

AccuCal™

Audio/Video Reviews

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Algoith Mosquito - Video Noise Reducer

Highlights:

Pros:

- It really can make poor broadcast easier to watch on a high quality display.
- Reduces random noise found in analog broadcasts.
- Reduces MPEG blocking artifacts.

Cons:

- Less than stellar bandwidth filters all high quality signals.
- Connectivity limited to component inputs only.
- Infrared remote interfered with the operation of my Krell Show-case Processor.
- It is an expensive solution.

Overview

You probably already know what this device is for if you are reading this, but for those who don't...

The advent of High Definition Television (HDTV) has brought a longstanding problem into painful focus. Once a person purchases a HDTV they discover the quality of most of our standard definition (480i) sources are not very good. Most assume something is wrong with their new television, but unfortunately these high resolution devices bring our legacy broadcast system flaws into sharp focus. Whether you get your signal off-the-air (OTA) or from cable or satellite they are fraught with noise including compression artifacts and bad reception noise. Surprisingly OTA has fewer problems than the others, but programming selection is limited in comparison.

Algoith has created a new device to deal with this problem that won recognition as a CES 2005 Innovations Honoree in the Home Theater category. The Mosquito uses four different noise reducing techniques to improve the appearance of less than perfect source material. It can remove mosquito noise using Algoith's proprietary pixel based algorithm. Something called Block Artifact Reduction (BAR) reduces the block structures of compressed images found on any source that uses MPEG compression. Advanced motion adaptive temporal filtering is provided to eliminate bad reception and low light noise. Finally, the Mosquito provides image enhancement using non-linear filters to remove noise while retaining image details.

Summary

The Mosquito should be called "The Exterminator" because it can kill most of these bugs dead. It may be the answer to your dreams of cleaner images if you are having trouble watching standard definition sources. This assumes you are willing to pay the \$2495 MSRP to get it. It won't solve color problems, poor resolution or reception, but it really can reduce noise from compression or bad reception. Their website shows excellent examples of how it performs in practical use (www.algoith.com) and their examples are not an exaggeration.

As usual there is a downside to this image processing. It can add noise of its own to an image depending on how it is used. The device also filters the highest resolution information from the image whether the processing is on or off.

Based on what I have seen in testing and in use with various sources I can highly recommend this device for NTSC (480i) sources with MPEG compression problems or analog noise. The Mosquito has really improved my satisfaction with our local cable provider for both analog and digital NTSC material.

I cannot recommend this device for use with HDTV or high quality NTSC sources. I found the improvement to HDTV and high quality DVD's to be very limited and the resulting loss in resolution not to be worth the trade-off. When Algoith releases their new unit with digital connections this is likely to be less of a problem.



Specifications:

General

- 17 inches wide
- 12 inches deep
- 1.5 inches high
- 10 lbs weight
- Rack mounting brackets included
- External AC adaptor 90-240 VAC
- Fan less chassis

Video Connections

- Two 1080i/720p/480p/480i RCA component inputs (rear)
- One 1080i/720p/480p/480i RCA component output (rear)

Performance Rating*

Effectiveness	4
Image Details	4
User Features	5
Connectivity	2

* Maximum rating is 5



Setup

Locating this device is easier than most. I placed mine based on convenience of use. Placing it where you can control it with the remote and easily route the component cables seems like a logical path to take. It does not run hot like most of my other equipment so worrying about cooling is not a high priority. Although, proper ventilation is always necessary.

The Mosquito has two component analog inputs that I would use with your cable and/or satellite set-top-box (STB) because those sources tend to have the most problems. The next thing I would connect is a DVD player with one caveat. It would be best if you could route your DVD player both through the Mosquito and around it. The processing can improve DVD's that are of less than stellar quality, but I prefer quality transfers without the Mosquito in the loop. I would not use the Mosquito for DVD's if you can't bypass it. I would not use this for HDTV because you will lose the highest level of horizontal resolution that is available from that format.

