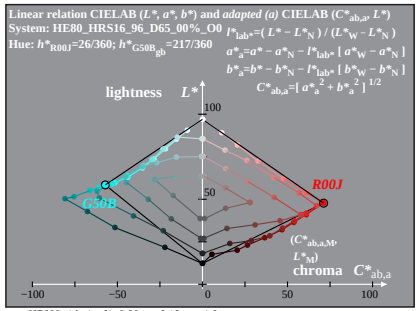
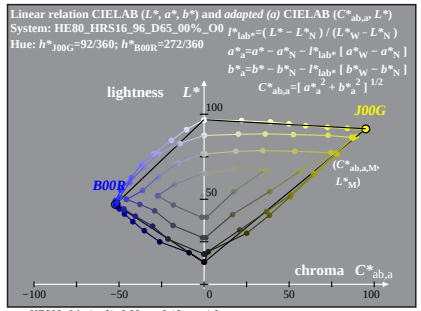
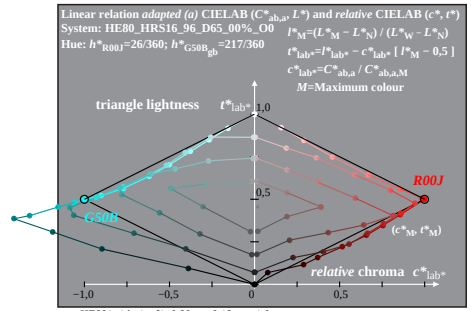
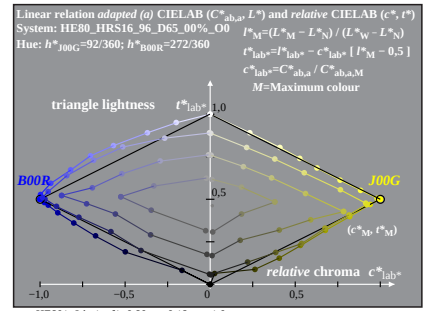
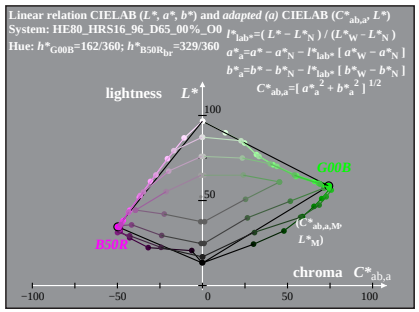
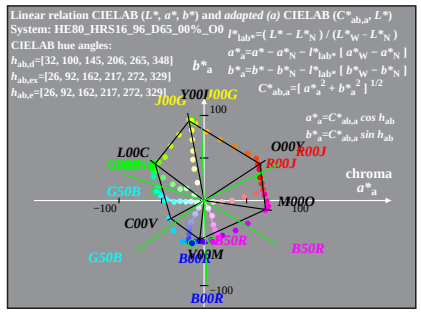

Linear relation CIELAB (L*, a*, b*) and adapted (a) CIELAB (C*ab,a, L*)
System: HE80_HRS16_96_D65_00%_O0
Hue: h*R00J=26/360; h*G50Bgb=217/360
l*lab*=(L* − L*N) / (L*W − L*N)
a*a=a* − a*N − l*lab* [a*W − a*N]
b*a=b* − b*N − l*lab* [b*W − b*N]
C*ab,a=[a*a2 + b*a2] 1/2
lightness L*
chroma C*ab,a
R00J
G50B
(C*ab,a,M, L*M)
HE800−1A, 1; cf1=0.90; nt=0.18; nx=1.0

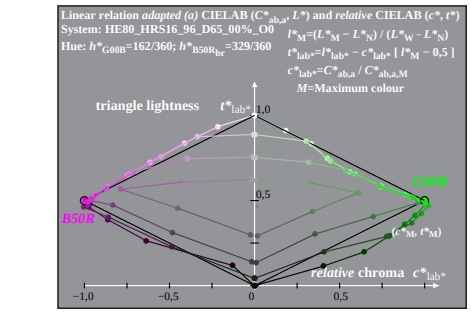

Linear relation CIELAB (L*, a*, b*) and adapted (a) CIELAB (C*ab,a, L*)
System: HE80_HRS16_96_D65_00%_O0
Hue: h*J00G=92/360; h*B00R=272/360
l*lab*=(L* − L*N) / (L*W − L*N)
a*a=a* − a*N − l*lab* [a*W − a*N]
b*a=b* − b*N − l*lab* [b*W − b*N]
C*ab,a=[a*a2 + b*a2] 1/2
lightness L*
chroma C*ab,a
J00G
B00R
(C*ab,a,M, L*M)
HE800−2A, 1; cf1=0.90; nt=0.18; nx=1.0

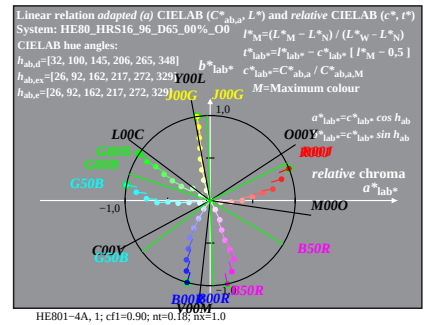

Linear relation adapted (a) CIELAB (C*ab,a, L*) and relative CIELAB (c*, t*)
System: HE80_HRS16_96_D65_00%_O0
Hue: h*R00J=26/360; h*G50Bgb=217/360
l*M=(L*M − L*N) / (L*W − L*N)
t*lab*=l*lab* − c*lab* [l*M − 0,5]
c*lab*=C*ab,a / C*ab,a,M
M=Maximum colour
triangle lightness t*lab*
relative chroma c*lab*
R00J
G50B
(c*M, t*M)
HE801−1A, 1; cf1=0.90; nt=0.18; nx=1.0

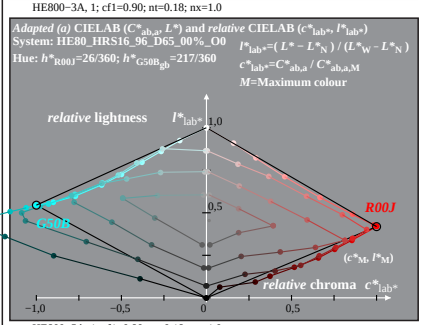

Linear relation adapted (a) CIELAB (C*ab,a, L*) and relative CIELAB (c*, t*)
System: HE80_HRS16_96_D65_00%_O0
Hue: h*J00G=92/360; h*B00R=272/360
t*lab*=l*lab* − c*lab* [l*M − 0,5]
c*lab*=C*ab,a / C*ab,a,M
M=Maximum colour
triangle lightness t*lab*
relative chroma c*lab*
B00R
J00G
(c*M, t*M)
HE801−2A, 1; cf1=0.90; nt=0.18; nx=1.0

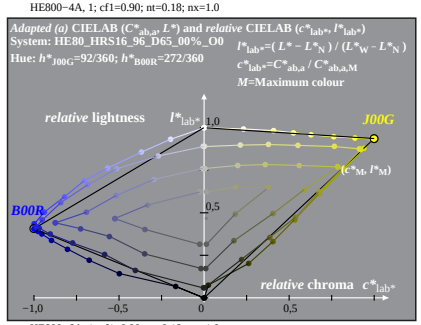

Linear relation CIELAB (L*, a*, b*) and adapted (a) CIELAB (C*ab,a, L*)
System: HE80_HRS16_96_D65_00%_O0
Hue: h*G00B=162/360; h*B50Rbr=329/360
l*lab*=(L* − L*N) / (L*W − L*N)
a*a=a* − a*N − l*lab* [a*W − a*N]
b*a=b* − b*N − l*lab* [b*W − b*N]
C*ab,a=[a*a2 + b*a2] 1/2
lightness L*
chroma C*ab,a
G00B
B50R
(C*ab,a,M, L*M)
HE800−3A, 1; cf1=0.90; nt=0.18; nx=1.0

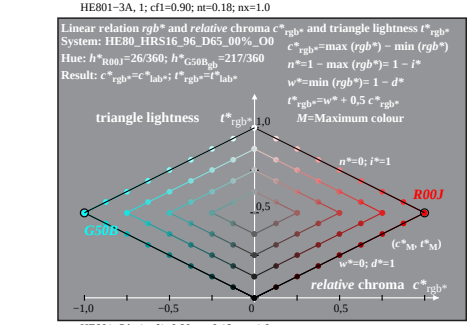

Linear relation CIELAB (L*, a*, b*) and adapted (a) CIELAB (C*ab,a, L*)
System: HE80_HRS16_96_D65_00%_O0
CIELAB hue angles:
hab,d=[32, 100, 145, 206, 265, 348]
hab,ex=[26, 92, 162, 217, 272, 329]
hab,e=[26, 92, 162, 217, 272, 329]
l*lab*=(L* − L*N) / (L*W − L*N)
a*a=a* − a*N − l*lab* [a*W − a*N]
b*a=b* − b*N − l*lab* [b*W − b*N]
C*ab,a=[a*a2 + b*a2] 1/2
b*a
a*a=C*ab,a cos hab
b*a=C*ab,a sin hab
chroma a*a
Y00L
J00G
L00C
G00B
G50B
O00Y
R00J
M00O
C00V
B50R
V00M
B00R
HE800−4A, 1; cf1=0.90; nt=0.18; nx=1.0

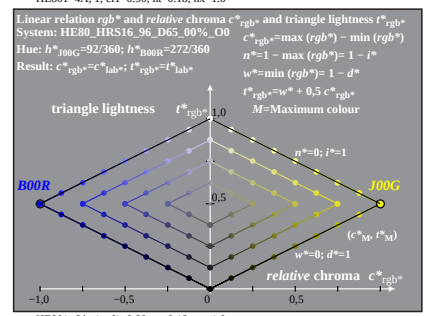

Linear relation adapted (a) CIELAB (C*ab,a, L*) and relative CIELAB (c*, t*)
System: HE80_HRS16_96_D65_00%_O0
Hue: h*G00B=162/360; h*B50Rbr=329/360
l*M=(L*M − L*N) / (L*W − L*N)
t*lab*=l*lab* − c*lab* [l*M − 0,5]
c*lab*=C*ab,a / C*ab,a,M
M=Maximum colour
triangle lightness t*lab*
relative chroma c*lab*
G00B
B50R
(c*M, t*M)
HE801−3A, 1; cf1=0.90; nt=0.18; nx=1.0

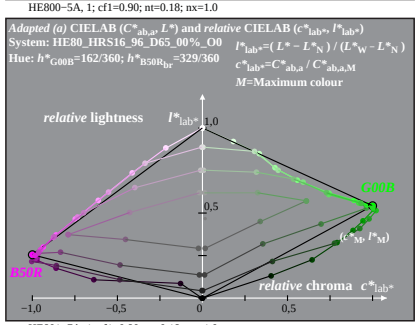

Linear relation adapted (a) CIELAB (C*ab,a, L*) and relative CIELAB (c*, t*)
System: HE80_HRS16_96_D65_00%_O0
CIELAB hue angles:
hab,d=[32, 100, 145, 206, 265, 348]
hab,ex=[26, 92, 162, 217, 272, 329]
hab,e=[26, 92, 162, 217, 272, 329]
l*M=(L*M − L*N) / (L*W − L*N)
t*lab*=l*lab* − c*lab* [l*M − 0,5]
c*lab*=C*ab,a / C*ab,a,M
M=Maximum colour
b*lab*
a*lab*=c*lab* cos hab
b*lab*=c*lab* sin hab
relative chroma a*lab*
Y00L
J00G
L00C
G00B
G50B
O00Y
R00J
M00O
C00V
B50R
B00R
V00M
HE801−4A, 1; cf1=0.90; nt=0.18; nx=1.0

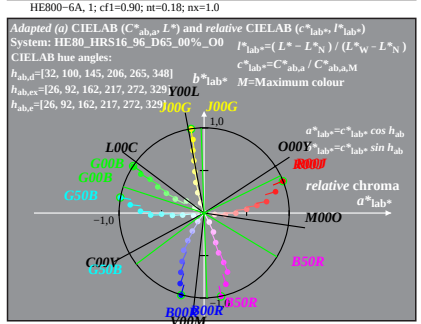

Adapted (a) CIELAB (C*ab,a, L*) and relative CIELAB (c*lab*, l*lab*)
System: HE80_HRS16_96_D65_00%_O0
Hue: h*R00J=26/360; h*G50Bgb=217/360
l*lab*=(L* − L*N) / (L*W − L*N)
c*lab*=C*ab,a / C*ab,a,M
M=Maximum colour
relative lightness l*lab*
relative chroma c*lab*
R00J
G50B
(c*M, l*M)
HE800−5A, 1; cf1=0.90; nt=0.18; nx=1.0

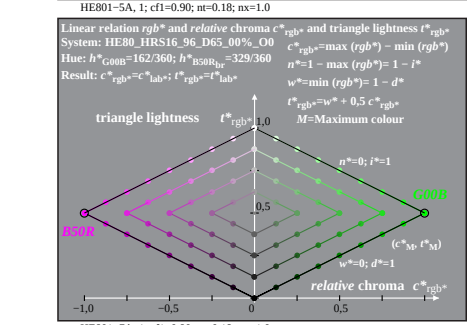

Adapted (a) CIELAB (C*ab,a, L*) and relative CIELAB (c*lab*, l*lab*)
System: HE80_HRS16_96_D65_00%_O0
Hue: h*J00G=92/360; h*B00R=272/360
l*lab*=(L* − L*N) / (L*W − L*N)
c*lab*=C*ab,a / C*ab,a,M
M=Maximum colour
relative lightness l*lab*
relative chroma c*lab*
J00G
B00R
(c*M, l*M)
HE800−6A, 1; cf1=0.90; nt=0.18; nx=1.0

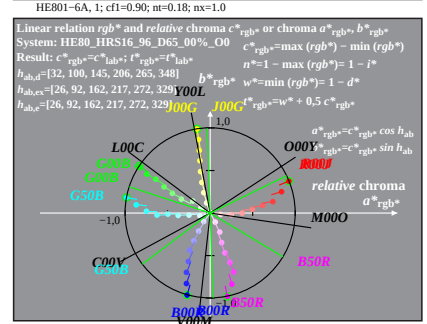

Linear relation rgb* and relative chroma c*rgb* and triangle lightness t*rgb*
System: HE80_HRS16_96_D65_00%_O0
Hue: h*R00J=26/360; h*G50Bgb=217/360
Result: c*rgb*=c*lab*; t*rgb*=t*lab*
c*rgb*=max (rgb*) − min (rgb*)
n*=1 − max (rgb*)= 1 − i*
w*=min (rgb*)= 1 − d*
t*rgb*=w* + 0,5 c*rgb*
M=Maximum colour
triangle lightness t*rgb*
n*=0; i*=1
w*=0; d*=1
relative chroma c*rgb*
R00J
G50B
(c*M, t*M)
HE801−5A, 1; cf1=0.90; nt=0.18; nx=1.0

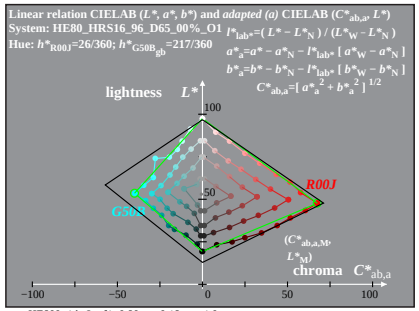

Linear relation rgb* and relative chroma c*rgb* and triangle lightness t*rgb*
System: HE80_HRS16_96_D65_00%_O0
Hue: h*J00G=92/360; h*B00R=272/360
Result: c*rgb*=c*lab*; t*rgb*=t*lab*
c*rgb*=max (rgb*) − min (rgb*)
n*=1 − max (rgb*)= 1 − i*
w*=min (rgb*)= 1 − d*
t*rgb*=w* + 0,5 c*rgb*
M=Maximum colour
triangle lightness t*rgb*
n*=0; i*=1
w*=0; d*=1
relative chroma c*rgb*
B00R
J00G
(c*M, t*M)
HE801−6A, 1; cf1=0.90; nt=0.18; nx=1.0


