See for similar files: http://www.ps.bam.de/ZE06/; www.ps.bam.de/ZE.HTM
Technical information: http://www.ps.bam.de Version 2.1, io=1,1

BAM registration: 20070501-ZE06/L06E00N1.PS/.TXT
application for measurement of printer or monitor systems

BAM material: code=tha4ta

Colorimetric data for system lines NRS18 –> ORS18, TLS00, NRS18, SRS18

For input LCH^*_{a0} (NRS18) and output olv^*_{3m} for 4 systems (m = 0 to 4)
Six CIELAB hue angles of device ORS18: (37.7 96.4 150.9 236.0 305.0 353.7);
Six CIELAB hue angles of device TLS00: (40.0 102.8 136.0 196.4 306.3 328.2);
Six CIELAB hue angles of device NRS18: (25.5 92.3 162.2 217.0 271.7 328.6);
Six CIELAB hue angles of device SRS18: (30.0 90.0 150.0 210.0 270.0 330.0);

	–>NRS18	–>NRS18	ORS18		TLS00		NRS18		SRS18	
no. Colour	LCH^*_{a0}	n^*, c^*, H^*_{a0}	olv^*_{31}		olv^*_{32}		olv^*_{33}		olv^*_{34}	
01 *R=r00j*	52.8 38.5	25 0.3 0.5	25 0.7 0.2	0.34	0.7 0.2	0.3	0.7 0.2	0.2	0.7 0.2	0.24
02 *r10j*	52.8 36.2	32 0.3 0.5	32 0.7 0.2	0.26	0.7 0.2	0.26	0.7 0.25	0.2	0.7 0.22	0.2
03 *r20j*	52.8 34.4	39 0.3 0.5	39 0.7 0.21	0.2	0.7 0.2	0.21	0.7 0.3	0.2	0.7 0.27	0.2
04 *r30j*	52.8 33.1	46 0.3 0.5	46 0.7 0.27	0.2	0.7 0.25	0.2	0.7 0.35	0.2	0.7 0.33	0.2
05 *r40j*	52.8 32.5	52 0.3 0.5	52 0.7 0.32	0.2	0.7 0.3	0.2	0.7 0.4	0.2	0.7 0.38	0.2
06 *r50j*	52.8 32.3	59 0.3 0.5	59 0.7 0.38	0.2	0.7 0.35	0.2	0.7 0.45	0.2	0.7 0.44	0.2
07 *r60j*	52.8 32.6	66 0.3 0.5	66 0.7 0.44	0.2	0.7 0.41	0.2	0.7 0.5	0.2	0.7 0.5	0.2
08 *r070j*	52.8 33.2	72 0.3 0.5	72 0.7 0.49	0.2	0.7 0.45	0.2	0.7 0.55	0.2	0.7 0.55	0.2
09 *r80j*	52.8 34.4	79 0.3 0.5	79 0.7 0.55	0.2	0.7 0.51	0.2	0.7 0.6	0.2	0.7 0.61	0.2
10 *r90j*	52.8 36.3	86 0.3 0.5	86 0.7 0.61	0.2	0.7 0.57	0.2	0.7 0.65	0.2	0.7 0.67	0.2
11 *J=j00g*	52.8 38.6	92 0.3 0.5	92 0.7 0.66	0.2	0.7 0.61	0.2	0.7 0.7	0.2	0.68 0.7	0.2

Goal: Transfer coordinates LCH^*_{a0} (system m=0) to $rgb_m = olv^*_{3m}$ (system m=1 to 4)

The given data LCH^*_{a0} include the device hue H^*_{a0}
Integer (i) device hue: $H^*_{ai0} = round\,(\,H^*_{a0}\,)$ (1)

Fetch device data $LCH^*_{a,Mm}$ 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 $olv^*_{3,Mm}$ from table with 361 entries for H^*_{ai0} from 0 to 360 degrees
"red, green, blue" rgb_{Mm} data: $olv^*_{3,Mm} = olv^*_{3,Mm}\,[\,H^*_{ai0}\,]$ (6)

For any input or output device (m=0 to 4) it is valid for constant n^*, c^*, l^*, H^*_a:
"red, green, blue" rgb_m data: $olv^*_{3m} = 1 - n^* - c^* + c^*\,olv^*_{3,Mm}$ (7)

