

RGB PRINTER PROFILES: ADOBE® PHOTOSHOP® CS3/CS4



INTRODUCTION

Some inkjet, toner-based, photographic, and other non-PostScript printers print in RGB mode, meaning the RIP or driver is designed to accept RGB rather than CMYK data. This includes Epson®, HP and Canon® inkjet printers that are used with the manufacturer's provided software driver. If images are sent in CMYK mode, the driver will first convert them to RGB mode and then back to CMYK. Even if the printer prints with CMY, CMYK, CMYKcm (light cyan and light magenta), or some other combination of inks, the printer is still classified as an RGB printer if it is designed to accept RGB data.

To profile an RGB printer, you must first print an RGB test chart with color management profiles turned off, make an RGB profile of the printer, and use this profile to convert your images. This document outlines these steps, plus explains how to use the profile for previewing output color through softproofing, and how to print with ICC profiles. This process is very similar on both Windows® and Macintosh® operating systems.

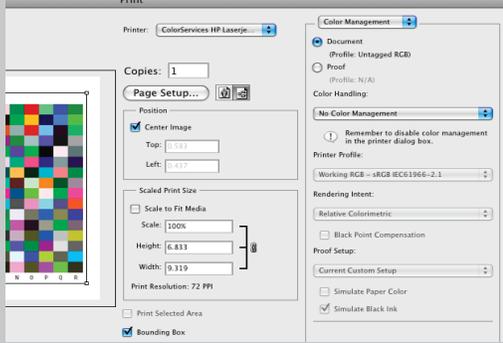


If you are working with Mac® OSX 10.5, make sure to look at the Need-to-Know paper on your specific printer driver for important new settings.

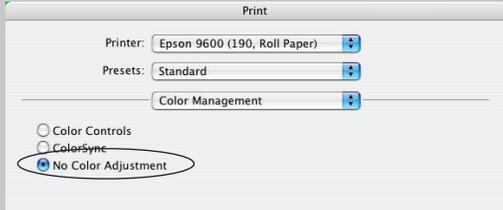
MAKING AN RGB PRINTER PROFILE

1. Use an RGB test chart such as i1 RGB 1.5 (288 color patches), TC 2.88 RGB (288 patches), or TC 9.18 RGB (918 patches). If the printer is non-linear, targets with a larger numbers of patches may produce better results.
2. Open the RGB printer target in Photoshop® without assigning a color profile. To do this, select **Leave as is—Don't color manage**. The

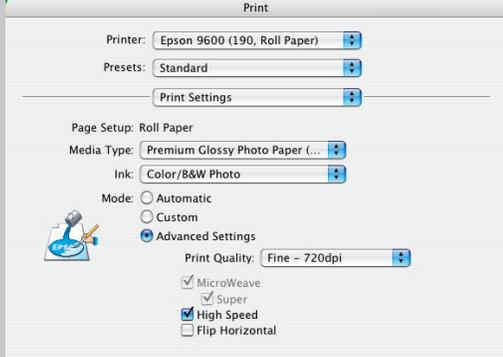
Printing the Test Chart



To profile an RGB-mode printer, select an RGB test chart. Print the chart with NO color management profiles applied. When opening the chart in Photoshop, make sure that there is not a profile assigned. The profile should read "Untagged RGB." In the Print dialog box, select "No Color Management" in the Color Handling pulldown menu.



When printing the test chart, make sure any color management settings are turned off in the print driver. For example, in the Epson driver's Color Management dialog box, select "No Color Adjustment."



In the print driver's Print Settings dialog box, select the same options for printing the test chart you use for production.

NEED TO KNOW

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image should be labeled “Untagged RGB” in the “Profile Info” window in the lower left corner of Photoshop.

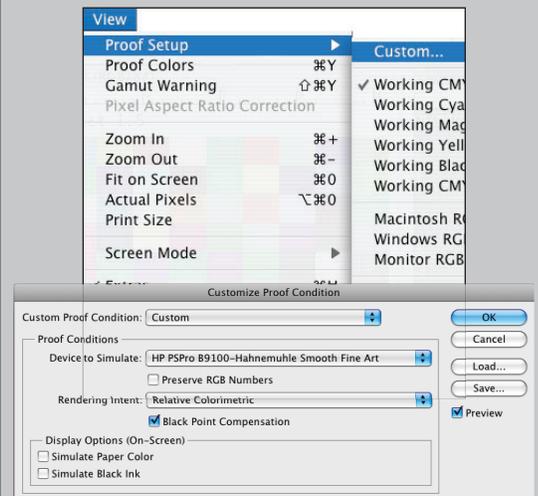
3. Print the target on your RGB printer with the Adobe Print Dialog color management settings turned off. To do this, set “Color Handling” to **No Color Management**.
4. Pay close attention to the manufacturer’s printer driver settings. These settings must be the same settings that will be used when printing files with your profile.
 - a. The paper or media type you select will determine the amount of ink that is laid down. To determine which paper type to select, start by choosing a media name that is similar to the type of paper that is loaded on the printer.
 - b. The print quality settings on some printers will be described as resolution; others may simply have names such as “draft,” “normal,” or “best.” When profiling your printer, select the same quality you will use in production.
 - c. Turn the color management off in the manufacturer’s print driver. Some drivers may use the term “No Color Adjust” or “No Color Management.” In HP’s driver, “Application Managed Color” will disable the driver’s color management.

