Aardenburg
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IMAGING & ARCHIVES

Tested System:
ID#:226

Printer: Epson Stylus Pro 3880

Inks/Colorants: Epson OEM UltraChrome K3™ with Vivid Magenta

Media: Hahnemuhle Photo Rag Ultrasmooth 308 gsm paper

Coating(s): no additional coating

Sample #: AaI_20110104_SN002

Testing Status: 140 Megalux hours total light exposure

Testing Is ongoing, next update on approximately JULY 15, 2016

Conservation Display Rating (CDR)

Lower limit: 51 Megalux hours (for weakest 10% of the color patches)
Upper limit: 84 Megalux hours (for average of all the color patches)

Note: a CDR with narrow range (typically less than 2:1) indicates relatively even overall fading of the image. A wide range indicates faster fading in certain local colors/tones prior to general fading of most colors/tones in the entire image. Compare ratings for different systems directly and/or use the table on page 2 to estimate time (years) on display.

* Please read document AaI_2009_0118_TA-01.pdf, **"An Overview of the AaI&A Conservation Display Ratings"**, located on the Documents page of the AaI&A website for furhter explanation of the Conservation display ratings.

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About this Report

This report contains light fastness information about a sample test print produced by a specific digital printing system. "System" refers to all hardware, software, and materials used to make the finished print. The hardware, software, material components, and printmaker's skills contribute to the final image quality and image permanence. The tested sample is made with current or recently discontinued stocks of commercially available products unless otherwise stated. Each sample has been prepared by Aardenburg Imaging & Archives or one of its members in accordance with customary print making practices unless otherwise noted. The sample may also contain additional finishing materials such as overcoats and laminates which are also noted when used. Finally, the sample has been tested under standardized conditions that are defined on the Sample Description page (see page 4). AaI&A makes every effort to ensure but cannot guarantee that the samples are properly identified and documented and that test results are accurate. For this reason, AaI&A also strives to test independently produced sample replicates in order to increase sampling confidence and to provide information on process variability. Please compare the results in this report to replicate test samples when the data become available.

Understanding this Report



The magnitude and visual appearance of fading depends not only on the chosen printing system but the chosen image as well. In other words, different images are comprised of different colors, and the fading relationships between those colors dictate how the image will look as it fades. The sample print in this test report was made by reproducing the digital image shown on the left. It contains 30 standard colors. 24 of the colors are colorimetrically matched to the Macbeth ColorChecker™ chart viewed under D50 illumination. The remaining six colors supplement the ColorChecker™ array with four additional skin tone colors, one patch for paper white, and another for maximum black. The additional colors also round out the distribution of CIELAB L* (lightness) values in the test target.

Information about the fading characteristics of the product is provided in three ways:

1) You can visually assess the fading. The target images reproduced in this report are digitally reconstructed from the spectrally measured color data rather than scanning or otherwise reproducing the physical print by conventional techniques. This method ensures a colorimetrically accurate representation of the print appearance as the print fades. A calibrated monitor is recommended to experience the best possible reproduction of the test sample appearance. The side-by-side "before and after" presentation of the target images simulates looking at a perfect copy of the unexposed original print along side the same print after light exposure. You can also use Adobe Reader's full screen mode to cycle through the pages and "animate" the fading.

2) I* Color and tonal accuracy scores are reported. This report includes I* metric scores that compare the color and tonal relationships of the light exposed samples to the color and tonal relationships existing in the original print prior to light exposure. Perfect I* scores of 100% can be approached when no significant fading occurs. Average scores above 90% generally indicate excellent retention of original quality, 80% good, 70% fair, etc., but your conclusions may vary depending on your image quality requirements. I* color rates the retained color accuracy (hue and chroma) while I* tone rates the retained tonal accuracy (lightness and contrast). The score is on a percentile scale where 100% is a perfect match between the comparison image (e.g., "after" light exposure) and the reference image (e.g., "before" any light exposure). 0% I* color means no color accuracy is left. 0% I* tone means essentially no tonality remains and all image information content is lost. Negative I* values have significance as well and contribute to the average I* score when they occur. Negative I* color values mean false color has occurred, for example, when a skin tone turns green or a neutral gray becomes distinctly colorful. Negative I* tone scores mean visual contrast between colors has become inverted (i.e., like the tonal relationships in a photographic film negative). Serious image quality problems must arise before false colors and/or tones appear. For more information on the I* metric, please refer to the AaI&A web site.

3) Color changes are also reported using the classic color difference model, ΔE. Note that ΔE values lose perceptual scaling significance when they become large (e.g., > 15). Also, the ΔE equation does not unambiguously measure changes in image contrast. This limitation is generally not a problem for paints and textiles, but can be a serious oversight when evaluating photographic images. Properly tracking changes in image contrast was a major reason behind the development of the I* metric.

Table to Convert Megalux-hours of Light Exposure to estimated "Years on Display" Light Fastness Ratings.											
Indoor Light Levels for Print Display		Multiply Mlux-hrs by	Megalux-hours in test									
Light Exposure	**Description**		**10**	**20**	**30**	**40**	**50**	**60**	**70**	**80**	**90**	**100**
≤ 10 Lux 24 hours per day	Interior rooms, storage areas, or hallways without windows, illuminated sparingly by artificial lighting	**11.42**	**114**	**228**	**342**	**457**	**571**	**685**	**799**	**913**	**1027**	**1142**
50 Lux 12 hours per day	"Museum Standard" display condition	**4.57**	**46**	**91**	**137**	**183**	**228**	**274**	**325**	**365**	**411**	**457**
120 Lux 12 hours per day "Kodak Display Years" (1)	Average home illumination level for photos is ~ 60 lux. 90% of all displayed photos do not exceed 120 lux (1).	**1.90**	**19**	**38**	**57**	**76**	**95**	**114**	**133**	**152**	**171**	**190**
228 Lux 12 hours per day	Relatively bright home or office. Note the simple 1:1 relationship between "years on display" and Mlux-hr values at this condition.	**1.00**	**10**	**20**	**30**	**40**	**50**	**60**	**70**	**80**	**90**	**100**
450 Lux 12 hours per day "WIR Display Years" (2) Also equals 500 lux for 11.8 hours per day	A bright home or commercial office building illumination level is 200-500 lux. Also, good illumination for color critical viewing and color matching tasks begins at about 500 lux.	**0.51**	**5**	**10**	**15**	**20**	**25**	**30**	**35**	**41**	**46**	**51**
2000 Lux 12 hours per day	Commercial Gallery. Also, critical color evaluation standards call for 2000 lux and a D50 illumination source.	**0.114**	**1.1**	**2.3**	**3.4**	**4.6**	**5.7**	**6.8**	**8.0**	**9.1**	**10.3**	**11.4**
5000 Lux 12 hours per day	E.g., Sunlight through a window striking print at an angle.	**0.046**	**0.5**	**0.9**	**1.4**	**1.8**	**2.3**	**2.7**	**3.2**	**3.7**	**4.1**	**4.6**
10,000 Lux 12 hours per day	South-facing window in U.S.A. , e.g., storefront display with photos directly facing window.	**0.023**	**0.2**	**0.5**	**0.7**	**0.9**	**1.1**	**1.4**	**1.6**	**1.8**	**2.1**	**2.3**

Light levels commonly encountered in the real world fluctuate widely throughout indoor print display environments and produce large variations in how long it takes for artwork to acquire light-induced damage. Use this table as a guide to estimate how many "years on display" (denoted in red text) it takes to accumulate an equivalent light exposure dosage. Review the test results to decide which Megalux-hour dose has caused fading to your level of concern (e.g., just noticeable, easily noticeable, objectionable, etc.). Then choose the "Light Exposure" description that best represents how your print is likely to be displayed. You may want to obtain a lux meter and make some measurements in your own display environment!

Note that as the years of display time increase, light-induced fading can be eclipsed by other serious aging mechanisms such as fading and/or staining caused by heat, humidity, and air pollutants. Mould damage can also occur at high humidity. Even when colorants remain water fast, direct contact with liquids may result in physical deformation and staining of the substrate. Also, temperature and especially strong seasonal humidity fluctuations can cause physical cracks and/or flaking, etc., over time. Handling damage such as scratching, abrasion, tears and creases, and catastrophic damage by smoke, fire, flood, etc., also destroy print quality over time. Thus, as illumination levels are reduced other forms of print degradation take on greater probability of occurrence.

(1) Eastman Kodak cited this exposure condition with a 90% confidence limit as a rationale for estimating print fading times of traditional color photo materials in typical home display environments. However, for light fading claims regarding its line of pigment-based inkjet printers, Kodak adopted the higher level of 450lux/12 hours per day which is also used by Wilhelm Imaging Research, Inc. (See below).

(2) Wilhelm Imaging Research (WIR) standardized its light fastness ratings on 450 lux for 12 hours per day in order to estimate the years on display necessary to reach "easily noticeable" fading. This average daily light exposure dosage, at an assumed 75˚F/60%RH temperature and humidity level, has become a de facto industry standard for most industry-sponsored predictive "years of life" light fading estimates in the absence of a published International Standards Organization (ISO) test standard. The table above readily shows how much error occurs in such "print lifetime" predictions as actual real world light levels for prints on display routinely deviate above and below the assumed 450 lux intensity value.

Sample Description

Sample # **AaI_20110104_SN002** **Batch #:** K1
Printer: Epson Stylus Pro 3880
Ink: Epson OEM UltraChrome K3™ with Vivid Magenta
Media: Hahnemuhle Photo Rag Ultrasmooth 308 gsm paper
Coating(s): no additional coating

Test Print Prepared by: AaI&A member
Printed: January 4, 2011
Initial Print colors measured August 10, 2011
Test Started: August 11, 2011

Test Image: AaI_StandardColorSet(v2)forSRGB.tif
RIP?Driver settings: Epson OEM driver, CS PS 4, 1440 dip, High speed "on", no color adjustment (NCA)

Media Setting Velvet Fine Art

Profile: Pro3880_Hahnemuhle_Photorag.icm **Rendering** Perceptual w/bpc
Profile type: custom, Profile Creation Software: Xrite Colormunki

Paper White Color (UV-included versus UV-excluded)

Optical Brighteners Present? *yes (low)*	**L***		**a***		**b***	
	UV inc	UV exc	UV inc	UV exc	UV inc	UV exc
Media Whitepoint Color	97.4	97.4	0.4	0.1	0.4	1.5
	UV-inc/UV-exc ΔL*, Δa*, Δb* respectively					
	0.0		0.3		1.1	
	Calculated differences, especially for Δb, indicate the role and magnitude of fluorescence on original paper color*					

Maximum Printed Black	**L***	**a***	**b***	Optical Density (Dmax)
	18.1	1.2	0.5	1.60

