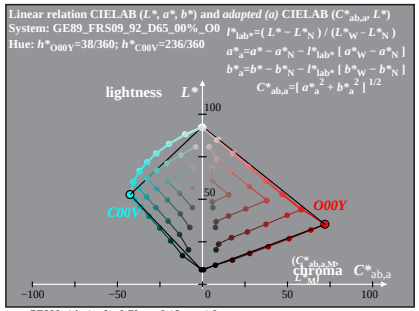

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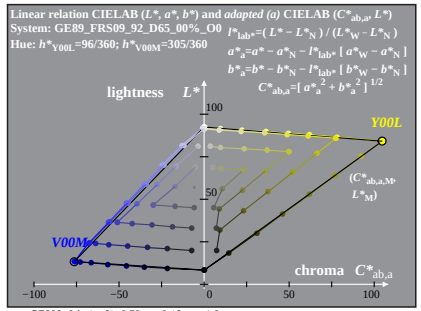

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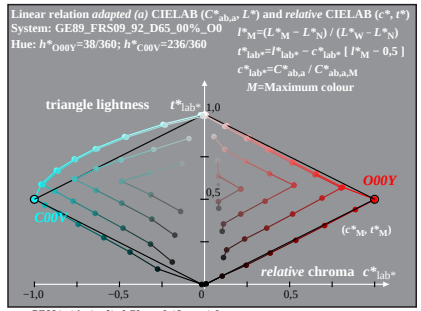

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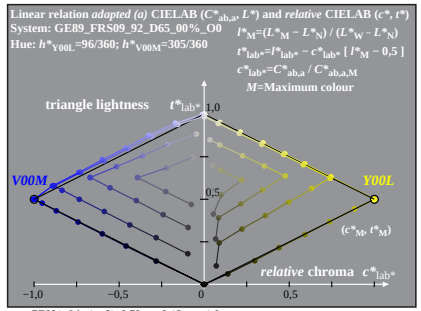

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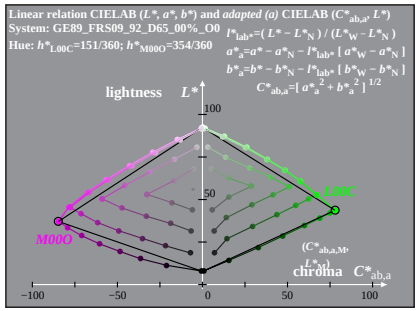

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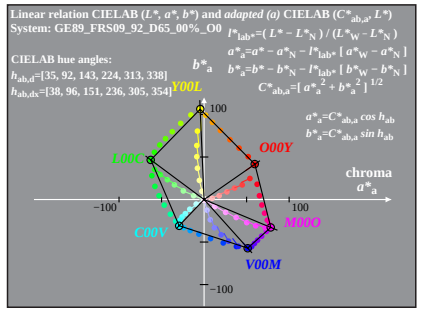

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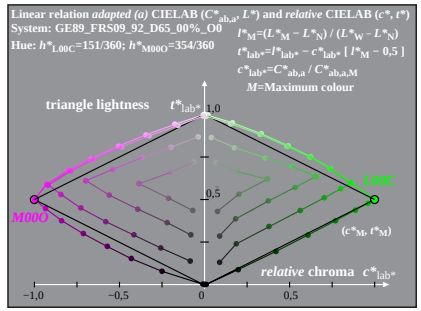

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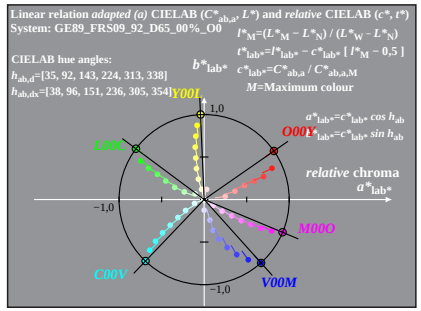

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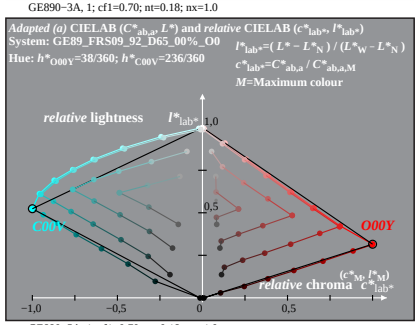

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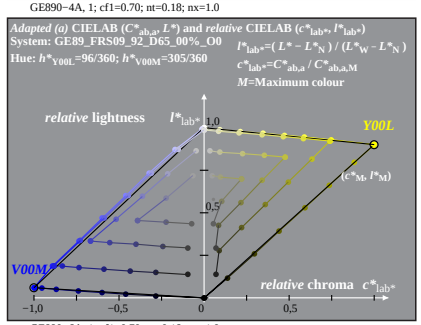

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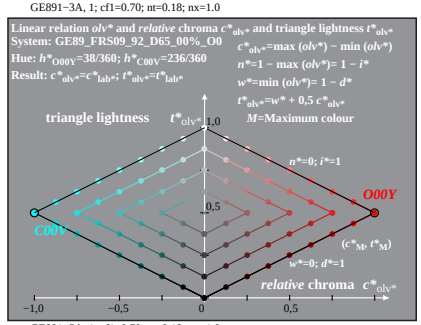

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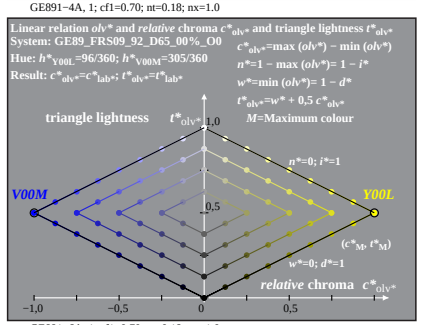

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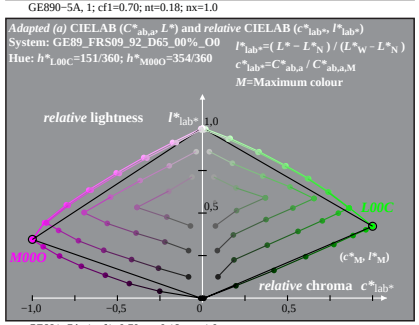

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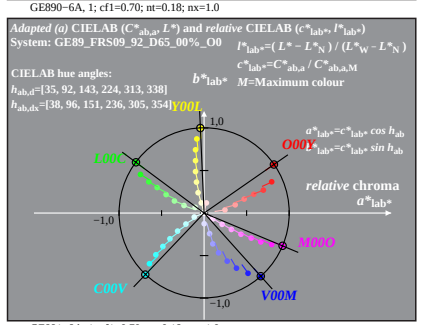

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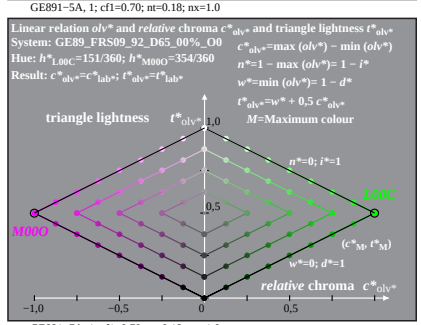

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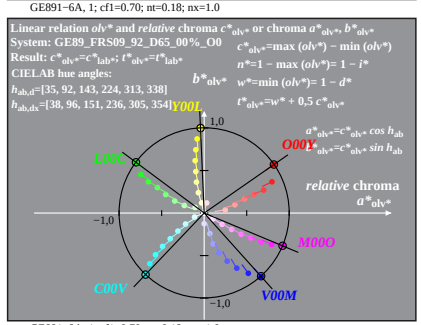

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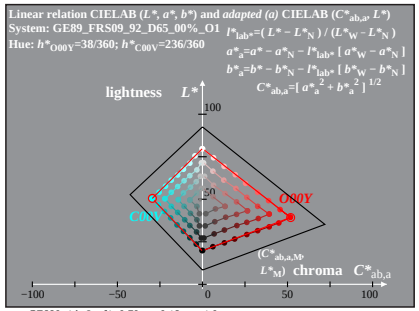

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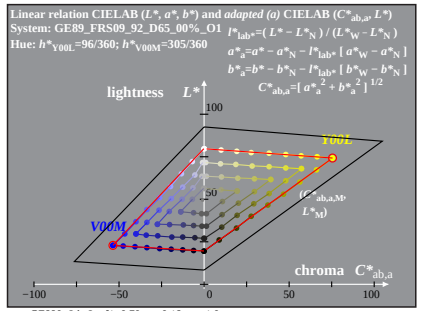

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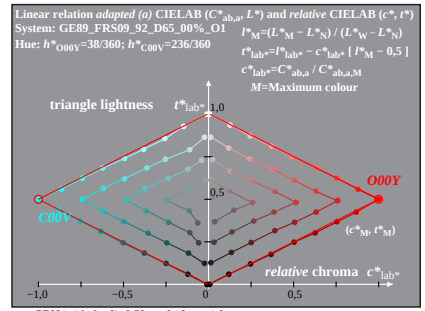

