

Colorimetric data for system line NRS18 -> ORS18

For input LCH^*_{a0} of the system 0: NRS18

Six CIELAB hue angles of device NRS18: (25.5 92.3 162.2 217.0 271.7 328.6);

and output $LCH^*_{a,M1}$, $olv^*_{3,M1}$, LCH^*_{a1} , olv^*_{31} of the system 1: ORS18

Six CIELAB hue angles of device ORS18: (37.7 96.4 150.9 236.0 305.0 353.7);

no. Colour	->NRS18 LCH^*_{a0}	->NRS18 n^* , c^* , H^*_{ai0}	ORS18 $LCH^*_{a,M1}$	ORS18 $olv^*_{3,M1}$	ORS18 LCH^*_{a1}	ORS18 olv^*_{31}	0 1
01 R=r00j	52.8 38.5 25	0.3 0.5 25	48.0 71.2 25	1.0 0.0 0.29	48.5 35.6 25	0.7 0.2 0.34	
02 r10j	52.8 36.2 32	0.3 0.5 32	48.0 73.2 32	1.0 0.0 0.13	48.5 36.6 32	0.7 0.2 0.26	
03 r20j	52.8 34.4 39	0.3 0.5 39	48.9 81.6 39	1.0 0.02 0.0	48.9 40.8 39	0.7 0.21 0.2	
04 r30j	52.8 33.1 46	0.3 0.5 46	53.9 77.2 46	1.0 0.14 0.0	51.5 38.6 46	0.7 0.27 0.2	
05 r40j	52.8 32.5 52	0.3 0.5 52	58.3 74.6 52	1.0 0.24 0.0	53.6 37.3 52	0.7 0.32 0.2	
06 r50j	52.8 32.3 59	0.3 0.5 59	63.3 72.7 59	1.0 0.36 0.0	56.2 36.4 59	0.7 0.38 0.2	
07 r60j	52.8 32.6 66	0.3 0.5 66	68.4 72.0 66	1.0 0.48 0.0	58.7 36.0 66	0.7 0.44 0.2	
08 r070j	52.8 33.2 72	0.3 0.5 72	72.7 72.3 72	1.0 0.58 0.0	60.9 36.1 72	0.7 0.49 0.2	
09 r80j	52.8 34.4 79	0.3 0.5 79	77.8 73.6 79	1.0 0.7 0.0	63.4 36.8 79	0.7 0.55 0.2	
10 r90j	52.8 36.3 86	0.3 0.5 86	82.9 76.2 86	1.0 0.82 0.0	65.9 38.1 86	0.7 0.61 0.2	
11 J=j00g	52.8 38.6 92	0.3 0.5 92	87.2 79.4 92	1.0 0.93 0.0	68.1 39.7 92	0.7 0.66 0.2	

Goal: Transfer coordinates LCH^*_{a0} (system m=0) to LCH^*_{a1} and olv^*_{31} (system m=1)

The given data LCH^*_{a0} include the device hue H^*_{a0}

Integer (i) device hue: $H^*_{ai0} = \text{round} (H^*_{a0})$ (1)

Fetch device data $LCH^*_{a,M0}$ from table with 361 entries for H^*_{ai0} from 0 to 360 degrees

Lightness, chroma, hue: $LCH^*_{a,M0} = LCH^*_{a,M0} [H^*_{ai0}]$ (2)

Calculate lcw^* data from LC^*_{a0} and $LC^*_{a,M0}$:

Relative lightness: $l^* = [L^*_{a0} - L^*_{N0}] / [L^*_{w0} - L^*_{N0}]$ (3)

Relative chroma: $c^* = C^*_{a0} / C^*_{a,M0}$ (4)

Relative Blackness: $n^* = 1 - l^* + c^* [L^*_{M0} - L^*_{N0}] / [L^*_{w0} - L^*_{N0}]$ (5)

Fetch device data $LCH^*_{a,M1}$ and $olv^*_{3,M1}$ from table with 361 entries for H^*_{ai0}

lightness, chroma, hue: $LCH^*_{a,M1} = LCH^*_{a,M1} [H^*_{ai0}]$ (6)

"Red, Green, Blue" rgb_1 data: $olv^*_{3,M1} = olv^*_{3,M1} [H^*_{ai0}]$ (7)

For any input or output device (m=0 to 1) it is valid for constant n^* , c^* , l^* , H^*_{a} :

CIELAB lightness: $L^*_1 = L^*_{a1} = L^*_{N1} + l^* [L^*_{w1} - L^*_{N1}]$ (8)

Adated CIELAB chroma: $C^*_{a1} = c^* C^*_{a,M1}$ (9)

Adated CIELAB hue: $H^*_{a1} = H^*_{a0}$ (10)

"red, green, blue" rgb_1 data: $olv^*_{31} = 1 - n^* - c^* + c^* olv^*_{3,M1}$ (11)

Result: device dependent adapted and relative CIELAB data of system m=1:

lightness, chroma, hue: LCH^*_{a1} and rgb_1 data: olv^*_{31} (12)

Colorimetric data for system line NRS18 -> ORS18

For input olv^*_{30} of the system 0: NRS18

Six CIELAB hue angles of device NRS18: (25.5 92.3 162.2 217.0 271.7 328.6);

and output $LCH^*_{a,M1}$, $olv^*_{3,M1}$, LCH^*_{a1} , olv^*_{31} of the system 1: ORS18

Six CIELAB hue angles of device ORS18: (37.7 96.4 150.9 236.0 305.0 353.7);

no. Colour	->NRS18 $olv^*_{30}=rgb^*_{30}n^*$, c^* , H^*_{si0}	->NRS18 $LCH^*_{a,M1}$	ORS18 $olv^*_{3,M1}$	ORS18 LCH^*_{a1}	ORS18 olv^*_{31}	0 1
01 R=r00j	0.7 0.2 0.2 0.3 0.5 30	48.0 71.2 25	1.0 0.0 0.29	48.5 35.6 25	0.7 0.2 0.34	
02 r10j	0.7 0.25 0.2 0.3 0.5 35	48.0 73.2 32	1.0 0.0 0.13	48.5 36.6 32	0.7 0.2 0.26	
03 r20j	0.7 0.3 0.2 0.3 0.5 41	48.9 81.6 39	1.0 0.02 0.0	48.9 40.8 39	0.7 0.21 0.2	
04 r30j	0.7 0.35 0.2 0.3 0.5 47	53.9 77.2 46	1.0 0.14 0.0	51.5 38.6 46	0.7 0.27 0.2	
05 r40j	0.7 0.4 0.2 0.3 0.5 53	58.3 74.6 52	1.0 0.24 0.0	53.6 37.3 52	0.7 0.32 0.2	
06 r50j	0.7 0.45 0.2 0.3 0.5 60	63.3 72.7 59	1.0 0.36 0.0	56.2 36.4 59	0.7 0.38 0.2	
07 r60j	0.7 0.5 0.2 0.3 0.5 67	68.4 72.0 66	1.0 0.48 0.0	58.7 36.0 66	0.7 0.44 0.2	
08 r070j	0.7 0.55 0.2 0.3 0.5 73	72.7 72.3 72	1.0 0.58 0.0	60.9 36.1 72	0.7 0.49 0.2	
09 r80j	0.7 0.6 0.2 0.3 0.5 79	77.8 73.6 79	1.0 0.7 0.0	63.4 36.8 79	0.7 0.55 0.2	
10 r90j	0.7 0.65 0.2 0.3 0.5 85	82.9 76.2 86	1.0 0.82 0.0	65.9 38.1 86	0.7 0.61 0.2	
11 J=j00g	0.7 0.7 0.2 0.3 0.5 90	87.2 79.4 92	1.0 0.93 0.0	68.1 39.7 92	0.7 0.66 0.2	

Goal: Transfer coordinates olv^*_{30} (system m=0) to LCH^*_{a1} and olv^*_{31} (system m=1)

The following equations for relative blackness and chroma are valid for any device:

$n^* = 1 - \max (o^*_{30}, l^*_{30}, v^*_{30})$ (1)

$c^* = \max (o^*_{30}, l^*_{30}, v^*_{30}) - \min (o^*_{30}, l^*_{30}, v^*_{30})$ (2)

For the calculation of the missing relative device hue assume

as a starting point that the three values olv^*_{30} belong to the standard (s) device SRS18:

relative red-green chroma: $a^*_{r0} = o^*_{30} \cos(30) + l^*_{30} \cos(150)$ (3)

relative yellow-blue chroma: $b^*_{r0} = o^*_{30} \sin(30) + l^*_{30} \sin(150) - v^*_{30} \sin(270)$ (4)

Standard integer hue: $H^*_{si0} = \text{round} [\text{atan} (b^*_{r0} / a^*_{r0})]$ (5)

Fetch device integer hue: $H^*_{ai0} = H^*_{si-ai} [H^*_{si0}]$ (6)

Fetch device data $LCH^*_{a,M0}$ from table with 361 entries for H^*_{ai0} from 0 to 360 degrees

Lightness, chroma, hue: $LCH^*_{a,M0} = LCH^*_{a,M0} [H^*_{ai0}]$ (7)

Fetch device data $LCH^*_{a,M1}$ from table with 361 entries for H^*_{ai0} from 0 to 360 degrees

lightness, chroma, hue: $LCH^*_{a,M1} = LCH^*_{a,M1} [H^*_{ai0}]$ (8)

For any input or output device (m=0 to 1) it is valid for constant n^* , c^* , l^* , H^*_{a} :

CIELAB lightness: $L^*_1 = L^*_{a1} = L^*_{N1} + l^* [L^*_{w1} - L^*_{N1}]$ (9)

Adated CIELAB chroma: $C^*_{a1} = c^* C^*_{a,M1}$ (10)

Adated CIELAB hue: $H^*_{a1} = H^*_{a,M0} = H^*_{a,M1}$ (11)

"red, green, blue" rgb_1 data: $olv^*_{31} = 1 - n^* - c^* + c^* olv^*_{3,M1}$ (12)

Result: device dependent adapted and relative CIELAB data of system m=1:

lightness, chroma, hue: LCH^*_{a1} and rgb_1 data: olv^*_{31} (13)