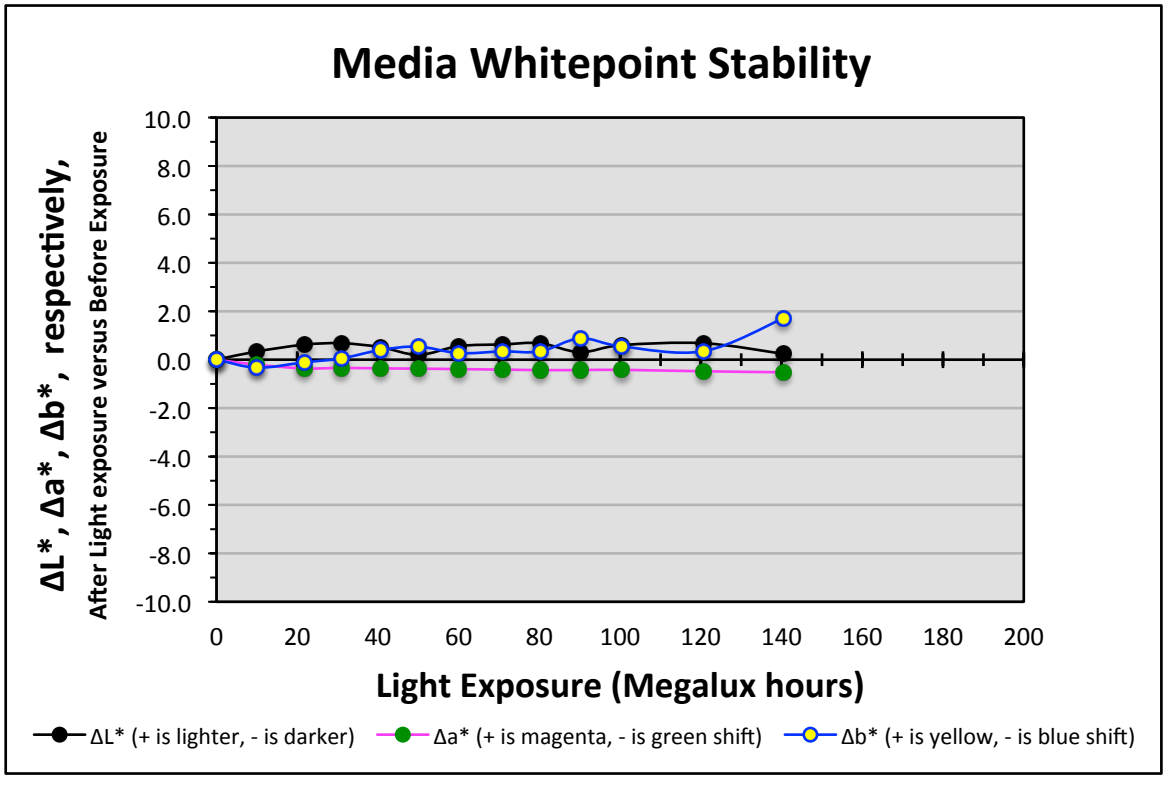
Light source: Phillips Colortone F40T12/C50 – 5000˚K full spectrum fluorescent. Color rendering Index (CRI) =92), soda lime glass filtered
Light Exposure Cycle: 8 hours on, 4 hours off, twice per 24 hours
CIELAB measurements: D50 2˚ observer, Xrite Gretag/Macbeth Spectrolino/Spectroscan

Average Illuminance during "on" cycle: 10906 Lux
Average Temperature: 23.6˚C over full test duration, 25.0˚C during light exposure.
Average Relative humidity: 56.7%RH over full test duration, 56.3%RH during light exposure.

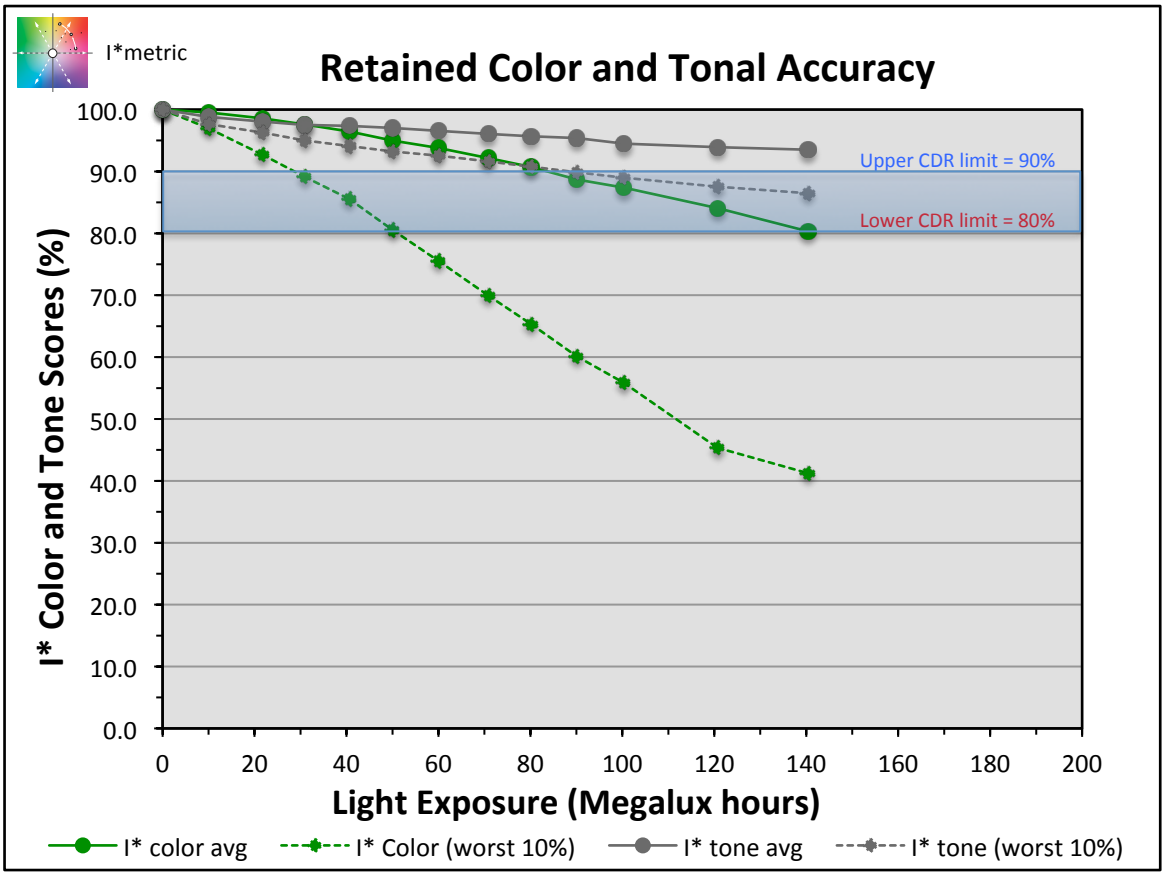
Notes/Comments:

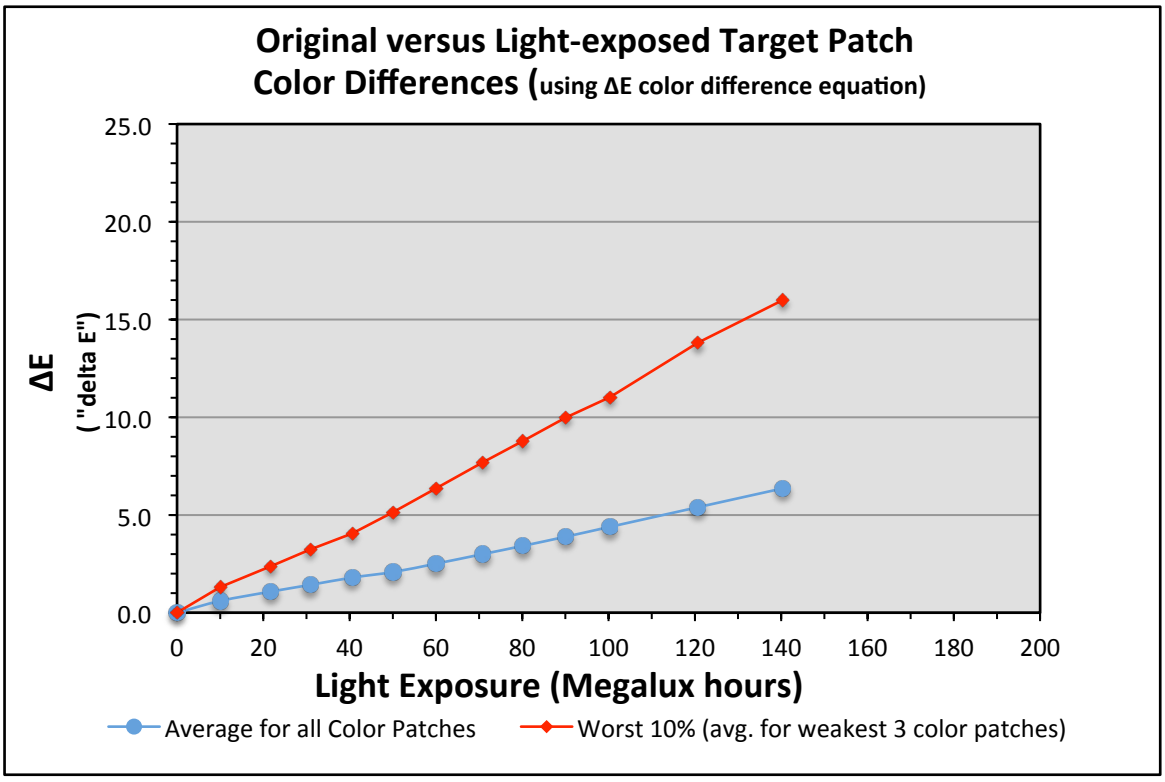
Graphs:

Epson Stylus Pro 3880, Epson OEM UltraChrome K3™ with Vivid Magenta, Hahnemuhle Photo Rag Ultrasmooth 308 gsm paper, no additional coating



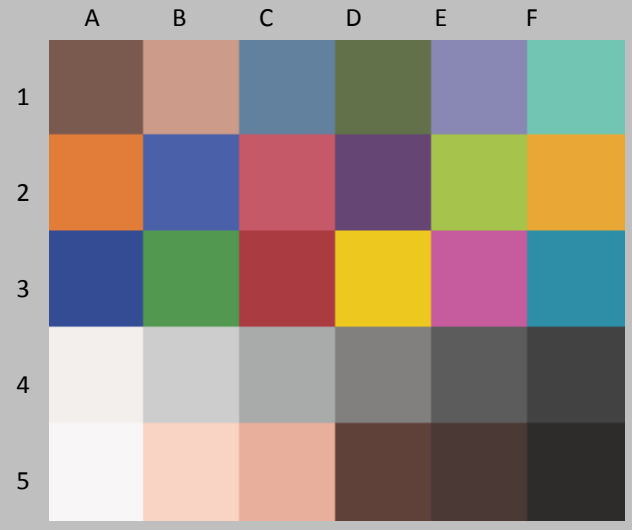
Epson Stylus Pro 3880, Epson OEM UltraChrome K3™ with Vivid Magenta, Hahnemuhle Photo Rag Ultrasmooth 308 gsm paper, no additional coating



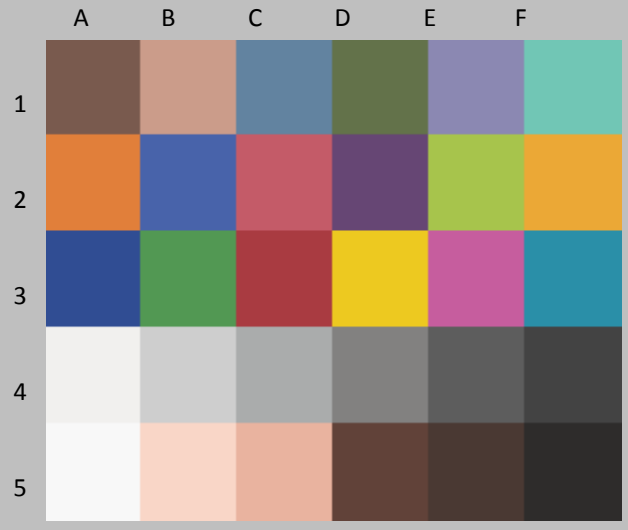


Values:

Epson Stylus Pro 3880, Epson OEM UltraChrome K3™ with Vivid Magenta, Hahnemuhle Photo Rag Ultrasmooth 308 gsm paper, no additional coating



