



### Input: Colorimetric Reflective System MRS18

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

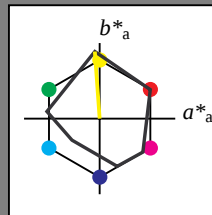
$lab \cdot tch$  and  $lab \cdot nch$

D65: hue J

LCH\*Ma: 91 89 94

rgb\*Ma: 1.0 1.0 0.0

triangle lightness



| MRS18; adapted (a) CIELAB data |                   |             |             |              |              |
|--------------------------------|-------------------|-------------|-------------|--------------|--------------|
|                                | $L^* = L^*_{a,a}$ | $a^*_{a,a}$ | $b^*_{a,a}$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
| RMa                            | 49.63             | 66.96       | 38.37       | 77.18        | 30           |
| JMa                            | 90.7              | -6.36       | 88.75       | 88.98        | 94           |
| GMa                            | 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            |
| RCIE                           | 39.92             | 58.66       | 26.98       | 64.56        | 25           |
| JCIE                           | 81.26             | -2.17       | 67.76       | 67.79        | 92           |
| GCIE                           | 52.23             | -42.26      | 11.75       | 43.87        | 164          |
| BCIE                           | 30.57             | 1.15        | -46.84      | 46.87        | 271          |

%Regularity

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

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

1,00

0,75

$n^* = 0,00$

0,25

$n^* = 0,25$

$n^* = 0,50$

0,00

$n^* = 1,0$

chromaticness  $c^*$

UE430-7, 5 step scales for constant CIELAB hue 94/360 = 0.261 (left)



BAM-test chart UE43; Colorimetric systems MRS18 & NCS11a input: *cmY0\* setcmykcolor*

D65: 5 step colour scales and coordinate data for 10 hues

### Output: Colorimetric Reflective System NCS11

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

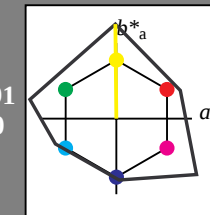
$lab \cdot tch$  and  $lab \cdot nch$

D65: hue J

LCH\*Ma: 91 125 91

rgb\*Ma: 1.0 1.0 0.0

triangle lightness



| NCS11; adapted (a) CIELAB data |                   |             |             |              |              |
|--------------------------------|-------------------|-------------|-------------|--------------|--------------|
|                                | $L^* = L^*_{a,a}$ | $a^*_{a,a}$ | $b^*_{a,a}$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
| RMa                            | 47.15             | 84.64       | 37.25       | 92.48        | 24           |
| JMa                            | 91.37             | -1.27       | 125.03      | 125.03       | 91           |
| GMa                            | 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            |
| RCIE                           | 39.92             | 58.69       | 27.98       | 65.01        | 25           |
| JCIE                           | 81.26             | -2.9        | 71.56       | 71.62        | 92           |
| GCIE                           | 52.23             | -42.45      | 13.59       | 44.59        | 162          |
| BCIE                           | 30.57             | 1.35        | -46.48      | 46.51        | 272          |

%Regularity

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

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

1,00

0,75

$n^* = 0,00$

0,25

$n^* = 0,25$

$n^* = 0,50$

0,00

$n^* = 1,0$

chromaticness  $c^*$

5 step scales for constant CIELAB hue 91/360 = 0.252 (right)

output: *no change compared to input*

### Input: Colorimetric Reflective System MRS18

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

$lab \cdot tch$  and  $lab \cdot nch$

D65: hue G  
LCH\*Ma: 52 70 172  
rgb\*Ma: 0.0 1.0 0.0

triangle lightness

1,00

%Gamut

$u^*_{rel} = 91$

%Regularity

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

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

0,75

%Regularity

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

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

0,50

%Regularity

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

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

0,25

%Regularity

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

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

0,00

%Regularity

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

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

0,00

%Regularity

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

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

0,00

%Regularity

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

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

0,00

%Regularity

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

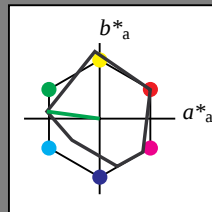
$g^*_{C,rel} = 65$

0,00

%Regularity

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

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



| MRS18; adapted (a) CIELAB data |             |         |         |              |              |
|--------------------------------|-------------|---------|---------|--------------|--------------|
|                                | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
| RMa                            | 49.63       | 66.96   | 38.37   | 77.18        | 30           |
| JMa                            | 90.7        | -6.36   | 88.75   | 88.98        | 94           |
| GMa                            | 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            |
| RCIE                           | 39.92       | 58.66   | 26.98   | 64.56        | 25           |
| JCIE                           | 81.26       | -2.17   | 67.76   | 67.79        | 92           |
| GCIE                           | 52.23       | -42.26  | 11.75   | 43.87        | 164          |
| BCIE                           | 30.57       | 1.15    | -46.84  | 46.87        | 271          |

### Output: Colorimetric Reflective System NCS11

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

$lab \cdot tch$  and  $lab \cdot nch$

D65: hue G  
LCH\*Ma: 63 117 167  
rgb\*Ma: 0.0 1.0 0.0

triangle lightness

1,00

%Gamut

$u^*_{rel} = 149$

%Regularity

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

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

0,75

%Regularity

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

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

0,50

%Regularity

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

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

0,25

%Regularity

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

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

0,00

%Regularity

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

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

0,00

%Regularity

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

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

0,00

%Regularity

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

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

0,00

%Regularity

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

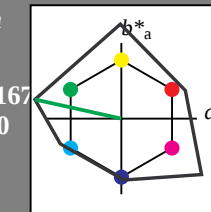
$g^*_{C,rel} = 65$

0,00

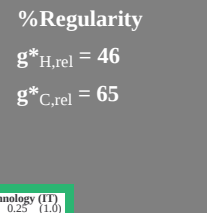
%Regularity

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

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



| NCS11; adapted (a) CIELAB data |             |         |         |              |              |
|--------------------------------|-------------|---------|---------|--------------|--------------|
|                                | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
| RMa                            | 47.15       | 84.64   | 37.25   | 92.48        | 24           |
| JMa                            | 91.37       | -1.27   | 125.03  | 125.03       | 91           |
| GMa                            | 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            |
| RCIE                           | 39.92       | 58.69   | 27.98   | 65.01        | 25           |
| JCIE                           | 81.26       | -2.9    | 71.56   | 71.62        | 92           |
| GCIE                           | 52.23       | -42.45  | 13.59   | 44.59        | 162          |
| BCIE                           | 30.57       | 1.35    | -46.48  | 46.51        | 272          |



| NCS11; adapted (a) CIELAB data |             |         |         |              |              |
|--------------------------------|-------------|---------|---------|--------------|--------------|
|                                | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
| RMa                            | 47.15       | 84.64   | 37.25   | 92.48        | 24           |
| JMa                            | 91.37       | -1.27   | 125.03  | 125.03       | 91           |
| GMa                            | 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            |
| RCIE                           | 39.92       | 58.69   | 27.98   | 65.01        | 25           |
| JCIE                           | 81.26       | -2.9    | 71.56   | 71.62        | 92           |
| GCIE                           | 52.23       | -42.45  | 13.59   | 44.59        | 162          |
| BCIE                           | 30.57       | 1.35    | -46.48  | 46.51        | 272          |

