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"… Video with a capital 'V' … INCREDIBLE … It really was like looking through a window."

BY ALAIN LÉVESQUE

AT LAST, VIDEO WITH A CAPITAL 'V'

When they launch a preamplifier for home theatre use, manufacturers often assure us that they will provide all hardware and software updates for their equipment. Most of the time, these are empty promises. However, such is not the case with Canadian manufacturer, Anthem. Its popular AVM 20 preamplifier/processor, launched a few years ago, is still functional today thanks to the large number of updates that Anthem has offered. The company repeated this performance when it launched its brand new flagship audio video processor, the Anthem Statement D2. It permitted users of its predecessor, the D1, to upgrade their hardware and software in a way that make it identical to the D2. It seems Anthem keeps its promises!

Since my colleague, Emmanuel Lehuy, had already reviewed the D1 in detail (see his review on the Anthem website at **www.anthemav.com**), I will restrict myself to a review of the new functionalities in the D2, equipped with a cutting-edge video processor. I will evaluate the video processing and the link between digital audio and video.

To the casual observer, the D2 could easily pass for a D1. However, if one looks more closely, one will notice some major updates, including the remodelling of the back panel. The D2 comes with the same chassis as the D1, something that should make for easier D1 updating. The new video processing board, based on the Gennum VXP microchip, covers almost the entire surface.

Anthem has included a number of new terminals in the D2, including four HDMI inputs and one output (compatible with HDCP, and supporting a maximum resolution of 1080p 60). It has also relocated all of the S-Video inputs and outputs. The technical support people at Anthem informed me that the new video processing board contains more than 1,800 parts; in other words, more parts than in the entire D1!

Video processors providing an inverse telecine (film mode) and motion adaptive de-interlacing for 480i standard resolution video sources have been on the market for some time. However, up to now, the de-interlacing of a 1080i signal has been very limited and essentially ineffective. This has resulted in a softer image, one

with a loss in sharpness and resolution, as is the case with the popular solutions from Genesis/Faroudja (FLI) and Silicon Image (SiI). The new generation of microchips, like the one produced by Gennum, use very advanced algorithms for processing HD 1080i signals, but they can, on the other hand, also function with an HD 1080i signal, both in film mode as well as with a video-type source. This allows preserving of optimal picture shrpness without loss of resolution, and without any artefacts.

ANATOMY OF A PROCESSOR

The Gennum processor performs 10-bit processing of the signal from one end to the other. It will accept all analog and digital video signals produced by our various 480i to 1080i sources; carry out de-interlacing, if necessary; scaling in practically all resolution options imaginable (standard and non-standard); and output it all through analog or digital outputs. It does all this up to a resolution of 1080p.

"…extremely high-performance deinterlacing… picture was sharper, better defined… practically a total absence of background noise … very detailed… realistic—especially when the action is fast."

An external video processor functions in an optimal manner when the projector or the television involved deactivates its own internal processor, or at least provides us with the possibility of getting around it. This mode of operation is usually referred to as "native mode," "native resolution," or simply "1:1." It represents the ultimate dream of every external video processor user, since it allows you to avoid the phenomenon of double scaling which affects the quality of the picture. Most of the time, this native mode is nothing but a standard resolution (480i/p, 720p, 1080i/p).

However, certain manufacturers sometimes use a non-standard resolution, and it can be difficult for the user to recognize the native mode. Users of televisions/projectors who find themselves in this situation should contact the manufacturers for information, or (athough it is not an ideal solution) use the standard resolutions accepted by their equipment according to their preference. The D2 allows one to reach this objective relatively easily.

Configuration is carried out primarily on two levels. On the first level one accesses the general D2 menu, from which one chooses the video output terminal desired, output resolution, colour space of the television/projector (SDTV or HDTV), and the data format (YCbCr 4:2:2 or 4:4:4, RGB, or extended RGB).

The second level of configuration involves the interface of the Gennum processor itself. An important point here is that each input has its own memory bank, making it possible to configure each source separately. Several menus are available.

