Subject: Fs is the biggest concern.
Posted by Bill Fitzmaurice on Sun, 12 Sep 2004 13:11:47 GMT
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The Fs is pushed downward by a horn to a different spec that I refer to as Fs(h), the resonance of the driver/horn combination. How much it goes down is dependant on the acoustic impedance of the horn; it can be anywhere from a few Hz to as much as 1/2 the Fs. The effect is quite similar to that of a dual chamber reflex box. Model a driver in a sealed box, then model it again with that same size rear chamber plus a vented front chamber and see how the passband (and the impedance peak that denotes the Fb) goes lower. The best way to account for this is to measure the Fs(h) with the driver in place and the rear chamber open to air; the best horn performance will be realized if the Fs(h) is the same as the horn Fc. Reactance annulling via a small rear chamber can push the system F up to around the Fc, but if you start with a driver that has an Fs equal to or lower than the Fc you may have trouble making the rear chamber small enough. I haven't bothered to go in to the mathematics of it, but the Fs to Fs(h) shift can be predicted. I just try to start with a driver with a higher Fs than Fc, though in the case of sub drivers that can be problematic.