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Subject: Re: 100dB/watt at 20 Hz is overkill.

Posted by [Bill Fitzmaurice](#) on Tue, 16 Mar 2004 12:59:15 GMT

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My RTAs were taken acoustically with a Phonic PAA2, both at the FOH and throughout the arena. For control purposes I also have taken RTAs of my personal electric bass rig, one which is quite capable of delivering 105dB output flat to 32 Hz. What I've found is that the bulk of sonic energy does not lie in the first octave fundamentals but in the second octave second harmonics, irrespective of whether the instrument being measured is electric bass, kick drum or pipe organ for that matter. There is a simple reason for this, and it has little to do with the capability of sound systems. It is that the human ear just isn't very sensitive to pure tones lower than 60 Hz, and when the second harmonic content of a bass tone is increased in level the brain is fooled into thinking that the fundametal level has been increased as well. This meshes quite nicely with the latest research on the subject by variuos sources as published in the Journal of the AES, where it has been verified time and again that increasing the subjective psycho-acoustically perceived level of bass content is most effectively achieved by the alteration of harmonic levels and not fundamental levels of bass sources. Chances are that when you have problems with kick drums it's not at 40 Hz but at 80 Hz. I've found that when bass levels are perceived as excessive, to the extent of pounding your chest so hard as to literally take your breath away, the bulk of the energy present is around 80 Hz, not 40 Hz. When you retune the drum higher what you're really doing sonically is pushing that all important second harmonic higher to where it is less offensive.

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