

Colorimetric data of Television Luminous System TLS11 for CIE lightness $L^*_N=11$ of black**System:****TLS11****Monitor:****LCD**

Color	$r=olv*1$	$g=olv*2$	$b=olv*3$	$L^*_c=LAB*1c$	$a^*_c=LAB*2c$	$b^*_c=LAB*3c$	$C^*_{ab,c}=LAB*rc$	$h_{ab,c}$	$X_c=XYZ1c$	$Y_c=XYZ2c$	$Z_c=XYZ3c$	x_c	y_c	$Y_c/88.59$
00 o00y	1.0	0.0	0.0	54.21	78.64	58.52	98.03	37	42.14	22.17	3.33	0.623	0.3278	0.2503
01 o13y	1.0	0.125	0.0	54.91	76.45	59.02	96.58	38	42.42	22.84	3.44	0.6174	0.3325	0.2579
02 o25y	1.0	0.25	0.0	57.87	68.1	61.12	91.5	42	43.91	25.83	3.96	0.5958	0.3505	0.2916
03 o38y	1.0	0.375	0.0	62.22	56.16	64.44	85.47	49	46.26	30.66	4.75	0.5664	0.3754	0.3461
04 o50y	1.0	0.5	0.0	67.48	42.42	68.19	80.31	58	49.48	37.27	5.91	0.534	0.4022	0.4207
05 o63y	1.0	0.625	0.0	73.63	27.43	72.96	77.94	70	53.85	46.12	7.39	0.5016	0.4296	0.5206
06 o75y	1.0	0.75	0.0	80.08	12.73	77.89	78.93	81	59.14	56.82	9.2	0.4725	0.454	0.6414
07 o88y	1.0	0.875	0.0	86.52	-1.05	82.98	82.99	91	65.14	69.03	11.22	0.448	0.4748	0.7793
08 y00l	1.0	1.0	0.0	94.11	-15.83	89.38	90.77	101	73.43	85.54	13.8	0.425	0.4951	0.9655
09 y13l	0.875	1.0	0.0	92.0	-27.1	86.39	90.55	108	64.07	80.71	13.54	0.4047	0.5098	0.911
10 y25l	0.75	1.0	0.0	90.22	-37.49	83.97	91.96	115	56.47	76.78	13.28	0.3854	0.524	0.8667
11 y38l	0.625	1.0	0.0	88.56	-48.25	81.77	94.94	122	49.55	73.23	13.01	0.3649	0.5393	0.8266
12 y50l	0.5	1.0	0.0	87.07	-58.61	79.85	99.06	128	43.6	70.14	12.75	0.3447	0.5545	0.7917
13 y63l	0.375	1.0	0.0	85.89	-67.53	78.43	103.5	132	39.02	67.76	12.51	0.3271	0.568	0.7649
14 y75l	0.25	1.0	0.0	84.97	-74.95	77.13	107.56	136	35.55	65.95	12.4	0.3121	0.579	0.7444
15 y88l	0.125	1.0	0.0	84.37	-79.89	76.36	110.52	138	33.36	64.77	12.3	0.3021	0.5865	0.7312
16 l00c	0.0	1.0	0.0	84.21	-81.1	76.13	111.24	138	32.83	64.47	12.29	0.2996	0.5883	0.7278
17 l13c	0.0	1.0	0.125	84.25	-80.71	73.57	109.22	139	32.98	64.54	13.31	0.2976	0.5823	0.7285
18 l25c	0.0	1.0	0.25	84.35	-78.62	63.95	101.35	143	33.71	64.74	17.66	0.2903	0.5576	0.7308
19 l38c	0.0	1.0	0.375	84.61	-75.49	51.46	91.37	148	34.93	65.24	24.72	0.2797	0.5224	0.7365
20 l50c	0.0	1.0	0.5	84.97	-71.46	38.14	81.01	154	36.59	65.95	34.2	0.2676	0.4823	0.7444
21 l63c	0.0	1.0	0.625	85.43	-66.43	24.55	70.83	163	38.75	66.85	46.23	0.2552	0.4403	0.7546
22 l75c	0.0	1.0	0.75	85.97	-61.24	11.9	62.39	173	41.15	67.93	59.93	0.2435	0.4019	0.7668
23 l88c	0.0	1.0	0.875	86.54	-56.04	0.7	56.06	183	43.7	69.07	74.31	0.2336	0.3692	0.7796
24 c00v	0.0	1.0	1.0	87.18	-51.1	-9.41	51.97	195	46.37	70.38	89.45	0.2249	0.3413	0.7944
25 c13v	0.0	0.875	1.0	78.68	-38.63	-22.32	44.62	213	38.35	54.38	86.97	0.2134	0.3026	0.6138
26 c25v	0.0	0.75	1.0	71.08	-26.3	-33.97	42.97	233	32.33	42.3	84.93	0.2026	0.2651	0.4775
27 c38v	0.0	0.675	1.0	63.12	-11.97	-46.39	47.92	254	27.09	31.73	83.16	0.1908	0.2235	0.3582
28 c50v	0.0	0.5	1.0	54.95	4.19	-59.11	59.26	272	22.65	22.88	81.29	0.1786	0.1804	0.2582
29 c63v	0.0	0.375	1.0	47.37	21.46	-71.55	74.71	284	19.44	16.3	80.45	0.1673	0.1403	0.184
30 c75v	0.0	0.25	1.0	40.2	39.44	-83.05	91.95	294	16.99	11.37	79.32	0.1578	0.1056	0.1284
31 c88v	0.0	0.125	1.0	34.57	55.15	-92.53	107.73	299	15.49	8.29	79.02	0.1507	0.0806	0.0935
32 v00m	0.0	0.0	1.0	33.09	59.26	-94.9	111.9	301	15.11	7.58	78.79	0.1489	0.0747	0.0856
33 v13m	0.125	0.0	1.0	33.6	60.17	-94.39	111.95	301	15.63	7.82	79.26	0.1522	0.0761	0.0882
34 v25m	0.25	0.0	1.0	35.64	62.25	-90.58	109.92	303	17.57	8.82	78.88	0.1669	0.0838	0.0996
35 v38m	0.375	0.0	1.0	38.78	65.67	-85.41	107.74	306	20.9	10.53	79.21	0.1889	0.0952	0.1189
36 v50m	0.5	0.0	1.0	42.38	69.54	-79.14	105.36	310	25.19	12.75	79.11	0.2152	0.1089	0.1439
37 v63m	0.625	0.0	1.0	46.58	74.48	-72.19	103.73	315	31.01	15.7	79.49	0.2457	0.1244	0.1772
38 v75m	0.75	0.0	1.0	50.83	79.05	-64.9	102.28	320	37.61	19.12	79.55	0.276	0.1403	0.2158
39 v88m	0.875	0.0	1.0	54.98	83.66	-57.89	101.74	324	44.97	22.91	79.74	0.3046	0.1552	0.2586
40 m00o	1.0	0.0	1.0	59.56	89.09	-50.27	102.3	329	54.26	27.64	80.12	0.3349	0.1706	0.312
41 m13o	1.0	0.0	0.875	58.35	87.39	-40.57	96.35	334	51.59	26.33	65.42	0.3599	0.1837	0.2972
42 m25o	1.0	0.0	0.75	57.23	85.38	-29.34	90.29	340	49.04	25.16	51.28	0.3908	0.2005	0.284
43 m38o	1.0	0.0	0.675	56.14	83.38	-16.14	84.93	348	46.62	24.05	37.77	0.4299	0.2218	0.2715
44 m50o	1.0	0.0	0.5	55.19	81.22	-0.89	81.23	359	44.43	23.11	25.72	0.4764	0.2478	0.2609
45 m63o	1.0	0.0	0.375	54.35	79.62	15.44	81.1	11	42.67	22.31	16.14	0.526	0.275	0.2518
46 m75o	1.0	0.0	0.25	53.75	78.41	33.44	85.24	24	41.41	21.74	8.91	0.5747	0.3017	0.2454
47 m88o	1.0	0.0	0.125	53.35	77.5	51.81	93.22	34	40.55	21.37	4.23	0.613	0.323	0.2412
48 o00y	1.0	0.0	0.0	54.21	78.64	58.52	98.03	37	42.14	22.17	3.33	0.623	0.3278	0.2503
49 n00w	0.0	0.0	0.0	10.76	5.51	-3.96	6.79	0	1.34	1.23	1.71	0.3134	0.2867	0.0139
50 n13w	0.125	0.125	0.125	16.56	4.87	-3.31	5.9	169	2.33	2.21	2.86	0.3146	0.2988	0.025
51 n25w	0.25	0.25	0.25	30.75	4.15	-2.76	4.99	269	6.61	6.54	7.89	0.3142	0.311	0.0739
52 n38w	0.375	0.375	0.375	43.53	4.11	-2.65	4.9	292	13.48	13.52	15.89	0.3142	0.3152	0.1526
53 n50w	0.5	0.5	0.5	55.06	4.06	-2.42	4.73	297	22.73	22.99	26.55	0.3145	0.3181	0.2595
54 n63w	0.625	0.625	0.625	66.15	3.69	-1.8	4.11	298	34.83	35.52	40.18	0.3151	0.3214	0.401
55 n75w	0.75	0.75	0.75	76.28	3.24	-0.77	3.34	301	49.03	50.35	55.64	0.3163	0.3248	0.5683
56 n88w	0.875	0.875	0.875	85.51	2.1	0.82	2.26	299	64.62	67.02	71.95	0.3174	0.3292	0.7565
57 n99w	1.0	1.0	1.0	95.41	-0.21	4.78	4.79	0	84.08	88.59	89.43	0.3208	0.338	1.0

TUB-test chart KE37; Hue circle and colorimetric data
Measurement: LCD and CRT display, and LCD projectorinput: $olv^* setrgbcolor$
output: no change compared to inputTUB registration: 20100601-KE37/KE37L0NP.PDF /.PS
application for measurement of printer or monitor systems

TUB material: code=rha4ta

Colorimetric data of Television Luminous System TLS11 for CIE lightness $L^*_N=11$ of black System: standard CIELAB (a^* , b^*) chroma diagram

TLS11

Y Yellow

Monitor:

$LCH^* = 94.1 \ 90.8 \ 100$

LCD

$LAB^* = 94.1 \ -15.8 \ 89.4$

L Leaf green

$LCH^* = 84.2 \ 111.2 \ 137$

$LAB^* = 84.2 \ -81.1 \ 76.1$

O Orange red

$LCH^* = 54.2 \ 98.0 \ 37$

$LAB^* = 54.2 \ 78.6 \ 58.5$

M Magenta red

$LCH^* = 59.6 \ 102.3 \ 331$

$LAB^* = 59.6 \ 89.1 \ -50.3$

C Cyan blue

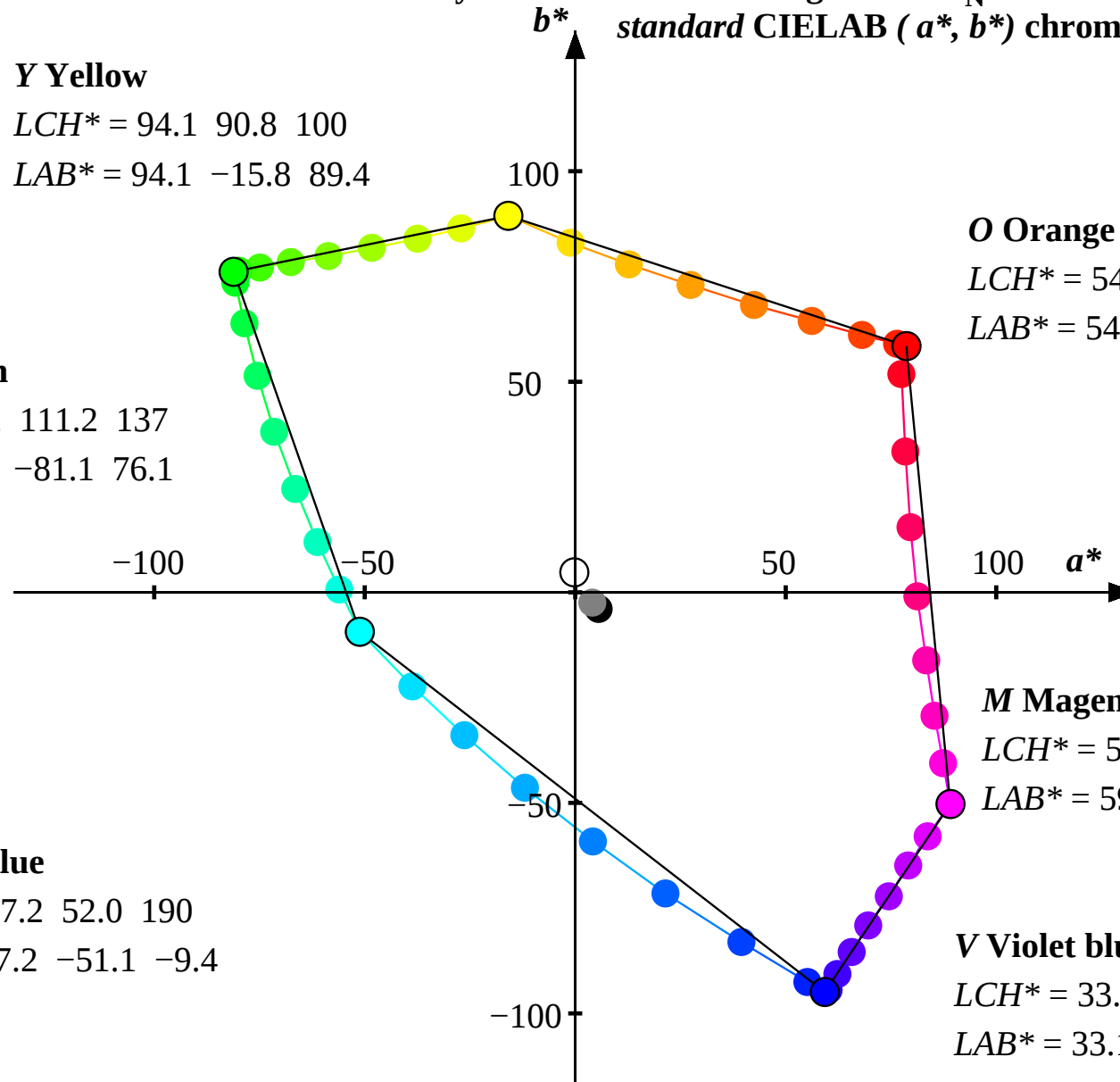
$LCH^* = 87.2 \ 52.0 \ 190$

$LAB^* = 87.2 \ -51.1 \ -9.4$

V Violet blue

$LCH^* = 33.1 \ 111.9 \ 302$

$LAB^* = 33.1 \ 59.3 \ -94.9$



Colorimetric data of Television Luminous System TLS11a for CIE lightness $L^*_N=11$ of black

System:

TLS11a

Monitor:

LCD

Color	$r=olv^*_1$	$g=olv^*_2$	$b=olv^*_3$	$L^*_a=LAB^*_{1a}$	$a^*_a=LAB^*_{2a}$	$b^*_a=LAB^*_{3a}$	$C^*_{ab,a}=LAB^*_{ra}$	$h_{ab,a}$	$X_a=XYZ^*_{1a}$	$Y_a=XYZ^*_{2a}$	$Z_a=XYZ^*_{3a}$	x_a	y_a	$Y_a/88.59$
00 o00y	1.0	0.0	0.0	54.21	76.07	58.0	95.66	37	41.29	22.17	3.41	0.6174	0.3315	0.2503
01 o13y	1.0	0.125	0.0	54.91	73.93	58.43	94.23	38	41.58	22.84	3.54	0.6118	0.3361	0.2579
02 o25y	1.0	0.25	0.0	57.87	65.78	60.22	89.18	42	43.12	25.83	4.12	0.5901	0.3535	0.2916
03 o38y	1.0	0.375	0.0	62.22	54.13	63.09	83.13	49	45.55	30.66	5.03	0.5607	0.3774	0.3461
04 o50y	1.0	0.5	0.0	67.48	40.75	66.3	77.82	58	48.87	37.27	6.37	0.5283	0.4029	0.4207
05 o63y	1.0	0.625	0.0	73.63	26.18	70.43	75.13	70	53.36	46.12	8.1	0.496	0.4287	0.5206
06 o75y	1.0	0.75	0.0	80.08	11.91	74.7	75.64	81	58.8	56.82	10.24	0.4672	0.4515	0.6414
07 o88y	1.0	0.875	0.0	86.52	-1.44	79.12	79.13	91	64.97	69.03	12.67	0.4429	0.4707	0.7793
08 y00l	1.0	1.0	0.0	94.11	-15.7	84.73	86.17	101	73.49	85.54	15.81	0.4203	0.4892	0.9655
09 y13l	0.875	1.0	0.0	92.0	-27.11	81.96	86.33	108	64.06	80.71	15.42	0.3999	0.5038	0.911
10 y25l	0.75	1.0	0.0	90.22	-37.62	79.72	88.15	115	56.42	76.78	15.06	0.3806	0.5179	0.8667
11 y38l	0.625	1.0	0.0	88.56	-48.49	77.69	91.59	122	49.46	73.23	14.69	0.36	0.5331	0.8266
12 y50l	0.5	1.0	0.0	87.07	-58.96	75.93	96.14	128	43.48	70.14	14.35	0.3398	0.5481	0.7917
13 y63l	0.375	1.0	0.0	85.89	-67.96	74.63	100.94	132	38.89	67.76	14.04	0.3222	0.5615	0.7649
14 y75l	0.25	1.0	0.0	84.97	-75.44	73.43	105.28	136	35.4	65.95	13.88	0.3072	0.5723	0.7444
15 y88l	0.125	1.0	0.0	84.37	-80.42	72.71	108.42	138	33.21	64.77	13.75	0.2973	0.5797	0.7312
16 l00c	0.0	1.0	0.0	84.21	-81.64	72.51	109.2	138	32.68	64.47	13.72	0.2948	0.5815	0.7278
17 l13c	0.0	1.0	0.125	84.25	-81.25	69.95	107.21	139	32.83	64.54	14.83	0.2926	0.5752	0.7285
18 l25c	0.0	1.0	0.25	84.35	-79.15	60.31	99.51	143	33.55	64.74	19.49	0.2849	0.5497	0.7308
19 l38c	0.0	1.0	0.375	84.61	-76.0	47.79	89.79	148	34.78	65.24	27.01	0.2738	0.5136	0.7365
20 l50c	0.0	1.0	0.5	84.97	-71.95	34.43	79.78	154	36.44	65.95	37.07	0.2613	0.4729	0.7444
21 l63c	0.0	1.0	0.625	85.43	-66.89	20.8	70.06	163	38.61	66.85	49.78	0.2487	0.4306	0.7546
22 l75c	0.0	1.0	0.75	85.97	-61.66	8.09	62.2	173	41.02	67.93	64.21	0.2369	0.3923	0.7668
23 l88c	0.0	1.0	0.875	86.54	-56.43	-3.15	56.52	183	43.57	69.07	79.31	0.227	0.3598	0.7796
24 c00v	0.0	1.0	1.0	87.18	-51.44	-13.34	53.15	195	46.25	70.38	95.2	0.2184	0.3322	0.7944
25 c13v	0.0	0.875	1.0	78.68	-39.54	-25.37	46.99	213	38.06	54.38	91.34	0.2071	0.2959	0.6138
26 c25v	0.0	0.75	1.0	71.08	-27.73	-36.23	45.64	233	31.93	42.3	88.11	0.1967	0.2606	0.4775
27 c38v	0.0	0.675	1.0	63.12	-13.94	-47.83	49.84	254	26.61	31.73	85.14	0.1854	0.2212	0.3582
28 c50v	0.0	0.5	1.0	54.95	1.67	-59.7	59.74	272	22.1	22.88	82.09	0.1739	0.18	0.2582
29 c63v	0.0	0.375	1.0	47.37	18.43	-71.36	73.71	284	18.85	16.3	80.21	0.1634	0.1413	0.184
30 c75v	0.0	0.25	1.0	40.2	35.92	-82.13	89.65	294	16.36	11.37	78.1	0.1546	0.1074	0.1284
31 c88v	0.0	0.125	1.0	34.57	51.25	-91.02	104.47	299	14.84	8.29	77.05	0.1481	0.0827	0.0935
32 v00m	0.0	0.0	1.0	33.09	55.26	-93.24	108.4	301	14.45	7.58	76.63	0.1465	0.0768	0.0856
33 v13m	0.125	0.0	1.0	33.6	56.21	-92.78	108.49	301	14.96	7.82	77.15	0.1497	0.0782	0.0882
34 v25m	0.25	0.0	1.0	35.64	58.43	-89.19	106.63	303	16.87	8.82	77.06	0.1642	0.0859	0.0996
35 v38m	0.375	0.0	1.0	38.78	62.05	-84.34	104.72	306	20.16	10.53	77.8	0.1858	0.0971	0.1189
36 v50m	0.5	0.0	1.0	42.38	66.17	-78.44	102.63	310	24.4	12.75	78.19	0.2116	0.1105	0.1439
37 v63m	0.625	0.0	1.0	46.58	71.39	-71.92	101.35	315	30.18	15.7	79.14	0.2414	0.1256	0.1772
38 v75m	0.75	0.0	1.0	50.83	76.25	-65.07	100.25	320	36.76	19.12	79.78	0.271	0.1409	0.2158
39 v88m	0.875	0.0	1.0	54.98	81.14	-58.49	100.03	324	44.1	22.91	80.55	0.2989	0.1553	0.2586
40 m00o	1.0	0.0	1.0	59.56	86.88	-51.35	100.93	329	53.4	27.64	81.56	0.3284	0.17	0.312
41 m13o	1.0	0.0	0.875	58.35	85.1	-41.52	94.69	334	50.73	26.33	66.53	0.3533	0.1834	0.2972
42 m25o	1.0	0.0	0.75	57.23	83.02	-30.18	88.34	340	48.17	25.16	52.11	0.384	0.2006	0.284
43 m38o	1.0	0.0	0.675	56.14	80.94	-16.86	82.68	348	45.76	24.05	38.35	0.423	0.2224	0.2715
44 m50o	1.0	0.0	0.5	55.19	78.72	-1.52	78.73	359	43.58	23.11	26.11	0.4696	0.249	0.2609
45 m63o	1.0	0.0	0.375	54.35	77.06	14.91	78.48	11	41.82	22.31	16.39	0.5194	0.2771	0.2518
46 m75o	1.0	0.0	0.25	53.75	75.81	32.96	82.67	24	40.56	21.74	9.05	0.5685	0.3047	0.2454
47 m88o	1.0	0.0	0.125	53.35	74.87	51.38	90.8	34	39.71	21.37	4.32	0.6072	0.3268	0.2412
48 o00y	1.0	0.0	0.0	54.21	76.07	58.0	95.66	37	41.29	22.17	3.41	0.6174	0.3315	0.2503
49 n00w	0.0	0.0	0.0	10.76	0.0	0.0	0.01	0	1.17	1.23	1.34	0.3127	0.329	0.0139
50 n13w	0.125	0.125	0.125	16.56	-0.23	0.05	0.25	169	2.09	2.21	2.4	0.3119	0.3299	0.025
51 n25w	0.25	0.25	0.25	30.75	0.0	-0.86	0.87	269	6.22	6.54	7.36	0.3091	0.3252	0.0739
52 n38w	0.375	0.375	0.375	43.53	0.82	-2.07	2.24	292	12.97	13.52	15.63	0.308	0.3209	0.1526
53 n50w	0.5	0.5	0.5	55.06	1.55	-3.03	3.42	297	22.18	22.99	26.95	0.3076	0.3188	0.2595
54 n63w	0.625	0.625	0.625	66.15	1.93	-3.55	4.05	298	34.32	35.52	41.67	0.3077	0.3186	0.401
55 n75w	0.75	0.75	0.75	76.28	2.17	-3.58	4.19	301	48.64	50.35	58.62	0.3086	0.3195	0.5683
56 n88w	0.875	0.875	0.875	85.51	1.65	-2.93	3.37	299	64.42	67.02	76.71	0.3095	0.322	0.7565
57 n99w	1.0	1.0	1.0	95.41	0.0	0.0	0.01	0	84.2	88.59	96.46	0.3127	0.329	1.0

