

Input: Colorimetric Reflective System NCS11

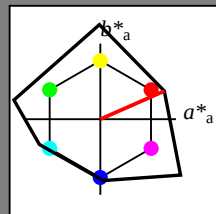
for hue  $h^* = lab \cdot h = 24/360 = 0.066$

LAB\*LCH, LAB\*NCH

D65: hue R

LCH\*Ma: 47 92 24

olv\*Ma: 1.0 0.0 0.0



NCS11; adapted (a) CIELAB data

|                    | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
|--------------------|-------------|---------|---------|--------------|--------------|
| R <sub>Ma</sub>    | 47.15       | 84.64   | 37.25   | 92.48        | 24           |
| J <sub>Ma</sub>    | 91.37       | -1.27   | 125.03  | 125.03       | 91           |
| G <sub>Ma</sub>    | 63.07       | -114.28 | 25.35   | 117.06       | 167          |
| G50B <sub>Ma</sub> | 59.47       | -80.6   | -33.45  | 87.28        | 203          |
| B <sub>Ma</sub>    | 49.01       | 3.65    | -81.19  | 81.28        | 273          |
| B50R <sub>Ma</sub> | 44.06       | 106.09  | -73.93  | 129.32       | 325          |
| N <sub>Ma</sub>    | 10.99       | 0.0     | 0.0     | 0.0          | 0            |
| W <sub>Ma</sub>    | 95.41       | 0.0     | 0.0     | 0.0          | 0            |
| R <sub>CIE</sub>   | 39.92       | 58.69   | 27.98   | 65.01        | 25           |
| J <sub>CIE</sub>   | 81.26       | -2.9    | 71.56   | 71.62        | 92           |
| G <sub>CIE</sub>   | 52.23       | -42.45  | 13.59   | 44.59        | 162          |
| B <sub>CIE</sub>   | 30.57       | 1.35    | -46.48  | 46.51        | 272          |

CIELAB lightness  $L^*$

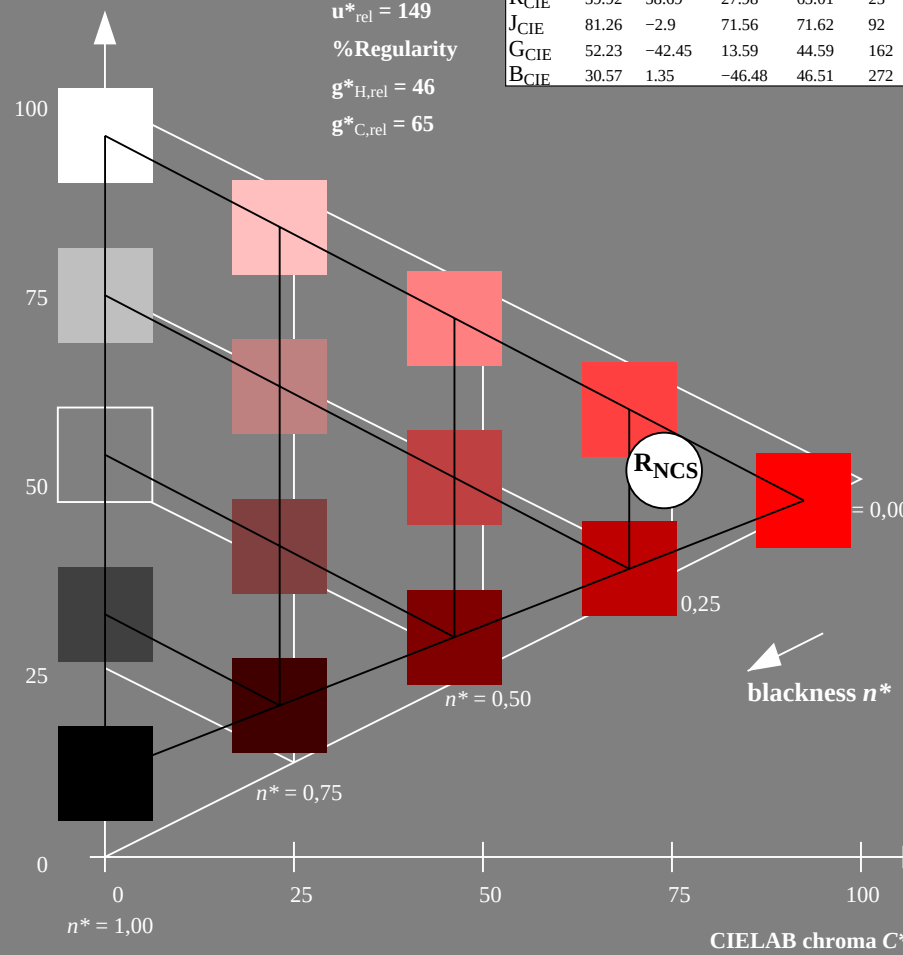
% Gamut

$u^*_{rel} = 149$

% Regularity

$g^*_{H,rel} = 46$

$g^*_{C,rel} = 65$



TE380-7, 5 step scales for constant CIELAB hue 24/360 = 0.066 (left)

Output: Colorimetric Reflective System MRS18

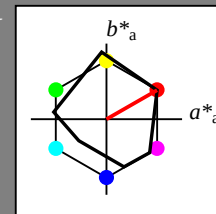
for hue  $h^* = lab \cdot h = 30/360 = 0.083$

LAB\*LCH, LAB\*NCH

D65: hue R

LCH\*Ma: 50 77 30

olv\*Ma: 1.0 0.0 0.0



MRS18; adapted (a) CIELAB data

|                    | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
|--------------------|-------------|---------|---------|--------------|--------------|
| R <sub>Ma</sub>    | 49.63       | 66.96   | 38.37   | 77.18        | 30           |
| J <sub>Ma</sub>    | 90.7        | -6.36   | 88.75   | 88.98        | 94           |
| G <sub>Ma</sub>    | 52.11       | -69.73  | 9.44    | 70.37        | 172          |
| G50B <sub>Ma</sub> | 45.03       | -36.57  | -28.47  | 46.36        | 218          |
| B <sub>Ma</sub>    | 36.65       | 23.19   | -63.05  | 67.18        | 290          |
| B50R <sub>Ma</sub> | 34.94       | 57.17   | -44.26  | 72.31        | 322          |
| N <sub>Ma</sub>    | 18.01       | 0.0     | 0.0     | 0.0          | 0            |
| W <sub>Ma</sub>    | 95.41       | 0.0     | 0.0     | 0.0          | 0            |
| R <sub>CIE</sub>   | 39.92       | 58.66   | 26.98   | 64.56        | 25           |
| J <sub>CIE</sub>   | 81.26       | -2.17   | 67.76   | 67.79        | 92           |
| G <sub>CIE</sub>   | 52.23       | -42.26  | 11.75   | 43.87        | 164          |
| B <sub>CIE</sub>   | 30.57       | 1.15    | -46.84  | 46.87        | 271          |

CIELAB lightness  $L^*$

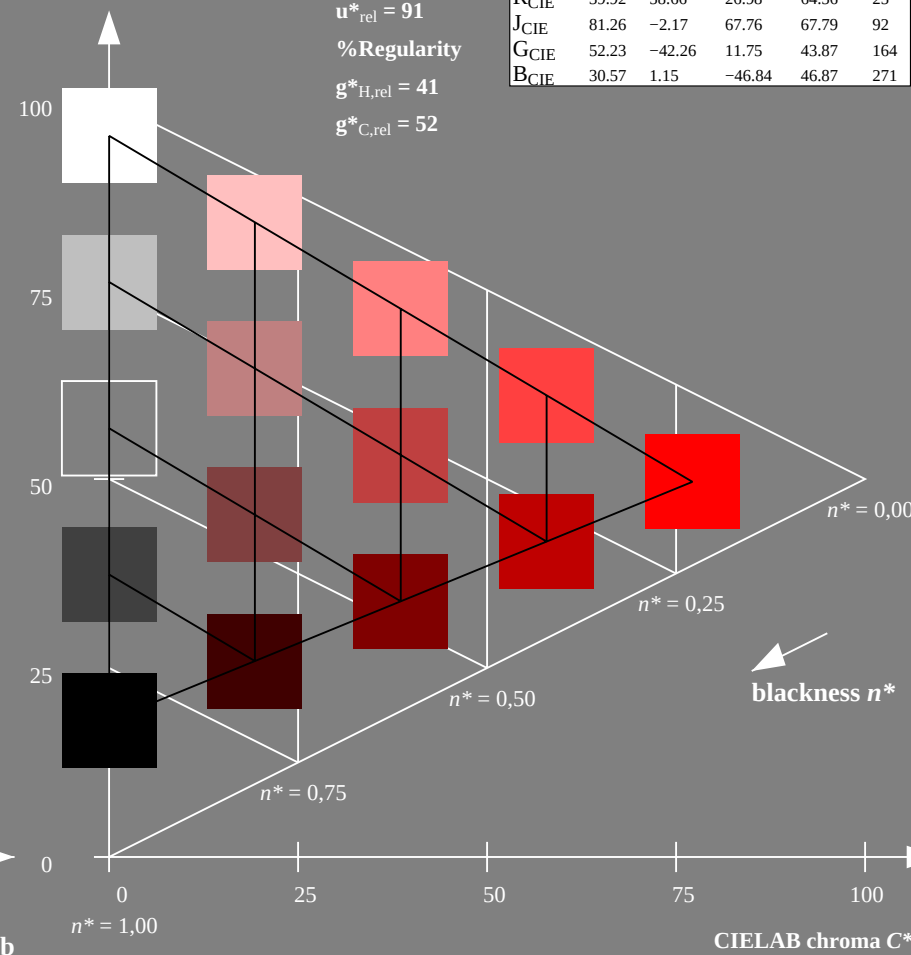
% Gamut

$u^*_{rel} = 91$

% Regularity

$g^*_{H,rel} = 41$

$g^*_{C,rel} = 52$



5 step scales for constant CIELAB hue 30/360 = 0.083 (right)

BAM-test chart TE38; Colorimetric systems NCS11a & MRS18 input: olv\* setrgbcolor

D65: Coordinate systems of 5 step colour scales for 10 hues

output: no change compared to input

Input: Colorimetric Reflective System NCS11

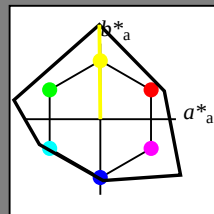
for hue  $h^* = lab^*h = 91/360 = 0.252$