Colorimetric data for system line NRS18 -> TLS00

For input LCH^*_{a0} of the system 0: NRS18

Six CIELAB hue angles of device NRS18: (25.5 92.3 162.2 217.0 271.7 328.6);

and output $LCH^*_{a,M1}$, $olv^*_{3,M1}$, LCH^*_{a1} , olv^*_{31} of the system 1: TLS00

Six CIELAB hue angles of device TLS00: (40.0 102.8 136.0 196.4 306.3 328.2);

no. Colour	->NRS18 LCH^*_{a0}	->NRS18 n^* , c^* , H^*_{ai0}	TLS00 $LCH^*_{a,M1}$	TLS00 $olv^*_{3,M1}$	TLS00 LCH^*_{a1}	TLS00 olv^*_{31}	0 1
01 $R=r00j$	52.8 38.5 25	0.3 0.5 25	51.9 96.2 25	1.0 0.0 0.21	45.0 48.1 25	0.7 0.2 0.3	
02 $r10j$	52.8 36.2 32	0.3 0.5 32	51.3 102 32	1.0 0.0 0.11	44.7 50.9 32	0.7 0.2 0.26	
03 $r20j$	52.8 34.4 39	0.3 0.5 39	50.6 110 39	1.0 0.0 0.01	44.4 54.8 39	0.7 0.2 0.21	
04 $r30j$	52.8 33.1 46	0.3 0.5 46	54.5 94.9 46	1.0 0.1 0.0	46.3 47.4 46	0.7 0.25 0.2	
05 $r40j$	52.8 32.5 52	0.3 0.5 52	58.5 90.9 52	1.0 0.19 0.0	48.4 45.4 52	0.7 0.3 0.2	
06 $r50j$	52.8 32.3 59	0.3 0.5 59	63.2 87.7 59	1.0 0.3 0.0	50.7 43.9 59	0.7 0.35 0.2	
07 $r60j$	52.8 32.6 66	0.3 0.5 66	67.9 86.1 66	1.0 0.41 0.0	53.1 43.0 66	0.7 0.41 0.2	
08 $r070j$	52.8 33.2 72	0.3 0.5 72	72.0 85.7 72	1.0 0.51 0.0	55.1 42.8 72	0.7 0.45 0.2	
09 $r80j$	52.8 34.4 79	0.3 0.5 79	76.7 86.4 79	1.0 0.62 0.0	57.4 43.2 79	0.7 0.51 0.2	
10 $r90j$	52.8 36.3 86	0.3 0.5 86	81.4 88.5 86	1.0 0.73 0.0	59.8 44.3 86	0.7 0.57 0.2	
11 $J=j00g$	52.8 38.6 92	0.3 0.5 92	85.4 91.5 92	1.0 0.83 0.0	61.8 45.8 92	0.7 0.61 0.2	

Goal: Transfer coordinates LCH^*_{a0} (system m=0) to LCH^*_{a1} and olv^*_{31} (system m=1)

The given data LCH^*_{a0} include the device hue H^*_{a0}

Integer (i) device hue: $H^*_{ai0} = \text{round} (H^*_{a0})$ (1)

Fetch device data $LCH^*_{a,M0}$ from table with 361 entries for H^*_{ai0} from 0 to 360 degrees
Lightness, chroma, hue: $LCH^*_{a,M0} = LCH^*_{a,M0} [H^*_{ai0}]$ (2)

Calculate lcw^* data from LC^*_{a0} and $LC^*_{a,M0}$:

Relative lightness: $l^* = [L^*_{a0} - L^*_{N0}] / [L^*_{w0} - L^*_{N0}]$ (3)

Relative chroma: $c^* = C^*_{a0} / C^*_{a,M0}$ (4)

Relative Blackness: $n^* = 1 - l^* + c^* [L^*_{M0} - L^*_{N0}] / [L^*_{w0} - L^*_{N0}]$ (5)

Fetch device data $LCH^*_{a,M1}$ and $olv^*_{3,M1}$ from table with 361 entries for H^*_{ai0}
lightness, chroma, hue: $LCH^*_{a,M1} = LCH^*_{a,M1} [H^*_{ai0}]$ (6)

"Red, Green, Blue" rgb_1 data: $olv^*_{3,M1} = olv^*_{3,M1} [H^*_{ai0}]$ (7)

For any input or output device (m=0 to 1) it is valid for constant n^* , c^* , l^* , H^*_{a} :

CIELAB lightness: $L^*_1 = L^*_{a1} = L^*_{N1} + l^* [L^*_{w1} - L^*_{N1}]$ (8)

Adated CIELAB chroma: $C^*_{a1} = c^* C^*_{a,M1}$ (9)

Adated CIELAB hue: $H^*_{a1} = H^*_{a0}$ (10)

"red, green, blue" rgb_1 data: $olv^*_{31} = 1 - n^* - c^* + c^* olv^*_{3,M1}$ (11)

Result: device dependent adapted and relative CIELAB data of system m=1:

lightness, chroma, hue: LCH^*_{a1} and rgb_1 data: olv^*_{31} (12)

Colorimetric data for system line NRS18 -> TLS00

For input olv^*_{30} of the system 0: NRS18

Six CIELAB hue angles of device NRS18: (25.5 92.3 162.2 217.0 271.7 328.6);

and output $LCH^*_{a,M1}$, $olv^*_{3,M1}$, LCH^*_{a1} , olv^*_{31} of the system 1: TLS00

Six CIELAB hue angles of device TLS00: (40.0 102.8 136.0 196.4 306.3 328.2);

no. Colour	->NRS18 $olv^*_{30}=rgb^*_{30}n^*$, c^* , H^*_{si0}	->NRS18 $LCH^*_{a,M1}$	TLS00 $olv^*_{3,M1}$	TLS00 LCH^*_{a1}	TLS00 olv^*_{31}	0 1
01 $R=r00j$	0.7 0.2 0.2 0.3 0.5 30	51.9 96.2 25	1.0 0.0 0.21	45.0 48.1 25	0.7 0.2 0.3	
02 $r10j$	0.7 0.25 0.2 0.3 0.5 35	51.3 102 32	1.0 0.0 0.11	44.7 50.9 32	0.7 0.2 0.26	
03 $r20j$	0.7 0.3 0.2 0.3 0.5 41	50.6 110 39	1.0 0.0 0.01	44.4 54.8 39	0.7 0.2 0.21	
04 $r30j$	0.7 0.35 0.2 0.3 0.5 47	54.5 94.9 46	1.0 0.1 0.0	46.3 47.4 46	0.7 0.25 0.2	
05 $r40j$	0.7 0.4 0.2 0.3 0.5 53	58.5 90.9 52	1.0 0.19 0.0	48.4 45.4 52	0.7 0.3 0.2	
06 $r50j$	0.7 0.45 0.2 0.3 0.5 60	63.2 87.7 59	1.0 0.3 0.0	50.7 43.9 59	0.7 0.35 0.2	
07 $r60j$	0.7 0.5 0.2 0.3 0.5 67	67.9 86.1 66	1.0 0.41 0.0	53.1 43.0 66	0.7 0.41 0.2	
08 $r070j$	0.7 0.55 0.2 0.3 0.5 73	72.0 85.7 72	1.0 0.51 0.0	55.1 42.8 72	0.7 0.45 0.2	
09 $r80j$	0.7 0.6 0.2 0.3 0.5 79	76.7 86.4 79	1.0 0.62 0.0	57.4 43.2 79	0.7 0.51 0.2	
10 $r90j$	0.7 0.65 0.2 0.3 0.5 85	81.4 88.5 86	1.0 0.73 0.0	59.8 44.3 86	0.7 0.57 0.2	
11 $J=j00g$	0.7 0.7 0.2 0.3 0.5 90	85.4 91.5 92	1.0 0.83 0.0	61.8 45.8 92	0.7 0.61 0.2	

Goal: Transfer coordinates olv^*_{30} (system m=0) to LCH^*_{a1} and olv^*_{31} (system m=1)

The following equations for relative blackness and chroma are valid for any device:

$n^* = 1 - \max (o^*_{30}, l^*_{30}, v^*_{30})$ (1)

$c^* = \max (o^*_{30}, l^*_{30}, v^*_{30}) - \min (o^*_{30}, l^*_{30}, v^*_{30})$ (2)

For the calculation of the missing relative device hue assume

as a starting point that the three values olv^*_{30} belong to the standard (s) device SRS18:

relative red-green chroma: $a^*_{r0} = o^*_{30} \cos(30) + l^*_{30} \cos(150)$ (3)

relative yellow-blue chroma: $b^*_{r0} = o^*_{30} \sin(30) + l^*_{30} \sin(150) - v^*_{30} \sin(270)$ (4)

Standard integer hue: $H^*_{si0} = \text{round} [\text{atan} (b^*_{r0} / a^*_{r0})]$ (5)

Fetch device integer hue: $H^*_{ai0} = H^*_{si-ai} [H^*_{si0}]$ (6)

Fetch device data $LCH^*_{a,M0}$ from table with 361 entries for H^*_{ai0} from 0 to 360 degrees

Lightness, chroma, hue: $LCH^*_{a,M0} = LCH^*_{a,M0} [H^*_{ai0}]$ (7)

Fetch device data $LCH^*_{a,M1}$ from table with 361 entries for H^*_{ai0} from 0 to 360 degrees

lightness, chroma, hue: $LCH^*_{a,M1} = LCH^*_{a,M1} [H^*_{ai0}]$ (8)

For any input or output device (m=0 to 1) it is valid for constant n^* , c^* , l^* , H^*_{a} :

CIELAB lightness: $L^*_1 = L^*_{a1} = L^*_{N1} + l^* [L^*_{w1} - L^*_{N1}]$ (9)

Adated CIELAB chroma: $C^*_{a1} = c^* C^*_{a,M1}$ (10)

Adated CIELAB hue: $H^*_{a1} = H^*_{a,M0} = H^*_{a,M1}$ (11)

"red, green, blue" rgb_1 data: $olv^*_{31} = 1 - n^* - c^* + c^* olv^*_{3,M1}$ (12)

Result: device dependent adapted and relative CIELAB data of system m=1:

lightness, chroma, hue: LCH^*_{a1} and rgb_1 data: olv^*_{31} (13)

