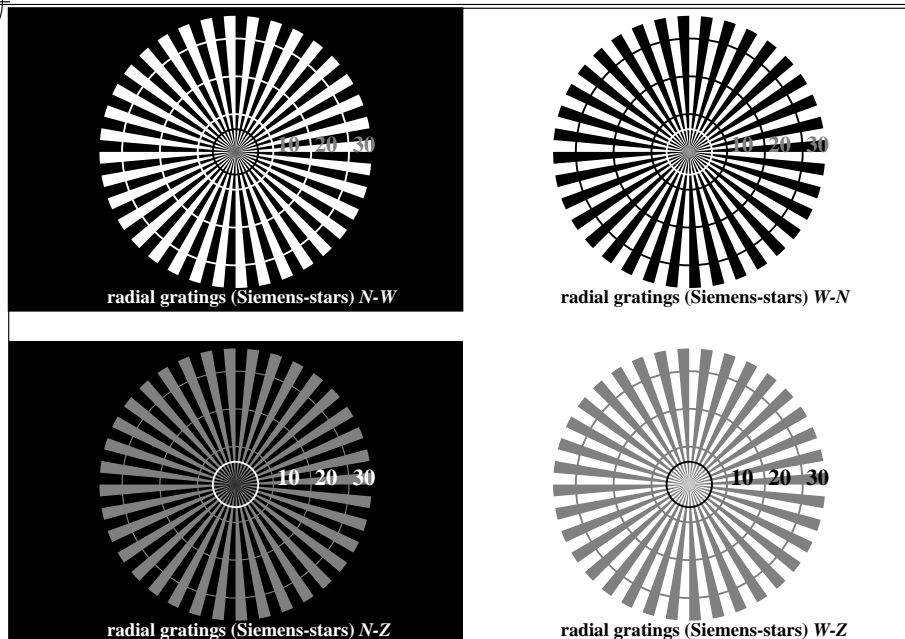
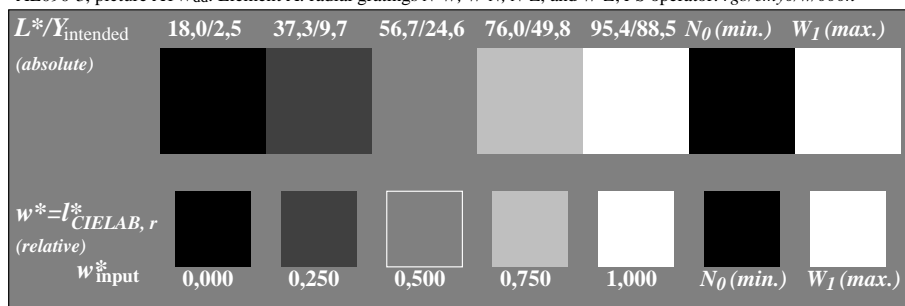


see similar files: <http://farbe.li.tu-berlin.de/AE09/AE09F0NX.PDF> / .PS; 3D-linearization, page 1/24  
technical information: <http://farbe.li.tu-berlin.de/> or <http://farbe.li.tu-berlin.de/AE.HTM>

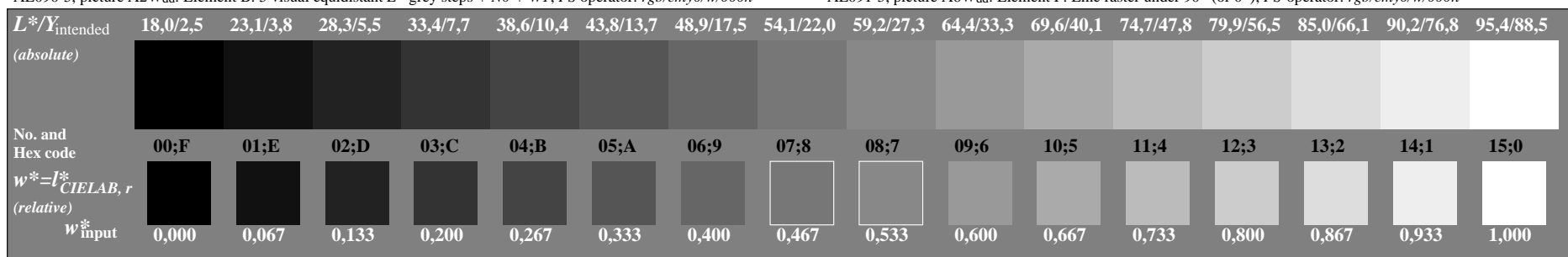
<http://farbe.li.tu-berlin.de/AE09/AE09F0NX.PDF> / .PS; 3D-linearization, page 1/24  
F: 3D-linearization AE09/AE09LF0NX.PDF / .PS in file (F)



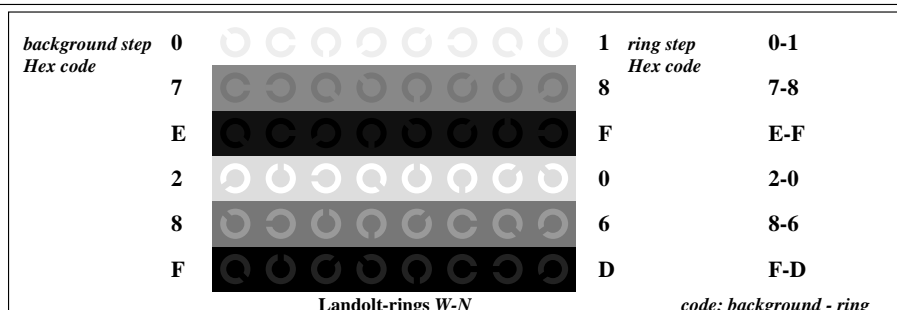
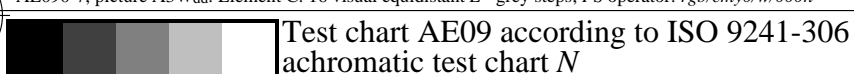
AE090-3, picture A1Wdd: Element A: radial gratings N-W, W-N, N-Z, and W-Z; PS operator: *rgb/cmy0/w/000n*



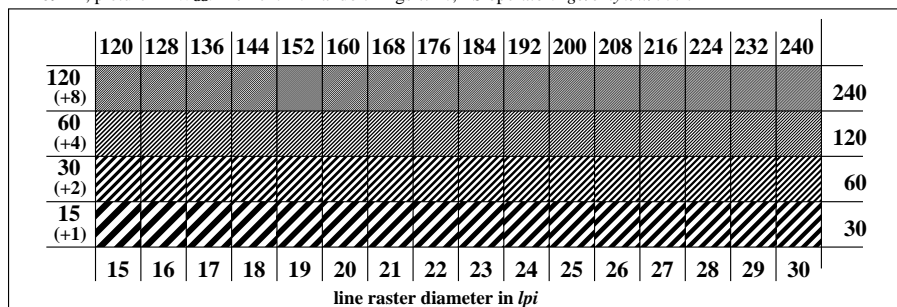
AE090-5, picture A2Wdd: Element B: 5 visual equidistant  $L^*$ -grey steps +  $N_0$  +  $W_1$ ; PS operator: *rgb/cmy0/w/000n*



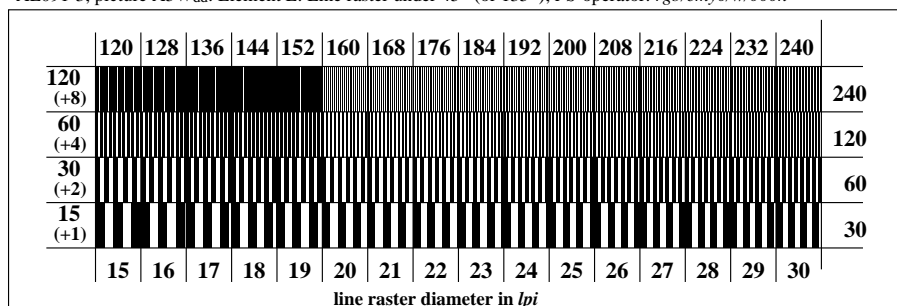
AE090-7, picture A3Wdd: Element C: 16 visual equidistant  $L^*$ -grey steps; PS operator: *rgb/cmy0/w/000n*



AE091-1, picture A4Wdd: Element D: Landolt-rings W-N; PS operator: *rgb/cmy0/w/000n*



AE091-3, picture A5Wdd: Element E: Line raster under 45° (or 135°); PS-operator: *rgb/cmy0/w/000n*



AE091-5, picture A6Wdd: Element F: Line raster under 90° (or 0°); PS-operator: *rgb/cmy0/w/000n*

input: *rgb/cmy0/000n/w set...*  
output: *->rgb<sub>dd</sub> setrgbcolor*

TUB Registration: 20190301-AE09/AE09L0FA.TXT / .PS  
application for measurement or viewing of display and print output  
TUB material: code=th4ta

see similar files: <http://farbe.li.tu-berlin.de/AE09/AE09F0NX.PDF> /PS; 3D-linearization, page 2/24  
technical information: <http://farbe.li.tu-berlin.de/> or <http://farbe.li.tu-berlin.de/AE09/AE09F0NX.PDF> /PS in file (F)

<http://farbe.li.tu-berlin.de/AE09/AE09F0NX.PDF> /PS; 3D-linearization, page 2/24  
F: 3D-linearization AE09/AE09LF0NX.PDF /PS in file (F)

**Test of visual linearized output of pictures A1W<sub>dd</sub> to A3W<sub>dd</sub>** please underline **Yes/No**  
**Output test with computer display ( ) or the external display ( )** please mark by (x)!

**Test of the radial grating according to picture A1W<sub>dd</sub>**

N-W-radial grating: Is the resolution diameter < 6 mm? **Yes/No**  
Test with magnifying glass (e.g. 6x) resolution diameter ..... mm

W-N-radial grating: Is the resolution diameter < 6 mm? **Yes/No**  
Test with magnifying glass (e.g. 6x) resolution diameter ..... mm

N-Z-radial grating: Is the resolution diameter < 6 mm? **Yes/No**  
Test with magnifying glass (e.g. 6x) resolution diameter ..... mm

W-Z-radial grating: Is the resolution diameter < 6 mm? **Yes/No**  
Test with magnifying glass (e.g. 6x) resolution diameter ..... mm

**Test of 5 visual equidistant L\*-grey steps according to picture A2W<sub>dd</sub>**  
Are the 5 steps on the upper rows distinguishable? **Yes/No**  
If No: How many steps can be distinguished? ..... Steps  
of the given 5 steps:

**Test of 16 visual equidistant L\*-grey steps according to picture A3W<sub>dd</sub>**  
Are the 16 steps on the upper rows distinguishable? **Yes/No**  
If No: How many steps can be distinguished? ..... Steps  
of the given 16 steps:

part 1, AE090-3dd: 01001

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

**PDF file:** [http://farbe.li.tu-berlin.de/AE09/AE09F0PX\\_CYN8\\_1.PDF](http://farbe.li.tu-berlin.de/AE09/AE09F0PX_CYN8_1.PDF) **underline: Yes/No**

**PS file:** [http://farbe.li.tu-berlin.de/AE09/AE09F0PX\\_CYN8\\_1.PS](http://farbe.li.tu-berlin.de/AE09/AE09F0PX_CYN8_1.PS) **underline: Yes/No**

**Used computer operating system:**  
either one of Windows/Mac/Unix/other and version:.....

**This evaluation is for the output:** **underline: monitor/data projector/printer**  
Device model, driver and version:.....

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

**For output with PDF file AE09F0PX\_CYN8\_1.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 output with PS file AE09F0PX\_CYN8\_1.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)

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

part 3, AE090-7dd: 01001

Form A: Test chart AE09 according to ISO 9241-306  
achromatic test chart N

**Test of visual linearized output of pictures A4W<sub>dd</sub> to A6W<sub>dd</sub>** please underline **Yes/No**  
**Output test with computer display ( ) or the external display ( )** please mark by (x)!

**Test of Landolt rings N-W according to picture A4W<sub>dd</sub>**  
Is the recognition frequency of the Landolt rings > 50% (5 of 8 at least)?

**background - ring**

0 - 1	<b>Yes/No</b>
7 - 8	<b>Yes/No</b>
E - F	<b>Yes/No</b>
2 - 0	<b>Yes/No</b>
8 - 6	<b>Yes/No</b>
F - D	<b>Yes/No</b>

**Test of the radial grating under 45° according to picture A5W<sub>dd</sub>**

Can equally spaced lines be seen? **Yes/No**  
Visual testing: for radial diameter from 15 to 60 lpi **Yes/No**  
Test with magnifying glass (e.g. 6x) - from 15 to ..... lpi

**Test of the radial grating under 90° according to picture A6W<sub>dd</sub>**

Can equally spaced lines be seen? **Yes/No**  
Visual testing: for radial diameter from 15 to 60 lpi **Yes/No**  
Test with magnifying glass (e.g. 6x) - from 15 to ..... lpi

part 2, AE091-3dd: 01001

**Documentation of assessor colour-vision properties for visual assessment**

The assessor has **normal** colour vision according to one test: **underline: Yes/No**  
either according to DIN 6160:1996 with Anomaloskop of Nagel **underline: Yes/unknown**  
or with test charts using colour points according to Ishihara **underline: Yes/unknown**  
or tested with, please specify: ..... **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://farbe.li.tu-berlin.de/AE09/AE09F0PX\\_CYN8\\_3.PDF](http://farbe.li.tu-berlin.de/AE09/AE09F0PX_CYN8_3.PDF) **underline: Yes/No**

**PS file:** [http://farbe.li.tu-berlin.de/AE09/AE09F0PX\\_CYN8\\_3.PS](http://farbe.li.tu-berlin.de/AE09/AE09F0PX_CYN8_3.PS) **underline: Yes/No**

**picture A7<sub>dd</sub> 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: Yes/No**

*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://farbe.li.tu-berlin.de/AE09/AE09F0PX\\_CYN8\\_3.PDF](http://farbe.li.tu-berlin.de/AE09/AE09F0PX_CYN8_3.PDF) **underline: Yes/No**

**PS file:** [http://farbe.li.tu-berlin.de/AE09/AE09F0PX\\_CYN8\\_3.PS](http://farbe.li.tu-berlin.de/AE09/AE09F0PX_CYN8_3.PS) **underline: Yes/No**

**picture A7<sub>dd</sub>** **underline: Yes/No**

**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 for 17 step colours of** <http://farbe.li.tu-berlin.de/OE70/OE70L1NP.PDF>

Exchange of CIELAB data in file <http://farbe.li.tu-berlin.de/AE82/AE82L0NP.TXT> and transfer

of the PS file AE82L0NP.PS (= .TXT) to the PDF-file AE82L0NP.PDF **underline: Yes/No**

If No, please describe other method: .....

part 4, AE091-7dd: 01001

input: *rgb/cmy0/000n/w set...*  
output: *->rgb<sub>dd</sub> setrgbcolor*

TUB Registration: 20190301-AE09/AE09L0FA.TXT /PS  
application for measurement or viewing of display and print output

TUB material: code=th4ta

see similar files: <http://farbe.li.tu-berlin.de/AE09/AE09F0NX.PDF> / .PS; 3D-linearization, page 3/24  
technical information: <http://farbe.li.tu-berlin.de/AE09/AE09LF0NX.PDF> / .PS in file (F)

i	LAB* <sub>ref</sub>	L* <sub>out</sub>	LAB* <sub>out</sub>	LAB* <sub>out-ref</sub>	ΔE*
1	0,00	0,00	0,00	0,00	0,01
2	6,36	0,00	0,06	0,00	0,01
3	12,72	0,00	0,13	0,00	0,01
4	19,08	0,00	0,20	0,00	0,01
5	25,44	0,00	0,26	0,00	0,01
6	31,80	0,00	0,33	0,00	0,01
7	38,16	0,00	0,40	0,00	0,01
8	44,52	0,00	0,46	0,00	0,01
9	50,88	0,00	0,53	0,00	0,01
10	57,24	0,00	0,60	0,00	0,01
11	63,60	0,00	0,66	0,00	0,01
12	69,96	0,00	0,73	0,00	0,01
13	76,32	0,00	0,80	0,00	0,01
14	82,68	0,00	0,86	0,00	0,01
15	89,04	0,00	0,93	0,00	0,01
16	95,41	0,00	1,00	0,00	0,01
17	0,00	0,00	0,00	0,00	0,01
18	23,85	0,00	0,25	0,00	0,01
19	47,70	0,00	0,50	0,00	0,01
20	71,55	0,00	0,75	0,00	0,01
21	95,41	0,00	1,00	0,00	0,01

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

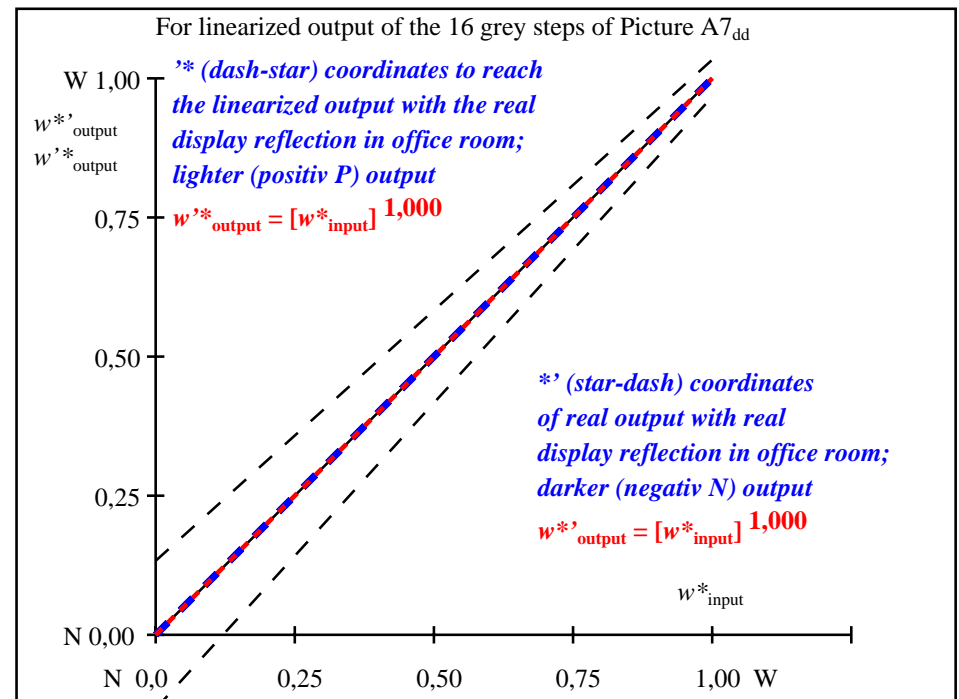
**Mean lightness difference**  
**(16 steps)**  
 $\Delta E^*_{\text{CIELAB}} = 0,0$

**Mean lightness difference**  
**(5 steps)**  
 $\Delta L^*_{\text{CIELAB}} = 0,0$

**Mean colour reproduction index:  $R^*_{\text{ab,m}} = 99,9$**

part 1,

AE090-3dd: 01002



part 2,

AE091-3dd: 01002

$L^*/Y_{\text{intended}}$ (absolute)	0,0/0,0	6,3/0,7	12,7/1,5	19,0/2,7	25,4/4,5	31,8/6,9	38,1/10,1	44,5/14,2	50,8/19,1	57,2/25,1	63,6/32,3	69,9/40,7	76,3/50,4	82,6/61,5	89,0/74,2	95,4/88,5
0 0 0 n*																
setcmyk																
gp=1,000																
No. and																
Hex code																
$w^* = l^*_{\text{CIELAB}, r}$ (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
$w^*_{\text{output}}$	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

part 3, picture A7<sub>dd</sub>: 16 visual equidistant  $L^*$ -grey steps; PS operator: 0 0 0 n\* setcmykcolor

AE090-7dd: 01002

In-out: Test chart AE09 according to ISO 9241-306  
Viewing  $Y$  contrast  $Y_W:Y_N=88,9:0,31$ ;  $Y_N$ -range 0,0 to <0,46

input:  $rgb/cmy0/000n/w$  set...  
output:  $->rgb_{dd}$  setrgbcolor

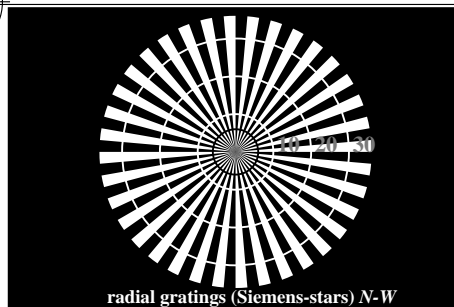
TUB Registration: 20190301-AE09/AE09L0FA.TXT /.PS  
application for measurement or viewing of display and print output

TUB material: code=th4ta

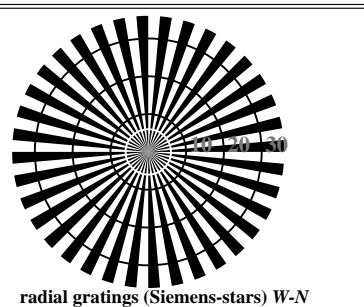
see similar files: <http://farbe.li.tu-berlin.de/AE09/AE09F0NX.PDF> / .PS; 3D-linearization, page 4/24  
technical information: <http://farbe.li.tu-berlin.de/> or <http://farbe.li.tu-berlin.de/AE.HTM>



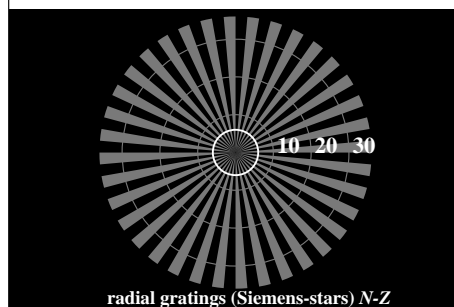
<http://farbe.li.tu-berlin.de/AE09/AE09F0NX.PDF> / .PS; 3D-linearization, page 4/24  
F: 3D-linearization AE09/AE09LF0NX.PDF / .PS in file (F)



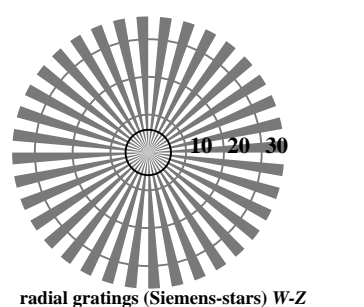
radial gratings (Siemens-stars) N-W



radial gratings (Siemens-stars) W-N



radial gratings (Siemens-stars) N-Z



radial gratings (Siemens-stars) W-Z

AE090-3, picture A1Wdd: Element A: radial gratings N-W, W-N, N-Z, and W-Z; PS operator: *rgb/cmy0/w/000n*

$L^*/Y_{\text{intended}}$ (absolute)	18,0/2,5	37,3/9,7	56,7/24,6	76,0/49,8	95,4/88,5	$N_0$ (min.)	$W_1$ (max.)
$w^* = I^*_{\text{CIELAB}, r}$ (relative)							
$w^*_{\text{input}}$	0,000	0,250	0,500	0,750	1,000	$N_0$ (min.)	$W_1$ (max.)