Hot Tip

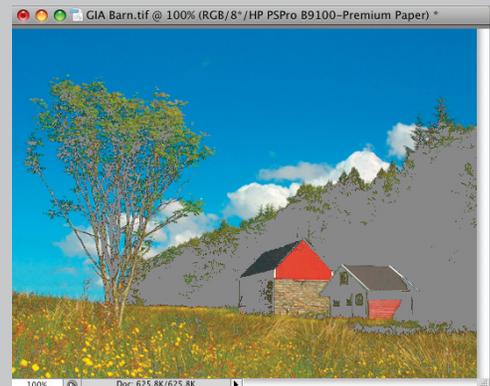
To reduce the chance of selecting the wrong settings later, we recommend saving these settings as a preset in order to use them when printing out of your applications.

5. Read the target with your spectrophotometer and make the ICC profile.
6. Place the ICC profile in the “System > ColorSync Profiles” folder (Mac) or “WINNT\System32\Spool\Drivers\Color” folder (Windows).

Previewing Your Printer’s Gamut



When editing your document in Photoshop, set up the Proof Colors dialog box to preview how your image will print. Use the Gamut Warning to see colors that will be out of the gamut of your printer profile (shown here in gray) and adjust them to be within gamut.



Gamut Warning shows out-of-gamut colors in gray.

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EDITING AND SOFT- PROOFING FILES

Softproofing allows you to see how the color will look on your printer. You will be able to make better editing judgments based on this preview. Adobe Photoshop also has gamut warning capabilities that can show you colors that fall outside the printer's capability to print.

1. Calibrate your monitor to the gamma and white point you want to use (we recommend gamma 2.20 and white point 6500 K). The gamma and white point need not necessarily match those of the working space because Photoshop will convert on the fly from the working space profile to your monitor profile. See our Monitor Profiling Need To Know paper for more information about gamma and white point.
2. Edit your images as desired in Photoshop.
3. To check colors and softproof the file before printing, set up Photoshop's soft-proofing using the **View > Proof Setup > Custom** dialog box. Select the RGB printer profile you created. Do not select "Preserve RGB Numbers"! You can select different rendering intents to see their affect on your output. Usually the best choice will be either "Perceptual" or "Relative Colorimetric."
4. When **View > Proof Colors** is selected, Photoshop will display the image as it will appear with the selected printer profile.
5. When **View > Gamut Warning** is turned on, Photoshop will show gray over colors that are out of the printer's gamut. These colors can then

be edited (e.g., reduce saturation using selective color correction) to provide a realistic print and avoid artifacts such as rough gradations.

PRINTING TO AN RGB PRINTER

When you are ready to output your file, select **File > Print with Preview** and set Photoshop's "Print Space" to the printer RGB profile you created.

Printing

Print

Printer: ColorServices HP Laserje

Copies: 1

Page Setup...

Position

Center Image

Top: 0.173

Left: 0

Scaled Print Size

Scale to Fit Media

Scale: 191.02%

Height: 7.647

Width: 10.194

Print Resolution: 157 PPI

Print Selected Area

Bounding Box

Units: inches

Color Management

Document (Profile: Adobe RGB (1998))

Proof (Profile: N/A)

Color Handling: Photoshop Manages Colors

Remember to disable color management in the printer dialog box.

Printer Profile: HP PSPro B9100-Premium Paper

Rendering Intent: Perceptual

Black Point Compensation

Proof Setup: Current Custom Setup

Simulate Paper Color

Simulate Black Ink

The name of the proof setting which includes the profile and rendering intent used to convert colors to the color space you are trying to simulate. These can be created by choosing View > Proof Setup > Custom.

Cancel Done Print...

To print files with your printer profile, make sure to set Color Handling to "Photoshop Manages Color" and select your printer profile.



For information on a variety classroom, custom on-site, and highly interactive on-line training options, see X-Rite's Color Services web site at http://www.xrite.com/top_services.aspx

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