

Gernot Hoffmann

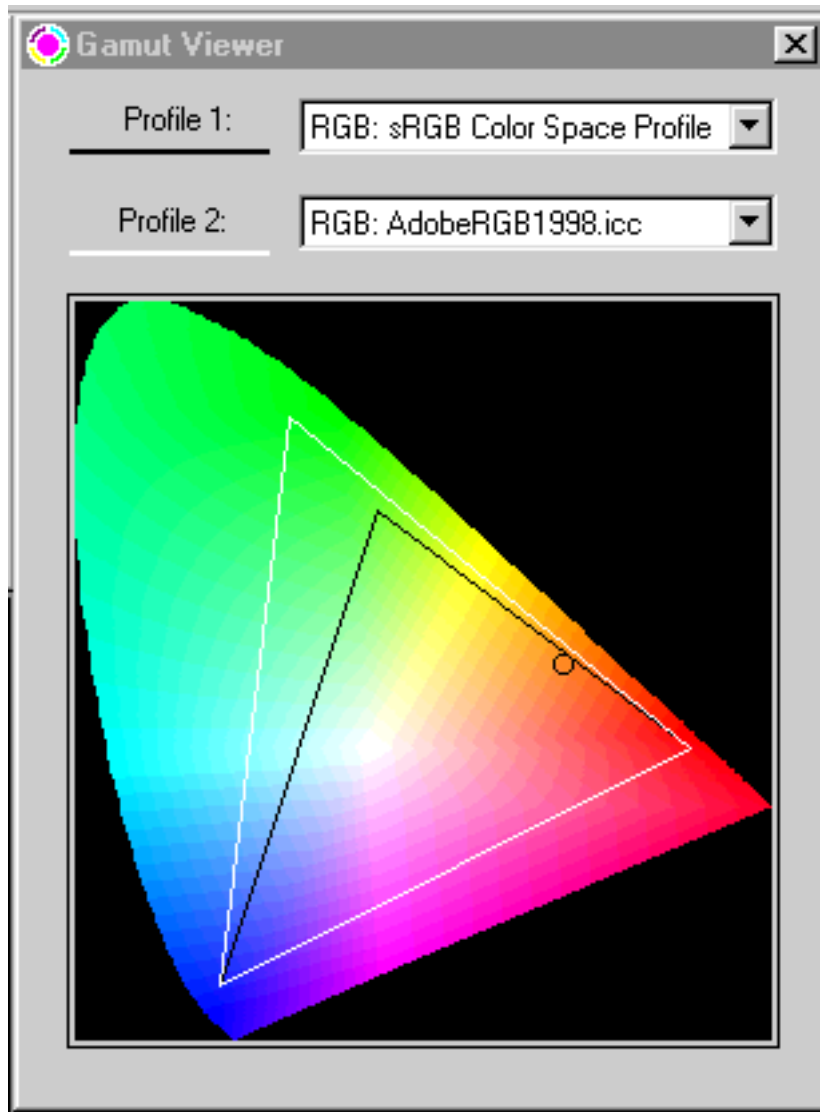
Gamuts



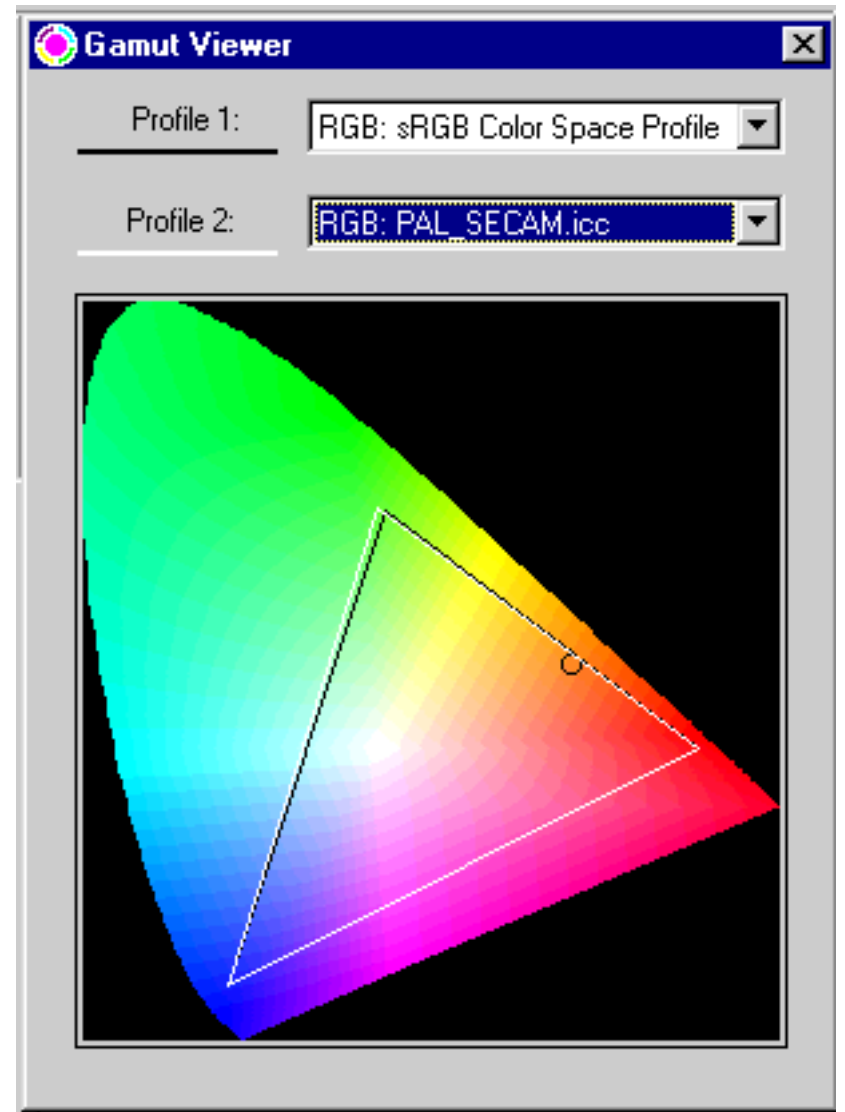
Contents

1.	Monitor and Working Space Gamuts	2
2.	Printer Gamuts	3
3.	Spectra of Offset and Pigment Inks	4
4.	Spectra of Offset Inks ISO 2846	5
5.	Tone Reproduction Curve for sRGB	6
6.	Tone Reproduction Curve for Rec.709	7

