Basic Printing with Color Management and Custom ICC profiles (Epson)

Concept:

Printers eject different amounts and colors of ink onto paper to create various shades of color. The general process is that the data of the image file is handled by the photoediting/printing program (we will call this level A) and it is then handed over to the printer driver that translates the instructions into signals (We will call this level B) that are then received by the processor within the printer which then prints.

In both of these two levels, adjustments can be made to modify how the printer prints. The set of adjustments are called ICC profiles. Each ink and paper has unique reactions, so ICC profiles are specific to an ink and paper setting.

To create ICC profiles, we print a set of known colors through the printer with no adjustments to how the printer prints. We then measure the colors that the printer has printed and since we know what colors it should have printed, we are now able to create a set of instructions telling the printer what to correct so that it can now print the color it should have printed.

The **first rule** to remember is that **Color Management is applied only once** between the file on your PC and the printer it is printed on. The adjustments need only be applied **ONCE**. We can do so at either Level A or Level B. We do not apply the adjustments at both levels or else we will be overcorrecting.

Level A Possibilities:

Some photoediting applications do not allow for corrections at Level A. These are generally entry level programs for casual users where the concept of controlling color is not required and may create more confusion and support issues. The better programs allow control (Color Management) by the user. Programs such as Adobe Photoshop, Adobe Photoshop Elements (V6 and newer), Adobe Lightroom, Apple Aperture and a very popular program called Qimage are the more popular ones that support color management.

Level B Possibilities:

If we do not apply the adjustments at Level A, then there is a further opportunity to apply these adjustments at level B.

When the printer receives the information that the image has, it now has to decide how it is going to control the printer to print these colors out. Now depending on the model, the amount of different colors of ink and the paper type, it now normally makes a set of adjustments assuming that the ink will be original OEM ink and OEM paper.

Since we printed a set of known colors with adjustments turned off, we can now apply the adjustments to correct the colors here if we didn't do it at Level A .

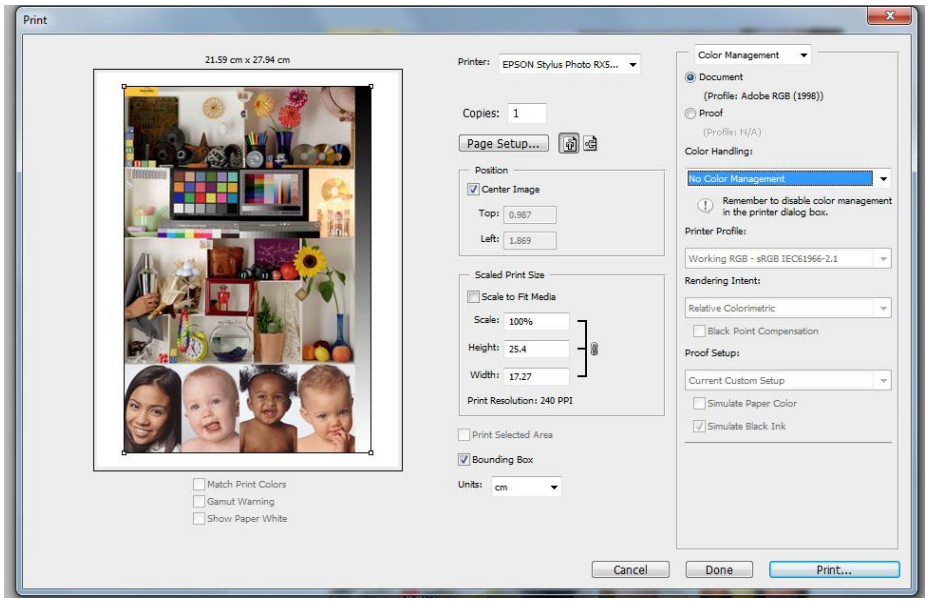
Unfortunately most narrow carriage (letter size) printers do not allow the adjustments to be inserted at this level. These printers are targeted at entry level users and level A adjustment must be used if we want to use ICC profiles on these printers.

However many of the wider carriage printers do allow the adjustments to be inserted at this level. ***Epson Stylus Photo 1400, Epson R1800, R1900, R2100, R2200, R2400, R2880*** *do allow the instructions to be inserted at this level.* To date Canon desktop printers wide and narrow do not allow adjustments at level B.

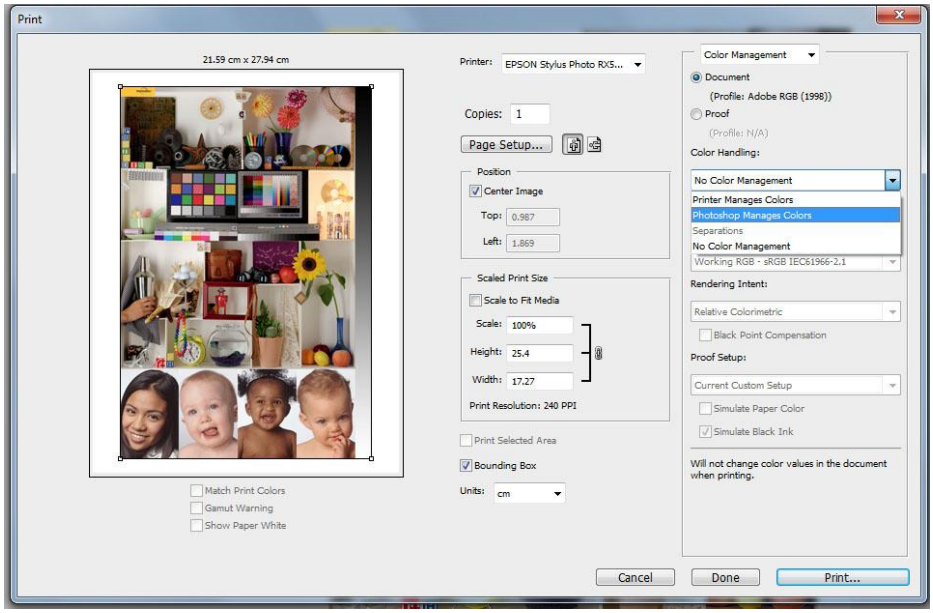
Using ICC profiles at Level A:

