Subject: Large mid-high horns with an exponential flare
Posted by Peter Krojgaard on Sun, 15 May 2005 12:17:34 GMT
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Hi,I am very attracted to the idea of making a large mid-high horn for a BMS 4592 ND in order to cover the frequency range between 300-20,000 Hz with ONE high quality (coax) driver(for home use, not PA).In order to do so I need a horn that:- has a cut-off about one octave below the crossover frequency, that is, about 150 Hz- has a “quick” expansion rate (and hence a big mouth) in order to have as little distortion at the throat as possible (I will happily sacrifice some efficiency for lower distortion:-)Now, if I try to calculate the contour of such a horn using the exponential calculator on the Melhuish website, I get a horn with Length = 98 cm and Mouth size = 4352 cm2However, if I look at well-respected exponential horns (TAD or Bill Martinelli’s) they seem to have a MUCH larger mouth relative to their length compared to the horns I get using the calculater at the Melhuish site.Since, I believe that I really need a large mouth in order to make the horn work from 300-20,000 Hz, I would like to change the “expansion rate” of the horn. I consider a horn about 110 cm long and with a mouth size of 7200 cm2 (120 cm wide [app 4 feet] and 60 cm high [app 2 feet])So, my question is:Can that be done by inserting a "constant" in the exponential contour formula, or..?Any advice is more than welcome! Thanks!
RegardsPeter

Subject: Re: Large mid-high horns with an exponential flare
Posted by Wayne Parham on Sun, 15 May 2005 12:30:34 GMT
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If you can take advantage of room boundaries, you can get away with a much smaller horn.

Subject: JBL has something to say about flare rate
Posted by wunhuanglo on Sun, 15 May 2005 13:06:55 GMT
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For reference.
Rapid flares work best

Subject: Re: Large mid-high horns with an exponential flare
Posted by colinhester on Sun, 15 May 2005 14:20:31 GMT
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I'm very interested in your project. I just bought a pair of 150 Hz Edgar horns (see link), and I've been wondering what to do with them. Please tell us more about what you're planning.....Colin
http://www.soundpractices.com/junk.htm

Subject: Re: Large mid-high horns with an exponential flare
Posted by Wayne Parham on Mon, 16 May 2005 02:41:27 GMT
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Use 'em as a midrange, of course. Put a woofer below 'em and a tweeter on top and you're set.

Subject: Re: Large mid-high horns
Posted by Mike.e on Mon, 16 May 2005 03:46:03 GMT
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Hi peter if you look at a page somewhere linked,you can consider both throat distortion and IMD. Its certainly an idealistic view to have one driver cover the vast majority of the audio range-but in the home situation at lower SPLS its possible im told.In Reply to: horns+air non linearity equation posted by toxicport.e on October 11, 2003 at 04:21:33: Hi Mike, Borwick's book is in fact pretty good. The wonderful chapter on transducer drive mechanisms (by Stanley Kelly) and the even more wonderful chapter on electrostatic loudspeakers (by Peter J. Baxandall) alone are worth many times the price of the book. (My copy is the first edition; the 2nd edition contains only minor additions.) But even good books could sometimes be improved by careful proofreading. The formula you cited has become an "old rule of thumb", but the reason is mainly careless copying, not faulty physics. First, the intensity should be under a square root, as it was in Beranek's book (Equation (9.33), p. 275). However, the multiplier 1.72 (1.73 in Beranek (whether it's 1.72 or 1.73 could be explained by slightly different values having been used for the characteristic impedance of air)) is wrong--it should be 1.22. Apparently, Beranek while manipulating the equations accidentally dropped the the square root of two which correctly appears in the denominator of his Equation (9.31) (1.73/Sqrt(2) = 1.22). Beranek's slightly erroneus equation (9.33) has been copied to countless other places. The correct form is as follows: D2(%) = 1.22*f/fc*Sqrt(It)*10^-2 . This equation appears in slightly different but correct forms in Thuras et al., "Extraneous Frequencies Generated in Air Carrying Intense Sound Waves (JASA, Vol. VI, pp. 173-180 (January, 1935)), and also in Olson (Eq. (7.20), p. 224). It seems that the air overload phenomenon was first theoretically investigated by B. Riemann (1860) and Y. Rocard (1933). If one of the more serious enthusiasts on here (Dennis? Steve? Bruce? anyone?) happens to have copies of the papers by these early investigators, I would be very interested in getting a copy. Trad
Link

Subject: Re: Large mid-high horns with an exponential flare
Posted by colinhester on Mon, 16 May 2005 03:49:31 GMT
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How easily would this integrate into a Pi 6 or 7 system? Could I use the Alpha 10 right in the Edgar horn? I tell you, after hearing Ron's high-efficiency 2-way, there is no going back.....Colin

Subject: Re: Large mid-high horns with an exponential flare
Posted by Wayne Parham on Mon, 16 May 2005 04:07:19 GMT
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Sure, that sounds like a good plan. I don't know what kind of response you'll get from that midhorn up high, but I feel confident that if it's placed in corners, it will do well down to a ~200Hz crossover point. That makes the lower crossover point easy, because wavelengths are long. I'm not sure about the upper response though. You might write to Bruce and ask him for measurements with various drivers. Then again, even with that information, the upper crossover point is sometimes kind of tricky. It isn't as forgiving as the DI-matched two-ways you saw at Ron's. If you want, ship 'em to me and I'll measure them and let you know what options I find.