LAB\*LCH, LAB\*NCH

D65: hue J

LCH\*Ma: 91 125 91

olv\*Ma: 1.0 1.0 0.0



NCS11; adapted (a) CIELAB data

|                    | $L^*=L_a^*$ | $a_a^*$ | $b_a^*$ | $C_{ab,a}^*$ | $h_{ab,a}^*$ |
|--------------------|-------------|---------|---------|--------------|--------------|
| R <sub>Ma</sub>    | 47.15       | 84.64   | 37.25   | 92.48        | 24           |
| J <sub>Ma</sub>    | 91.37       | -1.27   | 125.03  | 125.03       | 91           |
| G <sub>Ma</sub>    | 63.07       | -114.28 | 25.35   | 117.06       | 167          |
| G50B <sub>Ma</sub> | 59.47       | -80.6   | -33.45  | 87.28        | 203          |
| B <sub>Ma</sub>    | 49.01       | 3.65    | -81.19  | 81.28        | 273          |
| B50R <sub>Ma</sub> | 44.06       | 106.09  | -73.93  | 129.32       | 325          |
| N <sub>Ma</sub>    | 10.99       | 0.0     | 0.0     | 0.0          | 0            |
| W <sub>Ma</sub>    | 95.41       | 0.0     | 0.0     | 0.0          | 0            |
| R <sub>CIE</sub>   | 39.92       | 58.69   | 27.98   | 65.01        | 25           |
| J <sub>CIE</sub>   | 81.26       | -2.9    | 71.56   | 71.62        | 92           |
| G <sub>CIE</sub>   | 52.23       | -42.45  | 13.59   | 44.59        | 162          |
| B <sub>CIE</sub>   | 30.57       | 1.35    | -46.48  | 46.51        | 272          |

CIELAB lightness  $L^*$

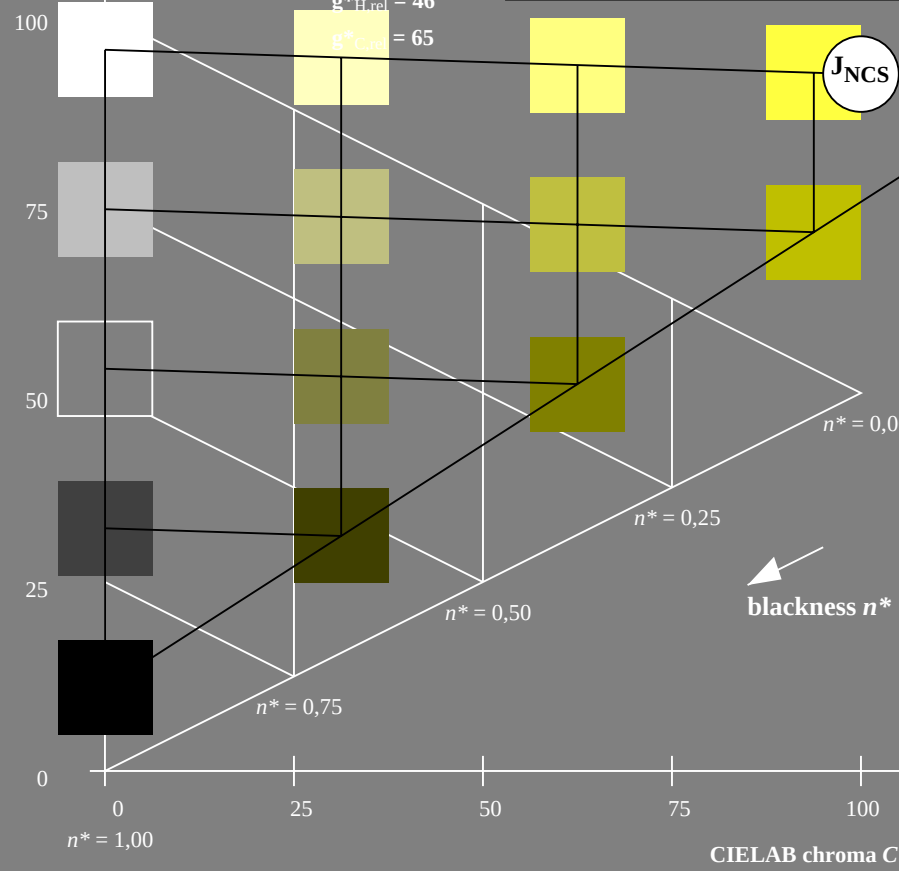
% Gamut

$u_{rel}^* = 149$

% Regularity

$g_{H,rel}^* = 46$

$g_{C,rel}^* = 65$



Output: Colorimetric Reflective System MRS18

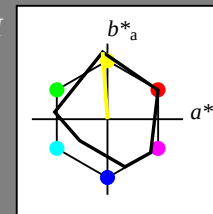
for hue  $h^* = lab^*h = 94/360 = 0.261$

LAB\*LCH, LAB\*NCH

D65: hue J

LCH\*Ma: 91 89 94

olv\*Ma: 1.0 1.0 0.0



MRS18; adapted (a) CIELAB data

|                    | $L^*=L_a^*$ | $a_a^*$ | $b_a^*$ | $C_{ab,a}^*$ | $h_{ab,a}^*$ |
|--------------------|-------------|---------|---------|--------------|--------------|
| R <sub>Ma</sub>    | 49.63       | 66.96   | 38.37   | 77.18        | 30           |
| J <sub>Ma</sub>    | 90.7        | -6.36   | 88.75   | 88.98        | 94           |
| G <sub>Ma</sub>    | 52.11       | -69.73  | 9.44    | 70.37        | 172          |
| G50B <sub>Ma</sub> | 45.03       | -36.57  | -28.47  | 46.36        | 218          |
| B <sub>Ma</sub>    | 36.65       | 23.19   | -63.05  | 67.18        | 290          |
| B50R <sub>Ma</sub> | 34.94       | 57.17   | -44.26  | 72.31        | 322          |
| N <sub>Ma</sub>    | 18.01       | 0.0     | 0.0     | 0.0          | 0            |
| W <sub>Ma</sub>    | 95.41       | 0.0     | 0.0     | 0.0          | 0            |
| R <sub>CIE</sub>   | 39.92       | 58.66   | 26.98   | 64.56        | 25           |
| J <sub>CIE</sub>   | 81.26       | -2.17   | 67.76   | 67.79        | 92           |
| G <sub>CIE</sub>   | 52.23       | -42.26  | 11.75   | 43.87        | 164          |
| B <sub>CIE</sub>   | 30.57       | 1.15    | -46.84  | 46.87        | 271          |

CIELAB lightness  $L^*$

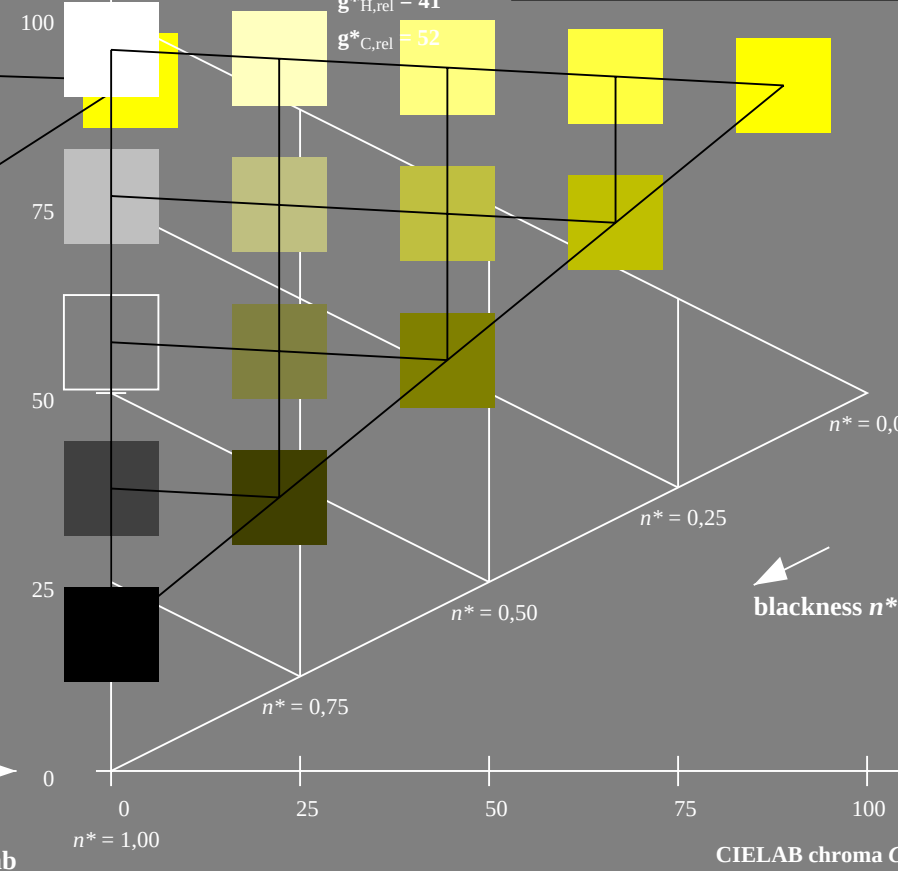
% Gamut

$u_{rel}^* = 91$

% Regularity

$g_{H,rel}^* = 41$

$g_{C,rel}^* = 52$



TE380-7, 5 step scales for constant CIELAB hue 91/360 = 0.252 (left)

5 step scales for constant CIELAB hue 94/360 = 0.261 (right)

BAM-test chart TE38; Colorimetric systems NCS11a & MRS18 input: olv\* setrgbcolor

D65: Coordinate systems of 5 step colour scales for 10 hues

output: no change compared to input

Input: Colorimetric Reflective System NCS11

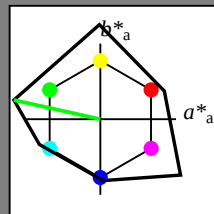
for hue  $h^* = lab \cdot h = 167/360 = 0.465$

LAB\*LCH, LAB\*NCH

D65: hue G

LCH\*Ma: 63 117 167

olv\*Ma: 0.0 1.0 0.0



NCS11; adapted (a) CIELAB data

|                    | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
|--------------------|-------------|---------|---------|--------------|--------------|
| R <sub>Ma</sub>    | 47.15       | 84.64   | 37.25   | 92.48        | 24           |
| J <sub>Ma</sub>    | 91.37       | -1.27   | 125.03  | 125.03       | 91           |
| G <sub>Ma</sub>    | 63.07       | -114.28 | 25.35   | 117.06       | 167          |
| G50B <sub>Ma</sub> | 59.47       | -80.6   | -33.45  | 87.28        | 203          |
| B <sub>Ma</sub>    | 49.01       | 3.65    | -81.19  | 81.28        | 273          |
| B50R <sub>Ma</sub> | 44.06       | 106.09  | -73.93  | 129.32       | 325          |
| N <sub>Ma</sub>    | 10.99       | 0.0     | 0.0     | 0.0          | 0            |
| W <sub>Ma</sub>    | 95.41       | 0.0     | 0.0     | 0.0          | 0            |
| R <sub>CIE</sub>   | 39.92       | 58.69   | 27.98   | 65.01        | 25           |
| J <sub>CIE</sub>   | 81.26       | -2.9    | 71.56   | 71.62        | 92           |
| G <sub>CIE</sub>   | 52.23       | -42.45  | 13.59   | 44.59        | 162          |
| B <sub>CIE</sub>   | 30.57       | 1.35    | -46.48  | 46.51        | 272          |