Photoshop

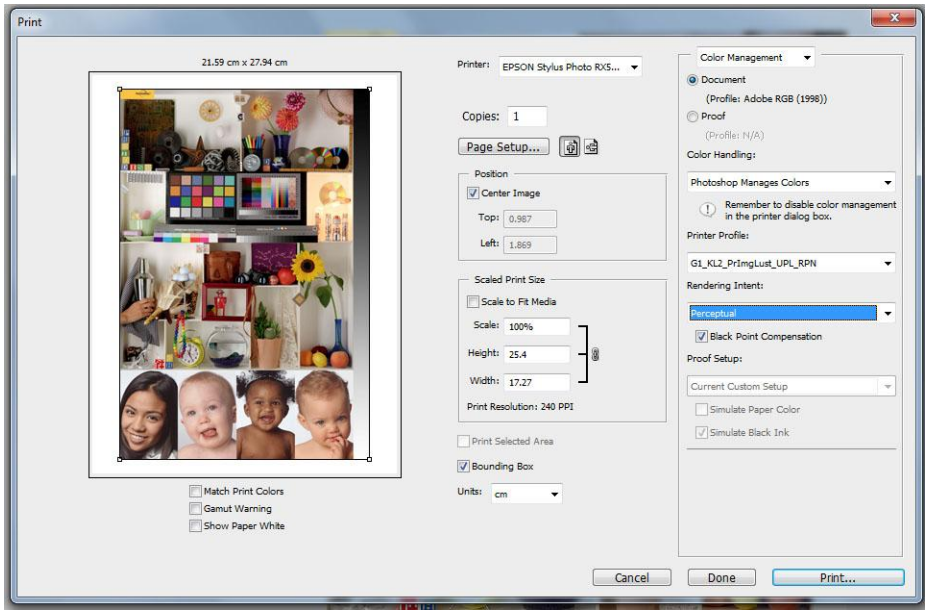
When we select to print the image we see



What we must now do is first select the pulldown in Color Handling:

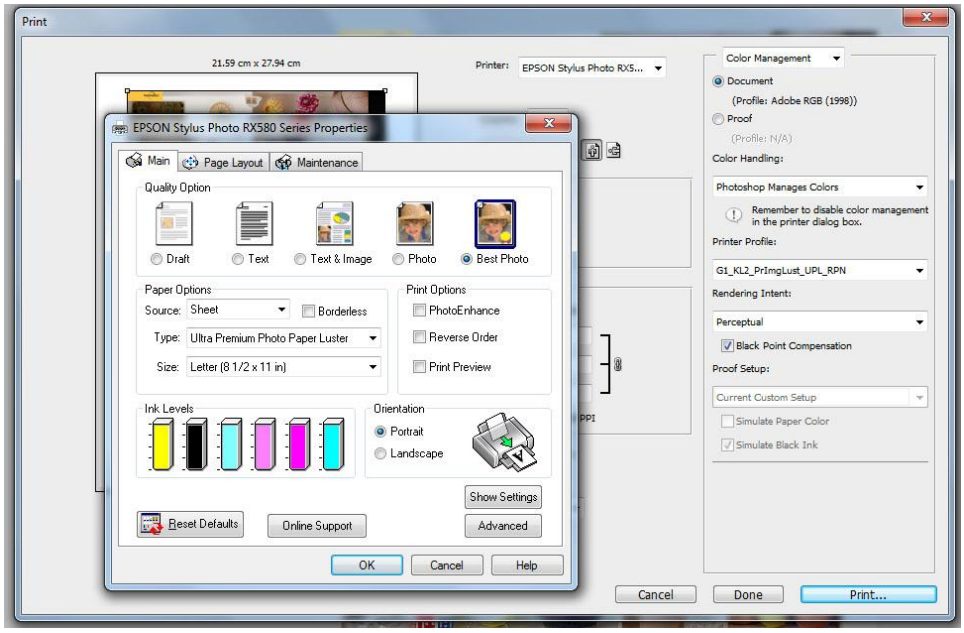


Choose Photoshop Manages Color



We then choose the Printer Profile in the drop down, choose Perceptual for the Rendering Intent and check off Black Point Compensation.

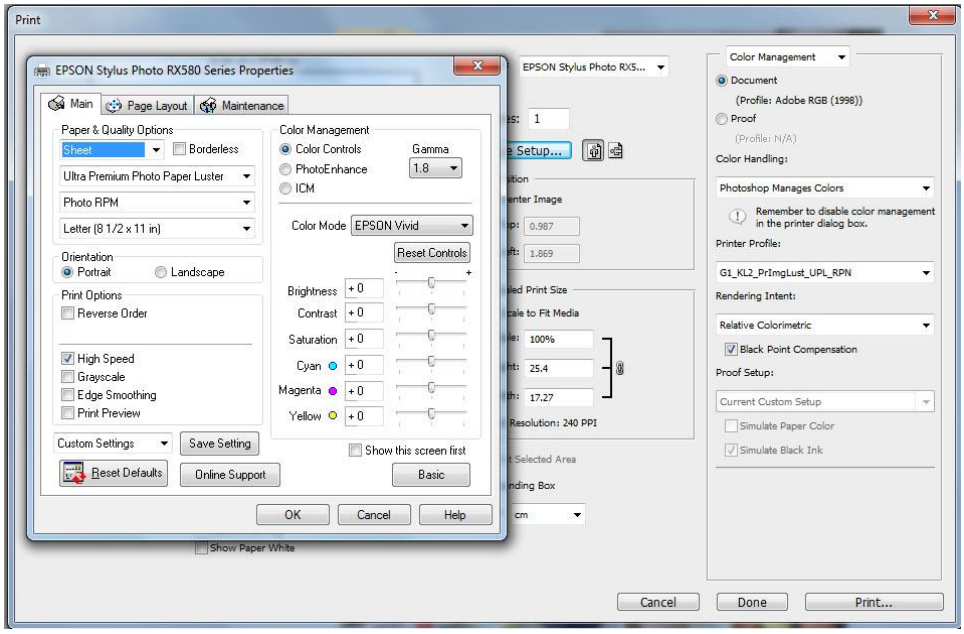
Next we choose Page Setup for the printer.



