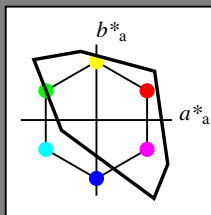


Input: Colorimetric Television Luminous System TLS00a

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*



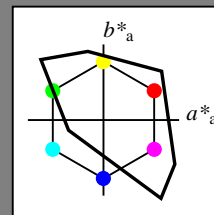
TLS00a; adapted (a) CIELAB data

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

Output: Colorimetric Television Luminous System TLS00a

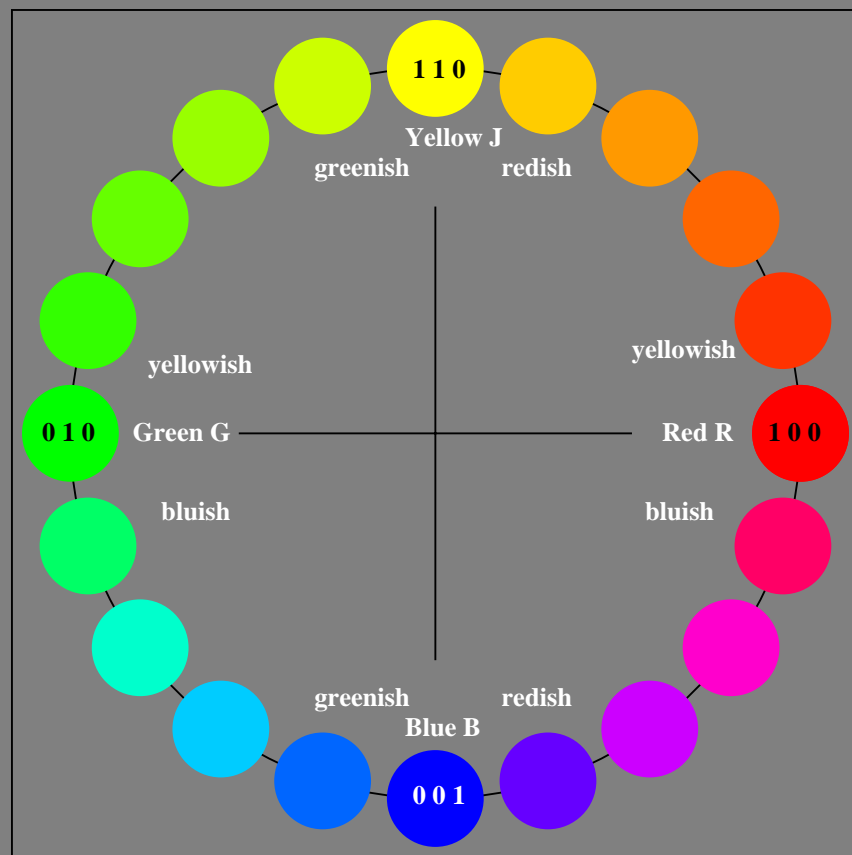
with hue number

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

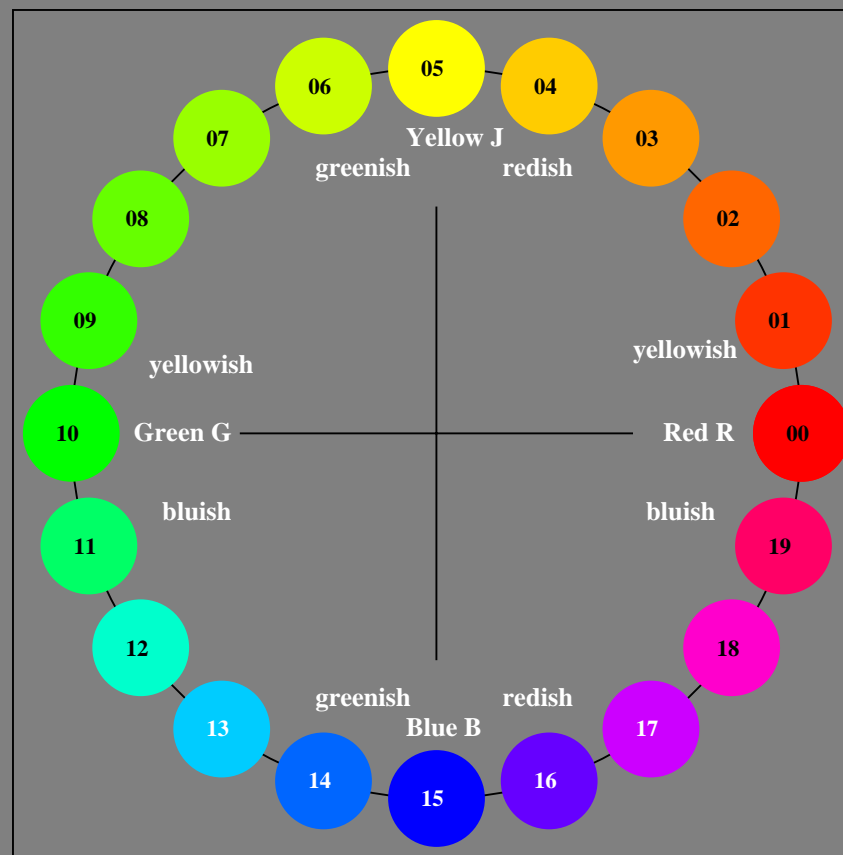


TLS00a; adapted (a) CIELAB data

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



OE760-7N-130-0: 20 step hue circle with elementary colours *R, J, G, B* (left)



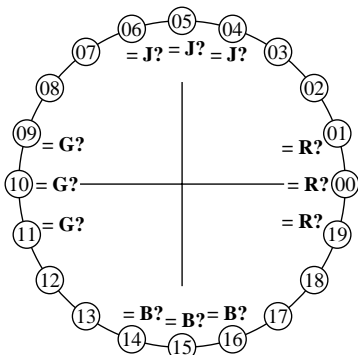
20 step hue circle with elementary colours *R, J, G, B* (right)

OE76: Test chart 5 according to DIN 33872-5; 1MR, DH  
Elementary hue agreement and discrimination

input: *rgb* ( $\rightarrow$  *rgb*<sub>d</sub>) *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

OE760-3N-130-1

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

PDF-File: <http://130.149.60.45/farbmetrik/OE76/OE76L0NP.PDF> underline Yes/No

PS-File: <http://130.149.60.45/farbmetrik/OE76/OE76L0NA.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 OE76L0NP.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 OE76L0NA.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:.....

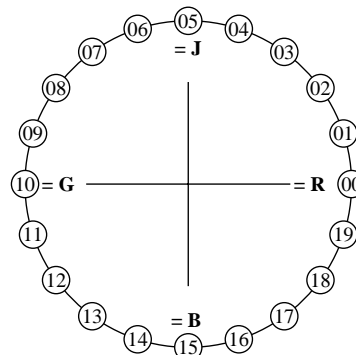
Special remarks:Special remarks, e. g. output of Landscape (L)

Part 3

OE760-7N-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

OE761-3N-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/OE76/OE76F1P2.PDF>

underline Yes/No

PS file: <http://130.149.60.45/farbmetrik/OE76/OE76F1P2.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/OE76/OE76F1P2.PDF>

picture A7-130-2

underline Yes/No

PS-File: <http://130.149.60.45/farbmetrik/OE76/OE76F1P2.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](http://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

OE761-7N-130-1

OE76: Form A for test chart 1 according to DIN 33872-5; 1MR, DH Input:  $rgb \rightarrow rgb_d$  setrgbcolor  
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 |

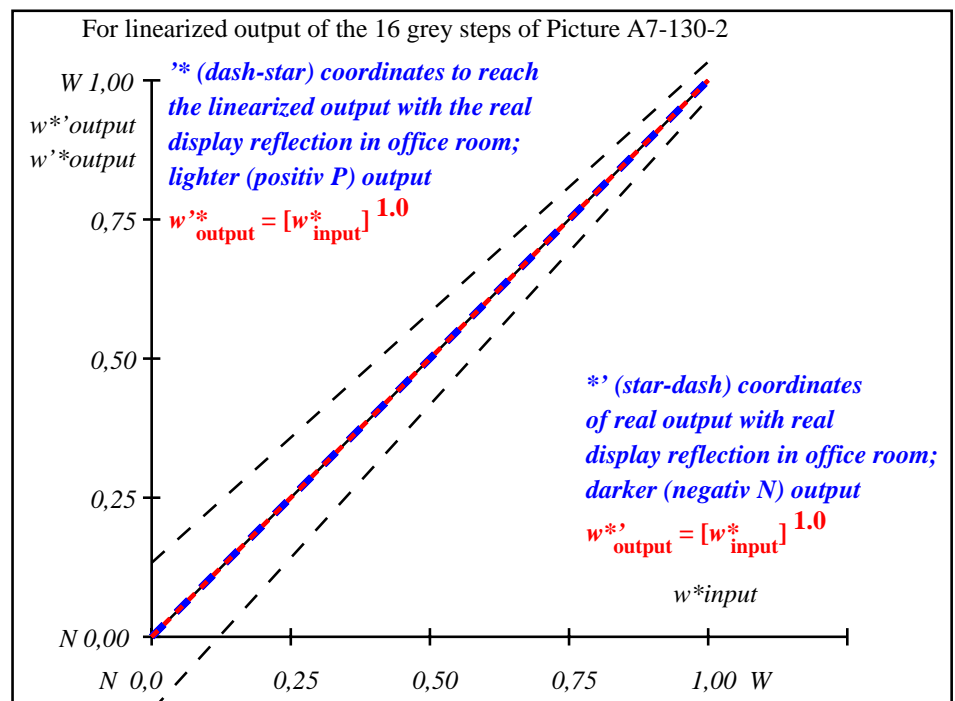
**Start output S1**  
**Specification according to**  
**ISO/IEC 15775 Annex G**  
**and DIN 33866-1 Annex G**

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:  $R^*_{ab,m} = 100$

OE760-3N-130-2: File: Measure unknown; Device: Device unknown; Date: Date unknown



OE761-3N-130-2: File: Measure unknown; Device: Device unknown; Date: Date unknown

| $L^*/Y_{\text{intended}}$<br>(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 |
|---|---------|---------|----------|----------|----------|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| $w^* w^* w^*$<br>setrgb<br>gp=1.0       |         |         |          |          |          |          |           |           |           |           |           |           |           |           |           |           |
| No. and<br>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      |
| $w^* = l^*$<br>CIELAB, r<br>(relative)  |         |         |          |          |          |          |           |           |           |           |           |           |           |           |           |           |
| $w^*_{\text{intended}}$                 | 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     |
| $w^*_{\text{out}}$                      | 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       |

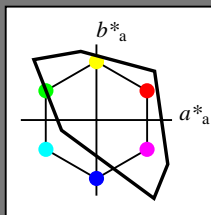
OE760-7N, Picture A7-130-2: 16 visual equidistant  $L^*$ -grey steps; PS operator:  $w^* w^* w^*$  setrgbcolor

OE76: In-output relation according to ISO 9241-306; 1MR, DH input:  $rgb \rightarrow rgb_d$  setrgbcolor  
Viewing  $Y$  contrast  $Y_W:Y_N=88,9:0,31$ ;  $Y_N$  range 0,0 to <0,46 output 130-2:  $g_P=1.0$ ;  $g_N=1.0$

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*



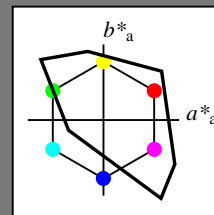
TLS00a; adapted (a) CIELAB data

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

Output: Colorimetric Television Luminous System TLS00a

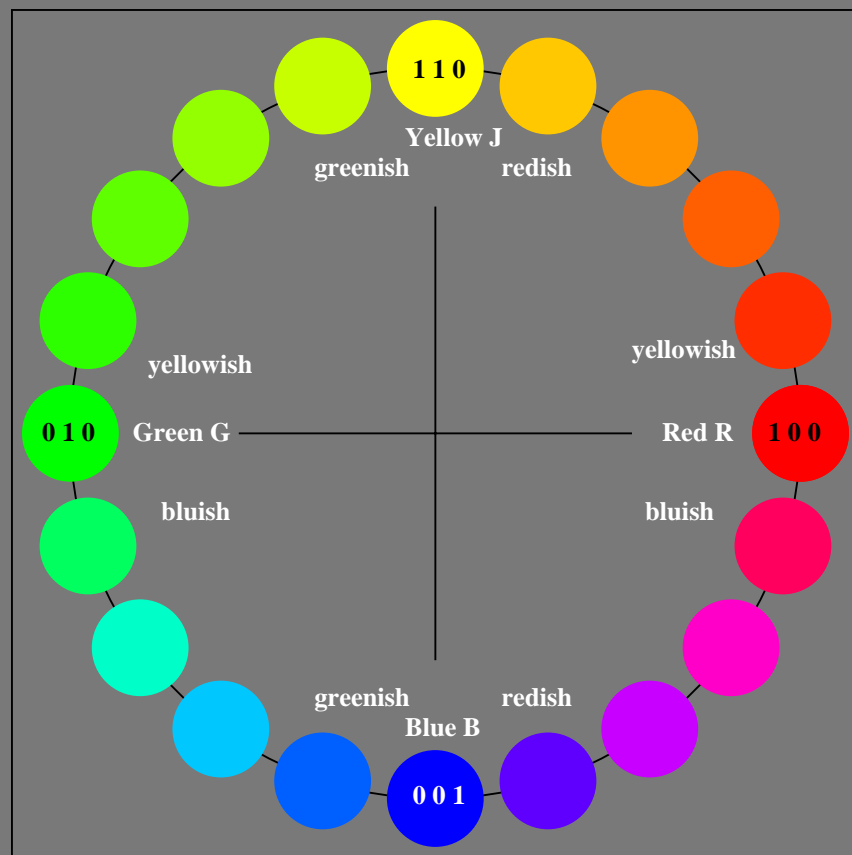
with hue number

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

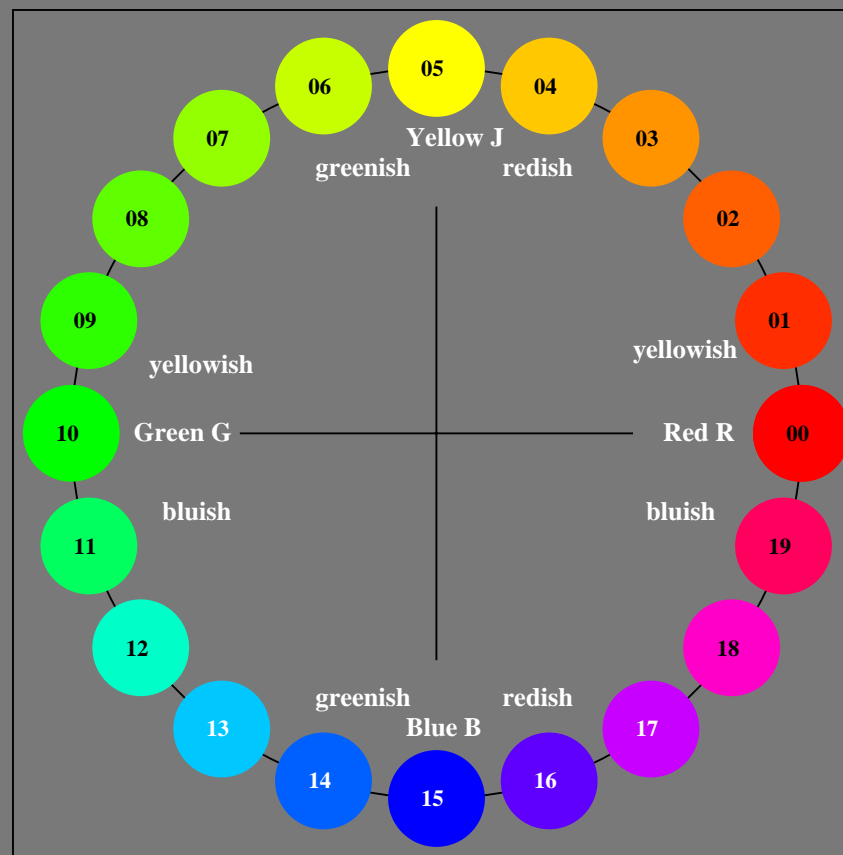


TLS00a; adapted (a) CIELAB data

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



OE760-7N-131-0: 20 step hue circle with elementary colours *R, J, G, B* (left)



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

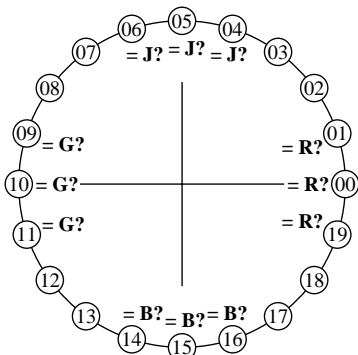
OE76: Test chart 5 according to DIN 33872-5; 1MR, DH  
Elementary hue agreement and discrimination

input: *rgb* ( $\rightarrow$  *rgb*<sub>d</sub>) *setrgbcolor*  
output 130-0:  $g_P=1.0$ ;  $g_N=1.08$



### 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) ..... are at the intended location |                                 |

Part 1

OE760-3N-131-1

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

PDF-File: <http://130.149.60.45/farbmetrik/OE76/OE76L0NP.PDF> underline Yes/No

PS-File: <http://130.149.60.45/farbmetrik/OE76/OE76L0NA.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 OE76L0NP.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 OE76L0NA.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:.....

