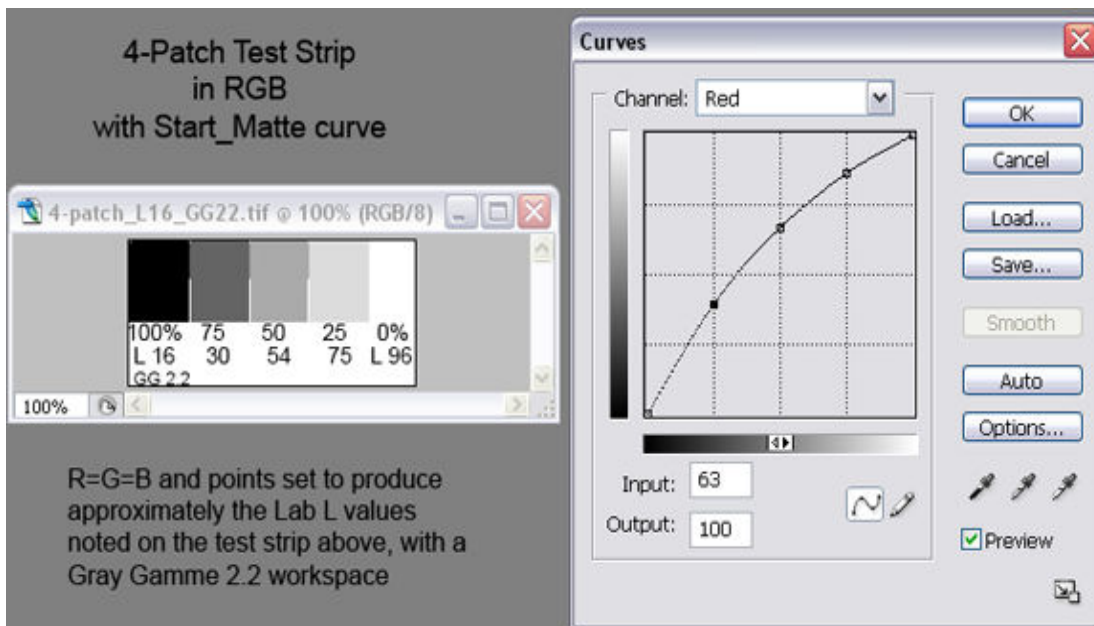


# Profiling the UT-3D Inkset on the 2400

## An HPR Example

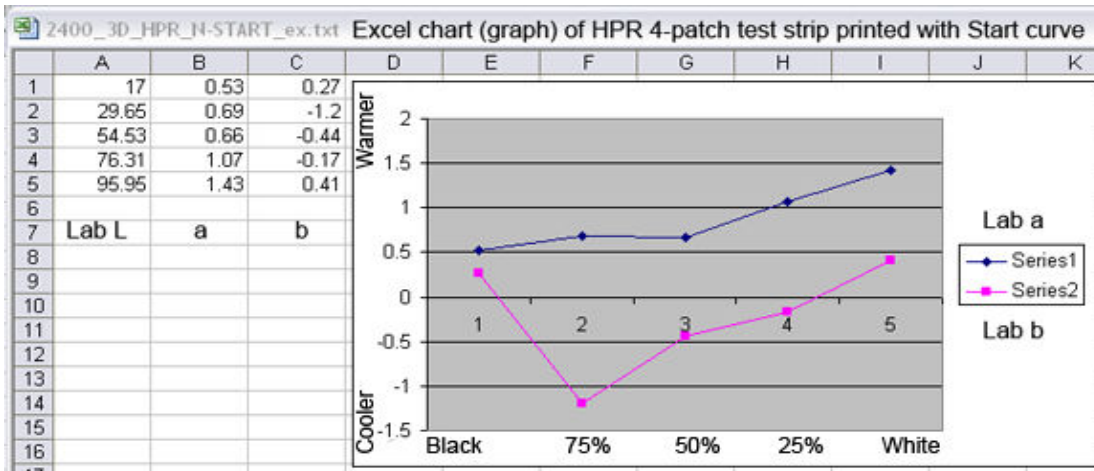
(5-27-06)

1. First, I printed the simple 4-ink density test strip, shown below (see [http://home1.gte.net/res09aij/4-patch\\_L16\\_GG22.jpg](http://home1.gte.net/res09aij/4-patch_L16_GG22.jpg)) with the Start\_Matte curve. (This and a gloss curve can be downloaded from [http://home1.gte.net/res09aij/UT-3D\\_Downloads.html](http://home1.gte.net/res09aij/UT-3D_Downloads.html) ) This curve gives the approximate distribution of densities that Gray Gamma calls for when “No Color Adjustment” is selected in the driver. Here I’m using the usual EEM media type setting.