Adapted (a) CIELAB (C*ab,a, L*) and relative CIELAB (c*lab*, l*lab*)
System: HE80_HRS16_96_D65_00%_O0
Hue: h*G00B=162/360; h*B50Rbr=329/360
l*lab*=(L* − L*N) / (L*W − L*N)
c*lab*=C*ab,a / C*ab,a,M
M=Maximum colour
relative lightness l*lab*
relative chroma c*lab*
G00B
B50R
(c*M, l*M)
HE801−7A, 1; cf1=0.90; nt=0.18; nx=1.0

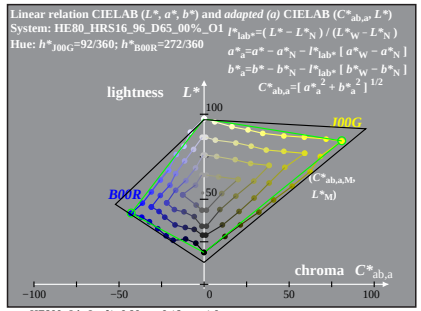

Adapted (a) CIELAB (C*ab,a, L*) and relative CIELAB (c*lab*, l*lab*)
System: HE80_HRS16_96_D65_00%_O0
CIELAB hue angles:
hab,d=[32, 100, 145, 206, 265, 348]
hab,ex=[26, 92, 162, 217, 272, 329]
hab,e=[26, 92, 162, 217, 272, 329]
l*lab*=(L* − L*N) / (L*W − L*N)
c*lab*=C*ab,a / C*ab,a,M
M=Maximum colour
b*lab*
a*lab*=c*lab* cos hab
b*lab*=c*lab* sin hab
relative chroma a*lab*
Y00L
J00G
L00C
G00B
G50B
O00Y
R00J
M00O
C00V
B50R
B00R
V00M
HE801−8A, 1; cf1=0.90; nt=0.18; nx=1.0


Linear relation rgb* and relative chroma c*rgb* and triangle lightness t*rgb*
System: HE80_HRS16_96_D65_00%_O0
Hue: h*G00B=162/360; h*B50Rbr=329/360
Result: c*rgb*=c*lab*; t*rgb*=t*lab*
c*rgb*=max (rgb*) − min (rgb*)
n*=1 − max (rgb*)= 1 − i*
w*=min (rgb*)= 1 − d*
t*rgb*=w* + 0,5 c*rgb*
M=Maximum colour
triangle lightness t*rgb*
n*=0; i*=1
w*=0; d*=1
relative chroma c*rgb*
G00B
B50R
(c*M, t*M)
HE801−7A, 1; cf1=0.90; nt=0.18; nx=1.0

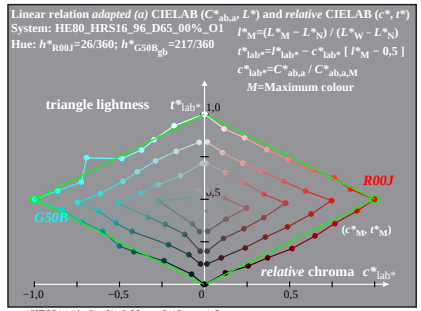

Linear relation rgb* and relative chroma c*rgb* or chroma a*rgb*, b*rgb*
System: HE80_HRS16_96_D65_00%_O0
Result: c*rgb*=c*lab*; t*rgb*=t*lab*
hab,d=[32, 100, 145, 206, 265, 348]
hab,ex=[26, 92, 162, 217, 272, 329]
hab,e=[26, 92, 162, 217, 272, 329]
c*rgb*=max (rgb*) − min (rgb*)
n*=1 − max (rgb*)= 1 − i*
w*=min (rgb*)= 1 − d*
t*rgb*=w* + 0,5 c*rgb*
b*rgb*
a*rgb*=c*rgb* cos hab
b*rgb*=c*rgb* sin hab
relative chroma a*rgb*
Y00L
J00G
L00C
G00B
G50B
O00Y
R00J
M00O
C00V
B50R
B00R
V00M
HE801−8A, 1; cf1=0.90; nt=0.18; nx=1.0



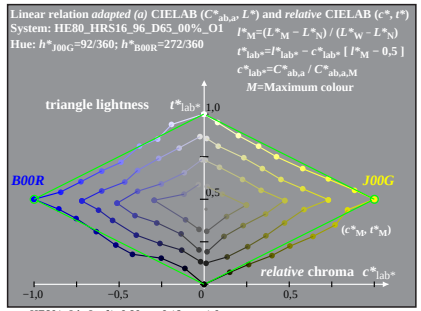
HE800−1A, 2; cf1=0.90; nt=0.18; nx=1.0



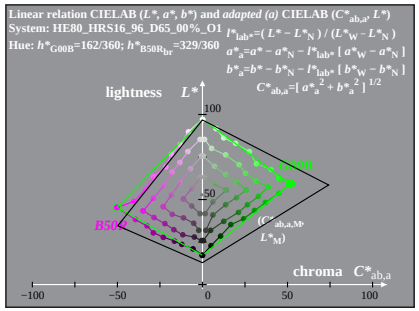
HE800−2A, 2; cf1=0.90; nt=0.18; nx=1.0



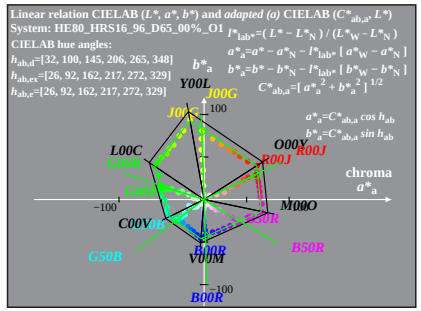
HE801−1A, 2; cf1=0.90; nt=0.18; nx=1.0



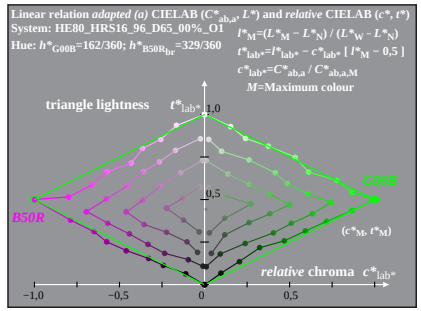
HE801−2A, 2; cf1=0.90; nt=0.18; nx=1.0



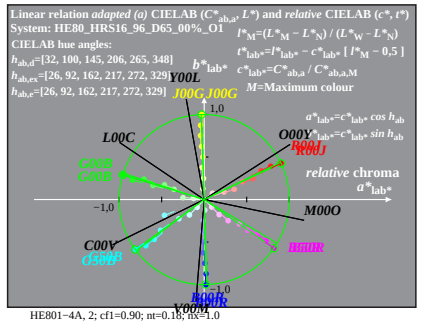
HE800−3A, 2; cf1=0.90; nt=0.18; nx=1.0



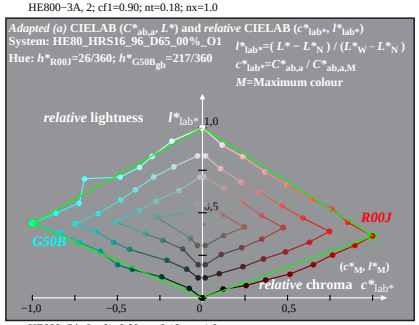
HE800−4A, 2; cf1=0.90; nt=0.18; nx=1.0



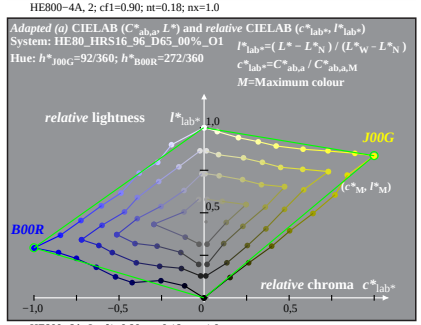
HE801−3A, 2; cf1=0.90; nt=0.18; nx=1.0



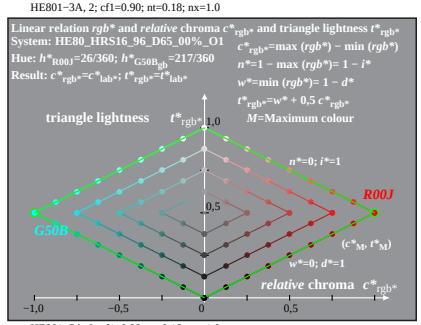
HE801−4A, 2; cf1=0.90; nt=0.18; nx=1.0



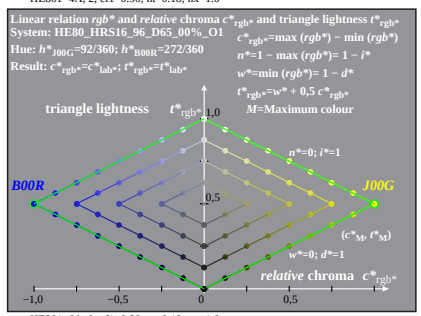
HE800−5A, 2; cf1=0.90; nt=0.18; nx=1.0



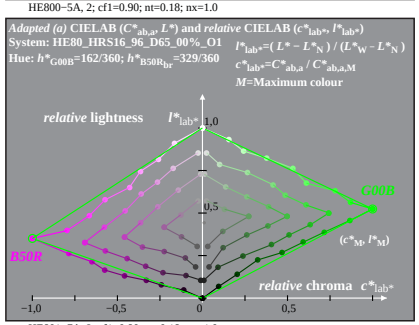
HE800−6A, 2; cf1=0.90; nt=0.18; nx=1.0



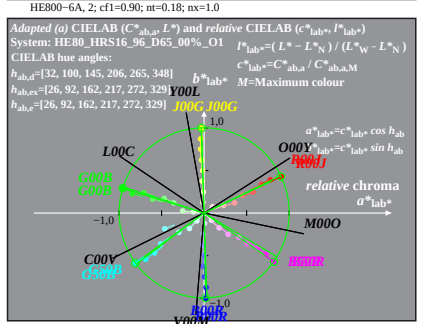
HE801−5A, 2; cf1=0.90; nt=0.18; nx=1.0



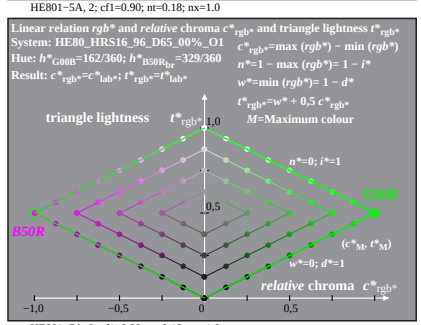
HE801−6A, 2; cf1=0.90; nt=0.18; nx=1.0



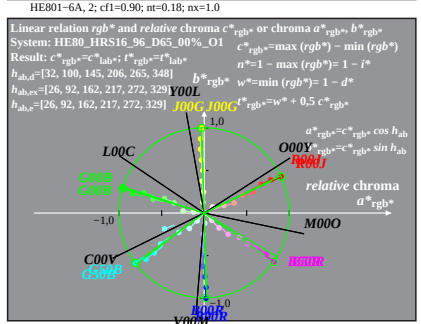
HE801−7A, 2; cf1=0.90; nt=0.18; nx=1.0



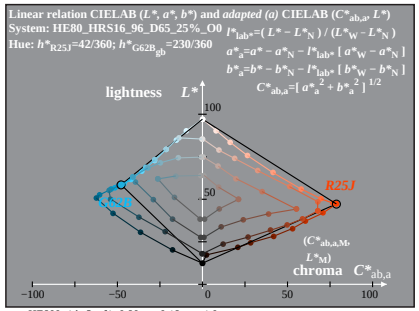
HE801−8A, 2; cf1=0.90; nt=0.18; nx=1.0

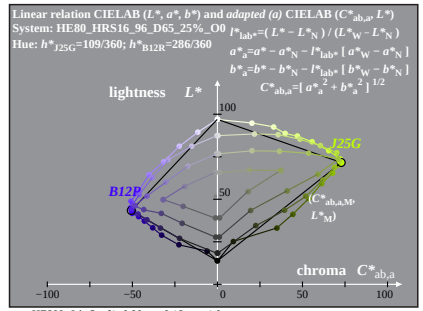


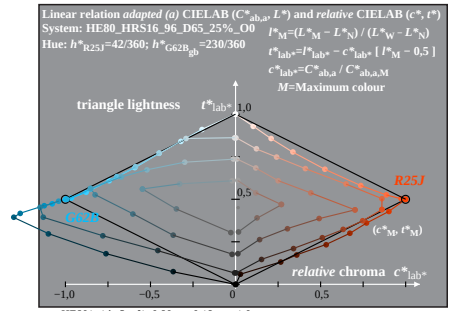
HE801−7A, 2; cf1=0.90; nt=0.18; nx=1.0

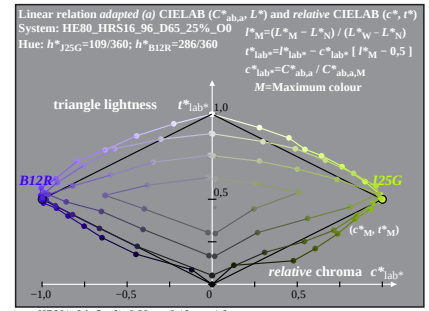


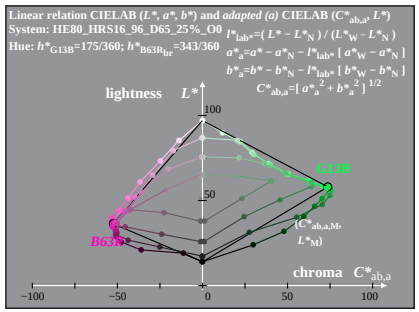
HE801−8A, 2; cf1=0.90; nt=0.18; nx=1.0

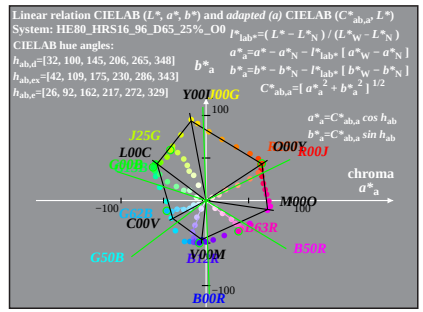

Linear relation CIELAB (L*, a*, b*) and adapted (a) CIELAB (C*ab,a, L*)
System: HE80_HRS16_96_D65_25%_O0
Hue: h*R25J=42/360; h*G62Bgb=230/360
l*labₙ=(L* − L*N) / (L*W − L*N)
a*a=a* − a*N − l*labₙ [a*W − a*N]
b*a=b* − b*N − l*labₙ [b*W − b*N]
C*ab,a=[a*a² + b*a²] 1/2
lightness L*
chroma C*ab,a
R25J
G62B
(C*ab,a,M, L*M)
HE800−1A, 3; cf1=0.90; nt=0.18; nx=1.0

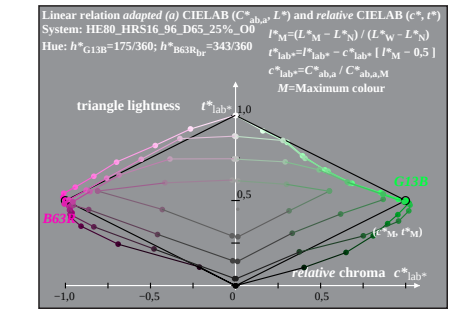

Linear relation CIELAB (L*, a*, b*) and adapted (a) CIELAB (C*ab,a, L*)
System: HE80_HRS16_96_D65_25%_O0
Hue: h*J25G=109/360; h*B12R=286/360
l*labₙ=(L* − L*N) / (L*W − L*N)
a*a=a* − a*N − l*labₙ [a*W − a*N]
b*a=b* − b*N − l*labₙ [b*W − b*N]
C*ab,a=[a*a² + b*a²] 1/2
lightness L*
chroma C*ab,a
J25G
B12R
(C*ab,a,M, L*M)
HE800−2A, 3; cf1=0.90; nt=0.18; nx=1.0

