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Subject: Re: 4Pi measurements

Posted by [Wayne Parham](#) on Wed, 24 Oct 2012 19:17:25 GMT

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To measure the woofer, leave it in the box and just disconnect the tweeter. A sweep up to 2kHz or 2.5kHz is sufficient, but it wouldn't hurt to go to 4kHz. I would measure it two ways: (1) Measure the woofer connected directly to the amplifier (without crossover). This will tell you what the woofer is doing, all by itself. If it has excessive breakup, this will show it. Then (2) measure with the woofer crossover connected, which should show smooth rolloff above 1kHz. If it peaks at 1.6kHz, we have a problem with the Zobel or the core low-pass splitter filter.

As for the HF, you have the microphone positioned exactly right. In fact, it will be pretty much the same even if the microphone is moved towards the top or the bottom of the box, until you reach the point of the vertical nulls, which are pretty far apart. See the following thread, and click on the "Vertical Nulls" link for a video of the measurement process (just like what you're doing):

Crossover optimization for DI-matched two-way speakers There are a lot of things that can cause the rolloff up high, but I think the most common one is just needing calibration. Seems like most uncalibrated systems are a little hot up high or a little rolled off. The microphone can be measured by a calibration house, who will return to you a disk that you install in the measurement system. The data on the disk is essentially a response curve of the microphone, which is then conjugated to make the resulting data true. Of course, this assumes the measurement system is accurate, including its internal preamp and ADC. It would be good to have this verified too.