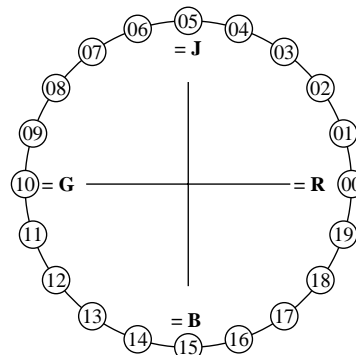
Special remarks:Special remarks, e. g. output of Landscape (L)

Part 3

OE760-7N-131-1

### 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) ..... differences visible |                         |

Part 2

OE761-3N-131-1

### 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/OE76/OE76F1P2.PDF>

underline Yes/No

PS file: <http://130.149.60.45/farbmetrik/OE76/OE76F1P2.PS>

underline Yes/No

Picture A7-131-2: **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/OE76/OE76F1P2.PDF>

picture A7-131-2

underline Yes/No

PS-File: <http://130.149.60.45/farbmetrik/OE76/OE76F1P2.PS>

picture A7-131-2

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](http://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

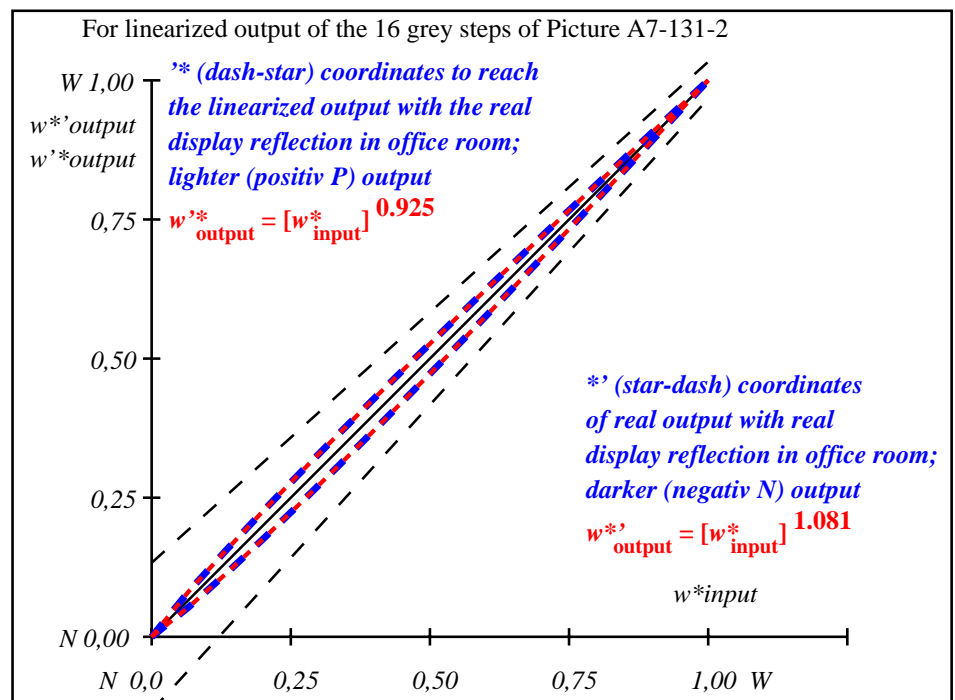
OE761-7N-131-1

OE76: Form A for test chart 1 according to DIN 33872-5; 1MR, DH Input:  $rgb \rightarrow rgb_d$  setrgbcolor  
Elementary hue agreement, discrimination (Yes/No-decision) output 130-1:  $g_P=1.0$ ;  $g_N=1.08$

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                                    | 5.69 0.0 0.0  | 0.0 0.0 0.0    | 5.69 0.0 0.0  | 0.0 0.0 0.0   | 0.01                    |
| 2                                    | 11.67 0.0 0.0 | 0.05 10.49 0.0 | 0.0 0.0 -1.17 | 0.0 0.0 0.0   | 1.18                    |
| 3                                    | 17.65 0.0 0.0 | 0.11 15.85 0.0 | 0.0 0.0 -1.79 | 0.0 0.0 0.0   | 1.8                     |
| 4                                    | 23.63 0.0 0.0 | 0.18 21.44 0.0 | 0.0 0.0 -2.19 | 0.0 0.0 0.0   | 2.2                     |
| 5                                    | 29.62 0.0 0.0 | 0.24 27.18 0.0 | 0.0 0.0 -2.42 | 0.0 0.0 0.0   | 2.43                    |
| 6                                    | 35.6 0.0 0.0  | 0.3 33.05 0.0  | 0.0 0.0 -2.54 | 0.0 0.0 0.0   | 2.55                    |
| 7                                    | 41.58 0.0 0.0 | 0.37 39.01 0.0 | 0.0 0.0 -2.56 | 0.0 0.0 0.0   | 2.57                    |
| 8                                    | 47.56 0.0 0.0 | 0.44 45.05 0.0 | 0.0 0.0 -2.5  | 0.0 0.0 0.0   | 2.51                    |
| 9                                    | 53.54 0.0 0.0 | 0.51 51.16 0.0 | 0.0 0.0 -2.37 | 0.0 0.0 0.0   | 2.38                    |
| 10                                   | 59.52 0.0 0.0 | 0.58 57.34 0.0 | 0.0 0.0 -2.17 | 0.0 0.0 0.0   | 2.18                    |
| 11                                   | 65.5 0.0 0.0  | 0.65 63.57 0.0 | 0.0 0.0 -1.92 | 0.0 0.0 0.0   | 1.93                    |
| 12                                   | 71.48 0.0 0.0 | 0.72 69.85 0.0 | 0.0 0.0 -1.62 | 0.0 0.0 0.0   | 1.63                    |
| 13                                   | 77.47 0.0 0.0 | 0.79 76.18 0.0 | 0.0 0.0 -1.28 | 0.0 0.0 0.0   | 1.29                    |
| 14                                   | 83.45 0.0 0.0 | 0.86 82.55 0.0 | 0.0 0.0 -0.89 | 0.0 0.0 0.0   | 0.9                     |
| 15                                   | 89.43 0.0 0.0 | 0.93 88.96 0.0 | 0.0 0.0 -0.46 | 0.0 0.0 0.0   | 0.47                    |
| 16                                   | 95.41 0.0 0.0 | 1.0 95.41 0.0  | 0.0 0.0 0.0   | 0.0 0.0 0.0   | 0.01                    |
| 17                                   | 5.69 0.0 0.0  | 0.0 0.0 0.0    | 5.69 0.0 0.0  | 0.0 0.0 0.0   | 0.01                    |
| 18                                   | 28.12 0.0 0.0 | 0.22 25.74 0.0 | 0.0 0.0 -2.37 | 0.0 0.0 0.0   | 2.38                    |
| 19                                   | 50.55 0.0 0.0 | 0.47 48.1 0.0  | 0.0 0.0 -2.44 | 0.0 0.0 0.0   | 2.45                    |
| 20                                   | 72.98 0.0 0.0 | 0.73 71.43 0.0 | 0.0 0.0 -1.54 | 0.0 0.0 0.0   | 1.55                    |
| 21                                   | 95.41 0.0 0.0 | 1.0 95.41 0.0  | 0.0 0.0 0.0   | 0.0 0.0 0.0   | 0.01                    |
| Mean lightness difference (16 steps) |               |                |               |               | 0.47                    |
| ΔE* <sub>CIELAB</sub> =              |               |                |               |               | 1.6                     |
| Mean lightness difference (5 steps)  |               |                |               |               | 1.55                    |
| ΔL* <sub>CIELAB</sub> =              |               |                |               |               | 1.3                     |
| Mean colour reproduction index:      |               |                |               |               | R* <sub>ab,m</sub> = 93 |

OE760-3N-131-2: File: Measure unknown; Device: Device unknown; Date: Date unknown



OE761-3N-131-2: File: Measure unknown; Device: Device unknown; Date: Date unknown

| $L^{*}/Y_{intended}$<br>(absolute)                                 | 5.7/0.6 | 11.7/1.4 | 17.7/2.4 | 23.6/4.0 | 29.6/6.1 | 35.6/8.8 | 41.6/12.2 | 47.6/16.5 | 53.5/21.5 | 59.5/27.6 | 65.5/34.7 | 71.5/42.9 | 77.5/52.3 | 83.4/63.0 | 89.4/75.1 | 95.4/88.6 |
|--|---------|----------|----------|----------|----------|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| $w^{*} w^{*} w^{*}$<br>setrgb<br>$g_N=1.08$<br>No. and<br>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      |
| $w^{*}=l^{*}$<br>$CIELAB, r$<br>(relative)                         | 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     |
| $w^{*}_{intended}$<br>$w^{*}_{out}$                                | 0.0     | 0.054    | 0.113    | 0.176    | 0.24     | 0.305    | 0.371     | 0.439     | 0.506     | 0.576     | 0.645     | 0.715     | 0.786     | 0.857     | 0.928     | 1.0       |

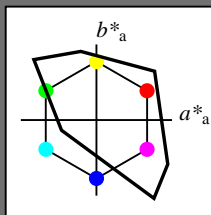
OE760-7N, Picture A7-131-2: 16 visual equidistant  $L^{*}$ -grey steps; PS operator:  $w^{*} w^{*} w^{*}$  setrgbcolor

OE76: In-output relation according to ISO 9241-306; 1MR, DH input:  $rgb \rightarrow rgb_d$  setrgbcolor  
Viewing  $Y$  contrast  $Y_W:Y_N=88,9:0,62$ ;  $Y_N$  range 0,46 to <0,93 output 130-2:  $g_P=1,0$ ;  $g_N=1,08$

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*



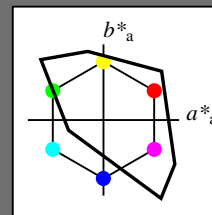
TLS00a; adapted (a) CIELAB data

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

Output: Colorimetric Television Luminous System TLS00a

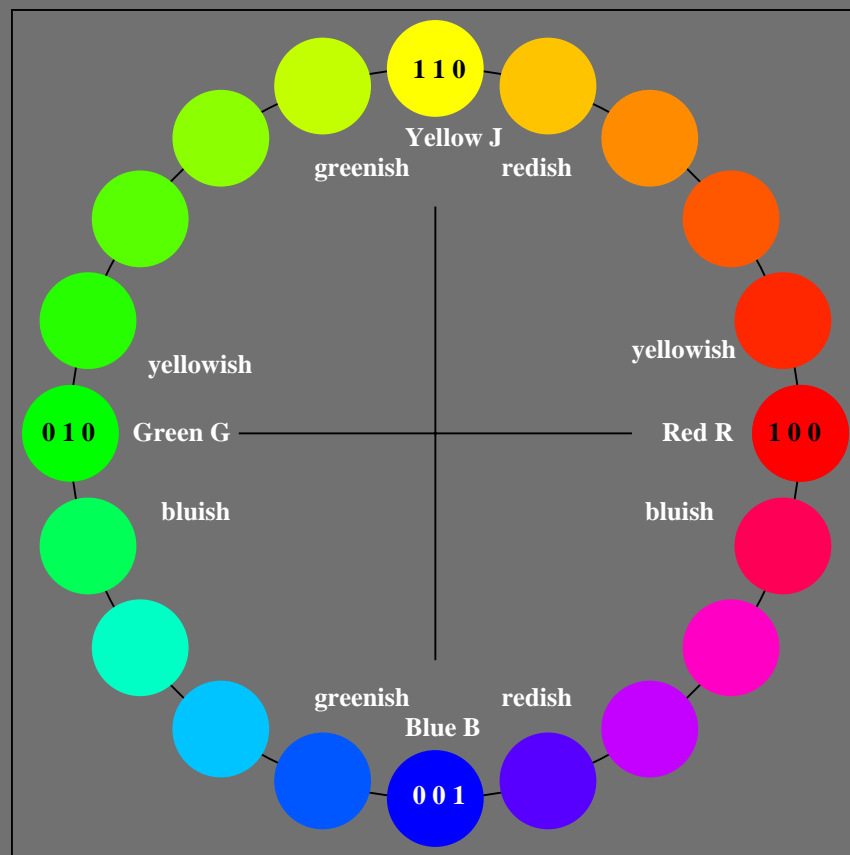
with hue number

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

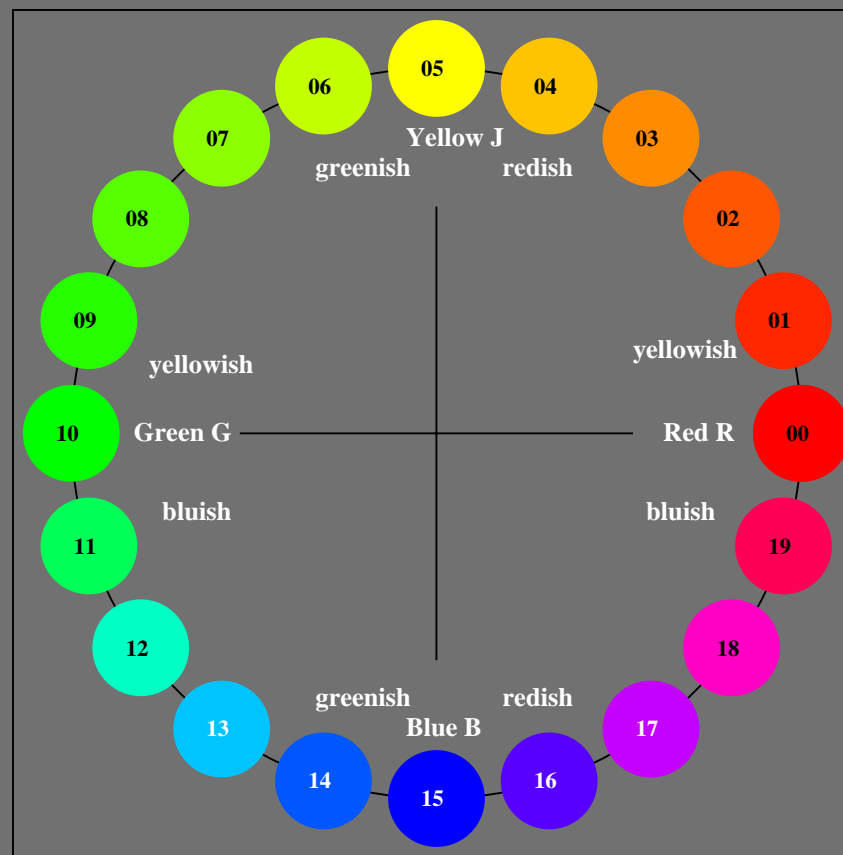


TLS00a; adapted (a) CIELAB data

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



OE760-7N-132-0: 20 step hue circle with elementary colours *R, J, G, B* (left)