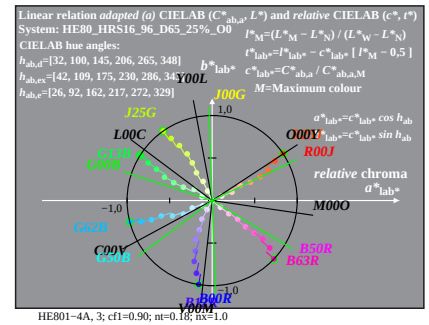

Linear relation adapted (a) CIELAB (C*ab,a, L*) and relative CIELAB (c*, t*)
System: HE80_HRS16_96_D65_25%_O0
Hue: h*R25J=42/360; h*G62Bgb=230/360
l*M=(L*M − L*N) / (L*W − L*N)
t*labₙ=l*labₙ − c*labₙ [l*M − 0,5]
c*labₙ=C*ab,a / C*ab,a,M
M=Maximum colour
triangle lightness t*labₙ
relative chroma c*labₙ
R25J
G62B
(c*M, t*M)
HE801−1A, 3; cf1=0.90; nt=0.18; nx=1.0

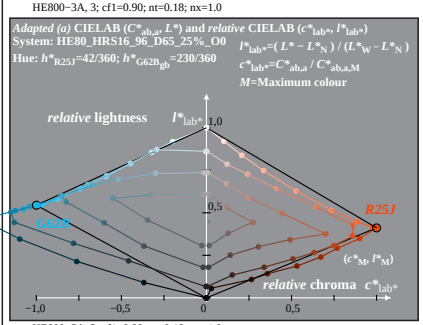

Linear relation adapted (a) CIELAB (C*ab,a, L*) and relative CIELAB (c*, t*)
System: HE80_HRS16_96_D65_25%_O0
Hue: h*J25G=109/360; h*B12R=286/360
l*M=(L*M − L*N) / (L*W − L*N)
t*labₙ=l*labₙ − c*labₙ [l*M − 0,5]
c*labₙ=C*ab,a / C*ab,a,M
M=Maximum colour
triangle lightness t*labₙ
relative chroma c*labₙ
J25G
B12R
(c*M, t*M)
HE801−2A, 3; cf1=0.90; nt=0.18; nx=1.0

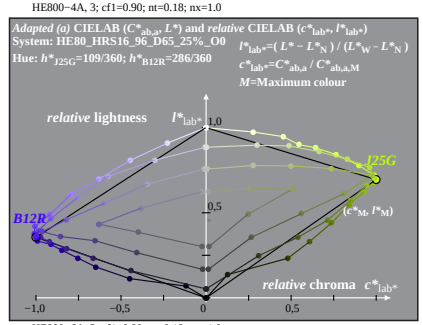

Linear relation CIELAB (L*, a*, b*) and adapted (a) CIELAB (C*ab,a, L*)
System: HE80_HRS16_96_D65_25%_O0
Hue: h*G13B=175/360; h*B63Rbr=343/360
l*labₙ=(L* − L*N) / (L*W − L*N)
a*a=a* − a*N − l*labₙ [a*W − a*N]
b*a=b* − b*N − l*labₙ [b*W − b*N]
C*ab,a=[a*a² + b*a²] 1/2
lightness L*
chroma C*ab,a
G13B
B63R
(C*ab,a,M, L*M)
HE800−3A, 3; cf1=0.90; nt=0.18; nx=1.0

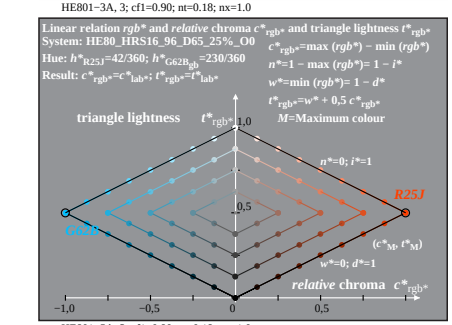

Linear relation CIELAB (L*, a*, b*) and adapted (a) CIELAB (C*ab,a, L*)
System: HE80_HRS16_96_D65_25%_O0
CIELAB hue angles:
hab,d=[32, 100, 145, 206, 265, 348]
hab,ex=[42, 109, 175, 230, 286, 343]
hab,e=[26, 92, 162, 217, 272, 329]
l*labₙ=(L* − L*N) / (L*W − L*N)
a*a=a* − a*N − l*labₙ [a*W − a*N]
b*a=b* − b*N − l*labₙ [b*W − b*N]
C*ab,a=[a*a² + b*a²] 1/2
a*a=C*ab,a cos hab
b*a=C*ab,a sin hab
b*a
chroma a*a
Y00I
J00G
J25G
L00C
G13B
G00B
O00Y
R00J
M00O
C00V
G62B
B50R
G50B
Y00M
B63R
B00R
HE800−4A, 3; cf1=0.90; nt=0.18; nx=1.0

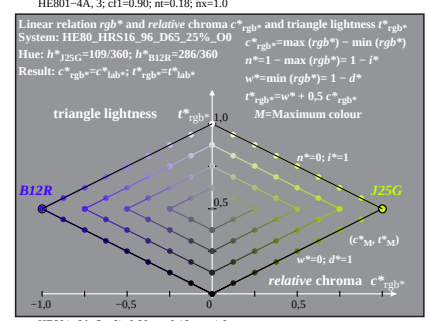

Linear relation adapted (a) CIELAB (C*ab,a, L*) and relative CIELAB (c*, t*)
System: HE80_HRS16_96_D65_25%_O0
Hue: h*G13B=175/360; h*B63Rbr=343/360
l*M=(L*M − L*N) / (L*W − L*N)
t*labₙ=l*labₙ − c*labₙ [l*M − 0,5]
c*labₙ=C*ab,a / C*ab,a,M
M=Maximum colour
triangle lightness t*labₙ
relative chroma c*labₙ
G13B
B63R
(c*M, t*M)
HE801−3A, 3; cf1=0.90; nt=0.18; nx=1.0

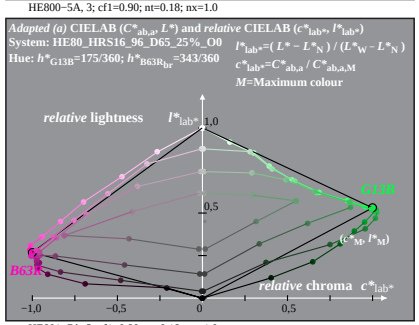

Linear relation adapted (a) CIELAB (C*ab,a, L*) and relative CIELAB (c*, t*)
System: HE80_HRS16_96_D65_25%_O0
CIELAB hue angles:
hab,d=[32, 100, 145, 206, 265, 348]
hab,ex=[42, 109, 175, 230, 286, 343]
hab,e=[26, 92, 162, 217, 272, 329]
l*M=(L*M − L*N) / (L*W − L*N)
t*labₙ=l*labₙ − c*labₙ [l*M − 0,5]
c*labₙ=C*ab,a / C*ab,a,M
M=Maximum colour
b*labₙ
a*labₙ=c*labₙ cos hab
b*labₙ=c*labₙ sin hab
relative chroma a*labₙ
Y00L
J00G
J25G
L00C
G13B
G00B
O00Y
R00J
M00O
G62B
C00V
B50R
B63R
B00R
HE801−4A, 3; cf1=0.90; nt=0.18; nx=1.0

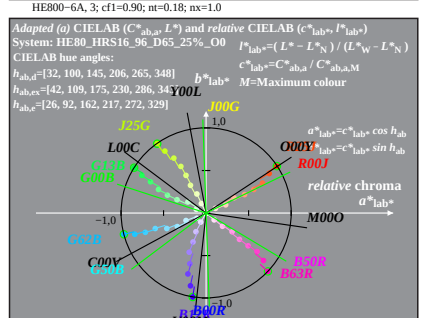

Adapted (a) CIELAB (C*ab,a, L*) and relative CIELAB (c*labₙ, l*labₙ)
System: HE80_HRS16_96_D65_25%_O0
Hue: h*R25J=42/360; h*G62Bgb=230/360
l*labₙ=(L* − L*N) / (L*W − L*N)
c*labₙ=C*ab,a / C*ab,a,M
M=Maximum colour
relative lightness l*labₙ
relative chroma c*labₙ
R25J
G62B
(c*M, l*M)
HE800−5A, 3; cf1=0.90; nt=0.18; nx=1.0

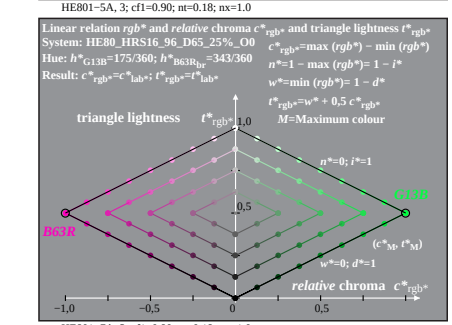

Adapted (a) CIELAB (C*ab,a, L*) and relative CIELAB (c*labₙ, l*labₙ)
System: HE80_HRS16_96_D65_25%_O0
Hue: h*J25G=109/360; h*B12R=286/360
l*labₙ=(L* − L*N) / (L*W − L*N)
c*labₙ=C*ab,a / C*ab,a,M
M=Maximum colour
relative lightness l*labₙ
relative chroma c*labₙ
J25G
B12R
(c*M, l*M)
HE800−6A, 3; cf1=0.90; nt=0.18; nx=1.0

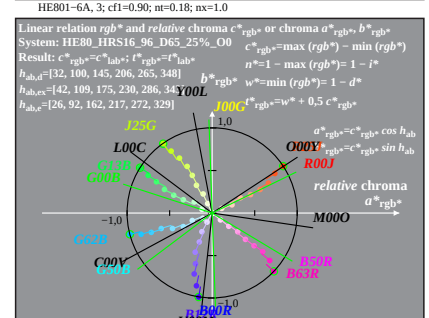

Linear relation rgb* and relative chroma c*rgbₙ and triangle lightness t*rgbₙ
System: HE80_HRS16_96_D65_25%_O0
Hue: h*R25J=42/360; h*G62Bgb=230/360
Result: c*rgbₙ=c*labₙ; t*rgbₙ=t*labₙ
c*rgbₙ=max (rgb*) − min (rgb*)
n*=1 − max (rgb*)= 1 − i*
w*=min (rgb*)= 1 − d*
t*rgbₙ=w* + 0,5 c*rgbₙ
M=Maximum colour
triangle lightness t*rgbₙ
n*=0; i*=1
w*=0; d*=1
relative chroma c*rgbₙ
R25J
G62B
(c*M, t*M)
HE801−5A, 3; cf1=0.90; nt=0.18; nx=1.0

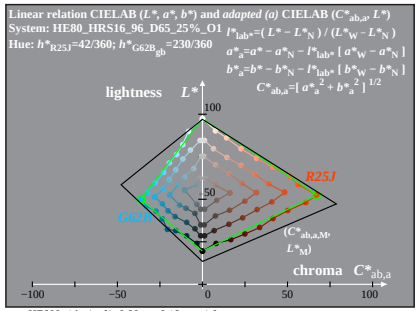

Linear relation rgb* and relative chroma c*rgbₙ and triangle lightness t*rgbₙ
System: HE80_HRS16_96_D65_25%_O0
Hue: h*J25G=109/360; h*B12R=286/360
Result: c*rgbₙ=c*labₙ; t*rgbₙ=t*labₙ
c*rgbₙ=max (rgb*) − min (rgb*)
n*=1 − max (rgb*)= 1 − i*
w*=min (rgb*)= 1 − d*
t*rgbₙ=w* + 0,5 c*rgbₙ
M=Maximum colour
triangle lightness t*rgbₙ
n*=0; i*=1
w*=0; d*=1
relative chroma c*rgbₙ
J25G
B12R
(c*M, t*M)
HE801−6A, 3; cf1=0.90; nt=0.18; nx=1.0

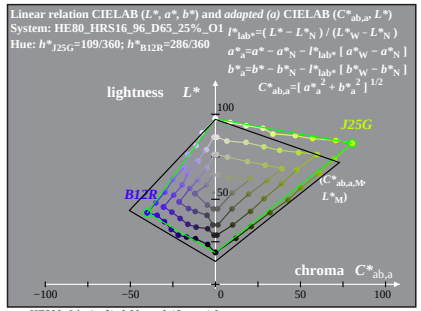

Adapted (a) CIELAB (C*ab,a, L*) and relative CIELAB (c*labₙ, l*labₙ)
System: HE80_HRS16_96_D65_25%_O0
Hue: h*G13B=175/360; h*B63Rbr=343/360
l*labₙ=(L* − L*N) / (L*W − L*N)
c*labₙ=C*ab,a / C*ab,a,M
M=Maximum colour
relative lightness l*labₙ
relative chroma c*labₙ
G13B
B63R
(c*M, l*M)
HE801−7A, 3; cf1=0.90; nt=0.18; nx=1.0

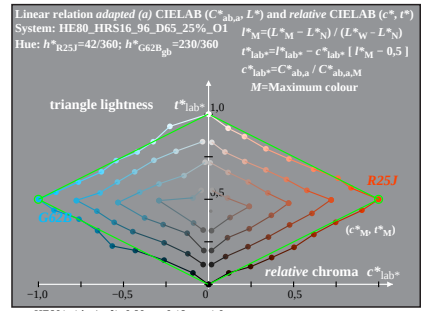

Adapted (a) CIELAB (C*ab,a, L*) and relative CIELAB (c*labₙ, l*labₙ)
System: HE80_HRS16_96_D65_25%_O0
CIELAB hue angles:
hab,d=[32, 100, 145, 206, 265, 348]
hab,ex=[42, 109, 175, 230, 286, 343]
hab,e=[26, 92, 162, 217, 272, 329]
l*labₙ=(L* − L*N) / (L*W − L*N)
c*labₙ=C*ab,a / C*ab,a,M
M=Maximum colour
b*labₙ
a*labₙ=c*labₙ cos hab
b*labₙ=c*labₙ sin hab
relative chroma a*labₙ
Y00L
J00G
J25G
L00C
G13B
G00B
O00Y
R00J
M00O
G62B
C00V
B50R
B63R
B00R
HE801−8A, 3; cf1=0.90; nt=0.18; nx=1.0

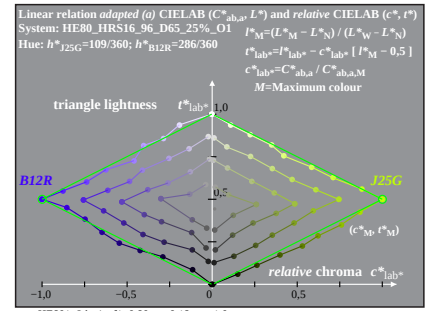

Linear relation rgb* and relative chroma c*rgbₙ and triangle lightness t*rgbₙ
System: HE80_HRS16_96_D65_25%_O0
Hue: h*G13B=175/360; h*B63Rbr=343/360
Result: c*rgbₙ=c*labₙ; t*rgbₙ=t*labₙ
c*rgbₙ=max (rgb*) − min (rgb*)
n*=1 − max (rgb*)= 1 − i*
w*=min (rgb*)= 1 − d*
t*rgbₙ=w* + 0,5 c*rgbₙ
M=Maximum colour
triangle lightness t*rgbₙ
n*=0; i*=1
w*=0; d*=1
relative chroma c*rgbₙ
G13B
B63R
(c*M, t*M)
HE801−7A, 3; cf1=0.90; nt=0.18; nx=1.0

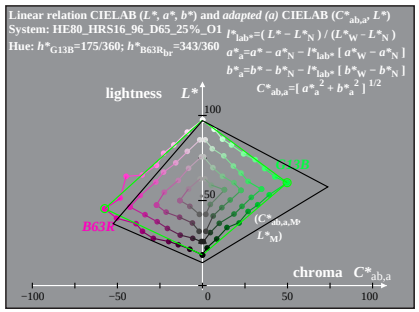

Linear relation rgb* and relative chroma c*rgbₙ or chroma a*rgbₙ, b*rgbₙ
System: HE80_HRS16_96_D65_25%_O0
Result: c*rgbₙ=c*labₙ; t*rgbₙ=t*labₙ
hab,d=[32, 100, 145, 206, 265, 348]
hab,ex=[42, 109, 175, 230, 286, 343]
hab,e=[26, 92, 162, 217, 272, 329]
c*rgbₙ=max (rgb*) − min (rgb*)
n*=1 − max (rgb*)= 1 − i*
w*=min (rgb*)= 1 − d*
t*rgbₙ=w* + 0,5 c*rgbₙ
b*rgbₙ
a*rgbₙ=c*rgbₙ cos hab
b*rgbₙ=c*rgbₙ sin hab
relative chroma a*rgbₙ
Y00L
J00G
J25G
L00C
G13B
G00B
O00Y
R00J
M00O
G62B
C00V
B50R
B63R
B00R
HE801−8A, 3; cf1=0.90; nt=0.18; nx=1.0

