Subject: alighnments
Posted by hitsware on Mon, 06 Dec 2004 01:24:30 GMT
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If one 'alighned' an open baffle system toa 2' x 4' panel .....Could you subsititue a 2.83' x 2.83' panel ....Without upsetting the 'alighnment' .....?????

Subject: Re: alighnments
Posted by Wayne Parham on Mon, 06 Dec 2004 01:39:12 GMT
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Open baffles aren't my thing, but I can speak to the issue of radiating angle. I'd say the transition

driver is centered on a round baffle, the transition will be the most abrupt because the distance to the edge is the same in all directions. The square baffle is close, because four sides are equidistant. If the driver is offset on the baffle, the transition will be more gradual. So the shape of the baffle and the position of the radiator will set the rolloff shape of the low frequencies due to the sharpness of this transition.

Subject: Re: alighnments
Posted by hitsware on Mon, 06 Dec 2004 03:53:27 GMT
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What I'm trying to get at is how to determine the 'effective diameter' of a panel. There seems to be a couple of schools of thought on this subject.1) effective diameter = shortest dimension2) effective diameter = diameter based on total areaI tend to think that 'effective radius (shortest distancebetween front and rear of driver)' may be more appropriate.But people say that because an OB is a 'velocity' rather than a'pressure' system that the circumferance rather than the (true)diameter sets the LF cutoff ??????????????????????????????

Subject: Re: alighnments
Posted by Wayne Parham on Mon, 06 Dec 2004 04:28:41 GMT
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If the baffle is circular with the radiator in the center, then the distance from the sound source to

happen over a narrow range because the distance to the edge is the same in all directions.But if

the baffle isn't circular with the driver in the center, transition is staggered and more gradual. Defining an effective diameter for any baffle shape other than circular is a simplification. If you consider the shortest dimension then you'll probably have a little more bass energy than you expect and if you average area, you'll probably have a little less.

Subject: Re: alighnments
Posted by hitsware on Mon, 06 Dec 2004 15:38:11 GMT
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Ok. For now let's consider driver in the center of a round baffle.Call Fc the lowest frequency before rolloff begins. Free space.As I understand it (not that that means much The 2 schools of thought.....Say we have a 1' diameter baffle:1) the circumferance must = 1wl so.....cir = pi * dia = piFc = 1130 / pi = 360Hz2) the distance front to rear of driver must = wl/2 soFc = 1130 / (2*dia) = 565Hz#1 is certainly more attractive and seems to work, but what about the 'rear wave cancellation' of #2. ???????????

Subject: Re: alighnments
Posted by Wayne Parham on Mon, 06 Dec 2004 20:15:16 GMT
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The event at 565Hz is what I'd be most concerned with. I would expect this speaker to work well down to ~500Hz and roll off rapidly below that.

Subject: Re: alighnments
Posted by hitsware on Mon, 06 Dec 2004 22:03:24 GMT
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>Defining an effective diameter for any baffle>shape other than circular is a simplification.That's what I need !So say a 3' x 5' baffle on the floor.....a = area = 15 sq.ft.r = radius = (15/pi)^0.5 = ~2.19'd = 2 x r = ~4.37'Fc = 565/4.37 = ~130HzSince it's on the floor Fc = .707*130=~92Hz-3db = .707*92=~65HzSound reasonable ?

Subject: Re: alighnments
Posted by Wayne Parham on Mon, 06 Dec 2004 23:01:28 GMT
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I'd use the shortest dimension as my place of interest. That would put it around 100Hz. Then rolloff will probably be slower than if the baffle were circular with the speaker in the middle. Instead of an abrupt roloff, you'll probably have more energy below 100Hz than if the baffle were a 3' circle.It might be interesting to measure several baffle shapes and develop a mathematical model to describe the response. It would be easy to do with cardboard and could help you make a spreadsheet to predict response.

Subject: Re: alighnments
Posted by hitsware on Tue, 07 Dec 2004 00:16:35 GMT
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>Instead of an abrupt rolloff, you'll >probably have more energy below 100Hz >than if the baffle were a 3' circle.Yea ..... But .....Here's my (tentative) plan:Use a widerange driver to get down to say 100Hz.So a 100Hz driver with a Q of 1 will give a flatresponse (Q=~.7) on a 100Hz baffle.Then add a 'helper woofer' to extend down an octave.(rolled off on the high end with a 12db/octave passivenetwork) (a driver with a Q of 2 @ 50Hz on a 100Hz baffle isflat down to 50Hz)Thus the need for a fairly good definition of bafflecutoff since the baffle is used as a crossover element.

Subject: Re: alighnments
Posted by Wayne Parham on Tue, 07 Dec 2004 06:16:56 GMT
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That sounds like a good plan. I'm reasonably confident that the fastest and most well defined rolloff will be on a circular baffle with the driver in the center.You might makes some test baffles with cardboard of different shapes and configurations and do some measurements to test everything out. I'd experiment with smaller baffle sizes to shift the frequency up so measurements would be easier. Maybe try 9 inches to a foot, using a small midrange driver. The higher in frequency you go, the smaller the distances involved and the easier it is to gate out reflections from walls and stuff. Once you have defined properties, you could scale up to the size you want and go with a larger driver for your 100Hz model.

Subject: Re: alighnments
Posted by hitsware on Wed, 08 Dec 2004 01:08:24 GMT
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Thank You !Think I'll modify my present system .....

Subject: Re: alighnments
Posted by Wayne Parham on Wed, 08 Dec 2004 04:17:05 GMT
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Neat! Might look cool to make the baffle oval to match the drivers.

Subject: Re: alighnments
Posted by hitsware on Wed, 08 Dec 2004 14:00:41 GMT
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Thanks ! And thanks for the help with the math. (though I find myself fi-niggling the theory to fit what I want to happen)An eliptical baffle supposedly helps spread out the interferance patterns also. Though 1 of my best efforts was a small round driver in the same baffle (plastic xmas tree drain pans). Maybe I like 'comb filtering' (or whatever it is that happens) ..... mike