CIELAB lightness L^*, CIE tristimulus value discrimination dY and CIE contrast sensitivity (Y/dY)

CIELAB lightness for all colours L^*_w=100:

$L^* = 116\,(Y/Y_n)^{1/3} - 16$ (Y_n=100, $Y > 1$)

For the grey discrimination we get:

$dL^*/dY = (116/Y_n)\,(1/3)\,(Y/Y_n)^{-2/3}$

and for dL^*=1 (about 5 thresholds) we can write:

$dY = 3\,(Y_n/116)\,(Y/Y_n)^{2/3}$

or $\log(dY) = \log(\,3\,(Y_n/116)\,) + (2/3)\log(Y/Y_n)$

therefore in a log-log diagram the slope is (2/3).

for the CIE contrast sensitivity, and for dL^* = 1 it is valid:

$Y/dY = (1/3)\,(116/Y_n)\,(Y/Y_n)^{1/3}$

or $\log(Y/dY) = \log(\,(1/3)\,(116/Y_n)) + (1/3)\log(Y/Y_n)$

VE240−1N

CIELAB lightness L^*, CIE tristimulus value discrimination dY and CIE contrast sensitivity (Y/dY)

CIELAB lightness for all colours L^*_w=100:

$L^* = 116\,(Y/Y_n)^{1/3} - 16$ (Y_n=100, $Y > 1$)

For the grey discrimination we get:

$dL^*/dY = (116/Y_n)\,(1/3)\,(Y/Y_n)^{-2/3}$

and for dL^*=1 (about 5 thresholds) we can write:

$dY = (3(Y_n^{1/3})/116)\,(Y)^{2/3}$

or $\log(dY) = \log(3(Y_n^{1/3})/116) + (2/3)\log(Y)$

therefore in a log-log diagram the slope is (2/3).

for the CIE contrast sensitivity, and for dL^* = 1 it is valid:

$Y/dY = (1/3)\,(116/(Y_n^{1/3}))\,Y^{1/3}$

or $\log(Y/dY) = \log(\,(1/3)\,(116/(Y_n^{1/3}))\,) + (1/3)\log(Y)$

VE240−2N

sRGB lightness L^*, CIE tristimulus value discrimination dY and CIE contrast sensitivity (Y/dY) sRGB: see IEC 61966−2−1

sRGB lightness (times 100) for *achromatic* colours: W

$L^*_{sRGB,100} = 100\,(Y/Y_n)^{1/2,4}$ (Y_n=100)

For the grey discrimination we get:

$dL^*_{sRGB,100}/dY = (1/2,4)\,(Y/Y_n)^{-1,4/2,4} = 0,42\,(Y/Y_n)^{-0,58}$

and for $dL^*_{sRGB,100}$=1 (about 5 thresholds) we can write:

$dY = 2,4\,(Y/Y_n)^{1,4/2,4}$

or $\log(dY) = \log(2,4) + (1,4/2,4)\log(Y/Y_n)$

therefore in a log-log diagram the slope is 1,4/2,4.

for the CIE contrast sensitivity, and for $dL^*_{sRGB,100}$=1:

$Y/dY = (Y_n^{1,4/2,4}/2,4)\,(Y/Y_n)^{1/2,4}$

or $\log(Y/dY) = \log(Y_n^{1,4/2,4}/2,4) + 1/2,4\log(Y/Y_n)$

VE241−1N

sRGB lightness L^*, CIE tristimulus value discrimination dY and CIE contrast sensitivity (Y/dY) sRGB: see IEC 61966−2−1

sRGB lightness (times 100) for *chromatic* colours: *RGB*

$L^*_{sRGB,100} = 100\,(Y/Y_n)^{1/2,4}$ (Y_n=22(R), =71(G), =07(B))

For the discrimination we get:

$dL^*_{sRGB,100}/dY = (1/2,4)\,(Y/Y_n)^{-1,4/2,4} = 0,42\,(Y/Y_n)^{-0,58}$

and for $dL^*_{sRGB,100}$=1 (about 5 thresholds) we can write:

$dY = 2,4\,(Y/Y_n)^{1,4/2,4}$

or $\log(dY) = \log(2,4) + (1,4/2,4)\log(Y/Y_n)$

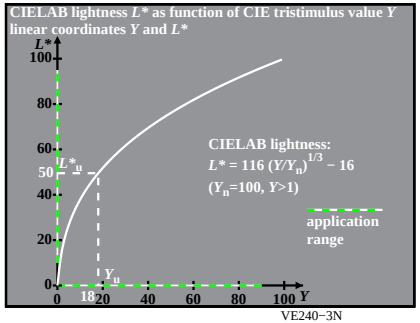
therefore in a log-log diagram the slope is 1,4/2,4.

for the CIE contrast sensitivity, and for $dL^*_{sRGB,100}$=1:

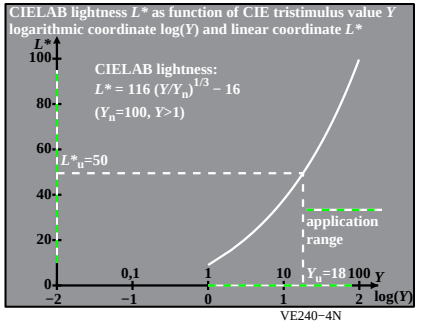
$Y/dY = (Y_n^{1,4/2,4}/2,4)\,(Y/Y_n)^{1/2,4}$

or $\log(Y/dY) = \log(Y_n^{1,4/2,4}/2,4) + 1/2,4\log(Y/Y_n)$

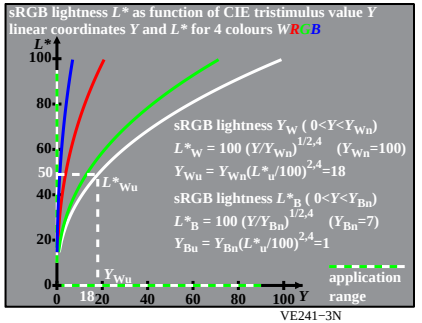
VE241−2N



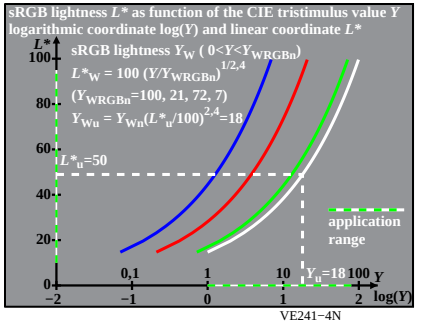
VE240−3N



VE240−4N



VE241−3N



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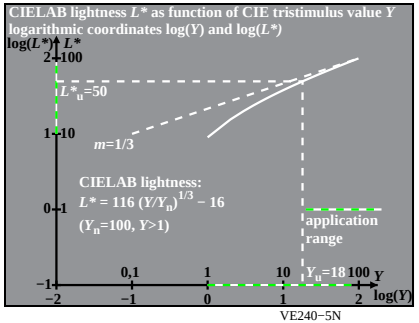

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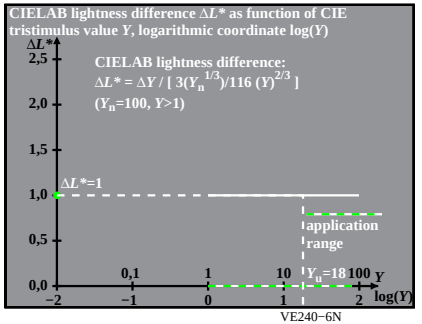
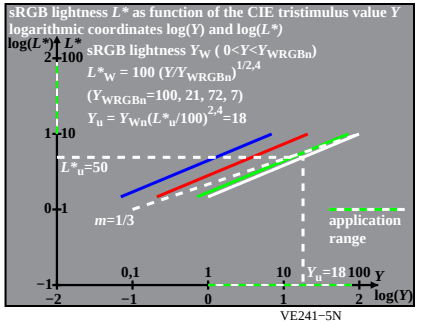
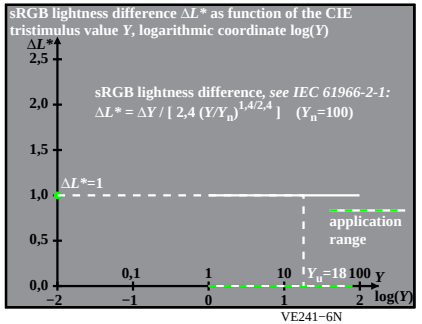


VE240−6N



VE241−5N



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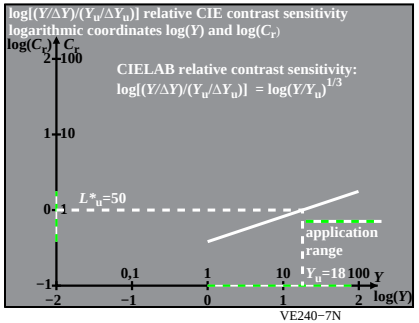
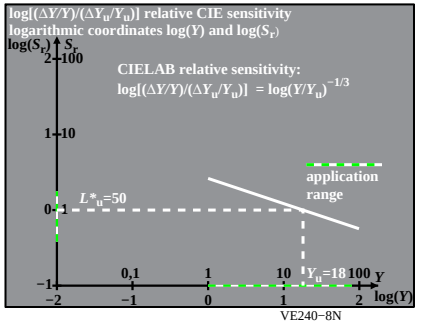
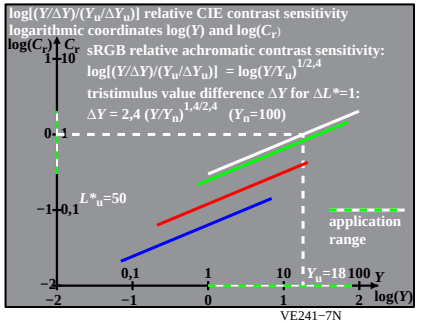


VE240−7N



VE240−8N



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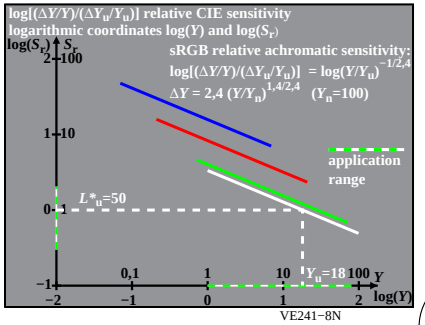

VE241−8N

see similar files: http://130.149.60.45/~farbmetrik/VE24/VE24.HTM
technical information: http://www.ps.bam.de or http://130.149.60.45/~farbmetrik

TUB registration: 20130201-VE24/VE24L0NP.PDF /.PS
application for measurement of display output

TUB material: code=rha4ta

input: *w/rgb/cmyk −> w/rgb/cmyk−*
output: no change