

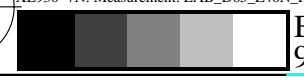
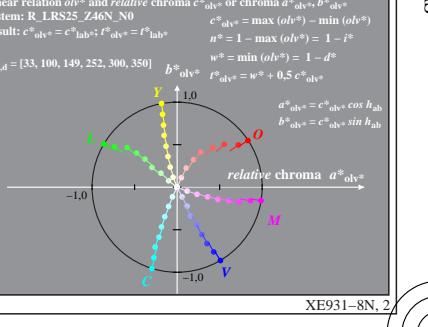
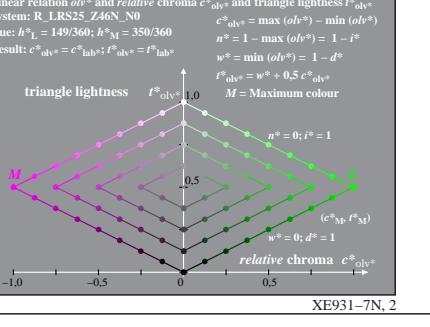
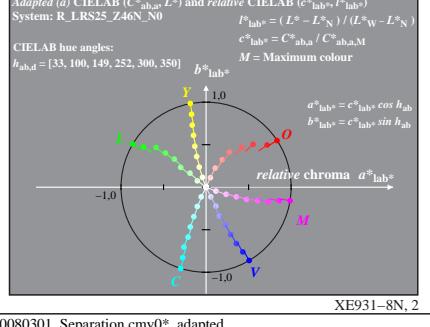
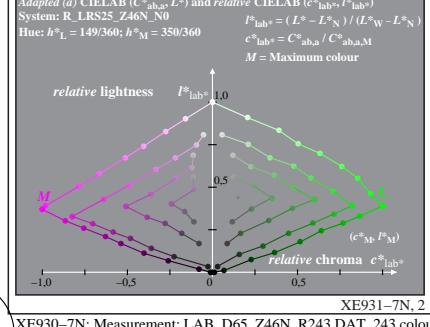
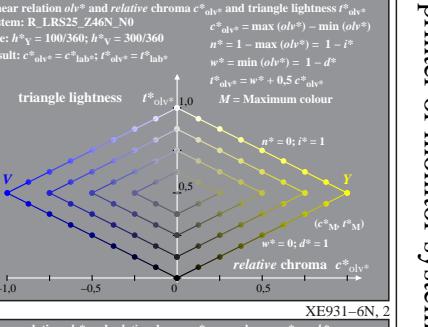
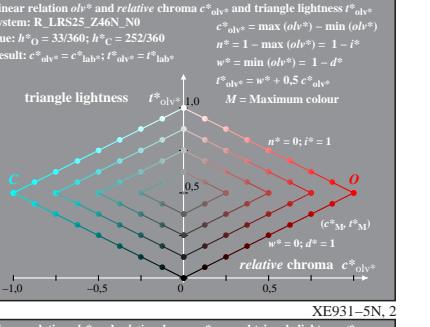
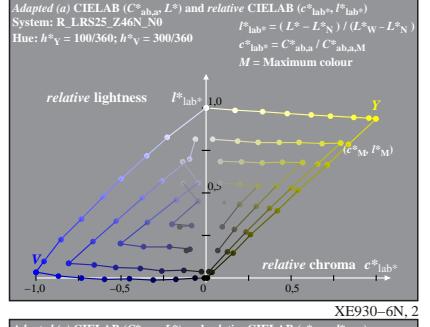
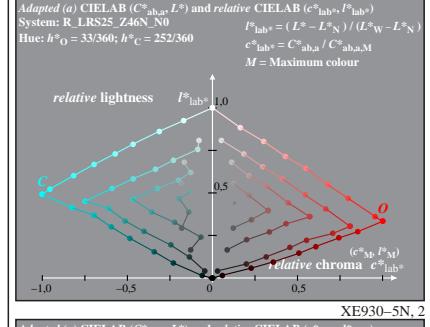
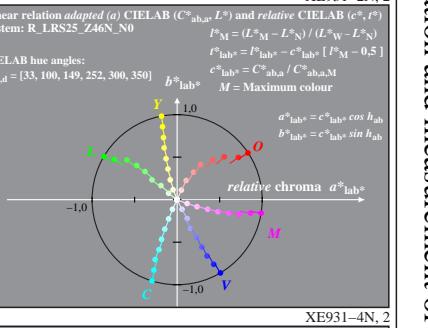
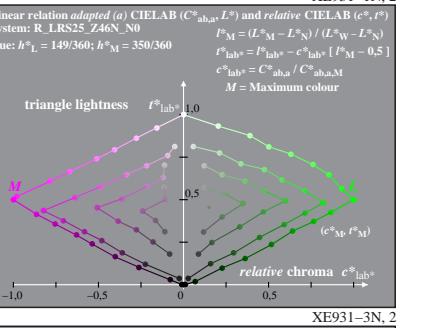
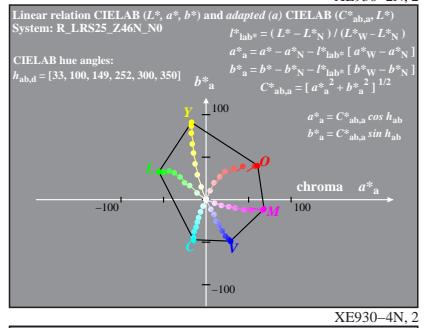
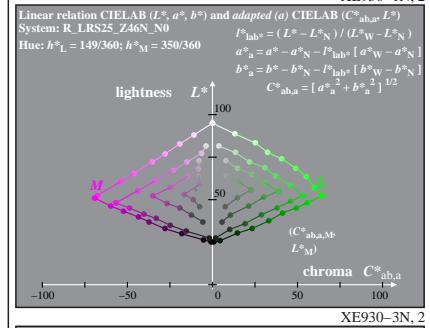
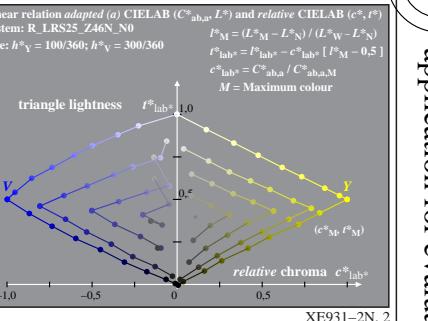
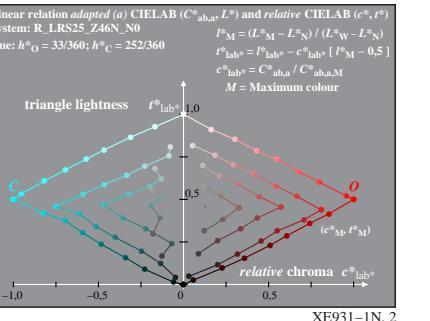
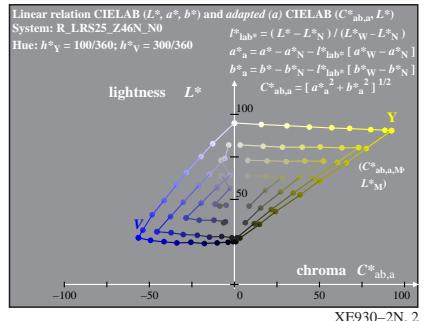
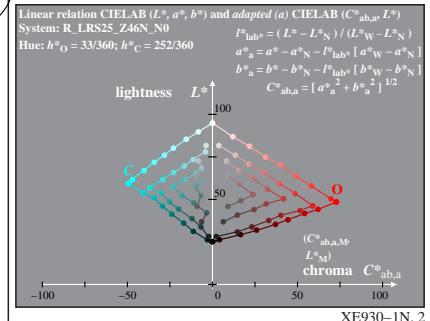
# BAM registration: 20080601-XE93/10L/L93E00NA.PS /TXT BAM material: code=rha4ta



www.ps.bam.de/XE93/10L/L93E00NA.PS /TXT, Page 2/8; start output  
N: No Output Linearization (OL) data in File (F), Startup (S) or Device (D)

See for similar files: <http://www.ps.bam.de/XE93/>; www.ps.bam.de/XE93/; Version 2.1, io=1,1