CIELAB lightness  $L^*$

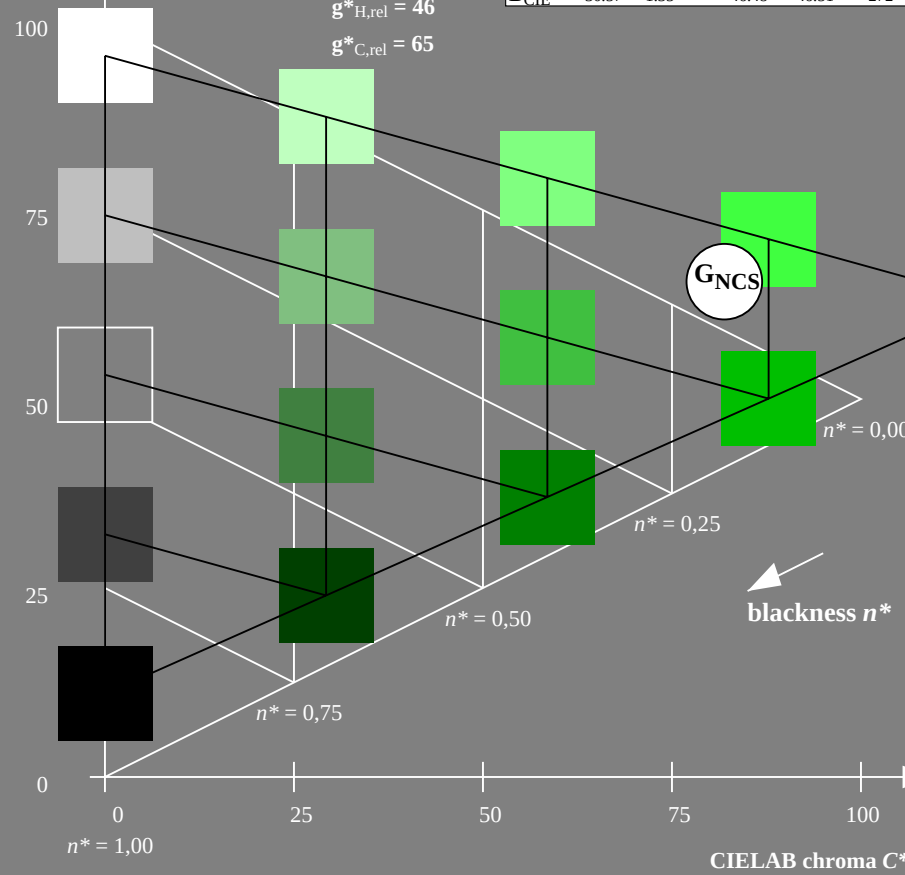
% Gamut

$u^*_{rel} = 149$

% Regularity

$g^*_{H,rel} = 46$

$g^*_{C,rel} = 65$



TE380-7, 5 step scales for constant CIELAB hue 167/360 = 0.465 (left)

Output: Colorimetric Reflective System MRS18

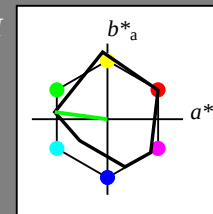
for hue  $h^* = lab \cdot h = 172/360 = 0.479$

LAB\*LCH, LAB\*NCH

D65: hue G

LCH\*Ma: 52 70 172

olv\*Ma: 0.0 1.0 0.0



MRS18; adapted (a) CIELAB data

|                    | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
|--------------------|-------------|---------|---------|--------------|--------------|
| R <sub>Ma</sub>    | 49.63       | 66.96   | 38.37   | 77.18        | 30           |
| J <sub>Ma</sub>    | 90.7        | -6.36   | 88.75   | 88.98        | 94           |
| G <sub>Ma</sub>    | 52.11       | -69.73  | 9.44    | 70.37        | 172          |
| G50B <sub>Ma</sub> | 45.03       | -36.57  | -28.47  | 46.36        | 218          |
| B <sub>Ma</sub>    | 36.65       | 23.19   | -63.05  | 67.18        | 290          |
| B50R <sub>Ma</sub> | 34.94       | 57.17   | -44.26  | 72.31        | 322          |
| N <sub>Ma</sub>    | 18.01       | 0.0     | 0.0     | 0.0          | 0            |
| W <sub>Ma</sub>    | 95.41       | 0.0     | 0.0     | 0.0          | 0            |
| R <sub>CIE</sub>   | 39.92       | 58.66   | 26.98   | 64.56        | 25           |
| J <sub>CIE</sub>   | 81.26       | -2.17   | 67.76   | 67.79        | 92           |
| G <sub>CIE</sub>   | 52.23       | -42.26  | 11.75   | 43.87        | 164          |
| B <sub>CIE</sub>   | 30.57       | 1.15    | -46.84  | 46.87        | 271          |

CIELAB lightness  $L^*$

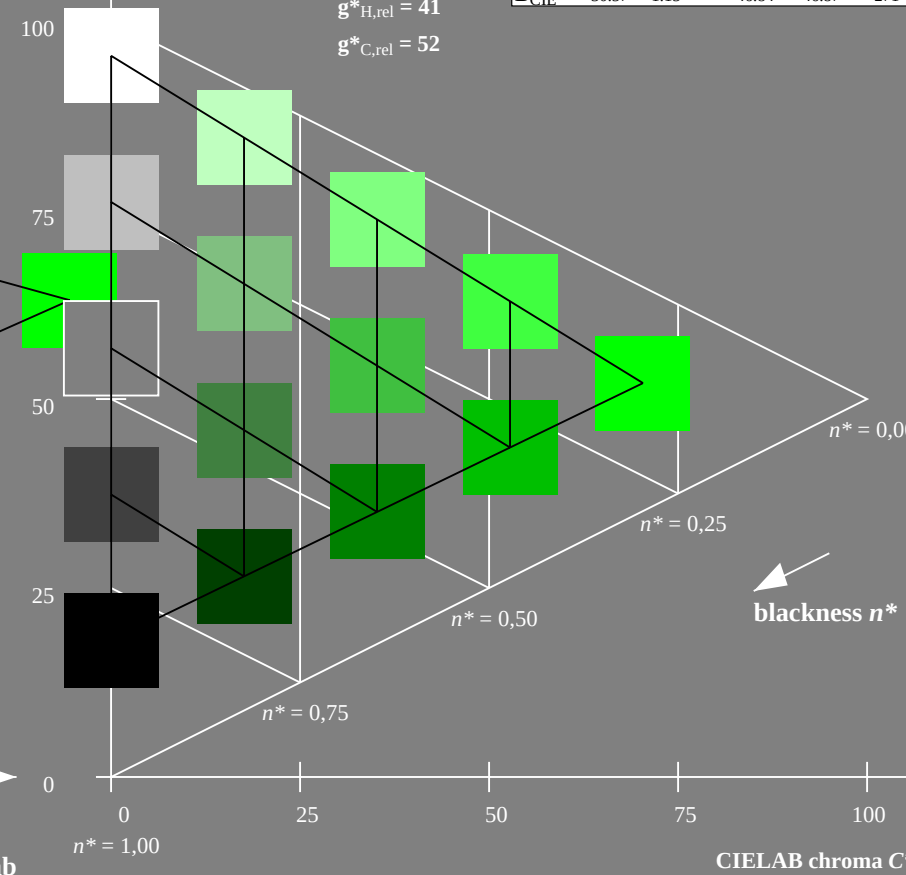
% Gamut

$u^*_{rel} = 91$

% Regularity

$g^*_{H,rel} = 41$

$g^*_{C,rel} = 52$



5 step scales for constant CIELAB hue 172/360 = 0.479 (right)

BAM-test chart TE38; Colorimetric systems NCS11a & MRS18 input: olv\* setrgbcolor

D65: Coordinate systems of 5 step colour scales for 10 hues

output: no change compared to input

Input: Colorimetric Reflective System NCS11

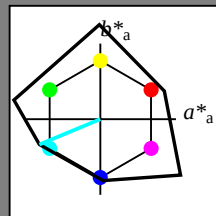
for hue  $h^* = lab \cdot h = 203/360 = 0.563$

LAB\*LCH, LAB\*NCH

D65: hue G50B

LCH\*Ma: 59 87 203

olv\*Ma: 0.0 1.0 1.0



NCS11; adapted (a) CIELAB data

|                    | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
|--------------------|-------------|---------|---------|--------------|--------------|
| R <sub>Ma</sub>    | 47.15       | 84.64   | 37.25   | 92.48        | 24           |
| J <sub>Ma</sub>    | 91.37       | -1.27   | 125.03  | 125.03       | 91           |
| G <sub>Ma</sub>    | 63.07       | -114.28 | 25.35   | 117.06       | 167          |
| G50B <sub>Ma</sub> | 59.47       | -80.6   | -33.45  | 87.28        | 203          |
| B <sub>Ma</sub>    | 49.01       | 3.65    | -81.19  | 81.28        | 273          |
| B50R <sub>Ma</sub> | 44.06       | 106.09  | -73.93  | 129.32       | 325          |
| N <sub>Ma</sub>    | 10.99       | 0.0     | 0.0     | 0.0          | 0            |
| W <sub>Ma</sub>    | 95.41       | 0.0     | 0.0     | 0.0          | 0            |
| R <sub>CIE</sub>   | 39.92       | 58.69   | 27.98   | 65.01        | 25           |
| J <sub>CIE</sub>   | 81.26       | -2.9    | 71.56   | 71.62        | 92           |
| G <sub>CIE</sub>   | 52.23       | -42.45  | 13.59   | 44.59        | 162          |
| B <sub>CIE</sub>   | 30.57       | 1.35    | -46.48  | 46.51        | 272          |

CIELAB lightness  $L^*$

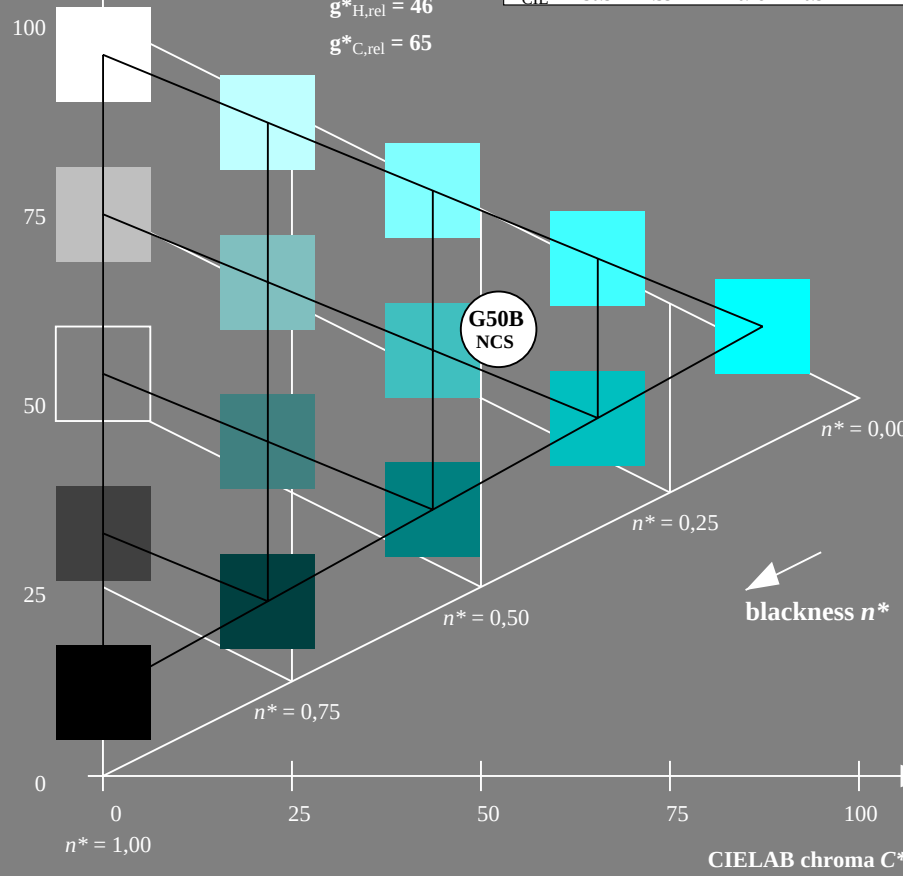
% Gamut

$u^*_{rel} = 149$

% Regularity

$g^*_{H,rel} = 46$

$g^*_{C,rel} = 65$



TE380-7, 5 step scales for constant CIELAB hue 203/360 = 0.563 (left)

