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Subject: Re: 4Pi crossover study

Posted by [Wayne Parham](#) on Fri, 19 Jul 2013 18:55:42 GMT

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One more thing:

You and Bruce are focused on the measurement setup, and that's good because you should really start there. I am focused on the crossover and the horns and drivers, because that's the subject we're trying to understand. But really, if you're seeing more rolloff up high than you expect, it is just as likely the microphone or measurement setup as it is the device under test.

Do you have any way to baseline the measurements? Do you have a known source that you can test and see if there is rolloff up high? I expect you would have done that already if available, but it doesn't hurt to ask.

The compression driver itself may rolloff more than you are expecting too. The JBL drivers certainly do, which is why they need more compensation. That's not a bad thing, as it indicates reduced or highly damped breakup. But ideally, we have the output up high and it's smooth. We want to have our cake and to eat it too.

Anyway, try and find a way to baseline your measurements, so you can know whether or not to trust them where rolloff is concerned, or if maybe they're showing more rolloff than is really there. If you can validate the measurement setup is accurate, then try to find the cause of the rolloff in the DUT by swapping it - Change things one at a time until you find the cause.

I'd start with the compression driver first, if possible. Borrow a different driver if you can, and see how that tests. If that's not possible, try some really basic filters and see how they act. First, try no filter - straight wire to the driver. Then try a basic first order, just a capacitor in series. Then try putting in a resistor shunted by a capacitor in series, the R1/C1 part of the network. This should give peaks where there are impedance spikes, but should also give rising response. Then put a shunt resistor in there to damp the impedance spikes. Build up one step at a time to see what each part does to the system response. Let the documents below be your guides:

Speaker motors and passive crossover filters  
Crossover Electronics 101 Seminar Handout