Technical information: <http://www.ps.bam.de>



BAM-test chart XE93; Colour device output, Page 2/8  
9 step series; laser printer; 4 separations + 4 linearisations

input:  $rgb \rightarrow oly^*$   
output: no change compared to input

# BAM registration: 20080601-XE93/10L/L93E00NA.PS /TXT BAM material: code=rha4ta



Linear relation adapted (a) CIELAB ( $C^*_{ab,a}$ ,  $L^*$ ) and relative CIELAB ( $c^*_{lab^*}$ ,  $t^*_{lab^*}$ )  
System: R\_LRS25\_Z47N\_N4  
Hue:  $h^*_{ab} = 100/360$ ;  $h^*_{c} = 297/360$

$I^*_{lab^*} = (L^* - L^*_{N}) / (L^*_{W} - L^*_{N})$   
 $a^*_{ab} = a^* - a^*_{N} - I^*_{lab^*} [a^*_{W} - a^*_{N}]$   
 $b^*_{ab} = b^* - b^*_{N} - I^*_{lab^*} [b^*_{W} - b^*_{N}]$   
 $C^*_{ab,a} = [a^*_{ab} + b^*_{ab}]^{1/2}$

$I^*_{M} = (L^*_{M} - L^*_{N}) / (L^*_{W} - L^*_{N})$   
 $t^*_{lab^*} = I^*_{lab^*} - c^*_{lab^*} [I^*_{M} - 0.5]$   
 $c^*_{lab^*} = C^*_{ab,a} / C^*_{ab,M}$   
 $M = \text{Maximum colour}$

triangle lightness  $t^*_{lab^*}$  vs relative chroma  $c^*_{lab^*}$

Linear relation adapted (a) CIELAB ( $C^*_{ab,a}$ ,  $L^*$ ) and relative CIELAB ( $c^*_{lab^*}$ ,  $t^*_{lab^*}$ )  
System: R\_LRS25\_Z47N\_N4  
Hue:  $h^*_{ab} = 146/360$ ;  $h^*_{M} = 355/360$

$I^*_{lab^*} = (L^* - L^*_{N}) / (L^*_{W} - L^*_{N})$   
 $a^*_{ab} = a^* - a^*_{N} - I^*_{lab^*} [a^*_{W} - a^*_{N}]$   
 $b^*_{ab} = b^* - b^*_{N} - I^*_{lab^*} [b^*_{W} - b^*_{N}]$   
 $C^*_{ab,a} = [a^*_{ab} + b^*_{ab}]^{1/2}$

$I^*_{M} = (L^*_{M} - L^*_{N}) / (L^*_{W} - L^*_{N})$   
 $t^*_{lab^*} = I^*_{lab^*} - c^*_{lab^*} [I^*_{M} - 0.5]$   
 $c^*_{lab^*} = C^*_{ab,a} / C^*_{ab,M}$   
 $M = \text{Maximum colour}$

triangle lightness  $t^*_{lab^*}$  vs relative chroma  $c^*_{lab^*}$

Linear relation oly\* and relative chroma  $c^*_{olv^*}$  and triangle lightness  $t^*_{olv^*}$   
System: R\_LRS25\_Z47N\_N4  
Hue:  $h^*_{O} = 40/360$ ;  $h^*_{C} = 246/360$

$I^*_{lab^*} = (L^* - L^*_{N}) / (L^*_{W} - L^*_{N})$   
 $c^*_{olv^*} = C^*_{ab,a} / C^*_{ab,M}$   
 $M = \text{Maximum colour}$

$c^*_{olv^*} = \max(olv^*) - \min(olv^*)$   
 $n^* = 1 - \max(olv^*) = 1 - i^*$   
 $w^* = \min(olv^*) = 1 - d^*$   
 $t^*_{olv^*} = w^* + 0.5 * c^*_{olv^*}$   
 $M = \text{Maximum colour}$

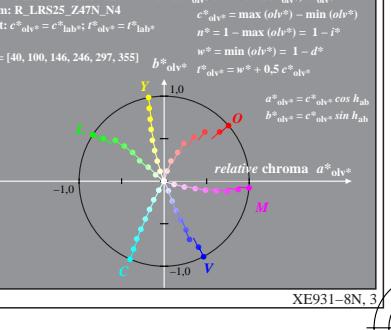
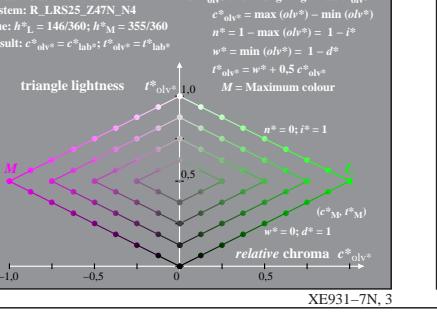
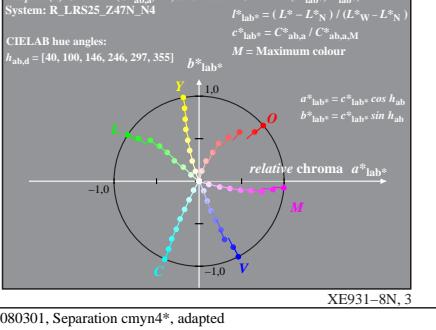
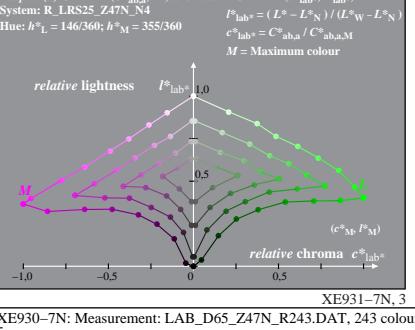
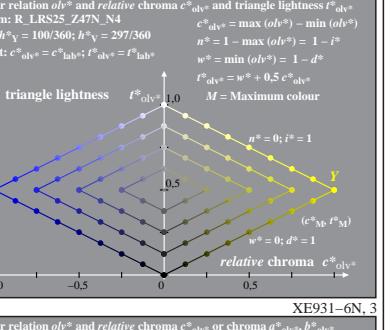
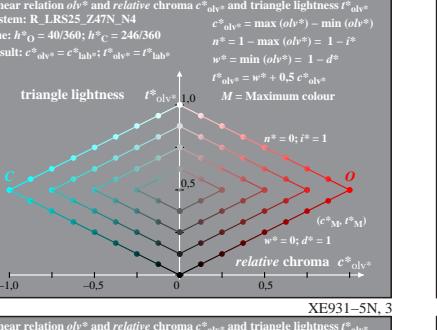
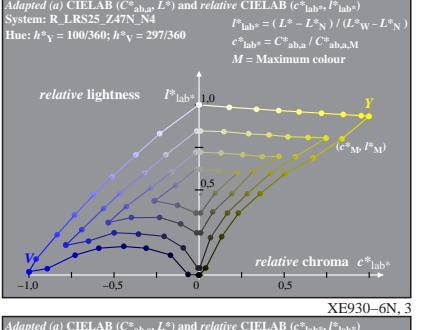
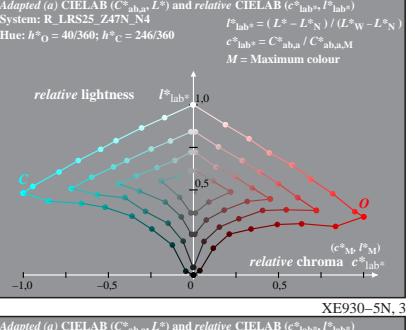
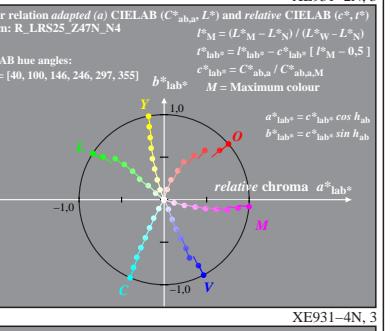
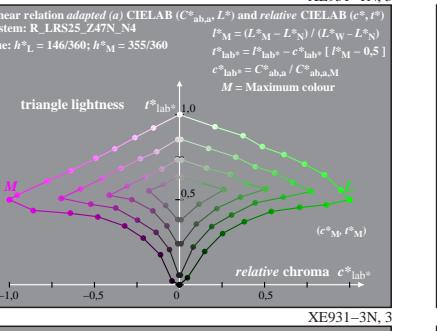
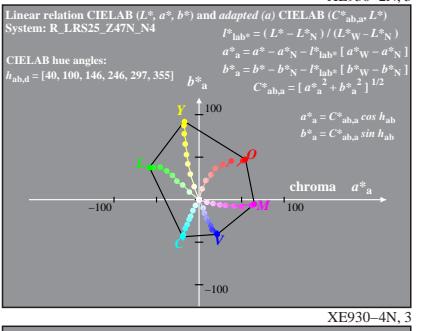
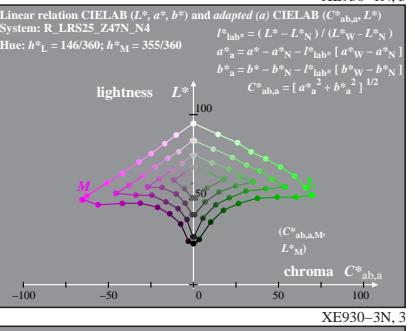
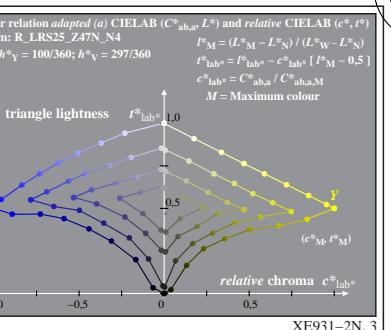
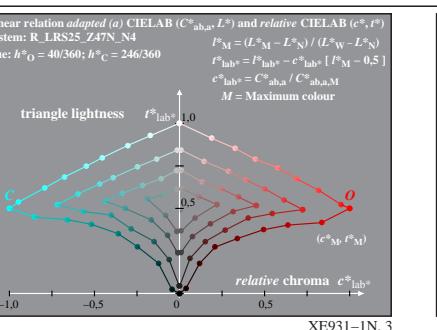
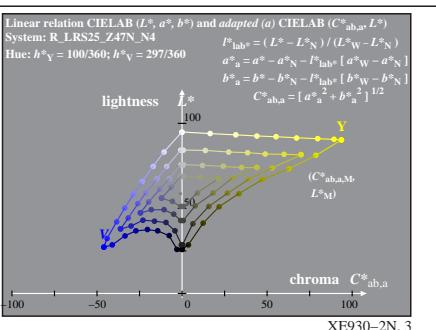
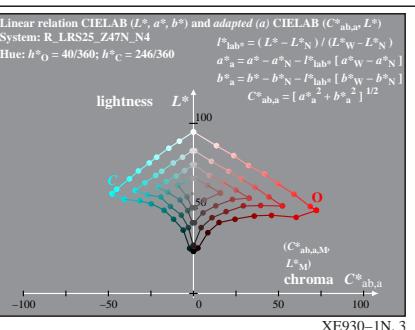
triangle lightness  $t^*_{olv^*}$  vs relative chroma  $c^*_{olv^*}$