UE430-7, 5 step scales for constant CIELAB hue 172/360 = 0.479 (left)

5 step scales for constant CIELAB hue 167/360 = 0.465 (right)

BAM-test chart UE43; Colorimetric systems MRS18 & NCS11a input: *cmY0\* setcmykcolor*

D65: 5 step colour scales and coordinate data for 10 hues

output: *no change compared to input*

### Input: Colorimetric Reflective System MRS18

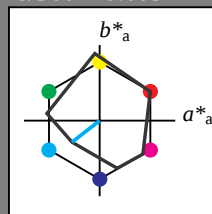
for hue  $h^* = lab \cdot h = 218/360 = 0.605$

$lab \cdot tch$  and  $lab \cdot nch$

D65: hue G50B  
LCH\*Ma: 45 46 218  
rgb\*Ma: 0.0 1.0 1.0

triangle lightness

1,00



% Gamut

$u^*_{rel} = 91$

| MRS18; adapted (a) CIELAB data |               |         |         |              |              |
|--------------------------------|---------------|---------|---------|--------------|--------------|
|                                | $L^* = L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
| RMa                            | 49.63         | 66.96   | 38.37   | 77.18        | 30           |
| JMa                            | 90.7          | -6.36   | 88.75   | 88.98        | 94           |
| GMa                            | 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            |
| RCIE                           | 39.92         | 58.66   | 26.98   | 64.56        | 25           |
| JCIE                           | 81.26         | -2.17   | 67.76   | 67.79        | 92           |
| GCIE                           | 52.23         | -42.26  | 11.75   | 43.87        | 164          |
| BCIE                           | 30.57         | 1.15    | -46.84  | 46.87        | 271          |

%Regularity

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

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

1,00

### Output: Colorimetric Reflective System NCS11

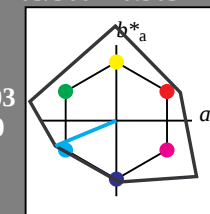
for hue  $h^* = lab \cdot h = 203/360 = 0.563$

$lab \cdot tch$  and  $lab \cdot nch$

D65: hue G50B  
LCH\*Ma: 59 87 203  
rgb\*Ma: 0.0 1.0 1.0

triangle lightness

1,00



% Gamut

$u^*_{rel} = 149$

| NCS11; adapted (a) CIELAB data |               |         |         |              |              |
|--------------------------------|---------------|---------|---------|--------------|--------------|
|                                | $L^* = L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
| RMa                            | 47.15         | 84.64   | 37.25   | 92.48        | 24           |
| JMa                            | 91.37         | -1.27   | 125.03  | 125.03       | 91           |
| GMa                            | 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            |
| RCIE                           | 39.92         | 58.69   | 27.98   | 65.01        | 25           |
| JCIE                           | 81.26         | -2.9    | 71.56   | 71.62        | 92           |
| GCIE                           | 52.23         | -42.45  | 13.59   | 44.59        | 162          |
| BCIE                           | 30.57         | 1.35    | -46.48  | 46.51        | 272          |

%Regularity

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

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

0,75

| relative Inform. Technology (IT) |       |     |       |     |       |
|----------------------------------|-------|-----|-------|-----|-------|
| olvi3*                           | 1.0   | 1.0 | 1.0   | 1.0 | (1.0) |
| cmyn3*                           | 0.0   | 0.0 | 0.0   | 0.0 | (0.0) |
| olvi4*                           | 1.0   | 1.0 | 1.0   | 1.0 | (1.0) |
| cmyn4*                           | 0.0   | 0.0 | 0.0   | 0.0 | (0.0) |
| standard and adapted CIELAB      |       |     |       |     |       |
| LAB*LAB                          | 95.41 | 0.0 | -0.01 |     |       |
| LAB*LABa                         | 95.41 | 0.0 | 0.0   |     |       |
| LAB*LABb                         | 95.41 | 0.0 | 0.0   |     |       |
| LAB*LABc                         | 95.41 | 0.0 | 0.0   |     |       |
| LAB*LABd                         | 95.41 | 0.0 | 0.0   |     |       |
| LAB*LABe                         | 95.41 | 0.0 | 0.0   |     |       |
| LAB*LABf                         | 95.41 | 0.0 | 0.0   |     |       |
| LAB*LABg                         | 95.41 | 0.0 | 0.0   |     |       |
| LAB*LABh                         | 95.41 | 0.0 | 0.0   |     |       |
| LAB*LABi                         | 95.41 | 0.0 | 0.0   |     |       |
| LAB*LABj                         | 95.41 | 0.0 | 0.0   |     |       |
| LAB*LABk                         | 95.41 | 0.0 | 0.0   |     |       |
| LAB*LABl                         | 95.41 | 0.0 | 0.0   |     |       |
| LAB*LABm                         | 95.41 | 0.0 | 0.0   |     |       |
| LAB*LABn                         | 95.41 | 0.0 | 0.0   |     |       |
| LAB*LABo                         | 95.41 | 0.0 | 0.0   |     |       |
| LAB*LABp                         | 95.41 | 0.0 | 0.0   |     |       |
| LAB*LABq                         | 95.41 | 0.0 | 0.0   |     |       |
| LAB*LABr                         | 95.41 | 0.0 | 0.0   |     |       |
| LAB*LABs                         | 95.41 | 0.0 | 0.0   |     |       |
| LAB*LABt                         | 95.41 | 0.0 | 0.0   |     |       |
| LAB*LABu                         | 95.41 | 0.0 | 0.0   |     |       |
| LAB*LABv                         | 95.41 | 0.0 | 0.0   |     |       |
| LAB*LABw                         | 95.41 | 0.0 | 0.0   |     |       |
| LAB*LABx                         | 95.41 | 0.0 | 0.0   |     |       |
| LAB*LABy                         | 95.41 | 0.0 | 0.0   |     |       |
| LAB*LABz                         | 95.41 | 0.0 | 0.0   |     |       |

