

“Create ICC-RGB” & Photoshop Adjustment Curves

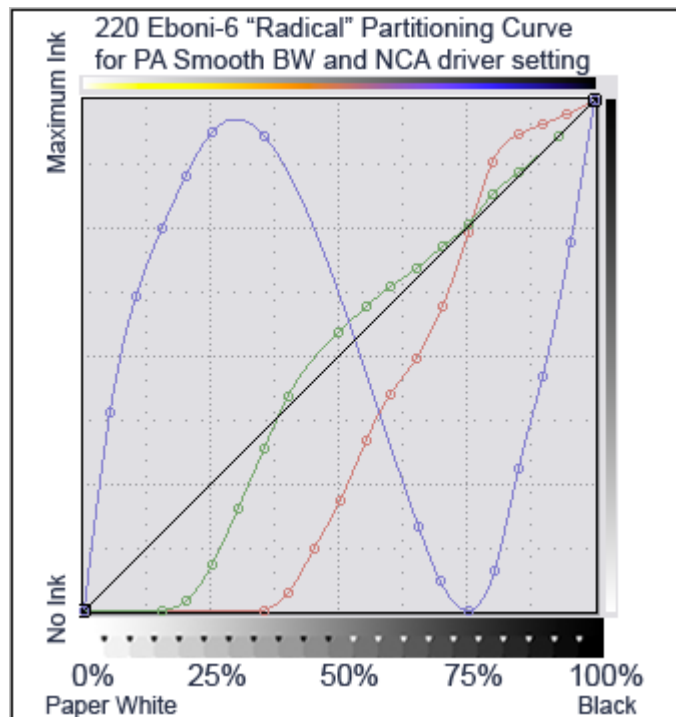
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7-08

The Epson driver workflow that gives the most control and smoothest results uses QTR’s Create ICC-RGB with a Photoshop image adjustment (*.acv) curve embedded in it. These workflows can have what I call “radical” partitioning curves or more mild ones that simply “separate” the ink channels, giving some partitioning and sometimes a better gray scale ramp, particularly with K2 and K3.

Radical Partitioning Curves

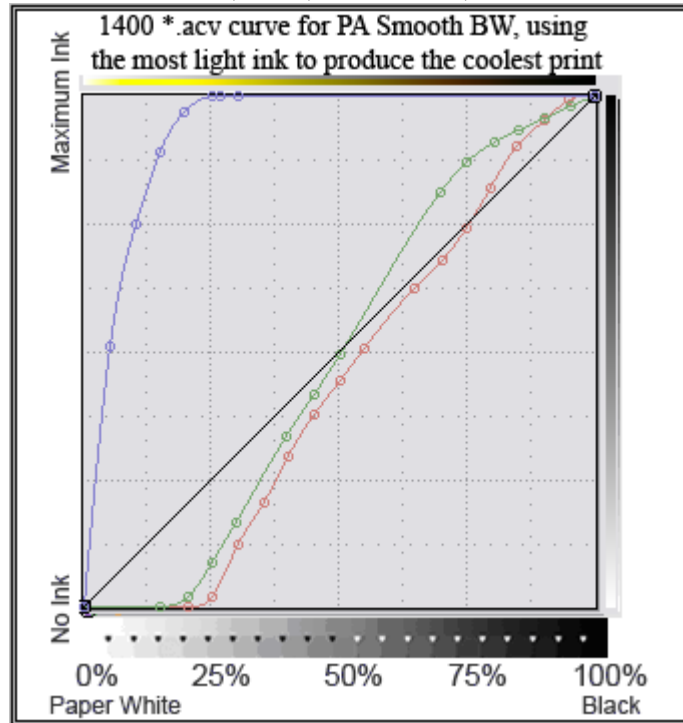
The 7500 and similar older large format printers do show some dots when closely examined if the Epson driver with no partitioning curve is used. These are definitely candidates for the more radical partitioning curves. The purpose of these curves is to use only the lightest ink at first, and then start the darker inks only when needed. The curve below is typical of this type of curve:



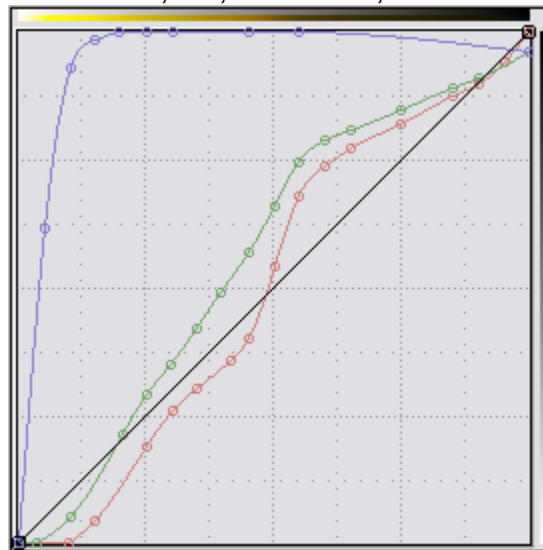
For the full or radical partitioning curves I recommend driver setting “No Color Adjustment.” This allows each channel to reach its maximum ink load and, in effect, allows more complete control of the inks.

Although the Epson 1400 is a very modern printer that does not need a radical partitioning curve for smoothness, the lighter inks tend to print cooler. The curve below uses the lightest ink as much as possible for the purpose of keeping the tones on Premier Art Smooth BW as neutral as possible.

