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: $H^*_{ai0} = round\ (\ H^*_{a0})$ (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 $lcnw^*$ 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:-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)

ZE020−7

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 $olv^*_{30}=rgb^*_{30}$			−>NRS18 n^*, c^*, H^*_{si0}			ORS18 $LCH^*_{a,M1}$			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 asume
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: $H^*_{si0} = round\ [\ atan\ (\ b^*_{r0} / a^*_{r0}\ )\ ]$ (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)

ZE021−7

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		
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

0 1

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: $H^*_{ai0} = round\ (\ H^*_{a0})$ (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 ***lcnw**** 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:-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)

ZE020−7

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			−>NRS18 n*, c*, H*si0			TLS00 LCH*a,M1			TLS00 olv*3,M1			TLS00 LCH*a1			TLS00 olv*31		
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

0 1

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 asume
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: $H^*_{si0} = round\ [\ atan\ (\ b^*_{r0} / a^*_{r0}\ )\ ]$ (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)

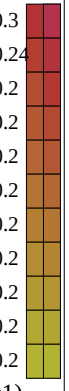
Result: device dependent adapted and relative CIELAB data of system m=1:
lightness, chroma, hue: ***LCH*a1*** and rgb_1 data: ***olv*31*** (13)

ZE021−7

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		
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 = 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 ***lcnw**** 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:-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)

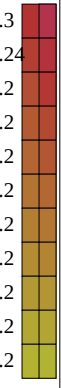
Result: device dependent adapted and relative CIELAB data of system m=1:
lightness, chroma, hue: ***LCH*a1*** and ***rgb*1** data: ***olv*31*** (12)

ZE020−7

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			−>NRS18 n*, c*, H*si0			FRS06 LCH*a,M1			FRS06 olv*3,M1			FRS06 LCH*a1			FRS06 olv*31		
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 asume
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 = round [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)

ZE021−7

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}		
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

0 1

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: $H^*_{ai0} = round\ (\ H^*_{a0})$ (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 $lcnw^*$ 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:-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)

ZE020−7

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}			−>NRS18 n^*, c^*, H^*_{si0}			TLS18 $LCH^*_{a,M1}$			TLS18 $olv^*_{3,M1}$			TLS18 LCH^*_{a1}			TLS18 olv^*_{31}		
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

0 1

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 asume
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: $H^*_{si0} = round\ [\ atan\ (\ b^*_{r0} / a^*_{r0}\ )\ ]$ (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)

ZE021−7

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}		
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

0 1

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: $H^*_{ai0} = round\ (\ H^*_{a0})$ (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 $lcnw^*$ 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:-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)

ZE020−7

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}			−>NRS18 n^*, c^*, H^*_{si0}			NLS00 $LCH^*_{a,M1}$			NLS00 $olv^*_{3,M1}$			NLS00 LCH^*_{a1}			NLS00 olv^*_{31}		
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

0 1

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 asume
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: $H^*_{si0} = round\ [\ atan\ (\ b^*_{r0} / a^*_{r0}\ )\ ]$ (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)

ZE021−7

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: $H^*_{ai0} = round\ (\ H^*_{a0})$ (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 $lcnw^*$ 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:-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)

ZE020−7

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}			−>NRS18 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 asume
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: $H^*_{si0} = round\ [\ atan\ (\ b^*_{r0} / a^*_{r0}\ )\ ]$ (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)

ZE021−7

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: $H^*_{ai0} = round\ (\ H^*_{a0}\ )$ (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 $lcnw^*$ 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:-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)

ZE020−7

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}			−>NRS18 n^*, c^*, H^*_{si0}			SRS18 $LCH^*_{a,M1}$			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 asume
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: $H^*_{si0} = round\ [\ atan\ (\ b^*_{r0} / a^*_{r0}\ )\ ]$ (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)

ZE021−7

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		
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

0 1

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: $H^*_{ai0} = round\ (\ H^*_{a0})$ (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 ***lcnw**** 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:-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)

ZE020−7

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			−>NRS18 n*, c*, H*si0			TLS70 LCH*a,M1			TLS70 olv*3,M1			TLS70 LCH*a1			TLS70 olv*31		
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

0 1

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 asume
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: $H^*_{si0} = round\ [\ atan\ (\ b^*_{r0} / a^*_{r0}\ )\ ]$ (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)

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