AE090-5, picture A2Wdd: Element B: 5 visual equidistant  $L^*$ -grey steps +  $N_0$  +  $W_1$ ; PS operator: *rgb/cmy0/w/000n*

$L^*/Y_{\text{intended}}$ (absolute)	18,0/2,5	23,1/3,8	28,3/5,5	33,4/7,7	38,6/10,4	43,8/13,7	48,9/17,5	54,1/22,0	59,2/27,3	64,4/33,3	69,6/40,1	74,7/47,8	79,9/56,5	85,0/66,1	90,2/76,8	95,4/88,5
No. and Hex code	00;F	01;E	02;D	03;C	04;B	05;A	06;9	07;8	08;7	09;6	10;5	11;4	12;3	13;2	14;1	15;0
$w^* = I^*_{\text{CIELAB}, r}$ (relative)																
$w^*_{\text{input}}$	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

AE090-7, picture A3Wdd: Element C: 16 visual equidistant  $L^*$ -grey steps; PS operator: *rgb/cmy0/w/000n*



Test chart AE09 according to ISO 9241-306  
achromatic test chart N

background step	0	1	ring step	0-1
Hex code	7	8	Hex code	7-8
E		F	E-F	
2	0	6	2-0	
8	D	8-6		
F		D	F-D	

Landolt-rings W-N

code: background - ring

AE091-1, picture A4Wdd: Element D: Landolt-rings W-N; PS operator: *rgb/cmy0/w/000n*

	120	128	136	144	152	160	168	176	184	192	200	208	216	224	232	240	
120 (+8)																	240
60 (+4)																	120
30 (+2)																	60
15 (+1)																	30
	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	

line raster diameter in lpi

AE091-3, picture A5Wdd: Element E: Line raster under 45° (or 135°); PS-operator: *rgb/cmy0/w/000n*

	120	128	136	144	152	160	168	176	184	192	200	208	216	224	232	240	
120 (+8)																	240
60 (+4)																	120
30 (+2)																	60
15 (+1)																	30
	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	

line raster diameter in lpi

AE091-5, picture A6Wdd: Element F: Line raster under 90° (or 0°); PS-operator: *rgb/cmy0/w/000n*

	120	128	136	144	152	160	168	176	184	192	200	208	216	224	232	240	
120 (+8)																	240
60 (+4)																	120
30 (+2)																	60
15 (+1)																	30
	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	

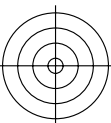
input: *rgb/cmy0/000n/w set...*  
output: *->rgb<sub>dd</sub> setrgbcolor*



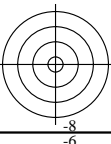
TUB Registration: 20190301-AE09/AE09L0FA.TXT / .PS  
application for measurement or viewing of display and print output

TUB material: code=th4ta

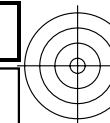




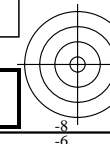
see similar files: <http://farbe.li.tu-berlin.de/AE09/AE09F0NX.PDF> /PS; 3D-linearization, page 5/24  
 technical information: <http://farbe.li.tu-berlin.de/> or <http://farbe.li.tu-berlin.de/AE09/AE09F0NX.PDF> /PS in file (F)



<http://farbe.li.tu-berlin.de/AE09/AE09F0NX.PDF> /PS; 3D-linearization, page 5/24  
 F: 3D-linearization AE09/AE09LF0NX.PDF /PS in file (F)



TUB Registration: 20190301-AE09/AE09L0FA.TXT /PS  
 application for measurement or viewing of display and print output  
 TUB material: code=th4ta



**Test of visual linearized output of pictures A1W<sub>dd</sub> to A3W<sub>dd</sub>** please underline **Yes/No**  
**Output test with computer display ( ) or the external display ( )** please mark by (x)!

**Test of the radial grating according to picture A1W<sub>dd</sub>**

N-W-radial grating: Is the resolution diameter < 6 mm? **Yes/No**  
 Test with magnifying glass (e.g. 6x) resolution diameter ..... mm

W-N-radial grating: Is the resolution diameter < 6 mm? **Yes/No**  
 Test with magnifying glass (e.g. 6x) resolution diameter ..... mm

N-Z-radial grating: Is the resolution diameter < 6 mm? **Yes/No**  
 Test with magnifying glass (e.g. 6x) resolution diameter ..... mm

W-Z-radial grating: Is the resolution diameter < 6 mm? **Yes/No**  
 Test with magnifying glass (e.g. 6x) resolution diameter ..... mm

**Test of 5 visual equidistant L\*-grey steps according to picture A2W<sub>dd</sub>**  
 Are the 5 steps on the upper rows distinguishable? **Yes/No**  
 If No: How many steps can be distinguished? ..... Steps  
 of the given 5 steps:

**Test of 16 visual equidistant L\*-grey steps according to picture A3W<sub>dd</sub>**  
 Are the 16 steps on the upper rows distinguishable? **Yes/No**  
 If No: How many steps can be distinguished? ..... Steps  
 of the given 16 steps:

part 1, AE090-3dd: 01081

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

**PDF file:** [http://farbe.li.tu-berlin.de/AE09/AE09F0PX\\_CYN7\\_1.PDF](http://farbe.li.tu-berlin.de/AE09/AE09F0PX_CYN7_1.PDF) **underline: Yes/No**  
**PS file:** [http://farbe.li.tu-berlin.de/AE09/AE09F0PX\\_CYN7\\_1.PS](http://farbe.li.tu-berlin.de/AE09/AE09F0PX_CYN7_1.PS) **underline: Yes/No**

**Used computer operating system:**  
 either one of Windows/Mac/Unix/other and version:.....

**This evaluation is for the output:** **underline: monitor/data projector/printer**  
 Device model, driver and version:.....

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

**For output with PDF file AE09F0PX\_CYN7\_1.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 output with PS file AE09F0PX\_CYN7\_1.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)  
 .....  
 .....  
 .....

part 3, AE090-7dd: 01081

Form A: Test chart AE09 according to ISO 9241-306  
 achromatic test chart N

**Test of visual linearized output of pictures A4W<sub>dd</sub> to A6W<sub>dd</sub>** please underline **Yes/No**  
**Output test with computer display ( ) or the external display ( )** please mark by (x)!

**Test of Landolt rings N-W according to picture A4W<sub>dd</sub>**  
 Is the recognition frequency of the Landolt rings > 50% (5 of 8 at least)?

<b>background - ring</b>	
0 - 1	<b>Yes/No</b>
7 - 8	<b>Yes/No</b>
E - F	<b>Yes/No</b>
2 - 0	<b>Yes/No</b>
8 - 6	<b>Yes/No</b>
F - D	<b>Yes/No</b>

**Test of the radial grating under 45° according to picture A5W<sub>dd</sub>**  
 Can equally spaced lines be seen? **Yes/No**  
 Visual testing: for radial diameter from 15 to 60 lpi ..... lpi  
 Test with magnifying glass (e.g. 6x) - from 15 to

**Test of the radial grating under 90° according to picture A6W<sub>dd</sub>**  
 Can equally spaced lines be seen? **Yes/No**  
 Visual testing: for radial diameter from 15 to 60 lpi ..... lpi  
 Test with magnifying glass (e.g. 6x) - from 15 to

part 2, AE091-3dd: 01081

**Documentation of assessor colour-vision properties for visual assessment**

The assessor has **normal** colour vision according to one test: **underline: Yes/No**  
 either according to DIN 6160:1996 with Anomaloskop of Nagel **underline: Yes/unknown**  
 or with test charts using colour points according to Ishihara **underline: Yes/unknown**  
 or tested with, please specify: ..... **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://farbe.li.tu-berlin.de/AE09/AE09F0PX\\_CYN7\\_3.PDF](http://farbe.li.tu-berlin.de/AE09/AE09F0PX_CYN7_3.PDF) **underline: Yes/No**  
**PS file:** [http://farbe.li.tu-berlin.de/AE09/AE09F0PX\\_CYN7\\_3.PS](http://farbe.li.tu-berlin.de/AE09/AE09F0PX_CYN7_3.PS) **underline: Yes/No**

**picture A7<sub>dd</sub> 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: Yes/No**  
 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://farbe.li.tu-berlin.de/AE09/AE09F0PX\\_CYN7\\_3.PDF](http://farbe.li.tu-berlin.de/AE09/AE09F0PX_CYN7_3.PDF) **underline: Yes/No**  
**PS file:** [http://farbe.li.tu-berlin.de/AE09/AE09F0PX\\_CYN7\\_3.PS](http://farbe.li.tu-berlin.de/AE09/AE09F0PX_CYN7_3.PS) **underline: Yes/No**  
**picture A7<sub>dd</sub>** **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 for 17 step colours of** <http://farbe.li.tu-berlin.de/OE70/OE70L1NP.PDF>  
 Exchange of CIELAB data in file <http://farbe.li.tu-berlin.de/AE82/AE82L0NP.TXT> and transfer  
 of the PS file AE82L0NP.PS (= .TXT) to the PDF-file AE82L0NP.PDF **underline: Yes/No**  
 If No, please describe other method: .....

part 4, AE091-7dd: 01081

input: *rgb/cmy0/000n/w set...*  
 output: *->rgb<sub>dd</sub> setrgbcolor*



see similar files: <http://farbe.li.tu-berlin.de/AE09/AE09F0NX.PDF> / .PS; 3D-linearization, page 6/24  
technical information: <http://farbe.li.tu-berlin.de/AE09/AE09LF0NX.PDF> / .PS in file (F)

TUB Registration: 20190301-AE09/AE09L0FA.TXT /.PS  
application for measurement or viewing of display and print output  
TUB material: code=th4ta

i	LAB* <sub>ref</sub>	L* <sub>out</sub>	LAB* <sub>out</sub>	LAB* <sub>out-ref</sub>	ΔE*
1	5,69 0,00 0,00	0,00 0,00 0,00	5,69 0,00 0,00	0,00 0,00 0,00	0,01
2	11,67 0,00 0,00	0,04 0,00 0,00	9,36 0,00 0,00	-2, 0,00 0,00	2,30
3	17,65 0,00 0,00	0,09 0,00 0,00	14,01 0,00 0,00	-3, 0,00 0,00	3,63
4	23,63 0,00 0,00	0,14 0,00 0,00	19,12 0,00 0,00	-4, 0,00 0,00	4,51
5	29,61 0,00 0,00	0,21 0,00 0,00	24,55 0,00 0,00	-5, 0,00 0,00	5,06
6	35,59 0,00 0,00	0,27 0,00 0,00	30,23 0,00 0,00	-5, 0,00 0,00	5,36
7	41,57 0,00 0,00	0,33 0,00 0,00	36,12 0,00 0,00	-5, 0,00 0,00	5,45
8	47,55 0,00 0,00	0,40 0,00 0,00	42,19 0,00 0,00	-5, 0,00 0,00	5,36
9	53,54 0,00 0,00	0,47 0,00 0,00	48,42 0,00 0,00	-5, 0,00 0,00	5,11
10	59,52 0,00 0,00	0,54 0,00 0,00	54,79 0,00 0,00	-4, 0,00 0,00	4,72
11	65,50 0,00 0,00	0,61 0,00 0,00	61,29 0,00 0,00	-4, 0,00 0,00	4,20
12	71,48 0,00 0,00	0,69 0,00 0,00	67,91 0,00 0,00	-3, 0,00 0,00	3,57
13	77,46 0,00 0,00	0,76 0,00 0,00	74,64 0,00 0,00	-2, 0,00 0,00	2,82
14	83,44 0,00 0,00	0,84 0,00 0,00	81,47 0,00 0,00	-1, 0,00 0,00	1,97
15	89,42 0,00 0,00	0,92 0,00 0,00	88,39 0,00 0,00	-1, 0,00 0,00	1,03
16	95,41 0,00 0,00	1,00 0,00 0,00	95,41 0,00 0,00	0,00 0,00 0,00	0,01
17	5,69 0,00 0,00	0,00 0,00 0,00	5,69 0,00 0,00	0,00 0,00 0,00	0,01
18	28,12 0,00 0,00	0,19 0,00 0,00	23,16 0,00 0,00	-4, 0,00 0,00	4,95
19	50,55 0,00 0,00	0,44 0,00 0,00	45,28 0,00 0,00	-5, 0,00 0,00	5,26
20	72,98 0,00 0,00	0,71 0,00 0,00	69,58 0,00 0,00	-3, 0,00 0,00	3,39
21	95,41 0,00 0,00	1,00 0,00 0,00	95,41 0,00 0,00	0,00 0,00 0,00	0,01

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

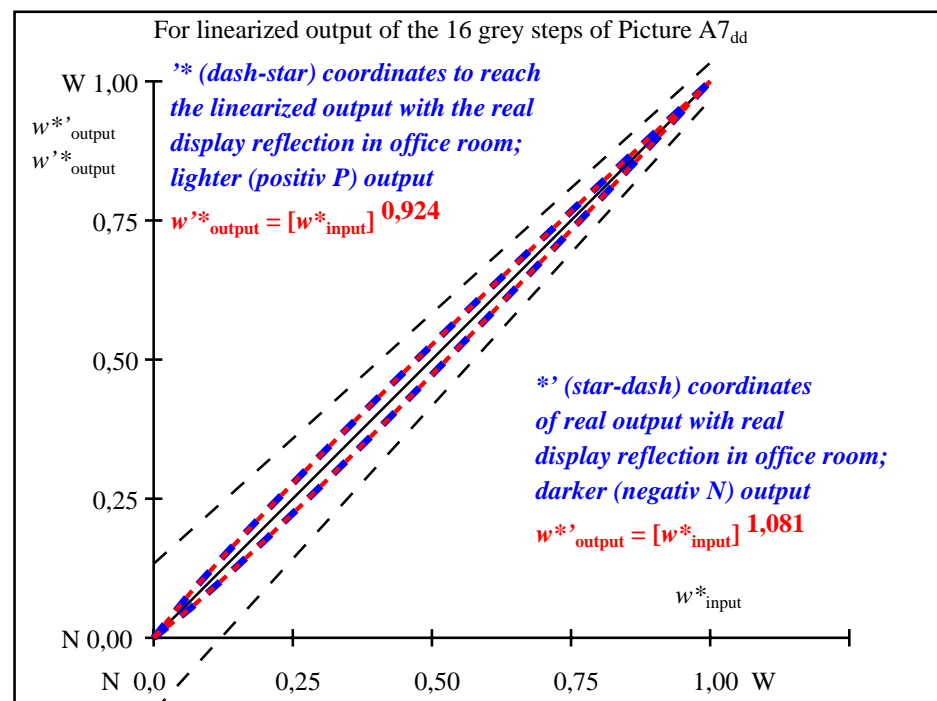
Mean lightness difference (16 steps)  
 $\Delta E^*_{\text{CIELAB}} = 3,4$

Mean lightness difference (5 steps)  
 $\Delta L^*_{\text{CIELAB}} = 2,7$

Mean colour reproduction index:  $R^*_{\text{ab,m}} = 84,9$

part 1,

AE090-3dd: 01082



part 2,

AE091-3dd: 01082

$L^*/Y_{\text{intended}}$ (absolute)	5,6/0,6	11,6/1,3	17,6/2,4	23,6/3,9	29,6/6,0	35,5/8,8	41,5/12,2	47,5/16,4	53,5/21,5	59,5/27,5	65,5/34,6	71,4/42,8	77,4/52,3	83,4/63,0	89,4/75,0	95,4/88,5
0 0 0 n* setcmyk																
gN=1,081 No. and Hex code	00;F	01;E	02;D	03;C	04;B	05;A	06;9	07;8	08;7	09;6	10;5	11;4	12;3	13;2	14;1	15;0
$w^* = l^*_{\text{CIELAB}, r}$ (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
$w^*_{\text{output}}$	0,000	0,053	0,112	0,175	0,239	0,304	0,371	0,439	0,506	0,575	0,645	0,714	0,785	0,857	0,927	1,000

part 3, picture A7<sub>dd</sub>: 16 visual equidistant  $L^*$ -grey steps; PS operator: 0 0 0 n\* setcmykcolor

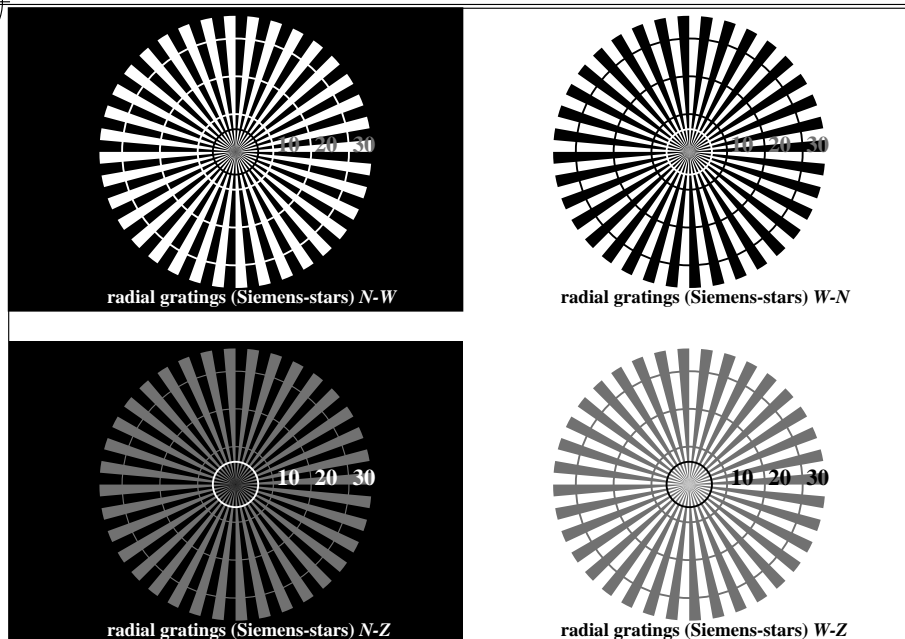
AE090-7dd: 01082

In-out: Test chart AE09 according to ISO 9241-306  
Viewing  $Y$  contrast  $Y_W:Y_N=88,9:0,62$ ;  $Y_N$ -range 0,46 to <0,93

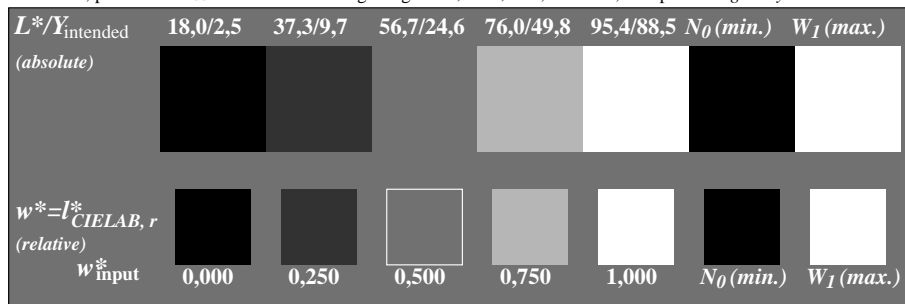
input:  $rgb/cmy0/000n/w$  set...  
output:  $->rgb_{dd}$  setrgbcOLOR

see similar files: <http://farbe.li.tu-berlin.de/AE09/AE09F0NX.PDF> / .PS; 3D-linearization, page 7/24  
technical information: <http://farbe.li.tu-berlin.de/> or <http://farbe.li.tu-berlin.de/AE.HTM>