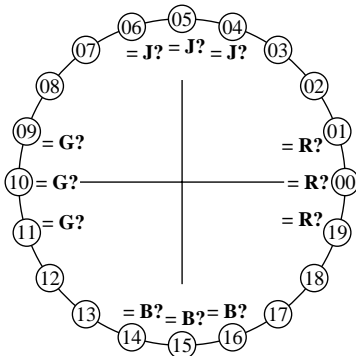
20 step hue circle with elementary colours *R, J, G, B* (right)

OE76: Test chart 5 according to DIN 33872-5; 1MR, DH  
Elementary hue agreement and discrimination

input: *rgb* ( $\rightarrow$  *rgb<sub>d</sub>*) *setrgbcolor*  
output 130-0:  $g_P=1.0$ ;  $g_N=1.17$

### 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) ..... are at the intended location |                                 |

Part 1

OE760-3N-132-1

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

PDF-File: <http://130.149.60.45/farbmetrik/OE76/OE76L0NP.PDF> underline Yes/No

PS-File: <http://130.149.60.45/farbmetrik/OE76/OE76L0NA.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 OE76L0NP.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 OE76L0NA.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)

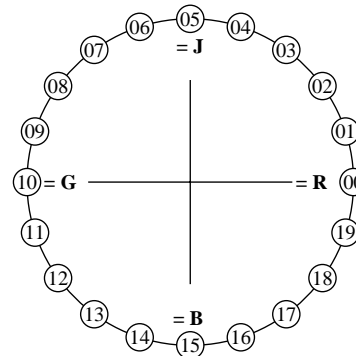
.....  
.....  
.....

Part 3

OE760-7N-132-1

### 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) ..... differences visible |                         |

Part 2

OE761-3N-132-1

### 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/OE76/OE76F1P2.PDF>

underline Yes/No

PS file: <http://130.149.60.45/farbmetrik/OE76/OE76F1P2.PS>

underline Yes/No

Picture A7-132-2: **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/OE76/OE76F1P2.PDF>

picture A7-132-2

underline Yes/No

PS-File: <http://130.149.60.45/farbmetrik/OE76/OE76F1P2.PS>

picture A7-132-2

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](http://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

OE761-7N-132-1

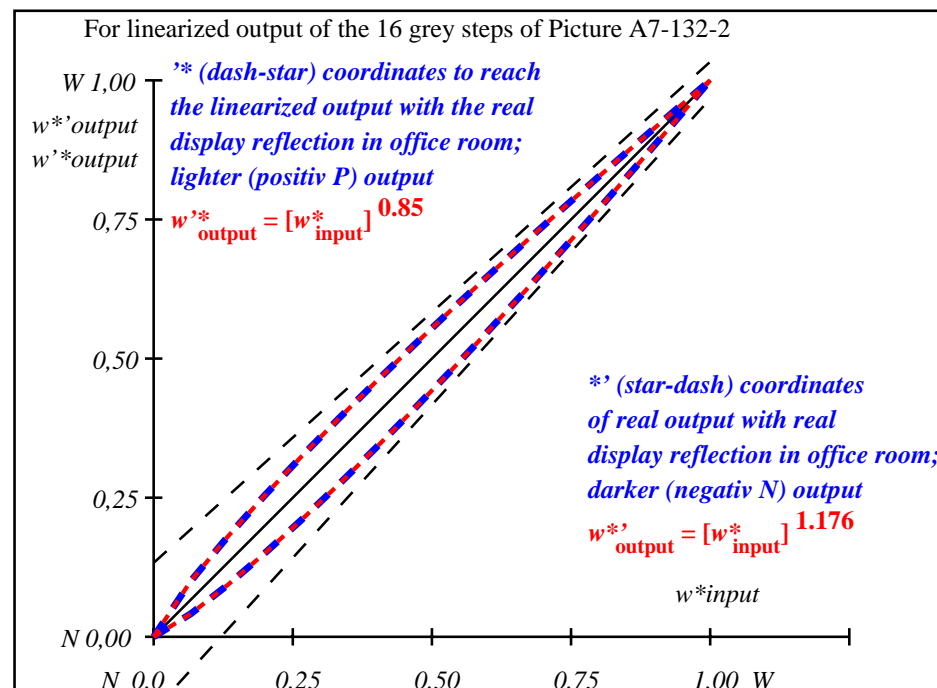
OE76: Form A for test chart 1 according to DIN 33872-5; 1MR, DH Input:  $rgb \rightarrow rgb_d$  setrgbcolor  
Elementary hue agreement, discrimination (Yes/No-decision) output 130-1:  $g_P=1.0$ ;  $g_N=1.17$



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*         | Start output S1<br>Specification according to<br>ISO/IEC 15775 Annex G<br>and DIN 33866-1 Annex G |
|---------------------------------|---------|-----|-----|-------|-------|-----|---------|-------|-----|---------------|------|--------------------------------------|-------------|---|
|                                 |         |     |     |       |       |     |         |       |     |               |      |                                      |             |   |
| 1                               | 10.99   | 0.0 | 0.0 | 0.0   | 10.99 | 0.0 | 0.0     | 0.0   | 0.0 | 0.0           | 0.0  | 0.01                                 |             |   |
| 2                               | 16.62   | 0.0 | 0.0 | 0.04  | 14.48 | 0.0 | 0.0     | -2.13 | 0.0 | 0.0           | 2.14 |                                      |             |   |
| 3                               | 22.25   | 0.0 | 0.0 | 0.09  | 18.88 | 0.0 | 0.0     | -3.36 | 0.0 | 0.0           | 3.37 |                                      |             |   |
| 4                               | 27.88   | 0.0 | 0.0 | 0.15  | 23.7  | 0.0 | 0.0     | -4.16 | 0.0 | 0.0           | 4.17 |                                      |             |   |
| 5                               | 33.5    | 0.0 | 0.0 | 0.21  | 28.82 | 0.0 | 0.0     | -4.67 | 0.0 | 0.0           | 4.68 |                                      |             |   |
| 6                               | 39.13   | 0.0 | 0.0 | 0.27  | 34.17 | 0.0 | 0.0     | -4.95 | 0.0 | 0.0           | 4.96 |                                      |             |   |
| 7                               | 44.76   | 0.0 | 0.0 | 0.34  | 39.72 | 0.0 | 0.0     | -5.03 | 0.0 | 0.0           | 5.04 |                                      |             |   |
| 8                               | 50.39   | 0.0 | 0.0 | 0.41  | 45.43 | 0.0 | 0.0     | -4.95 | 0.0 | 0.0           | 4.96 |                                      |             |   |
| 9                               | 56.02   | 0.0 | 0.0 | 0.48  | 51.29 | 0.0 | 0.0     | -4.72 | 0.0 | 0.0           | 4.73 |                                      |             |   |
| 10                              | 61.64   | 0.0 | 0.0 | 0.55  | 57.28 | 0.0 | 0.0     | -4.36 | 0.0 | 0.0           | 4.37 |                                      |             |   |
| 11                              | 67.27   | 0.0 | 0.0 | 0.62  | 63.38 | 0.0 | 0.0     | -3.88 | 0.0 | 0.0           | 3.89 |                                      |             |   |
| 12                              | 72.9    | 0.0 | 0.0 | 0.69  | 69.6  | 0.0 | 0.0     | -3.29 | 0.0 | 0.0           | 3.3  |                                      |             |   |
| 13                              | 78.53   | 0.0 | 0.0 | 0.77  | 75.92 | 0.0 | 0.0     | -2.6  | 0.0 | 0.0           | 2.61 |                                      |             |   |
| 14                              | 84.15   | 0.0 | 0.0 | 0.85  | 82.33 | 0.0 | 0.0     | -1.81 | 0.0 | 0.0           | 1.82 |                                      |             |   |
| 15                              | 89.78   | 0.0 | 0.0 | 0.92  | 88.83 | 0.0 | 0.0     | -0.94 | 0.0 | 0.0           | 0.95 | Mean lightness difference (16 steps) |             |   |
| 16                              | 95.41   | 0.0 | 0.0 | 1.0   | 95.41 | 0.0 | 0.0     | 0.0   | 0.0 | 0.0           | 0.01 | ΔE*CIELAB = 3.2                      |             |   |
| 17                              | 10.99   | 0.0 | 0.0 | 0.0   | 10.99 | 0.0 | 0.0     | 0.0   | 0.0 | 0.0           | 0.01 |                                      |             |   |
| 18                              | 32.1    | 0.0 | 0.0 | 0.2   | 27.52 | 0.0 | 0.0     | -4.57 | 0.0 | 0.0           | 4.58 |                                      |             |   |
| 19                              | 53.2    | 0.0 | 0.0 | 0.44  | 48.34 | 0.0 | 0.0     | -4.85 | 0.0 | 0.0           | 4.86 |                                      |             |   |
| 20                              | 74.31   | 0.0 | 0.0 | 0.71  | 71.17 | 0.0 | 0.0     | -3.12 | 0.0 | 0.0           | 3.13 | Mean lightness difference (5 steps)  |             |   |
| 21                              | 95.41   | 0.0 | 0.0 | 1.0   | 95.41 | 0.0 | 0.0     | 0.0   | 0.0 | 0.0           | 0.01 | ΔL*CIELAB = 2.5                      |             |   |
| Mean colour reproduction index: |         |     |     |       |       |     |         |       |     |               |      |                                      | R*ab,m = 86 |   |

OE760-3N-132-2: File: Measure unknown; Device: Device unknown; Date: Date unknown



OE761-3N-132-2: File: Measure unknown; Device: Device unknown; Date: Date unknown

| $L^*/Y_{\text{intended}}$<br>(absolute)                      | 11.0/1.3 | 16.6/2.2 | 22.2/3.6 | 27.9/5.4 | 33.5/7.8 | 39.1/10.7 | 44.8/14.4 | 50.4/18.7 | 56.0/23.9 | 61.6/30.0 | 67.3/37.0 | 72.9/45.0 | 78.5/54.1 | 84.2/64.4 | 89.8/75.8 | 95.4/88.6 |
|--|----------|----------|----------|----------|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| $w^* w^* w^*$<br>setrgb<br>$g_N=1.18$<br>No. and<br>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      |
| $w^*=l^*_{\text{CIELAB},r}$<br>(relative)                    |          |          |          |          |          |           |           |           |           |           |           |           |           |           |           |           |
| $w^*_{\text{intended}}$                                      | 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     |
| $w^*_{\text{out}}$   | 0.0      | 0.042    | 0.093    | 0.151    | 0.211    | 0.274     | 0.34      | 0.408     | 0.477     | 0.548     | 0.621     | 0.694     | 0.769     | 0.845     | 0.922     | 1.0       |

OE760-7N, Picture A7-132-2: 16 visual equidistant  $L^*$ -grey steps; PS operator:  $w^* w^* w^*_{\text{setrgbcolor}}$

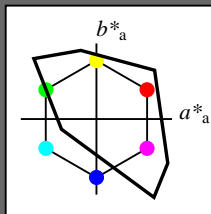
OE76: In-output relation according to ISO 9241-306; 1MR, DH input:  $rgb \rightarrow rgb_d$  setrgbcolor  
Viewing  $Y$  contrast  $Y_W:Y_N=88,9:1,25$ ;  $Y_N$  range 0,93 to <1,87 output 130-2:  $g_P=1.0$ ;  $g_N=1.17$

TUB registration: 20110801-OE76/OE76L0NA.TXT /.PS  
application for output of displays: monitor systems or data projector systems  
TUB material: code=rh4ta

