Aardenburg
144

IMAGING & ARCHIVES

Tested System:
ID#:204

Printer: Epson Stylus Pro 3880

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

Media: Kernow Coatings Ltd – Tintagel 140gsm 65/35 Polyester/Cotton

Coating(s): no additional coating

Sample #: AaI_20100913_SN015

Testing Status: 160 Megalux hours total light exposure
Testing Is ongoing, next update on approximately OCT 05, 2014

Conservation Display Rating (CDR)

Lower limit: 35 Megalux hours (for weakest 10% of the color patches)
Upper limit: 105 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.

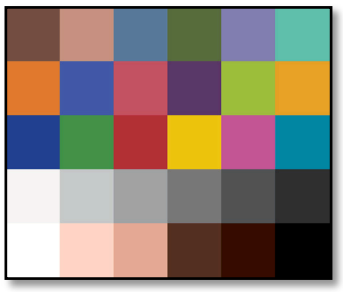
http://www.aardenburg-imaging.com

Aardenburg Imaging & Archives

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"											
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	**11.4**	**114**	**228**	**342**	**457**	**571**	**685**	**799**	**913**	**1027**	**1142**
50 Lux 12 hours per day	"Museum Standard" display condition	**4.6**	**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).	**1.9**	**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.	**1.0**	**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.	**0.5**	**5**	**10**	**15**	**20**	**25**	**30**	**35**	**41**	**46**	**51**

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 the light exposure test 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 print display 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 humidity cycling can cause physical cracks and/or flaking, etc. Handling damage such as scratching, abrasion, tears and creases, and catastrophic damage by smoke, fire, flood, etc., also degrade print quality over time. Thus, as illumination levels are reduced other forms of degradation take on greater proportion of risk and may appear in shorter time intervals.

(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. For light fading claims regarding its newer 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 dose (at 75˚F/60%RH assumed temperature and humidity levels) used in conjunction with WIR's visually weighted densitometric endpoint criteria set V3.0 became a de facto industry standard during the first decade of the 21st century in the absence of a published International Standards Organization (ISO) test standard. However, the WIR V3.0 visual criteria set used to predict "easily noticeable fade" was designed for traditional 20th century silver–halide color photofinishing processes. It is not well suited to the evaluation of modern digital media. Nevertheless, the WIR assumed daily light exposure dose is one of many commonly encountered light exposure conditions existing within the range of real world picture display locations.

Sample Description

Sample # **AaI_20100913_SN015** **Batch #:** I1a
Printer: Epson Stylus Pro 3880
Ink: Epson OEM UltraChrome K3™ with Vivid Magenta
Media: Kernow Coatings Ltd – Tintagel 140gsm 65/35 Polyester/Cotton
Coating(s): no additional coating

Test Print Prepared by: AaI&A
Printed: September 16, 2010
Initial Print colors measured September 19, 2010
Test Started: September 19, 2010

Test Image: AaI_StandardColorSet(v2)forSRGB.tif
RIP?Driver settings: CS5/InDesign, Epson OEM driver ver 6.6./Mac OS 10.6.4, 2880dpi, high speed = 0n, finest details, no color adjustment (NCA)

Media Setting Watercolor Radiant White

Profile: AaI_Ep3880_Kernow Tintagel.icc **Rendering** perceptual
Profile type: custom

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

Optical Brighteners Present? *yes (high)*	**L***		**a***		**b***	
Media Whitepoint Color	UV inc	UV exc	UV inc	UV exc	UV inc	UV exc
	93.7	93.7	1.6	-0.2	-6.0	-0.1
	UV-inc/UV-exc ΔL*, Δa*, Δb* respectively					
	0.0		1.8		5.9	
	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)
	26.8	1.4	2.2	1.30

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: 11254 Lux
Average Temperature: 23.3˚C over full test duration, 24.7˚C during light exposure.
Average Relative humidity: 56.7%RH over full test duration, 56.5%RH during light exposure.

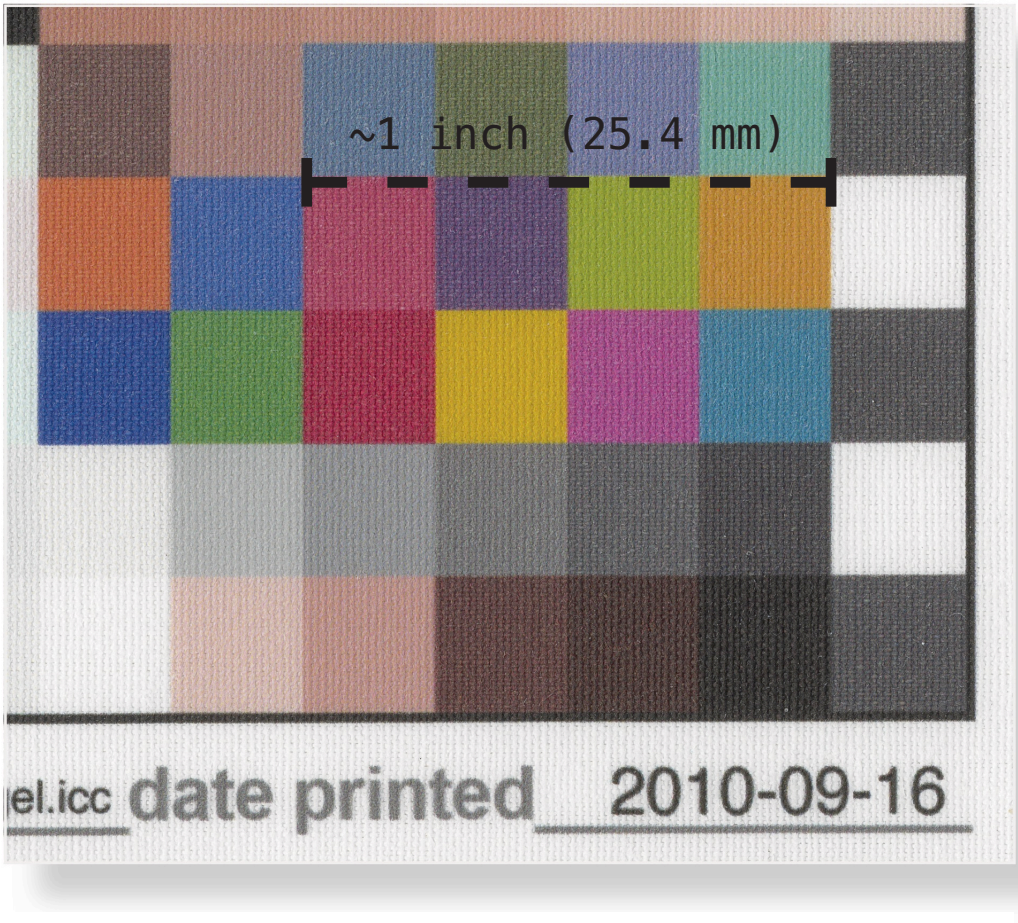
Description by Kernow Coatings Ltd for Tintagel

Tintagel is a 140gsm 65/35 Polyester/Cotton mix, cleaned and bleached, but with a degree of optical brightener. It has a higher white-point than the other fabrics in the range, making it particularly suitable for photographic rendering and monochromatic images.

Our expectation is that major users will be professional photographers and art/craft specialists wanting a pliable, lightweight fabric for many uses, including quilt art, light blinds, dividing panels, backlit photography and board-laminated photo-textiles. The combination of density and contrast available by direct aqueous inkjet printing make this a uniquely versatile material in combination with low-cost aqueous inkjet printers.

Notes/Comments:

The Epson Stylus Pro 3880 was used by AaI&A staff to prepare this test sample. It does not have a roll feed option and would therefore not be a typical choice for use with the Kernow Coating Ltd line of fabrics, whereas the other printers in the popular x880 series of Epson professional printers (Epson stylus pro 4880, 7880, and 9880) are ideal for this type of material. Because the Epson K3VM ink set is common to all x880 series of printers these test results should fairly represent the type of lightfastness that can be achieved using any Epson x880 series printer/OEM driver configurations.



Surface texture of Kernow Coatings Ltd – Tintagel 140gsm 65/35 Polyester/Cotton. Printed with Epson Stylus Pro 3880 and Epson OEM UltraChrome K3™ with Vivid Magenta ink set.

2011-03-24: Kernow Coatings Ltd markets the Tintagel 140gsm 65/35 Polyester/Cotton and other inkjet printable fabrics under the tradename: "The Kernewek Range of Fine Fabrics".

The website is:: http://kernewekfinefabrics.com.

Contact information is:

Kernow Coatings Ltd.
Kernick Rd., Penryn, Cornwall TR10 9DQ
Phone: +44(0)1326 373147
Fax: +44(0)1326 376614
e-mail: kc@sensitisers.com

Notes/Comments:

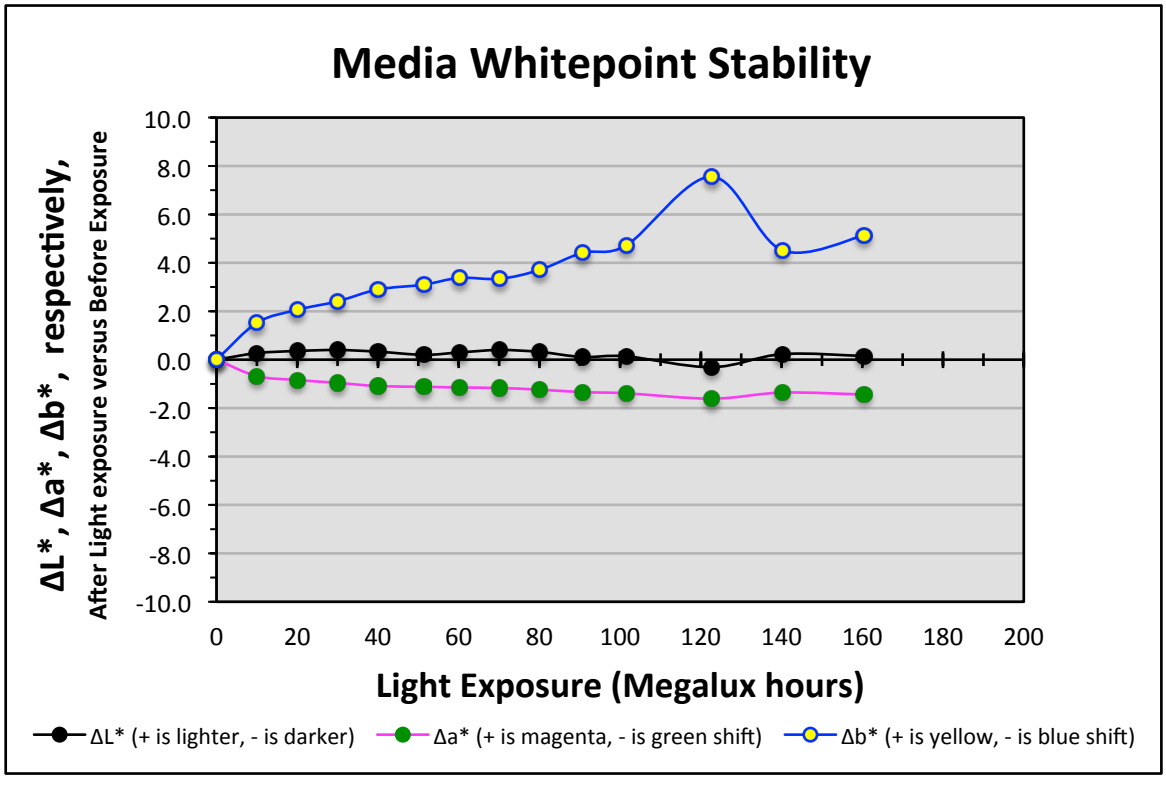
In the United States, the Kernewek line of fine fabrics is available from:
FreeStyle Photographic Supplies, Inc
800 292-6137
http://www.FreestylePhoto.biz
However, Freestyle has renamed the Kernewek line of Fine Fabrics as the "Arista Americana Collection". The renaming key is as follows:

Kernewek	**Arista Americana**
St Ive's 400gsm =	Monument Valley 400gsm
Newlyn 260gsm =	Yosemite 260gsm
Tresco Design 160gsm =	Rushmore 160gsm
Marazion 260gsm =	Sedona 260gsm
Tintagel 140gsm =	Yellowstone 140gsm