Colorimetric data for system line NRS18 -> FRS06

For input LCH^*_{a0} of the system 0: NRS18

Six CIELAB hue angles of device NRS18: (25.5 92.3 162.2 217.0 271.7 328.6);

and output $LCH^*_{a,M1}$, $olv^*_{3,M1}$, LCH^*_{a1} , olv^*_{31} of the system 1: FRS06

Six CIELAB hue angles of device FRS06: (36.7 91.6 143.4 232.0 312.1 337.2);

no. Colour	->NRS18 LCH^*_{a0}	->NRS18 n^* , c^* , H^*_{ai0}	FRS06 $LCH^*_{a,M1}$	FRS06 $olv^*_{3,M1}$	FRS06 LCH^*_{a1}	FRS06 olv^*_{31}	0 1
01 R=r00j	52.8 38.5 25	0.3 0.5 25	32.9 79.9 25	1.0 0.0 0.2	36.7 40.0 25	0.7 0.2 0.3	
02 r10j	52.8 36.2 32	0.3 0.5 32	32.7 83.9 32	1.0 0.0 0.08	36.6 41.9 32	0.7 0.2 0.24	
03 r20j	52.8 34.4 39	0.3 0.5 39	34.7 76.2 39	1.0 0.04 0.0	37.6 38.1 39	0.7 0.22 0.2	
04 r30j	52.8 33.1 46	0.3 0.5 46	41.1 72.6 46	1.0 0.17 0.0	40.8 36.3 46	0.7 0.28 0.2	
05 r40j	52.8 32.5 52	0.3 0.5 52	46.5 70.6 52	1.0 0.28 0.0	43.5 35.3 52	0.7 0.34 0.2	
06 r50j	52.8 32.3 59	0.3 0.5 59	52.9 69.3 59	1.0 0.41 0.0	46.7 34.6 59	0.7 0.4 0.2	
07 r60j	52.8 32.6 66	0.3 0.5 66	59.3 69.0 66	1.0 0.53 0.0	49.9 34.5 66	0.7 0.47 0.2	
08 r070j	52.8 33.2 72	0.3 0.5 72	64.8 69.7 72	1.0 0.64 0.0	52.7 34.8 72	0.7 0.52 0.2	
09 r80j	52.8 34.4 79	0.3 0.5 79	71.2 71.4 79	1.0 0.77 0.0	55.9 35.7 79	0.7 0.59 0.2	
10 r90j	52.8 36.3 86	0.3 0.5 86	77.6 74.3 86	1.0 0.9 0.0	59.1 37.2 86	0.7 0.65 0.2	
11 J=j00g	52.8 38.6 92	0.3 0.5 92	82.4 114 92	0.99 1.0 0.0	61.5 56.8 92	0.7 0.7 0.2	

Goal: Transfer coordinates LCH^*_{a0} (system m=0) to LCH^*_{a1} and olv^*_{31} (system m=1)

The given data LCH^*_{a0} include the device hue H^*_{a0}

Integer (i) device hue: $H^*_{ai0} = \text{round} (H^*_{a0})$ (1)

Fetch device data $LCH^*_{a,M0}$ from table with 361 entries for H^*_{ai0} from 0 to 360 degrees

Lightness, chroma, hue: $LCH^*_{a,M0} = LCH^*_{a,M0} [H^*_{ai0}]$ (2)

Calculate lcw^* data from LC^*_{a0} and $LC^*_{a,M0}$:

Relative lightness: $l^* = [L^*_{a0} - L^*_{N0}] / [L^*_{w0} - L^*_{N0}]$ (3)

Relative chroma: $c^* = C^*_{a0} / C^*_{a,M0}$ (4)

Relative Blackness: $n^* = 1 - l^* + c^* [L^*_{M0} - L^*_{N0}] / [L^*_{w0} - L^*_{N0}]$ (5)

Fetch device data $LCH^*_{a,M1}$ and $olv^*_{3,M1}$ from table with 361 entries for H^*_{ai0}

lightness, chroma, hue: $LCH^*_{a,M1} = LCH^*_{a,M1} [H^*_{ai0}]$ (6)

"Red, Green, Blue" rgb_1 data: $olv^*_{3,M1} = olv^*_{3,M1} [H^*_{ai0}]$ (7)

For any input or output device (m=0 to 1) it is valid for constant n^* , c^* , l^* , H^*_{a} :

CIELAB lightness: $L^*_1 = L^*_{a1} = L^*_{N1} + l^* [L^*_{w1} - L^*_{N1}]$ (8)

Adated CIELAB chroma: $C^*_{a1} = c^* C^*_{a,M1}$ (9)

Adated CIELAB hue: $H^*_{a1} = H^*_{a0}$ (10)

"red, green, blue" rgb_1 data: $olv^*_{31} = 1 - n^* - c^* + c^* olv^*_{3,M1}$ (11)

Result: device dependent adapted and relative CIELAB data of system m=1:

lightness, chroma, hue: LCH^*_{a1} and rgb_1 data: olv^*_{31} (12)

Colorimetric data for system line NRS18 -> FRS06

For input olv^*_{30} of the system 0: NRS18

Six CIELAB hue angles of device NRS18: (25.5 92.3 162.2 217.0 271.7 328.6);

and output $LCH^*_{a,M1}$, $olv^*_{3,M1}$, LCH^*_{a1} , olv^*_{31} of the system 1: FRS06

Six CIELAB hue angles of device FRS06: (36.7 91.6 143.4 232.0 312.1 337.2);

no. Colour	->NRS18 $olv^*_{30}=rgb^*_{30}n^*$, c^* , H^*_{si0}	->NRS18 $LCH^*_{a,M1}$	FRS06 $olv^*_{3,M1}$	FRS06 LCH^*_{a1}	FRS06 olv^*_{31}	0 1
01 R=r00j	0.7 0.2 0.2 0.3 0.5 30	32.9 79.9 25	1.0 0.0 0.2	36.7 40.0 25	0.7 0.2 0.3	
02 r10j	0.7 0.25 0.2 0.3 0.5 35	32.7 83.9 32	1.0 0.0 0.08	36.6 41.9 32	0.7 0.2 0.24	
03 r20j	0.7 0.3 0.2 0.3 0.5 41	34.7 76.2 39	1.0 0.04 0.0	37.6 38.1 39	0.7 0.22 0.2	
04 r30j	0.7 0.35 0.2 0.3 0.5 47	41.1 72.6 46	1.0 0.17 0.0	40.8 36.3 46	0.7 0.28 0.2	
05 r40j	0.7 0.4 0.2 0.3 0.5 53	46.5 70.6 52	1.0 0.28 0.0	43.5 35.3 52	0.7 0.34 0.2	
06 r50j	0.7 0.45 0.2 0.3 0.5 60	52.9 69.3 59	1.0 0.41 0.0	46.7 34.6 59	0.7 0.4 0.2	
07 r60j	0.7 0.5 0.2 0.3 0.5 67	59.3 69.0 66	1.0 0.53 0.0	49.9 34.5 66	0.7 0.47 0.2	
08 r070j	0.7 0.55 0.2 0.3 0.5 73	64.8 69.7 72	1.0 0.64 0.0	52.7 34.8 72	0.7 0.52 0.2	
09 r80j	0.7 0.6 0.2 0.3 0.5 79	71.2 71.4 79	1.0 0.77 0.0	55.9 35.7 79	0.7 0.59 0.2	
10 r90j	0.7 0.65 0.2 0.3 0.5 85	77.6 74.3 86	1.0 0.9 0.0	59.1 37.2 86	0.7 0.65 0.2	
11 J=j00g	0.7 0.7 0.2 0.3 0.5 90	82.4 114 92	0.99 1.0 0.0	61.5 56.8 92	0.7 0.7 0.2	

Goal: Transfer coordinates olv^*_{30} (system m=0) to LCH^*_{a1} and olv^*_{31} (system m=1)

The following equations for relative blackness and chroma are valid for any device:

$n^* = 1 - \max (o^*_{30}, l^*_{30}, v^*_{30})$ (1)

$c^* = \max (o^*_{30}, l^*_{30}, v^*_{30}) - \min (o^*_{30}, l^*_{30}, v^*_{30})$ (2)

For the calculation of the missing relative device hue assume

as a starting point that the three values olv^*_{30} belong to the standard (s) device SRS18:

relative red-green chroma: $a^*_{r0} = o^*_{30} \cos(30) + l^*_{30} \cos(150)$ (3)

relative yellow-blue chroma: $b^*_{r0} = o^*_{30} \sin(30) + l^*_{30} \sin(150) - v^*_{30} \sin(270)$ (4)

Standard integer hue: $H^*_{si0} = \text{round} [\text{atan} (b^*_{r0} / a^*_{r0})]$ (5)

Fetch device integer hue: $H^*_{ai0} = H^*_{si-ai} [H^*_{si0}]$ (6)

Fetch device data $LCH^*_{a,M0}$ from table with 361 entries for H^*_{ai0} from 0 to 360 degrees

Lightness, chroma, hue: $LCH^*_{a,M0} = LCH^*_{a,M0} [H^*_{ai0}]$ (7)

Fetch device data $LCH^*_{a,M1}$ from table with 361 entries for H^*_{ai0} from 0 to 360 degrees

lightness, chroma, hue: $LCH^*_{a,M1} = LCH^*_{a,M1} [H^*_{ai0}]$ (8)

For any input or output device (m=0 to 1) it is valid for constant n^* , c^* , l^* , H^*_{a} :

CIELAB lightness: $L^*_1 = L^*_{a1} = L^*_{N1} + l^* [L^*_{w1} - L^*_{N1}]$ (9)

Adated CIELAB chroma: $C^*_{a1} = c^* C^*_{a,M1}$ (10)

Adated CIELAB hue: $H^*_{a1} = H^*_{a,M0} = H^*_{a,M1}$ (11)

"red, green, blue" rgb_1 data: $olv^*_{31} = 1 - n^* - c^* + c^* olv^*_{3,M1}$ (12)

Result: device dependent adapted and relative CIELAB data of system m=1:

lightness, chroma, hue: LCH^*_{a1} and rgb_1 data: olv^*_{31} (13)

