Subject: Interesting New Line Array Design
Posted by AudioFred on Mon, 10 Aug 2009 15:45:25 GMT
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Here's one that uses the new Dayton ND90 3" full range drivers. I know there's a comb effect issue with this kind of array, and that the array needs equalization, but I heard Roger Russel's IDS25's at the 2007 RMAF, and they sounded very good. Not $18K good, but this version will cost more like $1K or less.

http://www.trueaudio.com/array/

Subject: Re: Interesting New Line Array Design
Posted by Eric J on Tue, 11 Aug 2009 11:18:18 GMT
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There is a huge comb effect with those 3.5 inch drivers, and no transition to at least a single high SPL tweeter(thought preferably a line).

When I first hooked up my Three way Tri-amp system, with the 3 inch 3mm xmax Sammi's, it was using only them and not the two 12 inch 15 xmax DVC woofers, or the 60 ND20A tweeters.

I thought the sound was great. I used a 1/3 octace equalizer, and i was impressed. But when I hooked up the tweeters, and the woofers, I discovered the missing sound. I disconnected the equalizer, and haven't used it since.

My recommendation is that at least one very high efficiency tweeter should be used. You will notice the difference immediately.

Subject: Re: Interesting New Line Array Design
Posted by AudioFred on Tue, 11 Aug 2009 15:22:26 GMT
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Eric J wrote on Tue, 11 August 2009 06:18
I thought the sound was great. I used a 1/3 octace equalizer, and i was impressed. But when I hooked up the tweeters, and the woofers, I discovered the missing sound. I disconnected the equalizer, and haven't used it since.

That's the most frequent reaction I've heard about full range driver line arrays. The shortcomings are subtractive, so you don't notice them until you compare to an array with a single line of full range drivers to one with separate lines of woofers and tweeters, and only then do the advantages of having a separate tweeter array become obvious.

Subject: Re: Interesting New Line Array Design
Posted by Eric J on Tue, 11 Aug 2009 19:51:29 GMT
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Its amazing how many people think that they can build a line array like they do when they are building a regular 2-way or 3-way. Huge amount of work.

If it wasn't for Jim Griffin's work in 2003, we'd still all be building them and some getting it and some not, and nobody knowing why.

Eric

Subject: Re: Interesting New Line Array Design
Posted by AudioFred on Wed, 12 Aug 2009 10:52:19 GMT
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The advantages and disadvantages of a budget full-range-driver line array are summarized in the graphs and the designer's conclusions about the Kuze 3201 array here:
http://www.parts-express.com/projectshowcase/indexn.cfm?project=Kuze3201

The examples I've heard at the RMAF, incuding Roger Russell's array and the Audience arrays, sounded very good to me, but they did lack that last bit of "sparkle" you hear with a high quality tweeter.

http://www.roger-russell.com/columns/columns.htm#living

http://www.audience-av.com/loudspeakers/index.php

And here is Russell's explanation of comb filtering in his line arrays, which concludes that it is clearly measurable but it isn't an objectionable quality. His conclusions are consistent with my brief listening experience, but I would need a more extended listening opportunity to be convinced.

http://www.roger-russell.com/columns/combfilter2.htm

Subject: Re: Interesting New Line Array Design
Posted by Eric J on Thu, 13 Aug 2009 04:34:20 GMT
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I think that comb filter distortion pretty much depends on who is listening.

Since Jim Griffen has clearly indicated that human perception drops of dramatically and increasingly from 10-20 khz, and increasingly with age. Depending on how much each individual can actually hear of those high frequencies is dependent on what they mean to each person.

This is what Jim actually said about it:

"Comb lining will dull the highs and will be most noticeable in the lack of air (dull highs) especially as you move off axis. Essentially, the high frequencies are rolled off as the ensemble of the tweeter outputs don't add up but start to cancel. Now the ear is less sensitive in the upper octave (10-20 kHz) you may not observe the full impact of this effect. But if you compare to an array that is properly designed, then there is no comparison as the proper array will yield a more airy (and accurate) sound."

Jim Griffin on PE technical discussion board : 11-21-06

I've read Russell's response, and in fact have a pdf saved copy in my files. All I can say is that if you take a system adjusted for reduced CFD and one without that scriptor and listen to them side by side you will hear a difference. Unfortunately Russel probably can't hear it. He's way older than me and I'm 60.

Eric J.

