Subject: sensitivity question
Posted by hurdy_gurdyman on Fri, 09 Apr 2004 03:07:37 GMT
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I have a pair of EV LS-12 fullrange 12" drivers mounted on open baffles, which EV rated at 93dB 1W/1M. I also have a pair of Klipsch Heresy's which are factory rated at 96dB 1W/1M. Both are rated at 8 ohms. If I leave the amp at the same volume setting and change from one pair of speakers to the other, the EV's are louder then the Klipsch. Any explantions for this? Inquiring minds need to know! ;^)Dave:^)

Subject: Re: sensitivity question
Posted by Wayne Parham on Fri, 09 Apr 2004 03:47:42 GMT
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Magic

Subject: Re: sensitivity question
Posted by wunhuanglo on Fri, 09 Apr 2004 03:54:12 GMT
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Is this at a single frequency or with music?Is this measured or perception?

Subject: Re: sensitivity question
Posted by Wayne Parham on Fri, 09 Apr 2004 03:57:28 GMT
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Sorry, Dave. I just wanted to be ornery. Maybe one was rated at 2.83v and the other at 1 watt. If they present different loads to the amplifier, that might explain it. Or one speaker might be rated in free space, the other in half-space or quarter-space. Half-space represents about 3dB over free-space, and quarter-space is about 6dB. Some companies rate in free space, and others measure on a large baffle, which is half-space. Another thing that could be is that one might just be a little bit conservative and the other a bit optimistic. Then again, I suppose something could be just plain ol' out of spec.

Subject: It's probably a midrange thing.
Posted by Bill Fitzmaurice on Fri, 09 Apr 2004 11:13:44 GMT
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Sensitivity isn't always measured the same way; a lot of driver manufacturers average it over the bandwidth, while some measure at 1kHz. In this case I'd say that the EVs probably are putting out a stronger midrange than the other(500 to 1.5kHz), which will subjectively sound louder due to the stepped sensitivity of the ear (see Fletcher-Munson curves)than lower and higher frequencies at the same or even somewhat higher SPLs. You can check it easily enough via an RTA or swept sine SPL measurement.

Subject: Re: sensitivity question
Posted by hurdy_gurdyman on Fri, 09 Apr 2004 12:50:43 GMT
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When I change from the Heresy's to the EV's, I have to boost my subwoofer level guite a bit to match. I use a Rat Shack meter to determine correct subwoofer level. Seems to be around a four or five decible boost needed with the EV's. Also, when having the EV's on one channel and the Klipsch on the other, using the balance control to pan back and forth, the EV's are very noticably louder. To match the Heresy's level, I need to rotate the volume control back from 9:00 to 8:00.Dave

Subject: Re: sensitivity question
Posted by hurdy_gurdyman on Fri, 09 Apr 2004 12:52:22 GMT
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Magic is good. Do you know of any that will convert my Heresy's into Pi Theatre 4's?Dave :^)

Subject: Re: sensitivity question
Posted by hurdy_gurdyman on Fri, 09 Apr 2004 12:59:41 GMT
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The way I understand it, the old EV's (late 1950's) were measured outside in an open field. The old measurements, done at something like 30 feet, were converted to modern standards by a formula that was available on the Fullrange Driver forum. I have the formula buired here somewhere.Word has it that Klipsch speakers are measured in room. It would seem that using sensitivity measurements to compare speakers is a waste of time, as with these two it could lead

to a false conclusion. The EV's are clearly more efficient. Both sound good, with different strengths and weaknesses. I'm listening to the EV's this week. They are less picky on recording quality, thus easier on the ears for long term listening. Those Klipsch midhorns are ruthless!Dave

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Subject: Re: It's probably a midrange thing.
Posted by hurdy_gurdyman on Fri, 09 Apr 2004 13:12:00 GMT
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Here's graph's of the two speakers. They were both taken using 70dB pink noise as a referance, so sensitivity differences don't show up here. Stereophile test CD #2 was used (warble tones) and Rat Shack analog meter, using the common standard compensation. Both speakers are tested with the subs on and balanced for best response, so anything below 60-80Hs is subwoofers. The EV has a transformer coupled piezo with 60 ohm resistor and zobel added, 1.5 uF cap between 8 ohm tap and amp. Sounds well balanced, even though the Rat Shack meter doesn't seem to pick up good past 10kHz.Dave
speaker graphs

Subject: Re: sensitivity question
Posted by wunhuanglo on Fri, 09 Apr 2004 19:23:41 GMT
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If you discount salesmanship in the specmanship (a pretty generous stipulation) I'd offer the possibility that spectral balance is the most likely reason for the difference. You mention fooling with the sub level - the "impression" of adequate bass is enhanced by a boost in the area of 70Hz. Lower response around this freq will give the sense of lack of bass impact.I wonder what it would seem like if you eq'd them flat?Hey, what do I know? I'm more of an amateur than you are!

