

Input: Colorimetric Offset Reflective System ORS18a

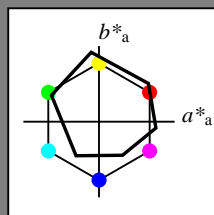
with *rgb* data of the
four elementary hues

1 0 0 = Red *R*

1 1 0 = Yellow *J*

0 1 0 = Green *G*

0 0 1 = Blue *B*



ORS18a; adapted (a) CIELAB data

	$L^*=L_a^*$	a_a^*	b_a^*	$C_{ab,a}^*$	$h_{ab,a}^*$
O _{Ma}	47.94	65.39	50.52	82.63	38
Y _{Ma}	90.37	-10.26	91.75	92.32	96
L _{Ma}	50.9	-62.83	34.96	71.91	151
C _{Ma}	58.62	-30.34	-45.01	54.3	236
V _{Ma}	25.72	31.1	-44.4	54.22	305
M _{Ma}	48.13	75.28	-8.36	75.74	354
N _{Ma}	18.01	0.0	0.0	0.0	0
W _{Ma}	95.41	0.0	0.0	0.0	0
R _{CIE}	39.92	58.66	26.98	64.57	25
J _{CIE}	81.26	-2.16	67.76	67.79	92
G _{CIE}	52.23	-42.25	11.76	43.87	164
B _{CIE}	30.57	1.15	-46.84	46.86	271

Output: Colorimetric Offset Reflective System ORS18a

with hue number

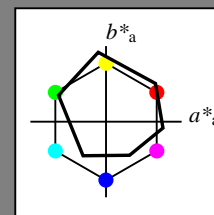
n = 00 to 19

00 = Red *R*

05 = Yellow *J*

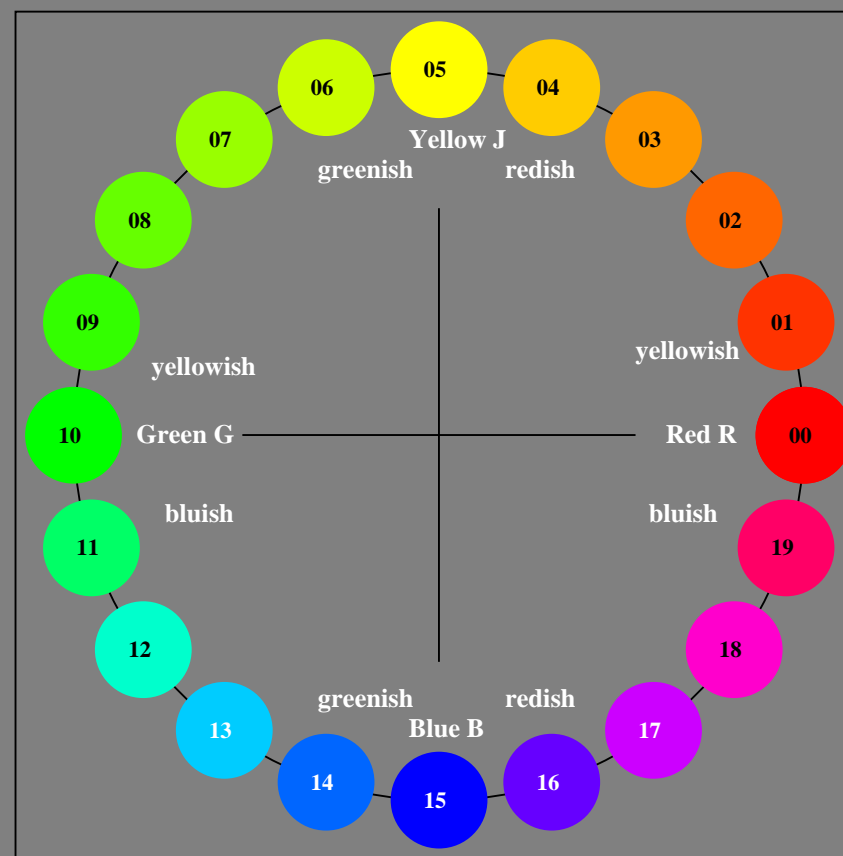
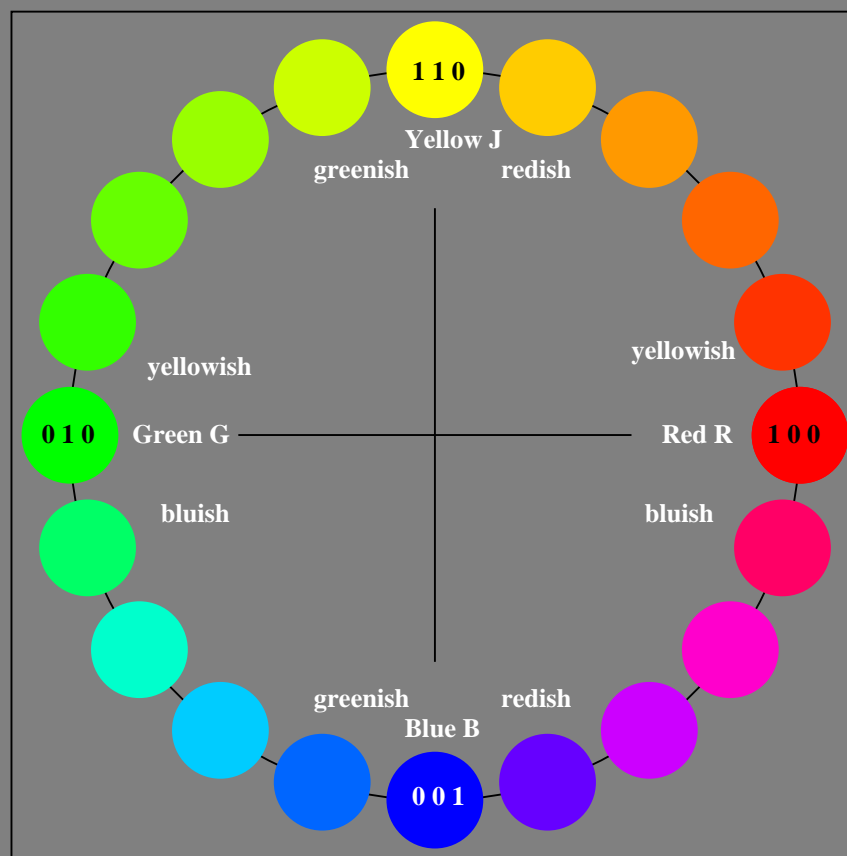
10 = Green *G*

