MoniTOR 1.0

Introduction

MoniTOR is the tool that will let you verify the most important aspects related to displays quality.

You can also use the different features of the software as a guide to set your monitor colour, brightness and contrast, image frame and other several geometry related aspects.

MoniTOR is distributed as shareware, it costs $20 and you can buy it through Kagi (www.kagi.com).

Registered users of MoniTOR could benefit from future updates of the software for free.

You can send your comments or requests for new features to:

info@mosquitosw.com

For technical support related questions, please contact:

support@mosquitosw.com

Visit Mosquito SW website at:

www.mosquitosw.Com

Technical requirements:

MoniTOR is available for Mac OS X and Windows XP.

Minimum requirements for Mac OS X:
Operating system: OS X 10.3.5
RAM: 128 MB
Resolution: 800 x 600 pixels
Colour deep: thousands
QuickTime 6.5 installed

Minimum requirements for Windows:
Operating system: Windows XP Personal Edition
RAM: 128 MB
Resolution: 800 x 600 pixels
Colour deep: thousands
QuickTime 6.5 installed

Program features that are based on video require QuickTime technology from Apple computer. You can download and install QuickTime at no cost from www.apple.com/quicktime, both for Macintosh and compatible Microsoft Windows machines.

Installation

If you have this program on a CD-ROM, drag MoniTOR folder to any place of your hard disk (recommended Applications folder).

In case you downloaded MoniTOR from Mosquito SW website and you have a Macintosh, double click the downloaded file. With this action you will have a new volume mounted in your desktop.
Now, drag MoniTOR folder to any place of your hard disk (recommended Applications folder).

The web distribution of MoniTOR doesn`t include QuickTime movies that the program uses in the video tests, but you can add your own movies as follows:

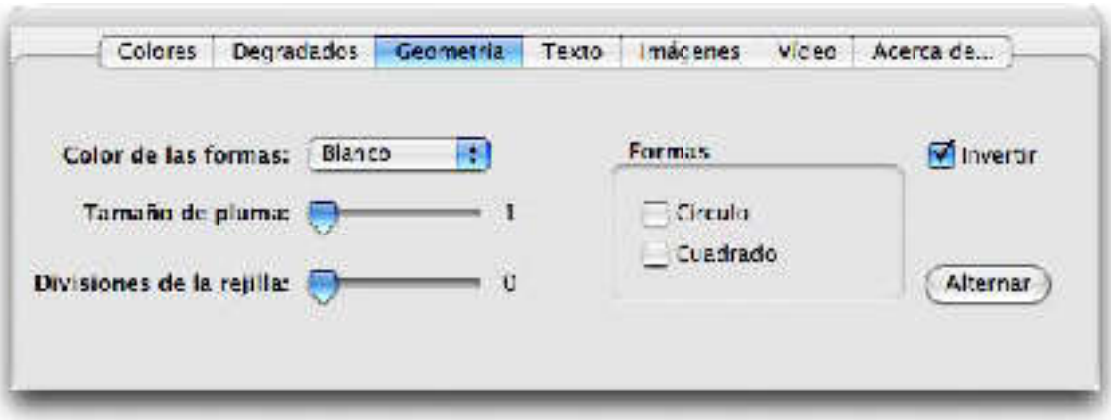
– Save the movie files you wish to use for the tests in QuickTime format with DV coding and a resolution of 750 x 576 pixels, maximum quality and 25 frames per second.

– Name the files as follows: videodemo"n".mov, where "n" is a number (1 for the first video, and so on). Please, be sure to include .mov extension in all your example movies.
You can use any other QuickTime compatible video codec, but please note that a resolution bellow 750 x 576 pixels will not be suitable to achieve the desired results in the test. The same will happen with other video codec and the results obtained in the resolution and refresh rate tests.

Program interface

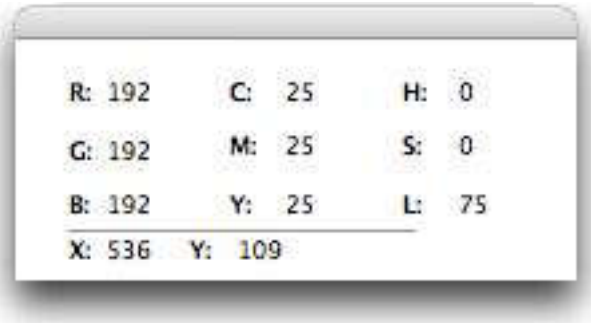
The whole program interface is made of two help windows. You can use main window to select the different tests.

