

## **Basic steps to proper color-management in your studio**

By: Brandon Hedgpeth

Let's take a moment to dive into some key elements to setting up a typical digital workflow of today's wedding photographer. We'll also explore the types of equipment we recommend to assure that you are operating in an efficient manner. I'm going to be answering some very common questions from our customers:

### **Q. How do I get the color on my computer monitor to look like the print I get back from the lab?**

A. There are several things to understand before trying to get a proper screen-to-print match. Let's look over the next few questions to try and understand this dilemma.

### **Q. How does the condition of my monitor affect the image on screen?**

A. The age of the monitor is very important in determining the stability of your monitor's display. Older monitors lose their ability to show and maintain any sort of accurate color over time. Newer monitors will have better luck displaying proper color but will still have a standard "color drift", creating the need for frequent adjusting. Most newer monitors that are calibrated can only hold that calibration for 14-21 days before they are, again, out-of-balance. A computer that contains an average quality video card will easily lose calibration with the strain of opening high-resolution images. Improving your video card is an essential element to maintaining consistent color.

### **Q. Does it matter what type of monitor I am using?**

A. Yes, this is the first step to having a color-managed workflow. There are different types of monitors so let's review them: CRT (Cathode-Ray Tube) monitors are the big, bulky units that look much like a television set. The advantage they offer is they are very inexpensive and can display color quite accurately once calibrated. The disadvantage is they are heavy and take up lots of space. The latest problem with CRT monitors is their availability is dwindling by the day. Some are still being made but they're not the higher-end quality

monitors that are sought after by the photo and graphic industry but rather for PC gaming or text-based applications.

The newer monitors on the market are LCD (liquid Crystal Display) units. These are often referred to as “flat panels” because of their very thin size. Their advantages are obvious with the amount of desk space saved by these monitors, their ability to show better moving applications such as DVD movies, lower power consumption and cooler running units. As “neat” as they are, most of them come with a huge disadvantage for photographers and graphic designers alike. They are incredibly poor at displaying the tonal range necessary for getting screen-to-print matches that satisfy even the non-critical photographer.

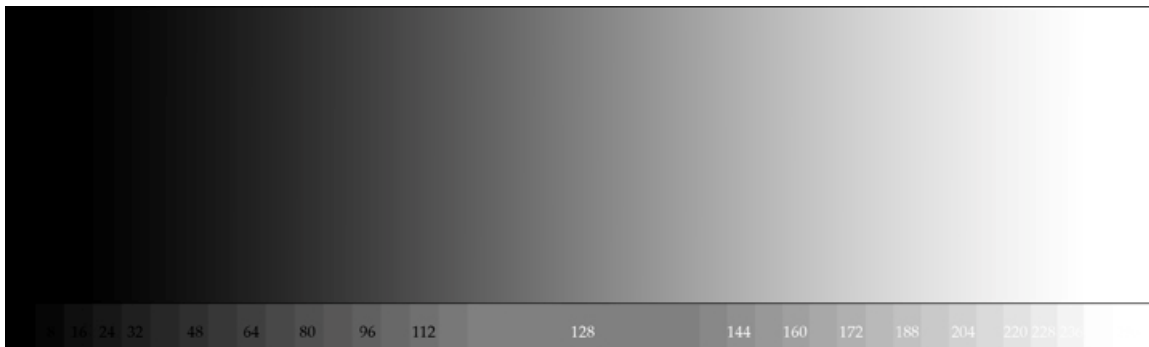
Graphic designers and photographers have had to scavenge for good CRTs to keep their workflow and in-studio color management up to par. So what will happen once they are extinct and the only options are the LCD monitors sold at electronic stores such as Best Buy, Circuit City, Office Depot, etc. Those are great stores to buy televisions, but professional photographers demand a better image than any of the monitors sold in their stores are capable of producing. I am assuming that if you are reading this article, you are or are trying to become a professional photographer and looking for professional results. Non-professional LCD monitors have no place in the workflow of someone trying to deliver high-quality images.

**Q. So my \$500 21” LCD monitor is not good enough?**

A. That is correct! You cannot get professional grade color and tonal ranges from LCD monitors that are less than 12-bit. There are some 10-bit LCD monitors that produce acceptable results if you are not willing to spend what it takes to purchase a 12-bit unit. The higher the contrast ratio does not mean it’s a better monitor, either. Rest assured, the industry has banded together to insist that the LCD manufacturers build products that meet the high standard that photographers put into their own digital images. They have finally responded with some affordable, professional-grade LCD monitors.