Output: Colorimetric Reflective System MRS18

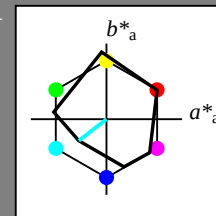
for hue  $h^* = lab \cdot h = 218/360 = 0.605$

LAB\*LCH, LAB\*NCH

D65: hue G50B

LCH\*Ma: 45 46 218

olv\*Ma: 0.0 1.0 1.0



MRS18; adapted (a) CIELAB data

|                    | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
|--------------------|-------------|---------|---------|--------------|--------------|
| R <sub>Ma</sub>    | 49.63       | 66.96   | 38.37   | 77.18        | 30           |
| J <sub>Ma</sub>    | 90.7        | -6.36   | 88.75   | 88.98        | 94           |
| G <sub>Ma</sub>    | 52.11       | -69.73  | 9.44    | 70.37        | 172          |
| G50B <sub>Ma</sub> | 45.03       | -36.57  | -28.47  | 46.36        | 218          |
| B <sub>Ma</sub>    | 36.65       | 23.19   | -63.05  | 67.18        | 290          |
| B50R <sub>Ma</sub> | 34.94       | 57.17   | -44.26  | 72.31        | 322          |
| N <sub>Ma</sub>    | 18.01       | 0.0     | 0.0     | 0.0          | 0            |
| W <sub>Ma</sub>    | 95.41       | 0.0     | 0.0     | 0.0          | 0            |
| R <sub>CIE</sub>   | 39.92       | 58.66   | 26.98   | 64.56        | 25           |
| J <sub>CIE</sub>   | 81.26       | -2.17   | 67.76   | 67.79        | 92           |
| G <sub>CIE</sub>   | 52.23       | -42.26  | 11.75   | 43.87        | 164          |
| B <sub>CIE</sub>   | 30.57       | 1.15    | -46.84  | 46.87        | 271          |

CIELAB lightness  $L^*$

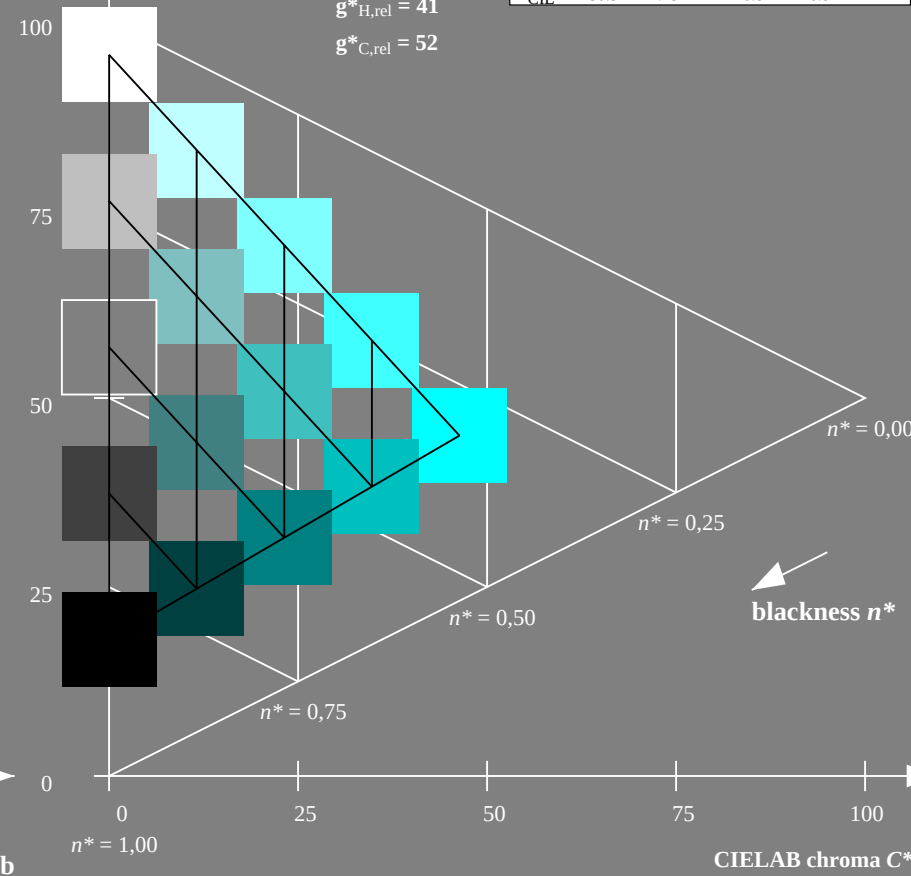
% Gamut

$u^*_{rel} = 91$

% Regularity

$g^*_{H,rel} = 41$

$g^*_{C,rel} = 52$



5 step scales for constant CIELAB hue 218/360 = 0.605 (right)

BAM-test chart TE38; Colorimetric systems NCS11a & MRS18 input: olv\* setrgbcolor

D65: Coordinate systems of 5 step colour scales for 10 hues

output: no change compared to input

Input: Colorimetric Reflective System NCS11

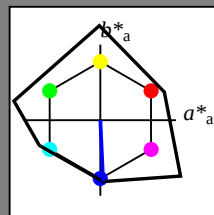
for hue  $h^* = lab \cdot h = 273/360 = 0.757$

LAB\*LCH, LAB\*NCH

D65: hue B

LCH\*Ma: 49 81 273

olv\*Ma: 0.0 0.0 1.0



NCS11; adapted (a) CIELAB data

|                    | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
|--------------------|-------------|---------|---------|--------------|--------------|
| R <sub>Ma</sub>    | 47.15       | 84.64   | 37.25   | 92.48        | 24           |
| J <sub>Ma</sub>    | 91.37       | -1.27   | 125.03  | 125.03       | 91           |
| G <sub>Ma</sub>    | 63.07       | -114.28 | 25.35   | 117.06       | 167          |
| G50B <sub>Ma</sub> | 59.47       | -80.6   | -33.45  | 87.28        | 203          |
| B <sub>Ma</sub>    | 49.01       | 3.65    | -81.19  | 81.28        | 273          |
| B50R <sub>Ma</sub> | 44.06       | 106.09  | -73.93  | 129.32       | 325          |
| N <sub>Ma</sub>    | 10.99       | 0.0     | 0.0     | 0.0          | 0            |
| W <sub>Ma</sub>    | 95.41       | 0.0     | 0.0     | 0.0          | 0            |
| R <sub>CIE</sub>   | 39.92       | 58.69   | 27.98   | 65.01        | 25           |
| J <sub>CIE</sub>   | 81.26       | -2.9    | 71.56   | 71.62        | 92           |
| G <sub>CIE</sub>   | 52.23       | -42.45  | 13.59   | 44.59        | 162          |
| B <sub>CIE</sub>   | 30.57       | 1.35    | -46.48  | 46.51        | 272          |

CIELAB lightness  $L^*$

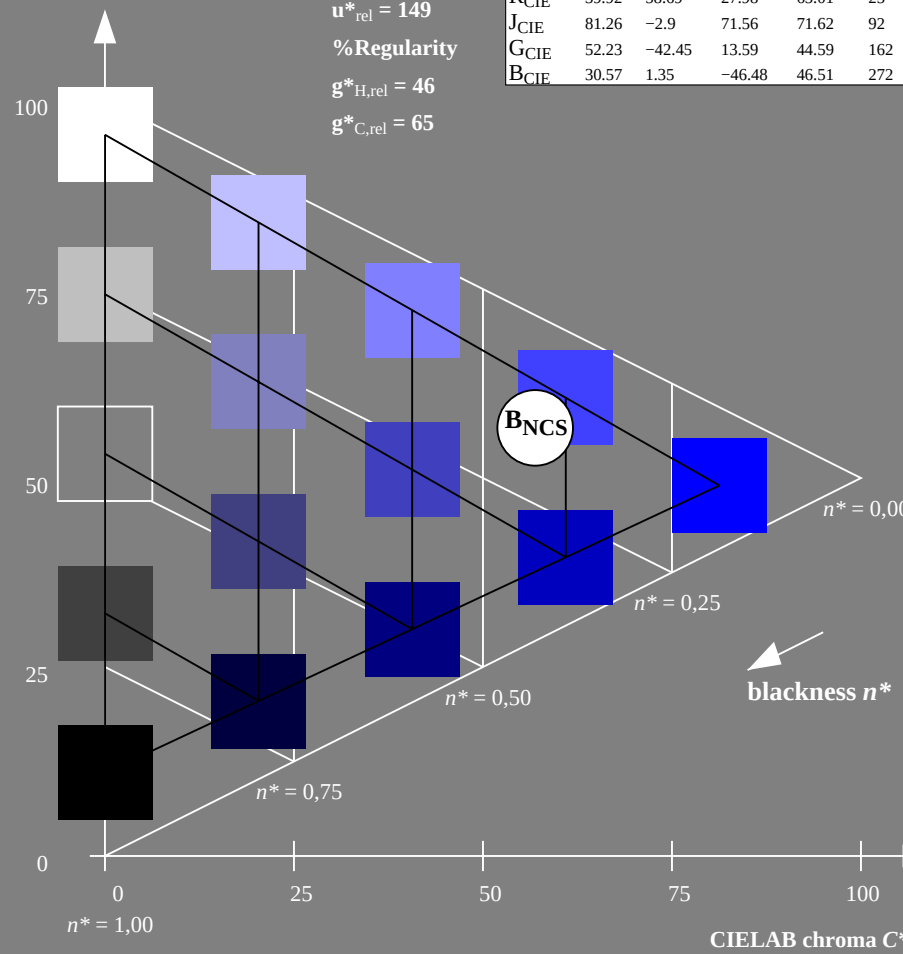
% Gamut

$u^*_{rel} = 149$

% Regularity

$g^*_{H,rel} = 46$

$g^*_{C,rel} = 65$



TE380-7, 5 step scales for constant CIELAB hue 273/360 = 0.757 (left)

Output: Colorimetric Reflective System MRS18

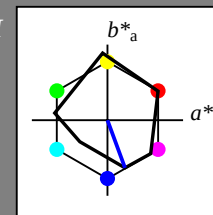
for hue  $h^* = lab \cdot h = 290/360 = 0.806$

