Subject: Integrating full-range as wide-range
Posted by GarMan on Mon, 05 Jun 2006 14:42:02 GMT
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After listening to my Goodmans Axiette 8 II's for a week, I'm still very impressed by it. However, it's obvious it's missing the very top and bottom end. The top end's easy. I simply added a set of piezos I had lying around, crossed at 10kHz, and the improvement was immediately noticable. What I need help on is integrating the bottom end, specifically cabinet design.I have a pair of JBL 2235, each in its own 5 ft^3 cabinets that I use in my main system. The bass from these are incredible and would complement the Goodmans well. I'm sure I can get "good" bass from the Goodmans with a well aligned cabinet, but it will never be as deep and loud as the JBL's.Questions:If I intend to integrate the Goodmans with the JBLs, can I get away with a simple sealed box? I like to keep the cabinet as small and simple as possible. I know that a larger vented box, or even BLH can extend the bass lower, but what are the advantages of taking the fullrange down to, say, 50Hz if I'm using a "sub"?If the sealed box is okay, what size? There's little to none information on the web about these speakers. From this forum's experience with similar drivers, how low will it go in a sealed enclosure? The drivers currently sit in a 2 ft^3 vented.thx,Gar.

Subject: Re: Integrating full-range as wide-range
Posted by akhilesh on Tue, 06 Jun 2006 11:19:54 GMT
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HI Gar,You can use a sealed box, but then your JBLs will be doing work till about 150-200 Hz. THis will cause imaging/coherence issues. My suggestion is to measure the axiettes and build a BR box for them, then cross them over an octave higher with the JBLs. My guess is the axiettes should be capable of producing 50 Hz or so in a well designed BR box. Design a box that does that (you'll have to measure the drivers to be sure of course) and then cross over an octave higher. Try different slopes. i'd start with at least a 12 db slope each way. This will give you coherence and imaging. -akhilesh

Subject: Re: Integrating full-range as wide-range
Posted by Wayne Parham on Tue, 06 Jun 2006 15:56:13 GMT
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The trade-off, of course, is that as you crossover the main driver lower, you increase IMD. You don't want that because it's really objectionable in the vocal range. I'd pick the crossover based

thing that will affect summing between the sub and main driver.

Subject: Re: Integrating full-range as wide-range
Posted by akhilesh on Wed, 07 Jun 2006 16:19:38 GMT
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I agree, Wayne. That's why i like to cross the wide range an octave higherthan it can produc (kinda like my trusonics which I cross at around 90 Hz). OF course each driver is different.-akhilesh

Subject: Re: Integrating full-range as wide-range
Posted by Wayne Parham on Wed, 07 Jun 2006 19:31:38 GMT
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Sounds reasonable. I like the sound of your Trusonic + sub system, by the way.

Subject: Re: Integrating full-range as wide-range
Posted by akhilesh on Wed, 07 Jun 2006 20:41:09 GMT
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I know. You need to visit and hear my stuff soon. Lunch sometime soon (my treat)?-akhilesh

Subject: Re: Integrating full-range as wide-range
Posted by GarMan on Wed, 07 Jun 2006 23:13:18 GMT
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Akhilesh,When you crossed your fullrange to sub, did you apply any high pass on the fullrange, or did you just let it die out naturally?

Subject: Re: Integrating full-range as wide-range
Posted by Wayne Parham on Thu, 08 Jun 2006 02:28:36 GMT
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Sounds great - It's a plan.

Subject: Re: Integrating full-range as wide-range
Posted by akhilesh on Fri, 09 Jun 2006 02:39:54 GMT
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I applied a highpass on the full range. 24db. That's what the active does. If you want the fullrange to die out naturally, as you know, there are 2 issues at least:1. WE need to calculate the slope of die out and then calculate the low pass slope on the sub so thee summing is zero ro whatever we want2. We don't reduce the IM distortion: in my opinion the main advantage to the use of a sub. For example, my trusonic can do 45 hz in its BR box. So if is let it die naturally i'd probably be crossing it at 24 db at around 40 db. But the IM distortion would be the same as without a sub. Crossing it actively at 90 hz takes care of that. It actually sounds significantly better: the results of IM distortion are not the phantom metrics that plague the dreams of many "speaker designers", it's very clearly audible. Hoep this helps-akhilesh

Subject: Re: Integrating full-range as wide-range
Posted by GarMan on Fri, 09 Jun 2006 12:14:49 GMT
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I completely agree on IM. I've built a couple of sets of speakers using 3" Tangbands fullrange, and the effects of 100uF in series with woofer was tremendous. Completely cleaned up the mids and highs and improved power handling.

Subject: Re: Integrating full-range as wide-range
Posted by akhilesh on Fri, 09 Jun 2006 22:43:48 GMT
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"Completely cleaned up the mids and highs and improved power handling."YOu describe exactly what I have heard many a time, esp with the smaller full ranges. At the GPAF this year I demoed exaclty that with the 4" DCA drivers in a PAWO horn: a classic case of a driver being able to do 45HZ in a BLH, but producing COPIOUS IM. Crossing it at 70HZ cleaned it up very significantly.

Subject: Re: Integrating full-range as wide-range
Posted by GarMan on Mon, 12 Jun 2006 12:32:24 GMT
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I would think that applying the high pass in front of the amp, even passively would give even better results than at speaker level. It would allow you to run the amp higher before clipping in the

trebles. It could be as simple as reducing the input coupling cap by a factor of 10.