First of all, in addition to the traditional picture-related parameters such as contrast, brightness, colour, and tint, there are other, more advanced controls, such as choice of the colour space of the source, detection of film mode, reduction of video noise, and detection of the CUE bug and its filtering. Next, a menu is shown that allows particularly extensive control of picture aspects and ratios at the input and output terminals of the video processor; provision for anamorphic projector lenses (not implemented yet, and not known when they will be); zoom; picture displacement, etc. Since I have used a number of standalone video processors previously, I found the D2 menus a bit limited compared to these devices. The technical support people at Anthem admitted to having hesitated for some time on this point; not daring to include as many advanced adjustments in the D2 menus as are found in the traditional dedicated external processors, simply because they were afraid that some users would quickly get lost in it. I would have preferred a bit more flexibility, but I understand that the user of a preamp would not be as demanding as a video expert or a professional installer/calibrator who usually choose a dedicated external video processor.

Use of the D2 video processor ideally requires a signal of 480i or 1080i as these allow one to benefit from the exceptional capabilities of the Gennum chip. For instance, it is not desirable to send a 480p signal to the processor as one circumvents, in such cases, the de-interlacing and advanced algorithms inherent in the Gennum chip, while using only the scaling functions. The D2 is the first A/V processor on the market to display both setup menus and superimposed on-screen-display with any HDMI or Component Video setting, regardless of the resolution. It does this at up to 1080p. If the video device is HDCP-protected then only the HDMI output terminal will be active.

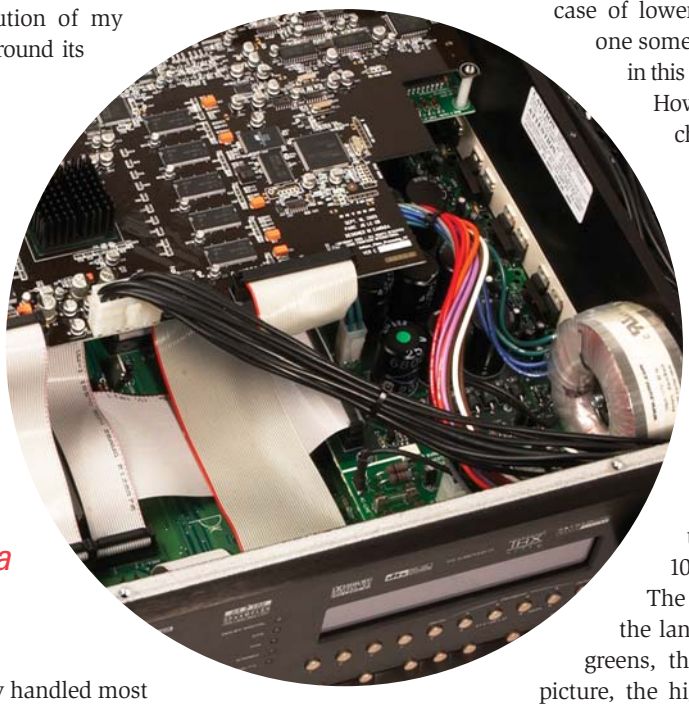
"… as for its performance with HD … detailed, large-scale close-ups … landscape shots rich in blues and greens … fluidity and stability … high-level resolution … incredible 3-D feel … almost made me forget that I was seated in front of a screen and not on the island of Hawaii … It really was like looking through a window."

It is worth noting that HDMI cable can carry all existing digital audio signals, including the DVD-A multichannel format (but not the SACD format). It also has the bandwidth to carry (right from the time of their recent release) the new high-definition multichannel digital audio formats decoded by Blu-Ray and HD-DVD players. The D2 is fully compatible with the next-generation of HD players, for both audio and video.

LIKE LOOKING THROUGH A WINDOW

The evaluation of this video processor should be carried out more precisely at two signal levels: the entry level, at a standard resolution of 480i; and at high-definition resolution of 1080i. In the former case, one can make use of a number of test CDs; but in the second case, test equipment is, unfortunately, hard to find. The industry should make an effort to provide us with new tools very soon, before the arrival of the new high-definition players. Given these circumstances, and in order to evaluate the performance of the video processor on standard DVDs, I chose to use my own Pioneer Elite 79AVi player because of its capability (now quite rare) of allowing transmission of a 480i signal through its HDMI cable connection. Furthermore, I have always used a D2 1080p output signal, which corresponds to the native resolution of my projector and allows me to get around its integrated video processor.

"… truly unique … can even be termed avant-garde … Anthem has taken a step off the beaten path … ultra-high performance … from audio with a capital 'A' we have arrived at video with a capital 'V'!"



