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★ HOTTEST MOVIES ON BLU-RAY: SUPER 8, CARS 2 3D & MORE P72 ★ REVIEWED: INTEGRA DTR-80.3 SURROUND PROCESSOR & DTA-70.1 AMP P68

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REFERENCE SPEAKERS ON A BUDGET
 RSL'S THEATER SYSTEM FILLS YOUR EARS WITHOUT EMPTYING YOUR WALLET

Test Bench

BY Mark Fleischmann

Harman Kardon AVR 3650 A/V Receiver

PRICE: \$999 **AT A GLANCE:** High-quality amplification • Logic 7, Dolby Volume listening modes • Distinctive gray and black look

The Road Less Traveled

The home theater system's beating heart is the audio/video receiver. It supports a heroic workload: routing video and audio signals from source components to display and speakers, gussying up the video, decoding audio formats, massaging audio signals with listening modes, cabalistically correcting room acoustics—and last but not least, performing the heavy lifting necessary to drive loudspeakers. The final item on that list is among the AVR's most significant attributes. But in the race to jam in as many features as possible, amplification is in danger of becoming an afterthought. In Harman Kardon's AVR 3650, the top model in its new receiver line, the manufacturer took the road less often traveled and acts more like a high-end boutique manufacturer than a mass marketer. It went the extra mile to make this AVR sound great and rigorously stripped it of back-panel clutter. The result offers comfort to the music lover who cares about the fundamentals of performance.

Two-Tone Look

The Harman Kardon AVR 3650 has a distinctive look carried over from previous lines. You'd never mistake a Harman A/V receiver for anyone else's. The front panel is dramatically bisected into a shiny black top half and a matte gray bottom half, divided by a skinny strip of nearly invisible buttons. The front-panel HDMI and USB jacks are so well camouflaged that you

might easily miss them as well. The volume knob to the right of the white fluorescent display is circled in white light. Viewed from off center, it looks like a bright crescent moon on a clear evening. While you can dim the front-panel display in three stages or turn it off, you can only set the volume knob backlighting to on or off.

Connectivity isn't what you'd expect in an A/V receiver that sells for a thousand bucks. It's considerably reduced. Harman isn't the first manufacturer to omit S-video, and forward-looking videophiles would probably forgive cutting back composite video to two inputs and two outputs. Really, how much legacy junk do you need in your rack?

But while Harman provides two component video inputs, it has omitted the component video output, which you may miss if you use an older pre-HDMI HDTV or component video for a long projector cable run. For

analog audio, there are three stereo inputs and two stereo outputs, but no multichannel ins or multichannel preamp outs, so forget about plugging in an older disc player or using this AVR as a surround processor. If you're connecting an iPod or iPhone, you may use The Bridge III, a \$129 accessory. The AVR 3650 doesn't support the iPad tablet either way.

Harman Kardon mixes licensed and proprietary technologies in a mostly pragmatic way. This HDMI 1.4a AVR supports 3D. Video processing is Faroudja DCDi. You can set resolution, video processing mode, and parameters such as film-mode detect and black level separately for each input. The graphic user interface is generated in your choice of output resolution up to 1080p.

On the audio side, the product supports DTS-HD Master Audio and Dolby TrueHD lossless surround—nowadays, we expect

HARMAN KARDON AVR 3650 A/V RECEIVER
AUDIO PERFORMANCE ★★★★★
VIDEO PERFORMANCE ★★★★★
FEATURES ★★★★★
ERGONOMICS ★★★★★
VALUE ★★★★★

no less—with the welcome addition of Dolby Volume for volume leveling and dynamic range control. Listening modes include Dolby Pro Logic IIz, which offers the possibility of redirecting the sixth and seventh amp channels to height enhancement. Harman supplements DPLII with its own Logic 7 listening mode, with movie, music, and game settings; plus Harman Virtual Speaker, which simulates 5.1-channel effects from two speakers; and Harman Headphone, another virtual surround mode. Auto setup and room correction are present in Harman's own EZSet/EQ, with results I'll describe later.