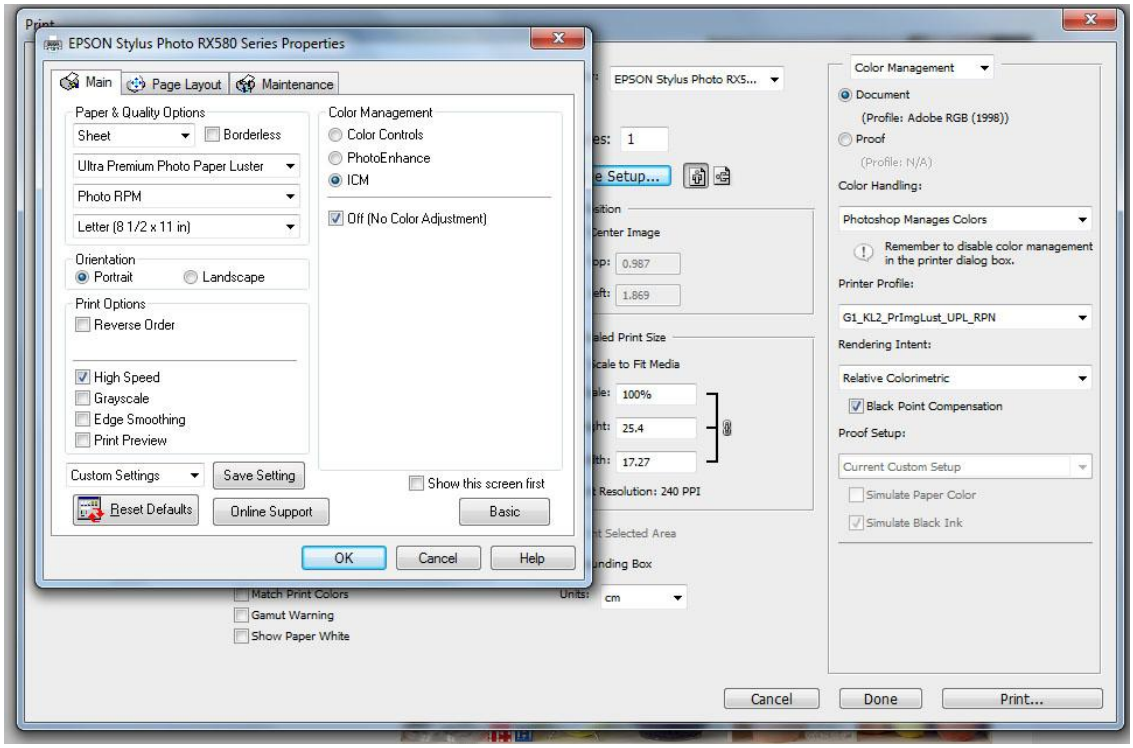
Here we choose the size of the paper in the printer. Choose type of paper according to the setting files for the profile. In this case we choose Ultra Premium Photo Paper Luster and then we check off Best Photo. Now pay attention because the driver then by default checks off Photoenhance. <u>We manually uncheck it.</u>

Then we click on Advanced in the bottom right corner.

We then see this screen:



<u>This is a very important screen</u> because it is here that we are going to Turn Off Adjustments



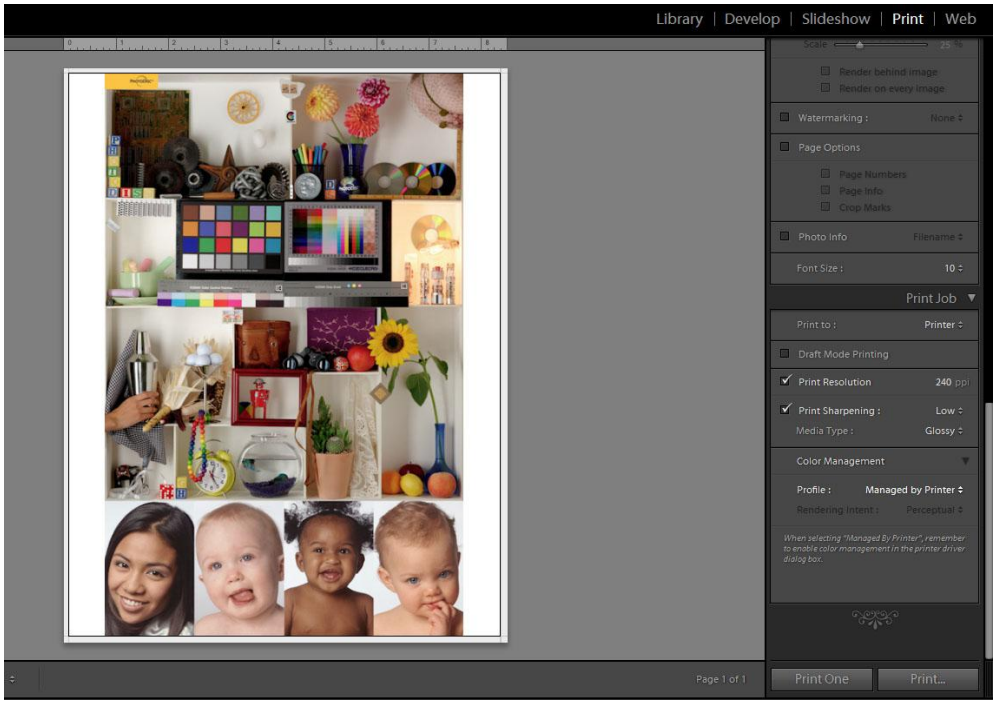
We tick on ICM and the we place a tick on Off(No Color Adjustment)

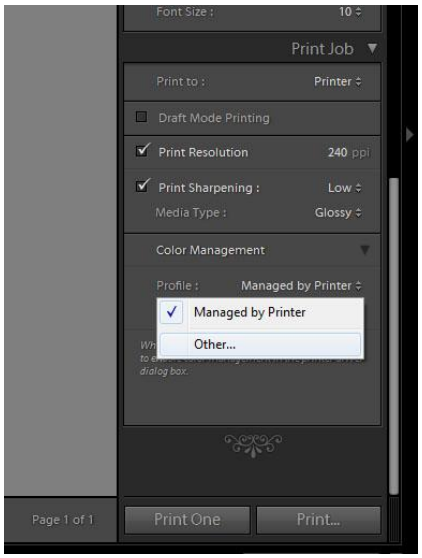
Then we click on OK.