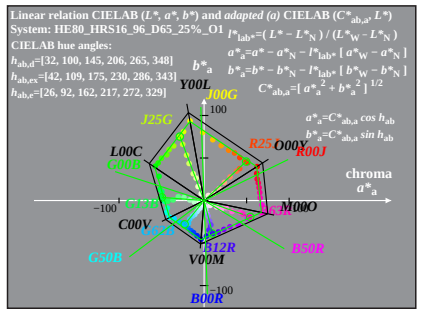

Linear relation CIELAB (L*, a*, b*) and adapted (a) CIELAB (C*ab,a, L*)
System: HE80_HRS16_96_D65_25%_O1
Hue: h*R25J=42/360; h*G62Bgb=230/360
l*lab*=(L* − L*N) / (L*W − L*N)
a*a=a* − a*N − l*lab* [a*W − a*N]
b*a=b* − b*N − l*lab* [b*W − b*N]
C*ab,a=[a*a2 + b*a2] 1/2
lightness L*
chroma C*ab,a
R25J
G62B
(C*ab,a,M, L*M)
HE800−1A, 4; cf1=0.90; nt=0.18; nx=1.0

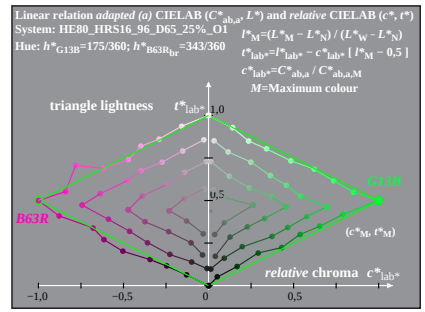

Linear relation CIELAB (L*, a*, b*) and adapted (a) CIELAB (C*ab,a, L*)
System: HE80_HRS16_96_D65_25%_O1
Hue: h*J25G=109/360; h*B12R=286/360
l*lab*=(L* − L*N) / (L*W − L*N)
a*a=a* − a*N − l*lab* [a*W − a*N]
b*a=b* − b*N − l*lab* [b*W − b*N]
C*ab,a=[a*a2 + b*a2] 1/2
lightness L*
chroma C*ab,a
J25G
B12R
(C*ab,a,M, L*M)
HE800−2A, 4; cf1=0.90; nt=0.18; nx=1.0

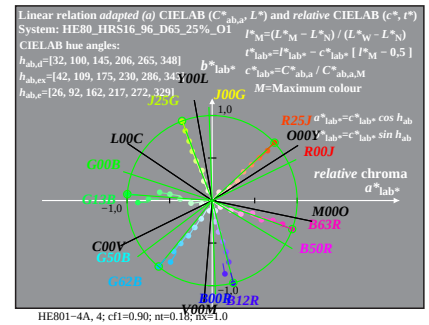

Linear relation adapted (a) CIELAB (C*ab,a, L*) and relative CIELAB (c*, t*)
System: HE80_HRS16_96_D65_25%_O1
Hue: h*R25J=42/360; h*G62Bgb=230/360
l*M=(L*M − L*N) / (L*W − L*N)
t*lab*=l*lab* − c*lab* [l*M − 0,5]
c*lab*=C*ab,a / C*ab,a,M
M=Maximum colour
triangle lightness t*lab*
relative chroma c*lab*
R25J
G62B
(c*M, t*M)
HE801−1A, 4; cf1=0.90; nt=0.18; nx=1.0

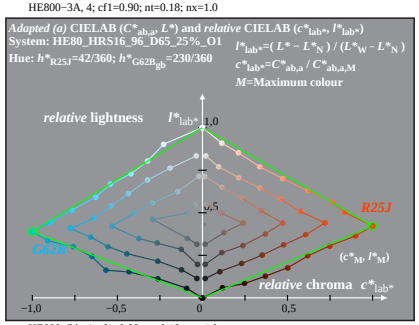

Linear relation adapted (a) CIELAB (C*ab,a, L*) and relative CIELAB (c*, t*)
System: HE80_HRS16_96_D65_25%_O1
Hue: h*J25G=109/360; h*B12R=286/360
l*M=(L*M − L*N) / (L*W − L*N)
t*lab*=l*lab* − c*lab* [l*M − 0,5]
c*lab*=C*ab,a / C*ab,a,M
M=Maximum colour
triangle lightness t*lab*
relative chroma c*lab*
B12R
J25G
(c*M, t*M)
HE801−2A, 4; cf1=0.90; nt=0.18; nx=1.0

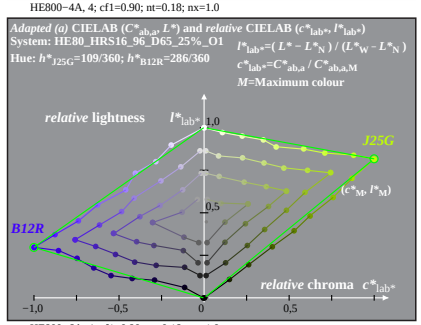

Linear relation CIELAB (L*, a*, b*) and adapted (a) CIELAB (C*ab,a, L*)
System: HE80_HRS16_96_D65_25%_O1
Hue: h*G13B=175/360; h*B63Rbr=343/360
l*lab*=(L* − L*N) / (L*W − L*N)
a*a=a* − a*N − l*lab* [a*W − a*N]
b*a=b* − b*N − l*lab* [b*W − b*N]
C*ab,a=[a*a2 + b*a2] 1/2
lightness L*
chroma C*ab,a
G13B
B63R
(C*ab,a,M, L*M)
HE800−3A, 4; cf1=0.90; nt=0.18; nx=1.0

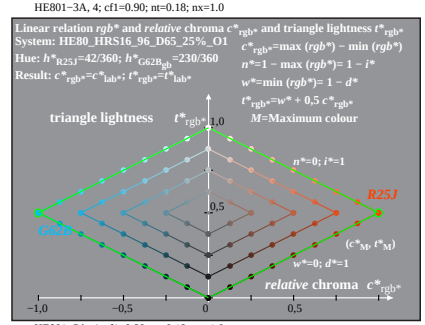

Linear relation CIELAB (L*, a*, b*) and adapted (a) CIELAB (C*ab,a, L*)
System: HE80_HRS16_96_D65_25%_O1
CIELAB hue angles:
hab,d=[32, 100, 145, 206, 265, 348]
hab,ex=[42, 109, 175, 230, 286, 343]
hab,e=[26, 92, 162, 217, 272, 329]
l*lab*=(L* − L*N) / (L*W − L*N)
a*a=a* − a*N − l*lab* [a*W − a*N]
b*a=b* − b*N − l*lab* [b*W − b*N]
C*ab,a=[a*a2 + b*a2] 1/2
a*a=C*ab,a cos hab
b*a=C*ab,a sin hab
chroma a*a
b*a
Y00L
J00G
J25G
L00C
G00B
R25J
O00Y
R00J
M00O
C00V
G50B
B12R
B50R
V00M
B00R
HE800−4A, 4; cf1=0.90; nt=0.18; nx=1.0

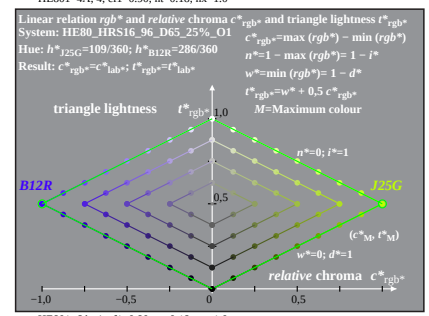

Linear relation adapted (a) CIELAB (C*ab,a, L*) and relative CIELAB (c*, t*)
System: HE80_HRS16_96_D65_25%_O1
Hue: h*G13B=175/360; h*B63Rbr=343/360
l*M=(L*M − L*N) / (L*W − L*N)
t*lab*=l*lab* − c*lab* [l*M − 0,5]
c*lab*=C*ab,a / C*ab,a,M
M=Maximum colour
triangle lightness t*lab*
relative chroma c*lab*
G13B
B63R
(c*M, t*M)
HE801−3A, 4; cf1=0.90; nt=0.18; nx=1.0

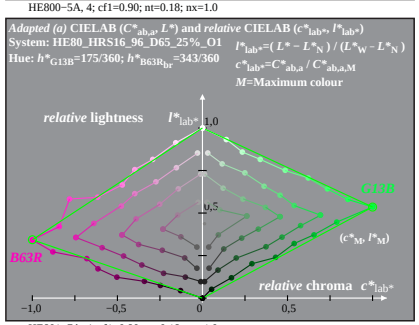

Linear relation adapted (a) CIELAB (C*ab,a, L*) and relative CIELAB (c*, t*)
System: HE80_HRS16_96_D65_25%_O1
CIELAB hue angles:
hab,d=[32, 100, 145, 206, 265, 348]
hab,ex=[42, 109, 175, 230, 286, 343]
hab,e=[26, 92, 162, 217, 272, 329]
l*M=(L*M − L*N) / (L*W − L*N)
t*lab*=l*lab* − c*lab* [l*M − 0,5]
c*lab*=C*ab,a / C*ab,a,M
M=Maximum colour
a*lab*=c*lab* cos hab
b*lab*=c*lab* sin hab
relative chroma a*lab*
b*lab*
Y00L
J00G
J25G
L00C
R25J
O00Y
R00J
G00B
M00O
B63R
C00V
G50B
B50R
G62B
B00R
B12R
V00M
HE801−4A, 4; cf1=0.90; nt=0.18; nx=1.0

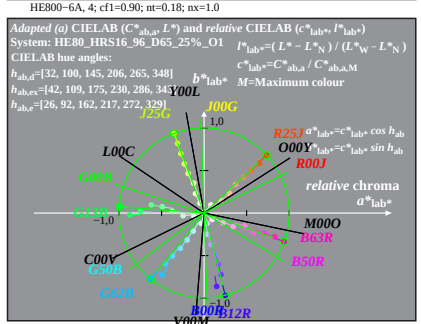

Adapted (a) CIELAB (C*ab,a, L*) and relative CIELAB (c*lab*, l*lab*)
System: HE80_HRS16_96_D65_25%_O1
Hue: h*R25J=42/360; h*G62Bgb=230/360
l*lab*=(L* − L*N) / (L*W − L*N)
c*lab*=C*ab,a / C*ab,a,M
M=Maximum colour
relative lightness l*lab*
relative chroma c*lab*
R25J
G62B
(c*M, l*M)
HE800−5A, 4; cf1=0.90; nt=0.18; nx=1.0

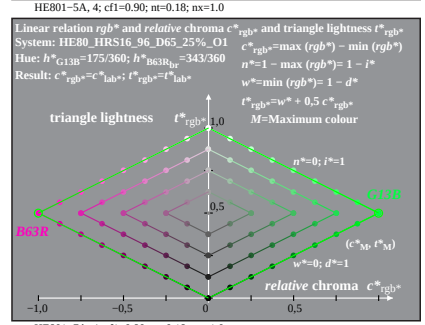

Adapted (a) CIELAB (C*ab,a, L*) and relative CIELAB (c*lab*, l*lab*)
System: HE80_HRS16_96_D65_25%_O1
Hue: h*J25G=109/360; h*B12R=286/360
l*lab*=(L* − L*N) / (L*W − L*N)
c*lab*=C*ab,a / C*ab,a,M
M=Maximum colour
relative lightness l*lab*
relative chroma c*lab*
J25G
B12R
(c*M, l*M)
HE800−6A, 4; cf1=0.90; nt=0.18; nx=1.0

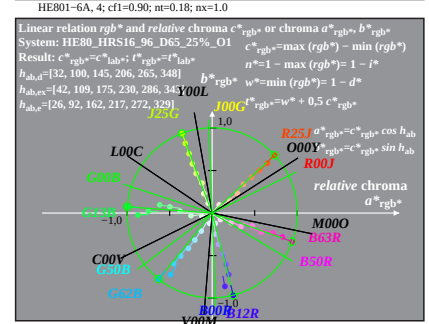

Linear relation rgb* and relative chroma c*rgb* and triangle lightness t*rgb*
System: HE80_HRS16_96_D65_25%_O1
Hue: h*R25J=42/360; h*G62Bgb=230/360
Result: c*rgb*=c*lab*; t*rgb*=t*lab*
c*rgb*=max (rgb*) − min (rgb*)
n*=1 − max (rgb*)= 1 − i*
w*=min (rgb*)= 1 − d*
t*rgb*=w* + 0,5 c*rgb*
M=Maximum colour
triangle lightness t*rgb*
n*=0; i*=1
w*=0; d*=1
relative chroma c*rgb*
R25J
G62B
(c*M, t*M)
HE801−5A, 4; cf1=0.90; nt=0.18; nx=1.0

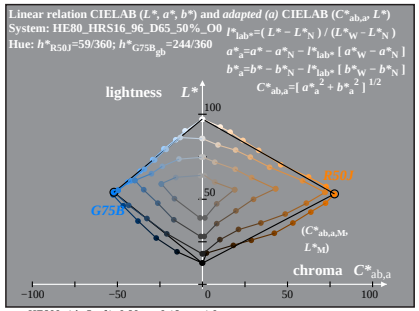

Linear relation rgb* and relative chroma c*rgb* and triangle lightness t*rgb*
System: HE80_HRS16_96_D65_25%_O1
Hue: h*J25G=109/360; h*B12R=286/360
Result: c*rgb*=c*lab*; t*rgb*=t*lab*
c*rgb*=max (rgb*) − min (rgb*)
n*=1 − max (rgb*)= 1 − i*
w*=min (rgb*)= 1 − d*
t*rgb*=w* + 0,5 c*rgb*
M=Maximum colour
triangle lightness t*rgb*
n*=0; i*=1
w*=0; d*=1
relative chroma c*rgb*
B12R
J25G
(c*M, t*M)
HE801−6A, 4; cf1=0.90; nt=0.18; nx=1.0

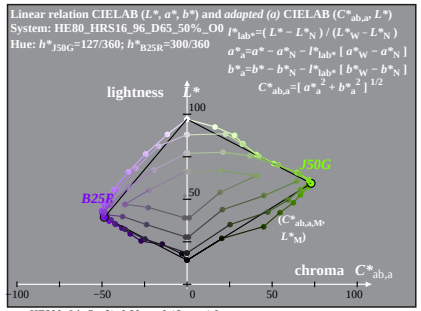

Adapted (a) CIELAB (C*ab,a, L*) and relative CIELAB (c*lab*, l*lab*)
System: HE80_HRS16_96_D65_25%_O1
Hue: h*G13B=175/360; h*B63Rbr=343/360
l*lab*=(L* − L*N) / (L*W − L*N)
c*lab*=C*ab,a / C*ab,a,M
M=Maximum colour
relative lightness l*lab*
relative chroma c*lab*
G13B
B63R
(c*M, l*M)
HE801−7A, 4; cf1=0.90; nt=0.18; nx=1.0

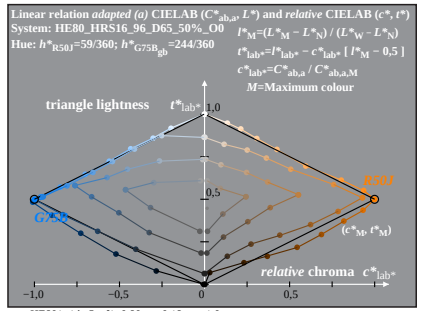

Adapted (a) CIELAB (C*ab,a, L*) and relative CIELAB (c*lab*, l*lab*)
System: HE80_HRS16_96_D65_25%_O1
CIELAB hue angles:
hab,d=[32, 100, 145, 206, 265, 348]
hab,ex=[42, 109, 175, 230, 286, 343]
hab,e=[26, 92, 162, 217, 272, 329]
l*lab*=(L* − L*N) / (L*W − L*N)
c*lab*=C*ab,a / C*ab,a,M
M=Maximum colour
a*lab*=c*lab* cos hab
b*lab*=c*lab* sin hab
relative chroma a*lab*
b*lab*
Y00L
J00G
J25G
L00C
R25J
O00Y
R00J
G00B
M00O
B63R
C00V
G50B
B50R
G62B
B00R
B12R
V00M
HE801−8A, 4; cf1=0.90; nt=0.18; nx=1.0