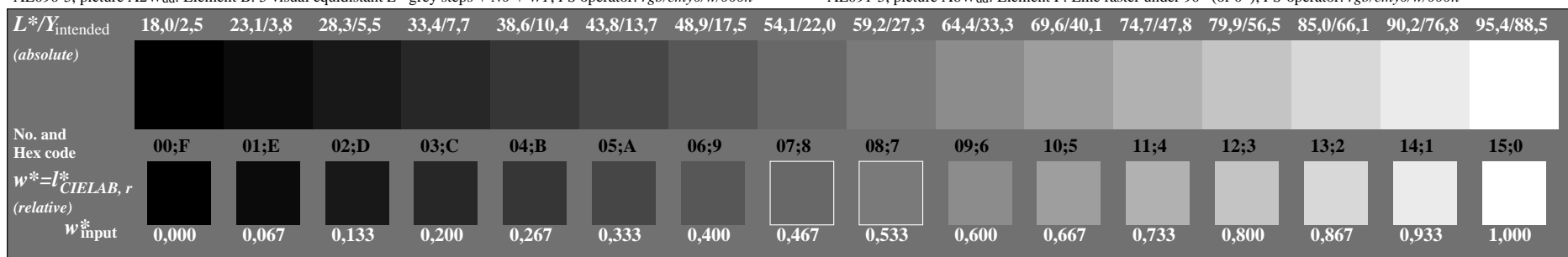
<http://farbe.li.tu-berlin.de/AE09/AE09F0NX.PDF> / .PS; 3D-linearization, page 7/24  
F: 3D-linearization AE09/AE09LF0NX.PDF / .PS in file (F)



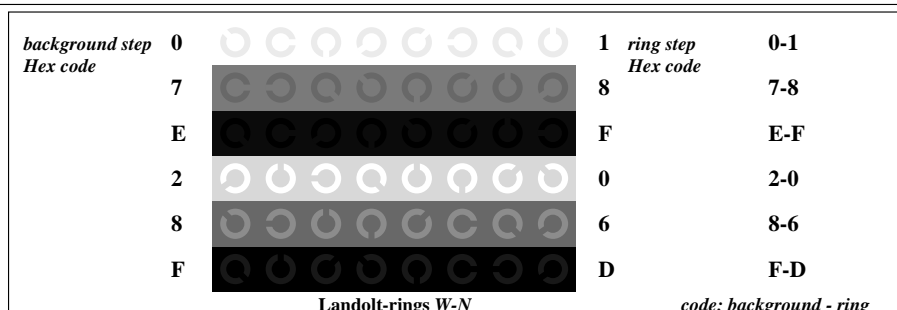
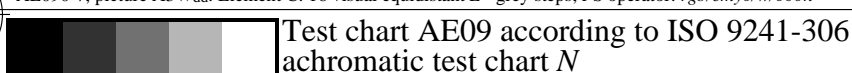
AE090-3, picture A1Wdd: Element A: radial gratings N-W, W-N, N-Z, and W-Z; PS operator: *rgb/cmy0/w/000n*



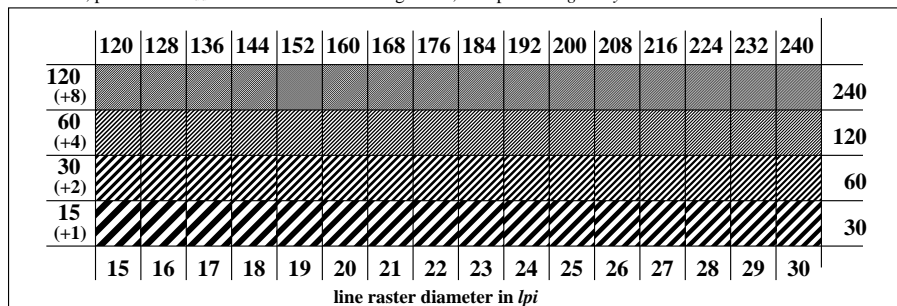
AE090-5, picture A2Wdd: Element B: 5 visual equidistant  $L^*$ -grey steps +  $N_0$  +  $W_1$ ; PS operator: *rgb/cmy0/w/000n*



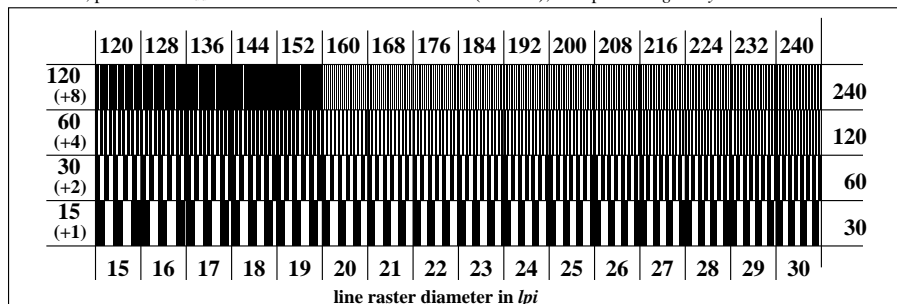
AE090-7, picture A3Wdd: Element C: 16 visual equidistant  $L^*$ -grey steps; PS operator: *rgb/cmy0/w/000n*



AE091-1, picture A4Wdd: Element D: Landolt-rings W-N; PS operator: *rgb/cmy0/w/000n*



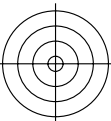
AE091-3, picture A5Wdd: Element E: Line raster under 45° (or 135°); PS-operator: *rgb/cmy0/w/000n*



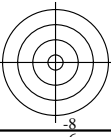
AE091-5, picture A6Wdd: Element F: Line raster under 90° (or 0°); PS-operator: *rgb/cmy0/w/000n*

input: *rgb/cmy0/000n/w set...*  
output: *->rgb<sub>dd</sub> setrgbcolor*

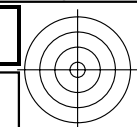
TUB Registration: 20190301-AE09/AE09L0FA.TXT / .PS  
application for measurement or viewing of display and print output  
TUB material: code=th4ta



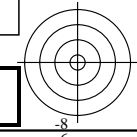
see similar files: <http://farbe.li.tu-berlin.de/AE09/AE09F0NX.PDF> /PS; 3D-linearization, page 8/24  
 technical information: <http://farbe.li.tu-berlin.de/> or [http://farbe.li.tu-berlin.de/AE09/AE09F0PX\\_CYN6\\_1.PDF](http://farbe.li.tu-berlin.de/AE09/AE09F0PX_CYN6_1.PDF)



<http://farbe.li.tu-berlin.de/AE09/AE09F0NX.PDF> /PS; 3D-linearization, page 8/24  
 F: 3D-linearization AE09/AE09LF0NX.PDF /PS in file (F)



TUB Registration: 20190301-AE09/AE09L0FA.TXT /PS  
 application for measurement or viewing of display and print output  
 TUB material: code=th4ta



**Test of visual linearized output of pictures A1W<sub>dd</sub> to A3W<sub>dd</sub>** please underline **Yes/No**  
**Output test with computer display ( ) or the external display ( )** please mark by (x)!

**Test of the radial grating according to picture A1W<sub>dd</sub>**

N-W-radial grating: Is the resolution diameter < 6 mm? **Yes/No**  
 Test with magnifying glass (e.g. 6x) resolution diameter ..... mm

W-N-radial grating: Is the resolution diameter < 6 mm? **Yes/No**  
 Test with magnifying glass (e.g. 6x) resolution diameter ..... mm

N-Z-radial grating: Is the resolution diameter < 6 mm? **Yes/No**  
 Test with magnifying glass (e.g. 6x) resolution diameter ..... mm

W-Z-radial grating: Is the resolution diameter < 6 mm? **Yes/No**  
 Test with magnifying glass (e.g. 6x) resolution diameter ..... mm

**Test of 5 visual equidistant L\*-grey steps according to picture A2W<sub>dd</sub>**  
 Are the 5 steps on the upper rows distinguishable? **Yes/No**  
 If No: How many steps can be distinguished? ..... Steps  
 of the given 5 steps:

**Test of 16 visual equidistant L\*-grey steps according to picture A3W<sub>dd</sub>**  
 Are the 16 steps on the upper rows distinguishable? **Yes/No**  
 If No: How many steps can be distinguished? ..... Steps  
 of the given 16 steps:

part 1, AE090-3dd: 010161

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

**PDF file:** [http://farbe.li.tu-berlin.de/AE09/AE09F0PX\\_CYN6\\_1.PDF](http://farbe.li.tu-berlin.de/AE09/AE09F0PX_CYN6_1.PDF) **underline: Yes/No**  
**PS file:** [http://farbe.li.tu-berlin.de/AE09/AE09F0PX\\_CYN6\\_1.PS](http://farbe.li.tu-berlin.de/AE09/AE09F0PX_CYN6_1.PS) **underline: Yes/No**

**Used computer operating system:**  
 either one of Windows/Mac/Unix/other and version:.....

**This evaluation is for the output:** **underline: monitor/data projector/printer**  
 Device model, driver and version:.....

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

**For output with PDF file AE09F0PX\_CYN6\_1.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 output with PS file AE09F0PX\_CYN6\_1.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)  
 .....  
 .....  
 .....

part 3, AE090-7dd: 010161



Form A: Test chart AE09 according to ISO 9241-306  
 achromatic test chart N

**Test of visual linearized output of pictures A4W<sub>dd</sub> to A6W<sub>dd</sub>** please underline **Yes/No**  
**Output test with computer display ( ) or the external display ( )** please mark by (x)!

**Test of Landolt rings N-W according to picture A4W<sub>dd</sub>**  
 Is the recognition frequency of the Landolt rings > 50% (5 of 8 at least)?

<b>background - ring</b>	
0 - 1	<b>Yes/No</b>
7 - 8	<b>Yes/No</b>
E - F	<b>Yes/No</b>
2 - 0	<b>Yes/No</b>
8 - 6	<b>Yes/No</b>
F - D	<b>Yes/No</b>

**Test of the radial grating under 45° according to picture A5W<sub>dd</sub>**  
 Can equally spaced lines be seen? **Yes/No**  
 Visual testing: for radial diameter from 15 to 60 lpi **Yes/No**  
 Test with magnifying glass (e.g. 6x) - from 15 to ..... lpi

**Test of the radial grating under 90° according to picture A6W<sub>dd</sub>**  
 Can equally spaced lines be seen? **Yes/No**  
 Visual testing: for radial diameter from 15 to 60 lpi **Yes/No**  
 Test with magnifying glass (e.g. 6x) - from 15 to ..... lpi

part 2, AE091-3dd: 010161

**Documentation of assessor colour-vision properties for visual assessment**

The assessor has **normal** colour vision according to one test: **underline: Yes/No**  
 either according to DIN 6160:1996 with Anomaloskop of Nagel **underline: Yes/unknown**  
 or with test charts using colour points according to Ishihara **underline: Yes/unknown**  
 or tested with, please specify: ..... **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://farbe.li.tu-berlin.de/AE09/AE09F0PX\\_CYN6\\_3.PDF](http://farbe.li.tu-berlin.de/AE09/AE09F0PX_CYN6_3.PDF) **underline: Yes/No**  
**PS file:** [http://farbe.li.tu-berlin.de/AE09/AE09F0PX\\_CYN6\\_3.PS](http://farbe.li.tu-berlin.de/AE09/AE09F0PX_CYN6_3.PS) **underline: Yes/No**  
**picture A7<sub>dd</sub> 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: Yes/No**  
 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://farbe.li.tu-berlin.de/AE09/AE09F0PX\\_CYN6\\_3.PDF](http://farbe.li.tu-berlin.de/AE09/AE09F0PX_CYN6_3.PDF) **underline: Yes/No**  
**picture A7<sub>dd</sub>** **underline: Yes/No**  
**PS file:** [http://farbe.li.tu-berlin.de/AE09/AE09F0PX\\_CYN6\\_3.PS](http://farbe.li.tu-berlin.de/AE09/AE09F0PX_CYN6_3.PS) **underline: Yes/No**  
**picture A7<sub>dd</sub>** **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 for 17 step colours of** <http://farbe.li.tu-berlin.de/OE70/OE70L1NP.PDF>  
 Exchange of CIELAB data in file <http://farbe.li.tu-berlin.de/AE82/AE82L0NP.TXT> and transfer  
 of the PS file AE82L0NP.PS (= .TXT) to the PDF-file AE82L0NP.PDF **underline: Yes/No**  
 If No, please describe other method: .....

part 4, AE091-7dd: 010161



input: *rgb/cmy0/000n/w set...*  
 output: *->rgb<sub>dd</sub> setrgbcolor*



see similar files: <http://farbe.li.tu-berlin.de/AE09/AE09F0NX.PDF> / .PS; 3D-linearization, page 9/24  
technical information: <http://farbe.li.tu-berlin.de/> or <http://farbe.li.tu-berlin.de/AE09F0NX.PDF> in file (F)

i	LAB* <sub>ref</sub>	L* <sub>out</sub>	LAB* <sub>out</sub>	LAB* <sub>out-ref</sub>	ΔE*
1	10,99 0,00 0,00	0,00	10,99 0,00 0,00	0,00 0,00 0,00	0,01
2	16,62 0,00 0,00	0,02	13,11 0,00 0,00	-3, 0,00 0,00	3,50
3	22,24 0,00 0,00	0,06	16,44 0,00 0,00	-5, 0,00 0,00	5,80
4	27,87 0,00 0,00	0,11	20,45 0,00 0,00	-7, 0,00 0,00	7,42
5	33,50 0,00 0,00	0,16	24,98 0,00 0,00	-8, 0,00 0,00	8,52
6	39,13 0,00 0,00	0,22	29,94 0,00 0,00	-9, 0,00 0,00	9,19
7	44,75 0,00 0,00	0,28	35,27 0,00 0,00	-9, 0,00 0,00	9,48
8	50,38 0,00 0,00	0,35	40,93 0,00 0,00	-9, 0,00 0,00	9,45
9	56,01 0,00 0,00	0,42	46,89 0,00 0,00	-9, 0,00 0,00	9,11
10	61,64 0,00 0,00	0,49	53,13 0,00 0,00	-8, 0,00 0,00	8,50
11	67,27 0,00 0,00	0,57	59,62 0,00 0,00	-7, 0,00 0,00	7,64
12	72,89 0,00 0,00	0,65	66,35 0,00 0,00	-6, 0,00 0,00	6,54
13	78,52 0,00 0,00	0,73	73,31 0,00 0,00	-5, 0,00 0,00	5,21
14	84,15 0,00 0,00	0,82	80,48 0,00 0,00	-3, 0,00 0,00	3,67
15	89,78 0,00 0,00	0,91	87,84 0,00 0,00	-1, 0,00 0,00	1,93
16	95,41 0,00 0,00	1,00	95,41 0,00 0,00	0,00 0,00 0,00	0,01
17	10,99 0,00 0,00	0,00	10,99 0,00 0,00	0,00 0,00 0,00	0,01
18	32,09 0,00 0,00	0,15	23,80 0,00 0,00	-8, 0,00 0,00	8,29
19	53,20 0,00 0,00	0,38	43,88 0,00 0,00	-9, 0,00 0,00	9,32
20	74,30 0,00 0,00	0,67	68,07 0,00 0,00	-6, 0,00 0,00	6,22
21	95,41 0,00 0,00	1,00	95,41 0,00 0,00	0,00 0,00 0,00	0,01

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

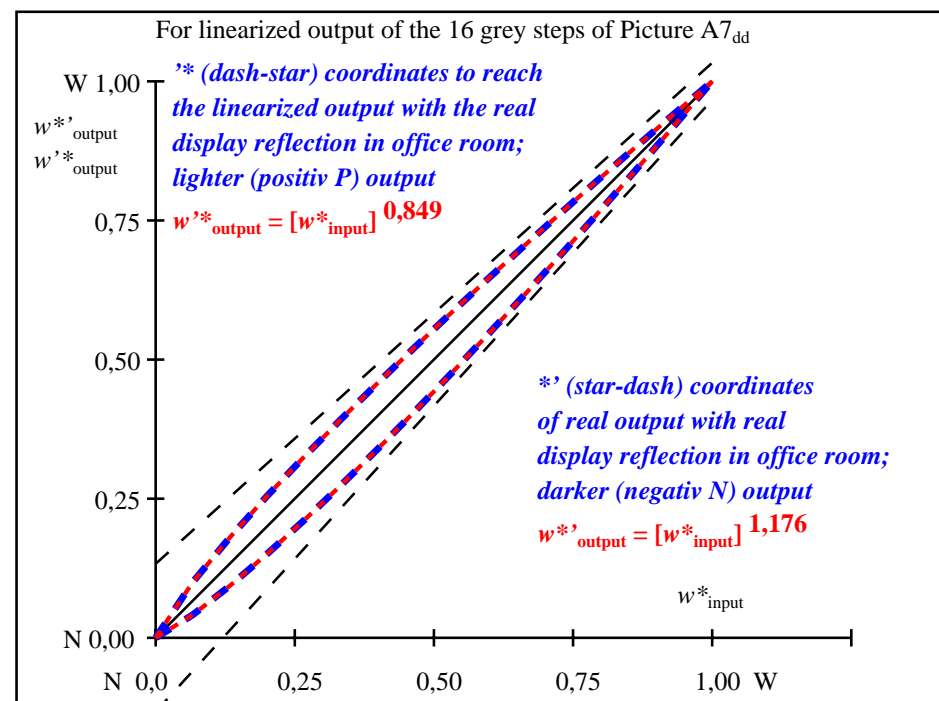
**Mean lightness difference**  
**(16 steps)**  
 $\Delta E^*_{CIELAB} = 6,0$

**Mean lightness difference**  
**(5 steps)**  
 $\Delta L^*_{CIELAB} = 4,7$

**Mean colour reproduction index:  $R^*_{ab,m} = 73,7$**

part 1,

AE090-3dd: 010162



part 2,

AE091-3dd: 010162

$L^*/Y_{intended}$ (absolute)	10,9/1,2	16,6/2,2	22,2/3,5	27,8/5,4	33,5/7,7	39,1/10,7	44,7/14,3	50,3/18,7	56,0/23,9	61,6/29,9	67,2/36,9	72,8/45,0	78,5/54,1	84,1/64,3	89,7/75,8	95,4/88,5
0 0 0 n*																
setcmyk																
gN=1,176																
No. and																
Hex code																
$w^* = l^*_{CIELAB, r}$ (relative)																
$w^*_{intended}$	0,000	0,067	0,133	0,200	0,267	0,333	0,400	0,467	0,533	0,600	0,667	0,733	0,800	0,867	0,933	1,000
$w^*_{output}$	0,000	0,041	0,093	0,150	0,211	0,274	0,340	0,408	0,476	0,548	0,620	0,693	0,769	0,845	0,921	1,000

part 3, picture A7<sub>dd</sub>: 16 visual equidistant  $L^*$ -grey steps; PS operator: 0 0 0 n\* setcmykcolor

AE090-7dd: 010162

In-out: Test chart AE09 according to ISO 9241-306  
Viewing  $Y$  contrast  $Y_W:Y_N=88,9:1,25$ ;  $Y_N$ -range 0,93 to <1,87

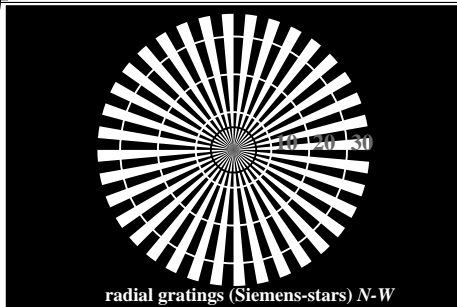
input:  $rgb/cmy0/000n/w$  set...  
output:  $->rgb_{dd}$  setrgbcOLOR

TUB Registration: 20190301-AE09/AE09L0FA.TXT /.PS  
application for measurement or viewing of display and print output

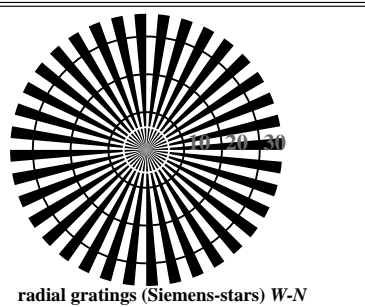
TUB material: code=th4ta

see similar files: <http://farbe.li.tu-berlin.de/AE09/AE09F0NX.PDF> /PS; 3D-linearization, page 10/24  
technical information: <http://farbe.li.tu-berlin.de/> or <http://farbe.li.tu-berlin.de/AE.HTM>

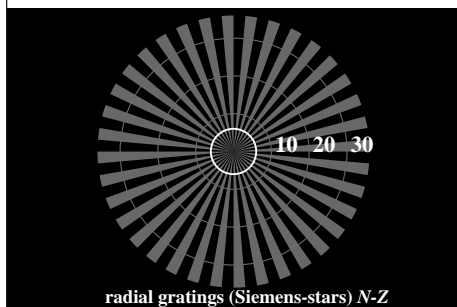
TUB Registration: 20190301-AE09/AE09L0FA.TXT /.PS  
application for measurement or viewing of display and print output  
TUB material: code=th4ta



