Subject: compression horn tweeter
Posted by mike erb on Wed, 28 Jul 2004 02:43:04 GMT
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hello , would like to know if i can make and use a compression horn tweeter for a line array speaker ,i would make my own horn lense around 1" to 2" wide and 80" to 84" tall ,but dont know how deep to make it or if the depth tune the horn or not ,but i thought i could use one driver for the tweet instead of multi drivers ,for one the cost would be lower ,it would be paired up with either 16x5.25" mids or 18x4.5" mids or 24x3.5" mids ,have not decided yet. and it would be crossedover around 1500 to 2500hz ,any ideas?

Subject: It won't work.
Posted by Bill Fitzmaurice on Wed, 28 Jul 2004 18:45:25 GMT
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The problem is that to have the flare rapid enough to get that mouth size, without making the horn five feet long, there won't be any HF loading. Stick with multiple tweeters; if you want to go cheap use piezos; you can get them at Parts Express for a buck apiece. Closeout dynamics can also be had for little cash. You also don't want to cross 5.25 inchers that low; the frame/surround width between the cones will come to about two inches, even less with squared 'pin cushion' frames, so you can go to 6kHz easily assuming that the driver 30 degree off-axis response is no more than -6db. Crossing over that high gives you a lot more tweeter choices, both piezo and dynamic. The downfall with piezos lies with their roll off slope; with side by side woofer/tweeter lines you really want 18dB/octave or better crossovers to minimize output frequency overlap that will cause horizontal plane comb-filtering. That's another good reason for crossing the woofers higher so their acoustic roll off can contribute to the total slope.

Subject: Re: It won't work.
Posted by mike erb on Wed, 28 Jul 2004 19:11:44 GMT
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thanks ,is it the 80" length or the small width ?,i've been looking at car audio softdome tweeters can buy them wholesale for $1.50 a setalso ,what size mids do you think are the best ,can use 16 each 5.25" or 18 each 4.5" or 24 each 3.5" all cheap though parts express closeout sale ,also do i need to have a bass blocker and at what frequency like 80hz or higher like 120hz? and do that many drivers wired series/parallel change your crossover points ,sould i bi-amp or not also thought about an electronic crossover ,this would only work if i bi-amp'd ofcourse.this is going to be a 7.1 surround system the three fronts left ,right ,center will be the only line array speakers ,thought this infomation may help.thanks

Subject: Re: It won't work.
Posted by Bill Fitzmaurice on Wed, 28 Jul 2004 19:57:42 GMT
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It's the hieght; with a pathway of only a few inches there wouldn't be any throat impedance to load the driver, which for all intents might as well be in a baffle.The mids depend on what you want for a low end. You can roughly figure their response with a program like WinISD from their specs, and their usable high end from the manufacturers off-axis SPL charts, not going higher than the frequency where you're -6dB at 30 degrees off axis. A crossover to the sub is a must; use a real crossover, not Bass Blockers (which are fancily packaged capacitors in any event). You don't need a crossover if you're using a 7.1 receiver that has one built in.Car audio softdomes are OK provided they have no wide mounting flanges. An array on the center is not a good idea, as it would be too high to fit close enough to the TV screen, though an MTM is viable.

Subject: Re: It won't work.
Posted by mike erb on Wed, 28 Jul 2004 20:29:23 GMT
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thanks ,so the crossover in the receiver ,is good enouf for the low filter on the array's ,so then do i need to tune the box? ,ported or sealed or doesn't matter ,i can build the best subboxes ,use to own a car audio store ,but home speakers ,especially line array's and having to build my own crossovers, if i was building a three way speaker box then i'd port it and seal the mids/tweets from the bass but this array stuff is different ,i have seen some diy'ers port then low but i plan on using seperate subwoofers so i could x-over higher ,so porting the enclosure is not necessary, i think?and do you think i should bi-amp or not? i have two 5 channel amps ,so i have 3 extra channels ,thought i could run a channel to each set of drivers. also the mid speaker row is going to be longer the the tweeters if i use the same amount how would i lay them out ,put a tweet next to each mid ,or center the rows next to each other ,or buy more tweeters till they are the same length? sorry for all the questions ,i have more thanks

Subject: Re: It won't work.
Posted by Bill Fitzmaurice on Thu, 29 Jul 2004 10:38:00 GMT
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For a box with a response down to 80-120 Hz or so you don't need to tune it; a simple sealed box configuration is best. A transmission line is also viable but I think design wise that's quite a bit beyond your present skill level; if you can wait a few months my Transmission Line Array will be appearing in audioXpress magazine, and after that on my website.Your receiver will handle the crosover duty but you need a separate amp to drive your sub. Your tweeter array needs to be close to the midwoofer array hieght so that they will have the same response characteristic at the crossover frequency. You will need a crossover between the two lines with a minimum 18dB

slope.