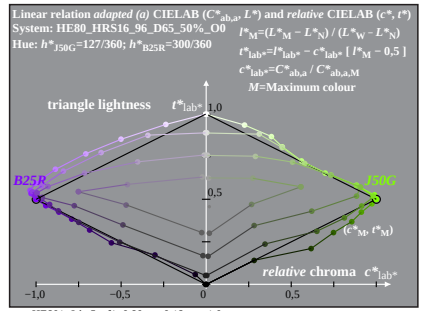

Linear relation rgb* and relative chroma c*rgb* and triangle lightness t*rgb*
System: HE80_HRS16_96_D65_25%_O1
Hue: h*G13B=175/360; h*B63Rbr=343/360
Result: c*rgb*=c*lab*; t*rgb*=t*lab*
c*rgb*=max (rgb*) − min (rgb*)
n*=1 − max (rgb*)= 1 − i*
w*=min (rgb*)= 1 − d*
t*rgb*=w* + 0,5 c*rgb*
M=Maximum colour
triangle lightness t*rgb*
n*=0; i*=1
w*=0; d*=1
relative chroma c*rgb*
G13B
B63R
(c*M, t*M)
HE801−7A, 4; cf1=0.90; nt=0.18; nx=1.0

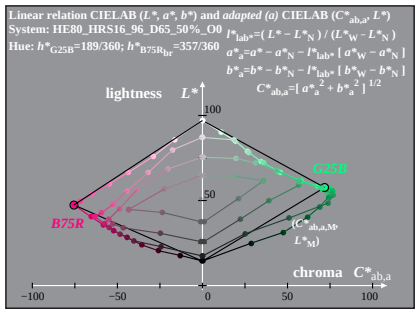

Linear relation rgb* and relative chroma c*rgb* or chroma a*rgb*, b*rgb*
System: HE80_HRS16_96_D65_25%_O1
Result: c*rgb*=c*lab*; t*rgb*=t*lab*
hab,d=[32, 100, 145, 206, 265, 348]
hab,ex=[42, 109, 175, 230, 286, 343]
hab,e=[26, 92, 162, 217, 272, 329]
c*rgb*=max (rgb*) − min (rgb*)
n*=1 − max (rgb*)= 1 − i*
w*=min (rgb*)= 1 − d*
t*rgb*=w* + 0,5 c*rgb*
a*rgb*=c*rgb* cos hab
b*rgb*=c*rgb* sin hab
relative chroma a*rgb*
b*rgb*
Y00L
J00G
J25G
L00C
R25J
O00Y
R00J
G00B
M00O
B63R
C00V
G50B
B50R
G62B
B00R
B12R
V00M
HE801−8A, 4; cf1=0.90; nt=0.18; nx=1.0

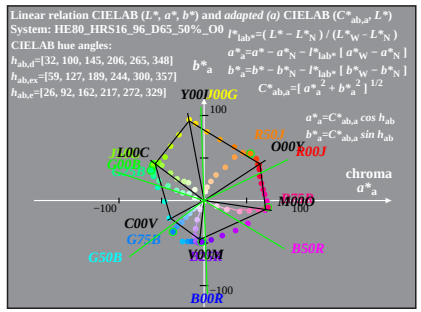

Linear relation CIELAB (L*, a*, b*) and adapted (a) CIELAB (C*ab,a, L*)
System: HE80_HRS16_96_D65_50%_O0
Hue: h*R50J=59/360; h*G75Bgb=244/360
l*lab*=(L* − L*N) / (L*W − L*N)
a*a=a* − a*N − l*lab* [a*W − a*N]
b*a=b* − b*N − l*lab* [b*W − b*N]
C*ab,a=[a*a2 + b*a2] 1/2
lightness L*
chroma C*ab,a
G75B
R50J
(C*ab,a,M, L*M)
HE800−1A, 5; cf1=0.90; nt=0.18; nx=1.0

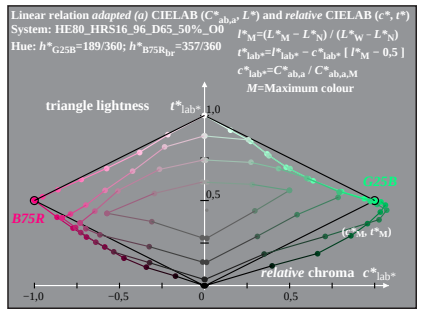

Linear relation CIELAB (L*, a*, b*) and adapted (a) CIELAB (C*ab,a, L*)
System: HE80_HRS16_96_D65_50%_O0
Hue: h*J50G=127/360; h*B25R=300/360
l*lab*=(L* − L*N) / (L*W − L*N)
a*a=a* − a*N − l*lab* [a*W − a*N]
b*a=b* − b*N − l*lab* [b*W − b*N]
C*ab,a=[a*a2 + b*a2] 1/2
lightness L*
chroma C*ab,a
B25R
J50G
(C*ab,a,M, L*M)
HE800−2A, 5; cf1=0.90; nt=0.18; nx=1.0

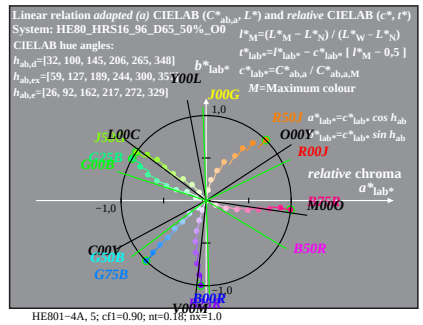

Linear relation adapted (a) CIELAB (C*ab,a, L*) and relative CIELAB (c*, t*)
System: HE80_HRS16_96_D65_50%_O0
Hue: h*R50J=59/360; h*G75Bgb=244/360
l*M=(L*M − L*N) / (L*W − L*N)
t*lab*=l*lab* − c*lab* [l*M − 0,5]
c*lab*=C*ab,a / C*ab,a,M
M=Maximum colour
triangle lightness t*lab*
relative chroma c*lab*
G75B
R50J
(c*M, t*M)
HE801−1A, 5; cf1=0.90; nt=0.18; nx=1.0

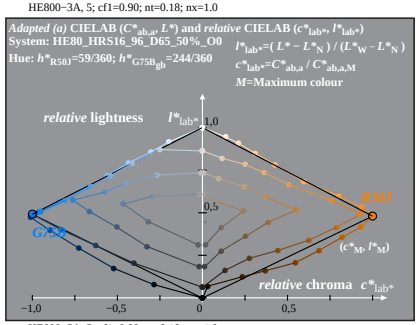

Linear relation adapted (a) CIELAB (C*ab,a, L*) and relative CIELAB (c*, t*)
System: HE80_HRS16_96_D65_50%_O0
Hue: h*J50G=127/360; h*B25R=300/360
l*M=(L*M − L*N) / (L*W − L*N)
t*lab*=l*lab* − c*lab* [l*M − 0,5]
c*lab*=C*ab,a / C*ab,a,M
M=Maximum colour
triangle lightness t*lab*
relative chroma c*lab*
B25R
J50G
(c*M, t*M)
HE801−2A, 5; cf1=0.90; nt=0.18; nx=1.0

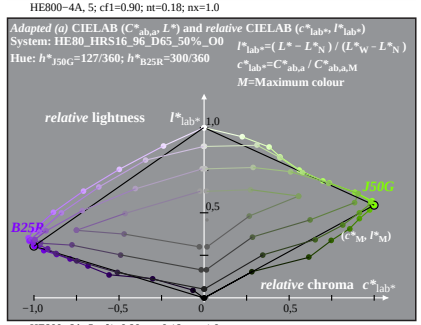

Linear relation CIELAB (L*, a*, b*) and adapted (a) CIELAB (C*ab,a, L*)
System: HE80_HRS16_96_D65_50%_O0
Hue: h*G25Bbr=189/360; h*B75Rbr=357/360
l*lab*=(L* − L*N) / (L*W − L*N)
a*a=a* − a*N − l*lab* [a*W − a*N]
b*a=b* − b*N − l*lab* [b*W − b*N]
C*ab,a=[a*a2 + b*a2] 1/2
lightness L*
chroma C*ab,a
G25B
B75R
(C*ab,a,M, L*M)
HE800−3A, 5; cf1=0.90; nt=0.18; nx=1.0

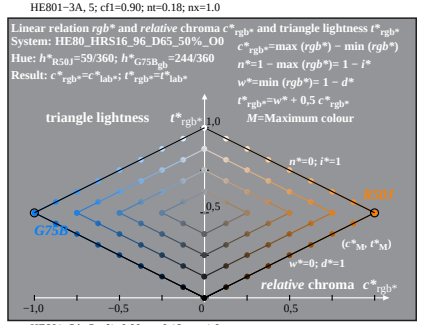

Linear relation CIELAB (L*, a*, b*) and adapted (a) CIELAB (C*ab,a, L*)
System: HE80_HRS16_96_D65_50%_O0
CIELAB hue angles:
hab,d=[32, 100, 145, 206, 265, 348]
hab,ex=[59, 127, 189, 244, 300, 357]
hab,e=[26, 92, 162, 217, 272, 329]
l*lab*=(L* − L*N) / (L*W − L*N)
a*a=a* − a*N − l*lab* [a*W − a*N]
b*a=b* − b*N − l*lab* [b*W − b*N]
C*ab,a=[a*a2 + b*a2] 1/2
b*a
a*a=C*ab,a cos hab
b*a=C*ab,a sin hab
chroma a*a
Y00L
J00G
R50J
O00Y
R00J
L00C
G00B
M00O
C00V
G75B
B50R
G50B
V01M
B00R
HE800−4A, 5; cf1=0.90; nt=0.18; nx=1.0

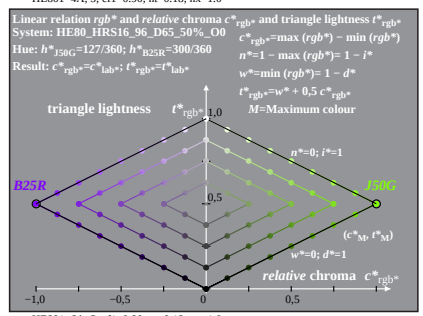

Linear relation adapted (a) CIELAB (C*ab,a, L*) and relative CIELAB (c*, t*)
System: HE80_HRS16_96_D65_50%_O0
Hue: h*G25Bbr=189/360; h*B75Rbr=357/360
l*M=(L*M − L*N) / (L*W − L*N)
t*lab*=l*lab* − c*lab* [l*M − 0,5]
c*lab*=C*ab,a / C*ab,a,M
M=Maximum colour
triangle lightness t*lab*
relative chroma c*lab*
G25B
B75R
(c*M, t*M)
HE801−3A, 5; cf1=0.90; nt=0.18; nx=1.0

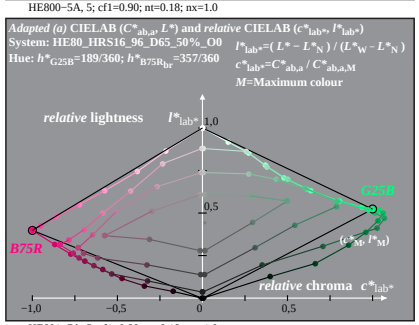

Linear relation adapted (a) CIELAB (C*ab,a, L*) and relative CIELAB (c*, t*)
System: HE80_HRS16_96_D65_50%_O0
CIELAB hue angles:
hab,d=[32, 100, 145, 206, 265, 348]
hab,ex=[59, 127, 189, 244, 300, 357]
hab,e=[26, 92, 162, 217, 272, 329]
l*M=(L*M − L*N) / (L*W − L*N)
t*lab*=l*lab* − c*lab* [l*M − 0,5]
c*lab*=C*ab,a / C*ab,a,M
M=Maximum colour
b*lab*
Y00L
J00G
R50J
a*lab*=c*lab* cos hab
O00Y
b*lab*=c*lab* sin hab
R00J
L00C
G00B
relative chroma a*lab*
M00O
C00V
G75B
B50R
B00R
HE801−4A, 5; cf1=0.90; nt=0.18; nx=1.0

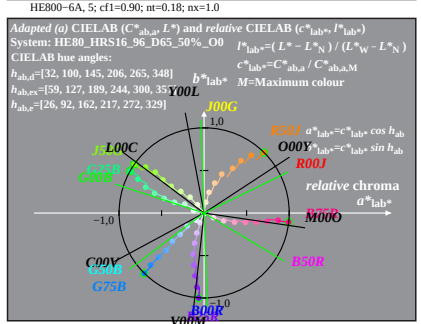

Adapted (a) CIELAB (C*ab,a, L*) and relative CIELAB (c*lab*, l*lab*)
System: HE80_HRS16_96_D65_50%_O0
Hue: h*R50J=59/360; h*G75Bgb=244/360
l*lab*=(L* − L*N) / (L*W − L*N)
c*lab*=C*ab,a / C*ab,a,M
M=Maximum colour
relative lightness l*lab*
relative chroma c*lab*
G75B
R50J
(c*M, l*M)
HE800−5A, 5; cf1=0.90; nt=0.18; nx=1.0

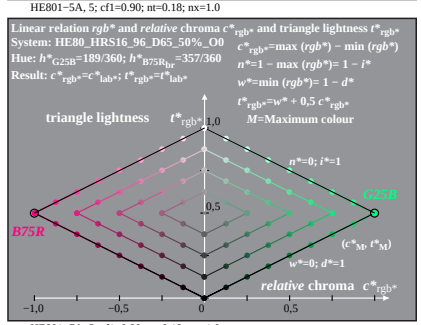

Adapted (a) CIELAB (C*ab,a, L*) and relative CIELAB (c*lab*, l*lab*)
System: HE80_HRS16_96_D65_50%_O0
Hue: h*J50G=127/360; h*B25R=300/360
l*lab*=(L* − L*N) / (L*W − L*N)
c*lab*=C*ab,a / C*ab,a,M
M=Maximum colour
relative lightness l*lab*
relative chroma c*lab*
B25R
J50G
(c*M, l*M)
HE800−6A, 5; cf1=0.90; nt=0.18; nx=1.0

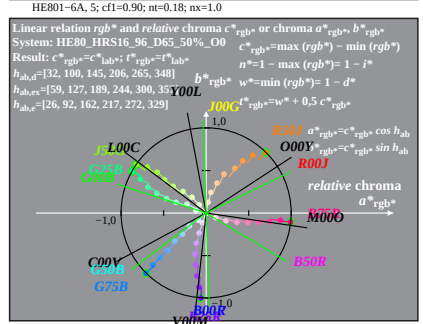

Linear relation rgb* and relative chroma c*rgb* and triangle lightness t*rgb*
System: HE80_HRS16_96_D65_50%_O0
Hue: h*R50J=59/360; h*G75Bgb=244/360
Result: c*rgb*=c*lab*; t*rgb*=t*lab*
c*rgb*=max (rgb*) − min (rgb*)
n*=1 − max (rgb*)= 1 − i*
w*=min (rgb*)= 1 − d*
t*rgb*=w* + 0,5 c*rgb*
M=Maximum colour
triangle lightness t*rgb*
n*=0; i*=1
w*=0; d*=1
relative chroma c*rgb*
G75B
R50J
(c*M, t*M)
HE801−5A, 5; cf1=0.90; nt=0.18; nx=1.0