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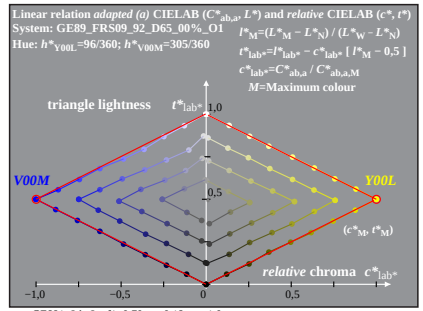

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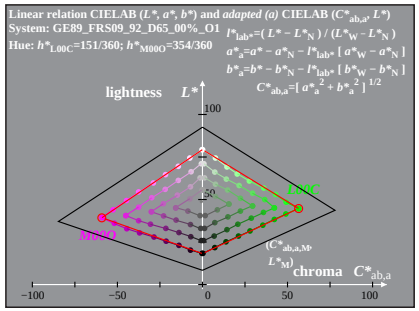

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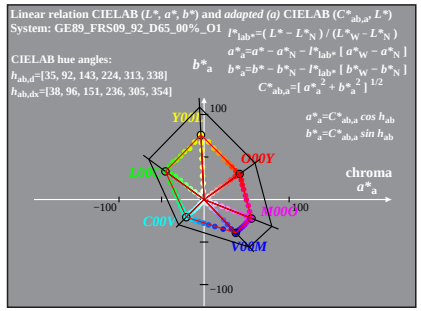

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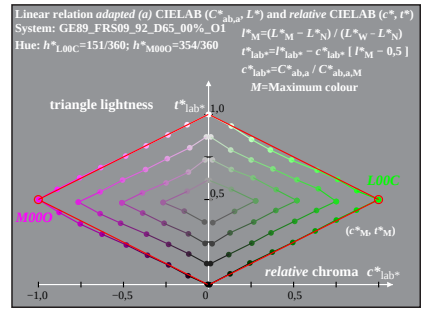

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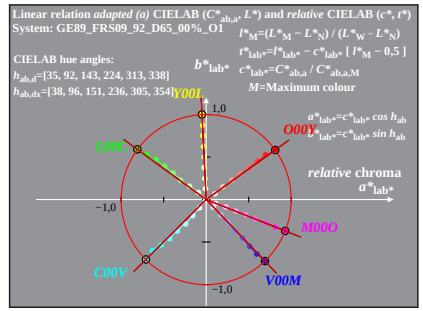

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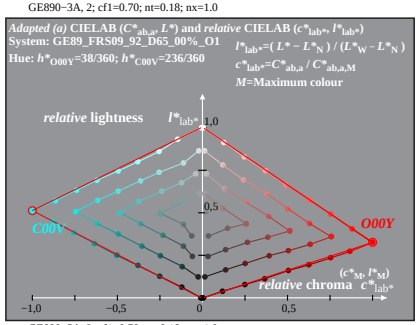

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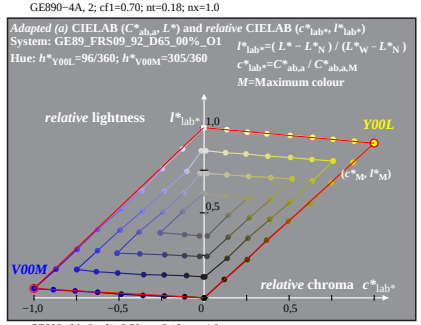

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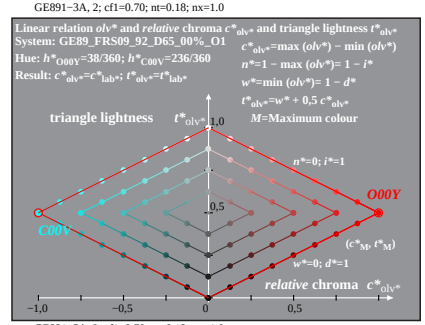

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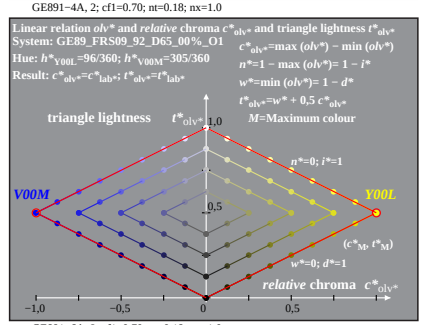

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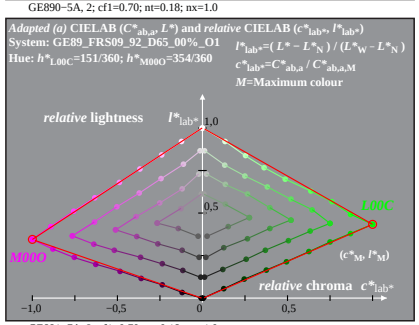

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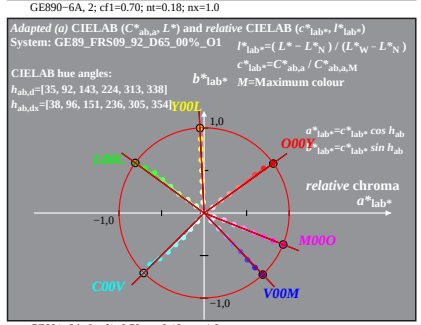

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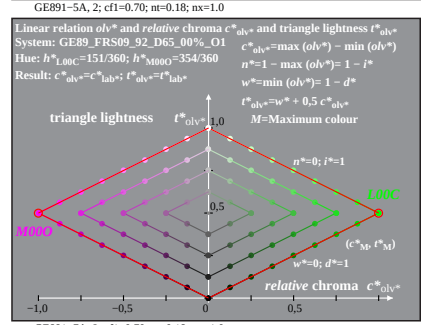

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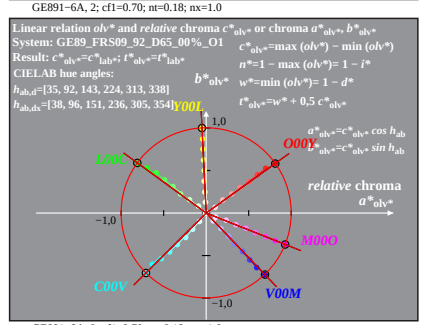

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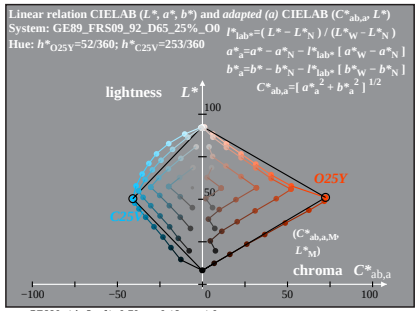

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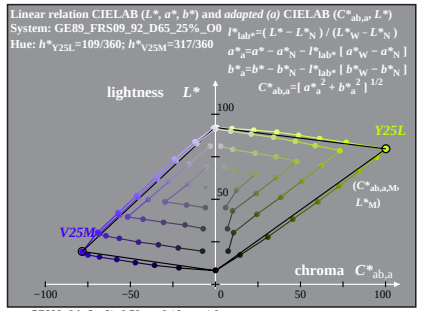

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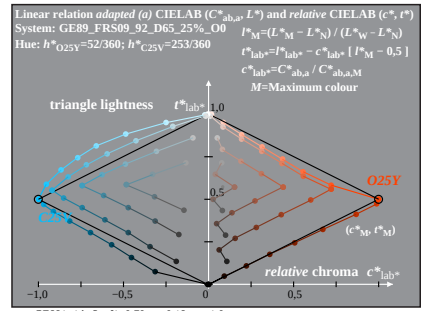

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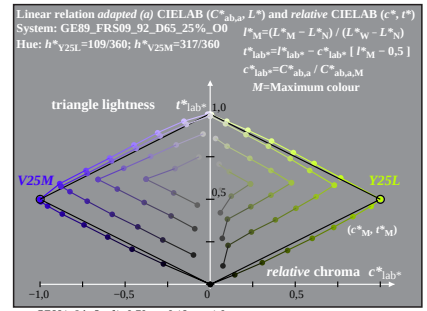

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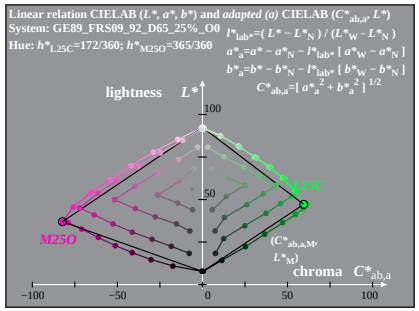

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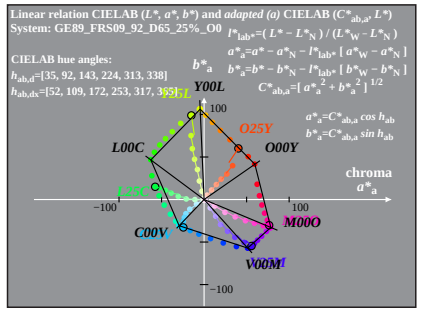