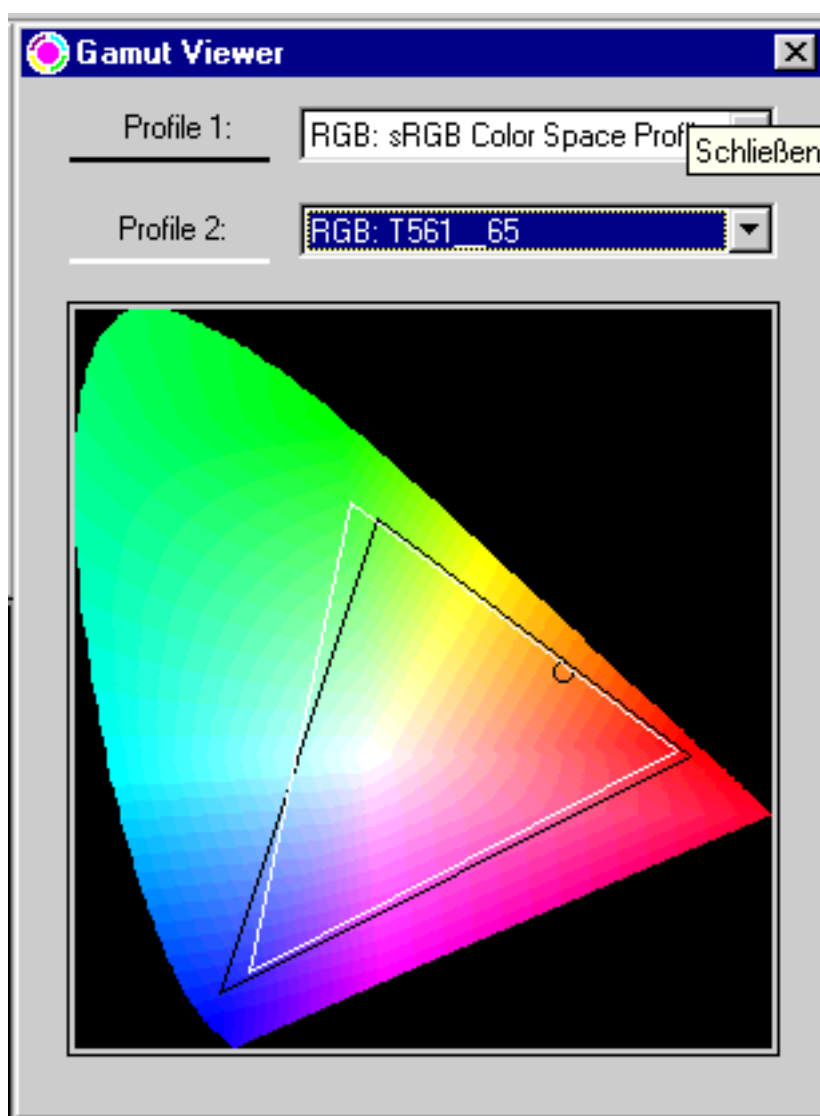
1. Monitor and Working Space Gamuts



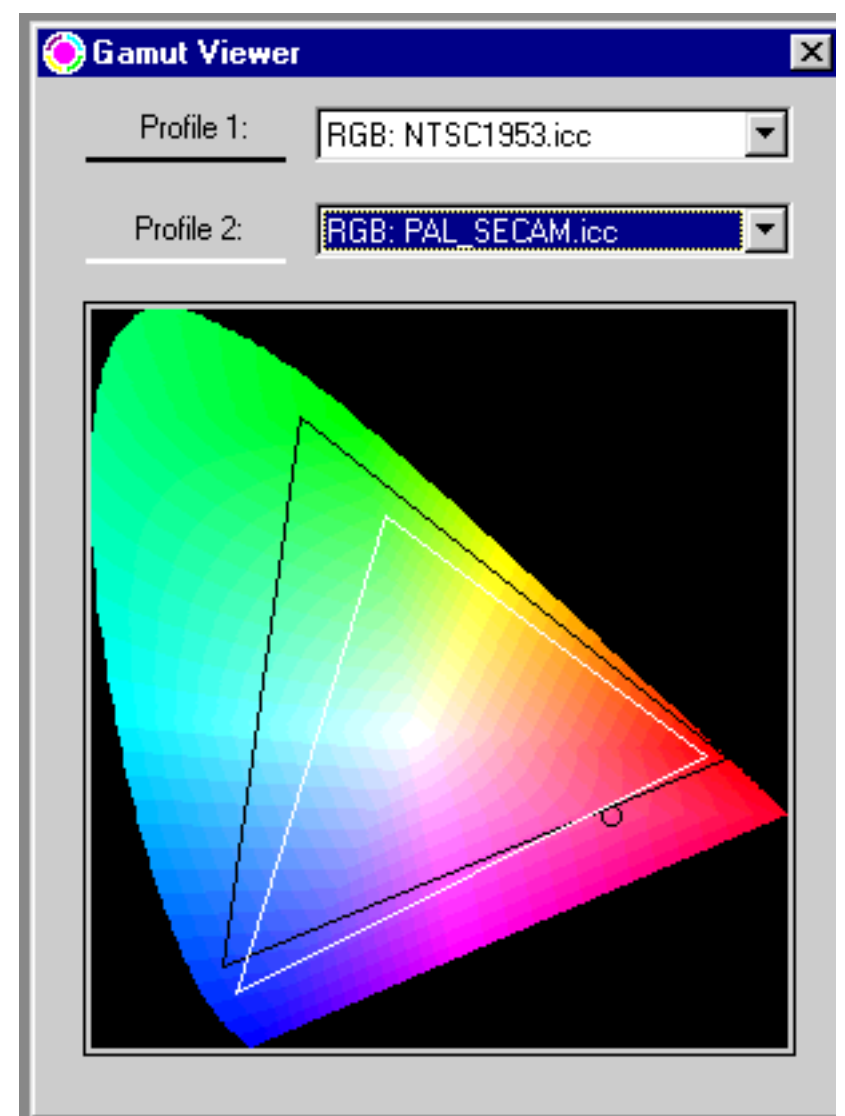
sRGB and Adobe RGB (98)