Colorimetric data for system line NRS18 -> TLS18

For input LCH^*_{a0} of the system 0: NRS18

Six CIELAB hue angles of device NRS18: (25.5 92.3 162.2 217.0 271.7 328.6);

and output $LCH^*_{a,M1}$, $olv^*_{3,M1}$, LCH^*_{a1} , olv^*_{31} of the system 1: TLS18

Six CIELAB hue angles of device TLS18: (34.9 103.3 136.9 196.5 304.3 328.1);

no. Colour	->NRS18 LCH^*_{a0}	->NRS18 n^* , c^* , H^*_{ai0}	TLS18 $LCH^*_{a,M1}$	TLS18 $olv^*_{3,M1}$	TLS18 LCH^*_{a1}	TLS18 olv^*_{31}	0 1
01 R=r00j	52.8 38.5 25	0.3 0.5 25	53.7 95.9 25	1.0 0.0 0.15	51.3 47.9 25	0.7 0.2 0.27	
02 r10j	52.8 36.2 32	0.3 0.5 32	53.0 102 32	1.0 0.0 0.04	51.0 51.0 32	0.7 0.2 0.22	
03 r20j	52.8 34.4 39	0.3 0.5 39	55.2 83.4 39	1.0 0.06 0.0	52.1 41.7 39	0.7 0.23 0.2	
04 r30j	52.8 33.1 46	0.3 0.5 46	59.3 78.5 46	1.0 0.16 0.0	54.1 39.2 46	0.7 0.28 0.2	
05 r40j	52.8 32.5 52	0.3 0.5 52	62.8 75.5 52	1.0 0.25 0.0	55.9 37.8 52	0.7 0.33 0.2	
06 r50j	52.8 32.3 59	0.3 0.5 59	66.9 73.3 59	1.0 0.35 0.0	57.9 36.7 59	0.7 0.38 0.2	
07 r60j	52.8 32.6 66	0.3 0.5 66	71.0 72.3 66	1.0 0.46 0.0	60.0 36.1 66	0.7 0.43 0.2	
08 r070j	52.8 33.2 72	0.3 0.5 72	74.5 72.3 72	1.0 0.54 0.0	61.7 36.1 72	0.7 0.47 0.2	
09 r80j	52.8 34.4 79	0.3 0.5 79	78.6 73.3 79	1.0 0.65 0.0	63.8 36.6 79	0.7 0.52 0.2	
10 r90j	52.8 36.3 86	0.3 0.5 86	82.7 75.5 86	1.0 0.75 0.0	65.8 37.7 86	0.7 0.57 0.2	
11 J=j00g	52.8 38.6 92	0.3 0.5 92	86.2 78.4 92	1.0 0.84 0.0	67.6 39.2 92	0.7 0.62 0.2	

Goal: Transfer coordinates LCH^*_{a0} (system m=0) to LCH^*_{a1} and olv^*_{31} (system m=1)

The given data LCH^*_{a0} include the device hue H^*_{a0}

Integer (i) device hue: $H^*_{ai0} = \text{round} (H^*_{a0})$ (1)

Fetch device data $LCH^*_{a,M0}$ from table with 361 entries for H^*_{ai0} from 0 to 360 degrees
Lightness, chroma, hue: $LCH^*_{a,M0} = LCH^*_{a,M0} [H^*_{ai0}]$ (2)

Calculate lcw^* data from LC^*_{a0} and $LC^*_{a,M0}$:

Relative lightness: $l^* = [L^*_{a0} - L^*_{N0}] / [L^*_{w0} - L^*_{N0}]$ (3)

Relative chroma: $c^* = C^*_{a0} / C^*_{a,M0}$ (4)

Relative Blackness: $n^* = 1 - l^* + c^* [L^*_{M0} - L^*_{N0}] / [L^*_{w0} - L^*_{N0}]$ (5)

Fetch device data $LCH^*_{a,M1}$ and $olv^*_{3,M1}$ from table with 361 entries for H^*_{ai0}
lightness, chroma, hue: $LCH^*_{a,M1} = LCH^*_{a,M1} [H^*_{ai0}]$ (6)

"Red, Green, Blue" rgb_1 data: $olv^*_{3,M1} = olv^*_{3,M1} [H^*_{ai0}]$ (7)

For any input or output device (m=0 to 1) it is valid for constant n^* , c^* , l^* , H^*_{a} :

CIELAB lightness: $L^*_1 = L^*_{a1} = L^*_{N1} + l^* [L^*_{w1} - L^*_{N1}]$ (8)

Adated CIELAB chroma: $C^*_{a1} = c^* C^*_{a,M1}$ (9)

Adated CIELAB hue: $H^*_{a1} = H^*_{a0}$ (10)

"red, green, blue" rgb_1 data: $olv^*_{31} = 1 - n^* - c^* + c^* olv^*_{3,M1}$ (11)

Result: device dependent adapted and relative CIELAB data of system m=1:

lightness, chroma, hue: LCH^*_{a1} and rgb_1 data: olv^*_{31} (12)

Colorimetric data for system line NRS18 -> TLS18

For input olv^*_{30} of the system 0: NRS18

Six CIELAB hue angles of device NRS18: (25.5 92.3 162.2 217.0 271.7 328.6);

and output $LCH^*_{a,M1}$, $olv^*_{3,M1}$, LCH^*_{a1} , olv^*_{31} of the system 1: TLS18

Six CIELAB hue angles of device TLS18: (34.9 103.3 136.9 196.5 304.3 328.1);

no. Colour	->NRS18 $olv^*_{30}=rgb^*_{30}n^*$, c^* , H^*_{si0}	->NRS18 $LCH^*_{a,M1}$	TLS18 $olv^*_{3,M1}$	TLS18 LCH^*_{a1}	TLS18 olv^*_{31}	0 1
01 R=r00j	0.7 0.2 0.2 0.3 0.5 30	53.7 95.9 25	1.0 0.0 0.15	51.3 47.9 25	0.7 0.2 0.27	
02 r10j	0.7 0.25 0.2 0.3 0.5 35	53.0 102 32	1.0 0.0 0.04	51.0 51.0 32	0.7 0.2 0.22	
03 r20j	0.7 0.3 0.2 0.3 0.5 41	55.2 83.4 39	1.0 0.06 0.0	52.1 41.7 39	0.7 0.23 0.2	
04 r30j	0.7 0.35 0.2 0.3 0.5 47	59.3 78.5 46	1.0 0.16 0.0	54.1 39.2 46	0.7 0.28 0.2	
05 r40j	0.7 0.4 0.2 0.3 0.5 53	62.8 75.5 52	1.0 0.25 0.0	55.9 37.8 52	0.7 0.33 0.2	
06 r50j	0.7 0.45 0.2 0.3 0.5 60	66.9 73.3 59	1.0 0.35 0.0	57.9 36.7 59	0.7 0.38 0.2	
07 r60j	0.7 0.5 0.2 0.3 0.5 67	71.0 72.3 66	1.0 0.46 0.0	60.0 36.1 66	0.7 0.43 0.2	
08 r070j	0.7 0.55 0.2 0.3 0.5 73	74.5 72.3 72	1.0 0.54 0.0	61.7 36.1 72	0.7 0.47 0.2	
09 r80j	0.7 0.6 0.2 0.3 0.5 79	78.6 73.3 79	1.0 0.65 0.0	63.8 36.6 79	0.7 0.52 0.2	
10 r90j	0.7 0.65 0.2 0.3 0.5 85	82.7 75.5 86	1.0 0.75 0.0	65.8 37.7 86	0.7 0.57 0.2	
11 J=j00g	0.7 0.7 0.2 0.3 0.5 90	86.2 78.4 92	1.0 0.84 0.0	67.6 39.2 92	0.7 0.62 0.2	

Goal: Transfer coordinates olv^*_{30} (system m=0) to LCH^*_{a1} and olv^*_{31} (system m=1)

The following equations for relative blackness and chroma are valid for any device:

$n^* = 1 - \max (o^*_{30}, l^*_{30}, v^*_{30})$ (1)

$c^* = \max (o^*_{30}, l^*_{30}, v^*_{30}) - \min (o^*_{30}, l^*_{30}, v^*_{30})$ (2)

For the calculation of the missing relative device hue assume

as a starting point that the three values olv^*_{30} belong to the standard (s) device SRS18:

relative red-green chroma: $a^*_{r0} = o^*_{30} \cos(30) + l^*_{30} \cos(150)$ (3)

relative yellow-blue chroma: $b^*_{r0} = o^*_{30} \sin(30) + l^*_{30} \sin(150) - v^*_{30} \sin(270)$ (4)

Standard integer hue: $H^*_{si0} = \text{round} [\text{atan} (b^*_{r0} / a^*_{r0})]$ (5)

Fetch device integer hue: $H^*_{ai0} = H^*_{si-ai} [H^*_{si0}]$ (6)

Fetch device data $LCH^*_{a,M0}$ from table with 361 entries for H^*_{ai0} from 0 to 360 degrees

Lightness, chroma, hue: $LCH^*_{a,M0} = LCH^*_{a,M0} [H^*_{ai0}]$ (7)

Fetch device data $LCH^*_{a,M1}$ from table with 361 entries for H^*_{ai0} from 0 to 360 degrees

lightness, chroma, hue: $LCH^*_{a,M1} = LCH^*_{a,M1} [H^*_{ai0}]$ (8)

For any input or output device (m=0 to 1) it is valid for constant n^* , c^* , l^* , H^*_{a} :

CIELAB lightness: $L^*_1 = L^*_{a1} = L^*_{N1} + l^* [L^*_{w1} - L^*_{N1}]$ (9)

Adated CIELAB chroma: $C^*_{a1} = c^* C^*_{a,M1}$ (10)

Adated CIELAB hue: $H^*_{a1} = H^*_{a,M0} = H^*_{a,M1}$ (11)

"red, green, blue" rgb_1 data: $olv^*_{31} = 1 - n^* - c^* + c^* olv^*_{3,M1}$ (12)

Result: device dependent adapted and relative CIELAB data of system m=1:

lightness, chroma, hue: LCH^*_{a1} and rgb_1 data: olv^*_{31} (13)

