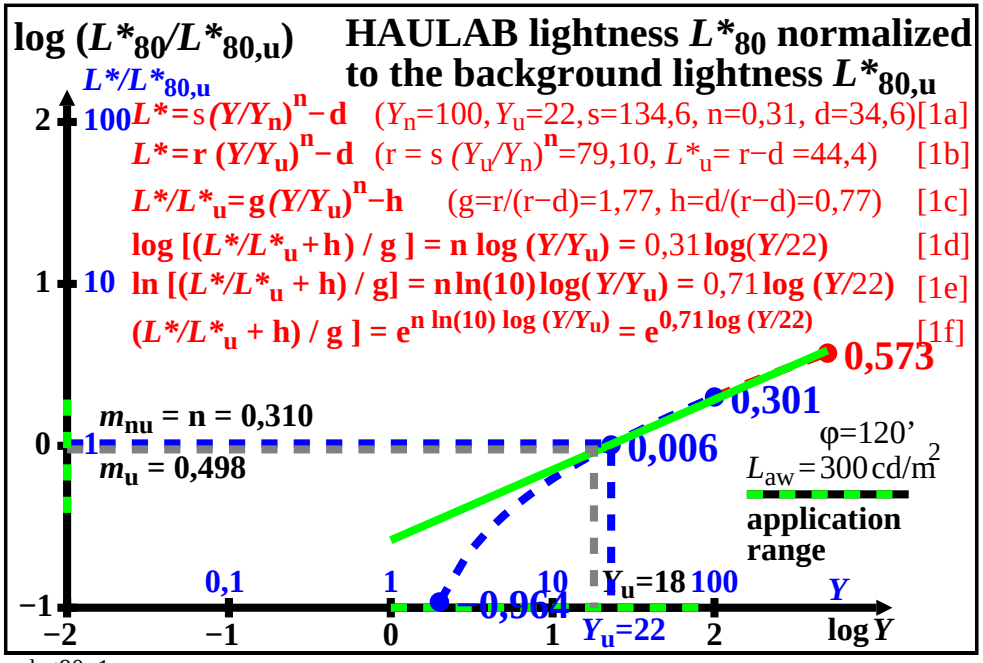
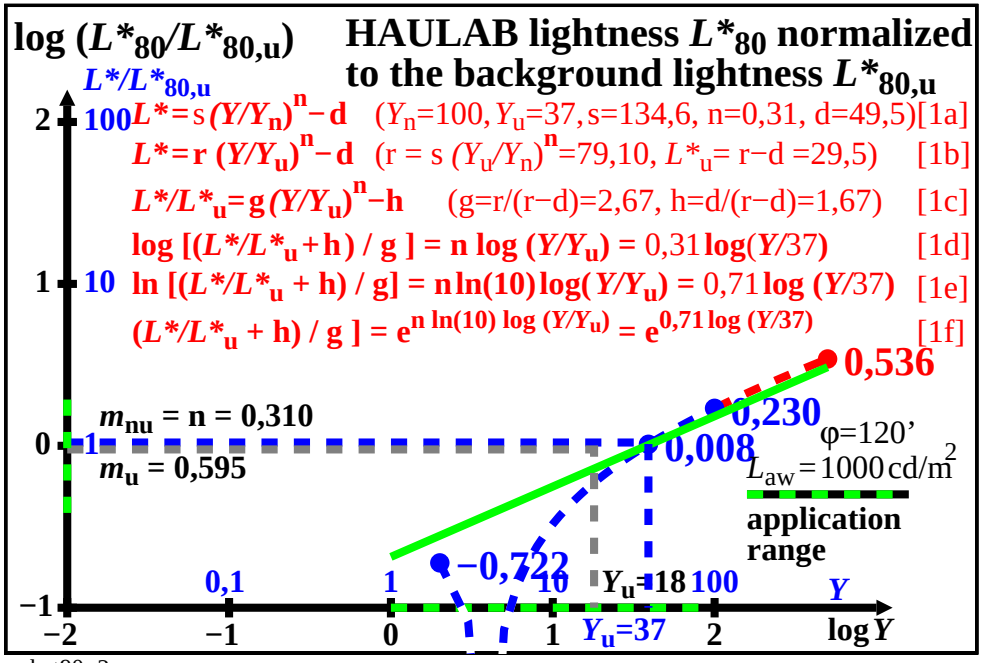
