

Crossover for a system like this should be limited to about 100Hz. There's no penalty for going higher, say to 150Hz or so, if used as flanking subs in a multi-sub configuration. But beyond that, you're not going to get any reduction of distortion from push-pull drive. You can go higher, as I said, without penalty, but distortion will rise because coupling isn't as good up high. So it is probably better to crossover to a driver with a shorting ring.

If used as flanking subs, it would be best to overlap up to the lower 100's or so, blending the subs with the mains. More distant subs should be low-passed at lower frequency, of course, to prevent localization problems. You never should be able to identify a sub; It should seem to be "invisible" to the listener. If you don't have the impression that the sound is coming totally from the mains, then the subs aren't setup right.

or not. You start to gain a benefit from them at about 100 watts, approximately 108dB/M and louder. They reduce core temperature, which in turns reduces electro-mechanical parameter shift and power compression.

I think most people don't really need the plugs and plates for home hifi or home theater, but I suppose if you push them hard, they'll help. But you'll definitely be rattling the house at those levels. On the other hand, if the subs are used for prosound, then I would definitely suggest the cooling plugs be installed.