2. I read the resulting test strip, left to right, with a spectro. By reading it left to right, the order of the test strip, the graph below, and the curves box match, which lessens the potential for confusion and mistake. The L, a, and b data should be in a text file in columns. (They do not need to be marked as such and will not be in the Excel display. I inserted labels here.)

3. I open the text file of Lab readings in Excel and make a graph of the a\* and b\* data: Select/highlight the 2 columns of a\* and b\* data, click on Insert>Chart>Line>Next>Finish.



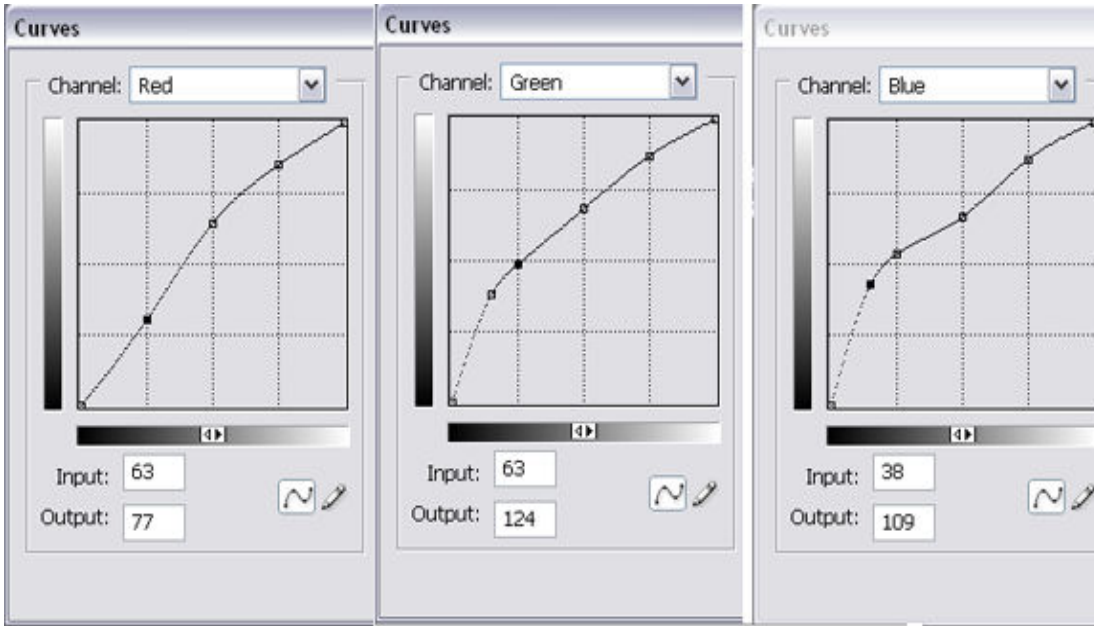
4. I then go back to the Start\_Matte.acv curve and move the points as needed. I wanted the lines straighter, particularly the b\* tones.

I move the Red and Green points up and down in offsetting amounts so the density is not overly affected. Here the largest move was at the 75% (RGB 63) points, with a 20 point move of both the Red and Green curves. After b\* is finished, I adjust a\* with the Blue curve. Several iterations will be needed, printing and reading the 4-patch test strip.

In general, moving a point down increases the amount of ink. So, Red (C = Carbon) moved down makes the print warmer, up cooler. Green (M = Main cool toner) moved down makes the print cooler, up warmer.

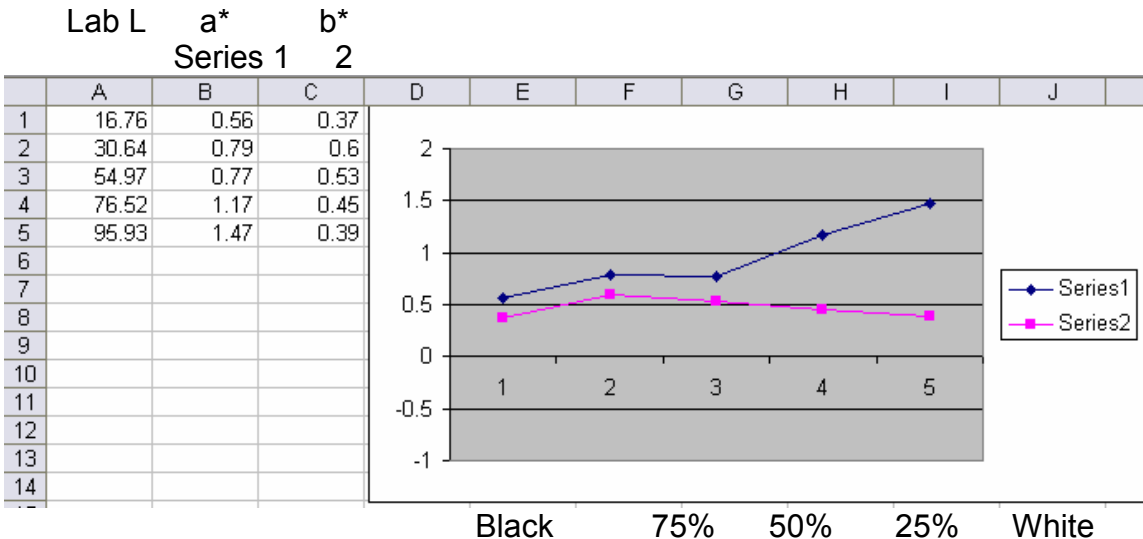
By keeping notes of the moves on a printed version of the Excel graph, I get to know what move causes what tone change.