Colorimetric data for system line NRS18 -> NLS00

For input LCH^*_{a0} of the system 0: NRS18

Six CIELAB hue angles of device NRS18: (25.5 92.3 162.2 217.0 271.7 328.6);

and output $LCH^*_{a,M1}$, $olv^*_{3,M1}$, LCH^*_{a1} , olv^*_{31} of the system 1: NLS00

Six CIELAB hue angles of device NLS00: (30.0 90.0 150.0 210.0 270.0 330.0);

no. Colour	->NRS18 LCH^*_{a0}	->NRS18 n^* , c^* , H^*_{ai0}	NLS00 $LCH^*_{a,M1}$	NLS00 $olv^*_{3,M1}$	NLS00 LCH^*_{a1}	NLS00 olv^*_{31}	0 1
01 R=r00j	52.8 38.5 25	0.3 0.5 25	34.5 91.2 25	1.0 0.0 0.08	36.3 45.6 25	0.7 0.2 0.24	
02 r10j	52.8 36.2 32	0.3 0.5 32	32.9 93.6 32	1.0 0.03 0.0	35.5 46.8 32	0.7 0.22 0.2	
03 r20j	52.8 34.4 39	0.3 0.5 39	36.6 88.5 39	1.0 0.15 0.0	37.4 44.2 39	0.7 0.28 0.2	
04 r30j	52.8 33.1 46	0.3 0.5 46	40.3 85.1 46	1.0 0.27 0.0	39.2 42.6 46	0.7 0.33 0.2	
05 r40j	52.8 32.5 52	0.3 0.5 52	43.5 83.4 52	1.0 0.37 0.0	40.8 41.7 52	0.7 0.38 0.2	
06 r50j	52.8 32.3 59	0.3 0.5 59	47.2 82.6 59	1.0 0.48 0.0	42.7 41.3 59	0.7 0.44 0.2	
07 r60j	52.8 32.6 66	0.3 0.5 66	50.9 83.1 66	1.0 0.6 0.0	44.5 41.5 66	0.7 0.5 0.2	
08 r070j	52.8 33.2 72	0.3 0.5 72	54.1 84.5 72	1.0 0.7 0.0	46.1 42.2 72	0.7 0.55 0.2	
09 r80j	52.8 34.4 79	0.3 0.5 79	57.8 87.4 79	1.0 0.82 0.0	48.0 43.7 79	0.7 0.61 0.2	
10 r90j	52.8 36.3 86	0.3 0.5 86	61.5 91.9 86	1.0 0.93 0.0	49.8 46.0 86	0.7 0.67 0.2	
11 J=j00g	52.8 38.6 92	0.3 0.5 92	62.6 93.6 92	0.97 1.0 0.0	50.4 46.8 92	0.68 0.7 0.2	

Goal: Transfer coordinates LCH^*_{a0} (system m=0) to LCH^*_{a1} and olv^*_{31} (system m=1)

The given data LCH^*_{a0} include the device hue H^*_{a0}

Integer (i) device hue: $H^*_{ai0} = \text{round} (H^*_{a0})$ (1)

Fetch device data $LCH^*_{a,M0}$ from table with 361 entries for H^*_{ai0} from 0 to 360 degrees
Lightness, chroma, hue: $LCH^*_{a,M0} = LCH^*_{a,M0} [H^*_{ai0}]$ (2)

Calculate lcw^* data from LC^*_{a0} and $LC^*_{a,M0}$:

Relative lightness: $l^* = [L^*_{0} - L^*_{N0}] / [L^*_{W0} - L^*_{N0}]$ (3)

Relative chroma: $c^* = C^*_{a0} / C^*_{a,M0}$ (4)

Relative Blackness: $n^* = 1 - l^* + c^* [L^*_{M0} - L^*_{N0}] / [L^*_{W0} - L^*_{N0}]$ (5)

Fetch device data $LCH^*_{a,M1}$ and $olv^*_{3,M1}$ from table with 361 entries for H^*_{ai0}
lightness, chroma, hue: $LCH^*_{a,M1} = LCH^*_{a,M1} [H^*_{ai0}]$ (6)

"Red, Green, Blue" rgb_1 data: $olv^*_{3,M1} = olv^*_{3,M1} [H^*_{ai0}]$ (7)

For any input or output device (m=0 to 1) it is valid for constant n^* , c^* , l^* , H^*_{a} :

CIELAB lightness: $L^*_1 = L^*_{a1} = L^*_{N1} + l^* [L^*_{W1} - L^*_{N1}]$ (8)

Adated CIELAB chroma: $C^*_{a1} = c^* C^*_{a,M1}$ (9)

Adated CIELAB hue: $H^*_{a1} = H^*_{a0}$ (10)

"red, green, blue" rgb_1 data: $olv^*_{31} = 1 - n^* - c^* + c^* olv^*_{3,M1}$ (11)

Result: device dependent adapted and relative CIELAB data of system m=1:

lightness, chroma, hue: LCH^*_{a1} and rgb_1 data: olv^*_{31} (12)

Colorimetric data for system line NRS18 -> NLS00

For input olv^*_{30} of the system 0: NRS18

Six CIELAB hue angles of device NRS18: (25.5 92.3 162.2 217.0 271.7 328.6);

and output $LCH^*_{a,M1}$, $olv^*_{3,M1}$, LCH^*_{a1} , olv^*_{31} of the system 1: NLS00

Six CIELAB hue angles of device NLS00: (30.0 90.0 150.0 210.0 270.0 330.0);

no. Colour	->NRS18 $olv^*_{30}=rgb^*_{30}n^*$, c^* , H^*_{si0}	->NRS18 $LCH^*_{a,M1}$	NLS00 $olv^*_{3,M1}$	NLS00 LCH^*_{a1}	NLS00 olv^*_{31}	0 1
01 R=r00j	0.7 0.2 0.2 0.3 0.5 30	34.5 91.2 25	1.0 0.0 0.08	36.3 45.6 25	0.7 0.2 0.24	
02 r10j	0.7 0.25 0.2 0.3 0.5 35	32.9 93.6 32	1.0 0.03 0.0	35.5 46.8 32	0.7 0.22 0.2	
03 r20j	0.7 0.3 0.2 0.3 0.5 41	36.6 88.5 39	1.0 0.15 0.0	37.4 44.2 39	0.7 0.28 0.2	
04 r30j	0.7 0.35 0.2 0.3 0.5 47	40.3 85.1 46	1.0 0.27 0.0	39.2 42.6 46	0.7 0.33 0.2	
05 r40j	0.7 0.4 0.2 0.3 0.5 53	43.5 83.4 52	1.0 0.37 0.0	40.8 41.7 52	0.7 0.38 0.2	
06 r50j	0.7 0.45 0.2 0.3 0.5 60	47.2 82.6 59	1.0 0.48 0.0	42.7 41.3 59	0.7 0.44 0.2	
07 r60j	0.7 0.5 0.2 0.3 0.5 67	50.9 83.1 66	1.0 0.6 0.0	44.5 41.5 66	0.7 0.5 0.2	
08 r070j	0.7 0.55 0.2 0.3 0.5 73	54.1 84.5 72	1.0 0.7 0.0	46.1 42.2 72	0.7 0.55 0.2	
09 r80j	0.7 0.6 0.2 0.3 0.5 79	57.8 87.4 79	1.0 0.82 0.0	48.0 43.7 79	0.7 0.61 0.2	
10 r90j	0.7 0.65 0.2 0.3 0.5 85	61.5 91.9 86	1.0 0.93 0.0	49.8 46.0 86	0.7 0.67 0.2	
11 J=j00g	0.7 0.7 0.2 0.3 0.5 90	62.6 93.6 92	0.97 1.0 0.0	50.4 46.8 92	0.68 0.7 0.2	

Goal: Transfer coordinates olv^*_{30} (system m=0) to LCH^*_{a1} and olv^*_{31} (system m=1)

The following equations for relative blackness and chroma are valid for any device:

$n^* = 1 - \max (o^*_{30}, l^*_{30}, v^*_{30})$ (1)

$c^* = \max (o^*_{30}, l^*_{30}, v^*_{30}) - \min (o^*_{30}, l^*_{30}, v^*_{30})$ (2)

For the calculation of the missing relative device hue assume

as a starting point that the three values olv^*_{30} belong to the standard (s) device SRS18:

relative red-green chroma: $a^*_{r0} = o^*_{30} \cos(30) + l^*_{30} \cos(150)$ (3)

relative yellow-blue chroma: $b^*_{r0} = o^*_{30} \sin(30) + l^*_{30} \sin(150) - v^*_{30} \sin(270)$ (4)

Standard integer hue: $H^*_{si0} = \text{round} [\text{atan} (b^*_{r0} / a^*_{r0})]$ (5)

Fetch device integer hue: $H^*_{ai0} = H^*_{si-ai} [H^*_{si0}]$ (6)

Fetch device data $LCH^*_{a,M0}$ from table with 361 entries for H^*_{ai0} from 0 to 360 degrees

Lightness, chroma, hue: $LCH^*_{a,M0} = LCH^*_{a,M0} [H^*_{ai0}]$ (7)

Fetch device data $LCH^*_{a,M1}$ from table with 361 entries for H^*_{ai0} from 0 to 360 degrees

lightness, chroma, hue: $LCH^*_{a,M1} = LCH^*_{a,M1} [H^*_{ai0}]$ (8)

For any input or output device (m=0 to 1) it is valid for constant n^* , c^* , l^* , H^*_{a} :

CIELAB lightness: $L^*_1 = L^*_{a1} = L^*_{N1} + l^* [L^*_{W1} - L^*_{N1}]$ (9)

Adated CIELAB chroma: $C^*_{a1} = c^* C^*_{a,M1}$ (10)

Adated CIELAB hue: $H^*_{a1} = H^*_{a,M0} = H^*_{a,M1}$ (11)

"red, green, blue" rgb_1 data: $olv^*_{31} = 1 - n^* - c^* + c^* olv^*_{3,M1}$ (12)

Result: device dependent adapted and relative CIELAB data of system m=1:

lightness, chroma, hue: LCH^*_{a1} and rgb_1 data: olv^*_{31} (13)