The Gennum microchip very ably handled most of the test patterns on the demanding evaluation CDs and DVDs representing the HQV Benchmark DVD from Silicon Optics and the Microsoft WHQL 3.0. The Gennum chip proved to be very fast in switching from one mode to another with mixed film/video devices.

Artifacts were evident only rarely during these switches, and if present, were practically imperceptible. A number of other processors that I have evaluated in the past were so slow during the above switches that it was embarrassing. Insofar as extreme diagonal lining is concerned, the Faroudja DCDi processing is still the solution to beat, even though the difference between it and the Gennum chip is practically imperceptible with regards to the presence of any ladder phenomena on the lines when viewed from different angles. Note that DCDi processing from Faroudja is functional only in video mode and not in film mode, and only in 480i resolution, while processing of the diagonal lines by the Gennum chip works for both resolutions, 480i and 1080i.

After all these tests, I reached the conclusion that the Gennum chip combines those features of Faroudja and Silicon Image that I like most, while displaying none of their weaknesses. It restores itself following a frequency break quicker than the Faroudja chip, and remains in film mode for a longer time. Furthermore, I viewed a video clip on DVD-A from the Blue Man Group, and *The Complex* with Dave Mathews which usually causes a lot of problems for de-interlacing chips. Compared to the Faroudja chip in my other DVD players, the Gennum chip shows much fewer combing effects, and provides a more stable picture. The film *Gladiator*, with Russell Crowe, can also cause headaches for de-interlacing chips. This is particularly true during the very detailed scene in which the camera pans above the roofs of the Roman houses. In the case of lower-performing video processors, one sometimes sees a slight loss of detail in this scene, and at times, even aliasing. However, the Gennum chip met this challenge easily, never stumbling. As for its performance with HD, since HD players are still conspicuously absent at the time of writing this article I was obliged to turn to my Star Choice EVN530 HD satellite receiver to obtain a 1080i signal. The popular television series, *Lost*, although it comes out in film mode sources that only require 3:2 pulldown, completely fills the screen when reproduced in 1080p using the Gennum chip. The detailed, large-scale close-ups, the landscape shots rich in blues and greens, the fluidity and stability of the picture, the high-level resolution, as well as the incredible 3-D feel, almost made me forget that I was seated in front of a screen and not on the island of Hawaii! It really was like looking through a window.

"… fully compatible with the next-generation of HD players [Blu-Ray and HD-DVD] …"

When dealing with true native 1080i devices, the benefits of the extremely high performance de-interlacing of the Gennum chip were obvious. The picture was sharper, better defined, and with practically a total absence of background noise. The important thing for me, and what really interests me, is that the very detailed scenes have a realistic feel, especially when the action is fast. Action scenes and concert videos teach us a lot more about the performance of a video processor than do the highly coloured scenes with slow panoramic camera scans. The Gennum chip shines in all these difficult situations.

In order for a video processor to provide the best possible picture quality, it must be able to detect the frequency of the source or the configuration sequence of the fields. It must also be able to construct the entire ensemble accurately, without loss of detail or loss of sharpness. The Gennum chip does all of this without stumbling, even when the source is in High Definition, and regardless of whether the source is film mode or video.

"… such performance with an HD source propels us, finally, toward another level of picture quality."

This performance with an HD source propels us, finally, toward another level of picture quality, making us forget very quickly the earlier generation of lower-performance chips. We may also add that, unlike the Faroudja chips, the Gennum does not have the problem of macroblocking. It can readily be optimized and updated by downloading a simple program from the Anthem website (**www.anthemav.com**), and is easy to install using the RS-232 interface of the D2. In addition, as the Anthem does not use the Gennum source drives, but rather, its own optimized version, we know that picture performance can only get even better!

A PROMISE KEPT

The Anthem D1 provided audio and surround sound performance at a very high level. However, Anthem had promised to provide the same level of performance in the area of video processing, an area that up to now had been neglected by most manufacturers of preamplifiers and surround sound receivers. And the company has kept that promise! The D2 audio/video processor is truly unique, a product that can even be termed avant-garde. Anthem has taken a step off the beaten path. It has not shrunk from giving those ultra-high performance external video processors (the ones that have, up to now, lorded over the high-end video performance field) a run for their money. Anthem has restored credibility to the "V" in the acronym "AV." From audio with a capital "A" we have arrived at video with a capital "V."