Use the info window to get the colour value for the pixel bellow the pointer as you move it along the display. This window will show you the information for RGB, CMY and HSV colour spaces.



This window also gives you the pointer position in X and Y axes of the monitor.

Hide help windows. Move the pointer to the upper right corner of your main display.



Hide main window. Hold Option key (in Macintosh) and move the pointer towards the upper right corner of the display.

Colour models

RGB. Is the native colour space in monitors and other devices, like the scanners and digital cameras.

In this space every colour pixel is made from the combination of different values of Red, Green and Blue. Minimum and maximum value for every one of these channels is 0 and 255.

Please, note that some professional acquisition and edition systems use 16 bits (or 2 bytes) in order to represent more information variations for every colour channel.

Nevertheless you use 8 or 16 bits to represent colour information, in RGB you get black colour with 0 value in each channel, meanwhile white corresponds to the maximum value of each channel (256).

When the three colour channels have the same value, you get different grey tones.

You can also refer to this colour space as additive colour system, provided that white colour is the addition of the maximum values of every basic colour channel.

CMY(K). This is the colour space used in preprint and graphic arts processes. CMYK is also the colour space used by several output devices, for example laser colour printers and some inkjet printers.

In this space the colours are composed by the combination of the different Cyan, Magenta and Yellow colours. Black colour is made up combining the three channels with their maximum value (100%). This generally results in a dark brown very near to black. "Pure" Black is also made up adding another ink of black colour (represented by K).

You can also refer to this colour space as subtraction colour system, because you get white colour when the value of every colour channel is 0% (that is, when you print that value you get the white colour of paper).

HSV. This colour space is device-independent. This means an abstract system to referring colour that you can apply it to any input/output device. This space is very used in colour studies, and it represents different colours with a chromatic wheel.

This model is based on human colour perception and describes its three basic features: Hue, Saturation and Value.

Colour represents the colour tone, in the chromatic wheel this is a number between 0º and 360º.

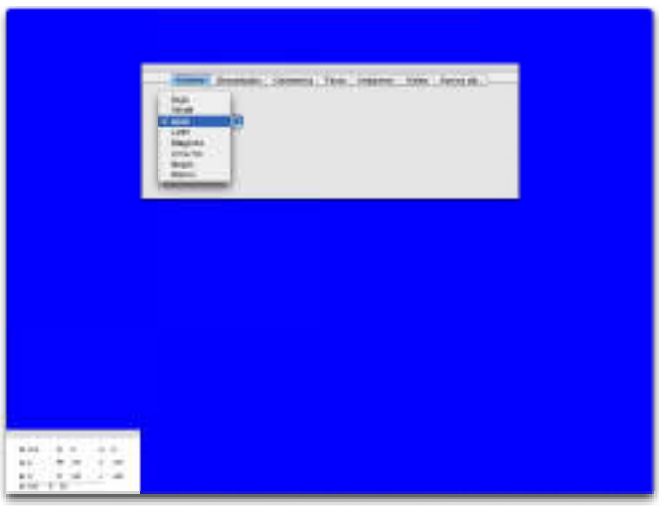
Saturation defines -as a percentage- the grey quantity that a colour has. A colour with saturation value set to the minimum is completely grey in the middle of the chromatic wheel. The maximum saturation of a colour results in its maximum purity.

Value indicates -also as a percentage- the brightness or tone of the colour

(what we use to call "darker" or "brighter").

Colour uniformity and bad pixels

Select in the pop-up menu one of the basic RGB, CMY or black and white colours. MoniTOR will fill the whole display area with that colour at its maximum value.



You can use this test to verify if your display represents colour uniformly in the whole display area.

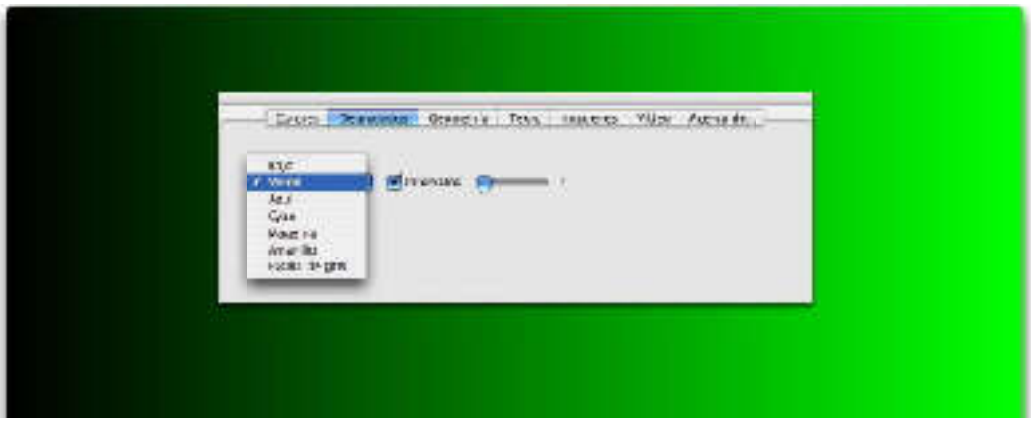
Select black and white colours to test bad pixels in TFT monitors.

