QTR, 2200, 4K+Ccm Inkset, Matte BW 2880 Neutral Profile

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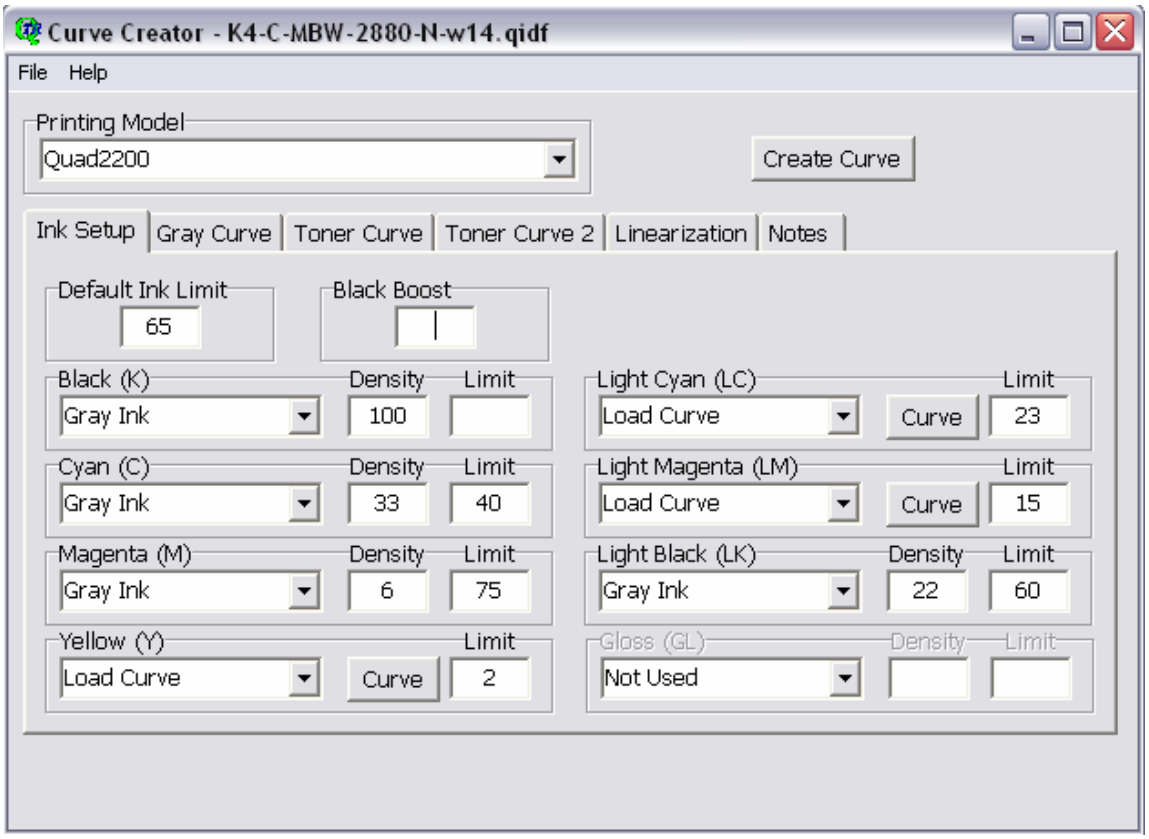
These are screen grabs relating to my 2200 Matte BW QTR profile MBW-N (neutral) for QTR at 2880 resolution, “Better” speed, and “Ordered” dither.

For information on the inkset, see http://home1.gte.net/res09aij/4K+.pdf This variant of the inkset uses dark cyan ink as well as the 4 carbons and light cyan and magenta.

The paper is Premier Art’s Matte BW paper (MBW), an affordable, acid free “EEM substitute.”

First Calibration – set where the Eboni MK hits its dmax. This avoids the need for any later black boost. For MBW, 65 gives a dmax of L 15.