The graphic user interface is modern and good looking—once



SPECS

HARMAN KARDON AVR 3650 A/V RECEIVER

AUDIO DECODING:

DOLBY: TrueHD, Digital 5.1, EX, Pro Logic II/IIx/IIz, Volume

DTS: DTS-HD Master Audio, DTS, ES, 96/24, Neo-6

HARMAN: Logic 7, Virtual Speaker, Headphone

3D: Yes

THX CERTIFICATION: No

NUMBER OF AMP CHANNELS: 7

RATED POWER (WATTS PER CHANNEL):

110 into 8 ohms, two channels driven

SPECIFIED FREQUENCY RESPONSE:

10 Hz to 130 kHz (+0/-3 dB)

VIDEO PROCESSING: Faroudja DCDi

AUTO SETUP/ROOM EQ: EZ-Set/EQ

DIMENSIONS (W X H X D, INCHES):

17.31 x 6.5 x 17.13

WEIGHT (POUNDS): 27.25

PRICE: \$999



• The AVR 3650's front-panel HDMI and USB jacks are camouflaged well.

you find the button that activates it. The minimal printed manual that came with my sample instructs you to look for a Setup button on the remote control, but the remote button that triggers the GUI is labeled AVR. Harman has since fixed the manual. Incidentally, the full manual (available as a PDF on Harman's Website) correctly identifies the remote's AVR button as the GUI entry point. The remote itself is big, a good 10 inches long, with bright white backlighting triggered by a dedicated button. Controls are well differentiated by size, shape, and layout. The lozenge-shaped key for volume up/down is easy to find and a hair over an inch long. This is a sleek, well-thought-out remote, and I

enjoyed having it by my side during the demos.

Setup with EZSet/EQ and the included setup microphone was straightforward. The program listed speaker distances in rounded-off feet but was otherwise in the ballpark. It correctly pegged the size (meaning bass capability) of my reference speakers as large, which is standard procedure for most auto setups. I changed this to small with an 80-hertz crossover, which is standard procedure for me. The default setting for Dolby Volume was low; I switched it off but selectively invoked it on some movie (never music) content. I always prefer to hear music with the dynamics the artist intended.

Associated equipment included five Paradigm Reference Studio 20 v.4 speakers and an Oppo BDP-83SE universal disc player.

Politesse

In movie demos, with EZSet/EQ engaged, the AVR 3650 exhibited a smooth, laid-back sound that was slightly reticent in the upper midrange compared with most A/V receivers that visit my equipment rack. This took the edge off aggressive action-movie effects. While it didn't severely dull vocals, it did require me to play soundtracks at moderate to loud volumes for optimum vocal clarity. Dynamics were good: The AVR had no trouble driving my reference speakers, which are of average sensitivity, to high output levels.

The Special Relationship (DVD, Dolby Digital) precedes its dramatization of the Blair/Clinton bond with a Broadway recording of Cole Porter's "Friendship." After that, the soundtrack consists of orchestral music the London

Symphony Orchestra recorded at Abbey Road. The contrast between the two was striking: The AVR conjured splashy textures from the swaggering show tune but then went soft and gauzy on the impeccably recorded orchestral score. Clearly, the receiver didn't apply a one-size-fits-all aesthetic. Surround effects sometimes dropped below the threshold of audibility—I was rarely aware of them except when I sat close to one of the surround speakers. I learned to play the Harman at a higher average volume level than I use for most A/V receivers, which restored soundfield and dialogue perception.

Children of the Corn: Genesis (Blu-ray, Dolby Digital) has a brasher treble in its effects treatment, which made me grateful for the Harman's polite top end. However, that didn't prevent me from switching on Dolby Volume (low) after half an hour, which firmed up the soundfield and improved overall listening comfort. It would be hard to overstate the benefit of low-volume listening modes with movie soundtracks in general. If I hadn't been acting as a critic,

I'd probably have kept Dolby Volume on for all movies. Receiver-equalized bass on this selection seemed on the plump side of acceptable, something I'd previously noticed in several informal movie-night sessions. When I checked with Harman, the company told me EZ-Set/EQ does equalize bass.

