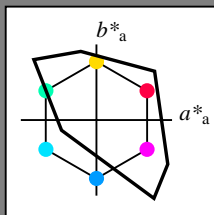


Input: Colorimetric Television Luminous System TLS00a

with *rgb* data of the
four elementary hues

1 0 0 = Red *R*
1 1 0 = Yellow *J*
0 1 0 = Green *G*
0 0 1 = Blue *B*



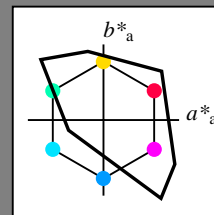
TLS00a; adapted (a) CIELAB data

| | $L^*=L^*_a$ | a^*_a | b^*_a | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
|------------------|-------------|---------|---------|--------------|--------------|
| O _{Ma} | 50.5 | 76.92 | 64.55 | 100.42 | 40 |
| Y _{Ma} | 92.66 | -20.69 | 90.75 | 93.08 | 103 |
| L _{Ma} | 83.63 | -82.75 | 79.9 | 115.04 | 136 |
| C _{Ma} | 86.88 | -46.16 | -13.55 | 48.12 | 196 |
| V _{Ma} | 30.39 | 76.06 | -103.59 | 128.52 | 306 |
| M _{Ma} | 57.3 | 94.35 | -58.41 | 110.97 | 328 |
| N _{Ma} | 0.01 | 0.0 | 0.0 | 0.0 | 0 |
| W _{Ma} | 95.41 | 0.0 | 0.0 | 0.0 | 0 |
| R _{CIE} | 39.92 | 58.74 | 27.99 | 65.07 | 25 |
| J _{CIE} | 81.26 | -2.88 | 71.56 | 71.62 | 92 |
| G _{CIE} | 52.23 | -42.41 | 13.6 | 44.55 | 162 |
| B _{CIE} | 30.57 | 1.41 | -46.46 | 46.49 | 272 |