| relative Inform. Technology (IT) |       |      |     |     |       |
|----------------------------------|-------|------|-----|-----|-------|
| olvi3*                           | 0.5   | 0.5  | 0.5 | 0.5 | (0.5) |
| cmyn3*                           | 0.0   | 0.0  | 0.0 | 0.0 | (0.0) |
| olvi4*                           | 0.5   | 0.5  | 0.5 | 0.5 | (0.5) |
| cmyn4*                           | 0.0   | 0.0  | 0.0 | 0.0 | (0.0) |
| standard and adapted CIELAB      |       |      |     |     |       |
| LAB*LAB                          | 74.31 | 0.02 | 0.0 |     |       |
| LAB*LABa                         | 74.31 | 0.02 | 0.0 |     |       |
| LAB*LABb                         | 74.31 | 0.02 | 0.0 |     |       |
| LAB*LABc                         | 74.31 | 0.02 | 0.0 |     |       |
| LAB*LABd                         | 74.31 | 0.02 | 0.0 |     |       |
| LAB*LABe                         | 74.31 | 0.02 | 0.0 |     |       |
| LAB*LABf                         | 74.31 | 0.02 | 0.0 |     |       |
| LAB*LABg                         | 74.31 | 0.02 | 0.0 |     |       |
| LAB*LABh                         | 74.31 | 0.02 | 0.0 |     |       |
| LAB*LABi                         | 74.31 | 0.02 | 0.0 |     |       |
| LAB*LABj                         | 74.31 | 0.02 | 0.0 |     |       |
| LAB*LABk                         | 74.31 | 0.02 | 0.0 |     |       |
| LAB*LABl                         | 74.31 | 0.02 | 0.0 |     |       |
| LAB*LABm                         | 74.31 | 0.02 | 0.0 |     |       |
| LAB*LABn                         | 74.31 | 0.02 | 0.0 |     |       |
| LAB*LABo                         | 74.31 | 0.02 | 0.0 |     |       |
| LAB*LABp                         | 74.31 | 0.02 | 0.0 |     |       |
| LAB*LABq                         | 74.31 | 0.02 | 0.0 |     |       |
| LAB*LABr                         | 74.31 | 0.02 | 0.0 |     |       |
| LAB*LABs                         | 74.31 | 0.02 | 0.0 |     |       |
| LAB*LABt                         | 74.31 | 0.02 | 0.0 |     |       |
| LAB*LABu                         | 74.31 | 0.02 | 0.0 |     |       |
| LAB*LABv                         | 74.31 | 0.02 | 0.0 |     |       |
| LAB*LABw                         | 74.31 | 0.02 | 0.0 |     |       |
| LAB*LABx                         | 74.31 | 0.02 | 0.0 |     |       |
| LAB*LABy                         | 74.31 | 0.02 | 0.0 |     |       |
| LAB*LABz                         | 74.31 | 0.02 | 0.0 |     |       |

| relative Inform. Technology (IT) |       |      |      |      |        |
|----------------------------------|-------|------|------|------|--------|
| olvi3*                           | 0.25  | 0.25 | 0.25 | 0.25 | (0.25) |
| cmyn3*                           | 0.0   | 0.0  | 0.0  | 0.0  | (0.0)  |
| olvi4*                           | 0.25  | 0.25 | 0.25 | 0.25 | (0.25) |
| cmyn4*                           | 0.0   | 0.0  | 0.0  | 0.0  | (0.0)  |
| standard and adapted CIELAB      |       |      |      |      |        |
| LAB*LAB                          | 53.21 | 0.04 | 0.0  |      |        |
| LAB*LABa                         | 53.21 | 0.04 | 0.0  |      |        |
| LAB*LABb                         | 53.21 | 0.04 | 0.0  |      |        |
| LAB*LABc                         | 53.21 | 0.04 | 0.0  |      |        |
| LAB*LABd                         | 53.21 | 0.04 | 0.0  |      |        |
| LAB*LABe                         | 53.21 | 0.04 | 0.0  |      |        |
| LAB*LABf                         | 53.21 | 0.04 | 0.0  |      |        |
| LAB*LABg                         | 53.21 | 0.04 | 0.0  |      |        |
| LAB*LABh                         | 53.21 | 0.04 | 0.0  |      |        |
| LAB*LABi                         | 53.21 | 0.04 | 0.0  |      |        |
| LAB*LABj                         | 53.21 | 0.04 | 0.0  |      |        |
| LAB*LABk                         | 53.21 | 0.04 | 0.0  |      |        |
| LAB*LABl                         | 53.21 | 0.04 | 0.0  |      |        |
| LAB*LABm                         | 53.21 | 0.04 | 0.0  |      |        |
| LAB*LABn                         | 53.21 | 0.04 | 0.0  |      |        |
| LAB*LABo                         | 53.21 | 0.04 | 0.0  |      |        |
| LAB*LABp                         | 53.21 | 0.04 | 0.0  |      |        |
| LAB*LABq                         | 53.21 | 0.04 | 0.0  |      |        |
| LAB*LABr                         | 53.21 | 0.04 | 0.0  |      |        |
| LAB*LABs                         | 53.21 | 0.04 | 0.0  |      |        |
| LAB*LABt                         | 53.21 | 0.04 | 0.0  |      |        |
| LAB*LABu                         | 53.21 | 0.04 | 0.0  |      |        |
| LAB*LABv                         | 53.21 | 0.04 | 0.0  |      |        |
| LAB*LABw                         | 53.21 | 0.04 | 0.0  |      |        |
| LAB*LABx                         | 53.21 | 0.04 | 0.0  |      |        |
| LAB*LABy                         | 53.21 | 0.04 | 0.0  |      |        |
| LAB*LABz                         | 53.21 | 0.04 | 0.0  |      |        |

| relative Inform. Technology (IT) |       |      |      |     |       |
|----------------------------------|-------|------|------|-----|-------|
| olvi3*                           | 0.0   | 0.0  | 0.0  | 0.0 | (0.0) |
| cmyn3*                           | 1.0   | 1.0  | 1.0  | 1.0 | (1.0) |
| olvi4*                           | 1.0   | 1.0  | 1.0  | 1.0 | (1.0) |
| cmyn4*                           | 0.0   | 0.0  | 0.0  | 0.0 | (0.0) |
| standard and adapted CIELAB      |       |      |      |     |       |
| LAB*LAB                          | 11.01 | 0.07 | 0.01 |     |       |
| LAB*LABa                         | 11.01 | 0.07 | 0.01 |     |       |
| LAB*LABb                         | 11.01 | 0.07 | 0.01 |     |       |
| LAB*LABc                         | 11.01 | 0.07 | 0.01 |     |       |
| LAB*LABd                         | 11.01 | 0.07 | 0.01 |     |       |
| LAB*LABe                         | 11.01 | 0.07 | 0.01 |     |       |
| LAB*LABf                         | 11.01 | 0.07 | 0.01 |     |       |
| LAB*LABg                         | 11.01 | 0.07 | 0.01 |     |       |
| LAB*LABh                         | 11.01 | 0.07 | 0.01 |     |       |
| LAB*LABi                         | 11.01 | 0.07 | 0.01 |     |       |
| LAB*LABj                         | 11.01 | 0.07 | 0.01 |     |       |
| LAB*LABk                         | 11.01 | 0.07 | 0.01 |     |       |
| LAB*LABl                         | 11.01 | 0.07 | 0.01 |     |       |
| LAB*LABm                         | 11.01 | 0.07 | 0.01 |     |       |
| LAB*LABn                         | 11.01 | 0.07 | 0.01 |     |       |
| LAB*LABo                         | 11.01 | 0.07 | 0.01 |     |       |
| LAB*LABp                         | 11.01 | 0.07 | 0.01 |     |       |
| LAB*LABq                         | 11.01 | 0.07 | 0.01 |     |       |
| LAB*LABr                         | 11.01 | 0.07 | 0.01 |     |       |
| LAB*LABs                         | 11.01 | 0.07 | 0.01 |     |       |
| LAB*LABt                         | 11.01 | 0.07 | 0.01 |     |       |
| LAB*LABu                         | 11.01 | 0.07 | 0.01 |     |       |
| LAB*LABv                         | 11.01 | 0.07 | 0.01 |     |       |
| LAB*LABw                         | 11.01 | 0.07 | 0.01 |     |       |
| LAB*LABx                         | 11.01 | 0.07 | 0.01 |     |       |
| LAB*LABy                         | 11.01 | 0.07 | 0.01 |     |       |
| LAB*LABz                         | 11.01 | 0.07 | 0.01 |     |       |

