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Subject: How do you test speaker spl?

Posted by [bmar](#) on Sat, 27 Oct 2001 21:46:26 GMT

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Hi,I would like to make some graphs of the speaker spl so i can see what I have and what changes in crossovers do for me before i start my Pi cabinets.this is what i have been trying so far. run a sine wave tone into my amplifier, adjust the volume control to give me 2.8 volts across the speaker leads, measure the spl from 1 meter away on axis.Is this even close to being correct? Is there a better way to get 1 watt into the speakers.is there a better way or program that can make a graph other than just inputing the spl readings into exell.any input would be great.thanks,bmar

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Subject: Re: How do you test speaker spl?

Posted by [Wayne Parham](#) on Sun, 28 Oct 2001 07:22:55 GMT

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Assuming your speaker is approximately an 8 ohm load, it is true that you should look for 2.83vrms. But if the speaker is 4 ohms, then set it for 2vrms. That will give you the 1W/1M value.

Something to remember is the speaker is never a pure resistance and rarely averages a multiple of 4 or 8 ohms. It is usually something like 6.8 ohms. So rather than calculate the voltage required to dissipate 1W at a certain impedance, it might be easier to make voltage the standard rather than power. In other words, instead of finding SPL at 1W/1M, you might consider finding SPL at 2.83v/1M. That takes impedance out of the equation and may be more useful to you, since voltage sensitivity is what has to be matched between subsystems anyway.Your amplifier will deliver the same voltage across the speaker terminals regardless of impedance, so voltage sensitivity is what you really care about when designing a crossover. The internal impedance of the amp and the resistance of the wires causes a slight voltage drop, and this drop increases as load impedance decreases, but this is usually small enough to be negligible. When you connect an 8 ohm driver and a 16 ohm driver in the same circuit, the 8 ohm driver will receive twice the power as the 16 ohm driver because the input signal applied across each driver is the same, but the impedance is different. This has an affect of making the low impedance driver louder. That's why you sometimes hear people talking about voltage sensitivity, qualifying the fact that the number expressed is related to voltage input, not power.

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Subject: Re: How do you test speaker spl?

Posted by [bmar](#) on Sun, 28 Oct 2001 18:04:16 GMT

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Hi Wayne, Once again, thanks for your input. I will give that a try and get back with you. bmar

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Subject: Re: How do you test speaker spl?

Posted by [Wayne Parham](#) on Sun, 28 Oct 2001 18:57:15 GMT

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Yes, please write back with your results!

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Subject: Re: How do you test speaker spl?

Posted by [bmar](#) on Sun, 28 Oct 2001 23:35:36 GMT

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Wayne, Do you know something better for testing spl than this rat shack meter? thanks much, bmar

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Subject: Re: How do you test speaker spl?

Posted by [Wayne Parham](#) on Mon, 29 Oct 2001 02:53:02 GMT

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You could look at Speaker Workshop. It is a full-fledged measurement system that you could use to make response graphs. But it would have to be calibrated to give you an accurate SPL, and the only way you could do that is to use the Radio Shack meter as a reference. Not my idea of a golden reference, but the price is right. You might also consider purchasing a measurement system like LMS, which comes with a calibrated microphone and has built-in calibration functions for the rest of the system. That would give you confidence in the accuracy of your SPL charts.