15 = Blue *B*



ORS18a; adapted (a) CIELAB data

	$L^*=L_a^*$	a_a^*	b_a^*	$C_{ab,a}^*$	$h_{ab,a}^*$
O _{Ma}	47.94	65.39	50.52	82.63	38
Y _{Ma}	90.37	-10.26	91.75	92.32	96
L _{Ma}	50.9	-62.83	34.96	71.91	151
C _{Ma}	58.62	-30.34	-45.01	54.3	236
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M _{Ma}	48.13	75.28	-8.36	75.74	354
N _{Ma}	18.01	0.0	0.0	0.0	0
W _{Ma}	95.41	0.0	0.0	0.0	0
R _{CIE}	39.92	58.66	26.98	64.57	25
J _{CIE}	81.26	-2.16	67.76	67.79	92
G _{CIE}	52.23	-42.25	11.76	43.87	164
B _{CIE}	30.57	1.15	-46.84	46.86	271



De150-7N, 20 step hue circle with elementary colours *R, J, G, B* (left)

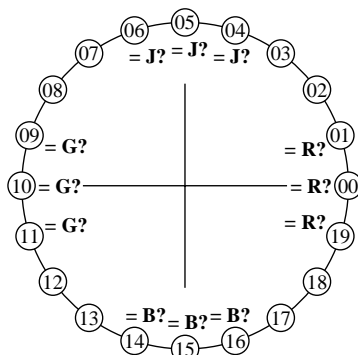
20 step hue circle with elementary colours *R, J, G, B* (right)

Test chart 1 according to DIN 33872-5, Page 1/2
Elementary hue agreement and discrimination, ORS18a

input: *rgb* (-> *olv**) *setrgbcolor*
output: no change compared to input

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

Dg150-3

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

PDF-File: either www.ps.bam.de/De15/10L/L15e00NP.PDF or www.ps.bam.de/De15/10P/P15e00NP.PDF	<u>underline</u> Yes/No or <u>underline</u> Yes/No
PS-File: either www.ps.bam.de/De15/10L/L15e00NA.PS or www.ps.bam.de/De15/10P/P15e00NA.PS	<u>underline</u> Yes/No or <u>underline</u> 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 (L/P)15e00NP.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 (L/P)15e00NA.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, e. g. output of Landscape (L) file L15e00NA.PS was cutted,
Portrait (P) file P15e00NA.PS was used:.....