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*



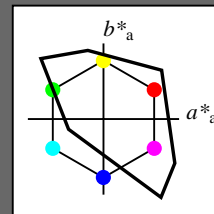
TLS00a; adapted (a) CIELAB data

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

Output: Colorimetric Television Luminous System TLS00a

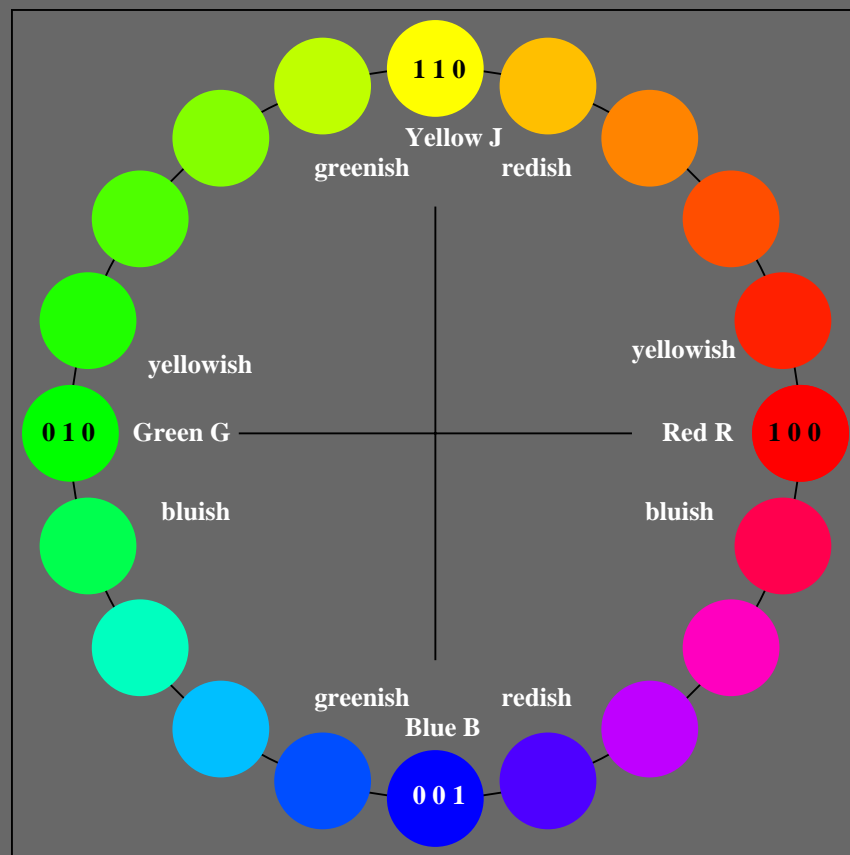
with hue number

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

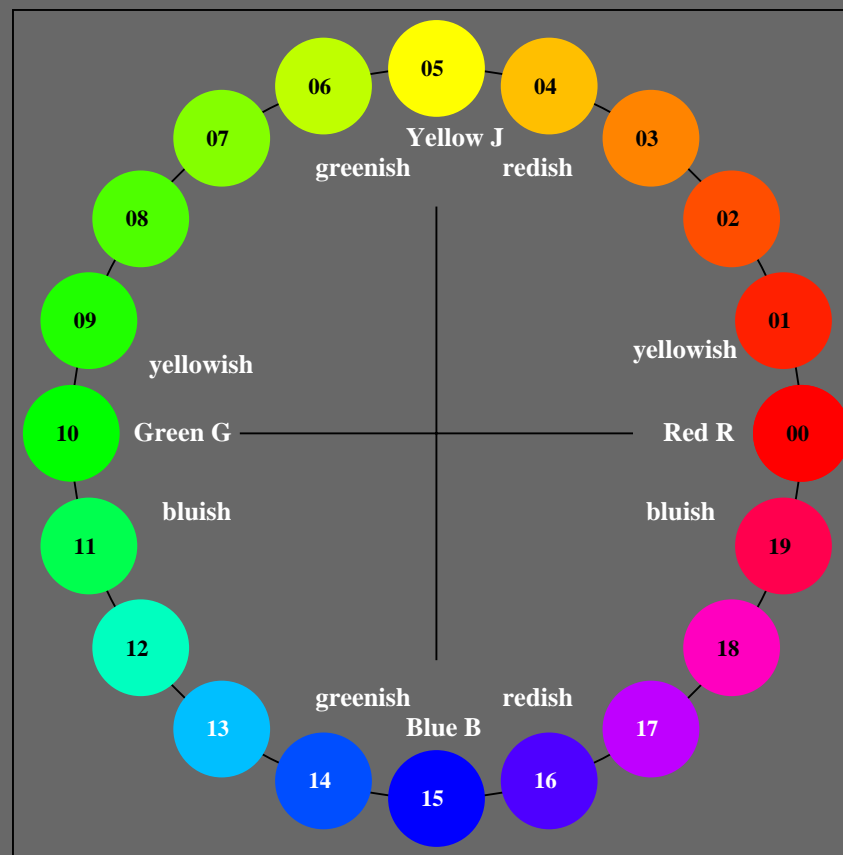


TLS00a; adapted (a) CIELAB data

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



OE760-7N-133-0: 20 step hue circle with elementary colours *R, J, G, B* (left)



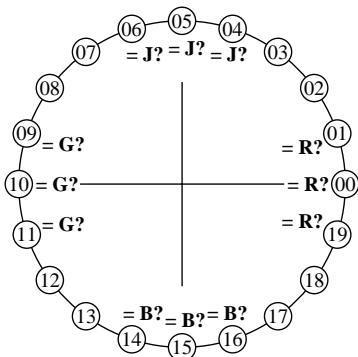
20 step hue circle with elementary colours *R, J, G, B* (right)

OE76: Test chart 5 according to DIN 33872-5; 1MR, DH  
Elementary hue agreement and discrimination

input: *rgb* ( $\rightarrow$  *rgb<sub>d</sub>*) *setrgbcolor*  
output 130-0:  $g_P=1.0$ ;  $g_N=1.29$

### 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) ..... are at the intended location |                                 |

Part 1

OE760-3N-133-1

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

PDF-File: <http://130.149.60.45/farbmetrik/OE76/OE76L0NP.PDF> underline Yes/No

PS-File: <http://130.149.60.45/farbmetrik/OE76/OE76L0NA.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 OE76L0NP.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 OE76L0NA.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:.....

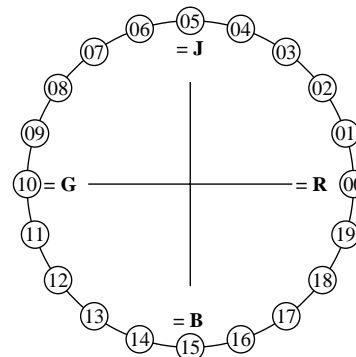
Special remarks:Special remarks, e. g. output of Landscape (L)

Part 3

OE760-7N-133-1

### 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) ..... differences visible |                         |

Part 2

OE761-3N-133-1

### 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/OE76/OE76F1P2.PDF>

underline Yes/No

PS file: <http://130.149.60.45/farbmetrik/OE76/OE76F1P2.PS>

underline Yes/No

Picture A7-133-2: **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/OE76/OE76F1P2.PDF>

picture A7-133-2

underline Yes/No

PS-File: <http://130.149.60.45/farbmetrik/OE76/OE76F1P2.PS>

picture A7-133-2

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](http://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

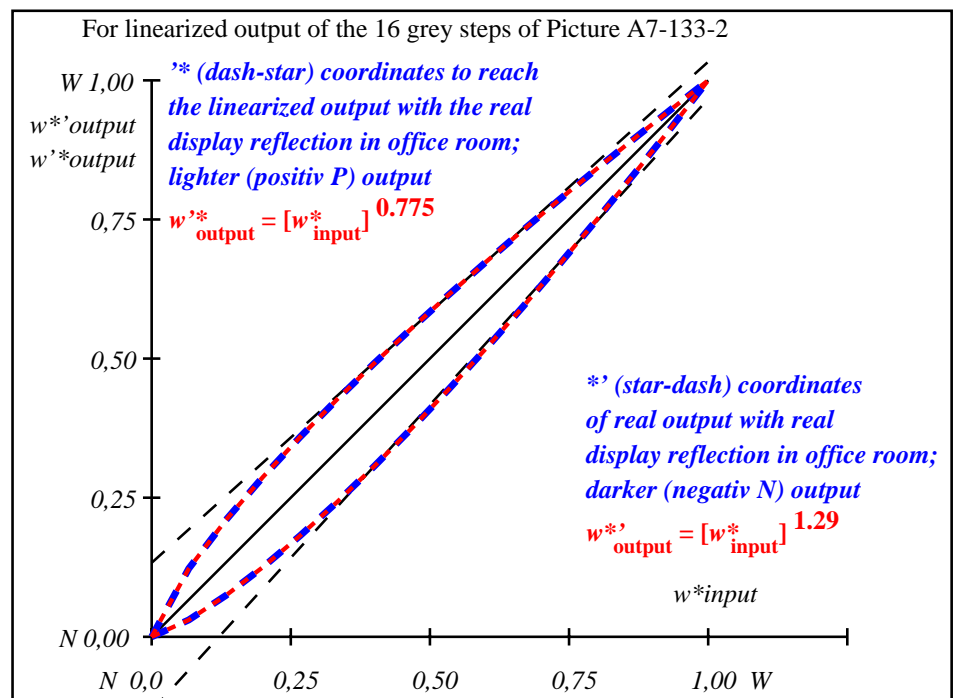
OE761-7N-133-1

OE76: Form A for test chart 1 according to DIN 33872-5; 1MR, DH Input:  $rgb \rightarrow rgb_d$  setrgbcolor  
Elementary hue agreement, discrimination (Yes/No-decision) output 130-1:  $g_P=1.0$ ;  $g_N=1.29$

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                                    | 18.01 0.0 0.0 | 0.0 0.0 0.0    | 18.01 0.0 0.0 | 0.0 0.0 0.0   | 0.01                        |
| 2                                    | 23.17 0.0 0.0 | 0.03 0.03 0.03 | 20.36 0.0 0.0 | -2.8 0.0 0.0  | 2.81                        |
| 3                                    | 28.33 0.0 0.0 | 0.07 0.07 0.07 | 23.76 0.0 0.0 | -4.56 0.0 0.0 | 4.57                        |
| 4                                    | 33.49 0.0 0.0 | 0.13 0.13 0.13 | 27.71 0.0 0.0 | -5.77 0.0 0.0 | 5.78                        |
| 5                                    | 38.65 0.0 0.0 | 0.18 0.18 0.18 | 32.07 0.0 0.0 | -6.57 0.0 0.0 | 6.58                        |
| 6                                    | 43.81 0.0 0.0 | 0.24 0.24 0.24 | 36.76 0.0 0.0 | -7.04 0.0 0.0 | 7.05                        |
| 7                                    | 48.97 0.0 0.0 | 0.31 0.31 0.31 | 41.74 0.0 0.0 | -7.22 0.0 0.0 | 7.23                        |
| 8                                    | 54.13 0.0 0.0 | 0.37 0.37 0.37 | 46.96 0.0 0.0 | -7.16 0.0 0.0 | 7.17                        |
| 9                                    | 59.29 0.0 0.0 | 0.44 0.44 0.44 | 52.4 0.0 0.0  | -6.88 0.0 0.0 | 6.89                        |
| 10                                   | 64.45 0.0 0.0 | 0.52 0.52 0.52 | 58.05 0.0 0.0 | -6.39 0.0 0.0 | 6.4                         |
| 11                                   | 69.61 0.0 0.0 | 0.59 0.59 0.59 | 63.88 0.0 0.0 | -5.72 0.0 0.0 | 5.73                        |
| 12                                   | 74.77 0.0 0.0 | 0.67 0.67 0.67 | 69.88 0.0 0.0 | -4.88 0.0 0.0 | 4.89                        |
| 13                                   | 79.93 0.0 0.0 | 0.75 0.75 0.75 | 76.05 0.0 0.0 | -3.87 0.0 0.0 | 3.88                        |
| 14                                   | 85.09 0.0 0.0 | 0.83 0.83 0.83 | 82.36 0.0 0.0 | -2.72 0.0 0.0 | 2.73                        |
| 15                                   | 90.25 0.0 0.0 | 0.91 0.91 0.91 | 88.82 0.0 0.0 | -1.42 0.0 0.0 | 1.43                        |
| 16                                   | 95.41 0.0 0.0 | 1.0 1.0 1.0    | 95.41 0.0 0.0 | 0.0 0.0 0.0   | 0.01                        |
| 17                                   | 18.01 0.0 0.0 | 0.0 0.0 0.0    | 18.01 0.0 0.0 | 0.0 0.0 0.0   | 0.01                        |
| 18                                   | 37.36 0.0 0.0 | 0.17 0.17 0.17 | 30.95 0.0 0.0 | -6.4 0.0 0.0  | 6.41                        |
| 19                                   | 56.71 0.0 0.0 | 0.41 0.41 0.41 | 49.66 0.0 0.0 | -7.04 0.0 0.0 | 7.05                        |
| 20                                   | 76.06 0.0 0.0 | 0.69 0.69 0.69 | 71.41 0.0 0.0 | -4.64 0.0 0.0 | 4.65                        |
| 21                                   | 95.41 0.0 0.0 | 1.0 1.0 1.0    | 95.41 0.0 0.0 | 0.0 0.0 0.0   | 0.01                        |
| Mean lightness difference (16 steps) |               |                |               |               | ΔE* <sub>CIELAB</sub> = 4.6 |
| Mean lightness difference (5 steps)  |               |                |               |               | ΔL* <sub>CIELAB</sub> = 3.6 |
| Mean colour reproduction index:      |               |                |               |               | R* <sub>ab,m</sub> = 80     |

OE760-3N-133-2: File: Measure unknown; Device: Device unknown; Date: Date unknown



OE761-3N-133-2: File: Measure unknown; Device: Device unknown; Date: Date unknown

| $L^*/Y_{\text{intended}}$<br>(absolute)                      | 18.0/2.5 | 23.2/3.8 | 28.3/5.6 | 33.5/7.8 | 38.6/10.5 | 43.8/13.7 | 49.0/17.6 | 54.1/22.1 | 59.3/27.3 | 64.4/33.4 | 69.6/40.2 | 74.8/47.9 | 79.9/56.6 | 85.1/66.2 | 90.2/76.8 | 95.4/88.6 |
|--|----------|----------|----------|----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| $w^* w^* w^*$<br>setrgb<br>$g_N=1.29$<br>No. and<br>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      |
| $w^*=l^*$<br>$\text{CIELAB}, r$<br>(relative)                |          |          |          |          |           |           |           |           |           |           |           |           |           |           |           |           |
| $w^*_{\text{intended}}$                                      | 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     |
| $w^*_{\text{out}}$   | 0.0      | 0.031    | 0.074    | 0.125    | 0.182     | 0.242     | 0.307     | 0.374     | 0.444     | 0.517     | 0.593     | 0.67      | 0.75      | 0.832     | 0.914     | 1.0       |

OE760-7N, Picture A7-133-2: 16 visual equidistant  $L^*$ -grey steps; PS operator:  $w^* w^* w^* \text{setrgbcolor}$

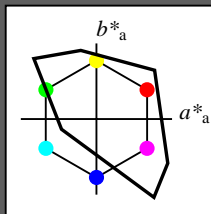
OE76: In-output relation according to ISO 9241-306; 1MR, DH input:  $rgb \rightarrow rgb_d$  setrgbcolor  
Viewing  $Y$  contrast  $Y_W:Y_N=88.9:2.5$ ;  $Y_N$  range 1,87 to <3,75 output 130-2:  $g_P=1.0$ ;  $g_N=1.29$