sRGB and PAL/Secam



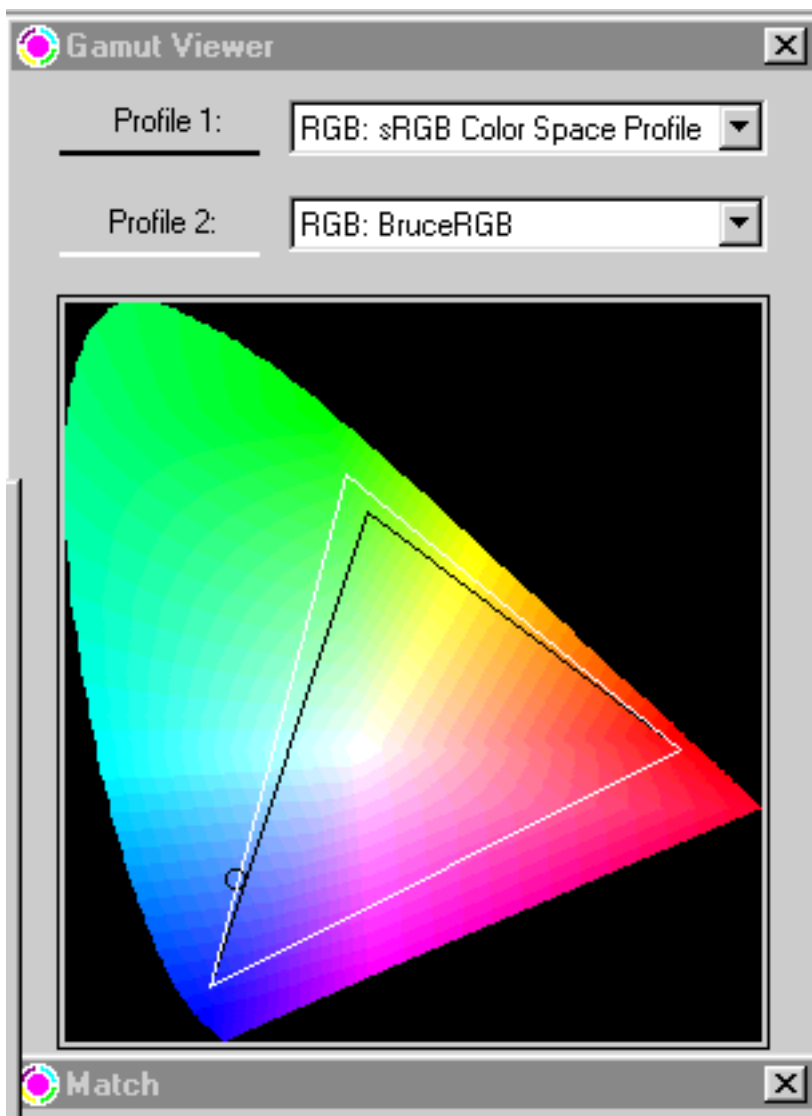
sRGB and monitor Eizo T561



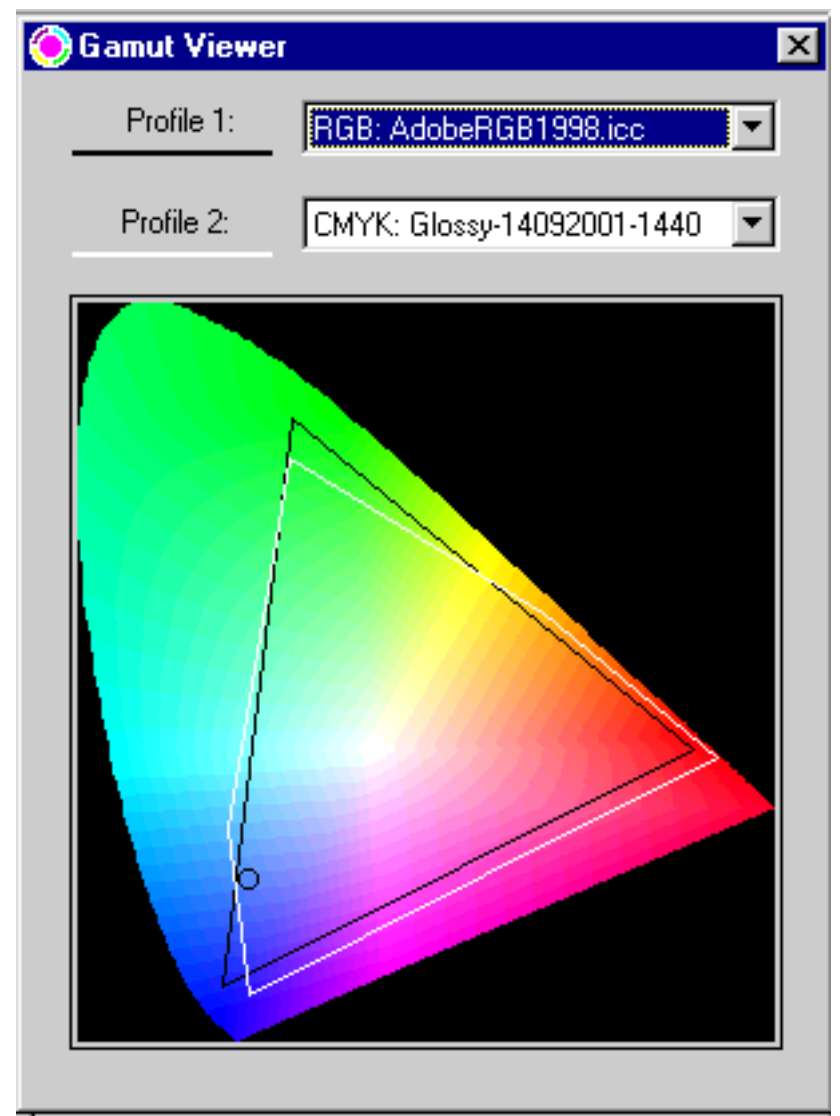
NTSC and PAL/Secam

Banded because of ZIP(4) compression for small file size

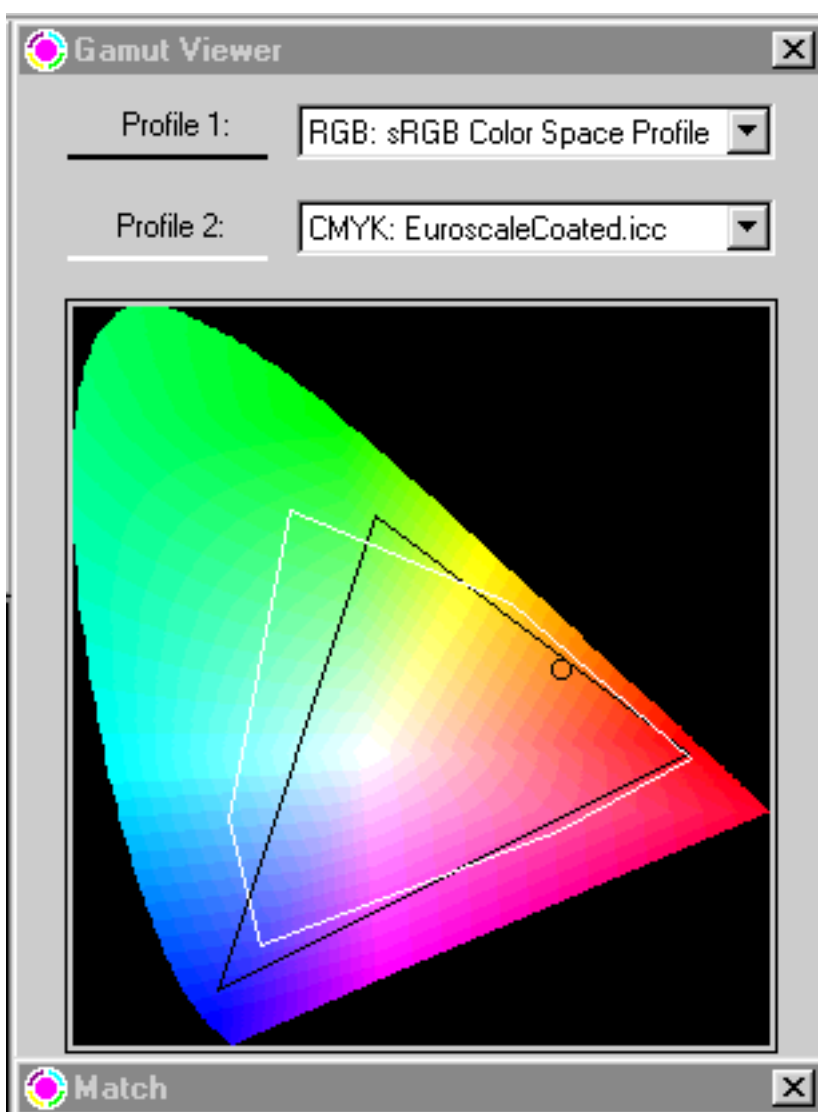
2. Printer Gamuts



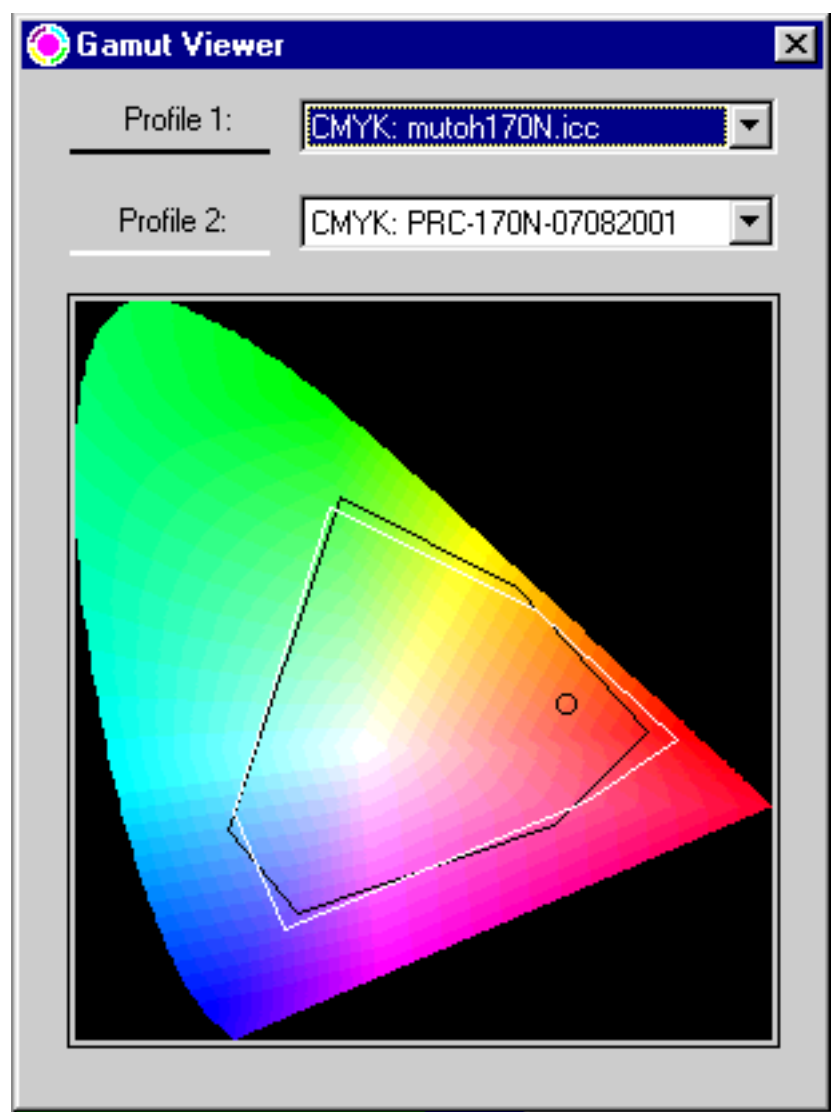
