

# SOUND & VISION®

from test report on the Denon DVD-2200 DVD/SACD player in the January 2004 S&V. Copyright © 2003 by Hachette Filipacchi Media U.S., Inc. All rights reserved.

## in the lab

### DVD-VIDEO PERFORMANCE

Measurements were made from a variety of DVD test discs. Unless otherwise stated, data are for the composite-video output.

Maximum-white level error ..... 0 IRE

Setup level ..... +7.5/0 IRE (switchable)

#### Horizontal luminance response

(re level at 1 MHz)

4 MHz ..... -0.26 dB

5 MHz ..... -0.35 dB

6 MHz ..... -0.72 dB

6.75 MHz ..... -0.92 dB

Onscreen horizontal resolution ..... 540 lines

In-player letterboxing ..... good

#### Component-output level error (interlaced)

(Y/P<sub>r</sub>/P<sub>b</sub>) ..... +3.42/-8.0/-7.7%

#### Component-output timing error (interlaced)

(P<sub>r</sub>/P<sub>b</sub>) ..... -5/-1 nanoseconds

### DVD-AUDIO PLAYBACK

All tests were done using a custom-made test DVD-R consisting of computer-generated signals containing dither, which sets limits on measured distortion and noise performance. All speakers were set to "large," subwoofer on, channel-trim controls all at 0 dB. Data are for the left front channel but are typical of all channels.

Maximum output ..... 2.1 volts

Noise level (re -20-dBFS, A-wtd, 24-bit signals)  
96-kHz sampling rate ..... -90.1 dB

#### Frequency response

96-kHz ..... 20 Hz to 46.5 kHz +0.008, -3 dB

#### Excess noise (re perfect 24-bit performance)

96-kHz sampling rate ..... +33.6 dB

#### Noise modulation

all sampling rates ..... 0.5 dB

### SACD PLAYBACK

All tests were made with the Philips DAC-test multichannel SACD under the same conditions as for DVD-Audio.

Excellent performance was the rule for the Denon DVD-2200 in the lab. For example, noise levels in CD playback were riding right at theoretical perfection for 16-bit signals and less than 1 bit away from perfect quasi-20-bit performance. I obtained similarly good noise levels with DVD-Video (noise limited by the Dolby Digital encoding), DVD-Audio (about 19-bit equivalent quality), and SACD playback (close to 18-bit performance).

There were no problems with video performance. Even the standard setting of the color-level control produced dead-on accurate test patterns. Most DVD players have their color levels set too high and require compensation

Maximum output ..... 2.1 volts

#### Frequency response

20 Hz to 70.4 kHz +0, -3 dB

Noise level (re -20 dBFS) ..... -86.0 dB

### CD AUDIO PLAYBACK

All tests except defect tracking were made with *Sound & Vision's* test CD-RW. All test signals contain dither.

Maximum output ..... 2.1 volts

#### Frequency response

20 Hz to 20 kHz +0.009, -0.036 dB

Noise level (re -20 dBFS, A-wtd) ..... -75.8 dB

#### Excess noise (without/with sine tone)

16-bit (EN16) ..... 0/0 dB

quasi-20-bit (EN20) ..... +5.3/+5.3 dB

Linearity error (at -90 dBFS) ..... ±0 dB

Noise modulation ..... 0.5 dB

#### Defect tracking

(Pierre Verany test disc) ..... 1,000 µm

### BASS MANAGEMENT

Subwoofer-overload tests were performed using worst-case Dolby Digital signals on a custom DVD-RW. Center- and surround-channel outputs were set to "small," subwoofer on, and all channel-balance controls were set to 0.

#### Subwoofer low-pass frequency response

DVD-Video, DVD-Audio, CD: -24 dB/octave rolloff above -6-dB point of 80 Hz

SACD: -12 dB/octave rolloff above -3-dB point of 80 Hz

#### Main-channel high-pass frequency response

DVD-Video, DVD-Audio, CD: -12 dB/octave rolloff below -3-dB point of 80 Hz

SACD: -6 dB/octave rolloff below -3-dB point of 80 Hz

#### Maximum subwoofer output

Dolby Digital: 2.0 volts with 0.06% THD+N

DVD-Audio: 3.2 volts with 0.2% THD+N

either with the color control or by a rigorous monitor setup. Right out of the box, the Denon DVD-2200's picture quality was superb on all outputs, including progressive-scan, which had none of the all-too-common color-upsampling smearing or jagged diagonals.

Bass management was applied to all media, and all main speakers can be set to either "large" or "small." As usual, speaker distance compensation was lacking for SACD playback, and the crossover slopes shifted when changing from CD or DVD-Video/Audio playback to SACD. Fortunately, crossover frequency did *not* shift.

— David Ranada