We then return to the Print Dialog box again at which point we can then send the image to print.

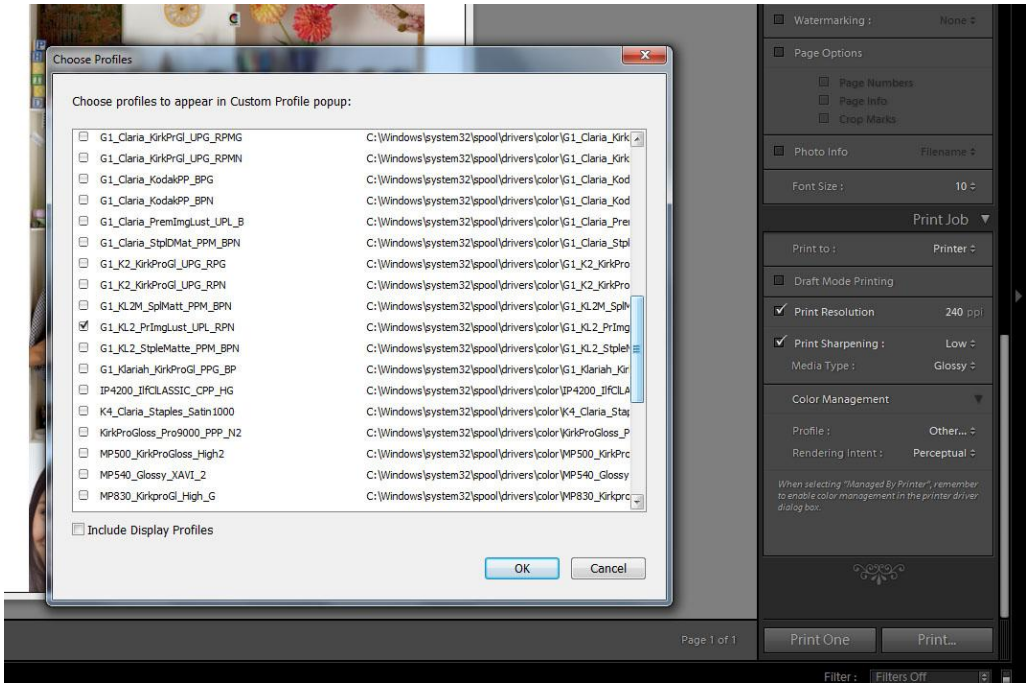
Adobe Lightroom

First we choose the Print module at the top and then on the right hand menus, we move the sliders down to the bottom.