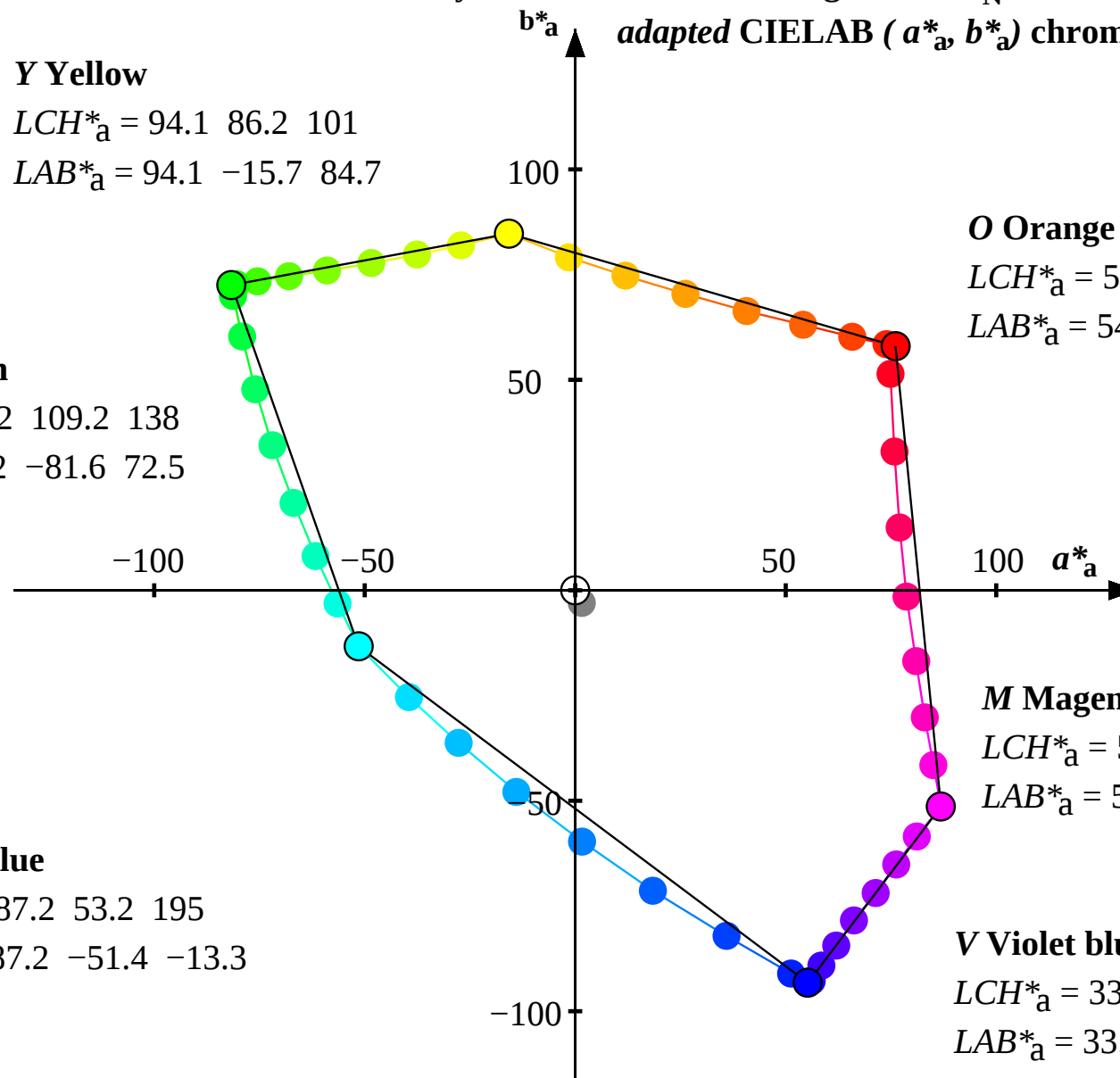
KE370-7N, 3/66

TUB-test chart KE37; Hue circle and colorimetric data
Measurement: LCD and CRT display, and LCD projector

input: $olv^* setrgbcolor$
output: no change compared to input

TUB registration: 20100601-KE37/KE37L0NP.PDF /.PS
application for measurement of printer or monitor systems

TUB material: code=rha4ta

Colorimetric data of Television Luminous System TLS11a for CIE lightness $L^*_N=11$ of black**System:****TLS11a****Y Yellow****Monitor:** $LCH^*_a = 94.1 \ 86.2 \ 101$ **LCD** $LAB^*_a = 94.1 \ -15.7 \ 84.7$ **L Leaf green** $LCH^*_a = 84.2 \ 109.2 \ 138$ $LAB^*_a = 84.2 \ -81.6 \ 72.5$ **C Cyan blue** $LCH^*_a = 87.2 \ 53.2 \ 195$ $LAB^*_a = 87.2 \ -51.4 \ -13.3$ **adapted CIELAB (a^*_a , b^*_a) chroma diagram****O Orange red** $LCH^*_a = 54.2 \ 95.7 \ 37$ $LAB^*_a = 54.2 \ 76.1 \ 58.0$ **M Magenta red** $LCH^*_a = 59.6 \ 100.9 \ 329$ $LAB^*_a = 59.6 \ 86.9 \ -51.4$ **V Violet blue** $LCH^*_a = 33.1 \ 108.4 \ 301$ $LAB^*_a = 33.1 \ 55.3 \ -93.3$

Colorimetric data of Television Luminous System TLS00a for CIE lightness $L^*_N=00$ of black

System:

TLS00a

Monitor:

LCD

Color	$r=olv*_1$	$g=olv*_2$	$b=olv*_3$	$L^*_a=LAB^*_1a$	$a^*_a=LAB^*_2a$	$b^*_a=LAB^*_3a$	$C^*_{ab,a}=LAB^*_{ab,a}$	$h_{ab,a}$	$X_a=XYZ^*_1a$	$Y_a=XYZ^*_2a$	$Z_a=XYZ^*_3a$	x_a	y_a	$Y_a/88.59$
00 o00y	1.0	0.0	0.0	53.21	78.53	65.65	102.36	40	40.69	21.24	2.1	0.6355	0.3317	0.2484
01 o13y	1.0	0.125	0.0	53.94	76.28	65.83	100.76	41	40.98	21.92	2.23	0.6292	0.3365	0.2564
02 o25y	1.0	0.25	0.0	57.02	67.72	66.71	95.06	45	42.54	24.95	2.82	0.605	0.3548	0.2918
03 o38y	1.0	0.375	0.0	61.52	55.58	68.6	88.29	51	45.0	29.85	3.75	0.5726	0.3797	0.3491
04 o50y	1.0	0.5	0.0	66.94	41.72	70.89	82.26	60	48.37	36.55	5.1	0.5373	0.406	0.4275
05 o63y	1.0	0.625	0.0	73.24	26.73	74.3	78.96	70	52.93	45.53	6.85	0.5026	0.4323	0.5325
06 o75y	1.0	0.75	0.0	79.83	12.13	78.0	78.94	81	58.44	56.38	9.03	0.4719	0.4552	0.6594
07 o88y	1.0	0.875	0.0	86.38	-1.46	82.01	82.02	91	64.7	68.76	11.49	0.4463	0.4744	0.8042
08 y00l	1.0	1.0	0.0	94.1	-15.93	87.27	88.72	100	73.34	85.49	14.68	0.4227	0.4927	1.0
09 y13l	0.875	1.0	0.0	91.95	-27.55	84.51	88.89	108	63.78	80.6	14.28	0.402	0.508	0.9427
10 y25l	0.75	1.0	0.0	90.14	-38.26	82.28	90.74	115	56.03	76.62	13.91	0.3823	0.5228	0.8962
11 y38l	0.625	1.0	0.0	88.45	-49.38	80.26	94.24	122	48.97	73.01	13.54	0.3613	0.5388	0.854
12 y50l	0.5	1.0	0.0	86.94	-60.11	78.52	98.89	127	42.91	69.88	13.19	0.3406	0.5547	0.8174
13 y63l	0.375	1.0	0.0	85.74	-69.36	77.23	103.81	132	38.25	67.47	12.88	0.3225	0.5689	0.7891
14 y75l	0.25	1.0	0.0	84.81	-77.08	76.04	108.28	135	34.72	65.63	12.72	0.3071	0.5804	0.7676
15 y88l	0.125	1.0	0.0	84.19	-82.22	75.33	111.52	138	32.5	64.44	12.58	0.2967	0.5884	0.7537
16 l00c	0.0	1.0	0.0	84.03	-83.48	75.12	112.31	138	31.96	64.13	12.56	0.2941	0.5903	0.7501
17 l13c	0.0	1.0	0.125	84.07	-83.08	72.37	110.19	139	32.11	64.2	13.68	0.2919	0.5837	0.7509
18 l25c	0.0	1.0	0.25	84.18	-80.91	62.13	102.03	142	32.84	64.4	18.41	0.284	0.5569	0.7533
19 l38c	0.0	1.0	0.375	84.44	-77.67	49.03	91.86	148	34.09	64.92	26.04	0.2726	0.5192	0.7593
20 l50c	0.0	1.0	0.5	84.81	-73.5	35.21	81.5	154	35.77	65.63	36.23	0.2599	0.4768	0.7676
21 l63c	0.0	1.0	0.625	85.28	-68.28	21.21	71.51	163	37.96	66.55	49.13	0.2471	0.4331	0.7784
22 l75c	0.0	1.0	0.75	85.82	-62.91	8.24	63.45	173	40.41	67.64	63.75	0.2352	0.3937	0.7911
23 l88c	0.0	1.0	0.875	86.4	-57.53	-3.2	57.63	183	43.0	68.79	79.07	0.2253	0.3604	0.8046
24 c00v	0.0	1.0	1.0	87.06	-52.42	-13.54	54.15	194	45.72	70.12	95.18	0.2167	0.3323	0.8202
25 c13v	0.0	0.875	1.0	78.4	-40.44	-25.8	47.98	213	37.41	53.89	91.26	0.2049	0.2952	0.6304
26 c25v	0.0	0.75	1.0	70.63	-28.48	-36.92	46.64	232	31.2	41.65	87.99	0.194	0.2589	0.4871
27 c38v	0.0	0.675	1.0	62.45	-14.4	-48.87	50.97	254	25.8	30.93	84.99	0.182	0.2183	0.3618
28 c50v	0.0	0.5	1.0	53.98	1.74	-61.22	61.26	272	21.23	21.95	81.89	0.1697	0.1755	0.2568
29 c63v	0.0	0.375	1.0	46.02	19.41	-73.51	76.04	285	17.93	15.29	79.98	0.1584	0.135	0.1788
30 c75v	0.0	0.25	1.0	38.35	38.38	-85.12	93.38	294	15.41	10.29	77.84	0.1488	0.0993	0.1203
31 c88v	0.0	0.125	1.0	32.16	55.61	-94.97	110.06	300	13.86	7.16	76.77	0.1418	0.0732	0.0837
32 v00m	0.0	0.0	1.0	30.5	60.26	-97.5	114.62	302	13.47	6.44	76.35	0.14	0.0669	0.0754
33 v13m	0.125	0.0	1.0	31.07	61.12	-96.93	114.6	302	13.99	6.68	76.88	0.1434	0.0685	0.0781
34 v25m	0.25	0.0	1.0	33.35	62.93	-92.92	112.23	304	15.93	7.7	76.78	0.1586	0.0767	0.0901
35 v38m	0.375	0.0	1.0	36.81	66.05	-87.54	109.67	307	19.26	9.44	77.54	0.1813	0.0888	0.1104
36 v50m	0.5	0.0	1.0	40.7	69.7	-81.13	106.97	311	23.56	11.68	77.94	0.2082	0.1032	0.1366
37 v63m	0.625	0.0	1.0	45.18	74.51	-74.14	105.11	315	29.42	14.67	78.89	0.2392	0.1193	0.1716
38 v75m	0.75	0.0	1.0	49.67	79.02	-66.89	103.54	320	36.09	18.14	79.54	0.2698	0.1356	0.2122
39 v88m	0.875	0.0	1.0	54.01	83.65	-59.99	102.94	324	43.54	21.99	80.32	0.2985	0.1508	0.2572
40 m00o	1.0	0.0	1.0	58.77	89.16	-52.55	103.5	329	52.97	26.78	81.35	0.3288	0.1663	0.3133
41 m13o	1.0	0.0	0.875	57.52	87.43	-42.59	97.26	334	50.26	25.46	66.11	0.3543	0.1795	0.2978
42 m25o	1.0	0.0	0.75	56.35	85.39	-31.06	90.87	340	47.67	24.27	51.49	0.3862	0.1966	0.2838
43 m38o	1.0	0.0	0.675	55.22	83.35	-17.43	85.15	348	45.22	23.14	37.54	0.427	0.2186	0.2707
44 m50o	1.0	0.0	0.5	54.23	81.16	-1.58	81.17	359	43.01	22.19	25.13	0.4761	0.2457	0.2596
45 m63o	1.0	0.0	0.375	53.36	79.52	15.69	81.06	11	41.22	21.38	15.26	0.5294	0.2745	0.25
46 m75o	1.0	0.0	0.25	52.73	78.3	35.35	85.91	24	39.95	20.8	7.82	0.5826	0.3033	0.2433
47 m88o	1.0	0.0	0.125	52.31	77.37	57.23	96.24	36	39.08	20.42	3.02	0.6251	0.3266	0.2389
48 o00y	1.0	0.0	0.0	53.21	78.53	65.65	102.36	40	40.69	21.24	2.1	0.6355	0.3317	0.2484
49 n00w	0.0	0.0	0.0	0.0	0.0	0.0	0.01	289	0.0	0.0	0.0	0.0	0.0	0.0
50 n13w	0.125	0.125	0.125	8.96	-0.41	0.08	0.43	169	0.94	1.0	1.08	0.3109	0.3309	0.0117
51 n25w	0.25	0.25	0.25	27.82	0.0	-0.99	1.0	269	5.12	5.39	6.11	0.3082	0.3244	0.0631
52 n38w	0.375	0.375	0.375	41.94	0.88	-2.21	2.39	292	11.97	12.46	14.5	0.3075	0.3201	0.1458
53 n50w	0.5	0.5	0.5	54.1	1.61	-3.16	3.56	297	21.31	22.07	25.97	0.3073	0.3182	0.2581
54 n63w	0.625	0.625	0.625	65.58	1.98	-3.65	4.16	298	33.61	34.78	40.9	0.3076	0.3182	0.4068
55 n75w	0.75	0.75	0.75	75.95	2.21	-3.65	4.28	301	48.14	49.81	58.08	0.3085	0.3192	0.5826
56 n88w	0.875	0.875	0.875	85.36	1.68	-2.98	3.43	299	64.14	66.72	76.43	0.3094	0.3219	0.7804
57 n99w	1.0	1.0	1.0	95.41	0.0	0.0	0.01	0	84.2	88.59	96.46	0.3127	0.329	1.0362

$$n = 88.59 / (88.59 - 1.23) = 1.014$$

TUB-test chart KE37; Hue circle and colorimetric data
Measurement: LCD and CRT display, and LCD projector

input: $olv^* setrgbcolor$
output: no change compared to input

Colorimetric data of Television Luminous System TLS00a for CIE lightness $L^*_N=00$ of black

System:

TLS00a

Y Yellow

Monitor:

$LCH^*_a = 94.1 \ 88.7 \ 100$

LCD

$LAB^*_a = 94.1 \ -15.9 \ 87.3$

L Leaf green

$LCH^*_a = 84.0 \ 112.3 \ 138$

$LAB^*_a = 84.0 \ -83.5 \ 75.1$

C Cyan blue

$LCH^*_a = 87.1 \ 54.2 \ 194$

$LAB^*_a = 87.1 \ -52.4 \ -13.6$

O Orange red

$LCH^*_a = 53.2 \ 102.4 \ 40$

$LAB^*_a = 53.2 \ 78.5 \ 65.7$

M Magenta red

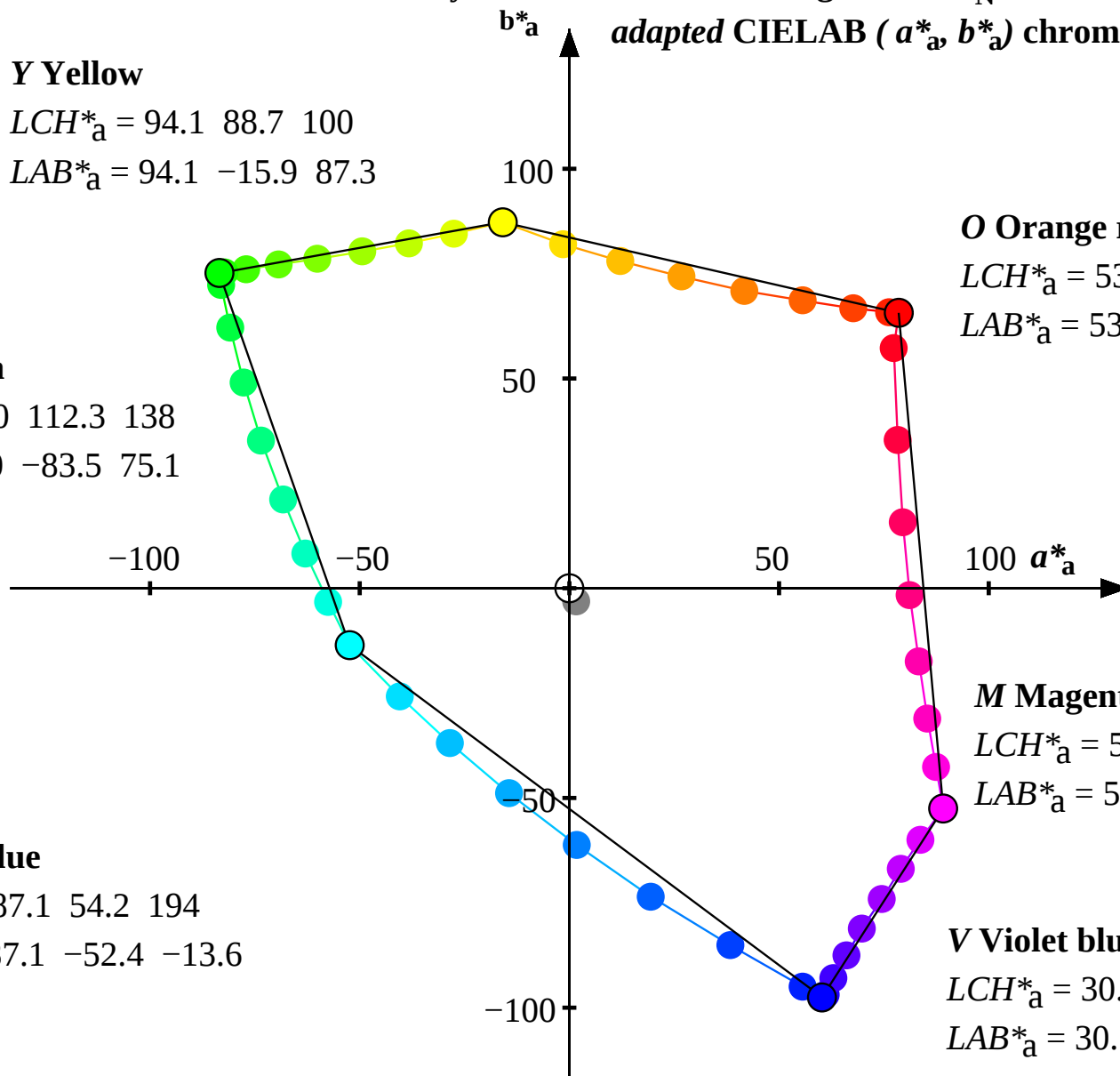
$LCH^*_a = 58.8 \ 103.5 \ 329$

$LAB^*_a = 58.8 \ 89.2 \ -52.6$

V Violet blue

$LCH^*_a = 30.5 \ 114.6 \ 302$

$LAB^*_a = 30.5 \ 60.3 \ -97.5$



See original or copy: <http://web.me.com/klaus.richter/KE37/KE37L0NP.PDF> /.PS
Technical information: <http://www.ps.bam.de> or <http://130.149.60.45/~farbmetrik>