| relative Inform. Technology (IT) |     |     |     |     |       |
|----------------------------------|-----|-----|-----|-----|-------|
| olvi3*                           | 0.0 | 0.0 | 0.0 | 0.0 | (0.0) |
| cmyn3*                           | 1.0 | 1.0 | 1.0 | 1.0 | (1.0) |
| olvi4*                           | 1.0 | 1.0 | 1.0 | 1.0 | (1.0) |
| cmyn4*                           | 0.0 | 0.0 | 0.0 | 0.0 | (0.0) |
| standard and adapted CIELAB      |     |     |     |     |       |
| LAB*LAB                          | 0.0 | 0.0 | 0.0 |     |       |
| LAB*LABa                         | 0.0 | 0.0 | 0.0 |     |       |
| LAB*LABb                         | 0.0 | 0.0 | 0.0 |     |       |
| LAB*LABc                         | 0.0 | 0.0 | 0.0 |     |       |
| LAB*LABd                         | 0.0 | 0.0 | 0.0 |     |       |
| LAB*LABe                         | 0.0 | 0.0 | 0.0 |     |       |
| LAB*LABf                         | 0.0 | 0.0 | 0.0 |     |       |
| LAB*LABg                         | 0.0 | 0.0 | 0.0 |     |       |
| LAB*LABh                         | 0.0 | 0.0 | 0.0 |     |       |
| LAB*LABi                         | 0.0 | 0.0 | 0.0 |     |       |
| LAB*LABj                         | 0.0 | 0.0 | 0.0 |     |       |
| LAB*LABk                         | 0.0 | 0.0 | 0.0 |     |       |
| LAB*LABl                         | 0.0 | 0.0 | 0.0 |     |       |
| LAB*LABm                         | 0.0 | 0.0 | 0.0 |     |       |
| LAB*LABn                         | 0.0 | 0.0 | 0.0 |     |       |
| LAB*LABo                         | 0.0 | 0.0 | 0.0 |     |       |
| LAB*LABp                         | 0.0 | 0.0 | 0.0 |     |       |
| LAB*LABq                         | 0.0 | 0.0 | 0.0 |     |       |
| LAB*LABr                         | 0.0 | 0.0 | 0.0 |     |       |
| LAB*LABs                         | 0.0 | 0.0 | 0.0 |     |       |
| LAB*LABt                         | 0.0 | 0.0 | 0.0 |     |       |
| LAB*LABu                         | 0.0 | 0.0 | 0.0 |     |       |
| LAB*LABv                         | 0.0 | 0.0 | 0.0 |     |       |
| LAB*LABw                         | 0.0 | 0.0 | 0.0 |     |       |
| LAB*LABx                         | 0.0 | 0.0 | 0.0 |     |       |
| LAB*LABy                         | 0.0 | 0.0 | 0.0 |     |       |
| LAB*LABz                         | 0.0 | 0.0 | 0.0 |     |       |

| relative Inform. Technology (IT) |       |        |       |       |
|----------------------------------|-------|--------|-------|-------|
| olvi3*                           | 0.75  | 1.0    | 1.0   | (1.0) |
| cmyn3*                           | 0.25  | 0.0    | 0.0   | (0.0) |
| olvi4*                           | 0.75  | 1.0    | 1.0   | (1.0) |
| cmyn4*                           | 0.25  | 0.0    | 0.0   | (0.0) |
| standard and adapted CIELAB      |       |        |       |       |
| LAB*LAB                          | 86.42 | -20.12 | -8.35 |       |
| LAB*LABa                         | 86.42 | -20.12 | -8.35 |       |
| LAB*LABb                         | 86.42 | -20.12 | -8.35 |       |
| LAB*LABc                         | 87.5  | 21.81  | 20.27 |       |
| relative CIEbA Lab               |       |        |       |       |
| lab*lab                          | 0.893 | 0.23   | -0.06 |       |
| lab*lab*                         | 0.875 | 0.25   | 0.563 |       |
| lab*labch                        | 0.0   | 0.25   | 0.563 |       |
| relative Natural Colour (NC)     |       |        |       |       |
| lab*lab                          | 0.893 | 0.208  | -0.13 |       |
| lab*lab*                         | 0.875 | 0.25   | 0.563 |       |
| lab*labcE                        | 0.0   | 0.25   | 0.563 |       |

| relative Inform. Technology (IT) |       |        |       |        |
|----------------------------------|-------|--------|-------|--------|
| olvi3*                           | 0.5   | 0.75   | 0.75  | (1.0)  |
| cmyn3*                           | 0.5   | 0.25   | 0.25  | (0.0)  |
| olvi4*                           | 0.75  | 1.0    | 1.0   | (0.75) |
| cmyn4*                           | 0.25  | 0.0    | 0.0   | (0.25) |
| standard and adapted CIELAB      |       |        |       |        |
| LAB*LAB                          | 65.32 | 20.11  | -8.36 |        |
| LAB*LABa                         | 65.32 | -20.14 | -8.36 |        |

