Subject: Driver parameter shifts on horns
Posted by Ralph on Sat, 11 Sep 2004 17:55:10 GMT
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I am doing some research and I think I've learned just enough to be dangerous. I understand driver parameters are shifted by the cabinet and/or horn but don't know how to determine the shift on a horn. Understanding a sealed box rear chamber is pretty easy, but what if the a back horn, transmission line or vented rear chamber is used? Speaker tuning becomes more complex and there's more to it than reactance annulling. Maybe it is best to tune the back horn or rear chamber broadly so it is insensitive to driver parameter shifts?How do you determine the shift in driver Fs and Qms (or CMS, RMS amd MMD with air load) when a driver is mounted on a horn? Must T/S specs be measured with the driver mounted on the horn or is there a way to calculate them?

Subject: Re: Driver parameter shifts on horns
Posted by Mike.e on Sun, 12 Sep 2004 03:00:19 GMT
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ML util tells you the Qts shift on given hornId just hornresp a horn,and adjust it FR and impedence graph wise so that reality matches simulation.Driver parameter shift cant be too bad- or else wed be having huge troubles using horns and it would be a huge issue i think.Cheers!

Subject: Re: Driver parameter shifts on horns
Posted by akhilesh on Sun, 12 Sep 2004 04:30:24 GMT
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HI,I don't know too much about the physics of drivers, but my understanding is that t/s parameters are independent of the enclosure. If this is true, then a horn or BR should not alter them. It will alter the freq / sensitivity of the speaker system, of course, but not the t/s parameters of the driver. Of course, i may be totally off base!-akhilesh

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.