LAB\*LCH, LAB\*NCH

D65: hue B

LCH\*Ma: 37 67 290

olv\*Ma: 0.0 0.0 1.0



MRS18; adapted (a) CIELAB data

|                    | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
|--------------------|-------------|---------|---------|--------------|--------------|
| R <sub>Ma</sub>    | 49.63       | 66.96   | 38.37   | 77.18        | 30           |
| J <sub>Ma</sub>    | 90.7        | -6.36   | 88.75   | 88.98        | 94           |
| G <sub>Ma</sub>    | 52.11       | -69.73  | 9.44    | 70.37        | 172          |
| G50B <sub>Ma</sub> | 45.03       | -36.57  | -28.47  | 46.36        | 218          |
| B <sub>Ma</sub>    | 36.65       | 23.19   | -63.05  | 67.18        | 290          |
| B50R <sub>Ma</sub> | 34.94       | 57.17   | -44.26  | 72.31        | 322          |
| N <sub>Ma</sub>    | 18.01       | 0.0     | 0.0     | 0.0          | 0            |
| W <sub>Ma</sub>    | 95.41       | 0.0     | 0.0     | 0.0          | 0            |
| R <sub>CIE</sub>   | 39.92       | 58.66   | 26.98   | 64.56        | 25           |
| J <sub>CIE</sub>   | 81.26       | -2.17   | 67.76   | 67.79        | 92           |
| G <sub>CIE</sub>   | 52.23       | -42.26  | 11.75   | 43.87        | 164          |
| B <sub>CIE</sub>   | 30.57       | 1.15    | -46.84  | 46.87        | 271          |

CIELAB lightness  $L^*$

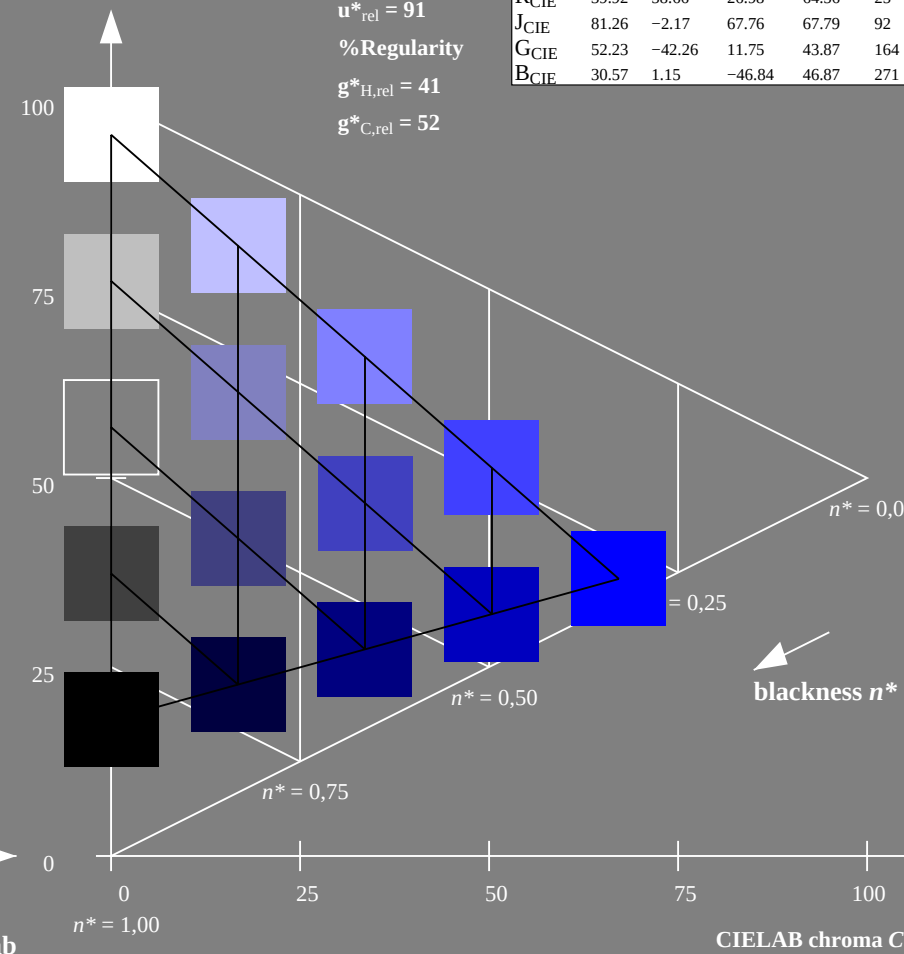
% Gamut

$u^*_{rel} = 91$

% Regularity

$g^*_{H,rel} = 41$

$g^*_{C,rel} = 52$



5 step scales for constant CIELAB hue 290/360 = 0.806 (right)

BAM-test chart TE38; Colorimetric systems NCS11a & MRS18 input: olv\* setrgbcolor

D65: Coordinate systems of 5 step colour scales for 10 hues

output: no change compared to input

Input: Colorimetric Reflective System NCS11

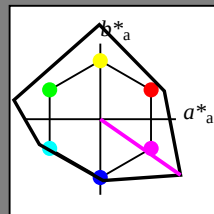
for hue  $h^* = lab \cdot h = 325/360 = 0.903$ 

LAB\*LCH, LAB\*NCH

D65: hue B50R

LCH\*Ma: 44 129 325

olv\*Ma: 1.0 0.0 1.0

CIELAB lightness  $L^*$ 

%Gamut

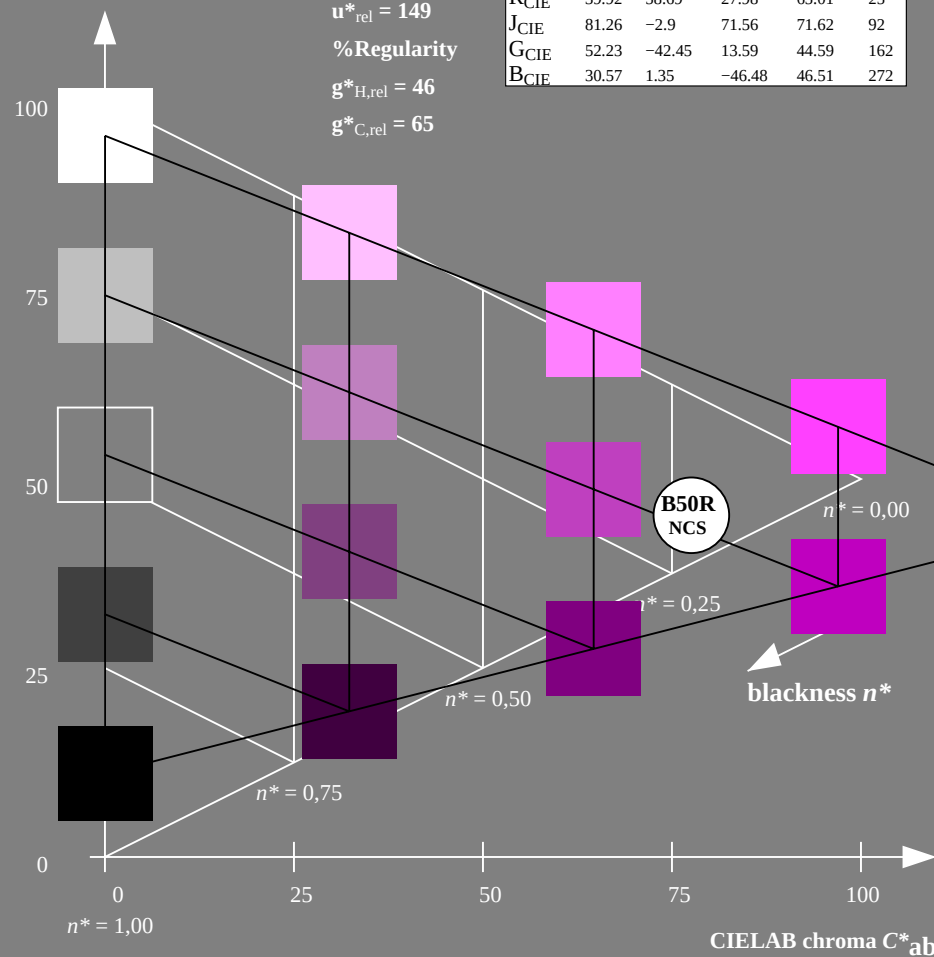
 $u^*_{rel} = 149$ 

%Regularity

 $g^*_{H,rel} = 46$  $g^*_{C,rel} = 65$ 

NCS11; adapted (a) CIELAB data

|                    | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
|--------------------|-------------|---------|---------|--------------|--------------|
| R <sub>Ma</sub>    | 47.15       | 84.64   | 37.25   | 92.48        | 24           |
| J <sub>Ma</sub>    | 91.37       | -1.27   | 125.03  | 125.03       | 91           |
| G <sub>Ma</sub>    | 63.07       | -114.28 | 25.35   | 117.06       | 167          |
| G50B <sub>Ma</sub> | 59.47       | -80.6   | -33.45  | 87.28        | 203          |
| B <sub>Ma</sub>    | 49.01       | 3.65    | -81.19  | 81.28        | 273          |
| B50R <sub>Ma</sub> | 44.06       | 106.09  | -73.93  | 129.32       | 325          |
| N <sub>Ma</sub>    | 10.99       | 0.0     | 0.0     | 0.0          | 0            |
| W <sub>Ma</sub>    | 95.41       | 0.0     | 0.0     | 0.0          | 0            |
| R <sub>CIE</sub>   | 39.92       | 58.69   | 27.98   | 65.01        | 25           |
| J <sub>CIE</sub>   | 81.26       | -2.9    | 71.56   | 71.62        | 92           |
| G <sub>CIE</sub>   | 52.23       | -42.45  | 13.59   | 44.59        | 162          |
| B <sub>CIE</sub>   | 30.57       | 1.35    | -46.48  | 46.51        | 272          |



TE380-7, 5 step scales for constant CIELAB hue 325/360 = 0.903 (left)

Output: Colorimetric Reflective System MRS18

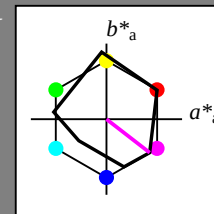
for hue  $h^* = lab \cdot h = 322/360 = 0.895$ 