Subject: Re: Interesting New Line Array Design
Posted by AudioFred on Mon, 28 Sep 2009 20:28:31 GMT
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The design work continues. This line array now has the power of not just 24 three inch radiators but a total of N = 5 x (24 x 4) = 480 radiators. That's for just one line.

Go to the link below and scroll down to "Fun With Mirrors":
http://www.trueaudio.com/array/MCLA_design.htm

Subject: Re: Interesting New Line Array Design
Posted by darkmoebius2 on Tue, 29 Sep 2009 04:14:19 GMT
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That Dayton ND90-8 is one interesting driver!

Looking at his driver tests, it fills a lot of requirements for those looking for a 3" widerange driver. I just wonder how it sounds? Does it get tonality right?

FR test to 3kHz (limit of test methodology)

Groundplane test - 1W (2.83 Vrms), 1 meter outdoors (includes some local reflections)

Merging the two tests

Impedance

Subject: Re: Interesting New Line Array Design
Posted by selahaudio on Tue, 29 Sep 2009 05:19:08 GMT
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darkmoebius2 wrote on Mon, 28 September 2009 23:14That Dayton ND90-8 is one interesting driver!

Looking at his driver tests, it fills a lot of requirements for those looking for a 3" widerange driver. I just wonder how it sounds? Does it get tonality right?

Very good driver!

Subject: Re: Interesting New Line Array Design
Posted by selahaudio on Tue, 29 Sep 2009 05:20:38 GMT
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AudioFred wrote on Mon, 28 September 2009 15:28The design work continues. This line array now has the power of not just 24 three inch radiators but a total of N = 5 x (24 x 4) = 480 radiators. That's for just one line.

Go to the link below and scroll down to "Fun With Mirrors":
http://www.trueaudio.com/array/MCLA_design.htm

Fred,

I know of a system in Austin you should go hear.

Subject: Re: Interesting New Line Array Design
Posted by darkmoebius2 on Tue, 29 Sep 2009 07:13:51 GMT
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selahaudio wrote on Tue, 29 September 2009 00:19Very good driver! Yep, I think I found a good candidate to start with. At least, order a couple to do some of my own FR and listening tests with.

(really low sensitivity, though - 80dB@1kHz/1W)

BTW, I found a post by Zaph on HT Guide forum where he mentions that it looks and tests exactly like the Aura NS3-193-8A(.pdf spec sheeet). And it sure looks like he is right.

Nominal Diameter . . . . . 3 inches (70 mm)
Nominal Impedance (Z) . . . . . 8 Ohms
Sensitivity, 1W/1m (E) . . . . . 80 dB @ 1 kHz
Power Capacity, RMS (Pe) . . . . . 20 W
Power Capacity, Peak . . . . . 80 W
Frequency Range (-10dB) . . . . . Fo - 15 kHz
Minimum Impedance . . . . . 8 ohms
Voice Coil Diameter . . . . . 19.3 mm
Voice Coil Winding Length (h) . . . . . 6.5 mm
Voice Coil Number of Layers (n) 4
Voice Coil Former Material . . . . . Kapton
Voice Coil Wire Composition . . . . . CCAW
Magnetic Material . . . . . Neodymium radial
Stray Flux Shielding . . . . . Inherent
Magnetic Gap Depth (He) . . . . . 12.7 mm
Cone Material . . . . . Aluminum
Surround Material . . . . . Rubber
Polarity, Outward Motion . . . . . Positive voltage on (+) tab
Net Weight . . . . . 216 g
Maximum Excursion . . . . . 19 mm peak to peak

Thiele / Small Parameters

Resonant Frequency (Fo) - Fs . . . . . 80 Hertz
Voice Coil DC Resistance - Re . . . . . 7.6 Ohms
Total Q - Qts 0.67
Mechanical Q - Qms 8.0
Electrical Q - Qes . . . . . 0..73
Equivalent Volume of Air - Vas . . . . . 1.25 L
Radiating Piston Area - Sd . . . . . 31 cm 2
Electrical / Mechanical Parameters
Flux Density x Length - BL . . . . . 4.7 Tesla-meters
Compliance - Cms . . . . . 920 µm/N
Total Mass - Mms . . . . . 4.3 grams
Xmax . . . . . 9.5 mm peak to peak

My question, though, is that with that extremely low sensitivity, will 24 of them in an array be able to move enough air for moderately loud listening before distorting badly? Check out the distortion plot on the spec sheet.

Also, how about finding tweeters/ribbons that won't need a lot of padding down?

