

# SOUND & VISION®

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## IN THE LAB

	HITACHI DV-PF73U	PANASONIC DMR-E50	INTEGRA DPS-8.3
<b>DVD-VIDEO PERFORMANCE</b> Measurements were made from a variety of test discs using each player's composite-video output except as noted.			
<b>Maximum-white level error</b>	-3 IRE	±0 IRE	-1 IRE
<b>Differential gain, phase</b>	1%, 1°	0%, 0°	0%, 1°
<b>Horizontal luminance response</b> (re level at 1 MHz)			
4 MHz	-0.18 dB	-0.45 dB	-0.26 dB
5 MHz	-0.18 dB	-0.45 dB	-0.54 dB
6 MHz	-0.18 dB	-0.45 dB	-0.92 dB
6.75 MHz (DVD limit)	-0.18 dB	-0.92 dB	-1.4 dB
<b>Onscreen horizontal resolution</b>	540 lines	540 lines	540 lines
<b>In-player letterboxing</b>	fair	good	good
<b>Component-output level error</b> Y, P <sub>r</sub> , P <sub>b</sub>	+3.7, -2.3, -3.5%	+0.97, -1.3, -3.1%	+3.6, -0.65, -0.24%
<b>Component-output timing error</b> P <sub>r</sub> , P <sub>b</sub> (in nanoseconds, or ns)	+13, +13 ns	+26, +23 ns	+4, +7 ns

### INTEGRA DPS-8.3 AUDIO PERFORMANCE

Results obtained from a variety of test discs. All speakers were set to "large," subwoofer on, for all tests except those for the subwoofer output and bass management. All DVD-Audio results were obtained with signals at a 96-kHz sampling rate. Reference level for noise measurements was the output level with a -20-dBFS, 1-kHz signal.

#### Noise level (A-wtd, best case)

Dolby Digital	-72.2 dB
CD (16-bit signal)	-73.6 dB
DVD-Audio (24-bit signal)	-78.5 dB
SACD	-77.5 dB

#### Frequency response

Dolby Digital	20 Hz to 20 kHz +0.018, -0.45 dB
CD	20 Hz to 20 kHz +0.32, -0.004 dB
DVD-Audio	20 Hz to 42 kHz +0.025, -0.44 dB
SACD	20 Hz to 72.7 kHz +0.009, -3 dB

All three players measured fine in composite-video playback from DVDs. There were slight differences in their in-player letterboxing performance, but this is always a judgment call (and irrelevant if you have a widescreen TV). There were also slight differences in progressive-scan playback. All three players displayed mild forms of the "chroma upsampling bug," which creates striated effects at the borders of areas of highly saturated colors (this is most easily seen in computer-animated movies like *Toy Story* and *Monsters, Inc.*). The Panasonic performed best in this regard, followed closely by the Integra, with the Hitachi bringing up the rear.

The recording performance of the Panasonic was nearly identical to what I've measured from previous Panasonic DVD-RAM recorders. Its video resolution was a full 540 lines in the XP and SP modes but dropped precipitously to 250 lines in the LP mode and the ultra-long-playing EP mode. The latter also seemed to record only every other video field, which produced somewhat jerky motion with objects moving at moderate speeds. Encoding artifacts were rare in XP and SP but became increasingly visible when switching to LP and EP. These artifacts were more visually distracting than the typical 220-line resolution of the Hitachi VHS recorder.

Aside from its chroma bug, the most surprising thing about the Integra's performance was its noise

### INTEGRA BASS-MANAGEMENT PERFORMANCE

Measured results using Dolby Digital test signals.

#### Subwoofer output frequency response

12 dB/octave rolloff above -3-dB point at 100 Hz

#### High-pass-filter frequency response

12 dB/octave rolloff below -3-dB point at 100 Hz (SACD: 6 dB/octave rolloff)

#### Maximum unclipped subwoofer output (fixed-level output)

1.3 volts

#### Subwoofer distortion (from 6-channel, 30-Hz, 0-dBFS signal; fixed-level output)

0.04%

#### Response consistency: high-pass slope changes for SACD

**Media consistency:** no bass management for DVD-Audio, CDs, or two-channel SACDs

**Speaker-size selection:** front left/right channels cannot be set to "small"

**Speaker-distance compensation:** none for SACD

levels. Both DVD-Audio and SACD playback were only 4 to 5 dB quieter than CD playback, itself a couple of decibels higher than the theoretical minimum we've seen from many other players. The numbers printed here are *best-case* results, which occurred on the front left/right channels. Noise levels from the center and surround channels were several decibels higher. Spectrum analysis of the noise output showed considerable contamination from the power-line frequency and its harmonics, some of which extend up into the frequencies at which listeners are most sensitive and therefore *might* be audible under critical listening conditions.

The Integra's bass-management/distance-compensation system is incomplete. Only Dolby Digital and DTS soundtracks come out right. DVD-Audio discs receive no bass management while multichannel SACDs get no distance compensation. If you have a subwoofer/satellite speaker system, this means you will get changes in bass balance when you change disc types.

There were varying results in our recordable-DVD playback tests. Neither the Hitachi nor the Integra could play DVD-RAM discs, and the Hitachi also couldn't handle DVD-RWs recorded in the editable VR mode. Both the Integra and, somewhat surprisingly, the Panasonic *did* play VR-mode DVD-RWs.

— David Ranada