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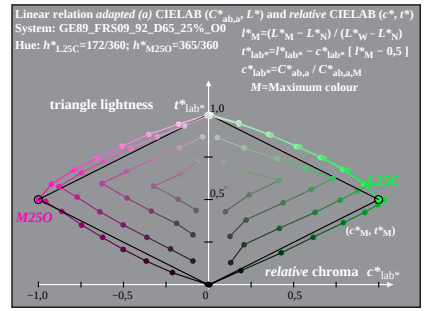

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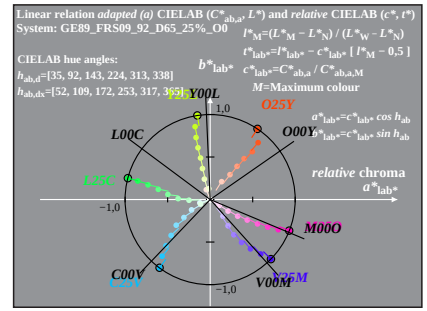

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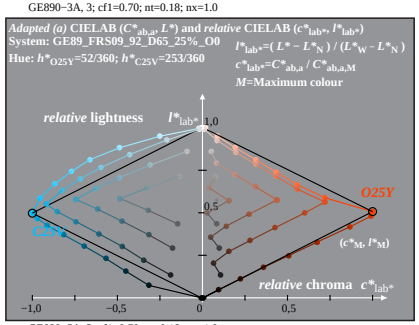

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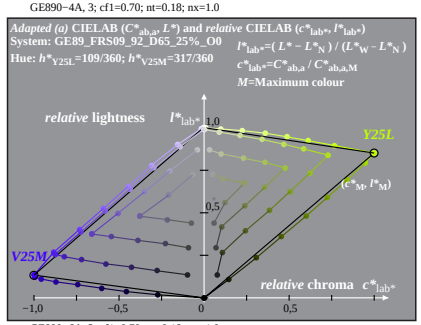

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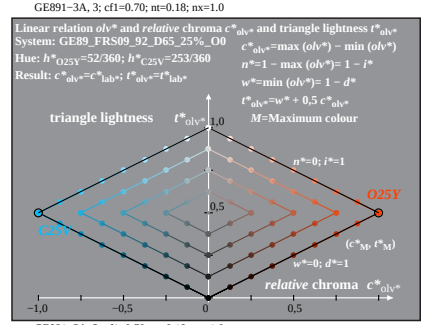

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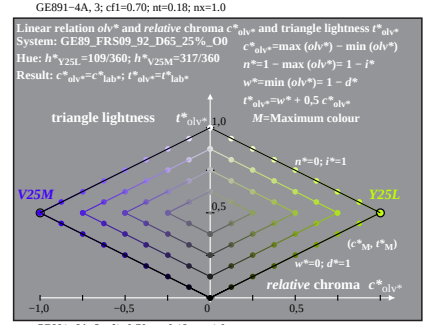

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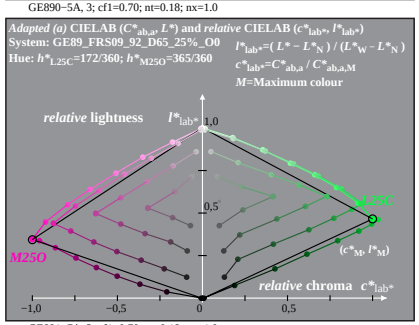

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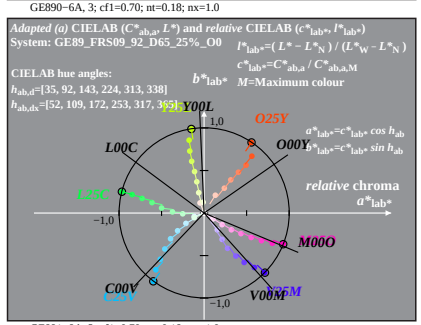

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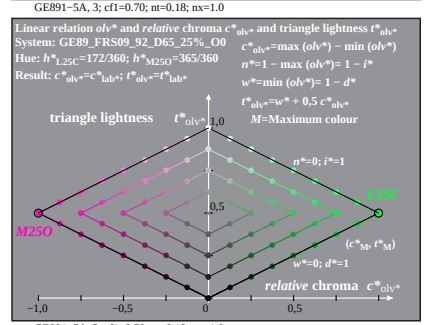

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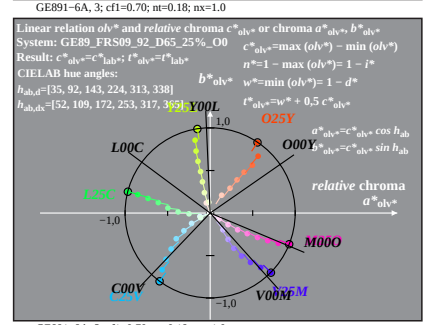

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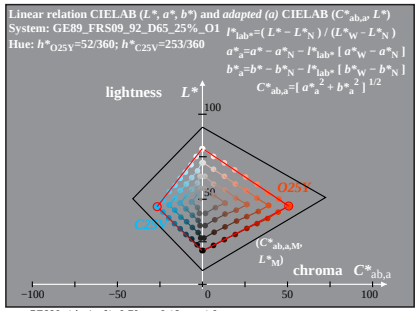
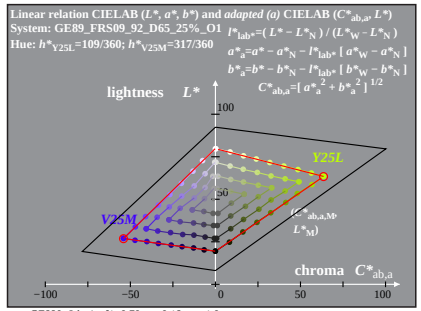
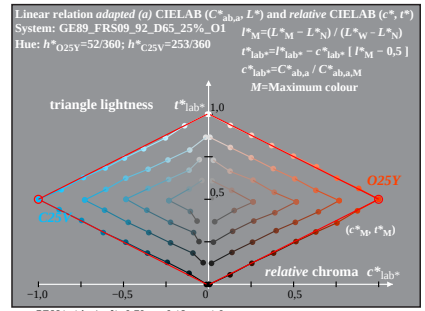
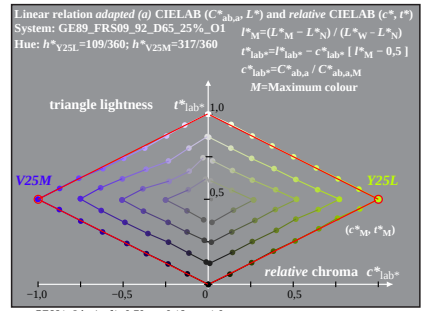
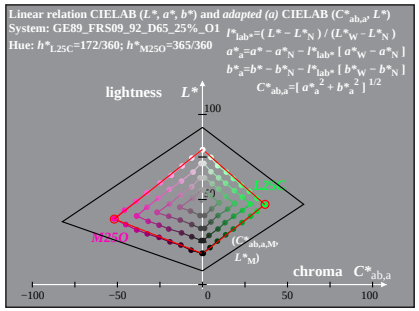
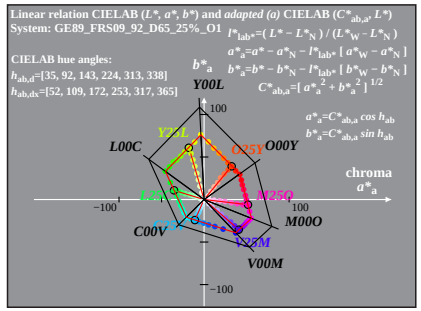

Linear relation CIELAB (L*, a*, b*) and adapted (a) CIELAB (C*ab,a, L*)
System: GE89_FRS09_92_D65_25%_O1
Hue: h*O25Y=52/360; h*C25V=253/360
l*lab*=(L* − L*N) / (L*W − L*N)
a*a=a* − a*N − l*lab* [a*W − a*N]
b*a=b* − b*N − l*lab* [b*W − b*N]
C*ab,a=[a*a2 + b*a2] 1/2
lightness L*
chroma C*ab,a
O25Y
C25V
(C*ab,a,M, L*M)
GE890−1A, 4; cf1=0.70; nt=0.18; nx=1.0