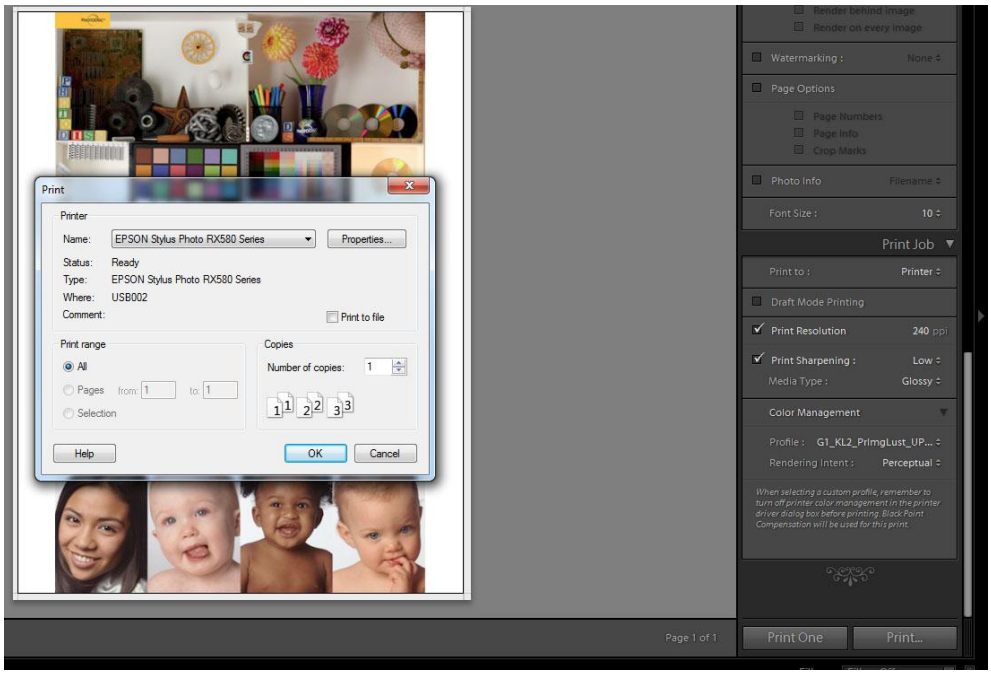




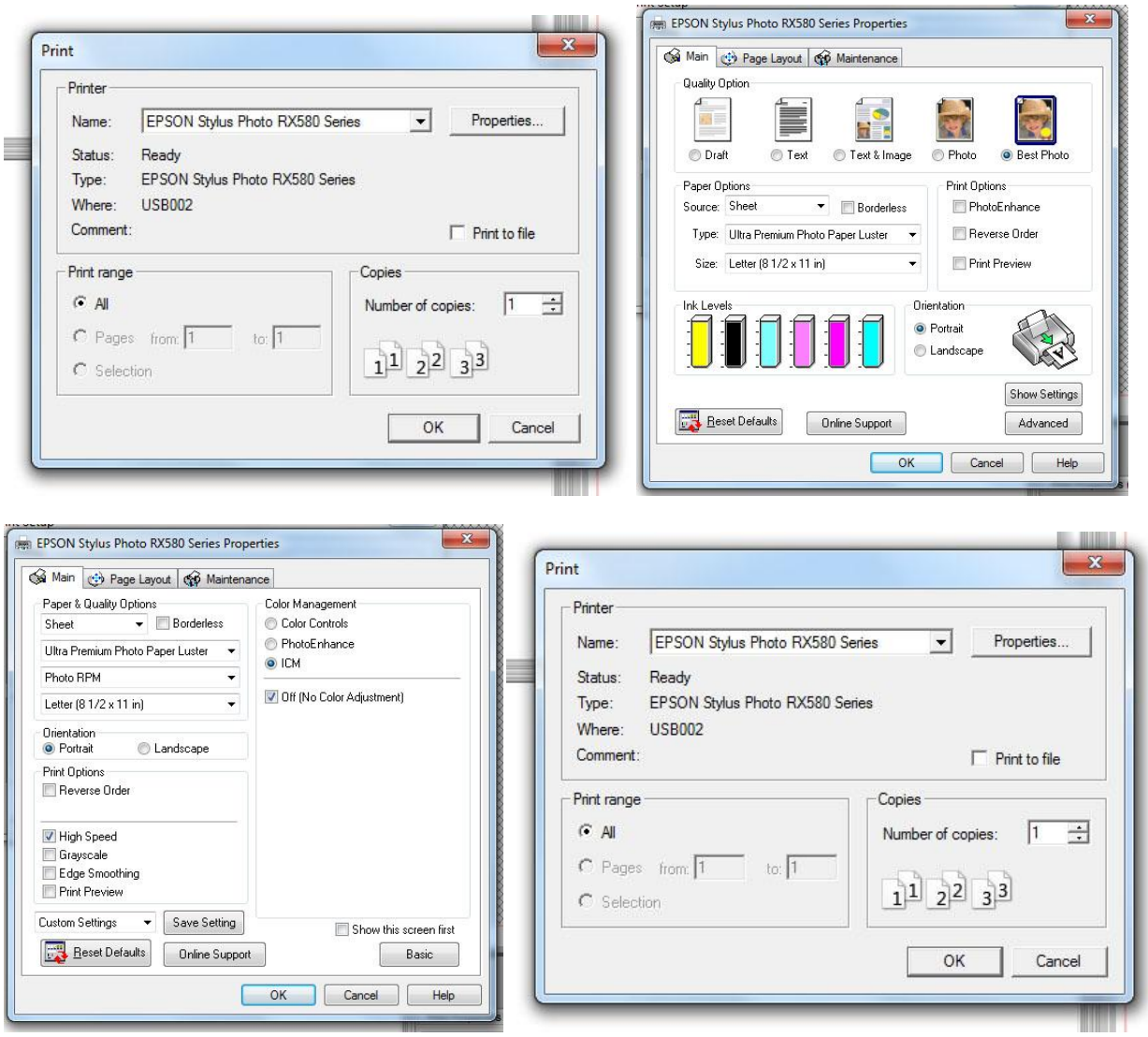
Choose Other



Choose the ICC profile and click OK.As soon as you choose an ICC Profile, Lightroom instantly now starts to manage colors. For the rendering intent, choose as we did before and pick Perceptual.After checking and selecting the print setting on this module, we then select Print



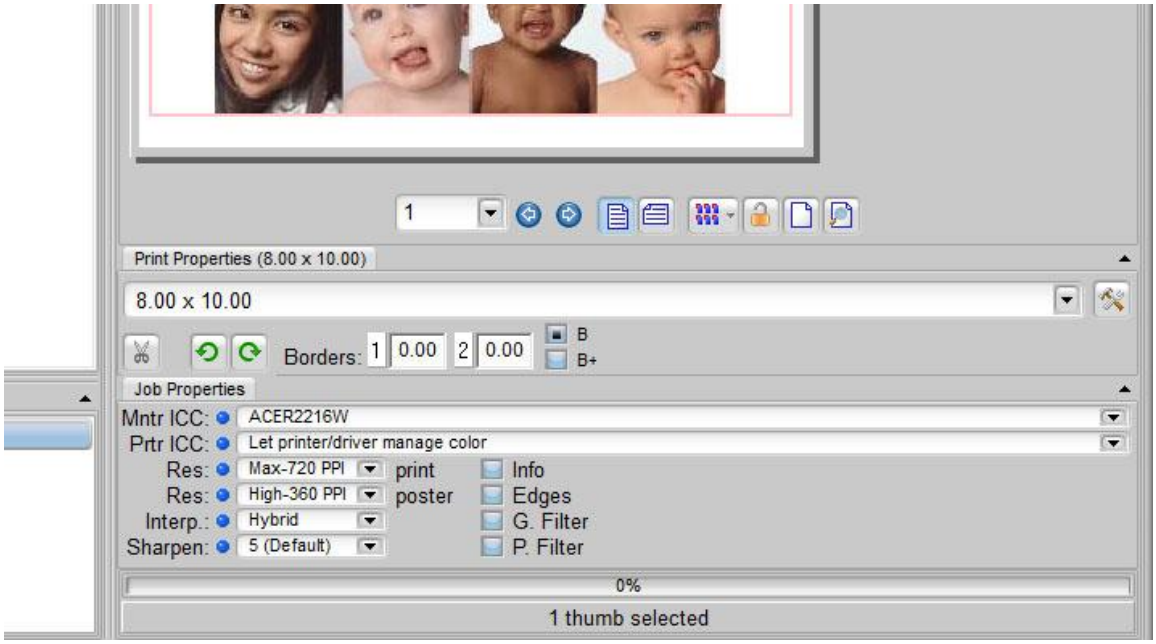
We are then presented with the printer driver dialog box



at which point we pick properties and follow through as we did with the previous example where we chose Paper Type, Quality Settings, and unchecked Photoenhance, picked the Advanced box (or Tab in certain models) and chose ICM and ticked OFF (No color Adjustment)

