Subject: Re: Crossover choices
Posted by Wayne Parham on Wed, 17 Jan 2007 15:24:02 GMT
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The best way to approach this, in my opinion, is to crossover where directivity is matched. The 2226 is 15" diameter and has radiating surface area of 132in2 or about 11.5" diameter. At 45º off-axis, it will be about -6dB around 1200Hz. By 2400Hz, the midwoofer's pattern will have narrowed so that it is -6dB at 22.5º or so. Directivity isn't a black-and-white thing, but you still prefer the woofer and tweeter DI to be close through the crossover region.To expound a little further, if you crossover a direct radiator to a 90º round horn, directivity is matched when wavelength is approximately equal to the diameter of the radiator. In terms of DI, a direct radiator has DI of 10 when diameter equals wavelength and DI of 16 when diameter equals two wavelengths. A 90x40 horn has DI of 11 and a 60x40 horn has DI of 12.5. That makes DI matching of a direct radiator to a 90x40 horn occur a little above 1 wavelength and a 60x40 horn about 1.5 wavelengths.A 10" driver typically has a radiating surface about 7.5" diameter, 12" driver has about 9" diameter radiator and 15" driver has about 12" radiating diameter. So the frequency where wavelength equals diameter is 1765Hz for a 10" driver, 1500Hz for a 12" driver and 1130Hz for a 15" driver. That makes a 90x40 horn matched to a 10" driver between 2.0kHz and 2.4kHz, a 12" driver between 1.8kHz and 2.1kHz and a 15" driver between 1.3kHz and 1.6kHz. A 60x40 horn is matched to a 10" driver at 2.4kHz to 2.8kHz, a 12" driver at 2.1kHz to 2.4kHz and a 15" driver at 1.6kHz to 1.8kHz.More info about crossovers and driver spacing