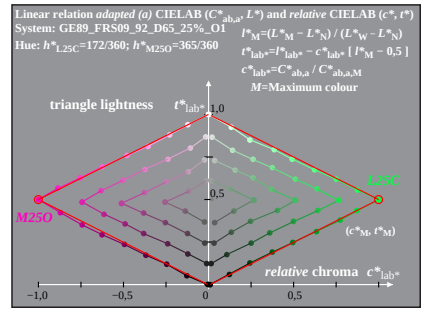

Linear relation CIELAB (L*, a*, b*) and adapted (a) CIELAB (C*ab,a, L*)
System: GE89_FRS09_92_D65_25%_O1
Hue: h*Y25L=109/360; h*V25M=317/360
l*lab*=(L* − L*N) / (L*W − L*N)
a*a=a* − a*N − l*lab* [a*W − a*N]
b*a=b* − b*N − l*lab* [b*W − b*N]
C*ab,a=[a*a2 + b*a2] 1/2
lightness L*
chroma C*ab,a
Y25L
V25M
(C*ab,a,M, L*M)
GE890−2A, 4; cf1=0.70; nt=0.18; nx=1.0

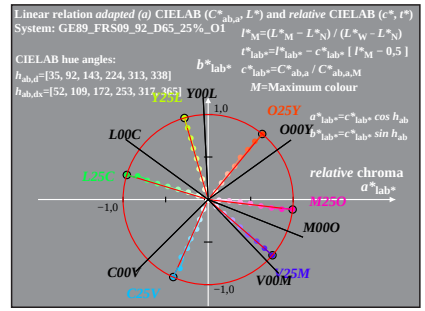

Linear relation adapted (a) CIELAB (C*ab,a, L*) and relative CIELAB (c*, t*)
System: GE89_FRS09_92_D65_25%_O1
Hue: h*O25Y=52/360; h*C25V=253/360
l*M=(L*M − L*N) / (L*W − L*N)
t*lab*=l*lab* − c*lab* [l*M − 0,5]
c*lab*=C*ab,a / C*ab,a,M
M=Maximum colour
triangle lightness t*lab*
relative chroma c*lab*
O25Y
C25V
(c*M, t*M)
GE891−1A, 4; cf1=0.70; nt=0.18; nx=1.0

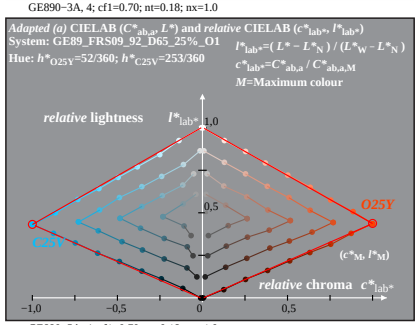

Linear relation adapted (a) CIELAB (C*ab,a, L*) and relative CIELAB (c*, t*)
System: GE89_FRS09_92_D65_25%_O1
Hue: h*Y25L=109/360; h*V25M=317/360
l*M=(L*M − L*N) / (L*W − L*N)
t*lab*=l*lab* − c*lab* [l*M − 0,5]
c*lab*=C*ab,a / C*ab,a,M
M=Maximum colour
triangle lightness t*lab*
relative chroma c*lab*
V25M
Y25L
(c*M, t*M)
GE891−2A, 4; cf1=0.70; nt=0.18; nx=1.0

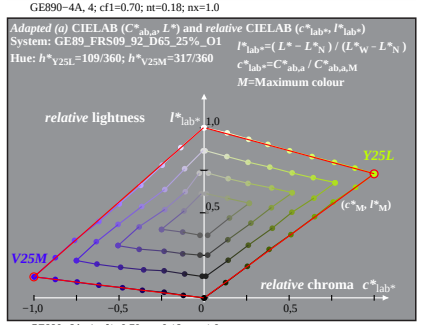

Linear relation CIELAB (L*, a*, b*) and adapted (a) CIELAB (C*ab,a, L*)
System: GE89_FRS09_92_D65_25%_O1
Hue: h*L25C=172/360; h*M25O=365/360
l*lab*=(L* − L*N) / (L*W − L*N)
a*a=a* − a*N − l*lab* [a*W − a*N]
b*a=b* − b*N − l*lab* [b*W − b*N]
C*ab,a=[a*a2 + b*a2] 1/2
lightness L*
chroma C*ab,a
L25C
M25O
(C*ab,a,M, L*M)
GE890−3A, 4; cf1=0.70; nt=0.18; nx=1.0

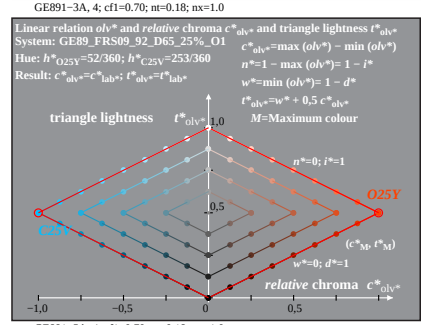

Linear relation CIELAB (L*, a*, b*) and adapted (a) CIELAB (C*ab,a, L*)
System: GE89_FRS09_92_D65_25%_O1
CIELAB hue angles:
hab,d=[35, 92, 143, 224, 313, 338]
hab,dx=[52, 109, 172, 253, 317, 365]
l*lab*=(L* − L*N) / (L*W − L*N)
a*a=a* − a*N − l*lab* [a*W − a*N]
b*a=b* − b*N − l*lab* [b*W − b*N]
C*ab,a=[a*a2 + b*a2] 1/2
a*a=C*ab,a cos hab
b*a=C*ab,a sin hab
b*a
chroma a*a
Y00L
L00C
Y25L
O25Y
O00Y
L25C
M25O
M00O
C00V
C25V
V25M
V00M
GE890−4A, 4; cf1=0.70; nt=0.18; nx=1.0

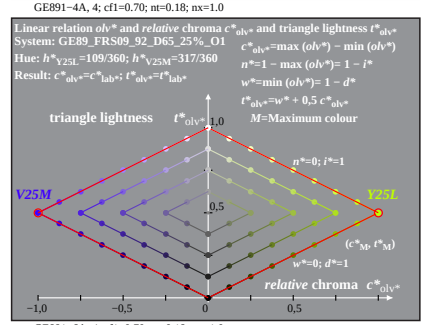

Linear relation adapted (a) CIELAB (C*ab,a, L*) and relative CIELAB (c*, t*)
System: GE89_FRS09_92_D65_25%_O1
Hue: h*L25C=172/360; h*M25O=365/360
l*M=(L*M − L*N) / (L*W − L*N)
t*lab*=l*lab* − c*lab* [l*M − 0,5]
c*lab*=C*ab,a / C*ab,a,M
M=Maximum colour
triangle lightness t*lab*
relative chroma c*lab*
L25C
M25O
(c*M, t*M)
GE891−3A, 4; cf1=0.70; nt=0.18; nx=1.0

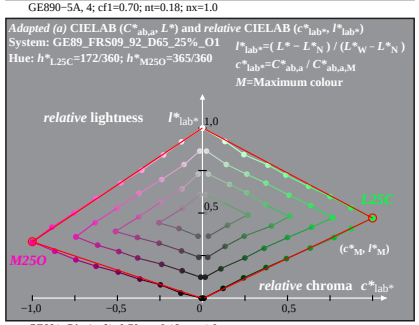

Linear relation adapted (a) CIELAB (C*ab,a, L*) and relative CIELAB (c*, t*)
System: GE89_FRS09_92_D65_25%_O1
CIELAB hue angles:
hab,d=[35, 92, 143, 224, 313, 338]
hab,dx=[52, 109, 172, 253, 317, 365]
l*M=(L*M − L*N) / (L*W − L*N)
t*lab*=l*lab* − c*lab* [l*M − 0,5]
c*lab*=C*ab,a / C*ab,a,M
M=Maximum colour
b*lab*
a*lab*=c*lab* cos hab
b*lab*=c*lab* sin hab
relative chroma a*lab*
Y00L
Y25L
O25Y
O00Y
L00C
L25C
M25O
M00O
C00V
C25V
V25M
V00M
GE891−4A, 4; cf1=0.70; nt=0.18; nx=1.0

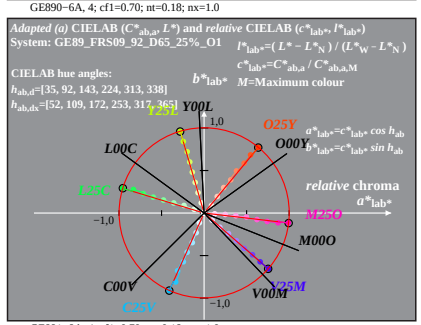

Adapted (a) CIELAB (C*ab,a, L*) and relative CIELAB (c*lab*, l*lab*)
System: GE89_FRS09_92_D65_25%_O1
Hue: h*O25Y=52/360; h*C25V=253/360
l*lab*=(L* − L*N) / (L*W − L*N)
c*lab*=C*ab,a / C*ab,a,M
M=Maximum colour
relative lightness l*lab*
relative chroma c*lab*
O25Y
C25V
(c*M, l*M)
GE890−5A, 4; cf1=0.70; nt=0.18; nx=1.0

