**How to create a 24-Bit Bitmap Image for use with the Digital Light Wand in Photoshop (CS4)**

The goal here is to create a BMP file that you can copy to an SD card for use in the Digital Light Wand. Since Digital Light Wands vary in the number of LEDs (Pixels) they have, you will want to adjust the settings below based on how many pixels your Digital Light Wand has. The example below is based on a 156 pixel DLW.

Remember that you will creating a light painting image with your camera using the DLW by moving the DLW from one side of the image to another. Now of course you can change this to fit any creative need you may dream up but this example is going to keep it simple and assume you want to recreate the image by moving left to right (as viewed from behind the camera) and the top of the image will be oriented to the top of the Digital Light Wand. The "TOP" of the digital Light Wand is designated as the pixel furthest away from the Arduino input on the LED Strip.

1. Start off by either creating a new image in photoshop or opening an existing image.
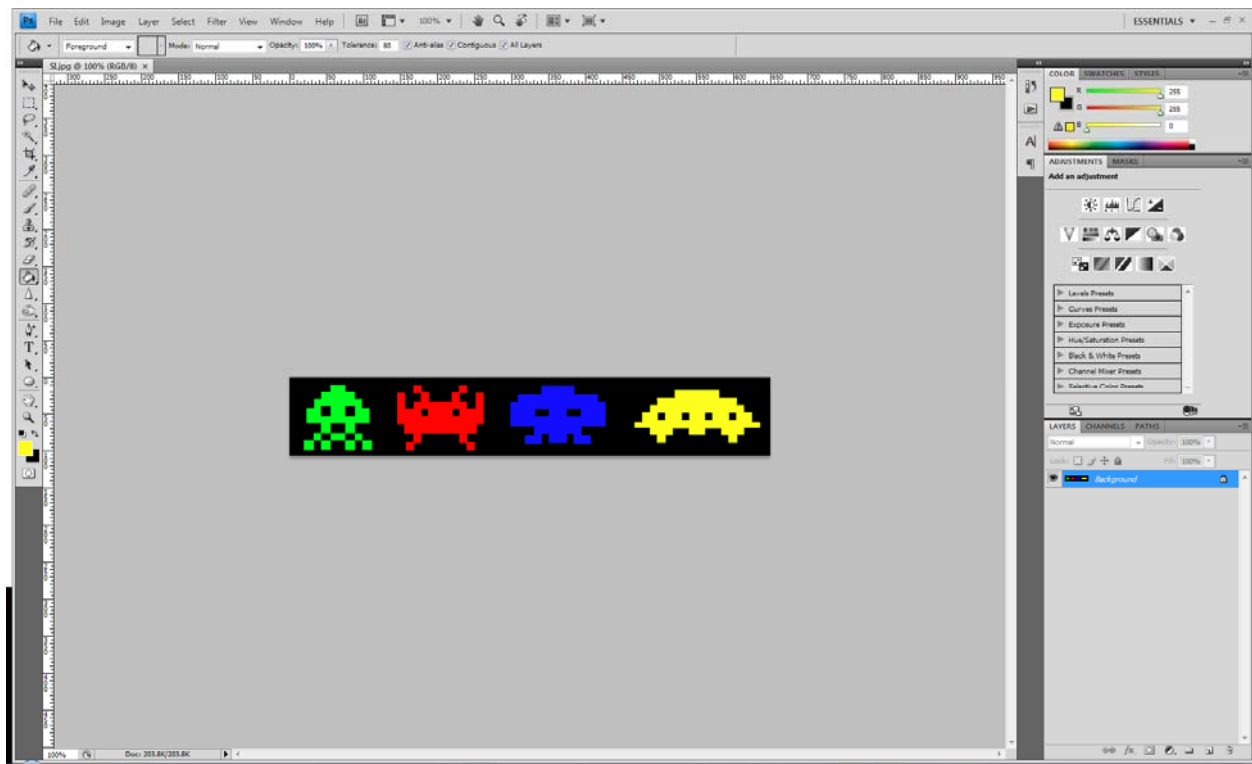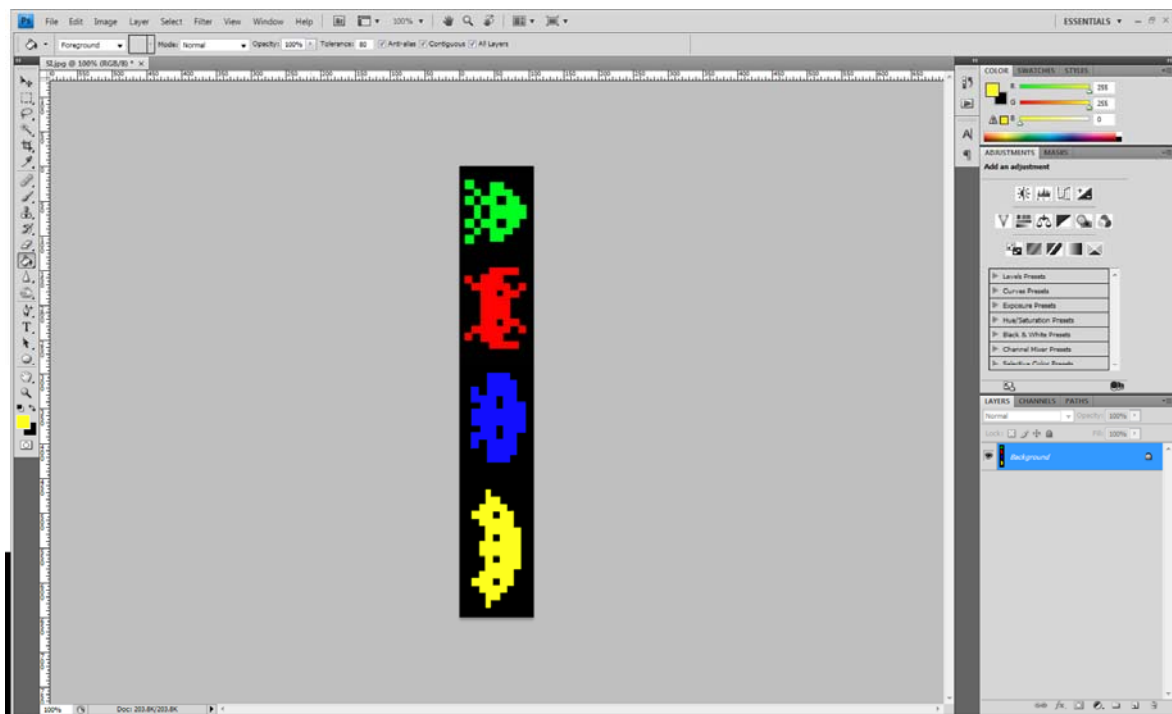
2. Rotate the image so that the top of the image is on the right.

