Subject: 2.5 way using two JBL 2226J with B&C DE 250 & H290 horn
Posted by Norris Wilson on Sun, 13 Jun 2010 20:25:47 GMT
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Hello everyone

I have been thinking about this project for some time. But, I keep procrastinating, or get side tracked before any real plans are drawn.

I would like to build a high efficiency two-way speaker using dual 15" JBL 2226J that I have on the shelf. I would use this 2.5 way with four sealed distributed subwoofers.

Out of the lack of knowledge, and mostly being speaker design challenged. I thought I would implement a basic Four Pi crossover altered to use a 16ohm 2226J with the B&C DE-250 and Eminence H290 biradial horn. I felt I could use a 10mH to 12mH coil to roll off the bottom of the second 2226J for bass reinforcement, and to increase speaker efficiency.

Q's

1.) I am not quite sure how to deal with the cabinet using dual woofers that will be working over most of the same frequency response. Should I build the cabinet and partition out each 2226J internal volume? Or, should I build a well braced cabinet and leave out the partition where the total internal volume would be shared between the dual 2226J midwoofers?
My main reason for this question is due to concern about the upper frequency range being effected by the dual woofers.
I think using the volume of Four Pi for each 2226J would be ideal in a vented design if partitioned internal volume were used.

2.) Any thoughts about volume for such an arrangement using dual midbass woofers?

3.) What would be the best type of cabinet type, sealed, or vented, to insure this dual woofer cabinet to be the highest sound quality for 2226J? And where it could be easily blended with sealed subwoofers.

4.) A 12mH air coil is quite large and expensive, not to mention inefficient in this size. Would someone recommend a good sound quality coil that is cost effective, and more efficient over an air coil?

5.) Will there be any issues with the dual woofers blending, to include effects on the midrange frequencies?

Also, I am interested in the option of using this dual 2226J cabinet as a midbass only cabinet. My thought is to use it in a four way system consisting of a 12" 98db 1/watt-1/meter midrange mated to 1" CD and waveguide combo from around 200Hz and up. The dual midbass would be allowed to run full range up to around 200Hz. Then, four distributed sealed subwoofers would be brought in to reinforce the last octave on bottom, and control room nodes.

I thought I could possibly experiment with different size of vents on dual woofer cabinet, where

bass could be tuned somewhat for better room integration.

I am sure I have missed one, or several dozen design considerations.

Any thoughts would be greatly appreciated.

Norris

Subject: Re: 2.5 way using two JBL 2226J with B&C DE 250 & H290 horn
Posted by Wayne Parham on Sun, 13 Jun 2010 22:59:07 GMT
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A few thoughts:

First, a minor clarification. The H290 is not a BiRadial horn. "BiRadial" is a JBL trademark and it is a constant directivity design that has a diffraction slot in the throat. The H290 is a radial horn that provides constant directivity in the horizontal plane. It has smooth side walls with no diffraction slots or edges. Just a quick clarification.

On the dual woofers, I'd do a 2.5 way arrangement, essentially running the top midwoofer and

done, and minimizes your need to retest. The longest part of a speaker design is the test/measure/modify/retest cycle.

You can make the bottom box larger, if you want, for greater bass extension. Run the bottom woofer off the midwoofer crossover output, but add a large coil in series to limit its output to the bass range. It will have slow gradual rolloff, with a lot of overlap, and that will tend to mitigate floor bounce and any other room modes in the overlap region.

I personally like using vented boxes, but with a slightly overdamped alignment. They have smooth gradual rolloff like a sealed box, but the excursion reduction and extra extension of a vented box. I think that's the best way to run woofers with electro-mechanical specs like the JBL 2226.
Room gain, pressure region, modal region and reverberent region

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