Subject: Re: Interesting New Line Array Design
Posted by AudioFred on Tue, 29 Sep 2009 09:40:11 GMT
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[quote title=selahaudio wrote on Tue, 29 September 2009 00:20
Fred,
I know of a system in Austin you should go hear. [/quote]

I'm in Austin at least once a month. This Sat I'll be at the Austin City Limits diy audio meeting.
http://www.diyaudioprojects.com/Forum/viewtopic.php?f=7&t=939

Next Sat I'll be back to hear my favorite Alt Rock group, Low Rent atx (notice the drummer and the lead guitar share my last name).
http://www.myspace.com/lowrentatx

Email or PM me about the owner of the system and I'll invite them to this weekend's audio meet.

Subject: Re: Interesting New Line Array Design
Posted by selahaudio on Tue, 29 Sep 2009 14:32:19 GMT
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He travels quite a bit so I'll see if I can reach him.

Subject: Re: Interesting New Line Array Design
Posted by selahaudio on Tue, 29 Sep 2009 14:38:44 GMT
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darkmoebius2 wrote on Tue, 29 September 2009 02:13selahaudio wrote on Tue, 29 September 2009 00:19Very good driver! Yep, I think I found a good candidate to start with. At least, order a couple to do some of my own FR and listening tests with. (really low sensitivity, though - 80dB@1kHz/1W)

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Nominal Impedance (Z) . . . . . 8 Ohms
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Power Capacity, Peak . . . . . 80 W

Frequency Range (-10dB) . . . . . Fo - 15 kHz
Minimum Impedance . . . . . 8 ohms
Voice Coil Diameter . . . . . 19.3 mm
Voice Coil Winding Length (h) . . . . . 6.5 mm
Voice Coil Number of Layers (n) 4
Voice Coil Former Material . . . . . Kapton
Voice Coil Wire Composition . . . . . CCAW
Magnetic Material . . . . . Neodymium radial
Stray Flux Shielding . . . . . Inherent
Magnetic Gap Depth (He) . . . . . 12.7 mm
Cone Material . . . . . Aluminum
Surround Material . . . . . Rubber
Polarity, Outward Motion . . . . . Positive voltage on (+) tab
Net Weight . . . . . 216 g
Maximum Excursion . . . . . 19 mm peak to peak

Thiele / Small Parameters

Resonant Frequency (Fo) - Fs . . . . . 80 Hertz
Voice Coil DC Resistance - Re . . . . . 7.6 Ohms
Total Q - Qts 0.67
Mechanical Q - Qms 8.0
Electrical Q - Qes . . . . . 0..73
Equivalent Volume of Air - Vas . . . . . 1.25 L
Radiating Piston Area - Sd . . . . . 31 cm 2
Electrical / Mechanical Parameters
Flux Density x Length - BL . . . . . 4.7 Tesla-meters
Compliance - Cms . . . . . 920 µm/N
Total Mass - Mms . . . . . 4.3 grams
Xmax . . . . . 9.5 mm peak to peak

My question, though, is that with that extremely low sensitivity, will 24 of them in an array be able to move enough air for moderately loud listening before distorting badly? Check out the distortion plot on the spec sheet.

Also, how about finding tweeters/ribbons that won't need a lot of padding down?

The gain from 24 of them will give you good sensitivity so don't worry about the 80db spec. I've used the Aura version (they may make these too) and it's exceptionally good.

Subject: Re: Interesting New Line Array Design

Posted by darkmoebius2 on Wed, 30 Sep 2009 00:20:36 GMT
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selahaudio wrote on Tue, 29 September 2009 09:38I've used the Aura version (they may make these too) and it's exceptionally good. This is a great option and has serious extension advantages over the Peerless 830987 3" I was looking at. Scaena uses this driver(modified) in their $60k-80k line arrays.

