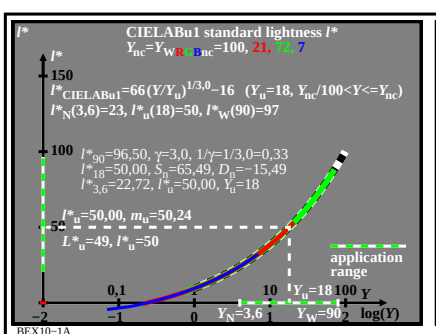
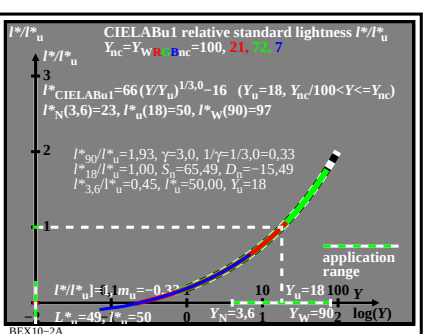
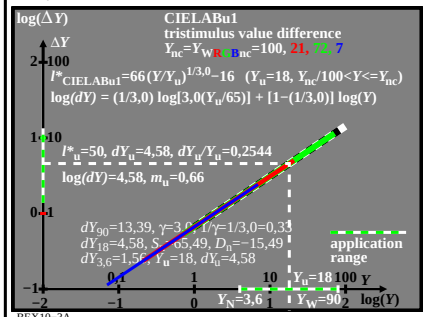
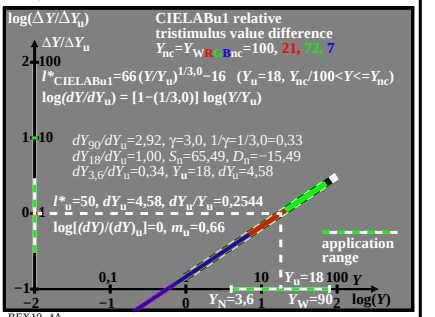
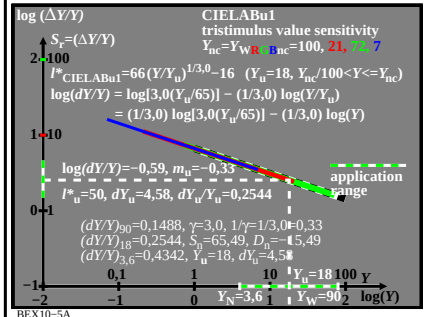
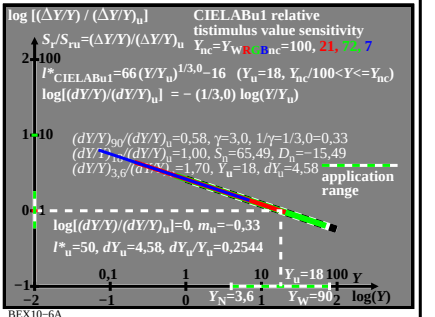

l*
CIELABu1 standard lightness l*
Ync=YWRGBnc=100, 21, 72, 7
l*CIELABu1=66 (Y/Yu)1/3,0−16 (Yu=18, Ync/100<Y<=Ync)
l*N(3,6)=23, l*u(18)=50, l*W(90)=97
l*90=96,50, γ=3,0, 1/γ=1/3,0=0,33
l*18=50,00, Sb=65,49, Db=−15,49
l*3,6=22,72, l*u=50,00, Yu=18
l*u=50,00, mu=50,24
L*u=49, l*u=50
application range
Yu=18 100 Y
YN=3,6 1
YW=90 2 log(Y)
BEX10−1A

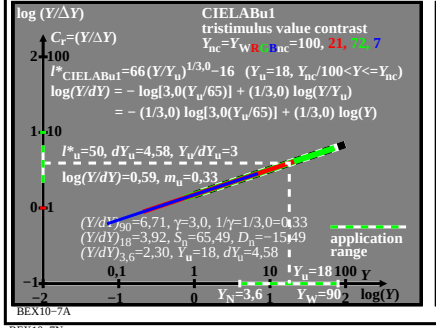

l*/l*u
CIELABu1 relative standard lightness l*/l*u
Ync=YWRGBnc=100, 21, 72, 7
l*CIELABu1=66 (Y/Yu)1/3,0−16 (Yu=18, Ync/100<Y<=Ync)
l*N(3,6)=23, l*u(18)=50, l*W(90)=97
l*90/l*u=1,93, γ=3,0, 1/γ=1/3,0=0,33
l*18/l*u=1,00, Sb=65,49, Db=−15,49
l*3,6/l*u=0,45, l*u=50,00, Yu=18
l*/l*u|=1,1 mu=−0,33
L*u=49, l*u=50
application range
Yu=18 100 Y
YN=3,6 1
YW=90 2 log(Y)
BEX10−2A