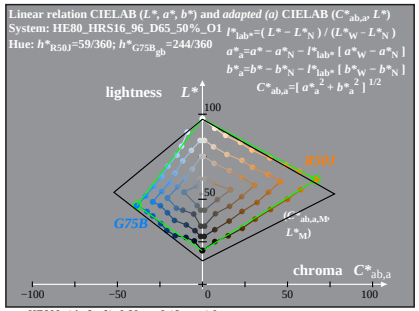

Linear relation rgb* and relative chroma c*rgb* and triangle lightness t*rgb*
System: HE80_HRS16_96_D65_50%_O0
Hue: h*J50G=127/360; h*B25R=300/360
Result: c*rgb*=c*lab*; t*rgb*=t*lab*
c*rgb*=max (rgb*) − min (rgb*)
n*=1 − max (rgb*)= 1 − i*
w*=min (rgb*)= 1 − d*
t*rgb*=w* + 0,5 c*rgb*
M=Maximum colour
triangle lightness t*rgb*
n*=0; i*=1
w*=0; d*=1
relative chroma c*rgb*
B25R
J50G
(c*M, t*M)
HE801−6A, 5; cf1=0.90; nt=0.18; nx=1.0

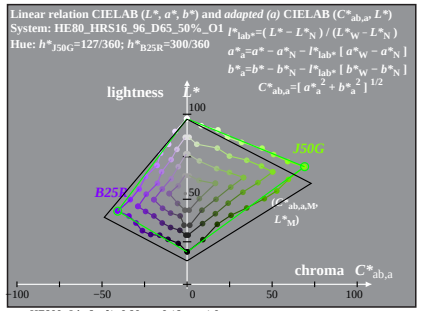

Adapted (a) CIELAB (C*ab,a, L*) and relative CIELAB (c*lab*, l*lab*)
System: HE80_HRS16_96_D65_50%_O0
Hue: h*G25Bbr=189/360; h*B75Rbr=357/360
l*lab*=(L* − L*N) / (L*W − L*N)
c*lab*=C*ab,a / C*ab,a,M
M=Maximum colour
relative lightness l*lab*
relative chroma c*lab*
G25B
B75R
(c*M, l*M)
HE801−7A, 5; cf1=0.90; nt=0.18; nx=1.0

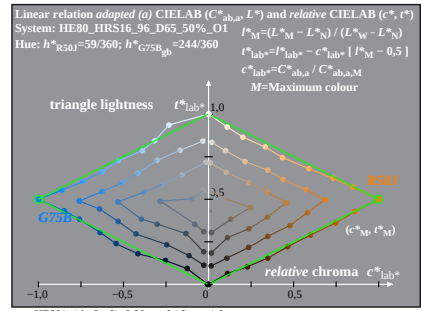

Adapted (a) CIELAB (C*ab,a, L*) and relative CIELAB (c*lab*, l*lab*)
System: HE80_HRS16_96_D65_50%_O0
CIELAB hue angles:
hab,d=[32, 100, 145, 206, 265, 348]
hab,ex=[59, 127, 189, 244, 300, 357]
hab,e=[26, 92, 162, 217, 272, 329]
l*lab*=(L* − L*N) / (L*W − L*N)
c*lab*=C*ab,a / C*ab,a,M
M=Maximum colour
b*lab*
Y00L
J00G
R50J
a*lab*=c*lab* cos hab
O00Y
b*lab*=c*lab* sin hab
R00J
L00C
G00B
relative chroma a*lab*
M00O
C00V
G75B
B50R
B00R
HE801−8A, 5; cf1=0.90; nt=0.18; nx=1.0

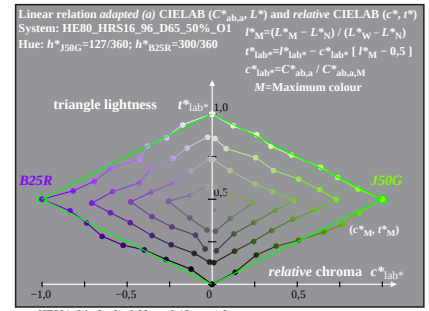

Linear relation rgb* and relative chroma c*rgb* and triangle lightness t*rgb*
System: HE80_HRS16_96_D65_50%_O0
Hue: h*G25Bbr=189/360; h*B75Rbr=357/360
Result: c*rgb*=c*lab*; t*rgb*=t*lab*
c*rgb*=max (rgb*) − min (rgb*)
n*=1 − max (rgb*)= 1 − i*
w*=min (rgb*)= 1 − d*
t*rgb*=w* + 0,5 c*rgb*
M=Maximum colour
triangle lightness t*rgb*
n*=0; i*=1
w*=0; d*=1
relative chroma c*rgb*
G25B
B75R
(c*M, t*M)
HE801−7A, 5; cf1=0.90; nt=0.18; nx=1.0

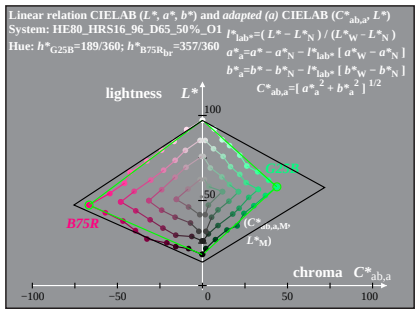

Linear relation rgb* and relative chroma c*rgb* or chroma a*rgb*, b*rgb*
System: HE80_HRS16_96_D65_50%_O0
Result: c*rgb*=c*lab*; t*rgb*=t*lab*
hab,d=[32, 100, 145, 206, 265, 348]
hab,ex=[59, 127, 189, 244, 300, 357]
hab,e=[26, 92, 162, 217, 272, 329]
c*rgb*=max (rgb*) − min (rgb*)
n*=1 − max (rgb*)= 1 − i*
w*=min (rgb*)= 1 − d*
t*rgb*=w* + 0,5 c*rgb*
b*rgb*
Y00L
J00G
R50J
a*rgb*=c*rgb* cos hab
O00Y
b*rgb*=c*rgb* sin hab
R00J
L00C
G00B
relative chroma a*rgb*
M00O
C00V
G75B
B50R
B00R
HE801−8A, 5; cf1=0.90; nt=0.18; nx=1.0

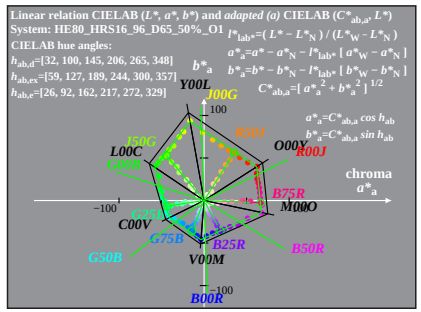

Linear relation CIELAB (L*, a*, b*) and adapted (a) CIELAB (C*ab,a, L*)
System: HE80_HRS16_96_D65_50%_O1
Hue: h*R50J=59/360; h*G75Bgb=244/360
l*lab*=(L* − L*N) / (L*W − L*N)
a*a=a* − a*N − l*lab* [a*W − a*N]
b*a=b* − b*N − l*lab* [b*W − b*N]
C*ab,a=[a*a2 + b*a2] 1/2
lightness L*
chroma C*ab,a
R50J
G75B
(C*ab,a,M, L*M)
HE800−1A, 6; cf1=0.90; nt=0.18; nx=1.0

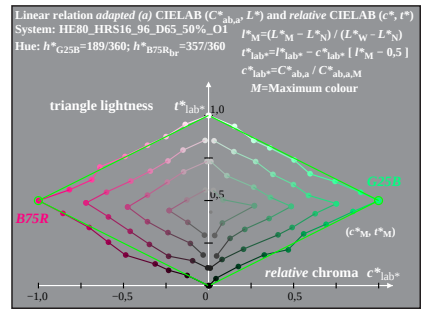

Linear relation CIELAB (L*, a*, b*) and adapted (a) CIELAB (C*ab,a, L*)
System: HE80_HRS16_96_D65_50%_O1
Hue: h*J50G=127/360; h*B25R=300/360
l*lab*=(L* − L*N) / (L*W − L*N)
a*a=a* − a*N − l*lab* [a*W − a*N]
b*a=b* − b*N − l*lab* [b*W − b*N]
C*ab,a=[a*a2 + b*a2] 1/2
lightness L*
chroma C*ab,a
J50G
B25R
(C*ab,a,M, L*M)
HE800−2A, 6; cf1=0.90; nt=0.18; nx=1.0

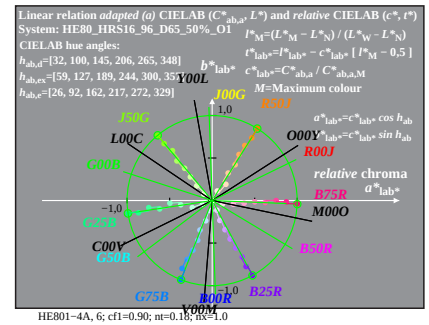

Linear relation adapted (a) CIELAB (C*ab,a, L*) and relative CIELAB (c*, t*)
System: HE80_HRS16_96_D65_50%_O1
Hue: h*R50J=59/360; h*G75Bgb=244/360
l*M=(L*M − L*N) / (L*W − L*N)
t*lab*=l*lab* − c*lab* [l*M − 0,5]
c*lab*=C*ab,a / C*ab,a,M
M=Maximum colour
triangle lightness t*lab*
relative chroma c*lab*
R50J
G75B
(c*M, t*M)
HE801−1A, 6; cf1=0.90; nt=0.18; nx=1.0

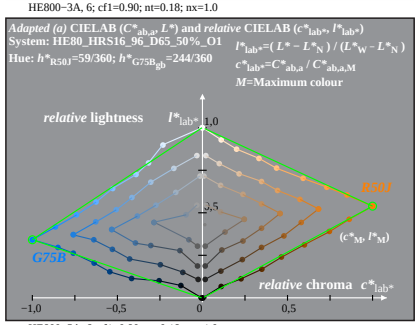

Linear relation adapted (a) CIELAB (C*ab,a, L*) and relative CIELAB (c*, t*)
System: HE80_HRS16_96_D65_50%_O1
Hue: h*J50G=127/360; h*B25R=300/360
l*M=(L*M − L*N) / (L*W − L*N)
t*lab*=l*lab* − c*lab* [l*M − 0,5]
c*lab*=C*ab,a / C*ab,a,M
M=Maximum colour
triangle lightness t*lab*
relative chroma c*lab*
B25R
J50G
(c*M, t*M)
HE801−2A, 6; cf1=0.90; nt=0.18; nx=1.0

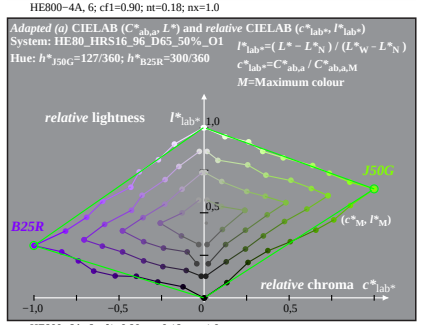

Linear relation CIELAB (L*, a*, b*) and adapted (a) CIELAB (C*ab,a, L*)
System: HE80_HRS16_96_D65_50%_O1
Hue: h*G25Bgb=189/360; h*B75Rbr=357/360
l*lab*=(L* − L*N) / (L*W − L*N)
a*a=a* − a*N − l*lab* [a*W − a*N]
b*a=b* − b*N − l*lab* [b*W − b*N]
C*ab,a=[a*a2 + b*a2] 1/2
lightness L*
chroma C*ab,a
B75R
(C*ab,a,M, L*M)
HE800−3A, 6; cf1=0.90; nt=0.18; nx=1.0

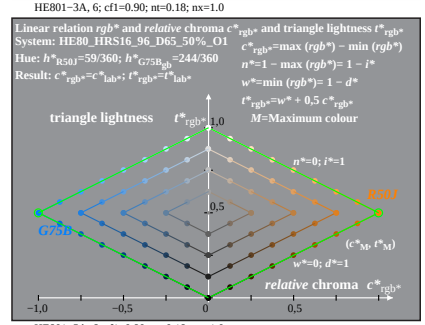

Linear relation CIELAB (L*, a*, b*) and adapted (a) CIELAB (C*ab,a, L*)
System: HE80_HRS16_96_D65_50%_O1
CIELAB hue angles:
hab,d=[32, 100, 145, 206, 265, 348]
hab,ex=[59, 127, 189, 244, 300, 357]
hab,e=[26, 92, 162, 217, 272, 329]
l*lab*=(L* − L*N) / (L*W − L*N)
a*a=a* − a*N − l*lab* [a*W − a*N]
b*a=b* − b*N − l*lab* [b*W − b*N]
C*ab,a=[a*a2 + b*a2] 1/2
a*a=C*ab,a cos hab
b*a=C*ab,a sin hab
b*lab*
a*a
chroma
Y00L
J00G
R50J
J50G
L00C
G00B
O00Y
R00J
B75R
M00O
C00V
G75B
B25R
B50R
G50B
V00M
B00R
HE800−4A, 6; cf1=0.90; nt=0.18; nx=1.0

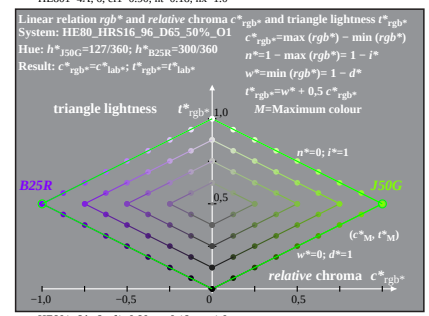

Linear relation adapted (a) CIELAB (C*ab,a, L*) and relative CIELAB (c*, t*)
System: HE80_HRS16_96_D65_50%_O1
Hue: h*G25Bgb=189/360; h*B75Rbr=357/360
l*M=(L*M − L*N) / (L*W − L*N)
t*lab*=l*lab* − c*lab* [l*M − 0,5]
c*lab*=C*ab,a / C*ab,a,M
M=Maximum colour
triangle lightness t*lab*
relative chroma c*lab*
G25B
B75R
(c*M, t*M)
HE801−3A, 6; cf1=0.90; nt=0.18; nx=1.0

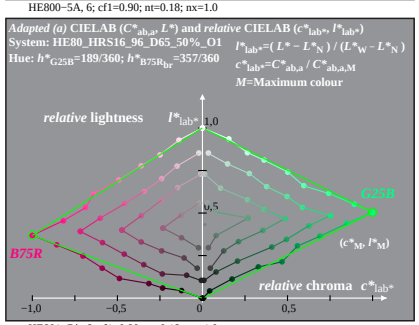

Linear relation adapted (a) CIELAB (C*ab,a, L*) and relative CIELAB (c*, t*)
System: HE80_HRS16_96_D65_50%_O1
CIELAB hue angles:
hab,d=[32, 100, 145, 206, 265, 348]
hab,ex=[59, 127, 189, 244, 300, 357]
hab,e=[26, 92, 162, 217, 272, 329]
l*M=(L*M − L*N) / (L*W − L*N)
t*lab*=l*lab* − c*lab* [l*M − 0,5]
c*lab*=C*ab,a / C*ab,a,M
M=Maximum colour
a*lab*=c*lab* cos hab
b*lab*=c*lab* sin hab
b*lab*
Y00L
J00G
R50J
J50G
L00C
O00Y
R00J
G00B
relative chroma
a*lab*
B75R
M00O
G25B
C00V
B50R
G50B
G75B
B25R
B00R
V00M
HE801−4A, 6; cf1=0.90; nt=0.18; nx=1.0

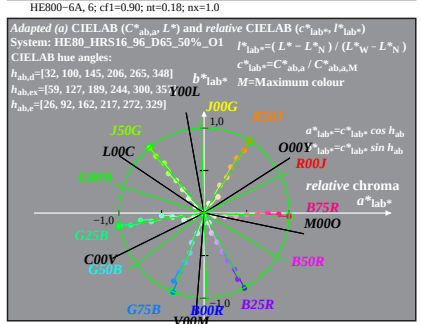

Adapted (a) CIELAB (C*ab,a, L*) and relative CIELAB (c*lab*, l*lab*)
System: HE80_HRS16_96_D65_50%_O1
Hue: h*R50J=59/360; h*G75Bgb=244/360
l*lab*=(L* − L*N) / (L*W − L*N)
c*lab*=C*ab,a / C*ab,a,M
M=Maximum colour
relative lightness l*lab*
relative chroma c*lab*
R50J
G75B
(c*M, l*M)
HE800−5A, 6; cf1=0.90; nt=0.18; nx=1.0

