Subject: Re: Is mixing 'n matching cabs a bad idea ?
Posted by Paul C. on Mon, 16 Jan 2006 00:06:28 GMT
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Right you are... my own instrument is the saxophone (ALL of them), and without exception, the 2nd harmonic is 3 db - 6 db stronger than the fundamental. The lowest note of the bass saxophone is 52 hz, but my PA spkrs only go down to about 60 hz. That low note comes right on through and sounds fine.The low instruments are heard more by their overtones than the actual fundamental.We need to realize that for electric guitar and bass that the amp and speaker is as much a part of its sound as the instrument itself. Even though the fundamental of the low E string of the bass guitar is 41 hz, having speaker response to 41 hz is simply not necessary.This is not to say that you don't need speakers that go that low... you do. Bass drum, the impact of tympani, and other tones are down in that region. On the other hand, I will often see where a sound engineer will note that the "normal" range of, for example, the tenor saxophone (this does not include players such as Bill Holloman, Kirk Whalum, etc), is from 104 hz (tenor sax's low Bb) to 624 hz (tenor's high F)... and then state that is all the speaker range needed for that instrument. But that is the range of the FUNDAMENTAL. What gives an instrument it's identifying tone quality is the number and relative strength of its overtones. The violin, trumpet, sax, oboe, flute all have both odd and even overtones. That is, f (fundamental), 2f, 3f, 4f, etc. This generally adds to be a sawtooth wave. But there are differences in the relative strengths of the overtones. The clarinet family has only odd overtones which add up to an approximation of a square wave.I can generate these waveforms with a synth, toss in some fixed and variable filters, and closely duplicate the tone of these various instruments, but still, it won't sound like the instrument. There are transients, and other things that make up the tone that are less easy to define.It is generally agreed that a sound requires at least the first 10 overtones to fool the ear into thinking it is hearing a certain instrument. I tend to agree. But I can take that highest sax tone, 624 hz, and filter above 6250 hz, and still, you can hear a difference.As far as a speaker's "sound", the midrange and highs are much more important than the bottom end. We always concentrate on the woofer, and low end, but it is the tweeter and xover that really makes a huge difference in sound reproduction.But regarding this bass guitar speaker... it is not a sound reproducer, it is a sound PRODUCER. It is a part of the instrument. Don't get hung up on exactly how low it goes. If it will get at least down to 55 hz - 60 hz it will do well for bass guitar.For sound reproduction, club speakers, PA at outdoor musical events, etc, we do need to go further down. Bass Guitar is not the lowest we deal with... it is the bass drum, aka "kick drum". This has a lot of energy in the 40 hz-50 hz range. And a good, fast, tight bass speaker is important. Kick drum does not go "Whooommmmm, Whoooommm..." (the sound of "4th order" subwoofers, what I call Johnny One Note speakers). The kick drum goes "BAP!!!" It has indefinite pitch, and a strong transient. It has "kick". A speaker that will do this is a little different from a bass guitar speaker.Still, for bass, you need response up to about 4khz.Some styles of bass (like you hear on the tags in Seinfeld) require more highs. Guys that play like that use 4x10 cabs for the quicker transients and more projecting tone. Guys that play walking bass in a 50's Rock and Roll band like a single 15". And some use a 15" with a pair of 10"'s.