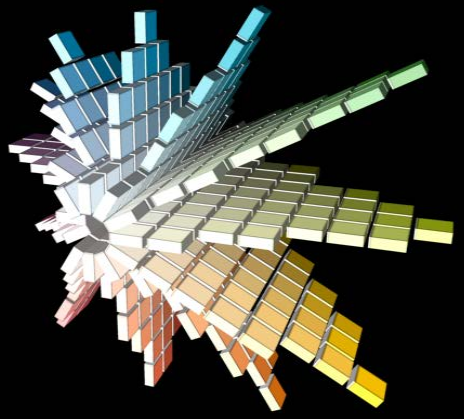
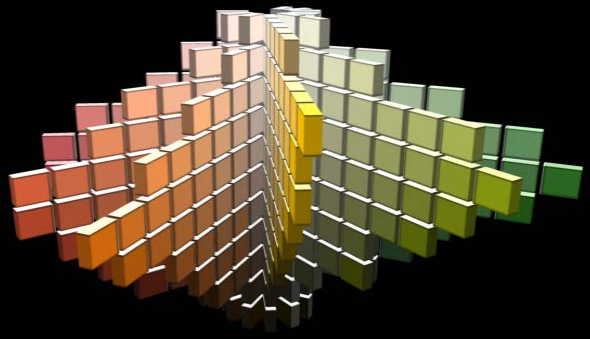
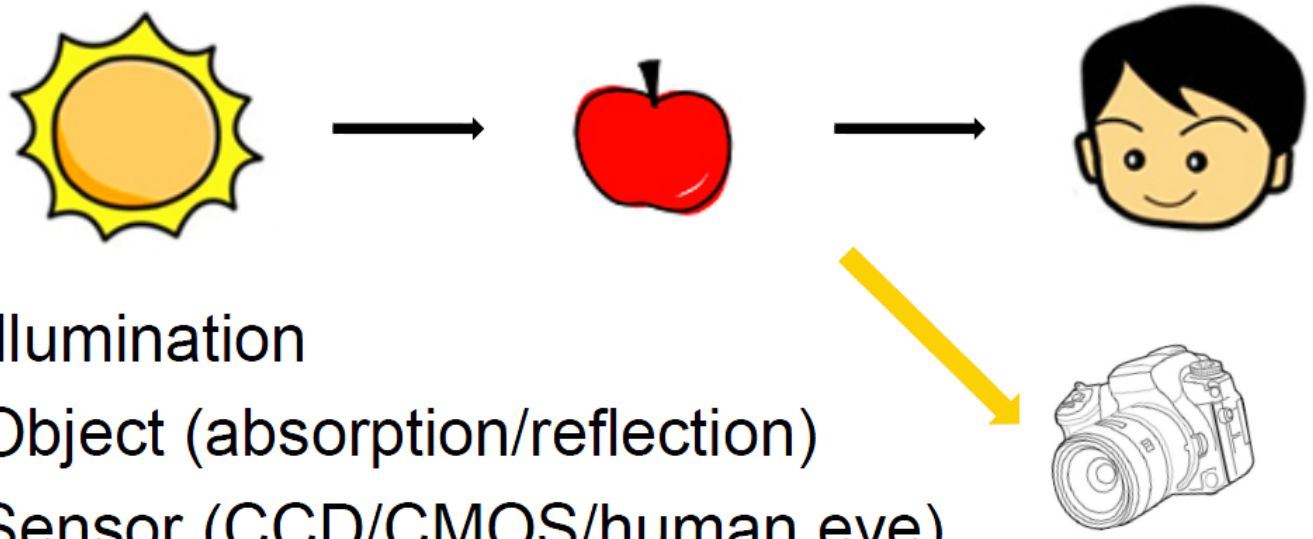


What is Color?



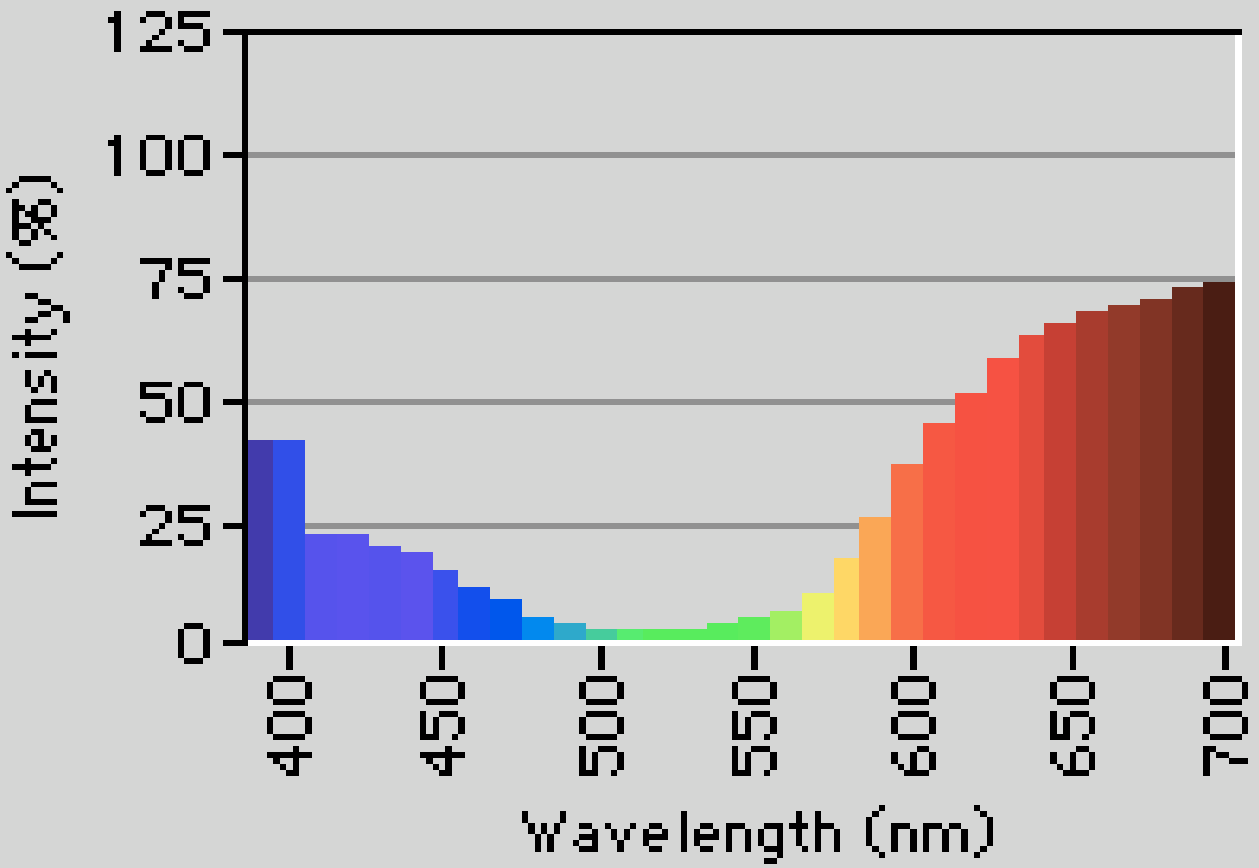
The Way Color Image Is Captured



- Illumination
- Object (absorption/reflection)
- Sensor (CCD/CMOS/human eye)

- Light that reaches the eye is captured and recorded

Spectrum



Wavelength :

Intensity :

What is Color? "色彩"現象來自"光", 沒有"光"就沒有"色彩"

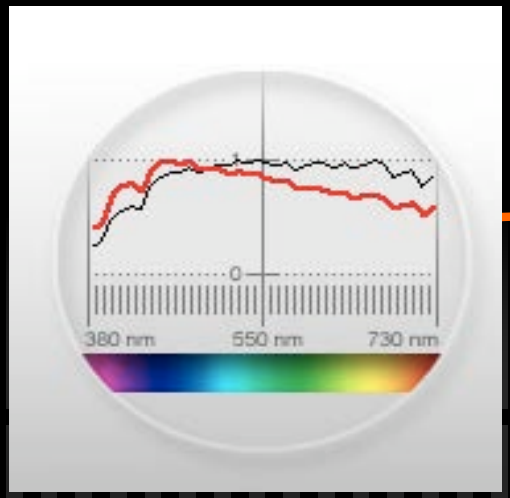
Isaac Newton examining light with a prism, while simultaneously striking a graceful pose

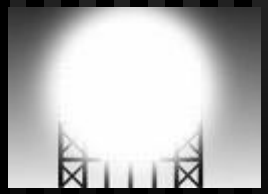
The breakthrough to the study color was this: Newton turned our attention to the light source . Color was, for the first time, an identifiable property of light. White light contains all colors. If a surface appears to be yellow this means that the light reaching our eyes has somehow been changed by reflecting off that surface. No light, no color. (For a description of Newton s experiment, see sidebar.)

Newton, Sir Isaac (1642-1727)

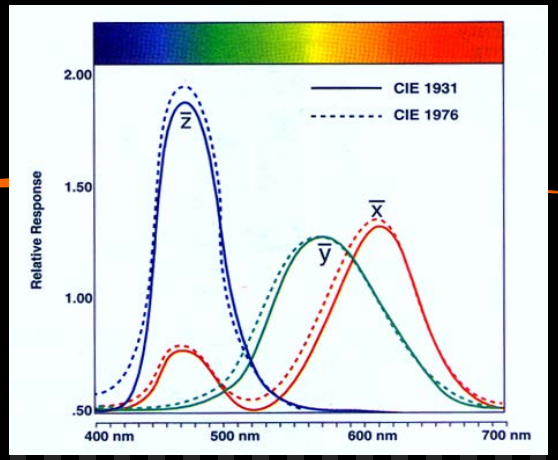
What is color?　色彩現象三元素: 光源,眼睛,物體

光源

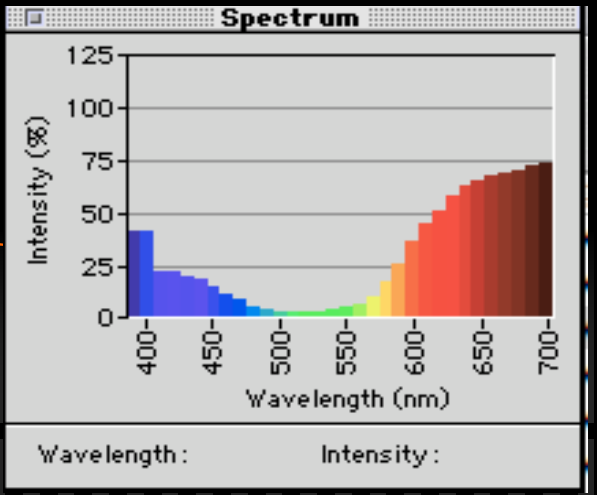




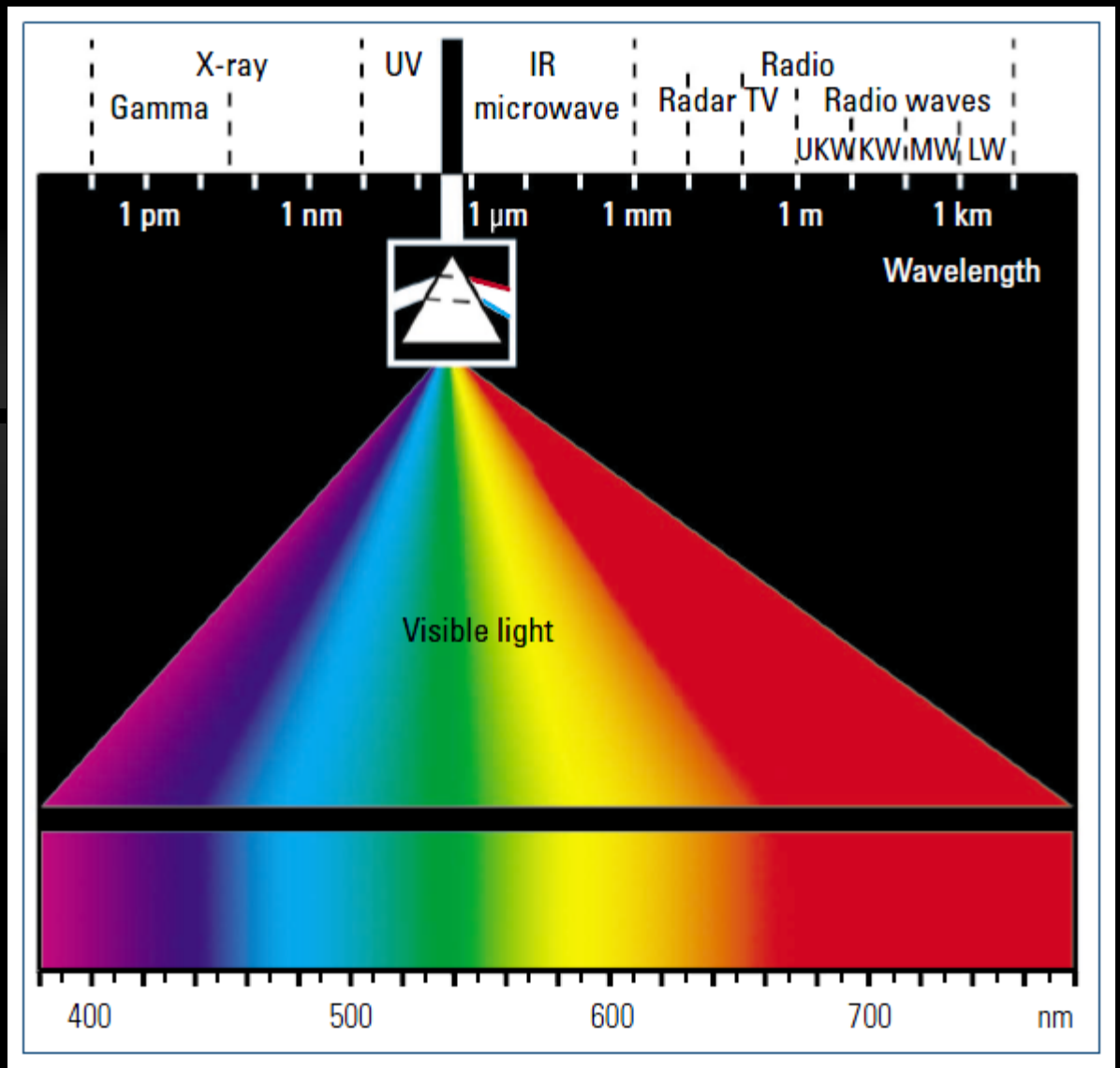
眼睛



物體

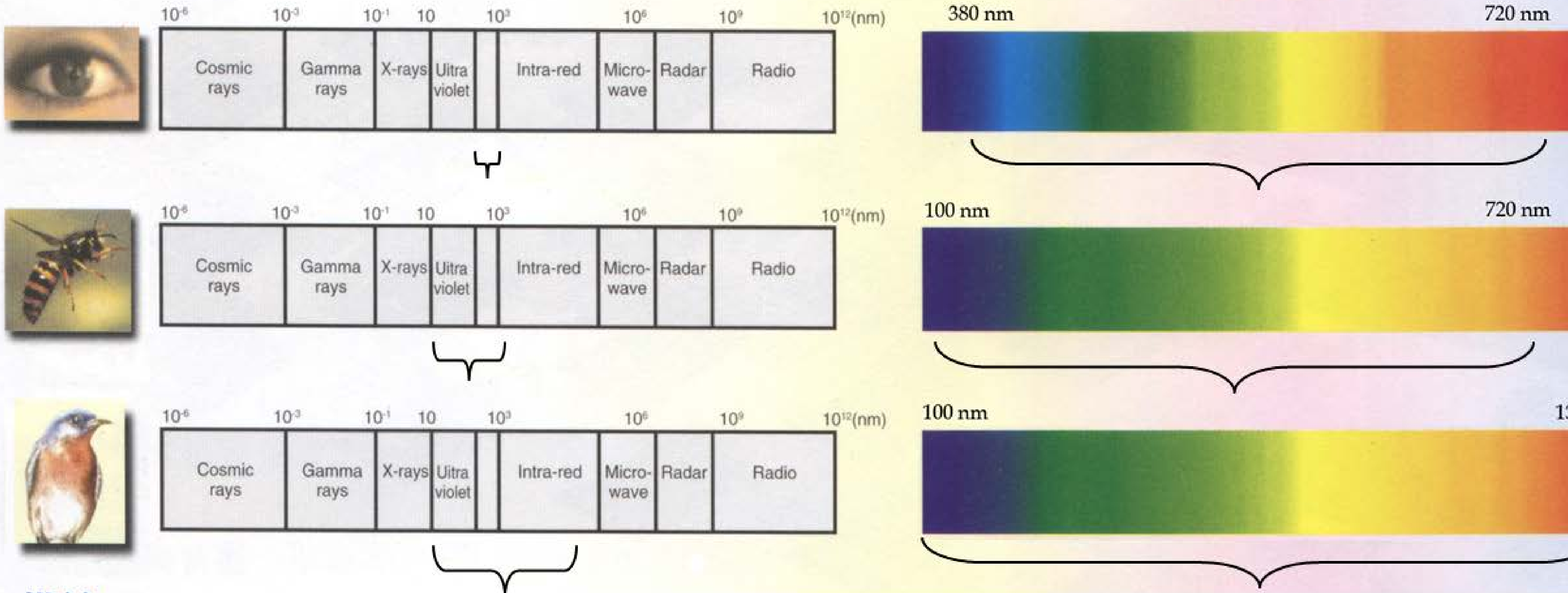


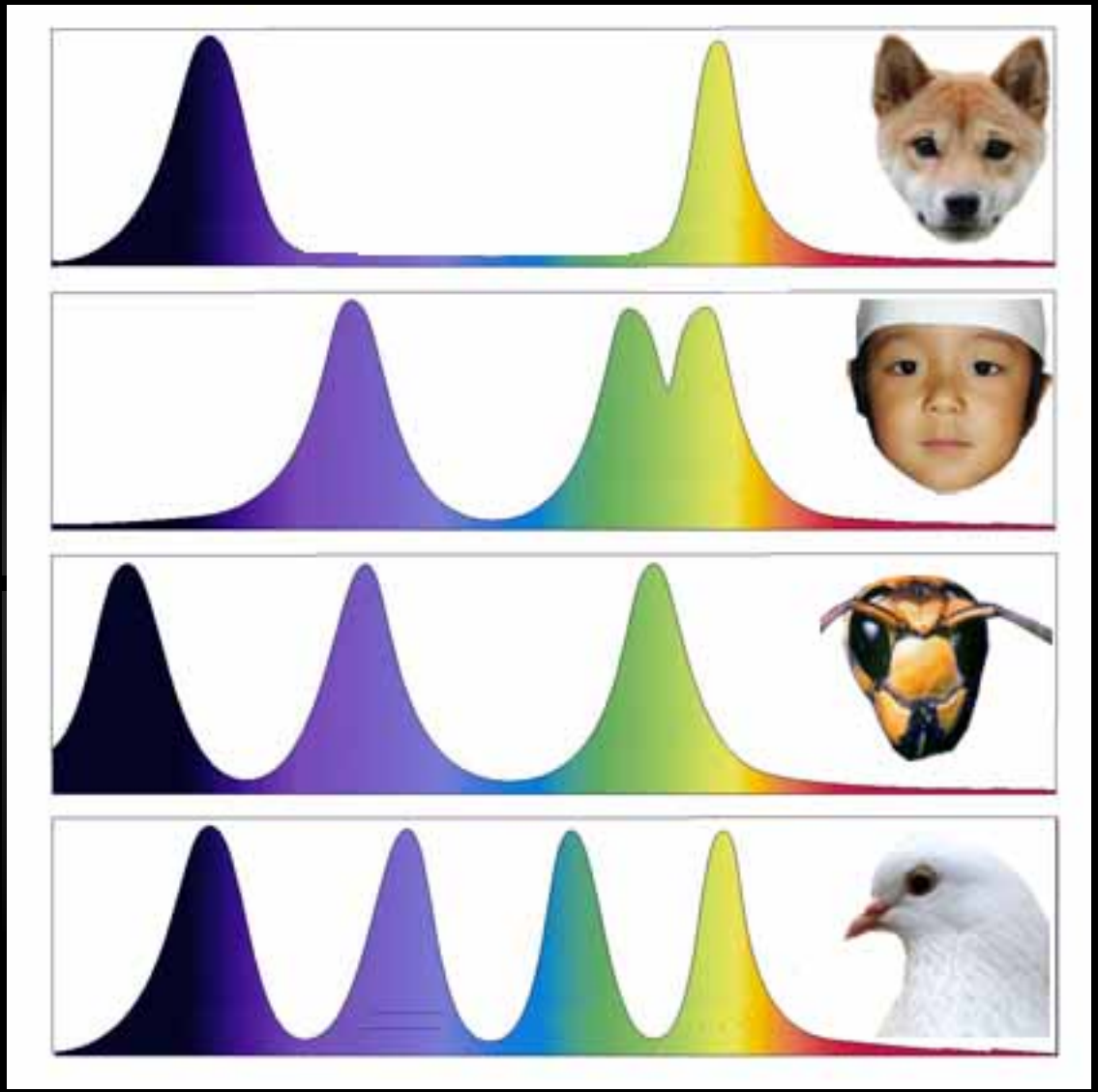
視覺 ← → 色彩


X-ray
Gamma
UV
IR
microwave
Radio
Radar TV
Radio waves
UKW KW MW LW
1 pm
1 nm
1 µm
1 mm
1 m
1 km
Wavelength
Visible light
400
500
600
700
nm

電磁波 (ElectroMagnetic Wave)

色彩感應



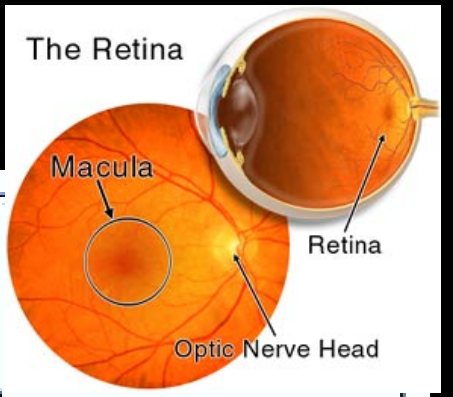


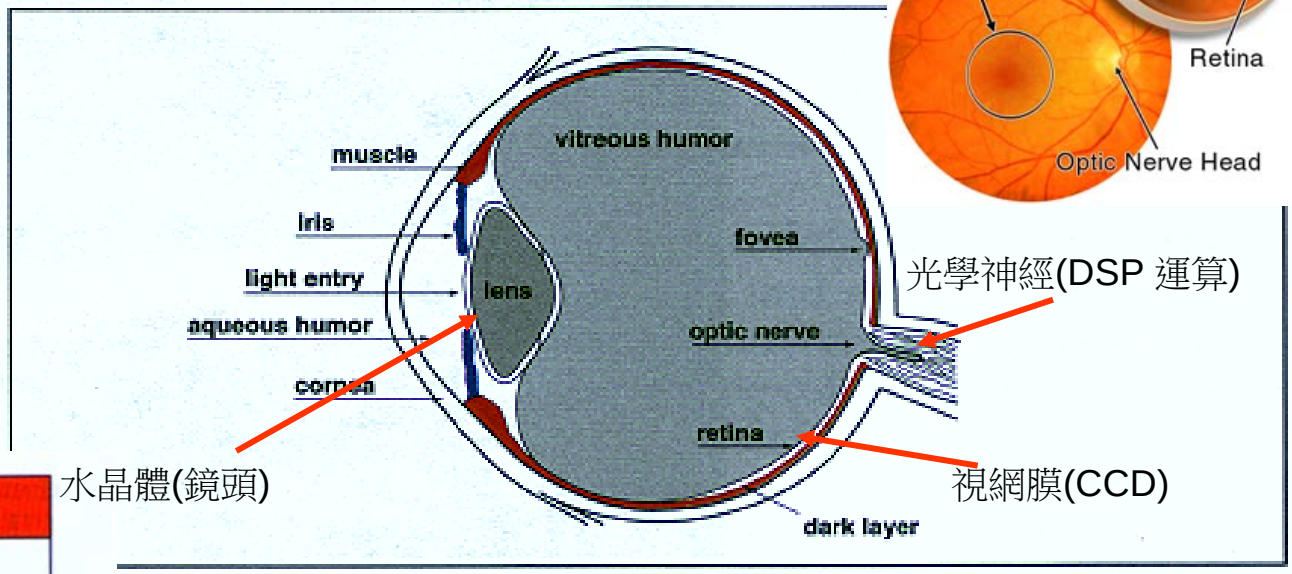
demo

What is color? 光源,眼睛,物體

錐狀細胞Cone: 感色

桿狀細胞Rod: 感明暗

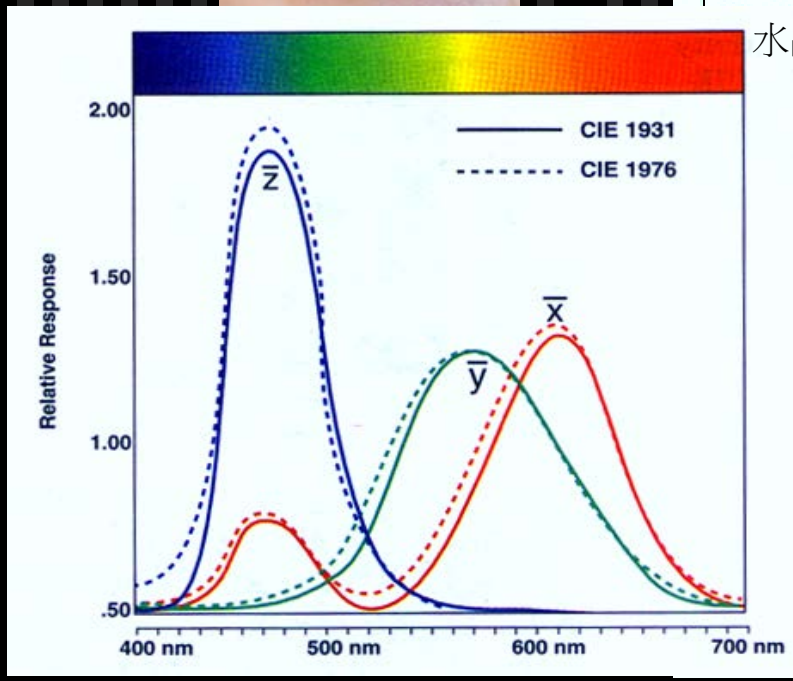




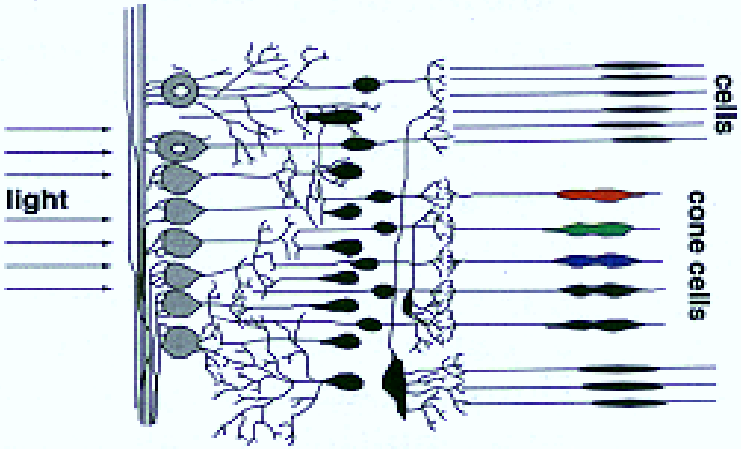
光學神經(DSP 運算)