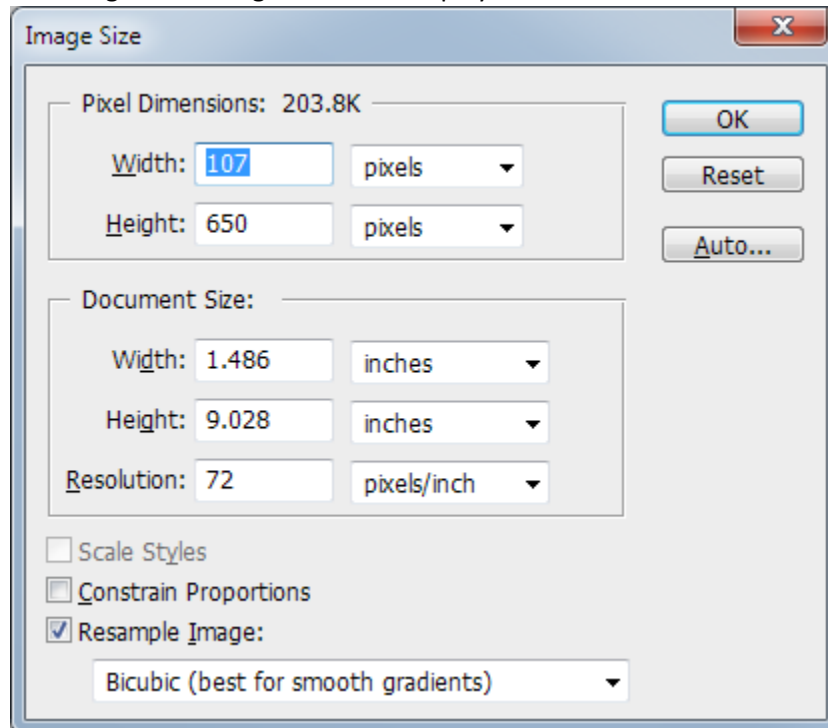   a. From the main PS menu, click on IMAGE -> Image Rotation -> 90 Degrees CW
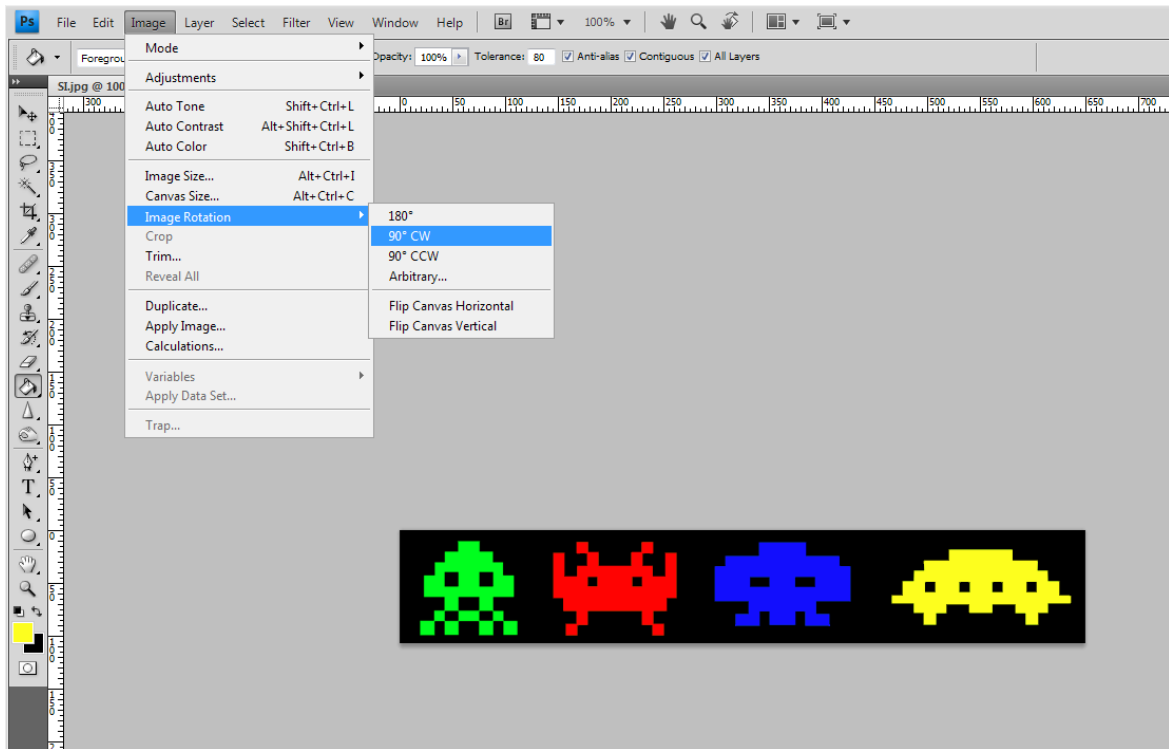
   b. This will rotate the image as shown below

