Subject: Alternatives to Martin King's spreadsheets
Posted by CRISTIAN M on Wed, 16 Jul 2014 04:45:48 GMT
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Hello all,

Are there alternatives to Martin King's spreadsheets to evaluate port / driver location?

I've been dealing with a software called "bassbox" which is very useful, but it doesn't provide clues to minimize the effect of standing waves.

In regard to the frequency response of a speaker, when people mention to "tune the box to certain low frequency" (say 40hz), does it refer to Fs or Fb?

Thanks!

Subject: Re: Alternatives to Martin King's spreadsheets
Posted by Wayne Parham on Wed, 16 Jul 2014 16:22:08 GMT
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When you tune a box to a certain frequency, you're setting Helmholtz (cavity) resonance using box and port size. In T/S simulations, this is known as fb.

resonance. In truth, both mechanisms are always in play anyway.

If the box is small, then standing waves don't develop at low frequency, and the stuffing inside damps them. Larger boxes allow standing waves to develop at low frequencies, so both cavity resonance and pipe modes potentially occur low enough to affect response.

That's why modeing should include both Helmholtz and standing wave resonance, especially if sound is presented to the box at frequencies above a quarter-wave of any box dimension.

Subject: Re: Alternatives to Martin King's spreadsheets
Posted by CRISTIAN M on Fri, 18 Jul 2014 04:23:24 GMT
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I think I got your point, but then, how can I calculate those parameters if I don't have Martin King's spreadsheet? Are there alternatives for that? online calculators or commercial software?

Subject: Re: Alternatives to Martin King's spreadsheets
Posted by Wayne Parham on Fri, 18 Jul 2014 18:27:43 GMT
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One thing you can do - and that makes the most sense to me - is to use one of the standard T/S modeling programs to get an idea what various alignments will do. Basically, just check the response at different box sizes. You'll see the larger the box, the deeper the response, up to a point. And you'll see how the port tuning can make it overdamped, underdamped or critically damped. I personally like to shoot for a little overdamped, because most every shift causes the alignment to reduce damping and head towards peaking. Thermal shifts do this, for example.

Once you get an idea of the size box you want, then it's just a matter of putting the driver, port and insulation in positions that mitigate internal standing waves. You can always do it by trial and error, cutting out a cabinet using inexpensive MDF and measuring it. As long as you don't see midrange ripple - it's good. If you do see ripple, move the driver and/or port. Watch closely in the 100-300Hz range. Above that range, the internal insulation will damp the sound very well and prevent ripple. Below that, the box is resonant, and that primary resonance is desirable. But in the 100-300Hz range, we want to make sure internal standing waves don't mess things up.

Subject: Re: Alternatives to Martin King's spreadsheets
Posted by CRISTIAN M on Fri, 18 Jul 2014 19:17:38 GMT
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Thanks so much!
I'll try everything you say and will let you know.
Saludos,
CM