水晶體(鏡頭)

視網膜(CCD)



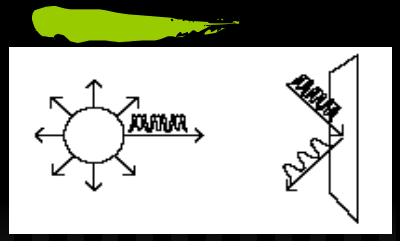
光線

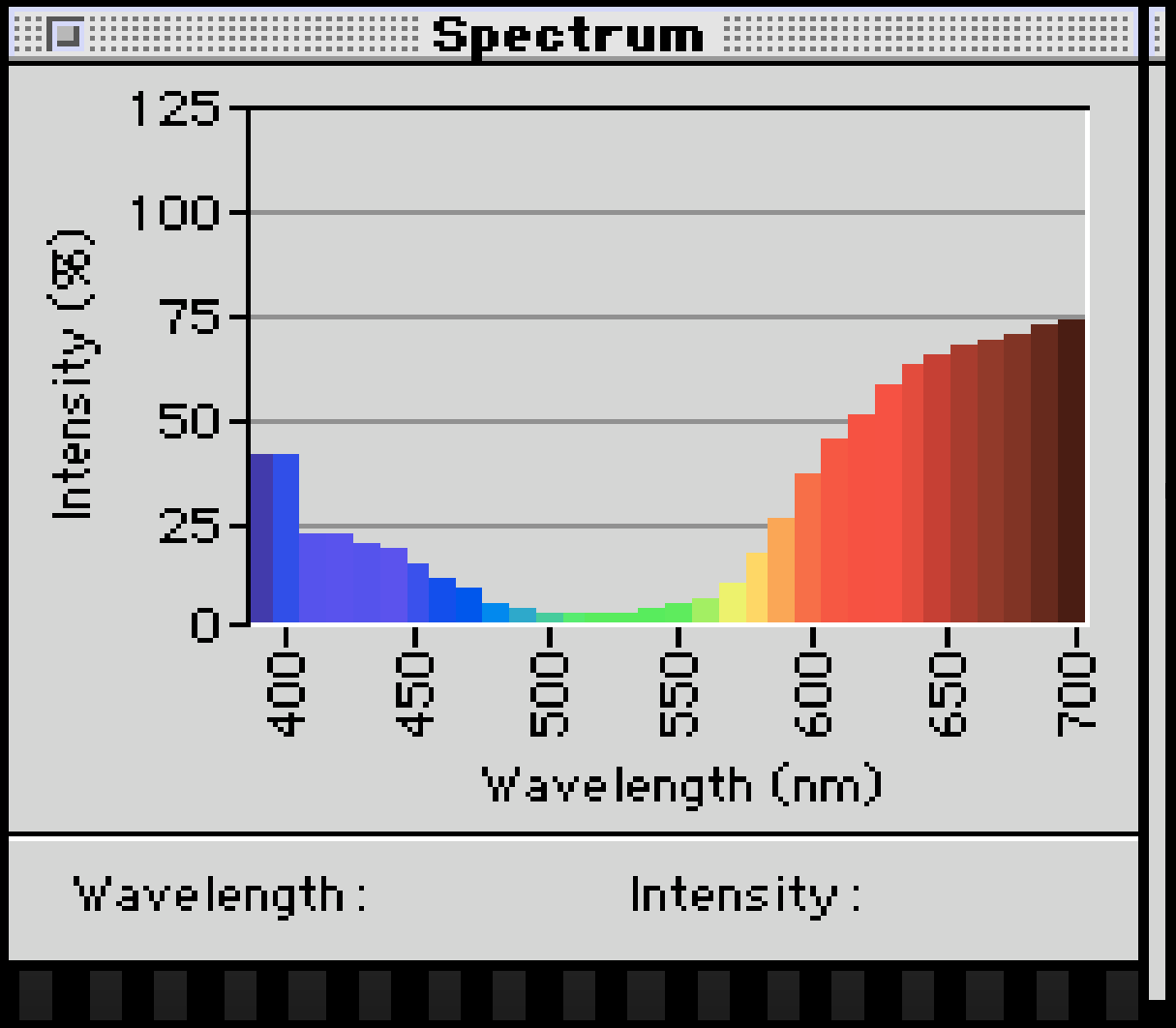


125 million

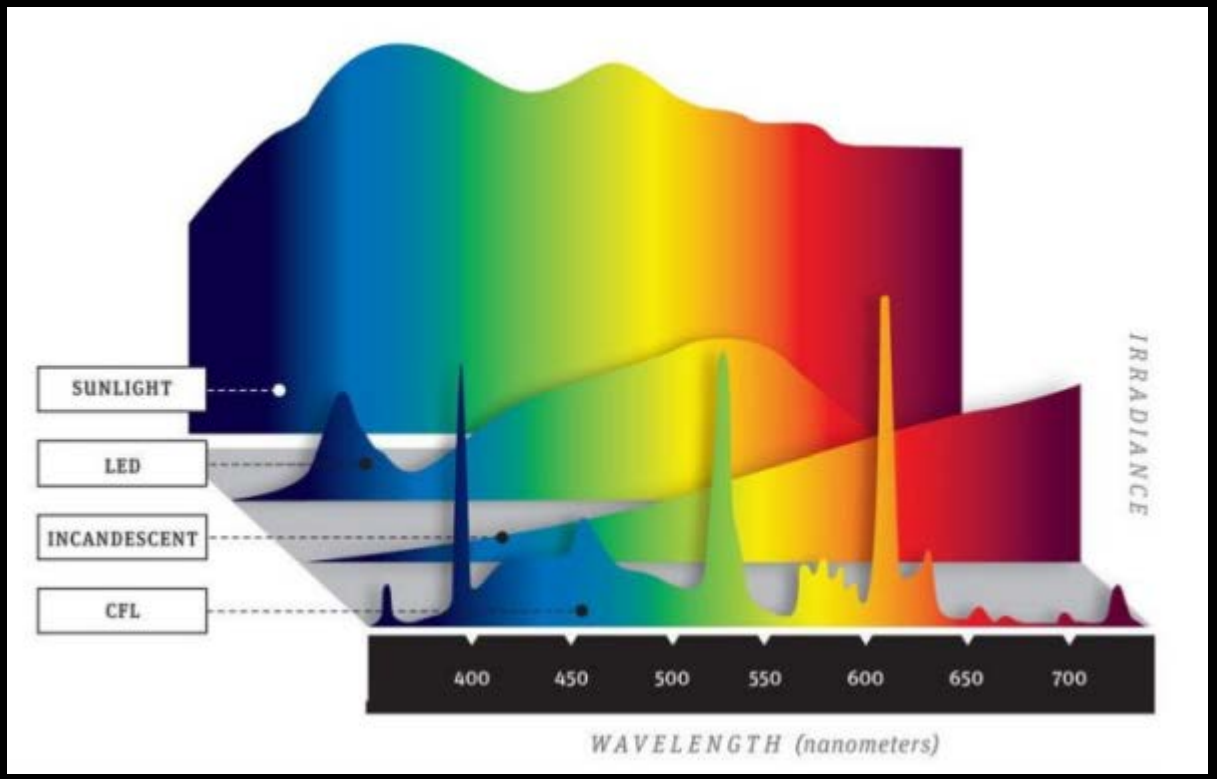
6 million

What is color? 光源,眼睛,物體

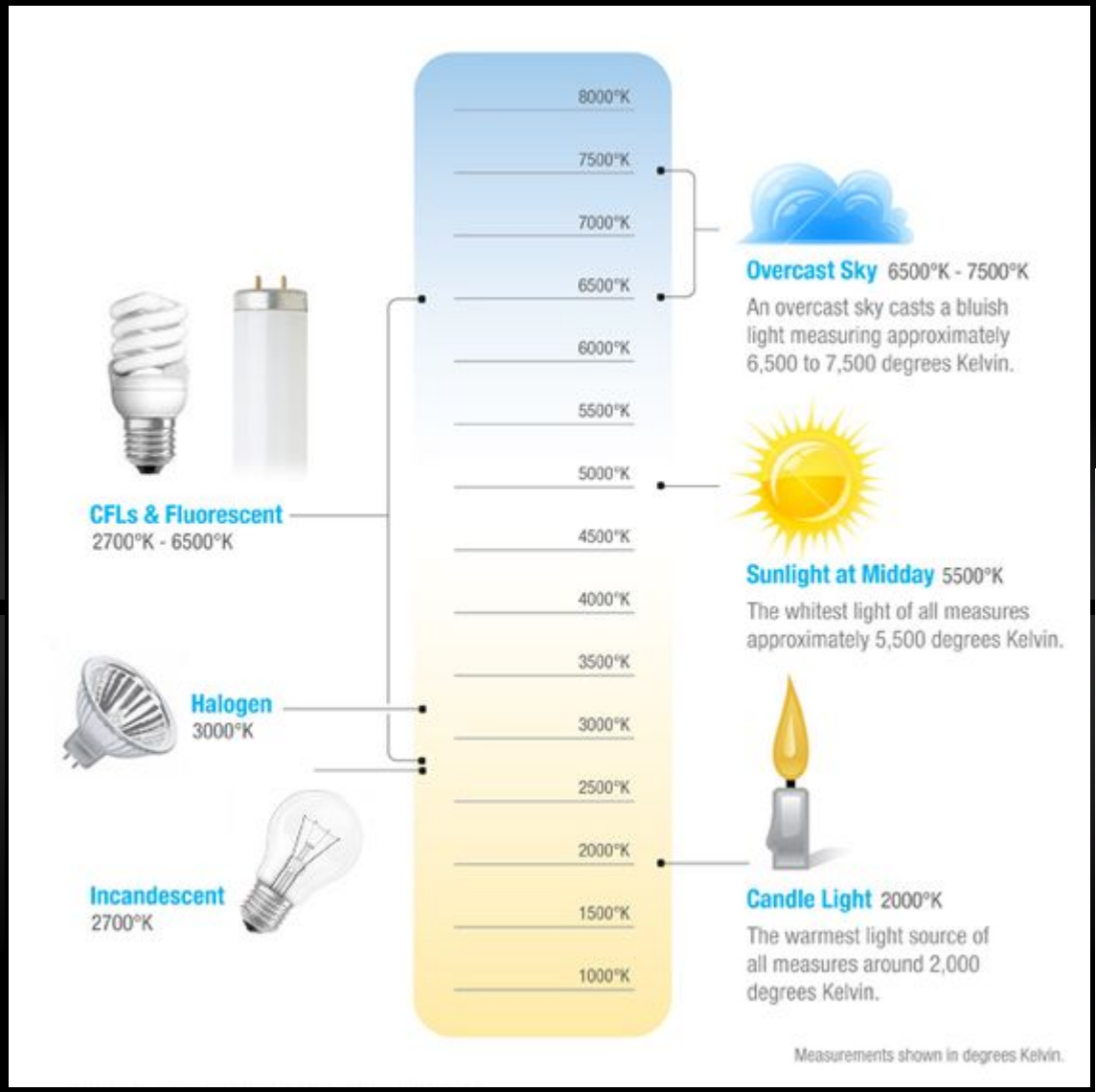


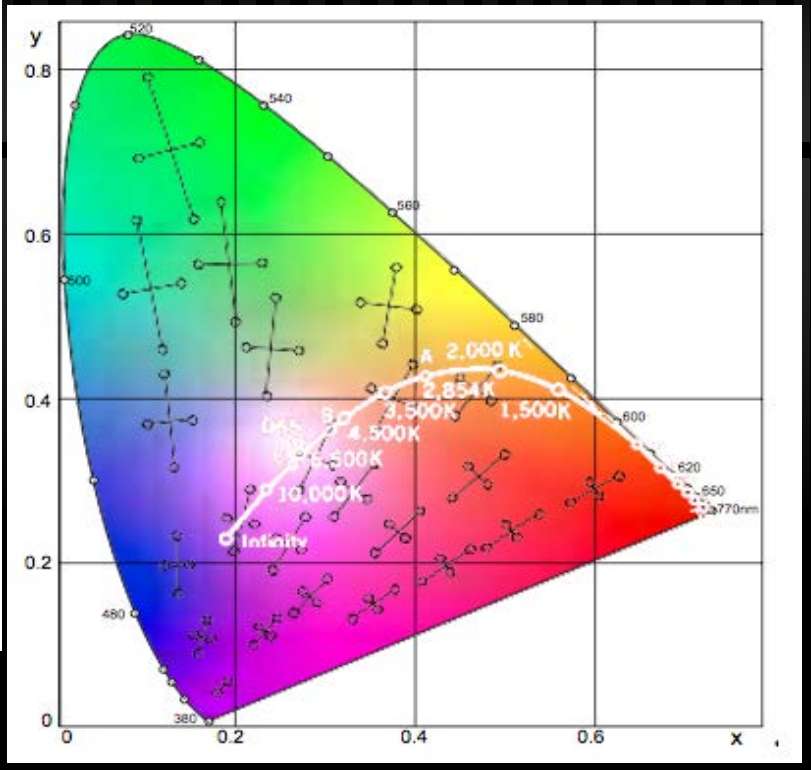


What is color?　光源,眼睛,物體

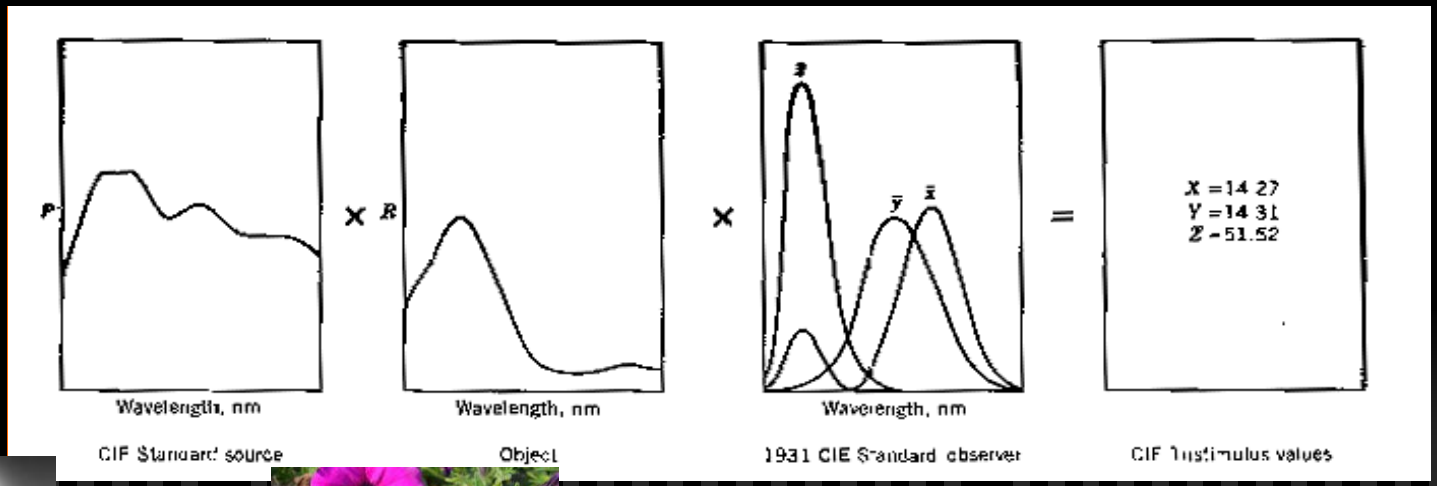


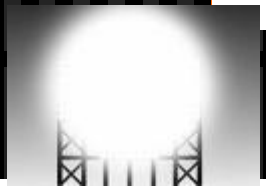
demo

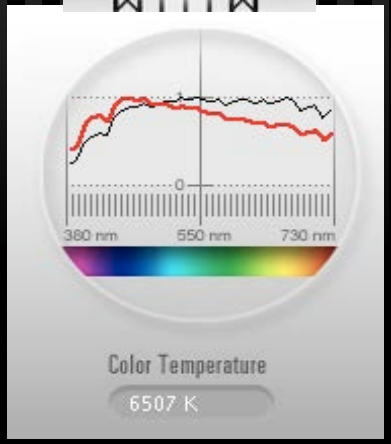

8000°K
7500°K
7000°K
6500°K
6000°K
5500°K
5000°K
4500°K
4000°K
3500°K
3000°K
2500°K
2000°K
1500°K
1000°K
Overcast Sky 6500°K - 7500°K
An overcast sky casts a bluish light measuring approximately 6,500 to 7,500 degrees Kelvin.
Sunlight at Midday 5500°K
The whitest light of all measures approximately 5,500 degrees Kelvin.
Candle Light 2000°K
The warmest light source of all measures around 2,000 degrees Kelvin.
CFLs & Fluorescent
2700°K - 6500°K
Halogen
3000°K
Incandescent
2700°K
Measurements shown in degrees Kelvin.

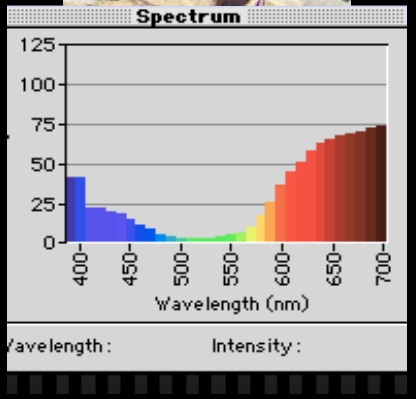

y
x
0
0.2
0.4
0.6
0.8
500
520
540
560
580
600
620
650
770nm
480
380
A 2,000 K
2,854K
3,500K
4,500K
1,500K
10,000K
Infinity

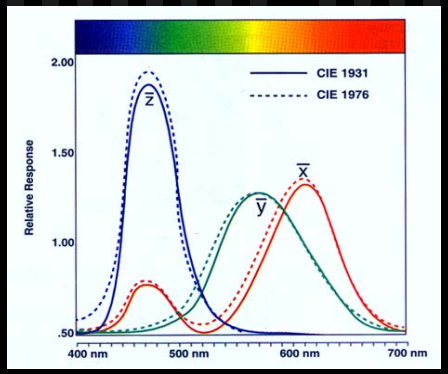
What is color?　光源,眼睛,物體

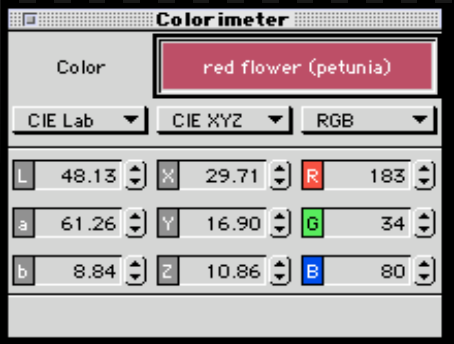








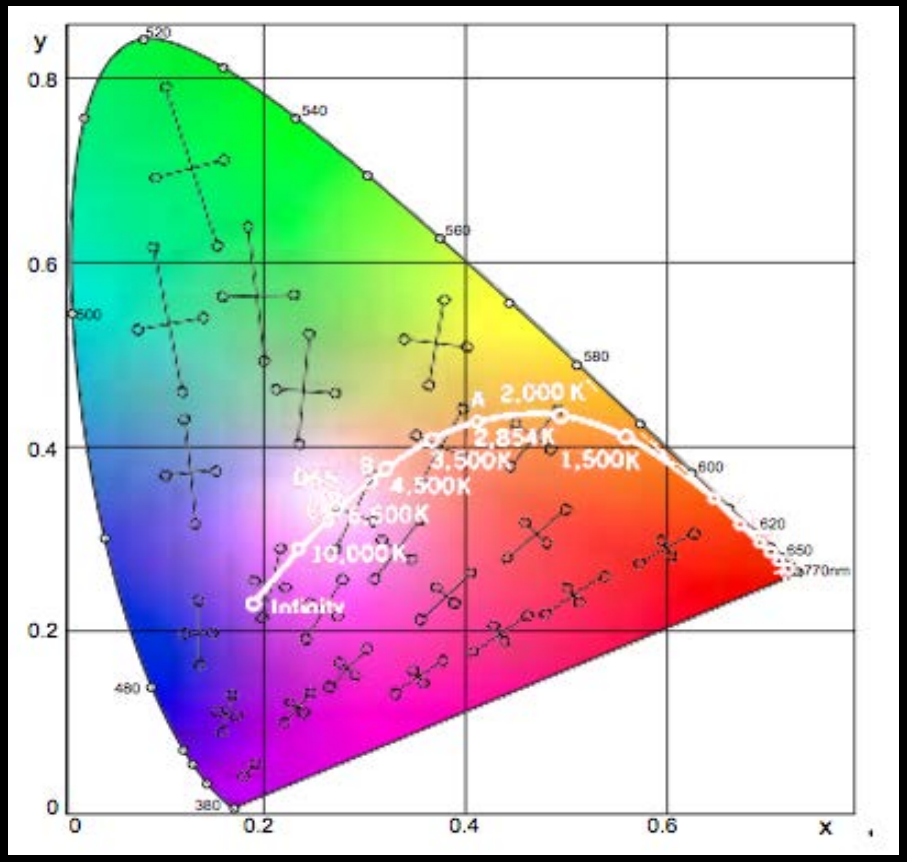




What is color?　Delta-E 色差

x= X/(X+Y+Z)
y= X/(X+Y+Z)
z= X/(X+Y+Z)
L= 116(Y/Yn)1/3-16
a= 500[(X/Xn)1/3-(Y/Yn)1/3]
b= 200[(Y/Yn)1/3-(Z/Zn)1/3]

CIE xyY



CIE L*a*b*

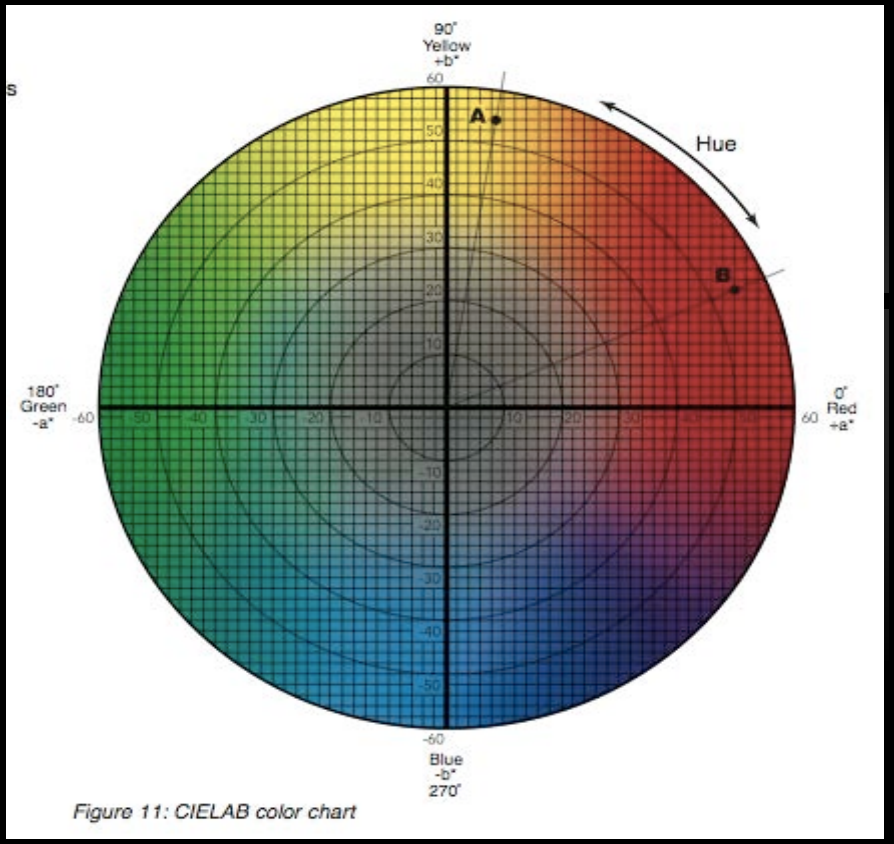


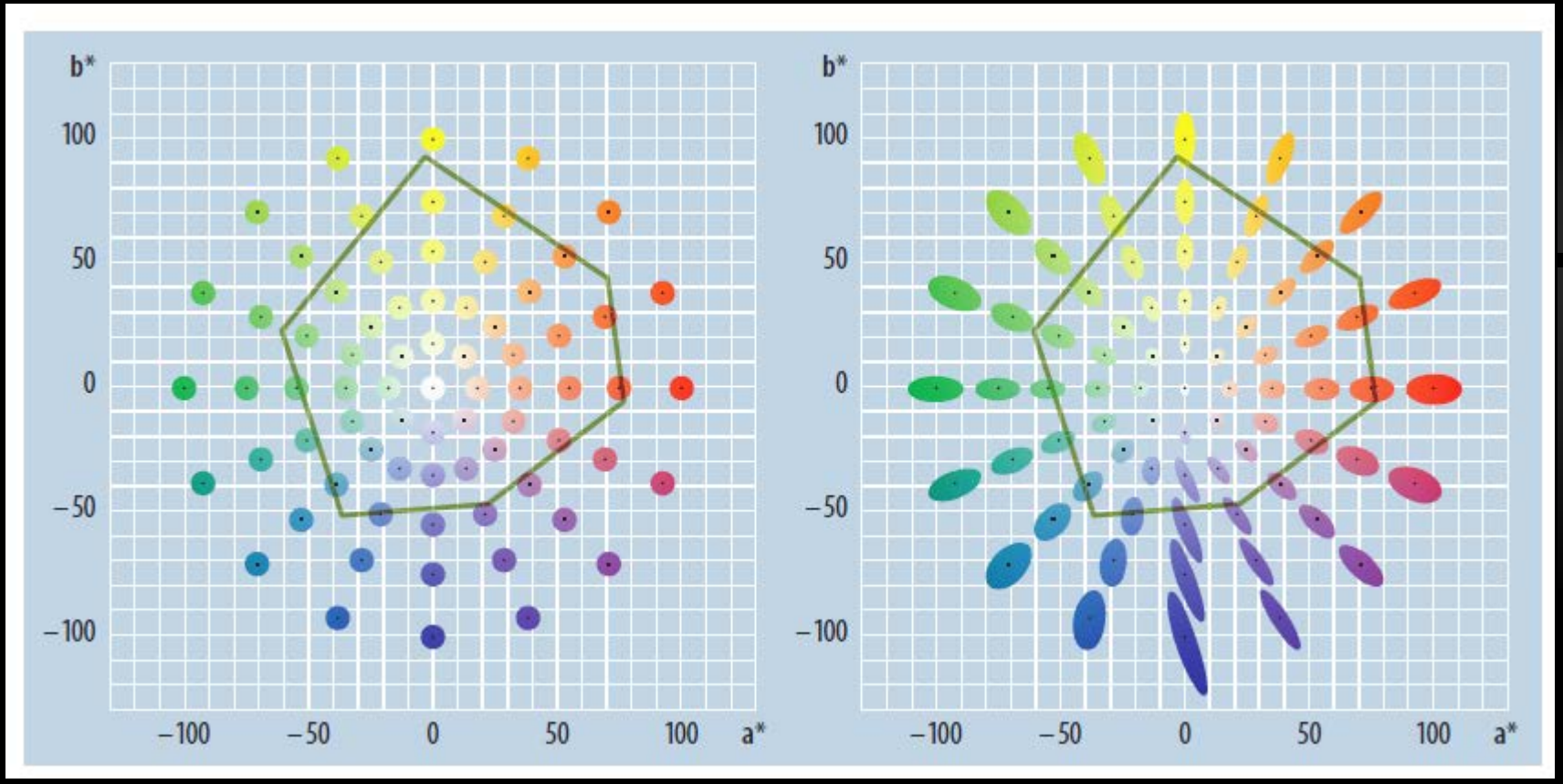
Figure 11: CIELAB color chart

http://127.0.0.1/deltaE/indexE.htm

What is color?　Color CIELAB Tolerance　色差容許

CIE Δab(1976)