TUB registration: 20100601-KE37/KE37L0NP.PDF /.PS
application for measurement of printer or monitor systems

TUB material: code=rha4ta

TUB-test chart KE37; Hue circle and colorimetric data
Measurement: LCD and CRT display, and LCD projector

input: `olv* setrgbcolor`
output: *no change compared to input*

Colorimetric data of Television Luminous System TLS00a for CIE lightness $L^*_N=00$ of black

System:

TLS00a

Monitor:

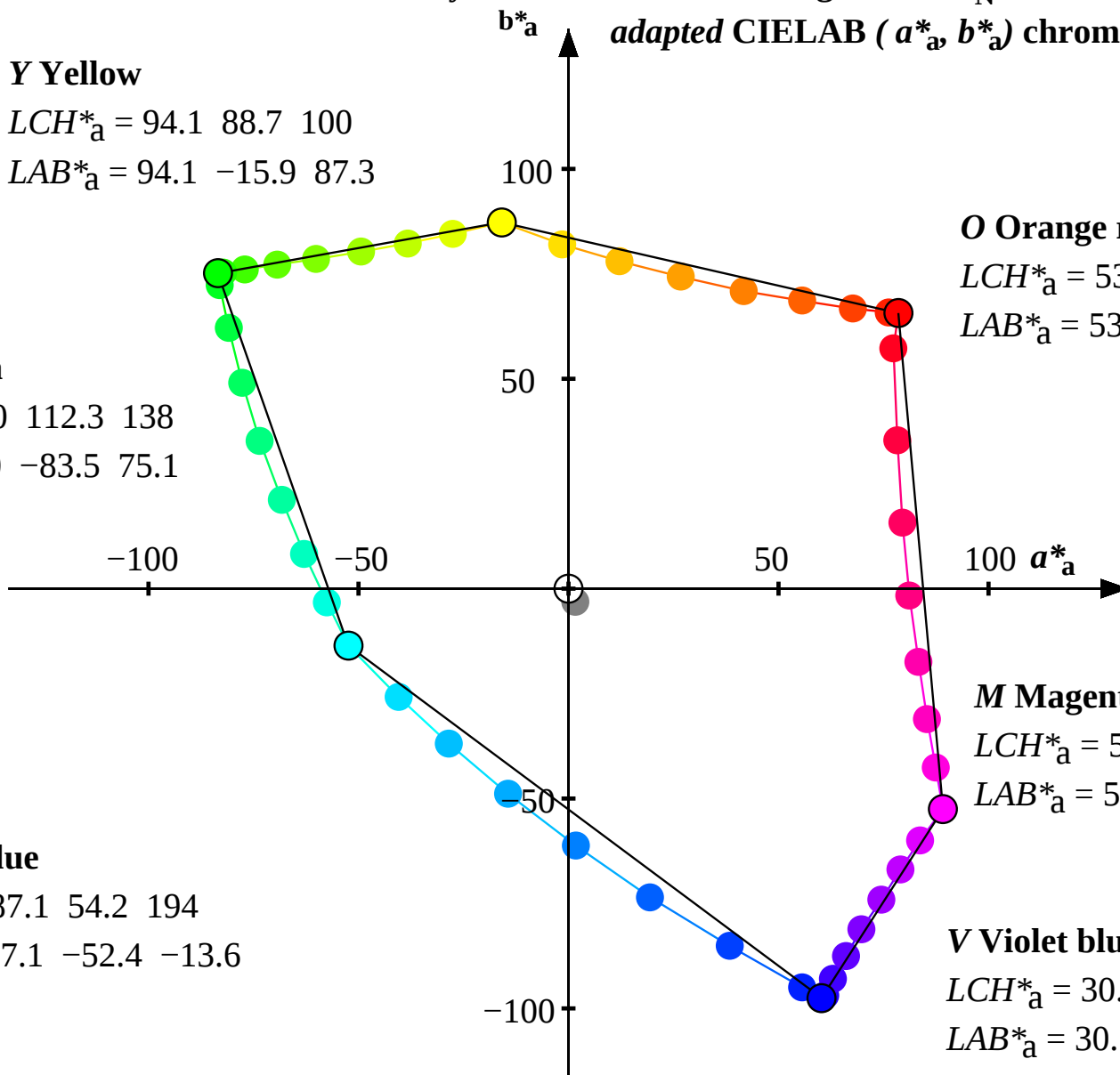
LCD

Reflection:

 $Y_N = 0.0$ $L^*_N = 0.0$

Color	$r=olv*_1$	$g=olv*_2$	$b=olv*_3$	$L^*_a=LAB^*_1a$	$a^*_a=LAB^*_2a$	$b^*_a=LAB^*_3a$	$C^*_{ab,a}=LAB^*_{ab,a}$	$h_{ab,a}$	$X_a=XYZ^*_1a$	$Y_a=XYZ^*_2a$	$Z_a=XYZ^*_3a$	x_a	y_a	$Y_a/88.59$
00 o00y	1.0	0.0	0.0	53.21	78.53	65.65	102.36	40	40.69	21.24	2.1	0.6355	0.3317	0.2484
01 o13y	1.0	0.125	0.0	53.94	76.28	65.83	100.76	41	40.98	21.92	2.23	0.6292	0.3365	0.2564
02 o25y	1.0	0.25	0.0	57.02	67.72	66.71	95.06	45	42.54	24.95	2.82	0.605	0.3548	0.2918
03 o38y	1.0	0.375	0.0	61.52	55.58	68.6	88.29	51	45.0	29.85	3.75	0.5726	0.3797	0.3491
04 o50y	1.0	0.5	0.0	66.94	41.72	70.89	82.26	60	48.37	36.55	5.1	0.5373	0.406	0.4275
05 o63y	1.0	0.625	0.0	73.24	26.73	74.3	78.96	70	52.93	45.53	6.85	0.5026	0.4323	0.5325
06 o75y	1.0	0.75	0.0	79.83	12.13	78.0	78.94	81	58.44	56.38	9.03	0.4719	0.4552	0.6594
07 o88y	1.0	0.875	0.0	86.38	-1.46	82.01	82.02	91	64.7	68.76	11.49	0.4463	0.4744	0.8042
08 y00l	1.0	1.0	0.0	94.1	-15.93	87.27	88.72	100	73.34	85.49	14.68	0.4227	0.4927	1.0
09 y13l	0.875	1.0	0.0	91.95	-27.55	84.51	88.89	108	63.78	80.6	14.28	0.402	0.508	0.9427
10 y25l	0.75	1.0	0.0	90.14	-38.26	82.28	90.74	115	56.03	76.62	13.91	0.3823	0.5228	0.8962
11 y38l	0.625	1.0	0.0	88.45	-49.38	80.26	94.24	122	48.97	73.01	13.54	0.3613	0.5388	0.854
12 y50l	0.5	1.0	0.0	86.94	-60.11	78.52	98.89	127	42.91	69.88	13.19	0.3406	0.5547	0.8174
13 y63l	0.375	1.0	0.0	85.74	-69.36	77.23	103.81	132	38.25	67.47	12.88	0.3225	0.5689	0.7891
14 y75l	0.25	1.0	0.0	84.81	-77.08	76.04	108.28	135	34.72	65.63	12.72	0.3071	0.5804	0.7676
15 y88l	0.125	1.0	0.0	84.19	-82.22	75.33	111.52	138	32.5	64.44	12.58	0.2967	0.5884	0.7537
16 l00c	0.0	1.0	0.0	84.03	-83.48	75.12	112.31	138	31.96	64.13	12.56	0.2941	0.5903	0.7501
17 l13c	0.0	1.0	0.125	84.07	-83.08	72.37	110.19	139	32.11	64.2	13.68	0.2919	0.5837	0.7509
18 l25c	0.0	1.0	0.25	84.18	-80.91	62.13	102.03	142	32.84	64.4	18.41	0.284	0.5569	0.7533
19 l38c	0.0	1.0	0.375	84.44	-77.67	49.03	91.86	148	34.09	64.92	26.04	0.2726	0.5192	0.7593
20 l50c	0.0	1.0	0.5	84.81	-73.5	35.21	81.5	154	35.77	65.63	36.23	0.2599	0.4768	0.7676
21 l63c	0.0	1.0	0.625	85.28	-68.28	21.21	71.51	163	37.96	66.55	49.13	0.2471	0.4331	0.7784
22 l75c	0.0	1.0	0.75	85.82	-62.91	8.24	63.45	173	40.41	67.64	63.75	0.2352	0.3937	0.7911
23 l88c	0.0	1.0	0.875	86.4	-57.53	-3.2	57.63	183	43.0	68.79	79.07	0.2253	0.3604	0.8046
24 c00v	0.0	1.0	1.0	87.06	-52.42	-13.54	54.15	194	45.72	70.12	95.18	0.2167	0.3323	0.8202
25 c13v	0.0	0.875	1.0	78.4	-40.44	-25.8	47.98	213	37.41	53.89	91.26	0.2049	0.2952	0.6304
26 c25v	0.0	0.75	1.0	70.63	-28.48	-36.92	46.64	232	31.2	41.65	87.99	0.194	0.2589	0.4871
27 c38v	0.0	0.675	1.0	62.45	-14.4	-48.87	50.97	254	25.8	30.93	84.99	0.182	0.2183	0.3618
28 c50v	0.0	0.5	1.0	53.98	1.74	-61.22	61.26	272	21.23	21.95	81.89	0.1697	0.1755	0.2568
29 c63v	0.0	0.375	1.0	46.02	19.41	-73.51	76.04	285	17.93	15.29	79.98	0.1584	0.135	0.1788
30 c75v	0.0	0.25	1.0	38.35	38.38	-85.12	93.38	294	15.41	10.29	77.84	0.1488	0.0993	0.1203
31 c88v	0.0	0.125	1.0	32.16	55.61	-94.97	110.06	300	13.86	7.16	76.77	0.1418	0.0732	0.0837
32 v00m	0.0	0.0	1.0	30.5	60.26	-97.5	114.62	302	13.47	6.44	76.35	0.14	0.0669	0.0754
33 v13m	0.125	0.0	1.0	31.07	61.12	-96.93	114.6	302	13.99	6.68	76.88	0.1434	0.0685	0.0781
34 v25m	0.25	0.0	1.0	33.35	62.93	-92.92	112.23	304	15.93	7.7	76.78	0.1586	0.0767	0.0901
35 v38m	0.375	0.0	1.0	36.81	66.05	-87.54	109.67	307	19.26	9.44	77.54	0.1813	0.0888	0.1104
36 v50m	0.5	0.0	1.0	40.7	69.7	-81.13	106.97	311	23.56	11.68	77.94	0.2082	0.1032	0.1366
37 v63m	0.625	0.0	1.0	45.18	74.51	-74.14	105.11	315	29.42	14.67	78.89	0.2392	0.1193	0.1716
38 v75m	0.75	0.0	1.0	49.67	79.02	-66.89	103.54	320	36.09	18.14	79.54	0.2698	0.1356	0.2122
39 v88m	0.875	0.0	1.0	54.01	83.65	-59.99	102.94	324	43.54	21.99	80.32	0.2985	0.1508	0.2572
40 m00o	1.0	0.0	1.0	58.77	89.16	-52.55	103.5	329	52.97	26.78	81.35	0.3288	0.1663	0.3133
41 m13o	1.0	0.0	0.875	57.52	87.43	-42.59	97.26	334	50.26	25.46	66.11	0.3543	0.1795	0.2978
42 m25o	1.0	0.0	0.75	56.35	85.39	-31.06	90.87	340	47.67	24.27	51.49	0.3862	0.1966	0.2838
43 m38o	1.0	0.0	0.675	55.22	83.35	-17.43	85.15	348	45.22	23.14	37.54	0.427	0.2186	0.2707
44 m50o	1.0	0.0	0.5	54.23	81.16	-1.58	81.17	359	43.01	22.19	25.13	0.4761	0.2457	0.2596
45 m63o	1.0	0.0	0.375	53.36	79.52	15.69	81.06	11	41.22	21.38	15.26	0.5294	0.2745	0.25
46 m75o	1.0	0.0	0.25	52.73	78.3	35.35	85.91	24	39.95	20.8	7.82	0.5826	0.3033	0.2433
47 m88o	1.0	0.0	0.125	52.31	77.37	57.23	96.24	36	39.08	20.42	3.02	0.6251	0.3266	0.2389
48 o00y	1.0	0.0	0.0	53.21	78.53	65.65	102.36	40	40.69	21.24	2.1	0.6355	0.3317	0.2484
49 n00w	0.0	0.0	0.0	0.0	0.0	0.0	0.01	289	0.0	0.0	0.0	0.0	0.0	0.0
50 n13w	0.125	0.125	0.125	8.96	-0.41	0.08	0.43	169	0.94	1.0	1.08	0.3109	0.3309	0.0117
51 n25w	0.25	0.25	0.25	27.82	0.0	-0.99	1.0	269	5.12	5.39	6.11	0.3082	0.3244	0.0631
52 n38w	0.375	0.375	0.375	41.94	0.88	-2.21	2.39	292	11.97	12.46	14.5	0.3075	0.3201	0.1458
53 n50w	0.5	0.5	0.5	54.1	1.61	-3.16	3.56	297	21.31	22.07	25.97	0.3073	0.3182	0.2581
54 n63w	0.625	0.625	0.625	65.58	1.98	-3.65	4.16	298	33.61	34.78	40.9	0.3076	0.3182	0.4068
55 n75w	0.75	0.75	0.75	75.95	2.21	-3.65	4.28	301	48.14	49.81	58.08	0.3085	0.3192	0.5826
56 n88w	0.875	0.875	0.875	85.36	1.68	-2.98	3.43	299	64.14	66.72	76.43	0.3094	0.3219	0.7804
57 n99w	1.0	1.0	1.0	95.41	0.0	0.0	0.01	0	84.2	88.59	96.46	0.3127	0.329	1.0362

 $n = 88.59 / (88.59 - 1.23) = 1.014$ TUB-test chart KE37; Hue circle and colorimetric data
Measurement: LCD and CRT display, and LCD projectorinput: $olv^* setrgbcolor$
output: no change compared to input

Colorimetric data of Television Luminous System TLS00a for CIE lightness $L^*_N=00$ of black**System:****TLS00a****Y Yellow****Monitor:** $LCH^*_a = 94.1 \ 88.7 \ 100$ **LCD** $LAB^*_a = 94.1 \ -15.9 \ 87.3$ **Reflection:** $Y_N = 0.0$ $L^*_N = 0.0$ **L Leaf green** $LCH^*_a = 84.0 \ 112.3 \ 138$ $LAB^*_a = 84.0 \ -83.5 \ 75.1$ **C Cyan blue** $LCH^*_a = 87.1 \ 54.2 \ 194$ $LAB^*_a = 87.1 \ -52.4 \ -13.6$ b^*_a *adapted CIELAB (a^*_a , b^*_a) chroma diagram***O Orange red** $LCH^*_a = 53.2 \ 102.4 \ 40$ $LAB^*_a = 53.2 \ 78.5 \ 65.7$ **M Magenta red** $LCH^*_a = 58.8 \ 103.5 \ 329$ $LAB^*_a = 58.8 \ 89.2 \ -52.6$ **V Violet blue** $LCH^*_a = 30.5 \ 114.6 \ 302$ $LAB^*_a = 30.5 \ 60.3 \ -97.5$ 

Colorimetric data of Television Luminous System TLS06a for CIE lightness $L^*_N=06$ of black

System:

TLS06a

Monitor:

LCD

Reflection:

