Subject: Mysteries of Port behavior and design
Posted by Ron brady on Fri, 24 Dec 2004 16:30:54 GMT
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Seasons greeting all.I like to use WinISD Beta to run sims on various drivers. I have successfully used the program to build several designs and have come to trust its accuracy. I have noticed that every simulation ends up with a default vent velocity of .05 to .06 Mach number. It doesn't seem to matter if the driver spl is 80db or 100db. It is safe to assume that the program makes its calculations with the 1watt/1meter values entered in the T/S parameters section for each driver. Changing the spl for the driver doesn't change the vent velocity. I probably never listen to my music at only 1 watt and it is reasonable to assume that the velocity of the vent will increase as the amp is turned up to 4 or 5 watts. This poses a few questions. Is there an optimum vent velocity for my listening level? Is the sound quality of a high velocity vent better or worse or different than a low velocity vent? Is there an optimum group delay? Does a 10ms delay sound better than a 20ms delay? Any thought on the subject would be greatly appreciated.ThanksRon Brady

Subject: Re: Mysteries of Port behavior and design
Posted by Wayne Parham on Fri, 24 Dec 2004 18:33:43 GMT
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Hi Ron,Group delay is a function of frequency and rolloff slope. So if your bass response extends down very low, group delay will be higher than a speaker with higher cutoff. Most would prefer less group delay, but it is important to realize what it is. I'd rather have 30Hz response with its attendent group delay than 80Hz cutoff with less group delay.Airspeed through a loudspeaker port is directly related to radiator displacement and port area. So if you are not running a lot of power, you can use a smaller port. The Helmholtz formula doesn't address the issue of port area and air velocity, so it doesn't take into account cases where the port becomes excessively restictive. But unless you're considering very small ports, I wouldn't be concerned with the low power levels you're talking about. This is just a seat of the pants estimate, but I don't think you would have problems with any port size larger than 1/2" if you're only running 1 watt. It's easy enough to check and confirm. There just isn't enough power to generate displacements that would cause you problems.Wayne

Subject: Re: Mysteries of Port behavior and design
Posted by roncla on Mon, 03 Jan 2005 15:31:19 GMT
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Or just have a larger port size and go aperiodic.I find Ap ports easier to tune(provided you leave access to the insides) and provide a very tamed impedance curve.ron