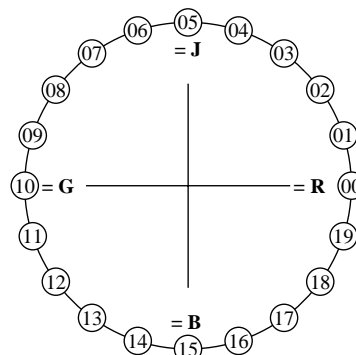
Part 3

De150-5

Form A for test chart 1 according to DIN 33872-5, Page 2/2
Elementary hue agreement; discrimination (Yes/No decision)

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

Dg151-3

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

Only for display (monitor, data projector) output:

Office workplace illumination is daylight (clouded/north sky) underline Yes/No
PDF-file output with www.ps.bam.de/De13/10L/L13e00NP.PDF underline Yes/No
Comparison of contrast range of 16 steps F to 0 with test chart no. 3 of DIN 33866-1:2000
give contrast range: (>F:0) (F:0) (E:0) (D:0) (C:0) (A:0) (9:0) (7:0) (5:0) (3:0) (<3:0)

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

*on paper between: >F:0 (highly glossy), F:0 (silk glossy) and E:0 (matte)
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: either www.ps.bam.de/De11/10L/L11e00NP.PDF or www.ps.bam.de/De11/10P/P11e00NP.PDF	<u>underline</u> Yes/No or <u>underline</u> Yes/No
PS-File: either www.ps.bam.de/De11/10L/L11e00NA.PS or www.ps.bam.de/De11/10P/P11e00NA.PS	<u>underline</u> Yes/No or <u>underline</u> Yes/No

colour measurement and specification for:

CIE standard illuminant D65, 2 degree observer, CIE 45/0 geometry: underline Yes/No
If No, please give other parameters:

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

Exchange of CIELAB data in file www.ps.bam.de/De17/10L/L17e00NP.PS and transfer
of the PS-file L17e00NP.PS in PDF-file L17e00NP.PDF underline Yes/No
If No, please describe other method:

Part 4

De151-5

input: *rgb (->olv*) setrgbcolor*
output: no change compared to input

Input: Colorimetric Offset Reflective System ORS18a

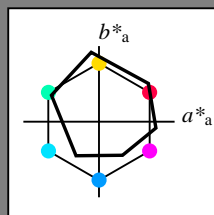
with *rgb* data of the
four elementary hues

1 0 0 = Red *R*

1 1 0 = Yellow *J*

0 1 0 = Green *G*

0 0 1 = Blue *B*



ORS18a; adapted (a) CIELAB data

	$L^*=L_a^*$	a_a^*	b_a^*	$C_{ab,a}^*$	$h_{ab,a}^*$
O _{Ma}	47.94	65.39	50.52	82.63	38
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L _{Ma}	50.9	-62.83	34.96	71.91	151
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V _{Ma}	25.72	31.1	-44.4	54.22	305
M _{Ma}	48.13	75.28	-8.36	75.74	354
N _{Ma}	18.01	0.0	0.0	0.0	0
W _{Ma}	95.41	0.0	0.0	0.0	0
R _{CIE}	39.92	58.66	26.98	64.57	25
J _{CIE}	81.26	-2.16	67.76	67.79	92
G _{CIE}	52.23	-42.25	11.76	43.87	164
B _{CIE}	30.57	1.15	-46.84	46.86	271