Linear relation oly\* and relative chroma  $c^*_{olv^*}$  or chroma  $a^*_{olv^*}, b^*_{olv^*}$   
System: R\_LRS25\_Z47N\_N4  
Hue:  $h^*_{O} = 146/360$ ;  $h^*_{M} = 355/360$

$I^*_{lab^*} = (L^* - L^*_{N}) / (L^*_{W} - L^*_{N})$   
 $c^*_{olv^*} = C^*_{ab,a} / C^*_{ab,M}$   
 $M = \text{Maximum colour}$

$c^*_{olv^*} = \max(olv^*) - \min(olv^*)$   
 $n^* = 1 - \max(olv^*) = 1 - i^*$   
 $w^* = \min(olv^*) = 1 - d^*$   
 $t^*_{olv^*} = w^* + 0.5 * c^*_{olv^*}$   
 $M = \text{Maximum colour}$

triangle lightness  $t^*_{olv^*}$  vs relative chroma  $c^*_{olv^*}$



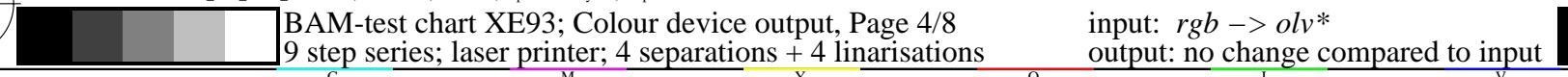
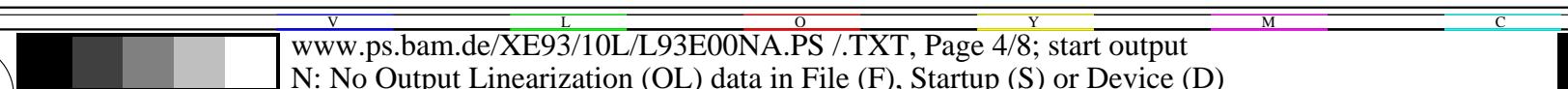
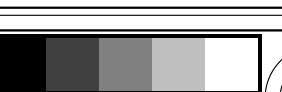
BAM-test chart XE93; Colour device output, Page 3/8  
9 step series; laser printer; 4 separations + 4 linearisations

input:  $rgb \rightarrow oly^*$   
output: no change compared to input

See for similar files: <http://www.ps.bam.de/XE93/>; [www.ps.bam.de/XE93.html](http://www.ps.bam.de/XE93.html)