3. Next you want to make sure the image size is adjusted to the correct number of pixels for your Digital Light Wand.
   a. From the main PS menu, click on IMAGE -> Image Size
   b. The Image Size dialog box will be displayed as shown below

Image Size

Pixel Dimensions: 203.8K

Width: 107   pixels ▼

Height: 650   pixels ▼

Document Size:

Width: 1.486   inches ▼

Height: 9.028   inches ▼

Resolution: 72   pixels/inch ▼

☐ Scale Styles
☐ Constrain Proportions
☑ Resample Image:

Bicubic (best for smooth gradients) ▼

OK   Reset   Auto...

   c. For the example image, the size is currently smaller than the digital light wand we will be using it on (Currently 107 pixels and we want 156 pixels)

d. To change the image size and retain the proportions, make sure the "Constrain Proportions checkbox is checked and then type in 156 (or whatever size your DLW is) to the Width. See the example below.
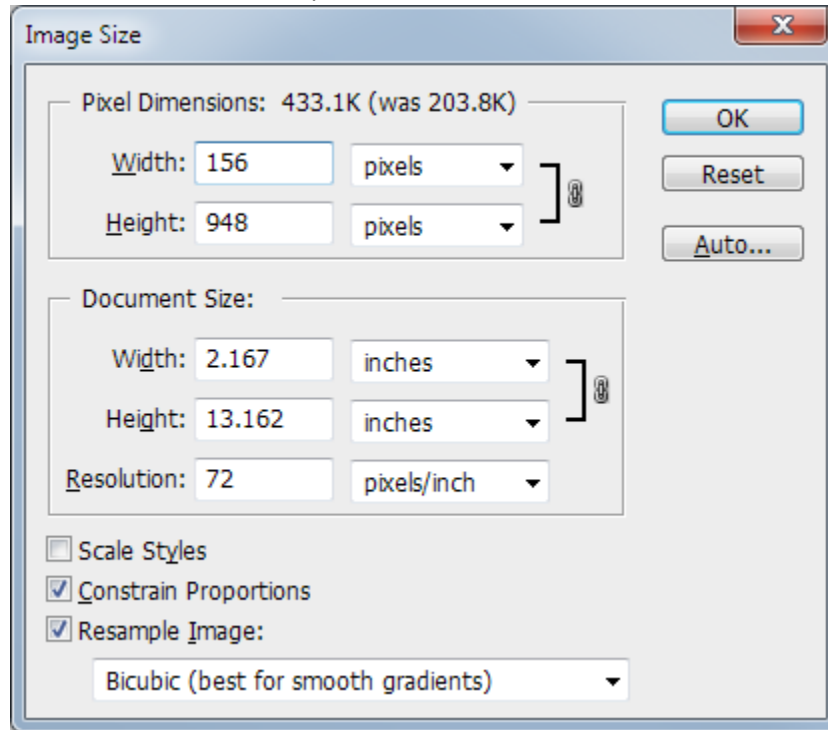

e. To complete resizing the image, click on the OK button.

NOTE: The reason the image needs to be rotated and resized is that the Digital Light Wand will open the file and then send the image one pixel at a time to the LED strip. The image is read from the top down and from left to right.

4. Now we need to save the file as a 24-Bit Bitmap image so the Digital Light Wand can read the file.
5. From the main PS menu, click on File -> Save As…