Output: Colorimetric Television Luminous System TLS00a

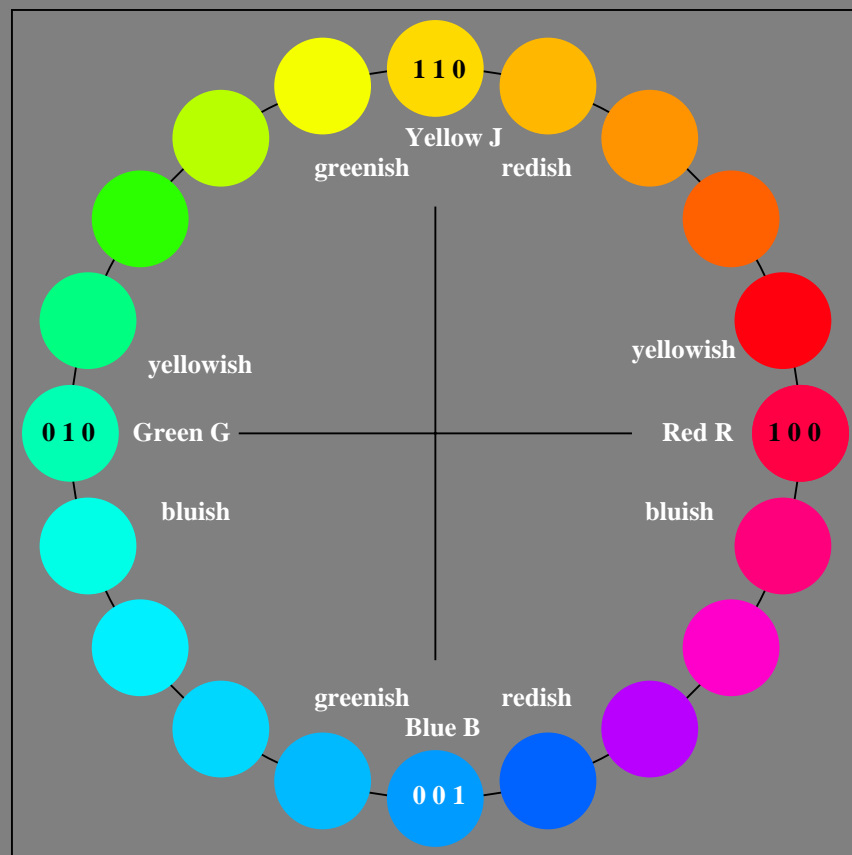
with hue number

$n = 00$ to 19
00 = Red *R*
05 = Yellow *J*
10 = Green *G*
15 = Blue *B*

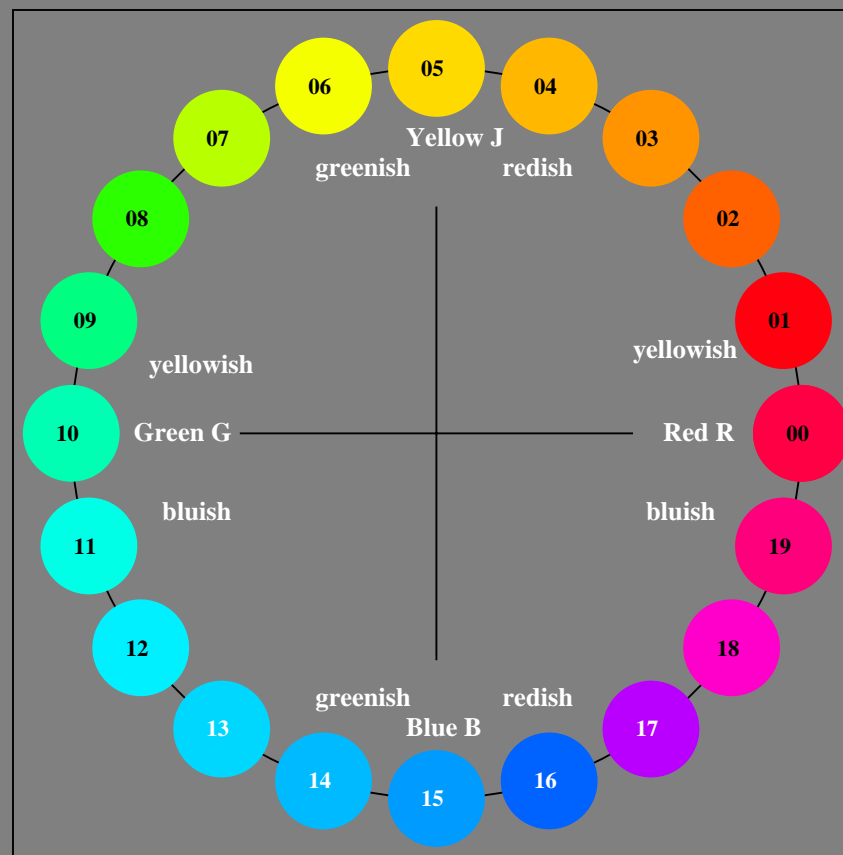


TLS00a; adapted (a) CIELAB data

| | $L^*=L^*_a$ | a^*_a | b^*_a | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
|------------------|-------------|---------|---------|--------------|--------------|
| O _{Ma} | 50.5 | 76.92 | 64.55 | 100.42 | 40 |
| Y _{Ma} | 92.66 | -20.69 | 90.75 | 93.08 | 103 |
| L _{Ma} | 83.63 | -82.75 | 79.9 | 115.04 | 136 |
| C _{Ma} | 86.88 | -46.16 | -13.55 | 48.12 | 196 |
| V _{Ma} | 30.39 | 76.06 | -103.59 | 128.52 | 306 |
| M _{Ma} | 57.3 | 94.35 | -58.41 | 110.97 | 328 |
| N _{Ma} | 0.01 | 0.0 | 0.0 | 0.0 | 0 |
| W _{Ma} | 95.41 | 0.0 | 0.0 | 0.0 | 0 |
| R _{CIE} | 39.92 | 58.74 | 27.99 | 65.07 | 25 |
| J _{CIE} | 81.26 | -2.88 | 71.56 | 71.62 | 92 |
| G _{CIE} | 52.23 | -42.41 | 13.6 | 44.55 | 162 |
| B _{CIE} | 30.57 | 1.41 | -46.46 | 46.49 | 272 |



OE860-7N-130-0: 20 step hue circle with elementary colours *R*, *J*, *G*, *B* (left)



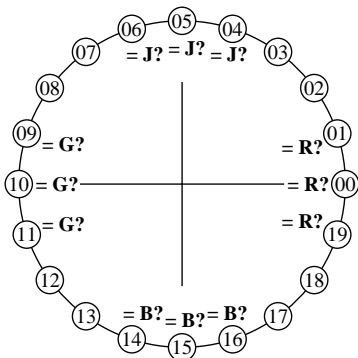
20 step hue circle with elementary colours *R*, *J*, *G*, *B* (right)

OE86: Test chart 5 according to DIN 33872-5; 1MR, DEH
Elementary hue agreement and discrimination

input: *rgb* (\rightarrow *rgb*_{de}) setrgbcolor
output 130-0: $g_P=1.0$; $g_N=1.0$

Agreement with elementary hues (Yes/No decision)

Layout example: agreement with elementary hues



There are four elementary hues on each page: Red R, Yellow J (=french Jaune), Green G, and Blue B.