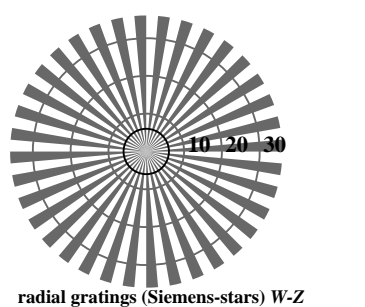
radial gratings (Siemens-stars) N-W



radial gratings (Siemens-stars) W-N

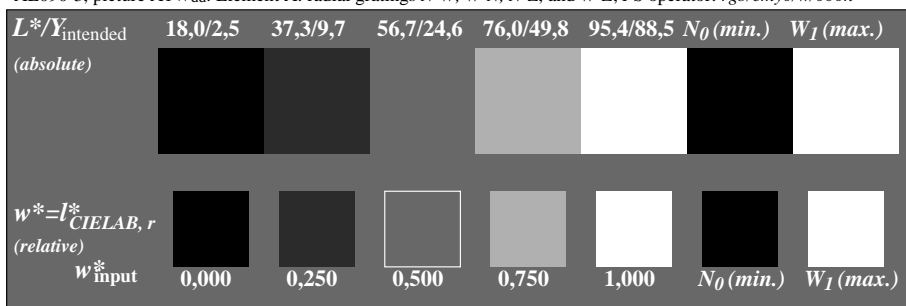


radial gratings (Siemens-stars) N-Z

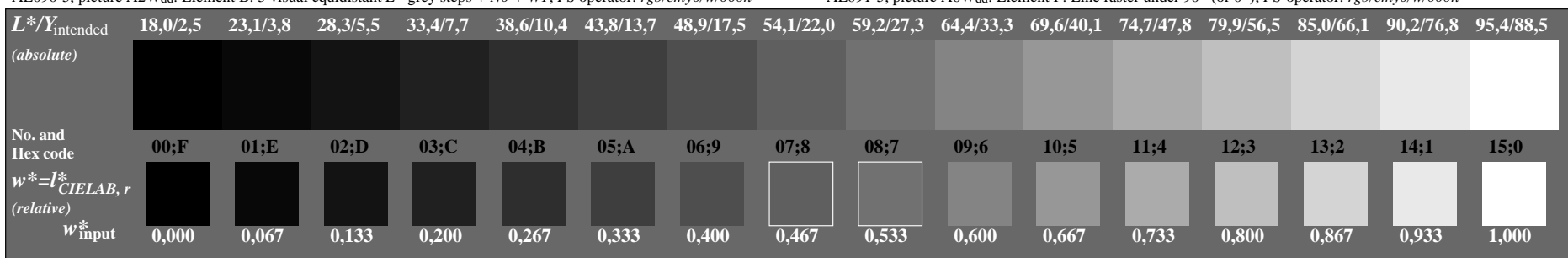


radial gratings (Siemens-stars) W-Z

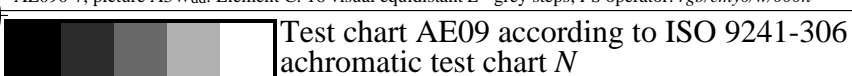
AE090-3, picture A1Wdd: Element A: radial gratings N-W, W-N, N-Z, and W-Z; PS operator: *rgb/cmy0/w/000n*



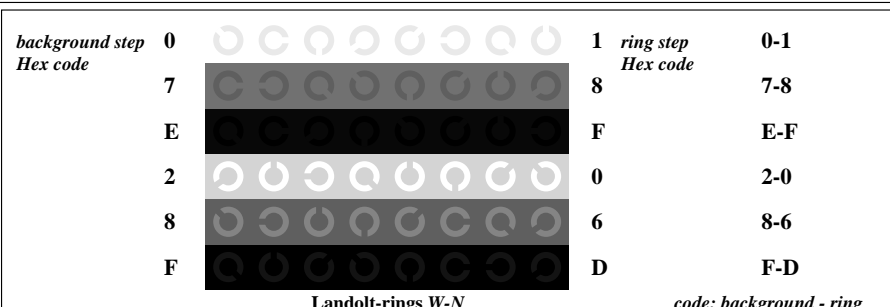
AE090-5, picture A2Wdd: Element B: 5 visual equidistant  $L^*$ -grey steps +  $N_0$  +  $W_1$ ; PS operator: *rgb/cmy0/w/000n*



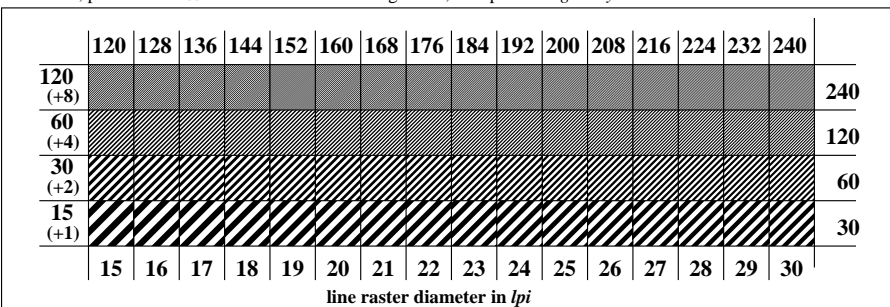
AE090-7, picture A3Wdd: Element C: 16 visual equidistant  $L^*$ -grey steps; PS operator: *rgb/cmy0/w/000n*



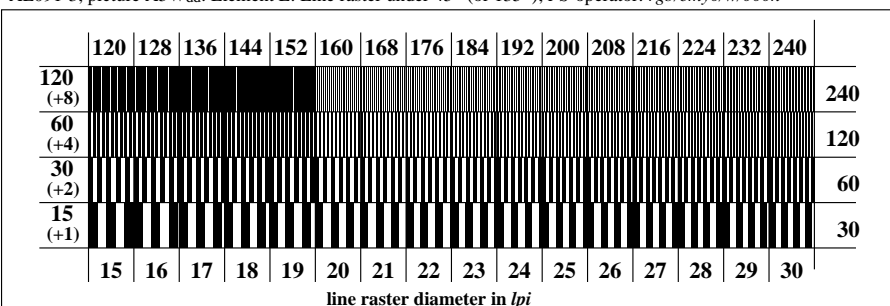
Test chart AE09 according to ISO 9241-306  
achromatic test chart N



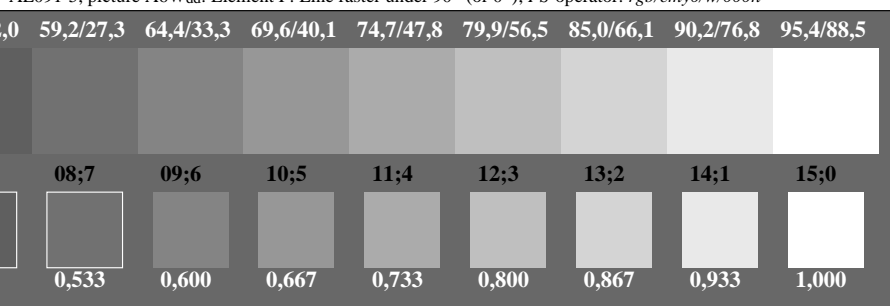
AE091-1, picture A4Wdd: Element D: Landolt-rings W-N; PS operator: *rgb/cmy0/w/000n*



AE091-3, picture A5Wdd: Element E: Line raster under 45° (or 135°); PS operator: *rgb/cmy0/w/000n*



AE091-5, picture A6Wdd: Element F: Line raster under 90° (or 0°); PS operator: *rgb/cmy0/w/000n*



input: *rgb/cmy0/000n/w set...*  
output: *->rgb<sub>dd</sub> setrgbcolor*



see similar files: [http://farbe.li.tu-berlin.de/AE09/AE09F0PX\\_CYN5\\_1.PDF](http://farbe.li.tu-berlin.de/AE09/AE09F0PX_CYN5_1.PDF)  
technical information: <http://farbe.li.tu-berlin.de/> or <http://farbe.li.tu-berlin.de/AE09/AE09F0NX.PDF>

**Test of visual linearized output of pictures A1W<sub>dd</sub> to A3W<sub>dd</sub>** please underline **Yes/No**  
**Output test with computer display ( ) or the external display ( )** please mark by (x)!

**Test of the radial grating according to picture A1W<sub>dd</sub>**

N-W-radial grating: Is the resolution diameter < 6 mm? **Yes/No**  
Test with magnifying glass (e.g. 6x) resolution diameter ..... mm

W-N-radial grating: Is the resolution diameter < 6 mm? **Yes/No**  
Test with magnifying glass (e.g. 6x) resolution diameter ..... mm

N-Z-radial grating: Is the resolution diameter < 6 mm? **Yes/No**  
Test with magnifying glass (e.g. 6x) resolution diameter ..... mm

W-Z-radial grating: Is the resolution diameter < 6 mm? **Yes/No**  
Test with magnifying glass (e.g. 6x) resolution diameter ..... mm

**Test of 5 visual equidistant L\*-grey steps according to picture A2W<sub>dd</sub>**  
Are the 5 steps on the upper rows distinguishable? **Yes/No**  
If No: How many steps can be distinguished? ..... Steps  
of the given 5 steps:

**Test of 16 visual equidistant L\*-grey steps according to picture A3W<sub>dd</sub>**  
Are the 16 steps on the upper rows distinguishable? **Yes/No**  
If No: How many steps can be distinguished? ..... Steps  
of the given 16 steps:

part 1, AE090-3dd: 010241

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

**PDF file:** [http://farbe.li.tu-berlin.de/AE09/AE09F0PX\\_CYN5\\_1.PDF](http://farbe.li.tu-berlin.de/AE09/AE09F0PX_CYN5_1.PDF) **underline: Yes/No**  
**PS file:** [http://farbe.li.tu-berlin.de/AE09/AE09F0PX\\_CYN5\\_1.PS](http://farbe.li.tu-berlin.de/AE09/AE09F0PX_CYN5_1.PS) **underline: Yes/No**

**Used computer operating system:**

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

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

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

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

**For output with PDF file AE09F0PX\_CYN5\_1.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 output with PS file AE09F0PX\_CYN5\_1.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)

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

part 3, AE090-7dd: 010241

Form A: Test chart AE09 according to ISO 9241-306  
achromatic test chart N

**Test of visual linearized output of pictures A4W<sub>dd</sub> to A6W<sub>dd</sub>** please underline **Yes/No**  
**Output test with computer display ( ) or the external display ( )** please mark by (x)!

**Test of Landolt rings N-W according to picture A4W<sub>dd</sub>**

Is the recognition frequency of the Landolt rings > 50% (5 of 8 at least)?

**background - ring**

0 - 1	<b>Yes/No</b>
7 - 8	<b>Yes/No</b>
E - F	<b>Yes/No</b>
2 - 0	<b>Yes/No</b>
8 - 6	<b>Yes/No</b>
F - D	<b>Yes/No</b>

**Test of the radial grating under 45° according to picture A5W<sub>dd</sub>**

Can equally spaced lines be seen?

Visual testing: for radial diameter from 15 to 60 lpi

Test with magnifying glass (e.g. 6x) - from 15 to ..... lpi

**Test of the radial grating under 90° according to picture A6W<sub>dd</sub>**

Can equally spaced lines be seen?

Visual testing: for radial diameter from 15 to 60 lpi

Test with magnifying glass (e.g. 6x) - from 15 to ..... lpi

part 2, AE091-3dd: 010241

**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)

**PDF file:** [http://farbe.li.tu-berlin.de/AE09/AE09F0PX\\_CYN5\\_3.PDF](http://farbe.li.tu-berlin.de/AE09/AE09F0PX_CYN5_3.PDF)

**PS file:** [http://farbe.li.tu-berlin.de/AE09/AE09F0PX\\_CYN5\\_3.PS](http://farbe.li.tu-berlin.de/AE09/AE09F0PX_CYN5_3.PS)

**picture A7<sub>dd</sub> 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

*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://farbe.li.tu-berlin.de/AE09/AE09F0PX\\_CYN5\\_3.PDF](http://farbe.li.tu-berlin.de/AE09/AE09F0PX_CYN5_3.PDF)

**picture A7<sub>dd</sub>**

**PS file:** [http://farbe.li.tu-berlin.de/AE09/AE09F0PX\\_CYN5\\_3.PS](http://farbe.li.tu-berlin.de/AE09/AE09F0PX_CYN5_3.PS)

**picture A7<sub>dd</sub>**

**colour measurement and specification for:**

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

If No, please give other parameters: .....

**Colorimetric specification for 17 step colours of** <http://farbe.li.tu-berlin.de/OE70/OE70L1NP.PDF>

Exchange of CIELAB data in file <http://farbe.li.tu-berlin.de/AE82/AE82L0NP.TXT> and transfer

of the PS file AE82L0NP.PS (= .TXT) to the PDF-file AE82L0NP.PDF

If No, please describe other method: .....

part 4,

AE091-7dd: 010241

input: *rgb/cmy0/000n/w set...*  
output: *->rgb<sub>dd</sub> setrgbcolor*

TUB Registration: 20190301-AE09/AE09L0FA.TXT /.PS  
application for measurement or viewing of display and print output

TUB material: code=th4ta

see similar files: <http://farbe.li.tu-berlin.de/AE09/AE09F0NX.PDF> / .PS; 3D-linearization, page 12/24  
technical information: <http://farbe.li.tu-berlin.de/AE09/AE09LF0NX.PDF> / .PS in file (F)

TUB Registration: 20190301-AE09/AE09L0FA.TXT /.PS  
application for measurement or viewing of display and print output  
TUB material: code=rh4ta

i	LAB <sup>*</sup> <sub>ref</sub>	L <sup>*</sup> <sub>out</sub>	LAB <sup>*</sup> <sub>out</sub>	LAB <sup>*</sup> <sub>out-ref</sub>	ΔE <sup>*</sup>	Start output S1
1	18,00 0,00 0,00	0,00	18,00 0,00 0,00	0,00 0,00 0,00	0,01	Specification according to
2	23,16 0,00 0,00	0,01	19,20 0,00 0,00	-3, 0,00 0,00	3,96	ISO/IEC 15775 Annex G
3	28,32 0,00 0,00	0,04	21,48 0,00 0,00	-6, 0,00 0,00	6,84	and DIN 33866-1 Annex G
4	33,48 0,00 0,00	0,08	24,50 0,00 0,00	-8, 0,00 0,00	8,98	
5	38,64 0,00 0,00	0,13	28,11 0,00 0,00	-10, 0,00 0,00	10,53	
6	43,80 0,00 0,00	0,18	32,26 0,00 0,00	-11, 0,00 0,00	11,54	
7	48,96 0,00 0,00	0,24	36,88 0,00 0,00	-12, 0,00 0,00	12,08	
8	54,12 0,00 0,00	0,30	41,94 0,00 0,00	-12, 0,00 0,00	12,18	
9	59,28 0,00 0,00	0,37	47,40 0,00 0,00	-11, 0,00 0,00	11,88	
10	64,44 0,00 0,00	0,45	53,25 0,00 0,00	-11, 0,00 0,00	11,19	
11	69,60 0,00 0,00	0,53	59,46 0,00 0,00	-10, 0,00 0,00	10,14	
12	74,76 0,00 0,00	0,62	66,01 0,00 0,00	-8, 0,00 0,00	8,75	
13	79,92 0,00 0,00	0,70	72,90 0,00 0,00	-7, 0,00 0,00	7,02	
14	85,08 0,00 0,00	0,80	80,10 0,00 0,00	-4, 0,00 0,00	4,98	
15	90,24 0,00 0,00	0,89	87,60 0,00 0,00	-2, 0,00 0,00	2,64	
16	95,41 0,00 0,00	1,00	95,41 0,00 0,00	0,00 0,00 0,00	0,01	
17	18,00 0,00 0,00	0,00	18,00 0,00 0,00	0,00 0,00 0,00	0,01	
18	37,35 0,00 0,00	0,11	27,16 0,00 0,00	-10, 0,00 0,00	10,19	
19	56,70 0,00 0,00	0,34	44,62 0,00 0,00	-12, 0,00 0,00	12,08	
20	76,05 0,00 0,00	0,64	67,70 0,00 0,00	-8, 0,00 0,00	8,35	
21	95,41 0,00 0,00	1,00	95,41 0,00 0,00	0,00 0,00 0,00	0,01	

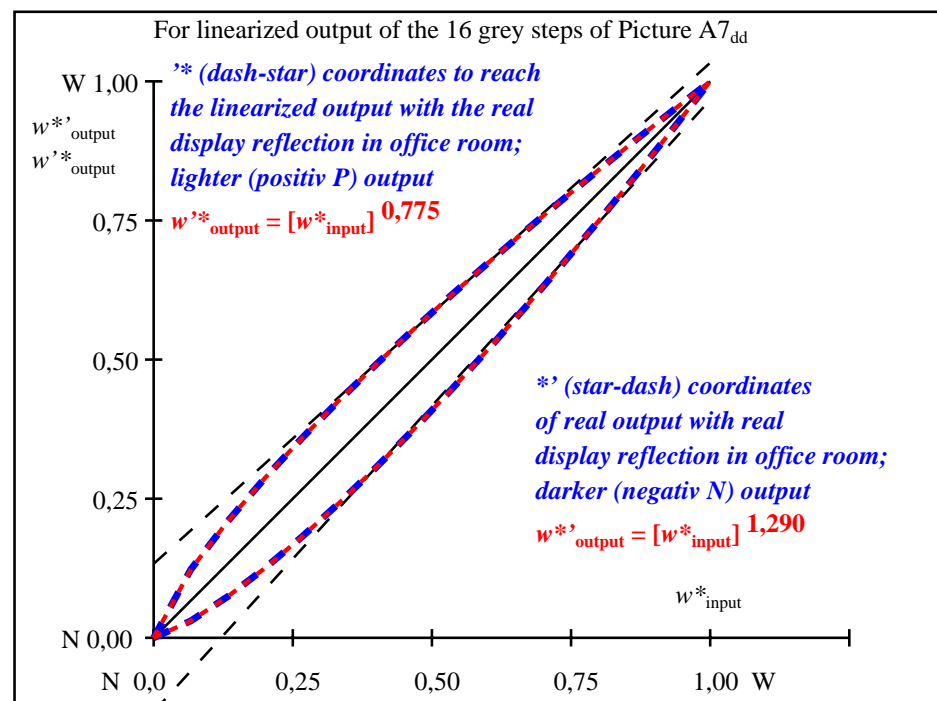
Mean lightness difference (16 steps)  
ΔE<sup>\*</sup><sub>CIELAB</sub> = 7,6

Mean lightness difference (5 steps)  
ΔL<sup>\*</sup><sub>CIELAB</sub> = 6,1

Mean colour reproduction index: R<sup>\*</sup><sub>ab,m</sub> = 66,3

part 1,

AE090-3dd: 010242



part 2,

AE091-3dd: 010242

L <sup>*</sup> /Y <sub>intended</sub> (absolute)	18,0/2,5	23,1/3,8	28,3/5,5	33,4/7,7	38,6/10,4	43,8/13,7	48,9/17,5	54,1/22,0	59,2/27,3	64,4/33,3	69,6/40,1	74,7/47,9	79,9/56,5	85,0/66,1	90,2/76,8	95,4/88,5
0 0 0 n <sup>*</sup> setcmyk																
gN=1,290																
No. and Hex code	00;F	01;E	02;D	03;C	04;B	05;A	06;9	07;8	08;7	09;6	10;5	11;4	12;3	13;2	14;1	15;0
w <sup>*</sup> =l <sup>*</sup> <sub>CIELAB, r</sub> (relative)																
w <sup>*</sup> <sub>intended</sub>	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 <sup>*</sup> <sub>output</sub>	0,000	0,030	0,074	0,125	0,181	0,241	0,306	0,374	0,444	0,517	0,593	0,669	0,749	0,831	0,914	1,000

part 3, picture A7<sub>dd</sub>: 16 visual equidistant L<sup>\*</sup>-grey steps; PS operator: 0 0 0 n<sup>\*</sup> setcmykcolor

AE090-7dd: 010242

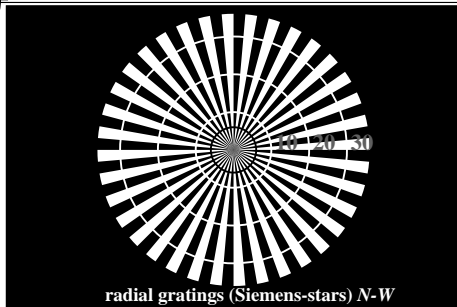
In-out: Test chart AE09 according to ISO 9241-306  
Viewing Y contrast Y<sub>W</sub>:Y<sub>N</sub>=88,9:2,5; Y<sub>N</sub>-range 1,87 to <3,75

input: rgb/cmy0/000n/w set...  
output: ->rgb<sub>dd</sub> setrgbcolor

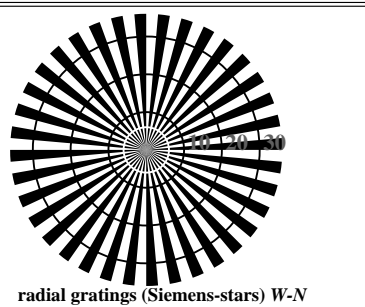


see similar files: <http://farbe.li.tu-berlin.de/AE09/AE09F0NX.PDF> /PS; 3D-linearization, page 13/24  
technical information: <http://farbe.li.tu-berlin.de/> or <http://farbe.li.tu-berlin.de/AE.HTM>

