Subject: Relationship Between X Max And Efficiency Questions
Posted by Ka7niq on Sat, 09 Jun 2007 05:27:46 GMT
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I built some subwoofers, each using an 85 db efficient 15 inch driver capable of 28 mm X Max.They are in a 9.5 cu ft sealed box, and 3 db down at 22 hz w/o room gain/They are corner mounted in seperate enclosures.I have some Dayton 15 inch drivers with 92 DB efficiency, but only 8.5 mm X Max.I could use em in this box sealed, 3 db would be 32 hz, OR ported they will go right down to 20 hz with 2 - 4" ports 6" longBox tuning will be 20.49 hzThe current 85 db woofers draw too much power, and make my lights dim as my big amps struggle to feed the power hungry bastards.They do rattle the room, but do not play loud enough for the bass impact I want.What in your opinion will I gain, or lose by putting the Dayton drivers in the boxes.The Daytons are 7 db more efficient, and will play as low IF ported.But the Dayons X Max is 8.5 mm compared to 28 mm in the current drivers.Comments ??

Subject: Re: Relationship Between X Max And Efficiency Questions
Posted by Bob Brines on Sat, 09 Jun 2007 13:11:08 GMT
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First, about your expectation:Your current subs rattle the room, but do not provide enough "impact". This is because "impact" or "slam" is not in the sub-bass, it is up around 80Hz, and your subs may well be crossed out by then. Upping the output of the low bass will not increase "slam", but will give you a much better potential to do structural damage to your house. You need to play with cross-over points and levels of your various drivers. THEN consider changing out your subs.Acoustical power output doubles with every 3dB of efficiency. Excursion goes up with the square root of the power increase. Perceived volume doubles every 10dB. Do your own math, but it looks to me that the difference in perceived volume of the two drivers is of little consequence.I suspect that you did your modeled the ported box with a max flat model. This is a guarantee that you will have boomy bass. You WILL get room lift, and you need to roll off the bottom to match the room lift to get flat in-room. Actually, a sealed sub with F3 around 30Hz is usually a pretty good fit with room lift unless your room is very large. Look at the F10 point, which is a good representation of the in-room F3. I'll bet that the Dayton sealed and ported models cross at near the F10 point. I do ported and quarter-wave cabinets myself, and I try to get EBS type roll-offs that start as high as 100Hz and round off the knee at cut-off.Finally, given efficiency or brute force, always choose efficiency. This will give you more headroom throughout the signal chain. IMO, anyway.OK, there's some comments.Bob

Subject: Re: Relationship Between X Max And Efficiency Questions
Posted by Ka7niq on Sat, 09 Jun 2007 16:54:38 GMT
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Thank You Bob !I have heard of your company before.My friend from the Internet Ozzy, who hangs over at Audio Asylum I THINK had your speakers once ?He is like me, NEVER "Happy", LOLI have the Dayton driver in ONE of the subs.The Dayton driver is a 15" QTS is .44 VAS is 9.70 and 20 hz free air with 92 DB 1 watt efficiency.Compared to the long throw TC Sounds 85 db efficiency 15" driver, here is what I hear.Bass QUALITY is MUCH better, it plays louder with more mid bass impact, but does not rattle the room as much.Nor does it shake the house as much here in the back room.The other driver has a qts of .539 VAS of 12.641 cu ft and 16.2 free air with 28 mm X MaxThe Dayton driver in a 9 cu ft box shows a q of around .622The TC Sounds LMS 4000 15" driver has a final Q of .887 in this 9 cu ft box.I have shut off the main speakers, put the CD player on repeat, and have a bass CD breaking in the Dayton as we speak.Now Bob, The Dayton driver can also be ported in this box.I found an alignment for it with 1.2 db pass band dip or peak.In a 9 cu ft box, with 2 4" vents 6" long, it will go down flat to 20 hz!Right now Bob, I love the bass quality, and just want a bit louder low bass, and I will be "happy" .... for awhile ..... LOLThink I should port the box ?If I do, will I be able to keep the excellent mid bass I am getting ?Thank you very much for helping me, with nothing "in it" for you.Guys like you,, Wayne Parham, Duke, Bill Fitzmaurice, Tom Danley, Jim Griffin, and any others I neglected to mention are a great asset to the hobby!