### Input: Colorimetric Reflective System MRS18

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

$lab \cdot tch$  and  $lab \cdot nch$

D65: hue B

LCH\*Ma: 37 67 290

rgb\*Ma: 0.0 0.0 1.0

triangle lightness

1,00

% Gamut

$u^*_{rel} = 91$

%Regularity

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

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

0,75

0,50

0,25

0,00

blackness  $n^*$

$n^* = 0,00$

$n^* = 0,25$

$n^* = 0,50$

$n^* = 1,0$

0,25

0,50

0,75

1,00

chromaticness  $c^*$

$n^* = 1,0$

$n^* = 0,50$

$n^* = 0,25$

$n^* = 0,00$

blackness  $n^*$

$n^* = 0,00$

$n^* = 0,25$

$n^* = 0,50$

$n^* = 1,0$

0,25

0,50

0,75

1,00

chromaticness  $c^*$

$n^* = 1,0$

$n^* = 0,50$

$n^* = 0,25$

$n^* = 0,00$

### 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          |

%Regularity

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

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

0,75

0,50

0,25

0,00

blackness  $n^*$

$n^* = 0,00$

$n^* = 0,25$

$n^* = 0,50$

$n^* = 1,0$

0,25

0,50

0,75

1,00

chromaticness  $c^*$

$n^* = 1,0$

$n^* = 0,50$

$n^* = 0,25$

$n^* = 0,00$

blackness  $n^*$

$n^* = 0,00$

$n^* = 0,25$

$n^* = 0,50$

$n^* = 1,0$

0,25

0,50

0,75

1,00

chromaticness  $c^*$

$n^* = 1,0$

$n^* = 0,50$

$n^* = 0,25$

$n^* = 0,00$

### Output: Colorimetric Reflective System NCS11

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

$lab \cdot tch$  and  $lab \cdot nch$

D65: hue B

LCH\*Ma: 49 81 273

rgb\*Ma: 0.0 0.0 1.0

triangle lightness

1,00

% Gamut

$u^*_{rel} = 149$

%Regularity

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

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

0,75

0,50

0,25

0,00

blackness  $n^*$

$n^* = 0,00$

$n^* = 0,25$

$n^* = 0,50$

$n^* = 1,0$

0,25

0,50

0,75

1,00

chromaticness  $c^*$

$n^* = 1,0$

$n^* = 0,50$

$n^* = 0,25$

$n^* = 0,00$

blackness  $n^*$

$n^* = 0,00$

$n^* = 0,25$

$n^* = 0,50$

$n^* = 1,0$

0,25

0,50

0,75

1,00

chromaticness  $c^*$

$n^* = 1,0$

$n^* = 0,50$

$n^* = 0,25$

$n^* = 0,00$

### 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          |

%Regularity

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

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

0,75

0,50

0,25

0,00

blackness  $n^*$

$n^* = 0,00$

$n^* = 0,25$

$n^* = 0,50$

$n^* = 1,0$

0,25

0,50

0,75

1,00

chromaticness  $c^*$

$n^* = 1,0$

$n^* = 0,50$

$n^* = 0,25$

$n^* = 0,00$

blackness  $n^*$

$n^* = 0,00$

$n^* = 0,25$

$n^* = 0,50$

$n^* = 1,0$

0,25

0,50

0,75

1,00

chromaticness  $c^*$

$n^* = 1,0$

$n^* = 0,50$

$n^* = 0,25$

$n^* = 0,00$

UE430-7, 5 step scales for constant CIELAB hue 290/360 = 0.806 (left)

5 step scales for constant CIELAB hue 273/360 = 0.757 (right)

BAM-test chart UE43; Colorimetric systems MRS18 & NCS11a input: *cmY0\* setcmykcolor*

D65: 5 step colour scales and coordinate data for 10 hues

output: *no change compared to input*

### Input: Colorimetric Reflective System MRS18

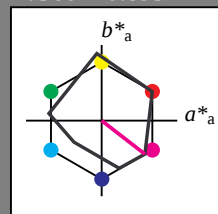
for hue  $h^* = lab^*h = 322/360 = 0.895$

$lab^*tch$  and  $lab^*nch$

D65: hue B50R  
LCH\*Ma: 35 72 322  
rgb\*Ma: 1.0 0.0 1.0

triangle lightness

1,00



| 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          |

%Regularity

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

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

1,00

| relative Inform. Technology (IT) |       |      |       |     |       |
|----------------------------------|-------|------|-------|-----|-------|
| olvi3*                           | 1.0   | 1.0  | 1.0   | 1.0 | (1.0) |
| cmyn3*                           | 0.0   | 0.0  | 0.0   | 0.0 | (0.0) |
| olvi4*                           | 1.0   | 1.0  | 1.0   | 1.0 | (1.0) |
| cmyn4*                           | 0.0   | 0.0  | 0.0   | 0.0 | (0.0) |
| standard and adapted CIELAB      |       |      |       |     |       |
| LAB*LAB                          | 95.41 | 0.0  | -0.01 |     |       |
| LAB*TCha                         | 99.99 | 0.01 |       |     |       |
| relative CIELAB lab*             |       |      |       |     |       |
| lab*lab                          | 1.0   | 0.0  | 0.0   |     |       |
| lab*tch                          | 1.0   | 0.0  | 0.0   |     |       |
| lab*nch                          | 0.0   | 0.0  | 0.0   |     |       |
| lab*trj                          | 1.0   | 0.0  | 0.0   |     |       |
| relative Natural Colour (NC)     |       |      |       |     |       |
| lab*tce                          | 1.0   | 0.0  | 0.0   |     |       |
| lab*nce                          | 0.0   | 0.0  | 0.0   |     |       |

| relative Inform. Technology (IT) |       |      |      |      |       |
|----------------------------------|-------|------|------|------|-------|
| olvi3*                           | 0.75  | 0.75 | 0.75 | 0.75 | (1.0) |
| cmyn3*                           | 0.25  | 0.25 | 0.25 | 0.25 | (0.0) |
| olvi4*                           | 1.0   | 1.0  | 1.0  | 1.0  | (1.0) |
| cmyn4*                           | 0.0   | 0.0  | 0.0  | 0.0  | (0.0) |
| standard and adapted CIELAB      |       |      |      |      |       |
| LAB*LAB                          | 74.31 | 0.02 | 0.0  |      |       |
| LAB*LABa                         | 74.31 | 0.0  | 0.0  |      |       |
| LAB*TCha                         | 75.0  | 0.01 | 0.0  |      |       |
| relative CIELAB lab*             |       |      |      |      |       |
| lab*lab                          | 0.75  | 0.0  | 0.0  |      |       |
| lab*tch                          | 0.75  | 0.0  | 0.0  |      |       |
| lab*nch                          | 0.25  | 0.0  | 0.0  |      |       |
| lab*trj                          | 0.75  | 0.0  | 0.0  |      |       |
| relative Natural Colour (NC)     |       |      |      |      |       |
| lab*tce                          | 0.75  | 0.0  | 0.0  |      |       |
| lab*nce                          | 0.25  | 0.0  | 0.0  |      |       |

| relative Inform. Technology (IT) |       |      |     |     |       |
|----------------------------------|-------|------|-----|-----|-------|
| olvi3*                           | 0.5   | 0.5  | 0.5 | 0.5 | (1.0) |
| cmyn3*                           | 0.5   | 0.5  | 0.5 | 0.5 | (0.0) |
| olvi4*                           | 1.0   | 1.0  | 1.0 | 1.0 | (1.0) |
| cmyn4*                           | 0.0   | 0.0  | 0.0 | 0.0 | (0.0) |
| standard and adapted CIELAB      |       |      |     |     |       |
| LAB*LAB                          | 53.21 | 0.04 | 0.0 |     |       |
| LAB*LABa                         | 53.21 | 0.0  | 0.0 |     |       |
| LAB*TCha                         | 50.0  | 0.01 | 0.0 |     |       |
| relative CIELAB lab*             |       |      |     |     |       |
| lab*lab                          | 0.5   | 0.0  | 0.0 |     |       |
| lab*tch                          | 0.5   | 0.0  | 0.0 |     |       |
| lab*nch                          | 0.5   | 0.0  | 0.0 |     |       |
| lab*trj                          | 0.5   | 0.0  | 0.0 |     |       |
| relative Natural Colour (NC)     |       |      |     |     |       |
| lab*tce                          | 0.5   | 0.0  | 0.0 |     |       |
| lab*nce                          | 0.5   | 0.0  | 0.0 |     |       |