The settings that I preferred were:

- 3D Temporal Filter = 12 (filters noise without much negative impact)
- 2D Spatial Filter = 1 (avoids adding noise and excessive filtering)
- MNR/DNR = MNR (subtle differences with other settings chose MNR because one must be chosen)
- BAR Block Artifact Reducer = Off (avoids adding noise)
- Detail Enhancement = Off (avoids adding noise)



These settings are different from what Algorith recommends in their manual. One reason for this maybe because I have 20-10 corrected vision and any softening or noise is painfully obvious with a 65" HDTV at 10 feet. Another reason may be due to the fact that the images that bothered me most were static ones where 3D Temporal Filtering was most effective when set high. The Mosquito includes a split screen mode that was very helpful in determining what settings worked best. Ten memories are available for each input if you happen to want that kind of flexibility.

Test Results

I did numerous tests on this unit to develop an understanding of what it did to images. Because I have a very limited set of noisy signals available many of these features may have more uses than what I saw. I also did not test all possible combinations of all settings because of the number of possible combinations available in this device. In the theme of full disclosure, I am generally opposed to image processing, but I found this device to be very interesting and useful in its approach. Below is a summary of the results of various tests in 480i, 480p, 720p and 1080i using my AccuPel HDG-3000 signal generator, Digital Video Essentials DVD, Avia Pro DVD, Digital Video Essentials 720p and numerous hours of actual use. Tests included reviewing moving zone plates, bowtie patterns, motion video, static chroma and luma resolution, polyphasic horizontal and vertical chroma sweeps, rainbow/dither test and pixel cropping patterns with multiple resolutions. The unit being tested had software revision number 2.01 with a date code of 0450.

3D Temporal Filtering

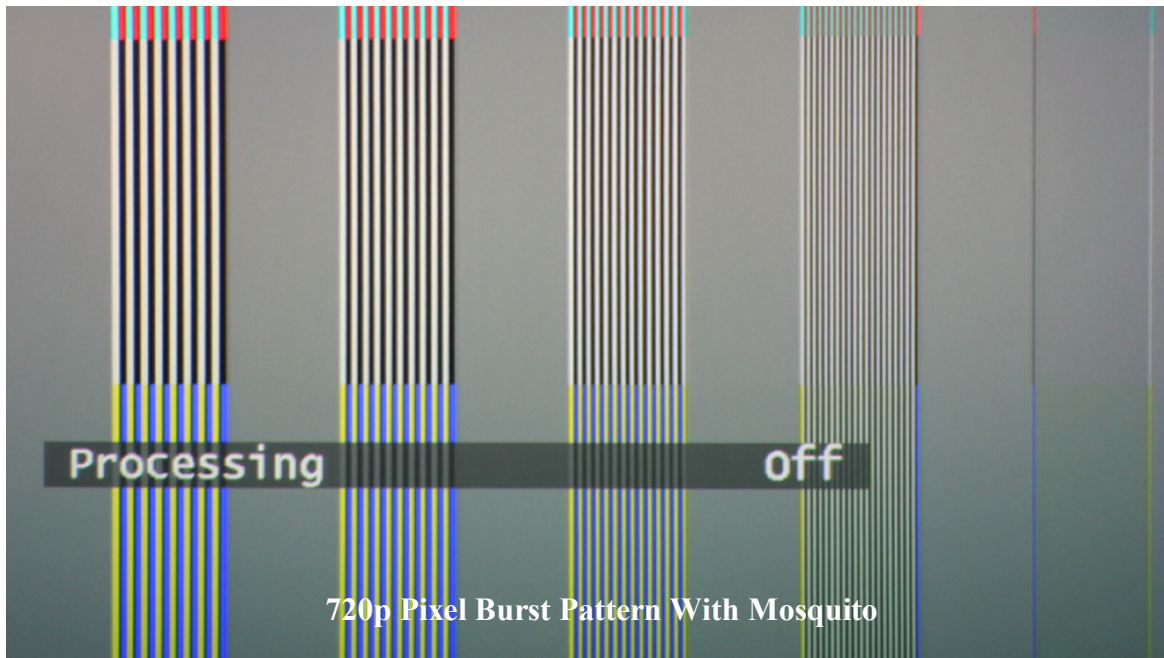
Temporal filtering adaptively filters moving images using a proprietary algorithm. I never once saw 3D temporal filtering do anything bad to a static or moving image. This was the most interesting of all the modes available in the Mosquito. It was able as if by magic to reduce the noise in signals. The most amazing thing about this filter was as it was increased resolution seemed to increase while noise was reduced. I found a setting of 12 achieved most of the improvement available. I saw no significant problem with setting it to max, but I tend toward minimum enhancement/filtering so I left it at 12.