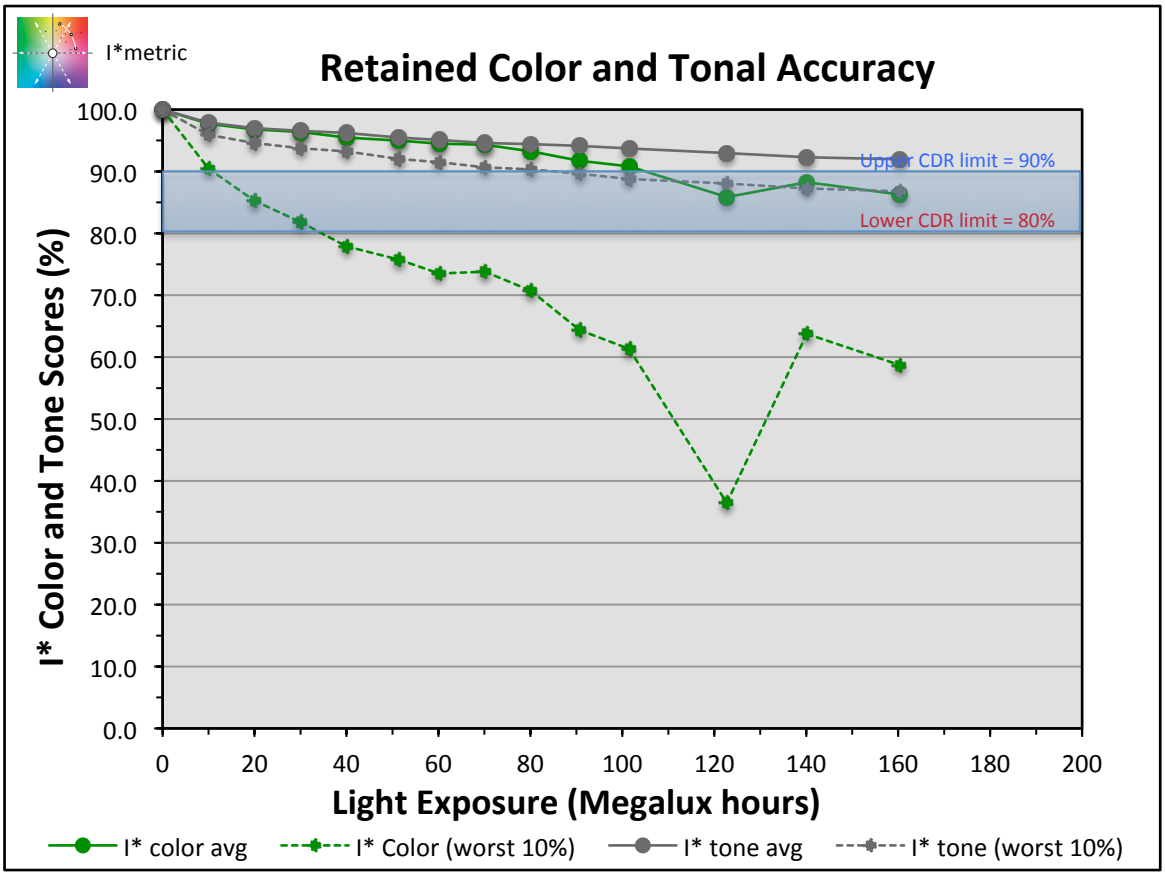
MHMG 2014-01-19: The dip in the graphs at 120 Mluxhr and recovery at 140Mluxhrs was not a measurement error. The 120 Mluxhr measurements were delayed a few weeks after removing the sample from the light fade unit. This temporary "dark storage" period caused a phenomenon I call "light-induced low intensity staining (LILIS). Additional media yellowing occurs which can be partially or fully reversed with more light exposure of sufficient intensity, but the stain will return again with further storage in low intensity or dark storage environments. The LILIS behavior appears to be related to optical brighteners in the media, but more research is needed.

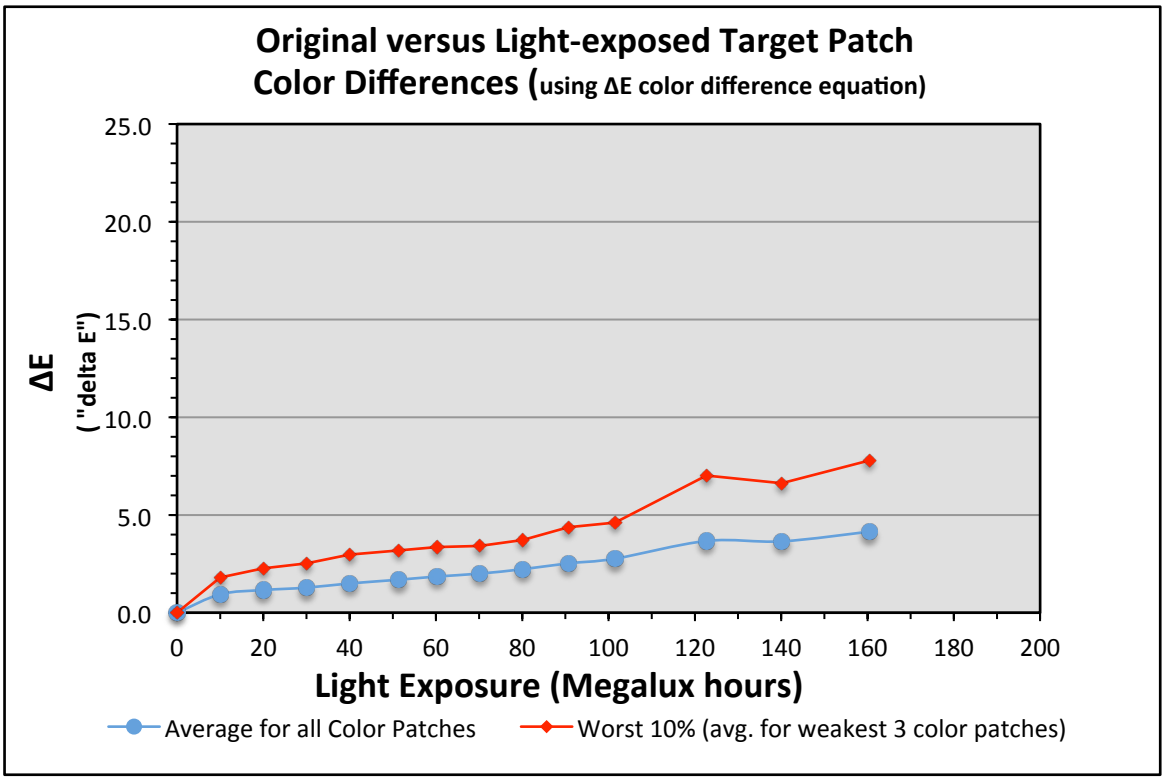
Graphs:

Epson Stylus Pro 3880, Epson OEM UltraChrome K3™ with Vivid Magenta, Kernow Coatings Ltd – Tintagel 140gsm 65/35 Polyester/Cotton, no additional coating



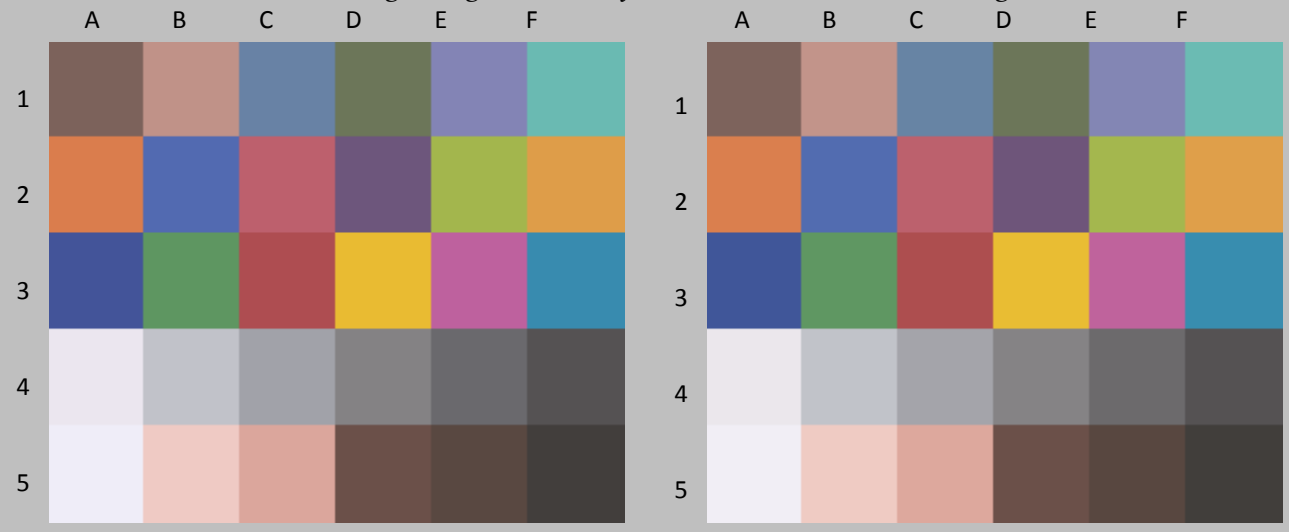
Epson Stylus Pro 3880, Epson OEM UltraChrome K3™ with Vivid Magenta, Kernow Coatings Ltd – Tintagel 140gsm 65/35 Polyester/Cotton, no additional coating





Values:

Epson Stylus Pro 3880, Epson OEM UltraChrome K3™ with Vivid Magenta, Kernow Coatings Ltd – Tintagel 140gsm 65/35 Polyester/Cotton, no additional coating



