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"A NEW STANDARD OF VISUAL EXCELLENCE … CAPABLE OF TURNING VIDEO WATER INTO WINE."

Reviewed by Randall Smith

There are so many options in today's electronic marketplace for bringing movies alive in our living rooms that we may be in our home-theater prime. With high-definition video technology being embraced by the mainstream, the boundaries of performance continue to be pushed, and for those buying a new TV, the sky is truly the limit. For many years I remained on the sidelines of my local big-box store, waiting for the right time to enter the game—the long-promised high-definition video resolution of 1080p that for years had loomed over my home-theater consciousness warned me not to rush in. Now, it has finally arrived. TVs that accept a true 1080p signal are on the shelves, and their prices don't offend too much. So I bit the bullet, opened my wallet, and joined in the fun.

Many other eager home-theater nuts are also taking the plunge, but these hobbyists may not fully understand what 1080p means, and thus may not fully realize the benefits of the resolution. The number 1080 refers to the number of vertical lines of resolution of the video screen, and the p stands for progressive scan. The more lines of resolution, the sharper the image can be, and at this point, 1080 lines are as good as it gets. The difference between progressive and interlaced scanning is the way each line of resolution is refreshed per frame. A progressive-scan video display refreshes every line of vertical resolution; an interlaced-scan display refreshes every other line of vertical resolution. The result: Progressive-scan video provides a picture that's smoother and richer in detail.

But now that our TVs and projectors can finally deliver 1080p, we have a problem: There are very few sources of true 1080p signals. HDTV currently boasts only 1080 interlaced lines (1080i) of resolution, and only a few channels actually deliver that. Most HD networks put out 720p signals for most of their broadcasts, but the vast majority of cable channels still broadcast in ancient 480i. The hi-def formats of Blu-ray and HD DVD do contain true 1080p signals, but unless you're willing to dive into another electronic pool of uncertainty, it's best to wait for the water to warm up. What to do?

Anthem provides the answer with the latest addition to their award-winning AVM line of audio/video processors. Beginning with the AVM 2 a number of years ago, Anthem supplied a feature-rich processor that was

then the state-of-the-art while being relatively affordable. Providing signal processing for every known sound format as well as wide-bandwidth video switching, the AVM 20 set the world of home theater on fire. Anthem later updated the AVM 20 and reissued it as the AVM 30—the same basic processor, with twice the number of component-video connections. The AVM 30 cost a few hundred dollars less than the AVM 20, which indicated that Anthem wasn't simply out to make more money; they really wanted to offer good value.

AVM 50: DESCRIPTION AND SETUP

Now Anthem has unveiled the next step in the evolution of the AVM, the AVM 50. Basically, the new model is the AVM 30 plus a video processor built around the Gennum VXP Digital Image Processor and HDMI switching capabilities. The Gennum, which is also included in the Anthem D2 processor, lets the AVM 50 upconvert a video signal from its S-video, component, or HDMI input to a 1080p signal, then pass that signal through its HDMI output to the display.

The AVM 50 is the same size as its predecessors: 17-1/4″ (43.8 cm) wide x 5-7/8″ (14.9 cm) high x 14-1/4″ (36.2 cm) deep. My review sample had a brushed-aluminum faceplate and a vented box of black metal. On the faceplate are more than three dozen buttons and a blue LED display. From afar, the AVM 50 looks just like an AVM 20 or 30.

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I unplugged all of the wires from my AVM 20 and placed it to the side. As we all know, home-theater systems can require a mess of cables, but HDMI minimizes that mess and simplifies logistics. With four HDMI inputs, the AVM 50 was much simpler to install than my AVM 20. My Toshiba HD-XA1 HD DVD player was a snap: plug the HDMI cable into the input marked HDMI 1. That was it. My HD cable box required a

component-video cable and one of the AVM 50's coax digital inputs, my Xbox 360 a component cable and one of the optical inputs.