1400, Eb6, PaSmBW, NCA

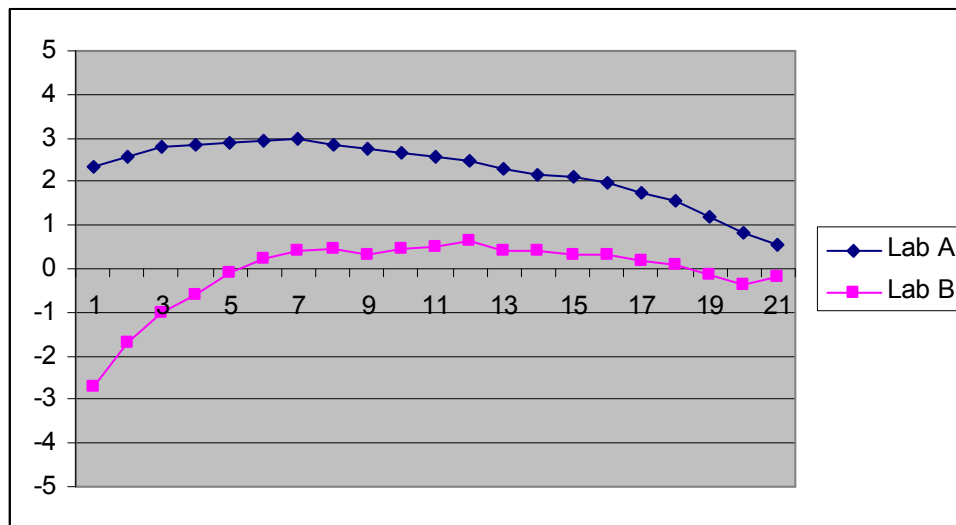


2200, C6, PaSmBW, CC22



The 2200 curve, above, uses the maximum amount of the Y-position (lightest) ink to obtain the smoothest, most neutral tones, shown below.

Print tones – 2200, Premier Art Smooth BW, above curve



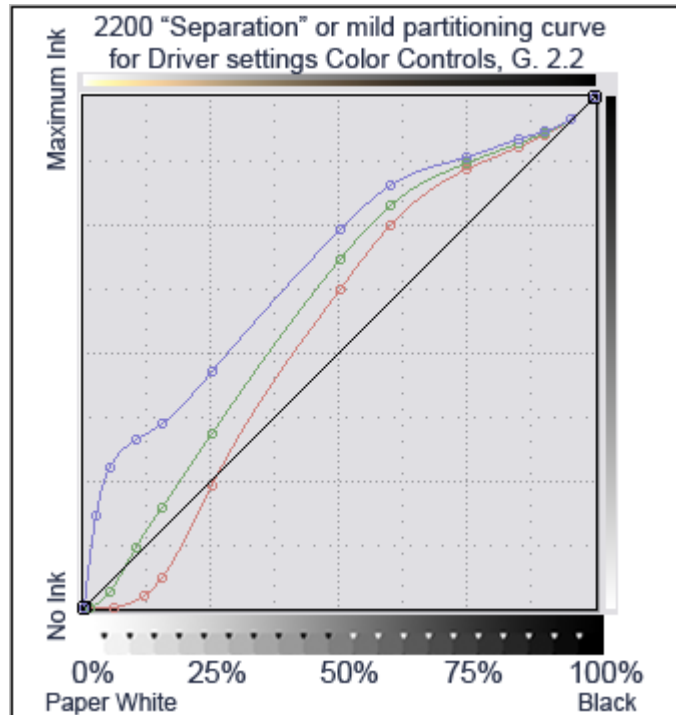
The above 2200 curves can be downloaded from <http://www.paulroark.com/BW-Info/2200-C6-curves.zip> They might benefit from some adjustment for Eboni-6. The 1400 Eboni-6 profiles are at <http://www.paulroark.com/BW-Info/1400-Profiles.zip>

Mild Separation Curves for K2 and K3 Printers

Most modern printers, and particularly the k2 and k3 models, may do better with these mild curves. With these printers the gray substitution of the driver extends well into the midtones. This injecting of LK and LLK ink can make obtaining a smooth grayscale ramp difficult with a radical partitioning curve. With a mild one that separates the inks smoothly the gray substitution can be better controlled.

Note that the use of even a mild curve like this, in effect, gives a high bit depth pipeline through the driver, even though the Epson driver is limited to 8 bits per channel. Since we are sending 3 channels (RGB) to the driver, 24 bits are available. The color management engine of Photoshop, which is where these ICCs are being applied, works at 16 bits per channel. Only by separating the channels, however, are we able to avoid the driver's 8 bit per channel limitation.

The curve below is an example of what I call a "separation" or mild partitioning curve. Because the inkset prints rather well with just "Color Controls" and Gamma 2.2 settings, those are what I start with for this type of curve.



The yellow channel (blue curve) is very light ink. The other channels are partitioned by the driver. Nonetheless, the darkest of the light inks (LC – the lower end of the red curve) is withheld from the very lightest highlights. In a modern printer these curves make very smooth prints.

Note that from 50% to 95%, where the LK is going to be substituted increasingly as the image becomes darker and “lower gamut,” the points are separated by equal and decreasing amounts. They converge at 95%. This helps avoid uneven driver gray substitution.

See http://www.paulroark.com/BW-Info/Embedding_Photoshop_Curves_in_ICCs.pdf for information on embedding curves in ICCs.

4. QTR

QTR provides the most control and flexibility. In my old 7500, for example, omitting either the lightest (LLLK) or second darkest (Eboni-C) inks still allows it to print well. So, there is redundancy that might be used to extend the life of an old printer.

QTR also allows a more precise ink limit setting. This allows one to achieve a slightly higher dmax than the Epson driver with some printers and papers. On the other hand, QTR does not automatically apply an overall ink limit to the cumulative load of inks. As such, one can overload the paper if not careful. QTR profiling is beyond the scope of this paper.