Original Print Colors before light exposure

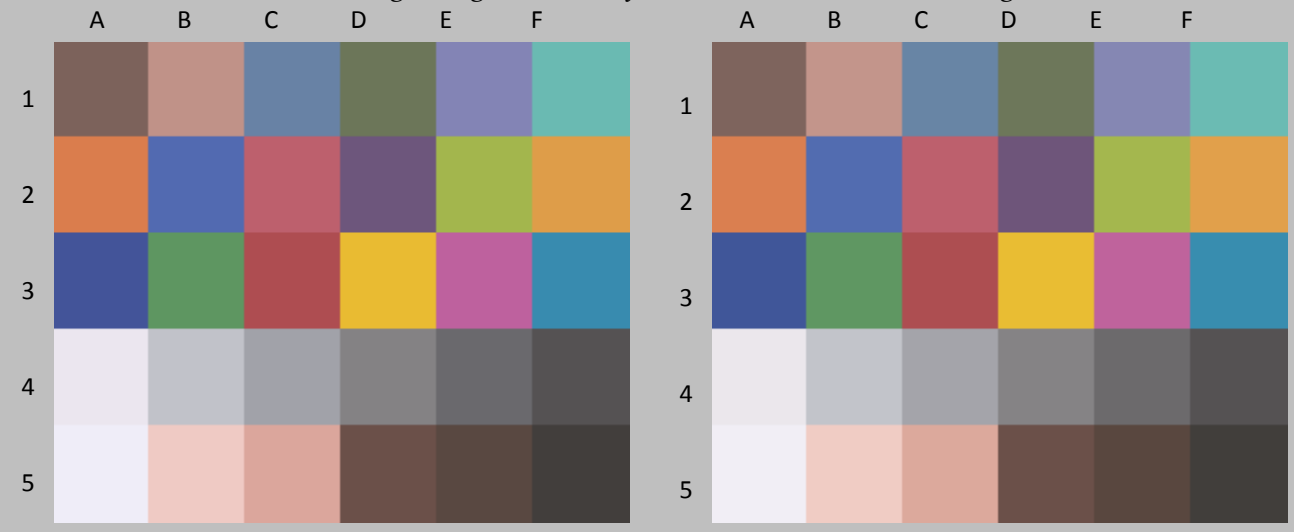
Colors After light exposure

Patch #	Description	I* Color	ΔE	L* Before	L* After	a* Before	a* After	b* Before	b* After
A1	Dark Skin	100.0	0.4	44.1	44.4	10.0	10.0	8.0	8.3
B1	Light Skin	99.3	0.9	64.9	65.6	17.0	16.5	11.9	12.4
C1	Blue sky	97.5	1.2	53.5	53.9	-3.4	-4.0	-21.8	-21.0
D1	Foliage	100.0	0.2	48.2	48.4	-8.3	-8.4	14.5	14.6
E1	blue flower	96.9	1.4	56.5	57.0	7.9	7.2	-25.7	-24.6
F1	bluish green	100.0	0.6	70.0	70.5	-27.3	-27.5	-4.5	-4.2
A1	orange	100.0	0.5	62.5	62.8	33.6	33.2	41.5	41.5
B2	purplish blue	96.9	1.8	45.5	45.8	7.2	5.9	-41.3	-40.0
C2	moderate red	100.0	0.5	52.4	52.6	38.8	38.5	10.8	11.2
D2	purple	96.8	1.3	39.9	40.1	16.0	15.5	-17.8	-16.6
E2	yellow green	100.0	0.4	70.9	71.3	-17.7	-17.7	49.8	49.9
F2	orange yellow	99.9	0.7	70.3	70.7	19.4	18.9	52.7	52.9
A3	blue	97.1	1.7	37.0	37.1	9.6	8.4	-41.4	-40.2
B3	green	100.0	0.3	57.3	57.6	-28.3	-28.3	21.9	21.8
C3	red	100.0	0.5	46.0	45.8	40.6	40.3	18.3	18.6
D3	yellow	100.0	0.6	78.4	78.8	7.7	7.3	69.8	70.0
E3	magenta	97.1	1.8	54.3	54.5	44.0	43.3	-15.6	-13.9
F3	cyan	98.5	1.0	54.0	54.4	-17.2	-17.9	-26.6	-25.9
A4	white	91.4	1.4	91.7	92.0	2.5	2.0	-3.6	-2.4
B4	neutral 8	92.3	1.4	78.5	79.0	0.9	0.4	-4.0	-2.9
C4	neutral 6.5	94.4	1.3	66.5	67.4	1.2	0.7	-4.0	-3.1
D4	neutral 5	96.6	0.9	54.4	54.8	0.9	0.6	-1.5	-0.7
E4	neutral 3.5	98.8	0.7	44.8	45.1	0.8	0.6	-1.8	-1.2
F4	black	100.0	0.4	35.3	35.5	0.9	0.8	-0.5	-0.1
A5	paper white	87.7	1.7	94.1	94.4	2.5	1.8	-4.9	-3.4
B5	Skin highlight L*=88	93.7	1.6	84.4	84.9	13.3	12.3	8.0	9.1
C5	Skin highlight L* =75	97.6	1.3	73.0	73.6	19.4	18.6	13.4	14.0
D5	Skin shadow L*=28	100.0	0.4	36.9	37.0	10.9	10.8	8.8	9.2
E5	Skin shadow L*=13	98.2	0.7	32.0	31.8	7.2	7.3	6.7	7.4
F5	Maximum Black	100.0	0.5	26.8	26.4	1.4	1.3	2.2	2.4

Summary Results	I* Color	I* tone	ΔE
Average Score for all patches	97.7	97.9	0.9
Worst 10% (3 lowest scoring patches)	90.5	95.9	1.8

10 Megalux hours

Epson Stylus Pro 3880, Epson OEM UltraChrome K3™ with Vivid Magenta, Kernow Coatings Ltd – Tintagel 140gsm 65/35 Polyester/Cotton, no additional coating



Original Print Colors before light exposure

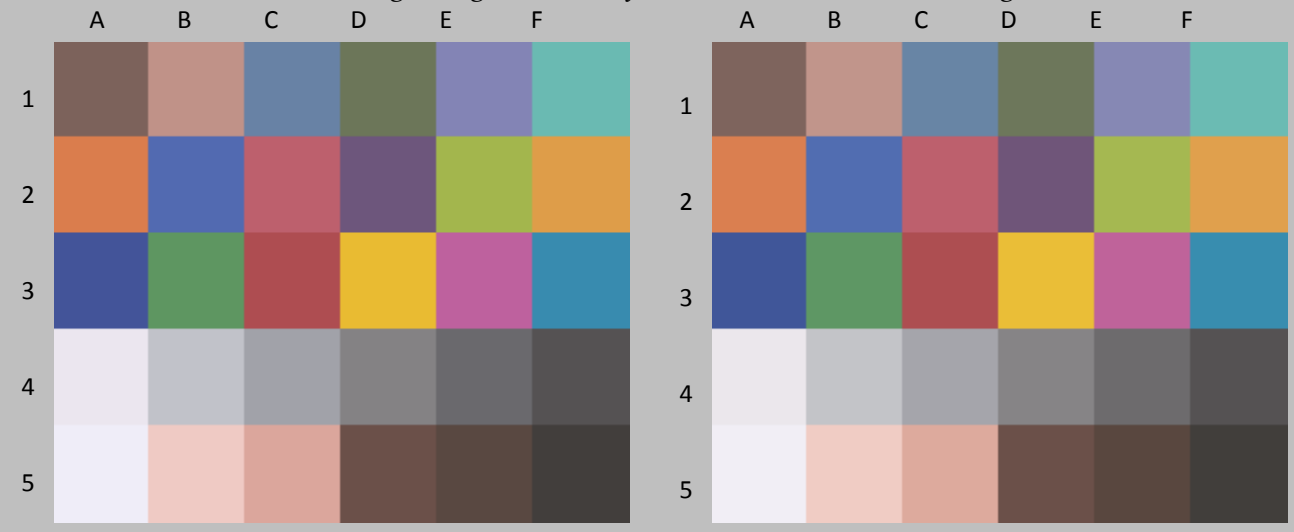
Colors After light exposure

Patch #	Description	I* Color	ΔE	L* Before	L* After	a* Before	a* After	b* Before	b* After
A1	Dark Skin	100.0	0.5	44.1	44.6	10.0	10.1	8.0	8.3
B1	Light Skin	99.7	1.2	64.9	65.9	17.0	16.5	11.9	12.2
C1	Blue sky	96.3	1.4	53.5	54.1	-3.4	-4.2	-21.8	-20.8
D1	Foliage	100.0	0.4	48.2	48.5	-8.3	-8.3	14.5	14.6
E1	blue flower	96.1	1.8	56.5	57.4	7.9	7.2	-25.7	-24.3
F1	bluish green	100.0	0.8	70.0	70.8	-27.3	-27.4	-4.5	-4.2
A1	orange	99.9	0.6	62.5	62.8	33.6	33.1	41.5	41.4
B2	purplish blue	95.8	2.4	45.5	46.1	7.2	5.5	-41.3	-39.8
C2	moderate red	100.0	0.4	52.4	52.6	38.8	38.7	10.8	11.1
D2	purple	96.5	1.4	39.9	40.1	16.0	15.5	-17.8	-16.5
E2	yellow green	100.0	0.7	70.9	71.5	-17.7	-17.7	49.8	49.6
F2	orange yellow	99.6	1.0	70.3	70.9	19.4	18.7	52.7	52.7
A3	blue	96.4	2.0	37.0	37.2	9.6	8.2	-41.4	-40.0
B3	green	100.0	0.6	57.3	57.8	-28.3	-28.4	21.9	21.6
C3	red	100.0	0.5	46.0	45.8	40.6	40.3	18.3	18.5
D3	yellow	99.9	0.8	78.4	78.9	7.7	7.2	69.8	69.6
E3	magenta	96.4	2.2	54.3	54.7	44.0	43.2	-15.6	-13.6
F3	cyan	98.0	1.2	54.0	54.5	-17.2	-18.1	-26.6	-25.9
A4	white	85.7	1.9	91.7	92.1	2.5	1.8	-3.6	-1.9
B4	neutral 8	88.3	1.8	78.5	79.2	0.9	0.3	-4.0	-2.5
C4	neutral 6.5	92.5	1.6	66.5	67.6	1.2	0.7	-4.0	-2.9
D4	neutral 5	96.7	1.0	54.4	55.1	0.9	0.6	-1.5	-0.7
E4	neutral 3.5	98.9	0.8	44.8	45.3	0.8	0.7	-1.8	-1.2
F4	black	100.0	0.3	35.3	35.4	0.9	0.8	-0.5	-0.2
A5	paper white	81.8	2.3	94.1	94.5	2.5	1.6	-4.9	-2.9
B5	Skin highlight L*=88	91.9	1.9	84.4	85.1	13.3	12.1	8.0	9.4
C5	Skin highlight L* =75	97.1	1.5	73.0	73.9	19.4	18.4	13.4	14.0
D5	Skin shadow L*=28	100.0	0.5	36.9	36.9	10.9	10.9	8.8	9.3
E5	Skin shadow L*=13	96.4	0.9	32.0	31.8	7.2	7.3	6.7	7.6
F5	Maximum Black	100.0	0.6	26.8	26.3	1.4	1.3	2.2	2.4

Summary Results	I* Color	I* tone	ΔE
Average Score for all patches	96.8	97.0	1.2
Worst 10% (3 lowest scoring patches)	85.3	94.6	2.3

20 Megalux hours

Epson Stylus Pro 3880, Epson OEM UltraChrome K3™ with Vivid Magenta, Kernow Coatings Ltd – Tintagel 140gsm 65/35 Polyester/Cotton, no additional coating



Original Print Colors before light exposure

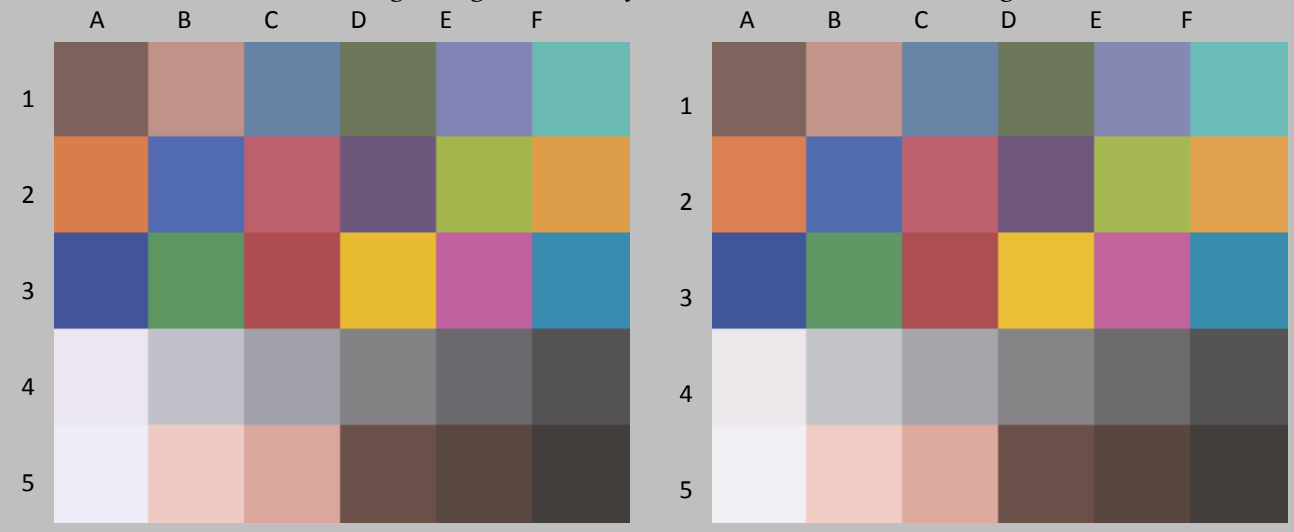
Colors After light exposure

Patch #	Description	I* Color	ΔE	L* Before	L* After	a* Before	a* After	b* Before	b* After
A1	Dark Skin	100.0	0.5	44.1	44.6	10.0	10.2	8.0	8.1
B1	Light Skin	100.0	1.3	64.9	66.0	17.0	16.5	11.9	12.0
C1	Blue sky	96.5	1.5	53.5	54.1	-3.4	-4.2	-21.8	-20.8
D1	Foliage	100.0	0.5	48.2	48.6	-8.3	-8.3	14.5	14.3
E1	blue flower	95.7	2.0	56.5	57.5	7.9	7.1	-25.7	-24.3
F1	bluish green	100.0	0.7	70.0	70.8	-27.3	-27.4	-4.5	-4.5
A1	orange	99.6	0.8	62.5	62.9	33.6	33.1	41.5	41.0
B2	purplish blue	95.3	2.5	45.5	46.1	7.2	5.4	-41.3	-39.6
C2	moderate red	100.0	0.4	52.4	52.7	38.8	38.8	10.8	10.8
D2	purple	96.0	1.5	39.9	40.1	16.0	15.5	-17.8	-16.4
E2	yellow green	100.0	0.9	70.9	71.6	-17.7	-17.7	49.8	49.3
F2	orange yellow	99.3	1.2	70.3	71.1	19.4	18.6	52.7	52.4
A3	blue	95.7	2.4	37.0	37.2	9.6	8.0	-41.4	-39.7
B3	green	99.1	1.0	57.3	57.8	-28.3	-28.4	21.9	21.0
C3	red	100.0	0.4	46.0	45.7	40.6	40.3	18.3	18.3
D3	yellow	99.5	1.1	78.4	79.1	7.7	7.0	69.8	69.5
E3	magenta	96.0	2.4	54.3	54.7	44.0	43.2	-15.6	-13.4
F3	cyan	97.7	1.3	54.0	54.5	-17.2	-18.2	-26.6	-25.9
A4	white	82.5	2.2	91.7	92.2	2.5	1.7	-3.6	-1.6
B4	neutral 8	85.0	2.1	78.5	79.3	0.9	0.3	-4.0	-2.2
C4	neutral 6.5	92.4	1.7	66.5	67.8	1.2	0.6	-4.0	-2.9
D4	neutral 5	97.4	1.1	54.4	55.2	0.9	0.6	-1.5	-0.8
E4	neutral 3.5	99.7	0.8	44.8	45.4	0.8	0.7	-1.8	-1.3
F4	black	100.0	0.2	35.3	35.5	0.9	0.9	-0.5	-0.3
A5	paper white	78.0	2.6	94.1	94.5	2.5	1.5	-4.9	-2.5
B5	Skin highlight L*=88	92.5	1.9	84.4	85.3	13.3	12.0	8.0	9.1
C5	Skin highlight L* =75	97.2	1.6	73.0	74.1	19.4	18.3	13.4	13.7
D5	Skin shadow L*=28	100.0	0.4	36.9	37.0	10.9	11.0	8.8	9.2
E5	Skin shadow L*=13	96.2	0.9	32.0	31.7	7.2	7.5	6.7	7.6
F5	Maximum Black	100.0	0.7	26.8	26.2	1.4	1.3	2.2	2.4