Colorimetric data for system line NRS18 -> NRS18

For input LCH^*_{a0} of the system 0: NRS18

Six CIELAB hue angles of device NRS18: (25.5 92.3 162.2 217.0 271.7 328.6);

and output $LCH^*_{a,M1}$, $olv^*_{3,M1}$, LCH^*_{a1} , olv^*_{31} of the system 1: NRS18

Six CIELAB hue angles of device NRS18: (25.5 92.3 162.2 217.0 271.7 328.6);

no. Colour	->NRS18 LCH^*_{a0}	->NRS18 n^* , c^* , H^*_{ai0}	NRS18 $LCH^*_{a,M1}$	NRS18 $olv^*_{3,M1}$	NRS18 LCH^*_{a1}	NRS18 olv^*_{31}	0 1
01 R=r00j	52.8 38.5 25	0.3 0.5 25	56.7 77.1 25	1.0 0.0 0.01	52.8 38.5 25	0.7 0.2 0.2	
02 r10j	52.8 36.2 32	0.3 0.5 32	56.7 72.4 32	1.0 0.1 0.0	52.8 36.2 32	0.7 0.25 0.2	
03 r20j	52.8 34.4 39	0.3 0.5 39	56.7 68.7 39	1.0 0.2 0.0	52.8 34.4 39	0.7 0.3 0.2	
04 r30j	52.8 33.1 46	0.3 0.5 46	56.7 66.3 46	1.0 0.31 0.0	52.8 33.1 46	0.7 0.35 0.2	
05 r40j	52.8 32.5 52	0.3 0.5 52	56.7 65.1 52	1.0 0.4 0.0	52.8 32.5 52	0.7 0.4 0.2	
06 r50j	52.8 32.3 59	0.3 0.5 59	56.7 64.6 59	1.0 0.5 0.0	52.8 32.3 59	0.7 0.45 0.2	
07 r60j	52.8 32.6 66	0.3 0.5 66	56.7 65.1 66	1.0 0.61 0.0	52.8 32.6 66	0.7 0.5 0.2	
08 r070j	52.8 33.2 72	0.3 0.5 72	56.7 66.3 72	1.0 0.7 0.0	52.8 33.2 72	0.7 0.55 0.2	
09 r80j	52.8 34.4 79	0.3 0.5 79	56.7 68.8 79	1.0 0.8 0.0	52.8 34.4 79	0.7 0.6 0.2	
10 r90j	52.8 36.3 86	0.3 0.5 86	56.7 72.6 86	1.0 0.91 0.0	52.8 36.3 86	0.7 0.65 0.2	
11 J=j00g	52.8 38.6 92	0.3 0.5 92	56.7 77.1 92	1.0 1.0 0.0	52.8 38.6 92	0.7 0.7 0.2	

Goal: Transfer coordinates LCH^*_{a0} (system m=0) to LCH^*_{a1} and olv^*_{31} (system m=1)

The given data LCH^*_{a0} include the device hue H^*_{a0}

Integer (i) device hue: $H^*_{ai0} = \text{round} (H^*_{a0})$ (1)

Fetch device data $LCH^*_{a,M0}$ from table with 361 entries for H^*_{ai0} from 0 to 360 degrees

Lightness, chroma, hue: $LCH^*_{a,M0} = LCH^*_{a,M0} [H^*_{ai0}]$ (2)

Calculate lcw^* data from LC^*_{a0} and $LC^*_{a,M0}$:

Relative lightness: $l^* = [L^*_{a0} - L^*_{N0}] / [L^*_{w0} - L^*_{N0}]$ (3)

Relative chroma: $c^* = C^*_{a0} / C^*_{a,M0}$ (4)

Relative Blackness: $n^* = 1 - l^* + c^* [L^*_{M0} - L^*_{N0}] / [L^*_{w0} - L^*_{N0}]$ (5)

Fetch device data $LCH^*_{a,M1}$ and $olv^*_{3,M1}$ from table with 361 entries for H^*_{ai0}

lightness, chroma, hue: $LCH^*_{a,M1} = LCH^*_{a,M1} [H^*_{ai0}]$ (6)

"Red, Green, Blue" rgb_1 data: $olv^*_{3,M1} = olv^*_{3,M1} [H^*_{ai0}]$ (7)

For any input or output device (m=0 to 1) it is valid for constant n^* , c^* , l^* , H^*_{a} :

CIELAB lightness: $L^*_1 = L^*_{a1} = L^*_{N1} + l^* [L^*_{w1} - L^*_{N1}]$ (8)

Adated CIELAB chroma: $C^*_{a1} = c^* C^*_{a,M1}$ (9)

Adated CIELAB hue: $H^*_{a1} = H^*_{a0}$ (10)

"red, green, blue" rgb_1 data: $olv^*_{31} = 1 - n^* - c^* + c^* olv^*_{3,M1}$ (11)

Result: device dependent adapted and relative CIELAB data of system m=1:

lightness, chroma, hue: LCH^*_{a1} and rgb_1 data: olv^*_{31} (12)

Colorimetric data for system line NRS18 -> NRS18

For input olv^*_{30} of the system 0: NRS18

Six CIELAB hue angles of device NRS18: (25.5 92.3 162.2 217.0 271.7 328.6);

and output $LCH^*_{a,M1}$, $olv^*_{3,M1}$, LCH^*_{a1} , olv^*_{31} of the system 1: NRS18

Six CIELAB hue angles of device NRS18: (25.5 92.3 162.2 217.0 271.7 328.6);

no. Colour	->NRS18 $olv^*_{30}=rgb^*_{30}n^*$, c^* , H^*_{si0}	->NRS18 $LCH^*_{a,M1}$	NRS18 $olv^*_{3,M1}$	NRS18 LCH^*_{a1}	NRS18 olv^*_{31}	0 1
01 R=r00j	0.7 0.2 0.2 0.3 0.5 30	56.7 77.1 25	1.0 0.0 0.01	52.8 38.5 25	0.7 0.2 0.2	
02 r10j	0.7 0.25 0.2 0.3 0.5 35	56.7 72.4 32	1.0 0.1 0.0	52.8 36.2 32	0.7 0.25 0.2	
03 r20j	0.7 0.3 0.2 0.3 0.5 41	56.7 68.7 39	1.0 0.2 0.0	52.8 34.4 39	0.7 0.3 0.2	
04 r30j	0.7 0.35 0.2 0.3 0.5 47	56.7 66.3 46	1.0 0.31 0.0	52.8 33.1 46	0.7 0.35 0.2	
05 r40j	0.7 0.4 0.2 0.3 0.5 53	56.7 65.1 52	1.0 0.4 0.0	52.8 32.5 52	0.7 0.4 0.2	
06 r50j	0.7 0.45 0.2 0.3 0.5 60	56.7 64.6 59	1.0 0.5 0.0	52.8 32.3 59	0.7 0.45 0.2	
07 r60j	0.7 0.5 0.2 0.3 0.5 67	56.7 65.1 66	1.0 0.61 0.0	52.8 32.6 66	0.7 0.5 0.2	
08 r070j	0.7 0.55 0.2 0.3 0.5 73	56.7 66.3 72	1.0 0.7 0.0	52.8 33.2 72	0.7 0.55 0.2	
09 r80j	0.7 0.6 0.2 0.3 0.5 79	56.7 68.8 79	1.0 0.8 0.0	52.8 34.4 79	0.7 0.6 0.2	
10 r90j	0.7 0.65 0.2 0.3 0.5 85	56.7 72.6 86	1.0 0.91 0.0	52.8 36.3 86	0.7 0.65 0.2	
11 J=j00g	0.7 0.7 0.2 0.3 0.5 90	56.7 77.1 92	1.0 1.0 0.0	52.8 38.6 92	0.7 0.7 0.2	

Goal: Transfer coordinates olv^*_{30} (system m=0) to LCH^*_{a1} and olv^*_{31} (system m=1)

The following equations for relative blackness and chroma are valid for any device:

$n^* = 1 - \max (o^*_{30}, l^*_{30}, v^*_{30})$ (1)

$c^* = \max (o^*_{30}, l^*_{30}, v^*_{30}) - \min (o^*_{30}, l^*_{30}, v^*_{30})$ (2)

For the calculation of the missing relative device hue assume

as a starting point that the three values olv^*_{30} belong to the standard (s) device SRS18:

relative red-green chroma: $a^*_{r0} = o^*_{30} \cos(30) + l^*_{30} \cos(150)$ (3)

relative yellow-blue chroma: $b^*_{r0} = o^*_{30} \sin(30) + l^*_{30} \sin(150) - v^*_{30} \sin(270)$ (4)

Standard integer hue: $H^*_{si0} = \text{round} [\text{atan} (b^*_{r0} / a^*_{r0})]$ (5)

Fetch device integer hue: $H^*_{ai0} = H^*_{si-ai} [H^*_{si0}]$ (6)

Fetch device data $LCH^*_{a,M0}$ from table with 361 entries for H^*_{ai0} from 0 to 360 degrees

Lightness, chroma, hue: $LCH^*_{a,M0} = LCH^*_{a,M0} [H^*_{ai0}]$ (7)

Fetch device data $LCH^*_{a,M1}$ from table with 361 entries for H^*_{ai0} from 0 to 360 degrees

lightness, chroma, hue: $LCH^*_{a,M1} = LCH^*_{a,M1} [H^*_{ai0}]$ (8)

For any input or output device (m=0 to 1) it is valid for constant n^* , c^* , l^* , H^*_{a} :

CIELAB lightness: $L^*_1 = L^*_{a1} = L^*_{N1} + l^* [L^*_{w1} - L^*_{N1}]$ (9)

Adated CIELAB chroma: $C^*_{a1} = c^* C^*_{a,M1}$ (10)

Adated CIELAB hue: $H^*_{a1} = H^*_{a,M0} = H^*_{a,M1}$ (11)

"red, green, blue" rgb_1 data: $olv^*_{31} = 1 - n^* - c^* + c^* olv^*_{3,M1}$ (12)

Result: device dependent adapted and relative CIELAB data of system m=1:

lightness, chroma, hue: LCH^*_{a1} and rgb_1 data: olv^*_{31} (13)

