Subject: The ultimate array
Posted by JPH on Fri, 16 May 2008 00:10:30 GMT
View Forum Message <> Reply to Message

What would the ultimate cost no object line array look like and consist of ?it would be interresting to hear the opinions of the professionals and amateurs .

Subject: Re: The ultimate array
Posted by Marlboro on Fri, 16 May 2008 04:25:43 GMT
View Forum Message <> Reply to Message

I'd have to radically change the way my system is configured, and then I wouldn't have the sound that I designed it for.It was designed to use 3 inch midrange speakers in separate PVC tubes, and to use dome tweeters. Currently I have found no 3 inch mids that have better specs than the SAMMI copper voice coil 3 mm Xmax speakers at any price. There is no other dome tweeter that can be configured to be as close c-to-c as the Dayton Neo (and I'm not going to ribbons since I don't like their sound, nor can the lowered distortion on eight ribbons match that of 30 domes). While I could upgrade the amplification hardware and go from an analog electronic crossover to a digital one, I'm not sure that this would be significant enough to be heard.So.... while I look for items to upgrade, I've not found any yet---at any price.Marlboro

Subject: Re: The ultimate array
Posted by Rick Craig on Fri, 16 May 2008 06:33:22 GMT
View Forum Message <> Reply to Message

I would make it with the Fountek Pro5i ribbon tweeters and use a DEQX for the crossover function. The woofers could be a symmetrical layout of smaller drivers or a single line of 5"-7" woofers with outboard subwoofers.

Subject: Re: The ultimate array
Posted by brucemck2 on Fri, 16 May 2008 17:23:17 GMT
View Forum Message <> Reply to Message

I'm taking a run at implementing the question:Fountek ribbons, Accuton 5" midranges (in sealed cabinets), outboard sealed dual 15" subs, all crossed via heavily modded DEQX and powered via custom built 300b SETsRick built me the arrays, Mark Seaton provided the subs, Empirical Audio provided the DEQX, and Alex at 3-d Audio provided the amps. It's far from dialed in, but the

results are already way beyond my expectations.

Subject: Re: The ultimate array
Posted by Marlboro on Fri, 16 May 2008 17:40:38 GMT
View Forum Message <> Reply to Message

Bruce,How many RMS Watts are you using for each sub line(tweeters, mids, and dual woofers)

Subject: Re: The ultimate array
Posted by brucemck2 on Fri, 16 May 2008 17:55:39 GMT
View Forum Message <> Reply to Message

Accutons and Founteks each have around 12w each. Active crossovers with pretty steep slopes and transformers matched to the drivers helps minimize power requirements.Seatons are self powered with 1000+ watts. (Submersives)

Subject: Re: The ultimate array
Posted by Marlboro on Fri, 16 May 2008 19:12:58 GMT
View Forum Message <> Reply to Message

12 watts for each accuton or or each Fountek, or 12 watts for the whole group of them per side? I'm assuming that you mean 12 watts for each individual of each line. How many accutons and how many founteks per side?Marlboro

---

Subject: Re: The ultimate array
Posted by brucemck2 on Fri, 16 May 2008 19:27:29 GMT
View Forum Message <> Reply to Message

8 Founteks per side. Each Fountek side has a dedicated 12w monoblock.8 Accutons per side. Each Accuton side has a dedicated 12w monoblock.Four monoblocks in all.

Subject: Re: The ultimate array
Posted by JPH on Fri, 16 May 2008 19:28:51 GMT
View Forum Message <> Reply to Message

500 RMS for each sub, 200x2 for mid and 200x2 for tweeters

Subject: Re: The ultimate array
Posted by JPH on Fri, 16 May 2008 19:33:00 GMT
View Forum Message <> Reply to Message

wich means that your actual design is for you the ultimate array possible ?JP

Subject: Thanks
Posted by Marlboro on Fri, 16 May 2008 19:36:42 GMT
View Forum Message <> Reply to Message

Thanks. I looked it up, as I wasn't familiar with the amp you quoted, and I'm not into using such small watt powered tube amps.

Subject: Re: The ultimate array
Posted by Marlboro on Fri, 16 May 2008 21:04:02 GMT
View Forum Message <> Reply to Message

At the moment..... and based on the current design requirements.PE is supposed to come out with a very low distortion RS series 3 inch midrange with high Xmax which might raise the bar on my current design, and then I could go with them. I've not seen a dome tweeter of higher quality that can be made with a center to center distance of closer than about .8 inch that fits the parameters of the current design. Using thirty of them per side drops the distortion down to pretty low levels. Using thirty tends to flatten the FR over an average.If I changed the design to a larger midrange then I could buy a more expensive one, but then that would require that I go to B&G Ribbons which are not part of my design since I prefer the tweeter sound of domes, and to get a similar low distortion I would need to have a double row of the ribbon tweeters which I'm not sure is possible. I would have to lower the crossover, and the domes would no longer work. I would need larger diameter tubes or would have to go with Sono-tubes. I could upgrade the amplification equipment, but I would only do an ultimate system if I could hear a difference. I've no evidence that I could. I'm not sure this answers your question. My design was very carefully worked out initially based on very specific parameters which I designed at the beginning. I spent a lot of time

in the design phase before I even began building.For me, the current design is at the ultimate level. Another design might be better, but I've not looked into modifying the design since I continue the be extremely happy with the sound I have now.I'm one of those people who when I reach the 96% level, I don't spend all my time trying to inch up to the 96.5% level, but just spend my time buying music and listening to it.Marlboro

---

Subject: Re: Thanks
Posted by brucemck2 on Fri, 16 May 2008 22:56:28 GMT
View Forum Message <> Reply to Message

Prior to this foray I wasn't into smaller amps either: my prior amps were VTL 750s.With the inherent efficiency of the arrays and the amps properly matched, 12w is more than enough even for blasting "Tusk" at concert levels.