Tonal range

Select the Gradient tab to verify the tonal range of your monitor for each primary colour in RGB and CMY. Colour increases its level from the left (minimum) to the right of the display, where it reaches its maximum level.

This test will also serve to verify the vision angle in TFT monitors.

Adjust brightness level. Select Greyscale in pop-up menu of Gradient tab to verify the brightness of your monitor, that is, the different grey levels you can recognize from the minimum value (black) to maximum (white).



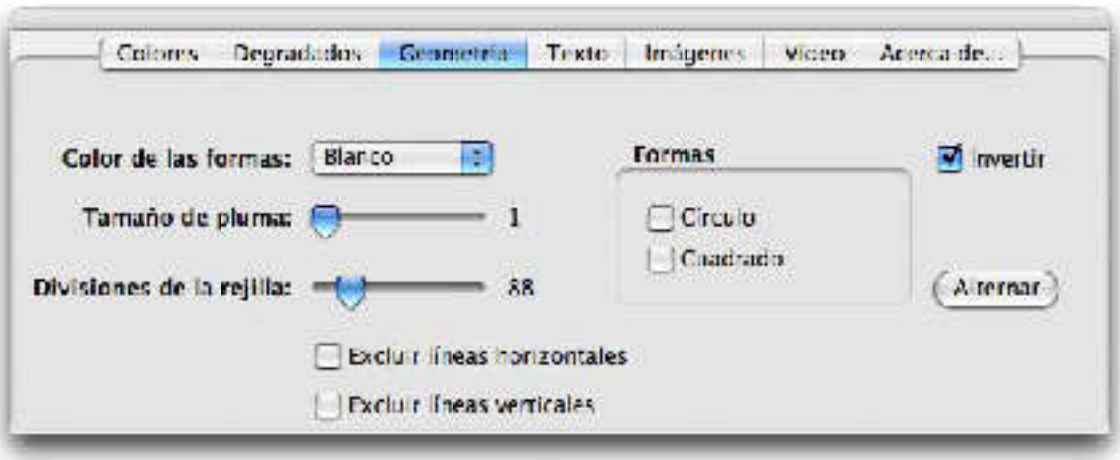
You can also use this mode to set the brightness level of your monitor in an optimal way and verify the potential colour casts of a particular colour profile. This happens when your monitor represents some grey with a red, green or blue trend.

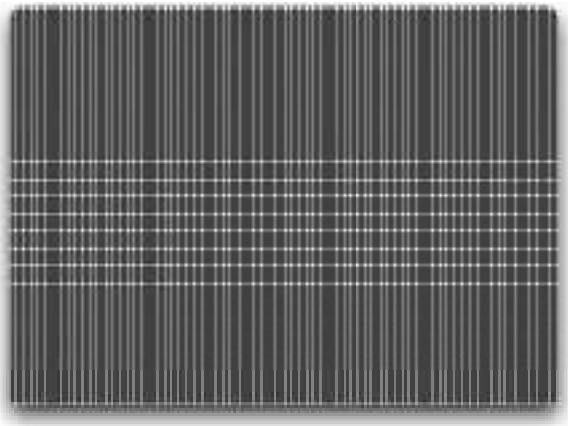
Range. By default the gradient created is proportional to screen wide. The program uses a lineal progression to create a smooth transition between different levels of the same colour. Nevertheless, you can enable the option Interval, which creates vertical colour or grey bars that eases the analysis of the different variations and allows you to adjust the display colour or brightness more easily.

Geometry

You can use these options to adjust the size and position of image in CRT displays, as well as adjust exactly the high and length rate by activating the geometric figures.

In this section you can also value moiré effect in CRT displays, the image persistence and other basic aspects of sharpness and contrast using the grid. You can also choose to draw only vertical or horizontal lines of the grid.





