

## The Truth About Subwoofers

by Tom Nousaine

Walk into any audio or big-box store and whaddya' see? Commercial products that are euphemistically called 'subwoofers.' Why do I describe that label as optimistic?

Eric Busch pointed out about 15 years ago that digital storage media made it possible to produce commercial recordings (cd, dvd) with program content as low as 6 Hz (Telarc "1812") and that there are plenty of cds that contain this kind of bass. Since then, the Cinema people have stopped high passing soundtracks and there are plenty of DVDs with strong infrasonic bass.

In my opinion a "Subwoofer" should be able to reproduce not only electric and acoustic bass but also programs containing organs, thunder, steam locomotives, cannons, fake T-Rex, train crashes and radial engine aircraft many of which have content in the bottom two acoustic octaves (5-10Hz and 10-20Hz) where sound is largely perceived through bone conduction. As David Clark might say ..... we need to preserve the artist intent in playback. I'm sure that Mother Nature wants us to enjoy a thunder report exactly as she intended when she did the live performance.

But, unfortunately commercially available "Subwoofers" will not allow you to play these programs at reference levels? How do I know this? I've had the opportunity to test over 200 commercial subwoofers in the past 15 years and exactly none of them were capable of doing justice to programs with infrasonic content. Only very recently have I tested 2 products that have reasonable sound pressure capability to 10 or 12.5 Hz.\*

For example, until now the biggest subwoofers with the greatest SPL capability currently on the market were both high passed; one at 15 Hz and the other at 19 Hz. Of the last 200 subwoofers I've measured fewer than 8% of them are capable of producing 16 Hz with <10% distortion @ 2 meters in a real room. The absolute best of that lot will do only do 101 dB SPL at 16 Hz and the others average an insulting 82 dB SPL. Only 20% of them will do an honest 20 Hz and with an embarrassing average of 80 dB SPL. Even the 300 lb. behemoth with 4 12-inch woofers (high passed at 19 Hz) only delivers 106 dB SPL at 20 Hz. *Subwoofers?* I don't think so.

The moral to this story is that in commercial audio up until the summer of 2008 *there was no such thing as a subwoofer*, a product that would play commercially available programs with infrasonic content at reference level. If you wanted to enjoy those programs as delivered to your woofer terminals you only had one choice....to build your own. When they look at their omnipresent horizontally arrayed center channel speakers and universal use of the term "subwoofer" to describe common woofer modules the loudspeaker industry should wince in unison every morning when they look in the mirror to shave.

\* As of November 2008 I am glad to report that I have recently tested 2 commercially available subwoofers that are true subwoofers. For example the Epik Conquest can deliver 104 dB SPL @ 2 meters at 12.5 Hz in my large living/test room and the SVS Ultra-13 can generate 100 dB SPL at 10 Hz. These are the first of, what I hope to be, a new breed.