Subject: Re: It's probably a midrange thing.
Posted by Bill Fitzmaurice on Fri, 09 Apr 2004 19:51:56 GMT
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Well, the Klipsch definitely shows major dips in the midbass and midrange, two areas where the ear is very sensitive, and so while the overall SPL is pretty close I'm not surprised that the EV subjectively sounds louder, though not necessarily better. In fact many studies have shown that the ear finds most pleasing frequencies that it is less sensitive to: bass and treble.As to why the Klipsch has a case of the dips, could be diffraction and Allison effects that the larger radiating planes on the EVs do a better job of controlling.

Subject: Re: sensitivity question
Posted by Bill Fitzmaurice on Fri, 09 Apr 2004 19:55:01 GMT
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Here I'd say that the Klipsch are putting out more below 100 Hz than the EV, so they don't need as much assistance. An SPL check without the subs would tell.

Subject: Re: sensitivity question
Posted by hurdy_gurdyman on Fri, 09 Apr 2004 20:13:27 GMT
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I actually set the sub level with test tones and meter so it is flat down to 30Hz with either speaker. It just takes more gain over the entire subwoofer range to match the EV's.

Subject: Re: sensitivity question
Posted by Wayne Parham on Fri, 09 Apr 2004 20:16:32 GMT
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It's all good!

Subject: Re: sensitivity question
Posted by hurdy_gurdyman on Fri, 09 Apr 2004 20:19:18 GMT
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With the Klipsch, I do need to cut back the range around 60Hz to make flat response, but still the entire range below that needs more gain with the EV's then the Klipsch at the same volume control setting. The entire bass range below 60Hz needs to be boosted several dB for the EV's. When using the EV's, I boost the 62Hz eq on my graphic eq used with the sub. That's the only eq change from one speaker to the next. The graphic eq is only used with the sub amp, and is set for flat response with each speaker system used.Dave

Subject: Re: sensitivity question
Posted by Wayne Parham on Fri, 09 Apr 2004 20:23:08 GMT
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Yeah, the differences in measuring outdoors in freespace and indoors is substantial. Eighth-space (corner loading) is 9dB higher than freespace. Makes sense that there is nearly a 10-fold increase because the corner forms a horn all by itself. Even if a speaker isn't corner loaded, you can pretty much expect 6dB just using them anywhere in a room that isn't huge or highly absorbent. Quarter-space (wall/floor placement) is 6dB over freespace, and even if you pull away from the wall, you're still in a confined area.

Subject: Re: It's probably a midrange thing.
Posted by hurdy_gurdyman on Fri, 09 Apr 2004 20:34:17 GMT
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The EV's definately sound louder when using one of each. To center the image requires turning the balance control almost all the way over toward the Heresy. As for sound quality, I could live with either. The Heresy's have what could almost be described as a sizzling midrange/treble, even with the mid-range driver set to the lower autoformer setting in the crossover. I heard one person describe this as a "frying bacon" sound playing with the music. This is the only complaint I have with the Heresy's, which, so far, I haven't been able to tweek out. It's more noticable with some types music then other types. The EV's have a wider image and subjectively sound "smoother", but don't have quite as good of transient detail, which seem to be their only real fault. I would love to have a speaker with all the good points of these two and none of the faults. Don't ask for much, do I!Dave :^)

Subject: Re: sensitivity question
Posted by AstroSonic on Sat, 10 Apr 2004 17:16:30 GMT
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If you are using a tube amplifier, the EV LS-12 may be an easier load to drive than the Heresy because, lacking a crossover in the midrange, it provides a more constant matching impedance thru the midrange. As a result, more power is actually delivered to the LS-12 for the same volume setting.Regards,Bob

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Subject: Re: sensitivity question
Posted by hurdy_gurdyman on Sat, 10 Apr 2004 19:16:28 GMT
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I was thinking something like that myself, but wasn't sure if it was a reasonable explanation or not.Dave

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Subject: Re: sensitivity question
Posted by AstroSonic on Sun, 11 Apr 2004 11:54:29 GMT
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Dave,The impedance curve between the Fs peak and the VC inductance rise in the HF presents a pretty constant load, and this is the range that contains the 'heart' of most of the music. A 2-way speaker places a broad peak in the midst of that. Its very much like running a 16 ohm speaker on a 4 ohm tap. The sound just lacks vitality. IME, full range/wide range drivers present an easy load for tube amplifiers. At only 90 db/w/m, the RS 1354 is easily driven by my 45 SET, sounding a little more lively than 2-way Tannoys with a 1.5 kHz xover and 94 db/w/m. The impedance mismatch caused by a midrange crossover peak results in poor power transfer, less apparent (actual in the range of the peak) efficiency, and a less lively presentation.Best,Bob