**Q. How can I check to see if my monitor is good enough for professional work?**

A. Here is a simple test to use to check the tonal range ability of your monitor. Look at this gradient ramp and see how smooth the shading appears.



Another test is to check the shadow and highlight detail. Look at the numbered “step” ramp and determine which number you can no longer read. All the numbers are filled in from 32

and lower. They read 32, 24, 16, 8, 0. You should be able to see the numbers down to at least 16 if not the 8. You should also be able to see at least both the white numbers 228 & 236.

For example, my \$3,200 Dell Latitude laptop does not show detail in the 24 box or the 228 box. That is serious enough to keep me from ever letting clients see images on my laptop monitor. Laptop monitors are the worst to try and calibrate. It's a lost cause.

Specular Highlights in normal flesh should measure with a brightness value of 230-235 when properly exposed. If your monitor loses detail at 228 then images that may have a proper exposure will cause the highlights to appear "blown out". Therefore, if you adjust the images to have detail that looks good on your monitor, you'll receive under-exposed prints from the lab.

I'm just trying to express the importance of having a monitor that is capable of matching a print.

### **Q. Where can I get a LCD monitor that meets the quality of my old CRT?**

A. I have been heavily researching the different companies that manufacture good LCD monitors and have selected a few that can fill this need for you. Keep in mind that in order for a monitor to be calibrated, it has to have the inherent ability to be able to be calibrated. I haven't found one under the \$1,000 price point that can be accurately calibrated simply because they weren't designed for that reason. It doesn't mean that the monitor you paid \$700 for is completely bad, but you cannot expect it to give you a nice screen-to-print match when its design won't allow it.

I have been testing and using the Eizo CE210W and found it to meet the standards of getting a good screen-to-print match. I use a colorimeter to calibrate it along with the monitor's built-in software and together they produce a high-quality match. The price tag on this monitor is around \$1,100 which is quite inexpensive for a monitor that will give photographers the match they've been after. I've also seen good results with the LaCie 321 LCD. It is a bit higher priced, but comes with its own colorimeter and exceptional software. If you are into maximum screen-to-print match and require only the best, I would recommend you purchase the 12-bit Eizo CG210 at \$2,300. This may be steep for many of our customers, so we feel it's not necessary to purchase this model when you can get acceptable results from the CE210W.

### **Q. What is a colorimeter and do I need one?**

A. It is a necessary device to profile and calibrate any monitor, LCD or CRT. You will also need to keep the monitor in calibration by performing the process at least once per month.

Note: Having a colorimeter and using it properly does not take a poor quality monitor and suddenly make it good. These devices only work on monitors and video cards that can handle being calibrated.

Colorimeters are often called a few different names, such as: screen calibrators, screen pucks, optical calibration device, spectrophotometers, spyders, etc. They are designed to accurately

interpret the colors and values that your monitor is capable of producing and then creating a profile that will display images as having a “neutral” bias.

That means that the image appears on the screen to be free from any monitor color flaws. With this done correctly you are seeing an image that looks very much like the file’s actual look. So now that the monitor has been profiled by the colorimeter, you’re seeing a “neutral” display. That’s step two to having a color managed system.

**Q. Does Candid 2000 have a preferred colorimeter?**

A. There are several that will do the job at many different price points; however we recommend one of two units that are available today, the X-Rite Eye-One Display 2 or the LT version. These are a popular device that I use every 3-4 weeks to keep my monitor calibrated. The other good news is they both are companion devices to the Eizo monitor’s software. Together they will make your color-management effective.

A third product is the Colorvision Spyder 2 Pro or latest version. This is another option but has never held the consistent results that are given by the previously mentioned devices. Don’t let the word “spyder” sucker you into buying the device bearing that name. The word spyder became a generic term used for all colorimeters because the Colorvision Spyder was one of the first to become widely used. It’s much like saying “I need a Kleenex!” when a Puff’s tissue may handle the job even better.

**Q. Where can I buy a X-Rite Eye-One Display 2 colorimeter?**

A. They are available at nearly every major camera store retailer or supply outlets. We do not have any connection with any retailer of these devices, so I am not recommending any retailers in this informational guide. If you want to know where I purchased my equipment here at the lab you can email me, and I’ll give you some names, but we don’t endorse any retailers at this time.

