Subject: New! Improved???
Posted by wunhuanglo on Fri, 02 Jan 2004 01:16:33 GMT
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A short report on a speaker modification.Over the pat week I finished modifying my home-built Altec A7s. Based on discussions by Roland R on other boards, I enclosed the woofer/mid-horn driver (515-G) isolating it from the reflex space, leaving a back chamber of approximately 42 liters. The chamber is lined with acoustic (egg crate) foam. I'm running Altec 802s on 511 horns on top.The reflex chamber, approximately 5-1/2 cubic feet, is dual-ported in the rear, 4-1/8" Dia X 3-3/4" long (40 Hz). The front baffles are two layers of 3/4" plywood (1-1/2" total). The drivers in the reflex chamber are JBL 2225.The things are driven through a Rane MX-23 with Crown D-75As on top and a Crown Com Tech 200 on the bottom. The "mid-horn" seems to integrate really well with the 511/802 combination at about 600 Hz. It's surprisingly seamless, even at a few feet away - you don't have the impression that either source is dominant on solo female voice, which I think is pretty good.The reflex driver is XO at 175 Hz to the mid-horn. Again the integration with the whole seems pretty good, but not as good as with the mid and top horns. Still fooling with level matching. I haven't done any measurements, principally because I don't know what to do. I have an SPL meter and I may do some investigations with it after some reflection.Right now I think it's a vast improvement over the stock A7 in that the totally absent bottom is overcome in a pretty musical way. Having braced, damped and altered these cabinets to high heaven, I think this will be the end of the road for this approach. The next time out will be a fresh start with a different configuration altogether.

Subject: Re: New! Improved???
Posted by Wayne Parham on Fri, 02 Jan 2004 06:07:10 GMT
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Wow, Charlie, that sounds like a killer "little" package.Can you post pics? I'd like to see your speakers.

Subject: Pictures Posted.
Posted by wunhuanglo on Fri, 02 Jan 2004 16:33:25 GMT
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Good thing I have a techno-savvy daughter!
http://wun.smellthecolors.com/ModifiedA7/

Subject: Re: Pictures Posted.
Posted by Wayne Parham on Fri, 02 Jan 2004 21:37:51 GMT
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Looks great!Is that an Altec woofer in the horn, and a JBL 2225 down below?

Subject: Pics are great
Posted by Mike.e on Sat, 03 Jan 2004 01:54:39 GMT
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I want to get into horns very soon..all this horn-ness everywhere,i have great envy :-P

Subject: Re: Pictures Posted.
Posted by wunhuanglo on Sat, 03 Jan 2004 01:55:54 GMT
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Right: the JBL 2225 is in the bottom (clamped to the baffle). That's an Altec 515-G in the horn.

Subject: Re: Pictures Posted.
Posted by hurdy_gurdyman on Sat, 03 Jan 2004 03:42:29 GMT
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If those sound as good as they they look, you are one fortunate person! Good job!Dave:^)

Subject: Adding a Tweeter
Posted by wunhuanglo on Sat, 03 Jan 2004 14:38:38 GMT
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I was thinking of experimenting with an additional tweeter. I'm thinking that if I were to add another 8 ohm driver and series cap in parallel with the top horn, the lowered impedence would not present a problem because of the limited power in that spectrum. There's no crossover impact since the system uses an active crosover. Is this a reasonable assumption?Thanks - and thanks to all for the positive feedback.

Subject: Re: Adding a Tweeter
Posted by Wayne Parham on Sat, 03 Jan 2004 23:01:49 GMT
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If you add a tweeter with a series capacitor, the addition will not lower system impedance except at frequncies below that which capacitive reactance approaches system impedance. As an example, if all your drivers have advertised impedance of 8 ohms, then the use of anything smaller than about a 2.2uF capacitor won't decrease system impedance throughout the audio band. At about 3.3uF to 4.7uF, system impedance will drop to ~6 ohms in the top octave if the tweeter is an 8 ohm driver.In any case, I suggest using a shunt resistor across he tweeter of about 1.5 times the advertised impedance to damp the circuit. The capacitor and tweeter voice coil form a resonator that will have a small peak around the crossover frequency, and a shunt resistor will help damp this peak.

Subject: Re: Tweeter - Thank you, Wayne <nt>
Posted by wunhuanglo on Sun, 04 Jan 2004 02:28:24 GMT
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Subject: Re: Tweeter - Thank you, Wayne <nt>
Posted by Bill Wassilak on Tue, 06 Jan 2004 21:22:33 GMT
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Looks very good, you said:"The reflex driver is XO at 175 Hz to the mid-horn. Again the integration with the whole seems pretty good, but not as good as with the mid and top horns."I don't know if you can do it on your x-over or not, but try delaying the reflex-driver to match the depth of the mid/hi horns and see what happens. If not you may have to play around with x-over freq. between the reflex and the mid-horn.HTHBill W.

Subject: Good thought, Bill
Posted by Wayne Parham on Wed, 07 Jan 2004 06:36:40 GMT
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Wavelength at the 175Hz crossover frequency is 6.5 feet. That gives a window of about a foot and a half to two feet to stay within 90o to 120o. The crossover will also introduce phase, but the point is that we're talking about critical distances of about a foot or two. If the depth is a foot, I'm

pretty sure Charlie would find he's within a quarter-wavelenth or 90o. If the distance is greater, then there may be reason to do some measurements and/or calculations to find out if the phase difference exceeds 120o. That represents a third-wavelenth, where we start seeing the edge of nulls begin to develop.