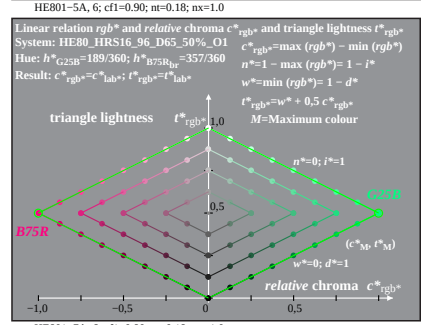

Adapted (a) CIELAB (C*ab,a, L*) and relative CIELAB (c*lab*, l*lab*)
System: HE80_HRS16_96_D65_50%_O1
Hue: h*J50G=127/360; h*B25R=300/360
l*lab*=(L* − L*N) / (L*W − L*N)
c*lab*=C*ab,a / C*ab,a,M
M=Maximum colour
relative lightness l*lab*
relative chroma c*lab*
J50G
B25R
(c*M, l*M)
HE800−6A, 6; cf1=0.90; nt=0.18; nx=1.0

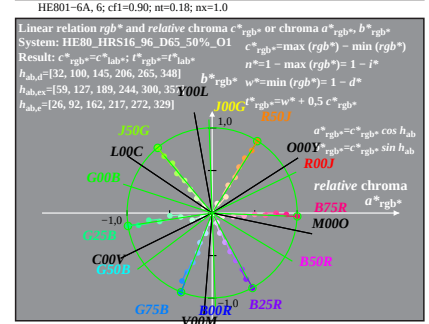

Linear relation rgb* and relative chroma c*rgb* and triangle lightness t*rgb*
System: HE80_HRS16_96_D65_50%_O1
Hue: h*R50J=59/360; h*G75Bgb=244/360
Result: c*rgb*=c*lab*; t*rgb*=t*lab*
c*rgb*=max (rgb*) − min (rgb*)
n*=1 − max (rgb*)= 1 − i*
w*=min (rgb*)= 1 − d*
t*rgb*=w* + 0,5 c*rgb*
M=Maximum colour
triangle lightness t*rgb*
n*=0; i*=1
w*=0; d*=1
relative chroma c*rgb*
R50J
G75B
(c*M, t*M)
HE801−5A, 6; cf1=0.90; nt=0.18; nx=1.0

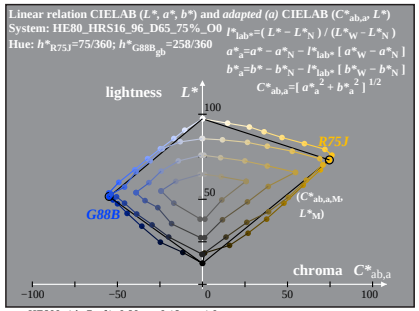

Linear relation rgb* and relative chroma c*rgb* and triangle lightness t*rgb*
System: HE80_HRS16_96_D65_50%_O1
Hue: h*J50G=127/360; h*B25R=300/360
Result: c*rgb*=c*lab*; t*rgb*=t*lab*
c*rgb*=max (rgb*) − min (rgb*)
n*=1 − max (rgb*)= 1 − i*
w*=min (rgb*)= 1 − d*
t*rgb*=w* + 0,5 c*rgb*
M=Maximum colour
triangle lightness t*rgb*
n*=0; i*=1
w*=0; d*=1
relative chroma c*rgb*
B25R
J50G
(c*M, t*M)
HE801−6A, 6; cf1=0.90; nt=0.18; nx=1.0

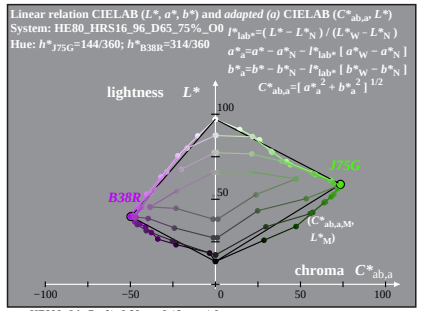

Adapted (a) CIELAB (C*ab,a, L*) and relative CIELAB (c*lab*, l*lab*)
System: HE80_HRS16_96_D65_50%_O1
Hue: h*G25Bgb=189/360; h*B75Rbr=357/360
l*lab*=(L* − L*N) / (L*W − L*N)
c*lab*=C*ab,a / C*ab,a,M
M=Maximum colour
relative lightness l*lab*
relative chroma c*lab*
G25B
B75R
(c*M, l*M)
HE801−7A, 6; cf1=0.90; nt=0.18; nx=1.0

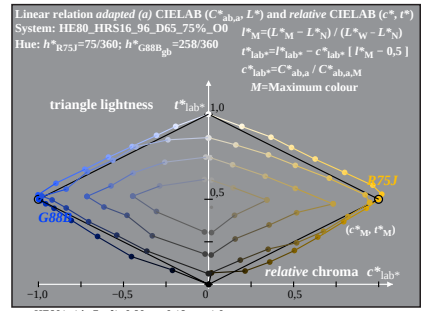

Adapted (a) CIELAB (C*ab,a, L*) and relative CIELAB (c*lab*, l*lab*)
System: HE80_HRS16_96_D65_50%_O1
CIELAB hue angles:
hab,d=[32, 100, 145, 206, 265, 348]
hab,ex=[59, 127, 189, 244, 300, 357]
hab,e=[26, 92, 162, 217, 272, 329]
l*lab*=(L* − L*N) / (L*W − L*N)
c*lab*=C*ab,a / C*ab,a,M
M=Maximum colour
a*lab*=c*lab* cos hab
b*lab*=c*lab* sin hab
b*lab*
Y00L
J00G
R50J
J50G
L00C
O00Y
R00J
G00B
relative chroma
a*lab*
B75R
M00O
G25B
C00V
B50R
G50B
G75B
B25R
B00R
V00M
HE801−8A, 6; cf1=0.90; nt=0.18; nx=1.0

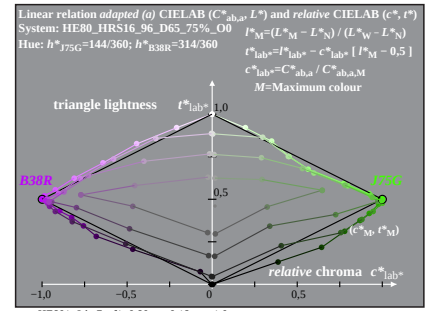

Linear relation rgb* and relative chroma c*rgb* and triangle lightness t*rgb*
System: HE80_HRS16_96_D65_50%_O1
Hue: h*G25Bgb=189/360; h*B75Rbr=357/360
Result: c*rgb*=c*lab*; t*rgb*=t*lab*
c*rgb*=max (rgb*) − min (rgb*)
n*=1 − max (rgb*)= 1 − i*
w*=min (rgb*)= 1 − d*
t*rgb*=w* + 0,5 c*rgb*
M=Maximum colour
triangle lightness t*rgb*
n*=0; i*=1
w*=0; d*=1
relative chroma c*rgb*
G25B
B75R
(c*M, t*M)
HE801−7A, 6; cf1=0.90; nt=0.18; nx=1.0

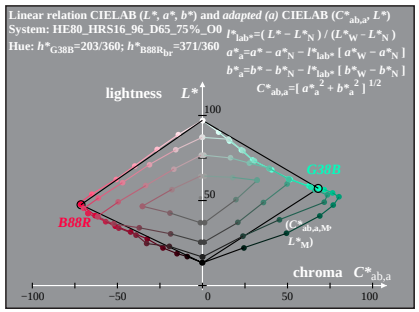

Linear relation rgb* and relative chroma c*rgb* or chroma a*rgb*, b*rgb*
System: HE80_HRS16_96_D65_50%_O1
Result: c*rgb*=c*lab*; t*rgb*=t*lab*
hab,d=[32, 100, 145, 206, 265, 348]
hab,ex=[59, 127, 189, 244, 300, 357]
hab,e=[26, 92, 162, 217, 272, 329]
c*rgb*=max (rgb*) − min (rgb*)
n*=1 − max (rgb*)= 1 − i*
w*=min (rgb*)= 1 − d*
t*rgb*=w* + 0,5 c*rgb*
a*rgb*=c*rgb* cos hab
b*rgb*=c*rgb* sin hab
b*rgb*
Y00L
J00G
R50J
J50G
L00C
O00Y
R00J
G00B
relative chroma
a*rgb*
B75R
M00O
G25B
C00V
B50R
G50B
G75B
B25R
B00R
V00M
HE801−8A, 6; cf1=0.90; nt=0.18; nx=1.0

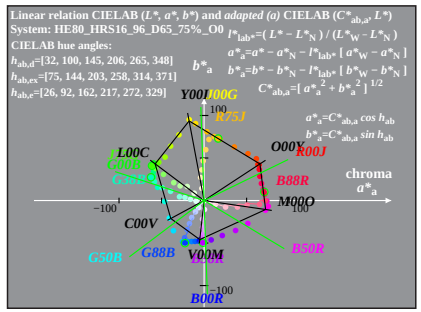

Linear relation CIELAB (L*, a*, b*) and adapted (a) CIELAB (C*ab,a, L*)
System: HE80_HRS16_96_D65_75%_O0
Hue: h*R75J=75/360; h*G88Bgb=258/360
l*lab*=(L* − L*N) / (L*W − L*N)
a*a=a* − a*N − l*lab* [a*W − a*N]
b*a=b* − b*N − l*lab* [b*W − b*N]
C*ab,a=[a*a2 + b*a2] 1/2
lightness L*
chroma C*ab,a
R75J
G88B
(C*ab,a,M, L*M)
HE800−1A, 7; cf1=0.90; nt=0.18; nx=1.0

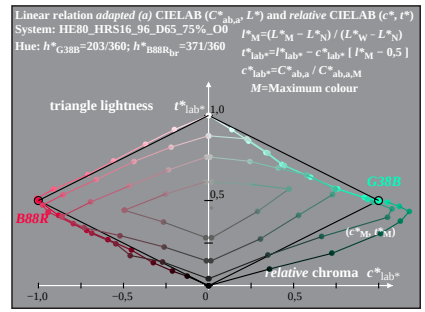

Linear relation CIELAB (L*, a*, b*) and adapted (a) CIELAB (C*ab,a, L*)
System: HE80_HRS16_96_D65_75%_O0
Hue: h*J75G=144/360; h*B38R=314/360
l*lab*=(L* − L*N) / (L*W − L*N)
a*a=a* − a*N − l*lab* [a*W − a*N]
b*a=b* − b*N − l*lab* [b*W − b*N]
C*ab,a=[a*a2 + b*a2] 1/2
lightness L*
chroma C*ab,a
J75G
B38R
(C*ab,a,M, L*M)
HE800−2A, 7; cf1=0.90; nt=0.18; nx=1.0

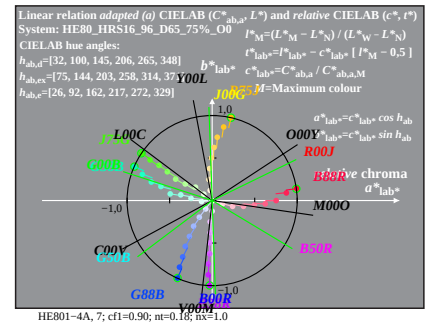

Linear relation adapted (a) CIELAB (C*ab,a, L*) and relative CIELAB (c*, t*)
System: HE80_HRS16_96_D65_75%_O0
Hue: h*R75J=75/360; h*G88Bgb=258/360
l*M=(L*M − L*N) / (L*W − L*N)
t*lab*=l*lab* − c*lab* [l*M − 0,5]
c*lab*=C*ab,a / C*ab,a,M
M=Maximum colour
triangle lightness t*lab*
relative chroma c*lab*
R75J
G88B
(c*M, t*M)
HE801−1A, 7; cf1=0.90; nt=0.18; nx=1.0

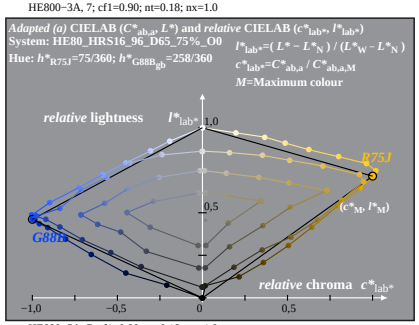

Linear relation adapted (a) CIELAB (C*ab,a, L*) and relative CIELAB (c*, t*)
System: HE80_HRS16_96_D65_75%_O0
Hue: h*J75G=144/360; h*B38R=314/360
l*M=(L*M − L*N) / (L*W − L*N)
t*lab*=l*lab* − c*lab* [l*M − 0,5]
c*lab*=C*ab,a / C*ab,a,M
M=Maximum colour
triangle lightness t*lab*
relative chroma c*lab*
B38R
J75G
(c*M, t*M)
HE801−2A, 7; cf1=0.90; nt=0.18; nx=1.0

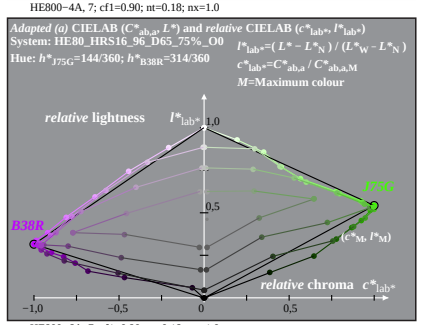

Linear relation CIELAB (L*, a*, b*) and adapted (a) CIELAB (C*ab,a, L*)
System: HE80_HRS16_96_D65_75%_O0
Hue: h*G38B=203/360; h*B88Rbr=371/360
l*lab*=(L* − L*N) / (L*W − L*N)
a*a=a* − a*N − l*lab* [a*W − a*N]
b*a=b* − b*N − l*lab* [b*W − b*N]
C*ab,a=[a*a2 + b*a2] 1/2
lightness L*
chroma C*ab,a
G38B
B88R
(C*ab,a,M, L*M)
HE800−3A, 7; cf1=0.90; nt=0.18; nx=1.0

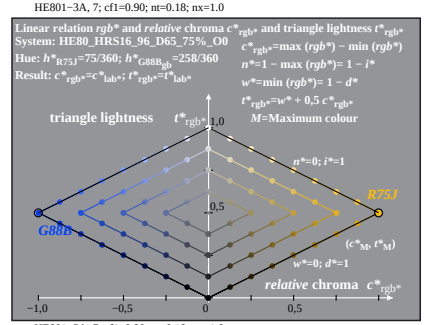

Linear relation CIELAB (L*, a*, b*) and adapted (a) CIELAB (C*ab,a, L*)
System: HE80_HRS16_96_D65_75%_O0
CIELAB hue angles:
hab,d=[32, 100, 145, 206, 265, 348]
hab,ex=[75, 144, 203, 258, 314, 371]
hab,e=[26, 92, 162, 217, 272, 329]
l*lab*=(L* − L*N) / (L*W − L*N)
a*a=a* − a*N − l*lab* [a*W − a*N]
b*a=b* − b*N − l*lab* [b*W − b*N]
C*ab,a=[a*a2 + b*a2] 1/2
a*a=C*ab,a cos hab
b*a=C*ab,a sin hab
b*a
chroma a*a
Y00J
J00G
R75J
L00C
G00B
G38B
O00Y
R00J
B88R
M00O
C00V
G50B
G88B
V00M
B50R
B00R
HE800−4A, 7; cf1=0.90; nt=0.18; nx=1.0

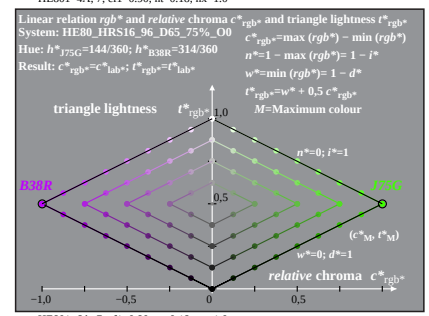

Linear relation adapted (a) CIELAB (C*ab,a, L*) and relative CIELAB (c*, t*)
System: HE80_HRS16_96_D65_75%_O0
Hue: h*G38B=203/360; h*B88Rbr=371/360
l*M=(L*M − L*N) / (L*W − L*N)
t*lab*=l*lab* − c*lab* [l*M − 0,5]
c*lab*=C*ab,a / C*ab,a,M
M=Maximum colour
triangle lightness t*lab*
relative chroma c*lab*
G38B
B88R
(c*M, t*M)
HE801−3A, 7; cf1=0.90; nt=0.18; nx=1.0