Summary Results	I* Color	I* tone	ΔE
Average Score for all patches	96.4	96.6	1.3
Worst 10% (3 lowest scoring patches)	81.8	93.8	2.5

30 Megalux hours

Epson Stylus Pro 3880, Epson OEM UltraChrome K3™ with Vivid Magenta, Kernow Coatings Ltd – Tintagel 140gsm 65/35 Polyester/Cotton, no additional coating



Original Print Colors before light exposure

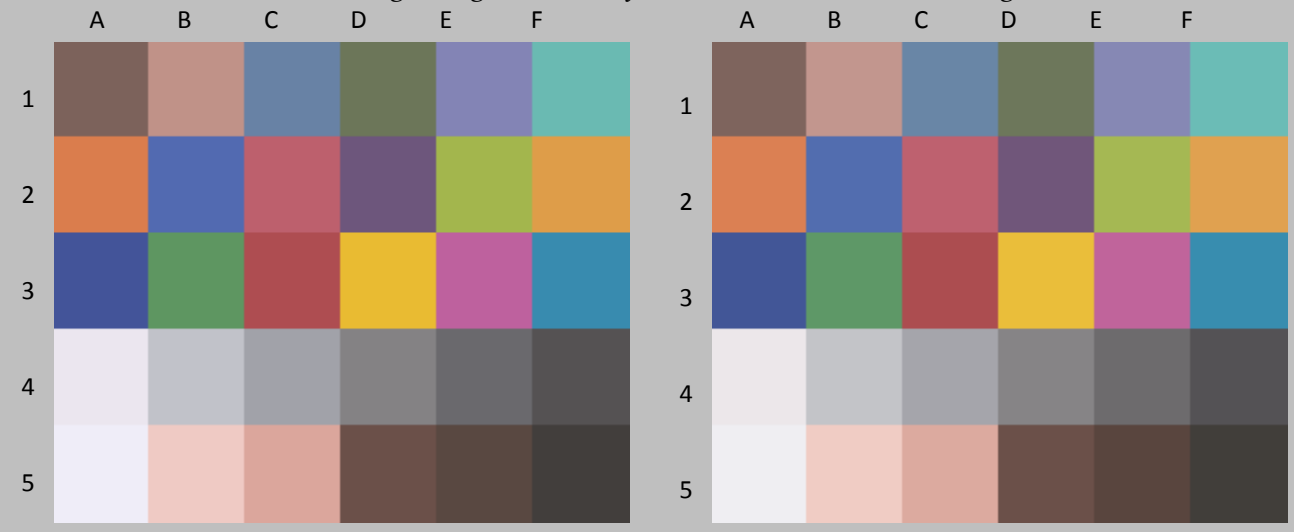
Colors After light exposure

Patch #	Description	I* Color	ΔE	L* Before	L* After	a* Before	a* After	b* Before	b* After
A1	Dark Skin	100.0	0.6	44.1	44.6	10.0	10.2	8.0	8.0
B1	Light Skin	99.8	1.4	64.9	66.2	17.0	16.5	11.9	11.7
C1	Blue sky	95.4	1.7	53.5	54.3	-3.4	-4.3	-21.8	-20.6
D1	Foliage	99.6	0.7	48.2	48.6	-8.3	-8.4	14.5	14.0
E1	blue flower	95.0	2.2	56.5	57.6	7.9	7.0	-25.7	-24.1
F1	bluish green	100.0	0.9	70.0	70.9	-27.3	-27.3	-4.5	-4.7
A1	orange	98.6	1.3	62.5	63.0	33.6	33.0	41.5	40.5
B2	purplish blue	94.3	3.0	45.5	46.2	7.2	5.2	-41.3	-39.2
C2	moderate red	100.0	0.4	52.4	52.8	38.8	38.8	10.8	10.6
D2	purple	95.3	1.7	39.9	40.2	16.0	15.5	-17.8	-16.3
E2	yellow green	98.9	1.3	70.9	71.7	-17.7	-17.7	49.8	48.8
F2	orange yellow	98.4	1.7	70.3	71.2	19.4	18.4	52.7	51.8
A3	blue	95.0	2.6	37.0	37.2	9.6	7.7	-41.4	-39.5
B3	green	98.1	1.3	57.3	57.9	-28.3	-28.3	21.9	20.7
C3	red	100.0	0.5	46.0	45.7	40.6	40.4	18.3	18.0
D3	yellow	98.8	1.5	78.4	79.1	7.7	6.8	69.8	68.8
E3	magenta	95.2	2.8	54.3	54.8	44.0	43.0	-15.6	-13.0
F3	cyan	97.1	1.5	54.0	54.6	-17.2	-18.3	-26.6	-25.7
A4	white	79.1	2.5	91.7	92.1	2.5	1.6	-3.6	-1.3
B4	neutral 8	82.0	2.4	78.5	79.3	0.9	0.2	-4.0	-2.0
C4	neutral 6.5	90.6	1.9	66.5	67.8	1.2	0.5	-4.0	-2.7
D4	neutral 5	97.7	1.1	54.4	55.2	0.9	0.6	-1.5	-0.8
E4	neutral 3.5	100.0	0.7	44.8	45.4	0.8	0.7	-1.8	-1.4
F4	black	100.0	0.2	35.3	35.6	0.9	0.9	-0.5	-0.5
A5	paper white	72.7	3.1	94.1	94.4	2.5	1.4	-4.9	-2.0
B5	Skin highlight L*=88	91.0	2.1	84.4	85.2	13.3	11.8	8.0	9.2
C5	Skin highlight L* =75	97.0	1.7	73.0	74.1	19.4	18.2	13.4	13.5
D5	Skin shadow L*=28	100.0	0.3	36.9	37.0	10.9	11.0	8.8	9.0
E5	Skin shadow L*=13	95.2	1.0	32.0	31.7	7.2	7.4	6.7	7.7
F5	Maximum Black	100.0	0.7	26.8	26.2	1.4	1.3	2.2	2.5

Summary Results	I* Color	I* tone	ΔE
Average Score for all patches	95.5	96.2	1.5
Worst 10% (3 lowest scoring patches)	77.9	93.3	3.0

40 Megalux hours

Epson Stylus Pro 3880, Epson OEM UltraChrome K3™ with Vivid Magenta, Kernow Coatings Ltd – Tintagel 140gsm 65/35 Polyester/Cotton, no additional coating



Original Print Colors before light exposure

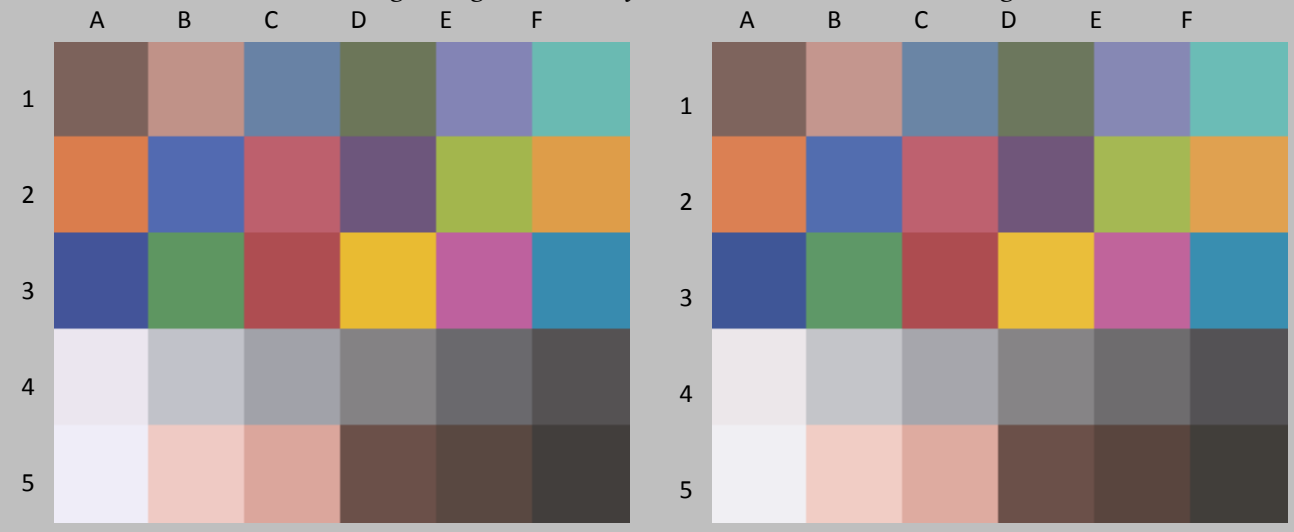
Colors After light exposure

Patch #	Description	I* Color	ΔE	L* Before	L* After	a* Before	a* After	b* Before	b* After
A1	Dark Skin	100.0	0.7	44.1	44.7	10.0	10.4	8.0	7.7
B1	Light Skin	98.7	1.7	64.9	66.4	17.0	16.5	11.9	11.3
C1	Blue sky	95.3	1.8	53.5	54.5	-3.4	-4.2	-21.8	-20.5
D1	Foliage	98.0	1.0	48.2	48.8	-8.3	-8.3	14.5	13.7
E1	blue flower	94.6	2.4	56.5	57.8	7.9	7.0	-25.7	-24.0
F1	bluish green	100.0	1.1	70.0	71.1	-27.3	-27.1	-4.5	-4.9
A1	orange	97.8	1.7	62.5	63.1	33.6	32.9	41.5	40.0
B2	purplish blue	93.7	3.2	45.5	46.2	7.2	5.0	-41.3	-39.1
C2	moderate red	99.7	0.8	52.4	52.8	38.8	38.9	10.8	10.2
D2	purple	95.0	1.7	39.9	40.3	16.0	15.7	-17.8	-16.1
E2	yellow green	97.8	1.9	70.9	71.9	-17.7	-17.7	49.8	48.2
F2	orange yellow	97.6	2.1	70.3	71.3	19.4	18.3	52.7	51.3
A3	blue	94.5	2.8	37.0	37.1	9.6	7.6	-41.4	-39.4
B3	green	97.1	1.7	57.3	58.0	-28.3	-28.3	21.9	20.4
C3	red	99.9	0.7	46.0	45.6	40.6	40.5	18.3	17.8
D3	yellow	98.3	1.9	78.4	79.2	7.7	6.7	69.8	68.5
E3	magenta	94.7	3.0	54.3	54.9	44.0	43.0	-15.6	-12.8
F3	cyan	96.9	1.6	54.0	54.6	-17.2	-18.3	-26.6	-25.6
A4	white	76.3	2.8	91.7	92.1	2.5	1.5	-3.6	-1.0
B4	neutral 8	80.4	2.5	78.5	79.3	0.9	0.1	-4.0	-1.8
C4	neutral 6.5	92.0	1.9	66.5	68.0	1.2	0.6	-4.0	-2.8
D4	neutral 5	97.6	1.1	54.4	55.3	0.9	0.7	-1.5	-0.8
E4	neutral 3.5	100.0	0.8	44.8	45.5	0.8	0.7	-1.8	-1.5
F4	black	100.0	0.2	35.3	35.4	0.9	1.0	-0.5	-0.6
A5	paper white	70.6	3.3	94.1	94.3	2.5	1.4	-4.9	-1.8
B5	Skin highlight L*=88	93.1	1.8	84.4	85.1	13.3	11.9	8.0	8.7
C5	Skin highlight L* =75	96.3	1.9	73.0	74.3	19.4	18.1	13.4	13.0
D5	Skin shadow L*=28	100.0	0.4	36.9	36.9	10.9	11.3	8.8	9.0
E5	Skin shadow L*=13	93.9	1.2	32.0	31.5	7.2	7.6	6.7	7.8
F5	Maximum Black	100.0	0.6	26.8	26.3	1.4	1.3	2.2	2.5

