Subject: Open baffle Focussed Line Arrays
Posted by _Wim_ on Sat, 11 Dec 2004 19:05:12 GMT
View Forum Message <> Reply to Message

Hi,I have built an open baffle focussed line array. The result are quite nice, but there is still some work to be done. They use 8 8inch fullrange speakers I collected from an ancient German Cinema. They have the same cone as the Siemens Ruf22a speakers, but a different magnet system.Doe the moment I am using them as a fullrange speaker, but I am planning on using 7 Neo7pdr planar speakers with them (I bought these already 6 months ago, but still haven't had time to attach them to my speakers...)I am also planning on building a pair of open baffle subwoofers to support the low end.What is your opinion on open baffle line arrays ?And your opinoim on focussed line array ?To five you an idea of this kind of speakers, please go and surf to the following link :http://www.geocities.com/dmitrynizh/labaffles.htmI have pictures of my speakers also, so If anyone is interested, just drop me an email and I will send them to you.Best Regards,Wiù
Focussed open baffle line arrays

Subject: Re: Open baffle Focussed Line Arrays
Posted by colinhester on Mon, 13 Dec 2004 22:02:13 GMT
View Forum Message <> Reply to Message

I love the 69 cent focused arrays on your web site. I bought 32 of these a year or so ago and played with the idea of using them exactly as you. What tweeter are you using? Can you share your crossover?.....Colin

Subject: Re: Open baffle Focussed Line Arrays
Posted by _Wim_ on Wed, 15 Dec 2004 20:02:13 GMT
View Forum Message <> Reply to Message

Hi,For the moment there is no crossover (I use them fullrange). When the Neo8pdr are finally connected, I will use a 6db/oc series filter. As the neo8 can go reasonably low, and the fullranges reasonably high, I think (I hope)this will be an ideal combination.Best Regards,Wim

Subject: Comments on Open Baffle Focused Line Arrays
Posted by Jim Griffin on Fri, 17 Dec 2004 01:14:22 GMT
View Forum Message <> Reply to Message

Wim,Thanks for sharing your thoughts and your work with everyone. I'll say upfront that I'm not a big lover of focused line arrays. As you know, focused arrays significantly reduce the area within the listening room where you realize good sound from the array. Use of a concave or parabolic array can account for the comb lining issues associated with a line array but it will mean that the sound would be optimized at a specific listening distance from the source. Thus, if you were not positioned at the focal point of the array, then you wouldn't hear the best sound. Move your chair and your will be out of the sweet spot and sound quality degrades. The principal advantage of a focused array is that you minimize the center to center spacing combing effects of the multiple drivers. For home applications I favor near field line arrays (NFLA) which use a flat baffle. See my white paper at the link for more details on NFLA design guidelines. Flat baffle NFLA are certainly easier to produce than a focused array. A NFLA design will enable the entire listening area to covered with well balanced sound. The sweet spot will be huge and good listening can be realized throughput the room. For line sources (arrays) in the near field the radiation of sound is somewhat different from conventional point sources. In the near field a line array (or line source) radiates a cylindical column of sound in the vertical axis. This column extends along the height of the array. This means that the sound that you hear travels parallel to the floor and ceiling from the column and does not spread as it inpringes on the listener. Hence, the sound that reaches the listener's ear is based on a parallel transversal (parallel to the floor and ceiling) and effectively travels the shortest path to the ear. Bottom line: The near field sound column does not spread in the vertical axis and will be effectively uniform along the height of the speaker. Hence, in the near field you will not hear sound that comes from different path lengths associated with the individual drivers but rather a wavefront that is a composite of the sound radiated by each source. My white paper illustrates this in Figure 2 in the text. Thus, the vertical dispersion in the near field from the array extends evenly from the source to the listener. Only as the distance from the array increases would the array trend toward far field radiation with a narrow vertical radiation pattern. You already know the advantages and disadvantages of open baffle speakers. While you don't have the boxy sound of an enclosure, you do have the issue of equalization to achieve adequate sound quality. Open baffle speakers need help in the bass region to equal the SPL of drivers in boxes. Plus you have room placement issues (placement away from walls is usually necessary) that have to be considered. Jim
Near Field Line Array White Paper

Subject: Re: Comments on Open Baffle Focused Line Arrays
Posted by _Wim_ on Wed, 05 Jan 2005 10:16:22 GMT
View Forum Message <> Reply to Message

Hi,I have been away for a while, but let me post some replys :You wrote : "You already know the advantages and disadvantages of open baffle speakers. While you don't have the boxy sound of an enclosure, you do have the issue of equalization to achieve adequate sound quality. Open baffle speakers need help in the bass region to equal the SPL of drivers in boxes. Plus you have room placement issues (placement away from walls is usually necessary) that have to be considered. "Answer : I fully agree. It not as easy as building a closed enclosere, but in the end it can be very rewarding. As for roomp placement, they are 1m from the back wall. This seems to be enough. If you want to place them closer, you have to have some kind of diffuser. In my experiments I used a bookshelf and my hifi rack as diffuser. This work very well and is readily

available...You wrote : "For line sources (arrays) in the near field the radiation of sound is somewhat different from conventional point sources. In the near field a line array (or line source) radiates a cylindical column of sound in the vertical axis. This column extends along the height of the array. This means that the sound that you hear travels parallel to the floor and ceiling from the column and does not spread as it inpringes on the listener. Hence, the sound that reaches the listener's ear is based on a parallel transversal (parallel to the floor and ceiling) and effectively travels the shortest path to the ear."Answer : Again, I fully agree. This is indeed the theory about line source. So now lets find out why this is...When you have a point source, it spreads omnidirectional. This is because the pressure wave (=sound wave) can go in any direction. When you place multiple point sources in a line, you get a cilyndrical wavefront. Every single point source still produces the same pressure wave. But because it neighbour also produces the same pressure wave, the pressure wave cannot go in every direction (it choses the easiest path). This way, it only goes to the left and the right, but not to the up and down direction. If you do the same for every point source in the line, you get a cilindrical wavefront. Now, why wouldn't this be the same for a curved line array ? The sound waves are focussed to the center, but because of pressure build up, the go forward in a horizontal direction (if you have a symmetrical curved line array). But you have 1 advantage. The pressure wave that do not follow this theory (quite a few), all have the same travel path to your sweetspot. So in my opinion, a curved line array works just as good as a straight line array, only in some point it works better !I compare a curved line array with a normal cone speaker. The cone also has sort of a curved form. And the same laws of fysics are correct for the cone : a line array only works as a line array if the length of the line is at least as long as the longest wavelength it has to produce. You have excalty the same with a cone speaker. When the wavelength reaches the diameter of the cone, it starts bundling (=working as a line array). But have you ever heard that a cone speaker only sounds goud at the listening distance that is equal to its focus point ????I agree with you that line arrays are harder to construct. But some of the DIYers are excellent woodworkers and are certainly willing to put in the extra hours to make a better cabinet...Best Regards,Wim