Original Print Colors before light exposure



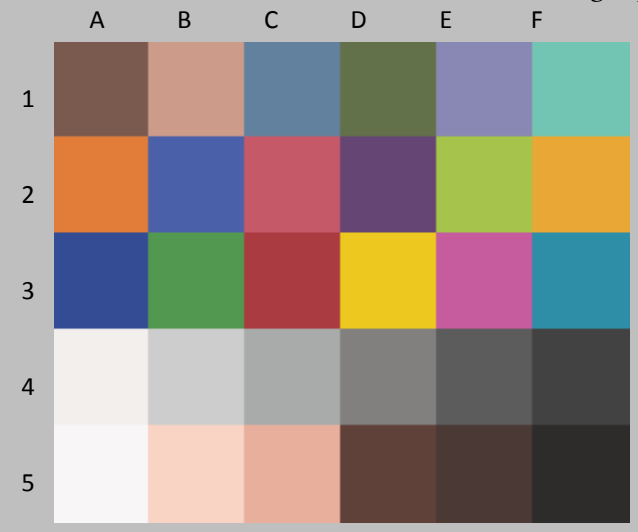
Colors After light exposure

				L*		a*		b*	
Patch #	Description	I* Color	ΔE	Before	After	Before	After	Before	After
A1	Dark Skin	100.0	0.3	41.1	41.2	12.6	12.4	11.8	11.5
B1	Light Skin	98.6	0.9	68.2	68.6	16.9	16.4	17.3	16.7
C1	Blue sky	100.0	0.5	52.5	52.8	-5.5	-5.9	-19.4	-19.5
D1	Foliage	100.0	0.3	45.7	45.9	-10.7	-10.8	19.9	19.7
E1	blue flower	99.6	0.8	57.5	58.0	8.4	7.8	-22.6	-22.5
F1	bluish green	97.6	1.3	73.7	74.0	-30.0	-29.8	1.5	0.2
A1	orange	99.6	0.8	63.2	63.4	35.6	34.9	53.5	53.2
B2	purplish blue	99.3	0.9	42.1	42.5	8.0	7.3	-42.1	-41.8
C2	moderate red	99.8	0.6	52.2	52.4	44.5	44.2	14.3	13.7
D2	purple	100.0	0.3	34.6	34.8	21.3	21.1	-20.7	-20.7
E2	yellow green	99.9	0.6	75.0	75.3	-23.2	-23.4	55.4	54.9
F2	orange yellow	99.6	0.8	73.8	74.1	18.4	17.6	65.2	65.0
A3	blue	99.5	0.7	33.2	33.4	8.8	8.1	-42.9	-42.7
B3	green	99.9	0.6	56.7	57.0	-33.9	-34.0	29.9	29.4
C3	red	100.0	0.4	41.6	41.5	46.4	46.2	22.1	21.8
D3	yellow	99.7	0.8	82.1	82.5	3.1	2.5	77.9	77.6
E3	magenta	99.9	0.6	54.2	54.5	48.5	48.0	-15.0	-14.7
F3	cyan	100.0	0.5	54.1	54.4	-22.4	-22.6	-21.8	-22.2
A4	white	100.0	0.6	94.6	95.0	0.6	0.4	1.4	1.0
B4	neutral 8	100.0	0.5	82.5	82.9	-0.1	-0.3	0.4	0.1
C4	neutral 6.5	100.0	0.5	69.9	70.3	-0.8	-0.9	-0.1	-0.3
D4	neutral 5	100.0	0.3	53.9	54.1	0.2	0.1	1.3	1.1
E4	neutral 3.5	100.0	0.3	39.3	39.5	0.0	-0.1	-0.1	-0.2
F4	black	100.0	0.1	28.0	28.1	0.0	-0.1	0.0	-0.1
A5	paper white	100.0	0.5	97.2	97.5	0.7	0.4	0.4	0.1
B5	Skin highlight L*=88	95.7	1.4	87.6	88.2	11.6	11.1	13.0	11.9
C5	Skin highlight L* =75	97.7	1.3	76.9	77.5	19.0	18.3	18.7	17.9
D5	Skin shadow L*=28	100.0	0.3	31.0	31.2	13.1	13.1	10.4	10.7
E5	Skin shadow L*=13	100.0	0.3	25.7	25.7	7.3	7.4	6.3	6.6
F5	Maximum Black	100.0	0.2	18.1	18.0	1.2	1.2	0.5	0.5

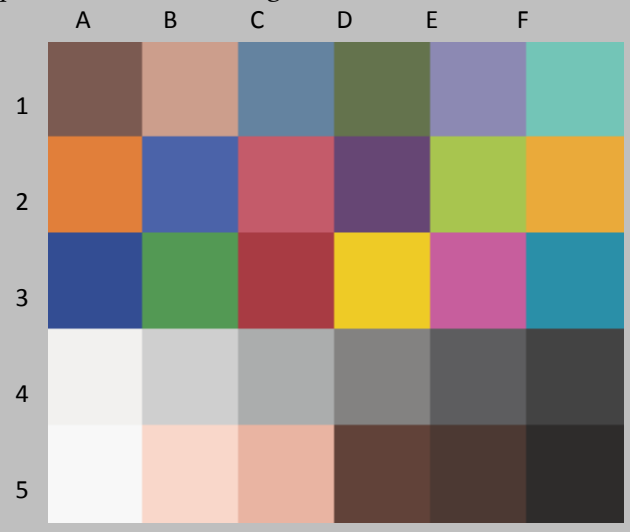
Summary Results	I* Color	I* tone	ΔE
Average Score for all patches	99.5	98.8	0.6
Worst 10% (3 lowest scoring patches)	97.0	97.6	1.3

10 Megalux hours

Epson Stylus Pro 3880, Epson OEM UltraChrome K3™ with Vivid Magenta, Hahnemuhle Photo Rag Ultrasmooth 308 gsm paper, no additional coating



Original Print Colors before light exposure



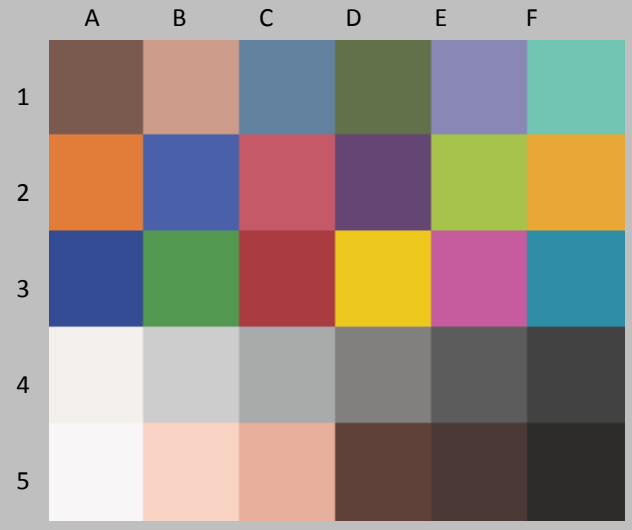
Colors After light exposure

				L*		a*		b*	
Patch #	Description	I* Color	ΔE	Before	After	Before	After	Before	After
A1	Dark Skin	99.9	0.6	41.1	41.4	12.6	12.6	11.8	11.2
B1	Light Skin	95.6	1.8	68.2	69.0	16.9	16.2	17.3	15.9
C1	Blue sky	100.0	0.8	52.5	53.2	-5.5	-6.0	-19.4	-19.3
D1	Foliage	99.5	0.8	45.7	46.1	-10.7	-10.8	19.9	19.3
E1	blue flower	98.0	1.3	57.5	58.3	8.4	7.5	-22.6	-22.1
F1	bluish green	94.2	2.3	73.7	74.3	-30.0	-29.5	1.5	-0.7
A1	orange	98.9	1.3	63.2	63.6	35.6	34.7	53.5	52.6
B2	purplish blue	98.1	1.5	42.1	42.8	8.0	6.9	-42.1	-41.4
C2	moderate red	98.5	1.3	52.2	52.7	44.5	44.2	14.3	13.1
D2	purple	100.0	0.3	34.6	35.0	21.3	21.3	-20.7	-20.8
E2	yellow green	98.3	1.7	75.0	75.6	-23.2	-23.3	55.4	53.9
F2	orange yellow	98.8	1.5	73.8	74.4	18.4	17.3	65.2	64.4
A3	blue	98.4	1.3	33.2	33.6	8.8	7.6	-42.9	-42.4
B3	green	98.7	1.2	56.7	57.2	-33.9	-34.1	29.9	28.8
C3	red	99.6	0.7	41.6	41.6	46.4	46.4	22.1	21.4
D3	yellow	99.0	1.5	82.1	82.9	3.1	2.2	77.9	77.0
E3	magenta	98.9	1.3	54.2	54.9	48.5	47.7	-15.0	-14.3
F3	cyan	100.0	0.7	54.1	54.6	-22.4	-22.7	-21.8	-22.1
A4	white	100.0	0.8	94.6	95.3	0.6	0.3	1.4	1.2
B4	neutral 8	100.0	0.7	82.5	83.1	-0.1	-0.4	0.4	0.3
C4	neutral 6.5	100.0	0.8	69.9	70.6	-0.8	-1.1	-0.1	-0.1
D4	neutral 5	100.0	0.6	53.9	54.5	0.2	0.0	1.3	1.1
E4	neutral 3.5	100.0	0.6	39.3	39.7	0.0	0.0	-0.1	-0.5
F4	black	100.0	0.4	28.0	28.3	0.0	-0.1	0.0	-0.3
A5	paper white	100.0	0.7	97.2	97.8	0.7	0.3	0.4	0.3
B5	Skin highlight L*=88	89.7	2.5	87.6	88.7	11.6	10.9	13.0	10.8
C5	Skin highlight L* =75	94.3	2.3	76.9	78.0	19.0	18.1	18.7	16.9
D5	Skin shadow L*=28	100.0	0.5	31.0	31.3	13.1	13.3	10.4	10.8
E5	Skin shadow L*=13	99.4	0.6	25.7	25.8	7.3	7.7	6.3	6.8
F5	Maximum Black	100.0	0.1	18.1	18.0	1.2	1.2	0.5	0.6

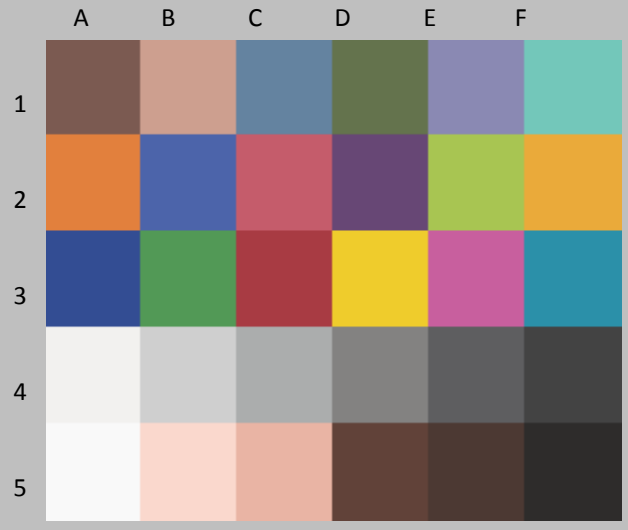
Summary Results	I* Color	I* tone	ΔE
Average Score for all patches	98.6	98.1	1.1
Worst 10% (3 lowest scoring patches)	92.7	96.3	2.4

20 Megalux hours

Epson Stylus Pro 3880, Epson OEM UltraChrome K3™ with Vivid Magenta, Hahnemuhle Photo Rag Ultrasmooth 308 gsm paper, no additional coating



