**Profile 7500_4K+_PremMat_N-4**

**A mild Split-tone to Match Un-Brightened Mat Board With a Brightened Paper and Neutral Midtone Print**

11-10-06

This profile is for PremierArt's "Matte BW" paper. I'm using it for prints that are to be displayed with mat boards from Light Impressions. Their Gallery White mat board is a "creamy," non-brightened paper, whereas Matte BW, like most paper, is brightened. The main challenge was to make a profile that would allow the bright paper to look good next to the somewhat warmer-looking mat board.

## Matte BW Paper

I've found Matte BW (previously known as Premier or Premium Matte) to be an excellent printing paper, regardless of price, and an outstanding value.

Matte BW is a very smooth ("hot press"), acid-free, alpha-cellulose paper that achieves a dmax of 1.72 with my Epson 7500 printer and MIS Eboni black. In terms of smoothness and over-all appearance, it and Photo Rag looked about the best with the 7500 in comparison tests I've run. With this paper available for about the same price as EEM, I don't see much reason to use that paper. For more information on Matte BW, see http://www.premierimagingproducts.com/pm_mattebw.php.

I bought my latest roll from http://store.ultrafineonline.com/wifoprprma21.html. Many vendors carry the sheet versions.

Bottom line, it now looks like a roll of Matte BW will stay on my 7500, in which I'm currently using the 4K+ inkset (http://home1.gte.net/res09aij/4K+.pdf).

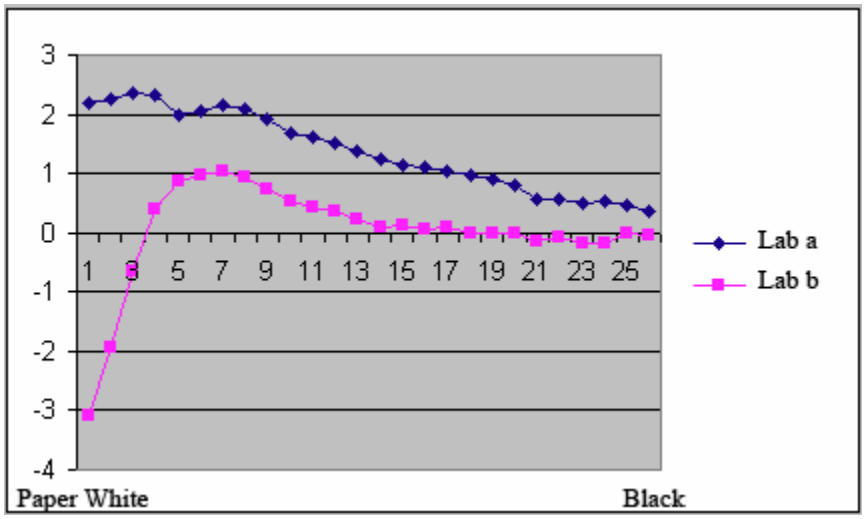
## Profiling Approach

In the past I have preferred display papers that are not brightened. That is, they have no optical brightening agents ("OBAs"). These papers matched the relatively creamy mat boards I use. Most papers, however, are brightened. This includes Matte BW. The creamy mat boards, however, can make cool, brightened papers look blue if they are right next to each other.

I think the mild split tone profiling approach described here, in conjunction with my normal printing and matting practices, is a better way to match the mat board and print tones.

What I've done is to make a profile that warms the highlights of an otherwise neutral print just enough to look good against the creamy mat board. Of course, the top highlights remain cool, but I keep them away from the edges, as discussed later.

The graph below shows the Lab a and b readings for a 26-step test strip printed with this profile, inkset, and paper. The paper itself is cool, with a negative Lab b (bluish). See the left side of the graph. Lab b rises rapidly to being slightly warm and then drifts back to neutral. Lab a is positive throughout, avoiding a greenish or cyan look.




I've always used my old silver prints as a frame of reference. There I used a light selenium toning for both aesthetic and preservation reasons. These silver prints basically had (and still have) neutral midtones, but with a slight magenta bias. So, I'm both accustomed to and prefer the somewhat elevated Lab a tone – which we used to think of as a light "selenium" look. Consistent with this, the "Gallery White" mat board also has a slightly elevated Lab a.

In trying to find what profiling approach would look best in my 7500, I made a series prints with different profiles. Initially I had profiles that started with more of a straight line between the cool (negative Lab b) paper tone and neutral midtones. However, the creamy mat board made the highlights look bluish. I needed to have warmer high tones next to the mat. This is also the case if one leaves a pure white paper border around the image. I no longer do this in any case for aesthetic and other reasons.

When I mounted and framed test prints that had varying degrees of warmth in the highlights, the print using the profile above looked the best to me. The tones of the mat board seemed appropriate for the light tones close to the edge – but

only because not only was there no white paper border, but also there were no cool parts of the print next to the creamy mat.

The reason no cool highlights were next to the print relates to the printing style that I use. When I printed in the darkroom, I always did a slight edge "burn." I virtually always burned in the edges of prints slightly to darken them. I continue to do this in Photoshop with digital images. My experience is that when viewing B&W prints my eyes are attracted by the bright spots or areas. So, to keep the eye within the picture, I use a slight edge burn to help guide the eye back into the print. This is a standard technique used my most experienced B&W printers, in my experience.