Electrical Data
Nominal Impedance Zn 8 ohm
Minimum Impedance Zmin 6.4 ohm
Maximum Impedance Zo 50.6 ohm
DC Resistance Re 6.1 ohm
Voice Coil Inductance Le 0.5 mH
TS Parameters
Resonance Frequency fs 103 Hz
Mechanical Q factor QMS 5.9
Electrical Q factor QES 1.12
Total Q factor Qts 0.94
Ratio fs/Qts F 110
Force Factor Bl 2.95 Tm
Mechanical Resistance Rms 0.28 Kg/s
Moving Mass Mms 2.45 g
Suspension Compliance Cms 965.2 mm/N
Effective cone diameter D 6.3 cm
Effective Piston Area sd 31.1 cm^2
Equivalent Volume Vas 1.16 ltrs
Sensitivity 2.83V/1m 83.8 dB
Ratio BL/v Re 1.4

Subject: Re: Interesting New Line Array Design
Posted by selahaudio on Wed, 30 Sep 2009 00:53:16 GMT
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darkmoebius2 wrote on Tue, 29 September 2009 19:20selahaudio wrote on Tue, 29 September 2009 09:38I've used the Aura version (they may make these too) and it's exceptionally good. This is a great option and has serious extension advantages over the Peerless 830987 3" I was looking at. Scaena uses this driver(modified) in their $60k-80k line arrays.

The 830986 is the better choice in the Peerless drivers. That's the one I used with the BG planars. My first choice was the Aura but it wasn't available at that time.

Subject: Re: Interesting New Line Array Design
Posted by AudioFred on Sun, 11 Oct 2009 18:46:19 GMT
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The designer/builder has posted test results:
http://www.trueaudio.com/array/MCLA_array_test_results.htm

Subject: Re: Interesting New Line Array Design
Posted by darkmoebius2 on Sun, 11 Oct 2009 23:07:34 GMT
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Those FR tests look pretty damn good. Of course, that doesn't have a lot to do with how things sound. It'll be interesting to see what his final listening tests reveal.

I wonder what the off-axis performance looks like?

Subject: Re: Interesting New Line Array Design
Posted by Wayne Parham on Mon, 12 Oct 2009 00:41:17 GMT
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I find it refreshing to see unsmoothed response curves posted, in addition to the more common highly smoothed charts. Showing response curves unsmoothed, as well as with 1/6th octave and 1/3rd octave processing is informative. I know a lot of people are used to seeing 1/3rd octave charts so when they see an unprocessed chart, they don't have a basis of comparison. Just about everything looks good with 1/3rd octave smoothing.

Subject: Re: Interesting New Line Array Design
Posted by AudioFred on Mon, 12 Oct 2009 10:16:27 GMT
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Wayne Parham wrote on Sun, 11 October 2009 19:41
I find it refreshing to see unsmoothed response curves posted, in addition to the more common highly smoothed charts.

It is refreshing, and I think I know why we don't see more of it. I believe a speaker manufacturer who publishes unsmoothed curves will see his sales drop like a rock. Very much like a woman who publishes an unretouched photo in a "women seeking men" online ad. Not making a moral

judgement, just pointing out a marketing reality.

Subject: Re: Interesting New Line Array Design
Posted by Marlboro on Mon, 12 Oct 2009 12:20:52 GMT
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Does anyone know the limit of actual descernment for a healthy adult human of maybe 35 years old in +/- db in a frequency response in music?

I mean, is it possibly to actually hear the what no smoothing and 1/3 octave smoothing shows? Maybe the 1/3 octave smoothing is actually more like what we can hear anyway.

Marlboro

Subject: Re: Interesting New Line Array Design
Posted by Jim Griffin on Mon, 12 Oct 2009 13:55:44 GMT
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A few cautions in what we are seeing in John's measurements. You notice that he states that these are his best equalized measurements to date. Likely the EQ accounts for lifting of any bass rolloff, flattening room peaks and dips, raising high end falloff of the response, etc. One can argue that with enough EQ you can make any measurement look near perfect as John has done. What we really need to see are the unequalized performance of the array to understand what is happening and how it really performs. John needs to explain the EQ that he added as well to create near perfect plots. Furthermore, looking at the unequalized raw data will yield a sense of the phase changes between data points.

His data reminds me of what happens when I use my DEQX system. Essentially you have near perfect response with little amplitude, phase, or time errors with that system.

What matters is the sound reproduction that is created with John's arrays and does the EQ'ing create issues of its own because of compression and off-axis phasing?

Subject: Re: Interesting New Line Array Design
Posted by Wayne Parham on Mon, 12 Oct 2009 16:19:52 GMT
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Yes, I agree. Posting response of an equalized speaker indoors makes any comparison to other systems impossible.

About smoothed verses unsmoothed, I think that the overall spectral balance is most important, which does sort of correlate to a 1/3rd smoothed chart. But I also think that subtleties show up in the unsmoothed chart, and those are definitely audible in an A/B comparison. Even without an

A/B comparison, I think a speaker with a lot of ripple often sounds more interesting at first, but becomes less appealing when lived with for a while.

