Subject: Re: Open Baffle Visaton B200 & Eminence Delta
Posted by Wayne Parham on Tue, 09 Jun 2009 18:39:55 GMT
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Cone breakup is caused by the cone flexing at high frequencies instead of moving as a rigid piston. At low frequencies, the surface of the cone is rigid but at high frequencies, it develops ripples across its surface.

If the cone is well damped, the ripples won't be too intense at any one frequency or group of frequencies. If the cone is well damped, then response is relatively smooth even above the pistonic range. If not, there are large peaks and dips in response.

The way to find out is to do a frequency response measurement. You'll need a microphone and a computer. There are some really nice packages out there to do loudspeaker measurements that don't cost too much. Two I use are WTPro from Smith & Larson and LMS from LinearX. There are many other good products out there in the hundreds to low thousands price range (USD).

One good way to start is free, but does take a fairly good investment of your time to learn. It's called Speaker Workshop. Download and install this program, and use an inexpensive Panasonic capsule microphone (less than $10.00 USD) and you can begin to make measurements. You may need a mic amp, but maybe not. (Depends on your computer sound board).

Acoustic measurements are really important if you want to do a good job. You can sometimes design a decent pair of speakers without measurements, but you're depending on reliable data from the manufacturer and it takes a lot of modeling and calculation. Working with measurements is much easier, and if the measurements are accurate, you have something extra, not available from the manufacturer - You have the influence of the physical relationships between drivers, their spacing, the cabinet (if used) and all other things specific to your implementation. This information is extremely valuable when setting up your crossover.

One more thing I'd suggest:

Take your speakers outdoors and listen to them. Indoor reflections may be making your speaker sound too bright. If they sound good outdoors, you may want to put some things in the room that absorb sound. Could be things that fit into your decor, or it may be specialized acoustic treatments like absorbent wedges. That's for you to decide.

But I think whether or not the room needs treatments, I'd like to know what measurements look like. That will tell you what your raw drivers are doing, and how their interactions play out. Measurements outdoors will tell you how the speaker acts in an anechoic (reflection free) environment, and that's important because it reduces the complexity of the DUT. (You won't be measuring drivers PLUS room - just drivers.) That will ensure any peaks you see are from the raw drivers themselves, or from an interaction between them. Indoors, I would expect to see some peaks and dips from room reflections, and you'll probably want to deal with those separately. Measurements outdoors will just help you know what's what.