Original Print Colors before light exposure



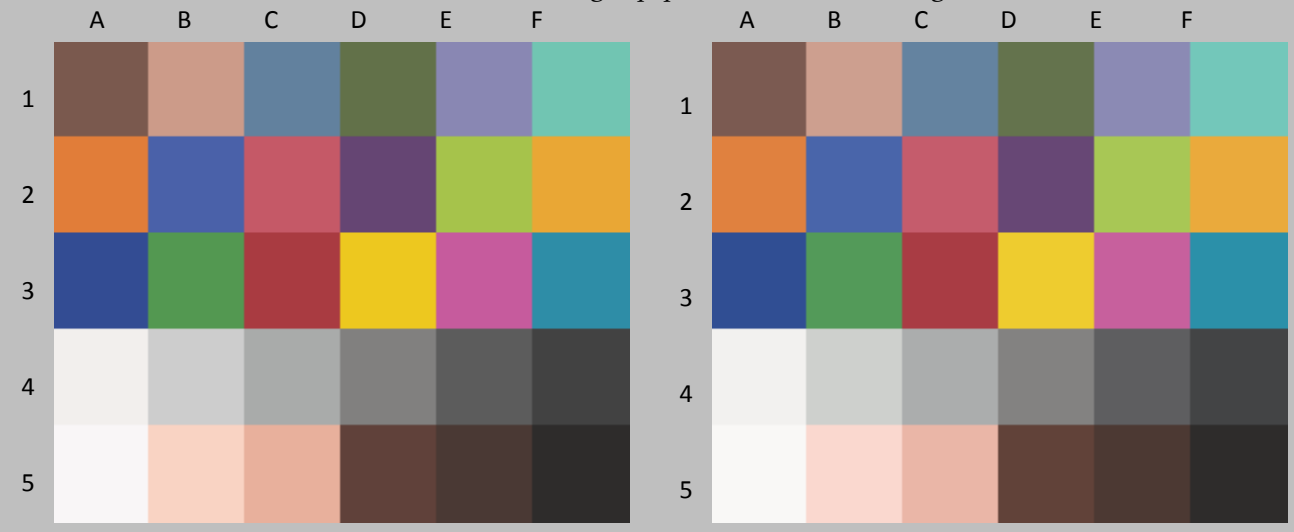
Colors After light exposure

				L*		a*		b*	
Patch #	Description	I* Color	ΔE	Before	After	Before	After	Before	After
A1	Dark Skin	98.1	1.0	41.1	41.5	12.6	12.7	11.8	10.9
B1	Light Skin	93.2	2.4	68.2	69.2	16.9	16.1	17.3	15.3
C1	Blue sky	99.5	1.1	52.5	53.3	-5.5	-6.1	-19.4	-19.2
D1	Foliage	98.0	1.1	45.7	46.2	-10.7	-10.8	19.9	18.9
E1	blue flower	96.7	1.7	57.5	58.5	8.4	7.3	-22.6	-21.9
F1	bluish green	91.1	3.3	73.7	74.5	-30.0	-29.2	1.5	-1.6
A1	orange	98.3	1.7	63.2	63.8	35.6	34.6	53.5	52.2
B2	purplish blue	97.5	1.8	42.1	43.0	8.0	6.8	-42.1	-41.1
C2	moderate red	97.7	1.7	52.2	52.8	44.5	44.2	14.3	12.7
D2	purple	100.0	0.5	34.6	35.1	21.3	21.3	-20.7	-20.8
E2	yellow green	96.8	2.6	75.0	75.8	-23.2	-23.3	55.4	53.0
F2	orange yellow	97.9	2.1	73.8	74.6	18.4	17.1	65.2	63.8
A3	blue	97.9	1.5	33.2	33.7	8.8	7.5	-42.9	-42.2
B3	green	97.3	1.9	56.7	57.4	-33.9	-33.9	29.9	28.1
C3	red	99.2	0.9	41.6	41.7	46.4	46.5	22.1	21.2
D3	yellow	98.3	2.1	82.1	83.0	3.1	2.0	77.9	76.4
E3	magenta	98.4	1.6	54.2	55.1	48.5	47.6	-15.0	-14.0
F3	cyan	100.0	0.7	54.1	54.7	-22.4	-22.6	-21.8	-22.0
A4	white	100.0	0.8	94.6	95.3	0.6	0.3	1.4	1.3
B4	neutral 8	100.0	0.9	82.5	83.2	-0.1	-0.5	0.4	0.4
C4	neutral 6.5	100.0	0.9	69.9	70.7	-0.8	-1.1	-0.1	0.0
D4	neutral 5	100.0	0.8	53.9	54.6	0.2	0.1	1.3	1.2
E4	neutral 3.5	99.1	0.8	39.3	39.9	0.0	0.0	-0.1	-0.6
F4	black	100.0	0.5	28.0	28.3	0.0	0.1	0.0	-0.5
A5	paper white	100.0	0.8	97.2	97.9	0.7	0.3	0.4	0.4
B5	Skin highlight L*=88	84.9	3.4	87.6	88.9	11.6	10.9	13.0	10.0
C5	Skin highlight L* =75	91.4	3.1	76.9	78.2	19.0	18.0	18.7	16.1
D5	Skin shadow L*=28	100.0	0.5	31.0	31.3	13.1	13.3	10.4	10.7
E5	Skin shadow L*=13	96.8	0.8	25.7	25.8	7.3	7.8	6.3	7.0
F5	Maximum Black	100.0	0.2	18.1	18.0	1.2	1.2	0.5	0.6

Summary Results	I* Color	I* tone	ΔE
Average Score for all patches	97.6	97.5	1.4
Worst 10% (3 lowest scoring patches)	89.2	95.0	3.2

30 Megalux hours

Epson Stylus Pro 3880, Epson OEM UltraChrome K3™ with Vivid Magenta, Hahnemuhle Photo Rag Ultrasmooth 308 gsm paper, no additional coating



Original Print Colors before light exposure

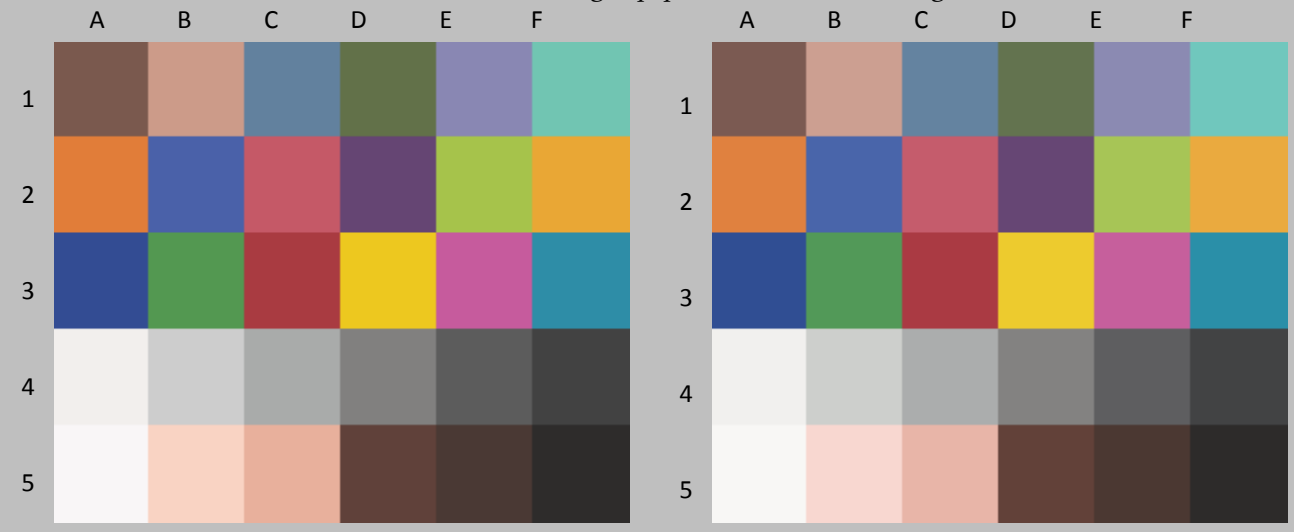
Colors After light exposure

				L*		a*		b*	
Patch #	Description	I* Color	ΔE	Before	After	Before	After	Before	After
A1	Dark Skin	95.7	1.4	41.1	41.7	12.6	12.7	11.8	10.5
B1	Light Skin	91.3	2.9	68.2	69.3	16.9	16.1	17.3	14.9
C1	Blue sky	98.6	1.2	52.5	53.4	-5.5	-6.2	-19.4	-18.9
D1	Foliage	96.3	1.5	45.7	46.3	-10.7	-10.7	19.9	18.5
E1	blue flower	95.6	2.0	57.5	58.7	8.4	7.2	-22.6	-21.5
F1	bluish green	88.2	4.1	73.7	74.5	-30.0	-28.9	1.5	-2.4
A1	orange	97.2	2.4	63.2	63.9	35.6	34.5	53.5	51.5
B2	purplish blue	96.3	2.3	42.1	43.1	8.0	6.4	-42.1	-40.7
C2	moderate red	97.0	2.1	52.2	53.0	44.5	44.2	14.3	12.4
D2	purple	100.0	0.6	34.6	35.2	21.3	21.1	-20.7	-20.7
E2	yellow green	95.2	3.5	75.0	75.9	-23.2	-23.3	55.4	52.0
F2	orange yellow	96.7	2.9	73.8	74.7	18.4	17.0	65.2	62.9
A3	blue	97.0	1.9	33.2	33.8	8.8	7.3	-42.9	-41.9
B3	green	95.8	2.5	56.7	57.5	-33.9	-33.8	29.9	27.5
C3	red	98.6	1.2	41.6	41.8	46.4	46.4	22.1	20.9
D3	yellow	97.1	2.9	82.1	83.0	3.1	1.9	77.9	75.4
E3	magenta	97.3	2.1	54.2	55.1	48.5	47.4	-15.0	-13.5
F3	cyan	100.0	0.7	54.1	54.8	-22.4	-22.6	-21.8	-21.9
A4	white	100.0	0.7	94.6	95.2	0.6	0.3	1.4	1.5
B4	neutral 8	100.0	0.9	82.5	83.2	-0.1	-0.5	0.4	0.6
C4	neutral 6.5	100.0	1.0	69.9	70.8	-0.8	-1.1	-0.1	0.2
D4	neutral 5	100.0	0.8	53.9	54.7	0.2	0.0	1.3	1.3
E4	neutral 3.5	96.6	1.2	39.3	40.1	0.0	0.0	-0.1	-0.9
F4	black	98.5	0.8	28.0	28.5	0.0	0.2	0.0	-0.7
A5	paper white	99.6	0.7	97.2	97.7	0.7	0.3	0.4	0.8
B5	Skin highlight L*=88	80.0	4.2	87.6	88.9	11.6	11.0	13.0	9.1
C5	Skin highlight L* =75	88.5	3.9	76.9	78.4	19.0	18.0	18.7	15.3
D5	Skin shadow L*=28	100.0	0.6	31.0	31.5	13.1	13.4	10.4	10.7
E5	Skin shadow L*=13	96.8	0.9	25.7	26.1	7.3	7.7	6.3	7.0
F5	Maximum Black	100.0	0.2	18.1	18.1	1.2	1.2	0.5	0.7

Summary Results	I* Color	I* tone	ΔE
Average Score for all patches	96.5	97.4	1.8
Worst 10% (3 lowest scoring patches)	85.5	94.1	4.1

40 Megalux hours

Epson Stylus Pro 3880, Epson OEM UltraChrome K3™ with Vivid Magenta, Hahnemuhle Photo Rag Ultrasmooth 308 gsm paper, no additional coating