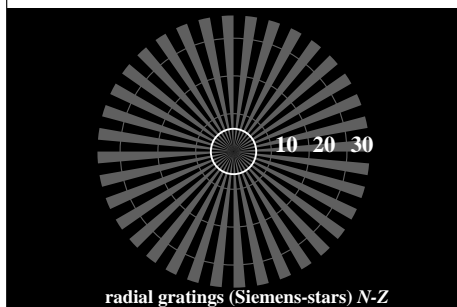
TUB Registration: 20190301-AE09/AE09L0FA.TXT /.PS  
application for measurement or viewing of display and print output  
TUB material: code=th4ta



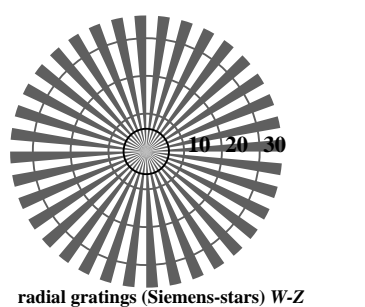
radial gratings (Siemens-stars) N-W



radial gratings (Siemens-stars) W-N

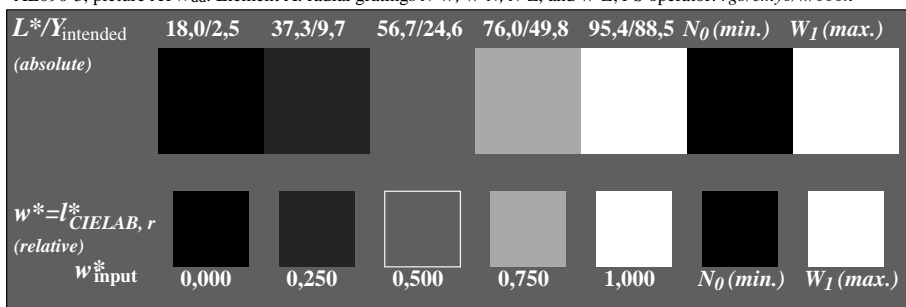


radial gratings (Siemens-stars) N-Z

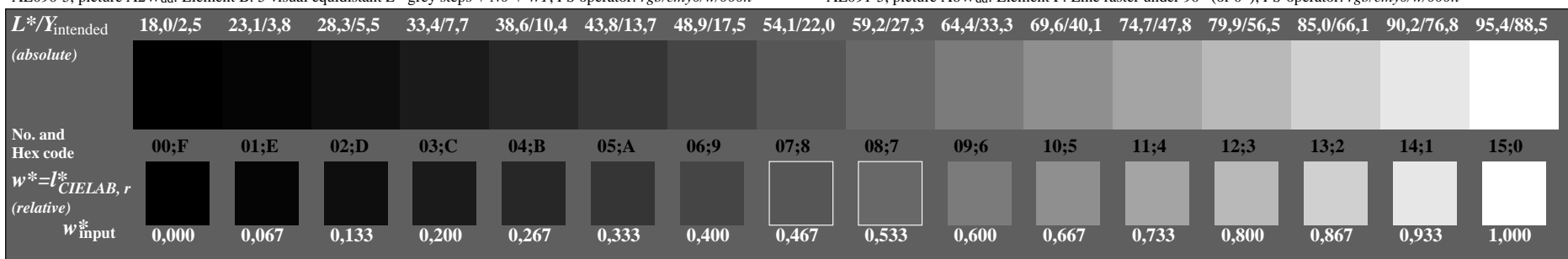


radial gratings (Siemens-stars) W-Z

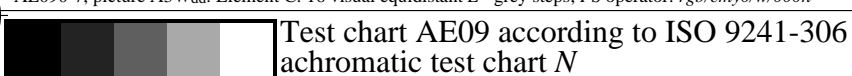
AE090-3, picture A1Wdd: Element A: radial gratings N-W, W-N, N-Z, and W-Z; PS operator: *rgb/cmy0/w/000n*



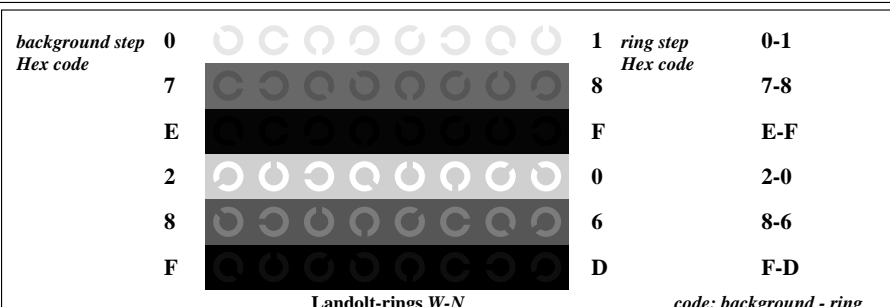
AE090-5, picture A2Wdd: Element B: 5 visual equidistant  $L^*$ -grey steps +  $N_0$  +  $W_1$ ; PS operator: *rgb/cmy0/w/000n*



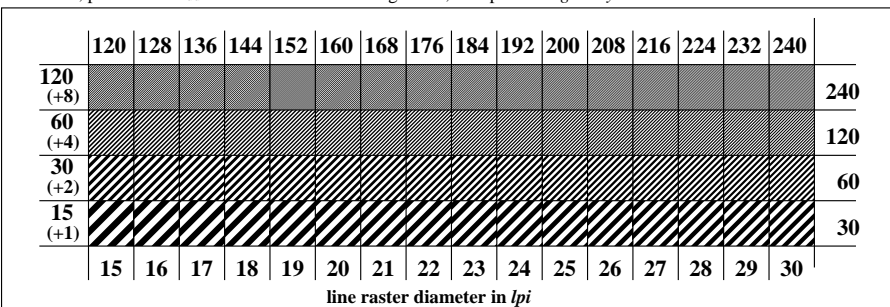
AE090-7, picture A3Wdd: Element C: 16 visual equidistant  $L^*$ -grey steps; PS operator: *rgb/cmy0/w/000n*



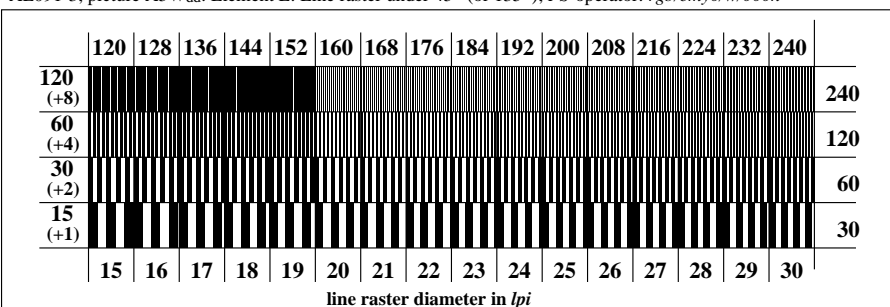
Test chart AE09 according to ISO 9241-306  
achromatic test chart N



AE091-1, picture A4Wdd: Element D: Landolt-rings W-N; PS operator: *rgb/cmy0/w/000n*

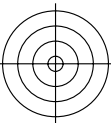


AE091-3, picture A5Wdd: Element E: Line raster under 45° (or 135°); PS operator: *rgb/cmy0/w/000n*

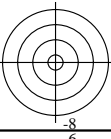


AE091-5, picture A6Wdd: Element F: Line raster under 90° (or 0°); PS operator: *rgb/cmy0/w/000n*

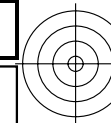
input: *rgb/cmy0/000n/w set...*  
output: *->rgb<sub>dd</sub> setrgbcolor*



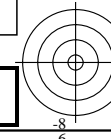
see similar files: <http://farbe.li.tu-berlin.de/AE09/AE09F0NX.PDF> /PS; 3D-linearization, page 14/24  
 technical information: <http://farbe.li.tu-berlin.de/> or <http://farbe.li.tu-berlin.de/AE09/AE09F0NX.PDF> /PS in file (F)



<http://farbe.li.tu-berlin.de/AE09/AE09F0NX.PDF> /PS; 3D-linearization, page 14/24  
 F: 3D-linearization AE09/AE09LF0NX.PDF /PS in file (F)



TUB Registration: 20190301-AE09/AE09L0FA.TXT /PS  
 application for measurement or viewing of display and print output  
 TUB material: code=th4ta



**Test of visual linearized output of pictures A1W<sub>dd</sub> to A3W<sub>dd</sub>** please underline **Yes/No**  
**Output test with computer display ( ) or the external display ( )** please mark by (x)!

**Test of the radial grating according to picture A1W<sub>dd</sub>**

N-W-radial grating: Is the resolution diameter < 6 mm? **Yes/No**  
 Test with magnifying glass (e.g. 6x) resolution diameter ..... mm

W-N-radial grating: Is the resolution diameter < 6 mm? **Yes/No**  
 Test with magnifying glass (e.g. 6x) resolution diameter ..... mm

N-Z-radial grating: Is the resolution diameter < 6 mm? **Yes/No**  
 Test with magnifying glass (e.g. 6x) resolution diameter ..... mm

W-Z-radial grating: Is the resolution diameter < 6 mm? **Yes/No**  
 Test with magnifying glass (e.g. 6x) resolution diameter ..... mm

**Test of 5 visual equidistant L\*-grey steps according to picture A2W<sub>dd</sub>**  
 Are the 5 steps on the upper rows distinguishable? **Yes/No**  
 If No: How many steps can be distinguished? ..... Steps  
 of the given 5 steps:

**Test of 16 visual equidistant L\*-grey steps according to picture A3W<sub>dd</sub>**  
 Are the 16 steps on the upper rows distinguishable? **Yes/No**  
 If No: How many steps can be distinguished? ..... Steps  
 of the given 16 steps:

part 1, AE090-3dd: 010321

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

**PDF file:** [http://farbe.li.tu-berlin.de/AE09/AE09F0PX\\_CYN4\\_1.PDF](http://farbe.li.tu-berlin.de/AE09/AE09F0PX_CYN4_1.PDF) **underline: Yes/No**  
**PS file:** [http://farbe.li.tu-berlin.de/AE09/AE09F0PX\\_CYN4\\_1.PS](http://farbe.li.tu-berlin.de/AE09/AE09F0PX_CYN4_1.PS) **underline: Yes/No**

**Used computer operating system:**  
 either one of Windows/Mac/Unix/other and version:.....

**This evaluation is for the output:** **underline: monitor/data projector/printer**  
 Device model, driver and version:.....

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

**For output with PDF file AE09F0PX\_CYN4\_1.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 output with PS file AE09F0PX\_CYN4\_1.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)  
 .....  
 .....  
 .....

part 3, AE090-7dd: 010321

Form A: Test chart AE09 according to ISO 9241-306  
 achromatic test chart N

**Test of visual linearized output of pictures A4W<sub>dd</sub> to A6W<sub>dd</sub>** please underline **Yes/No**  
**Output test with computer display ( ) or the external display ( )** please mark by (x)!

**Test of Landolt rings N-W according to picture A4W<sub>dd</sub>**  
 Is the recognition frequency of the Landolt rings > 50% (5 of 8 at least)?

<b>background - ring</b>	
0 - 1	<b>Yes/No</b>
7 - 8	<b>Yes/No</b>
E - F	<b>Yes/No</b>
2 - 0	<b>Yes/No</b>
8 - 6	<b>Yes/No</b>
F - D	<b>Yes/No</b>

**Test of the radial grating under 45° according to picture A5W<sub>dd</sub>**  
 Can equally spaced lines be seen? **Yes/No**  
 Visual testing: for radial diameter from 15 to 60 lpi ..... lpi  
 Test with magnifying glass (e.g. 6x) - from 15 to

**Test of the radial grating under 90° according to picture A6W<sub>dd</sub>**  
 Can equally spaced lines be seen? **Yes/No**  
 Visual testing: for radial diameter from 15 to 60 lpi ..... lpi  
 Test with magnifying glass (e.g. 6x) - from 15 to

part 2, AE091-3dd: 010321

**Documentation of assessor colour-vision properties for visual assessment**

The assessor has **normal** colour vision according to one test: **underline: Yes/No**  
 either according to DIN 6160:1996 with Anomaloskop of Nagel **underline: Yes/unknown**  
 or with test charts using colour points according to Ishihara **underline: Yes/unknown**  
 or tested with, please specify: ..... **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://farbe.li.tu-berlin.de/AE09/AE09F0PX\\_CYN4\\_3.PDF](http://farbe.li.tu-berlin.de/AE09/AE09F0PX_CYN4_3.PDF) **underline: Yes/No**  
**PS file:** [http://farbe.li.tu-berlin.de/AE09/AE09F0PX\\_CYN4\\_3.PS](http://farbe.li.tu-berlin.de/AE09/AE09F0PX_CYN4_3.PS) **underline: Yes/No**

**picture A7<sub>dd</sub> 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: Yes/No**  
 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://farbe.li.tu-berlin.de/AE09/AE09F0PX\\_CYN4\\_3.PDF](http://farbe.li.tu-berlin.de/AE09/AE09F0PX_CYN4_3.PDF) **underline: Yes/No**  
**PS file:** [http://farbe.li.tu-berlin.de/AE09/AE09F0PX\\_CYN4\\_3.PS](http://farbe.li.tu-berlin.de/AE09/AE09F0PX_CYN4_3.PS) **underline: Yes/No**  
**picture A7<sub>dd</sub>** **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 for 17 step colours of** <http://farbe.li.tu-berlin.de/OE70/OE70L1NP.PDF>  
 Exchange of CIELAB data in file <http://farbe.li.tu-berlin.de/AE82/AE82L0NP.TXT> and transfer  
 of the PS file AE82L0NP.PS (= .TXT) to the PDF-file AE82L0NP.PDF **underline: Yes/No**  
 If No, please describe other method: .....

part 4, AE091-7dd: 010321

input: *rgb/cmy0/000n/w set...*  
 output: *->rgb<sub>dd</sub> setrgbcolor*



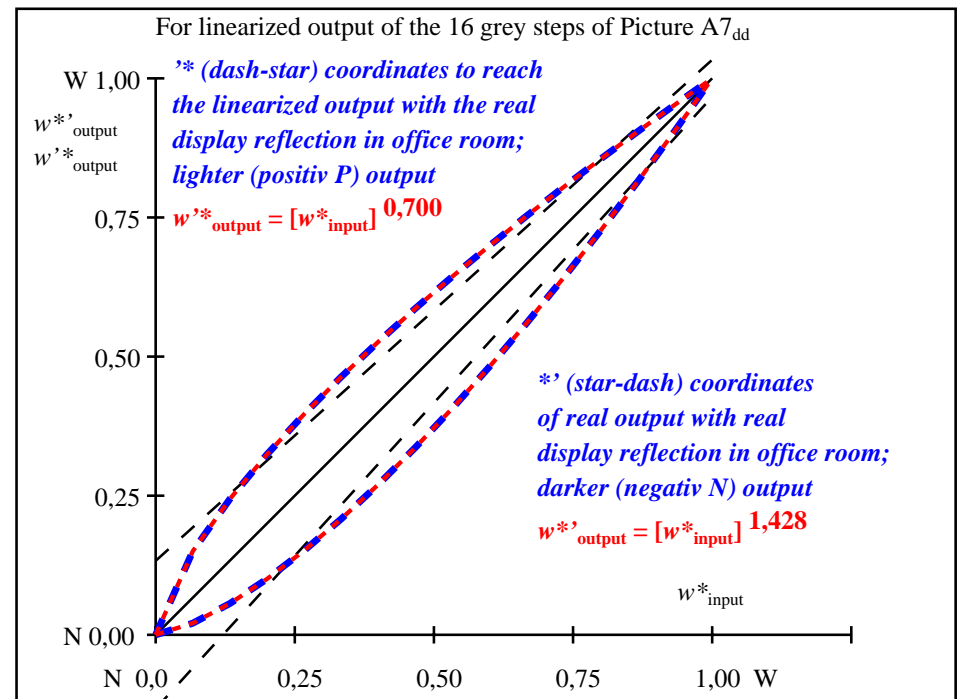
see similar files: <http://farbe.li.tu-berlin.de/AE09/AE09.HTM>  
technical information: <http://farbe.li.tu-berlin.de/> or <http://farbe.li.tu-berlin.de/AE.HTM>

TUB Registration: 20190301-AE09/AE09L0FA.TXT /.PS  
application for measurement or viewing of display and print output  
TUB material: code=rh4ta

i	LAB <sup>*</sup> <sub>ref</sub>	L <sup>*</sup> <sub>out</sub>	LAB <sup>*</sup> <sub>out</sub>	LAB <sup>*</sup> <sub>out-ref</sub>	ΔE <sup>*</sup>	Start output S1
1	26,84 0,00 0,00	0,00	26,84 0,00 0,00	0,00 0,00 0,00	0,01	Specification according to
2	31,41 0,00 0,00	0,00	27,49 0,00 0,00	-3, 0,00 0,00	3,92	ISO/IEC 15775 Annex G
3	35,98 0,00 0,00	0,03	28,99 0,00 0,00	-6, 0,00 0,00	6,99	and DIN 33866-1 Annex G
4	40,56 0,00 0,00	0,06	31,15 0,00 0,00	-9, 0,00 0,00	9,40	
5	45,13 0,00 0,00	0,10	33,90 0,00 0,00	-11, 0,00 0,00	11,22	
6	49,70 0,00 0,00	0,15	37,21 0,00 0,00	-12, 0,00 0,00	12,49	
7	54,27 0,00 0,00	0,20	41,02 0,00 0,00	-13, 0,00 0,00	13,24	
8	58,84 0,00 0,00	0,26	45,33 0,00 0,00	-13, 0,00 0,00	13,51	
9	63,41 0,00 0,00	0,33	50,10 0,00 0,00	-13, 0,00 0,00	13,31	
10	67,98 0,00 0,00	0,41	55,32 0,00 0,00	-12, 0,00 0,00	12,65	
11	72,55 0,00 0,00	0,49	60,98 0,00 0,00	-11, 0,00 0,00	11,57	
12	77,12 0,00 0,00	0,58	67,06 0,00 0,00	-10, 0,00 0,00	10,06	
13	81,69 0,00 0,00	0,68	73,55 0,00 0,00	-8, 0,00 0,00	8,14	
14	86,26 0,00 0,00	0,78	80,45 0,00 0,00	-5, 0,00 0,00	5,81	Mean lightness difference
15	90,83 0,00 0,00	0,88	87,73 0,00 0,00	-3, 0,00 0,00	3,10	(16 steps)
16	95,41 0,00 0,00	1,00	95,41 0,00 0,00	0,00 0,00 0,00	0,01	ΔE <sup>*</sup> <sub>CIELAB</sub> = 8,4
17	26,84 0,00 0,00	0,00	26,84 0,00 0,00	0,00 0,00 0,00	0,01	
18	43,98 0,00 0,00	0,09	33,16 0,00 0,00	-10, 0,00 0,00	10,82	
19	61,12 0,00 0,00	0,30	47,66 0,00 0,00	-13, 0,00 0,00	13,46	Mean lightness difference
20	78,26 0,00 0,00	0,60	68,64 0,00 0,00	-9, 0,00 0,00	9,62	(5 steps)
21	95,41 0,00 0,00	1,00	95,41 0,00 0,00	0,00 0,00 0,00	0,01	ΔL <sup>*</sup> <sub>CIELAB</sub> = 6,7
Mean colour reproduction index: R <sup>*</sup> <sub>ab,m</sub> = 62,8						

part 1,

AE090-3dd: 010322



part 2,

AE091-3dd: 010322

L <sup>*</sup> /Y <sub>intended</sub> (absolute)	26,8/5,0	31,4/6,8	35,9/9,0	40,5/11,5	45,1/14,6	49,7/18,1	54,2/22,2	58,8/26,8	63,4/32,0	67,9/37,9	72,5/44,4	77,1/51,7	81,6/59,7	86,2/68,5	90,8/78,1	95,4/88,5
0 0 0 n <sup>*</sup> setcmyk																
g <sub>N</sub> =1,428																
No. and Hex code	00;F	01;E	02;D	03;C	04;B	05;A	06;9	07;8	08;7	09;6	10;5	11;4	12;3	13;2	14;1	15;0
w <sup>*</sup> =l <sup>*</sup> <sub>CIELAB,r</sub> (relative)																
w <sup>*</sup> 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 <sup>*</sup> output	0,000	0,021	0,056	0,100	0,151	0,207	0,270	0,336	0,407	0,482	0,560	0,641	0,727	0,815	0,905	1,000

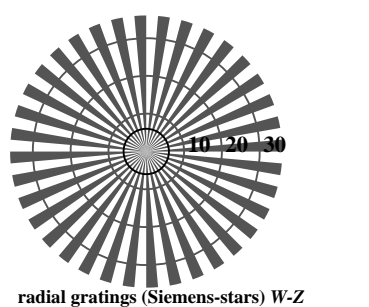
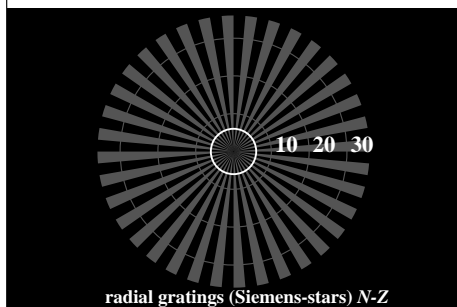
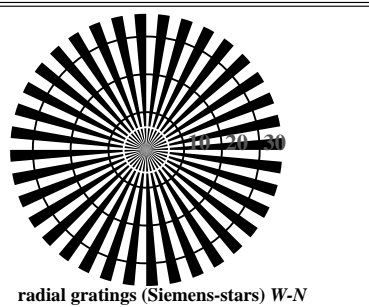
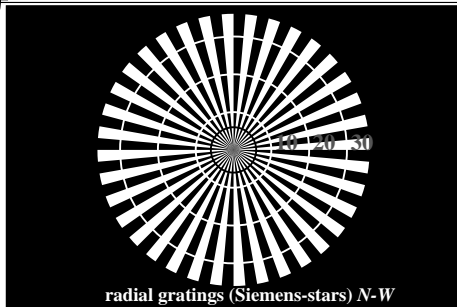
part 3, picture A7<sub>dd</sub>: 16 visual equidistant L<sup>\*</sup>-grey steps; PS operator: 0 0 0 n<sup>\*</sup> setcmykcolor