 $Y_N = 0.63$ $L^*_N = 5.69$

Color	$r=olv*_1$	$g=olv*_2$	$b=olv*_3$	$L^*_a=LAB^*_1a$	$a^*_a=LAB^*_2a$	$b^*_a=LAB^*_3a$	$C^*_{ab,a}=LAB^*_{ab,a}$	$h_{ab,a}$	$X_a=XYZ^*_1a$	$Y_a=XYZ^*_2a$	$Z_a=XYZ^*_3a$	x_a	y_a	$Y_a/88.59$
00 o00y	1.0	0.0	0.0	53.73	77.26	61.36	98.66	38	41.0	21.72	2.78	0.626	0.3316	0.254
01 o13y	1.0	0.125	0.0	54.44	75.06	61.69	97.16	39	41.29	22.39	2.9	0.6201	0.3363	0.2619
02 o25y	1.0	0.25	0.0	57.46	66.71	63.13	91.85	43	42.84	25.4	3.49	0.5972	0.3541	0.297
03 o38y	1.0	0.375	0.0	61.88	54.83	65.61	85.5	50	45.28	30.26	4.41	0.5664	0.3785	0.3539
04 o50y	1.0	0.5	0.0	67.21	41.22	68.44	79.89	59	48.62	36.92	5.75	0.5326	0.4044	0.4317
05 o63y	1.0	0.625	0.0	73.44	26.45	72.25	76.94	70	53.15	45.83	7.49	0.4992	0.4304	0.5359
06 o75y	1.0	0.75	0.0	79.96	12.02	76.27	77.21	81	58.63	56.61	9.65	0.4694	0.4533	0.6619
07 o88y	1.0	0.875	0.0	86.45	-1.45	80.5	80.51	91	64.84	68.9	12.1	0.4446	0.4725	0.8057
08 y00l	1.0	1.0	0.0	94.11	-15.81	85.95	87.39	100	73.42	85.52	15.26	0.4215	0.4909	1.0
09 y13l	0.875	1.0	0.0	91.98	-27.32	83.18	87.56	108	63.92	80.65	14.86	0.4009	0.5058	0.9431
10 y25l	0.75	1.0	0.0	90.18	-37.93	80.95	89.4	115	56.23	76.7	14.5	0.3814	0.5203	0.8969
11 y38l	0.625	1.0	0.0	88.51	-48.92	78.92	92.86	122	49.22	73.12	14.13	0.3607	0.5358	0.8551
12 y50l	0.5	1.0	0.0	87.0	-59.51	77.17	97.46	128	43.21	70.01	13.78	0.3402	0.5513	0.8187
13 y63l	0.375	1.0	0.0	85.81	-68.64	75.87	102.32	132	38.58	67.62	13.47	0.3224	0.565	0.7907
14 y75l	0.25	1.0	0.0	84.89	-76.23	74.68	106.72	136	35.07	65.79	13.32	0.3071	0.5762	0.7694
15 y88l	0.125	1.0	0.0	84.28	-81.29	73.97	109.91	138	32.87	64.61	13.18	0.297	0.5839	0.7555
16 l00c	0.0	1.0	0.0	84.13	-82.53	73.76	110.7	138	32.33	64.31	13.15	0.2945	0.5857	0.752
17 l13c	0.0	1.0	0.125	84.16	-82.13	71.11	108.65	139	32.48	64.37	14.27	0.2923	0.5793	0.7528
18 l25c	0.0	1.0	0.25	84.27	-80.0	61.19	100.73	143	33.21	64.58	18.96	0.2844	0.5531	0.7551
19 l38c	0.0	1.0	0.375	84.53	-76.81	48.39	90.79	148	34.44	65.08	26.54	0.2732	0.5163	0.7611
20 l50c	0.0	1.0	0.5	84.89	-72.7	34.81	80.61	154	36.12	65.79	36.66	0.2606	0.4748	0.7694
21 l63c	0.0	1.0	0.625	85.35	-67.57	21.0	70.77	163	38.29	66.7	49.46	0.2479	0.4319	0.78
22 l75c	0.0	1.0	0.75	85.9	-62.26	8.16	62.81	173	40.72	67.79	63.99	0.2361	0.393	0.7927
23 l88c	0.0	1.0	0.875	86.47	-56.96	-3.18	57.06	183	43.29	68.93	79.19	0.2262	0.3601	0.8061
24 c00v	0.0	1.0	1.0	87.12	-51.91	-13.44	53.64	195	45.99	70.25	95.19	0.2175	0.3323	0.8215
25 c13v	0.0	0.875	1.0	78.54	-39.97	-25.58	47.47	213	37.75	54.14	91.3	0.2061	0.2955	0.6331
26 c25v	0.0	0.75	1.0	70.86	-28.09	-36.57	46.12	232	31.57	41.98	88.05	0.1954	0.2598	0.4909
27 c38v	0.0	0.675	1.0	62.8	-14.16	-48.34	50.38	254	26.21	31.34	85.07	0.1838	0.2198	0.3665
28 c50v	0.0	0.5	1.0	54.48	1.71	-60.44	60.47	272	21.68	22.43	82.0	0.1719	0.1779	0.2623
29 c63v	0.0	0.375	1.0	46.72	18.89	-72.39	74.83	285	18.4	15.81	80.1	0.161	0.1383	0.1849
30 c75v	0.0	0.25	1.0	39.32	37.08	-83.56	91.42	294	15.9	10.84	77.98	0.1518	0.1035	0.1268
31 c88v	0.0	0.125	1.0	33.43	53.28	-92.89	107.1	300	14.36	7.74	76.91	0.1451	0.0781	0.0905
32 v00m	0.0	0.0	1.0	31.87	57.58	-95.25	111.31	301	13.97	7.03	76.49	0.1433	0.0721	0.0822
33 v13m	0.125	0.0	1.0	32.4	58.49	-94.74	111.35	302	14.49	7.26	77.02	0.1467	0.0735	0.0849
34 v25m	0.25	0.0	1.0	34.55	60.54	-90.96	109.27	304	16.41	8.28	76.92	0.1615	0.0815	0.0968
35 v38m	0.375	0.0	1.0	37.84	63.94	-85.86	107.06	307	19.72	10.0	77.67	0.1836	0.0931	0.1169
36 v50m	0.5	0.0	1.0	41.58	67.85	-79.73	104.7	310	24.0	12.23	78.07	0.21	0.107	0.143
37 v63m	0.625	0.0	1.0	45.91	72.88	-72.99	103.15	315	29.81	15.2	79.02	0.2403	0.1226	0.1777
38 v75m	0.75	0.0	1.0	50.27	77.58	-65.95	101.83	320	36.44	18.64	79.66	0.2704	0.1384	0.218
39 v88m	0.875	0.0	1.0	54.51	82.35	-59.22	101.44	324	43.82	22.46	80.44	0.2987	0.1531	0.2627
40 m00o	1.0	0.0	1.0	59.18	87.99	-51.93	102.17	329	53.19	27.22	81.46	0.3286	0.1682	0.3183
41 m13o	1.0	0.0	0.875	57.95	86.23	-42.04	95.93	334	50.5	25.91	66.33	0.3538	0.1815	0.3029
42 m25o	1.0	0.0	0.75	56.81	84.16	-30.6	89.56	340	47.93	24.72	51.81	0.3851	0.1987	0.2891
43 m38o	1.0	0.0	0.675	55.69	82.1	-17.14	83.87	348	45.49	23.61	37.96	0.4249	0.2205	0.2761
44 m50o	1.0	0.0	0.5	54.72	79.89	-1.55	79.91	359	43.3	22.66	25.63	0.4727	0.2474	0.265
45 m63o	1.0	0.0	0.375	53.87	78.24	15.28	79.72	11	41.53	21.85	15.84	0.5242	0.2759	0.2555
46 m75o	1.0	0.0	0.25	53.25	77.01	34.08	84.21	24	40.26	21.28	8.45	0.5752	0.304	0.2488
47 m88o	1.0	0.0	0.125	52.85	76.08	54.01	93.3	35	39.4	20.91	3.69	0.6157	0.3267	0.2445
48 o00y	1.0	0.0	0.0	53.73	77.26	61.36	98.66	38	41.0	21.72	2.78	0.626	0.3316	0.254
49 n00w	0.0	0.0	0.0	5.69	0.0	0.0	0.01	289	0.6	0.63	0.69	0.3127	0.329	0.0074
50 n13w	0.125	0.125	0.125	13.35	-0.29	0.06	0.31	169	1.53	1.62	1.76	0.3116	0.3302	0.0189
51 n25w	0.25	0.25	0.25	29.37	0.0	-0.92	0.93	269	5.69	5.98	6.75	0.3087	0.3249	0.07
52 n38w	0.375	0.375	0.375	42.77	0.85	-2.14	2.31	292	12.48	13.0	15.08	0.3077	0.3206	0.1521
53 n50w	0.5	0.5	0.5	54.6	1.58	-3.09	3.48	297	21.76	22.54	26.47	0.3075	0.3185	0.2636
54 n63w	0.625	0.625	0.625	65.87	1.95	-3.6	4.11	298	33.97	35.16	41.3	0.3076	0.3184	0.4112
55 n75w	0.75	0.75	0.75	76.12	2.19	-3.62	4.24	301	48.4	50.09	58.36	0.3086	0.3194	0.5857
56 n88w	0.875	0.875	0.875	85.44	1.66	-2.95	3.4	299	64.28	66.87	76.57	0.3095	0.3219	0.782
57 n99w	1.0	1.0	1.0	95.41	0.0	0.0	0.01	0	84.2	88.59	96.46	0.3127	0.329	1.0359

 $n = 88.59 / (88.59 - 1.23) = 1.014$ TUB-test chart KE37; Hue circle and colorimetric data
Measurement: LCD and CRT display, and LCD projectorinput: $olv^* setrgbcolor$
output: no change compared to input

Colorimetric data of Television Luminous System TLS06a for CIE lightness $L^*_N=06$ of black

System:

TLS06a

Y Yellow

Monitor:

$LCH^*_a = 94.1 \ 87.4 \ 100$

LCD

$LAB^*_a = 94.1 \ -15.8 \ 86.0$

Reflection:

$Y_N = 0.63$

$L^*_N = 5.69$

L Leaf green

$LCH^*_a = 84.1 \ 110.7 \ 138$

$LAB^*_a = 84.1 \ -82.5 \ 73.8$

C Cyan blue

$LCH^*_a = 87.1 \ 53.6 \ 195$

$LAB^*_a = 87.1 \ -51.9 \ -13.4$

O Orange red

$LCH^*_a = 53.7 \ 98.7 \ 38$

$LAB^*_a = 53.7 \ 77.3 \ 61.4$

M Magenta red

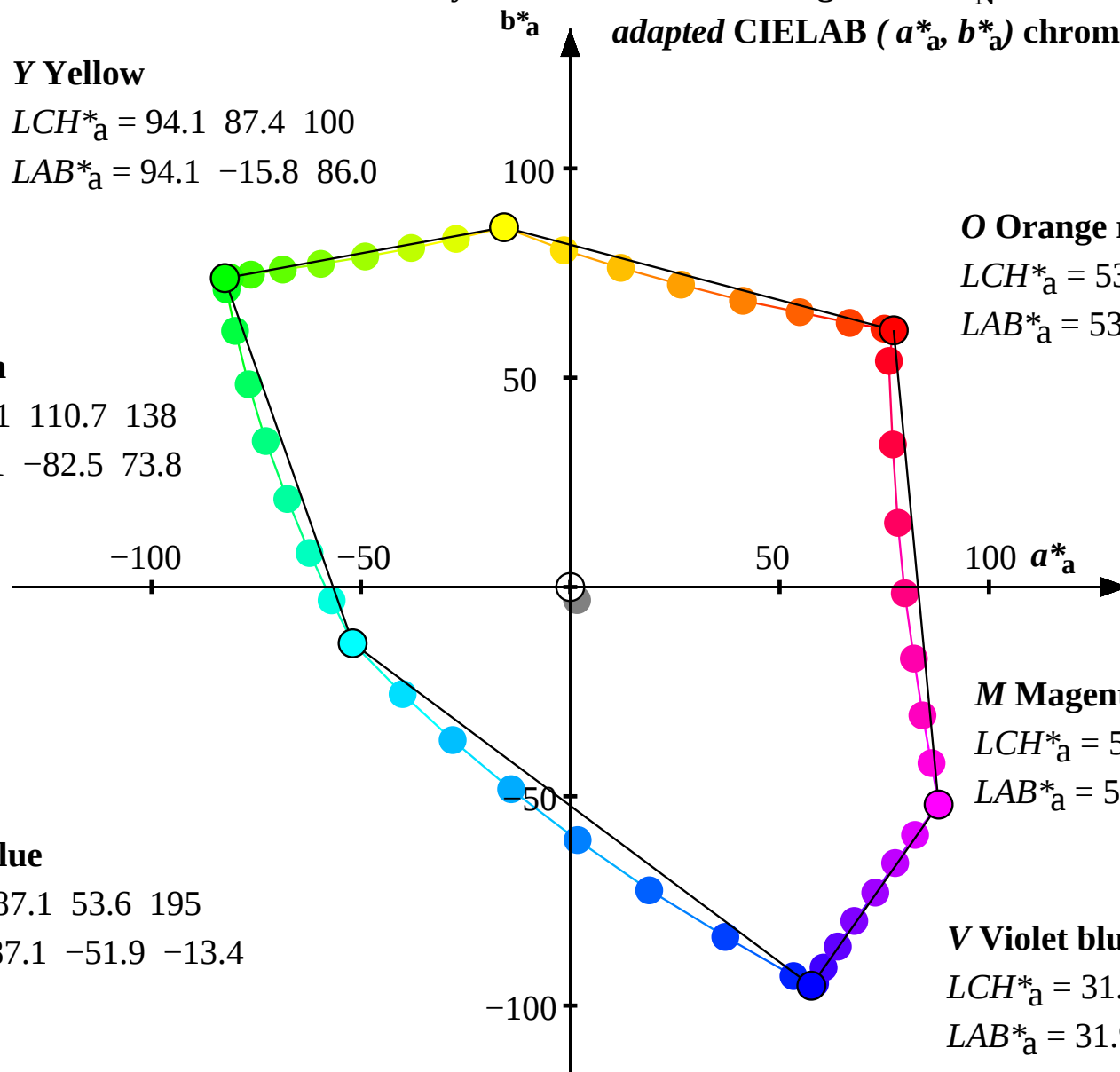
$LCH^*_a = 59.2 \ 102.2 \ 329$

$LAB^*_a = 59.2 \ 88.0 \ -51.9$

V Violet blue

$LCH^*_a = 31.9 \ 111.3 \ 301$

$LAB^*_a = 31.9 \ 57.6 \ -95.3$



Colorimetric data of Television Luminous System TLS11a for CIE lightness $L^*_N=11$ of black

System:

TLS11a

Monitor:

LCD

Reflection:

 $Y_N = 1.26$ $L^*_N = 11.0$

Color	$r=olv*_1$	$g=olv*_2$	$b=olv*_3$	$L^*_a=LAB^*_1a$	$a^*_a=LAB^*_2a$	$b^*_a=LAB^*_3a$	$C^*_{ab,a}=LAB^*_{ab,a}$	$h_{ab,a}$	$X_a=XYZ^*_1a$	$Y_a=XYZ^*_2a$	$Z_a=XYZ^*_3a$	x_a	y_a	$Y_a/88.59$
00 o00y	1.0	0.0	0.0	54.24	76.01	57.83	95.51	37	41.31	22.2	3.45	0.617	0.3315	0.2595
01 o13y	1.0	0.125	0.0	54.94	73.87	58.26	94.08	38	41.6	22.87	3.57	0.6114	0.3361	0.2673
02 o25y	1.0	0.25	0.0	57.9	65.73	60.07	89.04	42	43.13	25.85	4.16	0.5897	0.3535	0.3022
03 o38y	1.0	0.375	0.0	62.24	54.09	62.96	83.0	49	45.56	30.68	5.07	0.5604	0.3773	0.3587
04 o50y	1.0	0.5	0.0	67.49	40.72	66.19	77.71	58	48.88	37.29	6.4	0.528	0.4028	0.4359
05 o63y	1.0	0.625	0.0	73.64	26.16	70.33	75.04	70	53.38	46.14	8.13	0.4959	0.4286	0.5394
06 o75y	1.0	0.75	0.0	80.09	11.9	74.61	75.56	81	58.81	56.84	10.27	0.467	0.4514	0.6644
07 o88y	1.0	0.875	0.0	86.52	-1.44	79.04	79.06	91	64.97	69.04	12.7	0.4429	0.4706	0.8071
08 y00l	1.0	1.0	0.0	94.11	-15.69	84.66	86.11	101	73.49	85.54	15.84	0.4203	0.4892	1.0
09 y13l	0.875	1.0	0.0	92.0	-27.1	81.9	86.27	108	64.07	80.71	15.45	0.3999	0.5037	0.9436
10 y25l	0.75	1.0	0.0	90.22	-37.6	79.65	88.09	115	56.43	76.79	15.09	0.3805	0.5178	0.8977
11 y38l	0.625	1.0	0.0	88.56	-48.47	77.63	91.52	122	49.47	73.23	14.72	0.36	0.5329	0.8561
12 y50l	0.5	1.0	0.0	87.07	-58.93	75.86	96.07	128	43.5	70.15	14.38	0.3398	0.5479	0.8201
13 y63l	0.375	1.0	0.0	85.89	-67.92	74.56	100.87	132	38.9	67.77	14.07	0.3222	0.5613	0.7922
14 y75l	0.25	1.0	0.0	84.97	-75.4	73.36	105.21	136	35.42	65.96	13.91	0.3072	0.5721	0.7711
15 y88l	0.125	1.0	0.0	84.37	-80.37	72.65	108.35	138	33.23	64.78	13.78	0.2973	0.5795	0.7573
16 l00c	0.0	1.0	0.0	84.22	-81.59	72.44	109.12	138	32.7	64.48	13.75	0.2948	0.5813	0.7538
17 l13c	0.0	1.0	0.125	84.25	-81.2	69.88	107.14	139	32.85	64.55	14.86	0.2927	0.575	0.7546
18 l25c	0.0	1.0	0.25	84.35	-79.1	60.26	99.45	143	33.57	64.75	19.52	0.2849	0.5495	0.757
19 l38c	0.0	1.0	0.375	84.61	-75.96	47.76	89.74	148	34.8	65.25	27.04	0.2738	0.5134	0.7628
20 l50c	0.0	1.0	0.5	84.97	-71.91	34.41	79.73	154	36.46	65.96	37.09	0.2614	0.4728	0.7711
21 l63c	0.0	1.0	0.625	85.43	-66.85	20.79	70.02	163	38.62	66.86	49.8	0.2487	0.4306	0.7817
22 l75c	0.0	1.0	0.75	85.97	-61.63	8.09	62.17	173	41.03	67.93	64.22	0.2369	0.3923	0.7942
23 l88c	0.0	1.0	0.875	86.54	-56.4	-3.15	56.5	183	43.59	69.07	79.31	0.227	0.3598	0.8075
24 c00v	0.0	1.0	1.0	87.18	-51.41	-13.33	53.13	195	46.27	70.38	95.2	0.2184	0.3322	0.8228
25 c13v	0.0	0.875	1.0	78.69	-39.52	-25.36	46.97	213	38.08	54.39	91.34	0.2072	0.2959	0.6358
26 c25v	0.0	0.75	1.0	71.09	-27.71	-36.21	45.61	233	31.95	42.32	88.11	0.1968	0.2606	0.4947
27 c38v	0.0	0.675	1.0	63.14	-13.93	-47.81	49.61	254	26.63	31.75	85.15	0.1855	0.2212	0.3712
28 c50v	0.0	0.5	1.0	54.97	1.67	-59.66	59.7	272	22.12	22.9	82.1	0.174	0.1801	0.2677
29 c63v	0.0	0.375	1.0	47.4	18.4	-71.31	73.65	284	18.87	16.33	80.21	0.1635	0.1415	0.1909
30 c75v	0.0	0.25	1.0	40.25	35.86	-82.05	89.56	294	16.39	11.4	78.11	0.1548	0.1077	0.1333
31 c88v	0.0	0.125	1.0	34.63	51.15	-90.92	104.33	299	14.86	8.32	77.05	0.1483	0.083	0.0972
32 v00m	0.0	0.0	1.0	33.16	55.14	-93.14	108.25	301	14.48	7.61	76.63	0.1467	0.0771	0.089
33 v13m	0.125	0.0	1.0	33.66	56.09	-92.68	108.34	301	14.99	7.85	77.16	0.1499	0.0785	0.0917
34 v25m	0.25	0.0	1.0	35.7	58.32	-89.09	106.49	303	16.9	8.85	77.06	0.1644	0.0861	0.1035
35 v38m	0.375	0.0	1.0	38.83	61.96	-84.26	104.59	306	20.18	10.56	77.8	0.1859	0.0973	0.1235
36 v50m	0.5	0.0	1.0	42.42	66.08	-78.37	102.52	310	24.43	12.77	78.2	0.2117	0.1107	0.1493
37 v63m	0.625	0.0	1.0	46.61	71.31	-71.86	101.25	315	30.2	15.73	79.14	0.2415	0.1257	0.1838
38 v75m	0.75	0.0	1.0	50.86	76.18	-65.03	100.17	320	36.78	19.15	79.78	0.271	0.1411	0.2238
39 v88m	0.875	0.0	1.0	55.01	81.08	-58.45	99.96	324	44.11	22.93	80.55	0.2989	0.1554	0.2681
40 m00o	1.0	0.0	1.0	59.58	86.82	-51.32	100.86	329	53.41	27.66	81.56	0.3284	0.1701	0.3234
41 m13o	1.0	0.0	0.875	58.37	85.04	-41.49	94.63	334	50.74	26.36	66.54	0.3532	0.1835	0.3081
42 m25o	1.0	0.0	0.75	57.25	82.96	-30.15	88.27	340	48.19	25.18	52.13	0.384	0.2007	0.2944
43 m38o	1.0	0.0	0.675	56.16	80.88	-16.85	82.61	348	45.77	24.07	38.37	0.4229	0.2225	0.2815
44 m50o	1.0	0.0	0.5	55.21	78.66	-1.51	78.67	359	43.59	23.14	26.14	0.4694	0.2491	0.2705
45 m63o	1.0	0.0	0.375	54.38	76.99	14.89	78.42	11	41.83	22.33	16.42	0.5191	0.2771	0.2611
46 m75o	1.0	0.0	0.25	53.77	75.75	32.91	82.58	23	40.58	21.76	9.08	0.5681	0.3047	0.2544
47 m88o	1.0	0.0	0.125	53.38	74.81	51.24	90.68	34	39.73	21.39	4.35	0.6068	0.3268	0.2501
48 o00y	1.0	0.0	0.0	54.24	76.01	57.83	95.51	37	41.31	22.2	3.45	0.617	0.3315	0.2595
49 n00w	0.0	0.0	0.0	10.99	0.0	0.0	0.01	0	1.2	1.26	1.37	0.3127	0.329	0.0147
50 n13w	0.125	0.125	0.125	16.71	-0.23	0.05	0.25	169	2.12	2.24	2.44	0.3119	0.3299	0.0262
51 n25w	0.25	0.25	0.25	30.82	0.0	-0.86	0.87	269	6.25	6.57	7.39	0.3091	0.3253	0.0769
52 n38w	0.375	0.375	0.375	43.57	0.82	-2.07	2.23	292	13.0	13.55	15.66	0.308	0.3209	0.1584
53 n50w	0.5	0.5	0.5	55.09	1.55	-3.03	3.41	297	22.21	23.02	26.97	0.3076	0.3188	0.2691
54 n63w	0.625	0.625	0.625	66.17	1.92	-3.55	4.05	298	34.33	35.54	41.69	0.3077	0.3186	0.4155
55 n75w	0.75	0.75	0.75	76.29	2.16	-3.58	4.19	301	48.65	50.36	58.63	0.3086	0.3195	0.5888
56 n88w	0.875	0.875	0.875	85.52	1.65	-2.93	3.37	299	64.43	67.03	76.72	0.3095	0.322	0.7836
57 n99w	1.0	1.0	1.0	95.41	0.0	0.0	0.01	0	84.2	88.59	96.46	0.3127	0.329	1.0357