Subject: WOW, Taco Bell does large mid-high horns!?!
Posted by colinhester on Mon, 16 May 2005 04:07:25 GMT
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Can't link to AA from here.....Colin

Subject: Re: Large mid-high horns with an exponential flare
Posted by colinhester on Mon, 16 May 2005 04:15:19 GMT
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That's a nice offer; one I will take you up on in the future. The cool thing about these horns is that Dr. Edgar signed each, so I suspect he has a pretty good idea which driver is best suited for these. Right now I think Ron is going to help me get a pair of Altec A7s up and running. This should keep me busy for a little while, but I must get a pair of Pi's. I have put this off too long. Oh yeah, as soon as I get that done I've got to jump back on the Group Build and get an amp done. Shit, then there's the basement to finish, complete with dedicated music room.....Colin

Subject: Re: Large mid-high horns with an exponential flare
Posted by Wayne Parham on Mon, 16 May 2005 04:18:03 GMT
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Yep, Edgar signs all the horns he sells. I suspect he's measured a handful of drivers, so he'll be able to tell you about them. Seems like he does a lot with older EV's and JBL's, but I'm not sure what current production drivers he's used with them. Just have to ask and see.

Subject: Re: WOW, Taco Bell does large mid-high horns!?!
Posted by Wayne Parham on Mon, 16 May 2005 04:25:16 GMT
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Audio Asylum is configured to redirect links coming from AudioRoundTable.com over to Taco Bell. To view the post, you'll have to copy-and-paste or type the URL into the address bar on the browser.

Subject: Re: Large mid-high horns with an exponential flare
Posted by Peter Krojgaard on Mon, 16 May 2005 06:22:46 GMT
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Hi colinhester,I have large, straight bass horns that works up about 300 Hz. These should accompany the mid-high horn.Although your Edgar horn has a 150 flare rate like the one I am after, your horn can only be used with a cone driver due to it's throat size. I am sure it will sound great as a mid horn:-)Good luck with it!RegardsPeter

Subject: Thanks to all of you for your responses! (nt)
Posted by Peter Krojgaard on Mon, 16 May 2005 06:24:14 GMT
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RegardsPeter

Subject: Re: Large mid-high horns with an exponential flare
Posted by Manualblock on Mon, 16 May 2005 13:42:06 GMT
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We do it all then we die. So Colin; exactly how many huge speakers will you have to get past your wife into the house?The Kids could always use them to play in.See Honey; they're playhouses. With sound systems in 'em.

Subject: Re: Large mid-high horns with an exponential flare
Posted by colinhester on Mon, 16 May 2005 14:20:47 GMT
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At 50% capacity (this is about what Ron has) and assuming each pair of cabs takes up 20 sq. feet, I could easily fit about 1400 pair. However, two pairs is about my wife's limit. You're right. This would make a really fun play house for the kids; however, McDonald's has a nice playland right down the street, and it would be cheaper to just buy the store.....Colin

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Subject: Re: WOW, Taco Bell does large mid-high horns!?!
Posted by GM on Mon, 16 May 2005 14:29:43 GMT
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Greets!Really! Oh well, at least you can copy/paste the link to get there.GM

Subject: Re: Large mid-high horns with an exponential flare
Posted by Manualblock on Mon, 16 May 2005 16:13:32 GMT
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If my wife saw those coming in the door; I'd be listening with her lawyer.

Subject: Re: Large mid-high horns with an exponential flare
Posted by Wayne Parham on Tue, 17 May 2005 00:28:00 GMT
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Subject: Its a pity
Posted by Mike.e on Tue, 17 May 2005 20:49:43 GMT
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That a place with such knowledge tidbits are buried so deeply under lots of stuff.Equal potential for good and bad - More power,more potential.

Subject: It's a choice
Posted by Wayne Parham on Wed, 18 May 2005 11:10:38 GMT
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Sure, there is equal potential for good and bad in all aspects of life. All people have choices.ART was formed with the idea of embracing the good that could come from discussion forums like these, while reducing or eliminating the bad. While not everyone agrees on everything, everyone agrees not to stoop to personal attacks or they don't post here. You might see a disagreement, but you won't have to endure people calling your mother a whore and stuff like that.What you'll get on ART is a place to exchange ideas that recognizes and appreciates your contributions. You'll be able to exchange ideas about audio with other enthusiasts, both professonal and non-professional alike. You can obtain support from companies through their sponsored forums. You're at a website that won't allow others to use it as a way to stalk you. You won't have to endure personal attacks. You won't get filtered information because of selective "moderation." You won't see favoritism, where some people are allowed to do things that you can't. You won't see commercial or self-promotional posts from a select few, while others are refused. In short, what you'll get is a fair and ethical place to discuss audio. The rest is up to you.

Subject: Re: It's a choice
Posted by Mike.e on Thu, 19 May 2005 02:19:15 GMT
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And thats why I, and many others enjoy it here.