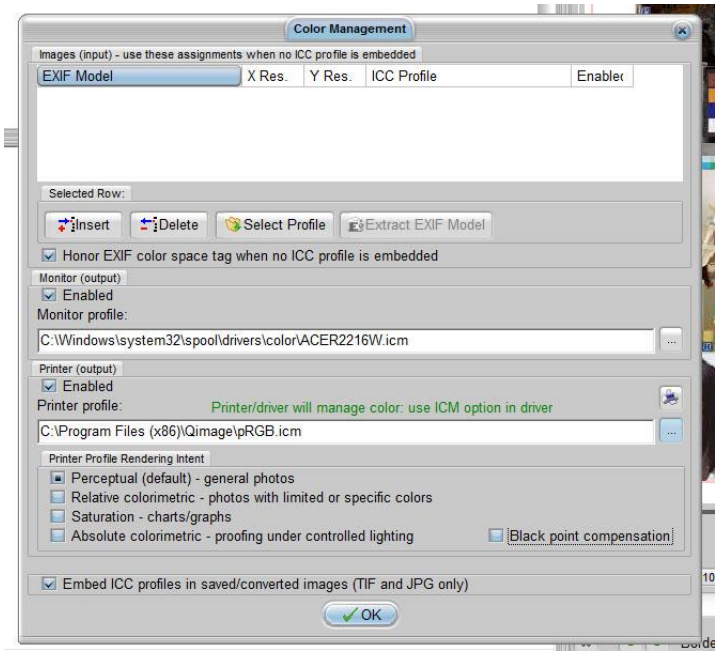
We then pick OK and a final OK on the dialog box to proceed to print.

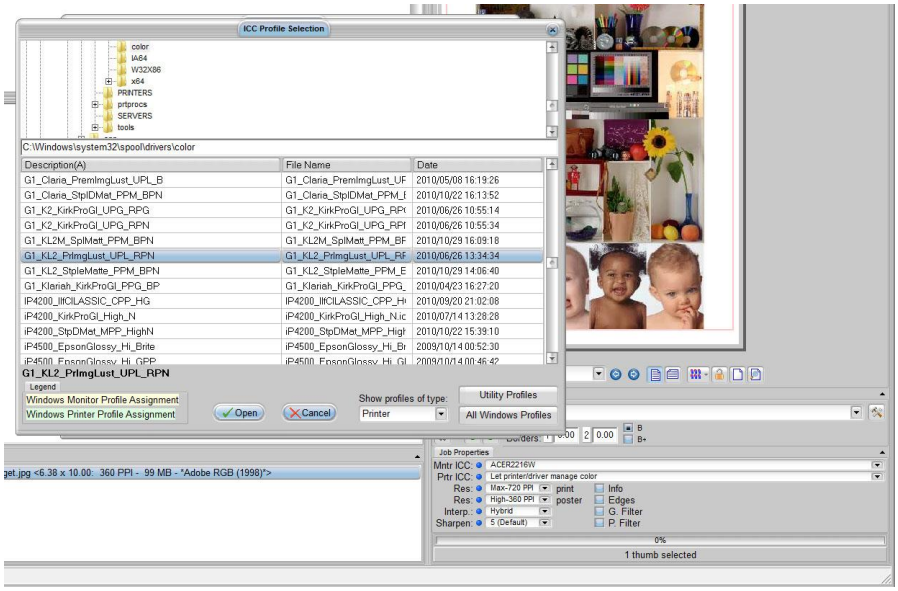
Qimage



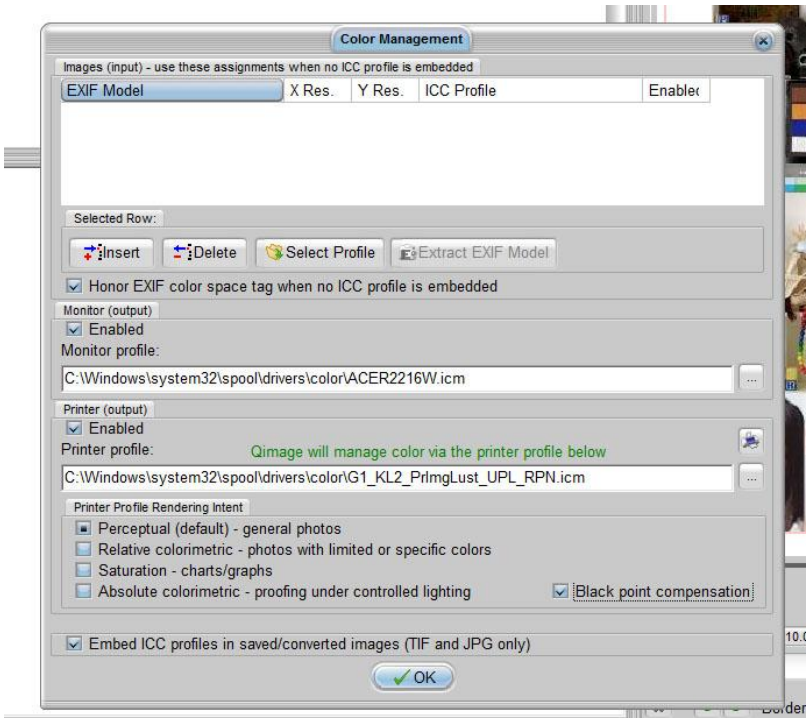
Here in thePrtrICC dropdown we select “Let printer/driver manage color”

To allow Qimage to manage color, we simply choose the ICC profile dropdown and select Choose New Profile.



