Subject: First coil in woofer's LPF with and without helper woofers
Posted by fakamada on Thu, 12 Sep 2013 19:46:29 GMT
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Hi Wayne, Hi everybody,

I'm wandering around the subject of rising woofers response compensation. In the world of wide baffles and controlled directivity, baffle step compensation (coil + resistor) is not commonly used. On the other hand, one can often see larger first coil in XO, than would be required just for regular low pass filter.

I've seen quite a range of values of this first coil. Usually beetween 1.5mH and 3mH. If it's large it can be used for rising response compensation. Bigger coils are sometimes used in very low QTS woofers because of their inherent tendency for such response.

Your approach is to use lower values (1.5mH). Is it because you assume using helper woofers/subwoofers? I'm thinking that if one uses such lower value coil, you can XO your helper woofers higher (150-250hz?).

In my case, I'm looking for a solution based on Faital Pro 12PR300 in very small (35 liters) sealed (simulated F3 125hz) or vented cabinet (tuned low to 45hz with simulated F3 - 85hz,)

Below that - active, DSP driven stereo sealed subs. Probably with Daytons st305-8. One per side.

Now I've been doing simulations based on measurements and I can easily use a coil beetween 2mH and 3.3mH and maintain good pahse tracking through XO
(3rd order for woofer - for example: 3mH 27uF 1.36mH)

What's better in your opinion. My speakers will be beetween 0.5m and 1m from the front wall. Should this be different when using or not using helper woofers/subs?

Subject: Re: First coil in woofer's LPF with and without helper woofers
Posted by Wayne Parham on Thu, 12 Sep 2013 23:31:00 GMT
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This is a topic that's important to me too. Please see the Pi Speakers FAQ, because there is a lot of information there about baffle step compensation, changing directivity (which is what baffle step really is) and other related topics.
Pi Speakers FAQ

Subject: Re: First coil in woofer's LPF with and without helper woofers
Posted by fakamada on Fri, 13 Sep 2013 05:45:26 GMT

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Oh I've read it before couple of times. Shouldn't this aproach be different with and without helper woofers/subs in modal range (up to about 200hz)? They also add to power response don't they? So shouldn't free standing, no helper woofers speakers be a little more compensated? At least compared to ones with flanking woofers?

Subject: Re: First coil in woofer's LPF with and without helper woofers
Posted by Wayne Parham on Fri, 13 Sep 2013 13:10:35 GMT
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That's kind of the point, yes. If you don't use helper woofers, then the mains are the only sound sources down low. And those tend to both rolloff sooner and shift source directivity from (baffle influenced) halfspace to omnidirectional. Then add to that the room modifies directivity way way of creating room modes.

So what you have in the modal region is messy, and no amount of EQ given to mains can solve it. That's why I prefer acoustic approaches, like constant directivity cornerhorns, or flanking subs for mains where that's not possible. And distributed multisubs for the lower frequency modes in either case.