Input data 1 0 0 should produce Red R.
Input data 0 1 0 should produce Green G.
Input data 0 0 1 should produce Blue B.
Input data 1 1 0 should produce Yellow J.

The elementary hues Red R and Green G should locate on the horizontal axis.
The elementary hues Yellow J and Blue B should locate on the vertical axis.

This test uses a hue circle with 20 hues.

No. 00 and 10 should be Red R and Green G.
No. 05 and 15 should be Yellow J and Blue B.

Are no. 00, 05, 10, and 15 the four elementary hues R, J, G and B? underline: Yes/No
Only in case of "No":

| | |
|--|---------------------------------|
| Elementary Red R is hue step no. (e. g. 00, 01, 19) | (neither yellowish nor blueish) |
| Elementary Yellow J is hue step no. (e. g. 05, 04, 06) | (neither reddish nor greenish) |
| Elementary Green G is hue step no. (e. g. 10, 09, 11) | (neither yellowish nor blueish) |
| Elementary Blue B is hue step no. (e. g. 15, 14, 16) | (neither reddish nor greenish) |
| Result: Of the 4 elementary hues (e.g. three) | |

Part 1

OE860-3N-130-1

Documentation of file format, hardware and software for this test:

PDF-File: <http://130.149.60.45/farbmetrik/OE86/OE86L0NP.PDF> underline Yes/No

PS-File: <http://130.149.60.45/farbmetrik/OE86/OE86L0NA.PS> or underline Yes/No

Used computer operating system:

either one of Windows/Mac/Unix/other and version:.....

This evaluation is for the device output: underline monitor/data projector/printer

Device model, driver and version:.....

Device output with PDF/PS-file: underline PDF/PS-file

For device output with PDF-file OE86L0NP.PDF:

either PDF-file transfer "download, copy" to PDF device.....
or with computer system interpretation by "Display-PDF":.....
or with software e. g. Adobe-Reader/-Acrobat and version:.....
or with software e. g. Ghostscript and version:.....

For device output with PS-file OE86L0NA.PS:

either PS-file transfer "download, copy" to PS device.....
or with computer system interpretation by "Display-PS":.....
or with software e. g. Ghostscript and version:.....
or with software e. g. Mac-Yap and version:.....

Special remarks:Special remarks, e. g. output of Landscape (L)

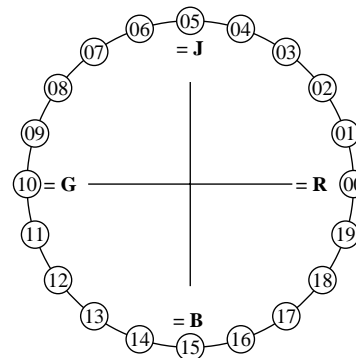
.....
.....
.....

Part 3

OE860-7N-130-1

Discriminability of colours with 20 hues (Yes/No decision)

Layout example: discriminability of colours with 20 hues



There are four elementary hues on each page: Red R, Yellow J (=french Jaune), Green G, and Blue B.

Input data 1 0 0 should produce Red R.
Input data 0 1 0 should produce Green G.
Input data 0 0 1 should produce Blue B.
Input data 1 1 0 should produce Yellow J.

Four hue steps are between:
Red R and Yellow J, Yellow J and Green G,
Green G and Blue B, and Blue B and Red R.

This test uses a hue circle with 20 hues.
All 20 hues should be distinguishable.

For this test it is **not** necessary:

1. All 19 differences are visually equal.
2. Elementary hues locate at 00, 05, 10, and 15.

Are all 20 colours of the 20 hues distinguishable?

underline: Yes/No

Only in case of "No":

| | |
|--|-------------------------|
| The colours of the two hue steps no. (e. g. 00 and 01) | are not distinguishable |
| The colours of the two hue steps no. (e. g. 14 and 15) | are not distinguishable |
| The colours of the two hue steps no. (e. g. 15 and 16) | are not distinguishable |
| List other pairs: | |
| Result: Of the 19 hue differences are (e.g. 18) | |