After everything was hooked up to the AVM 50, I used a single HDMI cable to connect the Anthem to my 57″, 1080p TV, a Mitsubishi WS-Y57. Doesn't get much simpler than that. I then used the AVM 50's front-panel controls to turn it on and navigate its setup menu. The AVM 50 booted up in only three seconds; the AVM 20 takes almost three times as long.

First order of business: Select the video output to the TV. I selected HDMI, then set the AVM 50's output to 1920x1080p/60. I was now set up to use the onscreen display (OSD), which was now output via HDMI. This is a great touch—before, with the AVM 20, the OSD was output only via the S-video connection. That was a bit of a pain because it meant changing the video input of the TV. While that process wasn't needed all the time, having the OSD data via HDMI is a welcome addition.

Setting up the video and audio inputs for each source took little time because I've owned an AVM 20 for years; someone new to Anthem's AVM line might struggle for a while. If so, Anthem provides great technical support. Tucked away in a dark room on the second floor of the Paradigm/Anthem facility in Toronto, Canada, overlooking the speaker-assembly area, Nick and Frank patiently answer every question promptly and with a disposition that makes every caller or e-mailer feel comfortable. When you spend thousands of dollars on a product, you should get topnotch service and support. Anthem provides that, and to a higher degree than any other company I have experienced.

With everything connected, I pressed the Back/CNT button on the AVM 50's well-laid-out and backlit remote control to leave the setup menu and get a glimpse of the 1080p video feed. My first impressions didn't reveal much improvement. Up till then, I'd been upconverting my cable signal to 1080i through the cable box; my Toshiba HD DVD player did the same with SD DVDs. Both do a reasonable job of upconverting to 1080i, and the Mitsubishi TV processes the rest to 1080p. Suddenly, I realized that was the problem. I went back into the setup of my cable box and DVD player and reset their output resolutions to the native resolution of the source. This meant that SD DVDs were now output in 480i, and some

HDTV in 720p. The AVM 50's Gennum VXP Digital Image Processor now took over, upscaling images from these resolutions to 1080p.

Why do I need a video scaler if my new TV can upconvert all signals to 1080p? Manufacturers of the new 1080p TVs do include a built-in processor that upconverts 480i, 720p, and 1080i signals to 1080p. Many people accept this video processing as "good enough," but what they don't realize is that the TV isn't really doing the job. To understand why, and to fully appreciate what the Gennum VXP Digital Image Processor does, it's important to comprehend a few tedious details.

To upconvert a video signal to 1080p, a process called 3:2 pulldown must be performed with film sources. Film has 24 frames per second, and to be seen on most displays, it has to be converted to video at 60 interlaced fields per second. A good video processor has to reverse this frame rate conversion. Confused? I was too.

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Here's a crude example. Let's label the 24 frames of one second of film footage A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, and X. The telecine process, which converts film sources to interlaced video, converts this one second of visual data by tripling every other vertical line and doubling the remaining lines. This means that frames A, C, E, G, I, K, M, O, Q, S, U, and W are repeated twice (12 x 3 = 36), and frames B, D, F, H, J, L, N, P, R, T, V, and X are repeated only once (12 x 2 = 24), for a total of 60 interlaced fields per second. One field contains the even lines, the other contains the odd lines, and the two fields together comprise one frame.

Most TVs sold today that boast the ability to upconvert to 1080p are not actually capable of correctly performing inverse telecine, also known as 3:2 pulldown or film mode,

in order to reconstruct the 24 frames as they were on film; at best, the consumer gets a jaggy and/or jittery picture. Not only does this describe most new "1080p" TVs, but also DVD players for which the same claim is made. Not all video scalers are created equal. But the Gennum VXP Digital Image Processor isn't only a video scaler; it also includes many adjustment features to fine-tune the picture to achieve even better results. The AVM 50's manual states that the processor's default video settings should work best overall; after a little adjusting, I found that they did. I could go into much greater detail concerning every adjustment provided, but that would be another review unto itself.