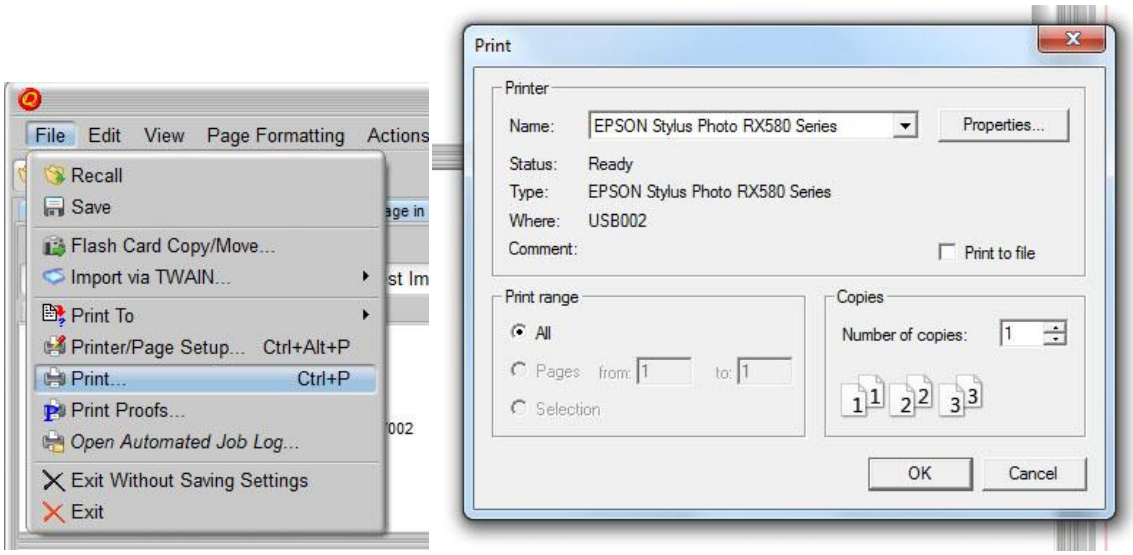


Here we choose the profile and then click on Open

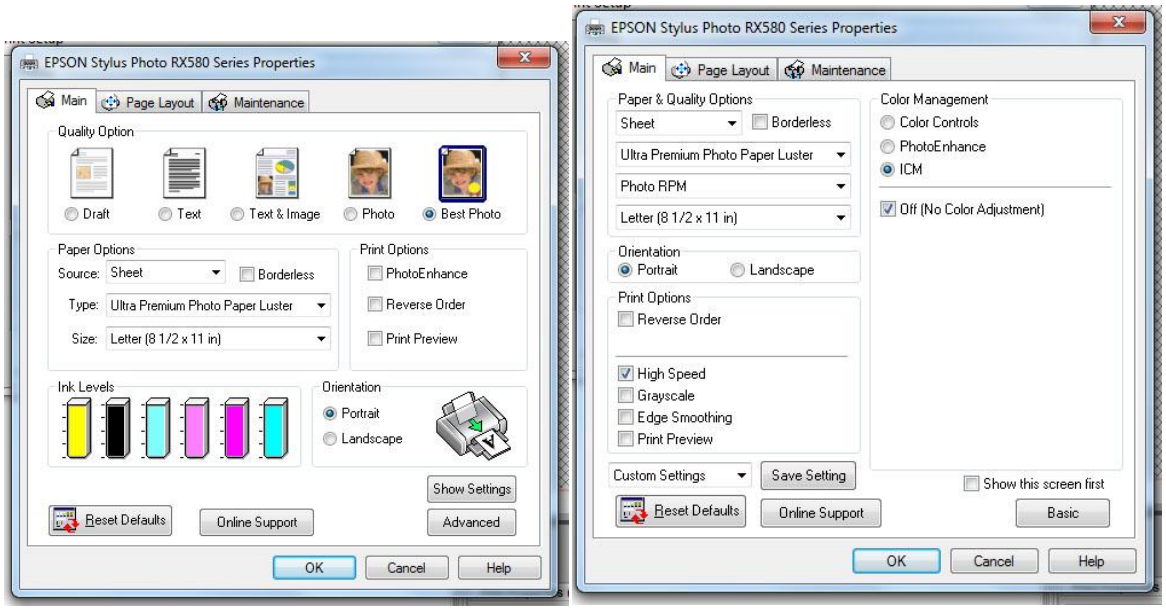


Choose Perceptual and place a tick on Black Point Compensation. Then OK.

Next we set up the print driver.



Then we are presented with the regular options again.



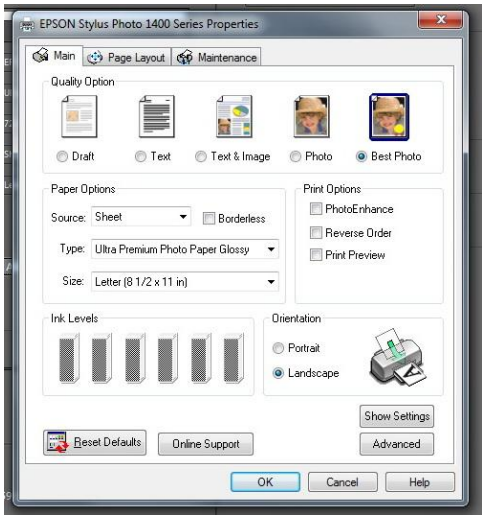
Using Custom ICC Profiles

Print Driver Level B

This example uses a different profile as the example. However, the concept is identical with other profiles. Just the type of paper must match the profile settings. Remember when using this method, all settings on the Photoediting program will allow the printer to manage color.

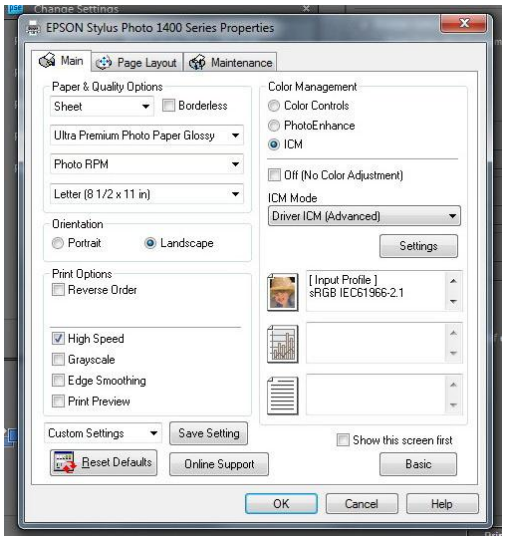
The example shows an Input Profile of sRGB. You must know what color space or input profile you image is specified for and choose the appropriate one. If you created the image or picture you will know whether it is AdobeRGB or sRGB or ProPhotoRGB. Most pictures from point and shoot cameras are sRGB. If you own a dSLR camera, you have the choice of whether you want to capture the image in sRGB or Adobe RGB. If you are capturing the image is RAW or DNG format, then you likely will not be applying ICC management at this level but at level A as previously described.

Choosing the incorrect input profile will cause the print to be very wrong in the colors. So if this happens pay attention to the input profile or color space.