The final curves are below.



I also added points at 38 to stop an abrupt drop in the Green and Blue curves. The drop caused the curves to the right of the 75% (RGB 63) point to rise. I moved the points at 38 up until the midtone curves between the 75% (63) and 50% (RGB 127) were relatively consistent with the other midtone values. This was just done by visually looking at the curves.

The Excel graph of the final simple test strip, printed with the curves above is as follows:



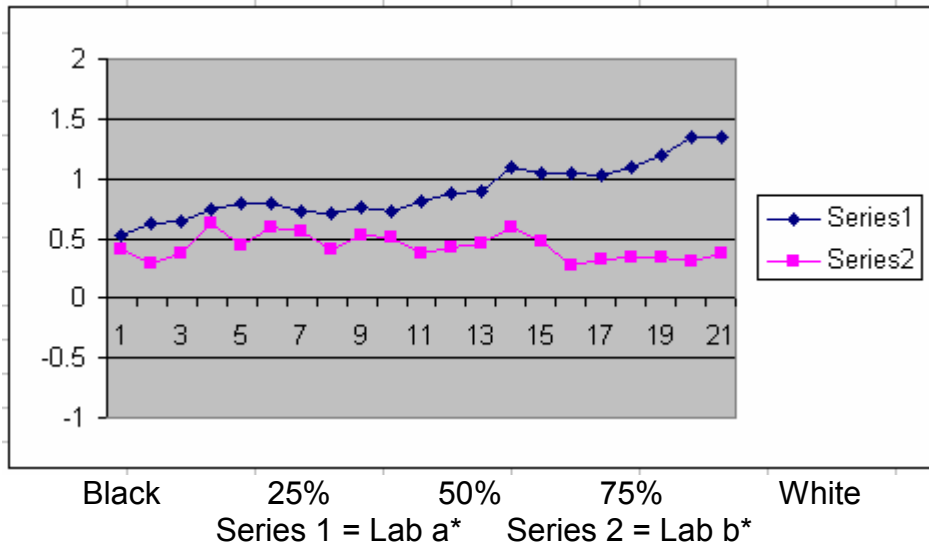
5. Print a 21-step test strip with the final curve. <http://home1.gte.net/res09aij/21-Step.jpg>

6. Linearize with Create ICC-RGB. See [http://home1.gte.net/res09aij/Embedding\\_Photoshop\\_Curves\\_in\\_ICCs.pdf](http://home1.gte.net/res09aij/Embedding_Photoshop_Curves_in_ICCs.pdf)

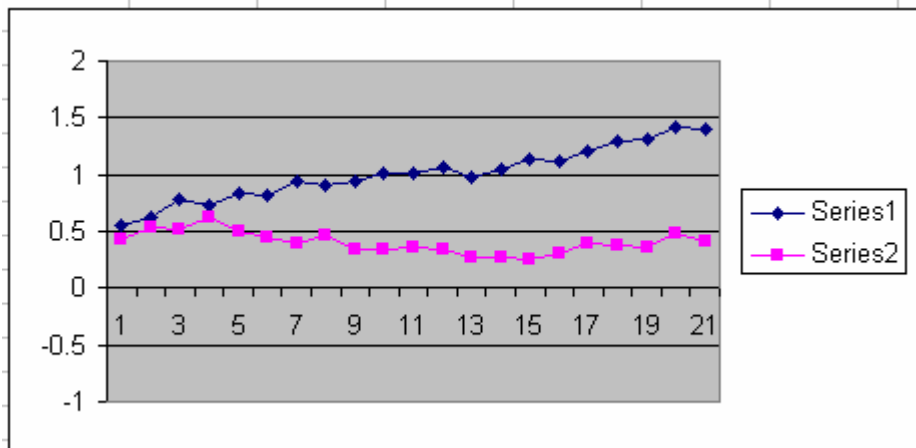
Much more work could have been done to the curves, above, to get intermediate points smooth. To see what more could be gained at least with HPR and this neutral curve, compare the next two graphs of 21-step test strips. (These were made after the linearization with an intermediate 21-step test strip, using the Create ICC-RGB program.)