Technical information: <http://www.ps.bam.de> Version 2.1, io=1,1

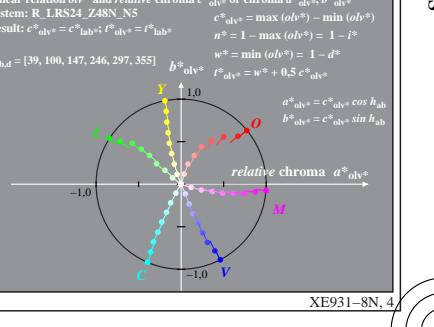
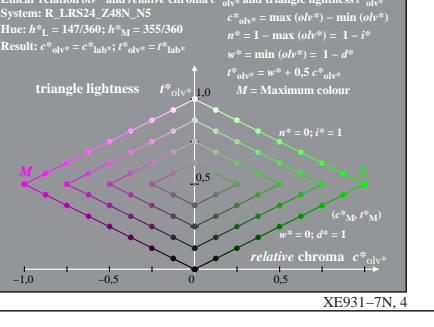
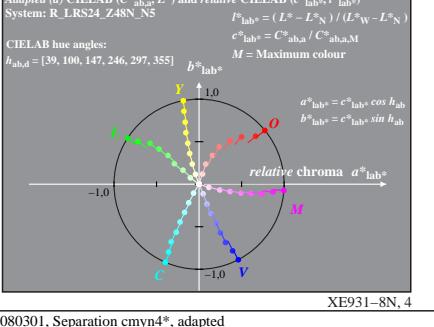
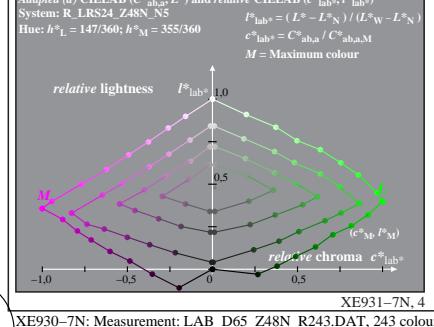
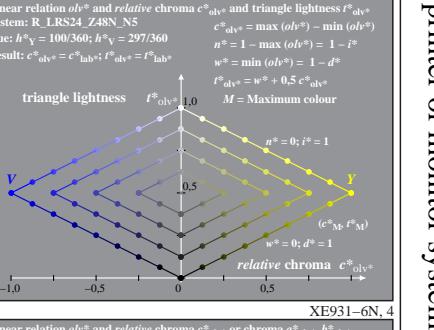
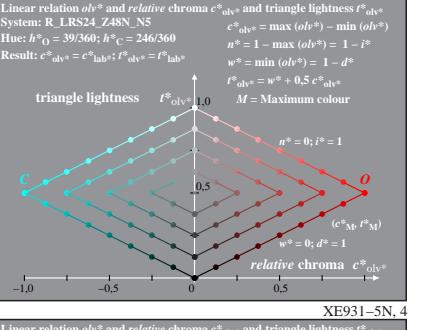
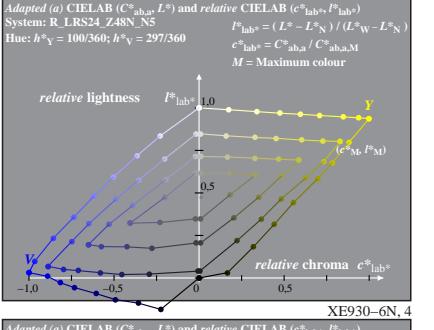
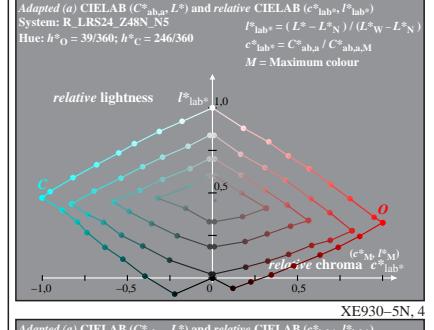
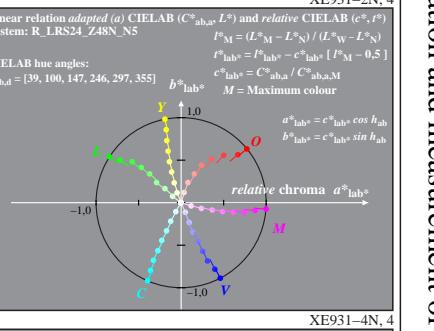
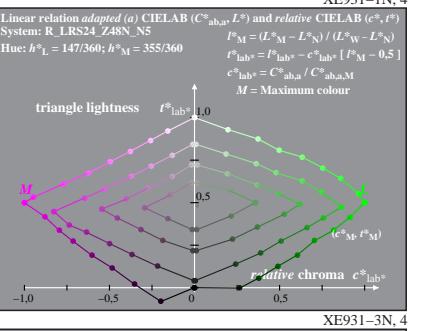
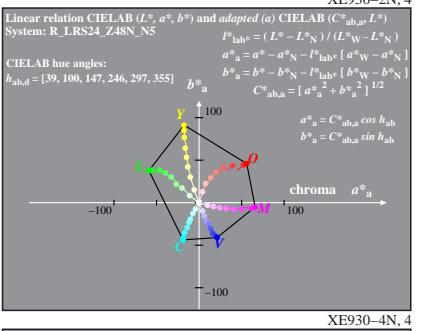
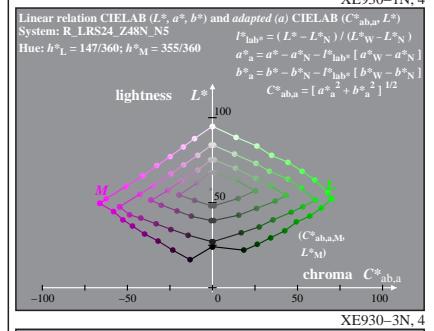
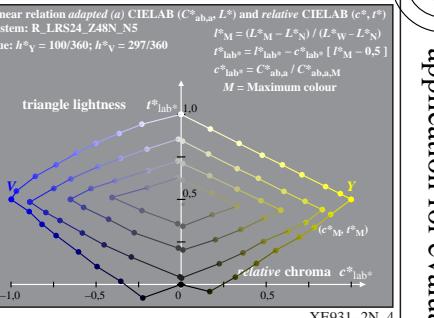
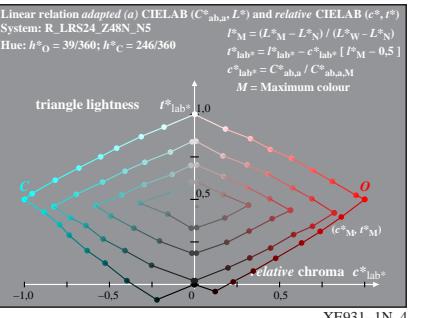
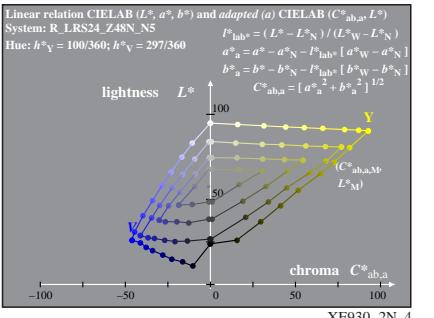
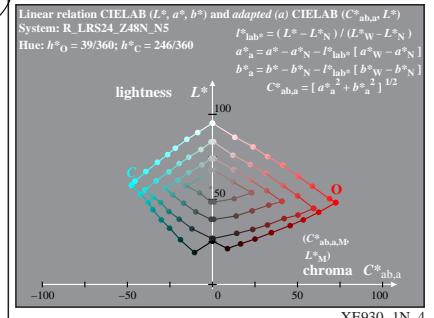
# BAM registration: 20080601-XE93/10L/L93E00NA.PS /TXT BAM material: code=rha4ta



www.ps.bam.de/XE93/10L/L93E00NA.PS /TXT, Page 4/8; start output  
N: No Output Linearization (OL) data in File (F), Startup (S) or Device (D)

See for similar files: <http://www.ps.bam.de/XE93/>; www.ps.bam.de/XE.HTM

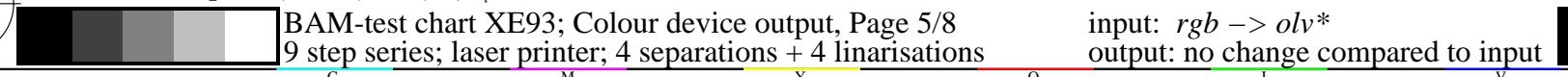
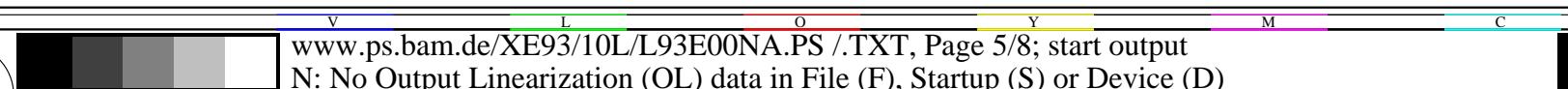
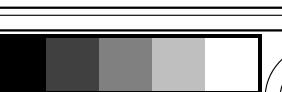
Technical information: <http://www.ps.bam.de> Version 2.1, io=1,1



BAM-test chart XE93; Colour device output, Page 4/8  
9 step series; laser printer; 4 separations + 4 linearisations