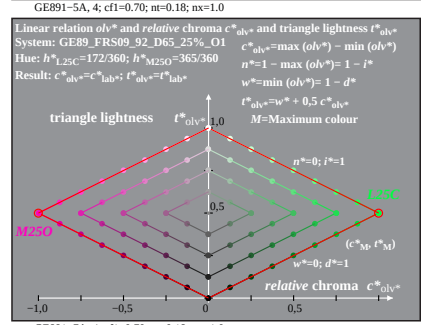

Adapted (a) CIELAB (C*ab,a, L*) and relative CIELAB (c*lab*, l*lab*)
System: GE89_FRS09_92_D65_25%_O1
Hue: h*Y25L=109/360; h*V25M=317/360
l*lab*=(L* − L*N) / (L*W − L*N)
c*lab*=C*ab,a / C*ab,a,M
M=Maximum colour
relative lightness l*lab*
relative chroma c*lab*
Y25L
V25M
(c*M, l*M)
GE890−6A, 4; cf1=0.70; nt=0.18; nx=1.0

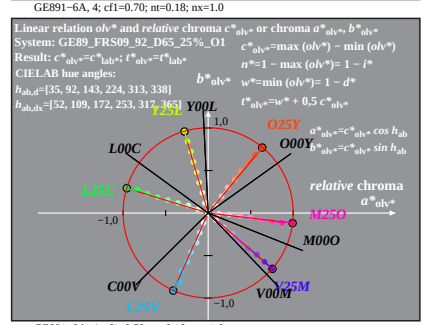

Linear relation olv* and relative chroma c*olv* and triangle lightness t*olv*
System: GE89_FRS09_92_D65_25%_O1
Hue: h*O25Y=52/360; h*C25V=253/360
Result: c*olv*=c*lab*; t*olv*=t*lab*
c*olv*=max (olv*) − min (olv*)
n*=1 − max (olv*)= 1 − i*
w*=min (olv*)= 1 − d*
t*olv*=w* + 0,5 c*olv*
M=Maximum colour
triangle lightness t*olv*
n*=0; i*=1
w*=0; d*=1
relative chroma c*olv*
O25Y
C25V
(c*M, t*M)
GE891−5A, 4; cf1=0.70; nt=0.18; nx=1.0

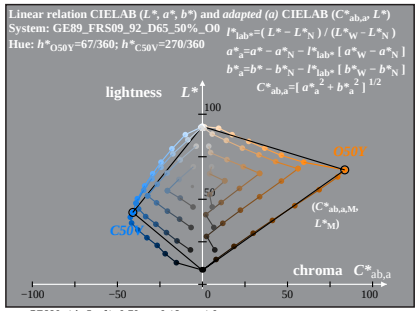

Linear relation olv* and relative chroma c*olv* and triangle lightness t*olv*
System: GE89_FRS09_92_D65_25%_O1
Hue: h*Y25L=109/360; h*V25M=317/360
Result: c*olv*=c*lab*; t*olv*=t*lab*
c*olv*=max (olv*) − min (olv*)
n*=1 − max (olv*)= 1 − i*
w*=min (olv*)= 1 − d*
t*olv*=w* + 0,5 c*olv*
M=Maximum colour
triangle lightness t*olv*
n*=0; i*=1
w*=0; d*=1
relative chroma c*olv*
V25M
Y25L
(c*M, t*M)
GE891−6A, 4; cf1=0.70; nt=0.18; nx=1.0


Adapted (a) CIELAB (C*ab,a, L*) and relative CIELAB (c*lab*, l*lab*)
System: GE89_FRS09_92_D65_25%_O1
Hue: h*L25C=172/360; h*M25O=365/360
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*
L25C
M25O
(c*M, l*M)
GE891−7A, 4; cf1=0.70; nt=0.18; nx=1.0


Adapted (a) CIELAB (C*ab,a, L*) and relative CIELAB (c*lab*, l*lab*)
System: GE89_FRS09_92_D65_25%_O1
CIELAB hue angles:
hab,d=[35, 92, 143, 224, 313, 338]
hab,dx=[52, 109, 172, 253, 317, 365]
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
Y25L
O25Y
O00Y
L00C
L25C
M25O
M00O
C00V
C25V
V25M
V00M
GE891−8A, 4; cf1=0.70; nt=0.18; nx=1.0


Linear relation olv* and relative chroma c*olv* and triangle lightness t*olv*
System: GE89_FRS09_92_D65_25%_O1
Hue: h*L25C=172/360; h*M25O=365/360
Result: c*olv*=c*lab*; t*olv*=t*lab*
c*olv*=max (olv*) − min (olv*)
n*=1 − max (olv*)= 1 − i*
w*=min (olv*)= 1 − d*
t*olv*=w* + 0,5 c*olv*
M=Maximum colour
triangle lightness t*olv*
n*=0; i*=1
w*=0; d*=1
relative chroma c*olv*
L25C
M25O
(c*M, t*M)
GE891−7A, 4; cf1=0.70; nt=0.18; nx=1.0


Linear relation olv* and relative chroma c*olv* or chroma a*olv*, b*olv*
System: GE89_FRS09_92_D65_25%_O1
Result: c*olv*=c*lab*; t*olv*=t*lab*
CIELAB hue angles:
hab,d=[35, 92, 143, 224, 313, 338]
hab,dx=[52, 109, 172, 253, 317, 365]
c*olv*=max (olv*) − min (olv*)
n*=1 − max (olv*)= 1 − i*
w*=min (olv*)= 1 − d*
t*olv*=w* + 0,5 c*olv*
b*olv*
a*olv*=c*olv* cos hab
b*olv*=c*olv* sin hab
relative chroma a*olv*
Y00L
Y25L
O25Y
O00Y
L00C
L25C
M25O
M00O
C00V
C25V
V25M
V00M
GE891−8A, 4; cf1=0.70; nt=0.18; nx=1.0



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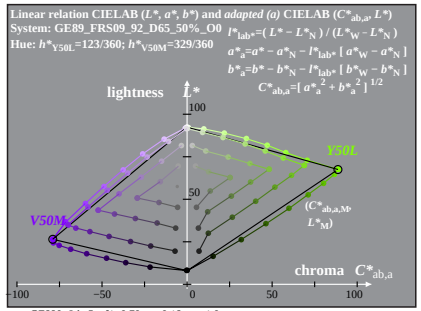

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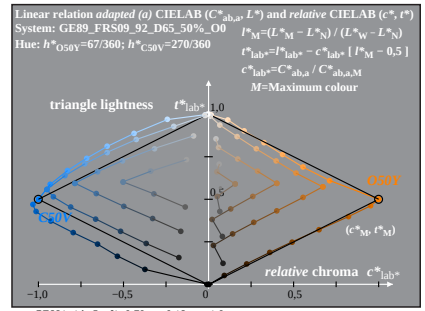
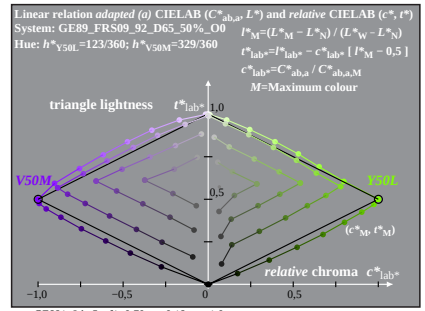
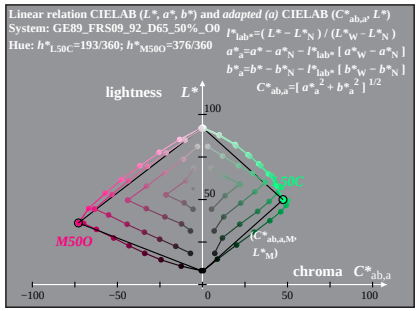


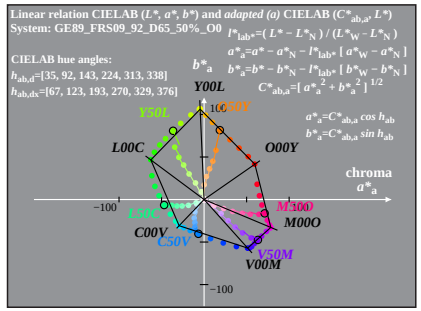
GE891−1A, 5; cf1=0.70; nt=0.18; nx=1.0



GE891−2A, 5; cf1=0.70; nt=0.18; nx=1.0



GE890−3A, 5; cf1=0.70; nt=0.18; nx=1.0



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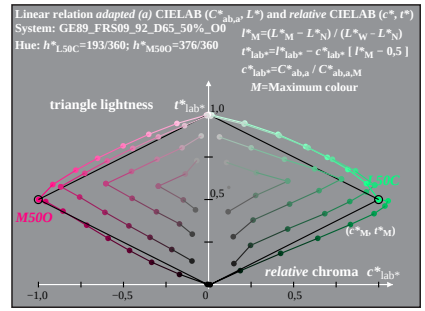
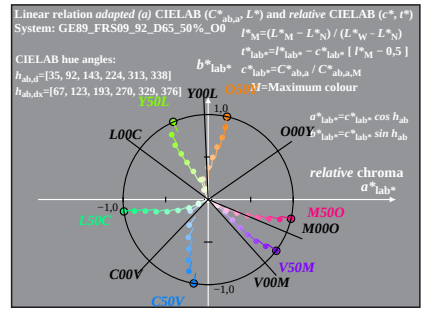
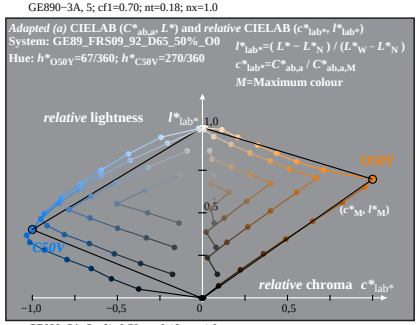