| relative Inform. Technology (IT) |       |      |      |      |       |
|----------------------------------|-------|------|------|------|-------|
| olvi3*                           | 0.25  | 0.25 | 0.25 | 0.25 | (1.0) |
| cmyn3*                           | 0.75  | 0.75 | 0.75 | 0.75 | (0.0) |
| olvi4*                           | 1.0   | 1.0  | 1.0  | 1.0  | (1.0) |
| cmyn4*                           | 0.0   | 0.0  | 0.0  | 0.0  | (0.0) |
| standard and adapted CIELAB      |       |      |      |      |       |
| LAB*LAB                          | 32.11 | 0.05 | 0.01 |      |       |
| LAB*LABa                         | 32.11 | 0.0  | 0.0  |      |       |
| LAB*TCha                         | 25.0  | 0.01 | 0.0  |      |       |
| relative CIELAB lab*             |       |      |      |      |       |
| lab*lab                          | 0.25  | 0.0  | 0.0  |      |       |
| lab*tch                          | 0.25  | 0.0  | 0.0  |      |       |
| lab*nch                          | 0.75  | 0.0  | 0.0  |      |       |
| lab*trj                          | 0.25  | 0.0  | 0.0  |      |       |
| relative Natural Colour (NC)     |       |      |      |      |       |
| lab*tce                          | 0.25  | 0.0  | 0.0  |      |       |
| lab*nce                          | 0.75  | 0.0  | 0.0  |      |       |

| relative Inform. Technology (IT) |       |      |      |     |       |
|----------------------------------|-------|------|------|-----|-------|
| olvi3*                           | 0.0   | 0.0  | 0.0  | 0.0 | (1.0) |
| cmyn3*                           | 1.0   | 1.0  | 1.0  | 1.0 | (0.0) |
| olvi4*                           | 1.0   | 1.0  | 1.0  | 1.0 | (1.0) |
| cmyn4*                           | 0.0   | 0.0  | 0.0  | 0.0 | (0.0) |
| standard and adapted CIELAB      |       |      |      |     |       |
| LAB*LAB                          | 11.01 | 0.07 | 0.01 |     |       |
| LAB*LABa                         | 11.01 | 0.0  | 0.0  |     |       |
| LAB*TCha                         | 0.01  | 0.01 | 0.0  |     |       |
| relative CIELAB lab*             |       |      |      |     |       |
| lab*lab                          | 0.0   | 0.0  | 0.0  |     |       |
| lab*tch                          | 0.0   | 0.0  | 0.0  |     |       |
| lab*nch                          | 1.0   | 0.0  | 0.0  |     |       |
| lab*trj                          | 0.0   | 0.0  | 0.0  |     |       |
| relative Natural Colour (NC)     |       |      |      |     |       |
| lab*tce                          | 0.0   | 0.0  | 0.0  |     |       |
| lab*nce                          | 1.0   | 0.0  | 0.0  |     |       |

| relative Inform. Technology (IT) |      |     |     |     |       |
|----------------------------------|------|-----|-----|-----|-------|
| olvi3*                           | 0.0  | 0.0 | 0.0 | 0.0 | (1.0) |
| cmyn3*                           | 1.0  | 1.0 | 1.0 | 1.0 | (0.0) |
| olvi4*                           | 1.0  | 1.0 | 1.0 | 1.0 | (1.0) |
| cmyn4*                           | 0.0  | 0.0 | 0.0 | 0.0 | (0.0) |
| standard and adapted CIELAB      |      |     |     |     |       |
| LAB*LAB                          | 0.01 | 0.0 | 0.0 |     |       |
| LAB*LABa                         | 0.01 | 0.0 | 0.0 |     |       |
| LAB*TCha                         | 0.01 | 0.0 | 0.0 |     |       |
| relative CIELAB lab*             |      |     |     |     |       |
| lab*lab                          | 0.0  | 0.0 | 0.0 |     |       |
| lab*tch                          | 0.0  | 0.0 | 0.0 |     |       |
| lab*nch                          | 1.0  | 0.0 | 0.0 |     |       |
| lab*trj                          | 0.0  | 0.0 | 0.0 |     |       |
| relative Natural Colour (NC)     |      |     |     |     |       |
| lab*tce                          | 0.0  | 0.0 | 0.0 |     |       |
| lab*nce                          | 1.0  | 0.0 | 0.0 |     |       |

$n^* = 1.0$

chromaticness  $c^*$

blackness  $n^*$

0,25 0,50 0,75 1,00

5 step scales for constant CIELAB hue 325/360 = 0.903 (right)

BAM-test chart UE43; Colorimetric systems MRS18 & NCS11a input:  $cmY0^* set cmykcolor$