CIE Δ_{00}(2000)



What is color?　Color CIELAB Tolerancing　色差容許

CIE Lab

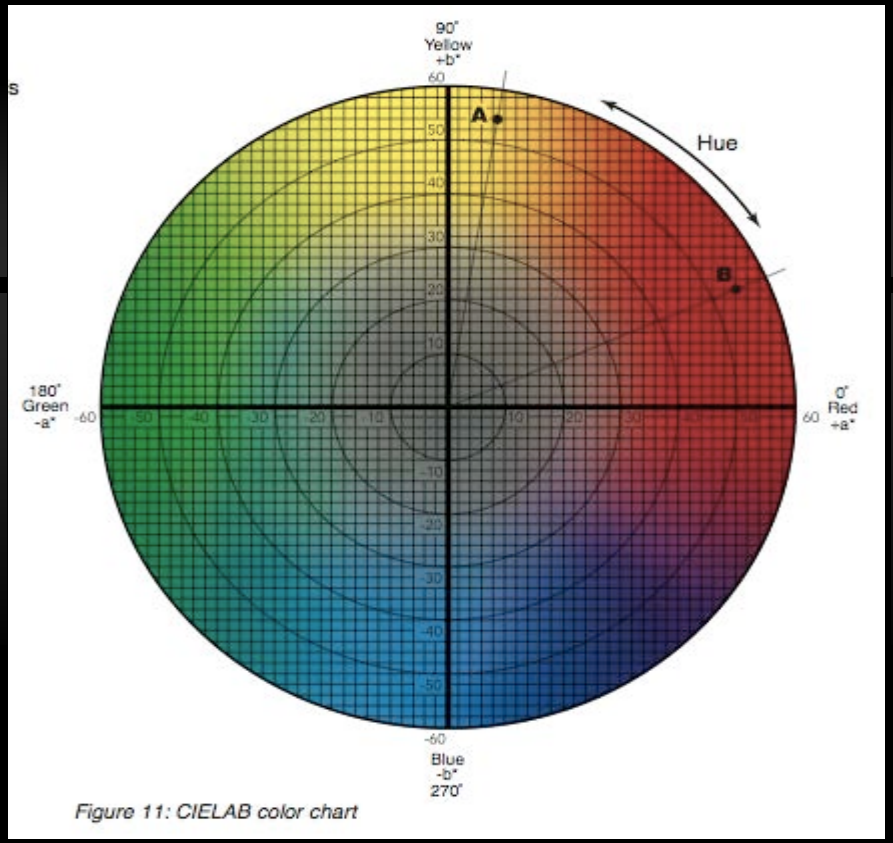


Figure 11: CIELAB color chart

CIE CMC

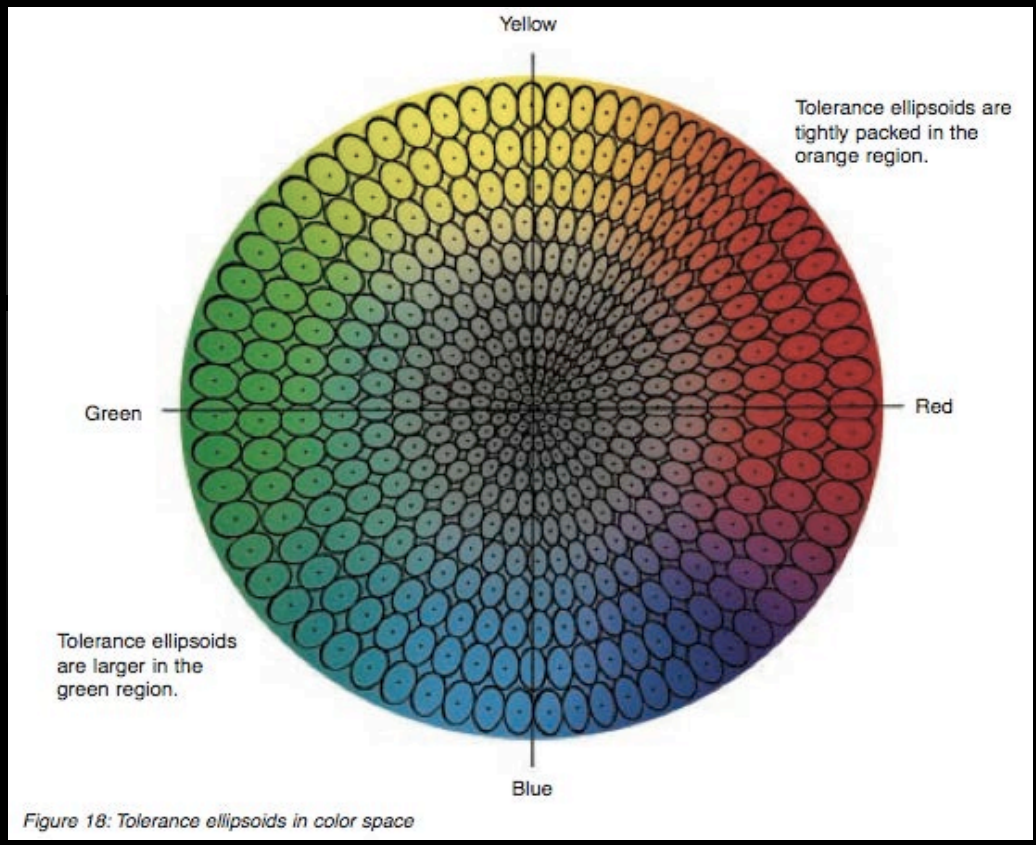
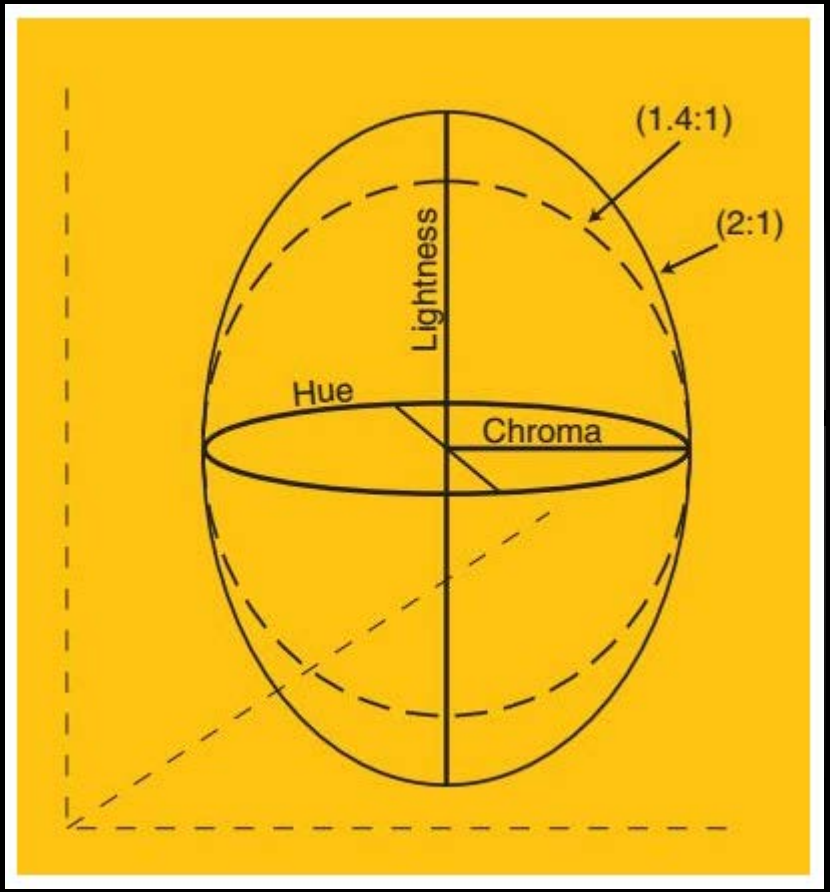


Figure 18: Tolerance ellipsoids in color space



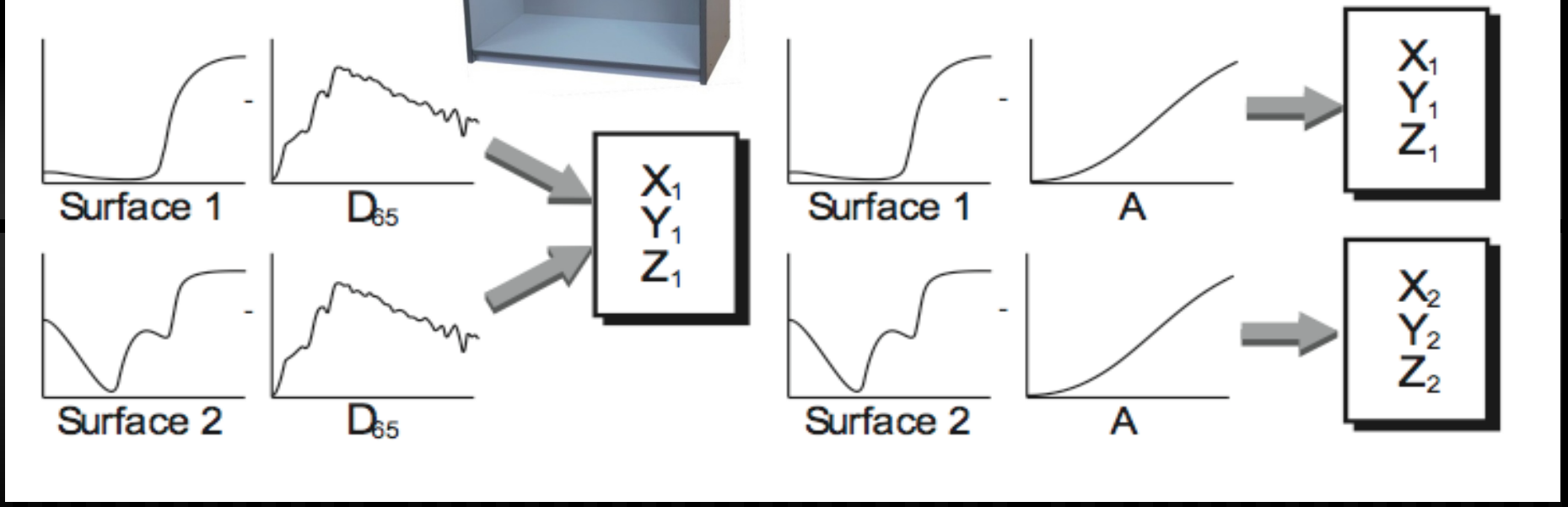
容差方法	跟视觉接近程度
CIE L*a*b*	75%
CIE L*C*h°	85%
CMC(l:c)	95%

$$\Delta E^*_{CMC} = \sqrt{\left(\frac{L^*_2 - L^*_1}{lS_L}\right)^2 + \left(\frac{C^*_2 - C^*_1}{cS_C}\right)^2 + \left(\frac{\Delta H^*_{ab}}{S_H}\right)^2}$$

$$F = \sqrt{\frac{C_1^{*4}}{C_1^{*4} + 1900}} \quad T = \begin{cases} 0.56 + |0.2\cos(h_1 + 168°)| & 164° \le h_1 \le 345° \\ 0.36 + |0.4\cos(h_1 + 35°)| & \text{otherwise} \end{cases}$$

$$S_L = \begin{cases} 0.511 & L^*_1 < 16 \\ \frac{0.040975 L^*_1}{1 + 0.01765 L^*_1} & L^*_1 \ge 16 \end{cases} \quad S_C = \frac{0.0638 C^*_1}{1 + 0.0131 C^*_1} + 0.638 \quad S_H = S_C(FT + 1 - F)$$

What is color? Metamerism (同色異譜）



兩個不同物體表面在D65光源下感受到相同顏色

同一組物體表面在A光源下感受到不同顏色

What is color? Attributes of Color: Hue, Chroma, Lightness
色彩標示特性: 色角度, 飽和度, 明度

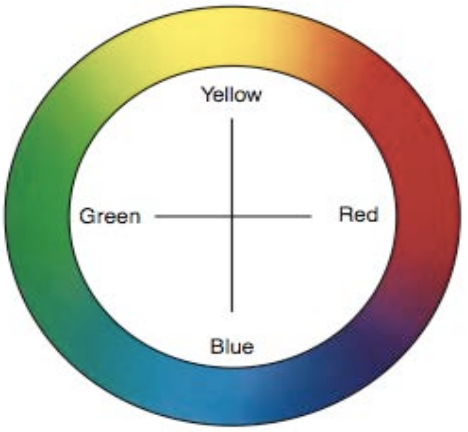


Figure 1: Hue

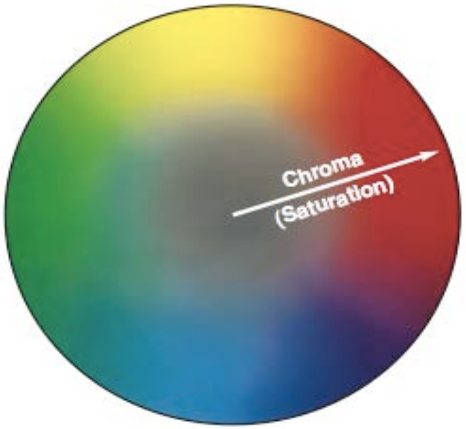


Figure 2: Chromaticity

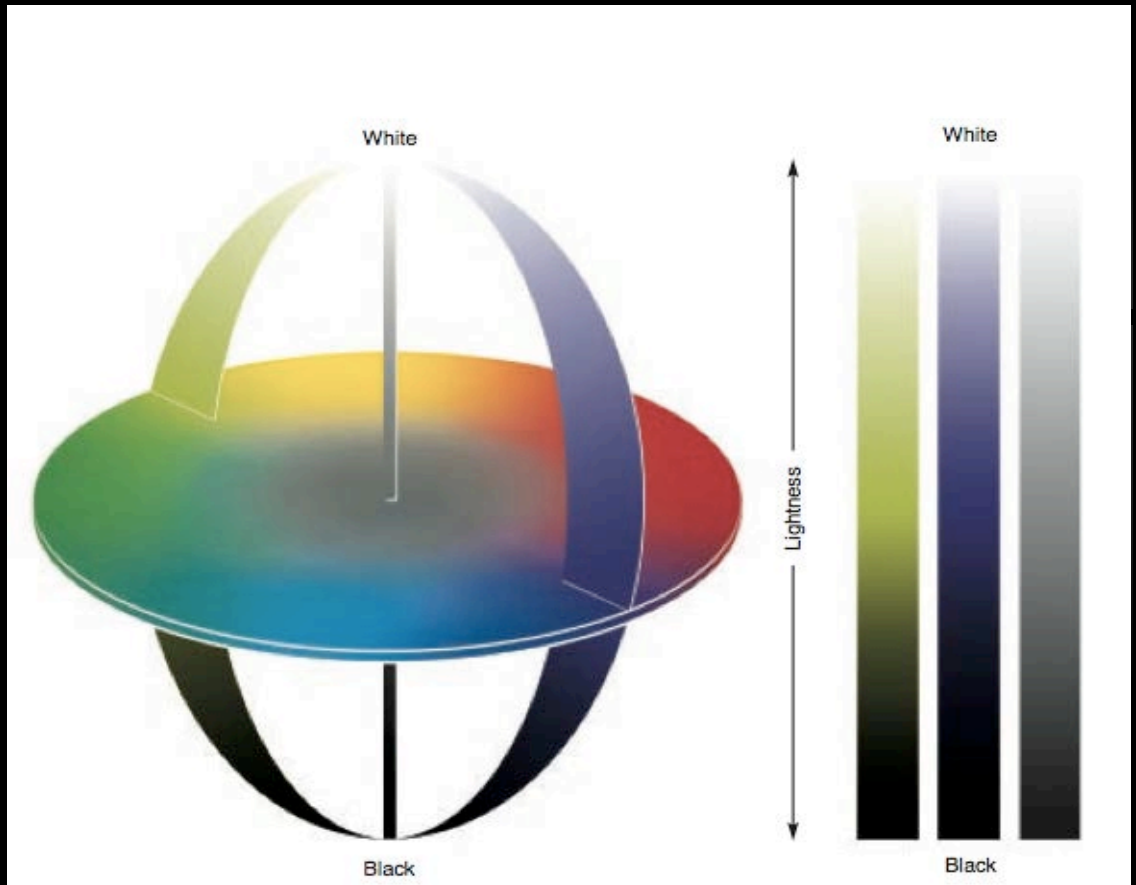
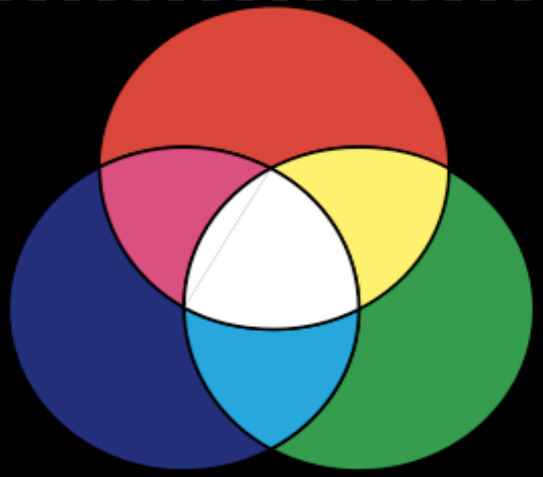
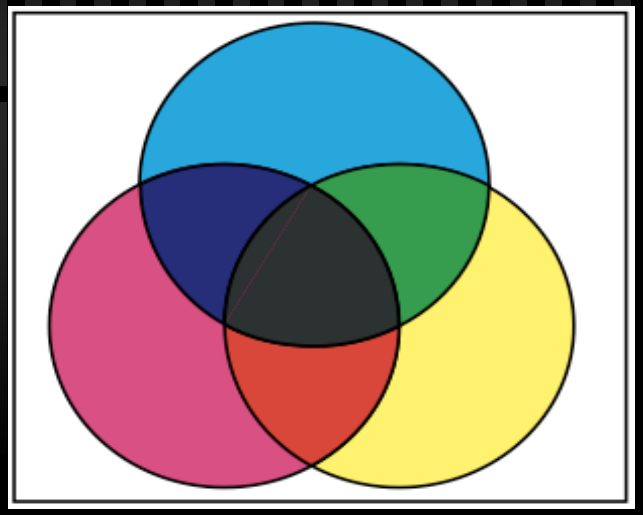


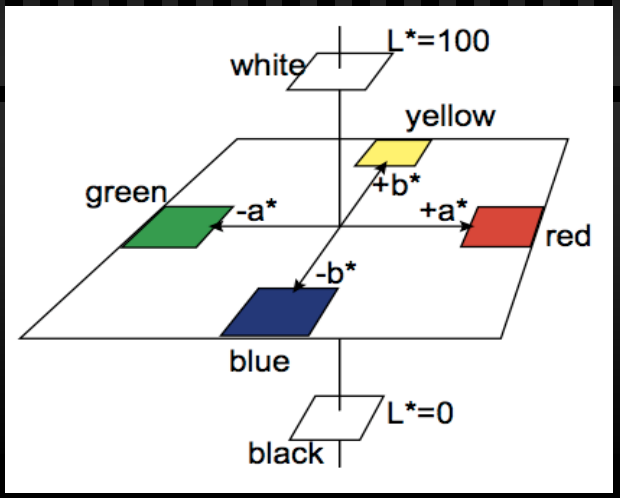
Figure 3: Three-dimensional color system depicting lightness

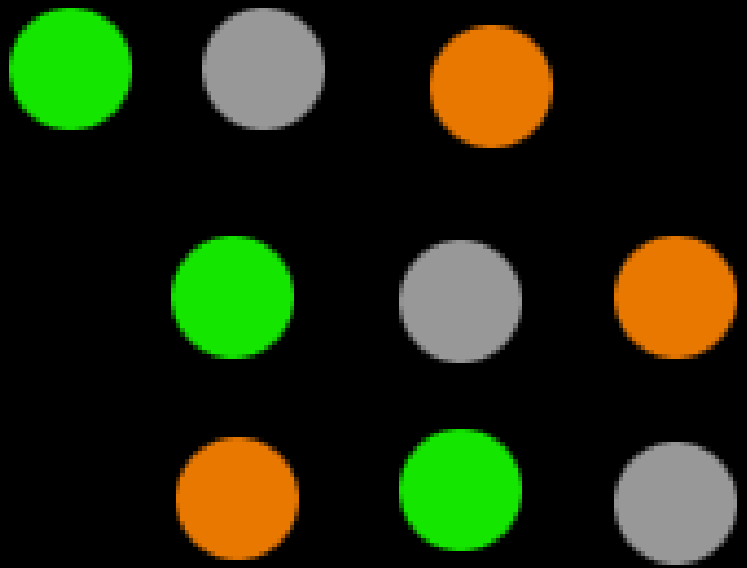
What is color? Color Space: RGB, CMYK. CIE

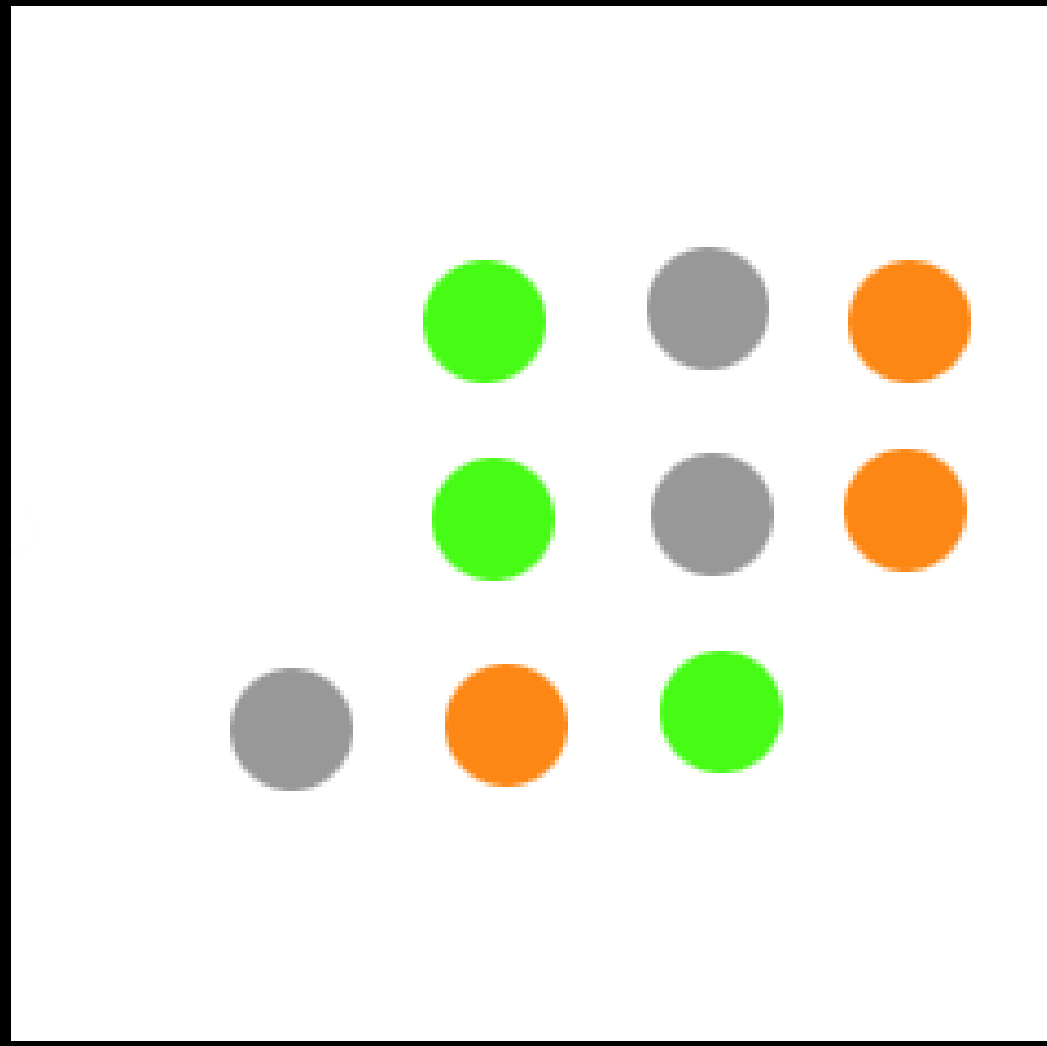
Device dependent: RGB, CMYK (依賴在設備的色彩標示)
Device independent: CIE (獨立於設備的色彩標示)