Legend of the Millennium Dragon (Blu-ray, DTS-HD Master Audio), with its Japanese anime battle scenes, offered more bass effects to show off the receiver's bottom end (down to the 80-Hz subwoofer crossover). In this selection, it felt right, with war drums and synthesized thunder.

We Can Be Heroes

Lang Lang's *Liszt: My Piano Hero* CD combines 10 of the composer's solo piano works with his first piano concerto, accompanied by the Vienna Philharmonic under the baton of Valery Gergiev. The beautifully recorded Sony Classical CD offers a vivid at-the-piano perspective that made it an ideal, if unwitting, test subject for A/B-ing. For the first time, I turned off EZSet/EQ. This made me realize how great a

3:2 HD	2:2 HD	MA HD	3:2 SD	2:2 SD	MA SD	VIDEO CLIPPING	LUMA RESOLUTION	CHROMA RESOLUTION	SCALING
FAIL	FAIL	FAIL	PASS	FAIL	FAIL	PASS	PASS	PASS	GOOD

VIDEO TEST BENCH The Harman Kardon performed poorly when called upon to perform deinterlacing on 1080i or 480i content, and of the six tests that involve such processing (the first six in the VTB chart shown here), it only marginally passed our 3:2 standard-definition test. But it performed well when passing through a native 1080p source (Video Clipping and Luma and Chroma resolution) or in upconverting a 480p signal to 1080p. If you have an external way to deinterlace a source (such as respectable video processing in a Blu-ray player, DVD player, or set-top satellite or cable box), you should check to

Visit our Website for a detailed explanation of these video tests.



determine if it can do a better deinterlacing job than the AVR 3650.

Note that from here forward, we have deleted the analog tests, which tested for component in to HDMI out cross-conversion. Component-capable sources are becoming scarcer as manufacturers seek to plug the analog hole that content providers have long complained about, while HDMI is becoming not only more reliable than in its teething period but also ubiquitous in both source components, AVRs and displays.—TJN

HT Labs Measures

HARMAN KARDON AVR 3650 A/V RECEIVER

Five channels driven continuously into 8-ohm loads:

- 0.1% distortion at 70.4 watts
- 1% distortion at 85.8 watts

Seven channels driven continuously into 8-ohm loads:

- 0.1% distortion at 43.6 watts
- 1% distortion at 50.8 watts

Analog frequency response in Stereo mode:

- 0.23 dB at 10 Hz
- 0.08 dB at 20 Hz
- +0.04 dB at 20 kHz
- 2.51 dB at 50 kHz

Analog frequency response with stereo signal processing:

- 1.59 dB at 10 Hz
- 0.48 dB at 20 Hz
- 0.28 dB at 20 kHz
- 35.02 dB at 50 kHz

This graph shows that the AVR 3650's left channel, from CD input to speaker output with two channels driving 8-ohm

loads, reaches 0.1 percent distortion at 109.2 watts and 1 percent distortion at 124.6 watts. Into 4 ohms, the amplifier reaches 0.1 percent distortion at 134.0 watts and 1 percent distortion at 170.0 watts.

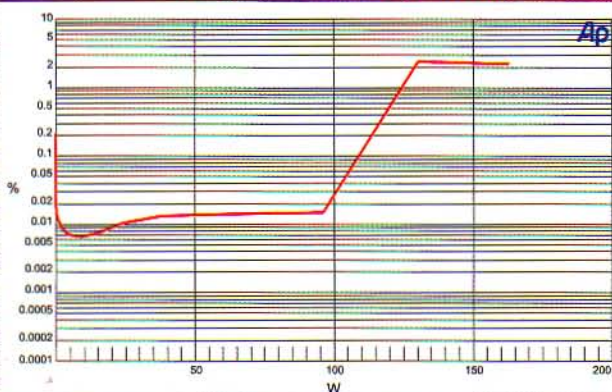
There was no multichannel analog input to measure. THD+N from the CD input to the speaker output was less than 0.012 percent at 1 kilohertz when driving 2.83 volts into an 8-ohm load. Crosstalk at 1 kHz driving 2.83 volts into an 8-ohm load was -72.82 decibels left to right and -72.11 dB right to left. The signal-to-noise ratio with an 8-ohm load from 10 Hz to 24 kHz with "A" weighting was -103.05 dBra.