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*



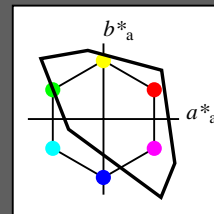
TLS00a; adapted (a) CIELAB data

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

Output: Colorimetric Television Luminous System TLS00a

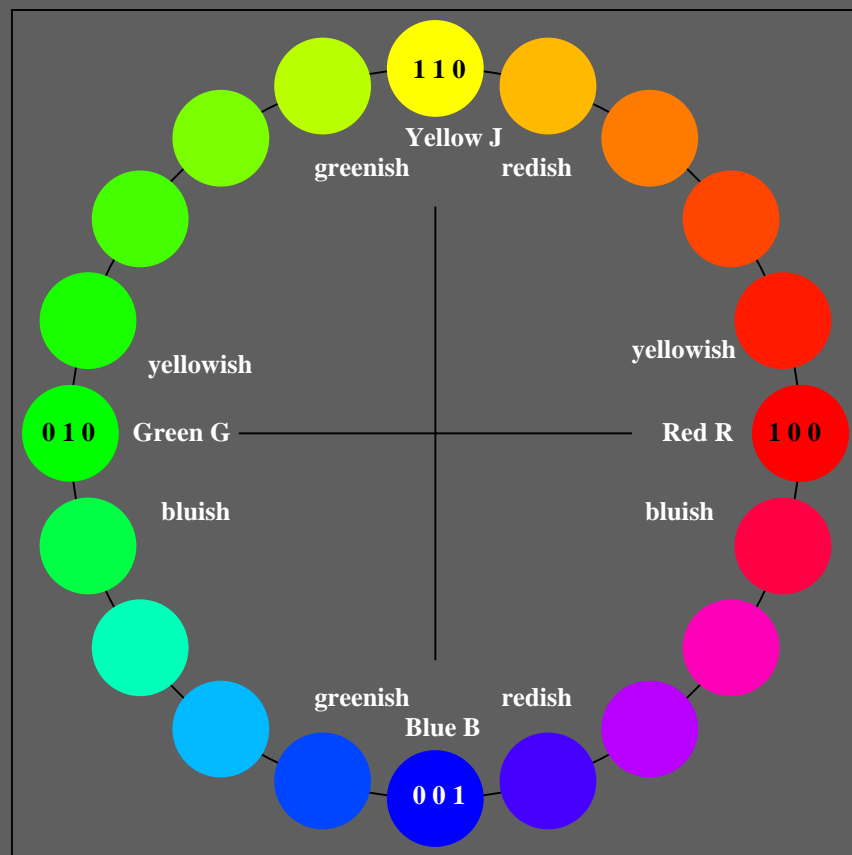
with hue number

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

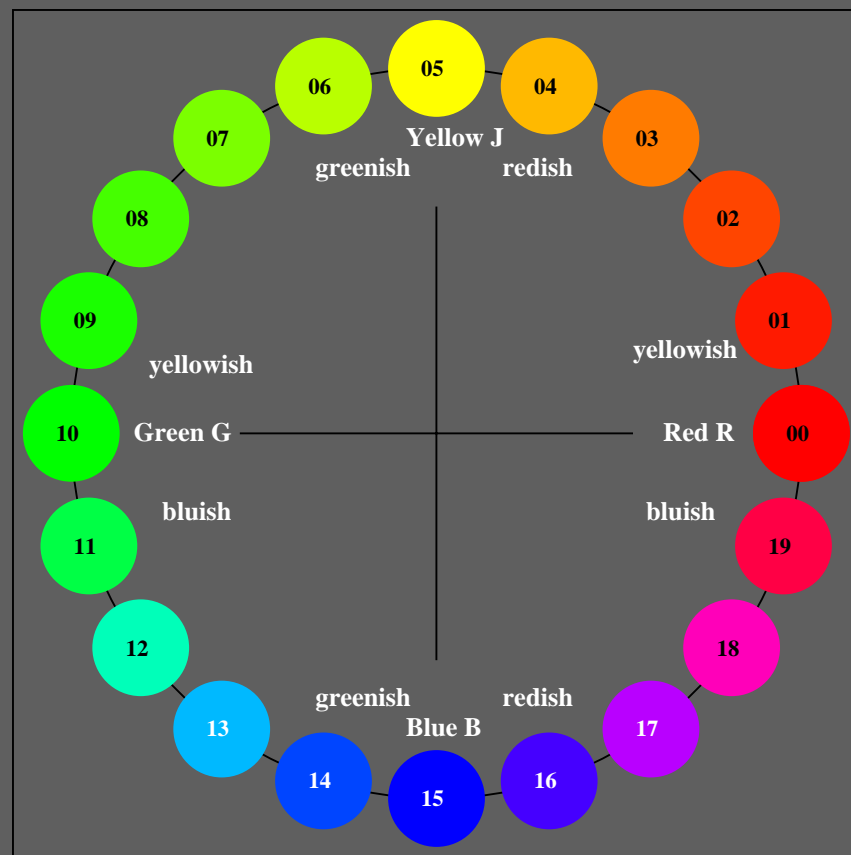


TLS00a; adapted (a) CIELAB data

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



OE760-7N-134-0: 20 step hue circle with elementary colours *R*, *J*, *G*, *B* (left)



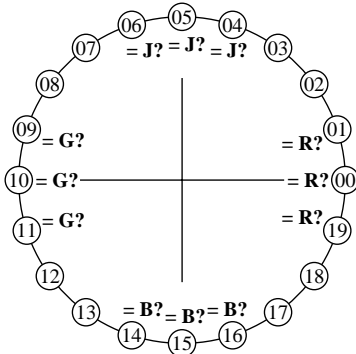
20 step hue circle with elementary colours *R*, *J*, *G*, *B* (right)

OE76: Test chart 5 according to DIN 33872-5; 1MR, DH  
Elementary hue agreement and discrimination

input: *rgb* ( $\rightarrow$  *rgb<sub>d</sub>*) *setrgbcolor*  
output 130-0: *g<sub>P</sub>*=1.0; *g<sub>N</sub>*=1.42

### 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) ..... are at the intended location |                                 |

Part 1

OE760-3N-134-1

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

PDF-File: <http://130.149.60.45/farbmetrik/OE76/OE76L0NP.PDF> underline Yes/No

PS-File: <http://130.149.60.45/farbmetrik/OE76/OE76L0NA.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 OE76L0NP.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 OE76L0NA.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)

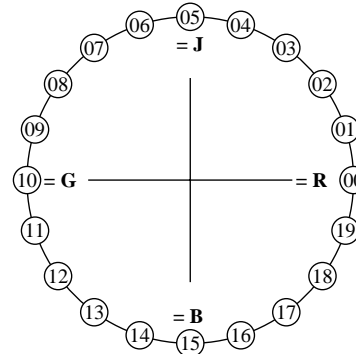
.....  
.....  
.....

Part 3

OE760-7N-134-1

### 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) ..... differences visible |                         |

Part 2

OE761-3N-134-1

### 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/OE76/OE76F1P2.PDF>

underline Yes/No

PS file: <http://130.149.60.45/farbmetrik/OE76/OE76F1P2.PS>

underline Yes/No

Picture A7-134-2: 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/OE76/OE76F1P2.PDF>

picture A7-134-2

underline Yes/No

PS-File: <http://130.149.60.45/farbmetrik/OE76/OE76F1P2.PS>

picture A7-134-2

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](http://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

OE761-7N-134-1

OE76: Form A for test chart 1 according to DIN 33872-5; 1MR, DH Input:  $rgb \rightarrow rgb_d$  setrgbcolor  
Elementary hue agreement, discrimination (Yes/No-decision) output 130-1:  $g_P=1.0$ ;  $g_N=1.42$

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  | 26.85 0.0 0.0 | 0.0 26.85 0.0  | 0.0 0.0 0.0   | 0.0 0.0 0.0   | 0.01 |
| 2  | 31.42 0.0 0.0 | 0.02 28.28 0.0 | 0.0 -3.13 0.0 | 0.0 0.0 0.0   | 3.14 |
| 3  | 35.99 0.0 0.0 | 0.06 30.7 0.0  | 0.0 -5.28 0.0 | 0.0 0.0 0.0   | 5.29 |
| 4  | 40.56 0.0 0.0 | 0.1 33.73 0.0  | 0.0 -6.82 0.0 | 0.0 0.0 0.0   | 6.83 |
| 5  | 45.13 0.0 0.0 | 0.15 37.22 0.0 | 0.0 -7.9 0.0  | 0.0 0.0 0.0   | 7.91 |
| 6  | 49.7 0.0 0.0  | 0.21 41.12 0.0 | 0.0 -8.57 0.0 | 0.0 0.0 0.0   | 8.58 |
| 7  | 54.27 0.0 0.0 | 0.27 45.37 0.0 | 0.0 -8.9 0.0  | 0.0 0.0 0.0   | 8.91 |
| 8  | 58.84 0.0 0.0 | 0.34 49.93 0.0 | 0.0 -8.91 0.0 | 0.0 0.0 0.0   | 8.92 |
| 9  | 63.41 0.0 0.0 | 0.41 54.78 0.0 | 0.0 -8.63 0.0 | 0.0 0.0 0.0   | 8.64 |
| 10 | 67.99 0.0 0.0 | 0.48 59.9 0.0  | 0.0 -8.08 0.0 | 0.0 0.0 0.0   | 8.09 |
| 11 | 72.56 0.0 0.0 | 0.56 65.27 0.0 | 0.0 -7.28 0.0 | 0.0 0.0 0.0   | 7.29 |
| 12 | 77.13 0.0 0.0 | 0.64 70.87 0.0 | 0.0 -6.25 0.0 | 0.0 0.0 0.0   | 6.26 |
| 13 | 81.7 0.0 0.0  | 0.73 76.7 0.0  | 0.0 -4.99 0.0 | 0.0 0.0 0.0   | 5.0  |
| 14 | 86.27 0.0 0.0 | 0.82 82.73 0.0 | 0.0 -3.52 0.0 | 0.0 0.0 0.0   | 3.53 |
| 15 | 90.84 0.0 0.0 | 0.91 88.97 0.0 | 0.0 -1.85 0.0 | 0.0 0.0 0.0   | 1.86 |
| 16 | 95.41 0.0 0.0 | 1.0 95.41 0.0  | 0.0 0.0 0.0   | 0.0 0.0 0.0   | 0.01 |
| 17 | 26.85 0.0 0.0 | 0.0 26.85 0.0  | 0.0 0.0 0.0   | 0.0 0.0 0.0   | 0.01 |
| 18 | 43.99 0.0 0.0 | 0.14 36.31 0.0 | 0.0 -7.67 0.0 | 0.0 0.0 0.0   | 7.68 |
| 19 | 61.13 0.0 0.0 | 0.37 52.32 0.0 | 0.0 -8.8 0.0  | 0.0 0.0 0.0   | 8.81 |
| 20 | 78.27 0.0 0.0 | 0.66 72.31 0.0 | 0.0 -5.95 0.0 | 0.0 0.0 0.0   | 5.96 |
| 21 | 95.41 0.0 0.0 | 1.0 95.41 0.0  | 0.0 0.0 0.0   | 0.0 0.0 0.0   | 0.01 |

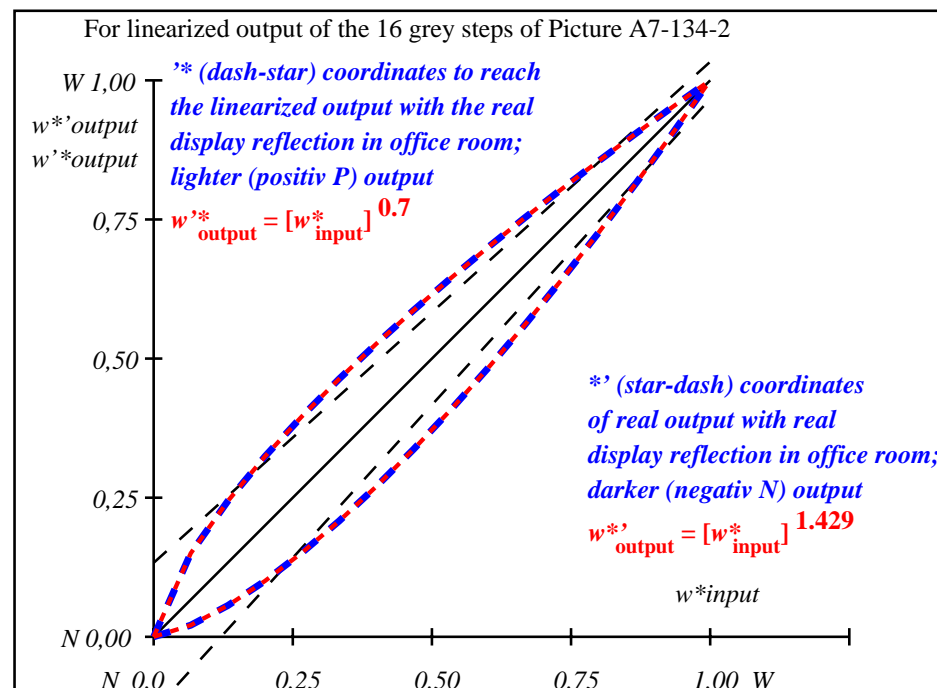
**Start output S1**  
**Specification according to**  
**ISO/IEC 15775 Annex G**  
**and DIN 33866-1 Annex G**

Mean lightness difference (16 steps)  
 $\Delta E^*_{\text{CIELAB}} = 5.6$

Mean lightness difference (5 steps)  
 $\Delta L^*_{\text{CIELAB}} = 4.5$

Mean colour reproduction index:  $R^*_{ab,m} = 75$

OE760-3N-134-2: File: Measure unknown; Device: Device unknown; Date: Date unknown



OE761-3N-134-2: File: Measure unknown; Device: Device unknown; Date: Date unknown

| $L^*/Y_{\text{intended}}$<br>(absolute)                      | 26.8/5.0     | 31.4/6.8       | 36.0/9.0       | 40.6/11.6    | 45.1/14.6      | 49.7/18.2      | 54.3/22.2     | 58.8/26.9      | 63.4/32.1      | 68.0/38.0      | 72.6/44.5      | 77.1/51.7      | 81.7/59.7      | 86.3/68.5      | 90.8/78.1      | 95.4/88.6    |
|--|--------------|----------------|----------------|--------------|----------------|----------------|---------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|--------------|
| $w^* w^* w^*$<br>setrgb<br>$g_N=1.43$<br>No. and<br>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         |
| $w^*=l^*_{\text{CIELAB},r}$<br>(relative)                    | 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        |
| $w^*_{\text{intended}}$<br>$w^*_{\text{out}}$                | 0.000<br>0.0 | 0.067<br>0.021 | 0.133<br>0.056 | 0.200<br>0.1 | 0.267<br>0.152 | 0.333<br>0.208 | 0.400<br>0.27 | 0.467<br>0.337 | 0.533<br>0.407 | 0.600<br>0.482 | 0.667<br>0.561 | 0.733<br>0.642 | 0.800<br>0.727 | 0.867<br>0.816 | 0.933<br>0.906 | 1.000<br>1.0 |

OE760-7N, Picture A7-134-2: 16 visual equidistant  $L^*$ -grey steps; PS operator:  $w^* w^* w^* \text{setrgbcolor}$

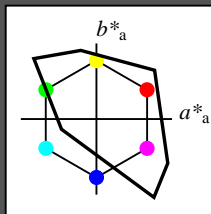
OE76: In-output relation according to ISO 9241-306; 1MR, DH input:  $rgb \rightarrow rgb_d$  setrgbcolor  
Viewing  $Y$  contrast  $Y_W:Y_N=88,9:5$ ;  $Y_N$  range 3,75 to <7,5 output 130-2:  $g_P=1.0$ ;  $g_N=1.42$

TUB registration: 20110801-OE76/OE76L0NA.TXT /.PS  
application for output of displays: monitor systems or data projector systems  
TUB material: code=rh4ta