input:  $rgb \rightarrow olv^*$   
output: no change compared to input

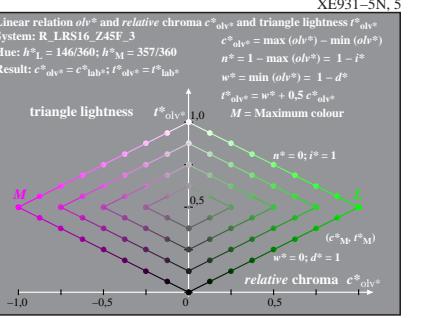
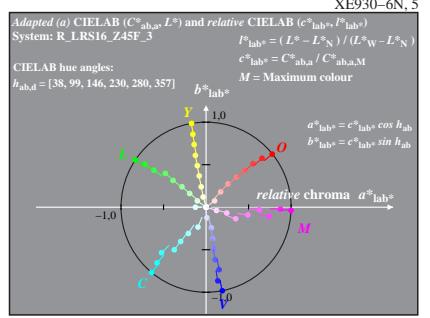
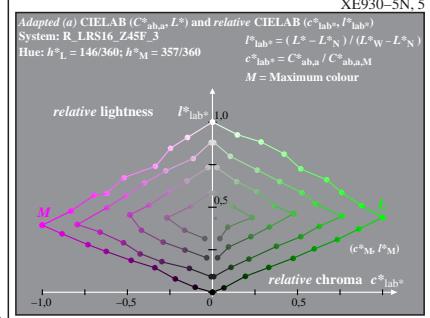
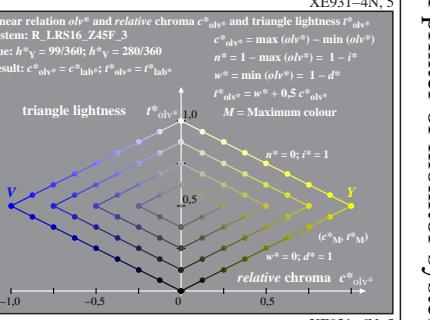
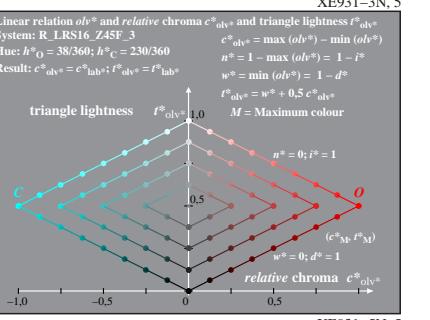
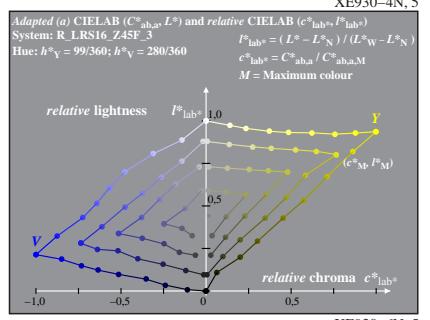
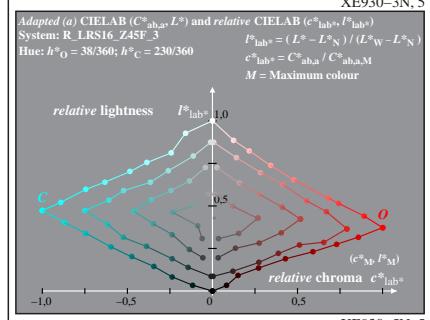
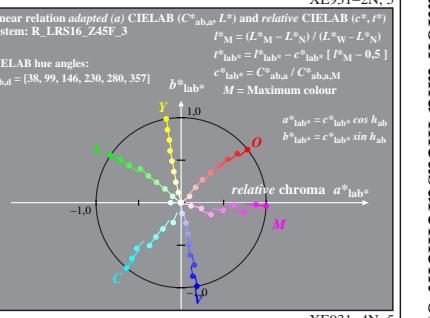
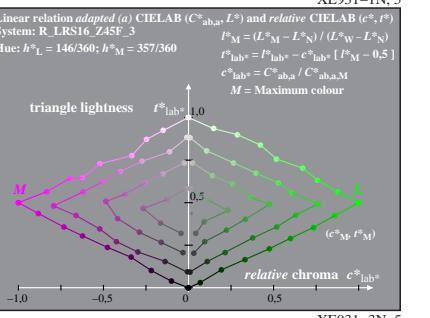
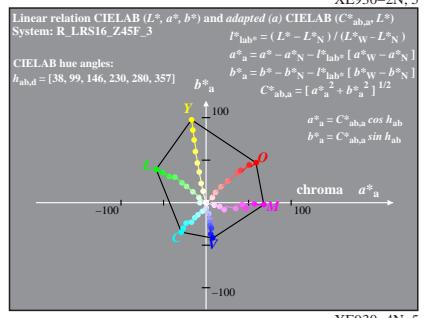
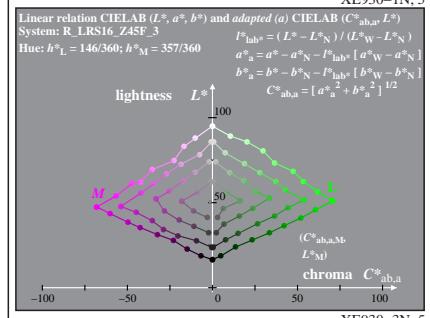
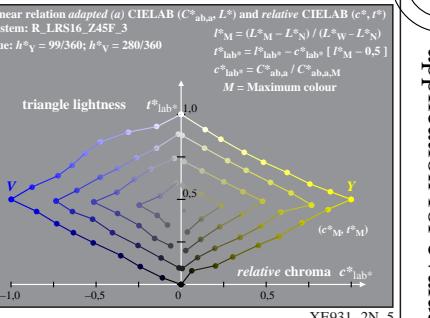
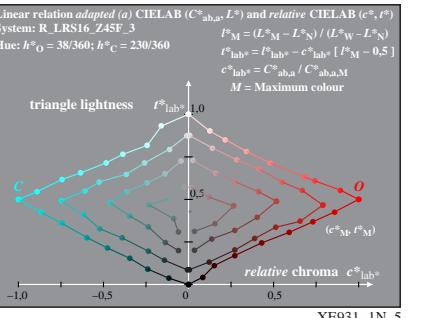
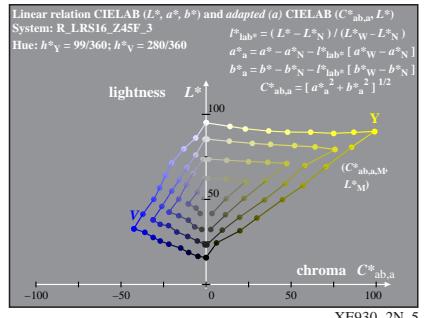
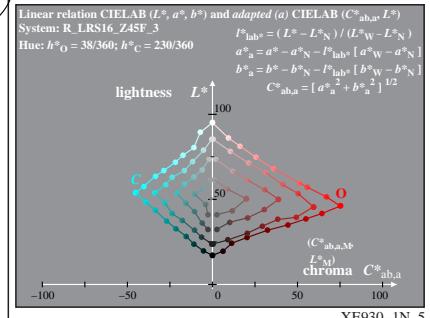
# BAM registration: 20080601-XE93/10L/L93E00NA.PS /TXT BAM material: code=rha4ta



www.ps.bam.de/XE93/10L/L93E00NA.PS /TXT, Page 5/8; start output  
N: No Output Linearization (OL) data in File (F), Startup (S) or Device (D)

See for similar files: <http://www.ps.bam.de/XE93/>; www.ps.bam.de/XE.HTM

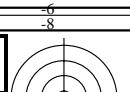
Technical information: <http://www.ps.bam.de> Version 2.1, io=1,1



XE930-7N: Measurement: Z45F\_R243.DAT, 243 colours, 20080301,  $olv^*$ , adapted

BAM-test chart XE93; Colour device output, Page 5/8  
9 step series; laser printer; 4 separations + 4 linearisations