6. The following Save As dialog box will be displayed.
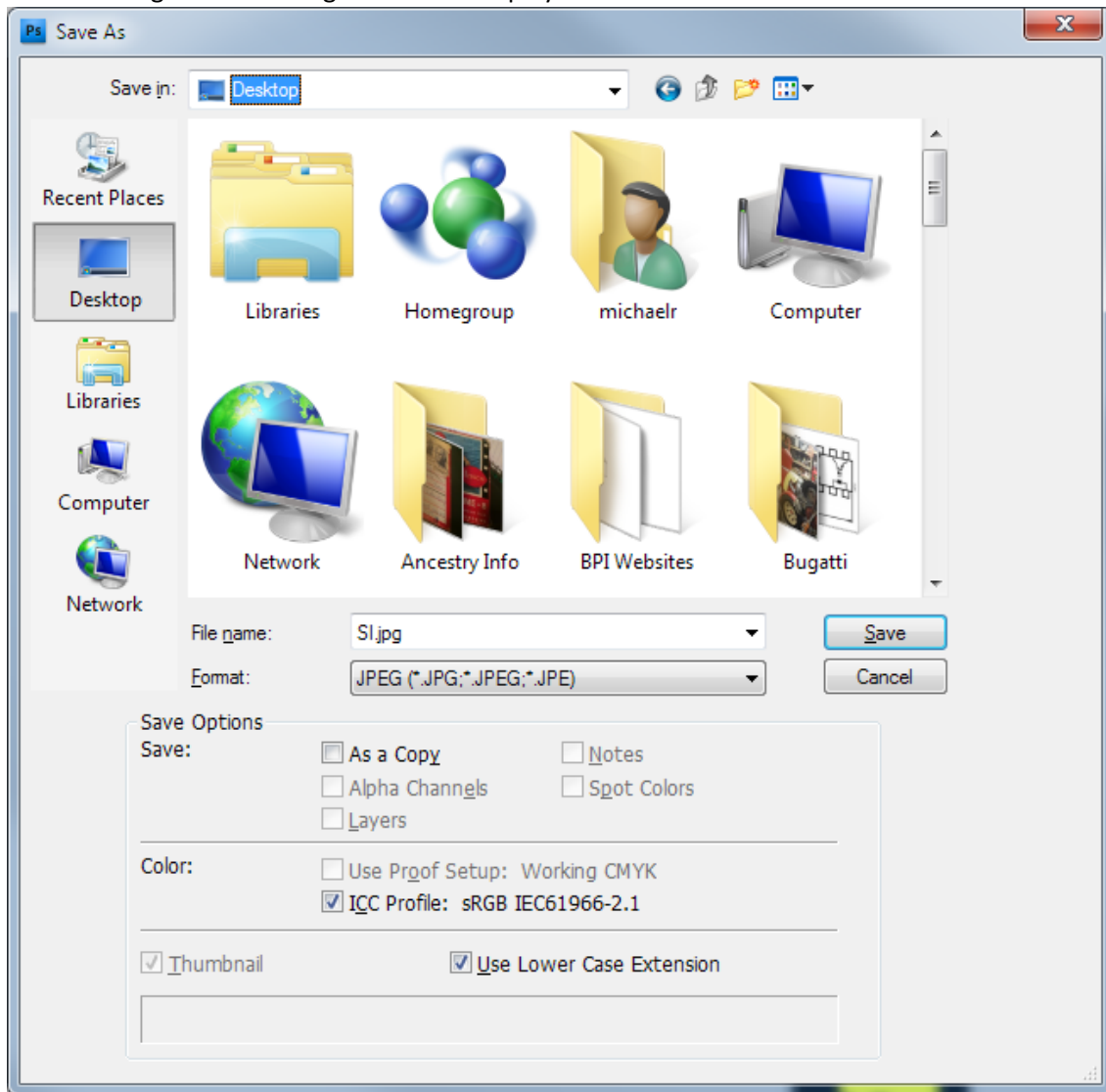
7. Name the file with an 8 or less character name and the three character "bmp" extension and select the BMP format in the Format pulldown selector as shown below.