LAB\*LCH, LAB\*NCH

D65: hue B50R

LCH\*Ma: 35 72 322

olv\*Ma: 1.0 0.0 1.0

CIELAB lightness  $L^*$ 

%Gamut

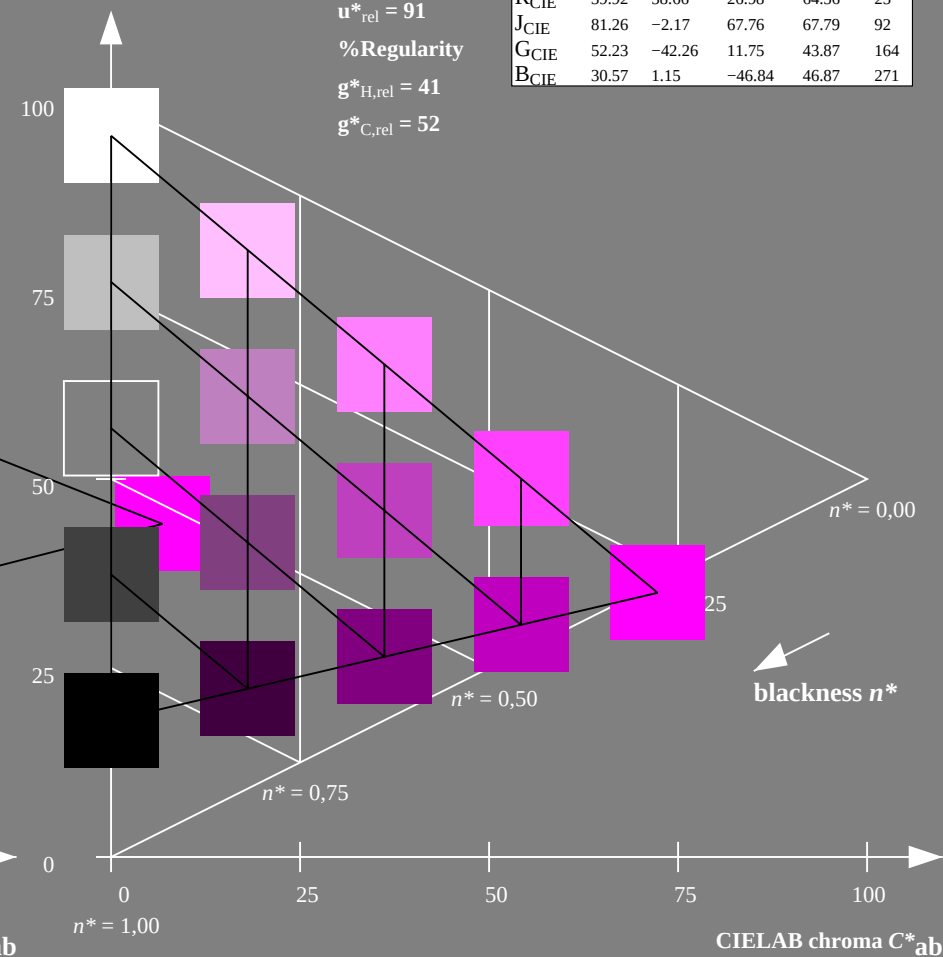
 $u^*_{rel} = 91$ 

%Regularity

 $g^*_{H,rel} = 41$  $g^*_{C,rel} = 52$ 

MRS18; adapted (a) CIELAB data

|                    | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
|--------------------|-------------|---------|---------|--------------|--------------|
| R <sub>Ma</sub>    | 49.63       | 66.96   | 38.37   | 77.18        | 30           |
| J <sub>Ma</sub>    | 90.7        | -6.36   | 88.75   | 88.98        | 94           |
| G <sub>Ma</sub>    | 52.11       | -69.73  | 9.44    | 70.37        | 172          |
| G50B <sub>Ma</sub> | 45.03       | -36.57  | -28.47  | 46.36        | 218          |
| B <sub>Ma</sub>    | 36.65       | 23.19   | -63.05  | 67.18        | 290          |
| B50R <sub>Ma</sub> | 34.94       | 57.17   | -44.26  | 72.31        | 322          |
| N <sub>Ma</sub>    | 18.01       | 0.0     | 0.0     | 0.0          | 0            |
| W <sub>Ma</sub>    | 95.41       | 0.0     | 0.0     | 0.0          | 0            |
| R <sub>CIE</sub>   | 39.92       | 58.66   | 26.98   | 64.56        | 25           |
| J <sub>CIE</sub>   | 81.26       | -2.17   | 67.76   | 67.79        | 92           |
| G <sub>CIE</sub>   | 52.23       | -42.26  | 11.75   | 43.87        | 164          |
| B <sub>CIE</sub>   | 30.57       | 1.15    | -46.84  | 46.87        | 271          |



5 step scales for constant CIELAB hue 322/360 = 0.895 (right)

BAM-test chart TE38; Colorimetric systems NCS11a &amp; MRS18 input: olv\* setrgbcolor

D65: Coordinate systems of 5 step colour scales for 10 hues

output: no change compared to input

output: *no change compared to input*



Input: Colorimetric Reflective System NCS11

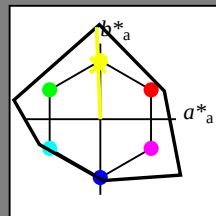
for hue  $h^* = lab \cdot h = 92/360 = 0.256$

LAB\*LCH, LAB\*NCH

D65: hue J

LCH\*Ma: 90 122 92

olv\*Ma: 0.97 1.0 0.0



NCS11; adapted (a) CIELAB data

|                    | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
|--------------------|-------------|---------|---------|--------------|--------------|
| R <sub>Ma</sub>    | 47.15       | 84.64   | 37.25   | 92.48        | 24           |
| J <sub>Ma</sub>    | 91.37       | -1.27   | 125.03  | 125.03       | 91           |
| G <sub>Ma</sub>    | 63.07       | -114.28 | 25.35   | 117.06       | 167          |
| G50B <sub>Ma</sub> | 59.47       | -80.6   | -33.45  | 87.28        | 203          |
| B <sub>Ma</sub>    | 49.01       | 3.65    | -81.19  | 81.28        | 273          |
| B50R <sub>Ma</sub> | 44.06       | 106.09  | -73.93  | 129.32       | 325          |
| N <sub>Ma</sub>    | 10.99       | 0.0     | 0.0     | 0.0          | 0            |
| W <sub>Ma</sub>    | 95.41       | 0.0     | 0.0     | 0.0          | 0            |
| R <sub>CIE</sub>   | 39.92       | 58.69   | 27.98   | 65.01        | 25           |
| J <sub>CIE</sub>   | 81.26       | -2.9    | 71.56   | 71.62        | 92           |
| G <sub>CIE</sub>   | 52.23       | -42.45  | 13.59   | 44.59        | 162          |
| B <sub>CIE</sub>   | 30.57       | 1.35    | -46.48  | 46.51        | 272          |

CIELAB lightness  $L^*$

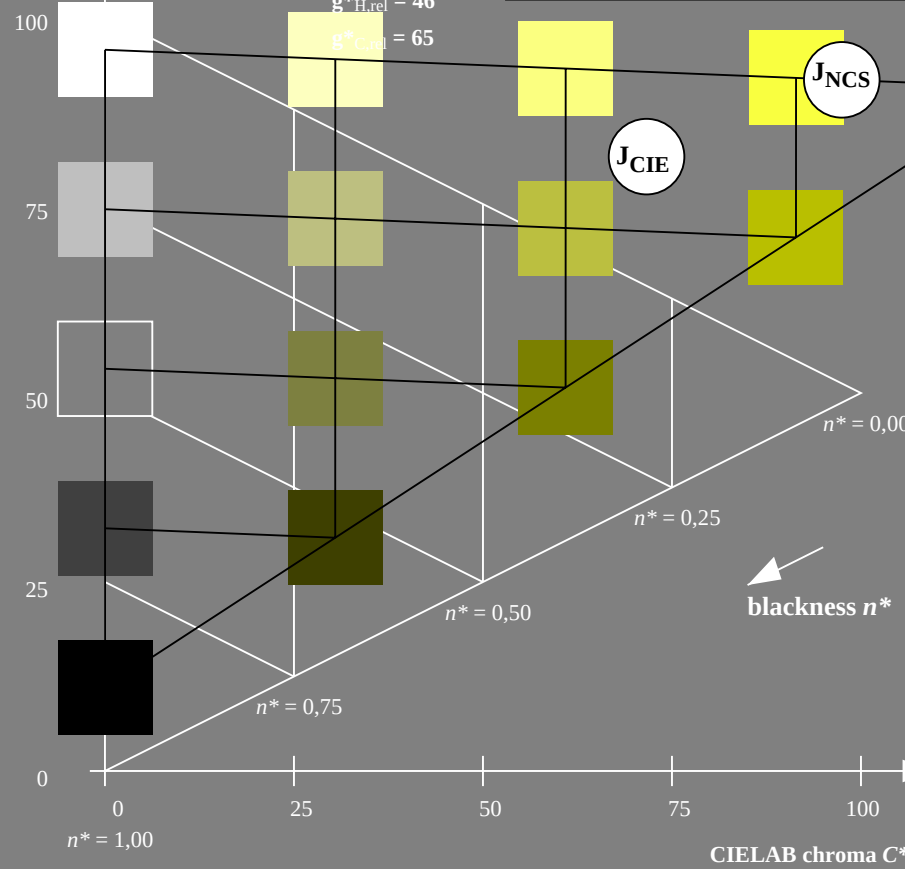
% Gamut

$u^*_{rel} = 149$

% Regularity

$g^*_{H,rel} = 46$

$g^*_{C,rel} = 65$



TE380-7, 5 step scales for constant CIELAB hue 92/360 = 0.256 (left)

Output: Colorimetric Reflective System MRS18

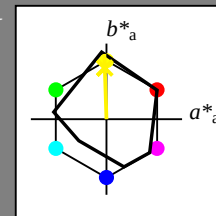
for hue  $h^* = lab \cdot h = 92/360 = 0.255$

LAB\*LCH, LAB\*NCH

D65: hue J

LCH\*Ma: 89 86 92

olv\*Ma: 1.0 0.95 0.0



MRS18; adapted (a) CIELAB data

|                    | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
|--------------------|-------------|---------|---------|--------------|--------------|
| R <sub>Ma</sub>    | 49.63       | 66.96   | 38.37   | 77.18        | 30           |
| J <sub>Ma</sub>    | 90.7        | -6.36   | 88.75   | 88.98        | 94           |
| G <sub>Ma</sub>    | 52.11       | -69.73  | 9.44    | 70.37        | 172          |
| G50B <sub>Ma</sub> | 45.03       | -36.57  | -28.47  | 46.36        | 218          |
| B <sub>Ma</sub>    | 36.65       | 23.19   | -63.05  | 67.18        | 290          |
| B50R <sub>Ma</sub> | 34.94       | 57.17   | -44.26  | 72.31        | 322          |
| N <sub>Ma</sub>    | 18.01       | 0.0     | 0.0     | 0.0          | 0            |
| W <sub>Ma</sub>    | 95.41       | 0.0     | 0.0     | 0.0          | 0            |
| R <sub>CIE</sub>   | 39.92       | 58.66   | 26.98   | 64.56        | 25           |
| J <sub>CIE</sub>   | 81.26       | -2.17   | 67.76   | 67.79        | 92           |
| G <sub>CIE</sub>   | 52.23       | -42.26  | 11.75   | 43.87        | 164          |
| B <sub>CIE</sub>   | 30.57       | 1.15    | -46.84  | 46.87        | 271          |