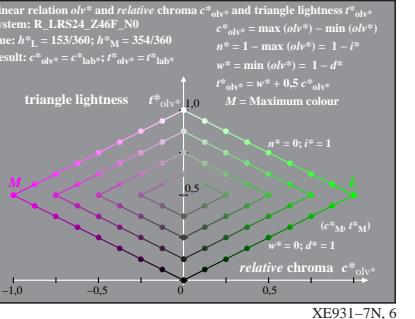
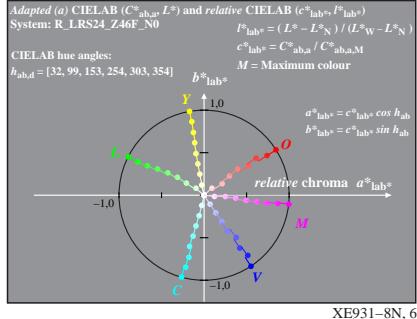
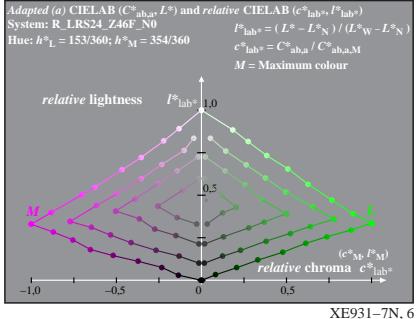
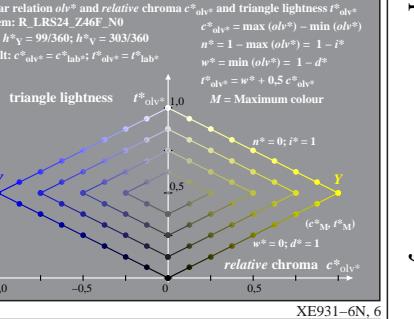
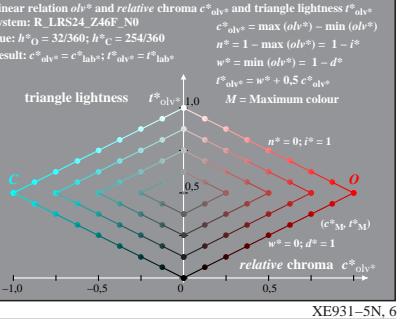
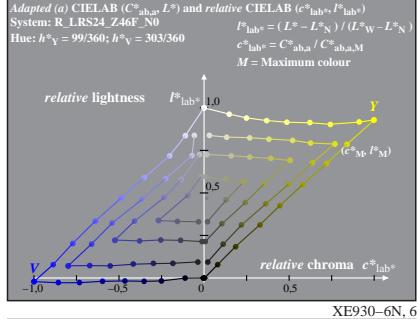
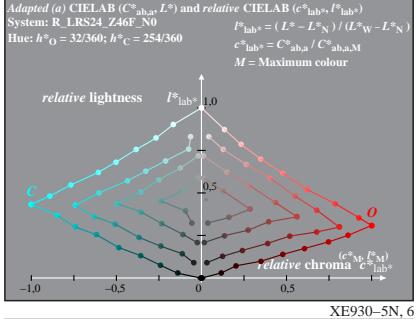
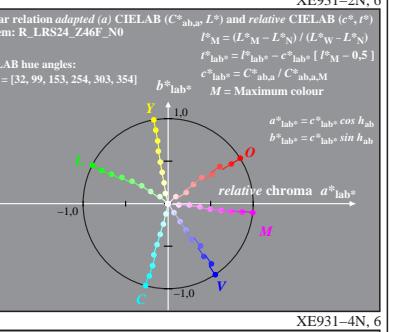
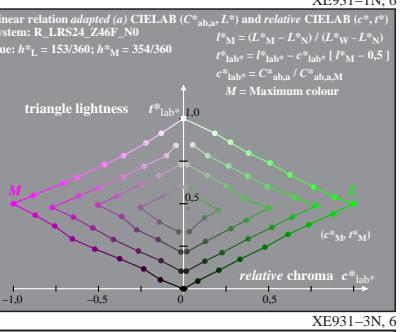
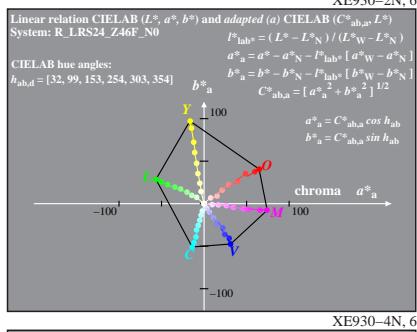
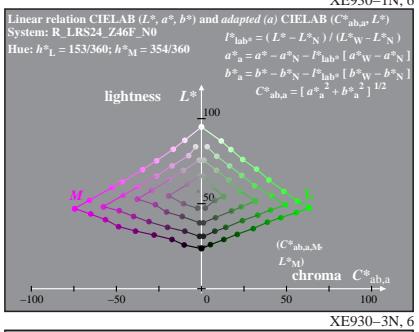
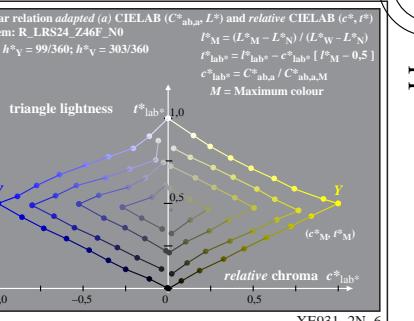
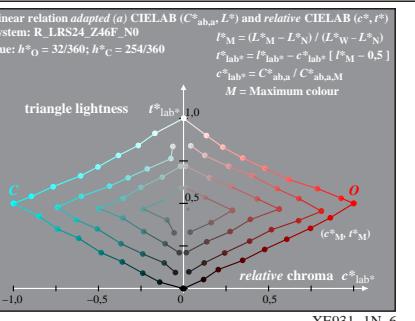
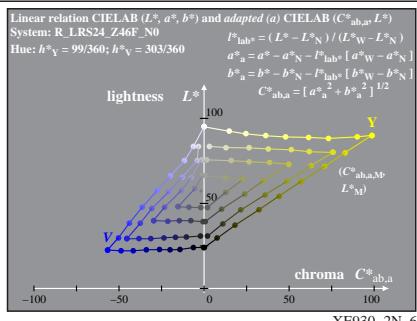
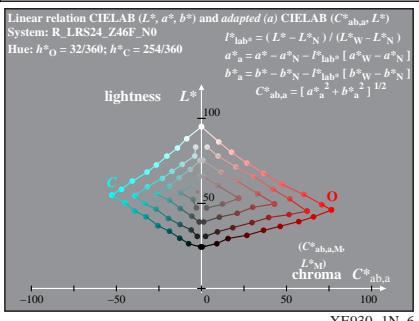
input:  $rgb \rightarrow olv^*$   
output: no change compared to input



) See for similar files: <http://www.ps.bam.de/X>  
Technical information: <http://www.ps.bam.de>

93/; www.ps.bam.de/XE.HTM  
Version 2.1, io=1,1

BAM registration: 20080601-XE93/10L/L93E00NA.PS /TXT BAM material: code=rha4ta application for evaluation and measurement of printer or monitor systems



BAM-test chart XE93; Colour device output, Page 6/8  
9 step series; laser printer; 4 separations + 4 linearisations

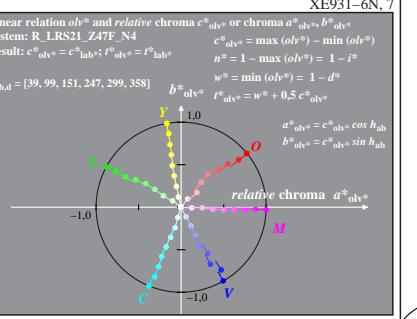
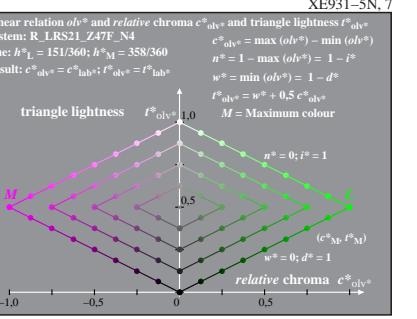
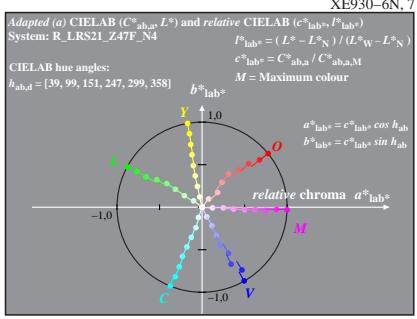
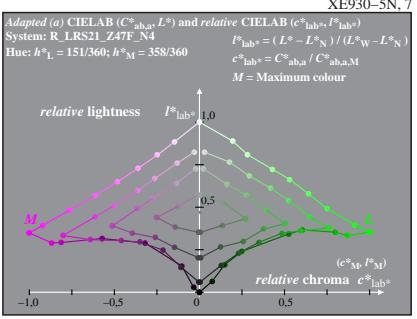
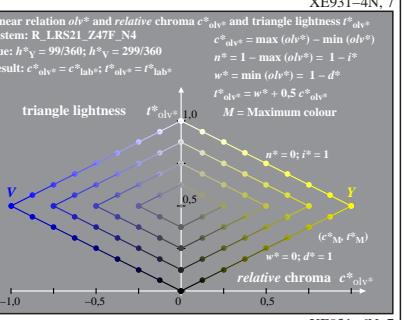
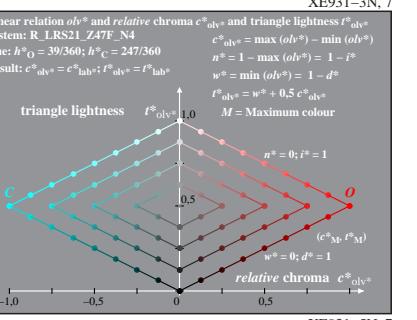
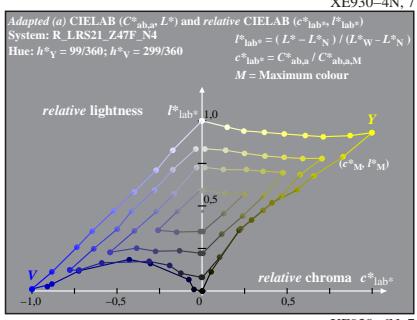
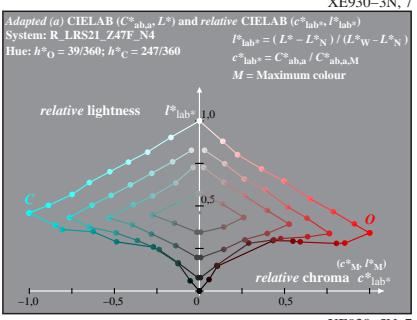
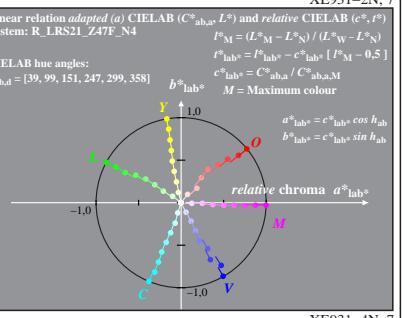
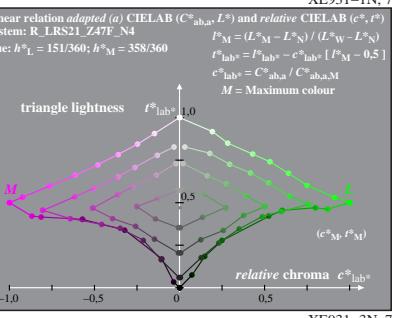
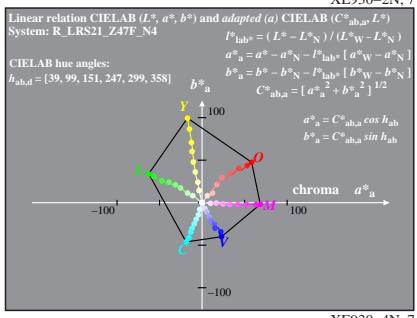
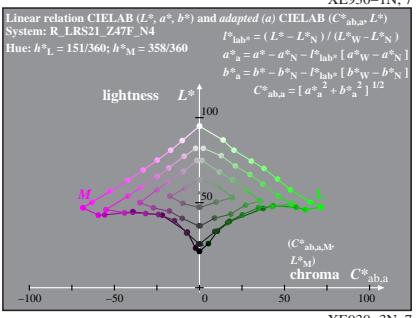
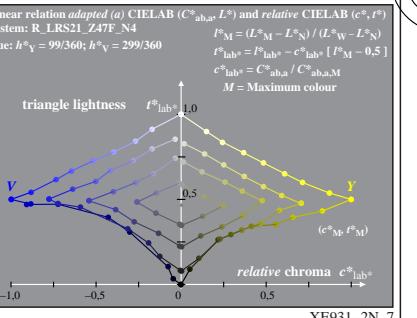
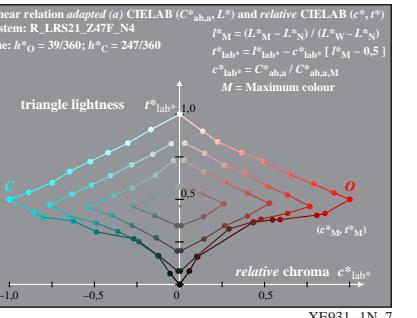
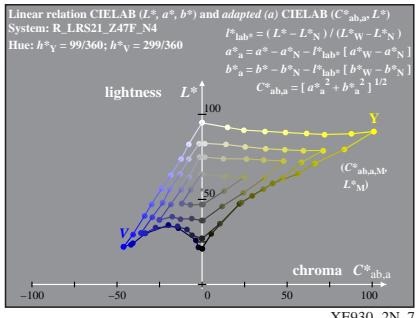
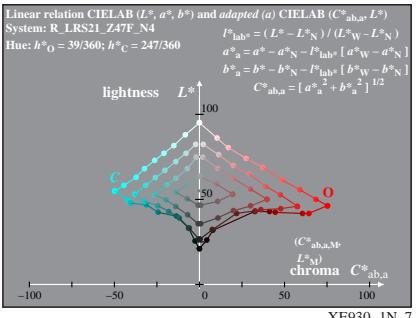
# BAM registration: 20080601-XE93/10L/L93E00NA.PS /TXT BAM material: code=rha4ta