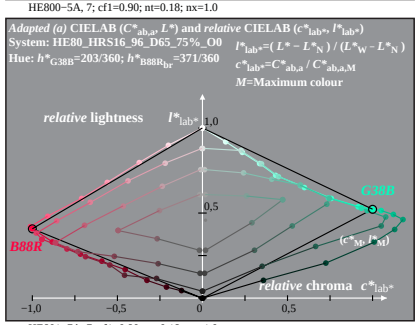

Linear relation adapted (a) CIELAB (C*ab,a, L*) and relative CIELAB (c*, t*)
System: HE80_HRS16_96_D65_75%_O0
CIELAB hue angles:
hab,d=[32, 100, 145, 206, 265, 348]
hab,ex=[75, 144, 203, 258, 314, 371]
hab,e=[26, 92, 162, 217, 272, 329]
l*M=(L*M − L*N) / (L*W − L*N)
t*lab*=l*lab* − c*lab* [l*M − 0,5]
c*lab*=C*ab,a / C*ab,a,M
M=Maximum colour
b*lab*
Y00L
J00G
R75J
a*lab*=c*lab* cos hab
b*lab*=c*lab* sin hab
L00C
O00Y
R00J
G00B
G38B
B88R
M00O
C00V
B50R
G88B
B00R
Y00M
HE801−4A, 7; cf1=0.90; nt=0.18; nx=1.0

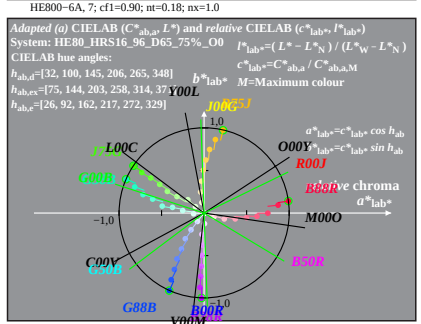

Adapted (a) CIELAB (C*ab,a, L*) and relative CIELAB (c*lab*, l*lab*)
System: HE80_HRS16_96_D65_75%_O0
Hue: h*R75J=75/360; h*G88Bgb=258/360
l*lab*=(L* − L*N) / (L*W − L*N)
c*lab*=C*ab,a / C*ab,a,M
M=Maximum colour
relative lightness l*lab*
relative chroma c*lab*
R75J
G88B
(c*M, l*M)
HE800−5A, 7; cf1=0.90; nt=0.18; nx=1.0

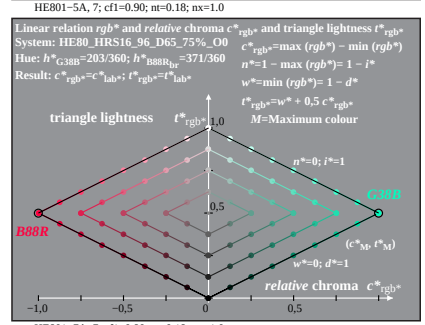

Adapted (a) CIELAB (C*ab,a, L*) and relative CIELAB (c*lab*, l*lab*)
System: HE80_HRS16_96_D65_75%_O0
Hue: h*J75G=144/360; h*B38R=314/360
l*lab*=(L* − L*N) / (L*W − L*N)
c*lab*=C*ab,a / C*ab,a,M
M=Maximum colour
relative lightness l*lab*
relative chroma c*lab*
J75G
B38R
(c*M, l*M)
HE800−6A, 7; cf1=0.90; nt=0.18; nx=1.0

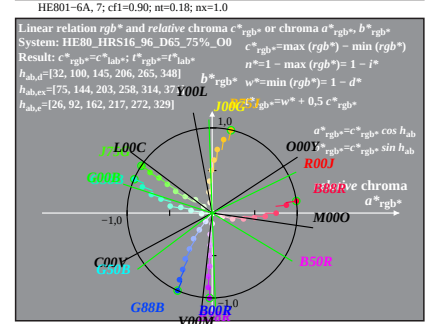

Linear relation rgb* and relative chroma c*rgb* and triangle lightness t*rgb*
System: HE80_HRS16_96_D65_75%_O0
Hue: h*R75J=75/360; h*G88Bgb=258/360
Result: c*rgb*=c*lab*; t*rgb*=t*lab*
c*rgb*=max (rgb*) − min (rgb*)
n*=1 − max (rgb*)= 1 − i*
w*=min (rgb*)= 1 − d*
t*rgb*=w* + 0,5 c*rgb*
M=Maximum colour
triangle lightness t*rgb*
n*=0; i*=1
w*=0; d*=1
relative chroma c*rgb*
R75J
G88B
(c*M, t*M)
HE801−5A, 7; cf1=0.90; nt=0.18; nx=1.0

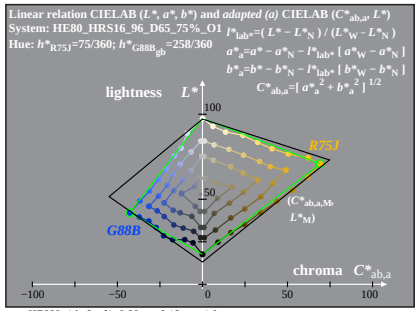

Linear relation rgb* and relative chroma c*rgb* and triangle lightness t*rgb*
System: HE80_HRS16_96_D65_75%_O0
Hue: h*J75G=144/360; h*B38R=314/360
Result: c*rgb*=c*lab*; t*rgb*=t*lab*
c*rgb*=max (rgb*) − min (rgb*)
n*=1 − max (rgb*)= 1 − i*
w*=min (rgb*)= 1 − d*
t*rgb*=w* + 0,5 c*rgb*
M=Maximum colour
triangle lightness t*rgb*
n*=0; i*=1
w*=0; d*=1
relative chroma c*rgb*
B38R
J75G
(c*M, t*M)
HE801−6A, 7; cf1=0.90; nt=0.18; nx=1.0

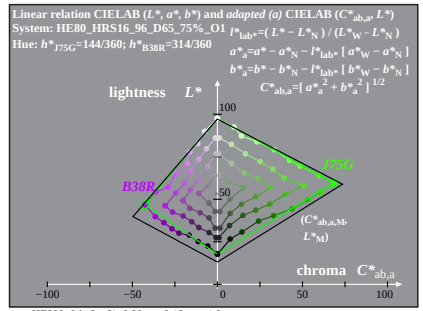

Adapted (a) CIELAB (C*ab,a, L*) and relative CIELAB (c*lab*, l*lab*)
System: HE80_HRS16_96_D65_75%_O0
Hue: h*G38B=203/360; h*B88Rbr=371/360
l*lab*=(L* − L*N) / (L*W − L*N)
c*lab*=C*ab,a / C*ab,a,M
M=Maximum colour
relative lightness l*lab*
relative chroma c*lab*
G38B
B88R
(c*M, l*M)
HE801−7A, 7; cf1=0.90; nt=0.18; nx=1.0

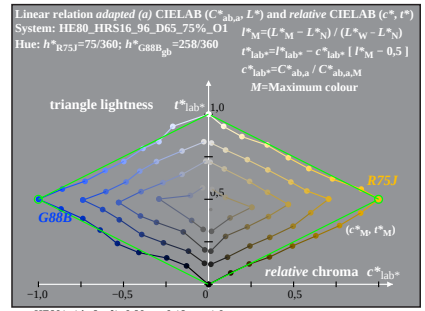

Adapted (a) CIELAB (C*ab,a, L*) and relative CIELAB (c*lab*, l*lab*)
System: HE80_HRS16_96_D65_75%_O0
CIELAB hue angles:
hab,d=[32, 100, 145, 206, 265, 348]
hab,ex=[75, 144, 203, 258, 314, 371]
hab,e=[26, 92, 162, 217, 272, 329]
l*lab*=(L* − L*N) / (L*W − L*N)
c*lab*=C*ab,a / C*ab,a,M
M=Maximum colour
b*lab*
Y00L
J00G
R75J
a*lab*=c*lab* cos hab
b*lab*=c*lab* sin hab
L00C
O00Y
R00J
G00B
G38B
B88R
M00O
C00V
B50R
G88B
B00R
Y00M
HE801−8A, 7; cf1=0.90; nt=0.18; nx=1.0

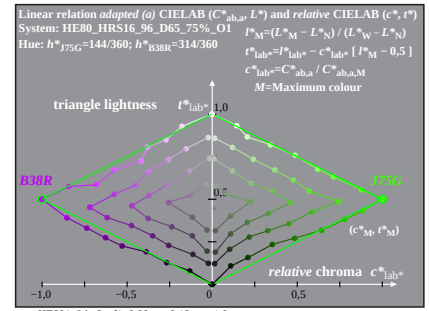

Linear relation rgb* and relative chroma c*rgb* and triangle lightness t*rgb*
System: HE80_HRS16_96_D65_75%_O0
Hue: h*G38B=203/360; h*B88Rbr=371/360
Result: c*rgb*=c*lab*; t*rgb*=t*lab*
c*rgb*=max (rgb*) − min (rgb*)
n*=1 − max (rgb*)= 1 − i*
w*=min (rgb*)= 1 − d*
t*rgb*=w* + 0,5 c*rgb*
M=Maximum colour
triangle lightness t*rgb*
n*=0; i*=1
w*=0; d*=1
relative chroma c*rgb*
G38B
B88R
(c*M, t*M)
HE801−7A, 7; cf1=0.90; nt=0.18; nx=1.0

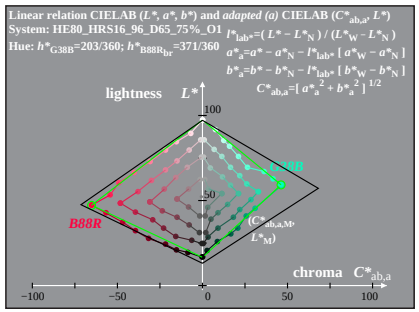

Linear relation rgb* and relative chroma c*rgb* or chroma a*rgb*, b*rgb*
System: HE80_HRS16_96_D65_75%_O0
Result: c*rgb*=c*lab*; t*rgb*=t*lab*
c*rgb*=max (rgb*) − min (rgb*)
n*=1 − max (rgb*)= 1 − i*
w*=min (rgb*)= 1 − d*
t*rgb*=w* + 0,5 c*rgb*
hab,d=[32, 100, 145, 206, 265, 348]
hab,ex=[75, 144, 203, 258, 314, 371]
hab,e=[26, 92, 162, 217, 272, 329]
b*rgb*
Y00L
J00G
R75J
a*rgb*=c*rgb* cos hab
b*rgb*=c*rgb* sin hab
L00C
O00Y
R00J
G00B
G38B
B88R
M00O
C00V
B50R
G88B
B00R
Y00M
HE801−8A, 7; cf1=0.90; nt=0.18; nx=1.0

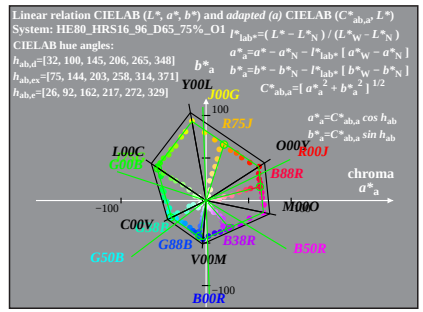


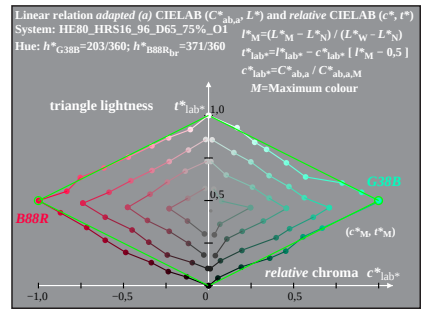


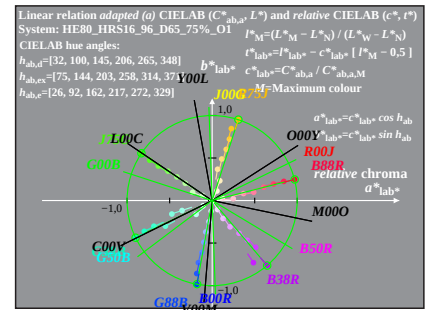


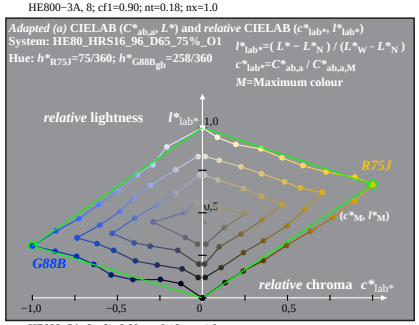


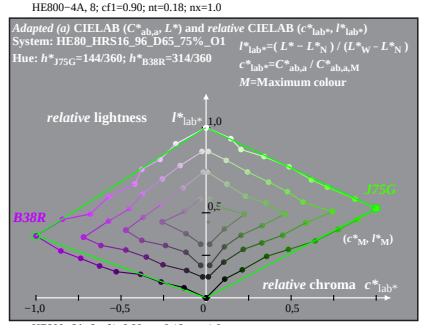


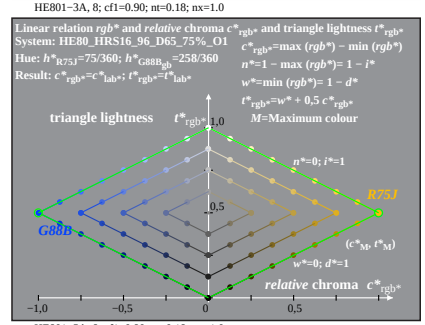


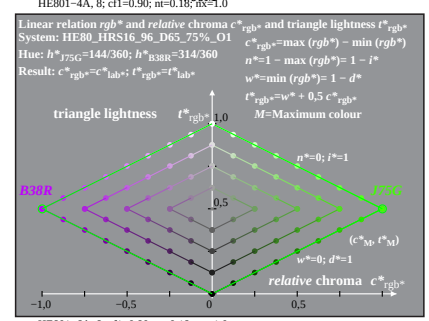


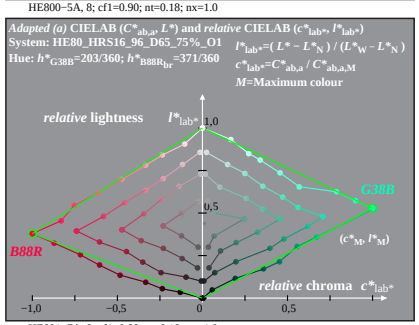


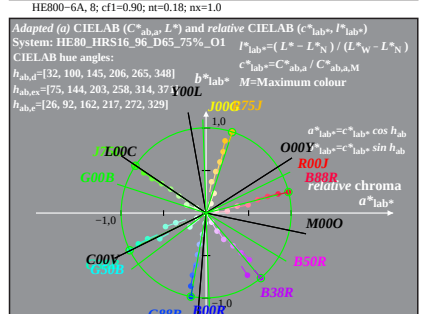


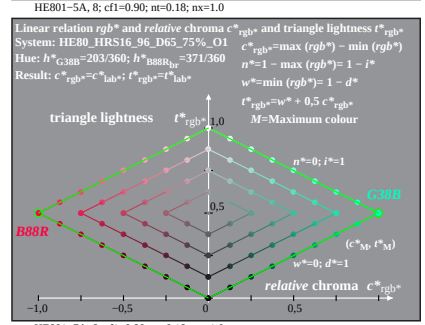


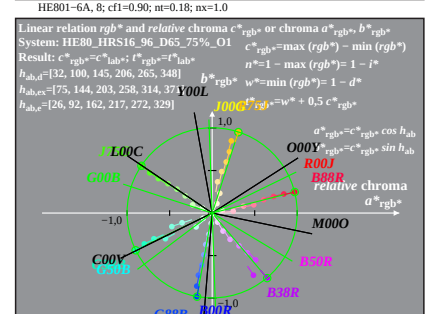












HE800−7A: Measurement: HE80_HRS16_96_D65_75%_O1_LU.DAT, 243 colours, 090115, Separation olv*, adapted, Page 8/8