Output: Colorimetric Offset Reflective System ORS18a

with hue number

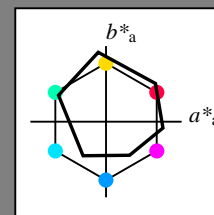
n = 00 to 19

00 = Red *R*

05 = Yellow *J*

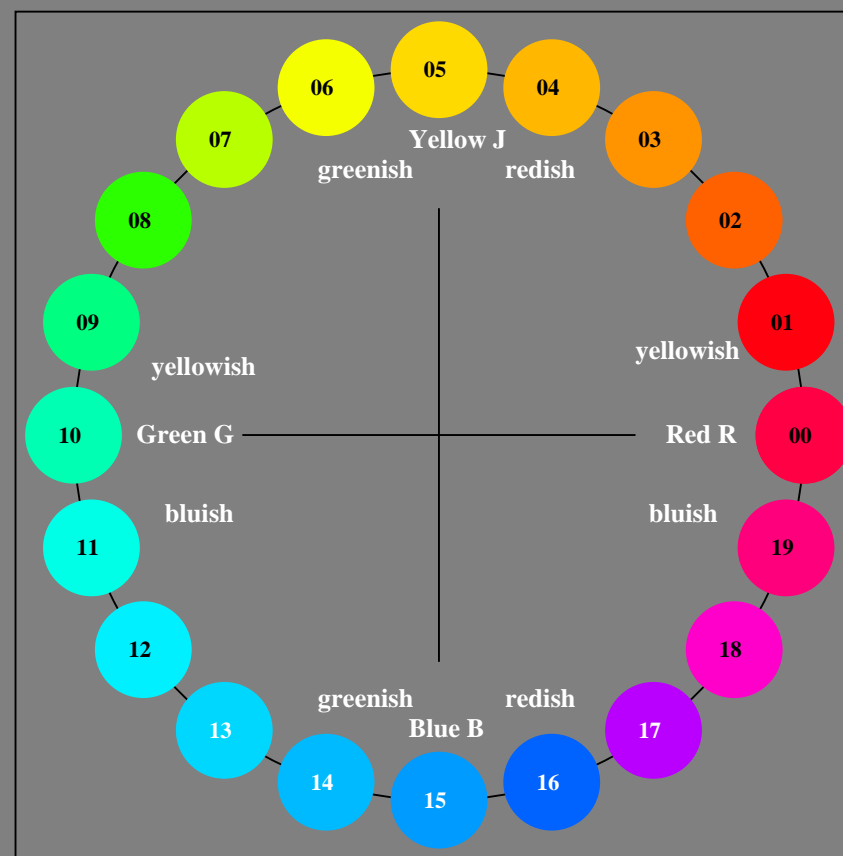
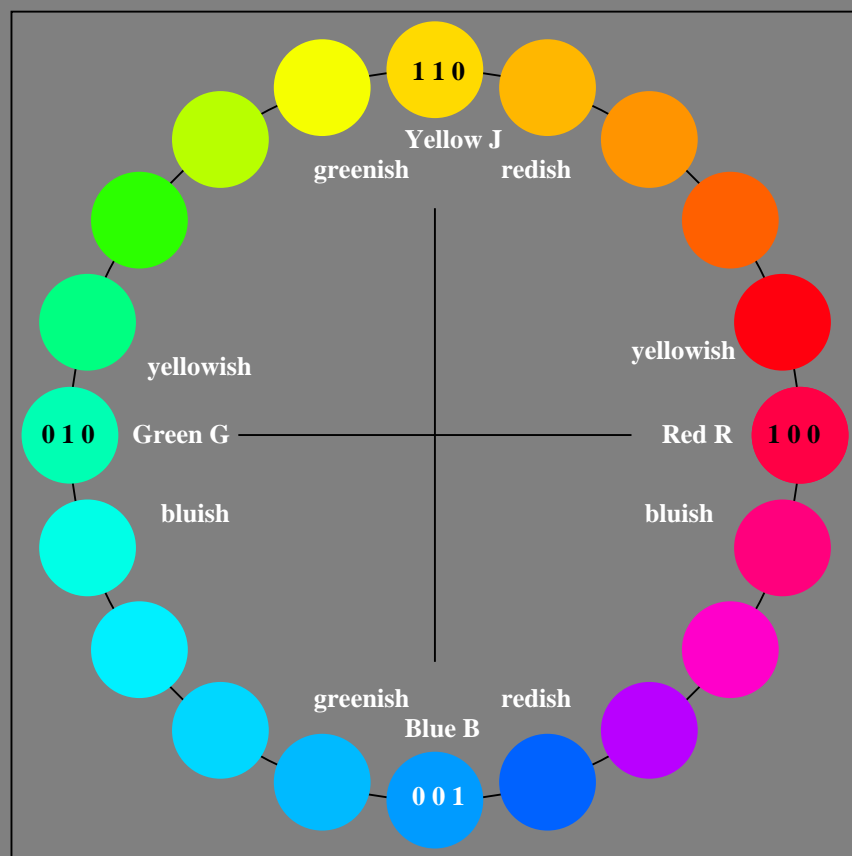
10 = Green *G*