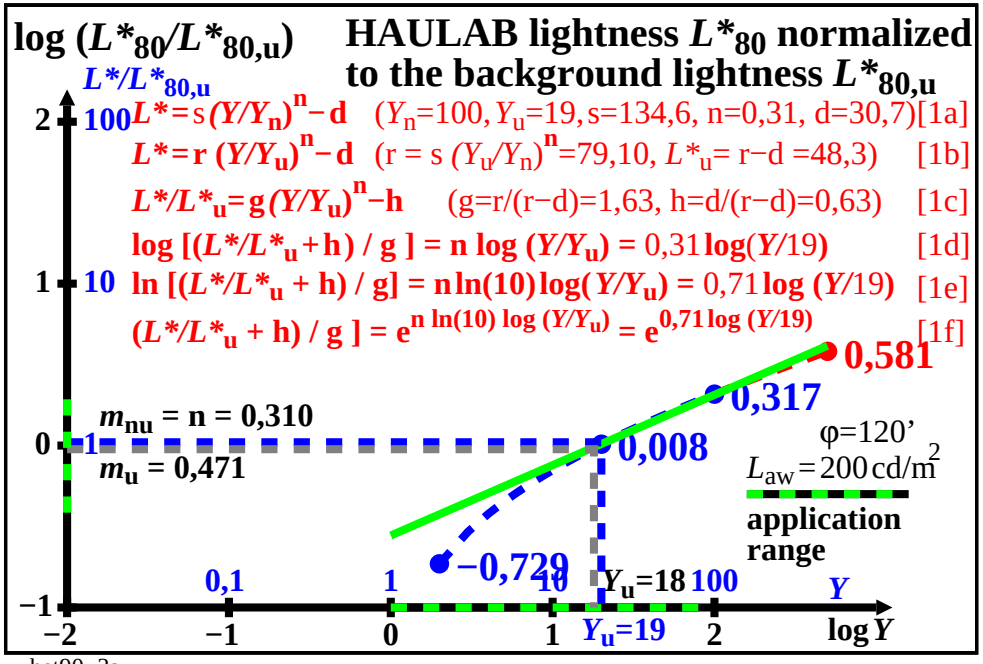
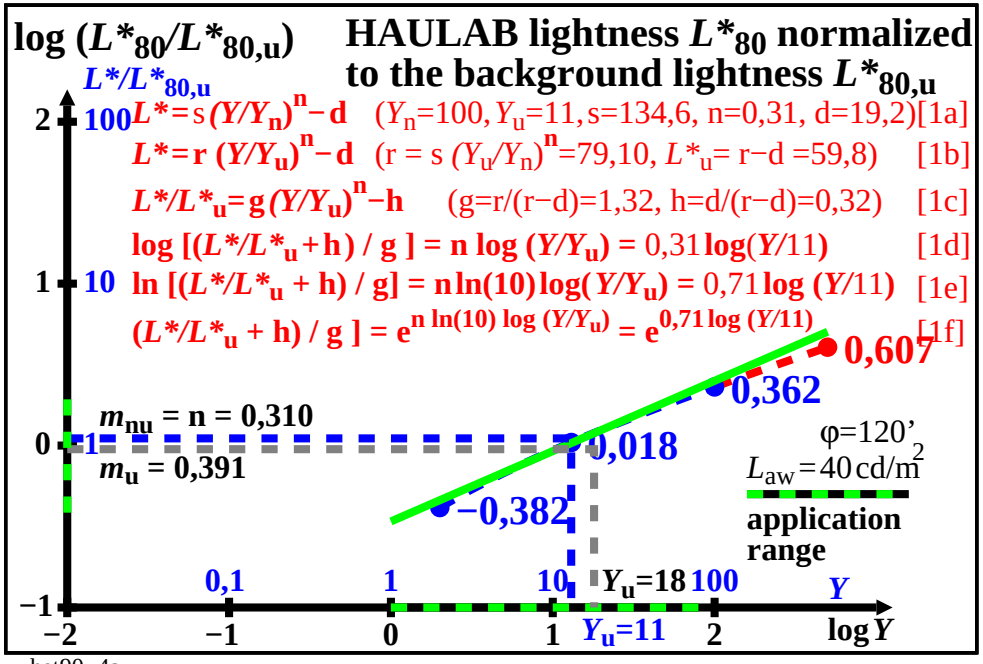