Original Print Colors before light exposure

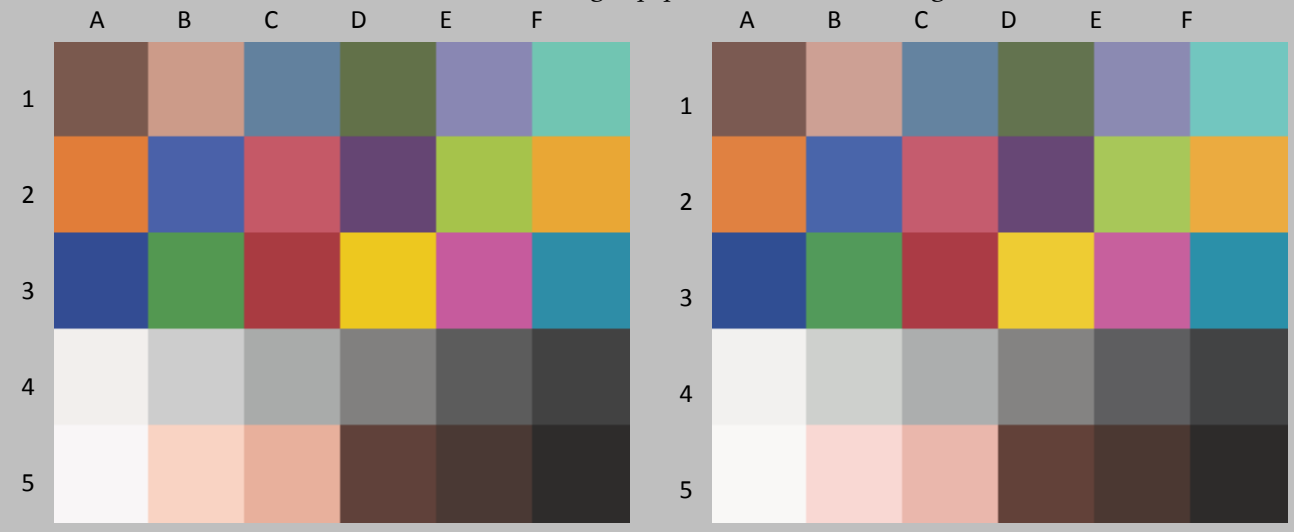
Colors After light exposure

Patch #	Description	I* Color	ΔE	L* Before	L* After	a* Before	a* After	b* Before	b* After
A1	Dark Skin	92.9	1.8	41.1	41.6	12.6	12.8	11.8	10.0
B1	Light Skin	88.3	3.6	68.2	69.4	16.9	16.2	17.3	14.1
C1	Blue sky	98.1	1.2	52.5	53.3	-5.5	-6.3	-19.4	-18.9
D1	Foliage	94.9	1.8	45.7	46.3	-10.7	-10.8	19.9	18.2
E1	blue flower	94.8	2.1	57.5	58.7	8.4	7.1	-22.6	-21.3
F1	bluish green	84.4	5.2	73.7	74.4	-30.0	-28.6	1.5	-3.5
A1	orange	96.6	2.8	63.2	63.9	35.6	34.5	53.5	51.0
B2	purplish blue	95.9	2.4	42.1	43.0	8.0	6.2	-42.1	-40.7
C2	moderate red	96.1	2.4	52.2	52.9	44.5	44.4	14.3	12.0
D2	purple	100.0	0.4	34.6	35.0	21.3	21.2	-20.7	-20.9
E2	yellow green	93.8	4.3	75.0	75.8	-23.2	-23.3	55.4	51.2
F2	orange yellow	95.9	3.4	73.8	74.6	18.4	16.9	65.2	62.4
A3	blue	96.9	1.9	33.2	33.6	8.8	7.2	-42.9	-41.9
B3	green	94.4	3.1	56.7	57.4	-33.9	-33.9	29.9	26.8
C3	red	98.2	1.4	41.6	41.6	46.4	46.8	22.1	20.7
D3	yellow	96.1	3.6	82.1	82.9	3.1	1.9	77.9	74.6
E3	magenta	96.6	2.4	54.2	55.0	48.5	47.2	-15.0	-13.1
F3	cyan	100.0	0.6	54.1	54.6	-22.4	-22.7	-21.8	-21.8
A4	white	100.0	0.5	94.6	95.0	0.6	0.3	1.4	1.5
B4	neutral 8	99.7	0.7	82.5	82.9	-0.1	-0.5	0.4	0.7
C4	neutral 6.5	100.0	0.8	69.9	70.5	-0.8	-1.2	-0.1	0.2
D4	neutral 5	100.0	0.7	53.9	54.5	0.2	0.0	1.3	1.3
E4	neutral 3.5	92.9	1.3	39.3	39.9	0.0	0.0	-0.1	-1.2
F4	black	94.5	1.0	28.0	28.2	0.0	0.3	0.0	-1.0
A5	paper white	98.4	0.7	97.2	97.4	0.7	0.3	0.4	0.9
B5	Skin highlight L*=88	73.0	5.3	87.6	88.7	11.6	11.2	13.0	7.8
C5	Skin highlight L* =75	84.3	4.9	76.9	78.2	19.0	18.1	18.7	14.1
D5	Skin shadow L*=28	99.5	0.6	31.0	31.2	13.1	13.6	10.4	10.7
E5	Skin shadow L*=13	93.2	1.2	25.7	25.5	7.3	8.0	6.3	7.3
F5	Maximum Black	100.0	0.4	18.1	17.7	1.2	1.3	0.5	0.6

Summary Results	I* Color	I* tone	ΔE
Average Score for all patches	95.0	97.0	2.1
Worst 10% (3 lowest scoring patches)	80.5	93.2	5.1

50 Megalux hours

Epson Stylus Pro 3880, Epson OEM UltraChrome K3™ with Vivid Magenta, Hahnemuhle Photo Rag Ultrasmooth 308 gsm paper, no additional coating



Original Print Colors before light exposure

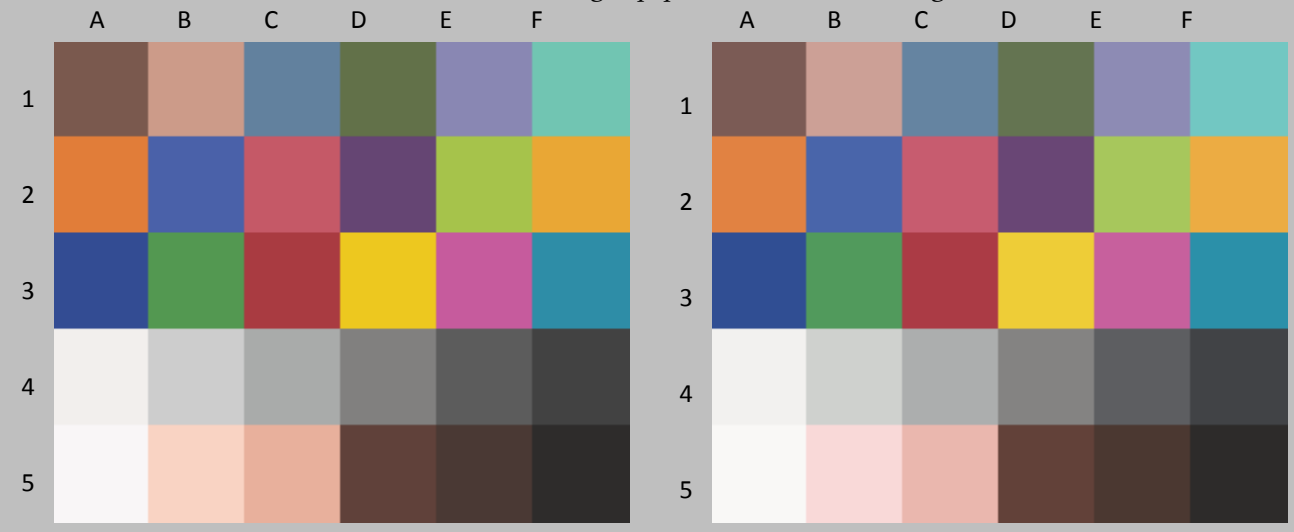
Colors After light exposure

Patch #	Description	I* Color	ΔE	L* Before	L* After	a* Before	a* After	b* Before	b* After
A1	Dark Skin	90.9	2.2	41.1	41.7	12.6	12.9	11.8	9.7
B1	Light Skin	84.9	4.4	68.2	69.6	16.9	16.2	17.3	13.2
C1	Blue sky	98.2	1.3	52.5	53.5	-5.5	-6.3	-19.4	-18.9
D1	Foliage	93.2	2.2	45.7	46.4	-10.7	-10.7	19.9	17.8
E1	blue flower	94.6	2.3	57.5	58.8	8.4	7.0	-22.6	-21.4
F1	bluish green	80.5	6.4	73.7	74.7	-30.0	-28.2	1.5	-4.6
A1	orange	95.6	3.4	63.2	64.0	35.6	34.4	53.5	50.4
B2	purplish blue	96.0	2.4	42.1	43.1	8.0	6.3	-42.1	-40.7
C2	moderate red	94.9	3.0	52.2	53.1	44.5	44.5	14.3	11.4
D2	purple	100.0	0.7	34.6	35.2	21.3	21.4	-20.7	-21.1
E2	yellow green	92.3	5.2	75.0	76.1	-23.2	-23.3	55.4	50.3
F2	orange yellow	94.9	4.1	73.8	74.9	18.4	16.7	65.2	61.6
A3	blue	96.8	2.0	33.2	33.8	8.8	7.1	-42.9	-42.0
B3	green	93.0	3.8	56.7	57.6	-33.9	-33.9	29.9	26.2
C3	red	97.5	1.8	41.6	41.8	46.4	46.9	22.1	20.4
D3	yellow	95.3	4.4	82.1	83.3	3.1	1.6	77.9	74.0
E3	magenta	96.8	2.4	54.2	55.3	48.5	47.3	-15.0	-13.2
F3	cyan	100.0	0.8	54.1	54.8	-22.4	-22.8	-21.8	-21.9
A4	white	100.0	0.8	94.6	95.3	0.6	0.3	1.4	1.2
B4	neutral 8	100.0	1.0	82.5	83.3	-0.1	-0.5	0.4	0.6
C4	neutral 6.5	100.0	1.1	69.9	70.8	-0.8	-1.2	-0.1	0.1
D4	neutral 5	100.0	0.9	53.9	54.8	0.2	0.0	1.3	1.2
E4	neutral 3.5	90.4	1.6	39.3	40.0	0.0	0.1	-0.1	-1.5
F4	black	92.1	1.3	28.0	28.3	0.0	0.4	0.0	-1.2
A5	paper white	100.0	0.7	97.2	97.8	0.7	0.3	0.4	0.7
B5	Skin highlight L*=88	66.1	6.6	87.6	89.1	11.6	11.3	13.0	6.6
C5	Skin highlight L* =75	80.0	6.1	76.9	78.6	19.0	18.1	18.7	13.0
D5	Skin shadow L*=28	98.6	0.8	31.0	31.3	13.1	13.8	10.4	10.7
E5	Skin shadow L*=13	91.6	1.3	25.7	25.6	7.3	8.2	6.3	7.3
F5	Maximum Black	100.0	0.4	18.1	17.7	1.2	1.2	0.5	0.7

Summary Results	I* Color	I* tone	ΔE
Average Score for all patches	93.8	96.6	2.5
Worst 10% (3 lowest scoring patches)	75.5	92.6	6.4

60 Megalux hours

Epson Stylus Pro 3880, Epson OEM UltraChrome K3™ with Vivid Magenta, Hahnemuhle Photo Rag Ultrasmooth 308 gsm paper, no additional coating