The coloration that's "interesting" often makes some things sound better to the listener, other things sound worse. And every listener is different, so what may sound good to you may not sound good to someone else. To me, the best policy is to be as true to the source as possibe. Sure, it's all about creating the illusion of being there but I think that illusion is usually enhanced when coloration is reduced.

Subject: Re: Interesting New Line Array Design
Posted by AudioFred on Mon, 12 Oct 2009 18:51:08 GMT
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Another factor to consider in interpreting the test data is that the results represent an average of 16 separate meaurements from different distances. As he describes it, "Each measurement below is an average of the Left and Right systems in-room measured response. Each of the Left and Right measured responses consists of an average of 16 unsmoothed responses measured in the listening area over a range from 1 to 3 meters from each array".

I would expect that each individual unsmoothed graph would look ragged, much like the measurements of the other full range driver line array I've seen, the Kuze 3201: http://www.parts-express.com/projectshowcase/kuze3201/kuze3201weqnosmooth.jpg

Nevertheless, it's the sound that matters, and I would expect the Murphy array to sound very much like the other FR-driver arrays I've heard at RMAF - very good, but with some loss of the sparkle one hears with cymbals and other high frequency percussion sounds. One very positive characteristic is that you save lots of money when you don't have to buy sixteen $120 ribbon tweeters, and the bottom line will be how it compares to other under-$1,000 arrays.

Subject: Re: Interesting New Line Array Design
Posted by Wayne Parham on Mon, 12 Oct 2009 19:39:04 GMT
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Yeah, I noticed that too. Measurements taken at different locations and averaged together will tend to smoothe the curve.

This is sort of how the multisub approach works to smoothe the modal region. Where there would be dip from destructive interference between a single sound source and a reflection, adding another sound source placed appropriately fills in the dip. With enough sound sources, the overall sound field through the room is made smoother.

The thing is, when a single speaker is placed in the room, you don't get that effect.

Measurements taken at various locations and averaged together tell you what the sound field would look like if there were multiple loudspeakers in the room. But if multiple loudspeakers aren't used, I'm not sure it is valid to average the measurements as if there were. It provides smoothing from dense interference that that wouldn't actually be there.

Not only does this approach smoothe the effects of room modes (which would then make it closer to an anechoic measurement) but it also smoothes the effects of destructive interference between drivers in the loudspeaker, itself. I think it sort of makes sense to try and remove the effects of the room, but by averaging the charts from multiple locations together, you don't see nulls that may form even when the loudspeaker is in a true anechoic environment. I think it is probably better to measure anechoically to begin with, as a sort of baseline. Indoors measurements might be useful too, but for a different purpose.

Then again, I think the indoors/averaged method is interesting, sort of like what Keith Larson was talking about in the thread called "Comb Filtering Misconceptions". Keith was talking about averaging over time, but averaging using measurements taken at several locations also shows the average power response, sort of an average distribution of energy in the room. It won't show where the lobes and nulls lie, of course, but it will give an idea of the general spectral balance.

Subject: Re: Interesting New Line Array Design
Posted by Rocket on Mon, 19 Oct 2009 15:49:13 GMT
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Please let me save you a lot of heartache. Please.

I built a Russell IDS25 clone - 'used the HiVi B3N drivers and a Behringer EQ. It was cool for a while by virtue of "hey cool, I built an array and it sounds impressive." And it was... for a little while.

But look, you are far better off with a 2 way array.

After A/B comparos to my little Usher X718's, there was just no competition. The little cones trying to reproduce that entire spectrum were just distorting like crazy, but you cant really hear it until you A/B em, unless you are golden eared and can get over the "wow" factor of you 1st array. - So I added a sub, and cut the low pass down to 80 Hz. It got a little better, but only marginally. The upper frequencies we just not there, even with gobs of EQ. (and its a killer EQ, BTW.)

Do yourself a favor, get some super cheap woofers around 5" or so, and a line of the PE 5/8" or 3/4" domes within the listening height, you don't have to go top to bottom of the line, and build a 2 way array of modest price. It will be exponentially better than the full range units, and you wont have to pawn off 50 drivers that you have no use for, or sell them to your friend who doesn't know a hill of beans about speakers, just that they are "impresssive and cool looking."

Just don't do it, Man.