 $n = 88.59 / (88.59 - 1.23) = 1.014$ TUB-test chart KE37; Hue circle and colorimetric data
Measurement: LCD and CRT display, and LCD projectorinput: $olv^* setrgbcolor$
output: no change compared to input

Colorimetric data of Television Luminous System TLS11a for CIE lightness $L^*_N=11$ of black

System:

TLS11a Y Yellow

Monitor: $LCH^*_a = 94.1 \ 86.1 \ 101$

LCD $LAB^*_a = 94.1 \ -15.7 \ 84.7$

Reflection:

$Y_N = 1.26$

$L^*_N = 11.0$

L Leaf green

$LCH^*_a = 84.2 \ 109.1 \ 138$

$LAB^*_a = 84.2 \ -81.6 \ 72.4$

C Cyan blue

$LCH^*_a = 87.2 \ 53.1 \ 195$

$LAB^*_a = 87.2 \ -51.4 \ -13.3$

O Orange red

$LCH^*_a = 54.2 \ 95.5 \ 37$

$LAB^*_a = 54.2 \ 76.0 \ 57.8$

M Magenta red

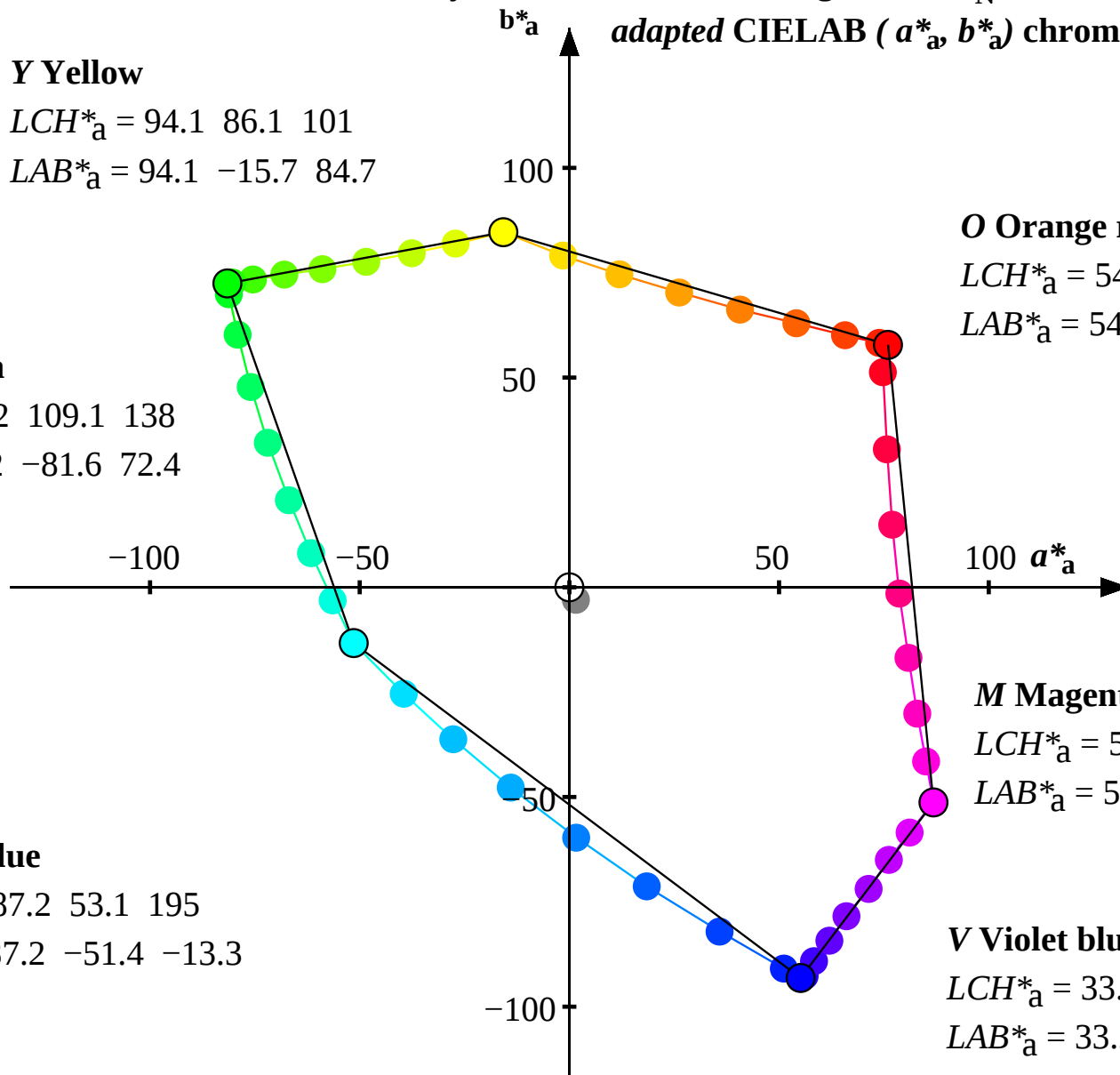
$LCH^*_a = 59.6 \ 100.9 \ 329$

$LAB^*_a = 59.6 \ 86.8 \ -51.3$

V Violet blue

$LCH^*_a = 33.2 \ 108.2 \ 301$

$LAB^*_a = 33.2 \ 55.1 \ -93.1$



Colorimetric data of Television Luminous System TLS18a for CIE lightness $L^*_N=18$ of black

System:

TLS18a

Monitor:

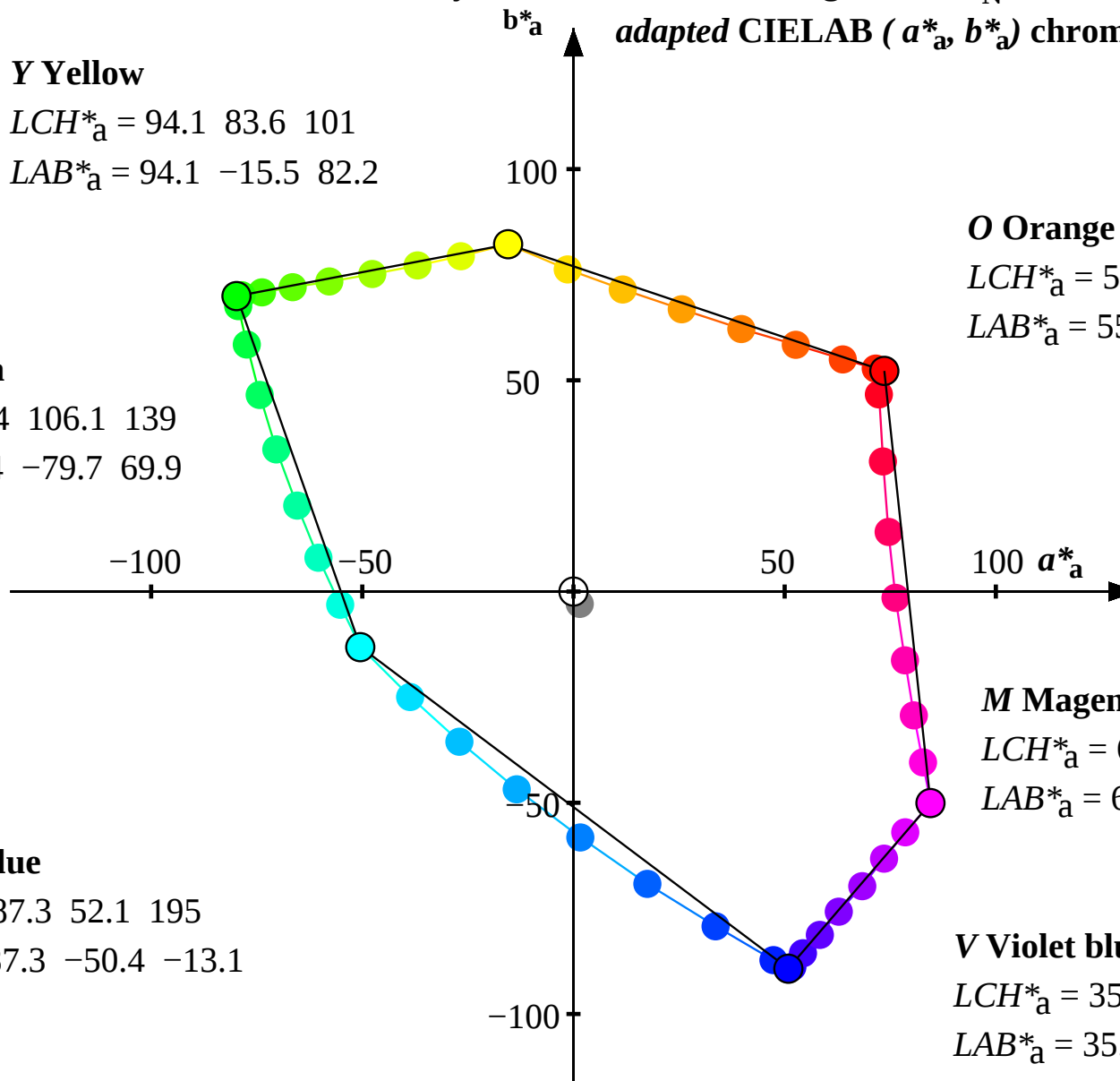
LCD

Reflection:

 $Y_N = 2.52$ $L^*_N = 18.01$

Color	$r=olv*_1$	$g=olv*_2$	$b=olv*_3$	$L^*_a=LAB^*_{1a}$	$a^*_a=LAB^*_{2a}$	$b^*_a=LAB^*_{3a}$	$C^*_{ab,a}=LAB^*_{ab,a}$	$h_{ab,a}$	$X_a=XYZ_{1a}$	$Y_a=XYZ_{2a}$	$Z_a=XYZ_{3a}$	x_a	y_a	$Y_a/88.59$
00 o00y	1.0	0.0	0.0	55.23	73.6	52.22	90.24	35	41.93	23.16	4.79	0.6001	0.3314	0.2706
01 o13y	1.0	0.125	0.0	55.9	71.56	52.76	88.91	36	42.21	23.82	4.91	0.595	0.3357	0.2783
02 o25y	1.0	0.25	0.0	58.75	63.8	55.0	84.24	41	43.73	26.76	5.49	0.5756	0.3522	0.3126
03 o38y	1.0	0.375	0.0	62.94	52.65	58.41	78.63	48	46.12	31.52	6.38	0.5489	0.3751	0.3683
04 o50y	1.0	0.5	0.0	68.04	39.74	62.19	73.81	57	49.39	38.03	7.7	0.5193	0.3998	0.4443
05 o63y	1.0	0.625	0.0	74.03	25.6	66.82	71.56	69	53.82	46.75	9.4	0.4894	0.4251	0.5463
06 o75y	1.0	0.75	0.0	80.34	11.68	71.52	72.47	81	59.17	57.29	11.52	0.4624	0.4477	0.6695
07 o88y	1.0	0.875	0.0	86.66	-1.41	76.28	76.29	91	65.25	69.32	13.91	0.4395	0.4669	0.81
08 y00l	1.0	1.0	0.0	94.13	-15.45	82.18	83.62	101	73.65	85.58	17.0	0.4179	0.4856	1.0
09 y13l	0.875	1.0	0.0	92.05	-26.66	79.42	83.77	109	64.36	80.82	16.62	0.3978	0.4995	0.9444
10 y25l	0.75	1.0	0.0	90.3	-36.95	77.17	85.56	116	56.83	76.96	16.26	0.3787	0.5129	0.8992
11 y38l	0.625	1.0	0.0	88.66	-47.57	75.14	88.94	122	49.97	73.45	15.9	0.3587	0.5272	0.8583
12 y50l	0.5	1.0	0.0	87.2	-57.76	73.37	93.38	128	44.09	70.41	15.56	0.339	0.5414	0.8228
13 y63l	0.375	1.0	0.0	86.04	-66.5	72.05	98.06	133	39.56	68.07	15.26	0.3219	0.5539	0.7953
14 y75l	0.25	1.0	0.0	85.14	-73.75	70.85	102.28	136	36.13	66.28	15.1	0.3074	0.5641	0.7745
15 y88l	0.125	1.0	0.0	84.55	-78.55	70.13	105.32	138	33.97	65.13	14.97	0.2978	0.571	0.761
16 l00c	0.0	1.0	0.0	84.4	-79.73	69.93	106.06	139	33.44	64.83	14.94	0.2954	0.5726	0.7575
17 l13c	0.0	1.0	0.125	84.43	-79.35	67.54	104.21	140	33.59	64.89	16.03	0.2933	0.5667	0.7583
18 l25c	0.0	1.0	0.25	84.53	-77.32	58.47	96.94	143	34.3	65.09	20.63	0.2858	0.5423	0.7606
19 l38c	0.0	1.0	0.375	84.79	-74.28	46.53	87.66	148	35.51	65.59	28.04	0.275	0.5079	0.7664
20 l50c	0.0	1.0	0.5	85.14	-70.36	33.63	77.99	154	37.15	66.28	37.95	0.2628	0.4688	0.7745
21 l63c	0.0	1.0	0.625	85.59	-65.45	20.37	68.55	163	39.28	67.17	50.47	0.2503	0.4281	0.7849
22 l75c	0.0	1.0	0.75	86.12	-60.37	7.94	60.9	173	41.66	68.23	64.68	0.2386	0.3909	0.7973
23 l88c	0.0	1.0	0.875	86.68	-55.28	-3.1	55.37	183	44.17	69.36	79.56	0.2288	0.3592	0.8104
24 c00v	0.0	1.0	1.0	87.31	-50.42	-13.13	52.11	195	46.82	70.64	95.22	0.2201	0.3322	0.8255
25 c13v	0.0	0.875	1.0	78.97	-38.61	-24.92	45.97	213	38.74	54.88	91.41	0.2094	0.2966	0.6413
26 c25v	0.0	0.75	1.0	71.54	-26.96	-35.51	44.6	233	32.7	42.98	88.23	0.1995	0.2622	0.5022
27 c38v	0.0	0.675	1.0	63.81	-13.47	-46.76	48.68	254	27.46	32.57	85.31	0.1889	0.2241	0.3806
28 c50v	0.0	0.5	1.0	55.94	1.6	-58.15	58.18	272	23.02	23.85	82.31	0.1782	0.1846	0.2787
29 c63v	0.0	0.375	1.0	48.73	17.48	-69.2	71.39	284	19.81	17.37	80.45	0.1684	0.1477	0.203
30 c75v	0.0	0.25	1.0	42.02	33.64	-79.19	68.05	293	17.37	12.51	78.37	0.1604	0.1156	0.1462
31 c88v	0.0	0.125	1.0	36.88	47.37	-87.26	99.3	298	15.86	9.47	77.33	0.1545	0.0923	0.1107
32 v00m	0.0	0.0	1.0	35.56	50.86	-89.23	102.71	300	15.48	8.78	76.92	0.153	0.0868	0.1026
33 v13m	0.125	0.0	1.0	36.0	51.85	-88.85	102.88	300	15.99	9.01	77.43	0.1561	0.088	0.1053
34 v25m	0.25	0.0	1.0	37.85	54.34	-85.6	101.4	302	17.87	10.0	77.34	0.1698	0.0951	0.1169
35 v38m	0.375	0.0	1.0	40.72	58.32	-81.22	100.0	306	21.11	11.69	78.07	0.1904	0.1054	0.1366
36 v50m	0.5	0.0	1.0	44.04	62.79	-75.77	98.42	310	25.29	13.87	78.46	0.215	0.1179	0.162
37 v63m	0.625	0.0	1.0	47.98	68.34	-69.7	97.62	314	30.98	16.78	79.39	0.2436	0.1319	0.196
38 v75m	0.75	0.0	1.0	52.0	73.48	-63.23	96.95	319	37.46	20.15	80.02	0.2722	0.1464	0.2354
39 v88m	0.875	0.0	1.0	55.97	78.6	-56.96	97.08	324	44.69	23.88	80.78	0.2992	0.1599	0.2791
40 m00o	1.0	0.0	1.0	60.38	84.55	-50.11	98.29	329	53.85	28.54	81.78	0.328	0.1739	0.3335
41 m13o	1.0	0.0	0.875	59.21	82.72	-40.41	92.07	334	51.22	27.25	66.98	0.3522	0.1874	0.3184
42 m25o	1.0	0.0	0.75	58.13	80.61	-29.28	85.76	340	48.71	26.1	52.77	0.3818	0.2046	0.3049
43 m38o	1.0	0.0	0.675	57.08	78.49	-16.28	80.17	348	46.33	25.01	39.21	0.4191	0.2262	0.2922
44 m50o	1.0	0.0	0.5	56.17	76.25	-1.45	76.27	359	44.18	24.08	27.16	0.463	0.2524	0.2814
45 m63o	1.0	0.0	0.375	55.37	74.57	14.15	75.9	11	42.44	23.29	17.57	0.5095	0.2795	0.2721
46 m75o	1.0	0.0	0.25	54.79	73.31	30.79	79.51	23	41.2	22.73	10.34	0.5548	0.306	0.2655
47 m88o	1.0	0.0	0.125	54.41	72.36	46.67	86.1	33	40.37	22.36	5.68	0.5901	0.3269	0.2613
48 o00y	1.0	0.0	0.0	55.23	73.6	52.22	90.24	35	41.93	23.16	4.79	0.6001	0.3314	0.2706
49 n00w	0.0	0.0	0.0	18.01	0.0	0.0	0.01	0	2.4	2.52	2.74	0.3127	0.329	0.0294
50 n13w	0.125	0.125	0.125	21.9	-0.17	0.04	0.18	169	3.3	3.49	3.79	0.3122	0.3296	0.0408
51 n25w	0.25	0.25	0.25	33.47	0.0	-0.76	0.77	269	7.37	7.76	8.68	0.3097	0.3259	0.0907
52 n38w	0.375	0.375	0.375	45.12	0.77	-1.94	2.09	292	14.03	14.63	16.83	0.3084	0.3216	0.1709
53 n50w	0.5	0.5	0.5	56.05	1.48	-2.91	3.28	297	23.1	23.96	27.97	0.3079	0.3193	0.28
54 n63w	0.625	0.625	0.625	66.75	1.87	-3.45	3.94	298	35.05	36.31	42.48	0.3079	0.3189	0.4242
55 n75w	0.75	0.75	0.75	76.63	2.12	-3.5	4.1	301	49.16	50.92	59.18	0.3087	0.3197	0.5949
56 n88w	0.875	0.875	0.875	85.68	1.62	-2.88	3.31	299	64.71	67.34	77.0	0.3095	0.3221	0.7868
57 n99w	1.0	1.0	1.0	95.41	0.0	0.0	0.01	0	84.2	88.59	96.46	0.3127	0.329	1.0351

 $n = 88.59 / (88.59 - 1.23) = 1.014$ TUB-test chart KE37; Hue circle and colorimetric data
Measurement: LCD and CRT display, and LCD projectorinput: $olv^* setrgbcolor$
output: no change compared to input

Colorimetric data of Television Luminous System TLS18a for CIE lightness $L^*_N=18$ of black**System:****TLS18a** **Y Yellow****Monitor:** $LCH^*_a = 94.1 \ 83.6 \ 101$ **LCD** $LAB^*_a = 94.1 \ -15.5 \ 82.2$ **Reflection:** $Y_N = 2.52$ $L^*_N = 18.01$ **L Leaf green** $LCH^*_a = 84.4 \ 106.1 \ 139$ $LAB^*_a = 84.4 \ -79.7 \ 69.9$ **C Cyan blue** $LCH^*_a = 87.3 \ 52.1 \ 195$ $LAB^*_a = 87.3 \ -50.4 \ -13.1$ **adapted CIELAB (a^*_a , b^*_a) chroma diagram**

Colorimetric data of Television Luminous System TLS27a for CIE lightness $L^*_N=27$ of black**System:****TLS27a****Monitor:****LCD****Reflection:** **$Y_N = 5.04$** **$L^*_N = 26.85$**

