Subject: insulation thickness
Posted by replay on Fri, 16 Aug 2002 11:52:38 GMT
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i've been using mini packs of fiberglass pink for speaker lining. the thickness is 2.5". i believe 1.5" is the thickness specified for pi speakers. it's a pain in the butt separating the fiberglass to achieve this thickness. what performances changes are to be expected using a thicker insulation?cheers,george

Subject: in a small enclosure
Posted by Sam P. on Fri, 16 Aug 2002 13:50:25 GMT
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like the 2.5 cu.ft. quasi-4 Pi Pro's, the enclosure tuning freq. went down to 47.6Hz.(too low) when the full thickness R19 was installed(about 3.5inches thick). Splitting that down to 1.75 inches thick brought the Fb to 50.8Hz. Empty box tuning was 53.9Hz., where I wanted to be for alignment per Pi program. Boxplot and my ears say leave the tuning at 50.8 where it is now, 'cause I am not shaving those port tubes down another darn 1/4 inch!!! SamOh yeah, in a large box size like 8 or 12 cu.ft., the difference in thickness of the 'glass will be a much smaller amount compared to the overall enclosure volume...I would imagine the tuning change would be much less noticeable, but the difference in sound absorbtion damping internally may be audible in the midrange. I like the walls adjacent to the woofer to be well 'glassed, seems that less bounce back thru the cone by the rear wave occurs, resulting in a slightly cleaner sounding presentation.

Subject: Re: How do you measure the FB
Posted by bmar on Fri, 16 Aug 2002 18:54:10 GMT
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How can you measure the box frequency after the box is built?to check and make sure your port and insulation did what you plannedBill

Subject: Measure impedance
Posted by Wayne Parham on Fri, 16 Aug 2002 21:34:35 GMT
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To find the box frequency, you measure impedance much the same way you find a woofer's free air resonance. But when the woofer motor is introduced to the (Helmholtz resonator) speaker cabinet, it now forms a system that has two resonant peaks, separated by a drop in impedance. So the box resonant frequency must be determined indirectly, by looking at the twin peaks and the dip between them in the impedance chart.The lower-frequency peak is described as fl and the upper-frequency peak is called fh. The Helmholtz frequency, or box resonance is called fb, free air resonance of the woofer is fs and fo is the frequency of resonance of the woofer mounted in the box, were there no port present. The formulas that describe these relationships are:flfh = fsfbfl2 + fh2 = fo2 + fb2Therefore,fb = (fl2 + fh2 - fo2)0.5fb = flfh / fsBasically, if you know fl, fh and either fs or fo, you can determine fb. And exact impedance values aren't required, only the frequencies fl, fh and either fs or fo

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Subject: you can obtain Fo by blocking the port(s)
Posted by Sam P. on Sat, 17 Aug 2002 12:12:46 GMT
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if you don't want to pull the woofs and measure Fs...yes, you can't even count on that being XX Hz., and 1 Hz. either way will skew your answer for Fb. The "twin peaks" Fl and Fh are easy to determine. Signal generator calibration should be verified at 60Hz., then should be OK across the region you will need the Hz. values for the formulas. This is an important area to "tweak" if you find things are not what you thought. I think the Ql of the enclosure also effects this, and each box is different regarding how "tight" the ultimate construction is. No sim can tell whether or not the horn and woofer flanges are air tight 100%. Sam

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