AE090-7dd: 010322

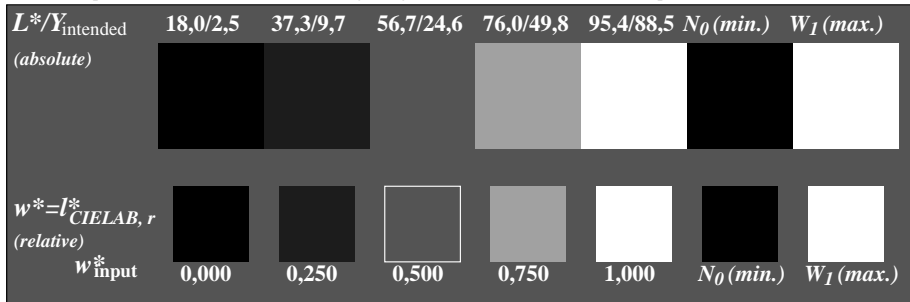
In-out: Test chart AE09 according to ISO 9241-306  
Viewing Y contrast Y<sub>W</sub>:Y<sub>N</sub>=88,9:5; Y<sub>N</sub>-range 3,75 to <7,5

input: rgb/cmy0/000n/w set...  
output: ->rgb<sub>dd</sub> setrgbcolor

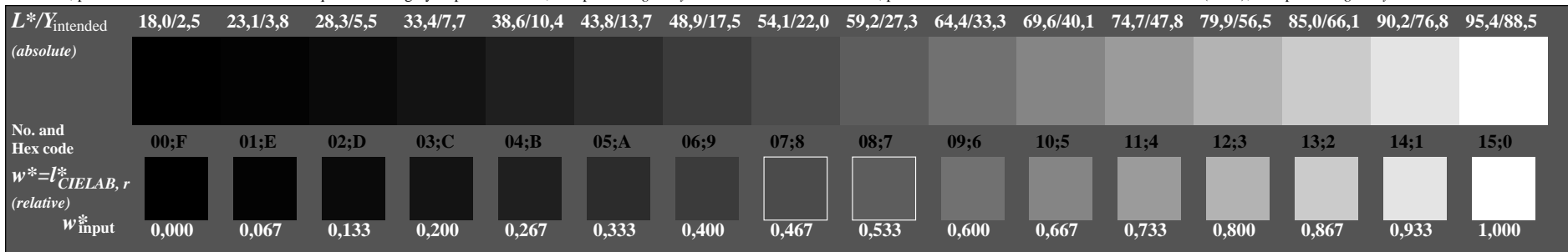
see similar files: <http://farbe.li.tu-berlin.de/AE09/AE09F0NX.PDF> / .PS; 3D-linearization, page 16/24  
technical information: <http://farbe.li.tu-berlin.de/> or <http://farbe.li.tu-berlin.de/AE.HTM>



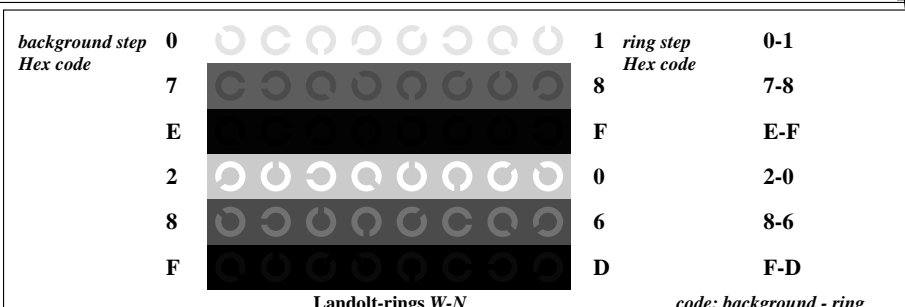
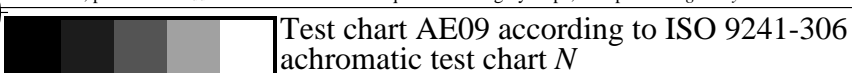
AE090-3, picture A1Wdd: Element A: radial gratings N-W, W-N, N-Z, and W-Z; PS operator: *rgb/cmy0/w/000n*



AE090-5, picture A2Wdd: Element B: 5 visual equidistant  $L^*$ -grey steps +  $N_0$  +  $W_1$ ; PS operator: *rgb/cmy0/w/000n*



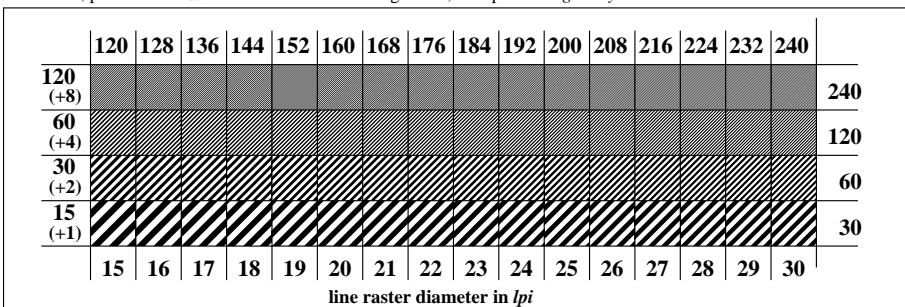
AE090-7, picture A3Wdd: Element C: 16 visual equidistant  $L^*$ -grey steps; PS operator: *rgb/cmy0/w/000n*



Landolt-rings W-N

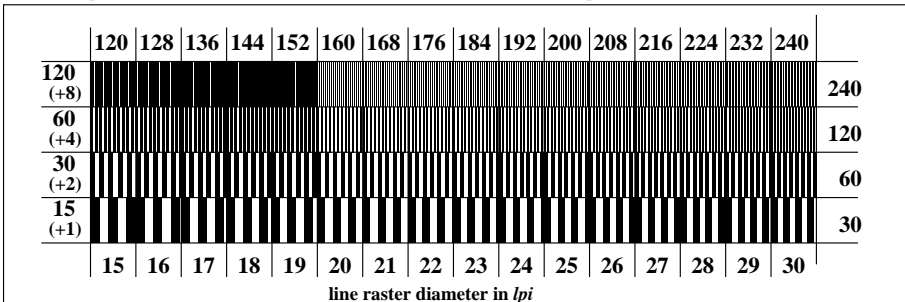
code: background - ring

AE091-1, picture A4Wdd: Element D: Landolt-rings W-N; PS operator: *rgb/cmy0/w/000n*



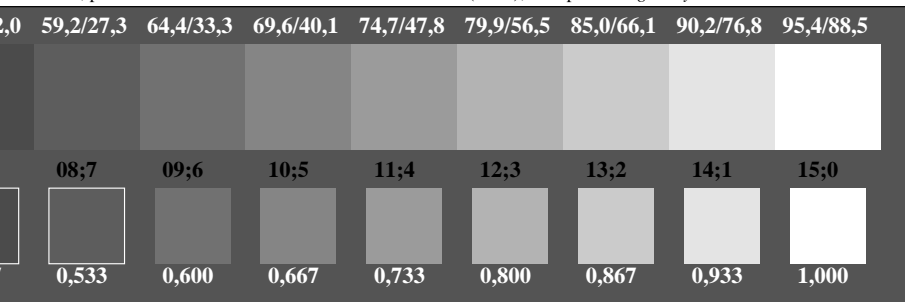
line raster diameter in lpi

AE091-3, picture A5Wdd: Element E: Line raster under 45° (or 135°); PS-operator: *rgb/cmy0/w/000n*



line raster diameter in lpi

AE091-5, picture A6Wdd: Element F: Line raster under 90° (or 0°); PS-operator: *rgb/cmy0/w/000n*

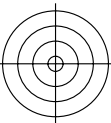


input: *rgb/cmy0/000n/w set...*  
output: *->rgb<sub>dd</sub> setrgbcolor*

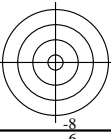
TUB Registration: 20190301-AE09/AE09L0FA.TXT /.PS  
application for measurement or viewing of display and print output

TUB material: code=th4ta





see similar files: <http://farbe.li.tu-berlin.de/AE09/AE09F0NX.PDF> /PS; 3D-linearization, page 17/24  
 technical information: <http://farbe.li.tu-berlin.de/> or [http://farbe.li.tu-berlin.de/AE09/AE09F0PX\\_CYN3\\_1.PDF](http://farbe.li.tu-berlin.de/AE09/AE09F0PX_CYN3_1.PDF)



<http://farbe.li.tu-berlin.de/AE09/AE09F0NX.PDF> /PS; 3D-linearization, page 17/24  
 F: 3D-linearization AE09/AE09LF0NX.PDF /PS in file (F)

**Test of visual linearized output of pictures A1W<sub>dd</sub> to A3W<sub>dd</sub>** please underline **Yes/No**  
**Output test with computer display ( ) or the external display ( )** please mark by (x)!

**Test of the radial grating according to picture A1W<sub>dd</sub>**

N-W-radial grating: Is the resolution diameter < 6 mm? **Yes/No**  
 Test with magnifying glass (e.g. 6x) resolution diameter ..... mm

W-N-radial grating: Is the resolution diameter < 6 mm? **Yes/No**  
 Test with magnifying glass (e.g. 6x) resolution diameter ..... mm

N-Z-radial grating: Is the resolution diameter < 6 mm? **Yes/No**  
 Test with magnifying glass (e.g. 6x) resolution diameter ..... mm

W-Z-radial grating: Is the resolution diameter < 6 mm? **Yes/No**  
 Test with magnifying glass (e.g. 6x) resolution diameter ..... mm

**Test of 5 visual equidistant L\*-grey steps according to picture A2W<sub>dd</sub>**  
 Are the 5 steps on the upper rows distinguishable? **Yes/No**  
 If No: How many steps can be distinguished? ..... Steps  
 of the given 5 steps:

**Test of 16 visual equidistant L\*-grey steps according to picture A3W<sub>dd</sub>**  
 Are the 16 steps on the upper rows distinguishable? **Yes/No**  
 If No: How many steps can be distinguished? ..... Steps  
 of the given 16 steps:

part 1, AE090-3dd: 010401

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

**PDF file:** [http://farbe.li.tu-berlin.de/AE09/AE09F0PX\\_CYN3\\_1.PDF](http://farbe.li.tu-berlin.de/AE09/AE09F0PX_CYN3_1.PDF) **underline: Yes/No**  
**PS file:** [http://farbe.li.tu-berlin.de/AE09/AE09F0PX\\_CYN3\\_1.PS](http://farbe.li.tu-berlin.de/AE09/AE09F0PX_CYN3_1.PS) **underline: Yes/No**

**Used computer operating system:**  
 either one of Windows/Mac/Unix/other and version:.....

**This evaluation is for the output:** **underline: monitor/data projector/printer**  
 Device model, driver and version:.....

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

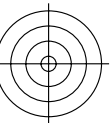
**For output with PDF file AE09F0PX\_CYN3\_1.PDF**  
 either PDF-file transfer "download, copy" to PDF device.....  
 or with computer system interpretation by "Display-PDF":.....  
 or with software e. g. Adobe-Reader/-Acrobat and version:.....  
 or with software e. g. Ghostscript and version:.....

**For output with PS file AE09F0PX\_CYN3\_1.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:.....

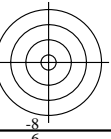
Special remarks: e. g. output of Landscape (L)  
 .....  
 .....  
 .....

part 3, AE090-7dd: 010401

Form A: Test chart AE09 according to ISO 9241-306  
 achromatic test chart N



TUB Registration: 20190301-AE09/AE09L0FA.TXT /PS  
 application for measurement or viewing of display and print output  
 TUB material: code=th4ta



**Test of visual linearized output of pictures A4W<sub>dd</sub> to A6W<sub>dd</sub>** please underline **Yes/No**  
**Output test with computer display ( ) or the external display ( )** please mark by (x)!

**Test of Landolt rings N-W according to picture A4W<sub>dd</sub>**  
 Is the recognition frequency of the Landolt rings > 50% (5 of 8 at least)?

<b>background - ring</b>	<b>Yes/No</b>
0 - 1	<b>Yes/No</b>
7 - 8	<b>Yes/No</b>
E - F	<b>Yes/No</b>
2 - 0	<b>Yes/No</b>
8 - 6	<b>Yes/No</b>
F - D	<b>Yes/No</b>

**Test of the radial grating under 45° according to picture A5W<sub>dd</sub>**  
 Can equally spaced lines be seen? **Yes/No**  
 Visual testing: for radial diameter from 15 to 60 lpi ..... lpi  
 Test with magnifying glass (e.g. 6x) - from 15 to

**Test of the radial grating under 90° according to picture A6W<sub>dd</sub>**  
 Can equally spaced lines be seen? **Yes/No**  
 Visual testing: for radial diameter from 15 to 60 lpi ..... lpi  
 Test with magnifying glass (e.g. 6x) - from 15 to

part 2, AE091-3dd: 010401

**Documentation of assessor colour-vision properties for visual assessment**

The assessor has **normal** colour vision according to one test: **underline: Yes/No**  
 either according to DIN 6160:1996 with Anomaloskop of Nagel **underline: Yes/unknown**  
 or with test charts using colour points according to Ishihara **underline: Yes/unknown**  
 or tested with, please specify: ..... **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://farbe.li.tu-berlin.de/AE09/AE09F0PX\\_CYN3\\_3.PDF](http://farbe.li.tu-berlin.de/AE09/AE09F0PX_CYN3_3.PDF) **underline: Yes/No**  
**PS file:** [http://farbe.li.tu-berlin.de/AE09/AE09F0PX\\_CYN3\\_3.PS](http://farbe.li.tu-berlin.de/AE09/AE09F0PX_CYN3_3.PS) **underline: Yes/No**

**picture A7<sub>dd</sub> 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: Yes/No**  
 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://farbe.li.tu-berlin.de/AE09/AE09F0PX\\_CYN3\\_3.PDF](http://farbe.li.tu-berlin.de/AE09/AE09F0PX_CYN3_3.PDF) **underline: Yes/No**  
**PS file:** [http://farbe.li.tu-berlin.de/AE09/AE09F0PX\\_CYN3\\_3.PS](http://farbe.li.tu-berlin.de/AE09/AE09F0PX_CYN3_3.PS) **underline: Yes/No**  
**picture A7<sub>dd</sub>** **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 for 17 step colours of** <http://farbe.li.tu-berlin.de/OE70/OE70L1NP.PDF>  
 Exchange of CIELAB data in file <http://farbe.li.tu-berlin.de/AE82/AE82L0NP.TXT> and transfer  
 of the PS file AE82L0NP.PS (= .TXT) to the PDF-file AE82L0NP.PDF **underline: Yes/No**  
 If No, please describe other method: .....

part 4, AE091-7dd: 010401

input: *rgb/cmy0/000n/w set...*  
 output: *->rgb<sub>dd</sub> setrgbcolor*

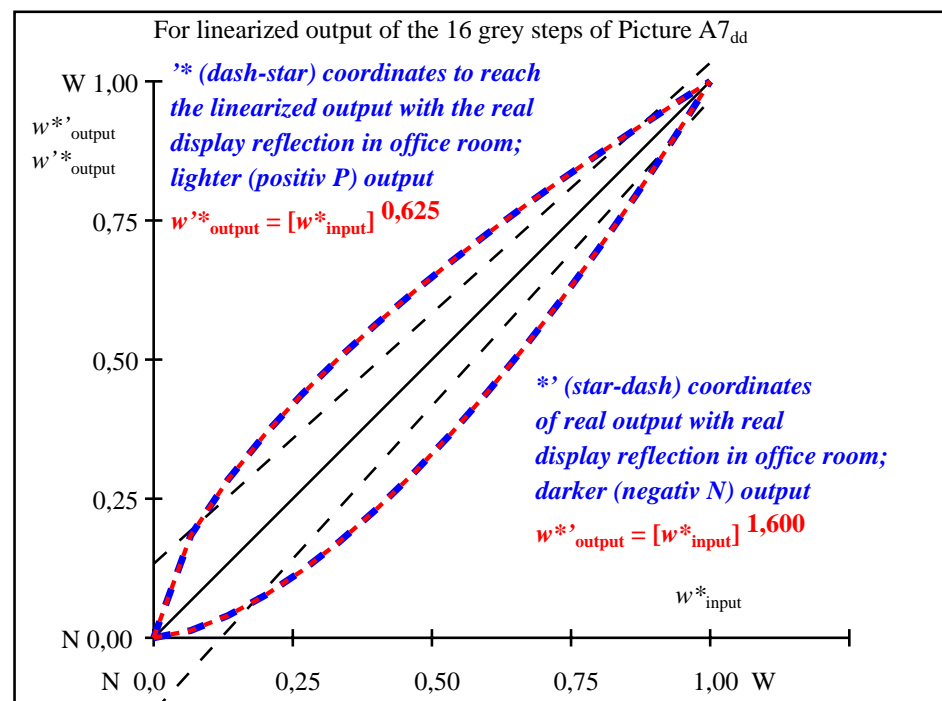
see similar files: <http://farbe.li.tu-berlin.de/AE09/AE09F0NX.PDF> / .PS; 3D-linearization, page 18/24  
technical information: <http://farbe.li.tu-berlin.de/AE09/AE09LF0NX.PDF> / .PS in file (F)

i	LAB <sup>*</sup> <sub>ref</sub>	L <sup>*</sup> <sub>out</sub>	LAB <sup>*</sup> <sub>out</sub>	LAB <sup>*</sup> <sub>out-ref</sub>	ΔE <sup>*</sup>	Start output S1
1	37,98 0,00 0,00	0,00	37,98 0,00 0,00	0,00 0,00 0,00	0,01	Specification according to
2	41,81 0,00 0,00	0,00	38,32 0,00 0,00	-3, 0,00 0,00	3,49	ISO/IEC 15775 Annex G
3	45,64 0,00 0,00	0,02	39,23 0,00 0,00	-6, 0,00 0,00	6,40	and DIN 33866-1 Annex G
4	49,47 0,00 0,00	0,04	40,68 0,00 0,00	-8, 0,00 0,00	8,78	
5	53,29 0,00 0,00	0,08	42,64 0,00 0,00	-10, 0,00 0,00	10,65	
6	57,12 0,00 0,00	0,12	45,10 0,00 0,00	-12, 0,00 0,00	12,02	
7	60,95 0,00 0,00	0,17	48,05 0,00 0,00	-12, 0,00 0,00	12,90	
8	64,78 0,00 0,00	0,23	51,48 0,00 0,00	-13, 0,00 0,00	13,30	
9	68,61 0,00 0,00	0,30	55,37 0,00 0,00	-13, 0,00 0,00	13,23	
10	72,44 0,00 0,00	0,37	59,74 0,00 0,00	-12, 0,00 0,00	12,69	
11	76,26 0,00 0,00	0,46	64,56 0,00 0,00	-11, 0,00 0,00	11,70	
12	80,09 0,00 0,00	0,55	69,83 0,00 0,00	-10, 0,00 0,00	10,25	
13	83,92 0,00 0,00	0,65	75,56 0,00 0,00	-8, 0,00 0,00	8,35	
14	87,75 0,00 0,00	0,76	81,73 0,00 0,00	-6, 0,00 0,00	6,01	Mean lightness difference
15	91,58 0,00 0,00	0,87	88,35 0,00 0,00	-3, 0,00 0,00	3,22	(16 steps)
16	95,41 0,00 0,00	1,00	95,41 0,00 0,00	0,00 0,00 0,00	0,01	ΔE <sup>*</sup> <sub>CIELAB</sub> = 8,3
17	37,98 0,00 0,00	0,00	37,98 0,00 0,00	0,00 0,00 0,00	0,01	
18	52,34 0,00 0,00	0,07	42,10 0,00 0,00	-10, 0,00 0,00	10,23	Mean lightness difference
19	66,69 0,00 0,00	0,26	53,37 0,00 0,00	-13, 0,00 0,00	13,32	(5 steps)
20	81,05 0,00 0,00	0,57	71,22 0,00 0,00	-9, 0,00 0,00	9,82	ΔL <sup>*</sup> <sub>CIELAB</sub> = 6,6
21	95,41 0,00 0,00	1,00	95,41 0,00 0,00	0,00 0,00 0,00	0,01	