In this section you can also value moiré effect in CRT displays, the image persistence and other basic aspects of sharpness and contrast using the grid. You can also choose to draw only vertical or horizontal lines of the grid.

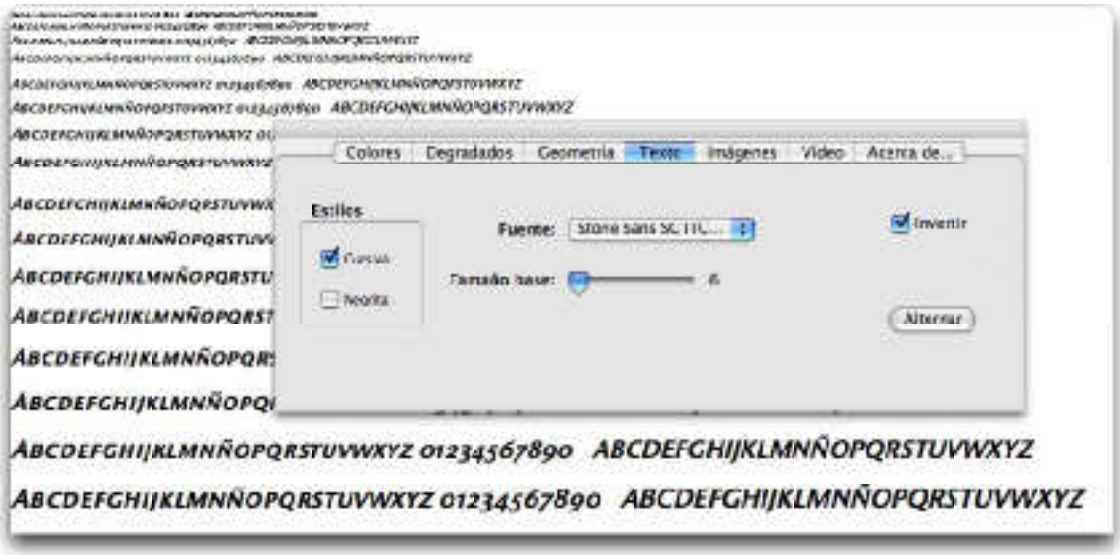
Focus. Use the Pen option, enable and change the figures colour to Red, Green and Blue to verify the focus of the monitor, especially CRT displays.

Contrast and persistence. Enable the Invert option to use black colour as background colour and white to draw the grid lines.

Click the Alternate button and the program begins to interchange automatically background and lines colour (black and white). If you want to exit this mode, press 'A' key. This test allows you to verify the images persistence in your monitor (refresh answer) and if your display shows residuary images when it switches between black and white.

Sharpness

The text representation is one of the better parameters to measure the sharpness of any monitor, nevertheless it uses CRT or TFT technology (but especially with CRT displays).



Click the Text tab to activate this mode, where you can select the font (from those installed in your computer), the size and the style of the text. The program will represent different text sets with diverse sizes from 6 dots. When the size exceeds 100 dots, the program only represents one text line to facilitate the evaluation. You must verify that all the vertical

lines are sharp. Enable Invert option to draw the text in white over black background. Click the Alternate button if you want to switch automatically between black and white (press 'A' key to exit this mode).

Images: colour tests

MoniTOR includes different images you can use to measure or adjust your display sharpness, colour, brightness and contrast. To use them you must select Images tab in the main window of the program.

View the different images selecting them in the pop-up menu Images and set the number of iterations to decide how many copies of the image will be used to cover the screen. This option is useful to verify the sharpness in different sizes of images and to check any difference of colour depending on the position of the image in your display.

