Subject: Re: Comments on Open Baffle Focused Line Arrays
Posted by _Wim_ on Wed, 05 Jan 2005 10:16:22 GMT
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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