Subject: Re: Relationship Between X Max And Efficiency Questions
Posted by Wayne Parham on Sat, 09 Jun 2007 20:23:27 GMT
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I agree with Bob about room lift and the desired response curve of the box in free air. The desired free air response should be the conjugate of room gain. That generally suggests an overdamped or EBS alignment when used indoors, particularly if corner loaded.About excursion: As Bob said, excursion rises rapidly as frequency goes down. Because of this, a driver is almost always limited mechanically at subwoofer frequencies. A driver is usually thermal limited at midbass frequencies up through the audio band. But at deep bass frequencies, the limit is excursion. For home hifi, even power hungry metalheads are usually satisfied with the SPL of high-efficiency woofers without pushing them past their limits. Most just don't need the SPL that would drive them to over-excursion. But you might crave it. If so, excursion will be the limiting factor for a high-efficiency woofer at very low frequencies. That's an application where you might choose a woofer with higher excursion. The decision point should be the limits: What SPL is required at what frequency, and what it will take to do that.

Subject: Re: Relationship Between X Max And Efficiency Questions
Posted by Ka7niq on Sat, 09 Jun 2007 20:39:02 GMT
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Thanks Wayne!If it were JUST me, I am sure I could be heppy with what the Metal heads are

happy with.As IF Metal Heads are EVER happy, LOLMaybe if they are drunk or high ?Hey just kidding, and I DO like Metallica and Judas Priest, etc, etc, as well as "audiophile approved" stuff.But, I got kids who listen to RAP, and they want woofers to "hit".

Subject: Re: Relationship Between X Max And Efficiency Questions
Posted by Bob Brines on Sun, 10 Jun 2007 10:59:26 GMT
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I sold Ozzy a pair of FTA-2000's. He loved everything about them -- except they are short on dynamics. He just couldn't make them loud enough. Oh, well. He did sell them for ~75% of the purchase price, which pleased ME to no end!Never,ever build a sub with a Qtc higher than 0.7, and if you can stand the size, go for 0.5. The TC's have a peaky response that is overloading the room but not providing the upper bass needed for "slam". The Dayton's are providing a much flatter response and play louder where you need it.You could port the Dayton's, but if you are not careful, you will wind up with the same boomy response as the TC's. A better bet would be to reduce the volume of the boxes until you get to a Qtc no higher than 0.7 -- just throw some junk in -- wood blocks, bricks, Styrofoam. Avoid the urge to get a ported max flat alignment. Something that you need to remember is that efficiency equates to large box size. If you can stand 9ft^3 boxes, maybe you can stand twice that. Use two drivers a side. Also, have you considered manifold mounted IB's? Now THAT will give you some REAL bass!Bob

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Subject: Re: Relationship Between X Max And Efficiency Questions
Posted by Ka7niq on Sun, 10 Jun 2007 13:53:46 GMT
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The Daytons WERE working fine, but I might have fried em, LOLNo big deasl, they are cheap, and if I did fry em, I now know their limits.I was hammering them with a bass CD, TRYING to hasten break in.Hey, another question ?I have some ported small monitors, made for near wall placement.hey have the port on the front.They are a small 8 inch 2 way.I have em in another system on stands, out 3 feet from back wall.They sound a BIT thin away from the rear wall, but image and look better.Could I simply shorten the port tube a bit to "warm em up" compansate for the away from wall placement ?I am using them with a subwoofer, but they sound overdamped, like someone did an EBS tuning intentionally so they sounded right when against wall.

Subject: Re: Relationship Between X Max And Efficiency Questions
Posted by LAL on Mon, 11 Jun 2007 14:50:04 GMT
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I believe TC Sounds recommends a 6 cubic foot box for sealed sub for that driver rather than a 9 cubic foot box. I have the 12" LMS in a 3 cubic foot sealed enclosure and it strikes me as the cleanest, lowest distortion sub of any I have built or owned(Adire Rava, Tumult, Bully,GR Research)

Subject: Re: Relationship Between X Max And Efficiency Questions
Posted by Ka7niq on Mon, 11 Jun 2007 18:43:03 GMT
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Thilo said it would be OK in 9 cu ft box, even better!What Thilo did NOT know is I corner mounted them!The boxes are designed to only go in the corners.The LMS 4000 has a pretty high QTS, OK for middle of the wall subs, but in the corner getting too much room gain.Plus, they are way too inefficient for my tastes.They will shake the room, but dim my lights doing it.Most of my main speakers are too high in efficiency for them to keep up!