CIELAB lightness  $L^*$

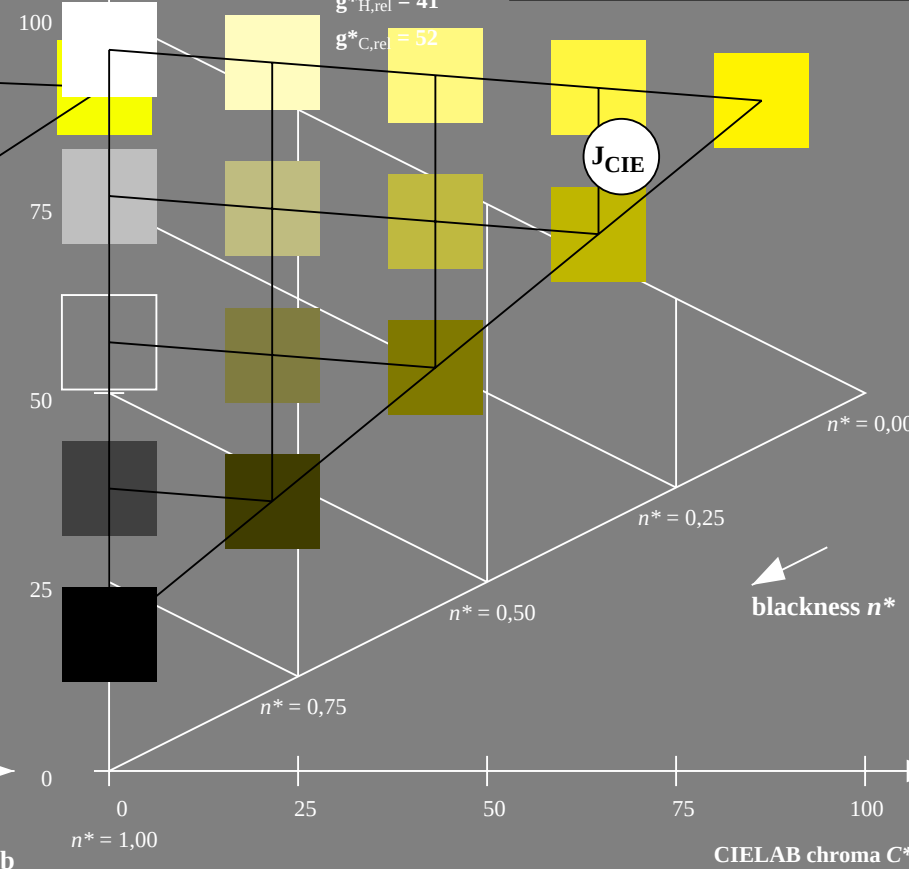
% Gamut

$u^*_{rel} = 91$

% Regularity

$g^*_{H,rel} = 41$

$g^*_{C,rel} = 52$



5 step scales for constant CIELAB hue 92/360 = 0.255 (right)

BAM-test chart TE38; Colorimetric systems NCS11a & MRS18 input: olv\* setrgbcolor

D65: Coordinate systems of 5 step colour scales for 10 hues

output: no change compared to input



Input: Colorimetric Reflective System NCS11

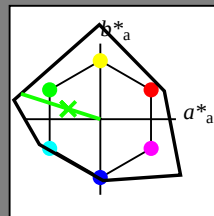
for hue  $h^* = lab \cdot h = 162/360 = 0.451$

LAB\*LCH, LAB\*NCH

D65: hue G

LCH\*Ma: 65 110 162

olv\*Ma: 0.08 1.0 0.0



NCS11; adapted (a) CIELAB data

|                    | $L^*=L_a^*$ | $a_a^*$ | $b_a^*$ | $C_{ab,a}^*$ | $h_{ab,a}^*$ |
|--------------------|-------------|---------|---------|--------------|--------------|
| R <sub>Ma</sub>    | 47.15       | 84.64   | 37.25   | 92.48        | 24           |
| J <sub>Ma</sub>    | 91.37       | -1.27   | 125.03  | 125.03       | 91           |
| G <sub>Ma</sub>    | 63.07       | -114.28 | 25.35   | 117.06       | 167          |
| G50B <sub>Ma</sub> | 59.47       | -80.6   | -33.45  | 87.28        | 203          |
| B <sub>Ma</sub>    | 49.01       | 3.65    | -81.19  | 81.28        | 273          |
| B50R <sub>Ma</sub> | 44.06       | 106.09  | -73.93  | 129.32       | 325          |
| N <sub>Ma</sub>    | 10.99       | 0.0     | 0.0     | 0.0          | 0            |
| W <sub>Ma</sub>    | 95.41       | 0.0     | 0.0     | 0.0          | 0            |
| R <sub>CIE</sub>   | 39.92       | 58.69   | 27.98   | 65.01        | 25           |
| J <sub>CIE</sub>   | 81.26       | -2.9    | 71.56   | 71.62        | 92           |
| G <sub>CIE</sub>   | 52.23       | -42.45  | 13.59   | 44.59        | 162          |
| B <sub>CIE</sub>   | 30.57       | 1.35    | -46.48  | 46.51        | 272          |

CIELAB lightness  $L^*$

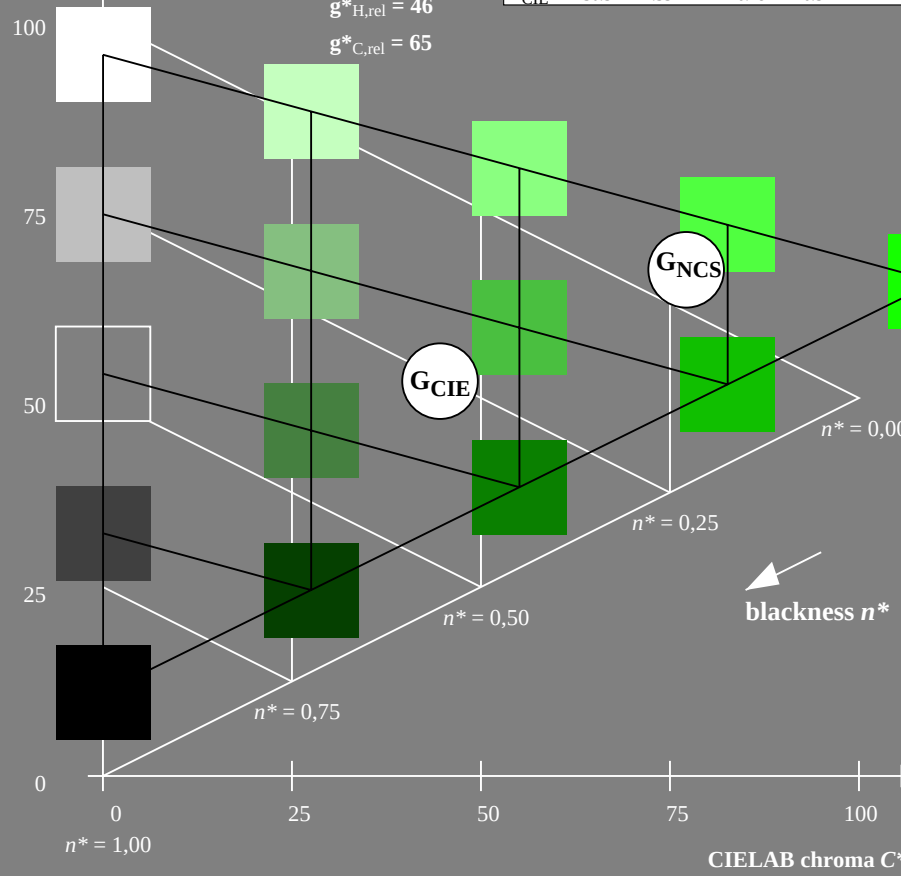
% Gamut

$u_{rel}^* = 149$

% Regularity

$g_{H,rel}^* = 46$

$g_{C,rel}^* = 65$



TE380-7, 5 step scales for constant CIELAB hue 162/360 = 0.451 (left)

Output: Colorimetric Reflective System MRS18

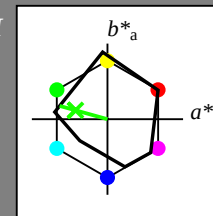
for hue  $h^* = lab \cdot h = 164/360 = 0.457$

LAB\*LCH, LAB\*NCH

D65: hue G

LCH\*Ma: 56 66 164

olv\*Ma: 0.1 1.0 0.0



MRS18; adapted (a) CIELAB data

|                    | $L^*=L_a^*$ | $a_a^*$ | $b_a^*$ | $C_{ab,a}^*$ | $h_{ab,a}^*$ |
|--------------------|-------------|---------|---------|--------------|--------------|
| R <sub>Ma</sub>    | 49.63       | 66.96   | 38.37   | 77.18        | 30           |
| J <sub>Ma</sub>    | 90.7        | -6.36   | 88.75   | 88.98        | 94           |
| G <sub>Ma</sub>    | 52.11       | -69.73  | 9.44    | 70.37        | 172          |
| G50B <sub>Ma</sub> | 45.03       | -36.57  | -28.47  | 46.36        | 218          |
| B <sub>Ma</sub>    | 36.65       | 23.19   | -63.05  | 67.18        | 290          |
| B50R <sub>Ma</sub> | 34.94       | 57.17   | -44.26  | 72.31        | 322          |
| N <sub>Ma</sub>    | 18.01       | 0.0     | 0.0     | 0.0          | 0            |
| W <sub>Ma</sub>    | 95.41       | 0.0     | 0.0     | 0.0          | 0            |
| R <sub>CIE</sub>   | 39.92       | 58.66   | 26.98   | 64.56        | 25           |
| J <sub>CIE</sub>   | 81.26       | -2.17   | 67.76   | 67.79        | 92           |
| G <sub>CIE</sub>   | 52.23       | -42.26  | 11.75   | 43.87        | 164          |
| B <sub>CIE</sub>   | 30.57       | 1.15    | -46.84  | 46.87        | 271          |

CIELAB lightness  $L^*$

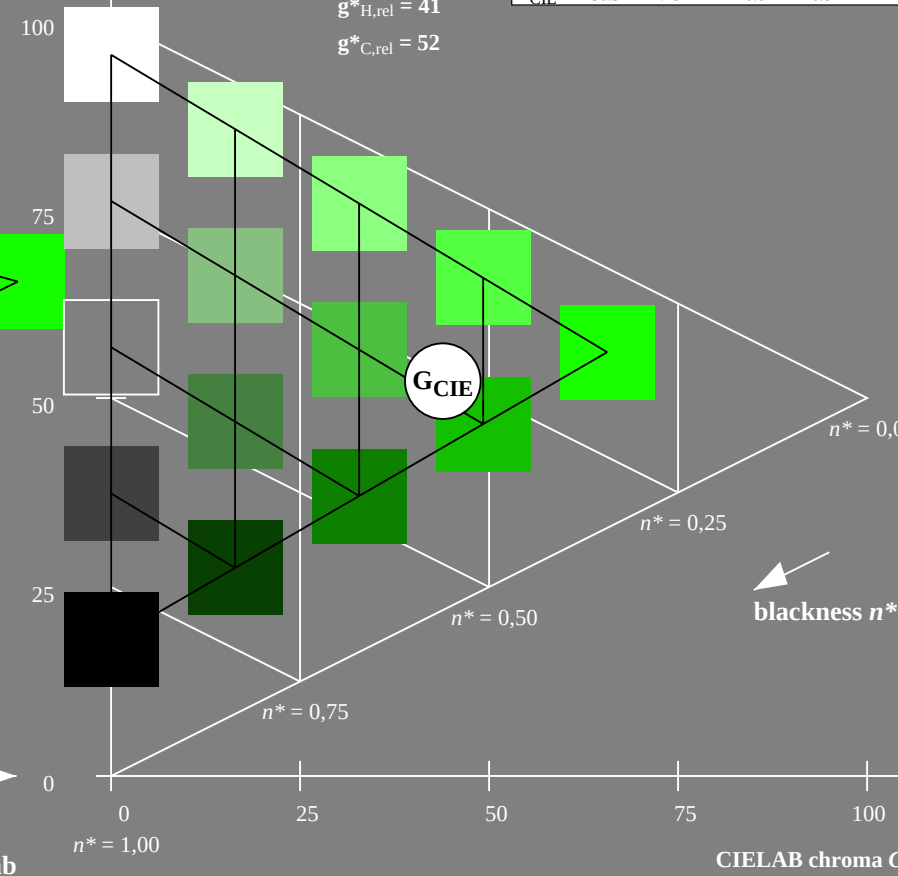
% Gamut

$u_{rel}^* = 91$

% Regularity

$g_{H,rel}^* = 41$

$g_{C,rel}^* = 52$



5 step scales for constant CIELAB hue 164/360 = 0.457 (right)