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*



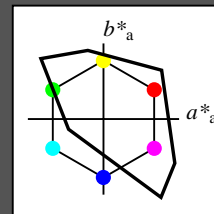
TLS00a; adapted (a) CIELAB data

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

Output: Colorimetric Television Luminous System TLS00a

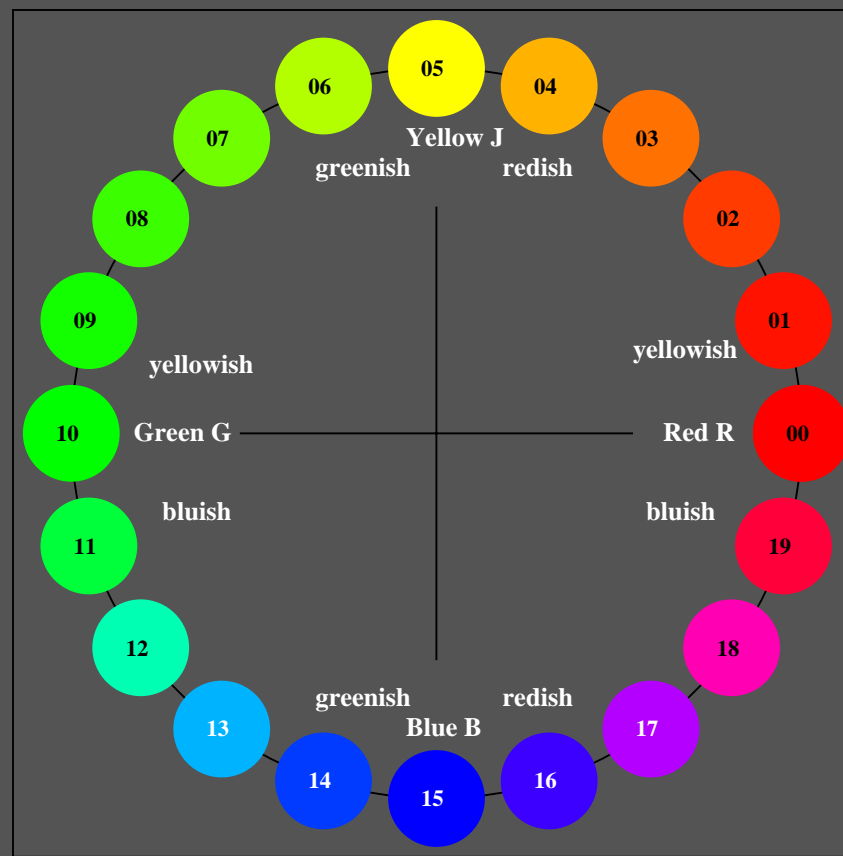
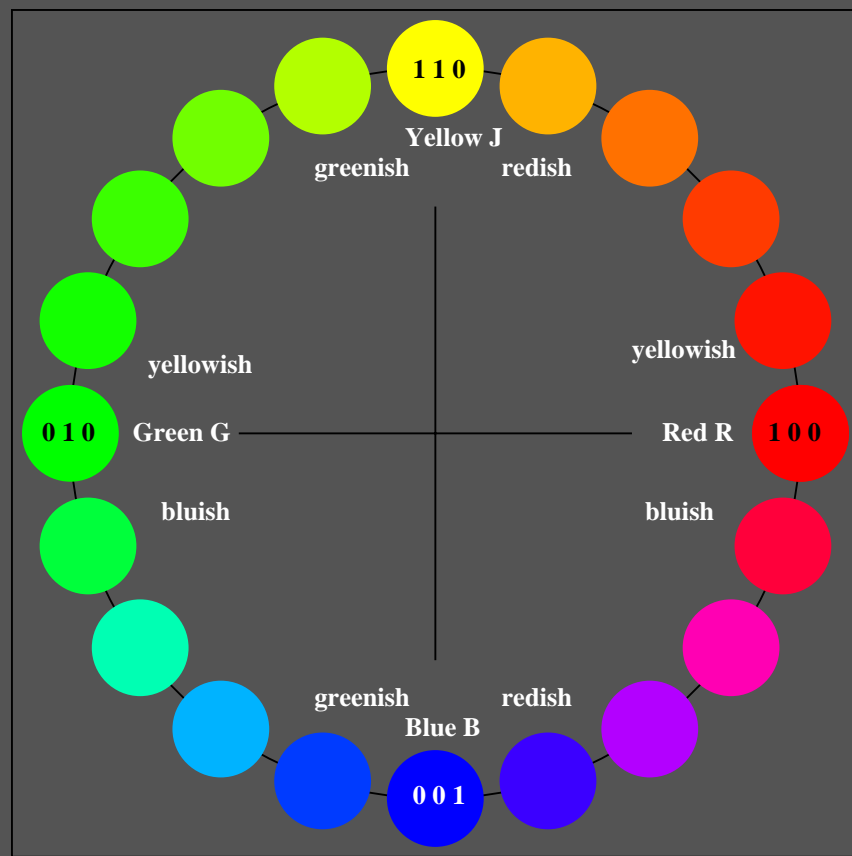
with hue number

$n = 00$  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 <sub>Ma</sub>  | 50.5        | 76.92   | 64.55   | 100.42       | 40           |
| Y <sub>Ma</sub>  | 92.66       | -20.69  | 90.75   | 93.08        | 103          |
| L <sub>Ma</sub>  | 83.63       | -82.75  | 79.9    | 115.04       | 136          |
| C <sub>Ma</sub>  | 86.88       | -46.16  | -13.55  | 48.12        | 196          |
| V <sub>Ma</sub>  | 30.39       | 76.06   | -103.59 | 128.52       | 306          |
| M <sub>Ma</sub>  | 57.3        | 94.35   | -58.41  | 110.97       | 328          |
| N <sub>Ma</sub>  | 0.01        | 0.0     | 0.0     | 0.0          | 0            |
| W <sub>Ma</sub>  | 95.41       | 0.0     | 0.0     | 0.0          | 0            |
| R <sub>CIE</sub> | 39.92       | 58.74   | 27.99   | 65.07        | 25           |
| J <sub>CIE</sub> | 81.26       | -2.88   | 71.56   | 71.62        | 92           |
| G <sub>CIE</sub> | 52.23       | -42.41  | 13.6    | 44.55        | 162          |
| B <sub>CIE</sub> | 30.57       | 1.41    | -46.46  | 46.49        | 272          |



OE760-7N-135-0: 20 step hue circle with elementary colours *R, J, G, B* (left)

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

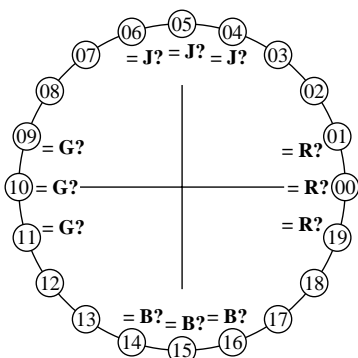
OE76: Test chart 5 according to DIN 33872-5; 1MR, DH  
Elementary hue agreement and discrimination

input: *rgb* ( $\rightarrow$  *rgb<sub>d</sub>*) *setrgbcolor*  
output 130-0:  $g_P=1.0$ ;  $g_N=1.6$



### 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) ..... are at the intended location |                                 |

Part 1

OE760-3N-135-1

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

PDF-File: <http://130.149.60.45/farbmetrik/OE76/OE76L0NP.PDF> underline Yes/No

PS-File: <http://130.149.60.45/farbmetrik/OE76/OE76L0NA.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 OE76L0NP.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 OE76L0NA.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:.....

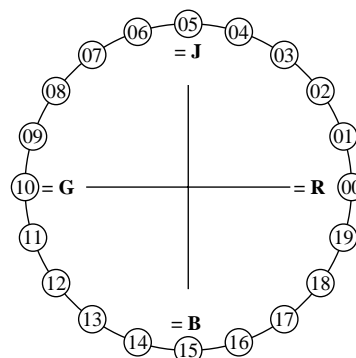
Special remarks:Special remarks, e. g. output of Landscape (L)

Part 3

OE760-7N-135-1

### 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) ..... differences visible |                         |

Part 2

OE761-3N-135-1

### 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/OE76/OE76F1P2.PDF>

underline Yes/No

PS file: <http://130.149.60.45/farbmetrik/OE76/OE76F1P2.PS>

underline Yes/No

Picture A7-135-2: 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/OE76/OE76F1P2.PDF>

picture A7-135-2

underline Yes/No

PS-File: <http://130.149.60.45/farbmetrik/OE76/OE76F1P2.PS>

picture A7-135-2

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](http://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

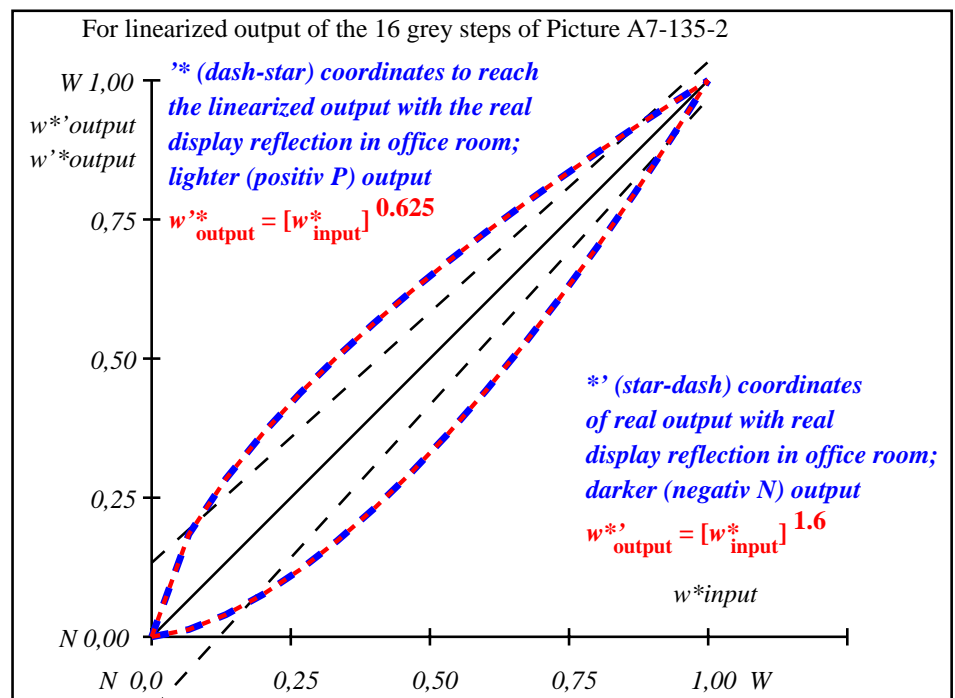
OE761-7N-135-1

OE76: Form A for test chart 1 according to DIN 33872-5; 1MR, DH Input:  $rgb \rightarrow rgb_d$  setrgbcolor  
Elementary hue agreement, discrimination (Yes/No-decision) output 130-1:  $g_P=1.0$ ;  $g_N=1.6$

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   | 37.99 0.0 0.0 | 0.0 37.99 0.0  | 0.0 0.0 0.0   | 0.0 0.0 0.0   | 0.01 |
| 2   | 41.81 0.0 0.0 | 0.01 38.74 0.0 | 0.0 -3.06 0.0 | 0.0 0.0 0.0   | 3.07 |
| 3   | 45.64 0.0 0.0 | 0.04 40.27 0.0 | 0.0 -5.36 0.0 | 0.0 0.0 0.0   | 5.37 |
| 4   | 49.47 0.0 0.0 | 0.08 42.36 0.0 | 0.0 -7.1 0.0  | 0.0 0.0 0.0   | 7.11 |
| 5   | 53.3 0.0 0.0  | 0.12 44.91 0.0 | 0.0 -8.37 0.0 | 0.0 0.0 0.0   | 8.38 |
| 6   | 57.13 0.0 0.0 | 0.17 47.89 0.0 | 0.0 -9.23 0.0 | 0.0 0.0 0.0   | 9.24 |
| 7   | 60.96 0.0 0.0 | 0.23 51.24 0.0 | 0.0 -9.7 0.0  | 0.0 0.0 0.0   | 9.71 |
| 8   | 64.78 0.0 0.0 | 0.3 54.95 0.0  | 0.0 -9.82 0.0 | 0.0 0.0 0.0   | 9.83 |
| 9   | 68.61 0.0 0.0 | 0.37 58.99 0.0 | 0.0 -9.61 0.0 | 0.0 0.0 0.0   | 9.62 |
| 10  | 72.44 0.0 0.0 | 0.44 63.34 0.0 | 0.0 -9.09 0.0 | 0.0 0.0 0.0   | 9.1  |
| 11  | 76.27 0.0 0.0 | 0.52 68.0 0.0  | 0.0 -8.26 0.0 | 0.0 0.0 0.0   | 8.27 |
| 12  | 80.1 0.0 0.0  | 0.61 72.95 0.0 | 0.0 -7.14 0.0 | 0.0 0.0 0.0   | 7.15 |
| 13  | 83.93 0.0 0.0 | 0.7 78.17 0.0  | 0.0 -5.75 0.0 | 0.0 0.0 0.0   | 5.76 |
| 14  | 87.75 0.0 0.0 | 0.8 83.66 0.0  | 0.0 -4.08 0.0 | 0.0 0.0 0.0   | 4.09 |
| 15  | 91.58 0.0 0.0 | 0.9 89.41 0.0  | 0.0 -2.16 0.0 | 0.0 0.0 0.0   | 2.17 |
| 16  | 95.41 0.0 0.0 | 1.0 95.41 0.0  | 0.0 0.0 0.0   | 0.0 0.0 0.0   | 0.01 |
| Mean lightness difference (16 steps)              |               |                |               |               |      |
| 17  | 37.99 0.0 0.0 | 0.0 37.99 0.0  | 0.0 0.0 0.0   | 0.0 0.0 0.0   | 0.01 |
| 18  | 52.34 0.0 0.0 | 0.11 44.23 0.0 | 0.0 -8.1 0.0  | 0.0 0.0 0.0   | 8.11 |
| 19  | 66.7 0.0 0.0  | 0.33 56.93 0.0 | 0.0 -9.76 0.0 | 0.0 0.0 0.0   | 9.77 |
| 20  | 81.05 0.0 0.0 | 0.63 74.23 0.0 | 0.0 -6.82 0.0 | 0.0 0.0 0.0   | 6.83 |
| 21  | 95.41 0.0 0.0 | 1.0 95.41 0.0  | 0.0 0.0 0.0   | 0.0 0.0 0.0   | 0.01 |
| Mean lightness difference (5 steps)               |               |                |               |               |      |
| Mean colour reproduction index: $R^*_{ab,m} = 73$ |               |                |               |               |      |

OE760-3N-135-2: File: Measure unknown; Device: Device unknown; Date: Date unknown



OE761-3N-135-2: File: Measure unknown; Device: Device unknown; Date: Date unknown

| $L^*/Y_{intended}$<br>(absolute)     | 38.0/10.1 | 41.8/12.4 | 45.6/15.0 | 49.5/18.0 | 53.3/21.3 | 57.1/25.1 | 61.0/29.2 | 64.8/33.8 | 68.6/38.8 | 72.4/44.3 | 76.3/50.3 | 80.1/56.9 | 83.9/63.9 | 87.8/71.6 | 91.6/79.8 | 95.4/88.6 |
|--------------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| $w^* w^* w^*$<br>setrgb<br>$g_N=1.6$ |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |
| No. and<br>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      |
| $w^*=l^*$<br>CIELAB, r<br>(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       | 0.013     | 0.04      | 0.076     | 0.121     | 0.172     | 0.231     | 0.296     | 0.365     | 0.442     | 0.523     | 0.608     | 0.7       | 0.796     | 0.895     | 1.0       |

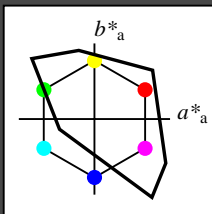
OE760-7N, Picture A7-135-2: 16 visual equidistant  $L^*$ -grey steps; PS operator:  $w^* w^* w^*$  setrgbcolor

OE76: In-output relation according to ISO 9241-306; 1MR, DH input:  $rgb \rightarrow rgb_d$  setrgbcolor  
Viewing  $Y$  contrast  $Y_W:Y_N=88,9:10$ ;  $Y_N$  range 7,5 to <15 output 130-2:  $g_P=1.0$ ;  $g_N=1.6$