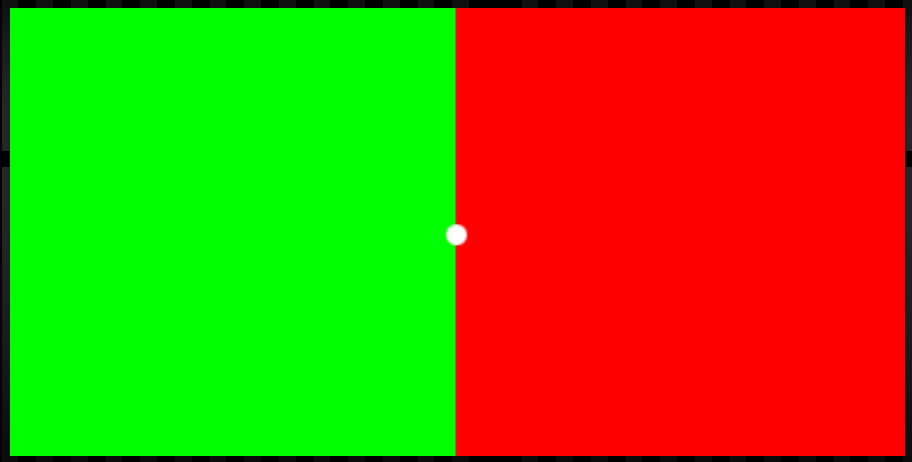


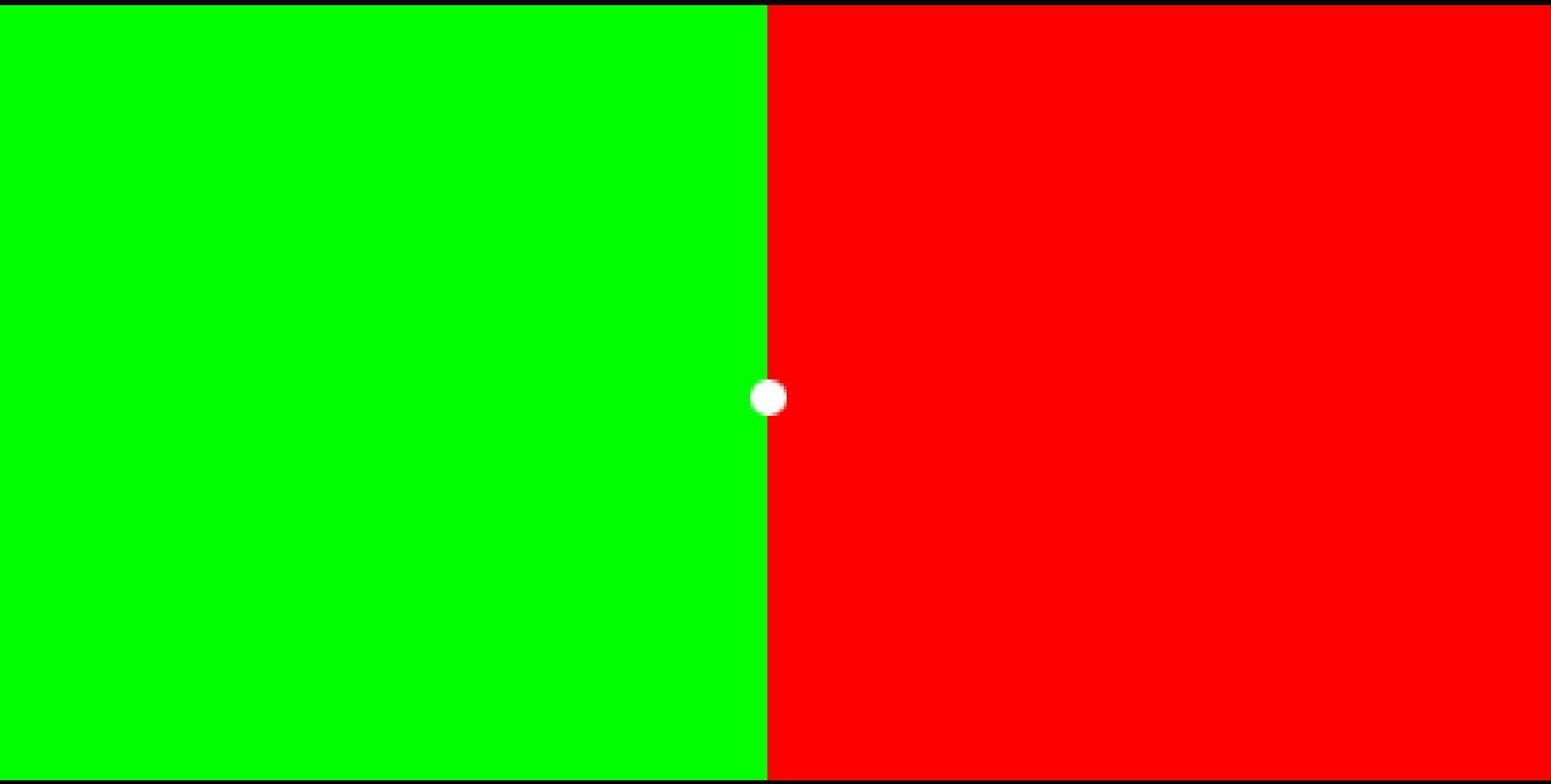




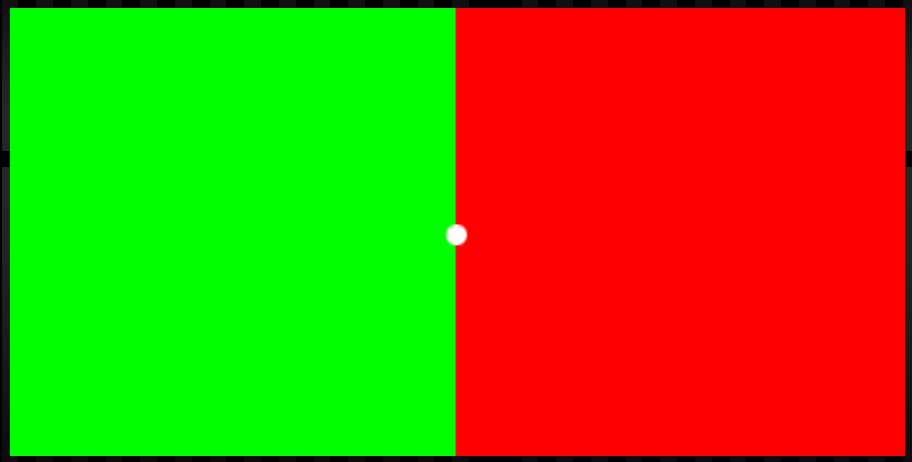
PSD Dotdot_dot.psd

How do we see?





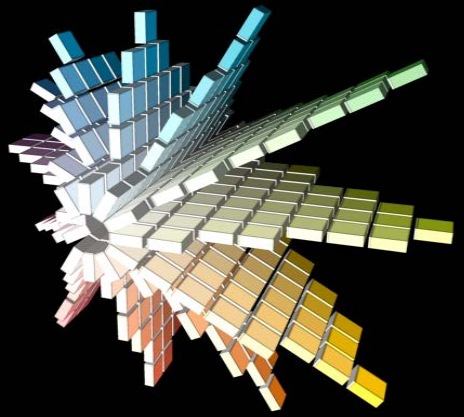
How do we see?



We s e by learni g to s e!

甘尼夏 Ganesha

韋馱天 Kartikeya

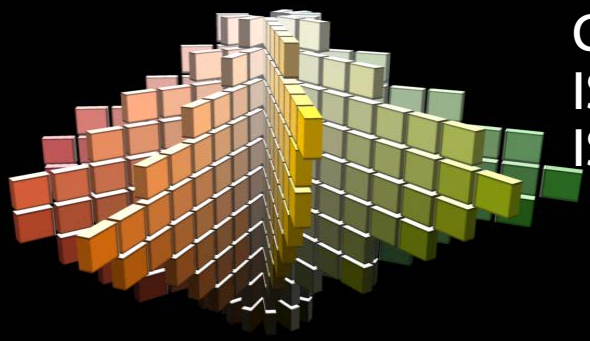


Print by Number

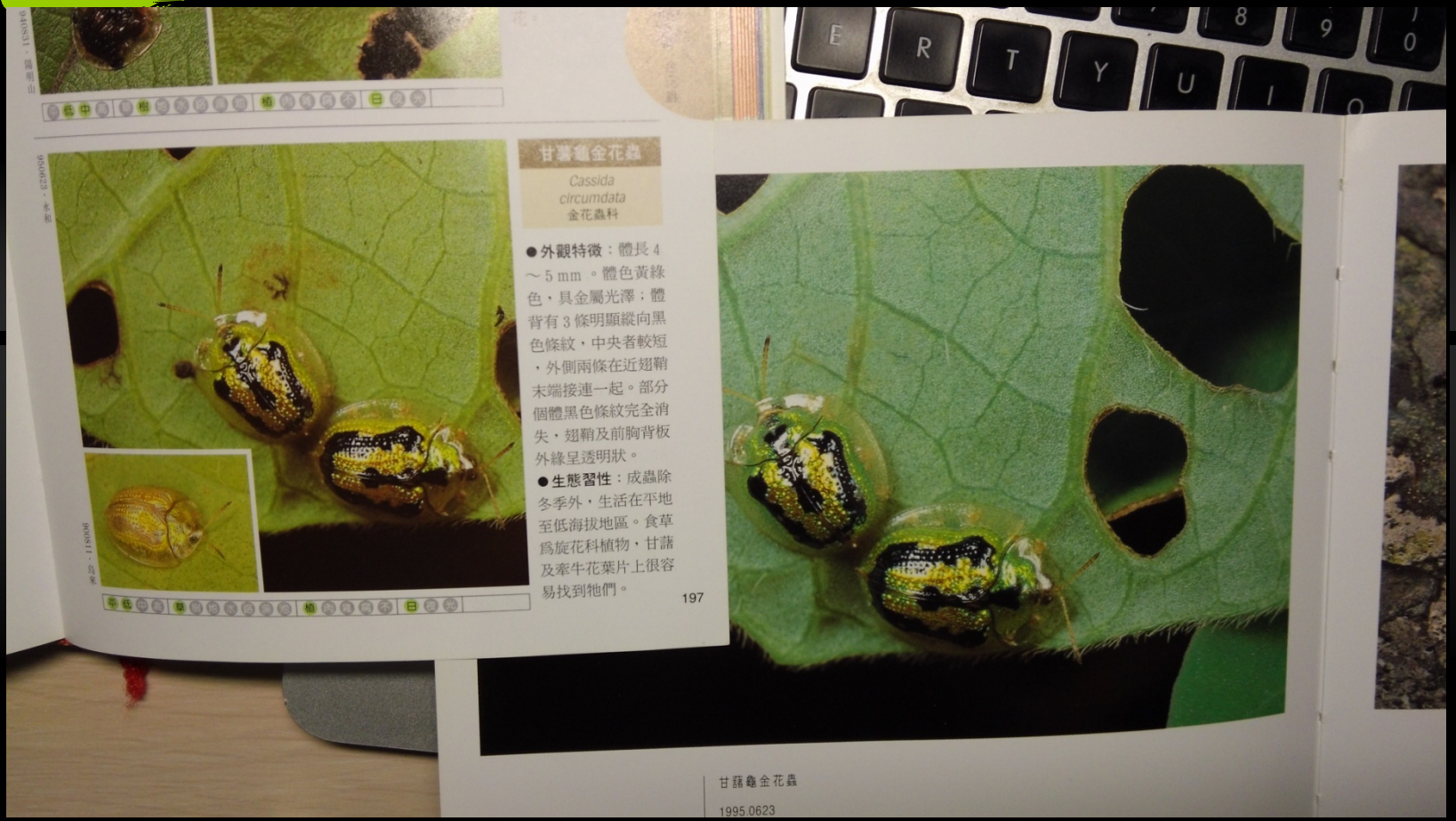
印刷標準化

--從工藝(Craft)到標準化生產 (Industrial Production)

ISO 12647-2:2004,7 (Fogra39)
GRACoI 2006 (G7)
ISO 15339:2011 (CRPC6)
ISO 12647-2:2013 (Fogra51)



你認為印刷產業應該是一種工藝(craft)生產？還是工業(industrial)生產？



甘薯龜金花蟲

Cassida circumdata
金花蟲科

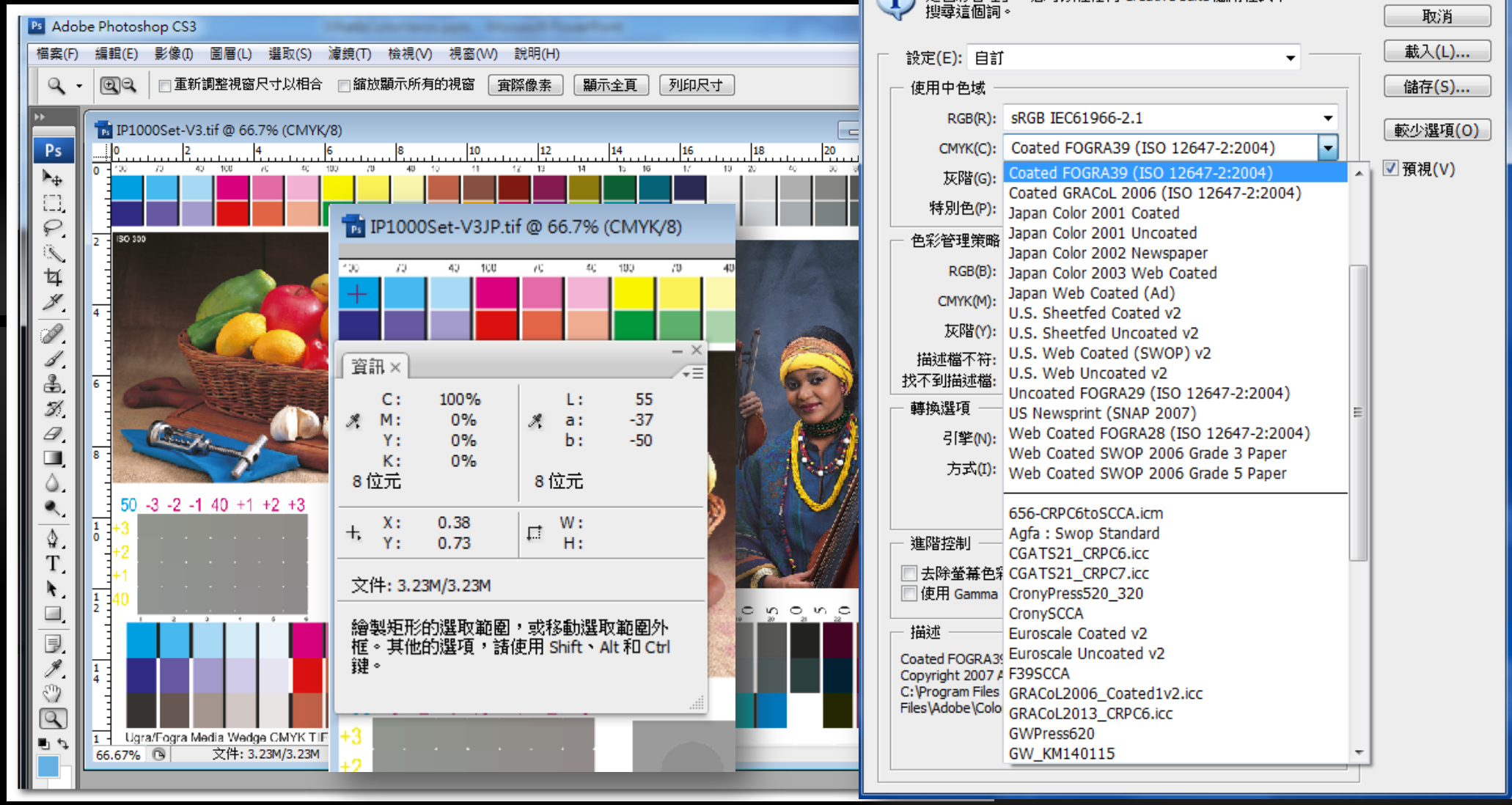
●**外觀特徵**：體長 4～5 mm。體色黃綠色，具金屬光澤；體背有 3 條明顯縱向黑色條紋，中央者較短，外側兩條在近翅鞘末端接連一起。部分個體黑色條紋完全消失，翅鞘及前胸背板外緣呈透明狀。

●**生態習性**：成蟲除冬季外，生活在平地至低海拔地區。食草爲旋花科植物，甘藷及牽牛花葉片上很容易找到牠們。

197

甘藷龜金花蟲
1995.0623

印刷標準化在哪裡?定義?作法?



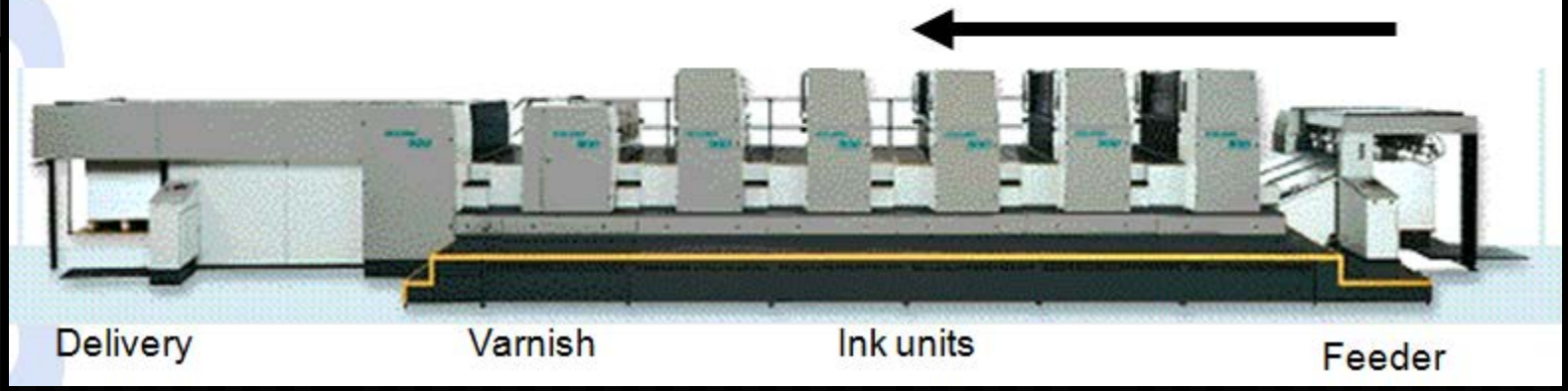
印刷標準化

基本能力:

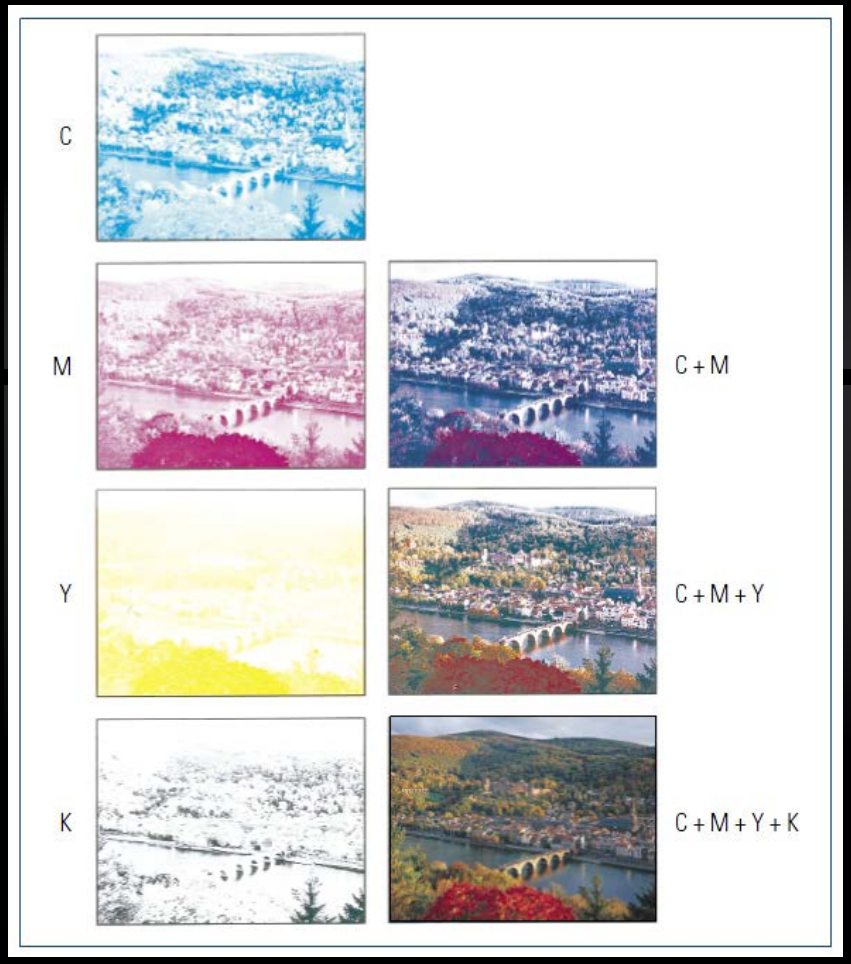
放墨 SID 放調子 TVI

Sheet fed presses

5 colour units + 1 varnish unit



After the 4 printing units



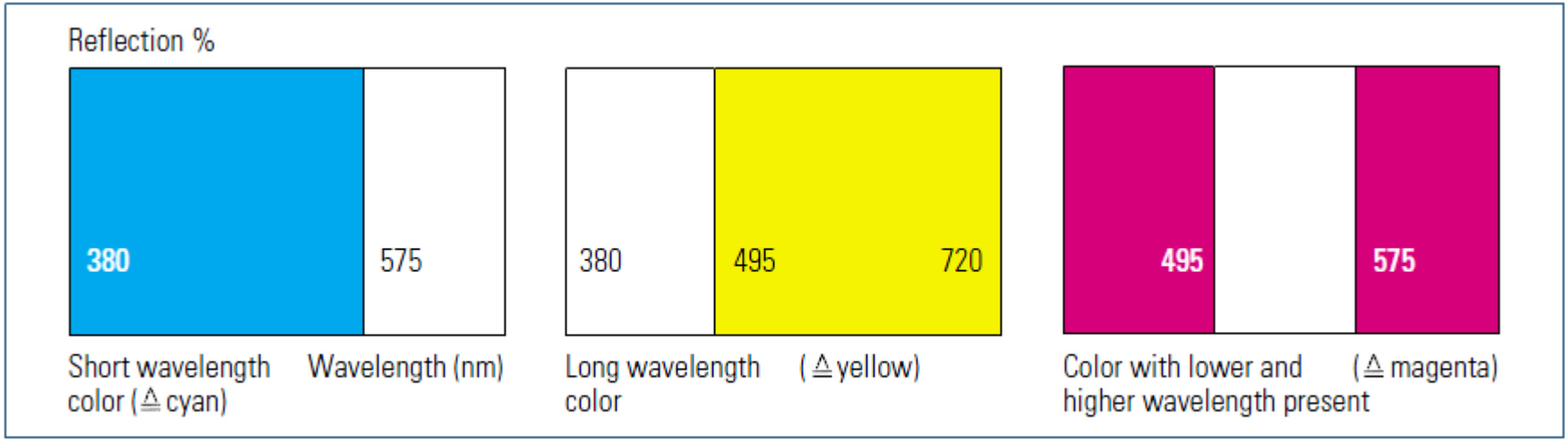


Fig. 1.4-20 Spectral distribution (relative spectral reflections) for "ideal colors"