www.ps.bam.de/XE93/10L/L93E00NA.PS /TXT, Page 7/8; start output  
N: No Output Linearization (OL) data in File (F), Startup (S) or Device (D)

See for similar files: <http://www.ps.bam.de/XE93/>; www.ps.bam.de/XE93/; Version 2.1, io=1,1

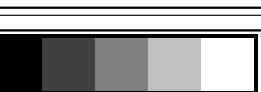
Technical information: <http://www.ps.bam.de>



BAM-test chart XE93; Colour device output, Page 7/8  
9 step series; laser printer; 4 separations + 4 linearisations

input:  $rgb \rightarrow \text{olv}^*$   
output: no change compared to input

# BAM registration: 20080601-XE93/10L/L93E00NA.PS /TXT BAM material: code=rha4ta



6

-8

www.ps.bam.de/XE93/10L/L93E00NA.PS /TXT, Page 8/8; start output  
N: No Output Linearization (OL) data in File (F), Startup (S) or Device (D)



C

M

Y

O

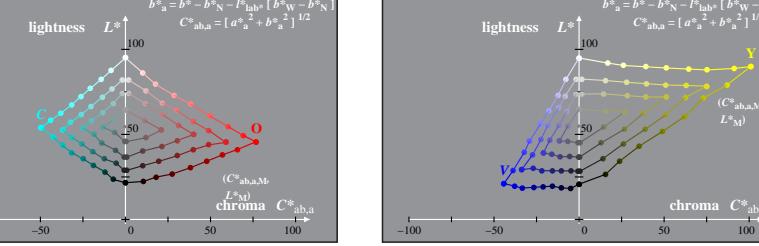
L

V

C

Linear relation CIELAB ( $L^*, a^*, b^*$ ) and adapted (a) CIELAB ( $C^*_{ab,a}, L^*$ )  
System: R\_LRS21\_Z48F\_N5  
Hue:  $h^*_O = 40/360$ ;  $h^*_C = 247/360$

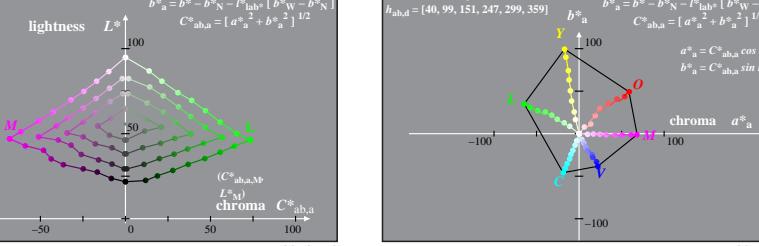
$I^*_{lab^*} = (L^* - L^*_N) / (L^*_{W'} - L^*_N)$   
 $a^*_{ab,a} = a^* - a^*_{N'}$ ;  $I^*_{lab^*} = [a^*_{W'} - a^*_{N'}]$   
 $b^*_{ab,a} = b^* - b^*_{N'}$ ;  $I^*_{lab^*} = [b^*_{W'} - b^*_{N'}]$   
 $C^*_{ab,a} = [a^*_{ab,a} + b^*_{ab,a}]^{1/2}$



XE930-1N, 8

Linear relation CIELAB ( $L^*, a^*, b^*$ ) and adapted (a) CIELAB ( $C^*_{ab,a}, L^*$ )  
System: R\_LRS21\_Z48F\_N5  
Hue:  $h^*_O = 151/360$ ;  $h^*_M = 359/360$

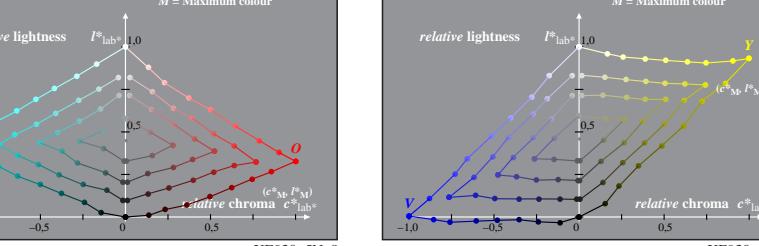
$I^*_{lab^*} = (L^* - L^*_N) / (L^*_{W'} - L^*_N)$   
 $a^*_{ab,a} = a^* - a^*_{N'}$ ;  $I^*_{lab^*} = [a^*_{W'} - a^*_{N'}]$   
 $b^*_{ab,a} = b^* - b^*_{N'}$ ;  $I^*_{lab^*} = [b^*_{W'} - b^*_{N'}]$   
 $C^*_{ab,a} = [a^*_{ab,a} + b^*_{ab,a}]^{1/2}$



XE930-2N, 8

Adapted (a) CIELAB ( $C^*_{ab,a}, L^*$ ) and relative CIELAB ( $c^*_{lab^*}, I^*_{lab^*}$ )  
System: R\_LRS21\_Z48F\_N5  
Hue:  $h^*_O = 40/360$ ;  $h^*_C = 247/360$