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*



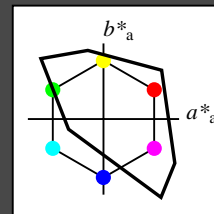
TLS00a; adapted (a) CIELAB data

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

Output: Colorimetric Television Luminous System TLS00a

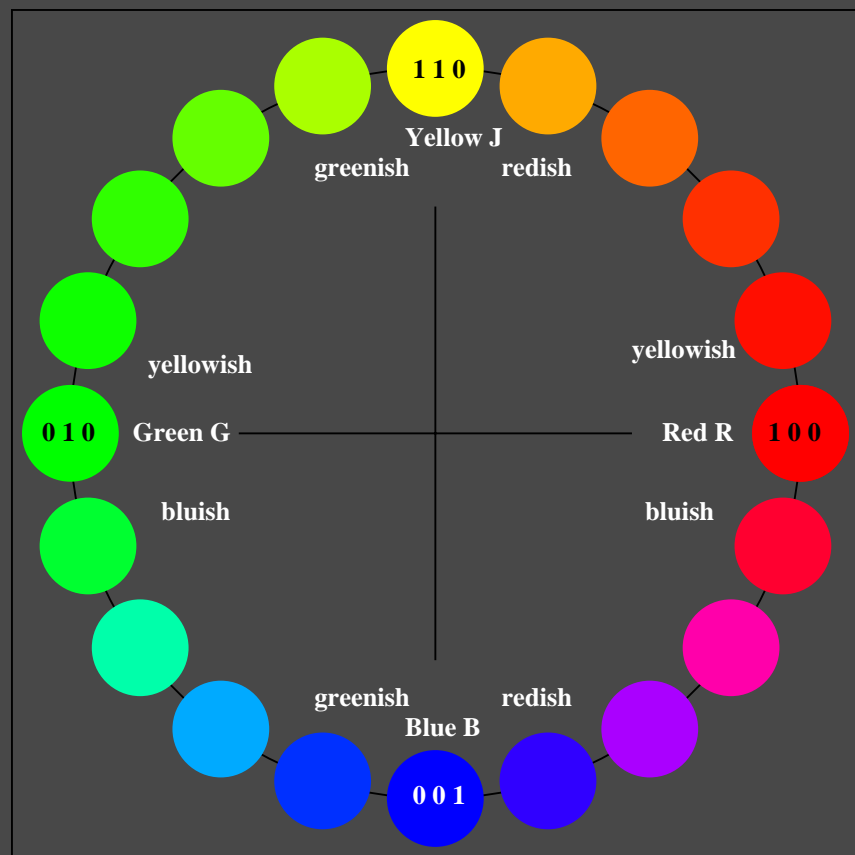
with hue number

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

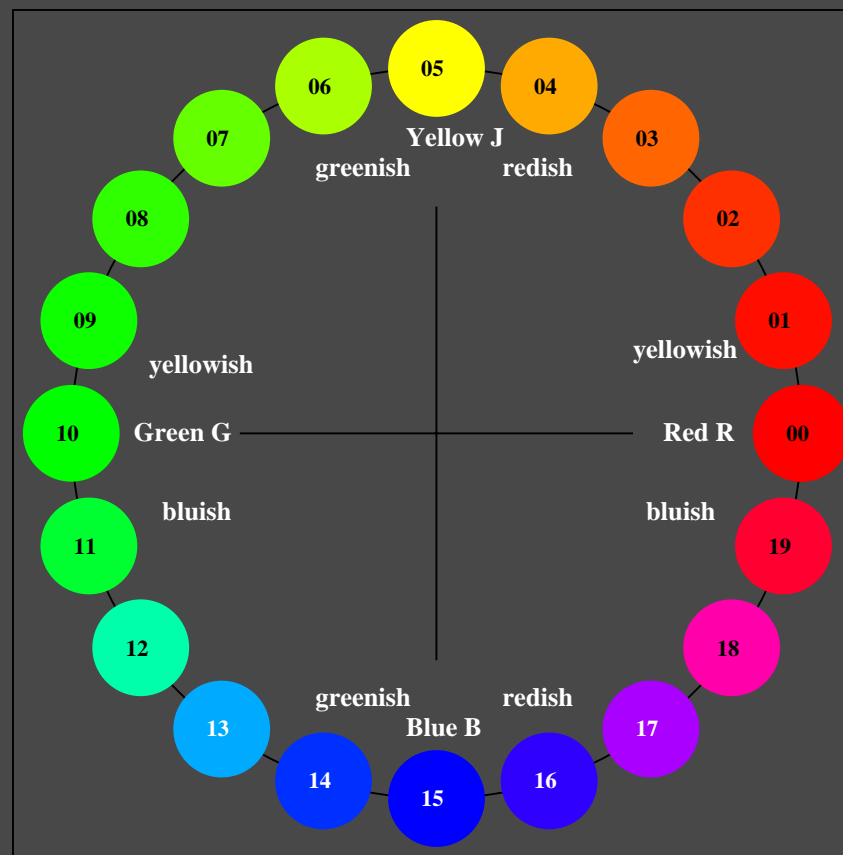


TLS00a; adapted (a) CIELAB data

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



OE760-7N-136-0: 20 step hue circle with elementary colours *R, J, G, B* (left)



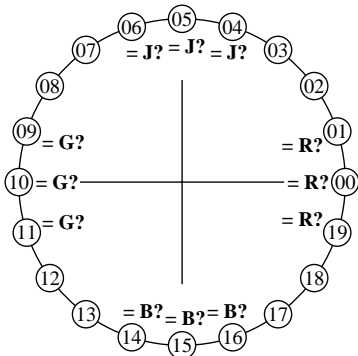
20 step hue circle with elementary colours *R, J, G, B* (right)

OE76: Test chart 5 according to DIN 33872-5; 1MR, DH  
Elementary hue agreement and discrimination

input: *rgb* ( $\rightarrow$  *rgb<sub>d</sub>*) *setrgbcolor*  
output 130-0: *g<sub>P</sub>*=1.0; *g<sub>N</sub>*=1.81

### 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) ..... are at the intended location |                                 |

Part 1

OE760-3N-136-1

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

PDF-File: <http://130.149.60.45/farbmetrik/OE76/OE76L0NP.PDF> underline Yes/No

PS-File: <http://130.149.60.45/farbmetrik/OE76/OE76L0NA.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 OE76L0NP.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 OE76L0NA.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:.....

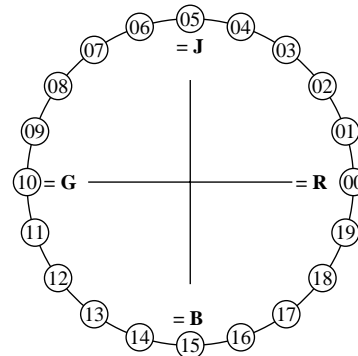
Special remarks:Special remarks, e. g. output of Landscape (L)

Part 3

OE760-7N-136-1

### 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) ..... differences visible |                         |

Part 2

OE761-3N-136-1

### 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/OE76/OE76F1P2.PDF>

underline Yes/No

PS file: <http://130.149.60.45/farbmetrik/OE76/OE76F1P2.PS>

underline Yes/No

Picture A7-136-2: 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/OE76/OE76F1P2.PDF>

picture A7-136-2

underline Yes/No

PS-File: <http://130.149.60.45/farbmetrik/OE76/OE76F1P2.PS>

picture A7-136-2

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](http://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

OE761-7N-136-1

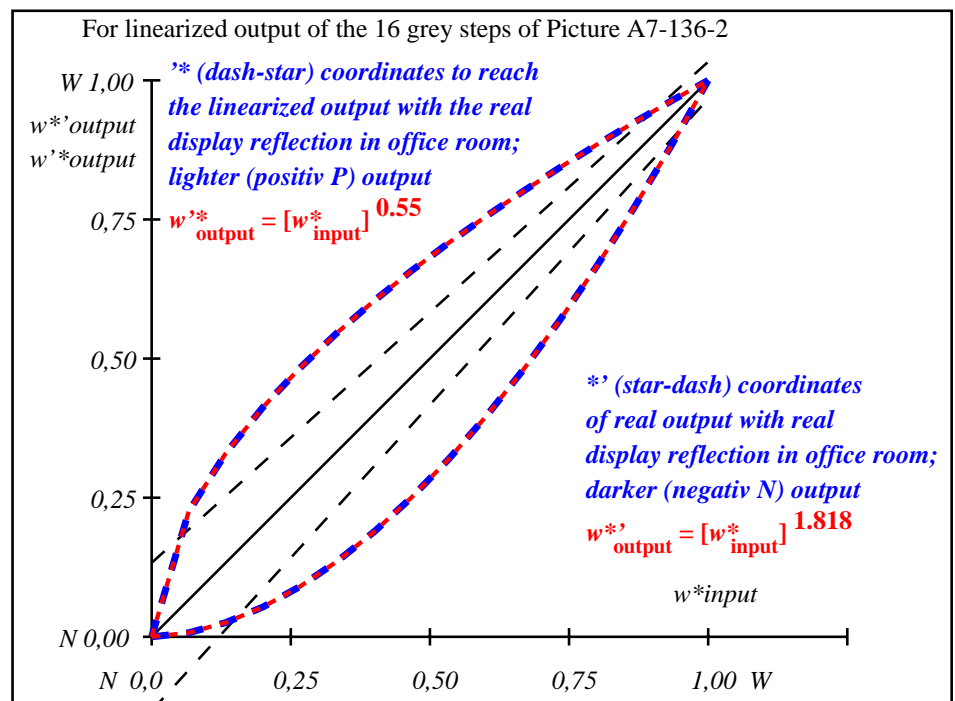
OE76: Form A for test chart 1 according to DIN 33872-5; 1MR, DH Input:  $rgb \rightarrow rgb_d$  setrgbcolor  
Elementary hue agreement, discrimination (Yes/No-decision) output 130-1:  $g_p=1.0$ ;  $g_N=1.81$



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                                    | 52.02 0.0 0.0 | 0.0 52.02 0.0  | 0.0 0.0 0.0   | 0.0 0.0 0.0   | 0.01                        |
| 2                                    | 54.91 0.0 0.0 | 0.01 52.33 0.0 | 0.0 0.0 -2.57 | 0.0 0.0 0.0   | 2.58                        |
| 3                                    | 57.8 0.0 0.0  | 0.03 53.13 0.0 | 0.0 0.0 -4.66 | 0.0 0.0 0.0   | 4.67                        |
| 4                                    | 60.7 0.0 0.0  | 0.05 54.34 0.0 | 0.0 0.0 -6.34 | 0.0 0.0 0.0   | 6.35                        |
| 5                                    | 63.59 0.0 0.0 | 0.09 55.94 0.0 | 0.0 0.0 -7.64 | 0.0 0.0 0.0   | 7.65                        |
| 6                                    | 66.48 0.0 0.0 | 0.14 57.9 0.0  | 0.0 0.0 -8.57 | 0.0 0.0 0.0   | 8.58                        |
| 7                                    | 69.37 0.0 0.0 | 0.19 60.22 0.0 | 0.0 0.0 -9.15 | 0.0 0.0 0.0   | 9.16                        |
| 8                                    | 72.27 0.0 0.0 | 0.25 62.87 0.0 | 0.0 0.0 -9.39 | 0.0 0.0 0.0   | 9.4                         |
| 9                                    | 75.16 0.0 0.0 | 0.32 65.85 0.0 | 0.0 0.0 -9.3  | 0.0 0.0 0.0   | 9.31                        |
| 10                                   | 78.05 0.0 0.0 | 0.4 69.16 0.0  | 0.0 0.0 -8.88 | 0.0 0.0 0.0   | 8.89                        |
| 11                                   | 80.95 0.0 0.0 | 0.48 72.78 0.0 | 0.0 0.0 -8.16 | 0.0 0.0 0.0   | 8.17                        |
| 12                                   | 83.84 0.0 0.0 | 0.57 76.71 0.0 | 0.0 0.0 -7.12 | 0.0 0.0 0.0   | 7.13                        |
| 13                                   | 86.73 0.0 0.0 | 0.67 80.94 0.0 | 0.0 0.0 -5.78 | 0.0 0.0 0.0   | 5.79                        |
| 14                                   | 89.62 0.0 0.0 | 0.77 85.47 0.0 | 0.0 0.0 -4.15 | 0.0 0.0 0.0   | 4.16                        |
| 15                                   | 92.52 0.0 0.0 | 0.88 90.29 0.0 | 0.0 0.0 -2.21 | 0.0 0.0 0.0   | 2.22                        |
| 16                                   | 95.41 0.0 0.0 | 1.0 95.41 0.0  | 0.0 0.0 0.0   | 0.0 0.0 0.0   | 0.01                        |
| 17                                   | 52.02 0.0 0.0 | 0.0 52.02 0.0  | 0.0 0.0 0.0   | 0.0 0.0 0.0   | 0.01                        |
| 18                                   | 62.87 0.0 0.0 | 0.08 55.51 0.0 | 0.0 0.0 -7.35 | 0.0 0.0 0.0   | 7.36                        |
| 19                                   | 73.71 0.0 0.0 | 0.28 64.32 0.0 | 0.0 0.0 -9.38 | 0.0 0.0 0.0   | 9.39                        |
| 20                                   | 84.56 0.0 0.0 | 0.59 77.74 0.0 | 0.0 0.0 -6.82 | 0.0 0.0 0.0   | 6.83                        |
| 21                                   | 95.41 0.0 0.0 | 1.0 95.41 0.0  | 0.0 0.0 0.0   | 0.0 0.0 0.0   | 0.01                        |
| Mean lightness difference (16 steps) |               |                |               |               | ΔE* <sub>CIELAB</sub> = 5.9 |
| Mean lightness difference (5 steps)  |               |                |               |               | ΔL* <sub>CIELAB</sub> = 4.7 |
| Mean colour reproduction index:      |               |                |               |               | R* <sub>ab,m</sub> = 74     |

OE760-3N-136-2: File: Measure unknown; Device: Device unknown; Date: Date unknown



OE761-3N-136-2: File: Measure unknown; Device: Device unknown; Date: Date unknown

| $L^*/Y_{\text{intended}}$<br>(absolute)                      | 52.0/20.2 | 54.9/22.8 | 57.8/25.8 | 60.7/28.9 | 63.6/32.3 | 66.5/36.0 | 69.4/39.9 | 72.3/44.1 | 75.2/48.5 | 78.1/53.3 | 80.9/58.4 | 83.8/63.8 | 86.7/69.5 | 89.6/75.5 | 92.5/81.9 | 95.4/88.6 |
|--|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| $w^* w^* w^*$<br>setrgb<br>$g_N=1.82$<br>No. and<br>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      |
| $w^*=l^*$<br>$C_{\text{IELAB}}, r$<br>(relative)             |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |
| $w^*_{\text{intended}}$                                      | 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     |
| $w^*_{\text{out}}$   | 0.0       | 0.007     | 0.026     | 0.054     | 0.091     | 0.135     | 0.189     | 0.25      | 0.319     | 0.395     | 0.479     | 0.569     | 0.666     | 0.771     | 0.882     | 1.0       |

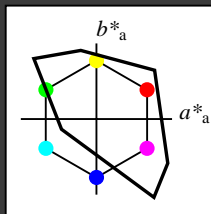
OE760-7N, Picture A7-136-2: 16 visual equidistant  $L^*$ -grey steps; PS operator:  $w^* w^* w^* \text{setrgbcolor}$

OE76: In-output relation according to ISO 9241-306; 1MR, DH input:  $rgb \rightarrow rgb_d$  setrgbcolor  
Viewing  $Y$  contrast  $Y_W:Y_N=88,9:20$ ;  $Y_N$  range 15 to <30 output 130-2:  $g_P=1.0$ ;  $g_N=1.81$