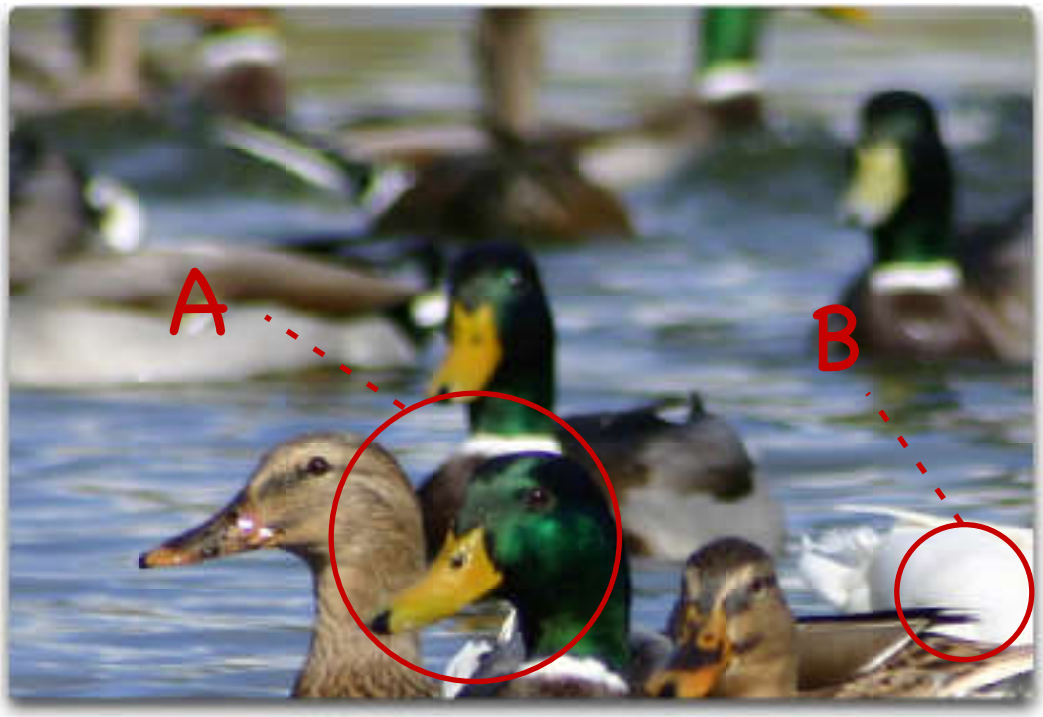


Image demo 1. This image allows you to check the sharpness level of your monitor and how it shows saturated colours. This photo has the focus in the middle foreground (A), with the background unfocused.

You can also verify the sharpness in the ducks feather, especially in the central duck neck. You can use this image to set the colour, contrast and brightness level. For the brightness level, use the image area (B) where levels are near white.

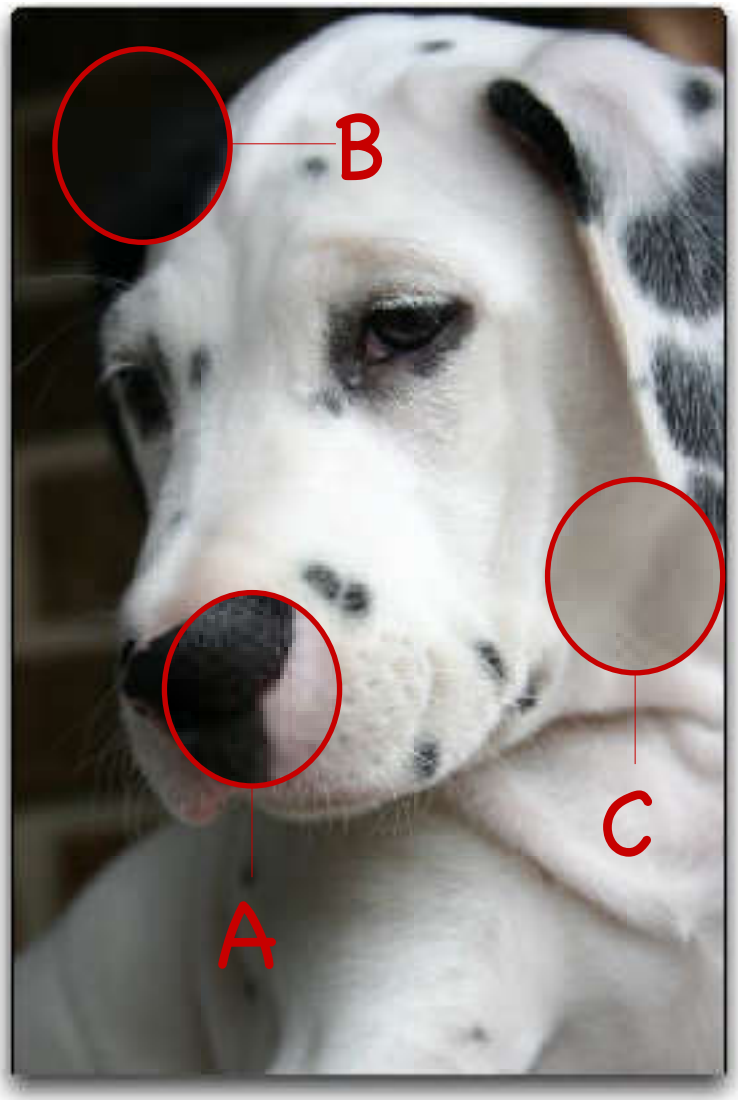
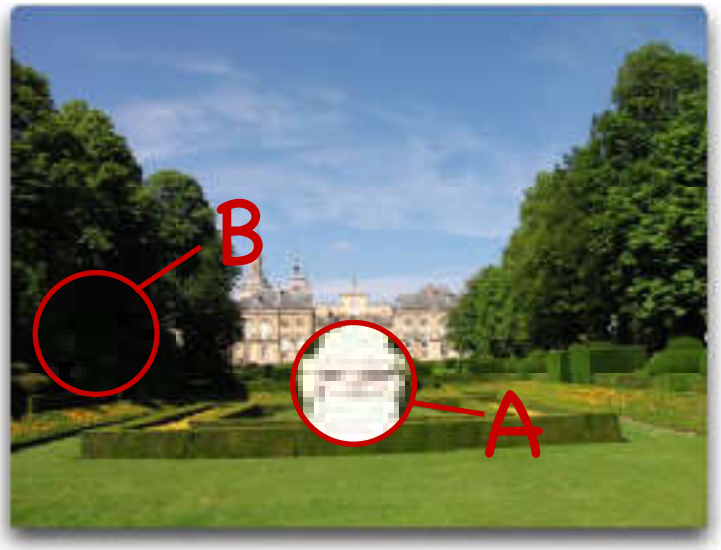