GE891−3A, 5; cf1=0.70; nt=0.18; nx=1.0



GE891−4A, 5; cf1=0.70; nt=0.18; nx=1.0



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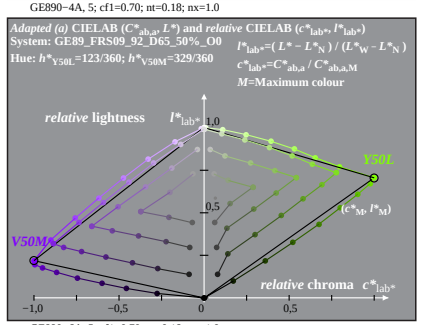

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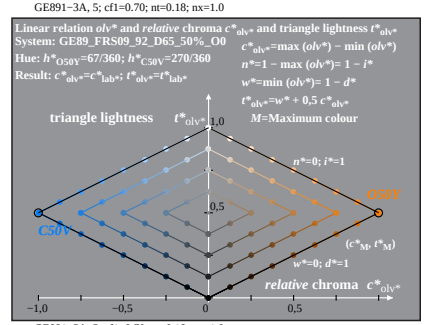

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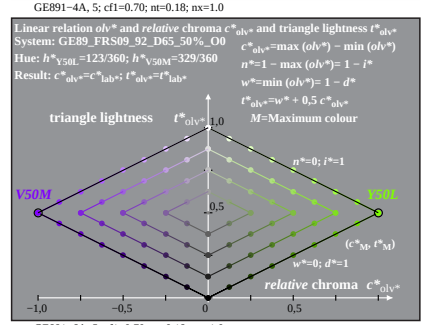

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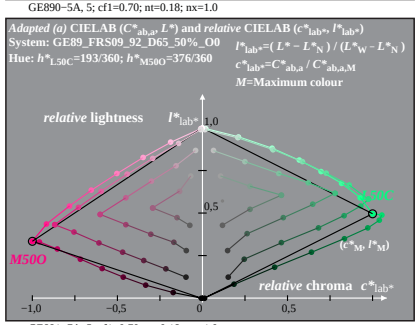

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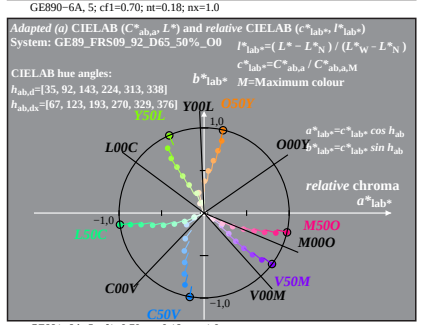

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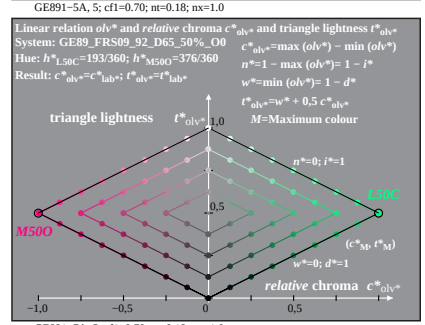

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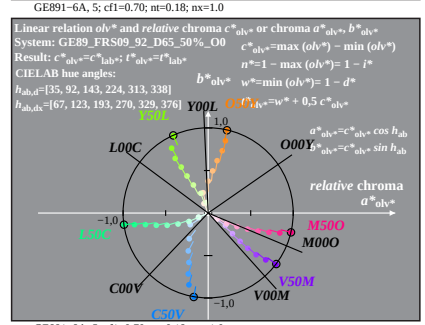

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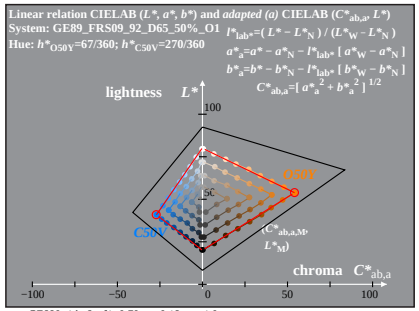

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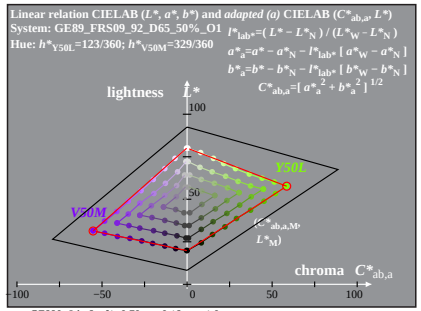

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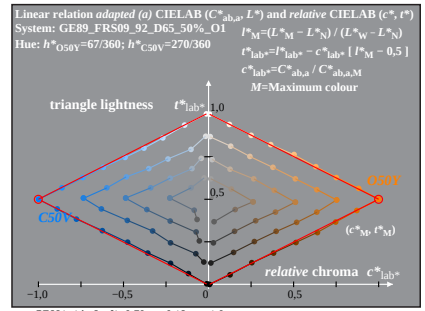

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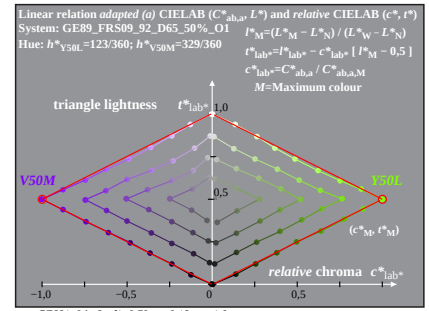

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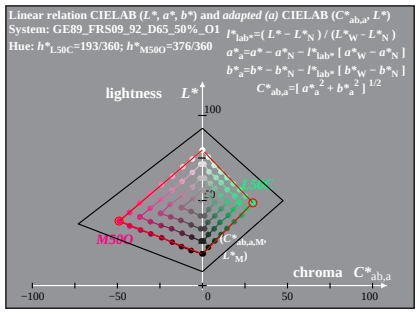

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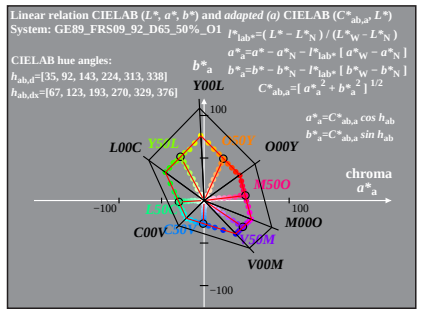

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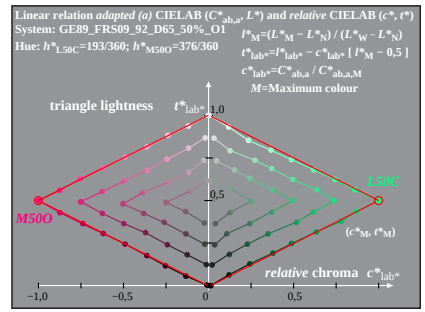

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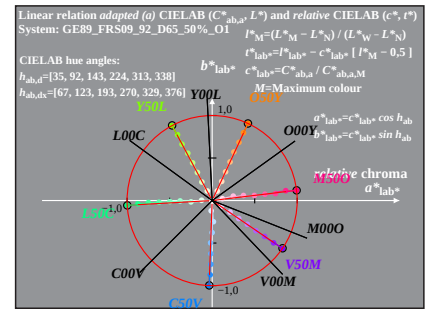

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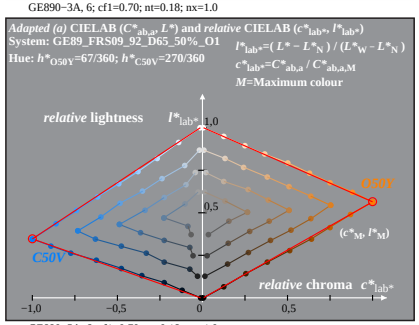

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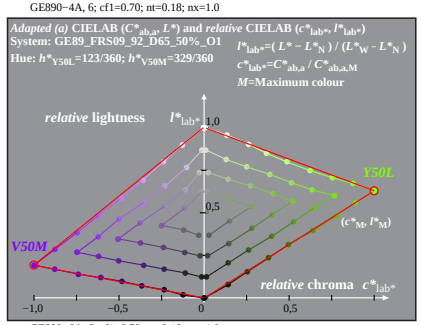