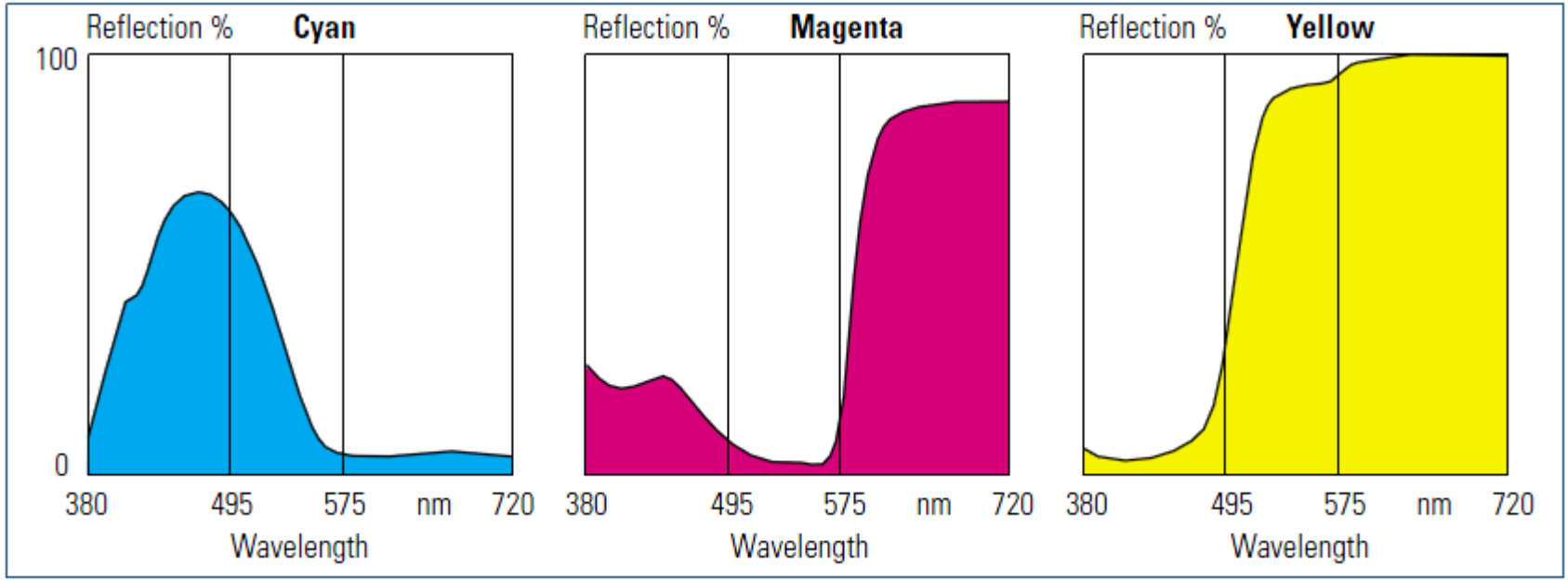
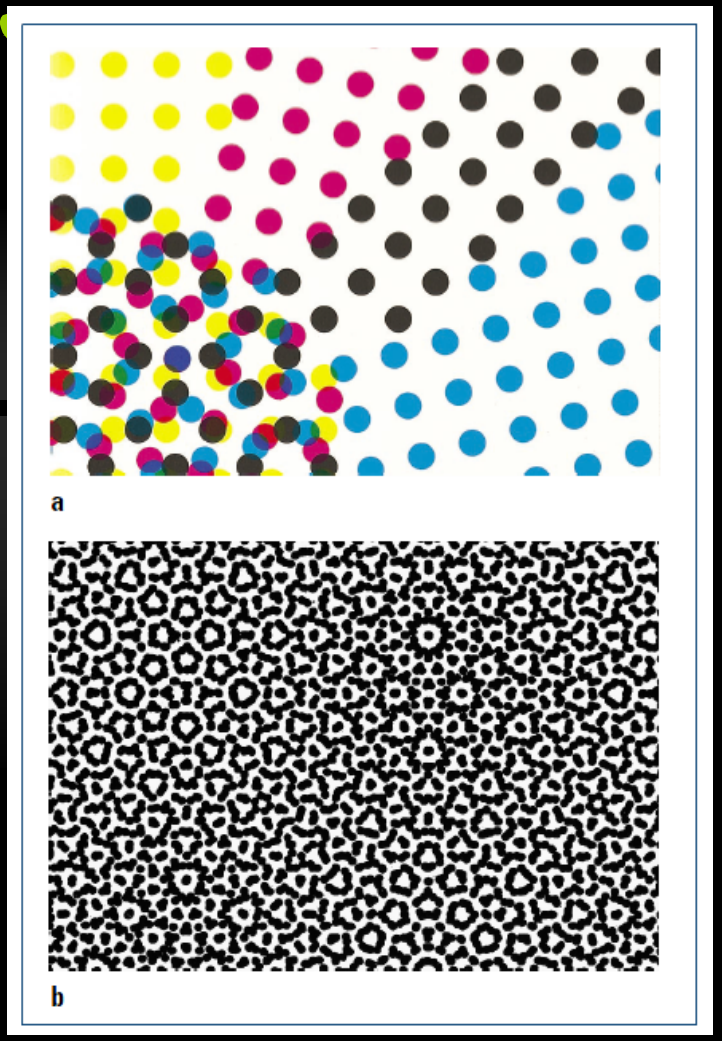
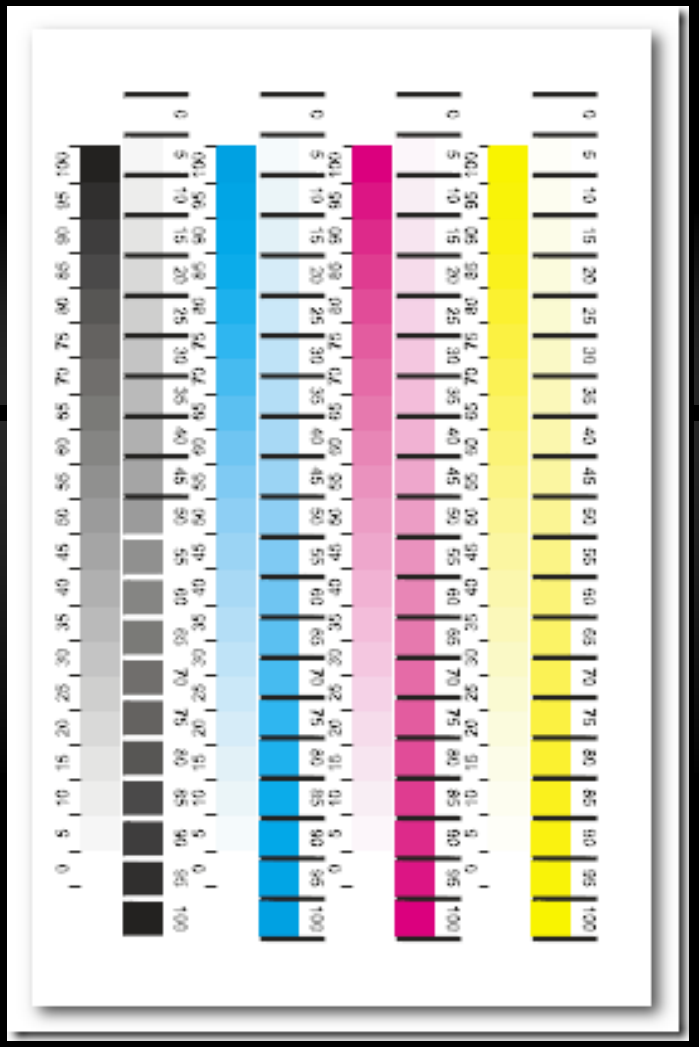


Fig. 1.4-22 Spectral distribution (degree of spectral reflection) of printing inks for multicolor printing [1.4-1]

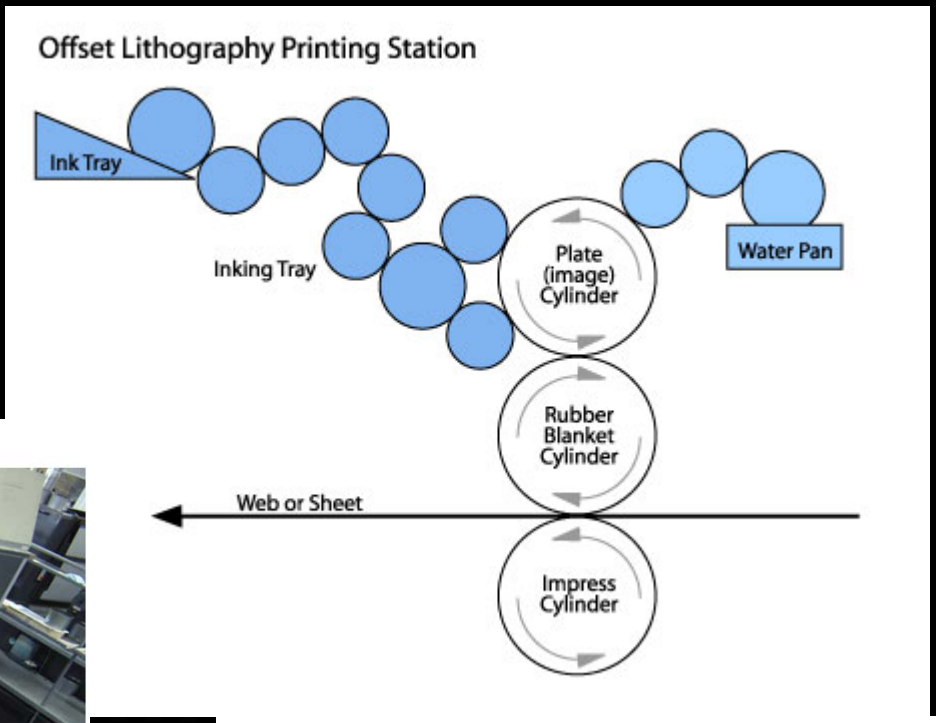
半色調，網屏角度，錯網





怎麼放墨?
SID (Solid Ink Density) 滿版濃度

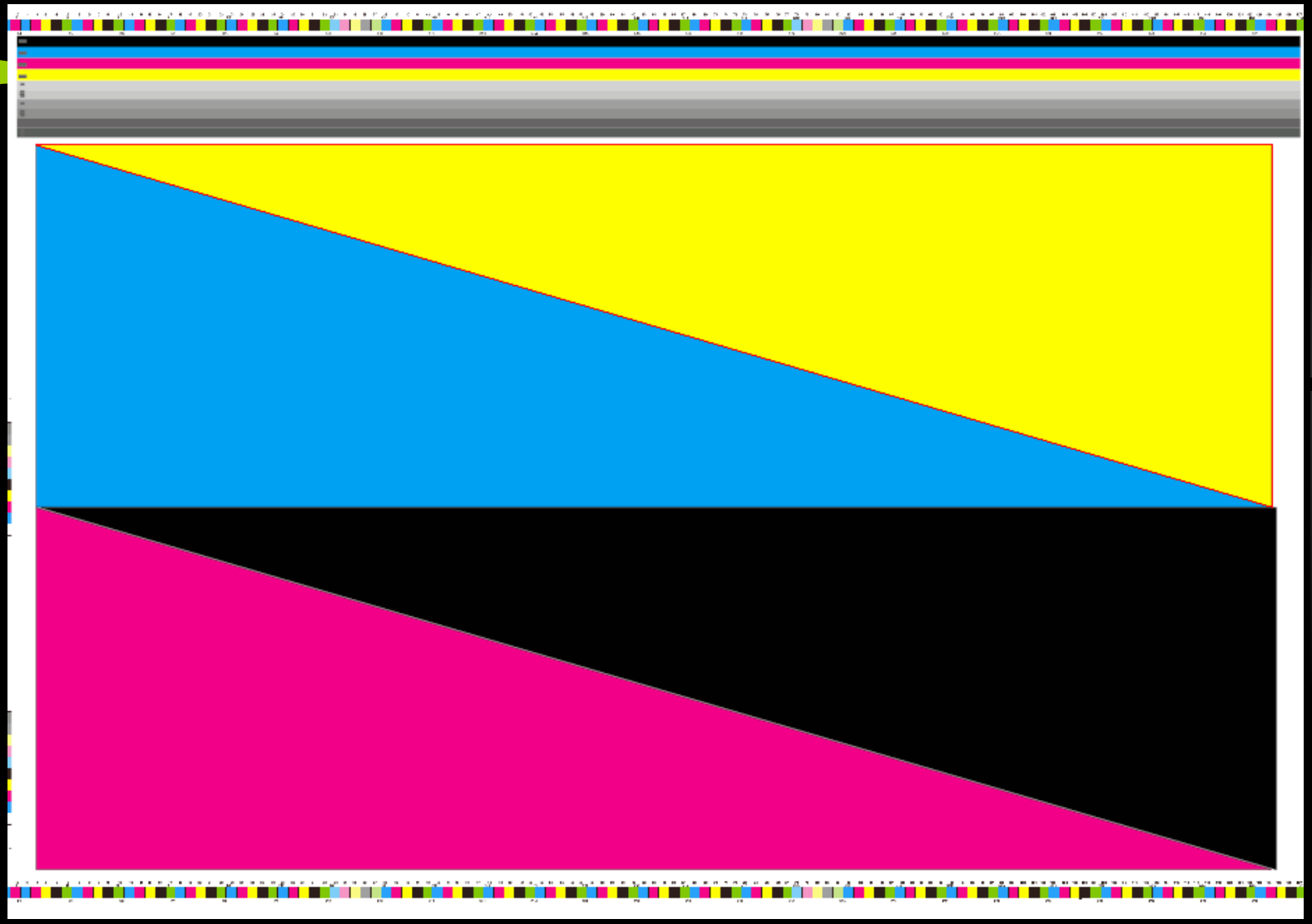
AIM	L	a	b
W	95	0	-2
C	55	-37	-50
M	48	74	-3
Y	89	-5	93
K	16	0.01	0.01



- Paper：3個 △E
- CMYK：5個 △E

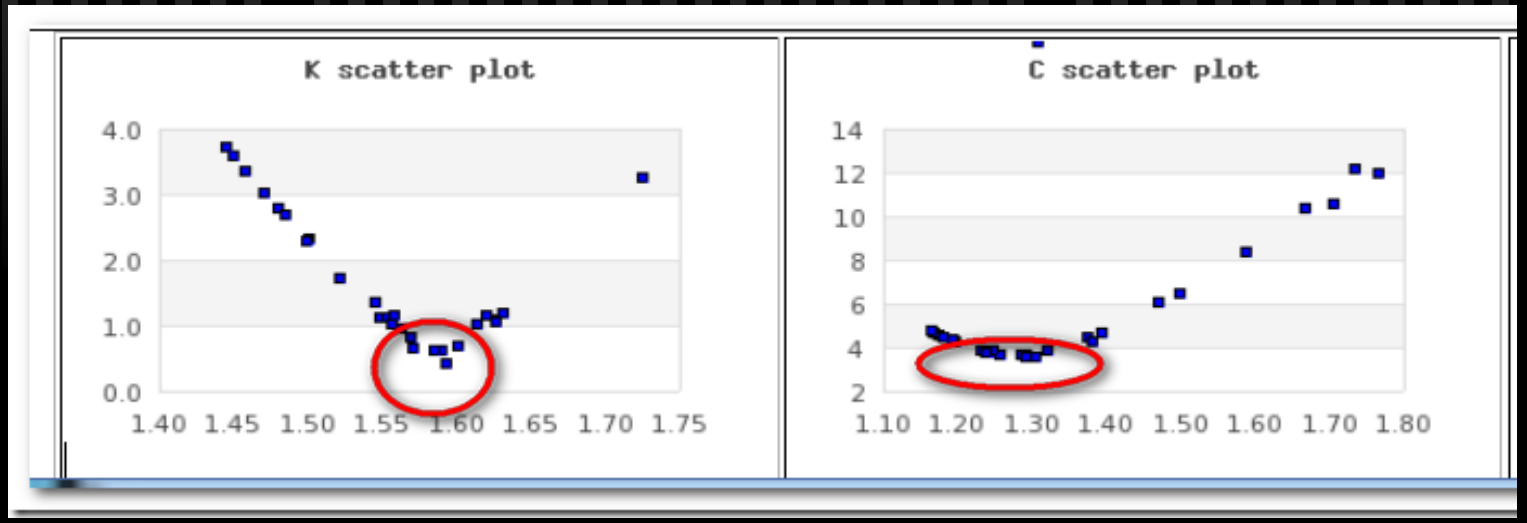
http://127.0.0.1/deltaE/indexE.htm

怎麼放墨？ Ink Hungry Form



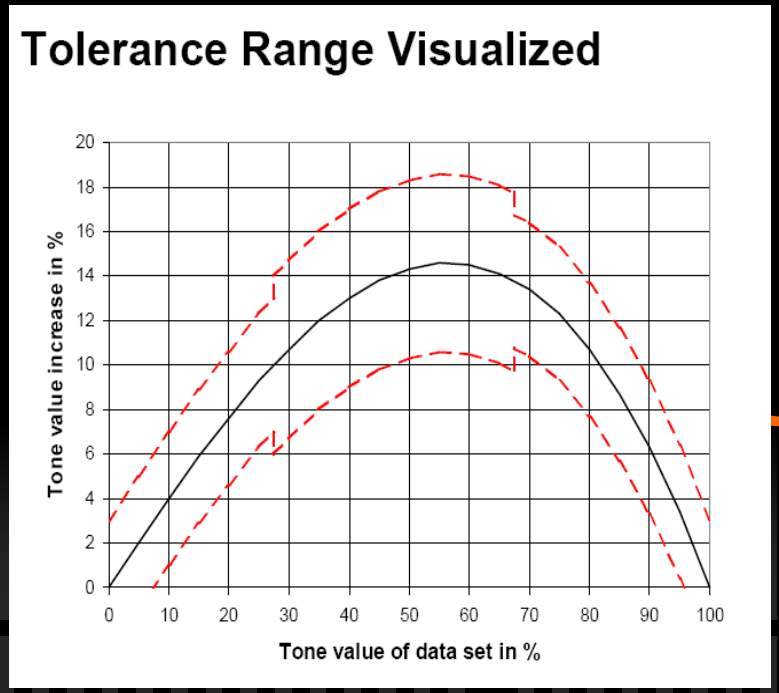
怎麼放墨?

- ✓取樣本濃度與色度值，比對標準色彩值，即可找出達成此色彩值的最佳濃度



http://127.0.0.1/fogra112t/tvireport.php?tvifile=526-TN1125.csv%20&contact=Fred&device=isis&printer=ManRoland&date=

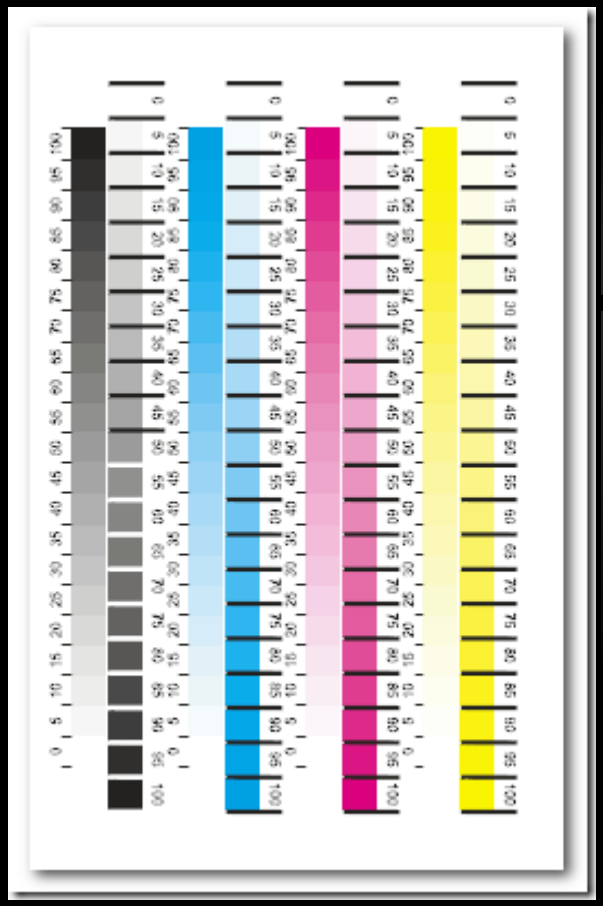
怎麼放調子? TVI



- TVI :5-25%->±3, 30-65%->±4, 70-95%->±3
- CMY spread: under 5

Tone value film/data	Tone value increase A: 13 %	B: 16 %	C: 19 %	D: 22 %	E: 25 %	F: 28 %
0	0,0	0,0	0,0	0,0	0,0	0,0
5	2,0	3,0	3,9	4,8	5,7	6,7
10	4,0	5,6	7,3	8,9	10,6	12,3
15	5,9	8,1	10,3	12,5	14,7	17,0
20	7,6	10,2	12,8	15,5	18,1	20,8
25	9,3	12,1	15,0	17,9	20,8	23,8
30	10,7	13,7	16,7	19,8	22,8	25,9
35	12,0	15,0	18,1	21,1	24,2	27,3
40	13,0	16,0	19,0	22,0	25,0	28,0
45	13,8	16,7	19,5	22,4	25,2	28,0
50	14,3	17,0	19,6	22,3	24,9	27,5
55	14,6	17,0	19,4	21,7	24,1	26,4
60	14,5	16,6	18,7	20,8	22,8	24,8
65	14,1	15,9	17,7	19,4	21,1	22,7
70	13,4	14,9	16,3	17,6	19,0	20,3
75	12,3	13,4	14,5	15,5	16,5	17,5
80	10,7	11,5	12,3	13,0	13,7	14,4
85	8,7	9,3	9,8	10,2	10,7	11,0
90	6,3	6,6	6,9	7,1	7,3	7,5
95	3,4	3,5	3,6	3,7	3,8	3,8
100	0,0	0,0	0,0	0,0	0,0	0,0
PT 1 and 2	☐ CMY	☐ K	■ CMY	■ K		
PT 3		☐ CMY	☐ K	■ CMY	■ K	
PT 4 and 5			☐ CMY	☐ K	■ CMY	■ K

怎麼放TVI?



✓快速反應數據並做出回應

主色	5%	10%	15%	20%	25%	30%	35%	40%
C	-1.41	-1.42	-1.63	-1.59	-1.1	-0.09	-0.15	0.18
M	-1.44	-1.48	-2.31	-2.8	-3.58	-2.97	-2.26	-0.57
Y	0.67	1.03	0.56	0.24	-0.35	-0.93	-1.84	-1.47
K	2.48	3.53	2.99	1.95	1.21	0.24	-0.69	-0.72
CMY	2.11	2.51	2.87	3.04	3.23	2.88	2.11	1.65

AIM	L	a	b	Test	L	a	b	E(76)
W	95	0	-2		92.87	1.41	-3.28	2.86
C	55	-37	-50		53.49	-34.57	-50.97	3.02
M	48	74	-3		45.94	75.94	-3.97	2.99
Y	89	-5	93		86.43	-4.73	92.13	2.73
K	16	0.01	0.01		14.17	1.08	2.75	3.46

TVI sample

ISO-12647-2

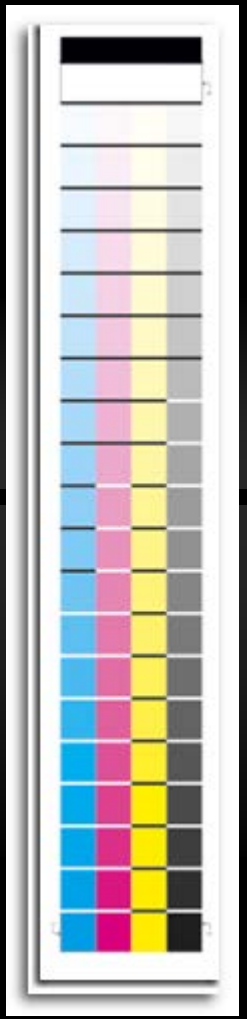
2004 年 ISO 發表12647(1-5) 系列文件，針對各種印刷方式提出測量，材料，色彩，控制等各方面規範; 其中12647-2為針對平版張頁機之規範

Fogra PSO

ISO 12647-2 襯白(White backing) 目標值及寬容值

AIM	L	a	b
W	95	0	-2
C	55	-37	-50
M	48	74	-3
Y	89	-5	93
K	16	0.01	0.01

- Paper：3個 △E
- CMYK：5個 △E
- TVI :5-25%->±3,
  30-65%->±4,
  70-95%->±3
- CMY spread: under 5



Data	Aim CMY	Aim K
0	0,0	0,0
5	2,0	3,0
10	4,0	5,6
15	5,9	8,1
20	7,6	10,2
25	9,3	12,1
30	10,7	13,7
35	12,0	15,0
40	13,0	16,0
45	13,8	16,7
50	14,3	17,0
55	14,6	17,0
60	14,5	16,6
65	14,1	15,9
70	13,4	14,9
75	12,3	13,4
80	10,7	11,5
85	8,7	9,3
90	6,3	6,6
95	3,4	3,5
100	0,0	0,0

Fogra39 Before & After

延續Fogra 39平台:
數位樣與軟打樣

Digital Proof to Fogra39

數位樣寬容值

- 紙張 (△E) : 3
- 主色 (△E) : 5
- 平均 (△E) : 3
- 最大 (△E) : 6
- 主色色相差(△H): 2.5
- 灰色元件平均色相差(△H): 1.5

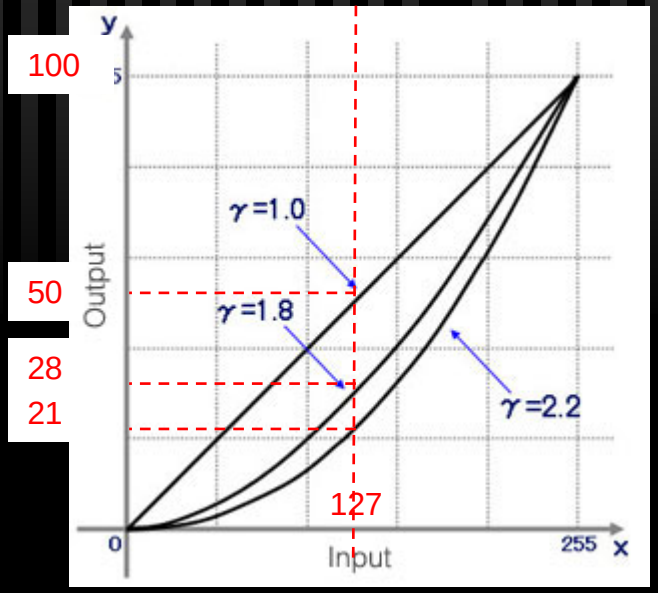
Ugra/Fogra Media Wedge CMYK V2

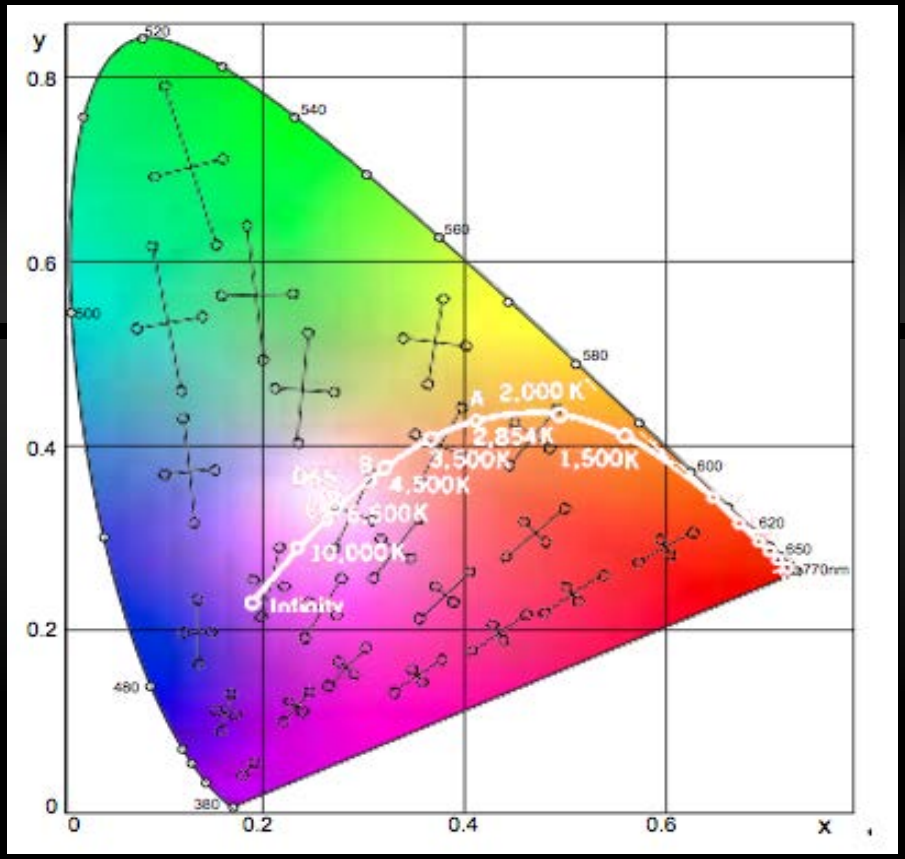
Ugra/Fogra Media Wedge CMYK V3 (2008/08)

