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Subject: Re: Impedance rise in horns

Posted by [Wayne Parham](#) on Mon, 14 Jan 2008 02:23:51 GMT

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Some people call that a rear-loaded horn, others call it a scoop. Either name you give it, the front of the speaker radiates directly from the cone and the rear through the pipe. Only bass gets through the pipe but full range is radiated out the front. The front wave and rear wave sum together, so of the overlap range of bass and misbass frequencies, some combine constructively and others cancel. You can model this with Hornresp. You might also try a traditional front-loaded horn and see what you come up with. Since you only need one frequency, you don't have to care as much about mouth area so the horn might not have to be all that big. You'll want the length to

area and environment offset this some though, so you may find a slightly different length gives you an edge. You can play with that some in Hornresp and afterwards when you make a physical model. Also try different rear chamber volumes to set it for the biggest peak at 51Hz. Making the rear chamber smaller will raise the mechanical resonant frequency of the woofer cone, so you will want to set that for the biggest peak at 51Hz. Too large will increase output below 51Hz and too small will increase output above 51Hz. The throat area and front chamber volume will also have an effect on response, so play with those values. Smaller throats give higher compression ratios but be careful because too much compression will bend or tear your woofer cone at high excursion levels. The front chamber volume will act as a low-pass filter. Finally, the shape of the pipe will have an effect on response so try different taper angles. Since you are only trying to generate a single frequency my gut feeling is a straight pipe will be fine but try tapered pipes as well.

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