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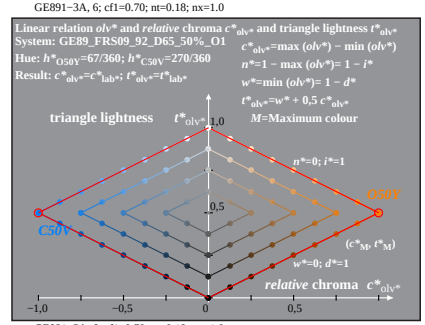

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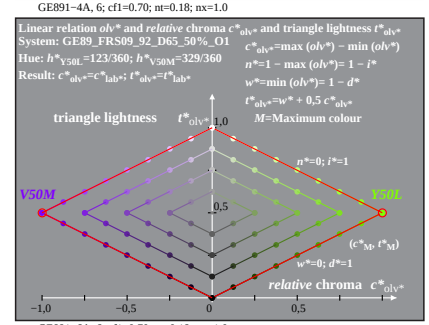

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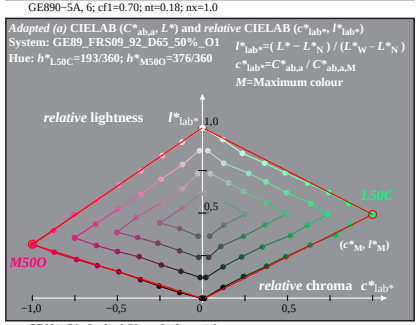

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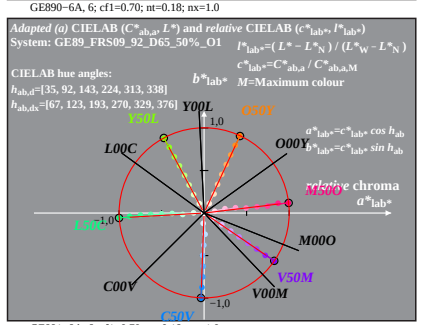

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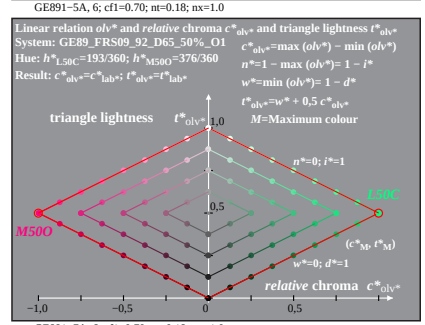

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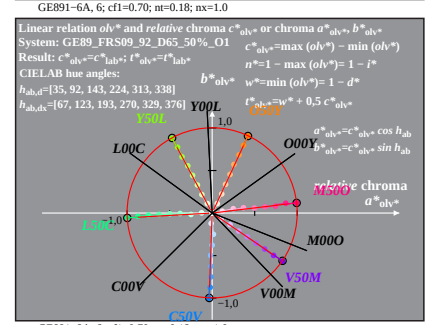

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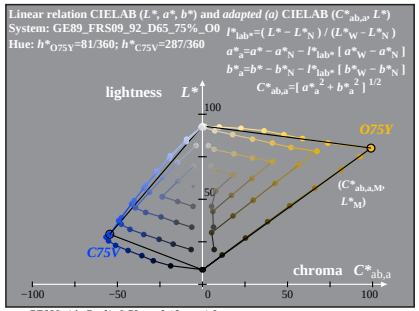

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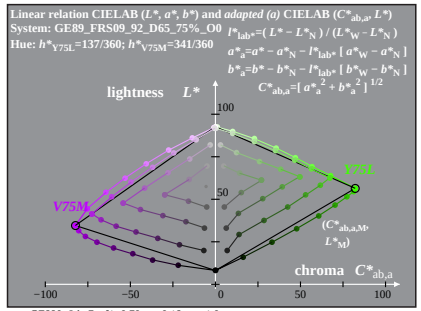

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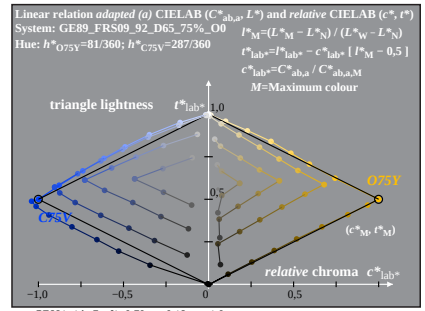

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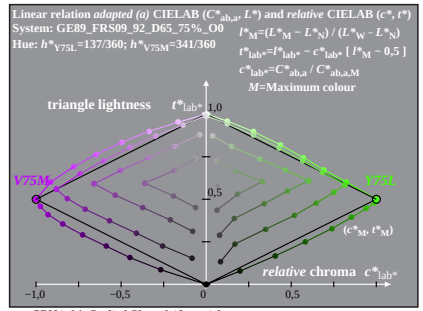

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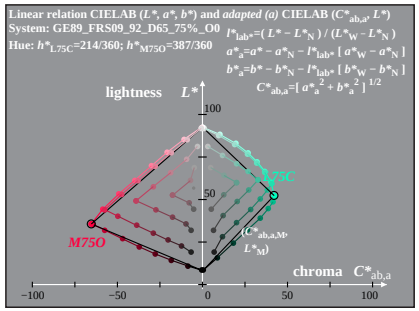

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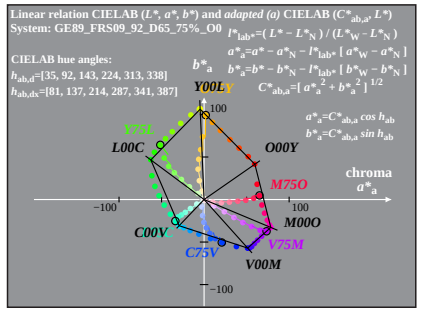

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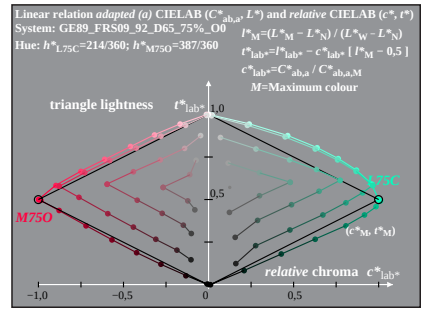

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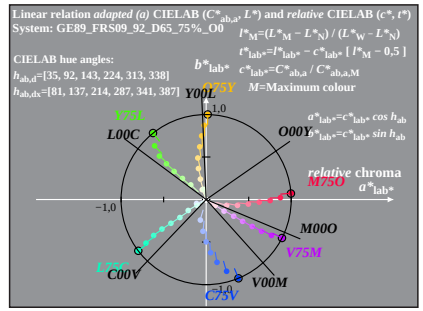

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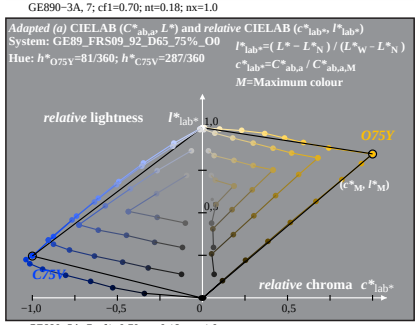

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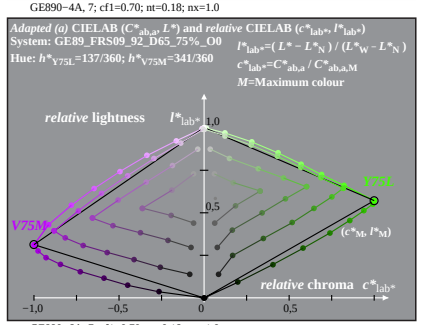

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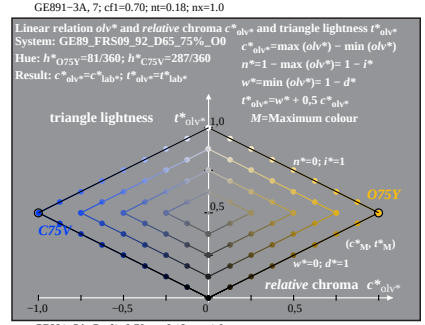

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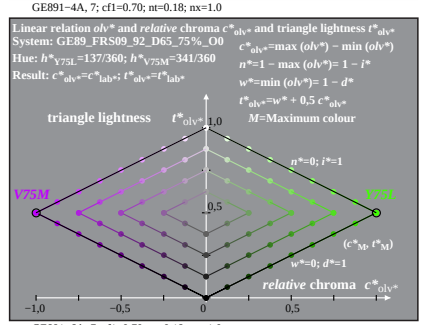

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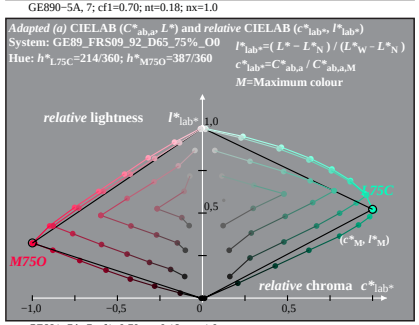