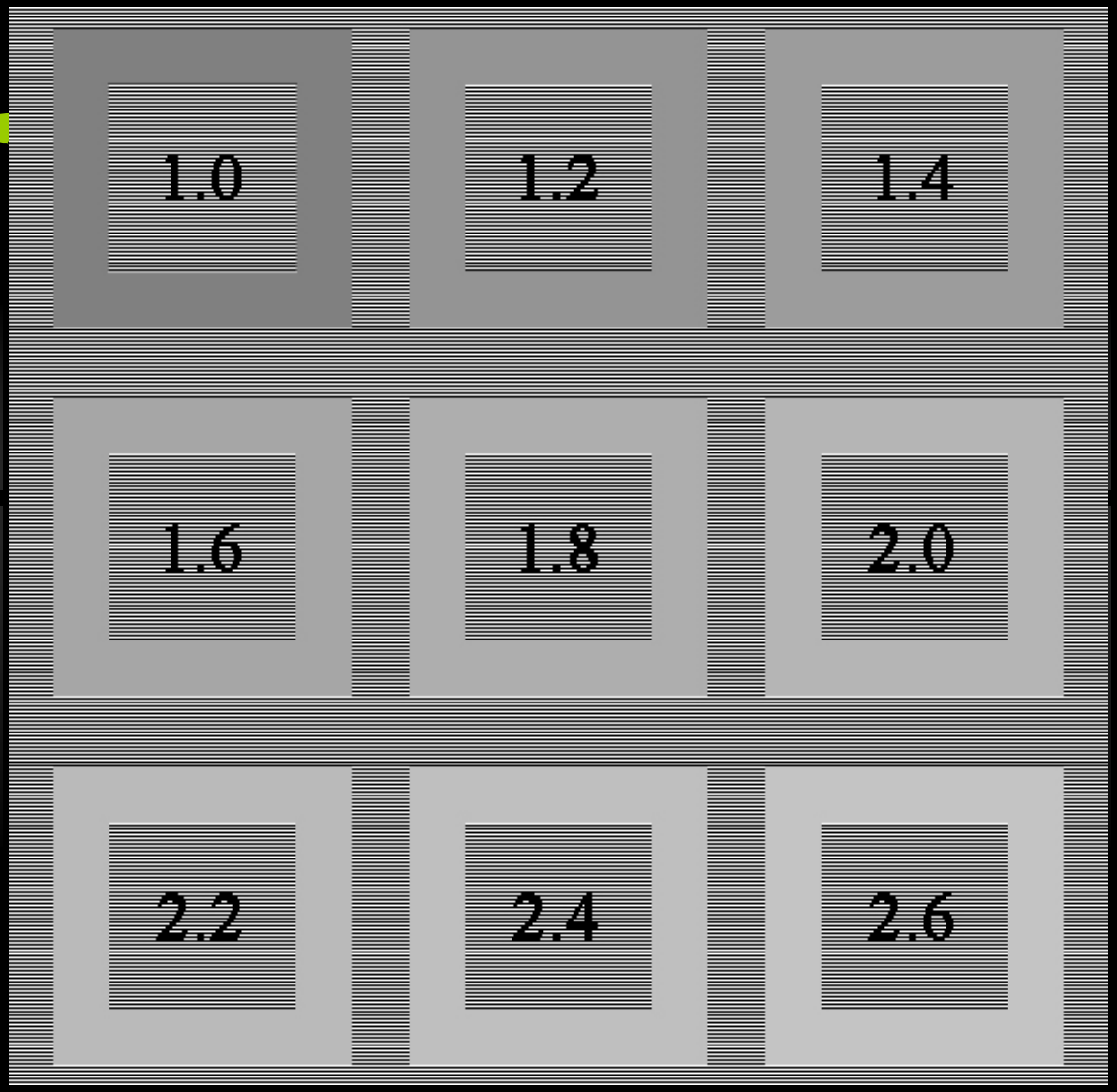
http://127.0.0.1/cronyerp/fograproof76/rank.php

軟打樣

- ✓ 亮度:120 cd/m²
- ✓ 白點: D50
- ✓ Gamma: 2.2 ($y=x^{\gamma}$)

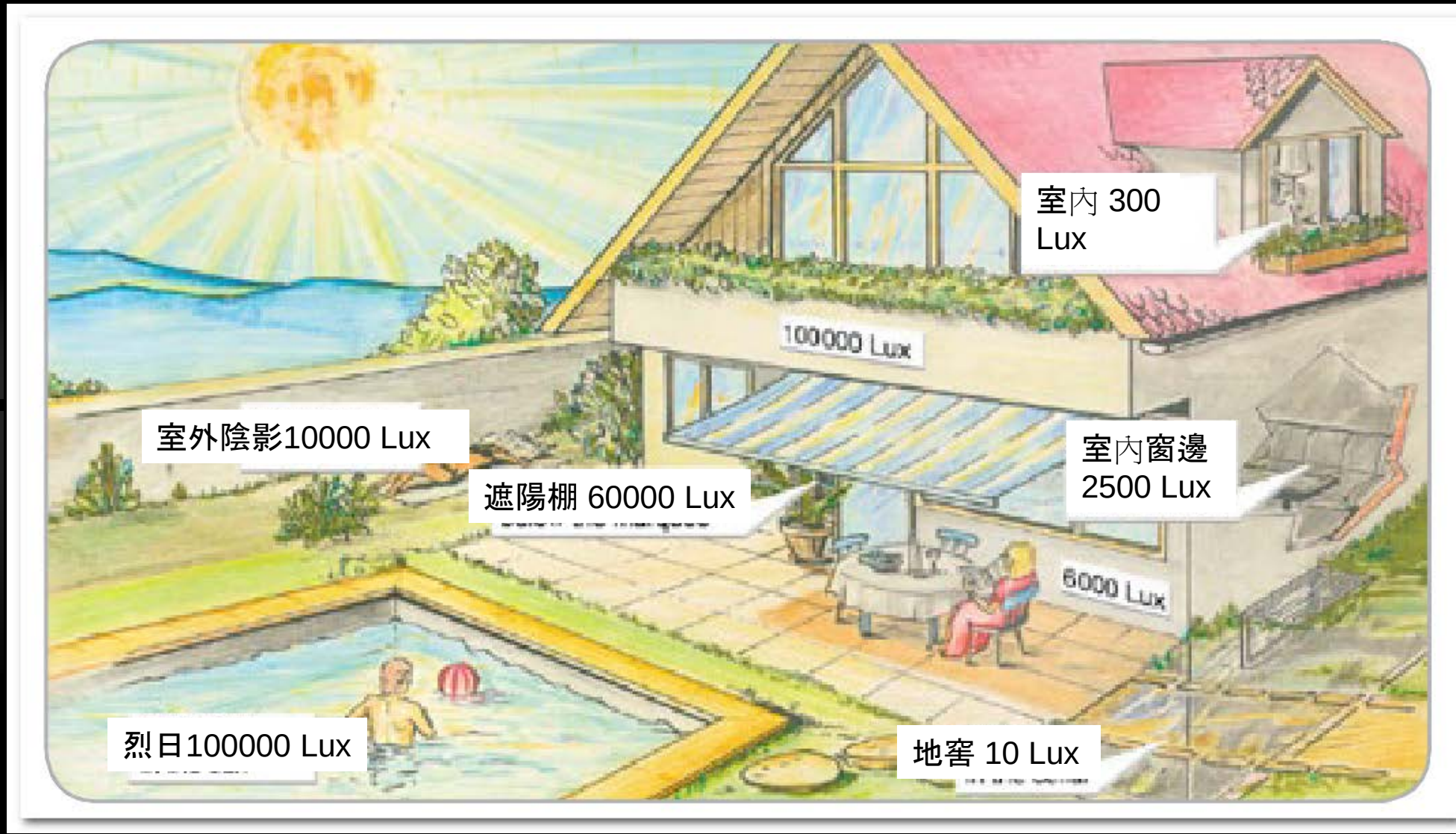






1080p

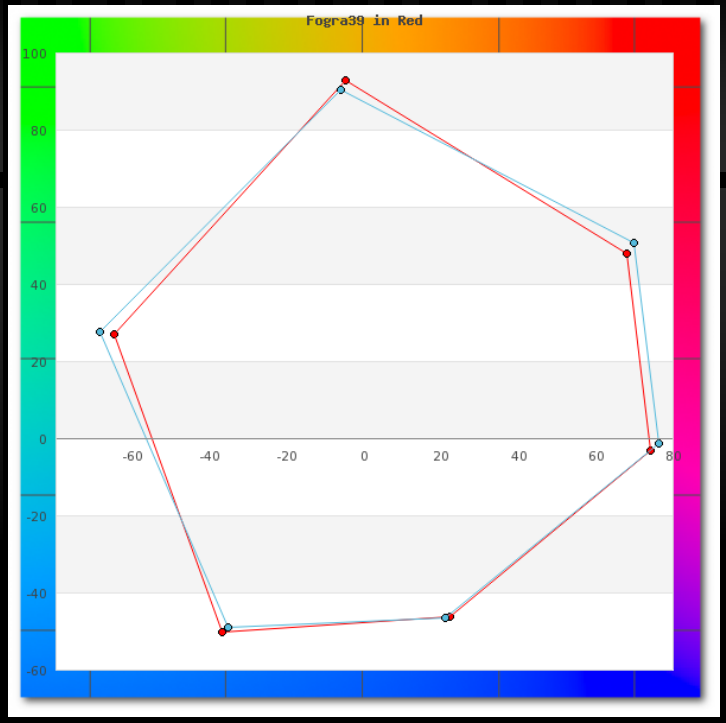
720p


室内 300 Lux
100000 Lux
室外陰影10000 Lux
遮陽棚 60000 Lux
室内窗邊 2500 Lux
6000 Lux
烈日100000 Lux
地窖 10 Lux

SoftProof to Fogra39

Ugra/Fogra Media Wedge CMYK V2

EIZO CX270



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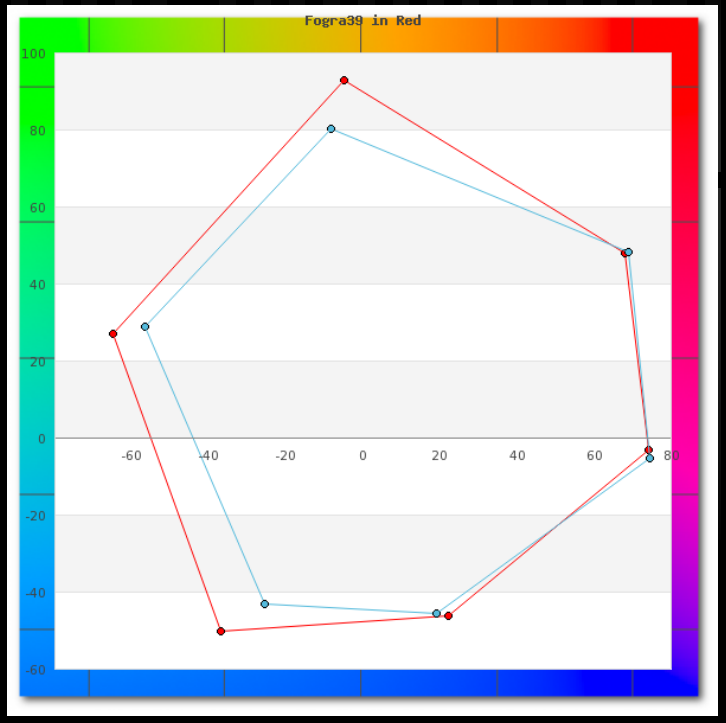
Samsung F2380



http://127.0.0.1/dptool/lcdReportFRo.php?f123=599-F2380_131219&contact=Fred&device=i1&printer=&date=2013-12-19

The Standard

影像生產要能被標準化規範，有幾個重要的歷史發展：

- 1931年，CIE的色彩系統可以用數字的方式精確的標示出某一個色彩，而不是模糊的，人類字彙的指稱。
- 1980年代後期，陸陸續續出版工作方式改為電子方式(DTP, Desk top publish),一件原稿，就是一組清清楚楚的電子資料。
- 1992年，Apple 將 ColorSync 置入系統，清楚的宣告：DTP 將可以用CIE 的方式來溝通色彩資訊。
- 1993年，ICC (**International Color Consortium**)成立，訂立 ICC profile 撰寫規範，不同設備間色彩資訊得以交換。
- 1996年，ISO 12647-2 發佈草稿(draft)，清楚的發佈印刷主色(CMYK)的CIE色彩值及色調標準(TVI, 版調增量)。
- 至此，印刷生產的標準化規範就算已經完成。
- 2004年，ISO 12647-2 正式發佈。德國Fogra 組織也訂立了認證稽核方法。

ICC Initial Membership

Founders:

Adobe Systems Incorporated
Agfa-Gevaert N.V.
Apple Computer, Inc.
Eastman Kodak Company
FOGRA-Institute (Honorary)
Microsoft Corporation
Silicon Graphics Inc.
Sun Microsystems, Inc.
Taligent, Inc.

印刷標準化

印刷標準化

Fogra PSO
ISO 12647 certified

APPROVED QUALITY

Process Standard Offset

Process Standard ISO 12647 certified OFFSET

Crony Information Technology Co., Ltd.
2F., No. 123, Lide Street
Jhonge City, Taipei County 235
Taiwan

has successfully passed an extensive examination according to the standards of ISO 12647-2 Process Standard Offset. All test values and results range within the extent of tolerance.

Contents of examination:

- Qualified colour management
- Creation of contract proofs
- Standardized platemaking
- Print run with sheet-fed offset printing machines according to Process Standard Offset

The results are documented in the test report 081119/JG.

vdm Baden-Württ
vdm Bayern
vdm Berlin-Brand
vdm Hessen
vdm Niedersachs

Test Forme for Sheet-fed Machines

印刷標準化

IDEAlliance G7
Certificate of Qualification

G7

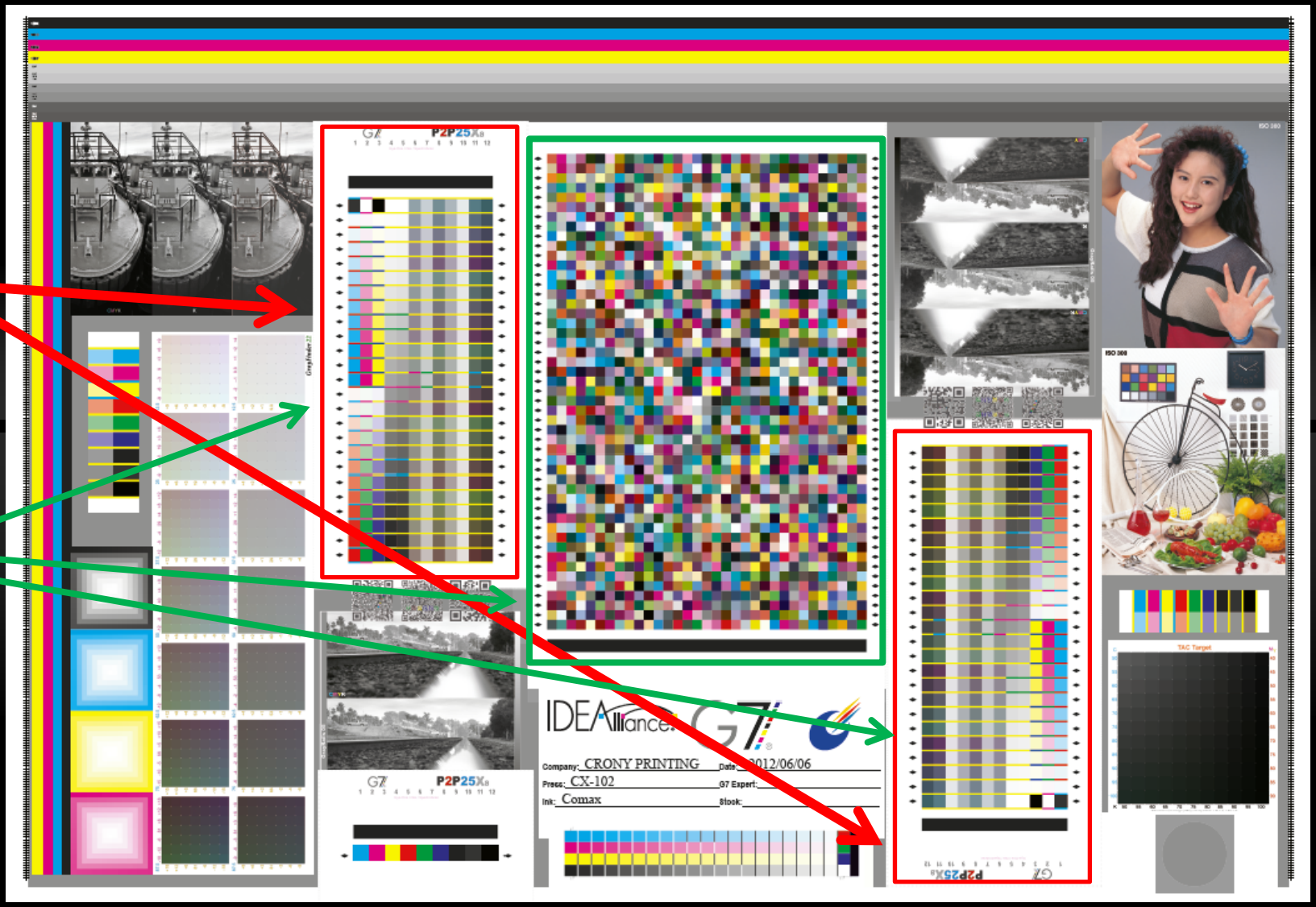
G是代表灰色階調

7色
(C、M、Y、K、R、G、B)

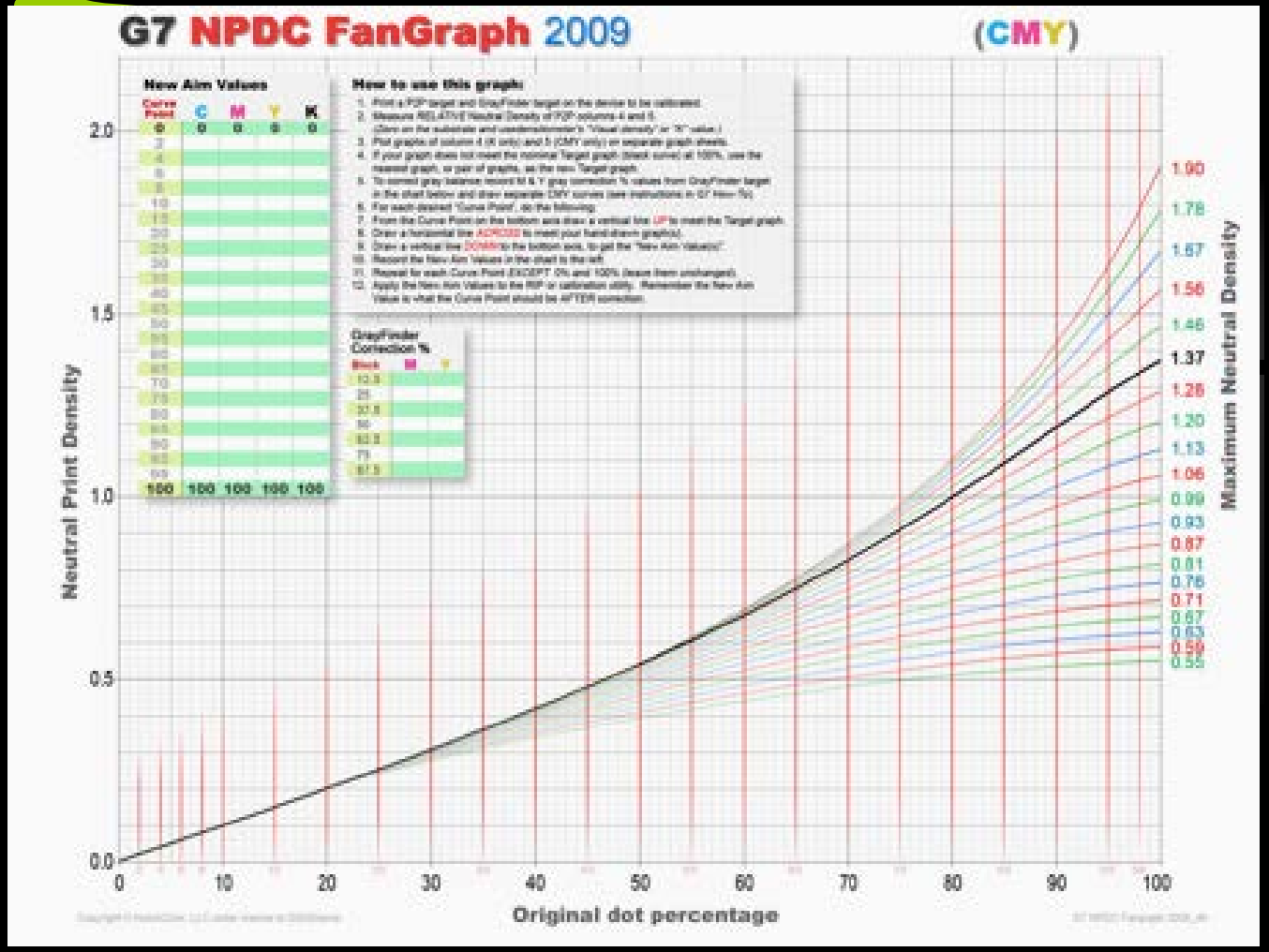
G7 Test Form

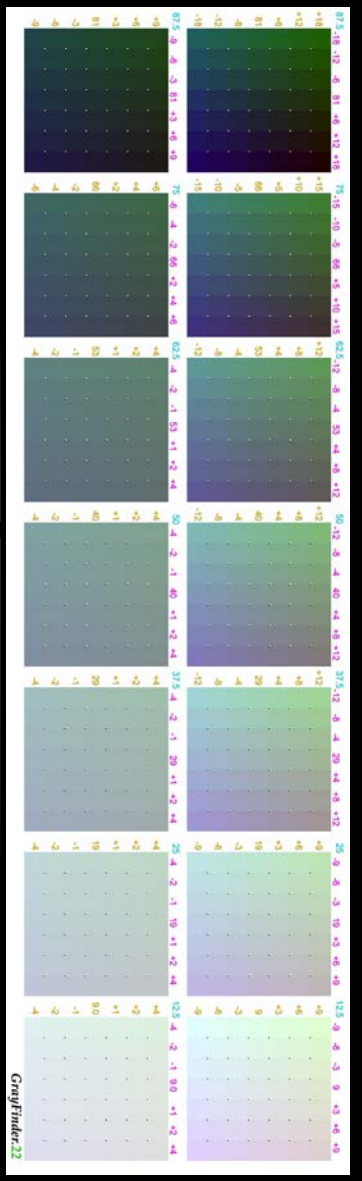
P2P25導表

檢視
CMYK平均



FanGraph 手動工具





G7.....仍然期待...

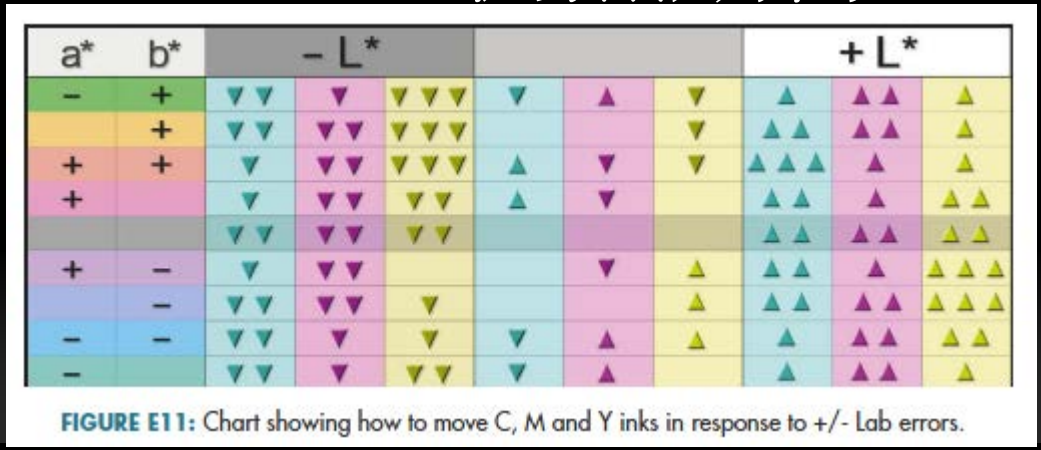
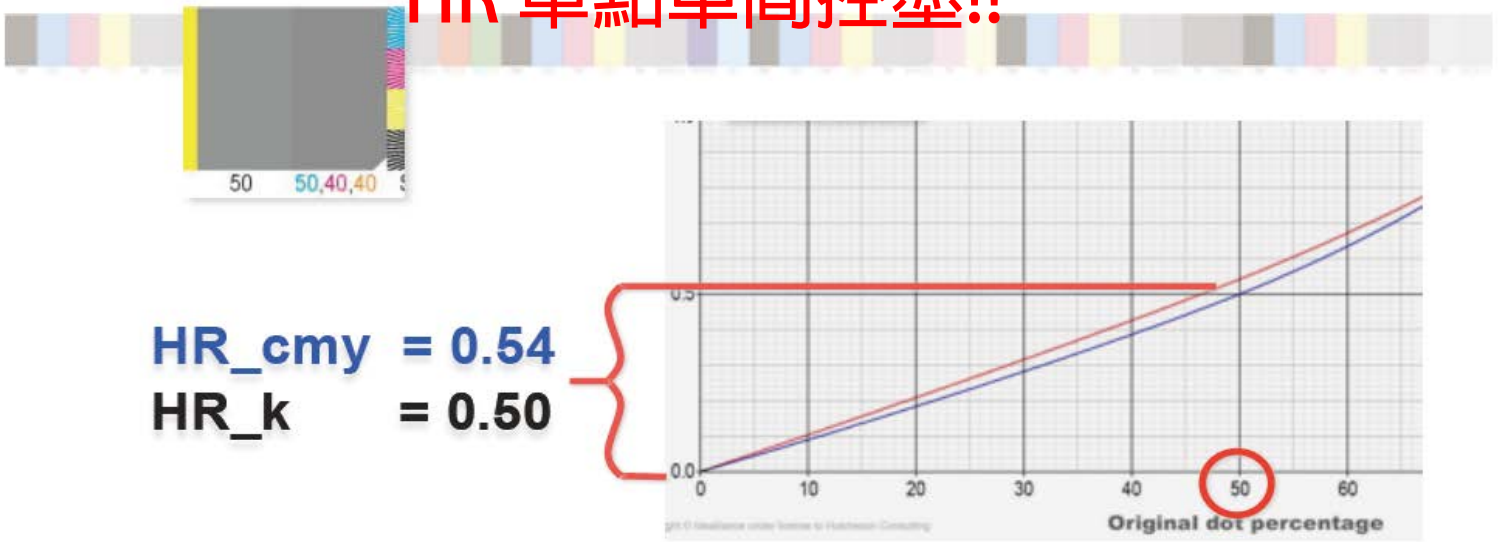


FIGURE E11: Chart showing how to move C, M and Y inks in response to +/- Lab errors.