Color	$r=olv*_1$	$g=olv*_2$	$b=olv*_3$	$L^*_a=LAB^*_1a$	$a^*_a=LAB^*_2a$	$b^*_a=LAB^*_3a$	$C^*_{ab,a}=LAB^*_{ab,a}$	$h_{ab,a}$	$X_a=XYZ^*_1a$	$Y_a=XYZ^*_2a$	$Z_a=XYZ^*_3a$	x_a	y_a	$Y_a/88.59$
00 o00y	1.0	0.0	0.0	57.14	69.06	44.23	82.01	33	43.17	25.07	7.47	0.5702	0.3311	0.2926
01 o13y	1.0	0.125	0.0	57.76	67.21	44.85	80.8	34	43.44	25.71	7.59	0.566	0.335	0.3001
02 o25y	1.0	0.25	0.0	60.4	60.15	47.43	76.6	38	44.91	28.57	8.15	0.5502	0.35	0.3335
03 o38y	1.0	0.375	0.0	64.31	49.88	51.28	71.53	46	47.23	33.19	9.02	0.5281	0.371	0.3874
04 o50y	1.0	0.5	0.0	69.12	37.85	55.63	67.28	56	50.41	39.51	10.3	0.503	0.3942	0.4612
05 o63y	1.0	0.625	0.0	74.81	24.51	60.81	65.56	68	54.71	47.98	11.95	0.4772	0.4185	0.56
06 o75y	1.0	0.75	0.0	80.86	11.23	66.04	66.98	80	59.91	58.21	14.0	0.4534	0.4406	0.6795
07 o88y	1.0	0.875	0.0	86.94	-1.36	71.23	71.25	91	65.81	69.89	16.33	0.4329	0.4597	0.8158
08 y00l	1.0	1.0	0.0	94.17	-14.97	77.54	78.98	101	73.96	85.67	19.33	0.4133	0.4787	1.0
09 y13l	0.875	1.0	0.0	92.15	-25.78	74.8	79.12	109	64.94	81.05	18.96	0.3937	0.4914	0.9461
10 y25l	0.75	1.0	0.0	90.46	-35.65	72.56	80.85	116	57.63	77.3	18.61	0.3754	0.5034	0.9023
11 y38l	0.625	1.0	0.0	88.87	-45.8	70.53	84.1	123	50.97	73.9	18.26	0.3561	0.5163	0.8626
12 y50l	0.5	1.0	0.0	87.46	-55.47	68.76	88.35	129	45.26	70.95	17.93	0.3374	0.5289	0.8281
13 y63l	0.375	1.0	0.0	86.34	-63.73	67.43	92.78	133	40.86	68.67	17.64	0.3213	0.54	0.8015
14 y75l	0.25	1.0	0.0	85.47	-70.53	66.24	96.77	137	37.53	66.94	17.48	0.3078	0.5489	0.7813
15 y88l	0.125	1.0	0.0	84.9	-75.02	65.53	99.62	139	35.44	65.81	17.36	0.2988	0.5549	0.7682
16 l00c	0.0	1.0	0.0	84.75	-76.12	65.32	100.31	139	34.93	65.52	17.33	0.2966	0.5563	0.7648
17 l13c	0.0	1.0	0.125	84.79	-75.77	63.22	98.69	140	35.07	65.59	18.39	0.2946	0.5509	0.7656
18 l25c	0.0	1.0	0.25	84.88	-73.86	55.09	92.15	143	35.76	65.78	22.85	0.2875	0.5288	0.7678
19 l38c	0.0	1.0	0.375	85.13	-71.01	44.16	83.63	148	36.94	66.26	30.04	0.2772	0.4973	0.7735
20 l50c	0.0	1.0	0.5	85.47	-67.32	32.12	74.6	154	38.53	66.94	39.66	0.2655	0.4612	0.7813
21 l63c	0.0	1.0	0.625	85.91	-62.69	19.55	65.68	163	40.59	67.8	51.82	0.2534	0.4232	0.7914
22 l75c	0.0	1.0	0.75	86.42	-57.9	7.65	58.41	172	42.9	68.83	65.61	0.2419	0.3881	0.8034
23 l88c	0.0	1.0	0.875	86.96	-53.08	-2.99	53.17	183	45.34	69.92	80.06	0.2321	0.358	0.8161
24 c00v	0.0	1.0	1.0	87.57	-48.47	-12.71	50.12	195	47.91	71.17	95.26	0.2235	0.332	0.8307
25 c13v	0.0	0.875	1.0	79.54	-36.86	-24.04	44.02	213	40.08	55.87	91.56	0.2137	0.298	0.6521
26 c25v	0.0	0.75	1.0	72.44	-25.52	-34.14	42.64	233	34.21	44.32	88.47	0.2049	0.2654	0.5173
27 c38v	0.0	0.675	1.0	65.13	-12.62	-44.72	46.48	254	29.12	34.21	85.64	0.1955	0.2297	0.3994
28 c50v	0.0	0.5	1.0	57.79	1.48	-55.25	55.28	272	24.81	25.74	82.72	0.1862	0.1932	0.3005
29 c63v	0.0	0.375	1.0	51.22	15.86	-65.26	67.17	284	21.7	19.46	80.92	0.1777	0.1594	0.2271
30 c75v	0.0	0.25	1.0	45.28	29.89	-73.98	79.8	292	19.32	14.74	78.9	0.1711	0.1305	0.1721
31 c88v	0.0	0.125	1.0	40.88	41.24	-80.8	90.72	297	17.86	11.79	77.89	0.1661	0.1096	0.1376
32 v00m	0.0	0.0	1.0	39.78	44.02	-82.39	93.42	298	17.5	11.12	77.49	0.1649	0.1048	0.1298
33 v13m	0.125	0.0	1.0	40.15	45.04	-82.13	93.68	299	17.98	11.34	77.99	0.1676	0.1057	0.1324
34 v25m	0.25	0.0	1.0	41.69	47.78	-79.4	92.67	301	19.81	12.3	77.9	0.1801	0.1118	0.1436
35 v38m	0.375	0.0	1.0	44.15	52.12	-75.71	91.93	305	22.95	13.94	78.61	0.1987	0.1207	0.1627
36 v50m	0.5	0.0	1.0	47.05	56.99	-71.0	91.05	309	27.01	16.06	78.99	0.2213	0.1315	0.1874
37 v63m	0.625	0.0	1.0	50.55	62.94	-65.65	90.95	314	32.54	18.88	79.89	0.2478	0.1438	0.2204
38 v75m	0.75	0.0	1.0	54.19	68.48	-59.83	90.94	319	38.83	22.15	80.5	0.2744	0.1566	0.2586
39 v88m	0.875	0.0	1.0	57.82	73.93	-54.11	91.62	324	45.85	25.78	81.24	0.2999	0.1686	0.3009
40 m00o	1.0	0.0	1.0	61.91	80.19	-47.78	93.35	329	54.74	30.3	82.21	0.3273	0.1812	0.3537
41 m13o	1.0	0.0	0.875	60.82	78.29	-38.35	87.19	334	52.19	29.05	67.84	0.3501	0.1949	0.3391
42 m25o	1.0	0.0	0.75	59.82	76.13	-27.62	80.99	340	49.75	27.93	54.05	0.3777	0.212	0.326
43 m38o	1.0	0.0	0.675	58.85	73.98	-15.23	75.53	348	47.43	26.87	40.89	0.4118	0.2332	0.3136
44 m50o	1.0	0.0	0.5	58.01	71.72	-1.34	71.73	359	45.35	25.97	29.18	0.4512	0.2584	0.3031
45 m63o	1.0	0.0	0.375	57.27	70.0	12.86	71.17	10	43.67	25.2	19.88	0.492	0.2839	0.2941
46 m75o	1.0	0.0	0.25	56.74	68.72	27.26	73.93	22	42.46	24.65	12.87	0.5309	0.3082	0.2878
47 m88o	1.0	0.0	0.125	56.39	67.77	39.88	78.63	30	41.65	24.3	8.34	0.5607	0.3271	0.2837
48 o00y	1.0	0.0	0.0	57.14	69.06	44.23	82.01	33	43.17	25.07	7.47	0.5702	0.3311	0.2926
49 n00w	0.0	0.0	0.0	26.85	0.0	0.0	0.01	0	4.79	5.04	5.49	0.3127	0.329	0.0588
50 n13w	0.125	0.125	0.125	29.36	-0.11	0.02	0.12	169	5.67	5.98	6.5	0.3124	0.3293	0.0698
51 n25w	0.25	0.25	0.25	38.07	0.0	-0.61	0.62	269	9.62	10.12	11.25	0.3104	0.3267	0.1182
52 n38w	0.375	0.375	0.375	48.0	0.68	-1.72	1.86	291	16.08	16.79	19.16	0.309	0.3228	0.196
53 n50w	0.5	0.5	0.5	57.9	1.37	-2.69	3.03	297	24.89	25.85	29.98	0.3083	0.3203	0.3018
54 n63w	0.625	0.625	0.625	67.9	1.77	-3.27	3.72	298	36.49	37.84	44.06	0.3082	0.3196	0.4417
55 n75w	0.75	0.75	0.75	77.29	2.03	-3.36	3.93	301	50.19	52.02	60.27	0.3089	0.3202	0.6072
56 n88w	0.875	0.875	0.875	85.99	1.56	-2.78	3.19	299	65.28	67.96	77.57	0.3097	0.3224	0.7933
57 n99w	1.0	1.0	1.0	95.41	0.0	0.0	0.01	0	84.2	88.59	96.46	0.3127	0.329	1.0341

KE370-7N, 15/66

 $n = 88.59 / (88.59 - 1.23) = 1.014$ TUB-test chart KE37; Hue circle and colorimetric data
Measurement: LCD and CRT display, and LCD projectorinput: $olv^* setrgbcolor$
output: no change compared to inputTUB registration: 20100601-KE37/KE37L0NP.PDF /.PS
application for measurement of printer or monitor systems

TUB material: code=rha4ta

Colorimetric data of Television Luminous System TLS27a for CIE lightness $L^*_N=27$ of black

System:

TLS27a Y Yellow

Monitor: $LCH^*_a = 94.2 \ 79.0 \ 101$

LCD $LAB^*_a = 94.2 \ -15.0 \ 77.5$

Reflection:

$Y_N = 5.04$

$L^*_N = 26.85$

L Leaf green

$LCH^*_a = 84.8 \ 100.3 \ 139$

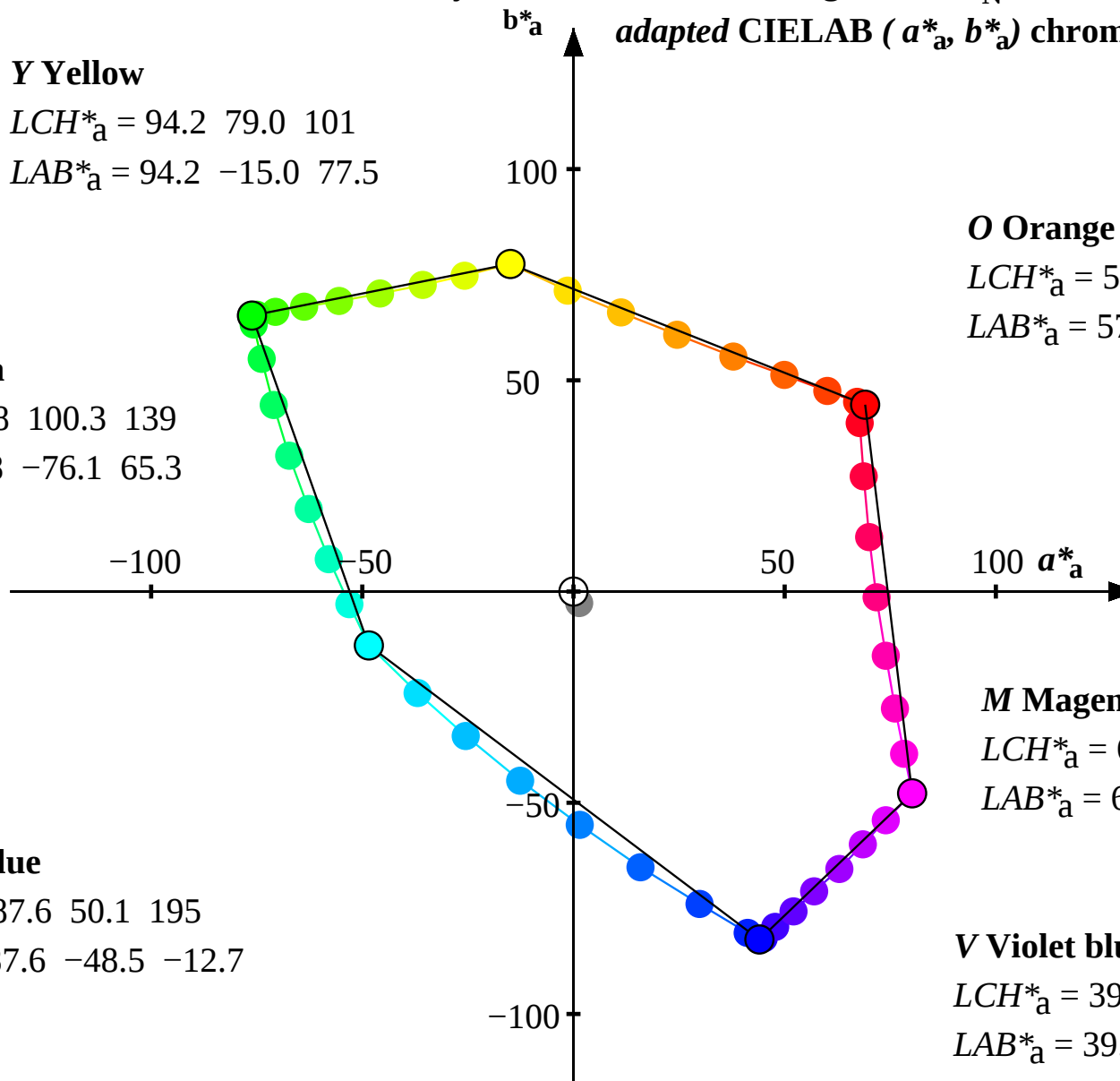
$LAB^*_a = 84.8 \ -76.1 \ 65.3$

C Cyan blue

$LCH^*_a = 87.6 \ 50.1 \ 195$

$LAB^*_a = 87.6 \ -48.5 \ -12.7$

adapted CIELAB (a^*_a , b^*_a) chroma diagram



Colorimetric data of Television Luminous System TLS38a for CIE lightness $L^*_N=38$ of black

System:

TLS38a

Monitor:

LCD

Reflection:

 $Y_N = 10.08$ $L^*_N = 37.99$

Color	$r=olv*_1$	$g=olv*_2$	$b=olv*_3$	$L^*_a=LAB^*_{1a}$	$a^*_a=LAB^*_{2a}$	$b^*_a=LAB^*_{3a}$	$C^*_{ab,a}=LAB^*_{ab,a}$	$h_{ab,a}$	$X_a=XYZ^*_{1a}$	$Y_a=XYZ^*_{2a}$	$Z_a=XYZ^*_{3a}$	x_a	y_a	$Y_a/88.59$
00 o00y	1.0	0.0	0.0	60.7	60.97	34.16	69.88	29	45.64	28.9	12.84	0.5223	0.3308	0.3367
01 o13y	1.0	0.125	0.0	61.23	59.42	34.78	68.85	30	45.9	29.51	12.96	0.5195	0.3339	0.3437
02 o25y	1.0	0.25	0.0	63.5	53.52	37.39	65.29	35	47.28	32.19	13.48	0.5087	0.3463	0.375
03 o38y	1.0	0.375	0.0	66.92	44.76	41.32	60.92	43	49.46	36.53	14.3	0.4932	0.3642	0.4255
04 o50y	1.0	0.5	0.0	71.19	34.28	45.91	57.3	53	52.45	42.47	15.5	0.475	0.3846	0.4947
05 o63y	1.0	0.625	0.0	76.33	22.42	51.39	56.07	66	56.49	50.43	17.05	0.4557	0.4068	0.5874
06 o75y	1.0	0.75	0.0	81.86	10.36	57.01	57.94	80	61.37	60.04	18.98	0.4371	0.4277	0.6994
07 o88y	1.0	0.875	0.0	87.49	-1.27	62.59	62.6	91	66.92	71.02	21.16	0.4206	0.4464	0.8272
08 y00l	1.0	1.0	0.0	94.25	-14.02	69.3	70.7	101	74.57	85.85	23.98	0.4044	0.4655	1.0
09 y13l	0.875	1.0	0.0	92.36	-24.04	66.63	70.84	110	66.1	81.51	23.63	0.386	0.476	0.9494
10 y25l	0.75	1.0	0.0	90.77	-33.11	64.45	72.46	117	59.23	77.98	23.3	0.369	0.4858	0.9083
11 y38l	0.625	1.0	0.0	89.29	-42.34	62.47	75.47	124	52.98	74.78	22.98	0.3515	0.4961	0.8711
12 y50l	0.5	1.0	0.0	87.97	-51.05	60.73	79.35	130	47.61	72.01	22.67	0.3346	0.5061	0.8388
13 y63l	0.375	1.0	0.0	86.93	-58.4	59.42	83.32	135	43.48	69.87	22.39	0.3203	0.5147	0.8139
14 y75l	0.25	1.0	0.0	86.13	-64.41	58.28	86.87	138	40.35	68.24	22.25	0.3084	0.5216	0.7949
15 y88l	0.125	1.0	0.0	85.6	-68.34	57.58	89.37	140	38.38	67.19	22.13	0.3006	0.5262	0.7826
16 l00c	0.0	1.0	0.0	85.46	-69.29	57.39	89.98	140	37.9	66.92	22.1	0.2986	0.5272	0.7795
17 l13c	0.0	1.0	0.125	85.49	-68.98	55.71	88.67	141	38.04	66.98	23.1	0.2969	0.5228	0.7802
18 l25c	0.0	1.0	0.25	85.58	-67.3	49.05	83.28	144	38.69	67.16	27.29	0.2906	0.5045	0.7823
19 l38c	0.0	1.0	0.375	85.81	-64.78	39.78	76.03	148	39.79	67.61	34.05	0.2813	0.478	0.7876
20 l50c	0.0	1.0	0.5	86.13	-61.53	29.25	68.14	155	41.28	68.24	43.09	0.2705	0.4472	0.7949
21 l63c	0.0	1.0	0.625	86.53	-57.42	17.97	60.18	163	43.22	69.06	54.51	0.2592	0.414	0.8044
22 l75c	0.0	1.0	0.75	87.01	-53.15	7.08	53.63	172	45.39	70.02	67.47	0.2482	0.3829	0.8156
23 l88c	0.0	1.0	0.875	87.51	-48.83	-2.78	48.92	183	47.69	71.05	81.05	0.2387	0.3556	0.8276
24 c00v	0.0	1.0	1.0	88.07	-44.69	-11.88	46.25	195	50.1	72.22	95.33	0.2302	0.3318	0.8413
25 c13v	0.0	0.875	1.0	80.65	-33.53	-22.33	40.3	214	42.74	57.84	91.85	0.2221	0.3006	0.6738
26 c25v	0.0	0.75	1.0	74.18	-22.87	-31.47	38.92	234	37.23	46.99	88.96	0.215	0.2713	0.5474
27 c38v	0.0	0.675	1.0	67.65	-11.09	-40.86	32.44	255	32.44	37.49	86.29	0.2077	0.24	0.4368
28 c50v	0.0	0.5	1.0	61.25	1.27	-49.9	49.93	271	28.39	29.54	83.55	0.2007	0.2088	0.3441
29 c63v	0.0	0.375	1.0	55.71	13.25	-58.2	59.7	283	25.47	23.63	81.85	0.1945	0.1804	0.2752
30 c75v	0.0	0.25	1.0	50.92	24.22	-65.06	69.43	290	23.24	19.2	79.96	0.1899	0.1568	0.2236
31 c88v	0.0	0.125	1.0	47.52	32.57	-70.19	77.39	295	21.87	16.42	79.01	0.1864	0.14	0.1913
32 v00m	0.0	0.0	1.0	46.7	34.5	-71.33	79.25	296	21.52	15.79	78.64	0.1856	0.1362	0.1839
33 v13m	0.125	0.0	1.0	46.98	35.46	-71.21	79.56	296	21.98	16.0	79.11	0.1877	0.1367	0.1864
34 v25m	0.25	0.0	1.0	48.14	38.22	-69.14	79.01	299	23.69	16.9	79.02	0.1981	0.1413	0.1969
35 v38m	0.375	0.0	1.0	50.03	42.65	-66.39	78.91	303	26.65	18.44	79.69	0.2136	0.1478	0.2148
36 v50m	0.5	0.0	1.0	52.32	47.69	-62.7	78.78	307	30.46	20.43	80.04	0.2327	0.156	0.238
37 v63m	0.625	0.0	1.0	55.16	53.89	-58.44	79.5	313	35.65	23.08	80.89	0.2553	0.1653	0.2689
38 v75m	0.75	0.0	1.0	58.19	59.76	-53.65	80.31	318	41.57	26.16	81.47	0.2786	0.1753	0.3047
39 v88m	0.875	0.0	1.0	61.28	65.54	-48.83	81.74	323	48.16	29.57	82.16	0.3012	0.1849	0.3444
40 m00o	1.0	0.0	1.0	64.82	72.12	-43.4	84.18	329	56.52	33.82	83.07	0.3259	0.195	0.3939
41 m13o	1.0	0.0	0.875	63.87	70.16	-34.54	78.21	334	54.12	32.64	69.57	0.3462	0.2088	0.3802
42 m25o	1.0	0.0	0.75	63.0	67.97	-24.6	72.29	340	51.82	31.59	56.61	0.3701	0.2256	0.3679
43 m38o	1.0	0.0	0.675	62.16	65.8	-13.36	67.15	349	49.65	30.59	44.24	0.3989	0.2457	0.3563
44 m50o	1.0	0.0	0.5	61.44	63.56	-1.15	63.57	359	47.69	29.75	33.24	0.4309	0.2688	0.3465
45 m63o	1.0	0.0	0.375	60.8	61.85	10.77	62.78	10	46.11	29.02	24.5	0.4628	0.2913	0.3381
46 m75o	1.0	0.0	0.25	60.35	60.57	22.05	64.46	20	44.98	28.51	17.91	0.4921	0.3119	0.3321
47 m88o	1.0	0.0	0.125	60.05	59.63	31.02	67.22	27	44.22	28.18	13.65	0.5139	0.3275	0.3282
48 o00y	1.0	0.0	0.0	60.7	60.97	34.16	69.88	29	45.64	28.9	12.84	0.5223	0.3308	0.3367
49 n00w	0.0	0.0	0.0	37.99	0.0	0.0	0.01	0	9.58	10.08	10.98	0.3127	0.329	0.1174
50 n13w	0.125	0.125	0.125	39.52	-0.06	0.02	0.08	169	10.41	10.96	11.93	0.3126	0.3292	0.1277
51 n25w	0.25	0.25	0.25	45.44	0.0	-0.45	0.46	269	14.12	14.86	16.39	0.3113	0.3275	0.1731
52 n38w	0.375	0.375	0.375	53.09	0.55	-1.39	1.5	291	20.19	21.13	23.82	0.3099	0.3243	0.2461
53 n50w	0.5	0.5	0.5	61.34	1.18	-2.32	2.61	297	28.47	29.64	33.99	0.3091	0.3218	0.3452
54 n63w	0.625	0.625	0.625	70.11	1.58	-2.92	3.33	298	39.37	40.9	47.22	0.3088	0.3208	0.4764
55 n75w	0.75	0.75	0.75	78.59	1.85	-3.07	3.6	301	52.24	54.22	62.45	0.3093	0.321	0.6316
56 n88w	0.875	0.875	0.875	86.61	1.45	-2.58	2.97	299	66.42	69.21	78.71	0.3099	0.3229	0.8062
57 n99w	1.0	1.0	1.0	95.41	0.0	0.0	0.01	0	84.2	88.59	96.46	0.3127	0.329	1.032