BAM-test chart TE38; Colorimetric systems NCS11a & MRS18 input: olv\* setrgbcolor

D65: Coordinate systems of 5 step colour scales for 10 hues

output: no change compared to input

**Input: Colorimetric Reflective System NCS11**

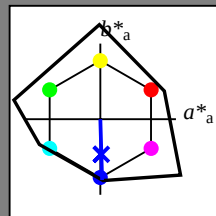
**for hue  $h^* = lab^*h = 272/360 = 0.755$**

*LAB\*LCH, LAB\*NCH*

**D65: hue B**

**LCH\*Ma: 49 80 272**

olv\*Ma: 0.0 0.02 1.0



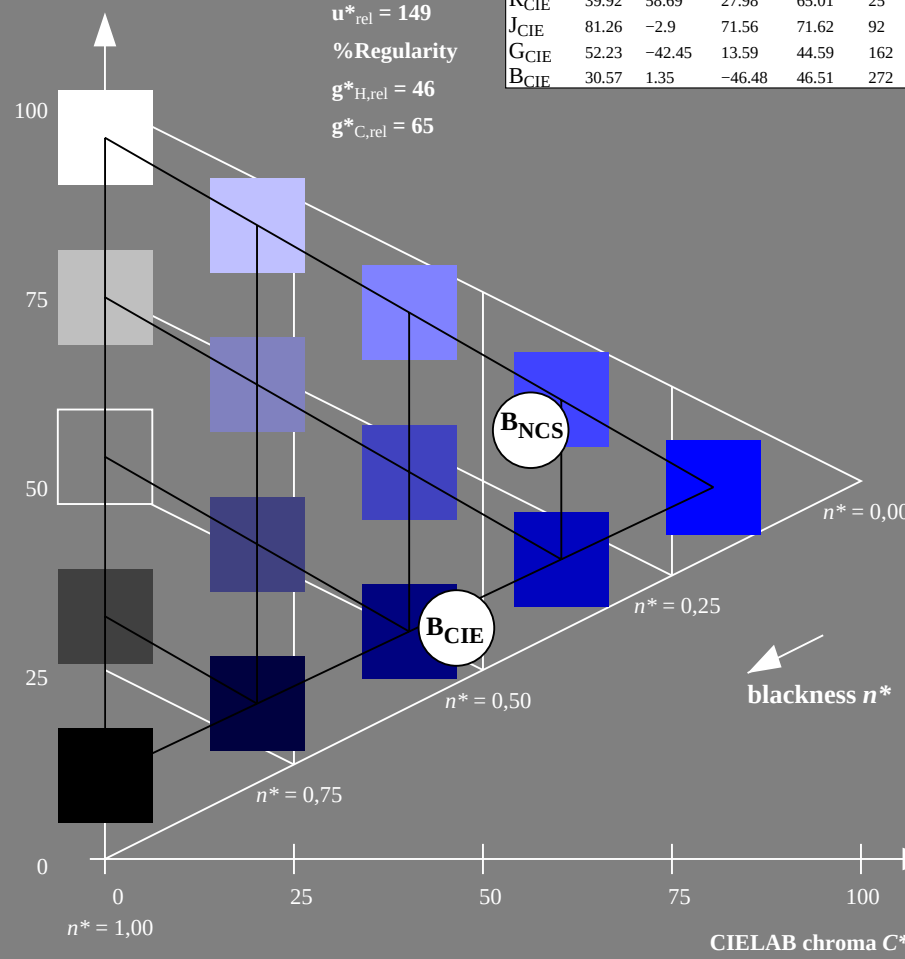
| NCS11; adapted (a) |               | CIELAB data |         |              |              |
|--------------------|---------------|-------------|---------|--------------|--------------|
|                    | $L^* = L^*_a$ | $a^*_a$     | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
| R <sub>Ma</sub>    | 47.15         | 84.64       | 37.25   | 92.48        | 24           |
| J <sub>Ma</sub>    | 91.37         | -1.27       | 125.03  | 125.03       | 91           |
| G <sub>Ma</sub>    | 63.07         | -114.28     | 25.35   | 117.06       | 167          |
| G50B <sub>Ma</sub> | 59.47         | -80.6       | -33.45  | 87.28        | 203          |
| B <sub>Ma</sub>    | 49.01         | 3.65        | -81.19  | 81.28        | 273          |
| B50R <sub>Ma</sub> | 44.06         | 106.09      | -73.93  | 129.32       | 325          |
| N <sub>Ma</sub>    | 10.99         | 0.0         | 0.0     | 0.0          | 0            |
| W <sub>Ma</sub>    | 95.41         | 0.0         | 0.0     | 0.0          | 0            |
| R <sub>CIE</sub>   | 39.92         | 58.69       | 27.98   | 65.01        | 25           |
| J <sub>CIE</sub>   | 81.26         | -2.9        | 71.56   | 71.62        | 92           |
| G <sub>CIE</sub>   | 52.23         | -82.45      | 13.59   | 44.59        | 162          |
| B <sub>CIE</sub>   | 30.57         | 1.35        | -46.48  | 46.51        | 272          |

**CIELAB lightness  $L^*$**

## %Gamut

$$\mathbf{u}_{\text{rel}}^* = 149$$

### %Regularity

$$g^*_{H,rel} = 46$$
$$g^*_{C,rel} = 65$$


TE380-7, 5 step scales for constant CIELAB hue 272/360 = 0.755 (left)

### Output: Colorimetric Reflective System MRS18

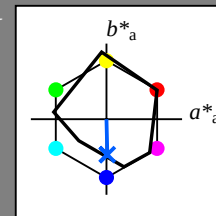
for hue  $h^* = lab^*h = 271/360 = 0.754$

*LAB\*LCH, LAB\*NCH*

**D65: hue B**

**LCH\*Ma: 40 50 271**

olv\*Ma: 0.0 0.37 1.0



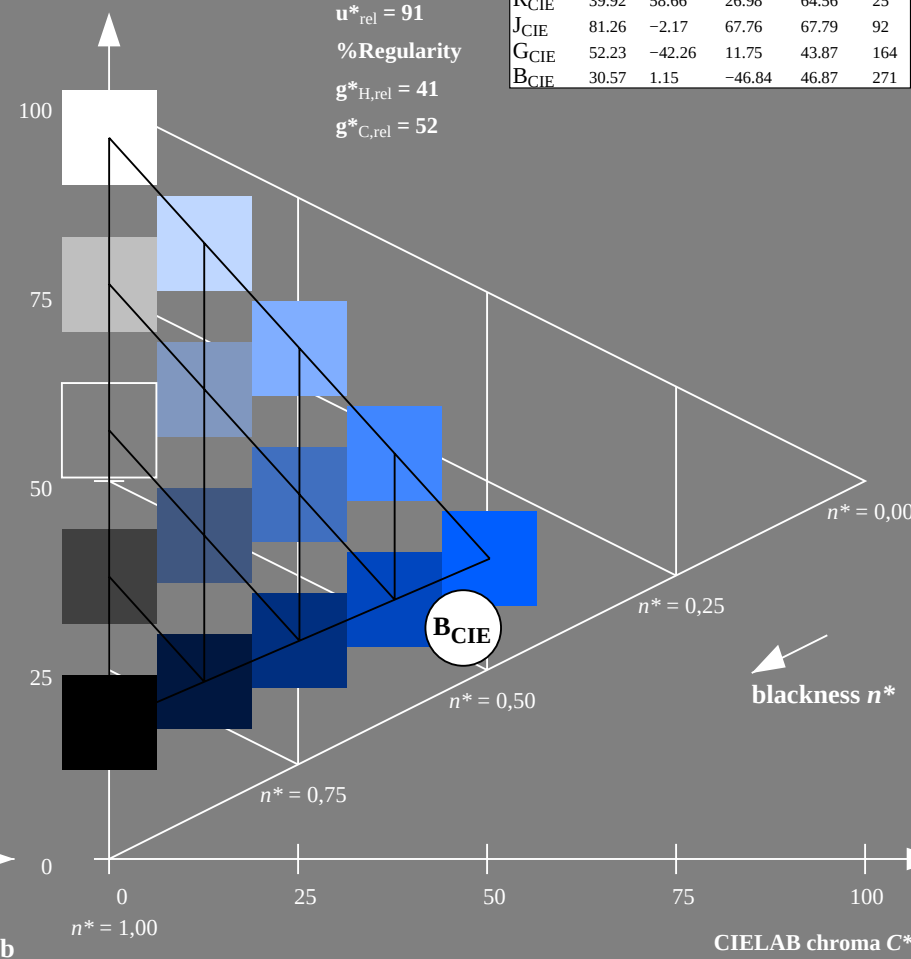
| MRS18; adapted (a) CIELAB data |            |            |            |               |               |
|--------------------------------|------------|------------|------------|---------------|---------------|
|                                | $L^*_{Ma}$ | $a^*_{Ma}$ | $b^*_{Ma}$ | $C^*_{ab,Ma}$ | $h^*_{ab,Ma}$ |
| R <sub>Ma</sub>                | 49.63      | 66.96      | 38.37      | 77.18         | 30            |
| J <sub>Ma</sub>                | 90.7       | -6.36      | 88.75      | 88.98         | 94            |
| G <sub>Ma</sub>                | 52.11      | -69.73     | 9.44       | 70.37         | 172           |
| G50B <sub>Ma</sub>             | 45.03      | -36.57     | -28.47     | 46.36         | 218           |
| B <sub>Ma</sub>                | 36.65      | 23.19      | -63.05     | 67.18         | 290           |
| B50R <sub>Ma</sub>             | 34.94      | 57.17      | -44.26     | 72.31         | 322           |
| N <sub>Ma</sub>                | 18.01      | 0.0        | 0.0        | 0.0           | 0             |
| W <sub>Ma</sub>                | 95.41      | 0.0        | 0.0        | 0.0           | 0             |
| R <sub>CIE</sub>               | 39.92      | 58.66      | 26.98      | 64.56         | 25            |
| J <sub>CIE</sub>               | 81.26      | -2.17      | 67.76      | 67.79         | 92            |
| G <sub>CIE</sub>               | 52.23      | -42.26     | 11.75      | 43.87         | 164           |
| B <sub>CIE</sub>               | 30.57      | 1.15       | -46.84     | 46.87         | 271           |

**CIELAB lightness  $L^*$**

%Gamut

$$u_{rel}^* = 91$$

### %Regularity

$$g^*_{H,rel} = 41$$
$$g^*_{C,rel} = 52$$


5 step scales for constant CIELAB hue 271/360 = 0.754 (right)

BAM-test chart TE38; Colorimetric systems NCS11a & MRS18 input: *olv\* setrgbcolor*

### D65: Coordinate systems of 5 step colour scales for 10 hues

output: *no change compared to input*