Colorimetric data for system line NRS18 -> SRS18

For input LCH^*_{a0} of the system 0: NRS18

Six CIELAB hue angles of device NRS18: (25.5 92.3 162.2 217.0 271.7 328.6);

and output $LCH^*_{a,M1}$, $olv^*_{3,M1}$, LCH^*_{a1} , olv^*_{31} of the system 1: SRS18

Six CIELAB hue angles of device SRS18: (30.0 90.0 150.0 210.0 270.0 330.0);

no. Colour	->NRS18 LCH^*_{a0}	->NRS18 n^* , c^* , H^*_{ai0}	SRS18 $LCH^*_{a,M1}$	SRS18 $olv^*_{3,M1}$	SRS18 LCH^*_{a1}	SRS18 olv^*_{31}	0 1
01 R=r00j	52.8 38.5 25	0.3 0.5 25	56.7 74.0 25	1.0 0.0 0.08	52.8 37.0 25	0.7 0.2 0.24	
02 r10j	52.8 36.2 32	0.3 0.5 32	56.7 75.9 32	1.0 0.03 0.0	52.8 38.0 32	0.7 0.22 0.2	
03 r20j	52.8 34.4 39	0.3 0.5 39	56.7 71.8 39	1.0 0.15 0.0	52.8 35.9 39	0.7 0.27 0.2	
04 r30j	52.8 33.1 46	0.3 0.5 46	56.7 69.1 46	1.0 0.27 0.0	52.8 34.5 46	0.7 0.33 0.2	
05 r40j	52.8 32.5 52	0.3 0.5 52	56.7 67.7 52	1.0 0.37 0.0	52.8 33.8 52	0.7 0.38 0.2	
06 r50j	52.8 32.3 59	0.3 0.5 59	56.7 67.0 59	1.0 0.48 0.0	52.8 33.5 59	0.7 0.44 0.2	
07 r60j	52.8 32.6 66	0.3 0.5 66	56.7 67.4 66	1.0 0.6 0.0	52.8 33.7 66	0.7 0.5 0.2	
08 r070j	52.8 33.2 72	0.3 0.5 72	56.7 68.5 72	1.0 0.7 0.0	52.8 34.3 72	0.7 0.55 0.2	
09 r80j	52.8 34.4 79	0.3 0.5 79	56.7 70.9 79	1.0 0.82 0.0	52.8 35.4 79	0.7 0.61 0.2	
10 r90j	52.8 36.3 86	0.3 0.5 86	56.7 74.6 86	1.0 0.93 0.0	52.8 37.3 86	0.7 0.67 0.2	
11 J=j00g	52.8 38.6 92	0.3 0.5 92	56.7 75.9 92	0.97 1.0 0.0	52.8 38.0 92	0.68 0.7 0.2	

Goal: Transfer coordinates LCH^*_{a0} (system m=0) to LCH^*_{a1} and olv^*_{31} (system m=1)

The given data LCH^*_{a0} include the device hue H^*_{a0}

Integer (i) device hue: $H^*_{ai0} = \text{round} (H^*_{a0})$ (1)

Fetch device data $LCH^*_{a,M0}$ from table with 361 entries for H^*_{ai0} from 0 to 360 degrees
Lightness, chroma, hue: $LCH^*_{a,M0} = LCH^*_{a,M0} [H^*_{ai0}]$ (2)

Calculate lcw^* data from LC^*_{a0} and $LC^*_{a,M0}$:

Relative lightness: $l^* = [L^*_{a0} - L^*_{N0}] / [L^*_{w0} - L^*_{N0}]$ (3)

Relative chroma: $c^* = C^*_{a0} / C^*_{a,M0}$ (4)

Relative Blackness: $n^* = 1 - l^* + c^* [L^*_{M0} - L^*_{N0}] / [L^*_{w0} - L^*_{N0}]$ (5)

Fetch device data $LCH^*_{a,M1}$ and $olv^*_{3,M1}$ from table with 361 entries for H^*_{ai0}
lightness, chroma, hue: $LCH^*_{a,M1} = LCH^*_{a,M1} [H^*_{ai0}]$ (6)

"Red, Green, Blue" rgb_1 data: $olv^*_{3,M1} = olv^*_{3,M1} [H^*_{ai0}]$ (7)

For any input or output device (m=0 to 1) it is valid for constant n^* , c^* , l^* , H^*_{a} :

CIELAB lightness: $L^*_1 = L^*_{a1} = L^*_{N1} + l^* [L^*_{w1} - L^*_{N1}]$ (8)

Adated CIELAB chroma: $C^*_{a1} = c^* C^*_{a,M1}$ (9)

Adated CIELAB hue: $H^*_{a1} = H^*_{a0}$ (10)

"red, green, blue" rgb_1 data: $olv^*_{31} = 1 - n^* - c^* + c^* olv^*_{3,M1}$ (11)

Result: device dependent adapted and relative CIELAB data of system m=1:

lightness, chroma, hue: LCH^*_{a1} and rgb_1 data: olv^*_{31} (12)

Colorimetric data for system line NRS18 -> SRS18

For input olv^*_{30} of the system 0: NRS18

Six CIELAB hue angles of device NRS18: (25.5 92.3 162.2 217.0 271.7 328.6);

and output $LCH^*_{a,M1}$, $olv^*_{3,M1}$, LCH^*_{a1} , olv^*_{31} of the system 1: SRS18

Six CIELAB hue angles of device SRS18: (30.0 90.0 150.0 210.0 270.0 330.0);

no. Colour	->NRS18 $olv^*_{30}=rgb^*_{30}n^*$, c^* , H^*_{si0}	->NRS18 $LCH^*_{a,M1}$	SRS18 $olv^*_{3,M1}$	SRS18 LCH^*_{a1}	SRS18 olv^*_{31}	0 1
01 R=r00j	0.7 0.2 0.2 0.3 0.5 30	56.7 74.0 25	1.0 0.0 0.08	52.8 37.0 25	0.7 0.2 0.24	
02 r10j	0.7 0.25 0.2 0.3 0.5 35	56.7 75.9 32	1.0 0.03 0.0	52.8 38.0 32	0.7 0.22 0.2	
03 r20j	0.7 0.3 0.2 0.3 0.5 41	56.7 71.8 39	1.0 0.15 0.0	52.8 35.9 39	0.7 0.27 0.2	
04 r30j	0.7 0.35 0.2 0.3 0.5 47	56.7 69.1 46	1.0 0.27 0.0	52.8 34.5 46	0.7 0.33 0.2	
05 r40j	0.7 0.4 0.2 0.3 0.5 53	56.7 67.7 52	1.0 0.37 0.0	52.8 33.8 52	0.7 0.38 0.2	
06 r50j	0.7 0.45 0.2 0.3 0.5 60	56.7 67.0 59	1.0 0.48 0.0	52.8 33.5 59	0.7 0.44 0.2	
07 r60j	0.7 0.5 0.2 0.3 0.5 67	56.7 67.4 66	1.0 0.6 0.0	52.8 33.7 66	0.7 0.5 0.2	
08 r070j	0.7 0.55 0.2 0.3 0.5 73	56.7 68.5 72	1.0 0.7 0.0	52.8 34.3 72	0.7 0.55 0.2	
09 r80j	0.7 0.6 0.2 0.3 0.5 79	56.7 70.9 79	1.0 0.82 0.0	52.8 35.4 79	0.7 0.61 0.2	
10 r90j	0.7 0.65 0.2 0.3 0.5 85	56.7 74.6 86	1.0 0.93 0.0	52.8 37.3 86	0.7 0.67 0.2	
11 J=j00g	0.7 0.7 0.2 0.3 0.5 90	56.7 75.9 92	0.97 1.0 0.0	52.8 38.0 92	0.68 0.7 0.2	

Goal: Transfer coordinates olv^*_{30} (system m=0) to LCH^*_{a1} and olv^*_{31} (system m=1)

The following equations for relative blackness and chroma are valid for any device:

$n^* = 1 - \max (o^*_{30}, l^*_{30}, v^*_{30})$ (1)

$c^* = \max (o^*_{30}, l^*_{30}, v^*_{30}) - \min (o^*_{30}, l^*_{30}, v^*_{30})$ (2)

For the calculation of the missing relative device hue assume

as a starting point that the three values olv^*_{30} belong to the standard (s) device SRS18:

relative red-green chroma: $a^*_{r0} = o^*_{30} \cos(30) + l^*_{30} \cos(150)$ (3)

relative yellow-blue chroma: $b^*_{r0} = o^*_{30} \sin(30) + l^*_{30} \sin(150) - v^*_{30} \sin(270)$ (4)

Standard integer hue: $H^*_{si0} = \text{round} [\text{atan} (b^*_{r0} / a^*_{r0})]$ (5)

Fetch device integer hue: $H^*_{ai0} = H^*_{si-ai} [H^*_{si0}]$ (6)

Fetch device data $LCH^*_{a,M0}$ from table with 361 entries for H^*_{ai0} from 0 to 360 degrees

Lightness, chroma, hue: $LCH^*_{a,M0} = LCH^*_{a,M0} [H^*_{ai0}]$ (7)

Fetch device data $LCH^*_{a,M1}$ from table with 361 entries for H^*_{ai0} from 0 to 360 degrees

lightness, chroma, hue: $LCH^*_{a,M1} = LCH^*_{a,M1} [H^*_{ai0}]$ (8)

For any input or output device (m=0 to 1) it is valid for constant n^* , c^* , l^* , H^*_{a} :

CIELAB lightness: $L^*_1 = L^*_{a1} = L^*_{N1} + l^* [L^*_{w1} - L^*_{N1}]$ (9)

Adated CIELAB chroma: $C^*_{a1} = c^* C^*_{a,M1}$ (10)

Adated CIELAB hue: $H^*_{a1} = H^*_{a,M0} = H^*_{a,M1}$ (11)

"red, green, blue" rgb_1 data: $olv^*_{31} = 1 - n^* - c^* + c^* olv^*_{3,M1}$ (12)

Result: device dependent adapted and relative CIELAB data of system m=1:

lightness, chroma, hue: LCH^*_{a1} and rgb_1 data: olv^*_{31} (13)