 $n = 88.59 / (88.59 - 1.23) = 1.014$ TUB-test chart KE37; Hue circle and colorimetric data
Measurement: LCD and CRT display, and LCD projectorinput: $olv^* setrgbcolor$
output: no change compared to input

Colorimetric data of Television Luminous System TLS38a for CIE lightness $L^*_N=38$ of black

System:

TLS38a Y Yellow

Monitor: $LCH^*_a = 94.2 \ 70.7 \ 101$

LCD $LAB^*_a = 94.2 \ -14.0 \ 69.3$

Reflection:

$Y_N = 10.08$

$L^*_N = 37.99$

L Leaf green

$LCH^*_a = 85.5 \ 90.0 \ 140$

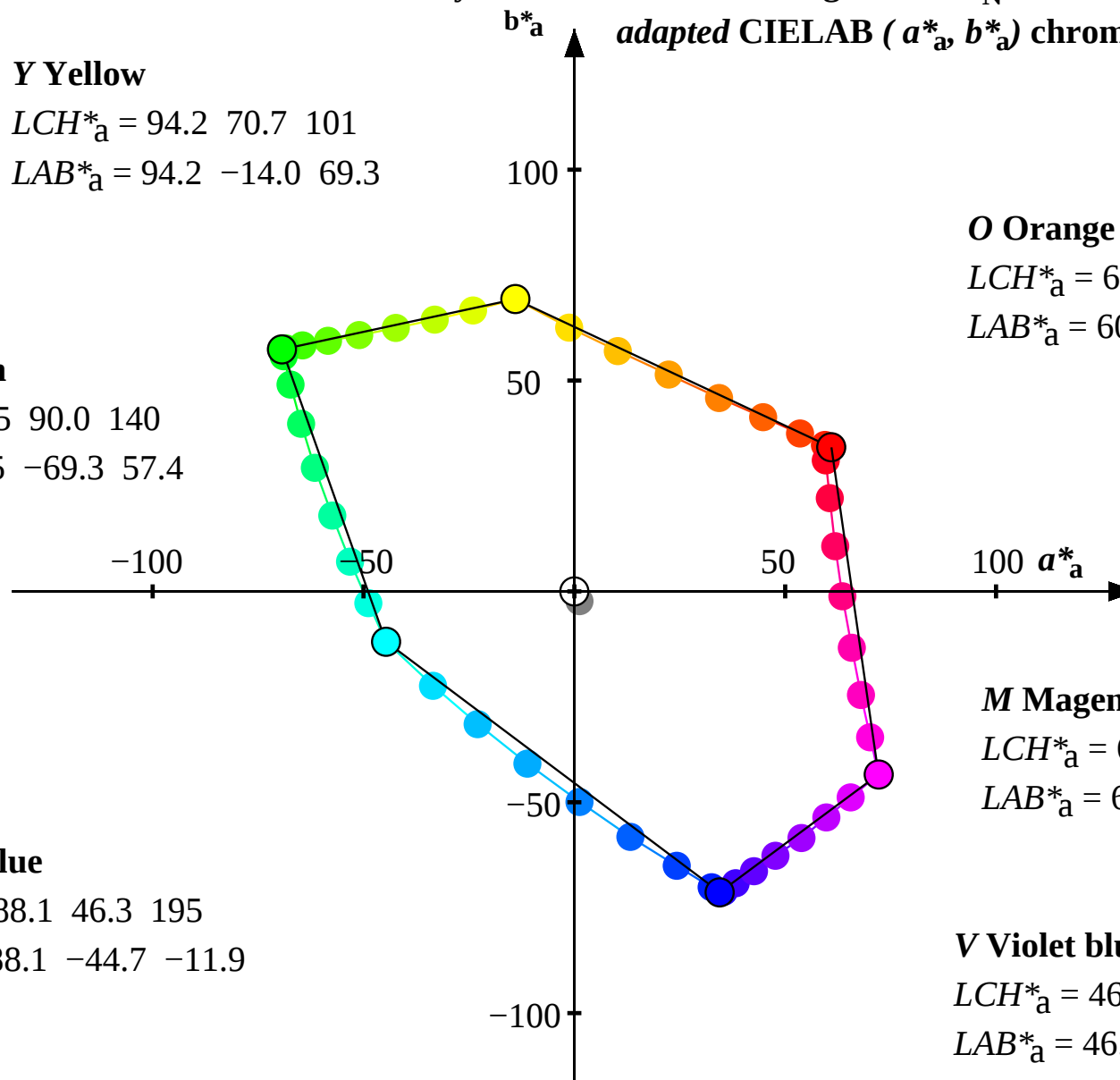
$LAB^*_a = 85.5 \ -69.3 \ 57.4$

C Cyan blue

$LCH^*_a = 88.1 \ 46.3 \ 195$

$LAB^*_a = 88.1 \ -44.7 \ -11.9$

adapted CIELAB (a^*_a , b^*_a) chroma diagram



O Orange red

$LCH^*_a = 60.7 \ 69.9 \ 29$

$LAB^*_a = 60.7 \ 61.0 \ 34.2$

M Magenta red

$LCH^*_a = 64.8 \ 84.2 \ 329$

$LAB^*_a = 64.8 \ 72.1 \ -43.4$

V Violet blue

$LCH^*_a = 46.7 \ 79.2 \ 296$

$LAB^*_a = 46.7 \ 34.5 \ -71.3$

Colorimetric data of Television Luminous System TLS52a for CIE lightness $L^*_N=52$ of black**System:****TLS52a****Monitor:****LCD****Reflection:** **$Y_N = 20.16$** **$L^*_N = 52.02$**

Color	$r=olv^*_1$	$g=olv^*_2$	$b=olv^*_3$	$L^*_a=LAB^*_{1a}$	$a^*_a=LAB^*_{2a}$	$b^*_a=LAB^*_{3a}$	$C^*_{ab,a}=LAB^*_{ab,a}$	$h_{ab,a}$	$X_a=XYZ^*_{1a}$	$Y_a=XYZ^*_{2a}$	$Z_a=XYZ^*_{3a}$	x_a	y_a	$Y_a/88.59$
00 o00y	1.0	0.0	0.0	66.95	47.68	22.92	52.9	26	50.59	36.57	23.58	0.4569	0.3302	0.4242
01 o13y	1.0	0.125	0.0	67.35	46.58	23.43	52.14	27	50.82	37.09	23.68	0.4554	0.3324	0.4303
02 o25y	1.0	0.25	0.0	69.06	42.36	25.62	49.51	31	52.02	39.43	24.13	0.4501	0.3411	0.4574
03 o38y	1.0	0.375	0.0	71.7	35.91	28.99	46.15	39	53.92	43.21	24.84	0.4421	0.3543	0.5013
04 o50y	1.0	0.5	0.0	75.07	27.93	33.11	43.32	50	56.52	48.39	25.89	0.4321	0.3699	0.5614
05 o63y	1.0	0.625	0.0	79.23	18.57	38.16	42.44	64	60.05	55.33	27.24	0.421	0.3879	0.6418
06 o75y	1.0	0.75	0.0	83.81	8.72	43.52	44.39	79	64.3	63.71	28.93	0.4097	0.4059	0.7391
07 o88y	1.0	0.875	0.0	88.58	-1.08	48.98	48.99	91	69.13	73.27	30.83	0.3991	0.423	0.85
08 y00l	1.0	1.0	0.0	94.4	-12.14	55.61	56.92	102	75.81	86.2	33.29	0.3882	0.4414	1.0
09 y13l	0.875	1.0	0.0	92.76	-20.64	53.2	57.06	111	68.43	82.42	32.98	0.3722	0.4483	0.9561
10 y25l	0.75	1.0	0.0	91.39	-28.21	51.22	58.48	119	62.44	79.34	32.7	0.3579	0.4547	0.9204
11 y38l	0.625	1.0	0.0	90.12	-35.77	49.42	61.02	126	56.98	76.56	32.41	0.3434	0.4613	0.8881
12 y50l	0.5	1.0	0.0	88.99	-42.77	47.85	64.18	132	52.31	74.14	32.14	0.3298	0.4675	0.8601
13 y63l	0.375	1.0	0.0	88.1	-48.57	46.65	67.35	136	48.71	72.27	31.9	0.3186	0.4728	0.8384
14 y75l	0.25	1.0	0.0	87.41	-53.23	45.64	70.13	139	45.98	70.85	31.78	0.3094	0.4768	0.822
15 y88l	0.125	1.0	0.0	86.96	-56.24	45.01	72.04	141	44.26	69.93	31.67	0.3034	0.4794	0.8113
16 l00c	0.0	1.0	0.0	86.85	-56.96	44.84	72.5	142	43.85	69.7	31.65	0.302	0.48	0.8086
17 l13c	0.0	1.0	0.125	86.87	-56.72	43.69	71.6	142	43.96	69.75	32.52	0.3006	0.477	0.8092
18 l25c	0.0	1.0	0.25	86.95	-55.41	38.99	67.76	145	44.53	69.91	36.17	0.2957	0.4642	0.811
19 l38c	0.0	1.0	0.375	87.15	-53.46	32.18	62.41	149	45.49	70.3	42.06	0.2882	0.4454	0.8156
20 l50c	0.0	1.0	0.5	87.41	-50.93	24.06	56.34	155	46.79	70.85	49.94	0.2792	0.4228	0.822
21 l63c	0.0	1.0	0.625	87.76	-47.7	15.02	50.02	163	48.49	71.56	59.9	0.2694	0.3977	0.8302
22 l75c	0.0	1.0	0.75	88.16	-44.33	6.0	44.74	172	50.37	72.4	71.2	0.2597	0.3733	0.84
23 l88c	0.0	1.0	0.875	88.59	-40.88	-2.38	40.96	183	52.37	73.3	83.02	0.251	0.3512	0.8503
24 c00v	0.0	1.0	1.0	89.07	-37.56	-10.26	38.95	195	54.48	74.32	95.47	0.2429	0.3314	0.8622
25 c13v	0.0	0.875	1.0	82.8	-27.51	-19.03	33.46	215	48.06	61.79	92.45	0.2376	0.3054	0.7168
26 c25v	0.0	0.75	1.0	77.48	-18.3	-26.46	32.19	235	43.26	52.33	89.92	0.2332	0.2821	0.6071
27 c38v	0.0	0.675	1.0	72.26	-8.61	-33.82	34.91	256	39.09	44.05	87.6	0.2289	0.258	0.5111
28 c50v	0.0	0.5	1.0	67.37	0.95	-40.56	40.58	271	35.56	37.12	85.21	0.2252	0.2351	0.4306
29 c63v	0.0	0.375	1.0	63.32	9.58	-46.47	47.46	282	33.01	31.97	83.73	0.222	0.215	0.3709
30 c75v	0.0	0.25	1.0	59.98	16.9	-51.01	53.74	288	31.06	28.11	82.08	0.2199	0.199	0.3261
31 c88v	0.0	0.125	1.0	57.74	22.1	-54.26	58.6	292	29.87	25.69	81.25	0.2183	0.1878	0.298
32 v00m	0.0	0.0	1.0	57.21	23.24	-54.93	59.66	293	29.57	25.14	80.92	0.218	0.1853	0.2916
33 v13m	0.125	0.0	1.0	57.39	23.99	-54.93	59.95	294	29.97	25.32	81.33	0.2193	0.1853	0.2937
34 v25m	0.25	0.0	1.0	58.14	26.31	-53.58	59.7	296	31.46	26.11	81.26	0.2266	0.1881	0.3029
35 v38m	0.375	0.0	1.0	59.39	30.12	-51.86	59.98	300	34.04	27.45	81.84	0.2375	0.1915	0.3184
36 v50m	0.5	0.0	1.0	60.94	34.63	-49.41	60.34	305	37.36	29.18	82.15	0.2513	0.1963	0.3386
37 v63m	0.625	0.0	1.0	62.92	40.32	-46.54	61.58	311	41.89	31.49	82.89	0.268	0.2015	0.3654
38 v75m	0.75	0.0	1.0	65.1	45.93	-43.15	63.03	317	47.04	34.17	83.39	0.2858	0.2076	0.3965
39 v88m	0.875	0.0	1.0	67.38	51.59	-39.65	65.07	322	52.79	37.14	83.99	0.3035	0.2136	0.4309
40 m00o	1.0	0.0	1.0	70.07	58.11	-35.6	68.15	329	60.07	40.85	84.79	0.3235	0.22	0.4739
41 m13o	1.0	0.0	0.875	69.34	56.2	-27.91	62.75	334	57.98	39.82	73.02	0.3394	0.2331	0.462
42 m25o	1.0	0.0	0.75	68.68	54.12	-19.51	57.53	340	55.98	38.9	61.72	0.3575	0.2484	0.4513
43 m38o	1.0	0.0	0.675	68.05	52.07	-10.35	53.09	349	54.09	38.04	50.95	0.378	0.2659	0.4413
44 m50o	1.0	0.0	0.5	67.5	50.02	-0.86	50.03	359	52.38	37.3	41.36	0.3997	0.2847	0.4327
45 m63o	1.0	0.0	0.375	67.03	48.43	7.81	49.05	9	51.0	36.67	33.74	0.4201	0.302	0.4254
46 m75o	1.0	0.0	0.25	66.69	47.25	15.4	49.7	18	50.02	36.22	27.99	0.4378	0.3171	0.4202
47 m88o	1.0	0.0	0.125	66.47	46.4	20.9	50.89	24	49.35	35.94	24.28	0.4504	0.328	0.4169
48 o00y	1.0	0.0	0.0	66.95	47.68	22.92	52.9	26	50.59	36.57	23.58	0.4569	0.3302	0.4242
49 n00w	0.0	0.0	0.0	52.02	0.0	0.0	0.01	0	19.16	20.16	21.95	0.3127	0.329	0.2339
50 n13w	0.125	0.125	0.125	52.87	-0.03	0.01	0.04	169	19.88	20.93	22.78	0.3126	0.3291	0.2428
51 n25w	0.25	0.25	0.25	56.41	0.0	-0.28	0.29	269	23.12	24.32	26.67	0.3119	0.3282	0.2822
52 n38w	0.375	0.375	0.375	61.47	0.38	-0.97	1.05	291	28.41	29.79	33.15	0.311	0.3261	0.3456
53 n50w	0.5	0.5	0.5	67.43	0.88	-1.74	1.96	297	35.62	37.21	42.01	0.3102	0.324	0.4316
54 n63w	0.625	0.625	0.625	74.2	1.25	-2.33	2.65	298	45.12	47.02	53.54	0.3097	0.3228	0.5455
55 n75w	0.75	0.75	0.75	81.09	1.54	-2.55	2.98	301	56.34	58.64	66.82	0.3099	0.3225	0.6802
56 n88w	0.875	0.875	0.875	87.82	1.24	-2.2	2.53	299	68.71	71.7	80.99	0.3103	0.3238	0.8317
57 n99w	1.0	1.0	1.0	95.41	0.0	0.0	0.01	0	84.2	88.59	96.46	0.3127	0.329	1.0277

KE370-7N, 19/66

 $n = 88.59 / (88.59 - 1.23) = 1.014$ TUB-test chart KE37; Hue circle and colorimetric data
Measurement: LCD and CRT display, and LCD projectorinput: $olv^* setrgbcolor$
output: *no change compared to input*

Colorimetric data of Television Luminous System TLS52a for CIE lightness $L^*_N=52$ of black

System:

TLS52a **Y Yellow**

Monitor: $LCH^*_a = 94.4 \ 56.9 \ 102$

LCD $LAB^*_a = 94.4 \ -12.1 \ 55.6$

Reflection:

$Y_N = 20.16$

$L^*_N = 52.02$

L Leaf green

$LCH^*_a = 86.8 \ 72.5 \ 142$

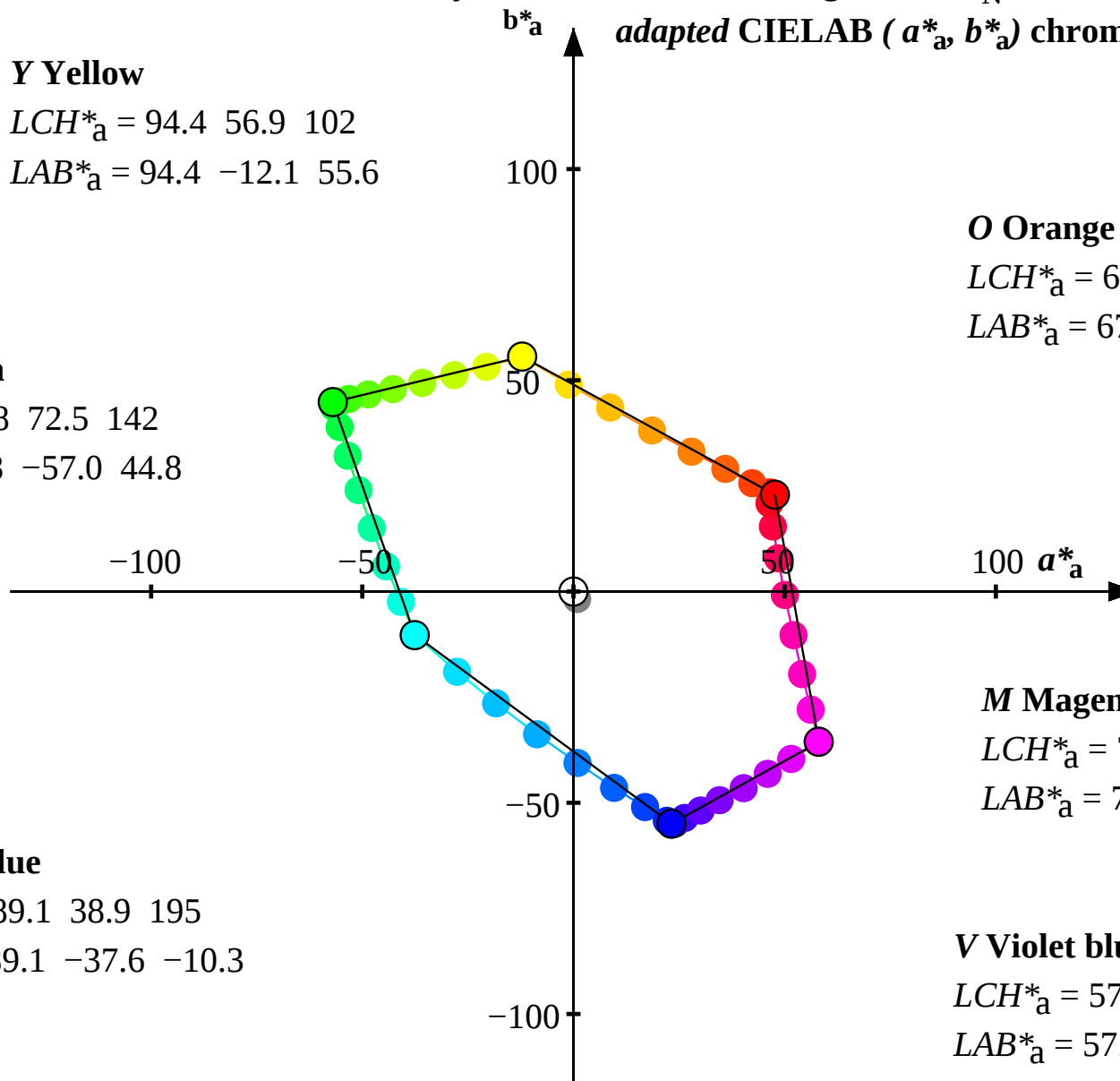
$LAB^*_a = 86.8 \ -57.0 \ 44.8$

C Cyan blue

$LCH^*_a = 89.1 \ 38.9 \ 195$

$LAB^*_a = 89.1 \ -37.6 \ -10.3$

*adapted CIELAB (a^*_a , b^*_a) chroma diagram*



O Orange red

$LCH^*_a = 67.0 \ 52.9 \ 26$

$LAB^*_a = 67.0 \ 47.7 \ 22.9$

M Magenta red

$LCH^*_a = 70.1 \ 68.2 \ 329$

$LAB^*_a = 70.1 \ 58.1 \ -35.6$

V Violet blue

$LCH^*_a = 57.2 \ 59.7 \ 293$

$LAB^*_a = 57.2 \ 23.2 \ -54.9$

See original or copy: <http://web.me.com/klaus.richter/KE37/KE37L0NP.PDF> /.PS
Technical information: <http://www.ps.bam.de> or <http://130.149.60.45/~farbmetrik>

