Subject: Finally Building Full Range Single Driver Speakers
Posted by AudioFred on Thu, 10 Sep 2009 12:36:19 GMT
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I've avoided building them in the past because (except for some in hard-to-build horn enclosures) they all sounded thin and shouty to me, at least until I heard Bob Brines' MLTL's with digital equalization or a passive filter. PE recently introduced the Tang Band 1772, and based on Bob's listening impressions I've decided to build a pair using these drivers in his FE-2000 enclosures.

Go here for Bob's listening impressions:
http://www.diyaudio.com/forums/showthread.php?p=1920475#post1920475

The TB-1772 is also the "secret driver" Duke has incorporated into his latest and more affordable bipole speakers. If Bob and Duke are both getting high on it, it must be good stuff!
http://audioroundtable.com/forum/index.php?t=msg&th=12093&start=0&

Subject: Re: Finally Building Full Range Single Driver Speakers
Posted by AudioFred on Thu, 10 Sep 2009 12:40:12 GMT
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Forgot to include this link. Is this a sexy looking driver or what?
http://www.parts-express.com/pe/showdetl.cfm?Partnumber=264-893

Subject: Re: Finally Building Full Range Single Driver Speakers
Posted by Skip Pack on Thu, 10 Sep 2009 17:35:56 GMT
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Hey Fred,

While you're at it, you could elaborate by building an offset bipole using Bob's geometry and tuning and Duke's Dream Maker concept with a nod to Jim Griffin. Keeping life simple, of course.

It sounds like you are back toward the high sensitivity side. How would you compare your lower sensitivity/more conventional efforts -- is it as simple as lower coloration versus better dynamics?

Hope all's well,

Skip

Subject: Re: Finally Building Full Range Single Driver Speakers
Posted by AudioFred on Thu, 10 Sep 2009 17:57:11 GMT
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Skip Pack wrote on Thu, 10 September 2009 12:35Hey Fred,

While you're at it, you could elaborate by building an offset bipole using Bob's geometry and tuning and Duke's Dream Maker concept with a nod to Jim Griffin. Keeping life simple, of course.

It sounds like you are back toward the high sensitivity side. How would you compare your lower sensitivity/more conventional efforts -- is it as simple as lower coloration versus better dynamics?

Hope all's well,

Skip

Sorry, Skip, the speaker you described in the first paragraph above sounds too simple, so could I make it an offset bipole MLTL line array? Actually, there are some effective meds for bipolar people like Duke, except that occasionally they become schizophrenic, believing they are surrounded by a swarm of little subwoofers or something equally delusional.

High sensitivity not! The typical 95dB sensitivity full range single driver offers that sensitivity only above 1khz, so you need a BSC filter to tame the highs, taking it down to the 90 to 92dB sensitivity range. Not a problem if you've moved all your tweekie/deekie little SET amps to a closet and replaced them with a real amp like a Krell.

Subject: Re: Finally Building Full Range Single Driver Speakers
Posted by Skip Pack on Thu, 10 Sep 2009 19:35:39 GMT
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You can pull all those amps out of the closet if you use a line level BSC filter ahead of the amp. (That's not quite true, you still need more power, but less than you would with the filter 'twixt the amp and the speaker).

Skip

Subject: Re: Finally Building Full Range Single Driver Speakers
Posted by AudioFred on Wed, 07 Oct 2009 12:11:10 GMT
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Skip Pack wrote on Thu, 10 September 2009 14:35You can pull all those amps out of the closet if

you
use a line level BSC filter ahead of the amp...
Skip

This is a one month delayed response, but you make a good point! I once tried a Behringer DEQ2496, which worked great for equalization, but it diminished the soundstage. I've been considering a dbx DriveRack PA+. I was told it sounds better than the less expensive Behringer products, but at $500 it would cost more than the speakers. The upside is that it's also an electronic crossover, which I could use with two-way speakers.

I've finally gotten around to cutting some mdf panels, so the project is now underway.

Subject: Re: Finally Building Full Range Single Driver Speakers
Posted by AudioFred on Sat, 07 Nov 2009 18:31:28 GMT
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They're up and playing.
http://fredt300b.smugmug.com/Hobbies/Speakers/132721_wacsQ#705734896_T4Duo

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Subject: Re: Finally Building Full Range Single Driver Speakers
Posted by Wayne Parham on Sat, 07 Nov 2009 23:34:12 GMT
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Is that birch? As usual, you've done a fine job with the cabinets.

Let us know your impressions. Both initial impressions and those after living with them a few weeks and getting to know them.

Looking good!

Subject: Re: Finally Building Full Range Single Driver Speakers
Posted by AudioFred on Sun, 08 Nov 2009 00:29:32 GMT
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Wayne Parham wrote on Sat, 07 November 2009 17:34
Is that birch? As usual, you've done a fine job with the cabinets.

