Subject: Maximum efficiency? Sensitivity?
Posted by Gator on Fri, 18 Jan 2008 17:13:40 GMT
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Hey, hey,What is the maximum theoretical efficiency of a speaker? What speakers come closest to this ideal? Also what is the difference between sensitivity and efficiency? Some use the words interchangeably, some say there's a difference.Later,Gator

Subject: Re: Maximum efficiency? Sensitivity?
Posted by Wayne Parham on Fri, 18 Jan 2008 22:42:39 GMT
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Efficiency is the ratio of the total acoustic power radiated from a speaker to the electrical power applied to it. Directionality isn't considered, rather, the total radiated power in all directions is compared with the input power. Impedance doesn't matter either, since power is what's being compared, not voltage. To provide a specific power level to the voice coil, the proper voltage must be applied according to its impedance.Sensitivity is often called efficiency but the two aren't really the same thing. The sensitivity figure includes the effects of impedance and directivity. It is impossible for any speaker or group of speakers to exceed 109dB/W/M with a radiation pattern that is omnidirectional. That's because an omnidirectional sound source radiating 1 acoustic watt will measure 109dB at 1 meter distance in any direction. You can't exceed 100% efficiency, so it isn't possible to get more than 109dB/W/M from an omnidirectional sound source. But if a speaker or array is highly directional and focuses most of the energy on one spot, it can exceed 109dB with 1 watt input measured 1 meter away. Also, if the voltage is fixed, then SPL increases as impedance decreases. For example, if the reference voltage is 2.83v, then 1 watt of power is

is higher if impedance is lower.

Subject: Re: Maximum efficiency? Sensitivity?
Posted by DMoore on Fri, 25 Jan 2008 23:44:10 GMT
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I would add that SENSITIVITY is also referenced at a particular frequency, usually unstated, and which varies with manufacturer.DM