Image Demo 2. This image is more suitable to adjust contrast and brightness of the display, and also to verify the quality of focus (sharpness). To adjust the focus, especially in CRT monitor, watch the hair and pores in the snout area (A).

To adjust or verify the contrast, verify that you can see all the background areas of the image (brick wall), as well as the right ear (B) and the hairs in the marked area (C). In this last option you must adjust the brightness previously, provided that the image doesn't have any white area (you will have details also in the white areas).

Image Demo 3. This is the best option to measure the quality in displays with resolution below 1.024 x 768 pixels. Nevertheless, you can also use it in higher resolutions.

Verify that you can see the blue in the sky like a uniform gradient and that you can see clearly the clouds. Otherwise, you must adjust the brightness and contrast.



You must watch also details in the grass and the trees. If you see this area like a colour mass, then you must adjust your display contrast, and also the focus in the case of a CRT monitor.

To set the optimum brightness level you must take into account that the central statue (A) isn't completely white and that the darker area details (B) must continue visible.

Image Demo 4. This is the best image you can use to evaluate the general quality of your monitor, or to use as a reference to set the saturation or levels of every primary colour channel (especially in CRT monitor).

This image has all the elements required: basic and well saturated colours, skin tones, lights, medium tones and darkness with details (A).

The image includes geometric elements that will help you to verify the focus and detail level of the display (fruits and signboard with text).

Video

Use this option to verify any persistence in the images of your monitor or to check halos or other rests produced by the quick change in the screen pixels. With the video you could verify the response rate or the refresh rate of your monitor.

If you are using the CD version of MoniTOR then you could use the original video installed together with the software. If you have downloaded the application from the website, then you could create your own video following the steps provided in the Installation section.

DV Compression. To create a movie usually you codify and compress the audio and video tracks to reduce the file size as much as you can. There are different video codec: lossless and with loss. Lossless codec maintain the original quality of the video but get a bigger size file. The loss codec's produce smaller movie files but losing part of the original quality of the image.
DV video coding is the system that offers better size/quality files, because it uses a compression system with loss similar to JPEG for graphic files.

DV is the coding system used in the example videos included with MoniTOR. This means that you could see faulty borders (especially in diagonal lines) and colour differences in gradients. You can also see a snow effect similar to old movies. When you play the movies in your computer and you see these effects, please note that they are not produced by your monitor, unless the grain movement or the faulty borders are too much visible (A).

Nevertheless, to assess the quality of your monitor when playing video you must see the images sharp and without halo, especially in contrast (the border of a figure against the background or the border of two objects in movement). You will need to adjust contrast if you see artifacts (small squares produced by compression) in solid colours, for example in the sky. In displays with a small dot pitch the movement produced by the compression will be less visible. The transitions will be softer in colour gradients, and edges and profiles will be less jaggy. The first example video is more suitable to verify image refresh or halos, while the second one is better to see dot pitch, colour, sharpness and contrast.