Subject: Re: Damping material placement
Posted by Wayne Parham on Thu, 01 Sep 2011 18:19:35 GMT
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I hate to say it but with all those mods, all bets are off. However, insulation spanning the cross-section is a good idea in general for large cabinets used into the midrange. It helps damp standing waves at midrange frequencies where insulation lining the walls can't. But the best position to put the cross-section piece and the best positions of woofer and port are best found by extensive modeling and/or empirically by measurements.

The goal is to prevent standing waves from lining up in the box in the 100Hz to 400Hz range - above that and the insulation lining the walls will attenuate it. Below that, the Helmholtz resonance and woofer parameters are setting the curve.

The 100Hz to 400Hz range is tricky to deal with in larger cabinets the size of these, because it's right where the standing waves line up and yet the insulation lining the walls cannot do much. So you have to put the woofer and port in positions that prevent large peaks in that range, and use a section (or two) of insulation spanning the cross-section to damp what's left.

The position of the insulation is also important, because it needs to be where the standing waves are at energy maximums do do the most good. That's why the insulation lining the walls is almost useless at midrange frequencies, it's right at an zero-energy point. At higher frequencies, it's thick enough to span from the zero-energy out to a place where the wave has some energy but at lower frequencies, it's too small acoustically. So to help with that, we must space the damping material out away from the walls.