D65: 5 step colour scales and coordinate data for 10 hues

output: no change compared to input

0,25 0,50 0,75 1,00

chromaticness  $c^*$

blackness  $n^*$

0,25 0,50 0,75 1,00

chromaticness  $c^*$

blackness  $n^*$

0,25 0,50 0,75 1,00

chromaticness  $c^*$

blackness  $n^*$

0,25 0,50 0,75 1,00

chromaticness  $c^*$

blackness  $n^*$

0,25 0,50 0,75 1,00

chromaticness  $c^*$

blackness  $n^*$

0,25 0,50 0,75 1,00

chromaticness  $c^*$

blackness  $n^*$

0,25 0,50 0,75 1,00

chromaticness  $c^*$

blackness  $n^*$

0,25 0,50 0,75 1,00

chromaticness  $c^*$

blackness  $n^*$

0,25 0,50 0,75 1,00

chromaticness  $c^*$

blackness  $n^*$

0,25 0,50 0,75 1,00

chromaticness  $c^*$

blackness  $n^*$

0,25 0,50 0,75 1,00

chromaticness  $c^*$

blackness  $n^*$

0,25 0,50 0,75 1,00

chromaticness  $c^*$

blackness  $n^*$

0,25 0,50 0,75 1,00

chromaticness  $c^*$

blackness  $n^*$

0,25 0,50 0,75 1,00

chromaticness  $c^*$

blackness  $n^*$

0,25 0,50 0,75 1,00

chromaticness  $c^*$

blackness  $n^*$

0,25 0,50 0,75 1,00

chromaticness  $c^*$

blackness  $n^*$

0,25 0,50 0,75 1,00

chromaticness  $c^*$

blackness  $n^*$

0,25 0,50 0,75 1,00

chromaticness  $c^*$

blackness  $n^*$

0,25 0,50 0,75 1,00

chromaticness  $c^*$

blackness  $n^*$

0,25 0,50 0,75 1,00

chromaticness  $c^*$

blackness  $n^*$

0,25 0,50 0,75 1,00

chromaticness  $c^*$

blackness  $n^*$

0,25 0,50 0,75 1,00

chromaticness  $c^*$

blackness  $n^*$

0,25 0,50 0,75 1,00

chromaticness  $c^*$

blackness  $n^*$

0,25 0,50 0,75 1,00

chromaticness  $c^*$

blackness  $n^*$

0,25 0,50 0,75 1,00

chromaticness  $c^*$

blackness  $n^*$

0,25 0,50 0,75 1,00

chromaticness  $c^*$

blackness  $n^*$

0,25 0,50 0,75 1,00

chromaticness  $c^*$

blackness  $n^*$

0,25 0,50 0,75 1,00

chromaticness  $c^*$

blackness  $n^*$

0,25 0,50 0,75 1,00

chromaticness  $c^*$

blackness  $n^*$

0,25 0,50 0,75 1,00

chromaticness  $c^*$

blackness  $n^*$

0,25 0,50 0,75 1,00

chromaticness  $c^*$

blackness  $n^*$

0,25 0,50 0,75 1,00

chromaticness  $c^*$

blackness  $n^*$

0,25 0,50 0,75 1,00

chromaticness  $c^*$

blackness  $n^*$

0,25 0,50 0,75 1,00

chromaticness  $c^*$

blackness  $n^*$

0,25 0,50 0,75 1,00

chromaticness  $c^*$

blackness  $n^*$

0,25 0,50 0,75 1,00

chromaticness  $c^*$

blackness  $n^*$

0,25 0,50 0,75 1,00

chromaticness  $c^*$

blackness  $n^*$

0,25 0,50 0,75 1,00

chromaticness  $c^*$

blackness  $n^*$

### Input: Colorimetric Reflective System MRS18

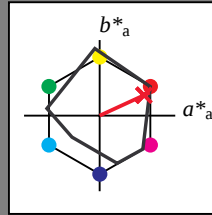
for hue  $h^* = lab \cdot h = 25/360 = 0.069$

$lab \cdot tch$  and  $lab \cdot nch$

D65: hue R  
LCH\*Ma: 48 73 25  
rgb\*Ma: 1.0 0.0 0.1

triangle lightness

1,00



% Gamut

$u^*_{rel} = 91$

| MRS18; adapted (a) CIELAB data |               |         |         |              |              |
|--------------------------------|---------------|---------|---------|--------------|--------------|
|                                | $L^* = L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
| RMa                            | 49.63         | 66.96   | 38.37   | 77.18        | 30           |
| JMa                            | 90.7          | -6.36   | 88.75   | 88.98        | 94           |
| GMa                            | 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            |
| RCIE                           | 39.92         | 58.66   | 26.98   | 64.56        | 25           |
| JCIE                           | 81.26         | -2.17   | 67.76   | 67.79        | 92           |
| GCIE                           | 52.23         | -42.26  | 11.75   | 43.87        | 164          |
| BCIE                           | 30.57         | 1.15    | -46.84  | 46.87        | 271          |

% Regularity

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

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

1,00

| relative Inform. Technology (IT) |     |     |     |     |     |
|----------------------------------|-----|-----|-----|-----|-----|
| olvi3*                           | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| olvi4*                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi5*                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi6*                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi7*                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi8*                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi9*                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi10*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi11*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi12*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi13*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi14*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi15*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi16*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi17*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi18*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi19*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi20*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi21*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi22*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi23*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi24*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi25*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi26*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi27*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi28*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi29*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi30*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi31*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi32*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi33*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi34*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi35*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi36*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi37*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi38*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi39*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi40*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi41*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi42*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi43*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi44*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi45*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi46*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi47*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi48*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi49*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi50*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi51*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi52*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi53*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi54*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi55*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi56*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi57*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi58*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi59*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi60*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi61*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi62*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi63*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi64*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi65*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi66*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi67*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi68*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi69*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi70*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi71*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi72*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi73*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi74*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi75*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi76*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi77*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi78*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi79*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi80*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi81*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi82*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi83*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi84*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi85*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi86*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi87*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi88*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi89*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi90*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi91*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi92*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi93*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi94*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi95*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi96*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi97*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi98*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi99*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi100*                         | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

### Output: Colorimetric Reflective System NCS11

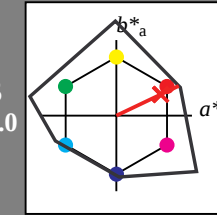
for hue  $h^* = lab \cdot h = 25/360 = 0.071$

$lab \cdot tch$  and  $lab \cdot nch$

D65: hue R  
LCH\*Ma: 48 91 25  
rgb\*Ma: 1.0 0.02 0.0

triangle lightness

1,00



% Gamut

$u^*_{rel} = 149$

| NCS11; adapted (a) CIELAB data |               |         |         |              |              |
|--------------------------------|---------------|---------|---------|--------------|--------------|
|                                | $L^* = L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
| RMa                            | 47.15         | 84.64   | 37.25   | 92.48        | 24           |
| JMa                            | 91.37         | -1.27   | 125.03  | 125.03       | 91           |
| GMa                            | 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            |
| RCIE                           | 39.92         | 58.69   | 27.98   | 65.01        | 25           |
| JCIE                           | 81.26         | -2.9    | 71.56   | 71.62        | 92           |
| GCIE                           | 52.23         | -42.45  | 13.59   | 44.59        | 162          |
| BCIE                           | 30.57         | 1.35    | -46.48  | 46.51        | 272          |

% Regularity

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

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

0,75

| relative Inform. Technology (IT) |     |     |     |     |     |
|----------------------------------|-----|-----|-----|-----|-----|
| olvi3*                           | 1.0 | 1.0 | 1.0 | 1.0 | 1.0 |
| olvi4*                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi5*                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi6*                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi7*                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi8*                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi9*                           | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi10*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi11*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi12*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi13*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi14*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi15*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi16*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi17*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi18*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi19*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi20*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi21*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi22*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi23*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi24*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi25*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi26*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi27*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi28*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi29*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi30*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi31*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi32*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi33*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi34*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi35*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi36*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi37*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi38*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi39*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi40*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi41*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi42*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi43*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi44*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi45*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi46*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi47*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi48*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi49*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi50*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi51*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi52*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi53*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi54*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi55*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi56*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi57*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi58*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi59*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi60*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi61*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi62*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi63*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi64*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi65*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi66*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi67*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi68*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi69*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi70*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi71*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi72*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi73*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi74*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| olvi75*                          | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