Let us know your impressions. Both initial impressions and those after living with them a few weeks and getting to know them.

Looking good!

It's 3/4" mdf with 1/4" plywood panels glued to the inside with a thick coat of liquid nails. Yes, you have to sleep with a pair of speakers before you can know if they're right for you.

Subject: Re: Finally Building Full Range Single Driver Speakers
Posted by Duke on Tue, 17 Nov 2009 09:40:02 GMT
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One of the advantages of the offset bipole configuration is that the baffle step is to a certain extent side-stepped. At the frequency where the front woofer (or fullrange) starts to bafflestep, so does the rear one... so its wraparound helps offset the bafflestep of the front driver.

Subject: Re: Finally Building Full Range Single Driver Speakers
Posted by AudioFred on Tue, 17 Nov 2009 11:42:00 GMT
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Duke wrote on Tue, 17 November 2009 03:40One of the advantages of the offset bipole configuration is that the baffle step is to a certain extent side-stepped. At the frequency where the front woofer (or fullrange) starts to bafflestep, so does the rear one... so its wraparound helps offset the bafflestep of the front driver.

In our Houston Audio Society meeting Saturday we compared the sound characteristics of several speakers including the TT-2000 and the Jim Griffin bipoles with CSS drivers. The bipoles with their little 4.5" drivers have the more impressive bass of the two plus the open life-like soundstage of a live performance. Jim's design isn't offset, and as I understand it the advantage of offestting the front and back drives is that it preserves all the advantages of a bipole while eliminateing one disadvantage, an anomaly caused by the reinforcement and cancellation of the front and back drivers at various frequencies. Is that correct?

Subject: Re: Finally Building Full Range Single Driver Speakers
Posted by Duke on Tue, 17 Nov 2009 21:26:40 GMT
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The main reason for the offset is to physically stagger the low frequency sources as much as possible, thereby approximating the delusion of being surrounded by swarms of tiny subs.

The offset also increases the boundary reinforcement the rear woofer gets, giving you a bit more

bottom end. In addition this geometry helps fill in the floor-bounce notch, as the rear woofer's output will not be floor-bounce-notching at the same frequeny as the front woofer.

The wrap-around notch (occurring at the frequency were the path length difference between rear woofer and front woofer equals 1/2 wavelength) is only marginally migitated by the offset. Various bipolar designers have used different techniques to deal with the wraparound notch. These include:

1. Lithium and group therapy.

2. Make the box about 1.5 times wider than it is deep (this is what I do).

3. Ignore it (works quite well, because it's not really audible for various reasons).

4. Use a side-firing woofer to cover the lower midrange and bass region (patented by Definitive Technology).

5. Use a rear-facing midwoofer wired in reverse polarity for that portion of the spectrum only (Genesis Model 5).

6. Notch the rear-woofer's output in that region (Mirage M-1, which also used the wide-and-shallow geometry; subsequent Mirage bipolars omitted the notch filter on the rear woofer).

In theory what you don't want is for the wrap-around notch to coincide with the floor-bounce notch. The offset geometry helps keep that from happening. It sounds like a lot of things to juggle and I guess it is, but it's not like a failure to geometrically optimize will ruin the design. Chances are nobody will ever notice.

Ah, here comes the nurse with my meds now...

Subject: Re: Finally Building Full Range Single Driver Speakers
Posted by AudioFred on Wed, 18 Nov 2009 12:22:45 GMT
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Do you think Obamacare will cover lithium and group therapy for people who have issues with the wraparound notch, or will Glenn Beck's prediction come true and a Washington bureaucrat will dictate some generic antidepressant like listening to line arrays for 30 minutes each day?

Just kidding, but I wanted to be sure you know we do read your responses, and how much we value them. As these Tang Band drivers break in (Or is it my ears that are breaking in?) I find myself listening to them more and more, and the other speakers less and less.

Subject: Re: Finally Building Full Range Single Driver Speakers
Posted by Bob Brines on Wed, 18 Nov 2009 12:44:18 GMT

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My TB's went into the cabinets that had the DX3's. I will probably have to build a new pair of boxes for the DX3's because I have no desire to take the TB's back out. The TB's lack the ultimate detail and air of the DX3's, but they sound so right.

Bob

Subject: Re: Finally Building Full Range Single Driver Speakers
Posted by AudioFred on Mon, 28 Dec 2009 13:53:42 GMT
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Santa brought me a dbx DriveRack PA+, and I'm using the graphic equalizer section instead of the passive LR filter. I'm very happy with the results. Now I can drive the TT-2000's to very satisfying room-filling levels even with my Bottlehead Paramour 3.5 watt amps, but I still prefer the convenience of a solid state integrated amp with remote. I've also found the graphic equalizer lets me make small adjustments to the midrange, which smooths out a peak in that area.
http://fredt300b.smugmug.com/Hobbies/Speakers/132721_wacsQ#751452403_BdpKM