Subject: 2nd ordrer Butterworth vs 3rd order Butterworth
Posted by spkrman57 on Tue, 20 Aug 2002 11:22:16 GMT
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Wayne, Using your 3rd order (BW) with JBL horn/driver (2418 on 2373 lens), standard textbook pi x-over(15 ohm/30 ohm/.47ufd) works great! (my 4 pi's in 3677 cabs and 2226J), but when I take the same approach with Altec horns/drivers (511/811)-(806/802) with Altec drivers, the resultant sound is not as natural as when I use a 2nd order BW (Altec's standard crossover). I'm not sure why this is, but the difference in the horns, JBL sounds more forward and more like domed driver, but the Altec, sets the deeper soundstage and requires triple the cap compensation value of the JBL's to sound similiar. Would your attenuation/compensation ciruit work ok with 2nd order BW??? I recall posts from some time back where you mentioned the necessity of 3rd order when using atten/compensation due to the load on the crossover. It might even have been mentioned in your crossover document. I wish I knew why the 2nd order sounds better on the Altecs, but the 3rd order sounds better on the JBL's. I have been unable to successfully incorporate JBL woofer/ALtec horn system to work as well as my all JBL system. Could you shed some light on this. Thanks, ROn

Subject: Re: 2nd ordrer Butterworth vs 3rd order Butterworth
Posted by Wayne Parham on Tue, 20 Aug 2002 19:32:57 GMT
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The points I've tried to make with respect to passive second and third-order filters is they are more prone to peaking from too small a load than first order. In fact, increasing the load resistance on a first-order filter just shifts the crossover point. There will be some peaking because of the reactive nature of the load, but the R1/R2/C1 network worn't work on a first order the same it does on a second or third. It works equally well on second or third or higher. The thing on these higher order networks is you have to consider the phase shift, which is a separate matter. The higher the slope, the less the overlap band, so vertical nulls will be present over a smaller frequency range. All these kinds of things have to be considered in additon to how the R1/R2/C1 network interacts with the base band-splitter filter.

Subject: Re: 2nd ordrer Butterworth vs 3rd order Butterworth
Posted by spkrman57 on Wed, 21 Aug 2002 11:43:40 GMT
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Wayne, Thanks, You pretty much told me what I need to know. I am guessing that using the 2nd order BW's I can use the same attenuation values for the 2nd order as the 3rd BW's. I am working on a project with JBL 2226J and Altec 288C(loaded with 16 ohm "G" diaphram) into 311-60

horns(they are aquaplas coated and don't ring like 511/811's). For 2nd order BW's @ 600hz, I have following info: 6mh and 12ufd, I am figuring 115db horn - 97db woofer = 18 db attenuation. I have not yet considered the cap for compensation yet as I want to hear the system straight up first. (breadboarding at this point) I wish JBL had included the le for the 2226J on their sheet/for 4 ohm .92mh/for 8 ohm 1.75mh and 16 ohm was omitted. I looked at your site for this info. I am guessing around 3mh might be figure. I need for zoebel/cap and resistor. would appreciate if you could derive this info for me. Thanks, Ron

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Subject: only UNCUT 511B's ring
Posted by Sam P. on Wed, 21 Aug 2002 13:22:59 GMT
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and JBL has T/S data posted in their tech library, shows 3.5mH for the 2226J Le. In an example of "been there, done that", I previously experimented with 600Hz., 16 ohm BW xovers. 6.0mH 14 ga. coils, 12uF solen caps. Sucked with EV models 15W and 15BWK. They were still online well past 1.5kHz. Acted like the filters were not even there! Not sure how their Le compares to the 3.5mH of the 2226J's, but Wayne can explain better why a high Le causes filter rolloff to be inadequate, or even non-existent under some circumstances. Also, it seems that a 2226J MAY be only 94dB/watt. A PAIR are rated between 97 and 100dB by JBL...just measure your LF and HF systems first, then apply the padding indicated. Nice thing about a PAIR, is TOGETHER they present only 1.75mH Le while providing an 8 ohm load for less expensive coils. Using 2226J's vs. 2226H's as singles is costing you 3dB/watt for sure. That plus the Le situation requires careful consideration in implementing them. Sam

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Subject: Re: only UNCUT 511B's ring
Posted by spkrman57 on Wed, 21 Aug 2002 15:16:09 GMT
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Sam, Nice to hear from you again. As you can see I am still in the process of trying to put together 2-way with my 288/311-60 combo. I can't time/phase align due to the weight of these 30+ lbs monsters (Altec horn/driver), so I am going for phase alignment(I think that is what I mean) The reason I went for 600 hz is because I have 4 6mh coils already and only have to get the 4 caps to match. The reason I have to try out these different combo's is I have several 2226J's and pair of 2226H's. I have various Altec horn/drivers and when I was younger and had no money (not that I am rich now, cause I'm not) I never had the option to experiment and had to settle for what fell my way. I have had several people in the Ohio area (Central Ohio,Columbus) stop by with their amps (tube and solid state) to try them out on my speakers so they could make decisions based on hearing instead of guessing. I guess I am trying to to for others what I did not have growing up. The opportunity to listen in a relaxed environment without a pushy salesman

down my throat. Also, I am curious in nature. Thanks for le for the 2226J, I will go to crossover page and plug in for my zoebel values. Regards, Ron

Subject: Re: only UNCUT 511B's ring
Posted by spkrman57 on Wed, 21 Aug 2002 15:25:08 GMT
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Sam, I had noticed after posting about the 3 db loss compared to the 2226H. Yes, you are correct, but this situation will be using a 16ohm horn driver also, so ref wattage will be same, 97db and 115db. Since this product when completed if it works as well as I hope for will be run off P-P tube amp (maybe my Mc240 at 40 watts/chnl on 16 ohm tap. As a bonus, using 16 ohm drivers can use 18 guage wire with less signal loss. Regards, Ron

Subject: Re: 2nd ordrer Butterworth vs 3rd order Butterworth
Posted by Wayne Parham on Wed, 21 Aug 2002 16:33:44 GMT
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The values of R1 and R2 are usually the same when following a second order or third order of the same crossover frequency. But you might want to confirm this with Spice, because while I found it to be true on many of the circuits I tried, I would not assume that is always the case.About the JBL 2226J (16 ohm version), Le=3.5mH and Re=12.0 ohms. Zobels are pretty wide tolerance filters, meaning component value shifts have a fairly small impact. I would suggest Zobel resistance of 16 ohms and capacitance of 8uF to 15uF.