Subject: Subwoofer project
Posted by Wayne Parham on Thu, 25 Mar 2004 23:32:05 GMT
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Chris Rose contacted me this week to say that the engineers are working on the subwoofer project. The requirements are that it have 2nd harmonic distortion components that are reduced at least 10dB from their other subwoofers. This will be their first subwoofer to use a flux stabilization ring, and the goal is to have 2nd harmonic less than -45dB between 50Hz and 100Hz, baffle mounted with 40 watts RMS input. The specified electro-mechanical parameters are shown below. Now we've just got to fund this thing and give it a name.The proposed driver is suitable for use in bass-reflex subwoofer cabinets between 2ft3 and 6ft3, tuned to 22Hz. It is also perfect for use in basshorns, and is an ideal replacement for the LABhorn. It is designed to have the same electro-mechanical specs as the LAB12 and be a high-fidelity alternative. If you'd like to see how and why this woofer is improved by the use of a flux stabilization ring, see the post called "Magnet structures".This project just sort of fell into my lap, and it is moving very rapidly. Dan Rilo asked for a subwoofer with a flux stabilization ring in the "massive subwoofer" thread on the ProSpeakers forum. It occured to me that there aren't many really great subwoofers made these days, and there seems to be a hole in the market. So I thought there's be no harm to ask Eminence about it. They are willing to build this device, but only if there is a commitment for 100 units.Right now, Chris has the Eminence engineering department researching the issue to make sure it is possible. If so, they will provide a quote for tooling and for production. We will have to pay for tooling in full, and half down on purchase of the first 100 speakers. We will be given 4 evaluation units, which are already tenatively promised out to Brad Litz. At that time, I'll post the prices and start taking orders. If we have enough interest to generate 100 down payments, I'll enter into an agreement with Eminence to get them started on production.We'll need everyone that is looking for a subwoofer in the $200 range to step up to the plate on this one. I've already received E-Mail requests for about 150 units, but many of these orders are tenative. That's not good enough, in order to make this a reality we need commitments. The first 100 drivers ordered will be sold at wholesale cost in order to fund this project, but we'll need prepayment at the time of your order.We don't have prices yet, so we don't need your money now. But we will have this information very shortly and will be taking orders. To get the wholesale cost deal, you'll need to be in on the initial 100 speakers ordered.Requirements - Preliminary Specifications:Nominal Basket DiameterImpedancePower RatingResonanceSensitivityMagnet WeightVoice Coil DiameterOverall DiameterBaffle Hole DiameterFront Sealing GasketRear Sealing GasketMounting Holes DiameterMounting Holes B.C.D.DepthResonant Frequency (fs)Impedance (Re)Coil Inductance (Le)Electromagnetic Q (Qes)Mechanical Q (Qms)Total Q (Qts)Compliance Equivalent Volume (Vas)Mechanical Compliance of Suspension (Cms)BL Product (BL)Diaphragm Mass inc. Airload (Mms)Equiv. Resistance of Mechanical Suspension Loss (Rms)Efficiency Bandwidth Product (EBP)Voice Coil Overhang (Xmax)Surface Area of Cone (Sd)Maximum Mechanical Limit (Xmech)12", 304.8mm6 ohms400Wrms, 800Wpeak22Hz87.4160 oz.2.5", 63.5mm12.32", 312.8mm10.98, 278.9mmyesyes0.26", 6.6mm11.77, 298.9mm6.44", 163.6mm22Hz4.29 ohms1.48mH0.3913.320.384.42ft3, 125.22 liters0.35mm/N15.0 T-M146 grams1.54N*sec/M5713mm506.7cm244mm

Subject: Re: Subwoofer project
Posted by djstan on Fri, 26 Mar 2004 03:27:08 GMT
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I would be interested in your sub project. Question? Assuming it is somewhat similar to the Labhorn, is this sub:1) suitable for DJ sound systems2) what would be the estimated Maximum SPL and efficiency3) would it be a suitable match for the PI Theatre or Professional series

Subject: Re: Subwoofer project
Posted by Mike.e on Fri, 26 Mar 2004 07:11:00 GMT
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1) yes2) 135dbA levels , ~105db average efficiency(depends on freq)www.prosoundweb.com/lsphttp://camphuisen.com
labhorn

Subject: Re: Subwoofer project
Posted by Wayne Parham on Fri, 26 Mar 2004 13:03:58 GMT
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The device is a subwoofer that can be used in a 2ft3 to 6ft3 ported cabinet or in a basshorn such as the LABhorn. This subwoofer is a high-fidelity option to the LAB12. It is being designed by Eminence who makes the LAB12, and it will be built by Eminence. It is essentially a better quality high-fidelity version of the LAB12 woofer.The requirements for the device are that it have the same electro-mechanical properties as the LAB12 but at least -10dB less distortion through the use of a flux stabilization ring. Since power capacity is the same, you can use it for pro sound. You can also use it for home or car applications. It's just a higher quality, higher fidelity woofer than the LAB12, and the price is not going to be much more at all.
Benefits gained by using a flux stabilization ring

Subject: Re: Subwoofer project
Posted by Adrian Mack on Fri, 26 Mar 2004 23:26:39 GMT
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Thanks for that link! I like the info about power compression, man, I always knew it was a big deal. Remember we talked about it on another forum and some people said that on music and in a home environment, power compression is a useless number? :P I knew they wern't right.... Tom

Danley on Power CompressionI wonder what air cooling ventillation and heatsinks will be like in the MAG12... it would need to be of the same level as pro sound drivers are if one is to avoid the greatly non linear affects of power compression. Wayne, do you know anything about this about the MAG12?

Subject: Re: Subwoofer project
Posted by Wayne Parham on Sat, 27 Mar 2004 00:18:45 GMT
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The requirements of the new subwoofer state that it must be equivalent to the LAB12 in all areas except distortion, where it must better the LAB12 by at least -10dB. Matching spec requirements include power handling, compression, efficiency and maximum SPL. If it does not meet these goals, then it has not passed requirements and will be rejected.These are realistic goals though, and I would be surprised if it didn't do this and more. I'm hoping for more like 15dB reduction in 2HD. The next coolest thing is cost. Chris said cost would potentially be low enough he was concerned that the new woofer's pricing might make it overly competitive with the LAB12. That translates to -15dB improvement in distortion for almost no additional cost.

Subject: Re: Subwoofer project update
Posted by Wayne Parham on Tue, 30 Mar 2004 11:21:23 GMT
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Subwoofer project update

Subject: April progress update
Posted by Wayne Parham on Sat, 17 Apr 2004 15:40:02 GMT
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April progress update
