SOUND&VISION®

in the lab

DVD-VIDEO PERFORMANCE

Measurements were made using 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)
4/5/6/6.75 MHz.....–0.17/–0.09/±0/±0 dB

Onscreen horizontal resolution.....540 lines

In-player letterboxing.....fair

Component-output level error (interlaced)
(Y/P_rP_b).....+10.8/+2.4/+4.4%

Component-output timing error (interlaced)
(P_rP_b).....+2/+9 nanoseconds

DVD-AUDIO PERFORMANCE

All tests used computer-generated, 24-bit signals encoded at a 96-kHz sampling rate on a custom-made test DVD-R. All signals contained dither, which sets limits on measured distortion and noise performance. All speakers were set to "large," subwoofer on. All data are for the left front channel but are typical of all channels.

Maximum output level .....2.02 volts

Noise level (re –20 dBFS, A-wtd).....–82.6 dB

Frequency response
20 Hz to 43.7 kHz +0.005, –0.43 dB

Excess noise
(re perfect 24-bit performance).....+40.8 dB

Noise modulation.....<0.5 dB

SACD PERFORMANCE

All tests used the Philips DAC-test multichannel SACD under the same conditions.

Maximum output level .....2.03 volts

Frequency response
20 Hz to 49.9 kHz +0.003, –3 dB

Noise level (re –20 dBFS).....–81.6 dB

DOLBY DIGITAL PERFORMANCE

All tests used Dolby Digital signals on a custom DVD-R that were encoded from 24-bit PCM data and contained dither. Dialogue normalization for all signals was 27 (the same setting used by movie soundtracks), which leads to maximum output levels and noise reference levels 4 dB lower than for other media. All speakers were set to "large," subwoofer on. Data are for the left front channel, but are typical of all channels.

Maximum output level.....1.27 volts

Distortion (THD+N, 1 kHz)
at –20 dBFS.....0.01%

Noise level (re –20 dBFS, A-wtd).....–79.2 dB

Frequency response
20 Hz to 20 kHz +0.007, –0.39 dB

BASS-MANAGEMENT PERFORMANCE

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

Subwoofer low-pass frequency response
DVD-A, Dolby Digital, and CD: –12 dB/octave above 100 Hz
SACD: –12 dB/octave above 80 Hz

Main-channel high-pass frequency response
DVD-A, Dolby Digital, and CD: –6 dB/octave above 100 Hz
SACD: –6 dB/octave above 80 Hz

Maximum subwoofer output
1.92 volts, 0.006% THD+N

CD PERFORMANCE

All tests used computer-generated 16-bit signals containing dither on a custom CD-R.

Maximum output level.....2.03 volts

Distortion (THD+N, 1 kHz)
at 0 dBFS.....0.0038%
at –20 dBFS.....0.022%

Noise level (re –20 dBFS, A-wtd).....–74.9 dB

Excess noise (without/with sine tone)
16-Hz (EN16).....+1.05/+1.0 dB
quasi-20-Hz (EN20).....+14.0/+14.0

Noise modulation.....0.5 dB

Frequency response
20 Hz to 20 kHz +0, –0.1 dB

The Marantz DV6400's video behavior was quite good, with excellent luminance response. With its progressive-scan output, there was a mild trace of the color-smearing chroma-upsampling bug, and interlaced video material (such as that shot using standard video cameras) converted to progressive-scan was not as smooth and free of jagged diagonal edges as movies. Both of these characteristics are common.

Audio was also good, if not superb. The noise levels for DVD-Audio and SACD were both only about 6 dB lower than theoretically perfect 16-bit CD reproduction. While this 17-bit-equivalent performance is an audible improvement, it is nowhere near the best we have measured (lower than 90 dB in some players), nor what theory predicts these advanced formats should ideally deliver. Almost all program material, however, will be noisier than the Marantz player.

Measurements of bass management once again show SACDs behaving differently from the other formats. However, the ⅓-octave shift in crossover frequency between 80 and 100 Hz won't be that audibly significant if you take the time to set up and adjust your system properly. Then again, no amount of adjustment can make up for the player's lack of speaker-distance compensation during SACD playback, which seems to be the rule rather than the exception among SACD players. — *David Ranada*