log (L*80/L*80,u)
HAUBAL lightness L*80 normalized to the background lightness L*80,u
L*/L*80,u
100 L* = s (Y/Yn)^n − d (Yn=100, Yu=22, s=134,6, n=0,31, d=34,6) [1a]
L* = r (Y/Yu)^n − d (r = s (Yu/Yn)^n =79,10, L*u = r−d =44,4) [1b]
L*/L*u = g (Y/Yu)^n − h (g=r/(r−d)=1,77, h=d/(r−d)=0,77) [1c]
log [(L*/L*u + h) / g ] = n log (Y/Yu) = 0,31 log(Y/22) [1d]
10 ln [(L*/L*u + h) / g] = n ln(10) log(Y/Yu) = 0,71 log (Y/22) [1e]
(L*/L*u + h) / g ] = e^(n ln(10) log (Y/Yu)) = e^(0,71 log (Y/22)) [1f]
0,573
0,301
0,006
−0,964
mnu = n = 0,310
mu = 0,498
φ=120’
Law = 300 cd/m2
application range
0,1
1
10
Yu=18
100
Y
log Y
Yu=22
2
1
0
−1
−2
het90−1a


log (L*80/L*80,u)
HAUBAL lightness L*80 normalized to the background lightness L*80,u
L*/L*80,u
100 L* = s (Y/Yn)^n − d (Yn=100, Yu=37, s=134,6, n=0,31, d=49,5) [1a]
L* = r (Y/Yu)^n − d (r = s (Yu/Yn)^n =79,10, L*u = r−d =29,5) [1b]
L*/L*u = g (Y/Yu)^n − h (g=r/(r−d)=2,67, h=d/(r−d)=1,67) [1c]
log [(L*/L*u + h) / g ] = n log (Y/Yu) = 0,31 log(Y/37) [1d]
10 ln [(L*/L*u + h) / g] = n ln(10) log(Y/Yu) = 0,71 log (Y/37) [1e]
(L*/L*u + h) / g ] = e^(n ln(10) log (Y/Yu)) = e^(0,71 log (Y/37)) [1f]
0,536
0,230
0,008
−0,722
mnu = n = 0,310
mu = 0,595
φ=120’
Law = 1000 cd/m2
application range
0,1
1
10
Yu=18
100
Y
log Y
Yu=37
2
1
0
−1
−2
het90−2a


log (L*80/L*80,u)
HAUBAL lightness L*80 normalized to the background lightness L*80,u
L*/L*80,u
100 L* = s (Y/Yn)^n − d (Yn=100, Yu=19, s=134,6, n=0,31, d=30,7) [1a]
L* = r (Y/Yu)^n − d (r = s (Yu/Yn)^n =79,10, L*u = r−d =48,3) [1b]
L*/L*u = g (Y/Yu)^n − h (g=r/(r−d)=1,63, h=d/(r−d)=0,63) [1c]
log [(L*/L*u + h) / g ] = n log (Y/Yu) = 0,31 log(Y/19) [1d]
10 ln [(L*/L*u + h) / g] = n ln(10) log(Y/Yu) = 0,71 log (Y/19) [1e]
(L*/L*u + h) / g ] = e^(n ln(10) log (Y/Yu)) = e^(0,71 log (Y/19)) [1f]
0,581
0,317
0,008
−0,729
mnu = n = 0,310
mu = 0,471
φ=120’
Law = 200 cd/m2
application range
0,1
1
10
Yu=18
100
Y
log Y
Yu=19
2
1
0
−1
−2
het90−3a


log (L*80/L*80,u)
HAUBAL lightness L*80 normalized to the background lightness L*80,u
L*/L*80,u
100 L* = s (Y/Yn)^n − d (Yn=100, Yu=11, s=134,6, n=0,31, d=19,2) [1a]
L* = r (Y/Yu)^n − d (r = s (Yu/Yn)^n =79,10, L*u = r−d =59,8) [1b]
L*/L*u = g (Y/Yu)^n − h (g=r/(r−d)=1,32, h=d/(r−d)=0,32) [1c]
log [(L*/L*u + h) / g ] = n log (Y/Yu) = 0,31 log(Y/11) [1d]
10 ln [(L*/L*u + h) / g] = n ln(10) log(Y/Yu) = 0,71 log (Y/11) [1e]
(L*/L*u + h) / g ] = e^(n ln(10) log (Y/Yu)) = e^(0,71 log (Y/11)) [1f]
0,607
0,362
0,018
−0,382
mnu = n = 0,310
mu = 0,391
φ=120’
Law = 40 cd/m2
application range
0,1
1
10
Yu=18
100
Y
log Y
Yu=11
2
1
0
−1
−2
het90−4a

het90−3n