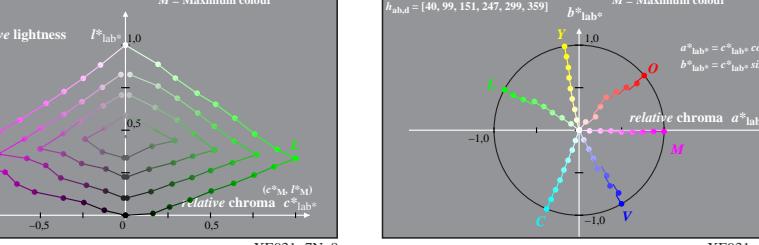
$I^*_{lab^*} = (L^* - L^*_N) / (L^*_{W'} - L^*_N)$   
 $c^*_{lab^*} = C^*_{ab,a} / C^*_{ab,a,M}$   
 $M = \text{Maximum colour}$



XE930-3N, 8

Adapted (a) CIELAB ( $C^*_{ab,a}, L^*$ ) and relative CIELAB ( $c^*_{lab^*}, I^*_{lab^*}$ )  
System: R\_LRS21\_Z48F\_N5  
Hue:  $h^*_L = 151/360$ ;  $h^*_M = 359/360$

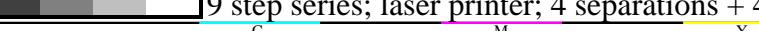
$I^*_{lab^*} = (L^* - L^*_N) / (L^*_{W'} - L^*_N)$   
 $c^*_{lab^*} = C^*_{ab,a} / C^*_{ab,a,M}$   
 $M = \text{Maximum colour}$



XE930-5N, 8

Adapted (a) CIELAB ( $C^*_{ab,a}, L^*$ ) and relative CIELAB ( $c^*_{lab^*}, I^*_{lab^*}$ )  
System: R\_LRS21\_Z48F\_N5  
Hue:  $h^*_L = 151/360$ ;  $h^*_M = 359/360$

$I^*_{lab^*} = (L^* - L^*_N) / (L^*_{W'} - L^*_N)$   
 $c^*_{lab^*} = C^*_{ab,a} / C^*_{ab,a,M}$   
 $M = \text{Maximum colour}$



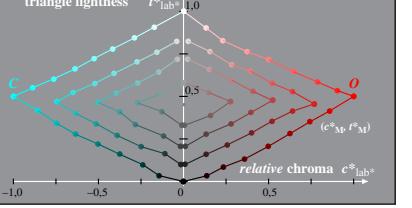
XE930-7N, 8

XE930-7N: Measurement: Z48F\_R243.DAT, 243 colours, 20080301, Separation cmyn5\*, adapted

BAM-test chart XE93; Colour device output, Page 8/8  
9 step series; laser printer; 4 separations + 4 linearisations

Linear relation adapted (a) CIELAB ( $C^*_{ab,a}, L^*$ ) and relative CIELAB ( $c^*, I^*$ )  
System: R\_LRS21\_Z48F\_N5  
Hue:  $h^*_O = 40/360$ ;  $h^*_C = 247/360$

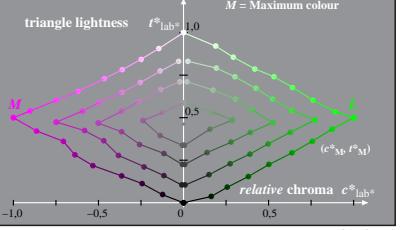
$I^*_{M} = (L^*_{M} - L^*_N) / (L^*_{W'} - L^*_N)$   
 $I^*_{lab^*} = I^*_{lab^*} - c^*_{lab^*} [I^*_{M} - 0.5]$   
 $c^*_{lab^*} = C^*_{ab,a} / C^*_{ab,a,M}$   
 $M = \text{Maximum colour}$



XE931-1N, 8

Linear relation adapted (a) CIELAB ( $C^*_{ab,a}, L^*$ ) and relative CIELAB ( $c^*, I^*$ )  
System: R\_LRS21\_Z48F\_N5  
Hue:  $h^*_L = 151/360$ ;  $h^*_M = 359/360$

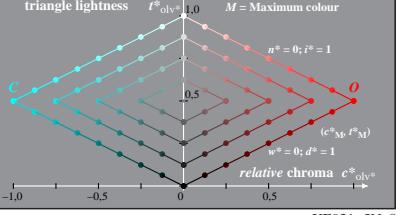
$I^*_{M} = (L^*_{M} - L^*_N) / (L^*_{W'} - L^*_N)$   
 $I^*_{lab^*} = I^*_{lab^*} - c^*_{lab^*} [I^*_{M} - 0.5]$   
 $c^*_{lab^*} = C^*_{ab,a} / C^*_{ab,a,M}$   
 $M = \text{Maximum colour}$



XE931-2N, 8

Linear relation oly\* and relative chroma  $c^*_{olv^*}$  and triangle lightness  $I^*_{olv^*}$   
System: R\_LRS21\_Z48F\_N5  
Hue:  $h^*_O = 40/360$ ;  $h^*_C = 247/360$

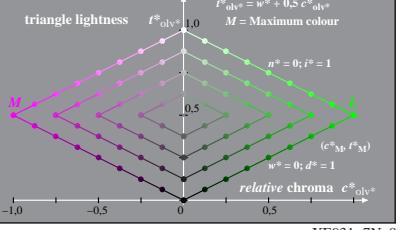
Result:  $c^*_{olv^*} = c^*_{lab^*}; I^*_{olv^*} = I^*_{lab^*}$   
 $c^*_{olv^*} = \max(olv^*) - \min(olv^*)$   
 $n^* = 1 - \max(olv^*) = 1 - i^*$   
 $w^* = \min(olv^*) = 1 - d^*$   
 $t^*_{olv^*} = w^* + 0.5 * c^*_{olv^*}$   
 $M = \text{Maximum colour}$



XE931-3N, 8

Linear relation oly\* and relative chroma  $c^*_{olv^*}$  and triangle lightness  $I^*_{olv^*}$   
System: R\_LRS21\_Z48F\_N5  
Hue:  $h^*_L = 151/360$ ;  $h^*_M = 359/360$

Result:  $c^*_{olv^*} = c^*_{lab^*}; I^*_{olv^*} = I^*_{lab^*}$   
 $c^*_{olv^*} = \max(olv^*) - \min(olv^*)$   
 $n^* = 1 - \max(olv^*) = 1 - i^*$   
 $w^* = \min(olv^*) = 1 - d^*$   
 $t^*_{olv^*} = w^* + 0.5 * c^*_{olv^*}$   
 $M = \text{Maximum colour}$



XE931-5N, 8

Linear relation oly\* and relative chroma  $c^*_{olv^*}$  or chroma  $a^*_{olv^*}, b^*_{olv^*}$   
System: R\_LRS21\_Z48F\_N5  
Hue:  $h^*_L = 151/360$ ;  $h^*_M = 359/360$

Result:  $c^*_{olv^*} = c^*_{lab^*}; I^*_{olv^*} = I^*_{lab^*}$   
 $c^*_{olv^*} = \max(olv^*) - \min(olv^*)$   
 $n^* = 1 - \max(olv^*) = 1 - i^*$   
 $w^* = \min(olv^*) = 1 - d^*$   
 $t^*_{olv^*} = w^* + 0.5 * c^*_{olv^*}$   
 $a^*_{olv^*} = c^*_{ab,a} * \cos h_{ab}$   
 $b^*_{olv^*} = c^*_{ab,a} * \sin h_{ab}$   
 $M = \text{Maximum colour}$



XE931-6N, 8

Linear relation oly\* and relative chroma  $c^*_{olv^*}$  or chroma  $a^*_{olv^*}, b^*_{olv^*}$   
System: R\_LRS21\_Z48F\_N5  
Hue:  $h^*_L = 151/360$ ;  $h^*_M = 359/360$

Result:  $c^*_{olv^*} = c^*_{lab^*}; I^*_{olv^*} = I^*_{lab^*}$   
 $c^*_{olv^*} = \max(olv^*) - \min(olv^*)$   
 $n^* = 1 - \max(olv^*) = 1 - i^*$   
 $w^* = \min(olv^*) = 1 - d^*$   
 $t^*_{olv^*} = w^* + 0.5 * c^*_{olv^*}$   
 $a^*_{olv^*} = c^*_{ab,a} * \cos h_{ab}$   
 $b^*_{olv^*} = c^*_{ab,a} * \sin h_{ab}$   
 $M = \text{Maximum colour}$



XE931-8N, 8

input:  $rgb \rightarrow oly^*$   
output: no change compared to input