15 = Blue *B*



ORS18a; adapted (a) CIELAB data

	$L^*=L_a^*$	a_a^*	b_a^*	$C_{ab,a}^*$	$h_{ab,a}^*$
O _{Ma}	47.94	65.39	50.52	82.63	38
Y _{Ma}	90.37	-10.26	91.75	92.32	96
L _{Ma}	50.9	-62.83	34.96	71.91	151
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M _{Ma}	48.13	75.28	-8.36	75.74	354
N _{Ma}	18.01	0.0	0.0	0.0	0
W _{Ma}	95.41	0.0	0.0	0.0	0
R _{CIE}	39.92	58.66	26.98	64.57	25
J _{CIE}	81.26	-2.16	67.76	67.79	92
G _{CIE}	52.23	-42.25	11.76	43.87	164
B _{CIE}	30.57	1.15	-46.84	46.86	271



De150-7N, 20 step hue circle with elementary colours *R, J, G, B* (left)

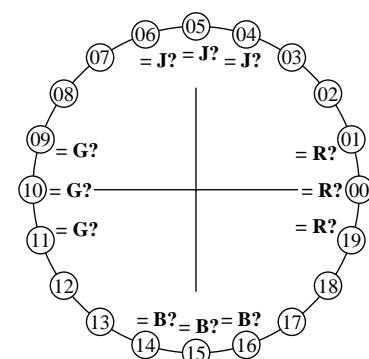
20 step hue circle with elementary colours *R, J, G, B* (right)

Test chart 1 according to DIN 33872-5, Page 1/2
Elementary hue agreement and discrimination, ORS18a

input: *rgb* (-> *olv**) *setrgbcolor*
output: no change compared to input

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

Dg150-3

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

PDF-File: either www.ps.bam.de/De15/10L/L15e00NP.PDF or www.ps.bam.de/De15/10P/P15e00NP.PDF	<u>underline</u> Yes/No or <u>underline</u> Yes/No
PS-File: either www.ps.bam.de/De15/10L/L15e00NA.PS or www.ps.bam.de/De15/10P/P15e00NA.PS	<u>underline</u> Yes/No or <u>underline</u> 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 (L/P)15e00NP.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 (L/P)15e00NA.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, e. g. output of Landscape (L) file L15e00NA.PS was cutted,
Portrait (P) file P15e00NA.PS was used:.....

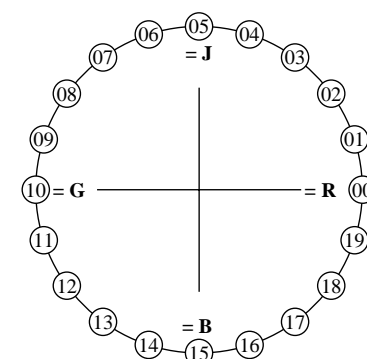
Part 3

De150-5

Form A for test chart 1 according to DIN 33872-5, Page 2/2
Elementary hue agreement; discrimination (Yes/No decision)

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

Dg151-3

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

Only for display (monitor, data projector) output:

Office workplace illumination is daylight (clouded/north sky) underline Yes/No
PDF-file output with www.ps.bam.de/De13/10L/L13e00NP.PDF underline Yes/No
Comparison of contrast range of 16 steps F to 0 with test chart no. 3 of DIN 33866-1:2000
give contrast range: (>F:0) (F:0) (E:0) (D:0) (C:0) (A:0) (9:0) (7:0) (5:0) (3:0) (<3:0)

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

*on paper between: >F:0 (highly glossy), F:0 (silk glossy) and E:0 (matte)
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: either www.ps.bam.de/De11/10L/L11e00NP.PDF or www.ps.bam.de/De11/10P/P11e00NP.PDF	<u>underline</u> Yes/No or <u>underline</u> Yes/No
PS-File: either www.ps.bam.de/De11/10L/L11e00NA.PS or www.ps.bam.de/De11/10P/P11e00NA.PS	<u>underline</u> Yes/No or <u>underline</u> Yes/No

colour measurement and specification for:

CIE standard illuminant D65, 2 degree observer, CIE 45/0 geometry: underline Yes/No
If No, please give other parameters:

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

Exchange of CIELAB data in file www.ps.bam.de/De17/10L/L17e00NP.PS and transfer
of the PS-file L17e00NP.PS in PDF-file L17e00NP.PDF underline Yes/No
If No, please describe other method:

Part 4

De151-5

input: *rgb (->olv*) setrgbcolor*
output: no change compared to input