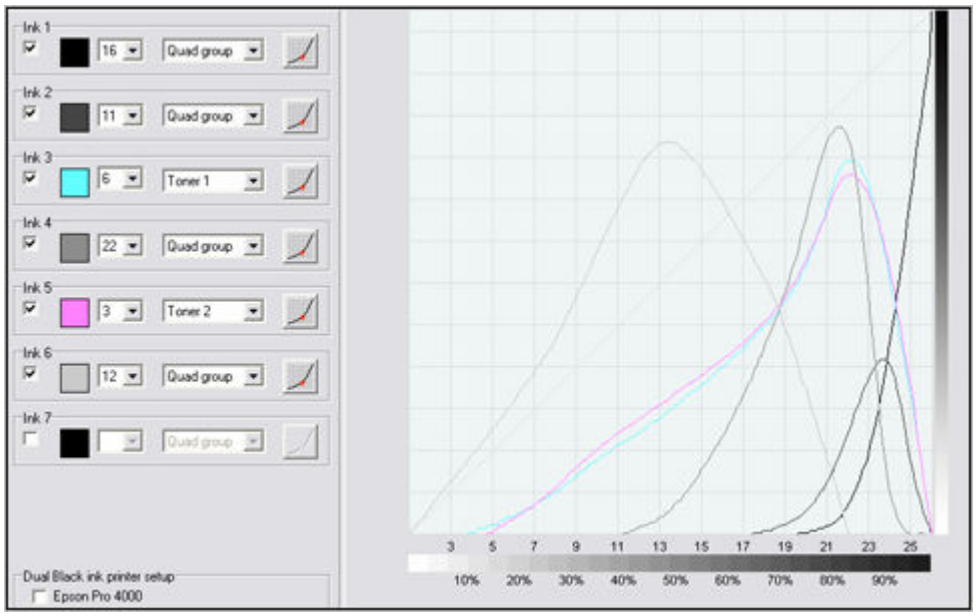
When the above profile is used with a print that has been edge burned appropriately, the tone of the print next to the over-mat is never cold (negative Lab b). The relative highlights next to the mat are up in the warmer section of the profile. So, the contrast between the creamy mat and brightened, cool print paper is not an unwanted distraction.

On the other hand, the internal, very top highlights do drift to the cool, brightened paper tone. This has the effect of increasing the apparent dynamic range of the paper compared to a non-brightened paper. That is, no doubt, why the vast majority of papers are brightened.

One of the images I was using for testing was the one currently on my home page at www.PaulRoark.com. The net affect of this profile, the edge burning, and the bright Matte BW paper is to give a rather continuous, but not obvious tone shift from the creamy mat board to the bright spectral highlights of the interior of the picture. In most viewing situations the mounted print looks mostly neutral, with just slightly warm highlights. The top highlights that are cool are apparently small enough and bright enough that they just look brighter, not cooler. With the 1.72 dmax and these bright interior highlights, the image has a very good dynamic range.

**Making the Profile**

These are the IJC curves that produced the profile:




With IJC-OPM (http://www.bowhaus.com/services/IJCOPMmain.php4) I'm finding that I can use the same basic carbon core for all the profiles for a paper or type of paper. The color pigments (LM and 50% LC or "LLC") are light enough and used sparingly enough that I just ignore their minimal impact on density. The linearization step takes care of that. So, Lab L is done.

I started with my existing neutral profile for Premier Matte, making adjustments in only the highlight sections of the two curves that control the 2 color inks. I only moved the end points and 2 internal points of each curve to make this profile out of the existing neutral one.

To move Lab a, I swap a one-unit move of LM for a one-unit, opposite-direction move of LLC. (Note that the ink limit differences between the LM and LLC, reflecting the dilution of the LLC, equalize the effects of equal moves). So, to increase Lab a, I move the relevant point of LM up and the corresponding point on the LLC curve down by the same amount. Lab a changes, and Lab b stays the same.

To move Lab b, I move each color the same amount in the same direction. If I want Lab b to increase – becoming warmer or more yellow – I reduce the amount of LM and LLC pigments in equal amounts (again, the ink limits dealing with the dilution differences). This moves Lab b up (warmer) due to the carbon core being warm. Lab a stays relatively steady.

Note how closely the LM and LLC curves are to each other in this basically neutral print profile. These pigments are well matched in their characteristics. This makes the above profiling strategy work very well.

So, I make a few moves, print a test strip, and read it with the ColorVision PrintFixPro Spectro (http://www.colorvision.com/profis/profis_view.jsp?id=521). The spectro exports a text file, which I open in Excel. I then simply highlight the columns of Lab a and b values and have Excel "Insert" a "Chart."

From the graph of the Lab a and b values I can estimate what more, if anything, needs to be done to get a curve that is tonally smooth and has the values that look like they'll work. When the graph looks relatively smooth, I linearize the profile (just transferring the Lab L readings into the rip) and make an 8x10 test print. This I quickly slap into (no taping, etc.) a cheap black frame with my standard mat board to see how the larger ones will look when all framed, etc. It's relatively fast.

I'm posting my profiles in zip files that can be downloaded, for example http://home1.gte.net/res09aij/7500_IJC_Profiles.zip

For more information on the 4k+ inkset, in general, see http://home1.gte.net/res09aij/4K+.pdf

Happy printing,

Paul

www.PaulRoark.com