Original Print Colors before light exposure

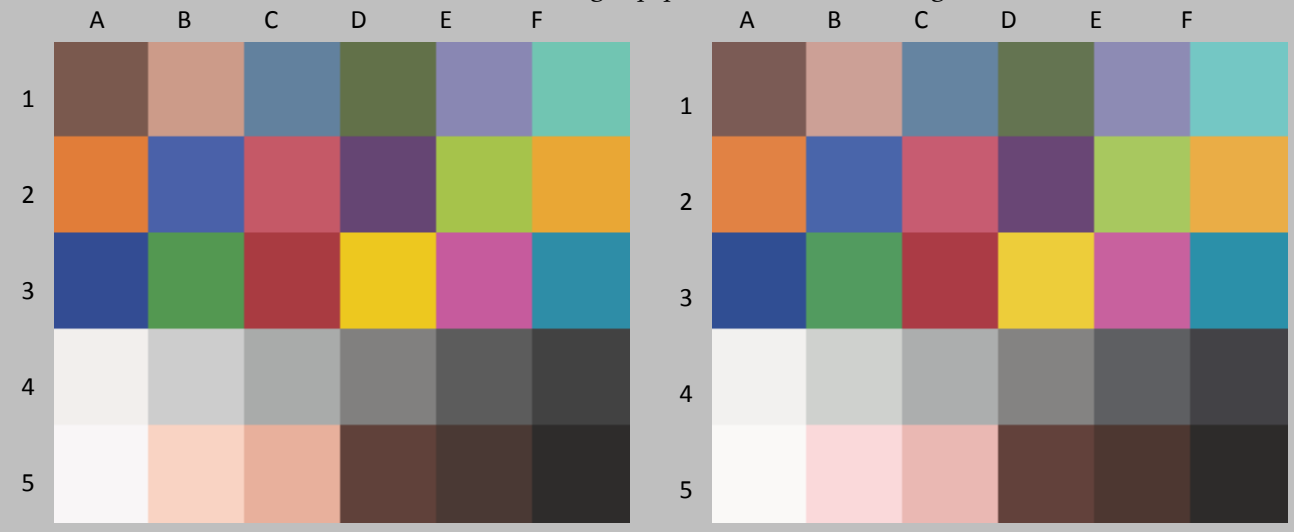
Colors After light exposure

				L*		a*		b*	
Patch #	Description	I* Color	ΔE	Before	After	Before	After	Before	After
A1	Dark Skin	87.8	2.7	41.1	41.8	12.6	13.2	11.8	9.2
B1	Light Skin	81.2	5.3	68.2	69.8	16.9	16.3	17.3	12.3
C1	Blue sky	98.0	1.4	52.5	53.6	-5.5	-6.3	-19.4	-18.9
D1	Foliage	90.8	2.7	45.7	46.5	-10.7	-10.6	19.9	17.3
E1	blue flower	94.1	2.5	57.5	59.0	8.4	7.0	-22.6	-21.2
F1	bluish green	76.0	7.8	73.7	74.8	-30.0	-27.8	1.5	-5.9
A1	orange	94.5	4.2	63.2	64.2	35.6	34.4	53.5	49.6
B2	purplish blue	95.6	2.6	42.1	43.2	8.0	6.1	-42.1	-40.6
C2	moderate red	93.5	3.7	52.2	53.3	44.5	44.7	14.3	10.7
D2	purple	99.6	0.9	34.6	35.3	21.3	21.5	-20.7	-21.3
E2	yellow green	90.2	6.5	75.0	76.3	-23.2	-23.3	55.4	49.0
F2	orange yellow	93.5	5.1	73.8	75.1	18.4	16.5	65.2	60.7
A3	blue	96.6	2.1	33.2	33.8	8.8	7.0	-42.9	-41.9
B3	green	91.0	4.7	56.7	57.8	-33.9	-33.8	29.9	25.3
C3	red	96.8	2.1	41.6	41.8	46.4	47.1	22.1	20.1
D3	yellow	94.0	5.3	82.1	83.4	3.1	1.4	77.9	73.1
E3	magenta	96.5	2.6	54.2	55.5	48.5	47.3	-15.0	-13.0
F3	cyan	100.0	0.8	54.1	54.9	-22.4	-22.7	-21.8	-21.9
A4	white	100.0	0.9	94.6	95.4	0.6	0.3	1.4	1.1
B4	neutral 8	99.9	1.1	82.5	83.4	-0.1	-0.6	0.4	0.6
C4	neutral 6.5	99.9	1.2	69.9	70.9	-0.8	-1.2	-0.1	0.2
D4	neutral 5	100.0	1.0	53.9	54.9	0.2	0.0	1.3	1.2
E4	neutral 3.5	86.7	2.0	39.3	40.2	0.0	0.2	-0.1	-1.8
F4	black	88.2	1.7	28.0	28.3	0.0	0.5	0.0	-1.6
A5	paper white	99.7	0.8	97.2	97.8	0.7	0.2	0.4	0.7
B5	Skin highlight L*=88	59.0	7.8	87.6	89.3	11.6	11.4	13.0	5.3
C5	Skin highlight L* =75	74.9	7.5	76.9	78.8	19.0	18.3	18.7	11.6
D5	Skin shadow L*=28	97.9	0.9	31.0	31.3	13.1	14.0	10.4	10.5
E5	Skin shadow L*=13	88.8	1.6	25.7	25.5	7.3	8.3	6.3	7.5
F5	Maximum Black	100.0	0.5	18.1	17.6	1.2	1.3	0.5	0.7

Summary Results	I* Color	I* tone	ΔE
Average Score for all patches	92.2	96.1	3.0
Worst 10% (3 lowest scoring patches)	70.0	91.6	7.7

70 Megalux hours

Epson Stylus Pro 3880, Epson OEM UltraChrome K3™ with Vivid Magenta, Hahnemuhle Photo Rag Ultrasmooth 308 gsm paper, no additional coating



Original Print Colors before light exposure

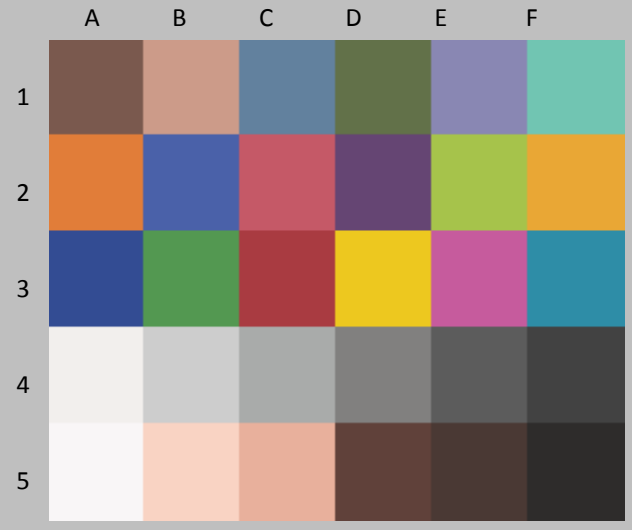
Colors After light exposure

				L*		a*		b*	
Patch #	Description	I* Color	ΔE	Before	After	Before	After	Before	After
A1	Dark Skin	84.9	3.2	41.1	41.9	12.6	13.2	11.8	8.7
B1	Light Skin	77.9	6.1	68.2	70.0	16.9	16.3	17.3	11.5
C1	Blue sky	97.7	1.5	52.5	53.7	-5.5	-6.3	-19.4	-18.8
D1	Foliage	88.8	3.2	45.7	46.6	-10.7	-10.6	19.9	16.9
E1	blue flower	93.8	2.6	57.5	59.1	8.4	7.0	-22.6	-21.2
F1	bluish green	72.3	8.9	73.7	74.9	-30.0	-27.4	1.5	-7.0
A1	orange	93.4	4.9	63.2	64.3	35.6	34.4	53.5	48.9
B2	purplish blue	95.5	2.7	42.1	43.3	8.0	6.1	-42.1	-40.6
C2	moderate red	92.3	4.2	52.2	53.4	44.5	44.8	14.3	10.2
D2	purple	98.9	1.1	34.6	35.3	21.3	21.6	-20.7	-21.5
E2	yellow green	88.1	7.8	75.0	76.4	-23.2	-23.3	55.4	47.8
F2	orange yellow	92.2	6.0	73.8	75.3	18.4	16.4	65.2	59.8
A3	blue	96.5	2.1	33.2	33.9	8.8	6.9	-42.9	-42.0
B3	green	89.2	5.5	56.7	57.9	-33.9	-33.8	29.9	24.5
C3	red	96.2	2.5	41.6	41.9	46.4	47.4	22.1	19.8
D3	yellow	92.8	6.3	82.1	83.6	3.1	1.3	77.9	72.1
E3	magenta	96.2	2.8	54.2	55.6	48.5	47.3	-15.0	-12.9
F3	cyan	100.0	0.9	54.1	54.9	-22.4	-22.7	-21.8	-22.0
A4	white	100.0	0.9	94.6	95.4	0.6	0.3	1.4	1.0
B4	neutral 8	99.7	1.1	82.5	83.4	-0.1	-0.6	0.4	0.6
C4	neutral 6.5	99.7	1.3	69.9	71.0	-0.8	-1.2	-0.1	0.2
D4	neutral 5	100.0	1.1	53.9	54.9	0.2	0.0	1.3	1.2
E4	neutral 3.5	83.0	2.3	39.3	40.2	0.0	0.3	-0.1	-2.2
F4	black	84.3	2.0	28.0	28.3	0.0	0.6	0.0	-1.9
A5	paper white	99.5	0.9	97.2	97.9	0.7	0.2	0.4	0.7
B5	Skin highlight L*=88	53.2	8.8	87.6	89.4	11.6	11.6	13.0	4.3
C5	Skin highlight L* =75	70.5	8.6	76.9	79.0	19.0	18.4	18.7	10.4
D5	Skin shadow L*=28	97.1	1.0	31.0	31.3	13.1	14.1	10.4	10.4
E5	Skin shadow L*=13	87.5	1.7	25.7	25.4	7.3	8.5	6.3	7.6
F5	Maximum Black	100.0	0.6	18.1	17.5	1.2	1.3	0.5	0.6

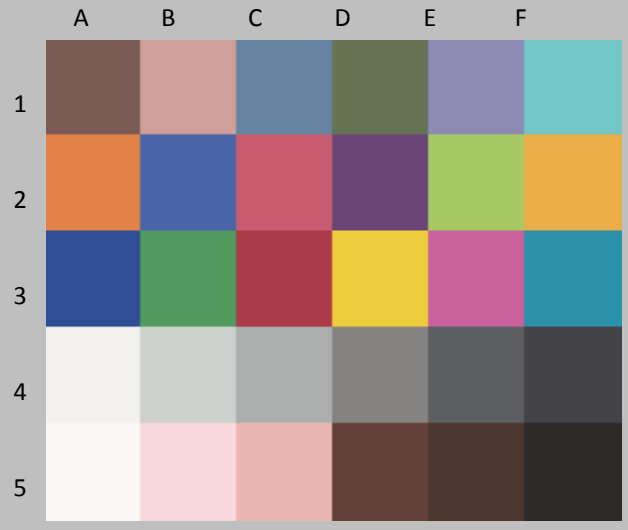
Summary Results	I* Color	I* tone	ΔE
Average Score for all patches	90.7	95.7	3.4
Worst 10% (3 lowest scoring patches)	65.3	90.8	8.8

80 Megalux hours

Epson Stylus Pro 3880, Epson OEM UltraChrome K3™ with Vivid Magenta, Hahnemuhle Photo Rag Ultrasmooth 308 gsm paper, no additional coating



