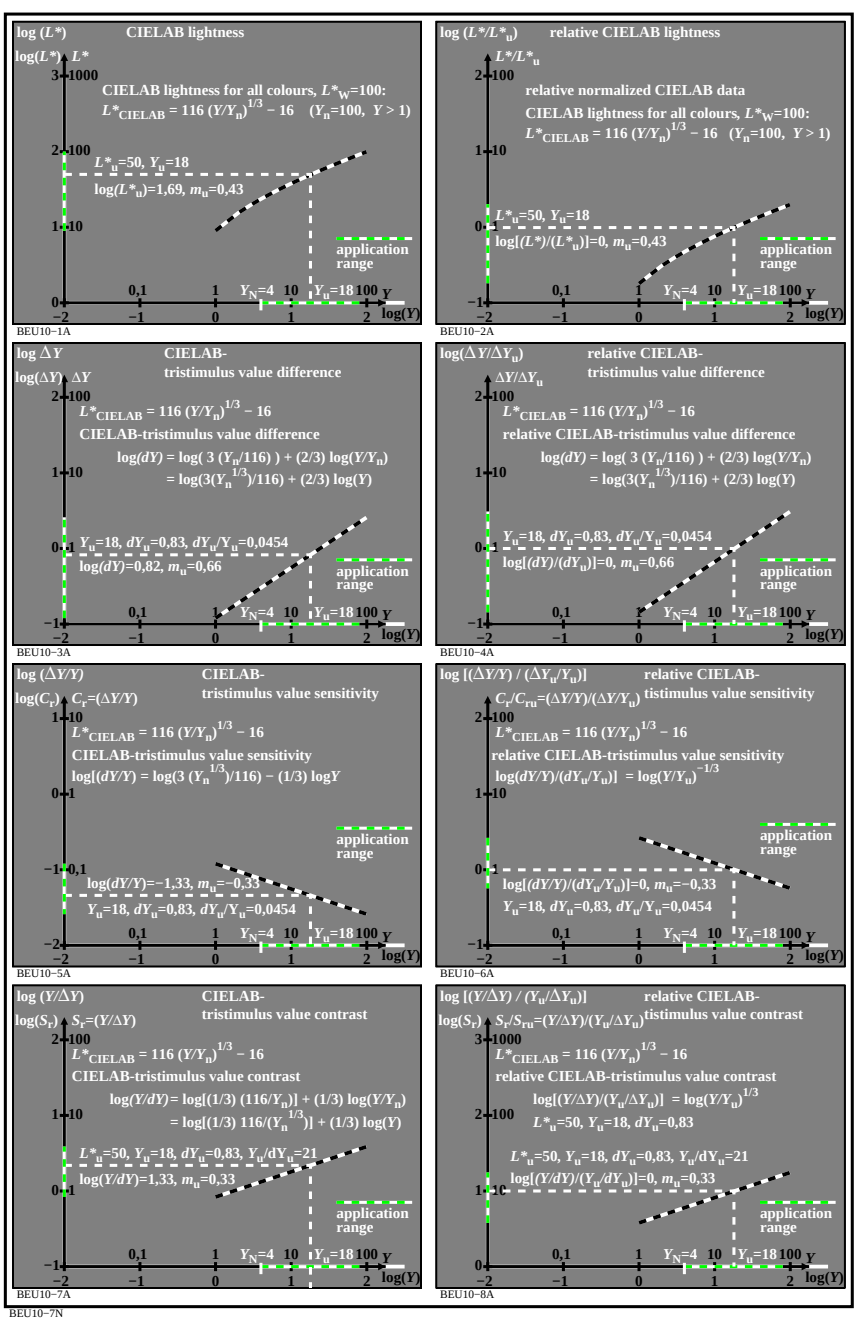
log (L*)
CIELAB lightness
log(L*)
L*
3
1000
CIELAB lightness for all colours, L*W=100:
L*CIELAB = 116 (Y/Yn)1/3 − 16 (Yn=100, Y > 1)
2
100
L*u=50, Yu=18
log(L*u)=1,69, mu=0,43
1
10
application range
0
0,1
1
YN=4
10
Yu=18
100
Y
−2
−1
0
1
2
log(Y)
BEU10−1A
log (L*/L*u)
relative CIELAB lightness
L*/L*u
2
100
relative normalized CIELAB data
CIELAB lightness for all colours, L*W=100:
L*CIELAB = 116 (Y/Yn)1/3 − 16 (Yn=100, Y > 1)
1
10
L*u=50, Yu=18
log[(L*)/(L*u)]=0, mu=0,43
0
application range
−1
0,1
1
YN=4
10
Yu=18
100
Y
−2
−1
0
1
2
log(Y)
BEU10−2A
log ΔY
CIELAB-tristimulus value difference
log(ΔY)
ΔY
2
100
L*CIELAB = 116 (Y/Yn)1/3 − 16
CIELAB-tristimulus value difference
log(dY) = log( 3 (Yu/116) ) + (2/3) log(Y/Yn)
= log(3(Yn1/3)/116) + (2/3) log(Y)
1
10
Yu=18, dYu=0,83, dYu/Yu=0,0454
0
0,1
log(dY)=0,82, mu=0,66
application range
−1
0,1
1
YN=4
10
Yu=18
100
Y
−2
−1
0
1
2
log(Y)
BEU10−3A
log(ΔY/ΔYu)
relative CIELAB-tristimulus value difference
ΔY/ΔYu
2
100
L*CIELAB = 116 (Y/Yn)1/3 − 16
relative CIELAB-tristimulus value difference
log(dY) = log( 3 (Yu/116) ) + (2/3) log(Y/Yn)
= log(3(Yn1/3)/116) + (2/3) log(Y)
1
10
Yu=18, dYu=0,83, dYu/Yu=0,0454
0
0,1
log[(dY)/(dYu)]=0, mu=0,66
application range
−1
0,1
1
YN=4
10
Yu=18
100
Y
−2
−1
0
1
2
log(Y)
BEU10−4A
log (ΔY/Y)
CIELAB-tristimulus value sensitivity
log(Cr)
Cr=(ΔY/Y)
2
100