Summary Results	I* Color	I* tone	ΔE
Average Score for all patches	95.0	95.5	1.7
Worst 10% (3 lowest scoring patches)	75.8	92.0	3.2

50 Megalux hours

Epson Stylus Pro 3880, Epson OEM UltraChrome K3™ with Vivid Magenta, Kernow Coatings Ltd – Tintagel 140gsm 65/35 Polyester/Cotton, no additional coating



Original Print Colors before light exposure

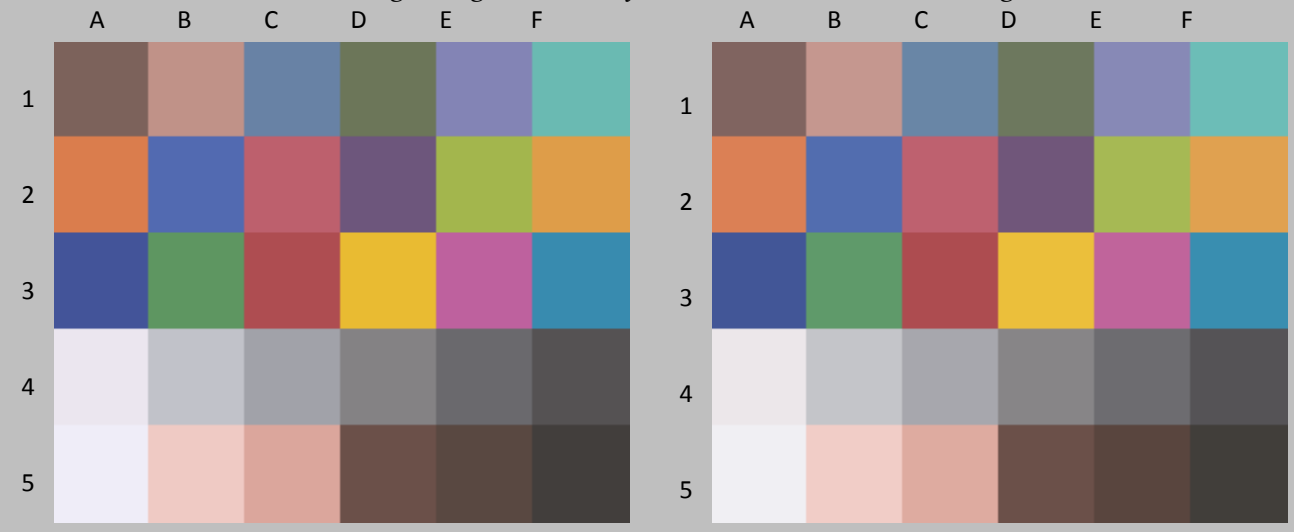
Colors After light exposure

Patch #	Description	I* Color	ΔE	L* Before	L* After	a* Before	a* After	b* Before	b* After
A1	Dark Skin	99.2	0.8	44.1	44.6	10.0	10.4	8.0	7.6
B1	Light Skin	98.5	1.8	64.9	66.5	17.0	16.6	11.9	11.2
C1	Blue sky	95.4	1.9	53.5	54.5	-3.4	-4.1	-21.8	-20.5
D1	Foliage	96.4	1.2	48.2	48.7	-8.3	-8.1	14.5	13.4
E1	blue flower	95.0	2.3	56.5	57.8	7.9	7.1	-25.7	-24.1
F1	bluish green	98.9	1.3	70.0	71.1	-27.3	-26.9	-4.5	-5.2
A1	orange	97.0	2.2	62.5	63.2	33.6	32.9	41.5	39.5
B2	purplish blue	93.4	3.3	45.5	46.3	7.2	5.1	-41.3	-38.8
C2	moderate red	99.3	0.9	52.4	52.8	38.8	39.0	10.8	10.1
D2	purple	94.4	1.9	39.9	40.3	16.0	15.6	-17.8	-16.0
E2	yellow green	97.4	2.1	70.9	71.9	-17.7	-17.5	49.8	48.0
F2	orange yellow	97.0	2.4	70.3	71.3	19.4	18.3	52.7	50.9
A3	blue	93.8	3.2	37.0	37.3	9.6	7.5	-41.4	-39.1
B3	green	95.8	2.2	57.3	58.1	-28.3	-28.1	21.9	19.9
C3	red	99.6	0.8	46.0	45.6	40.6	40.5	18.3	17.7
D3	yellow	97.8	2.2	78.4	79.3	7.7	6.6	69.8	68.2
E3	magenta	94.5	3.2	54.3	55.0	44.0	43.1	-15.6	-12.6
F3	cyan	97.0	1.6	54.0	54.7	-17.2	-18.3	-26.6	-25.6
A4	white	74.1	3.0	91.7	92.2	2.5	1.5	-3.6	-0.8
B4	neutral 8	78.8	2.7	78.5	79.5	0.9	0.2	-4.0	-1.6
C4	neutral 6.5	92.3	2.1	66.5	68.3	1.2	0.7	-4.0	-2.8
D4	neutral 5	98.2	1.2	54.4	55.5	0.9	0.7	-1.5	-0.8
E4	neutral 3.5	100.0	1.0	44.8	45.7	0.8	0.8	-1.8	-1.5
F4	black	100.0	0.4	35.3	35.4	0.9	1.0	-0.5	-0.8
A5	paper white	67.7	3.6	94.1	94.4	2.5	1.3	-4.9	-1.6
B5	Skin highlight L*=88	93.0	1.9	84.4	85.4	13.3	11.8	8.0	8.6
C5	Skin highlight L* =75	96.1	2.1	73.0	74.5	19.4	18.1	13.4	12.8
D5	Skin shadow L*=28	100.0	0.4	36.9	36.9	10.9	11.3	8.8	8.9
E5	Skin shadow L*=13	94.2	1.2	32.0	31.5	7.2	7.6	6.7	7.7
F5	Maximum Black	100.0	0.7	26.8	26.2	1.4	1.3	2.2	2.5

Summary Results	I* Color	I* tone	ΔE
Average Score for all patches	94.5	95.1	1.9
Worst 10% (3 lowest scoring patches)	73.5	91.5	3.4

60 Megalux hours

Epson Stylus Pro 3880, Epson OEM UltraChrome K3™ with Vivid Magenta, Kernow Coatings Ltd – Tintagel 140gsm 65/35 Polyester/Cotton, no additional coating



Original Print Colors before light exposure

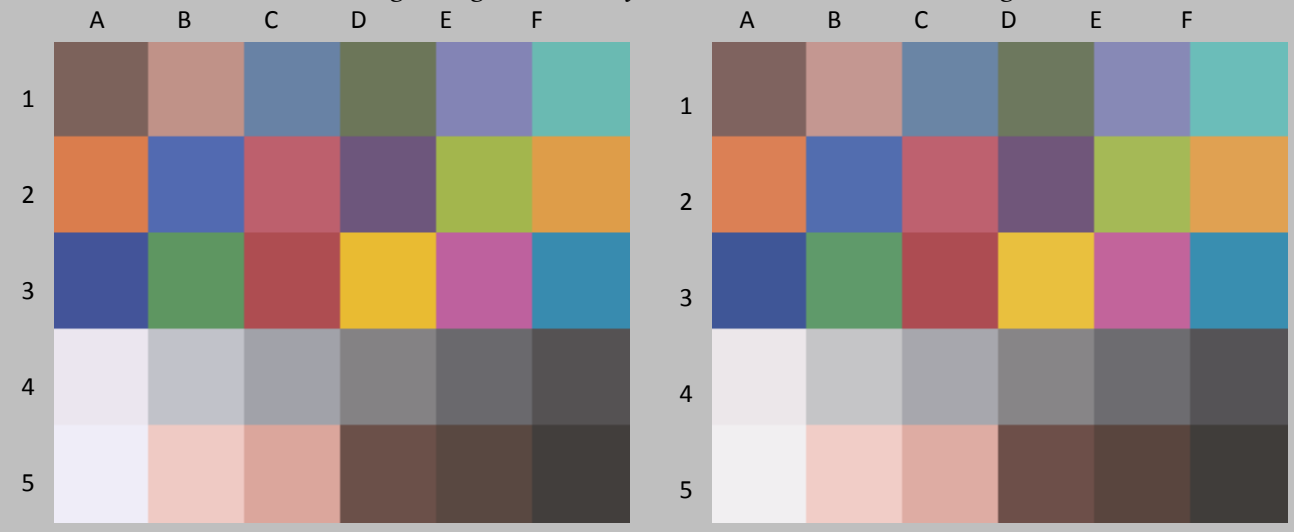
Colors After light exposure

Patch #	Description	I* Color	ΔE	L* Before	L* After	a* Before	a* After	b* Before	b* After
A1	Dark Skin	97.7	1.2	44.1	45.0	10.0	10.5	8.0	7.4
B1	Light Skin	96.8	2.2	64.9	66.8	17.0	16.7	11.9	10.8
C1	Blue sky	95.5	1.9	53.5	54.6	-3.4	-4.2	-21.8	-20.6
D1	Foliage	95.2	1.5	48.2	48.8	-8.3	-8.0	14.5	13.3
E1	blue flower	95.1	2.4	56.5	58.1	7.9	7.2	-25.7	-24.0
F1	bluish green	97.9	1.6	70.0	71.3	-27.3	-26.8	-4.5	-5.4
A1	orange	96.8	2.3	62.5	63.3	33.6	32.9	41.5	39.4
B2	purplish blue	93.2	3.5	45.5	46.4	7.2	4.9	-41.3	-38.9
C2	moderate red	98.4	1.3	52.4	53.0	38.8	39.3	10.8	9.8
D2	purple	94.7	1.8	39.9	40.3	16.0	15.7	-17.8	-16.1
E2	yellow green	96.8	2.5	70.9	72.2	-17.7	-17.6	49.8	47.7
F2	orange yellow	96.6	2.7	70.3	71.5	19.4	18.3	52.7	50.6
A3	blue	94.1	3.0	37.0	37.3	9.6	7.5	-41.4	-39.2
B3	green	94.6	2.6	57.3	58.3	-28.3	-28.1	21.9	19.5
C3	red	99.3	0.9	46.0	45.7	40.6	40.7	18.3	17.5
D3	yellow	97.5	2.5	78.4	79.5	7.7	6.5	69.8	67.9
E3	magenta	94.4	3.2	54.3	55.1	44.0	43.2	-15.6	-12.6
F3	cyan	97.2	1.6	54.0	54.8	-17.2	-18.3	-26.6	-25.7
A4	white	74.6	3.0	91.7	92.3	2.5	1.5	-3.6	-0.9
B4	neutral 8	78.9	2.8	78.5	79.7	0.9	0.2	-4.0	-1.6
C4	neutral 6.5	94.1	2.2	66.5	68.5	1.2	0.8	-4.0	-3.0
D4	neutral 5	99.6	1.2	54.4	55.5	0.9	0.8	-1.5	-1.0
E4	neutral 3.5	100.0	1.1	44.8	45.8	0.8	0.8	-1.8	-1.6
F4	black	99.9	0.6	35.3	35.6	0.9	1.2	-0.5	-0.9
A5	paper white	68.0	3.6	94.1	94.5	2.5	1.3	-4.9	-1.6
B5	Skin highlight L*=88	93.0	2.0	84.4	85.6	13.3	11.8	8.0	8.4
C5	Skin highlight L* =75	95.8	2.3	73.0	74.7	19.4	18.2	13.4	12.5
D5	Skin shadow L*=28	100.0	0.5	36.9	36.9	10.9	11.4	8.8	8.8
E5	Skin shadow L*=13	93.8	1.3	32.0	31.4	7.2	7.7	6.7	7.7
F5	Maximum Black	100.0	0.8	26.8	26.1	1.4	1.4	2.2	2.5