Original Print Colors before light exposure



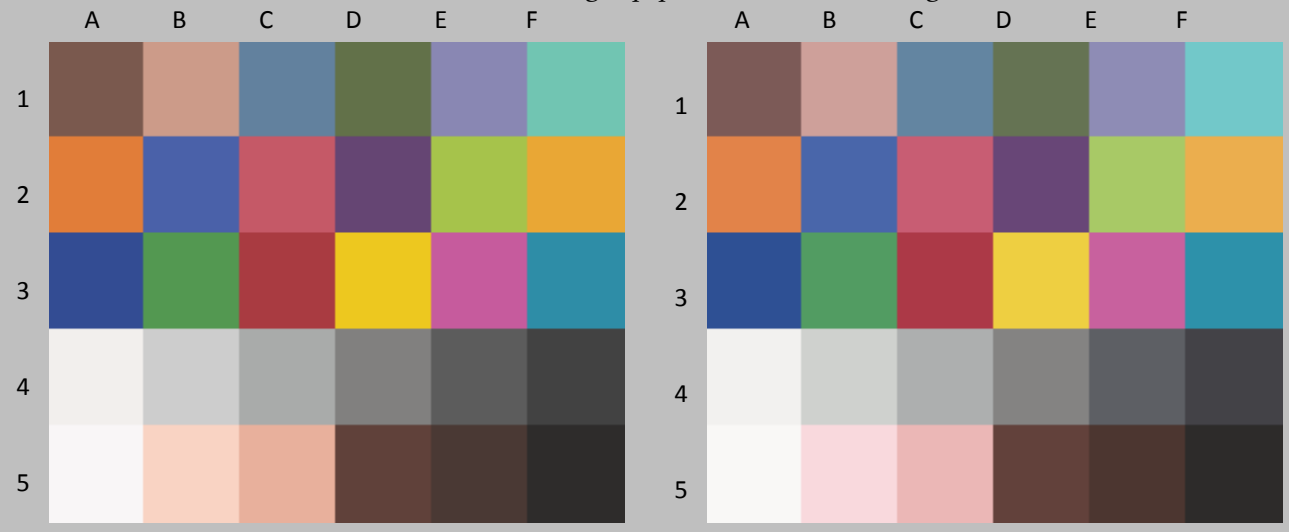
Colors After light exposure

				L*		a*		b*	
Patch #	Description	I* Color	ΔE	Before	After	Before	After	Before	After
A1	Dark Skin	81.7	3.7	41.1	41.9	12.6	13.3	11.8	8.2
B1	Light Skin	74.5	6.9	68.2	70.0	16.9	16.5	17.3	10.7
C1	Blue sky	96.4	1.7	52.5	53.6	-5.5	-6.5	-19.4	-18.6
D1	Foliage	86.3	3.7	45.7	46.6	-10.7	-10.4	19.9	16.3
E1	blue flower	92.0	3.0	57.5	59.2	8.4	6.8	-22.6	-20.7
F1	bluish green	68.2	10.1	73.7	74.9	-30.0	-27.0	1.5	-8.1
A1	orange	92.1	5.7	63.2	64.4	35.6	34.4	53.5	48.0
B2	purplish blue	94.4	3.1	42.1	43.2	8.0	5.7	-42.1	-40.3
C2	moderate red	91.3	4.7	52.2	53.3	44.5	45.1	14.3	9.7
D2	purple	98.9	1.0	34.6	35.2	21.3	21.5	-20.7	-21.5
E2	yellow green	85.9	9.1	75.0	76.4	-23.2	-23.1	55.4	46.5
F2	orange yellow	90.5	7.1	73.8	75.3	18.4	16.3	65.2	58.6
A3	blue	95.9	2.3	33.2	33.7	8.8	6.7	-42.9	-41.8
B3	green	87.1	6.4	56.7	57.8	-33.9	-33.8	29.9	23.6
C3	red	95.5	2.8	41.6	41.9	46.4	47.4	22.1	19.5
D3	yellow	91.1	7.6	82.1	83.6	3.1	1.2	77.9	70.8
E3	magenta	95.3	3.2	54.2	55.5	48.5	47.1	-15.0	-12.4
F3	cyan	100.0	0.9	54.1	54.9	-22.4	-22.8	-21.8	-21.8
A4	white	100.0	0.6	94.6	95.1	0.6	0.3	1.4	1.4
B4	neutral 8	96.8	1.1	82.5	83.3	-0.1	-0.6	0.4	1.0
C4	neutral 6.5	97.8	1.2	69.9	70.9	-0.8	-1.3	-0.1	0.4
D4	neutral 5	100.0	1.0	53.9	54.9	0.2	0.0	1.3	1.2
E4	neutral 3.5	79.9	2.6	39.3	40.1	0.0	0.3	-0.1	-2.5
F4	black	79.5	2.5	28.0	28.1	0.0	0.7	0.0	-2.4
A5	paper white	95.0	1.0	97.2	97.5	0.7	0.2	0.4	1.3
B5	Skin highlight L*=88	46.6	9.9	87.6	89.2	11.6	12.0	13.0	3.2
C5	Skin highlight L* =75	65.6	9.9	76.9	79.0	19.0	18.6	18.7	9.1
D5	Skin shadow L*=28	95.6	1.2	31.0	31.2	13.1	14.3	10.4	10.3
E5	Skin shadow L*=13	86.7	1.9	25.7	25.2	7.3	8.6	6.3	7.6
F5	Maximum Black	100.0	0.7	18.1	17.4	1.2	1.3	0.5	0.6

Summary Results	I* Color	I* tone	ΔE
Average Score for all patches	88.7	95.4	3.9
Worst 10% (3 lowest scoring patches)	60.1	89.9	10.0

90 Megalux hours

Epson Stylus Pro 3880, Epson OEM UltraChrome K3™ with Vivid Magenta, Hahnemuhle Photo Rag Ultrasmooth 308 gsm paper, no additional coating



Original Print Colors before light exposure

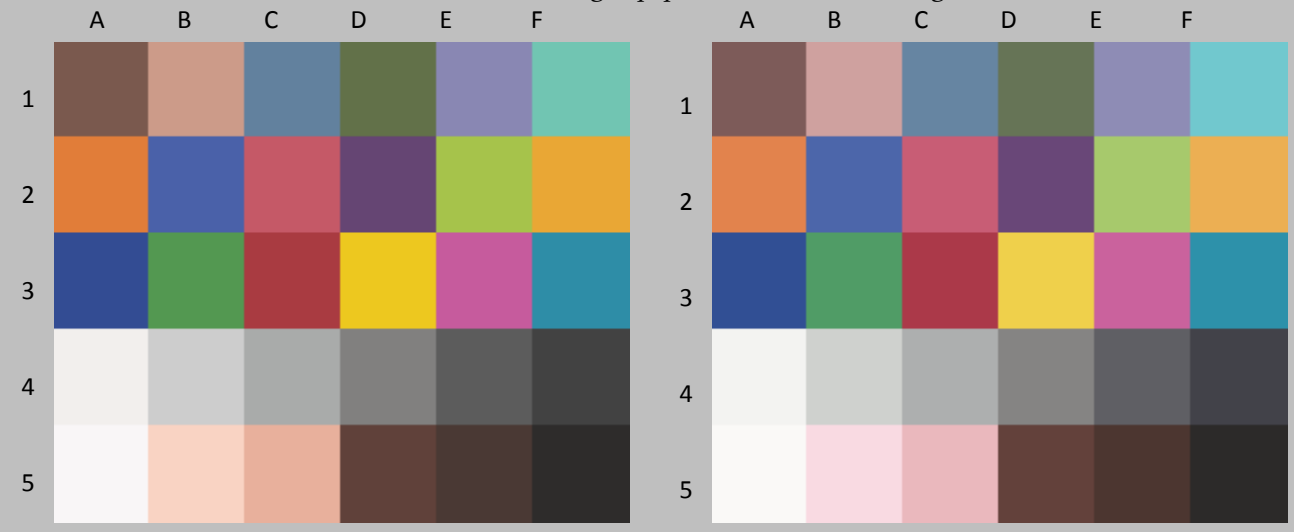
Colors After light exposure

				L*		a*		b*	
Patch #	Description	I* Color	ΔE	Before	After	Before	After	Before	After
A1	Dark Skin	79.0	4.2	41.1	42.0	12.6	13.6	11.8	7.8
B1	Light Skin	70.6	7.9	68.2	70.4	16.9	16.5	17.3	9.7
C1	Blue sky	95.6	2.0	52.5	53.9	-5.5	-6.7	-19.4	-18.6
D1	Foliage	85.1	4.0	45.7	46.8	-10.7	-10.4	19.9	16.0
E1	blue flower	91.7	3.2	57.5	59.5	8.4	6.6	-22.6	-20.8
F1	bluish green	65.4	11.0	73.7	75.3	-30.0	-26.7	1.5	-8.9
A1	orange	90.7	6.6	63.2	64.5	35.6	34.4	53.5	47.1
B2	purplish blue	93.8	3.5	42.1	43.6	8.0	5.4	-42.1	-40.3
C2	moderate red	89.4	5.6	52.2	53.6	44.5	45.0	14.3	8.8
D2	purple	97.3	1.5	34.6	35.4	21.3	21.8	-20.7	-21.9
E2	yellow green	84.0	10.3	75.0	76.8	-23.2	-23.0	55.4	45.3
F2	orange yellow	88.8	8.3	73.8	75.5	18.4	16.2	65.2	57.5
A3	blue	94.8	2.9	33.2	34.0	8.8	6.2	-42.9	-41.8
B3	green	86.0	7.0	56.7	58.2	-33.9	-33.8	29.9	23.0
C3	red	94.2	3.5	41.6	41.9	46.4	47.7	22.1	18.9
D3	yellow	90.1	8.4	82.1	83.9	3.1	1.1	77.9	70.0
E3	magenta	95.9	3.0	54.2	55.8	48.5	47.1	-15.0	-12.8
F3	cyan	99.5	1.2	54.1	55.1	-22.4	-23.1	-21.8	-21.6
A4	white	100.0	0.9	94.6	95.4	0.6	0.4	1.4	1.1
B4	neutral 8	97.6	1.3	82.5	83.6	-0.1	-0.6	0.4	0.9
C4	neutral 6.5	97.4	1.5	69.9	71.2	-0.8	-1.3	-0.1	0.5
D4	neutral 5	100.0	1.2	53.9	55.1	0.2	0.0	1.3	1.3
E4	neutral 3.5	78.0	2.8	39.3	40.4	0.0	0.2	-0.1	-2.6
F4	black	77.5	2.7	28.0	28.4	0.0	0.8	0.0	-2.6
A5	paper white	98.0	0.9	97.2	97.8	0.7	0.2	0.4	0.9
B5	Skin highlight L*=88	40.9	11.0	87.6	89.6	11.6	11.9	13.0	2.2
C5	Skin highlight L* =75	61.2	11.1	76.9	79.3	19.0	18.6	18.7	7.9
D5	Skin shadow L*=28	94.8	1.4	31.0	31.4	13.1	14.5	10.4	10.3
E5	Skin shadow L*=13	83.9	2.1	25.7	25.3	7.3	8.8	6.3	7.7
F5	Maximum Black	100.0	0.7	18.1	17.5	1.2	1.3	0.5	0.7

Summary Results	I* Color	I* tone	ΔE
Average Score for all patches	87.4	94.5	4.4
Worst 10% (3 lowest scoring patches)	55.8	89.0	11.0

100 Megalux hours

Epson Stylus Pro 3880, Epson OEM UltraChrome K3™ with Vivid Magenta, Hahnemuhle Photo Rag Ultrasmooth 308 gsm paper, no additional coating