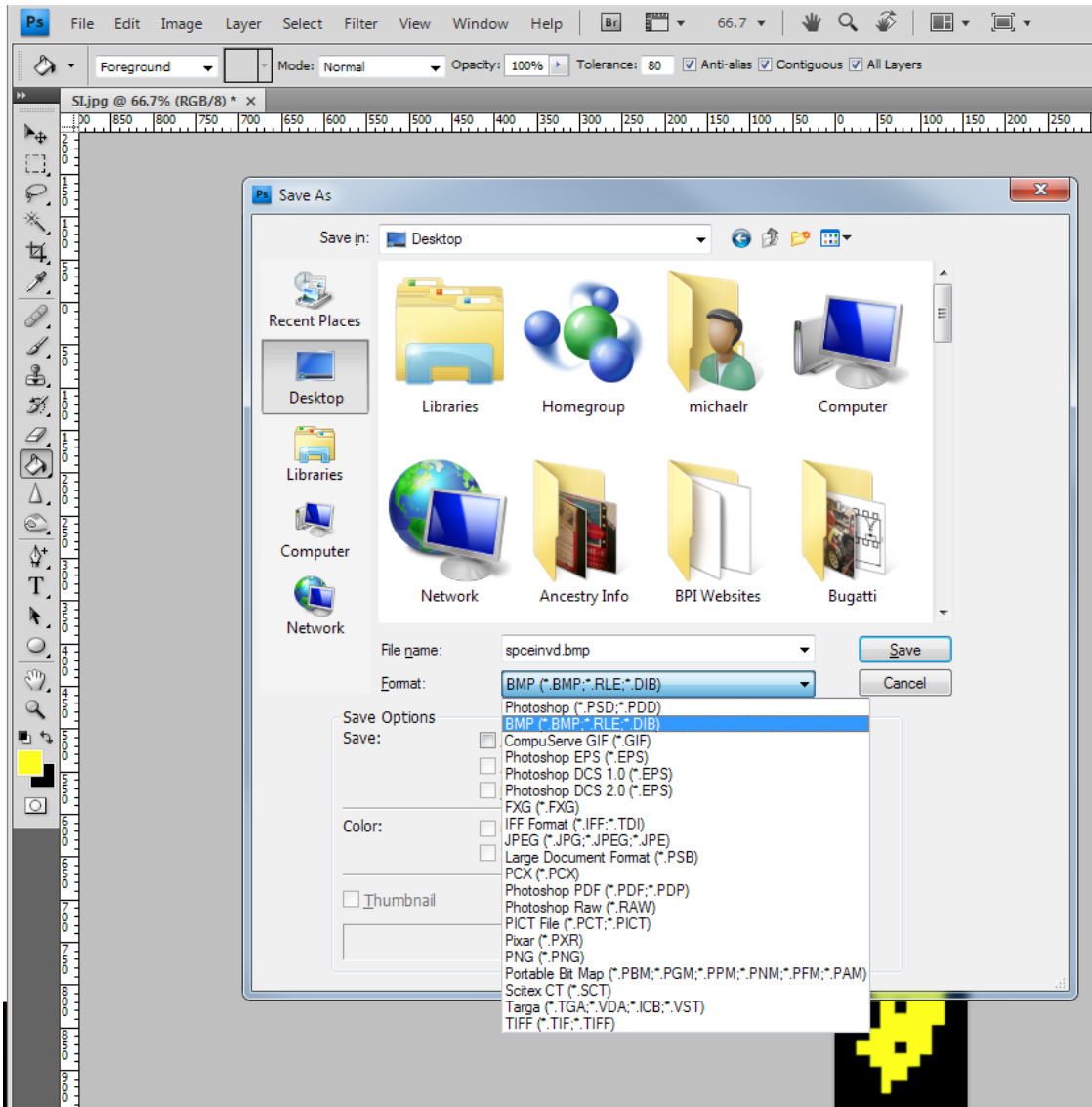
NOTE: Keep the file names in a simple format. Use 1 to 8 characters for the name and do not use any spaces or special characters in the name. Use letters and numbers ONLY. Upper and Lower case letters are okay.