Part 2

OE861-3N-130-1

Documentation of assessor colour vision properties for visual assessment

The assessor has **normal** colour vision according to one test:

either according to DIN 6160:1996 with Anomaloskop of Nagel
or with test charts using colour points according to Ishihara
or tested with, please specify:

underline Yes/No

underline Yes/unknown

underline Yes/unknown

underline Yes/unknown

For visual evaluation of the display (monitor, data projector) output

Office workplace illumination is daylight (clouded/north sky)

underline Yes/No

PDF file: <http://130.149.60.45/farbmetrik/OE86/OE86F1P2.PDF>

underline Yes/No

PS file: <http://130.149.60.45/farbmetrik/OE86/OE86F1P2.PS>

underline Yes/No

Picture A7-130-2: **contrast range:** (>F:0) (F:0) (E:0) (D:0) (C:0) (A:0) (9:0) (7:0) (5:0) (3:0) (<3:0)

compare standard print output according to ISO/IEC 15775 with range F:0 underline range

Remark: In daylighted offices the contrast range is in many cases:

on display between: >F:0 and E:0 (monitor), D:0 and 3:0 (data projector)

Only for optional colorimetric specification with PDF/PS file output

PDF-File: <http://130.149.60.45/farbmetrik/OE86/OE86F1P2.PDF>

picture A7-130-2

underline Yes/No

PS-File: <http://130.149.60.45/farbmetrik/OE86/OE86F1P2.PS>

picture A7-130-2

or underline Yes/No

colour measurement and specification for:

CIE standard illuminant D65, 2 degree observer, CIE 45/0 geometry:

underline Yes/No

If No, please give other parameters:

Colorimetric specification with PS file for colours in the columns A to T

Exchange of CIELAB data in file www.ps.bam.de/De17/10L/L17e00NP.PS and transfer

of the PS-file L17e00NP.PS in PDF-file L17e00NP.PDF

underline Yes/No

If No, please describe other method:

Part 4

OE861-7N-130-1

OE86: Form A for test chart 1 according to DIN 33872-5; 1MR, DEH
Elementary hue agreement, discrimination (Yes/No-decision) output 130-1: $g_P=1.0$; $g_N=1.0$

See similar ISO test charts: <http://www.ps.bam.de/24705TE>, <http://www.ps.bam.de/9241E>
Technical information: <http://www.ps.bam.de/33872E> Version 2.1, io=1,1, CIELAB

| i | LAB*ref | l*out | LAB*out | LAB*out/c-ref | ΔE* |
|----|---------|-------|---------|---------------|------|
| 1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.01 |
| 2 | 6.36 | 0.0 | 0.07 | 6.36 | 0.01 |
| 3 | 12.72 | 0.0 | 0.13 | 12.72 | 0.01 |
| 4 | 19.08 | 0.0 | 0.2 | 19.08 | 0.01 |
| 5 | 25.44 | 0.0 | 0.27 | 25.44 | 0.01 |
| 6 | 31.8 | 0.0 | 0.33 | 31.8 | 0.01 |
| 7 | 38.16 | 0.0 | 0.4 | 38.16 | 0.01 |
| 8 | 44.52 | 0.0 | 0.47 | 44.52 | 0.01 |
| 9 | 50.89 | 0.0 | 0.53 | 50.89 | 0.01 |
| 10 | 57.25 | 0.0 | 0.6 | 57.25 | 0.01 |
| 11 | 63.61 | 0.0 | 0.67 | 63.61 | 0.01 |
| 12 | 69.97 | 0.0 | 0.73 | 69.97 | 0.01 |
| 13 | 76.33 | 0.0 | 0.8 | 76.33 | 0.01 |
| 14 | 82.69 | 0.0 | 0.87 | 82.69 | 0.01 |
| 15 | 89.05 | 0.0 | 0.93 | 89.05 | 0.01 |
| 16 | 95.41 | 0.0 | 1.0 | 95.41 | 0.01 |
| 17 | 0.0 | 0.0 | 0.0 | 0.0 | 0.01 |
| 18 | 23.85 | 0.0 | 0.25 | 23.85 | 0.01 |
| 19 | 47.71 | 0.0 | 0.5 | 47.71 | 0.01 |
| 20 | 71.56 | 0.0 | 0.75 | 71.56 | 0.01 |
| 21 | 95.41 | 0.0 | 1.0 | 95.41 | 0.01 |