sRGB and Bruce RGB
(working spaces)



Adobe RGB (98) and
Mutoh 6100 Glossy, Dye



sRGB and EuroScaleCoated

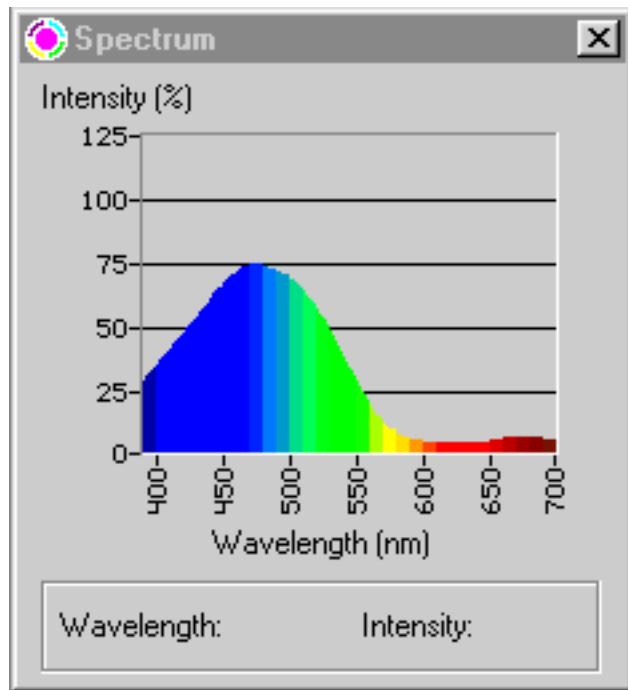


Mutoh 6100 Matt Paper
Pigment (1), Dye (2)

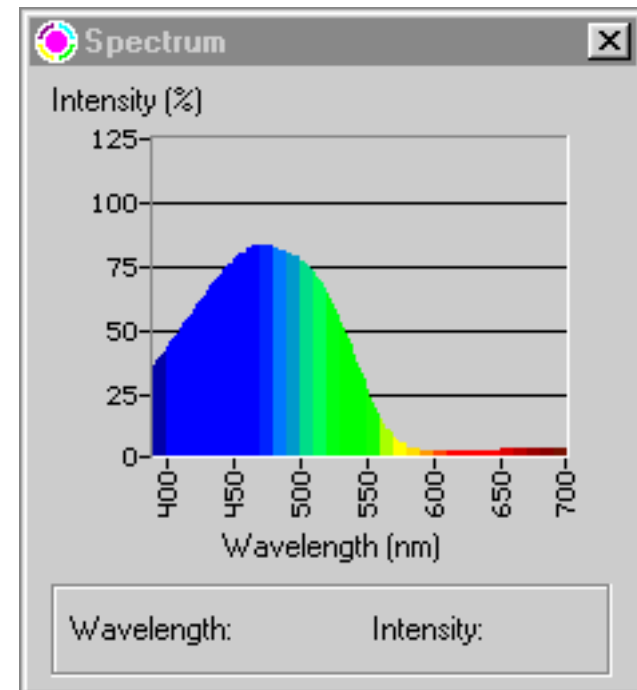
Banded because of ZIP(4) compression for small file size