Visit our Website for a detailed explanation of our testing regimen, plus a list of our reference gear.

on the web

From the Dolby Digital input to the loudspeaker output, the left channel measures -0.07 dB at 20 hertz and -0.18 dB at 20 kHz. The center channel measures -0.07 dB at 20 Hz and -0.09 dB at 20 kHz, and the left surround channel measures -0.07 dB at 20 Hz and -0.12 dB at 20 kHz. From the Dolby Digital input to the line-level output, the LFE channel is +0.23 dB at 20 Hz and reaches the upper 3-dB down point at 81 Hz and the upper 6-dB down point at 100 Hz. —MJP

HARMAN KARDON AVR 3650 A/V RECEIVER



role it had played in what I'd perceived as the AVR's laid-back sound. When I turned off the room correction, it produced a more lively top end with easily perceptible gains in harmonic richness and the continuity of decay. Harman's unadorned amp performed superbly and impressed me with its clean, dynamic sound, its well-balanced midrange, and its high-frequency extension and air.

While I've previously used the Yes masterpiece *Fragile* as demo material—both on vinyl and 5.1-channel DVD-Audio—this was the first time I've exploited the DVD-Audio's 24-bit stereo track (supposedly sampled at 192 kilohertz according to the package, though my Oppo detected only 96 kHz). The high resolution of both content and amp made me more aware of details such as the truncation of



CONNECTIONS

INPUTS: VIDEO: HDMI 1.4a (6), component video (2), composite video (2) **AUDIO:** Coaxial digital (2), optical digital (2), stereo analog (3) **ADDITIONAL:** Ethernet (1), USB (1) **ACCESSORY:** The Bridge IIP iPod dock (1), Sirius (1) **OUTPUTS: VIDEO:** HDMI 1.4a (1), composite video (2) **AUDIO:** Optical digital (1), stereo analog (2), subwoofer (1), headphone (1) **ADDITIONAL:** RS-232 (1), 12-volt trigger (out), zone-2 IR (in), IR remote (in/out)

cymbal smashes in "Heart of the Sunrise," the album's tour de force. There was a noticeable timbral shift when the album-proper gave way to its bonus track, the band's aggressively recomposed and rocked-out cover of Paul Simon's "America." The top end opened up and acquired more sparkle, which let me feast on the variety of Steve Howe's guitar tones and the crispness of his attack. Having EZSet/EQ off expanded the AVR's ability to make such distinctions.

On Johnny Hartman's *The Voice That Is!*, the receiver imaged the rich baritone so well—in stereo—that I put my ear to the center speaker to make sure it wasn't operating. I switched among the stereo-to-surround modes to evaluate Harman's Logic 7. Compared with stereo, it did summon the feeling of a concert hall—but this superimposed effect suffered in comparison with the solidity and presence of Rudy Van Gelder's original stereo mix. Compared with Dolby Pro Logic II and DTS Neo:6, Logic 7 brought more activity to the surround channels, although the effect seemed both superfluous

and inconsistent. It sometimes rapidly activated and deactivated the voice in the surround channels and made it seem as though the singer were darting to and fro between the front and back of the room.

The Harman Kardon AVR 3650's strongest suit is its amplification. If you spend a lot of time listening to music in unadorned stereo, you'll find this A/V receiver as rewarding as a well-designed stereo integrated amp. Aesthetics are also sweet—enough to make me wonder why more manufacturers don't think outside the black box. The room correction is suitable for movies but dispensable for music. Dolby Volume is always a plus. Altogether, this is the kind of AVR that will impress a music lover, and the impression left by the Lang Lang selection alone will stick in my memory for a long time. ¶

* Audio editor Mark Fleischmann is also the author of the annually updated book *Practical Home Theater* (quietriver-press.com).



The AVR 3650's remote is sleek and well thought out.



The AVR 3650 includes a separate remote for zone 2.

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