VIDEO

The 1080p image created by the AVM 50 was far superior to the images upconverted by my Mitsubishi TV. The TV sometimes renders colors overly bright and not consistently true, but via the AVM 50 colors were always deep and rich. I also noticed that the "video drag" associated with moving objects had disappeared, leaving the smoothest moving images I have ever seen.

A few chapters from *Behind Enemy Lines* provided a good test. In a scene early in the film, the pilots sit in the mess hall eating dinner. Suddenly, visible just over the shoulder of one of the characters, a commanding officer steps through a doorway. Without the AVM 50 in the mix and the video signal sent to the TV as 480i, the shading of the back wall as the camera pans over to the officer, then zooms in, reveals artifacts that drag across the screen. Once it had been brought to my attention, this became very noticeable and irritating. The AVM 50's upconversion to 1080p removed this dragging effect and smoothed it out completely. Facial details also seemed sharper, and skin tones more realistic.

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The Incredibles also came to life in a manner I hadn't experienced before. The improvement in the CGI color was stunning —it popped off the screen more than ever. The differences were striking: Colors were deeper, outlines of objects sharper, and dark images had greater depth. I knew at that point that my TV couldn't look any better.

Standard-definition TV also benefited from the AVM 50's video processing. But while the Anthem was in most cases capable of turning video water into wine, it couldn't perform such miracles with local broadcasting. The video processor did make the picture smoother and more uniform, but it couldn't make it look like HD. The AVM 50 can't be faulted for this; we'll just have to wait until analog cable-video feeds go away forever.

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My Toshiba HD DVD player also enjoyed the AVM 50's HDMI connectivity. I've read in many online forums about owners of Toshiba's HD DVD players having trouble with the HDMI handshake between source and processor, but I had none. I made the necessary adjustments inside the Toshiba, turned it and the AVM 50 off, then fired them both back up. They shook hands perfectly from then on. The Source setting in the Anthem's setup menu gives the option of sending the audio signal via HDMI, which meant that I could watch and listen to standard DVDs as well as HD DVDs without changing the input. HDMI also let me send the Dolby Digital Plus/TrueHD multichannel signal without having to press a single button. Fantastic.

To compare the AVM 50 to any other processor would require a substantial wait. Pixel Magic's Crystalio II has the same Gennum video processor but not nearly as many features or capabilities, including surround-sound processing, and it costs more than $1000 more. Companies such as Outlaw sell processors that costs thousands less than the AVM 50, and while you do get good performance from their products, the Anthem AVM 50's sound quality and abundance of features, as well as the flexibility it offers in letting the user tweak each source setup, clearly set it apart. And that was before Anthem added the Gennum processing chip.

CONCLUSIONS

The Anthem AVM 50 is the ideal processor for these changing times. With a group of mad scientists stashed away in a building somewhere in Canada designing tomorrow's new technology, and a factory of dedicated employees working hard to build almost every piece by hand, Anthem is committed to their customers. Whether it's the availability of upgrades via software downloads from their website or the opportunity for owners of AVM 30s to ship their units back to Anthem to be upgraded to AVM 50 status, Anthem's products are about as future-proof as they get.

I didn't have the space in this review to describe every facet of this ground-breaking processor. Explanation of its additional features can be found on Anthem's website. You can also read Jeff Van Dyne's great review of the AVM 30 (available at **www.anthemAV.com**). His descriptions of the AVM 30's functionality and his description of the processor's sound apply to the AVM 50 as well. My goal was to describe the difference the Gennum VXP Digital Image Processor made in the images produced. In that regard, the AVM 50 has set a new standard of visual excellence for me.

"… the Anthem is the ideal processor for these changing times … about as future-proof as they get … groundbreaking … the AVM 50 has set a new standard of visual excellence for me."