### Input: Colorimetric Reflective System MRS18

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

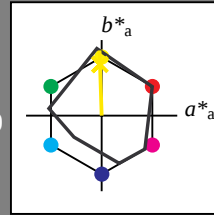
$lab \cdot tch$  and  $lab \cdot nch$

D65: hue J

LCH\*Ma: 89 86 92

rgb\*Ma: 1.0 0.95 0.0

triangle lightness



| MRS18; adapted (a) CIELAB data |             |         |         |              |              |
|--------------------------------|-------------|---------|---------|--------------|--------------|
|                                | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
| RMa                            | 49.63       | 66.96   | 38.37   | 77.18        | 30           |
| JMa                            | 90.7        | -6.36   | 88.75   | 88.98        | 94           |
| GMa                            | 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            |
| RCIE                           | 39.92       | 58.66   | 26.98   | 64.56        | 25           |
| JCIE                           | 81.26       | -2.17   | 67.76   | 67.79        | 92           |
| GCIE                           | 52.23       | -42.26  | 11.75   | 43.87        | 164          |
| BCIE                           | 30.57       | 1.15    | -46.84  | 46.87        | 271          |

%Regularity

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

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

1,00

0,75

$n^* = 0,00$

0,25

$n^* = 0,25$

$n^* = 0,50$

0,00

$n^* = 1,0$

UE430-7, 5 step scales for constant CIELAB hue 92/360 = 0.255 (left)



BAM-test chart UE43; Colorimetric systems MRS18 & NCS11a input: *cmY0\* setcmykcolor*

D65: 5 step colour scales and coordinate data for 10 hues

### Output: Colorimetric Reflective System NCS11

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

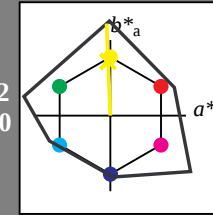
$lab \cdot tch$  and  $lab \cdot nch$

D65: hue J

LCH\*Ma: 90 122 92

rgb\*Ma: 0.97 1.0 0.0

triangle lightness



| NCS11; adapted (a) CIELAB data |             |         |         |              |              |
|--------------------------------|-------------|---------|---------|--------------|--------------|
|                                | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
| RMa                            | 47.15       | 84.64   | 37.25   | 92.48        | 24           |
| JMa                            | 91.37       | -1.27   | 125.03  | 125.03       | 91           |
| GMa                            | 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            |
| RCIE                           | 39.92       | 58.69   | 27.98   | 65.01        | 25           |
| JCIE                           | 81.26       | -2.9    | 71.56   | 71.62        | 92           |
| GCIE                           | 52.23       | -42.45  | 13.59   | 44.59        | 162          |
| BCIE                           | 30.57       | 1.35    | -46.48  | 46.51        | 272          |

%Regularity

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

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

1,00

0,75

$n^* = 0,00$

0,25

$n^* = 0,25$

$n^* = 0,50$

0,00

$n^* = 1,0$

5 step scales for constant CIELAB hue 92/360 = 0.256 (right)

output: *no change compared to input*

Input: Colorimetric Reflective System MRS18

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

$lab^*tch$  and  $lab^*nch$

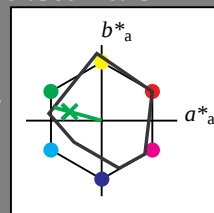
D65: hue G

LCH\*Ma: 56 66 164

rgb\*Ma: 0.1 1.0 0.0

triangle lightness

1,00



| 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            |
| RCIE                           | 39.92       | 58.66   | 26.98   | 64.56        | 25           |
| JCIE                           | 81.26       | -2.17   | 67.76   | 67.79        | 92           |
| GCIE                           | 52.23       | -42.26  | 11.75   | 43.87        | 164          |
| BCIE                           | 30.57       | 1.15    | -46.84  | 46.87        | 271          |

%Regularity

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

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

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### Input: Colorimetric Reflective System MRS18

for hue  $h^* = \text{lab}^*h = 271/360 = 0.754$

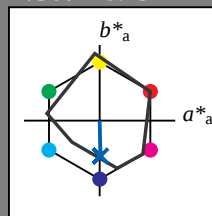
$\text{lab}^*tch$  and  $\text{lab}^*nch$

D65: hue B

LCH\*Ma: 40 50 271

rgb\*Ma: 0.0 0.37 1.0

triangle lightness



| MRS18; adapted (a) CIELAB data |             |         |         |              |              |
|--------------------------------|-------------|---------|---------|--------------|--------------|
|                                | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
| RMa                            | 49.63       | 66.96   | 38.37   | 77.18        | 30           |
| JMa                            | 90.7        | -6.36   | 88.75   | 88.98        | 94           |
| GMa                            | 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            |
| RCIE                           | 39.92       | 58.66   | 26.98   | 64.56        | 25           |
| JCIE                           | 81.26       | -2.17   | 67.76   | 67.79        | 92           |
| GCIE                           | 52.23       | -42.26  | 11.75   | 43.87        | 164          |
| BCIE                           | 30.57       | 1.15    | -46.84  | 46.87        | 271          |

%Regularity

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

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

1,00

0,75

$n^* = 0,00$

0,25

$n^* = 0,25$

$n^* = 0,50$

0,00

chromaticness  $c^*$

$n^* = 1,0$

UE430-7, 5 step scales for constant CIELAB hue 271/360 = 0.754 (left)



BAM-test chart UE43; Colorimetric systems MRS18 & NCS11a input: *cmY0\* setcmykcolor*

D65: 5 step colour scales and coordinate data for 10 hues

### Output: Colorimetric Reflective System NCS11

for hue  $h^* = \text{lab}^*h = 272/360 = 0.755$

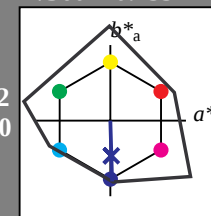
$\text{lab}^*tch$  and  $\text{lab}^*nch$

D65: hue B

LCH\*Ma: 49 80 272

rgb\*Ma: 0.0 0.02 1.0

triangle lightness



| NCS11; adapted (a) CIELAB data |             |         |         |              |              |
|--------------------------------|-------------|---------|---------|--------------|--------------|
|                                | $L^*=L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h^*_{ab,a}$ |
| RMa                            | 47.15       | 84.64   | 37.25   | 92.48        | 24           |
| JMa                            | 91.37       | -1.27   | 125.03  | 125.03       | 91           |
| GMa                            | 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            |
| RCIE                           | 39.92       | 58.69   | 27.98   | 65.01        | 25           |
| JCIE                           | 81.26       | -2.9    | 71.56   | 71.62        | 92           |
| GCIE                           | 52.23       | -42.45  | 13.59   | 44.59        | 162          |
| BCIE                           | 30.57       | 1.35    | -46.48  | 46.51        | 272          |

%Regularity

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

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

1,00

0,75

$n^* = 0,00$

0,25

$n^* = 0,25$

$n^* = 0,50$

0,00

chromaticness  $c^*$

$n^* = 1,0$

5 step scales for constant CIELAB hue 272/360 = 0.755 (right)

output: *no change compared to input*