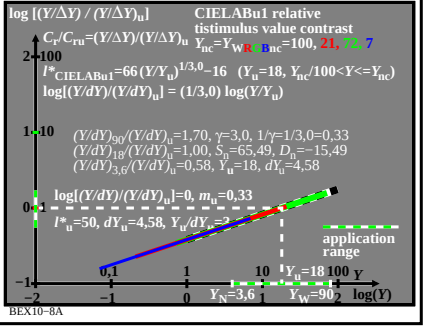

log(ΔY)
CIELABu1 tristimulus value difference
Ync=YWRGBnc=100, 21, 72, 7
ΔY
l*CIELABu1=66 (Y/Yu)1/3,0−16 (Yu=18, Ync/100<Y<=Ync)
log(dY) = (1/3,0) log[3,0(Yu/65)] + [1−(1/3,0)] log(Y)
l*u=50, dYu=4,58, dYu/Yu=0,2544
log(dY)=4,58, mu=0,66
dY90=13,39, γ=3,0, 1/γ=1/3,0=0,33
dY18=4,58, Sb=65,49, Db=−15,49
dY3,6=1,56, Yu=18, dYu=4,58
application range
Yu=18 100 Y
YN=3,6 1
YW=90 2 log(Y)
BEX10−3A


log(ΔY/ΔYu)
CIELABu1 relative tristimulus value difference
Ync=YWRGBnc=100, 21, 72, 7
ΔY/ΔYu
l*CIELABu1=66 (Y/Yu)1/3,0−16 (Yu=18, Ync/100<Y<=Ync)
log(dY/dYu) = [1−(1/3,0)] log(Y/Yu)
dY90/dYu=2,92, γ=3,0, 1/γ=1/3,0=0,33
dY18/dYu=1,00, Sb=65,49, Db=−15,49
dY3,6/dYu=0,34, Yu=18, dYu=4,58
l*u=50, dYu=4,58, dYu/Yu=0,2544
log[(dY)/(dY)u]=0, mu=0,66
application range
Yu=18 100 Y
YN=3,6 1
YW=90 2 log(Y)
BEX10−4A


log (ΔY/Y)
CIELABu1 tristimulus value sensitivity
Ync=YWRGBnc=100, 21, 72, 7
Sr=(ΔY/Y)
l*CIELABu1=66 (Y/Yu)1/3,0−16 (Yu=18, Ync/100<Y<=Ync)
log(dY/Y) = log[3,0(Yu/65)] − (1/3,0) log(Y/Yu)
= (1/3,0) log[3,0(Yu/65)] − (1/3,0) log(Y)
log(dY/Y)=−0,59, mu=−0,33
l*u=50, dYu=4,58, dYu/Yu=0,2544
(dY/Y)90=0,1488, γ=3,0, 1/γ=1/3,0=0,33
(dY/Y)18=0,2544, Sb=65,49, Db=−15,49
(dY/Y)3,6=0,4342, Yu=18, dYu=4,58
application range
Yu=18 100 Y
YN=3,6 1
YW=90 2 log(Y)
BEX10−5A


log [(ΔY/Y) / (ΔY/Y)u]
CIELABu1 relative tristimulus value sensitivity
Ync=YWRGBnc=100, 21, 72, 7
Sr/Sru=(ΔY/Y)/(ΔY/Y)u
l*CIELABu1=66 (Y/Yu)1/3,0−16 (Yu=18, Ync/100<Y<=Ync)
log[(dY/Y)/(dY/Y)u] = − (1/3,0) log(Y/Yu)
(dY/Y)90/(dY/Y)u=0,58, γ=3,0, 1/γ=1/3,0=0,33
(dY/Y)18/(dY/Y)u=1,00, Sb=65,49, Db=−15,49
(dY/Y)3,6/(dY/Y)u=1,70, Yu=18, dYu=4,58
log[(dY/Y)/(dY/Y)u]=0, mu=−0,33
l*u=50, dYu=4,58, dYu/Yu=0,2544
application range
Yu=18 100 Y
YN=3,6 1
YW=90 2 log(Y)
BEX10−6A


log (Y/ΔY)
CIELABu1 tristimulus value contrast
Ync=YWRGBnc=100, 21, 72, 7
Cr=(Y/ΔY)
l*CIELABu1=66 (Y/Yu)1/3,0−16 (Yu=18, Ync/100<Y<=Ync)
log(Y/dY) = − log[3,0(Yu/65)] + (1/3,0) log(Y/Yu)
= − (1/3,0) log[3,0(Yu/65)] + (1/3,0) log(Y)
l*u=50, dYu=4,58, Yu/dYu=3
log(Y/dY)=0,59, mu=0,33
(Y/dY)90=6,71, γ=3,0, 1/γ=1/3,0=0,33
(Y/dY)18=3,92, Sb=65,49, Db=−15,49
(Y/dY)3,6=2,30, Yu=18, dYu=4,58
application range
Yu=18 100 Y
YN=3,6 1
YW=90 2 log(Y)
BEX10−7A
BEX10−7N


log [(Y/ΔY) / (Y/ΔY)u]
CIELABu1 relative tristimulus value contrast
Ync=YWRGBnc=100, 21, 72, 7
Cr/Cru=(Y/ΔY)/(Y/ΔY)u
l*CIELABu1=66 (Y/Yu)1/3,0−16 (Yu=18, Ync/100<Y<=Ync)
log[(Y/dY)/(Y/dY)u] = (1/3,0) log(Y/Yu)
(Y/dY)90/(Y/dY)u=1,70, γ=3,0, 1/γ=1/3,0=0,33
(Y/dY)18/(Y/dY)u=1,00, Sb=65,49, Db=−15,49
(Y/dY)3,6/(Y/dY)u=0,58, Yu=18, dYu=4,58
log[(Y/dY)/(Y/dY)u]=0, mu=0,33
l*u=50, dYu=4,58, Yu/dYu=3
application range
Yu=18 100 Y
YN=3,6 1
YW=90 2 log(Y)
BEX10−8A