Summary Results	I* Color	I* tone	ΔE
Average Score for all patches	94.3	94.6	2.0
Worst 10% (3 lowest scoring patches)	73.8	90.7	3.4

70 Megalux hours

Epson Stylus Pro 3880, Epson OEM UltraChrome K3™ with Vivid Magenta, Kernow Coatings Ltd – Tintagel 140gsm 65/35 Polyester/Cotton, no additional coating



Original Print Colors before light exposure

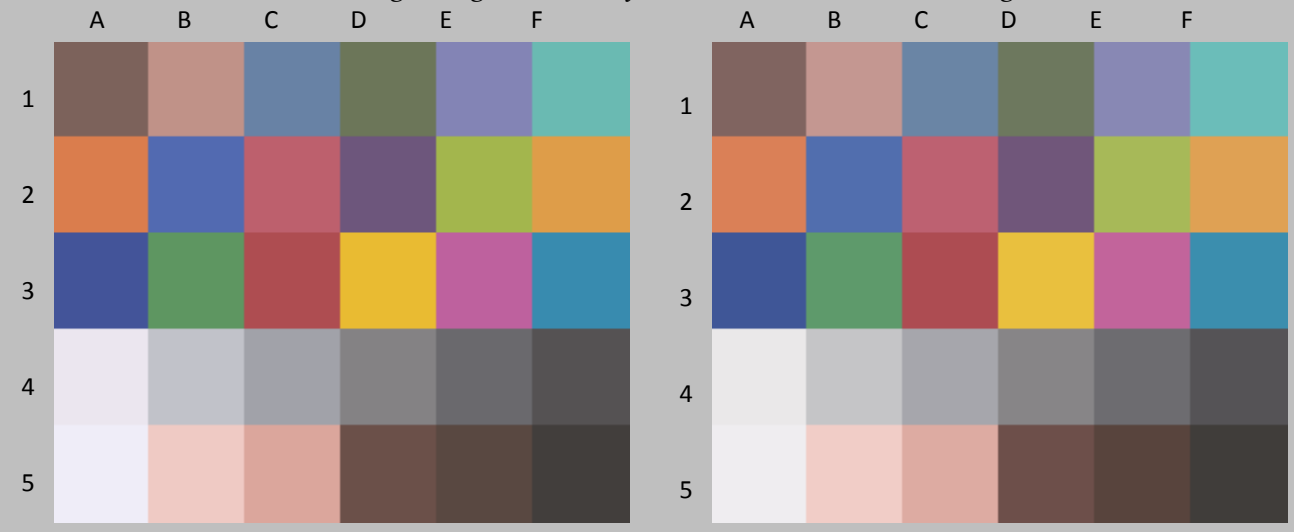
Colors After light exposure

				L*		a*		b*	
Patch #	Description	I* Color	ΔE	Before	After	Before	After	Before	After
A1	Dark Skin	95.6	1.3	44.1	44.9	10.0	10.6	8.0	7.1
B1	Light Skin	95.4	2.4	64.9	66.8	17.0	16.7	11.9	10.5
C1	Blue sky	95.2	2.0	53.5	54.7	-3.4	-4.1	-21.8	-20.4
D1	Foliage	93.2	1.8	48.2	48.8	-8.3	-8.0	14.5	12.9
E1	blue flower	94.3	2.6	56.5	58.1	7.9	7.1	-25.7	-23.8
F1	bluish green	97.3	1.8	70.0	71.3	-27.3	-26.7	-4.5	-5.6
A1	orange	95.9	2.8	62.5	63.3	33.6	32.9	41.5	38.9
B2	purplish blue	92.5	3.7	45.5	46.3	7.2	4.8	-41.3	-38.6
C2	moderate red	97.9	1.5	52.4	53.0	38.8	39.3	10.8	9.6
D2	purple	94.1	2.0	39.9	40.4	16.0	15.7	-17.8	-15.9
E2	yellow green	95.9	3.0	70.9	72.2	-17.7	-17.6	49.8	47.2
F2	orange yellow	95.6	3.2	70.3	71.6	19.4	18.2	52.7	50.1
A3	blue	93.3	3.3	37.0	37.2	9.6	7.3	-41.4	-39.0
B3	green	93.1	3.2	57.3	58.4	-28.3	-28.0	21.9	18.9
C3	red	98.7	1.2	46.0	45.6	40.6	40.8	18.3	17.3
D3	yellow	96.8	3.0	78.4	79.5	7.7	6.4	69.8	67.4
E3	magenta	93.8	3.5	54.3	55.1	44.0	43.2	-15.6	-12.3
F3	cyan	96.7	1.7	54.0	54.8	-17.2	-18.3	-26.6	-25.5
A4	white	72.1	3.2	91.7	92.2	2.5	1.5	-3.6	-0.6
B4	neutral 8	76.0	3.0	78.5	79.7	0.9	0.1	-4.0	-1.4
C4	neutral 6.5	93.9	2.2	66.5	68.5	1.2	0.8	-4.0	-3.0
D4	neutral 5	100.0	1.2	54.4	55.6	0.9	0.8	-1.5	-1.0
E4	neutral 3.5	100.0	1.1	44.8	45.9	0.8	0.9	-1.8	-1.7
F4	black	96.8	0.8	35.3	35.5	0.9	1.2	-0.5	-1.2
A5	paper white	64.1	3.9	94.1	94.4	2.5	1.2	-4.9	-1.2
B5	Skin highlight L*=88	92.5	2.1	84.4	85.6	13.3	11.7	8.0	8.4
C5	Skin highlight L* =75	94.8	2.5	73.0	74.7	19.4	18.1	13.4	12.2
D5	Skin shadow L*=28	99.0	0.6	36.9	36.9	10.9	11.5	8.8	8.6
E5	Skin shadow L*=13	93.6	1.3	32.0	31.3	7.2	7.8	6.7	7.7
F5	Maximum Black	100.0	0.8	26.8	26.1	1.4	1.3	2.2	2.5

Summary Results	I* Color	I* tone	ΔE
Average Score for all patches	93.3	94.4	2.2
Worst 10% (3 lowest scoring patches)	70.7	90.3	3.7

80 Megalux hours

Epson Stylus Pro 3880, Epson OEM UltraChrome K3™ with Vivid Magenta, Kernow Coatings Ltd – Tintagel 140gsm 65/35 Polyester/Cotton, no additional coating



Original Print Colors before light exposure

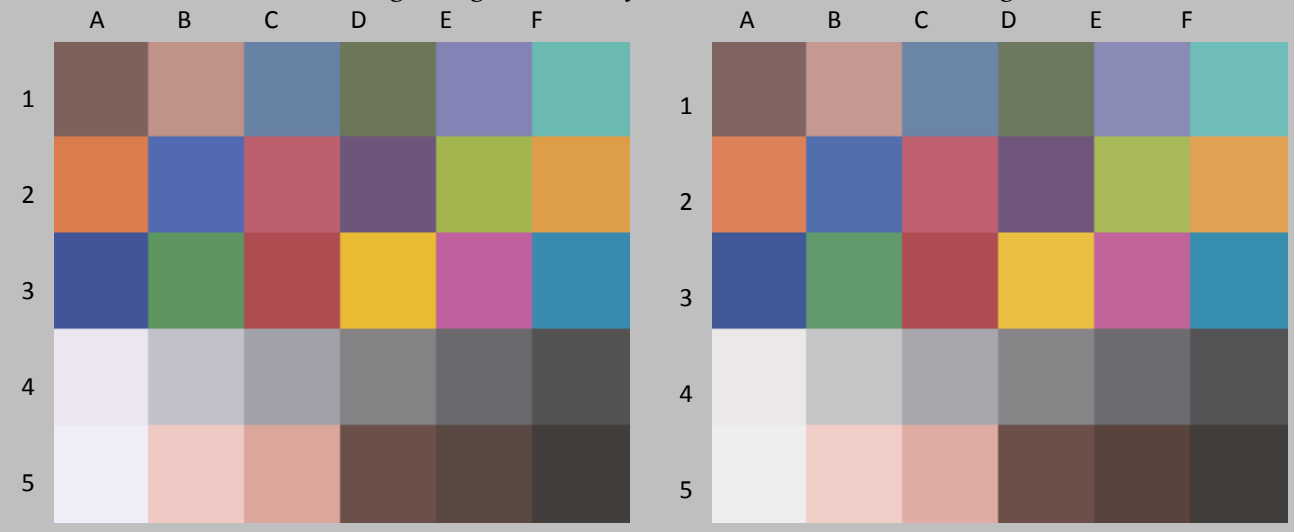
Colors After light exposure

Patch #	Description	I* Color	ΔE	L* Before	L* After	a* Before	a* After	b* Before	b* After
A1	Dark Skin	93.9	1.5	44.1	44.9	10.0	10.7	8.0	6.9
B1	Light Skin	94.3	2.6	64.9	66.8	17.0	16.7	11.9	10.2
C1	Blue sky	93.8	2.2	53.5	54.7	-3.4	-4.2	-21.8	-20.1
D1	Foliage	91.0	2.1	48.2	48.9	-8.3	-7.9	14.5	12.6
E1	blue flower	93.0	2.9	56.5	58.1	7.9	7.0	-25.7	-23.5
F1	bluish green	96.9	1.8	70.0	71.3	-27.3	-26.5	-4.5	-5.6
A1	orange	94.9	3.3	62.5	63.3	33.6	32.9	41.5	38.4
B2	purplish blue	90.7	4.5	45.5	46.4	7.2	4.5	-41.3	-37.9
C2	moderate red	97.2	1.7	52.4	53.0	38.8	39.3	10.8	9.3
D2	purple	93.2	2.2	39.9	40.5	16.0	15.6	-17.8	-15.7
E2	yellow green	94.4	3.7	70.9	72.2	-17.7	-17.5	49.8	46.4
F2	orange yellow	94.4	3.9	70.3	71.5	19.4	18.1	52.7	49.3
A3	blue	92.2	3.8	37.0	37.2	9.6	7.0	-41.4	-38.6
B3	green	91.6	3.6	57.3	58.3	-28.3	-27.9	21.9	18.4
C3	red	98.0	1.4	46.0	45.6	40.6	40.7	18.3	17.0
D3	yellow	96.0	3.5	78.4	79.5	7.7	6.3	69.8	66.8
E3	magenta	92.7	4.0	54.3	55.1	44.0	43.1	-15.6	-11.8
F3	cyan	95.9	2.0	54.0	54.8	-17.2	-18.4	-26.6	-25.3
A4	white	64.7	3.9	91.7	92.0	2.5	1.4	-3.6	0.1
B4	neutral 8	71.8	3.4	78.5	79.6	0.9	0.0	-4.0	-1.0
C4	neutral 6.5	91.9	2.3	66.5	68.4	1.2	0.7	-4.0	-2.8
D4	neutral 5	100.0	1.1	54.4	55.5	0.9	0.9	-1.5	-1.2
E4	neutral 3.5	100.0	1.0	44.8	45.8	0.8	1.0	-1.8	-1.8
F4	black	95.1	1.0	35.3	35.6	0.9	1.3	-0.5	-1.3
A5	paper white	56.6	4.6	94.1	94.2	2.5	1.1	-4.9	-0.5
B5	Skin highlight L*=88	92.4	2.0	84.4	85.4	13.3	11.7	8.0	8.5
C5	Skin highlight L* =75	94.2	2.5	73.0	74.7	19.4	18.1	13.4	12.1
D5	Skin shadow L*=28	98.1	0.8	36.9	37.0	10.9	11.6	8.8	8.4
E5	Skin shadow L*=13	93.0	1.5	32.0	31.1	7.2	7.9	6.7	7.7
F5	Maximum Black	100.0	0.9	26.8	26.0	1.4	1.3	2.2	2.5

Summary Results	I* Color	I* tone	ΔE
Average Score for all patches	91.7	94.1	2.5
Worst 10% (3 lowest scoring patches)	64.4	89.6	4.4

90 Megalux hours

Epson Stylus Pro 3880, Epson OEM UltraChrome K3™ with Vivid Magenta, Kernow Coatings Ltd – Tintagel 140gsm 65/35 Polyester/Cotton, no additional coating