Subject: Re: It won't work.
Posted by mike erb on Thu, 29 Jul 2004 15:34:36 GMT
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thank you for your help ,i have done t-line subwoofer boxes before ,they do need exact measurments or they sound horrible ,lol .also what is the address to your site? can i do a no box line array ?just a baffle board to mount the drivers? i have an idea with plexiglass and flat wire ,would look cool .if i don't need to tune the box then this should work ,correct?is there a different crossover for bi-amping? is it the same as a normal 2-way crossover or do you need to add more parts?and has anyone ever done a 3-way array speaker ,with a row of subs ,like 10" and then your row of mids and tweeters?how does an eq or a gate/limiter compressors ? used them both in car audio to get a perfect rta.

Subject: Re: It won't work.
Posted by Bill Fitzmaurice on Thu, 29 Jul 2004 16:56:37 GMT
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T lines do need to be properly designed and for the most part aren't used as subs as there are better/smaller ways. Full range T lines that will go to 20 Hz are viable- see Legacy.A baffle board only works but you give up a lot of sensitivity and bass response with them. Some people like them a lot- try the planar forum at Audio Asylum.Bi-amping requires an active crossover to operate.Arrays can be built 3 way or 4 way if you wish, but most are 2 way.I don't understand the last question, but I do use both EQ and a limiter on my HT system.

Subject: Re: It won't work.
Posted by mike erb on Thu, 29 Jul 2004 17:19:27 GMT
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yeah, the last t-line subbox i did was 3.5 cuft for a 12" ,but had a flat line down to 12hz ,and shook the heck out of this guys car ,harder then his past 4each 15" subs and hit higher spl's,most of all help with his rta scores and sound Q .i noticed i forgot to finish my question on the eq and limiters ,i was asking if they make a big differance.if your doing a t-line array ,then are you still using a sub?if i was going to use these speakers for stereo music listening then i would port and tune the box as low as possible ,but being a ht system ,i have subs.someday ,money permiting i,d like to try a t-line array ,sounds like fun to build and design.

Subject: Re: It won't work.
Posted by Bill Fitzmaurice on Fri, 30 Jul 2004 12:01:07 GMT
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I'm using my TLine Array down to 80 Hz and a folded horn sub below that. Using an array for a sub entails a whole buch of at least eight inch drivers, while the folded horn uses a single eight to get the same SPL, so from a space and cost standpoint the horn makes more sense as a sub. From 80 Hz and up where you can use a lot of small inexpensive drivers and have a cabinet that's not very large the array is the better choice for my livingroom.

Subject: Re:box shape
Posted by mike erb on Sat, 31 Jul 2004 21:38:36 GMT
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does the box shape have anything to do with the sound ,i am designing a speaker enclosure 84" tall x 8" to 10" wide x ? deep ,but i'd like to contour the face of the box ,and try to aim each drive to the sweet spot.any thoughts?

Subject: Re:box shape
Posted by Bill Fitzmaurice on Sun, 01 Aug 2004 00:43:51 GMT
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Ther actually have been commercial designs that had a spiral shape, with mediocre result. Line arrays don't require special aiming techniques in home usage. In large concert venues 'J' arrays are used to control vertical directivity but even then the individual elements are still aimed on the same horizontal axis.

Subject: Re:box shape
Posted by mike erb on Sun, 01 Aug 2004 01:13:03 GMT
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ok thank you ,i'll get a handle on this yet,lol does the size or the driver have any thing to do with the sound or output ,other then lows.i know a single 3.5" driver is not going to put out as much sound or spl as a 5.25" or 6.5" even , but i would be moving the same cone space on my speakers ,weather its the 3.5" or 5.25" ,just more or less drivers to make up the 84".so back to my question if size matters?

Subject: Driver T/S Specs
Posted by Bill Fitzmaurice on Sun, 01 Aug 2004 12:49:42 GMT
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There are a minimum of 3 T/S parameters used to derive the anticipated response of a driver, and those are Qts, Vas and Fs. Driver size is not there. Additional parameters can be used to further quantify a driver's probable performance, but the actual driver size is way down on the list. An in depth discussion of how all the parameters affect performance is well beyond the capabilities of a web forum, as that information literally can fill a book- which explains why there are dozens of books written about the subject. If you plan on getting serious at all about this stuff you're going to need at least two on your shelf. The two most often quoted items regarding driver performance are size and wattage; they are probably the two least significant indicators of potential driver performance.