After linearization with Create ICC-RGB, this is how the curves compared:

Simple curve:



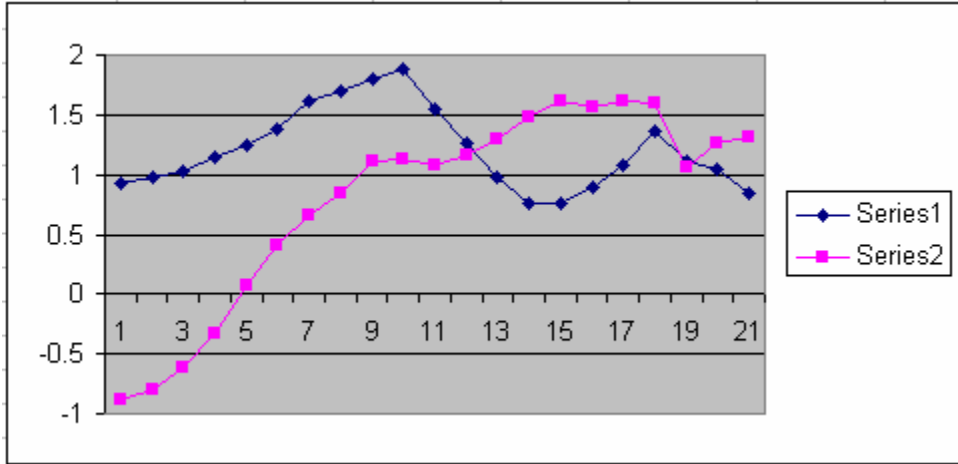
Complex curve:



It is doubtful that anyone can see the difference between prints made with the complex curve ICC as opposed to the simple curve in an ICC.

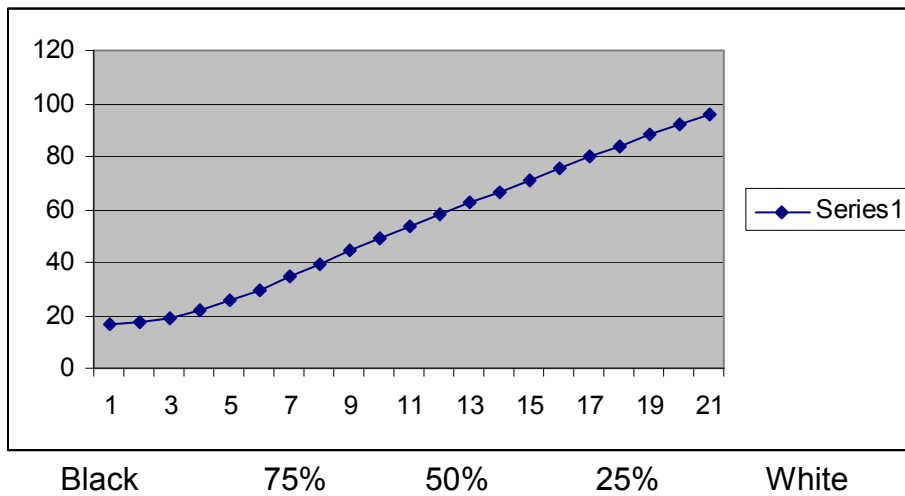
Both curves and ICCs (N-1 the complex and N-4 the simple) can be downloaded from [http://home1.gte.net/res09aij/UT-3D\\_Downloads.html](http://home1.gte.net/res09aij/UT-3D_Downloads.html)

For comparison, below is the graph for 2400 OEM ink, EEM, and the ABW mode:



Compared to the 2400 ABW mode print above, a simple UT-3D curve appears to provide a good return to the time spent.

The Lab L distributions of 21-step test files printed with the 2 ICCs are nearly identical and look perfect to me. Below is a graph of Lab L for the simple UT-3D curve after linearization with the ICC. It is printed from a Gray Gamma 2.2 workspace.



After the steps above, the print from the simple curve, linearized and put into an ICC, makes a print that is about as good as any I've been able to make on HPR.

For information on the UT-3D inkset in general, see  
[http://home1.gte.net/res09aij/UT-3D\\_Readme.pdf](http://home1.gte.net/res09aij/UT-3D_Readme.pdf)  
For my general index of B&W digital printing information, see  
<http://home1.gte.net/res09aij/index.htm>

That's it for now.

Enjoy the journey.

Paul  
[www.PaulRoark.com](http://www.PaulRoark.com)