Original Print Colors before light exposure

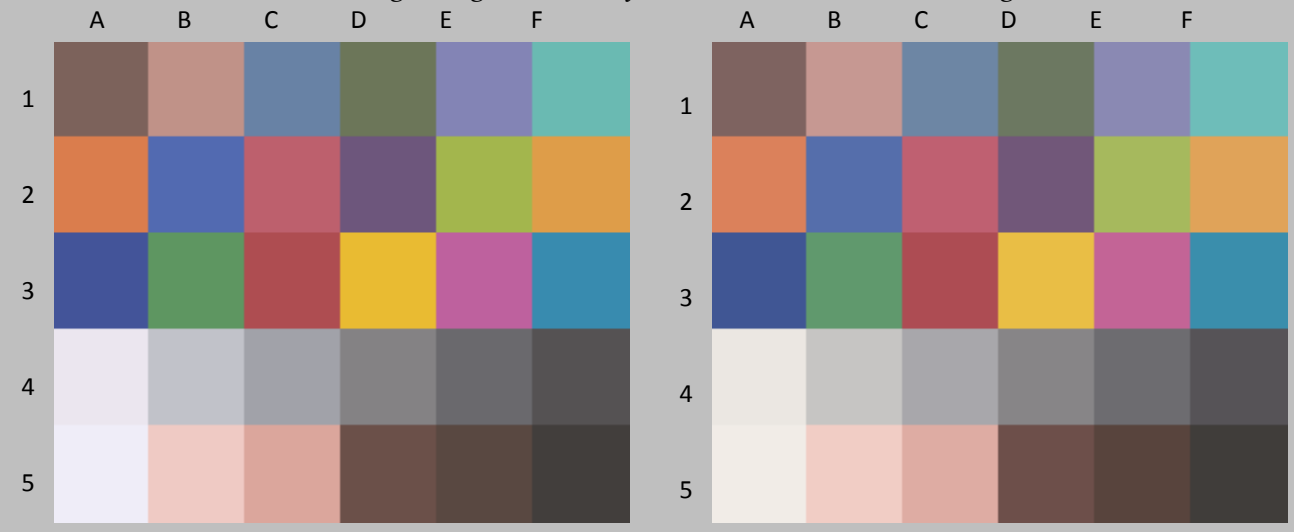
Colors After light exposure

				L*		a*		b*	
Patch #	Description	I* Color	ΔE	Before	After	Before	After	Before	After
A1	Dark Skin	93.5	1.7	44.1	45.1	10.0	10.8	8.0	6.9
B1	Light Skin	93.1	2.9	64.9	67.1	17.0	16.6	11.9	10.0
C1	Blue sky	93.7	2.2	53.5	54.6	-3.4	-4.3	-21.8	-20.2
D1	Foliage	90.0	2.3	48.2	49.0	-8.3	-7.7	14.5	12.5
E1	blue flower	92.9	3.1	56.5	58.4	7.9	7.1	-25.7	-23.4
F1	bluish green	94.9	2.3	70.0	71.3	-27.3	-26.2	-4.5	-6.0
A1	orange	93.7	3.9	62.5	63.4	33.6	32.7	41.5	37.7
B2	purplish blue	90.6	4.5	45.5	46.4	7.2	4.5	-41.3	-37.9
C2	moderate red	96.7	1.9	52.4	52.9	38.8	39.9	10.8	9.4
D2	purple	92.9	2.3	39.9	40.4	16.0	15.8	-17.8	-15.6
E2	yellow green	93.7	4.1	70.9	72.2	-17.7	-17.4	49.8	46.0
F2	orange yellow	93.6	4.3	70.3	71.6	19.4	18.0	52.7	48.9
A3	blue	91.9	4.0	37.0	37.5	9.6	6.9	-41.4	-38.5
B3	green	89.8	4.4	57.3	58.7	-28.3	-27.3	21.9	17.8
C3	red	97.6	1.6	46.0	45.7	40.6	40.9	18.3	16.8
D3	yellow	95.2	4.0	78.4	79.5	7.7	6.2	69.8	66.3
E3	magenta	92.1	4.3	54.3	55.2	44.0	43.3	-15.6	-11.5
F3	cyan	95.3	2.2	54.0	54.9	-17.2	-18.7	-26.6	-25.3
A4	white	60.4	4.3	91.7	92.0	2.5	1.4	-3.6	0.5
B4	neutral 8	70.2	3.6	78.5	79.7	0.9	0.1	-4.0	-0.8
C4	neutral 6.5	91.4	2.4	66.5	68.6	1.2	0.8	-4.0	-2.7
D4	neutral 5	100.0	1.2	54.4	55.6	0.9	1.1	-1.5	-1.3
E4	neutral 3.5	100.0	1.1	44.8	45.9	0.8	1.1	-1.8	-1.9
F4	black	93.0	1.2	35.3	35.5	0.9	1.3	-0.5	-1.6
A5	paper white	53.5	4.9	94.1	94.2	2.5	1.1	-4.9	-0.2
B5	Skin highlight L*=88	92.1	2.1	84.4	85.6	13.3	11.6	8.0	8.4
C5	Skin highlight L* =75	94.2	2.7	73.0	74.9	19.4	18.1	13.4	12.1
D5	Skin shadow L*=28	96.2	1.0	36.9	37.0	10.9	11.8	8.8	8.3
E5	Skin shadow L*=13	92.8	1.6	32.0	31.0	7.2	8.0	6.7	7.7
F5	Maximum Black	100.0	0.9	26.8	26.0	1.4	1.2	2.2	2.4

Summary Results	I* Color	I* tone	ΔE
Average Score for all patches	90.8	93.7	2.8
Worst 10% (3 lowest scoring patches)	61.3	88.8	4.6

100 Megalux hours

Epson Stylus Pro 3880, Epson OEM UltraChrome K3™ with Vivid Magenta, Kernow Coatings Ltd – Tintagel 140gsm 65/35 Polyester/Cotton, no additional coating



Original Print Colors before light exposure

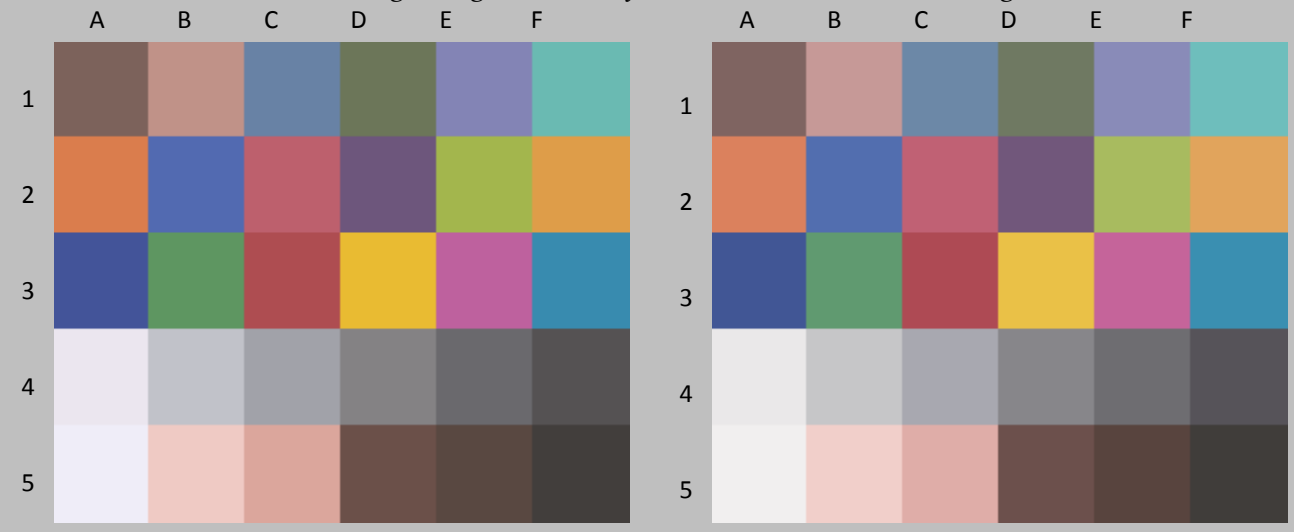
Colors After light exposure

Patch #	Description	I* Color	ΔE	L* Before	L* After	a* Before	a* After	b* Before	b* After
A1	Dark Skin	87.9	2.1	44.1	44.7	10.0	11.0	8.0	6.3
B1	Light Skin	91.9	3.1	64.9	67.0	17.0	17.1	11.9	9.7
C1	Blue sky	89.2	3.2	53.5	54.9	-3.4	-4.3	-21.8	-19.1
D1	Foliage	84.3	3.3	48.2	49.1	-8.3	-7.6	14.5	11.5
E1	blue flower	87.9	4.2	56.5	58.3	7.9	6.8	-25.7	-22.1
F1	bluish green	94.8	2.4	70.0	71.5	-27.3	-25.8	-4.5	-5.8
A1	orange	90.9	5.5	62.5	63.6	33.6	32.9	41.5	36.2
B2	purplish blue	86.8	6.1	45.5	46.5	7.2	3.9	-41.3	-36.2
C2	moderate red	96.3	2.1	52.4	53.1	38.8	39.5	10.8	9.0
D2	purple	89.7	3.1	39.9	40.6	16.0	15.6	-17.8	-14.9
E2	yellow green	90.7	5.6	70.9	72.3	-17.7	-16.8	49.8	44.5
F2	orange yellow	91.1	5.7	70.3	71.7	19.4	18.1	52.7	47.4
A3	blue	89.3	5.1	37.0	37.3	9.6	6.4	-41.4	-37.5
B3	green	87.1	5.3	57.3	58.5	-28.3	-27.4	21.9	16.8
C3	red	96.5	2.1	46.0	45.6	40.6	41.3	18.3	16.4
D3	yellow	92.9	5.6	78.4	79.4	7.7	6.5	69.8	64.4
E3	magenta	87.3	6.5	54.3	55.3	44.0	42.7	-15.6	-9.3
F3	cyan	93.3	2.8	54.0	54.9	-17.2	-18.7	-26.6	-24.4
A4	white	33.4	6.8	91.7	91.6	2.5	1.2	-3.6	3.1
B4	neutral 8	52.0	5.2	78.5	79.5	0.9	0.0	-4.0	1.0
C4	neutral 6.5	83.6	3.0	66.5	68.7	1.2	0.9	-4.0	-1.9
D4	neutral 5	98.1	1.6	54.4	55.9	0.9	1.2	-1.5	-0.9
E4	neutral 3.5	100.0	1.3	44.8	46.1	0.8	1.2	-1.8	-1.9
F4	black	87.0	1.8	35.3	35.6	0.9	1.7	-0.5	-2.0
A5	paper white	23.9	7.7	94.1	93.8	2.5	0.9	-4.9	2.6
B5	Skin highlight L*=88	89.3	2.4	84.4	85.4	13.3	11.6	8.0	9.4
C5	Skin highlight L* =75	94.5	2.7	73.0	75.0	19.4	18.2	13.4	12.1
D5	Skin shadow L*=28	93.1	1.5	36.9	37.0	10.9	12.1	8.8	7.9
E5	Skin shadow L*=13	92.9	1.6	32.0	30.9	7.2	8.1	6.7	7.6
F5	Maximum Black	100.0	1.0	26.8	25.9	1.4	1.2	2.2	2.4

Summary Results	I* Color	I* tone	ΔE
Average Score for all patches	85.9	93.0	3.7
Worst 10% (3 lowest scoring patches)	36.4	88.1	7.0

120 Megalux hours

Epson Stylus Pro 3880, Epson OEM UltraChrome K3™ with Vivid Magenta, Kernow Coatings Ltd – Tintagel 140gsm 65/35 Polyester/Cotton, no additional coating