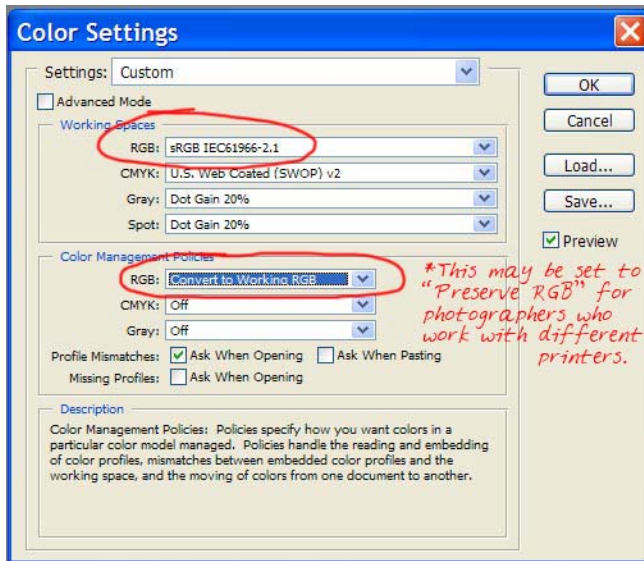
**Q. I’ve calibrated my monitor and the on-screen image looks cooler than my print?**

A. The key to successfully getting the “projected” image on screen to match the “reflected” image in your hand is to give the computer the White Point temperature of the lights in your work area that are reflecting the print to your eye. If you are in a warm-lit room working around incandescent lamps, your print will appear warmer than your image will on the screen. By setting your White Point at 6500K you will be in the middle and can adjust warmer or cooler from there to assure a more consistent match. Warmer lighting such as desk lamps is always better than overhead fluorescent lights or daylight from a window. The problem with window light is it changes color temperature all day long. Your screen may look calibrated in the morning but by noon it’s out-of-balance. For more precise control, you could purchase a “viewing box”. These boxes are fitted with a color corrected lamp that illuminates the image with a constant temperature, and sits beside your work area for you to refer to when comparing the monitor’s display.

**Q. Now that I'm calibrated, is there software you recommend I edit with?**

A. In a future discussion we'll jump into color editing in various software programs but for now, let me have you establish a couple things in Photoshop 7.0 or higher to help you with matching the lab's output. If you're still using an older version of Photoshop or using a sampler version such as Photoshop Elements you'll want to upgrade to Photoshop CS2 to assure you are seeing an accurate display of your image.

Go in Photoshop to Edit>Color Settings. In the dialog box that opens, it should look like this. If not, make the necessary changes.



This will assure that your monitor is showing the image to you in the sRGB color-space. Now you are viewing your file in sRGB and on a neutralized monitor.

**Q. Do I need a printer profile from Candid 2000 to view the final print quality?**

A. This is commonly referred to as “soft proofing”. Soft proofing an image on the monitor using a printer profile will certainly allow the editor to see any variances in color appearance from the monitor to the final paper print. We have decided to make this available for anyone wishing to use this soft proofing technique. This is NOT a monitor profile or an input profile but rather an output profile (a.k.a. printer profile) that is only viewed in the proofing area of Photoshop.

With that said, I've done extensive testing with soft proofing files using our printer profile in Photoshop and have failed to see its value when proofing skin tones. That means our profile is so remarkably similar to the sRGB viewing space you see in Photoshop that our profile is rendered useless. However, since photographic paper does have a limited color-space it can produce, the profile will help you to see which colors are outside the space of the paper's ability and see the final outcome. This would allow you to preview why a bride's bright red rose bouquet that was jumping off the screen at you, printed as a duller, less-vibrant red. Maybe the green grass behind a bride was almost a neon green on your monitor but came back printed as a darker, less-saturated green.

Those are the only advantages to having a printer profile to soft proof your images. We don't recommend you use this printer profile method as it may lead to confusion if not used properly.

**Q. Where can I direct further questions regarding this article?**

A. Please email Jason our Digital Specialist at [Jason@candid2000.com](mailto:Jason@candid2000.com) and he or I will be happy to share any of the results we have found to get the best images out of our lab.