L*CIELAB = 116 (Y/Yn)1/3 − 16
CIELAB-tristimulus value sensitivity
log[(dY/Y) = log(3 (Yn1/3)/116) − (1/3) logY
1
10
0
1
application range
−1
0,1
log(dY/Y)=−1,33, mu=−0,33
Yu=18, dYu=0,83, dYu/Yu=0,0454
−2
0,1
1
YN=4
10
Yu=18
100
Y
−2
−1
0
1
2
log(Y)
BEU10−5A
log [(ΔY/Y) / (ΔYu/Yu)]
relative CIELAB-tistimulus value sensitivity
Cr/Cru=(ΔY/Y)/(ΔY/Yu)
2
100
L*CIELAB = 116 (Y/Yn)1/3 − 16
relative CIELAB-tristimulus value sensitivity
log(dY/Y)/(dYu/Yu)] = log(Y/Yn)−1/3
1
10
application range
0
0,1
log[(dY/Y)/(dYu/Yu)]=0, mu=−0,33
Yu=18, dYu=0,83, dYu/Yu=0,0454
−1
0,1
1
YN=4
10
Yu=18
100
Y
−2
−1
0
1
2
log(Y)
BEU10−6A
log (Y/ΔY)
CIELAB-tristimulus value contrast
log(Sr)
Sr=(Y/ΔY)
2
100
L*CIELAB = 116 (Y/Yn)1/3 − 16
CIELAB-tristimulus value contrast
log(Y/dY)= log[(1/3) (116/Yn)] + (1/3) log(Y/Yn)
= log[(1/3) 116/(Yn1/3)] + (1/3) log(Y)
1
10
L*u=50, Yu=18, dYu=0,83, Yu/dYu=21
0
0,1
log(Y/dY)=1,33, mu=0,33
application range
−1
0,1
1
YN=4
10
Yu=18
100
Y
−2
−1
0
1
2
log(Y)
BEU10−7A
log [(Y/ΔY) / (Yu/ΔYu)]
relative CIELAB-tistimulus value contrast
log(Sr)
Sr/Sru=(Y/ΔY)/(Yu/ΔYu)
3
1000
L*CIELAB = 116 (Y/Yn)1/3 − 16
relative CIELAB-tristimulus value contrast
log[(Y/ΔY)/(Yu/ΔYu)] = log(Y/Yu)1/3
2
100
L*u=50, Yu=18, dYu=0,83
L*u=50, Yu=18, dYu=0,83, Yu/dYu=21
log[(Y/dY)/(Yu/dYu)]=0, mu=0,33
1
10
application range
0
0,1
1
YN=4
10
Yu=18
100
Y
−2
−1
0
1
2
log(Y)
BEU10−8A

BEU10−7N