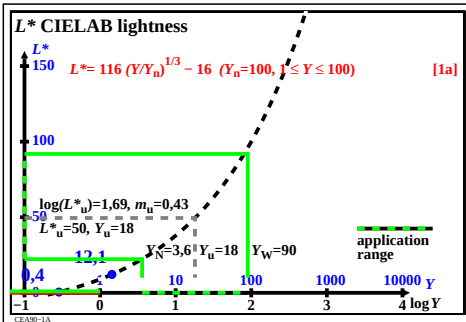
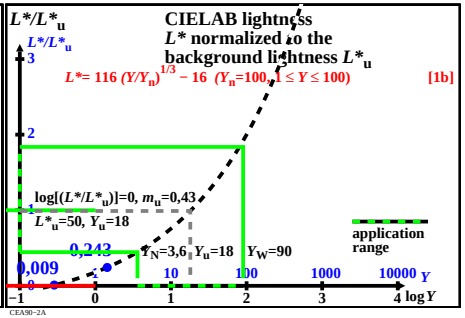
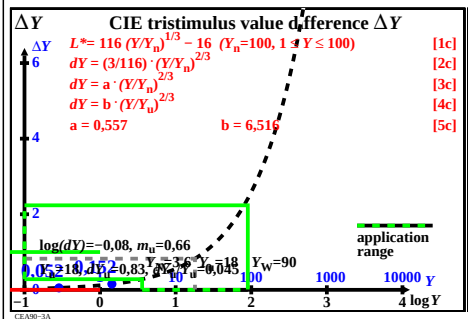
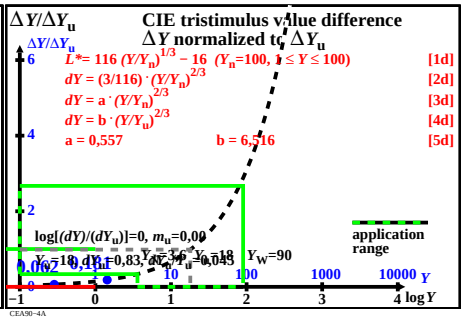
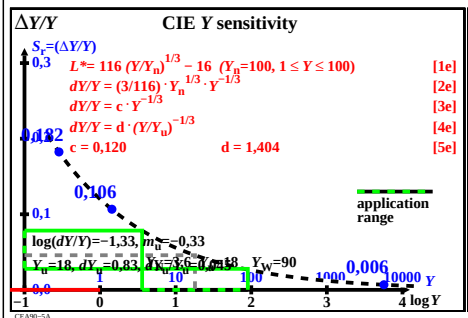
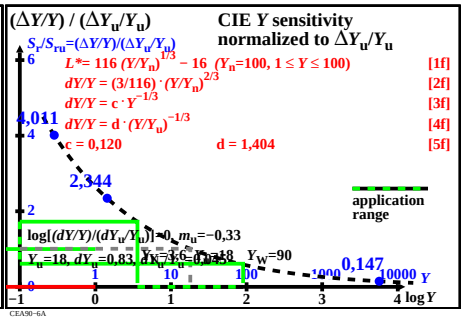

L* CIELAB lightness
L*= 116 (Y/Yn)^1/3 − 16 (Yn=100, 1 ≤ Y ≤ 100) [1a]
log(L*u)=1,69, mu=0,43
L*u=50, Yu=18
YN=3,6 Yu=18 YW=90
0,4
12,1
application range
CEA90−1A

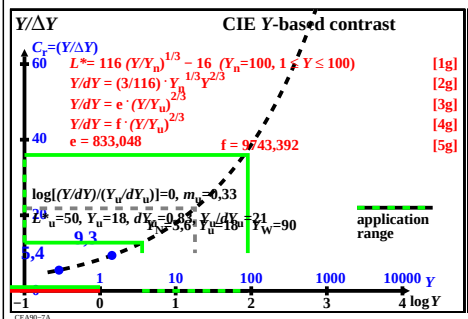

L*/L*u
CIELAB lightness
L* normalized to the background lightness L*u
L*= 116 (Y/Yn)^1/3 − 16 (Yn=100, 1 ≤ Y ≤ 100) [1b]
log[(L*/L*u)]=0, mu=0,43
L*u=50, Yu=18
YN=3,6 Yu=18 YW=90
0,009
0,243
application range
CEA90−2A

