Subject: Re: Need help with a center channel
Posted by Dr Mark Carter on Tue, 19 Dec 2006 03:36:13 GMT
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Dear John, I agree with one of the other correspondents, that using the MTM (D'Appolito format), in the horizontal rather than the vertical alignment makes no sense for a center channel speaker. The design of a center channel speaker is a difficult problem. It has to carry as much of the program as the front left/rights. It must be at least as good a speaker as the those also. It needs to have a relatively narrow horizontal dispersion so as not to cause interference with the left right speakers. It needs to excel in the natural reproduction of the human voice. It has to be compact. A tall order, and not surprising that most center channel speakers fall way short of the mark. I believe that the center channel speaker is best constructed using a coaxial driver. Good coaxial drivers for the home constructor are made by SEAS. They have a good crossover. Both are available from Madisound. They also have fabricated enclosures. This is the link.http://www.madisound.com/cgi-bin/index.cgi?exact_match=yes&product=SEC&cart_id=7119086.22070 These drivers like other small coned woofers in a small cabinet exhibit a step response. This results in a slightly thin tenor range. Since I think you plan to shelf mount, this will tend to mitigate this. To correct the step response requires a second driver in which the coaxial tweeter is not connected, and the woofer driven by a first order crossover with 6db peroctave roll off above 250 Hz. The speaker enclosure needs to be twice the volume. If you have two speakers in an enclosure you have to double the equivalent volume (VAS) in your calculations. If the drivers are in parallel then the sensitivity is up 3db. When choosing whether to go closed box, or ported, look at the Qts of the driver. If it is less than 0.3 ported alignment or horn is the way to go. Between 0.3 and 0.35 you can go either way. Above 0.35 closed box is usually the best way to go. Transmission lines tend to work best with drivers between Qts of 0.3 and 0.35. A good modelling program in Box Pro, it comes with x-over pro. I have just built a studio/home theater using transmission line speakers. There are nine lines in all, four of the speakers are dual line enclosures. The rear speakers, which in a seven channel system are actually the side speakers, are minimal ripple closed box design. The center channel is a transmision line, and uses two of the SEAS coaxial units. The step response correction uses an active electronic crossover. The coloration of a well designed line is very low indeed. Bass extension is good, even and natural. No bass restriction is required to these speakers. This center line is designed to go through the wall. The tweeter is connected in the lower driver only, which is right above the center of the TV screen, angled to the optimum listening area. I'm very proud of this center speaker, I know of nothing quite like it. The whole rig reproduces human dialog in a very natural converstional tone. No chestiness or sibilance. Opera watched on it is a truly pleasuable experince.http://gallery.mdcarter.com/main.php?g2_itemId=5756http://gallery.mdcarter.com/main.php?g2_itemId=5534 I hope I have covered your questions. My advice is you need to find a very good reason not to use a coaxial driver in this application. Good luck! Mark.
SEAS Coxial driver