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*



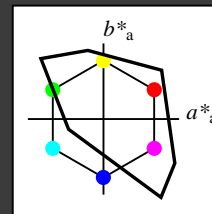
TLS00a; adapted (a) CIELAB data

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

Output: Colorimetric Television Luminous System TLS00a

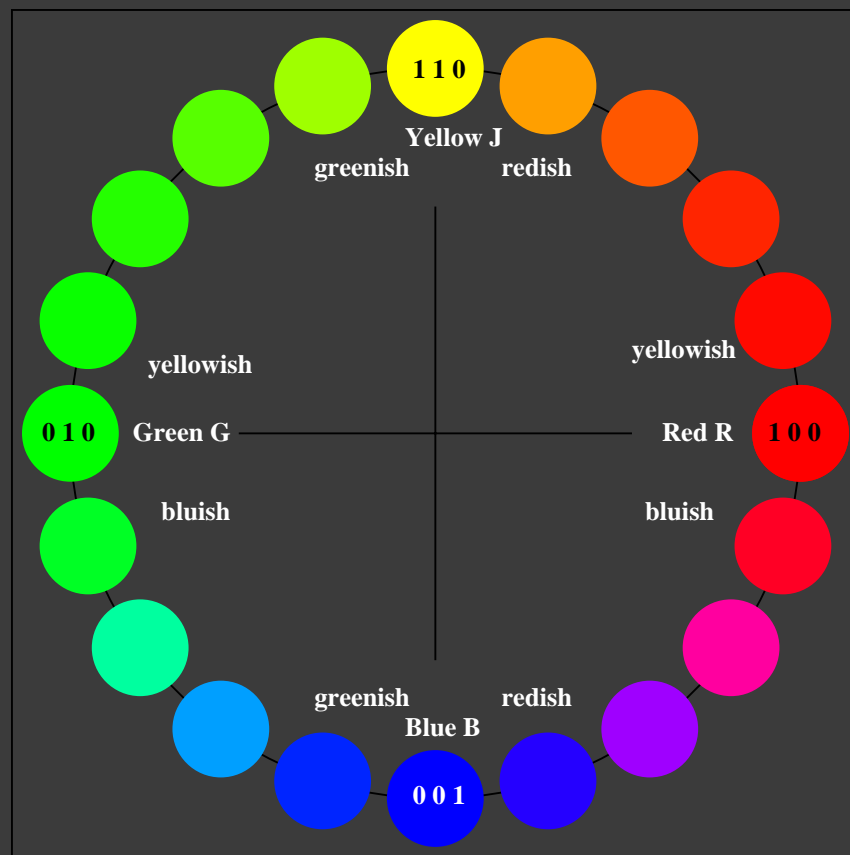
with hue number

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

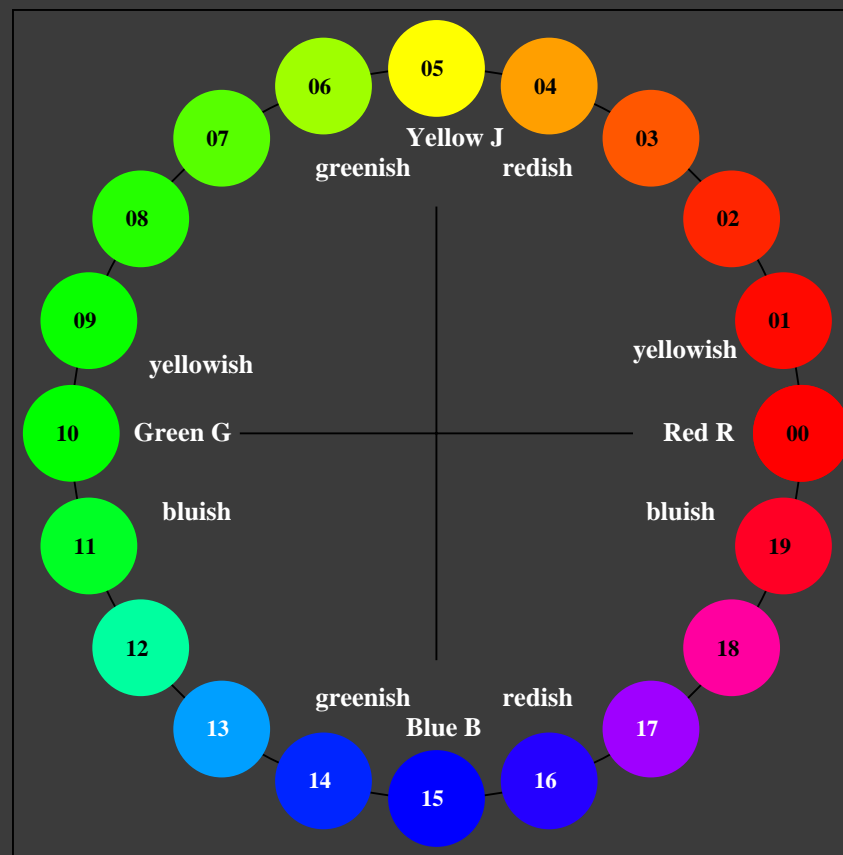


TLS00a; adapted (a) CIELAB data

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



OE760-7N-137-0: 20 step hue circle with elementary colours *R, J, G, B* (left)



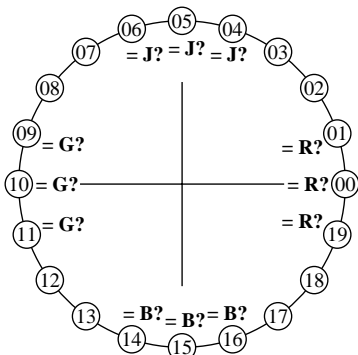
20 step hue circle with elementary colours *R, J, G, B* (right)

OE76: Test chart 5 according to DIN 33872-5; 1MR, DH  
Elementary hue agreement and discrimination

input: *rgb* ( $\rightarrow$  *rgb*<sub>d</sub>) *setrgbcolor*  
output 130-0: *g*<sub>P</sub>=1.0; *g*<sub>N</sub>=2.1

### 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) ..... are at the intended location |                                 |

Part 1

OE760-3N-137-1

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

PDF-File: <http://130.149.60.45/farbmetrik/OE76/OE76L0NP.PDF> underline Yes/No

PS-File: <http://130.149.60.45/farbmetrik/OE76/OE76L0NA.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 OE76L0NP.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 OE76L0NA.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:.....

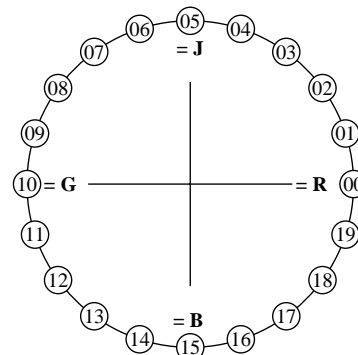
Special remarks:Special remarks, e. g. output of Landscape (L)

Part 3

OE760-7N-137-1

### 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) ..... differences visible |                         |

Part 2

OE761-3N-137-1

### 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/OE76/OE76F1P2.PDF>

underline Yes/No

PS file: <http://130.149.60.45/farbmetrik/OE76/OE76F1P2.PS>

underline Yes/No

Picture A7-137-2: **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/OE76/OE76F1P2.PDF>

picture A7-137-2

underline Yes/No

PS-File: <http://130.149.60.45/farbmetrik/OE76/OE76F1P2.PS>

picture A7-137-2

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](http://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

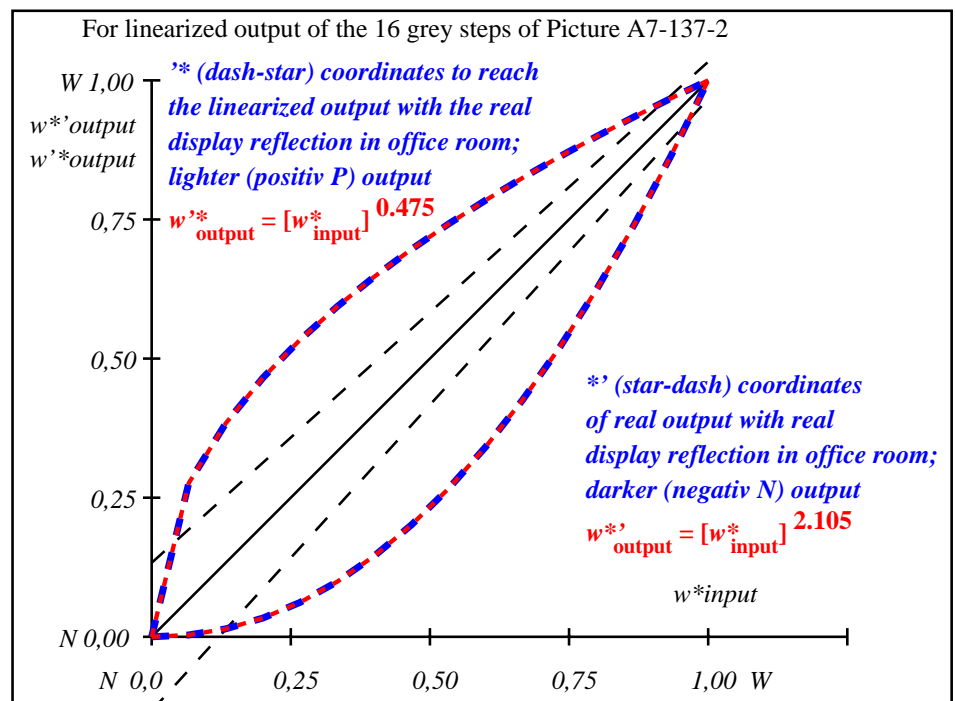
OE761-7N-137-1

OE76: Form A for test chart 1 according to DIN 33872-5; 1MR, DH Input:  $rgb \rightarrow rgb_d$  setrgbcolor  
Elementary hue agreement, discrimination (Yes/No-decision) output 130-1:  $g_p=1.0$ ;  $g_N=2.1$

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                                    | 69.7 0.0 0.0  | 0.0 69.7 0.0   | 0.0 0.0 0.0   | 0.0 0.0 0.0   | 0.01                        |
| 2                                    | 71.41 0.0 0.0 | 0.0 69.78 0.0  | 0.0 0.0 -1.62 | 0.0 0.0 0.0   | 1.63                        |
| 3                                    | 73.13 0.0 0.0 | 0.01 70.07 0.0 | 0.0 0.0 -3.05 | 0.0 0.0 0.0   | 3.06                        |
| 4                                    | 74.84 0.0 0.0 | 0.03 70.57 0.0 | 0.0 0.0 -4.26 | 0.0 0.0 0.0   | 4.27                        |
| 5                                    | 76.55 0.0 0.0 | 0.06 71.29 0.0 | 0.0 0.0 -5.26 | 0.0 0.0 0.0   | 5.27                        |
| 6                                    | 78.27 0.0 0.0 | 0.1 72.24 0.0  | 0.0 0.0 -6.02 | 0.0 0.0 0.0   | 6.03                        |
| 7                                    | 79.98 0.0 0.0 | 0.15 73.43 0.0 | 0.0 0.0 -6.54 | 0.0 0.0 0.0   | 6.55                        |
| 8                                    | 81.7 0.0 0.0  | 0.2 74.86 0.0  | 0.0 0.0 -6.82 | 0.0 0.0 0.0   | 6.83                        |
| 9                                    | 83.41 0.0 0.0 | 0.27 76.54 0.0 | 0.0 0.0 -6.86 | 0.0 0.0 0.0   | 6.87                        |
| 10                                   | 85.12 0.0 0.0 | 0.34 78.47 0.0 | 0.0 0.0 -6.65 | 0.0 0.0 0.0   | 6.66                        |
| 11                                   | 86.84 0.0 0.0 | 0.43 80.65 0.0 | 0.0 0.0 -6.18 | 0.0 0.0 0.0   | 6.19                        |
| 12                                   | 88.55 0.0 0.0 | 0.52 83.08 0.0 | 0.0 0.0 -5.46 | 0.0 0.0 0.0   | 5.47                        |
| 13                                   | 90.27 0.0 0.0 | 0.63 85.77 0.0 | 0.0 0.0 -4.49 | 0.0 0.0 0.0   | 4.5                         |
| 14                                   | 91.98 0.0 0.0 | 0.74 88.72 0.0 | 0.0 0.0 -3.25 | 0.0 0.0 0.0   | 3.26                        |
| 15                                   | 93.7 0.0 0.0  | 0.86 91.93 0.0 | 0.0 0.0 -1.75 | 0.0 0.0 0.0   | 1.76                        |
| 16                                   | 95.41 0.0 0.0 | 1.0 95.41 0.0  | 0.0 0.0 0.0   | 0.0 0.0 0.0   | 0.01                        |
| 17                                   | 69.7 0.0 0.0  | 0.0 69.7 0.0   | 0.0 0.0 0.0   | 0.0 0.0 0.0   | 0.01                        |
| 18                                   | 76.13 0.0 0.0 | 0.05 71.09 0.0 | 0.0 0.0 -5.03 | 0.0 0.0 0.0   | 5.04                        |
| 19                                   | 82.55 0.0 0.0 | 0.23 75.67 0.0 | 0.0 0.0 -6.87 | 0.0 0.0 0.0   | 6.88                        |
| 20                                   | 88.98 0.0 0.0 | 0.55 83.73 0.0 | 0.0 0.0 -5.24 | 0.0 0.0 0.0   | 5.25                        |
| 21                                   | 95.41 0.0 0.0 | 1.0 95.41 0.0  | 0.0 0.0 0.0   | 0.0 0.0 0.0   | 0.01                        |
| Mean lightness difference (16 steps) |               |                |               |               | ΔE* <sub>CIELAB</sub> = 4.3 |
| Mean lightness difference (5 steps)  |               |                |               |               | ΔL* <sub>CIELAB</sub> = 3.4 |
| Mean colour reproduction index:      |               |                |               |               | R* <sub>ab,m</sub> = 81     |

OE760-3N-137-2: File: Measure unknown; Device: Device unknown; Date: Date unknown



OE761-3N-137-2: File: Measure unknown; Device: Device unknown; Date: Date unknown

| $L^*/Y_{\text{intended}}$<br>(absolute)                      | 69.7/40.3 | 71.4/42.8 | 73.1/45.4 | 74.8/48.0 | 76.6/50.8 | 78.3/53.7 | 80.0/56.6 | 81.7/59.7 | 83.4/62.9 | 85.1/66.3 | 86.8/69.7 | 88.6/73.2 | 90.3/76.9 | 92.0/80.7 | 93.7/84.6 | 95.4/88.6 |
|--|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| $w^* w^* w^*$<br>setrgb<br>$g_N=2.11$<br>No. and<br>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      |
| $w^*=l^*$<br>$_{\text{CIELAB},r}$<br>(relative)              |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |           |
| $w^*_{\text{intended}}$                                      | 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     |
| $w^*_{\text{out}}$   | 0.0       | 0.003     | 0.014     | 0.034     | 0.062     | 0.099     | 0.145     | 0.201     | 0.266     | 0.341     | 0.426     | 0.52      | 0.625     | 0.74      | 0.864     | 1.0       |

OE760-7N, Picture A7-137-2: 16 visual equidistant  $L^*$ -grey steps; PS operator:  $w^* w^* w^* \text{setrgbcolor}$

OE76: In-output relation according to ISO 9241-306; 1MR, DH input:  $rgb \rightarrow rgb_d$  setrgbcolor  
Viewing  $Y$  contrast  $Y_W:Y_N=88,9:40$ ;  $Y_N$  range 30 to <60 output 130-2:  $g_P=1.0$ ;  $g_N=2.1$