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Subject: Woofer/Amplifier questions

Posted by [Anonymous](#) on Fri, 29 Nov 2002 06:12:24 GMT

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Take two different amplifiers; Amplifier #1 100w into 8 ohms 200w into 4 ohms 400w into 2 ohms Amplifier #2 100w into 8 ohms 100w into 4 ohms 100w into 2 ohms Amplifier #1 is a conventional design where power doubles as impedance halves. Amplifier #2 is a breed that monitors load and lowers the rail voltages to maintain the same power regardless of load. Two questions. 1. If amplifier #2 has variable rail voltages, would clipping occur sooner at 2 ohms vs. 8 ohms load? Suppose rails are +40v/-40v at 8 ohms, and +20v/-20v at 2 ohms. I argue that you would clip easier on transients at 2 ohms vs. 8 ohms, others say 100w = 100w, makes no difference. 2. Woofers have an impedance curve that varies with frequency. Hypothetical -> if an 8 ohm woofer's impedance is 2 ohms at 60hz, does amplifier #1 output 400w @ 60hz whereas amplifier #2 only outputs 100w across all frequencies, in which case, people may interpret amplifier #1 as driving woofers better due to more power?

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Subject: Woofer/Amplifier answers

Posted by [Wayne Parham](#) on Fri, 29 Nov 2002 06:56:38 GMT

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Since power is proportional to the square of current, changes in current effect power even more than changes in voltage. So a feedback mechanism should sense not only voltage but current also.

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Subject: Re: Woofer/Amplifier answers

Posted by [Anonymous](#) on Sat, 30 Nov 2002 04:56:39 GMT

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This whole thing started on the car sound forum where someone posted a message saying that the Brax X2000 car amplifiers sounded ballsy as compared to the JL audio 300/2 amplifier, both rated similar in power, 190w/ch into 4 ohms (Brax), 150w/ch into 4 ohms (JL). The author of the message wanted an explanation why Brax sounded like it was driving the Dynaudio drivers better. Since nobody offered a reason why Brax was sonically better, I offered a possible reason. In a nutshell, I said it was power that was the determining factor. The Brax is a dual mono bridged design, it almost doubles power as impedance halves, 1100 watts total @ 1 ohm. The JL is the amplifier that lowers rail voltages to maintain a constant 300 watt in the 1.5 ohm - 4 ohm range. I was being nice and said you are comparing a 1100 watt amplifier to a 300 watt amplifier, this is technically an unfair comparison - hehe.. I also offered an esoteric thought --> Dual mono bridged Brax, the speaker sees 2x rail voltage since it's bridged, clipping occurs probably at a higher voltage whereas the JL amp will lower the rail voltages if impedance dropped, hence I'm thinking it

may clip sooner. The JL audio guy comes on the forum to defend his amplifier technology stating that the ideal amplifier doesn't double power as impedance is halved, instead, the ideal amplifier supplies constant power regardless of load. This is fine theoretically, but you can't defy the laws of physics - hehe To maintain constant power at varying loads, there is a hidden penalty, the penalty is that the rail voltage drops. The drop in rail voltage would seem to cause a loss of dynamic headroom as the audio signal may reach clipping much sooner. I posted a message on another forum and Nelson Pass said JL audio is more concerned with marketing than amplifier design - lol You know who Nelson Pass is? Famous amplifier designer, founder of Threshold and now Pass Labs. Another esoteric thought --> if someone made a 1/4 ohm woofer and a matching amplifier that is 1/4 ohm stable, suppose the rail voltages are +10/-10v to produce 400w peak. The output signal swings from zero to 10 volts, anything higher is clipping correct? Take the amplifier of today, +55/-55v rails, driving a 8 ohm woofer, that is about 400w peak. The output signal swings from zero to 55v, anything higher is clipping correct? What I'm wondering is --> can you distinguish between these two hypothetical amplifiers, both the same power rating, or will the low voltage amplifier be more likely to clip on transients and would it be more audible? So far, nobody has not offered an explanation on various forums, even the technical ones. The solid state forum, people are scratching their heads. Perhaps I think too much?

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Subject: Re: Woofer/Amplifier answers

Posted by [Wayne Parham](#) on Sat, 30 Nov 2002 06:15:29 GMT

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