8. Click on the SAVE button and the BMP Options dialog box should be displayed as shown below.
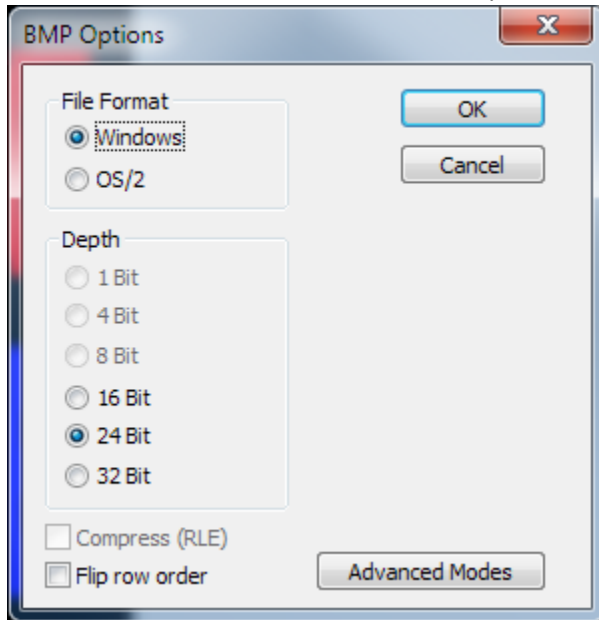
9. Make sure the Windows option is selected for the File Format and also that the 24 Bit option is selected for the Depth.
10. Click on the ADVANCED MODES button to display the BMP Advanced Modes dialog box as shown below.
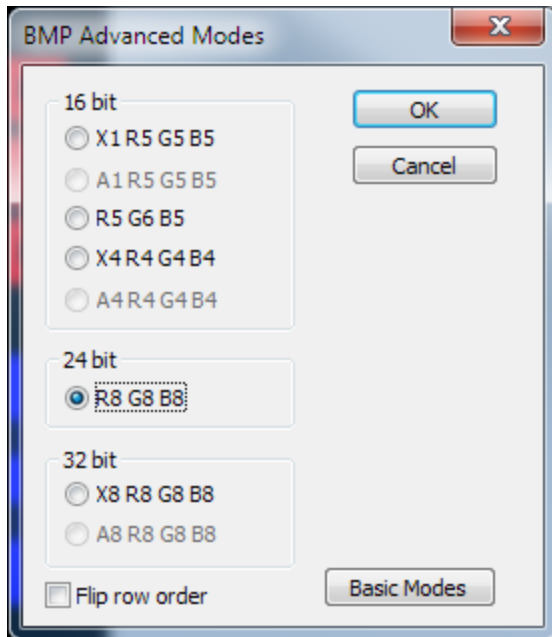
11. Make sure the 24 bit (R8 G8 B8) option is selected and the click on the OK button to complete saving the file.

And one last important note:

I have found that the Arduino can be EXTREMELY picky in reading the files from the SD card and that it seems to read the files in the order in which they were saved to the SD card instead of in alphabetical order making it difficult to find what you are looking for when using the DLW. So, to cure this, I usually save all my DLW BMP images in a single folder on my computer, then each time a make a change or add one, I add it to that folder. I then COMPLETELY delete ALL images on the SD card and copy ALL images back to make sure they are written to the card in alphabetical order. This makes it much easier to find what you are looking for when light painting. Particularly if you have the max number of images for use with the DLW on the SD card (256 images).