3. Spectra of Offset Inks and Pigment Inks

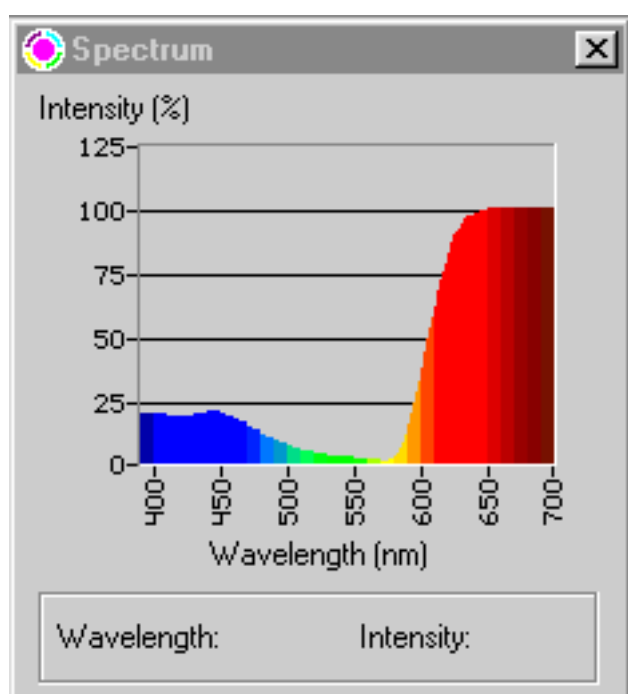
Left: measured in swatch book
Right: measured on inkjet print