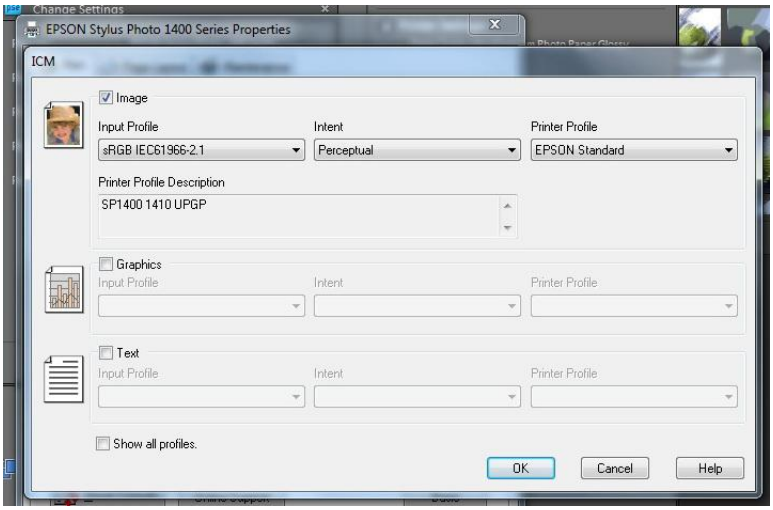


After we select print on the application the print driver dialog appears.

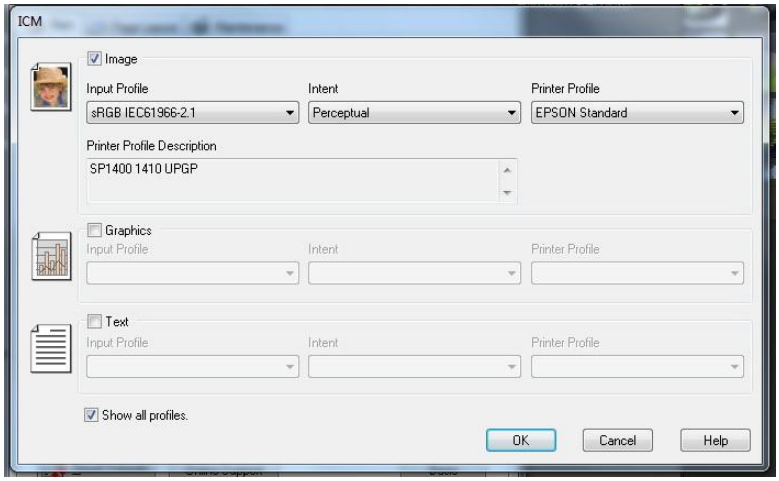
As before, this is the standard screen where we choose paper type, and quality/resolution settings. After completing this screen, click on Advanced.

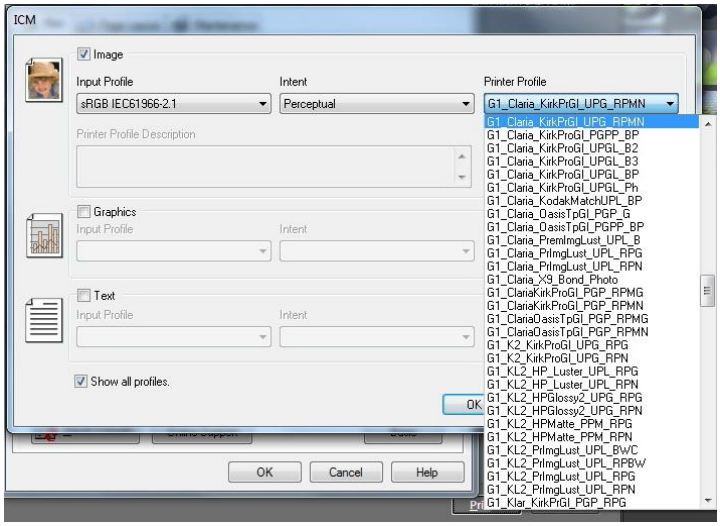


Here we choose ICM and then just below that under ICM Mode, we choose Driver ICM (Advanced). Next, we click on Settings.

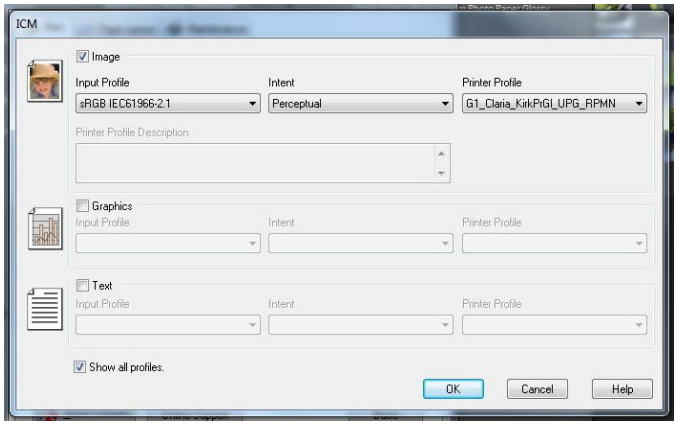


We now see this screen. We then place a tick on the bottom left box to “Show all profiles”



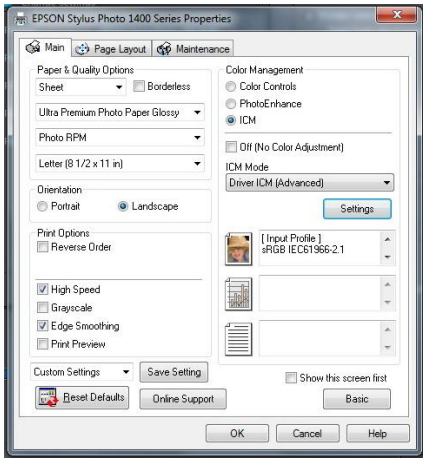


Using the drop down, we select the profile we want to use.



Next we choose our rendering intent and input profile or color space and then select OK.

To print the image we simply select OK again.



Installing Profiles:

After downloading and expanding the profiles, you can install them into the system by right clicking on each profile and choose **Install.**

Alternatively, you can directly install them into the system folder

C:/windows/system32/spool/drivers/color

Using the supplied profiles on alternate papers.

The supplied profiles can be used on alternate papers and while might not be optimal generally are very useable. One area to keep an eye on is the brightness and the color of the alternate paper. Generally we can get good matches when the paper color is similar. This is not a rule but it is a guideline when using alternate papers. If you cannot achieve a reasonable output or have some issues, please contact me and I can possibly create profiles for the specific paper you want to use.