Mean colour reproduction index:  $R^*_{ab,m} = 63,5$

part 1,

AE090-3dd: 010402



part 2,

AE091-3dd: 010402

L <sup>*</sup> /Y <sub>intended</sub> (absolute)	37,9/10,0	41,8/12,3	45,6/15,0	49,4/17,9	53,2/21,3	57,1/25,0	60,9/29,1	64,7/33,7	68,6/38,8	72,4/44,3	76,2/50,3	80,0/56,8	83,9/63,9	87,7/71,5	91,5/79,7	95,4/88,5
0 0 0 n <sup>*</sup> setcmyk																
g <sub>N</sub> =1,600																
No. and Hex code	00;F	01;E	02;D	03;C	04;B	05;A	06;9	07;8	08;7	09;6	10;5	11;4	12;3	13;2	14;1	15;0
w <sup>*</sup> =l <sup>*</sup> CIELAB, r (relative)																
w <sup>*</sup> <sub>intended</sub>	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 <sup>*</sup> <sub>output</sub>	0,000	0,013	0,039	0,076	0,120	0,172	0,230	0,295	0,365	0,441	0,523	0,608	0,699	0,795	0,894	1,000

part 3, picture A7<sub>dd</sub>: 16 visual equidistant L<sup>\*</sup>-grey steps; PS operator: 0 0 0 n<sup>\*</sup> setcmykcolor

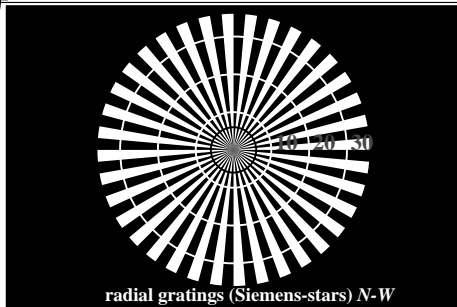
AE090-7dd: 010402

In-out: Test chart AE09 according to ISO 9241-306  
Viewing Y contrast  $Y_W:Y_N=88,9:10$ ;  $Y_N$ -range 7,5 to <15

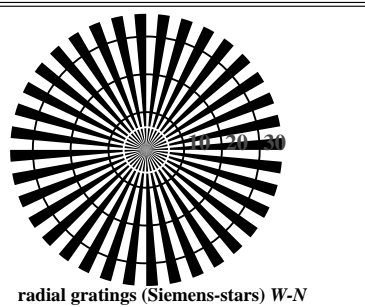
input: *rgb/cmy0/000n/w set...*  
output: *->rgb<sub>dd</sub> setrgbcolor*

TUB Registration: 20190301-AE09/AE09L0FA.TXT /.PS  
application for measurement or viewing of display and print output  
TUB material: code=rh4ta

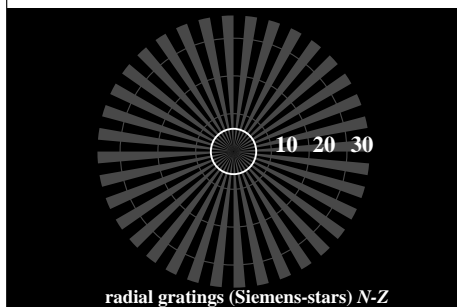
see similar files: <http://farbe.li.tu-berlin.de/AE09/AE09F0NX.PDF> / .PS; 3D-linearization, page 19/24  
technical information: <http://farbe.li.tu-berlin.de/AE09/AE09LF0NX.PDF> / .PS in file (F)



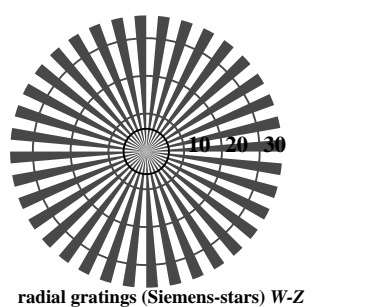
radial gratings (Siemens-stars) N-W



radial gratings (Siemens-stars) W-N

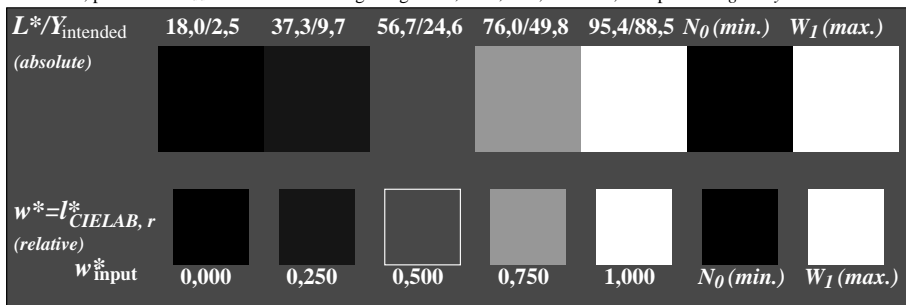


radial gratings (Siemens-stars) N-Z

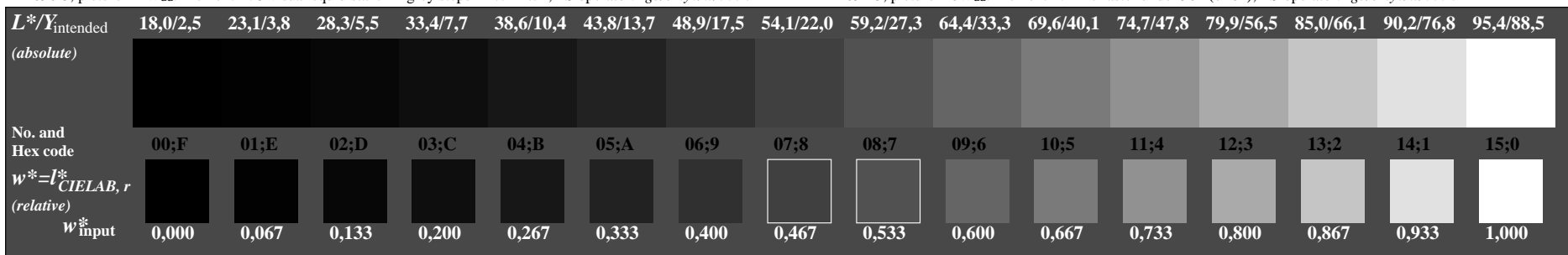


radial gratings (Siemens-stars) W-Z

AE090-3, picture A1Wdd: Element A: radial gratings N-W, W-N, N-Z, and W-Z; PS operator: *rgb/cmy0/w/000n*



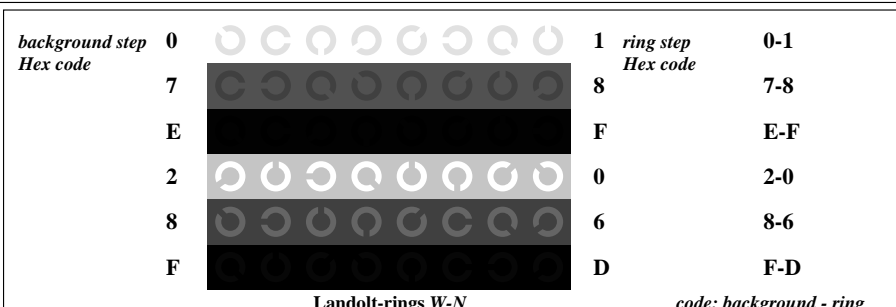
AE090-5, picture A2Wdd: Element B: 5 visual equidistant  $L^*$ -grey steps +  $N_0$  +  $W_1$ ; PS operator: *rgb/cmy0/w/000n*



AE090-7, picture A3Wdd: Element C: 16 visual equidistant  $L^*$ -grey steps; PS operator: *rgb/cmy0/w/000n*



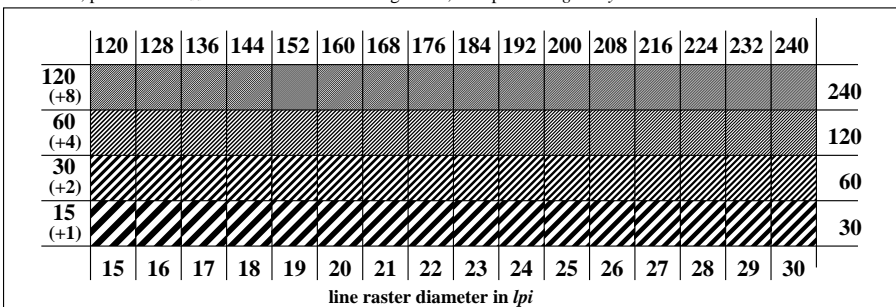
Test chart AE09 according to ISO 9241-306  
achromatic test chart N



Landolt-rings W-N

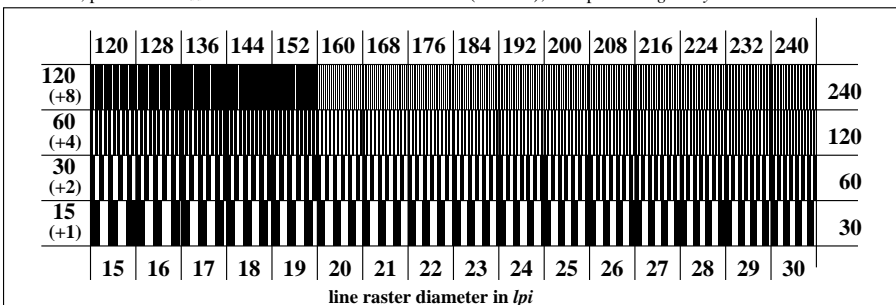
code: background - ring

AE091-1, picture A4Wdd: Element D: Landolt-rings W-N; PS operator: *rgb/cmy0/w/000n*



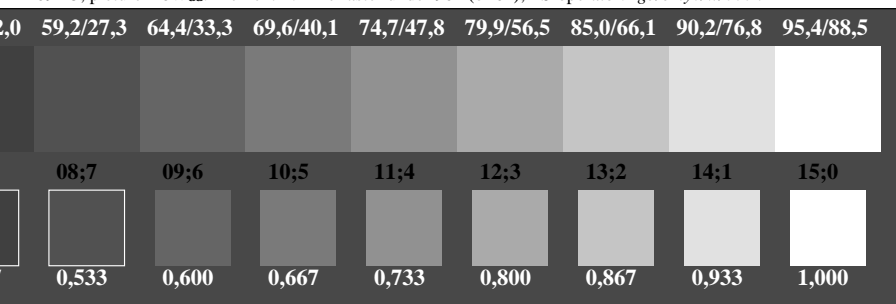
line raster diameter in lpi

AE091-3, picture A5Wdd: Element E: Line raster under 45° (or 135°); PS operator: *rgb/cmy0/w/000n*



line raster diameter in lpi

AE091-5, picture A6Wdd: Element F: Line raster under 90° (or 0°); PS operator: *rgb/cmy0/w/000n*

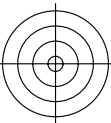


input: *rgb/cmy0/000n/w set...*  
output: *->rgb<sub>dd</sub> setrgbcolor*

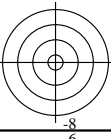


TUB Registration: 20190301-AE09/AE09L0FA.TXT /.PS  
application for measurement or viewing of display and print output

TUB material: code=th4ta



see similar files: <http://farbe.li.tu-berlin.de/AE09/AE09F0NX.PDF> /PS; 3D-linearization, page 20/24  
 technical information: <http://farbe.li.tu-berlin.de/> or [http://farbe.li.tu-berlin.de/AE09/AE09F0PX\\_CYN2\\_1.PDF](http://farbe.li.tu-berlin.de/AE09/AE09F0PX_CYN2_1.PDF)



<http://farbe.li.tu-berlin.de/AE09/AE09F0NX.PDF> /PS; 3D-linearization, page 20/24  
 F: 3D-linearization AE09/AE09LF0NX.PDF /PS in file (F)

**Test of visual linearized output of pictures A1W<sub>dd</sub> to A3W<sub>dd</sub>** please underline **Yes/No**  
**Output test with computer display ( ) or the external display ( )** please mark by (x)!

**Test of the radial grating according to picture A1W<sub>dd</sub>**

N-W-radial grating: Is the resolution diameter < 6 mm? **Yes/No**  
 Test with magnifying glass (e.g. 6x) resolution diameter ..... mm

W-N-radial grating: Is the resolution diameter < 6 mm? **Yes/No**  
 Test with magnifying glass (e.g. 6x) resolution diameter ..... mm

N-Z-radial grating: Is the resolution diameter < 6 mm? **Yes/No**  
 Test with magnifying glass (e.g. 6x) resolution diameter ..... mm

W-Z-radial grating: Is the resolution diameter < 6 mm? **Yes/No**  
 Test with magnifying glass (e.g. 6x) resolution diameter ..... mm

**Test of 5 visual equidistant L\*-grey steps according to picture A2W<sub>dd</sub>**  
 Are the 5 steps on the upper rows distinguishable? **Yes/No**  
 If No: How many steps can be distinguished? ..... Steps  
 of the given 5 steps:

**Test of 16 visual equidistant L\*-grey steps according to picture A3W<sub>dd</sub>**  
 Are the 16 steps on the upper rows distinguishable? **Yes/No**  
 If No: How many steps can be distinguished? ..... Steps  
 of the given 16 steps:

part 1, AE090-3dd: 010481

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

**PDF file:** [http://farbe.li.tu-berlin.de/AE09/AE09F0PX\\_CYN2\\_1.PDF](http://farbe.li.tu-berlin.de/AE09/AE09F0PX_CYN2_1.PDF) **underline: Yes/No**

**PS file:** [http://farbe.li.tu-berlin.de/AE09/AE09F0PX\\_CYN2\\_1.PS](http://farbe.li.tu-berlin.de/AE09/AE09F0PX_CYN2_1.PS) **underline: Yes/No**

**Used computer operating system:**  
 either one of Windows/Mac/Unix/other and version:.....

**This evaluation is for the output:** **underline: monitor/data projector/printer**  
 Device model, driver and version:.....

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

**For output with PDF file AE09F0PX\_CYN2\_1.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:.....

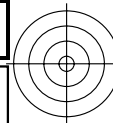
**For output with PS file AE09F0PX\_CYN2\_1.PS**  
 either PS-file transfer "download, copy" to PS device.....  
 or with computer system interpretation by "Display-PS":.....  
 or with software e. g. Ghostscript and version:.....  
 or with software e. g. Mac-Yap and version:.....

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

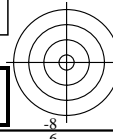
.....  
 .....  
 .....

part 3, AE090-7dd: 010481

Form A: Test chart AE09 according to ISO 9241-306  
 achromatic test chart N



TUB Registration: 20190301-AE09/AE09L0FA.TXT /PS  
 application for measurement or viewing of display and print output  
 TUB material: code=th4ta



**Test of visual linearized output of pictures A4W<sub>dd</sub> to A6W<sub>dd</sub>** please underline **Yes/No**  
**Output test with computer display ( ) or the external display ( )** please mark by (x)!

**Test of Landolt rings N-W according to picture A4W<sub>dd</sub>**  
 Is the recognition frequency of the Landolt rings > 50% (5 of 8 at least)?

background - ring	Yes/No
0 - 1	Yes/No
7 - 8	Yes/No
E - F	Yes/No
2 - 0	Yes/No
8 - 6	Yes/No
F - D	Yes/No

**Test of the radial grating under 45° according to picture A5W<sub>dd</sub>**  
 Can equally spaced lines be seen? **Yes/No**  
 Visual testing: for radial diameter from 15 to 60 lpi **Yes/No**  
 Test with magnifying glass (e.g. 6x) - from 15 to ..... lpi

**Test of the radial grating under 90° according to picture A6W<sub>dd</sub>**  
 Can equally spaced lines be seen? **Yes/No**  
 Visual testing: for radial diameter from 15 to 60 lpi **Yes/No**  
 Test with magnifying glass (e.g. 6x) - from 15 to ..... lpi

part 2, AE091-3dd: 010481

**Documentation of assessor colour-vision properties for visual assessment**

The assessor has **normal** colour vision according to one test: **underline: Yes/No**  
 either according to DIN 6160:1996 with Anomaloskop of Nagel **underline: Yes/unknown**  
 or with test charts using colour points according to Ishihara **underline: Yes/unknown**  
 or tested with, please specify: ..... **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://farbe.li.tu-berlin.de/AE09/AE09F0PX\\_CYN2\\_3.PDF](http://farbe.li.tu-berlin.de/AE09/AE09F0PX_CYN2_3.PDF) **underline: Yes/No**

**PS file:** [http://farbe.li.tu-berlin.de/AE09/AE09F0PX\\_CYN2\\_3.PS](http://farbe.li.tu-berlin.de/AE09/AE09F0PX_CYN2_3.PS) **underline: Yes/No**

**picture A7<sub>dd</sub> 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: Yes/No**

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://farbe.li.tu-berlin.de/AE09/AE09F0PX\\_CYN2\\_3.PDF](http://farbe.li.tu-berlin.de/AE09/AE09F0PX_CYN2_3.PDF) **underline: Yes/No**

**PS file:** [http://farbe.li.tu-berlin.de/AE09/AE09F0PX\\_CYN2\\_3.PS](http://farbe.li.tu-berlin.de/AE09/AE09F0PX_CYN2_3.PS) **underline: Yes/No**

**picture A7<sub>dd</sub>** **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 for 17 step colours of** <http://farbe.li.tu-berlin.de/OE70/OE70L1NP.PDF>

Exchange of CIELAB data in file <http://farbe.li.tu-berlin.de/AE82/AE82L0NP.TXT> and transfer

of the PS file AE82L0NP.PS (= .TXT) to the PDF-file AE82L0NP.PDF **underline: Yes/No**

If No, please describe other method: .....

part 4, AE091-7dd: 010481

input: *rgb/cmy0/000n/w set...*  
 output: *->rgb<sub>dd</sub> setrgbcolor*





see similar files: <http://farbe.li.tu-berlin.de/AE09/AE09F0NX.PDF> / .PS; 3D-linearization, page 21/24  
technical information: <http://farbe.li.tu-berlin.de/AE09/AE09LF0NX.PDF> / .PS in file (F)

TUB Registration: 20190301-AE09/AE09L0FA.TXT /.PS  
application for measurement or viewing of display and print output  
TUB material: code=th4ta

<i>i</i>	<i>LAB</i> <sup>*</sup> <sub>ref</sub>	<i>L</i> <sup>*</sup> <sub>out</sub>	<i>LAB</i> <sup>*</sup> <sub>out</sub>	<i>LAB</i> <sup>*</sup> <sub>out-ref</sub>	$\Delta E^*$	Start output S1
1	52,01 0,00 0,00	52,01 0,00 0,00	52,01 0,00 0,00	0,00 0,00 0,00	0,01	Specification according to
2	54,91 0,00 0,00	52,17 0,00 0,00	52,17 0,00 0,00	-2, 0,00 0,00	2,73	ISO/IEC 15775 Annex G
3	57,80 0,00 0,00	52,67 0,00 0,00	52,67 0,00 0,00	-5, 0,00 0,00	5,12	and DIN 33866-1 Annex G
4	60,69 0,00 0,00	53,54 0,00 0,00	53,54 0,00 0,00	-7, 0,00 0,00	7,15	
5	63,58 0,00 0,00	54,79 0,00 0,00	54,79 0,00 0,00	-8, 0,00 0,00	8,79	
6	66,48 0,00 0,00	56,43 0,00 0,00	56,43 0,00 0,00	-10, 0,00 0,00	10,04	
7	69,37 0,00 0,00	58,46 0,00 0,00	58,46 0,00 0,00	-10, 0,00 0,00	10,90	
8	72,26 0,00 0,00	60,90 0,00 0,00	60,90 0,00 0,00	-11, 0,00 0,00	11,35	
9	75,16 0,00 0,00	63,75 0,00 0,00	63,75 0,00 0,00	-11, 0,00 0,00	11,40	
10	78,05 0,00 0,00	67,01 0,00 0,00	67,01 0,00 0,00	-11, 0,00 0,00	11,03	
11	80,94 0,00 0,00	70,68 0,00 0,00	70,68 0,00 0,00	-10, 0,00 0,00	10,25	
12	83,83 0,00 0,00	74,78 0,00 0,00	74,78 0,00 0,00	-9, 0,00 0,00	9,05	
13	86,73 0,00 0,00	79,29 0,00 0,00	79,29 0,00 0,00	-7, 0,00 0,00	7,43	
14	89,62 0,00 0,00	84,23 0,00 0,00	84,23 0,00 0,00	-5, 0,00 0,00	5,38	
15	92,51 0,00 0,00	89,60 0,00 0,00	89,60 0,00 0,00	-2, 0,00 0,00	2,90	
16	95,41 0,00 0,00	95,41 0,00 0,00	95,41 0,00 0,00	0,00 0,00 0,00	0,01	
17	52,01 0,00 0,00	52,01 0,00 0,00	52,01 0,00 0,00	0,00 0,00 0,00	0,01	
18	62,86 0,00 0,00	54,44 0,00 0,00	54,44 0,00 0,00	-8, 0,00 0,00	8,42	
19	73,71 0,00 0,00	62,28 0,00 0,00	62,28 0,00 0,00	-11, 0,00 0,00	11,43	
20	84,56 0,00 0,00	75,87 0,00 0,00	75,87 0,00 0,00	-8, 0,00 0,00	8,69	
21	95,41 0,00 0,00	95,41 0,00 0,00	95,41 0,00 0,00	0,00 0,00 0,00	0,01	