2D Spatial Filter

Spatial filtering reduces the noise on each image without consideration of previous images. This is a nonlinear filter that can add noise to static images. I found the recommended setting of 10 to be much too soft for my taste. With values above 1, noise was apparent on wedges and zone plates like those found on Avia. This feature apparently filters image features with low amplitude more than those with high. As you increase the value of this filter the threshold of the change filtered increases, but it never will filter features anywhere close to a full amplitude change. This means that subtle details will be filtered more and more as this is increased. Since I dislike noise and soft images I found the 2D Spatial Filter to be less useful than the 3D Temporal.

MNR/DNR

DNR (Dynamic Noise Reducer) removes grainy noise from analog sources. MNR (MPEG Noise Reducer) removes noise that is found on the edge of objects when MPEG compression is used. I never once saw MNR or DNR do anything negative to an image. This is even true on images that added noise for artistic reasons which really surprised me. The effect of these are more significant when 2D or 3D filtering is not used, but with the settings I am using the effect of these filters was too subtle to matter with my sources.



Block Artifact Reducer

Block Artifact Reducer (BAR) blends the MPEG compression blocks to reduce their visibility. BAR caused some noise on fine text and various chroma bursts. I chose to avoid using this because of problems it caused and the effectiveness of 2D and 3D filters at removing these problems without it.

Detail Enhancement

Detail Enhancement increases the apparent sharpness of the image. This is a very well executed sharpness circuit. However, I found it made some static images jagged and unrealistically edgy when combined with the scaler in the television. Using this is the same as using the sharpness control on a display. Usually, no sharpening is best and that is what I chose here.

General Results

Many of the tests did not apply to any filter option, but apply to the device in general. The Mosquito did not add objectionable levels of noise or chroma delay to the image. Audio delay was very minimal and seemed to be barely detectable at what I would estimate is about 5 milliseconds. The above photograph is a 720p test pattern taken with the Mosquito in the loop and processing turned off. An AccuPel HDG-3000 was used to generate this pattern and the display that was used can display a clean test pattern with little loss in resolution over component. Note that the single pixel pattern which should be on the far right is essentially gone. The two pixel pattern which is the next pattern over from the right is also filtered compared to the others. This is very similar to what is seen with 480i, 480p and 1080i with the Mosquito in the signal path whether it has processing turned on or off. High quality sources should not be sent through the Mosquito to avoid this loss in resolution.

Miscellaneous Items

This device is very well made and would be a nice addition to any system. The remote is very heavy and solid. A port is provided on the rear of the Mosquito to connect a remote IR sensor. A USB port is also provided for software updates. I did not like the fact that it shared some remote codes with my Krell Showcase. This dramatically reduced the usefulness of the Mosquito remote for me, but I really did not need to adjust it once I had it setup.

Ratings Summary (With 5 Being Best)

Effectiveness (4) - Noise is dramatically reduced with the Mosquito. It does not eliminate the problem, but the algorithm has taken a big bite out of this problem.

Image Details (4) - When used with poor quality signals this device can actually improve the apparent details. Unfortunately, it does filter the highest frequency components of all resolutions.

User Features (5) - I found the features available in the menu to be very nice. They allowed fine control unlike most enhancement circuitry that usually operates in a very coarse manner. This was a pleasant surprise.

Connectivity (2) - The number of component inputs is reasonable, but having connectivity with HDMI, DVI, composite and S-Video devices would be very useful and it would also allow more flexibility in bypassing the Mosquito. I would guess adding S-Video and composite would be expensive and it might be cheaper to buy an external device to convert S-Video and composite to component.

Equipment Associated With Review:

Test:

HDTV Generator: AccuPel HDG-3000
DVD's: Avia Pro™, Digital Video Essentials
D-Theater: Digital Video Essentials 1080i & 720p

Video:

HDTV: Brillian 6501mB
HDTV Tuner: LG LST-3410A
HDTV Cable: SA-8300HD (Passport Software)
D-VHS: JVC® HM-DH30000U
DVD Player: Denon DVD-3800

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