Original Print Colors before light exposure

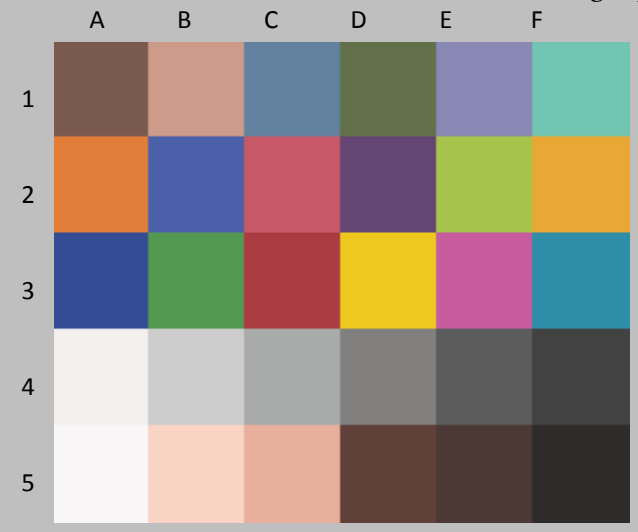
Colors After light exposure

				L*		a*		b*	
Patch #	Description	I* Color	ΔE	Before	After	Before	After	Before	After
A1	Dark Skin	72.2	5.4	41.1	42.2	12.6	13.7	11.8	6.6
B1	Light Skin	62.9	9.8	68.2	70.6	16.9	16.7	17.3	7.8
C1	Blue sky	96.8	1.9	52.5	54.0	-5.5	-6.5	-19.4	-18.7
D1	Foliage	78.9	5.4	45.7	46.9	-10.7	-10.2	19.9	14.6
E1	blue flower	91.8	3.3	57.5	59.7	8.4	6.7	-22.6	-20.8
F1	bluish green	55.3	14.0	73.7	75.4	-30.0	-25.6	1.5	-11.7
A1	orange	87.5	8.7	63.2	64.9	35.6	34.2	53.5	45.0
B2	purplish blue	94.4	3.3	42.1	43.6	8.0	5.7	-42.1	-40.3
C2	moderate red	87.1	6.7	52.2	53.7	44.5	45.4	14.3	7.8
D2	purple	96.9	1.7	34.6	35.5	21.3	21.8	-20.7	-22.0
E2	yellow green	78.5	13.6	75.0	77.0	-23.2	-22.9	55.4	42.0
F2	orange yellow	85.2	10.8	73.8	75.9	18.4	15.9	65.2	55.0
A3	blue	95.8	2.5	33.2	34.0	8.8	6.6	-42.9	-42.0
B3	green	80.5	9.5	56.7	58.4	-33.9	-33.5	29.9	20.6
C3	red	93.2	4.0	41.6	42.1	46.4	48.0	22.1	18.4
D3	yellow	86.4	11.3	82.1	84.2	3.1	0.7	77.9	67.1
E3	magenta	95.0	3.6	54.2	56.1	48.5	47.1	-15.0	-12.2
F3	cyan	100.0	1.1	54.1	55.2	-22.4	-22.7	-21.8	-22.1
A4	white	98.4	1.1	94.6	95.5	0.6	0.3	1.4	0.8
B4	neutral 8	98.5	1.4	82.5	83.7	-0.1	-0.7	0.4	0.7
C4	neutral 6.5	98.4	1.6	69.9	71.3	-0.8	-1.3	-0.1	0.3
D4	neutral 5	100.0	1.4	53.9	55.2	0.2	0.1	1.3	1.1
E4	neutral 3.5	69.0	3.6	39.3	40.5	0.0	0.6	-0.1	-3.5
F4	black	66.9	3.7	28.0	28.3	0.0	1.1	0.0	-3.5
A5	paper white	99.0	0.9	97.2	97.9	0.7	0.2	0.4	0.7
B5	Skin highlight L*=88	29.8	12.9	87.6	89.8	11.6	12.2	13.0	0.3
C5	Skin highlight L* =75	51.0	13.9	76.9	79.6	19.0	19.0	18.7	5.1
D5	Skin shadow L*=28	92.3	1.8	31.0	31.3	13.1	14.8	10.4	9.7
E5	Skin shadow L*=13	80.8	2.4	25.7	25.1	7.3	9.1	6.3	7.9
F5	Maximum Black	100.0	0.8	18.1	17.3	1.2	1.4	0.5	0.7

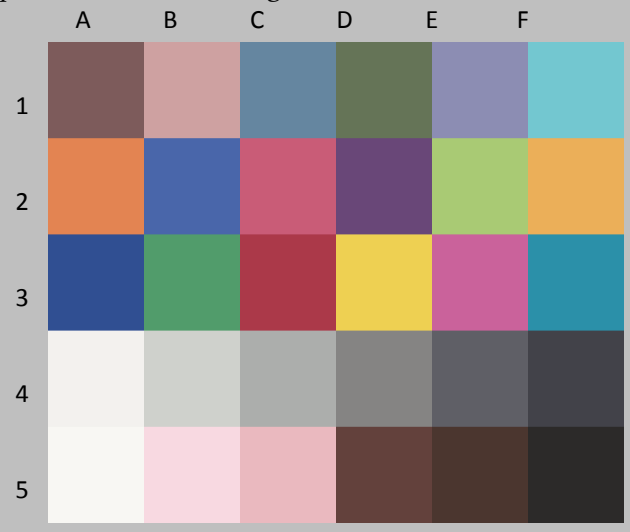
Summary Results	I* Color	I* tone	ΔE
Average Score for all patches	84.1	93.9	5.4
Worst 10% (3 lowest scoring patches)	45.4	87.5	13.8

120 Megalux hours

Epson Stylus Pro 3880, Epson OEM UltraChrome K3™ with Vivid Magenta, Hahnemuhle Photo Rag Ultrasmooth 308 gsm paper, no additional coating



Original Print Colors before light exposure



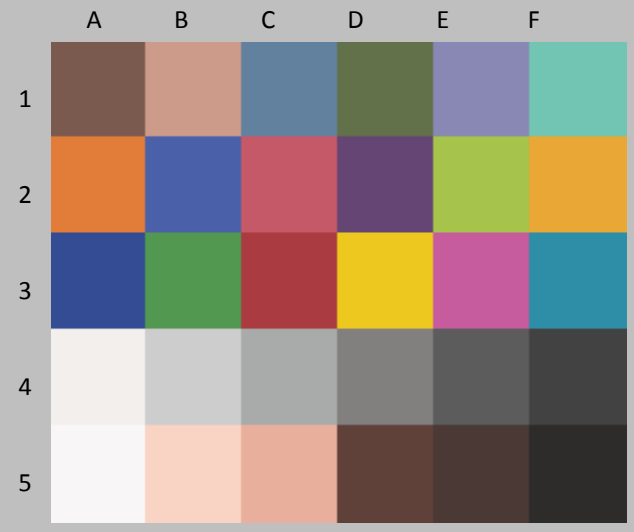
Colors After light exposure

				L*		a*		b*	
Patch #	Description	I* Color	ΔE	Before	After	Before	After	Before	After
A1	Dark Skin	66.4	6.4	41.1	42.3	12.6	14.0	11.8	5.6
B1	Light Skin	57.7	11.0	68.2	70.7	16.9	17.0	17.3	6.6
C1	Blue sky	94.2	2.2	52.5	53.9	-5.5	-6.7	-19.4	-18.2
D1	Foliage	73.9	6.5	45.7	47.0	-10.7	-10.1	19.9	13.5
E1	blue flower	88.1	4.0	57.5	59.7	8.4	6.5	-22.6	-19.8
F1	bluish green	49.9	15.6	73.7	75.3	-30.0	-24.8	1.5	-13.2
A1	orange	84.0	10.9	63.2	65.0	35.6	34.2	53.5	42.8
B2	purplish blue	92.5	4.0	42.1	43.5	8.0	5.2	-42.1	-39.6
C2	moderate red	85.1	7.6	52.2	53.8	44.5	45.6	14.3	6.9
D2	purple	97.0	1.7	34.6	35.5	21.3	21.9	-20.7	-22.0
E2	yellow green	72.8	17.0	75.0	77.1	-23.2	-22.3	55.4	38.6
F2	orange yellow	80.8	13.7	73.8	76.1	18.4	15.8	65.2	52.0
A3	blue	94.4	3.1	33.2	34.0	8.8	6.2	-42.9	-41.4
B3	green	75.6	11.7	56.7	58.5	-33.9	-33.1	29.9	18.4
C3	red	91.7	4.8	41.6	42.1	46.4	48.4	22.1	17.7
D3	yellow	82.2	14.5	82.1	84.2	3.1	0.8	77.9	63.8
E3	magenta	93.0	4.5	54.2	56.0	48.5	47.0	-15.0	-11.2
F3	cyan	99.8	1.1	54.1	55.1	-22.4	-22.9	-21.8	-21.5
A4	white	97.7	0.9	94.6	95.1	0.6	0.3	1.4	2.0
B4	neutral 8	91.0	1.7	82.5	83.4	-0.1	-0.7	0.4	1.6
C4	neutral 6.5	93.3	1.7	69.9	71.2	-0.8	-1.4	-0.1	0.9
D4	neutral 5	100.0	1.3	53.9	55.2	0.2	0.0	1.3	1.3
E4	neutral 3.5	63.1	4.2	39.3	40.5	0.0	0.7	-0.1	-4.0
F4	black	58.1	4.5	28.0	28.2	0.0	1.4	0.0	-4.3
A5	paper white	86.4	1.8	97.2	97.4	0.7	0.1	0.4	2.1
B5	Skin highlight L*=88	28.8	13.1	87.6	89.5	11.6	12.3	13.0	0.1
C5	Skin highlight L* =75	45.1	15.4	76.9	79.6	19.0	19.4	18.7	3.6
D5	Skin shadow L*=28	89.1	2.3	31.0	31.3	13.1	15.1	10.4	9.2
E5	Skin shadow L*=13	77.9	2.8	25.7	24.9	7.3	9.4	6.3	7.9
F5	Maximum Black	100.0	1.0	18.1	17.2	1.2	1.4	0.5	0.6

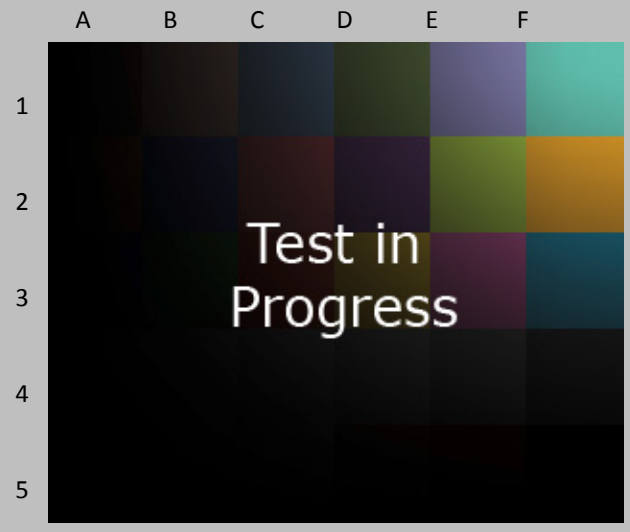
Summary Results	I* Color	I* tone	ΔE
Average Score for all patches	80.3	93.5	6.4
Worst 10% (3 lowest scoring patches)	41.2	86.5	16.0

140 Megalux hours

The 200 Megalux hour Update will be posted on approximately JULY 15, 2016.



Original Print Colors before light exposure



Colors After light exposure

Patch #	Description	I* Color	ΔE	L* Before	L* After	a* Before	a* After	b* Before	b* After
A1	Dark Skin			41.1		12.6		11.8	
B1	Light Skin			68.2		16.9		17.3	
C1	Blue sky			52.5		-5.5		-19.4	
D1	Foliage			45.7		-10.7		19.9	
E1	blue flower			57.5		8.4		-22.6	
F1	bluish green			73.7		-30.0		1.5	
A1	orange			63.2		35.6		53.5	
B2	purplish blue			42.1		8.0		-42.1	
C2	moderate red			52.2		44.5		14.3	
D2	purple			34.6		21.3		-20.7	
E2	yellow green			75.0		-23.2		55.4	
F2	orange yellow			73.8		18.4		65.2	
A3	blue			33.2		8.8		-42.9	
B3	green			56.7		-33.9		29.9	
C3	red			41.6		46.4		22.1	
D3	yellow			82.1		3.1		77.9	
E3	magenta			54.2		48.5		-15.0	
F3	cyan			54.1		-22.4		-21.8	
A4	white			94.6		0.6		1.4	
B4	neutral 8			82.5		-0.1		0.4	
C4	neutral 6.5			69.9		-0.8		-0.1	
D4	neutral 5			53.9		0.2		1.3	
E4	neutral 3.5			39.3		0.0		-0.1	
F4	black			28.0		0.0		0.0	
A5	paper white			97.2		0.7		0.4	
B5	Skin highlight L*=88			87.6		11.6		13.0	
C5	Skin highlight L* =75			76.9		19.0		18.7	
D5	Skin shadow L*=28			31.0		13.1		10.4	
E5	Skin shadow L*=13			25.7		7.3		6.3	
F5	Maximum Black			18.1		1.2		0.5	

Summary Results	I* Color	I* tone	ΔE
Average Score for all patches			
Worst 10% (3 lowest scoring patches)			

200 Megalux hours