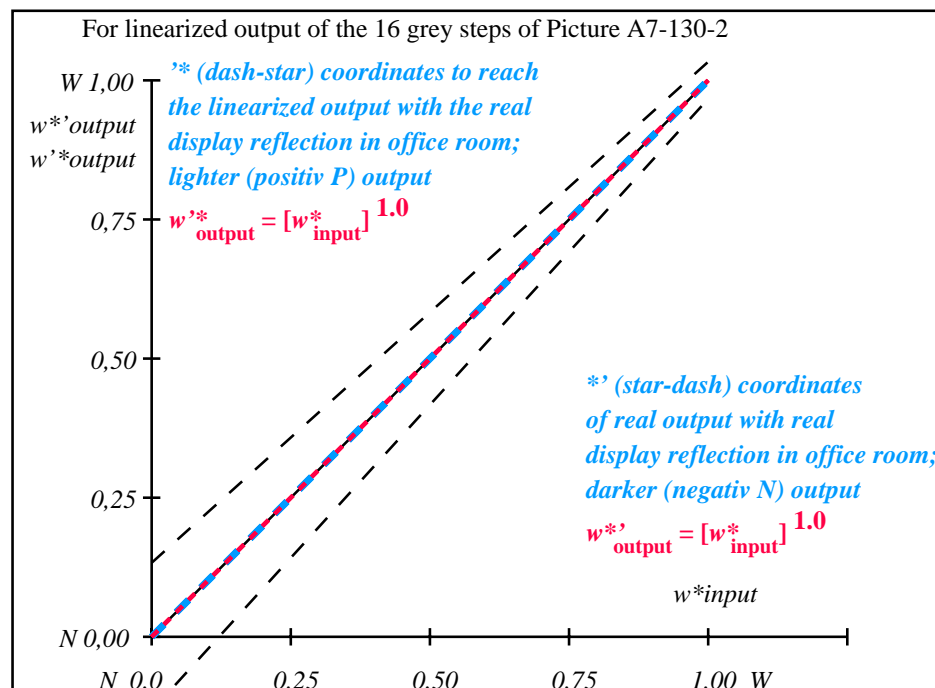
Start output S1
Specification according to
ISO/IEC 15775 Annex G
and DIN 33866-1 Annex G

Mean lightness difference (16 steps)
 $\Delta E^*_{\text{CIELAB}} = 0.0$

Mean lightness difference (5 steps)
 $\Delta L^*_{\text{CIELAB}} = 0.0$

Mean colour reproduction index: $R^*_{ab,m} = 100$

OE860-3N-130-2: File: Measure unknown; Device: Device unknown; Date: Date unknown



OE861-3N-130-2: File: Measure unknown; Device: Device unknown; Date: Date unknown

| L^*/Y_{intended} (absolute) | 0.0/0.0 | 6.4/0.7 | 12.7/1.5 | 19.1/2.8 | 25.4/4.6 | 31.8/7.0 | 38.2/10.2 | 44.5/14.2 | 50.9/19.2 | 57.2/25.2 | 63.6/32.3 | 70.0/40.7 | 76.3/50.4 | 82.7/61.6 | 89.0/74.3 | 95.4/88.6 |
|---|---------|---------|----------|----------|----------|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| $w^* w^* w^*$ setrgb gp=1.0 | | | | | | | | | | | | | | | | |
| No. and Hex code | 00;F | 01;E | 02;D | 03;C | 04;B | 05;A | 06;9 | 07;8 | 08;7 | 09;6 | 10;5 | 11;4 | 12;3 | 13;2 | 14;1 | 15;0 |
| $w^* = l^*$ CIELAB, r (relative) | | | | | | | | | | | | | | | | |
| w^*_{intended} | 0.000 | 0.067 | 0.133 | 0.200 | 0.267 | 0.333 | 0.400 | 0.467 | 0.533 | 0.600 | 0.667 | 0.733 | 0.800 | 0.867 | 0.933 | 1.000 |
| w^*_{out} | 0.0 | 0.067 | 0.133 | 0.2 | 0.267 | 0.333 | 0.4 | 0.467 | 0.533 | 0.6 | 0.667 | 0.733 | 0.8 | 0.867 | 0.933 | 1.0 |

OE860-7N, Picture A7-130-2: 16 visual equidistant L^* -grey steps; PS operator: $w^* w^* w^*$ setrgbcolor

OE86: In-output relation according to ISO 9241-306; 1MR, DEH input: $rgb \rightarrow rgb^*_{de}$ setrgbcolor
Viewing Y contrast $Y_W:Y_N=88,9:0,31$; Y_N range 0,0 to <0,46 output 130-2: $g_P=1,0$; $g_N=1,0$

TUB registration: 20110801-OE86/OE86L0NA.TXT /.PS
application for output of displays: monitor systems or data projector systems
TUB material: code=rh4ta