Subject: Re: The ultimate array-- adding a woofer array to the package
Posted by Marlboro on Sat, 17 May 2008 20:11:54 GMT
View Forum Message <> Reply to Message

I didin;t mention it, but the only upgrade I would make now would be to add 4 more Goldsound(not to be confused with Goldwood) ($139 ea) 12 inch 15mm xmax woofers, which adds a woofer array to the package.Not that I need more bass, just that the bass would have the same level of low distortion that the rest of the system has.Marlboro

---

Subject: Re: The ultimate array
Posted by Tom R. on Sun, 18 May 2008 02:46:23 GMT
View Forum Message <> Reply to Message

Marlboro, Do you have any idea how low a vertical array of 30 NEO’s can be crossed over?Say at 24 dB, and 48 dB per octave?Tom R.

Subject: Re: The ultimate array
Posted by Marlboro on Sun, 18 May 2008 05:12:30 GMT
View Forum Message <> Reply to Message

I cross mine at 24 db/octave electronic at about 2500. I've tried as low as 2300 but didn't like it. At 48db/ octave you might be able to go 1900, but I would go lower than 2200 myself.Marlboro

---

Subject: Re: The ultimate array
Posted by FredT on Sun, 18 May 2008 15:42:30 GMT
View Forum Message <> Reply to Message

I believe the essential characteristics would be: 1)Premium quality drivers throughout, 2)Drivers in each array (W,M,T) are highly compatible with the drivers in complimentary driver arrays 3)Three-way design with a sealed midwoofer array, 4)Active digital X-over & signal processing with separate amplification for each driver array. Here's my rationale:1) You can build a very good sounding line array using mid priced drivers, but those drivers individually are going to have some compromises that can't be completely overcome by using them in an array. The Dayton Classic midwoofers, for example, are very good "bang for the buck" drivers, but individually or in an array they are going to have more midrange distortion than similar size Aurisound ceramic cone or Seas Magnesium cone drivers.2) One mistake I sometimes see in amateur speakers is the use of incompatible drivers. One of my rich Houston Audio Society friends recently asked me what I thought about building an array using an array of twelve very expensive 8" woofers alongside an array of Raven tweeters. Great drivers, but the Raven tweeters he was thinking about using won't play low enough to cross to the 8" woofers, even with a high slope electronic crossover. I suggested that (if he had that much money to spend on a line array) he should contact a qualified designer and commission that person to design a cost-no-object array for him from the ground up.3) A three-way design with a sealed midwoofer array is a requirement for the ultimate array because a two-way design, even if it is ported, won't play low enough and still have state-of-the-art midrange. With a single midwoofer or an array of midwoofers there's a tradeoff between midrange clarity and bass extension. You can build a good sounding affordable two way array that will play into the low 40's, but the "ultimate array" would have separate subwoofers. And if you're designing the midwoofer array for use with a subwoofer you might as well make it a sealed design for better integration. For a more complete explanation of the bass extension limitations of an affordable two way design see Jim Salk's Audio Circle thread about "the $2,000 challenge"http://www.audiocircle.com/circles/index.php?topic=52247.04)Digital signal processing and crossover are a good choice because even the high quaity drivers you are using have some compromises at their frequency extremes, and DSP provides more control over those anomalies plus the elimination of the signal degradation and phase issues that are inherent in a passive crossover design. Separate amplification is a requirement of an active crossover, so that's a non-issue.That's about it. You could use a four-way design, especially if you wanted to make the speakers as expensive as possible, but I doubt the added complexity of a four way would improve the sound quality.

Subject: Re: The ultimate array
Posted by Marlboro on Sun, 18 May 2008 18:39:39 GMT
View Forum Message <> Reply to Message

In my opinion, your problem is not how far down the neo's will go, but how far up your mid-ranges will go.You can't use tweeter domes in an array with mid ranges above 4 inch diameter. The mids won't go high enough and you lose much of your upper midrange. So you them have to use ribbons or planars, and you won't be able to use more than 6 or 8 of them. This will cause you to lose the advantage of very low distortion of a huge line of tweeters.In my opinion, the main reason for not using dome tweeters is that you simply can't use them when you use mids above 4 inch in diameter. Your midrange speakers have to go reliably to at least 2500 hz to get the flexibility you need in design. Everything has to fit together.Marlboro

---

Subject: Buying it or building it yourself?
Posted by Marlboro on Sun, 18 May 2008 19:08:24 GMT
View Forum Message <> Reply to Message

We didn't determine whether one is building this design oneself or buying it from some manufacturer.If you are buying it, then you will pay top of the line prices for everything, and you will have to add on the standard 40% to 60% to even 100% gratuity for the builder/designer/manufacturer.If you are building it yourself, then you can afford to wait until the speakers that you have designed it for come on sale, you can wait until the electronic crossover and amplifiers come up for a good price on ebay, and you can do the whole thing without any gratuity to the manufacturer for his profit. You can do things in the design that would be totally not cost effective for the manufacturer.But if you are building it yourself, you will actually have to study and research everything you can find on the subject, buy books, ask people, and make a full study of how to do the whole thing. You will not get this from any one source, and most of the people who know how to do this are manufacturers, and won't tell a DIYer how to make their product for much cheaper.So you have to decide how much work you are willing to do or how much money you want to pay.MARLBORO

Subject: Re: The ultimate array
Posted by Tom R. on Mon, 19 May 2008 01:16:25 GMT
View Forum Message <> Reply to Message

Understood, My 5-1/4” mid woofers can go as high as 2500 Hz but need steep slopes to remove objectional high frequence content that I do not like. Thanks for the info, I may give to neo a try when I get some extra spending money.Tom R.
