Subject: What measurements matter to audibility?
Posted by akhilesh on Fri, 16 Dec 2005 20:05:20 GMT
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Very interesting discussion below on the goodness of Voigt pipses versus folded VPs versus Straight MLTL versus back loaded horn. The bottom line question from a listening perspective is: which of these isses are audible? For example, is the superiority of a certain box design over another (while measurable) really audible?Of course, the only way to answer this is through scientific sbjective testing, but there is some work already done in that area (notably by Floyd Toole). It seems that low distortion, flatness of frequency curve and to some degree, a uniform off axis decay are preferable over others. A uniform FR curve is +/- 3 db. So, the question is, as long as a design manages to do these, or comes close, is it worth going the trouble to do the rest? For example, people spend a lot of money on back loaded horns. I prefer to use a simple BR box, but to use subs & supertweeter. If I were using ONLY a BR box, versus a BLH, clearly I wold hear the difference. But with a sub, and a crossover at say 80-90 hz, what difference does it make if I am using a BR or a BLH ? Can I really hear it?I think we should all be cautious about designs that, while they measure better, may not be audibly better. (Of course, this should not prevent us from creating better designs!) Anyway, just my thoughts for the day! See you all the meeting tomorrow at my place!-akhilesh

Subject: Re: What measurements matter to audibility?
Posted by robertG on Mon, 19 Dec 2005 22:53:39 GMT
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Floyd Toole wrote very interesting papers a while back when he was at the CNRC.He also wrote less interesting papers at the head of Harman International R&D!For one, he wrote that any half decent engineer (or hobbyist for that matter) could design a "flat" speaker. That is true. On the other hand, he also noted that flat frequency response did not matter much, unless a broad resonance was present in the system. That is also true. But how come modern-day JBL, Revel and Infinity (all Harman products) were NOT considered true audiophile stuff? In my opinion, the answer is musical coherent contrast, that is the ability for a speaker system to convey a true sense of scale by rendering both infinitely small musical detail and infinitely variable loudness in a phase and time coherent way. Call it dynamics, but coherent dynamics: all drivers equally efficient and able to respond to minute amplifier signal. I guess only full range drivers in a back horn can achieve this.For sure, I'm very partial about fullrange driven horns as I design those. But I also like to design regular BR boxes too. The overall best is horn loaded as the efficiency is very high and thus able to render both detail and loudness.Of course, I also like other types of speakers, but all things being equal, only a horn has the ability to give musical contrast. And THAT cannot be measured as acurately as a FR plot...

Subject: Re: What measurements matter to audibility?

Posted by akhilesh on Tue, 20 Dec 2005 01:46:06 GMT
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I agree with you about that, robert. I like my horns too, because they sound most like live music, in that they convey much more detail than other designs. I have to admit, I have never heard a single driver in a properly set up BLH before, so I am waiting for that. Maybe some day....sigh..I've heard single drivers in Brs, of course, in double BRs, and in MLTL,s but never in a good horn for example a lowther in a medallion, etc). I am curious to hear that...maybe at the next GPAF.....-akhilesh

Subject: Re: What measurements matter to audibility?
Posted by Bob Brines on Tue, 20 Dec 2005 15:17:40 GMT
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First to answer your original question: An FR plot (at least 0,15,30 and 45 degrees off axis) and an impedance plot will give you the information to tweak a speaker. To set up equalization in the listening room, the mic has to be where your head will be.No back-loaded cabinet can improve the dynamics of a driver. Sorry, that's just the way it is. You can do different things with back loading, but the dynamics of the speaker are determined solely by the efficiency of the driver and its available excursion. If you want to increase the dynamics of a driver, that is the effective efficiency, you have to use FRONT loading. I direct you to Wayne's two-way speakers with horn mids -- very efficient, very dynamic, front loaded.What you do with a back-loaded speaker is shape bass output below the point where the driver can radiate directly. The back-loading has no effect on efficiency above a few hundred Hz. In my opinion, A BL will give you the smoothest FR in the bass, a MLTL will go deepest with acceptable smoothness, and BLH will potentially allow you to correct for baffle step acoustically at the expense of bandwidth.High BL, low Qts drivers will tend to have a rising response. I believe that this can be controlled acoustically in a BLH, although I plead innocent of any real knowledge about BLH's. You will have to treat the rising response electrically in BR's/MLTL's. You may have difficulty fitting a low-Q driver into the very small box required, and the F3 may be unacceptably high.The way you stated the problem, cross-over 80-90 HZ, I don't think you will hear a difference between the various back-loading techniques. Go with a BR if your driver is suitable.Bob

Subject: Re: What measurements matter to audibility?
Posted by roncla on Sat, 07 Jan 2006 21:56:11 GMT
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Yep, BLHs are pretty much junk, right Bob? Looking forward to the day we cah have a shoot off and let the public decide.ron

Subject: Re: What measurements matter to audibility?
Posted by roncla on Sat, 07 Jan 2006 22:01:18 GMT
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For a reference as to dynamics and such, a comparasion between a MLTL and a BLH.ronhttp://www.tnt-audio.com/casse/lowtherpm2a_e.htmlIf you find him wrong Bob then please write him and tell him so.