Subject: Re: Interesting New Line Array Design
Posted by John L. Murphy on Sat, 24 Oct 2009 18:05:18 GMT
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I've now posted in-room frequency response measurements of the non-equalized corner line arrays. I also expanded the section explaining image analysis.

Here is a link to the new measurement data:

http://trueaudio.com/array/MCLA_array_test_results.htm

I am in the process of putting together distortion data. Initial indications are that the array has greatly reduced distortion compared to a simgle driver. The distortion performance benefits from the -3 dB/octave slope due to the array effect.

Regards,

John

Subject: Re: Interesting New Line Array Design
Posted by AudioFred on Sat, 24 Oct 2009 19:33:51 GMT
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John, thanks for posting the response data. I would also be interested in your subjective reaction to their sound.

Subject: Re: Interesting New Line Array Design
Posted by John L. Murphy on Mon, 23 Nov 2009 16:00:49 GMT
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AudioFred wrote on Sat, 24 October 2009 15:33John, thanks for posting the response data. I would also be interested in your subjective reaction to their sound.

In my subjective opinion they sound excellent, just as the measurements imply. Over the years I've grown to love the midrange clarity of small full range speakers but I had to tolerate the limited output level of my single driver systems. Now I have it all. The MCLA is a crossover free full range system with the midrange clarity of a small full range driver but with bass extension and output level to spare. The listening does not get any better than this, IMHO.

I've posted more comments on how they sound on the Parts Express forum here:

http://techtalk.parts-express.com/showthread.php?t=214300

Cheers!

John

Subject: Re: Interesting New Line Array Design
Posted by John L. Murphy on Mon, 23 Nov 2009 17:04:19 GMT
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Just don't do it, Man.

Rocket, what frequency response did you achieve with your B3N array? I would think they would sound great. Could you show us a measured frequency response? Given the "pink" response of an array it is entirely possible that the high end really was "just not there".

I have to disagree that a 2-way array would sound better...especially one made with low quality transducers. I've been listening to an excellent 2-way line array for better than 30 years but I now prefer the new full range array for its midrange clarity. There are no missing highs in my opinion. Here is my measured frequency response averaged over the listening area:

You said your system was "distorting like crazy" but I wonder if it was actually the loudspeakers drivers distorting. Pro audio equalizers can be difficult to interface to home hi-fi systems due to the different operating levels and it is not unusual to overdrive the source feeding the EQ. The ND90 array has very low distortion at even the highest sound levels. Here is what I measured from one array driven at 50 Hz with 1 Watt:

With 94 dB SPL of output (at 1 Watt) the 2nd harmonic is down -41 dB from the 50 Hz fundamental for 0.9% distortion while the 3rd harmonic is at 1.4% distortion. This is as good as or better than the distortion performance of many subwoofers.

Cheers!

John

Subject: Re: Interesting New Line Array Design
Posted by Rocket on Mon, 23 Nov 2009 18:18:24 GMT
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Hey John,
Man, let me say that I have an amazing respect for you and your work. I am truly humbled.

I wish I still had the lines to measure here, alas, they are gone. What I think was happening was the LF being reproduced simultaneously as everything else at volume. This would be a practical application as opposed to a measured (gated) response, no? At low volumes, they were pleasant. Critical listening yielded different perceptions, however. I'm not ruling out the fact that perhaps I was expecting the end-all-be all and was not satisfied, but it just was not there for me. If one is prepared to accept the tradeoffs that a full-range driver [of this caliber] presents, maybe it's cool. It sincerely did not impress me, in the long haul. I'd like to try legitimate full range driver line source. I am seriously considering the new Tang_band drivers, or, perhaps the Mark Audio units. In my opinion, however, below 90 Hz needs to be accommodated by an external subwoofer.

Just one skinny guy's experiences and opinions.

Rock.

Subject: Re: Interesting New Line Array Design
Posted by justinc on Mon, 28 Dec 2009 21:51:49 GMT
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Does anyone know of any other EQ's that can be used besides the deq2496.

Rick or anyone else, have you tried using the crown xti amplifiers at all with their built in dsp for similar applications to this?

Subject: Re: Interesting New Line Array Design

Posted by selahaudio on Thu, 31 Dec 2009 00:24:00 GMT
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justinc wrote on Mon, 28 December 2009 15:51Does anyone know of any other EQ's that can be used besides the deq2496.

Rick or anyone else, have you tried using the crown xti amplifiers at all with their built in dsp for similar applications to this?

I've not used the Crown but I am looking at a product that is reasonably priced and may be perfect for arrays.