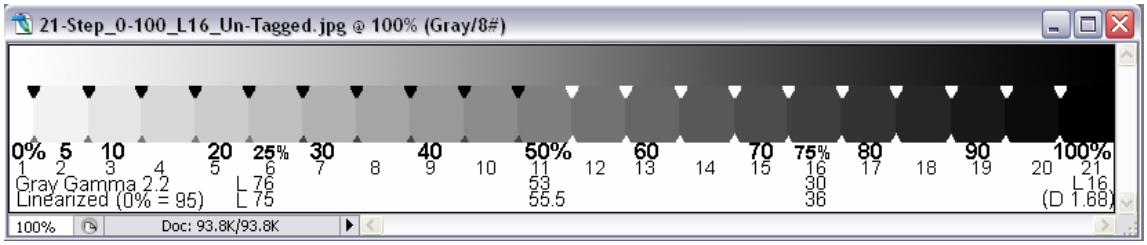


Second calibration print with the above limit – used to partition the gray inks by matching the lighter dmax with the darker (ultimately black) density patch. This approach to making the gray ink cross-overs seems to work well.

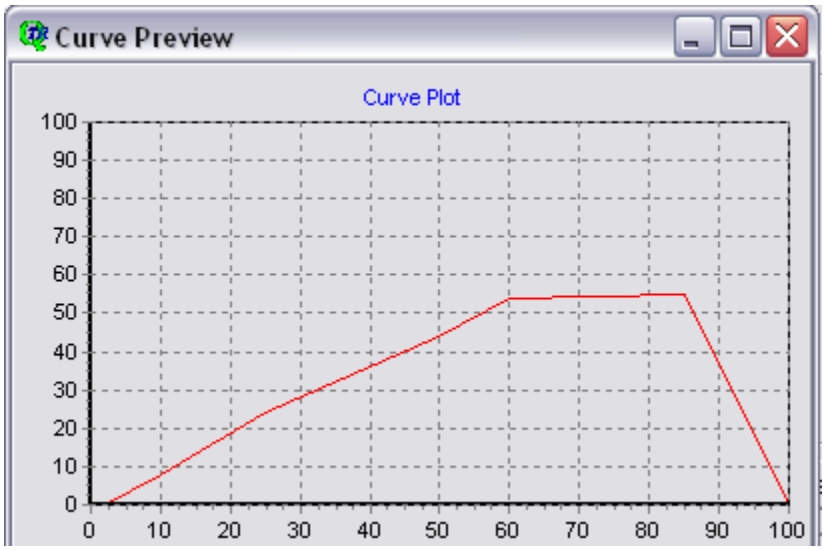
Gray and Toner Curves use 6,6,_,2 settings in their tabs in this profile. More experimentation might be useful here, but this seems to linearize well.

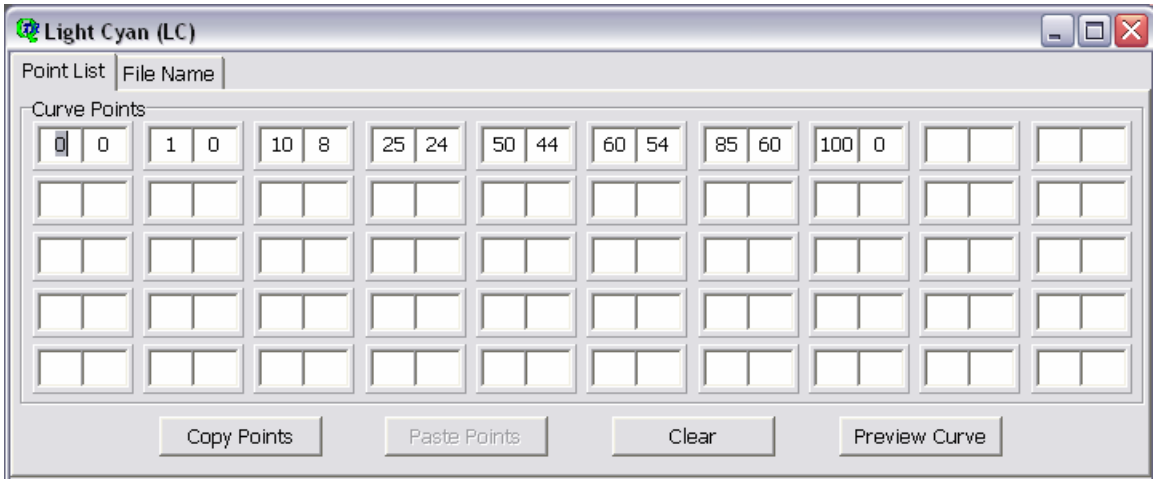
At gamma 2, the un-linearized 21-step test prints are darker than the final will be. The shadow smoothness is what I want emphasized at this point. At 16 bits, there is plenty of room to apply curves.

