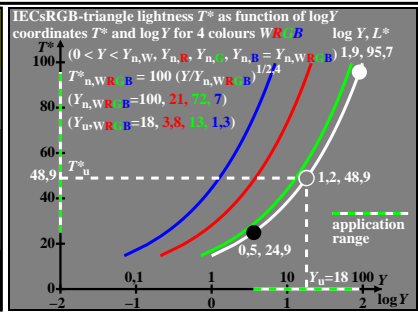


sensation scaling functions
lightness L^* and tristimulus value Y
adaptation on surround white W
 $L^*W = 100 (Y/100)^{1/2,0}$
adaptation on surround grey U
 $L^*U = 100 (Y/100)^{1/2,4}$
description with CIELAB 1976
 $L^*_{CIELAB} = 116 (Y/100)^{1/3,0} - 16$
adaptation on surround black N
 $L^*_{N} = 100 (Y/100)^{1/3,0}$



Viewing situations of adjacent greys

1A $R; R+\Delta R$ $Y; Y+\Delta Y$ $L; L+\Delta L$
 $R_U=0,18$ $Y_U=18$ $L_U=28 \text{ cd/m}^2$
 R=reflection Y=tristimulus value L=luminance

Viewing situations of separated greys

1B $R; R+\Delta R$ $Y; Y+\Delta Y$ $L; L+\Delta L$
 $R_U=0,18$ $Y_U=18$ $L_U=28 \text{ cd/m}^2$
 R=reflection Y=tristimulus value L=luminance

Viewing situations of adjacent greys

1A $L; L+\Delta L$ $L; L+\Delta L$ $L; L+\Delta L$
 $Y_N=3,6$ $Y_U=18$ $Y_W=90$

Viewing situations of separated greys

1B $L; L+\Delta L$ $L; L+\Delta L$ $L; L+\Delta L$
 $Y_N=3,6$ $Y_U=18$ $Y_W=90$

Dynamic range conversion of images with equally spaced rgb^b data
 Equally spaced visual output and lightness L^* output with GammaAdjuster

raw image data (8bit) $0 \leq rgb \leq 1$ (PhotoCD) not equally spaced search $0 \leq r_{gb_N} \leq 1$, and $0 \leq r_{gb_W} \leq 1$

16 grey steps ISO/IEC 15775 ISO 9241-306 standard range

Gamma Adjuster $(rgb^b)^{1/2,4}$ $\gamma_{rel} = \gamma/2,4$ $1,2 \leq \gamma \leq 4,8$

SDR display SDR range

visual image (8bit) $0 \leq (rgb^b)^{1/2,4} \leq 1$ equally spaced between $rgb^b_N=0, L_N^*=18, Y_N=2,5$ and $rgb^b_W=1, L_N^*=95, Y_N=90$ $\Delta r_{gb^b} = 1/15, \Delta L^* = 5$

Baseline image $0 \leq rgb^b \leq 1$ equally spaced $rgb^b_N=0, L_N^*=18, Y_N=2,5$ and $rgb^b_W=1, L_N^*=95, Y_N=90$ $\Delta r_{gb^b} = 1/15, \Delta L^* = 5$

apply $\gamma_{rel} = 1/\gamma_{rel}$ $\gamma_{rel} = 1/\gamma_{rel}$ $\gamma_{rel} = 1/\gamma_{rel}$

Alternate image $0 \leq (rgb^b)^{1/2,4} \leq 1$ equally spaced $rgb^b_N=0, L_N^*=18, Y_N=2,5$ and $rgb^b_W=1, L_N^*=95, Y_N=90$ $\Delta r_{gb^b} = 1/15, \Delta L^* = 5$

Visual definition of γ_{rel} by test-chart output on display
 according to ISO 9241-306 with 16 values $0,5 \leq \gamma_{rel} \leq 2$

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HDR display HDR range

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Baseline image $0 \leq rgb^b \leq 1$ equally spaced $rgb^b_N=0, L_N^*=18, Y_N=2,5$ and $rgb^b_W=1, L_N^*=95, Y_N=90$ $\Delta r_{gb^b} = 1/15, \Delta L^* = 5$

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Alternate image $0 \leq (rgb^b)^{1/2,4} \leq 1$ not equally spaced $rgb^b_N=0, L_N^*=107$ and $rgb^b_W=1, L_N^*=167$ $\Delta r_{gb^b} = 10, \Delta L^* = 1,3, \Delta Y = 0,8$

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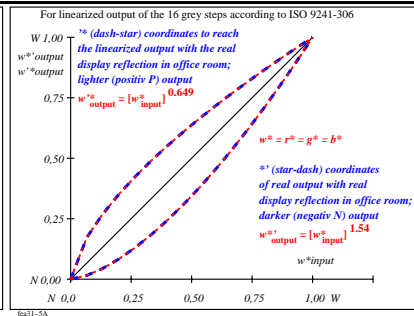
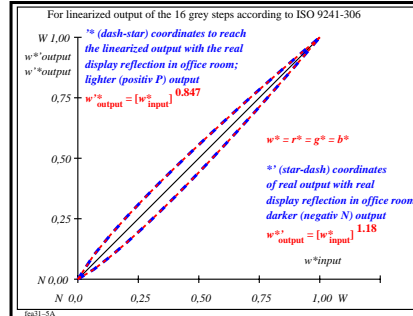
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Alternate image $0 \leq (rgb^b)^{1/2,4} \leq 1$ not equally spaced $rgb^b_N=0, L_N^*=36, Y_N=9$ and $rgb^b_W=1, L_N^*=88, Y_N=71$ $\Delta r_{gb^b} = 3, \Delta L^* = 0,8, \Delta Y = 1,3$



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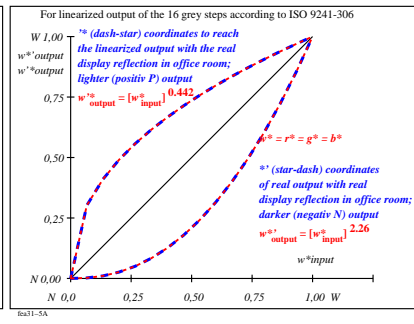
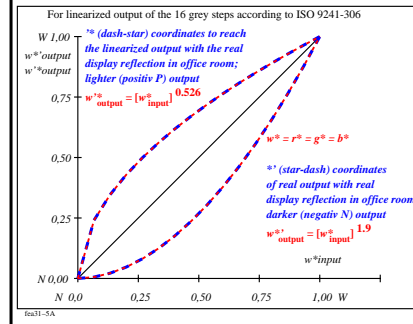
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see similar files of the whole serie: <http://farbe.li.tu-berlin.de/fea3.htm>
 technical information: <http://farbe.li.tu-berlin.de> OR <http://color.li.tu-berlin.de>

TUB registration: 20230801-fea3/fea310np.pdf / ps
 application for evaluation and measurement of display or print output

TUB material: code=rhadata