2003

2013

HR 單點車間控墨!!



HR-Tool

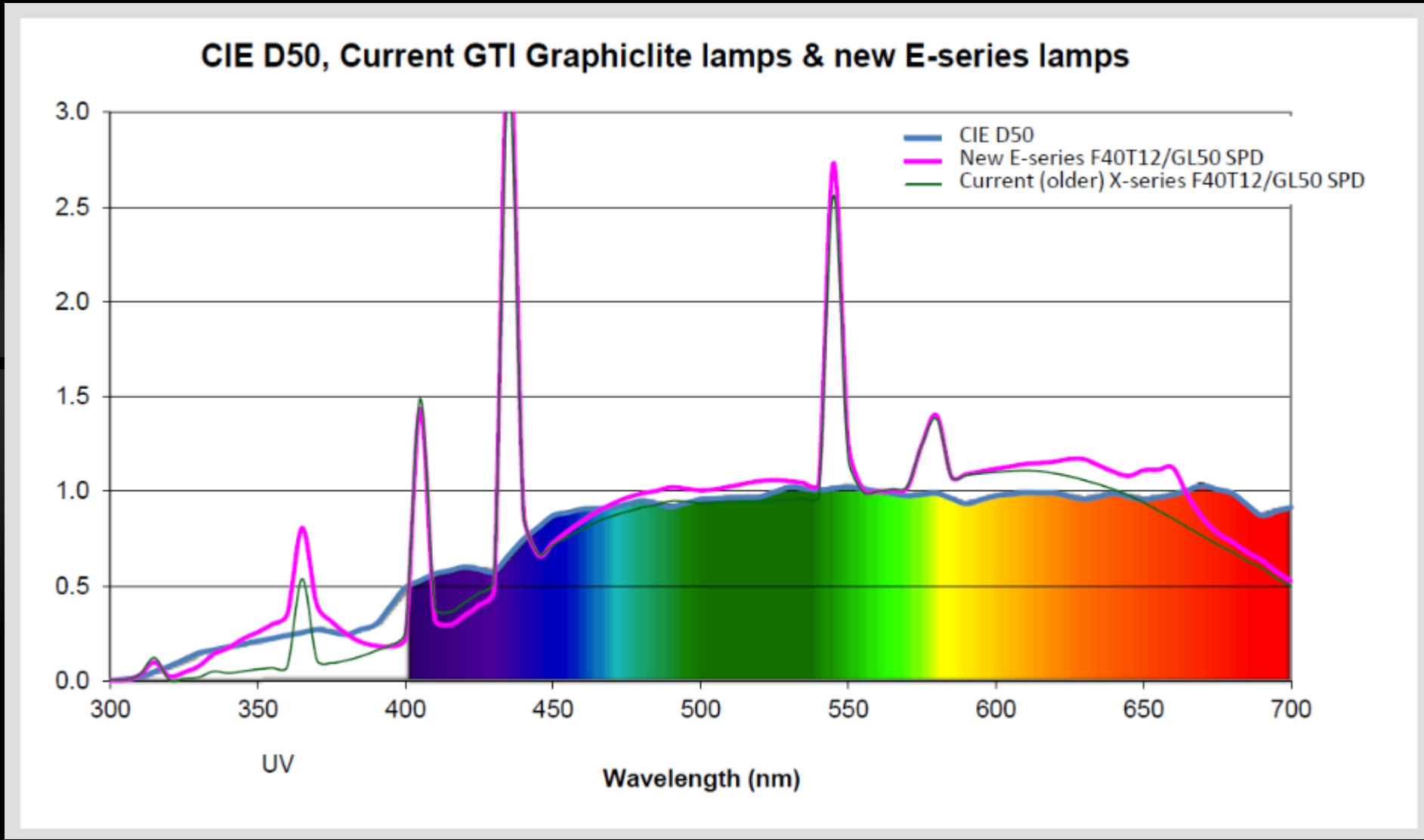
後 Fogra 39!!

後 Fogra 39!!

OBA (Optical Brighten Agent)
紙張增白劑大作戰!

ISO 3664:2009 (光源, 重新定義D50 UV成分)
ISO 13655:2009 (量測方式，M0~M3)
ISO 15339:2011 (SCCA，CRPC)
ISO 12647-2:2013 (Fogra51)

ISO 3664:2009 (光源, 重新定義D50 UV成分)

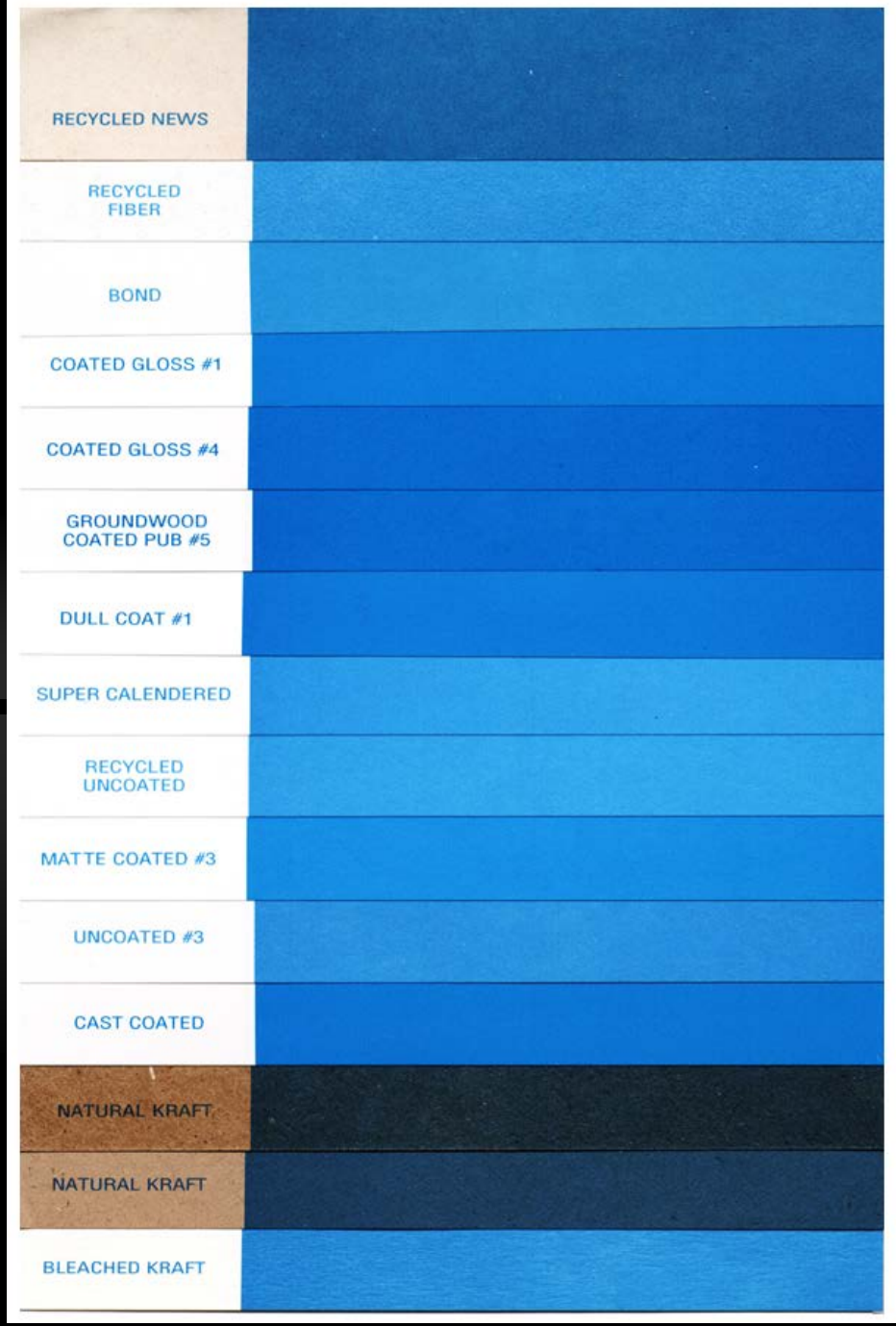


ISO 13655:2009 (量測方式)

- M0: A光源(UV不多)，無偏光
  M1:D50 光源(含UV)，無偏光
  M2: M0,M1 with UV cut，無偏光
  M3: M0,M1 with UV cut，有偏光

A new standard of color perfection.
The new i1Pro 2 has been enhanced and redesigned to provide the ultimate in accuracy, versatility, ergonomics, functionality and value.

Measurement Illumination Conditions	i1Pro 2	i1Pro
M0 (ISO 13655-2009) Tungsten (NoFilter)	●	○[1]
M1 (ISO 13655-2009) D50	●	
M2 (ISO 13655-2009) UV excluded (UVcut)	●	○[1]
OBC X-Rite Optical Brightener Compensation Technology	●	


RECYCLED NEWS
RECYCLED FIBER
BOND
COATED GLOSS #1
COATED GLOSS #4
GROUNDWOOD COATED PUB #5
DULL COAT #1
SUPER CALENDERED
RECYCLED UNCOATED
MATTE COATED #3
UNCOATED #3
CAST COATED
NATURAL KRAFT
NATURAL KRAFT
BLEACHED KRAFT

ISO 15339
SCCA (substrate corrected colorimetric aim)

Solid color conformance under Inking_1 and publ

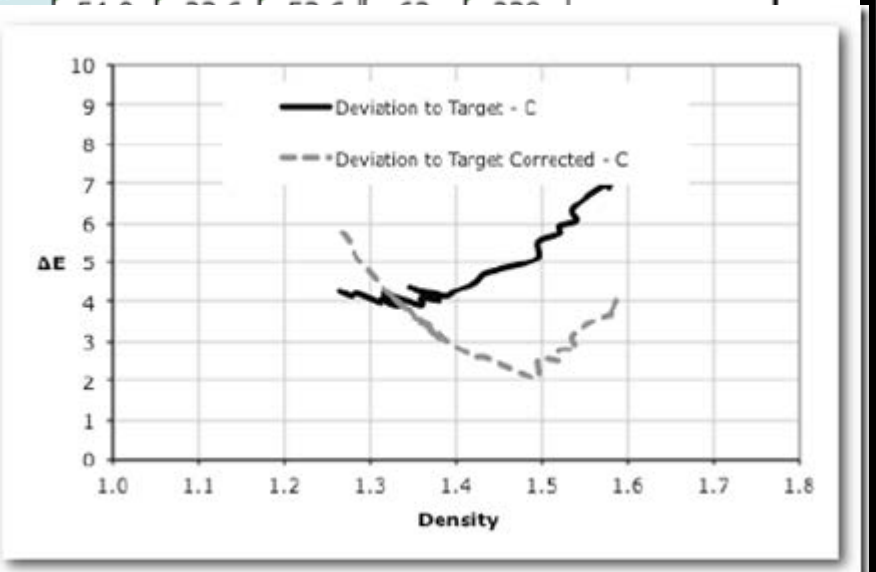
	ISO 12647-2 (PT1) L*	a*	b*	C*	h	ΔEab Inking_1
Paper	95	0	-2	2	270	5.5
	94.1	2.1	-7.0	7	286	
K	16	0	0	0	0	0.7
	16.3	0.4	-0.5	1	311	
C	55	-37	-50	62	233	3.9
	56.4	-33.8	-51.8	62	237	
M	48	74	-3	74	358	0.3
	48.3	74.0	-2.9	74	358	
Y	89	-5	93	93	93	1.5
	88.6	-3.6	92.7	93	92	

Solid color conformance under Inking_2 and substrate-correc

	ISO 12647-2 (PT 1) Corrected L*	a*	b*	C*	h	ΔEab Inking_2
Paper	94	2	-7	7	286	0.0
	94.1	2.1	-7.0	7	286	
K	16	0	-1	1	292	0.2
	15.8	0.4	-0.5	1	304	
C	54	-36	-54	65	237	2.1

$$X_2 = X_1(1+C) - X_{\min}C$$

$$C = \frac{X_{w2} - X_{w1}}{X_{w1} - X_{\min}}$$

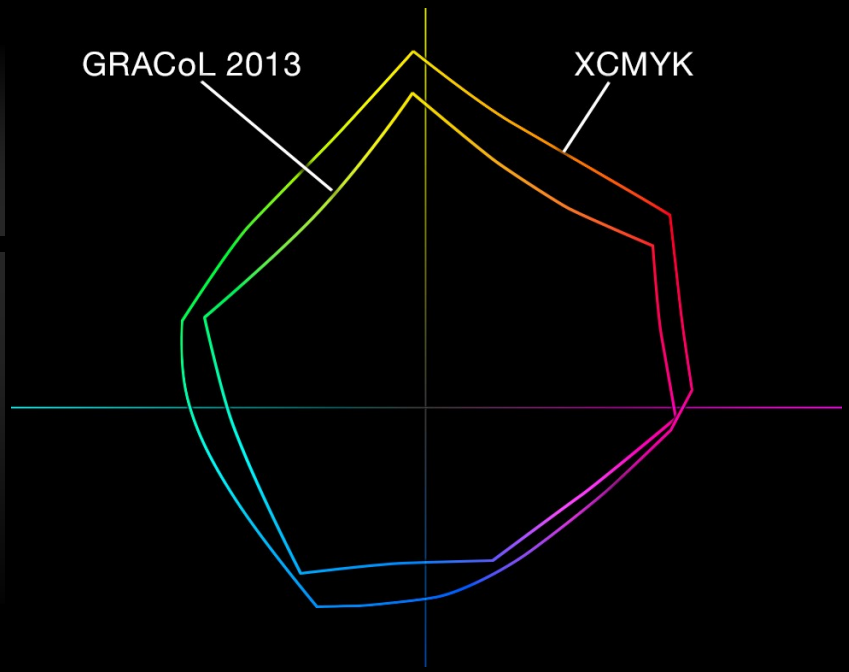


http://127.0.0.1/psa/indexE.htm

Beyond Fogra 39!!

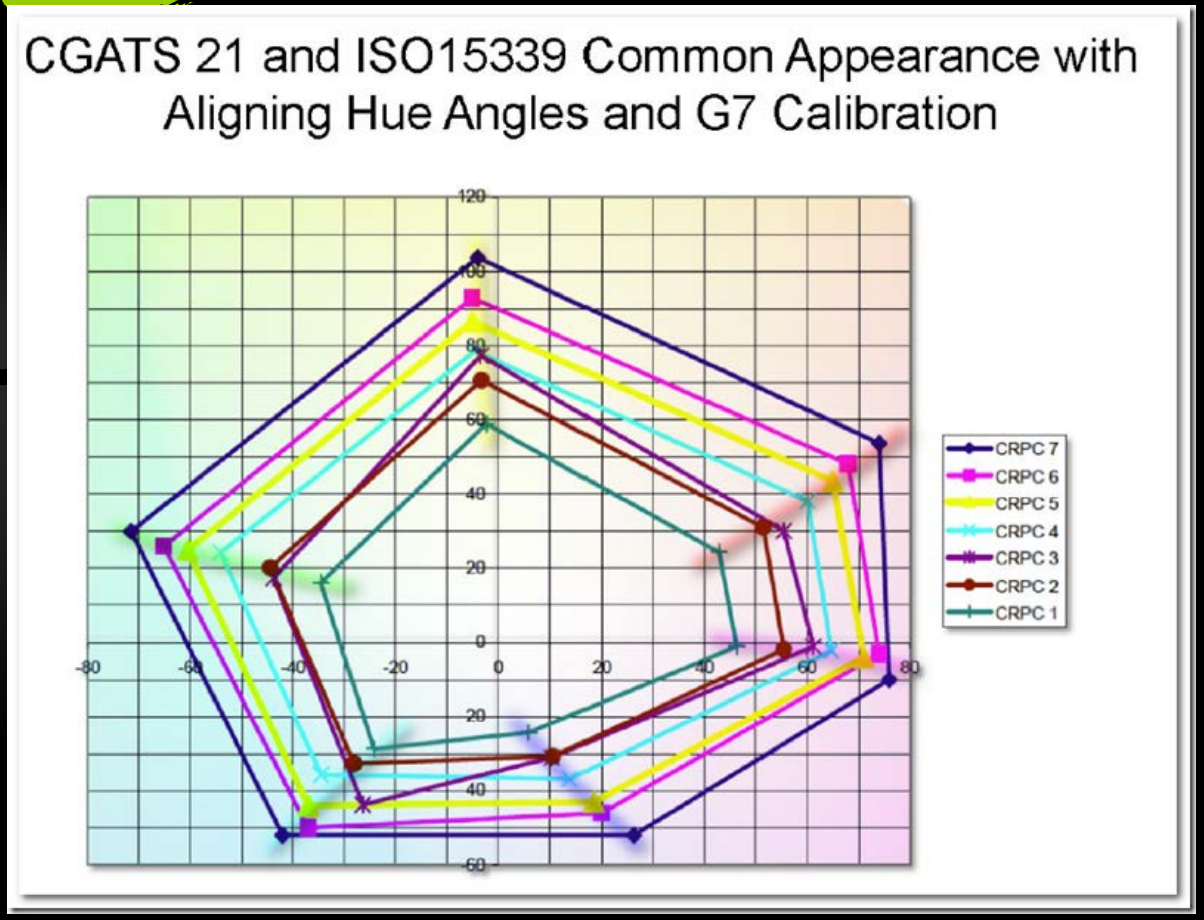
G7 XCMYK (15339 CRPC7)

W: 95 L* 1 a* -4 b*
C: 49 L* -32 a* -61 b*
M: 46 L* 80 a* 5 b*
Y: 90 L* -3 a* 105 b*
K: 8 L* 0 a* 0 b*
R: 46 L* 73 a* 56 b*
G: 42 L* -72 a* 24 b*
B: 19 L* 19 a* -51 b*



ISO 15339 CRPC

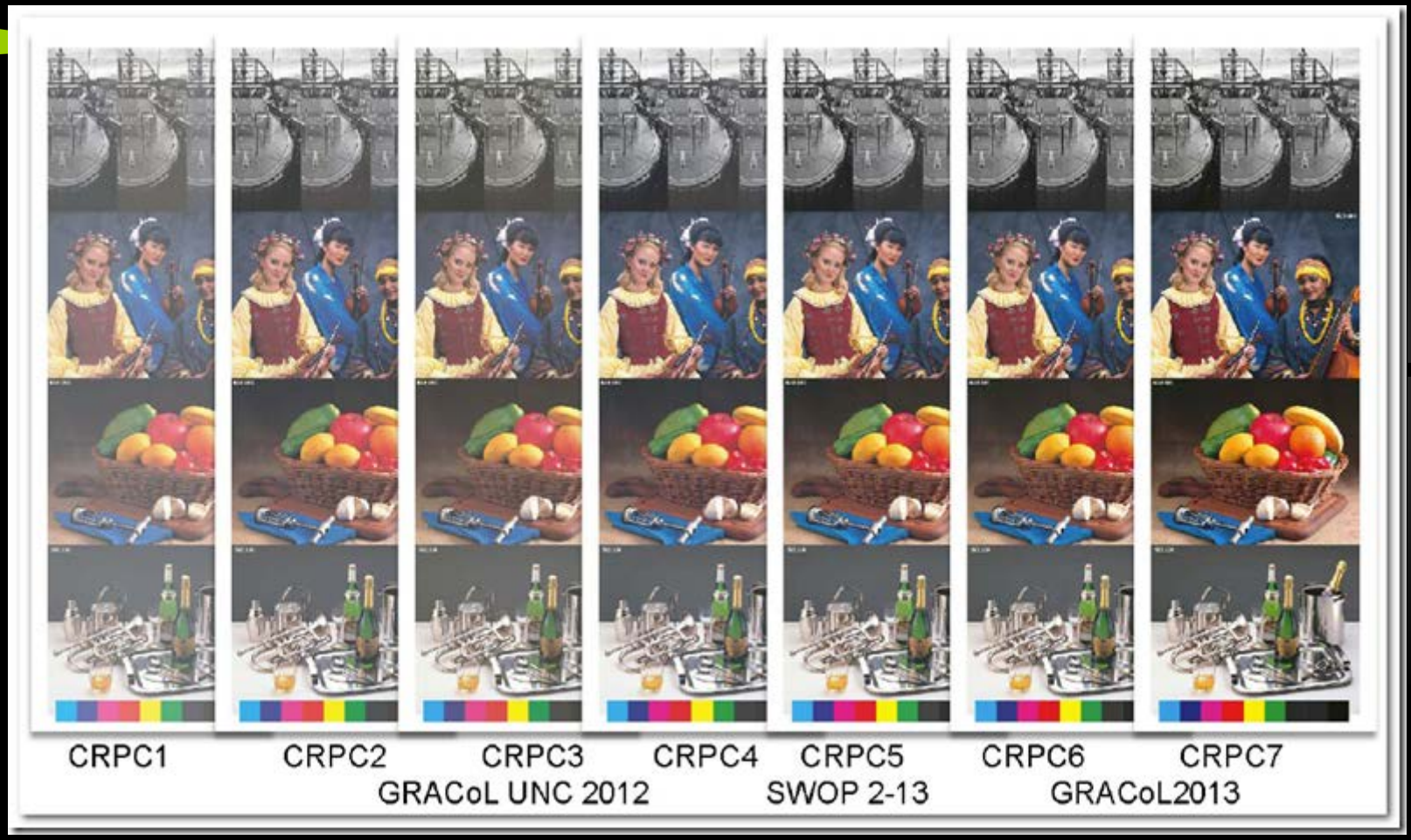
(characterized reference printing condition)



The 7 ISO 15339 CRPCs

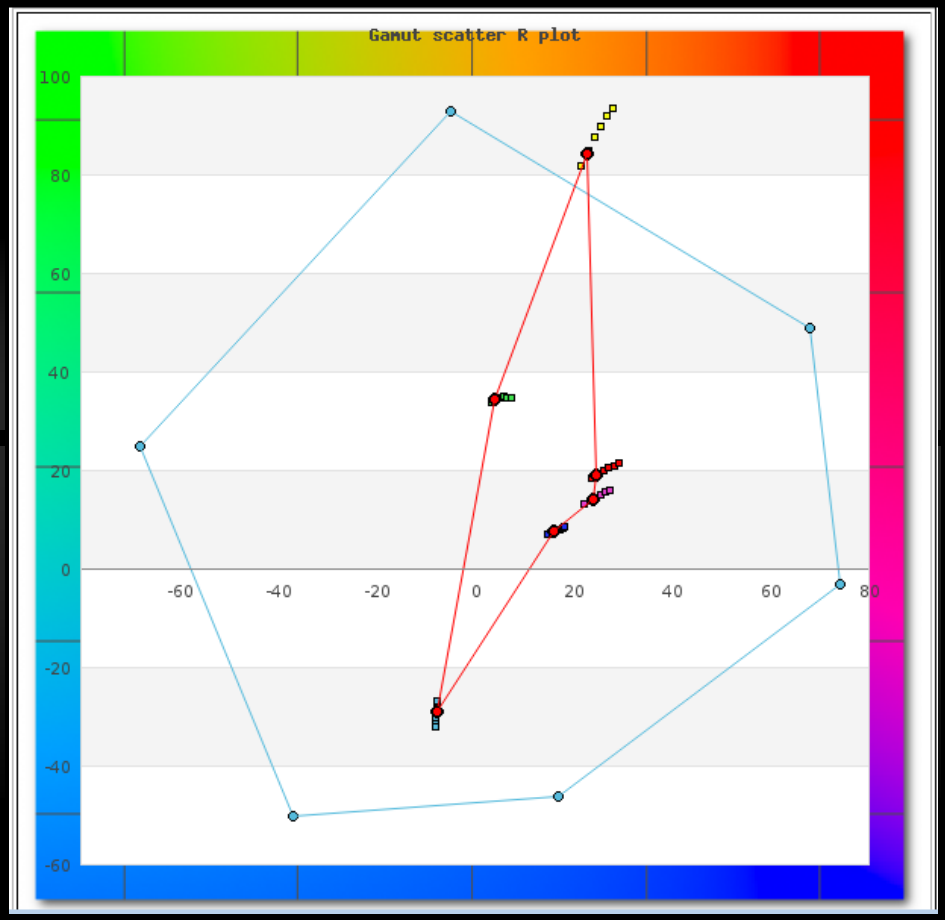
CRPC	CRPC name
1	ColdsetNews
2	HeatsetNews
3	PremUncoated
4	SuperCal
5	PubCoated
6	PremCoated
7	Extra Large

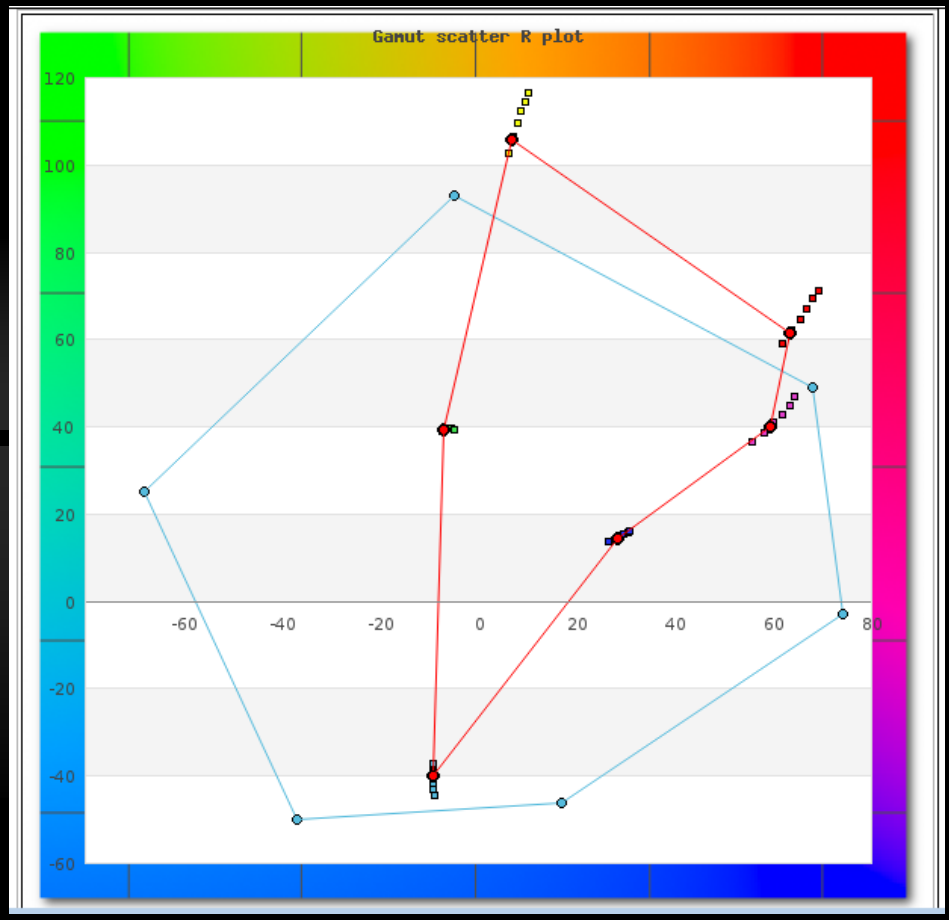
ISO 15339 CRPC



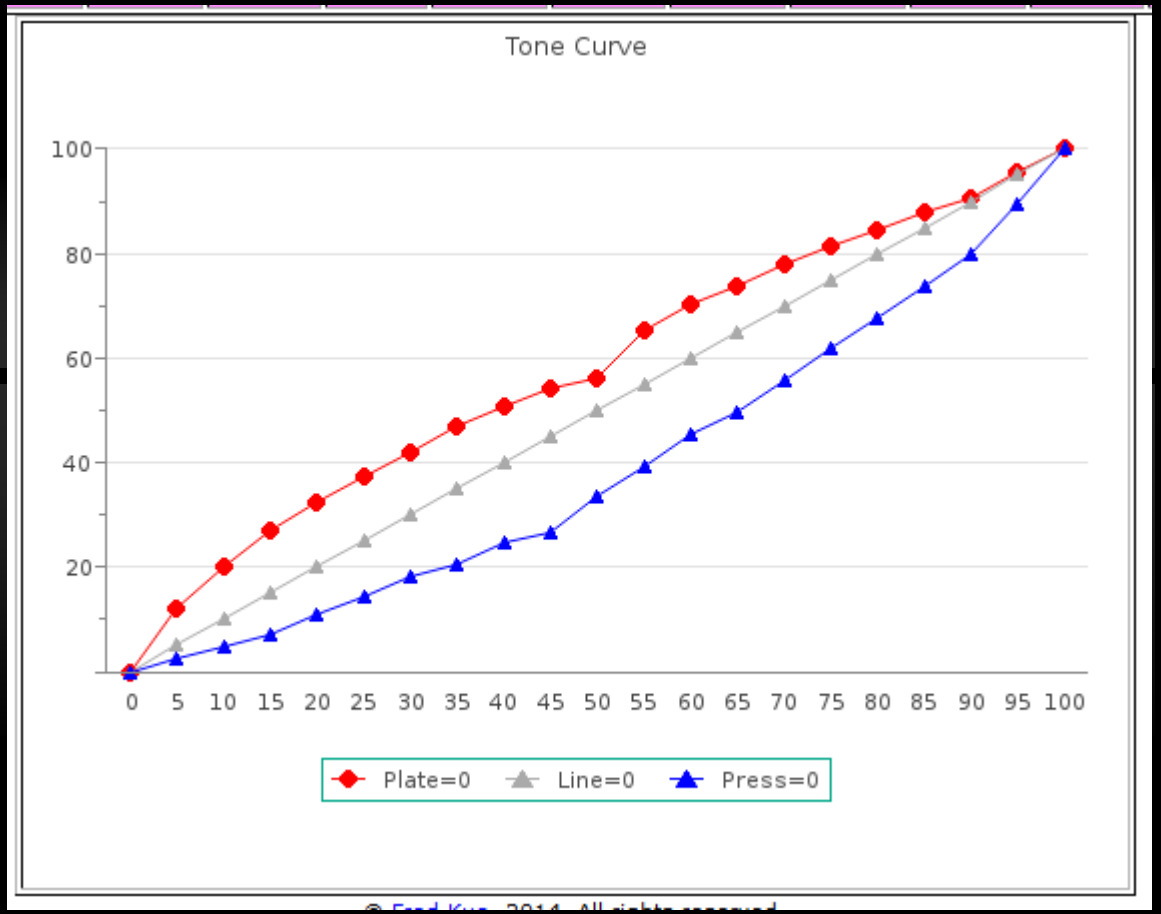
Beyond Paper !

