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Subject: How Do You Use Speaker Workshop?

Posted by [Charlie Biern](#) on Wed, 02 Nov 2005 23:22:24 GMT

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I'm a novice at speaker building but I have completed a pair of Bill Fitzmaurice's Omni 12 tops and Tuba 24 subs and I'd like to see a frequency response plot to make sure I've done things correctly. Wayne recommended Audio Workshop but I find it lacks a good deal of information about basic setup and usage or assumes that I should already know those basics. I've got a Behringer ECM 8000 mic into a Eurotrack 802 mixer to get phantom power, all the controls set midrange. Out of the soundcard into the left channel of a QSC RMX850 to the cabinet. I originally set the speaker on a stand outdoors with the middle of the cabinet 5' above the ground. The mic is set up 1m away also 5' up, dead center. (Wayne later told me that I should put both the speaker and the mic on the ground and measure in 1/2 space) I used a 1k sine for level setting and the peaks hit a little over 30k. No visible distortion (30k what? Samples?) I assume I am to use a sweep 20-20k. Log or linear? (I used linear) - Number of steps 10 (arbitrary setting since no explanation is given as to the effect of more or less steps) When I hit Record the Volume is at 50. - Left Chan. Only - Calibration is Left. - Data is Left. Type is Frequency Play and record times 5 sec (again arbitrarily) Several charts are produced. How are the chart properties to be set to see what needs to be seen? Should they be set to (whatever) before the recording? What is the dataset and why does it default to stop at 5.4k? What does the FFT chart show? Should I make other tests using pink noise or bursts etc. there are a bunch of waveform types that must be used for something. I'm posting what I got from one go 'round. It's a lot of questions I know but the program seems to demand them if you've never done this before. I'll happily follow instructions if they exist! Thanks, Charlie

Omni 12 left.swd

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Subject: Re: How Do You Use Speaker Workshop?

Posted by [Wayne Parham](#) on Wed, 02 Nov 2005 23:57:44 GMT

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Let's do this. We'll take things one step at a time. First, we'll check your sound card, microphone and preamp, make sure you have components that will work there. Then we'll make sure your output levels and input levels are within the dynamic range of the system, not below the noise floor or so high they're clipping. We'll make an assumption that the amps and microphones are reasonably flat, which isn't necessarily a reasonable assumption but without calibrated equipment to reference with, that's what we'll have to do for now. If you're using one of those Panasonic microphone capsules, a decent sound card and amps, you'll probably get fairly good measurements. First, what sound card do you have? Have you checked to see that Speaker Workshop thinks it's acceptable? Here's how to check. 1. Start a new project or open an existing one. (File - New or File - Open) 2. Check the sound card. (Options - Wizard - Check Sound Card) Does it say "You can use Speaker Workshop fully"? Click "More" on each of the input and output options to see what modes you can run. You should see several mono and stereo modes, 8 bit and 16 bit, 11kHz, 22kHz, 44kHz, etc. Other questions: 3. Did you connect your sound card output to an amplifier? If so, what kind? 4. What kind of microphone do you use? 5. Does it

connect to a microphone preamp?6. Do you have access to an oscilloscope to verify that the microphone signal is clean and undistorted? Same question for the amplifier used for MLS output, whether it can produce a reasonable amount of power without distortion and if its output impedance is low enough that it won't affect speaker Q. After you've looked at these things and we work through this, we'll set the input and output levels of your sound card, to make sure you're under  $\pm 32767$ , which is the limits of the ADC for sound card input. It's important that your levels be below that so they aren't clipped, but high enough that they're well away from the noise floor.

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