Note that QTR reads left-to-right, from 0% (paper white) to 100% black ink dmax. I have a new 21-step test strip that helps me with my hand-reading with a PFP spectro.
See http://home1.gte.net/res09aij/21-Step_0-100_L16_Un-Tagged.jpg



LC and LM use the same curve, below. The differing ink limits, above, compensate for the 2:1 dilution of the LC (aka “LLC”).





Because gamma 2 results in a darker print than the final linearized print, the above coordinates use a different x-axis value than will show up in the final, linearized print. In interior points have give control over the following segments of the final print:

(1, 0) is to give control of the starting point for the toners. For LM, I use (0.5, 0). This is the only point I change between the two curves.

(10, 8) is to control the highlight tones. In the final print, 10 will end up close to 25%.

(25, 24) controls the light midtones, just below 50%.

(50, 44) controls dark midtones.

(60, 54) is for shadow control.

(85, 60) is the toner apex. I don't try to control hue below this with the light inks. The dark cyan can do more.

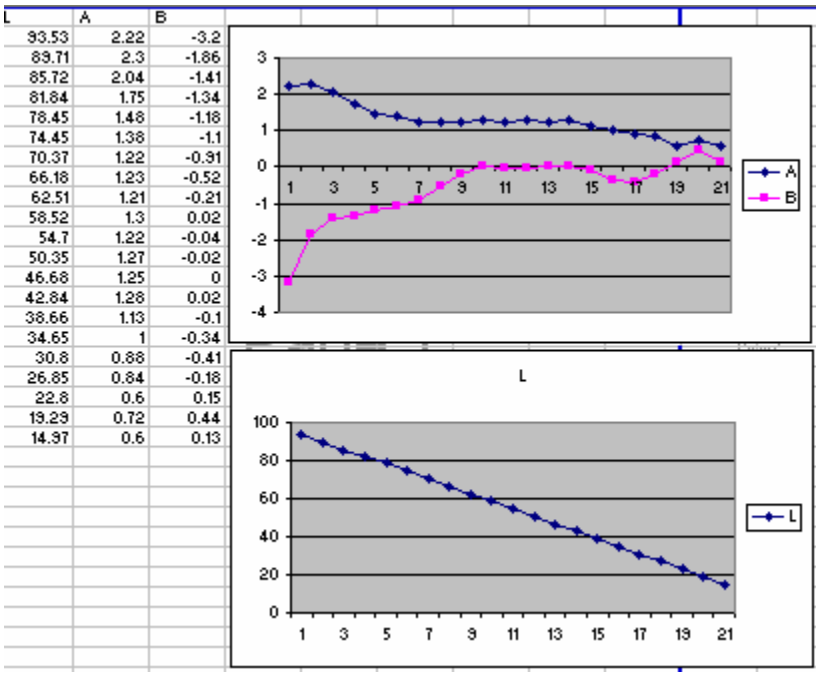
(100, 0) turns off the light toners for best dmax.

At first I used Photoshop curves for this input, but those curves, being external to the profile, will be, I think, hard to keep track of. These points seem to be the ones that are most needed to get a good tone ramp.

Wile I note, above, what part of the final, linearized print the points relate to, I modify the UN-linearized test strip tones until I think I'm ready for a final iteration. This makes it easier to relate the test strip readings with the chart (curve) above.

After I read the 21-step test print with the PFP spectro, I open the text file in Excel. This acts as the database for the information I need to both see and adjust the curves and also linearize the results with just a copy-paste of the L column numbers into QTR's linearization tab.

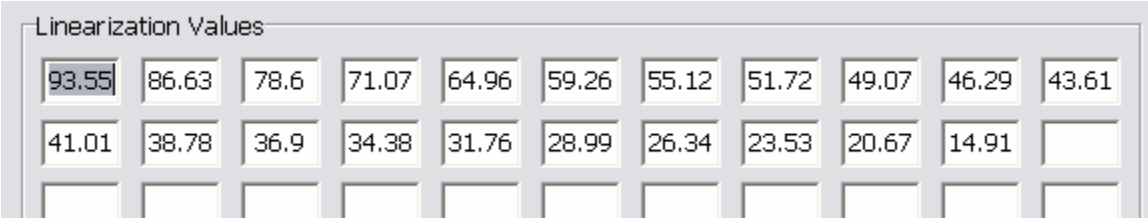
The resulting Lab tone and lightness distribution can be graphed easily in Excel (Insert<Chart<Line). This is the linearized Matte BW neutral profile:



L	A	B
93.53	2.22	-3.2
89.71	2.3	-1.86
85.72	2.04	-1.41
81.84	1.75	-1.34
78.45	1.48	-1.18
74.45	1.38	-1.1
70.37	1.22	-0.91
66.18	1.23	-0.52
62.51	1.21	-0.21
58.52	1.3	0.02
54.7	1.22	-0.04
50.35	1.27	-0.02
46.68	1.25	0
42.84	1.28	0.02
38.66	1.13	-0.1
34.65	1	-0.34
30.8	0.88	-0.41
26.85	0.84	-0.18
22.8	0.6	0.15
19.29	0.72	0.44
14.97	0.6	0.13

The deep shadow tone wiggle is in an area so dark it'll probably not be seen. However, that is also where the dark cyan ink can be used. I've straightened it out a bit, but more could be done.

This is the Linearization table, which was made with PFP output that was first pulled into Excel and then pasted into QTR. (I did not check the "QTR Format" box in PFP. I just export measurements to a text file and then open them in Excel.)

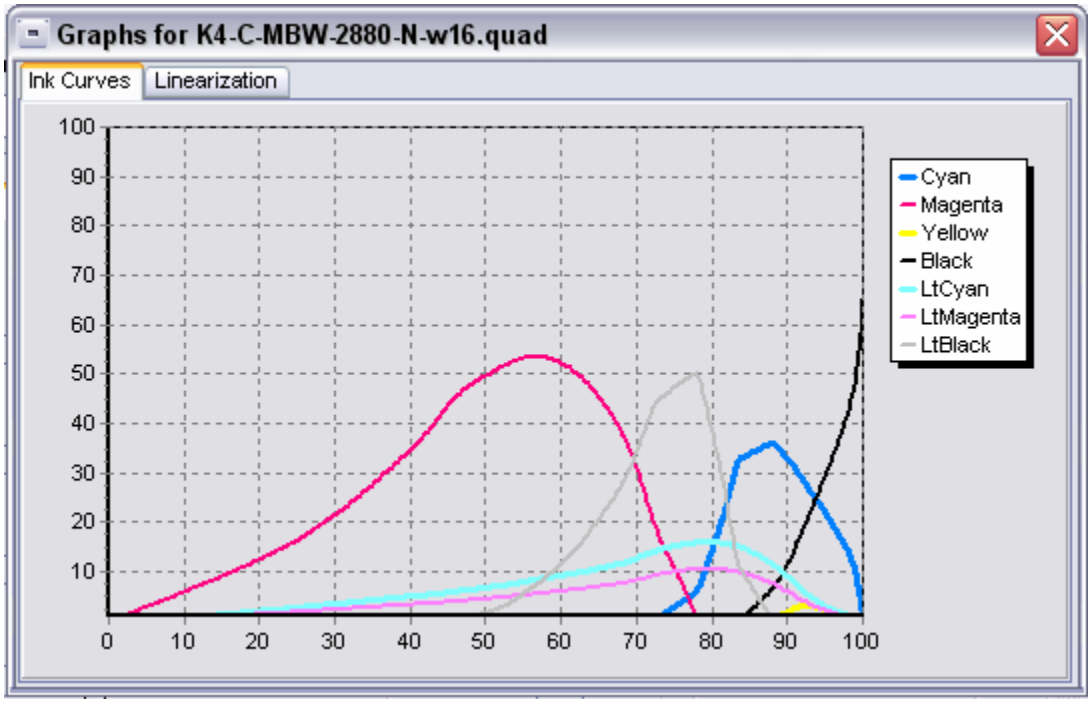


Linearization Values

93.55	86.63	78.6	71.07	64.96	59.26	55.12	51.72	49.07	46.29	43.61
41.01	38.78	36.9	34.38	31.76	28.99	26.34	23.53	20.67	14.91	

The shadows in the linearized graph are, indeed, linear, unlike the rather standard Gray Gamma 2.2 grayscale work space I use for my monitor and system overall. (Windows XP) The 21-step test strip noted above has the linearized and Gray Gamma 2.2 values noted on it. I use a Photoshop curve in a layer to translate between my Gray Gamma 2.2 workspace and monitor view and the linearized QTR output. The curve I use for that has the following coordinates: (0,0), (12, 1), (25, 7), (38, 16), (63, 46), (127, 121), (191, 197), (255, 255).

The curves set at this point looks like this:



This is a work in progress.

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