Original Print Colors before light exposure

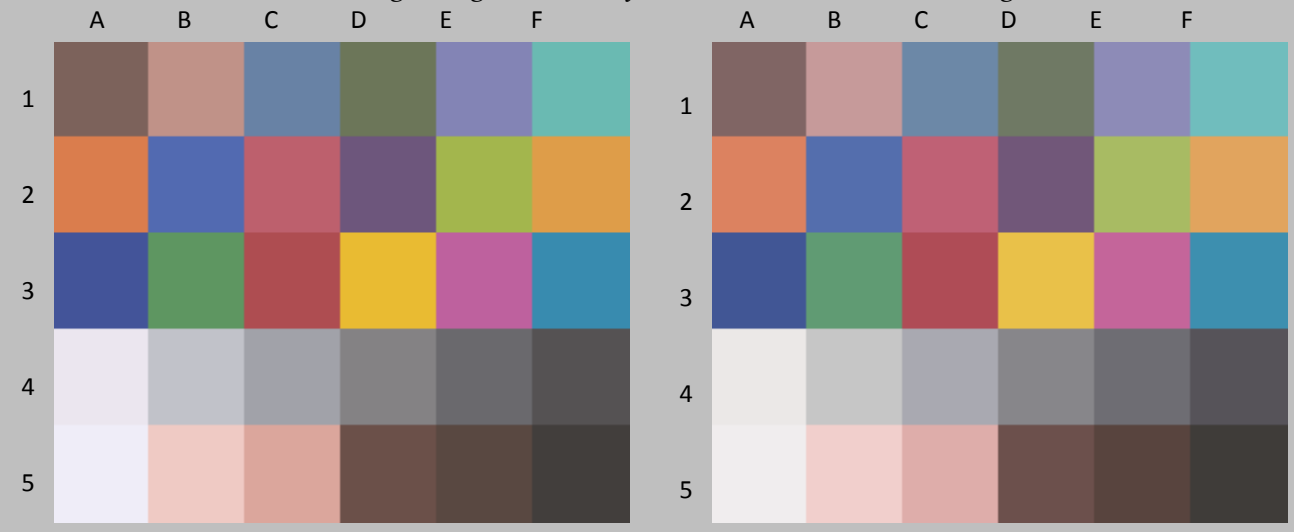
Colors After light exposure

Patch #	Description	I* Color	ΔE	L* Before	L* After	a* Before	a* After	b* Before	b* After
A1	Dark Skin	83.8	2.8	44.1	45.2	10.0	11.3	8.0	5.8
B1	Light Skin	83.5	4.8	64.9	67.6	17.0	17.3	11.9	8.0
C1	Blue sky	94.6	2.4	53.5	55.1	-3.4	-4.1	-21.8	-20.3
D1	Foliage	80.6	3.9	48.2	49.2	-8.3	-7.5	14.5	10.9
E1	blue flower	94.5	3.1	56.5	58.8	7.9	7.5	-25.7	-23.7
F1	bluish green	89.5	3.8	70.0	71.8	-27.3	-25.6	-4.5	-7.5
A1	orange	89.6	6.2	62.5	63.7	33.6	32.9	41.5	35.5
B2	purplish blue	90.0	4.9	45.5	46.8	7.2	4.3	-41.3	-37.7
C2	moderate red	92.8	3.5	52.4	53.3	38.8	40.2	10.8	7.7
D2	purple	92.7	2.4	39.9	40.6	16.0	15.9	-17.8	-15.6
E2	yellow green	89.1	6.5	70.9	72.8	-17.7	-17.2	49.8	43.6
F2	orange yellow	89.3	6.7	70.3	72.1	19.4	17.9	52.7	46.4
A3	blue	91.3	4.2	37.0	37.4	9.6	6.8	-41.4	-38.3
B3	green	83.6	6.6	57.3	59.0	-28.3	-27.2	21.9	15.6
C3	red	95.0	2.8	46.0	45.7	40.6	41.6	18.3	15.8
D3	yellow	91.9	6.4	78.4	80.0	7.7	5.8	69.8	63.9
E3	magenta	91.6	4.6	54.3	55.6	44.0	43.6	-15.6	-11.2
F3	cyan	96.6	1.9	54.0	55.2	-17.2	-18.4	-26.6	-25.5
A4	white	64.9	3.9	91.7	92.2	2.5	1.5	-3.6	0.1
B4	neutral 8	70.8	3.6	78.5	80.0	0.9	0.1	-4.0	-0.9
C4	neutral 6.5	100.0	2.6	66.5	69.1	1.2	1.1	-4.0	-3.5
D4	neutral 5	99.4	1.7	54.4	56.0	0.9	1.3	-1.5	-1.8
E4	neutral 3.5	96.4	1.6	44.8	46.1	0.8	1.3	-1.8	-2.5
F4	black	81.5	2.3	35.3	35.6	0.9	1.8	-0.5	-2.6
A5	paper white	55.6	4.7	94.1	94.3	2.5	1.1	-4.9	-0.4
B5	Skin highlight L*=88	89.8	2.6	84.4	85.9	13.3	11.6	8.0	6.8
C5	Skin highlight L* =75	86.6	4.5	73.0	75.5	19.4	18.2	13.4	9.9
D5	Skin shadow L*=28	90.4	1.8	36.9	37.0	10.9	12.1	8.8	7.4
E5	Skin shadow L*=13	92.4	1.7	32.0	30.9	7.2	8.3	6.7	7.4
F5	Maximum Black	100.0	1.1	26.8	25.8	1.4	1.3	2.2	2.4

Summary Results	I* Color	I* tone	ΔE
Average Score for all patches	88.3	92.3	3.7
Worst 10% (3 lowest scoring patches)	63.8	87.3	6.6

140 Megalux hours

Epson Stylus Pro 3880, Epson OEM UltraChrome K3™ with Vivid Magenta, Kernow Coatings Ltd – Tintagel 140gsm 65/35 Polyester/Cotton, no additional coating



Original Print Colors before light exposure

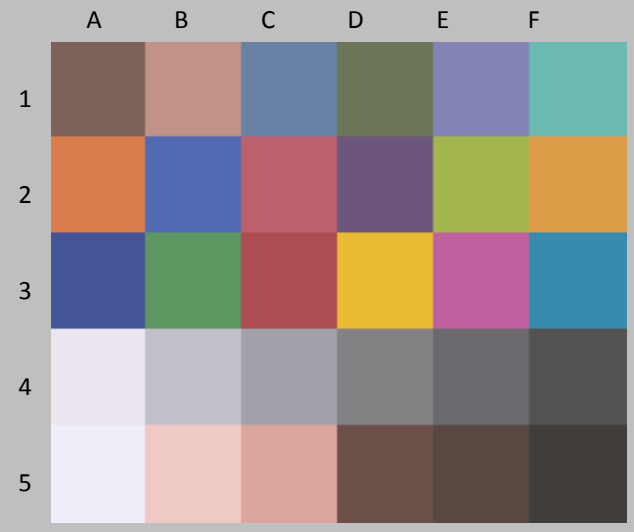
Colors After light exposure

Patch #	Description	I* Color	ΔE	L* Before	L* After	a* Before	a* After	b* Before	b* After
A1	Dark Skin	80.5	3.3	44.1	45.3	10.0	11.4	8.0	5.4
B1	Light Skin	80.4	5.4	64.9	67.7	17.0	17.4	11.9	7.3
C1	Blue sky	93.9	2.6	53.5	55.3	-3.4	-3.9	-21.8	-20.1
D1	Foliage	76.9	4.5	48.2	49.3	-8.3	-7.3	14.5	10.3
E1	blue flower	93.7	3.4	56.5	59.0	7.9	7.6	-25.7	-23.5
F1	bluish green	87.0	4.5	70.0	71.9	-27.3	-25.2	-4.5	-8.0
A1	orange	87.5	7.3	62.5	63.9	33.6	32.9	41.5	34.4
B2	purplish blue	89.1	5.2	45.5	46.8	7.2	4.2	-41.3	-37.3
C2	moderate red	91.4	4.1	52.4	53.4	38.8	40.4	10.8	7.2
D2	purple	91.9	2.6	39.9	40.7	16.0	15.9	-17.8	-15.4
E2	yellow green	86.9	7.7	70.9	72.9	-17.7	-17.1	49.8	42.4
F2	orange yellow	87.0	8.0	70.3	72.2	19.4	17.9	52.7	45.1
A3	blue	90.5	4.6	37.0	37.4	9.6	6.6	-41.4	-38.0
B3	green	80.5	7.7	57.3	59.0	-28.3	-27.1	21.9	14.5
C3	red	93.4	3.4	46.0	45.7	40.6	41.6	18.3	15.0
D3	yellow	90.1	7.7	78.4	80.0	7.7	5.9	69.8	62.6
E3	magenta	90.7	5.0	54.3	55.7	44.0	43.5	-15.6	-10.8
F3	cyan	96.2	2.1	54.0	55.3	-17.2	-18.4	-26.6	-25.3
A4	white	60.3	4.3	91.7	92.1	2.5	1.4	-3.6	0.5
B4	neutral 8	66.7	4.0	78.5	80.0	0.9	0.1	-4.0	-0.5
C4	neutral 6.5	100.0	2.8	66.5	69.3	1.2	1.3	-4.0	-3.6
D4	neutral 5	99.6	1.8	54.4	56.1	0.9	1.3	-1.5	-1.8
E4	neutral 3.5	95.8	1.7	44.8	46.2	0.8	1.3	-1.8	-2.6
F4	black	76.4	2.8	35.3	35.6	0.9	1.8	-0.5	-3.1
A5	paper white	49.2	5.3	94.1	94.2	2.5	1.0	-4.9	0.2
B5	Skin highlight L*=88	88.3	2.8	84.4	85.9	13.3	11.7	8.0	6.4
C5	Skin highlight L* =75	83.7	5.0	73.0	75.5	19.4	18.4	13.4	9.1
D5	Skin shadow L*=28	87.6	2.2	36.9	36.8	10.9	12.3	8.8	7.0
E5	Skin shadow L*=13	93.0	1.6	32.0	31.0	7.2	8.3	6.7	7.3
F5	Maximum Black	100.0	1.2	26.8	25.7	1.4	1.4	2.2	2.5

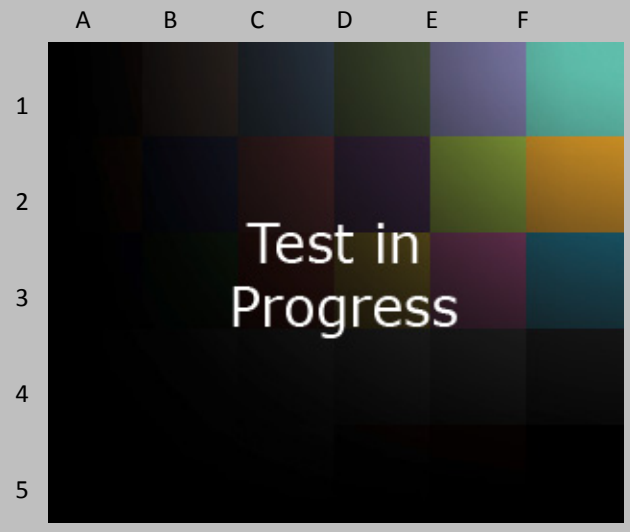
Summary Results	I* Color	I* tone	ΔE
Average Score for all patches	86.3	92.0	4.1
Worst 10% (3 lowest scoring patches)	58.7	86.8	7.8

160 Megalux hours

The 180 Megalux hour Update will be posted on approximately OCT 05, 2014.



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			44.1		10.0		8.0	
B1	Light Skin			64.9		17.0		11.9	
C1	Blue sky			53.5		-3.4		-21.8	
D1	Foliage			48.2		-8.3		14.5	
E1	blue flower			56.5		7.9		-25.7	
F1	bluish green			70.0		-27.3		-4.5	
A1	orange			62.5		33.6		41.5	
B2	purplish blue			45.5		7.2		-41.3	
C2	moderate red			52.4		38.8		10.8	
D2	purple			39.9		16.0		-17.8	
E2	yellow green			70.9		-17.7		49.8	
F2	orange yellow			70.3		19.4		52.7	
A3	blue			37.0		9.6		-41.4	
B3	green			57.3		-28.3		21.9	
C3	red			46.0		40.6		18.3	
D3	yellow			78.4		7.7		69.8	
E3	magenta			54.3		44.0		-15.6	
F3	cyan			54.0		-17.2		-26.6	
A4	white			91.7		2.5		-3.6	
B4	neutral 8			78.5		0.9		-4.0	
C4	neutral 6.5			66.5		1.2		-4.0	
D4	neutral 5			54.4		0.9		-1.5	
E4	neutral 3.5			44.8		0.8		-1.8	
F4	black			35.3		0.9		-0.5	
A5	paper white			94.1		2.5		-4.9	
B5	Skin highlight L*=88			84.4		13.3		8.0	
C5	Skin highlight L* =75			73.0		19.4		13.4	
D5	Skin shadow L*=28			36.9		10.9		8.8	
E5	Skin shadow L*=13			32.0		7.2		6.7	
F5	Maximum Black			26.8		1.4		2.2	

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

180 Megalux hours