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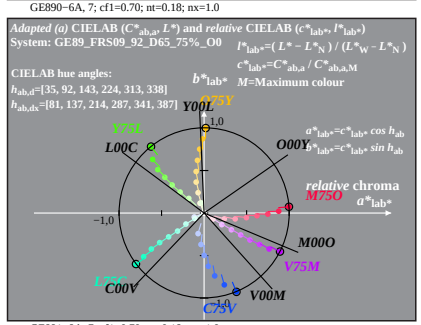

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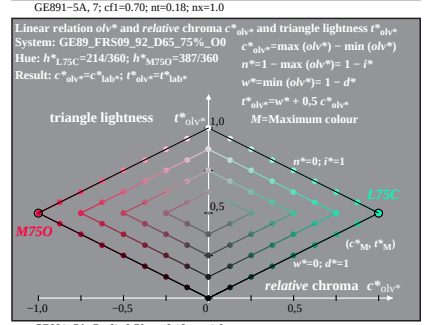

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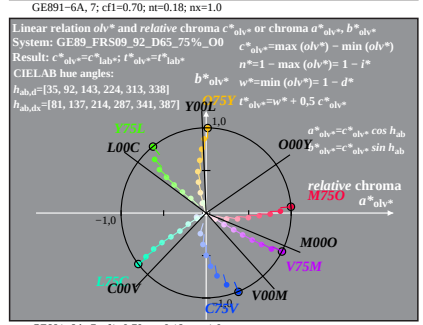

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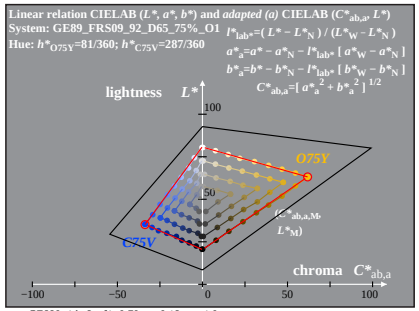

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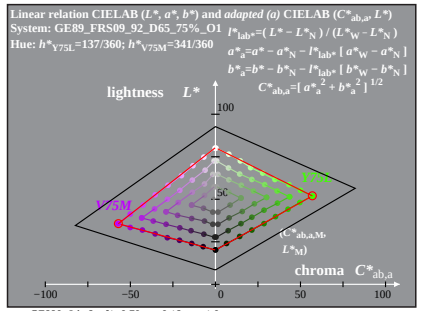

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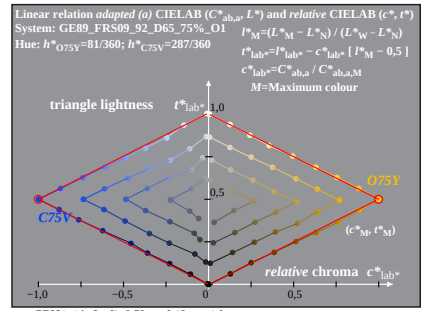

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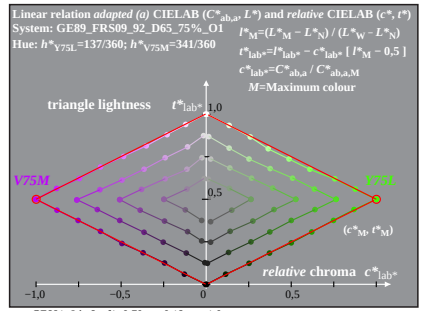

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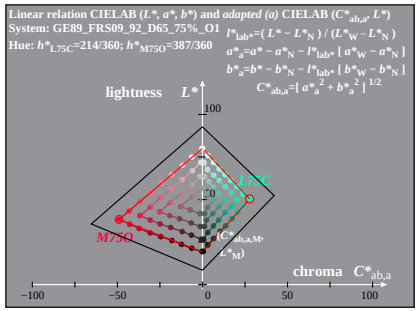

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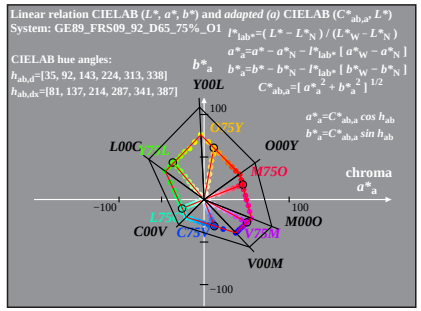

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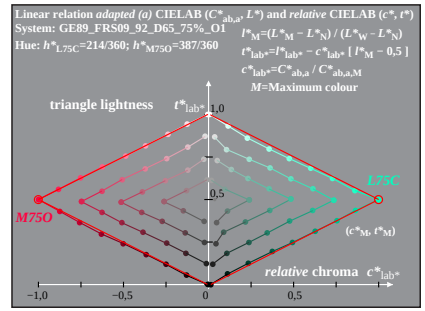

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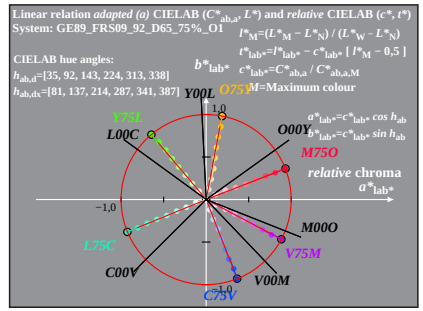

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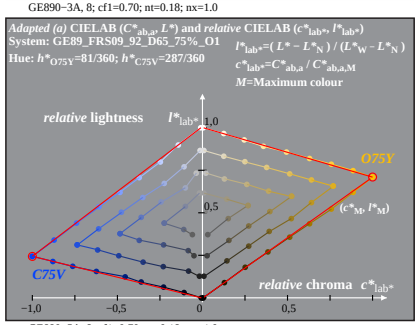

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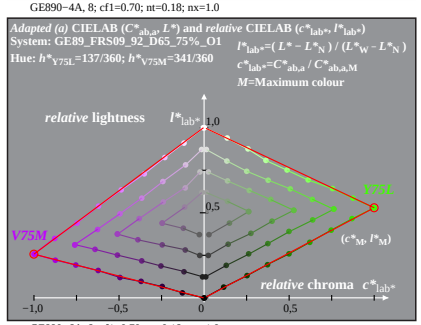

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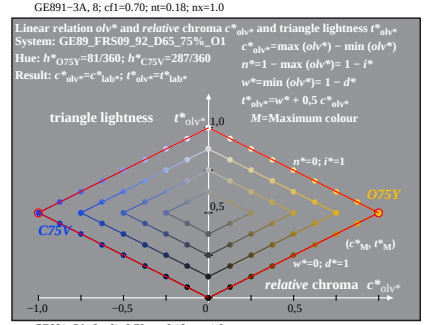

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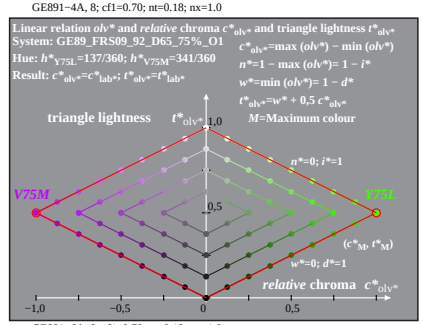

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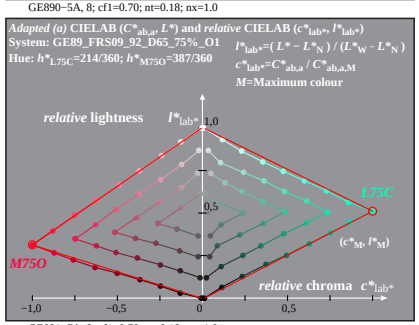

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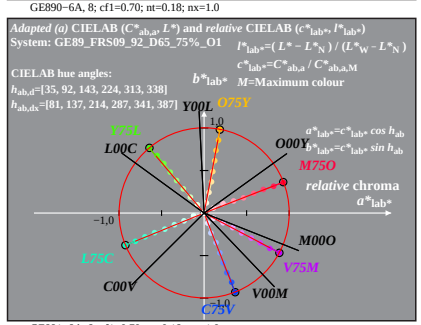

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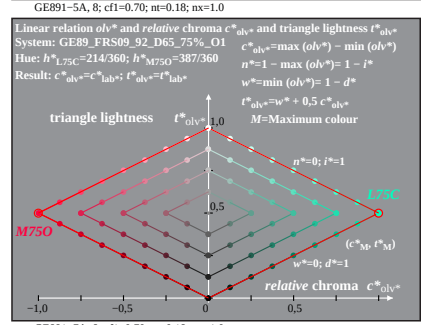

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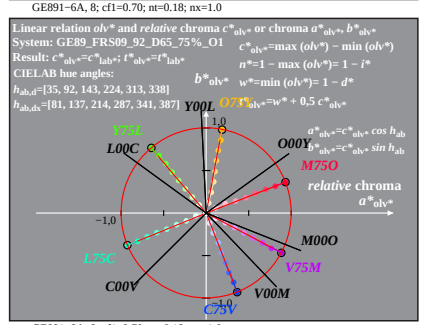

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