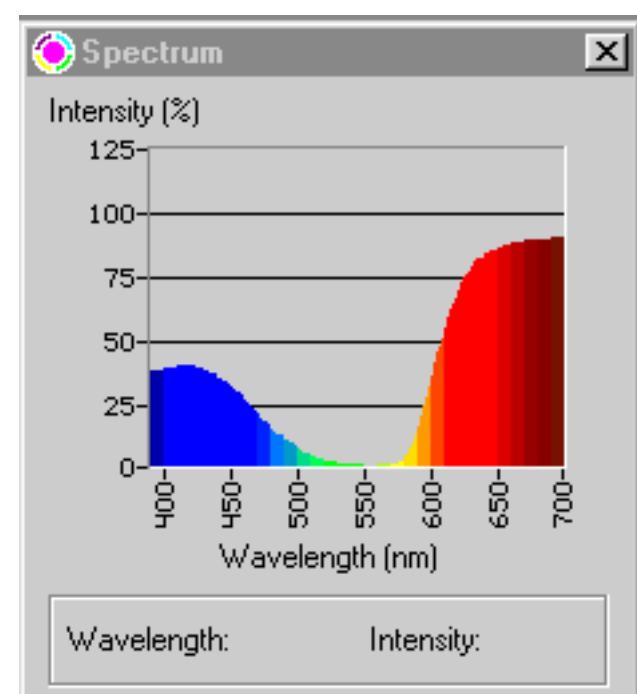
Pantone Process Cyan



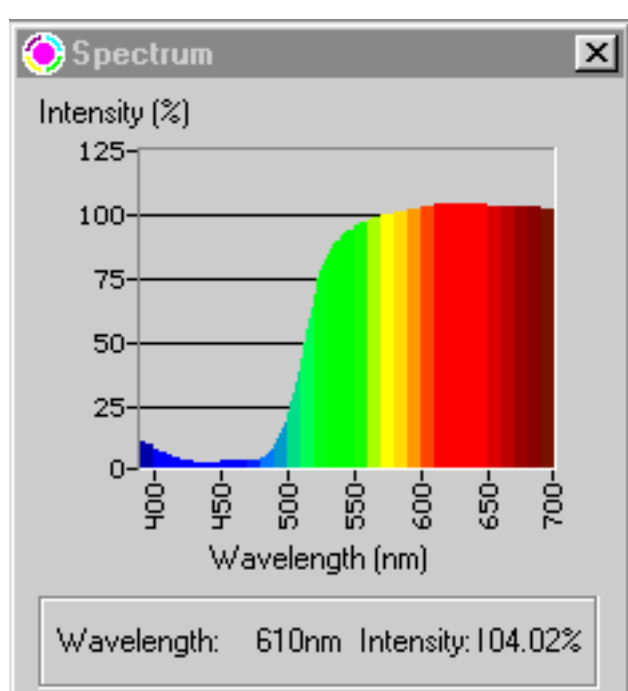
Mutoh Inkjet Cyan



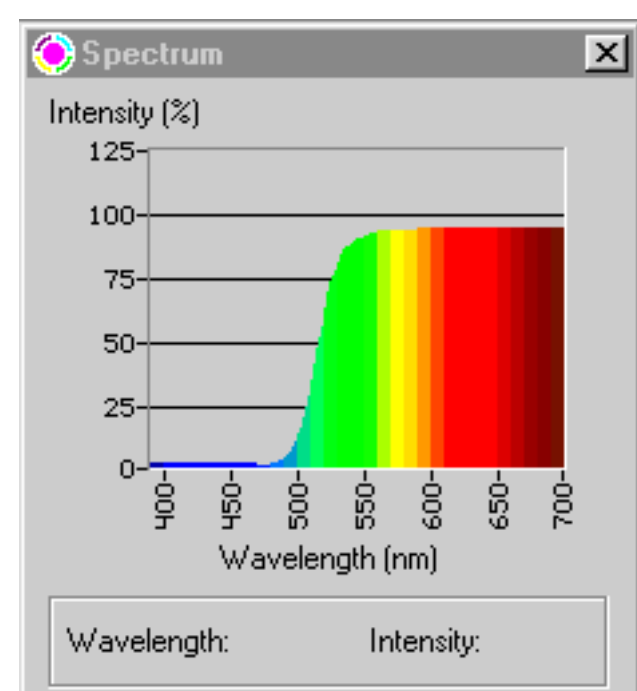
Pantone Proc. Magenta



Mutoh Inkjet Magenta



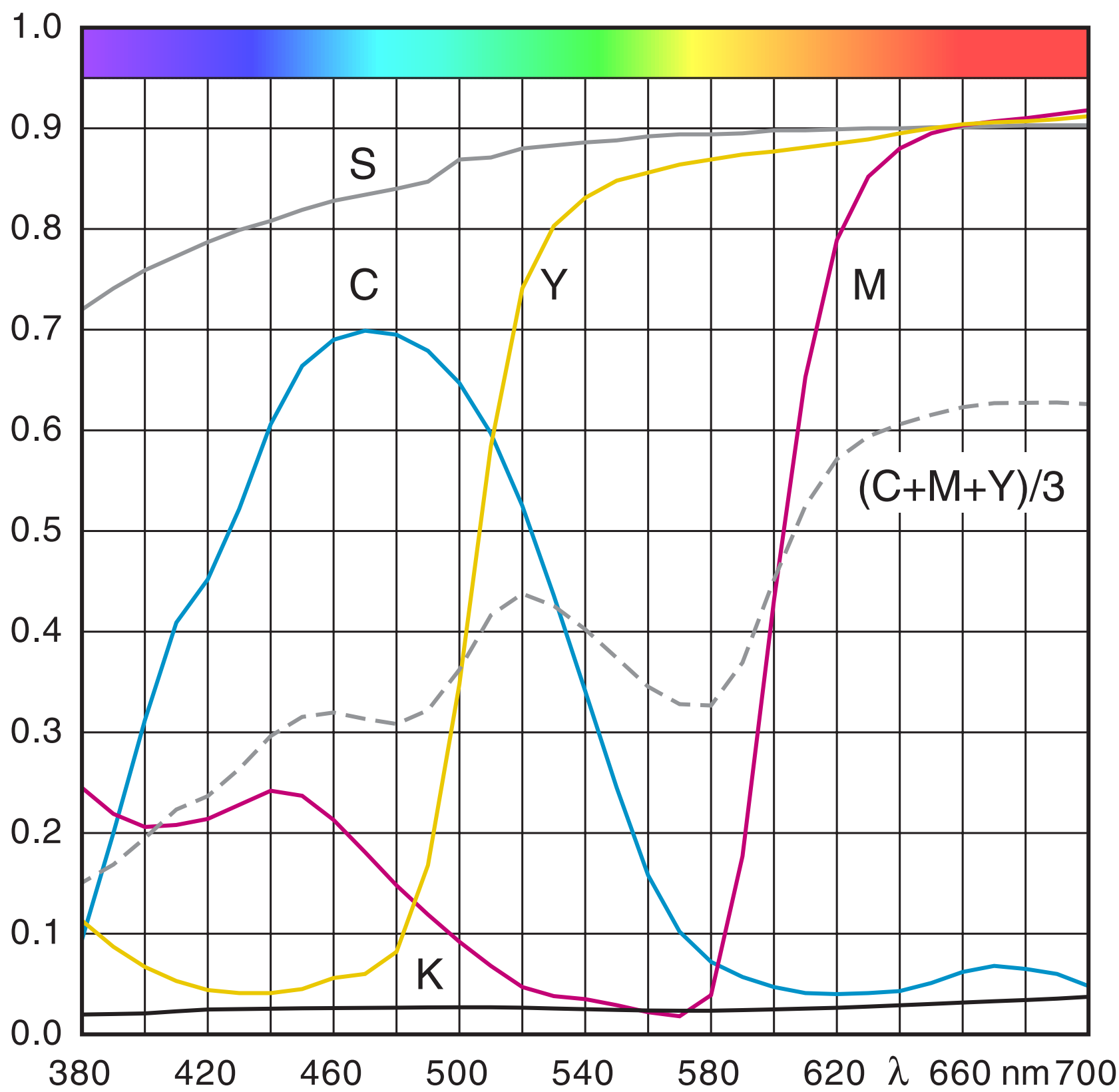
Pantone Process Yellow



Mutoh Inkjet Yellow

4. Spectra of Offset Inks ISO 2846-1:1997(E)

S is the substrate
The diagram shows also the sum of the color ink reflectances



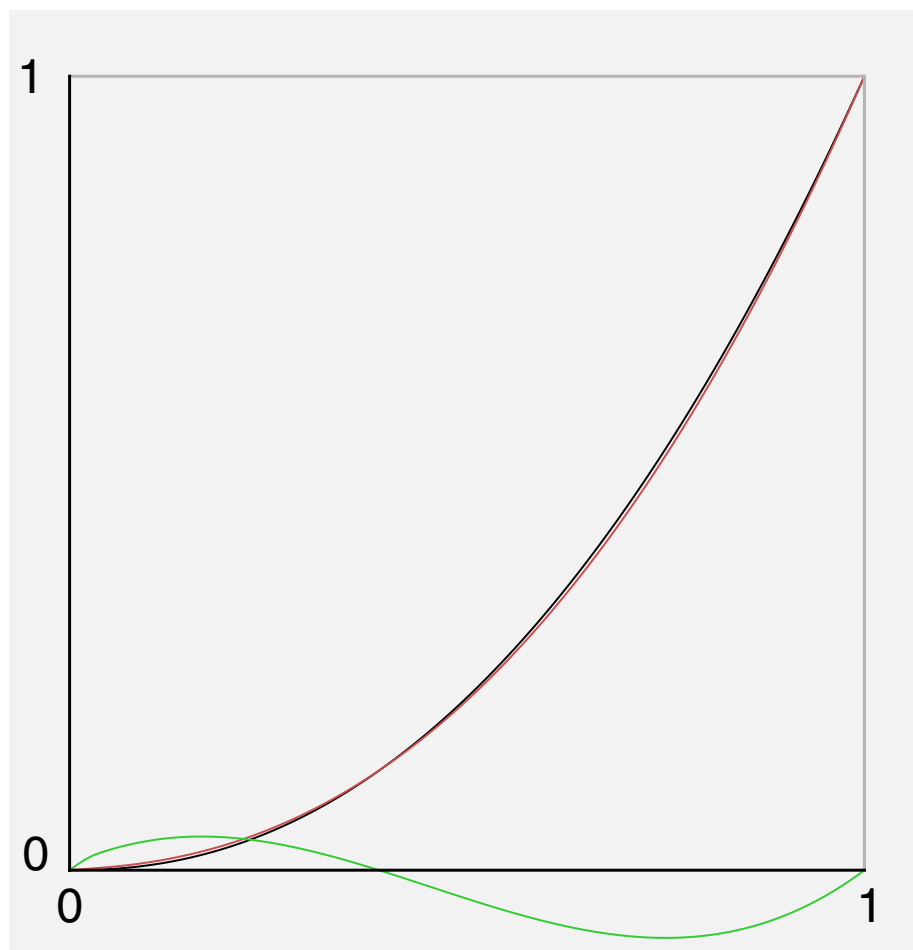
5. Tone Reproduction Curve for sRGB

sRGB is a standard color space, defined by companies, mainly Hewlett-Packard and Microsoft.

The transformation of RGB image data to CIE XYZ requires primarily a Gamma correction, which compensates an expected inverse Gamma correction, compared to linear light data.