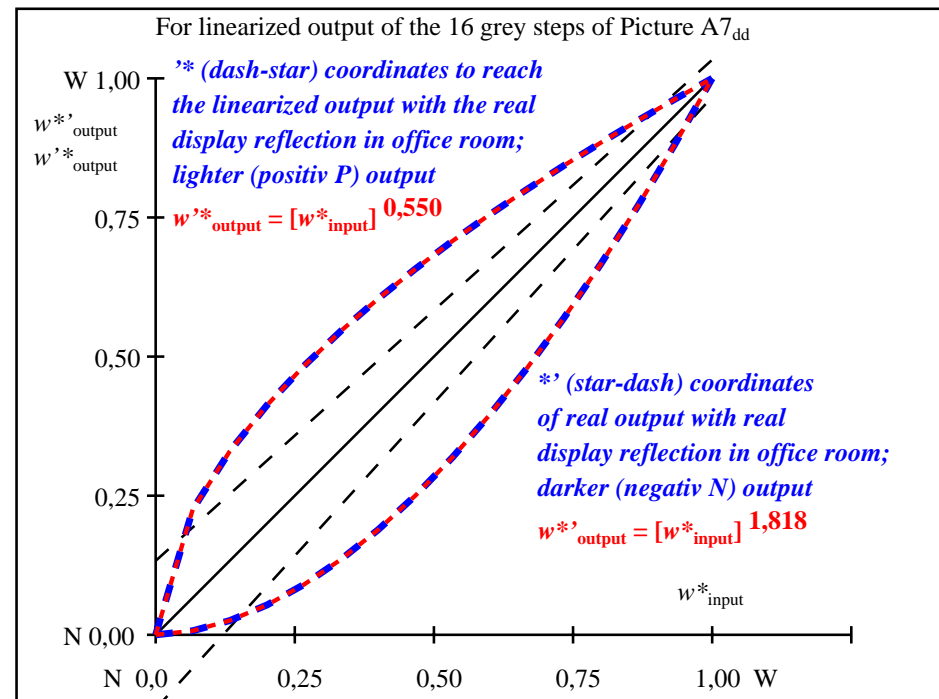
Mean lightness difference (16 steps)  
 $\Delta E^*_{\text{CIELAB}} = 7,1$

Mean lightness difference (5 steps)  
 $\Delta L^*_{\text{CIELAB}} = 5,7$

Mean colour reproduction index:  $R^*_{\text{ab,m}} = 68,8$

part 1,

AE090-3dd: 010482



part 2,

AE091-3dd: 010482

<i>L</i> <sup>*</sup> / <i>Y</i> <sub>intended</sub> (absolute)	52,0/20,1	54,9/22,8	57,8/25,7	60,6/28,9	63,5/32,2	66,4/35,9	69,3/39,8	72,2/44,0	75,1/48,5	78,0/53,3	80,9/58,3	83,8/63,7	86,7/69,4	89,6/75,4	92,5/81,8	95,4/88,5
<i>0 0 0 n*</i> setcmk																
<i>g<sub>N</sub></i> =1,818																
No. and Hex code	00;F	01;E	02;D	03;C	04;B	05;A	06;9	07;8	08;7	09;6	10;5	11;4	12;3	13;2	14;1	15;0
<i>w</i> <sup>*</sup> = <i>L</i> <sup>*</sup> <sub>CIELAB, r</sub> (relative)																
<i>w</i> <sup>*</sup> <sub>intended</sub>	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
<i>w</i> <sup>*</sup> <sub>output</sub>	0,000	0,007	0,025	0,053	0,090	0,135	0,189	0,250	0,318	0,395	0,478	0,568	0,666	0,771	0,881	1,000

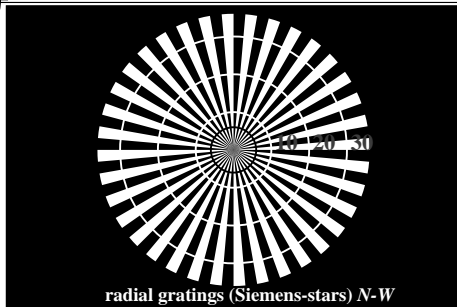
part 3, picture A7<sub>dd</sub>: 16 visual equidistant *L*<sup>\*</sup>-grey steps; PS operator: 0 0 0 *n\** setcmkcolor

AE090-7dd: 010482

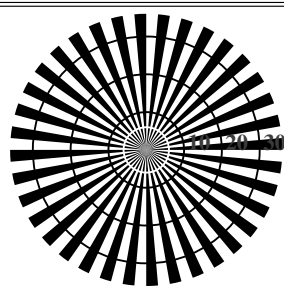
In-out: Test chart AE09 according to ISO 9241-306  
Viewing *Y* contrast  $Y_W:Y_N=88,9:20$ ;  $Y_N$ -range 15 to <30

input: *rgb/cmy0/000n/w set...*  
output: *->rgb<sub>dd</sub> setrgbcolor*

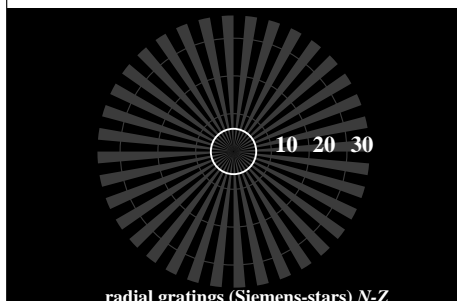
see similar files: <http://farbe.li.tu-berlin.de/AE09/AE09F0NX.PDF> /PS; 3D-linearization, page 22/24  
technical information: <http://farbe.li.tu-berlin.de/> or <http://farbe.li.tu-berlin.de/AE.HTM>



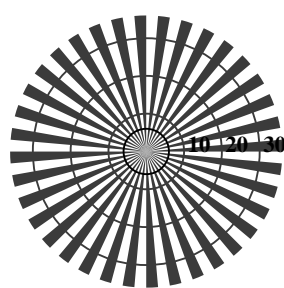
radial gratings (Siemens-stars) N-W



radial gratings (Siemens-stars) W-N



radial gratings (Siemens-stars) N-Z



radial gratings (Siemens-stars) W-Z

AE090-3, picture A1Wdd: Element A: radial gratings N-W, W-N, N-Z, and W-Z; PS operator: *rgb/cmy0/w/000n*

$L^*/Y_{\text{intended}}$ (absolute)	18,0/2,5	37,3/9,7	56,7/24,6	76,0/49,8	95,4/88,5	$N_0$ (min.)	$W_1$ (max.)
$w^* = I^*_{\text{CIELAB}, r}$ (relative)							
$w^*_{\text{input}}$	0,000	0,250	0,500	0,750	1,000	$N_0$ (min.)	$W_1$ (max.)

AE090-5, picture A2Wdd: Element B: 5 visual equidistant  $L^*$ -grey steps +  $N_0$  +  $W_1$ ; PS operator: *rgb/cmy0/w/000n*

$L^*/Y_{\text{intended}}$ (absolute)	18,0/2,5	23,1/3,8	28,3/5,5	33,4/7,7	38,6/10,4	43,8/13,7	48,9/17,5	54,1/22,0	59,2/27,3	64,4/33,3	69,6/40,1	74,7/47,8	79,9/56,5	85,0/66,1	90,2/76,8	95,4/88,5
No. and Hex code	00:F	01:E	02:D	03:C	04:B	05:A	06:9	07:8	08:7	09:6	10:5	11:4	12:3	13:2	14:1	15:0
$w^* = I^*_{\text{CIELAB}, r}$ (relative)																
$w^*_{\text{input}}$	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

AE090-7, picture A3Wdd: Element C: 16 visual equidistant  $L^*$ -grey steps; PS operator: *rgb/cmy0/w/000n*



Test chart AE09 according to ISO 9241-306  
achromatic test chart N

background step Hex code	0	7	E	2	8	F
ring step Hex code	0-1	7-8	E-F	2-0	8-6	F-D

Landolt-rings W-N

code: background - ring

AE091-1, picture A4Wdd: Element D: Landolt-rings W-N; PS operator: *rgb/cmy0/w/000n*

	120	128	136	144	152	160	168	176	184	192	200	208	216	224	232	240	
120 (+8)																	240
60 (+4)																	120
30 (+2)																	60
15 (+1)																	30
	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	

line raster diameter in lpi

AE091-3, picture A5Wdd: Element E: Line raster under 45° (or 135°); PS-operator: *rgb/cmy0/w/000n*

	120	128	136	144	152	160	168	176	184	192	200	208	216	224	232	240	
120 (+8)																	240
60 (+4)																	120
30 (+2)																	60
15 (+1)																	30
	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	

line raster diameter in lpi

AE091-5, picture A6Wdd: Element F: Line raster under 90° (or 0°); PS-operator: *rgb/cmy0/w/000n*

input: *rgb/cmy0/000n/w set...*  
output: *->rgb<sub>dd</sub> setrgbcolor*

TUB Registration: 20190301-AE09/AE09L0FA.TXT /.PS  
application for measurement or viewing of display and print output  
TUB material: code=rh4ta

see similar files: <http://farbe.li.tu-berlin.de/AE09/AE09F0NX.PDF> /PS; 3D-linearization, page 23/24  
technical information: <http://farbe.li.tu-berlin.de/> or [http://farbe.li.tu-berlin.de/AE09/AE09F0PX\\_CYN1\\_1.PDF](http://farbe.li.tu-berlin.de/AE09/AE09F0PX_CYN1_1.PDF)

<http://farbe.li.tu-berlin.de/AE09/AE09F0NX.PDF> /PS; 3D-linearization, page 23/24  
F: 3D-linearization AE09/AE09LF0NX.PDF /PS in file (F)

**Test of visual linearized output of pictures A1W<sub>dd</sub> to A3W<sub>dd</sub>** please underline **Yes/No**  
**Output test with computer display ( ) or the external display ( )** please mark by (x)!

**Test of the radial grating according to picture A1W<sub>dd</sub>**

N-W-radial grating: Is the resolution diameter < 6 mm? **Yes/No**  
Test with magnifying glass (e.g. 6x) resolution diameter ..... mm

W-N-radial grating: Is the resolution diameter < 6 mm? **Yes/No**  
Test with magnifying glass (e.g. 6x) resolution diameter ..... mm

N-Z-radial grating: Is the resolution diameter < 6 mm? **Yes/No**  
Test with magnifying glass (e.g. 6x) resolution diameter ..... mm

W-Z-radial grating: Is the resolution diameter < 6 mm? **Yes/No**  
Test with magnifying glass (e.g. 6x) resolution diameter ..... mm

**Test of 5 visual equidistant L\*-grey steps according to picture A2W<sub>dd</sub>**  
Are the 5 steps on the upper rows distinguishable? **Yes/No**  
If No: How many steps can be distinguished? ..... Steps  
of the given 5 steps:

**Test of 16 visual equidistant L\*-grey steps according to picture A3W<sub>dd</sub>**  
Are the 16 steps on the upper rows distinguishable? **Yes/No**  
If No: How many steps can be distinguished? ..... Steps  
of the given 16 steps:

part 1, AE090-3dd: 010561

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

**PDF file:** [http://farbe.li.tu-berlin.de/AE09/AE09F0PX\\_CYN1\\_1.PDF](http://farbe.li.tu-berlin.de/AE09/AE09F0PX_CYN1_1.PDF) **underline: Yes/No**  
**PS file:** [http://farbe.li.tu-berlin.de/AE09/AE09F0PX\\_CYN1\\_1.PS](http://farbe.li.tu-berlin.de/AE09/AE09F0PX_CYN1_1.PS) **underline: Yes/No**

**Used computer operating system:**

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

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

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

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

**For output with PDF file AE09F0PX\_CYN1\_1.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 output with PS file AE09F0PX\_CYN1\_1.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)

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

part 3, AE090-7dd: 010561

Form A: Test chart AE09 according to ISO 9241-306  
achromatic test chart N

**Test of visual linearized output of pictures A4W<sub>dd</sub> to A6W<sub>dd</sub>** please underline **Yes/No**  
**Output test with computer display ( ) or the external display ( )** please mark by (x)!

**Test of Landolt rings N-W according to picture A4W<sub>dd</sub>**

Is the recognition frequency of the Landolt rings > 50% (5 of 8 at least)?

**background - ring**

0 - 1	<b>Yes/No</b>
7 - 8	<b>Yes/No</b>
E - F	<b>Yes/No</b>
2 - 0	<b>Yes/No</b>
8 - 6	<b>Yes/No</b>
F - D	<b>Yes/No</b>

**Test of the radial grating under 45° according to picture A5W<sub>dd</sub>**

Can equally spaced lines be seen?

Visual testing: for radial diameter from 15 to 60 lpi

Test with magnifying glass (e.g. 6x) - from 15 to ..... lpi

**Test of the radial grating under 90° according to picture A6W<sub>dd</sub>**

Can equally spaced lines be seen?

Visual testing: for radial diameter from 15 to 60 lpi

Test with magnifying glass (e.g. 6x) - from 15 to ..... lpi

part 2, AE091-3dd: 010561

**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://farbe.li.tu-berlin.de/AE09/AE09F0PX\\_CYN1\\_3.PDF](http://farbe.li.tu-berlin.de/AE09/AE09F0PX_CYN1_3.PDF)

**underline: Yes/No**

**PS file:** [http://farbe.li.tu-berlin.de/AE09/AE09F0PX\\_CYN1\\_3.PS](http://farbe.li.tu-berlin.de/AE09/AE09F0PX_CYN1_3.PS)

**underline: Yes/No**

**picture A7<sub>dd</sub> 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: Yes/No**

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://farbe.li.tu-berlin.de/AE09/AE09F0PX\\_CYN1\\_3.PDF](http://farbe.li.tu-berlin.de/AE09/AE09F0PX_CYN1_3.PDF)

**underline: Yes/No**

**picture A7<sub>dd</sub>**

**underline: Yes/No**

**PS file:** [http://farbe.li.tu-berlin.de/AE09/AE09F0PX\\_CYN1\\_3.PS](http://farbe.li.tu-berlin.de/AE09/AE09F0PX_CYN1_3.PS)

**or underline: Yes/No**

**picture A7<sub>dd</sub>**

**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 for 17 step colours of** <http://farbe.li.tu-berlin.de/OE70/OE70L1NP.PDF>

Exchange of CIELAB data in file <http://farbe.li.tu-berlin.de/AE82/AE82L0NP.TXT> and transfer

of the PS file AE82L0NP.PS (= .TXT) to the PDF-file AE82L0NP.PDF

**underline: Yes/No**

If No, please describe other method: .....

part 4, AE091-7dd: 010561

input: *rgb/cmy0/000n/w set...*  
output: *->rgb<sub>dd</sub> setrgbcolor*

TUB Registration: 20190301-AE09/AE09L0FA.TXT /PS  
application for measurement or viewing of display and print output  
TUB material: code=th4ta

see similar files: <http://farbe.li.tu-berlin.de/AE09/AE09L0NA.TXT> / .PS  
technical information: <http://farbe.li.tu-berlin.de/> or <http://farbe.li.tu-berlin.de/AE.HTM>

i	LAB* <sub>ref</sub>	L* <sub>out</sub>	LAB* <sub>out</sub>	LAB* <sub>out-ref</sub>	ΔE*
1	69,69 0,00 0,00	0,00	69,69 0,00 0,00	0,00 0,00 0,00	0,01
2	71,41 0,00 0,00	0,00	69,75 0,00 0,00	-1, 0,00 0,00	1,65
3	73,12 0,00 0,00	0,01	69,96 0,00 0,00	-3, 0,00 0,00	3,15
4	74,83 0,00 0,00	0,02	70,37 0,00 0,00	-4, 0,00 0,00	4,46
5	76,55 0,00 0,00	0,05	70,99 0,00 0,00	-5, 0,00 0,00	5,56
6	78,26 0,00 0,00	0,08	71,84 0,00 0,00	-6, 0,00 0,00	6,42
7	79,98 0,00 0,00	0,12	72,93 0,00 0,00	-7, 0,00 0,00	7,04
8	81,69 0,00 0,00	0,17	74,28 0,00 0,00	-7, 0,00 0,00	7,40
9	83,41 0,00 0,00	0,24	75,90 0,00 0,00	-7, 0,00 0,00	7,50
10	85,12 0,00 0,00	0,31	77,80 0,00 0,00	-7, 0,00 0,00	7,32
11	86,83 0,00 0,00	0,39	79,98 0,00 0,00	-6, 0,00 0,00	6,85
12	88,55 0,00 0,00	0,49	82,45 0,00 0,00	-6, 0,00 0,00	6,09
13	90,26 0,00 0,00	0,60	85,22 0,00 0,00	-5, 0,00 0,00	5,04
14	91,98 0,00 0,00	0,72	88,30 0,00 0,00	-3, 0,00 0,00	3,67
15	93,69 0,00 0,00	0,85	91,69 0,00 0,00	-1, 0,00 0,00	1,99
16	95,41 0,00 0,00	1,00	95,41 0,00 0,00	0,00 0,00 0,00	0,01
17	69,69 0,00 0,00	0,00	69,69 0,00 0,00	0,00 0,00 0,00	0,01
18	76,12 0,00 0,00	0,04	70,81 0,00 0,00	-5, 0,00 0,00	5,30
19	82,55 0,00 0,00	0,20	75,06 0,00 0,00	-7, 0,00 0,00	7,48
20	88,98 0,00 0,00	0,52	83,11 0,00 0,00	-5, 0,00 0,00	5,86
21	95,41 0,00 0,00	1,00	95,41 0,00 0,00	0,00 0,00 0,00	0,01

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

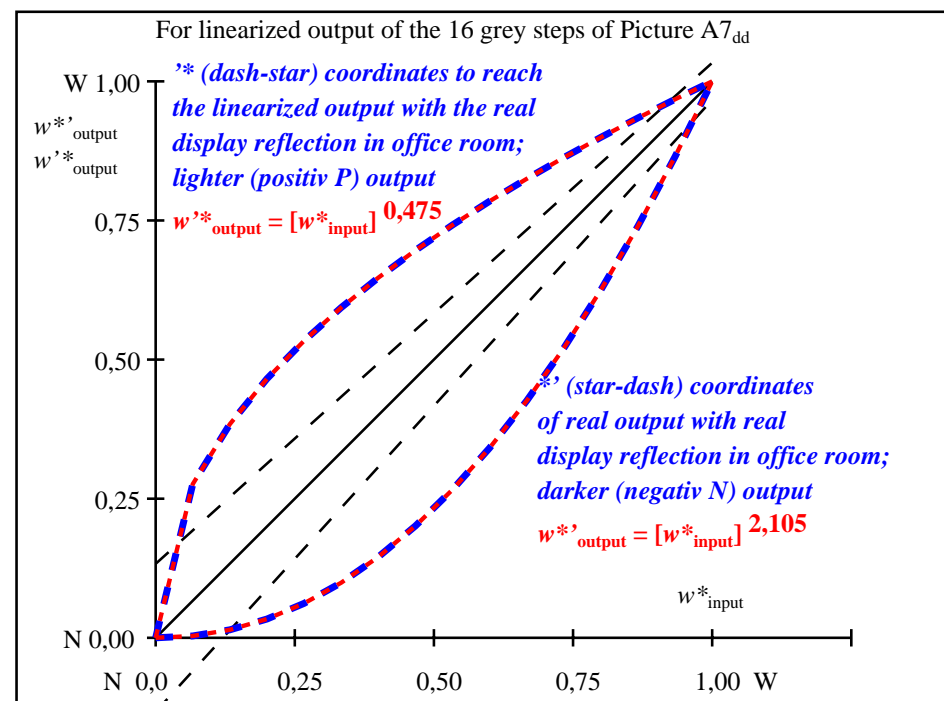
**Mean lightness difference**  
**(16 steps)**  
 $\Delta E^*_{CIELAB} = 4,6$

**Mean lightness difference**  
**(5 steps)**  
 $\Delta L^*_{CIELAB} = 3,7$

**Mean colour reproduction index:  $R^*_{ab,m} = 79,6$**

part 1,

AE090-3dd: 010562



$L^*/Y_{intended}$ (absolute)	69,6/40,3	71,4/42,7	73,1/45,3	74,8/48,0	76,5/50,7	78,2/53,6	79,9/56,6	81,6/59,7	83,4/62,9	85,1/66,2	86,8/69,6	88,5/73,2	90,2/76,8	91,9/80,6	93,6/84,5	95,4/88,5
0 0 0 n* setcmyk																
gN=2,105 No. and Hex code	00;F	01;E	02;D	03;C	04;B	05;A	06;9	07;8	08;7	09;6	10;5	11;4	12;3	13;2	14;1	15;0
$w^*=l^*_{CIELAB,r}$ (relative)																
$w^*_{intended}$	0,000	0,067	0,133	0,200	0,267	0,333	0,400	0,467	0,533	0,600	0,667	0,733	0,800	0,867	0,933	1,000
$w^*_{output}$	0,000	0,003	0,014	0,033	0,062	0,098	0,145	0,201	0,265	0,341	0,426	0,520	0,625	0,740	0,864	1,000

part 3, picture A7<sub>dd</sub>: 16 visual equidistant  $L^*$ -grey steps; PS operator: 0 0 0 n\* setcmykcolor

AE090-7dd: 010562

In-out: Test chart AE09 according to ISO 9241-306  
Viewing  $Y$  contrast  $Y_W:Y_N=88,9:40$ ;  $Y_N$ -range 30 to <60

input:  $rgb/cmy0/000n/w$  set...  
output:  $->rgb_{dd}$  setrgbcolor

TUB Registration: 20190301-AE09/AE09L0FA.TXT / .PS  
application for measurement or viewing of display and print output  
TUB material: code=rha4ta