Colorimetric data for system line NRS18 -> TLS70

For input LCH^*_{a0} of the system 0: NRS18

Six CIELAB hue angles of device NRS18: (25.5 92.3 162.2 217.0 271.7 328.6);

and output $LCH^*_{a,M1}$, $olv^*_{3,M1}$, LCH^*_{a1} , olv^*_{31} of the system 1: TLS70

Six CIELAB hue angles of device TLS70: (21.9 107.3 142.3 197.9 293.9 326.1);

no. Colour	->NRS18 LCH^*_{a0}	->NRS18 n^* , c^* , H^*_{ai0}	TLS70 $LCH^*_{a,M1}$	TLS70 $olv^*_{3,M1}$	TLS70 LCH^*_{a1}	TLS70 olv^*_{31}	0 1
01 R=r00j	52.8 38.5 25	0.3 0.5 25	77.1 27.0 25	1.0 0.04 0.0	78.5 13.5 25	0.7 0.22 0.2	
02 r10j	52.8 36.2 32	0.3 0.5 32	78.5 24.7 32	1.0 0.12 0.0	79.2 12.4 32	0.7 0.26 0.2	
03 r20j	52.8 34.4 39	0.3 0.5 39	79.9 23.1 39	1.0 0.2 0.0	80.0 11.5 39	0.7 0.3 0.2	
04 r30j	52.8 33.1 46	0.3 0.5 46	81.4 22.0 46	1.0 0.28 0.0	80.7 11.0 46	0.7 0.34 0.2	
05 r40j	52.8 32.5 52	0.3 0.5 52	82.6 21.3 52	1.0 0.35 0.0	81.3 10.7 52	0.7 0.38 0.2	
06 r50j	52.8 32.3 59	0.3 0.5 59	84.0 20.9 59	1.0 0.43 0.0	82.0 10.5 59	0.7 0.42 0.2	
07 r60j	52.8 32.6 66	0.3 0.5 66	85.5 20.8 66	1.0 0.52 0.0	82.7 10.4 66	0.7 0.46 0.2	
08 r070j	52.8 33.2 72	0.3 0.5 72	86.7 21.0 72	1.0 0.59 0.0	83.3 10.5 72	0.7 0.49 0.2	
09 r80j	52.8 34.4 79	0.3 0.5 79	88.1 21.5 79	1.0 0.67 0.0	84.1 10.7 79	0.7 0.53 0.2	
10 r90j	52.8 36.3 86	0.3 0.5 86	89.6 22.4 86	1.0 0.75 0.0	84.8 11.2 86	0.7 0.58 0.2	
11 J=j00g	52.8 38.6 92	0.3 0.5 92	90.8 23.4 92	1.0 0.82 0.0	85.4 11.7 92	0.7 0.61 0.2	

Goal: Transfer coordinates LCH^*_{a0} (system m=0) to LCH^*_{a1} and olv^*_{31} (system m=1)

The given data LCH^*_{a0} include the device hue H^*_{a0}

Integer (i) device hue: $H^*_{ai0} = \text{round} (H^*_{a0})$ (1)

Fetch device data $LCH^*_{a,M0}$ from table with 361 entries for H^*_{ai0} from 0 to 360 degrees
Lightness, chroma, hue: $LCH^*_{a,M0} = LCH^*_{a,M0} [H^*_{ai0}]$ (2)

Calculate lcw^* data from LC^*_{a0} and $LC^*_{a,M0}$:

Relative lightness: $l^* = [L^*_{a0} - L^*_{N0}] / [L^*_{w0} - L^*_{N0}]$ (3)

Relative chroma: $c^* = C^*_{a0} / C^*_{a,M0}$ (4)

Relative Blackness: $n^* = 1 - l^* + c^* [L^*_{M0} - L^*_{N0}] / [L^*_{w0} - L^*_{N0}]$ (5)

Fetch device data $LCH^*_{a,M1}$ and $olv^*_{3,M1}$ from table with 361 entries for H^*_{ai0}
lightness, chroma, hue: $LCH^*_{a,M1} = LCH^*_{a,M1} [H^*_{ai0}]$ (6)

"Red, Green, Blue" rgb_1 data: $olv^*_{3,M1} = olv^*_{3,M1} [H^*_{ai0}]$ (7)

For any input or output device (m=0 to 1) it is valid for constant n^* , c^* , l^* , H^*_{a} :

CIELAB lightness: $L^*_1 = L^*_{a1} = L^*_{N1} + l^* [L^*_{w1} - L^*_{N1}]$ (8)

Adated CIELAB chroma: $C^*_{a1} = c^* C^*_{a,M1}$ (9)

Adated CIELAB hue: $H^*_{a1} = H^*_{a0}$ (10)

"red, green, blue" rgb_1 data: $olv^*_{31} = 1 - n^* - c^* + c^* olv^*_{3,M1}$ (11)

Result: device dependent adapted and relative CIELAB data of system m=1:

lightness, chroma, hue: LCH^*_{a1} and rgb_1 data: olv^*_{31} (12)

Colorimetric data for system line NRS18 -> TLS70

For input olv^*_{30} of the system 0: NRS18

Six CIELAB hue angles of device NRS18: (25.5 92.3 162.2 217.0 271.7 328.6);

and output $LCH^*_{a,M1}$, $olv^*_{3,M1}$, LCH^*_{a1} , olv^*_{31} of the system 1: TLS70

Six CIELAB hue angles of device TLS70: (21.9 107.3 142.3 197.9 293.9 326.1);

no. Colour	->NRS18 $olv^*_{30}=rgb^*_{30}n^*$, c^* , H^*_{si0}	->NRS18 $LCH^*_{a,M1}$	TLS70 $olv^*_{3,M1}$	TLS70 LCH^*_{a1}	TLS70 olv^*_{31}	0 1
01 R=r00j	0.7 0.2 0.2 0.3 0.5 30	77.1 27.0 25	1.0 0.04 0.0	78.5 13.5 25	0.7 0.22 0.2	
02 r10j	0.7 0.25 0.2 0.3 0.5 35	78.5 24.7 32	1.0 0.12 0.0	79.2 12.4 32	0.7 0.26 0.2	
03 r20j	0.7 0.3 0.2 0.3 0.5 41	79.9 23.1 39	1.0 0.2 0.0	80.0 11.5 39	0.7 0.3 0.2	
04 r30j	0.7 0.35 0.2 0.3 0.5 47	81.4 22.0 46	1.0 0.28 0.0	80.7 11.0 46	0.7 0.34 0.2	
05 r40j	0.7 0.4 0.2 0.3 0.5 53	82.6 21.3 52	1.0 0.35 0.0	81.3 10.7 52	0.7 0.38 0.2	
06 r50j	0.7 0.45 0.2 0.3 0.5 60	84.0 20.9 59	1.0 0.43 0.0	82.0 10.5 59	0.7 0.42 0.2	
07 r60j	0.7 0.5 0.2 0.3 0.5 67	85.5 20.8 66	1.0 0.52 0.0	82.7 10.4 66	0.7 0.46 0.2	
08 r070j	0.7 0.55 0.2 0.3 0.5 73	86.7 21.0 72	1.0 0.59 0.0	83.3 10.5 72	0.7 0.49 0.2	
09 r80j	0.7 0.6 0.2 0.3 0.5 79	88.1 21.5 79	1.0 0.67 0.0	84.1 10.7 79	0.7 0.53 0.2	
10 r90j	0.7 0.65 0.2 0.3 0.5 85	89.6 22.4 86	1.0 0.75 0.0	84.8 11.2 86	0.7 0.58 0.2	
11 J=j00g	0.7 0.7 0.2 0.3 0.5 90	90.8 23.4 92	1.0 0.82 0.0	85.4 11.7 92	0.7 0.61 0.2	

Goal: Transfer coordinates olv^*_{30} (system m=0) to LCH^*_{a1} and olv^*_{31} (system m=1)

The following equations for relative blackness and chroma are valid for any device:

$n^* = 1 - \max (o^*_{30}, l^*_{30}, v^*_{30})$ (1)

$c^* = \max (o^*_{30}, l^*_{30}, v^*_{30}) - \min (o^*_{30}, l^*_{30}, v^*_{30})$ (2)

For the calculation of the missing relative device hue assume

as a starting point that the three values olv^*_{30} belong to the standard (s) device SRS18:

relative red-green chroma: $a^*_{r0} = o^*_{30} \cos(30) + l^*_{30} \cos(150)$ (3)

relative yellow-blue chroma: $b^*_{r0} = o^*_{30} \sin(30) + l^*_{30} \sin(150) - v^*_{30} \sin(270)$ (4)

Standard integer hue: $H^*_{si0} = \text{round} [\text{atan} (b^*_{r0} / a^*_{r0})]$ (5)

Fetch device integer hue: $H^*_{ai0} = H^*_{si-ai} [H^*_{si0}]$ (6)

Fetch device data $LCH^*_{a,M0}$ from table with 361 entries for H^*_{ai0} from 0 to 360 degrees

Lightness, chroma, hue: $LCH^*_{a,M0} = LCH^*_{a,M0} [H^*_{ai0}]$ (7)

Fetch device data $LCH^*_{a,M1}$ from table with 361 entries for H^*_{ai0} from 0 to 360 degrees

lightness, chroma, hue: $LCH^*_{a,M1} = LCH^*_{a,M1} [H^*_{ai0}]$ (8)

For any input or output device (m=0 to 1) it is valid for constant n^* , c^* , l^* , H^*_{a} :

CIELAB lightness: $L^*_1 = L^*_{a1} = L^*_{N1} + l^* [L^*_{w1} - L^*_{N1}]$ (9)

Adated CIELAB chroma: $C^*_{a1} = c^* C^*_{a,M1}$ (10)

Adated CIELAB hue: $H^*_{a1} = H^*_{a,M0} = H^*_{a,M1}$ (11)

"red, green, blue" rgb_1 data: $olv^*_{31} = 1 - n^* - c^* + c^* olv^*_{3,M1}$ (12)

Result: device dependent adapted and relative CIELAB data of system m=1:

lightness, chroma, hue: LCH^*_{a1} and rgb_1 data: olv^*_{31} (13)