

SOUND & VISION

Full lab results on three "Tiny Killer Subs" from the June 2005 S&V. © 2005 by Hachette Filipacchi Media, U.S., Inc. All rights reserved.

in the lab

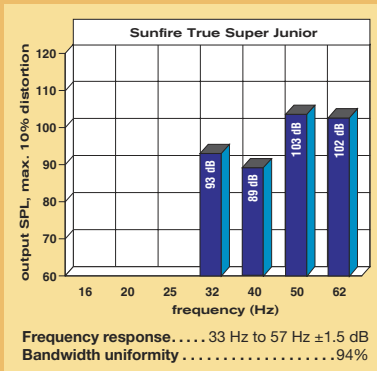
The bass limits for each subwoofer were measured with it set to maximum bandwidth and placed in the optimal corner of a 7,500-cubic-foot room. In a smaller room users can expect 2 to 3 Hz deeper extension and up to 3 dB higher sound-pressure level (SPL).

It's not uncommon to find discrepancies between lab measurements and subjective observation of subwoofer performance, as here with the Sunfire, which didn't measure as well as the Velodyne in some respects but was Dan Kumin's favorite. There are several reasons.

We standardize our SPL measurements at any given frequency to the highest level generated, in decibels, with a maximum of 10% distortion. The Sunfire produced output at 25 Hz, but did so with more than 10% distortion, so that measurement is omitted from the graph. At 32 Hz, its SPL with less than 10% distortion was 93 dB — equal to the Velodyne's.

In this context the word "distortion" has a somewhat different import than you might expect. As with the other subs here, if you feed the Sunfire a low-bass tone and turn up the signal, upper harmonics — multiples of the

duced an additional 12 dB SPL, though at this point the second harmonic was louder than the fundamental. While technically this har-



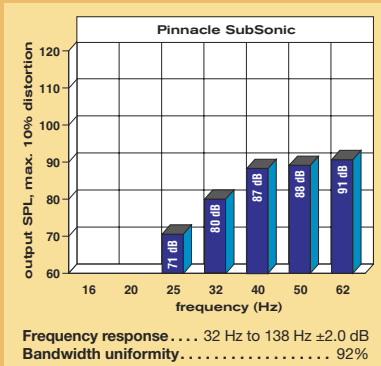
monic content is a distortion of the input signal, it is generally difficult to detect as such by most listeners. It may give the suggestion of deeper bass but is really just an increase in overall volume.

In contrast to the Sunfire, the Velodyne bumped the sound-level meter only 6 dB at maximum output with distortion unchecked, and it produced a higher maximum SPL overall within the 10% distortion limit: 108 dB at 62 Hz vs. the Sunfire's 102 dB.

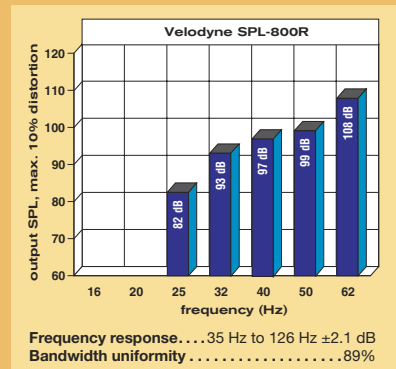
The Pinnacle SubSonic had relatively extended upper bandwidth with its crossover bypassed. I found dynamic capability quite limited, and rising distortion made the output fall off by roughly 12 dB per octave below 62 Hz. Running at full output without regard to distortion, the SubSonic drove up the needle on a sound meter by 12 dB, but upper-harmonic distortion was louder than the fundamental tone. Although the crossover dial is marked from 50 to 150 Hz, the actual turnover frequencies varied from only 75 to 80 Hz over its full rotation, but the slope of the low-pass filter progressively doubled as the control was turned downward. There was virtually no interaction with the level control.

The actual acoustic bandwidth of the Sunfire subwoofer was limited to 33 to 57 Hz even with the crossover control set to Bypass. Dynamic capability was uniform. With the crossover control set to its minimum (a marked 30 Hz), the upper turnover frequency measured 48 Hz, although the 24-dB-per-octave low-pass filter was sharpened as the crossover was turned down. There was no crossover/level interaction except for the very bottom position, where level was reduced by 6 dB.

The Velodyne SPL-800R had strong output at 62 Hz but fell by 16 dB per octave at lower frequencies. Still, it had 10 dB more clean 25-Hz capability than the Pinnacle. Driven to maximal output without limiting distortion, it could produce an additional 6 dB SPL. The acoustic crossover frequencies matched the dial markings much more closely than usual. There was a 4-dB drop in level at the very bottom of the crossover knob's rotation but little interaction at other settings. The Movies EQ setting increased output by 4 dB at 50 Hz compared with the Jazz/Classical EQ, with



fundamental tone — will eventually constitute more of the sound than the fundamental itself. When driven to maximum output, it pro-



which all primary measurements were taken. The Rock/R&B EQ added 6 dB between 50 and 70 Hz, while Games added 1.5 dB at 65 Hz and sharpened the high-pass filter below 45 Hz.

— Tom Nounsaine