For normalized values $C = R, G, B = 0 \dots 1$ as below. The matrix multiplication is here not explained.

The diagram shows, that sRGB has an effective Gamma = 2.2 = $1/0.4545$.



Black $C = C^{2.2} = C^{1/0.4545}$

Red sRGB
If $C \leq 0.03928$
Then
 $C = C/12.92$
Else
 $C = ((0.055 + C)/1.055)^g$
 $g = 2.4 = 1/0.4167$

Green 10 times the difference

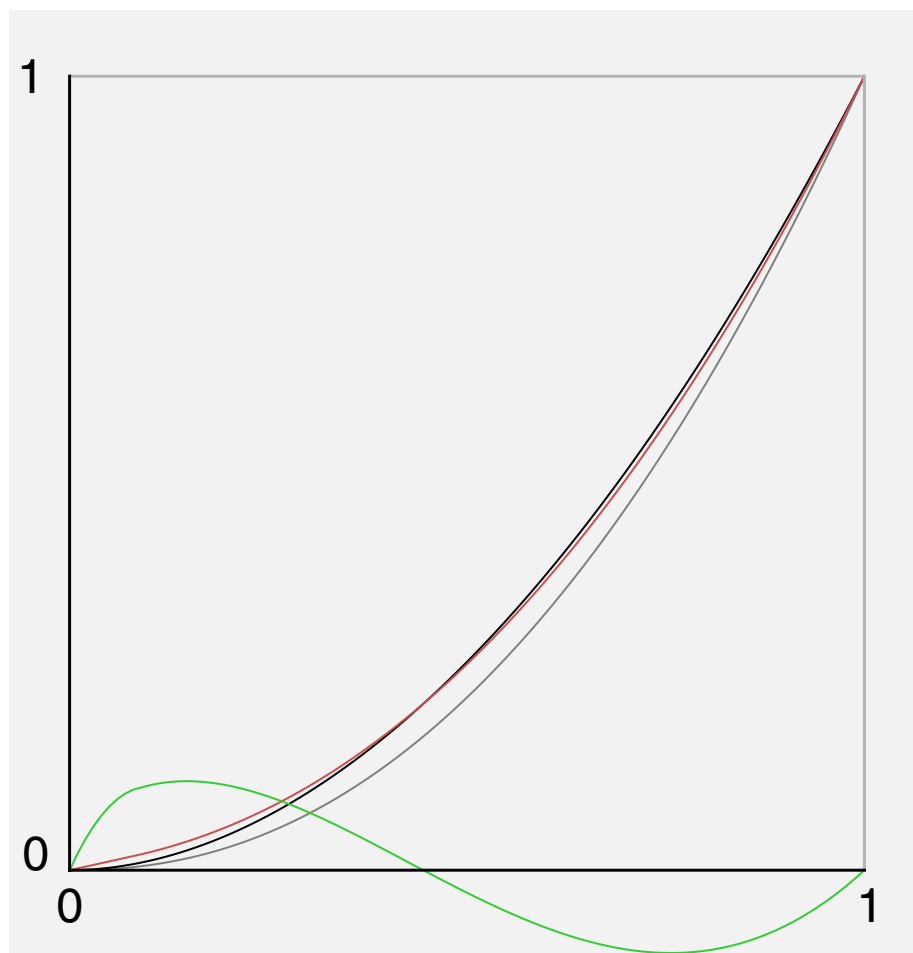
6. Tone Reproduction Curve for Rec.709

Rec.709 uses the same primaries as sRGB, but the Tone Reproduction Curve is different. This standard belongs to video systems.

The transformation of RGB image data to CIE XYZ requires primarily a Gamma correction, which compensates an expected inverse Gamma correction, compared to linear light data.

For normalized values $C = R, G, B = 0 \dots 1$ as below. The matrix multiplication is here not explained.

The diagram shows, that Rec.709 has an effective Gamma = 1.93 .



Gray $C = C^{2.2}$

Black $C = C^{1.93} = C^{1/0.518}$

Red Rec.709
If $C \leq 0.081$
Then
 $C = C/4.5$
Else
 $C = ((0.099 + C)/1.099)^g$

 $g = 2.2222 = 1/0.45$

Green 10 times the difference

Mutoh 6100 is a six-color large format inkjet, using CMYKLcLm
Calibrated by X-Rite DTP 41 and PosterShop Pro Profiler
Spectra by X-Rite Digital Swatchbook
Diagrams by X-Rite ColorShop

Gernot Hoffmann
June 25 / 2004
Website: [load browser and click here](#)