Result: device dependent relative CIELAB data of 4 systems m=1 to 4:
"red, green, blue" rgb_m data: $rgb_m = olv^*_{3m}$ (8)

ZE060–7

Colorimetric data for system lines NRS18 –> ORS18, TLS00, NRS18, SRS18

For input olv^*_{30} (NRS18) and output olv^*_{3m} for 4 systems (m = 0 to 4)
Six CIELAB hue angles of device ORS18: (37.7 96.4 150.9 236.0 305.0 353.7);
Six CIELAB hue angles of device TLS00: (40.0 102.8 136.0 196.4 306.3 328.2);
Six CIELAB hue angles of device NRS18: (25.5 92.3 162.2 217.0 271.7 328.6);
Six CIELAB hue angles of device SRS18: (30.0 90.0 150.0 210.0 270.0 330.0);

	–>NRS18	–>NRS18	ORS18		TLS00		NRS18		SRS18	
no. Colour	$olv^*_{30}=rgb^*_{30}$	n^*, c^*, H^*_{si0}	olv^*_{31}		olv^*_{32}		olv^*_{33}		olv^*_{34}	
01 *R=r00j*	0.7 0.2	0.2 0.3 0.5	30 0.7 0.2	0.34	0.7 0.2	0.3	0.7 0.2	0.2	0.7 0.2	0.24
02 *r10j*	0.7 0.25	0.2 0.3 0.5	35 0.7 0.2	0.26	0.7 0.2	0.26	0.7 0.25	0.2	0.7 0.22	0.2
03 *r20j*	0.7 0.3	0.2 0.3 0.5	41 0.7 0.21	0.2	0.7 0.2	0.21	0.7 0.3	0.2	0.7 0.27	0.2
04 *r30j*	0.7 0.35	0.2 0.3 0.5	47 0.7 0.27	0.2	0.7 0.25	0.2	0.7 0.35	0.2	0.7 0.33	0.2
05 *r40j*	0.7 0.4	0.2 0.3 0.5	53 0.7 0.32	0.2	0.7 0.3	0.2	0.7 0.4	0.2	0.7 0.38	0.2
06 *r50j*	0.7 0.45	0.2 0.3 0.5	60 0.7 0.38	0.2	0.7 0.35	0.2	0.7 0.45	0.2	0.7 0.44	0.2
07 *r60j*	0.7 0.5	0.2 0.3 0.5	67 0.7 0.44	0.2	0.7 0.41	0.2	0.7 0.5	0.2	0.7 0.5	0.2
08 *r070j*	0.7 0.55	0.2 0.3 0.5	73 0.7 0.49	0.2	0.7 0.45	0.2	0.7 0.55	0.2	0.7 0.55	0.2
09 *r80j*	0.7 0.6	0.2 0.3 0.5	79 0.7 0.55	0.2	0.7 0.51	0.2	0.7 0.6	0.2	0.7 0.61	0.2
10 *r90j*	0.7 0.65	0.2 0.3 0.5	85 0.7 0.61	0.2	0.7 0.57	0.2	0.7 0.65	0.2	0.7 0.67	0.2
11 *J=j00g*	0.7 0.7	0.2 0.3 0.5	90 0.7 0.66	0.2	0.7 0.61	0.2	0.7 0.7	0.2	0.68 0.7	0.2

Goal: Transfer coordinates olv^*_{30} (system m=0) to olv^*_{3m} (system m=1 to 4)
The following equations for relative blackness and chroma are valid for any device:

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

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

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 $olv^*_{3,Mm}$ from table with 361 entries for H^*_{ai0} from 0 to 360 degrees
"red, green, blue" rgb_{Mm} data: $olv^*_{3,Mm} = olv^*_{3,Mm}\,[\,H^*_{ai0}\,]$ (7)

For any input or output device (m=0 to 4) it is valid for constant n^*, c^*, l^*, H^*_a:
"red, green, blue" rgb_m data: $olv^*_{3m} = 1 - n^* - c^* + c^*\,olv^*_{3,Mm}$ (8)

Result: device dependent relative CIELAB data of 4 systems m=1 to 4:
"red, green, blue" rgb_m data: $rgb_m = olv^*_{3m}$ (9)

ZE061–7

BAM-test chart no. ZE06; Colour image data transfer
LCH*a0, olv*30 (NRS18) –> olv*3m (systems m=1 to 4)

input: *rgb (->olv*3) setrgbcolor*
output: no change compared to input