- ✓ 紡織
- ✓ 陶瓷
- ✓ 建材
- ✓ 金屬版(銅、鋁
- ✓ 玻璃
- ✓ CTF
- ✓ CTP


Gamut scatter R plot
100
80
60
40
20
0
-20
-40
-60
-60
-40
-20
0
20
40
60
80

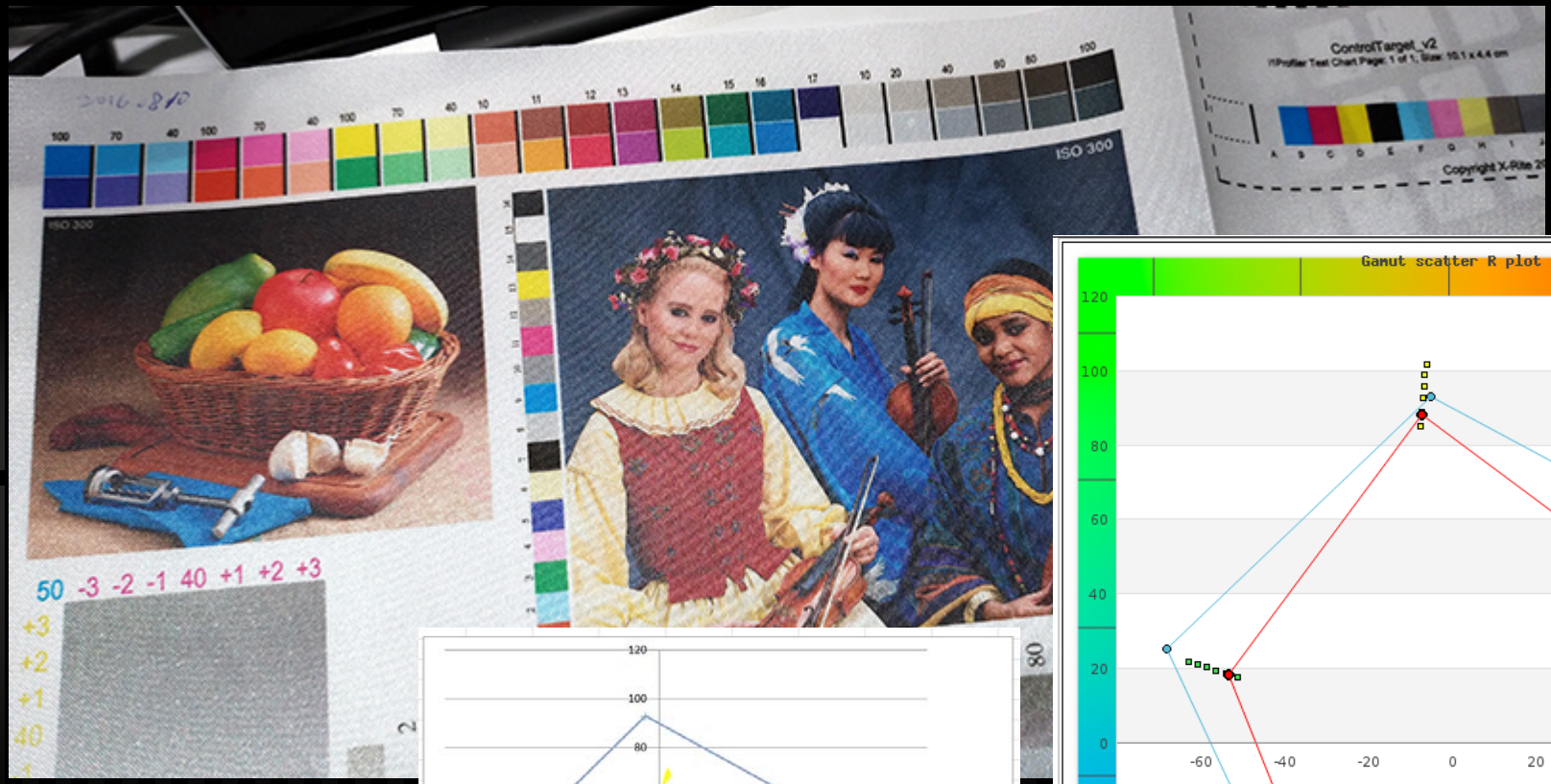

Gamut scatter R plot
120
100
80
60
40
20
0
-20
-40
-60
-60
-40
-20
0
20
40
60
80

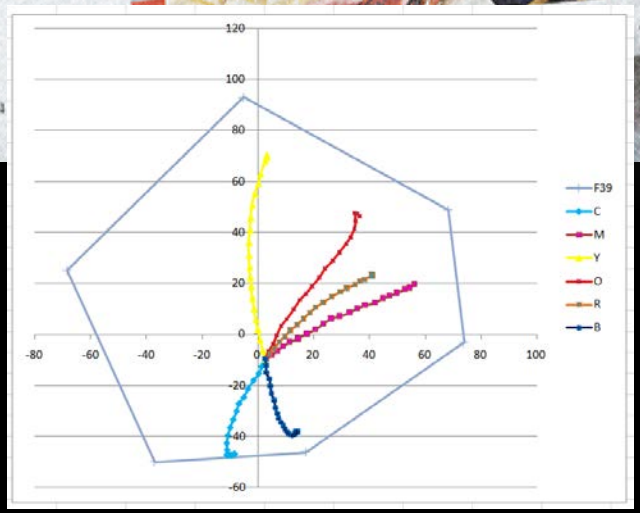
主色	5%	10%	15%	20%	25%	30%	35%	40%	45%	50%	55%	60%	65%	70%	75%	80%	85%	90%	95%
Plate	12.02	19.96	26.98	32.21	37.34	41.93	46.87	50.68	54.17	56.2	65.4	70.2	73.7	77.8	81.35	84.55	88.06	90.46	95.53
Press	2.54	4.94	7.06	10.87	14.44	18.32	20.53	24.68	26.6	33.46	39.45	45.34	49.55	55.63	61.82	67.57	73.63	79.74	89.53
de	-9.48	-15.02	-19.92	-21.34	-22.9	-23.61	-26.34	-26	-27.57	-22.74	-25.95	-24.86	-24.15	-22.17	-19.53	-16.98	-14.43	-10.72	-6

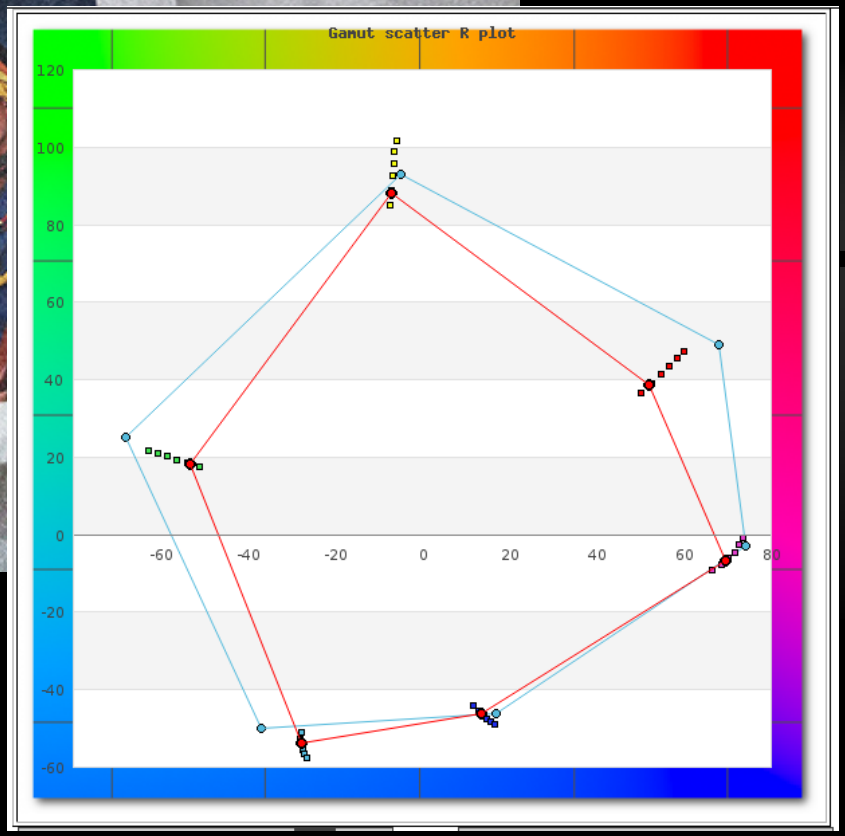


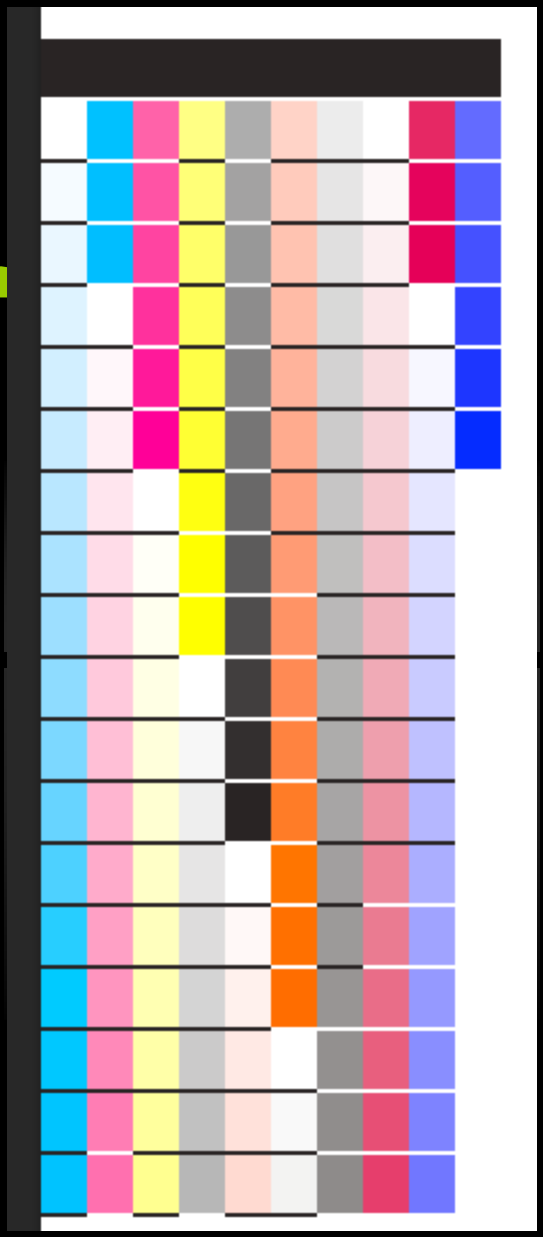
Textile on ISO

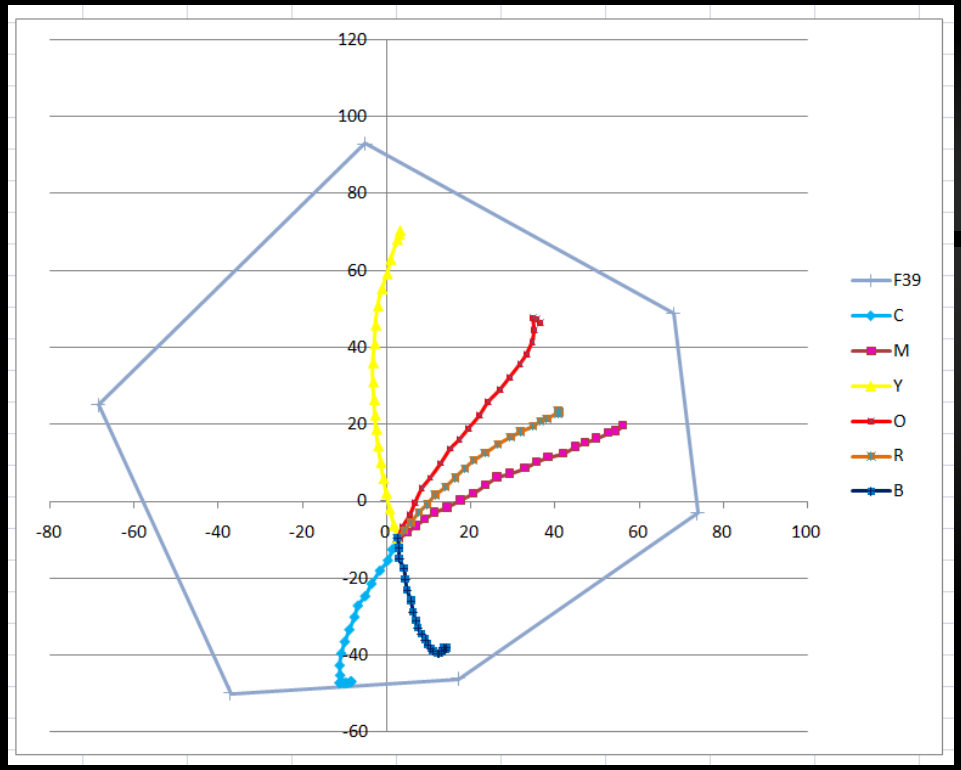
- ✓ISO 105 Textiles – 色牢度
- ✓ISO 10617 Textiles — 色彩交換格式
- ✓ISO 16373-1:2015 Textiles – 色彩染料原則


ISO 300
50 -3 -2 -1 40 +1 +2 +3


F39
C
M
Y
O
R
B


Gamut scatter R plot




120
100
80
60
40
20
0
-20
-40
-60
-80
-60
-40
-20
0
20
40
60
80
100
F39
C
M
Y
O
R
B

糊料→噴印→後處理→成品(dye)

配方、溫濕、材料、織法、噴頭

噴印→轉印→成品 (dye)

材料、織法、轉印溫度、噴頭

噴印→成品 (pigment)

材料、織法、噴頭

ISO 10617 Textiles — Standard data format for colorimetric communication — Textiles and related measurements

```
1 <?xml version="1.0" encoding="UTF-8"?>
2 <?xml-stylesheet type="text/xsl" href="example.xsl" me
3 <!DOCTYPE cdf SYSTEM "wg12cdf.dtd">
4 <cdf:cdf xmlns:cdf="http://www.xxx.org.uk/2004/cdf"
                      xmlns:xsi="http://www.w3.org/200
                      xsi:schemaLocation="http://www.x
5 wg12cdf.xsd">
6    <sample id="example1">
7      <name>mushroom</name>
8      <reference>ladybird</reference>
9      <comments>Ladybird Childrenswear (1993)</comments
10     <preview>#aba59f</preview>
11   </sample>
12   <spectral>
13     <data type="reflectance">
14         <value nm="400">32.88</value>
15         <value nm="420">30.89</value>
16         <value nm="440">31.56</value>
17         <value nm="460">33.71</value>
18         <value nm="480">36.58</value>
19         <value nm="500">38.18</value>
20         <value nm="520">38.42</value>
21         <value nm="540">37.17</value>
22         <value nm="560">38.24</value>
23         <value nm="580">40.46</value>
24         <value nm="600">40.50</value>
25         <value nm="620">40.64</value>
26         <value nm="640">41.87</value>
27         <value nm="660">44.98</value>
28         <value nm="680">50.74</value>
29         <value nm="700">59.05</value>
30         <uncertainty>0.15</uncertainty>
31     </data>
32     <parameters>
```

example1

Name: mushroom	**Reference:** ladybird
Description:	
Originator:	
Comments: *Ladybird Childrenswear (1993)*	

Spectral reflectance data:

32.88(400nm), 30.89(420nm), 31.56(440nm), 33.71(460nm), 36.58(480nm), 38.18(500nm), 38.42(520nm), 37.17(540nm), 38.24(560nm), 40.46(580nm), 40.50(600nm), 40.64(620nm), 41.87(640nm), 44.98(660nm), 50.74(680nm), 59.05(700nm)

Parameters:

Produced: 1993-01-21T10:14:07	Repeats: 1	Humidity:
Integration Time:	Temperature:	Reference Type:

Instrument: Macbeth MS-2020+ (*S/N*: 230778866)

Geometry:

Angle:	Aperture: 25mm (LAV)	Bandpass:
Bandwidth:	Distance:	Influx: d
Eflux: 0	Orientation: vertical	Pathlength:

Calibration (black):

Certificate:	Traceability: NPL

Calibration (tile):

Certificate: 8143	Traceability: NPL

Calibration (uv):

UV Cutoff: 700	UV Level:
Certificate:	Traceability:

Textile Measuring

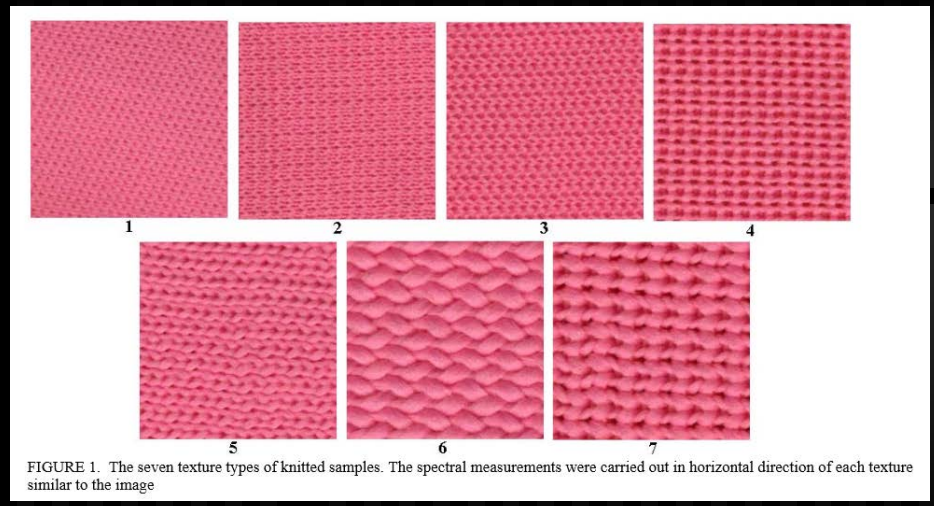
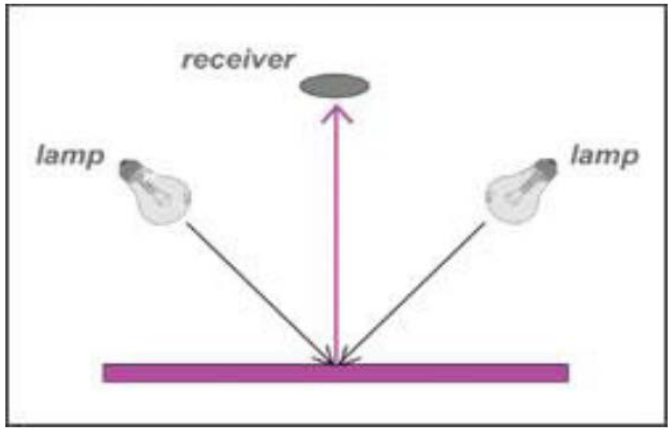
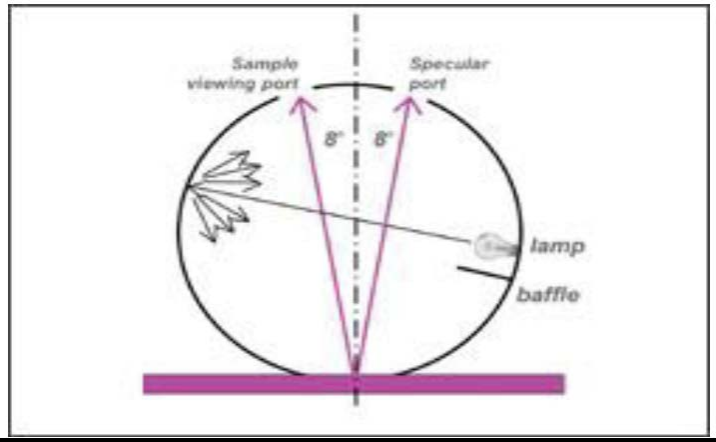


FIGURE 1. The seven texture types of knitted samples. The spectral measurements were carried out in horizontal direction of each texture similar to the image

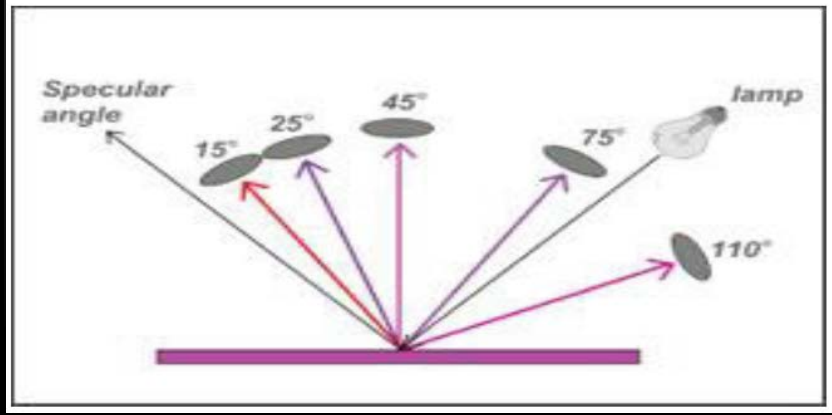
0º/45º (or 45º/0º) Spectrophotometers



Spherical Spectrophotometers



Multi-Angle Spectrophotometers



談規格

- 官方規格(Fogra39、CRPC7、GRACoL...)
  - 縱、橫向連結自動完成(設計←→生產←→發外)
- 自訂規格
  - 超越Fogra39、不足Fogra39
  - 自行建立連結(設計←→生產)
  - 兩個端點(材料0%與色料100%色彩值落點)
  - 版調值(Tone Value)
  - 目標值與寬容值
    - 灰色平衡...

談規格

- ✓ 生產規格
  - ✓ 單張平整度
  - ✓ 生產批次平穩度
- ✓ 總墨量(TAC...色域能力)
- ✓ 量測幾何 (0°/45°、d8、 MA)
- ✓ 量測光源(D50、F2...)
- ✓ 量測視角(2°、10°)
- ✓ 色差公式(ΔEab、ΔE_{00}、ΔE_{cmc})
- ✓ 取樣邏輯

發展題目

- ✓線性(Linearization)、總墨量(TAC, Total Area Covered)、滿版濃度(SID Solid Ink Density)、版調增量(TVI,Tone Value Increment)、
- ✓墨水能力比較：頻道ab 圖，二次色頻道ab 圖，icc 體積，牢度(抗光，抗磨，抗水)
- ✓樣張與生產
- ✓軟打樣(電子樣張，顯示器打樣)(SITI，KeraCromia, Onyx, Caldera)
- ✓生產穩定度參數：配方、溫濕、材料、織法、噴頭

blog

FB

Print By Number

謝謝！

印刷基本能力 (ISO12647-2:2004/2007 on Fogra39)

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