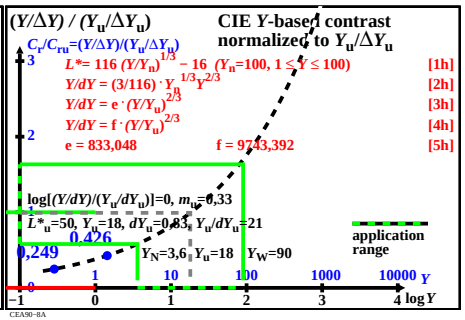

ΔY
CIE tristimulus value difference ΔY
L*= 116 (Y/Yn)^1/3 − 16 (Yn=100, 1 ≤ Y ≤ 100) [1c]
dY = (3/116) · (Y/Yn)^2/3 [2c]
dY = a · (Y/Yn)^2/3 [3c]
dY = b · (Y/Yu)^2/3 [4c]
a = 0,557 b = 6,516 [5c]
log(dY)=−0,08, mu=0,66
application range
CEA90−3A


ΔY/ΔYu
CIE tristimulus value difference ΔY normalized to ΔYu
L*= 116 (Y/Yn)^1/3 − 16 (Yn=100, 1 ≤ Y ≤ 100) [1d]
dY = (3/116) · (Y/Yn)^2/3 [2d]
dY = a · (Y/Yn)^2/3 [3d]
dY = b · (Y/Yu)^2/3 [4d]
a = 0,557 b = 6,516 [5d]
log[(dY)/(dYu)]=0, mu=0,00
application range
CEA90−4A


ΔY/Y
CIE Y sensitivity
L*= 116 (Y/Yn)^1/3 − 16 (Yn=100, 1 ≤ Y ≤ 100) [1e]
dY/Y = (3/116) · Yn^1/3 · Y^−1/3 [2e]
dY/Y = c · Y^−1/3 [3e]
dY/Y = d · (Y/Yu)^−1/3 [4e]
c = 0,120 d = 1,404 [5e]
log(dY/Y)=−1,33, mu=−0,33
application range
CEA90−5A


(ΔY/Y) / (ΔYu/Yu)
CIE Y sensitivity normalized to ΔYu/Yu
L*= 116 (Y/Yn)^1/3 − 16 (Yn=100, 1 ≤ Y ≤ 100) [1f]
dY/Y = (3/116) · (Y/Yn)^2/3 [2f]
dY/Y = c · Y^−1/3 [3f]
dY/Y = d · (Y/Yu)^−1/3 [4f]
c = 0,120 d = 1,404 [5f]
log[(dY/Y)/(dYu/Yu)]=0, mu=−0,33
application range
CEA90−6A


Y/ΔY
CIE Y-based contrast
L*= 116 (Y/Yn)^1/3 − 16 (Yn=100, 1 ≤ Y ≤ 100) [1g]
Y/dY = (3/116) · Yn^1/3 · Y^2/3 [2g]
Y/dY = e · (Y/Yu)^2/3 [3g]
Y/dY = f · (Y/Yu)^2/3 [4g]
e = 833,048 f = 9743,392 [5g]
log[(Y/dY)/(Yu/dYu)]=0, mu=−0,33
application range
CEA90−7A


(Y/ΔY) / (Yu/ΔYu)
CIE Y-based contrast normalized to Yu/ΔYu
L*= 116 (Y/Yn)^1/3 − 16 (Yn=100, 1 ≤ Y ≤ 100) [1h]
Y/dY = (3/116) · Yn^1/3 · Y^2/3 [2h]
Y/dY = e · (Y/Yu)^2/3 [3h]
Y/dY = f · (Y/Yu)^2/3 [4h]
e = 833,048 f = 9743,392 [5h]
log[(Y/dY)/(Yu/dYu)]=0, mu=−0,33
application range
CEA90−8A