Re: How would you calibrate a sound level meter RESTATING THE PROBLEM

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From: mike (*spamme0_at_juno.com*)
Date: 08/26/04

Date: Wed, 25 Aug 2004 19:18:08 −0700

Norm Dresner wrote:
> I originally wrote:
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> "Norm Dresner" <ndrez@att.net> wrote in message
> news:v3UWc.512527$Gx4.104653@bgtnsc04−news.ops.worldnet.att.net...
>
>>Any microphone with a suitable amplifier and an AC voltmeter makes a sound
>>level meter. Suppose I wanted to make one to set up a stereo system where
>>the input is single tone at a time and the goal is to adjust a
>
> multichannel
>
>>equalizer to get approximately overall flat response from voltage/power in
>>to sound level out. I don't need OSHA or any particular "weighting"
>
> scheme.
>
>>Can someone give me a rough idea of the sequence necessary to calibrate
>>something like this?
>>
>
>
> and several responders cuationed me that room acoustics would make the
> measurement process at best questionable.
>
> But perhaps I simply gave a bad application of a perfectly good instrument
> so let me try again. I have several speakers of differing
> acoustic−electrical efficiency by which I mean that in a free−field
> environment the acoustic energy output per unit of electrical energy input
> differs −− the usual measurements come from the factory in the form of dB
> SPL re 1 meter per 1 watt input but those details are unimportant. What is
> important is that I have several speakers, each with a restricted frequency
> range, which I want to use to create an array with flat response, i.e. the
> acoustic energy output per unit electrical energy input is approximately
> constant across the relevant bandwidth. This is usually done with
> cross−over networks which are in reality nothing but electical bandpass

> *filters. But in terms of matching the acoustic energy from the various*
> *speakers I also need to attenuate the response of some of them relative to*
> *the others. In general, tweeters are much more energy efficient than*
> *woofers, sometimes as much as a decade in power. To do the matching I want*
> *to be able to measure the acoustic energy out of each speaker as a function*
> *of its electrical input. SO ...*
> *How would one go about calibrating a sound−level meter?*
>
> *Norm*
>

I've spent a LOT of time in the past messing with speaker systems.
1) you don't need absolute calibration. You just need flat frequency response.
2) for multiple speaker systems, you'll have phasing problems out the wazoo. Measuring one speaker at a time won't tell you the whole story.
3) Room acoustics make tone measurements USELESS, USELESSS, USELESS. You'll have a much better chance getting good sounding results with pink noise.

If I were gonna do this again, I'd use one of the sound programs to make a pink noise CD. I'd play that CD in my system as the source.

I'd use that same sound program with a "flat" microphone into my sound card to view the result.

It was 20 years ago and all that was done with dedicated hardware, but the results were the same...I pitched the equalizer and all the random speakers. Went out and bought some good speakers.

mike

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Return address is VALID.
Wanted, 12.1" LCD for Gateway Solo 5300. Samsung LT121SU−121
Bunch of stuff For Sale and Wanted at the link below.
Compaq Aero floppy,ram,battery.
MINT HP−41CV, 2−METER AMPS, 200CH SCANNER
http://www.geocities.com/SiliconValley/Monitor/4710/