TUB registration: 20100601-KE37/KE37L0NP.PDF /.PS
application for measurement of printer or monitor systems

TUB material: code=rha4ta

Colorimetric data of Television Luminous System TLS70a for CIE lightness $L^*_N=70$ of black

System:

TLS70a

Monitor:

LCD

Reflection:

 $Y_N = 40.32$ $L^*_N = 69.7$

Color	$r=olv^*_1$	$g=olv^*_2$	$b=olv^*_3$	$L^*_a=LAB^*_{1a}$	$a^*_a=LAB^*_{2a}$	$b^*_a=LAB^*_{3a}$	$C^*_{ab,a}=LAB^*_{ab,a}$	$h_{ab,a}$	$X_a=XYZ^*_{1a}$	$Y_a=XYZ^*_{2a}$	$Z_a=XYZ^*_{3a}$	x_a	y_a	$Y_a/88.59$
00 o00y	1.0	0.0	0.0	77.22	28.3	11.69	30.62	22	60.49	51.89	45.05	0.3842	0.3296	0.5971
01 o13y	1.0	0.125	0.0	77.44	27.72	11.99	30.21	23	60.65	52.26	45.12	0.3838	0.3307	0.6014
02 o25y	1.0	0.25	0.0	78.41	25.53	13.32	28.8	28	61.5	53.91	45.44	0.3823	0.3352	0.6204
03 o38y	1.0	0.375	0.0	79.94	22.04	15.41	26.9	35	62.84	56.58	45.94	0.38	0.3422	0.6511
04 o50y	1.0	0.5	0.0	81.96	17.53	18.1	25.2	46	64.67	60.23	46.68	0.3769	0.351	0.6931
05 o63y	1.0	0.625	0.0	84.55	11.96	21.53	24.63	61	67.16	65.13	47.63	0.3733	0.362	0.7494
06 o75y	1.0	0.75	0.0	87.5	5.76	25.38	26.02	77	70.16	71.04	48.82	0.3692	0.3738	0.8174
07 o88y	1.0	0.875	0.0	90.68	-0.73	29.47	29.47	91	73.57	77.78	50.16	0.3651	0.386	0.8951
08 y00l	1.0	1.0	0.0	94.7	-8.44	34.63	35.65	104	78.28	86.9	51.9	0.3606	0.4003	1.0
09 y13l	0.875	1.0	0.0	93.55	-14.14	32.87	35.79	113	73.07	84.23	51.68	0.3496	0.4031	0.9693
10 y25l	0.75	1.0	0.0	92.6	-19.06	31.44	36.77	121	68.85	82.07	51.48	0.3402	0.4055	0.9443
11 y38l	0.625	1.0	0.0	91.73	-23.82	30.14	38.42	128	65.0	80.1	51.28	0.331	0.4079	0.9217
12 y50l	0.5	1.0	0.0	90.96	-28.08	29.40	40.38	134	61.7	78.4	51.09	0.3227	0.4101	0.9021
13 y63l	0.375	1.0	0.0	90.36	-31.51	28.14	42.25	138	59.16	77.08	50.92	0.3161	0.4118	0.887
14 y75l	0.25	1.0	0.0	89.9	-34.2	27.43	43.85	141	57.24	76.08	50.83	0.3108	0.4131	0.8754
15 y88l	0.125	1.0	0.0	89.59	-35.89	26.98	44.91	143	56.03	75.43	50.76	0.3075	0.414	0.868
16 l00c	0.0	1.0	0.0	89.52	-36.29	26.86	45.16	143	55.73	75.26	50.74	0.3067	0.4141	0.8661
17 l13c	0.0	1.0	0.125	89.53	-36.16	26.27	44.7	144	55.82	75.3	51.35	0.3059	0.4127	0.8665
18 l25c	0.0	1.0	0.25	89.59	-35.39	23.8	42.66	146	56.21	75.41	53.93	0.303	0.4064	0.8678
19 l38c	0.0	1.0	0.375	89.72	-34.27	20.06	39.71	150	56.89	75.69	58.09	0.2984	0.397	0.871
20 l50c	0.0	1.0	0.5	89.9	-32.79	15.36	36.22	155	57.81	76.08	63.64	0.2927	0.3851	0.8754
21 l63c	0.0	1.0	0.625	90.13	-30.89	9.82	32.42	162	59.01	76.58	70.67	0.2861	0.3713	0.8812
22 l75c	0.0	1.0	0.75	90.4	-28.88	4.01	29.17	172	60.34	77.17	78.64	0.2792	0.357	0.888
23 l88c	0.0	1.0	0.875	90.69	-26.8	-1.62	26.86	183	61.75	77.8	86.98	0.2726	0.3435	0.8953
24 c00v	0.0	1.0	1.0	91.02	-24.78	-7.1	25.79	196	63.23	78.53	95.76	0.2662	0.3306	0.9036
25 c13v	0.0	0.875	1.0	86.84	-17.45	-12.86	21.69	216	58.71	69.69	93.63	0.2644	0.3139	0.8019
26 c25v	0.0	0.75	1.0	83.45	-11.18	-17.5	20.78	237	55.32	63.01	91.84	0.2632	0.2998	0.7251
27 c38v	0.0	0.675	1.0	80.28	-5.05	-21.84	22.42	257	52.38	57.17	90.21	0.2622	0.2862	0.6579
28 c50v	0.0	0.5	1.0	77.45	0.53	-25.54	25.55	271	49.89	52.28	88.52	0.2616	0.2742	0.6016
29 c63v	0.0	0.375	1.0	75.23	5.18	-28.62	29.1	280	48.09	48.65	87.48	0.261	0.2641	0.5598
30 c75v	0.0	0.25	1.0	73.5	8.84	-30.79	32.04	286	46.72	45.92	86.31	0.2611	0.2566	0.5285
31 c88v	0.0	0.125	1.0	72.38	11.29	-32.3	34.23	289	45.87	44.22	85.73	0.2609	0.2515	0.5088
32 v00m	0.0	0.0	1.0	72.11	11.8	-32.58	34.66	290	45.66	43.83	85.5	0.2609	0.2505	0.5044
33 v13m	0.125	0.0	1.0	72.2	12.23	-32.64	34.87	291	45.94	43.96	85.79	0.2615	0.2502	0.5058
34 v25m	0.25	0.0	1.0	72.57	13.61	-31.97	34.75	293	47.0	44.52	85.74	0.2651	0.2511	0.5122
35 v38m	0.375	0.0	1.0	73.19	15.96	-31.19	35.04	297	48.81	45.46	86.15	0.2706	0.252	0.5231
36 v50m	0.5	0.0	1.0	73.99	18.86	-29.98	35.42	302	51.16	46.68	86.37	0.2777	0.2534	0.5372
37 v63m	0.625	0.0	1.0	75.02	22.68	-28.56	36.48	308	54.35	48.32	86.89	0.2867	0.2549	0.556
38 v75m	0.75	0.0	1.0	76.2	26.68	-26.79	37.82	315	57.99	50.21	87.24	0.2967	0.2569	0.5777
39 v88m	0.875	0.0	1.0	77.46	30.89	-24.91	39.69	321	62.04	52.3	87.67	0.3071	0.2589	0.6018
40 m00o	1.0	0.0	1.0	78.99	35.95	-22.67	42.51	328	67.18	54.91	88.23	0.3194	0.2611	0.6319
41 m13o	1.0	0.0	0.875	78.57	34.47	-17.35	38.59	333	65.7	54.19	79.92	0.3288	0.2712	0.6236
42 m25o	1.0	0.0	0.75	78.19	32.91	-11.79	34.75	340	64.29	53.54	71.96	0.3388	0.2821	0.6161
43 m38o	1.0	0.0	0.675	77.83	31.41	-6.05	31.99	349	62.96	52.93	64.35	0.3493	0.2937	0.6091
44 m50o	1.0	0.0	0.5	77.53	29.94	-0.48	29.94	359	61.75	52.41	57.59	0.3595	0.3052	0.6031
45 m63o	1.0	0.0	0.375	77.26	28.79	4.25	29.1	8	60.78	51.97	52.22	0.3684	0.315	0.598
46 m75o	1.0	0.0	0.25	77.07	27.96	8.08	29.1	16	60.09	51.65	48.16	0.3758	0.323	0.5944
47 m88o	1.0	0.0	0.125	76.95	27.37	10.68	29.38	21	59.62	51.45	45.55	0.3807	0.3285	0.592
48 o00y	1.0	0.0	0.0	77.22	28.3	11.69	30.62	22	60.49	51.89	45.05	0.3842	0.3296	0.5971
49 n00w	0.0	0.0	0.0	69.7	0.0	0.0	0.01	0	38.32	40.32	43.9	0.3127	0.329	0.464
50 n13w	0.125	0.125	0.125	70.08	-0.01	0.0	0.02	169	38.83	40.86	44.49	0.3127	0.3291	0.4702
51 n25w	0.25	0.25	0.25	71.73	0.0	-0.13	0.14	269	41.11	43.26	47.23	0.3124	0.3287	0.4978
52 n38w	0.375	0.375	0.375	74.26	0.2	-0.5	0.55	291	44.84	47.11	51.8	0.3119	0.3277	0.5421
53 n50w	0.5	0.5	0.5	77.49	0.5	-0.98	1.11	297	49.93	52.34	58.05	0.3114	0.3265	0.6023
54 n63w	0.625	0.625	0.625	81.44	0.76	-1.41	1.61	298	56.64	59.27	66.19	0.311	0.3255	0.682
55 n75w	0.75	0.75	0.75	85.74	0.99	-1.64	1.93	301	64.55	67.46	75.55	0.311	0.325	0.7763
56 n88w	0.875	0.875	0.875	90.17	0.83	-1.49	1.71	299	73.27	76.67	85.55	0.3111	0.3256	0.8823
57 n99w	1.0	1.0	1.0	95.41	0.0	0.0	0.01	0	84.2	88.59	96.46	0.3127	0.329	1.0194

 $n = 88.59 / (88.59 - 1.23) = 1.014$ TUB-test chart KE37; Hue circle and colorimetric data
Measurement: LCD and CRT display, and LCD projectorinput: $olv^* setrgbcolor$
output: no change compared to input

Colorimetric data of Television Luminous System TLS70a for CIE lightness $L^*_N=70$ of black

System:

TLS70a **Y Yellow**

Monitor: $LCH^*_a = 94.7 \ 35.6 \ 104$

LCD $LAB^*_a = 94.7 \ -8.5 \ 34.6$

Reflection:

$Y_N = 40.32$

$L^*_N = 69.7$

L Leaf green

$LCH^*_a = 89.5 \ 45.2 \ 143$

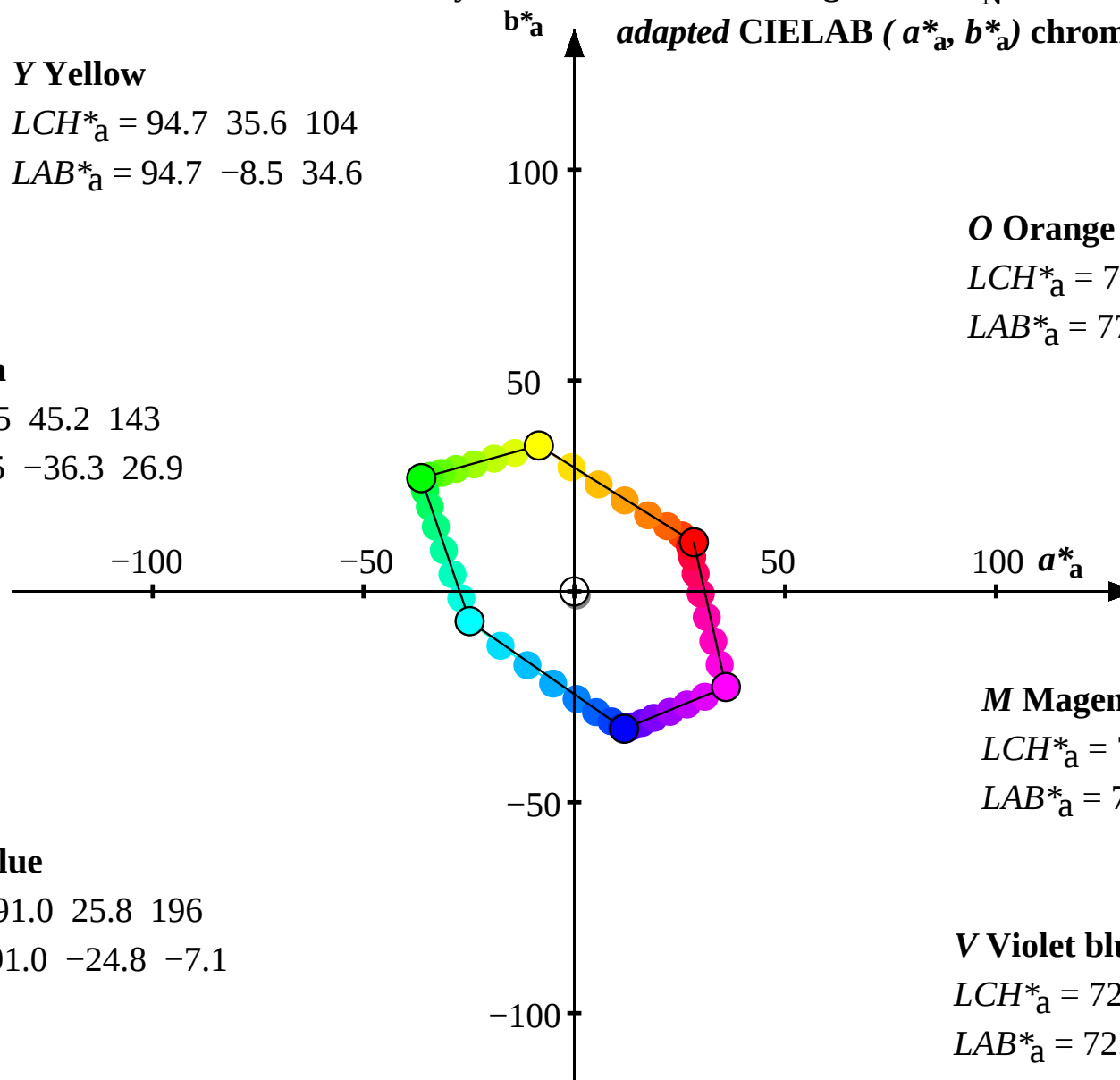
$LAB^*_a = 89.5 \ -36.3 \ 26.9$

C Cyan blue

$LCH^*_a = 91.0 \ 25.8 \ 196$

$LAB^*_a = 91.0 \ -24.8 \ -7.1$

*adapted CIELAB (a^*_a , b^*_a) chroma diagram*



O Orange red

$LCH^*_a = 77.2 \ 30.6 \ 22$

$LAB^*_a = 77.2 \ 28.3 \ 11.7$

M Magenta red

$LCH^*_a = 79.0 \ 42.5 \ 328$

$LAB^*_a = 79.0 \ 36.0 \ -22.7$

V Violet blue

$LCH^*_a = 72.1 \ 34.7 \ 290$

$LAB^*_a = 72.1 \ 11.8 \ -32.6$

Colorimetric data of Television Luminous System TLS00 for CIE lightness $L^*_N=00$ of black

System:

TLS00

Monitor:

CRT

Color	$r=olv^*_1$	$g=olv^*_2$	$b=olv^*_3$	$L^*_c=LAB^*_{1c}$	$a^*_c=LAB^*_{2c}$	$b^*_c=LAB^*_{3c}$	$C^*_{ab,c}=LAB^*_{rc}$	$h_{ab,c}$	$X_c=XYZ_{1c}$	$Y_c=XYZ_{2c}$	$Z_c=XYZ_{3c}$	x_c	y_c	$Y_c/88.59$
00 o00y	1.0	0.0	0.0	56.02	77.48	66.45	102.07	42	44.38	23.93	2.62	0.6257	0.3374	0.2701
01 o13y	1.0	0.125	0.0	56.02	77.28	66.41	101.9	42	44.31	23.93	2.62	0.6253	0.3377	0.2701
02 o25y	1.0	0.25	0.0	57.92	71.8	67.19	98.34	45	45.26	25.88	2.98	0.6106	0.3492	0.2921
03 o38y	1.0	0.375	0.0	62.19	59.5	69.13	91.21	51	47.4	30.62	3.86	0.5789	0.374	0.3457
04 o50y	1.0	0.5	0.0	67.72	44.39	72.09	84.66	61	50.6	37.59	5.13	0.5422	0.4028	0.4243
05 o63y	1.0	0.625	0.0	73.76	28.82	75.54	80.86	72	54.63	46.33	6.76	0.5071	0.4301	0.523
06 o75y	1.0	0.75	0.0	79.96	13.76	79.39	80.57	83	59.35	56.61	8.67	0.4762	0.4542	0.639
07 o88y	1.0	0.875	0.0	86.01	0.2	83.63	83.63	93	64.73	68.01	10.69	0.4513	0.4742	0.7677
08 y00l	1.0	1.0	0.0	91.93	-12.99	87.13	88.09	101	70.31	80.55	13.19	0.4286	0.491	0.9092
09 y13l	0.875	1.0	0.0	89.64	-24.0	84.58	87.92	108	61.01	75.52	12.63	0.409	0.5063	0.8525
10 y25l	0.75	1.0	0.0	87.47	-35.92	82.12	89.64	116	52.43	70.97	12.15	0.3868	0.5236	0.8011
11 y38l	0.625	1.0	0.0	85.44	-48.24	79.84	93.29	123	44.75	66.87	11.69	0.3629	0.5423	0.7548
12 y50l	0.5	1.0	0.0	83.56	-60.65	77.73	98.6	129	38.03	63.22	11.28	0.338	0.5618	0.7136
13 y63l	0.375	1.0	0.0	82.02	-72.3	75.94	104.86	134	32.65	60.33	10.97	0.3141	0.5804	0.681
14 y75l	0.25	1.0	0.0	80.88	-82.0	74.62	110.88	138	28.73	58.25	10.74	0.294	0.5961	0.6575
15 y88l	0.125	1.0	0.0	80.25	-87.72	73.89	114.7	140	26.61	57.12	10.61	0.2821	0.6054	0.6447
16 l00c	0.0	1.0	0.0	80.17	-88.48	73.79	115.22	141	26.35	56.98	10.61	0.2805	0.6066	0.6432
17 l13c	0.0	1.0	0.125	80.16	-88.43	73.41	114.94	141	26.35	56.96	10.73	0.2802	0.6057	0.643
18 l25c	0.0	1.0	0.25	80.28	-86.86	66.19	109.21	143	26.86	57.18	13.53	0.2753	0.586	0.6454
19 l38c	0.0	1.0	0.375	80.6	-83.19	51.95	98.09	148	28.12	57.74	20.48	0.2644	0.543	0.6518
20 l50c	0.0	1.0	0.5	81.07	-77.87	35.94	85.77	155	30.02	58.59	30.89	0.2512	0.4903	0.6614
21 l63c	0.0	1.0	0.625	81.71	-71.7	20.47	74.58	163	32.45	59.76	44.11	0.238	0.4384	0.6746
22 l75c	0.0	1.0	0.75	82.43	-64.7	5.72	64.96	174	35.34	61.1	60.02	0.2259	0.3905	0.6897
23 l88c	0.0	1.0	0.875	83.26	-57.4	-7.78	57.93	185	38.65	62.66	77.97	0.2156	0.3495	0.7073
24 c00v	0.0	1.0	1.0	84.22	-50.12	-20.03	53.99	198	42.33	64.49	97.58	0.2071	0.3155	0.728
25 c13v	0.0	0.875	1.0	77.24	-38.2	-30.47	48.88	214	36.57	51.93	95.19	0.1991	0.2827	0.5862
26 c25v	0.0	0.75	1.0	69.81	-24.32	-41.97	48.52	235	31.36	40.48	93.23	0.19	0.2452	0.4569
27 c38v	0.0	0.675	1.0	61.76	-8.13	-54.27	54.89	258	26.59	30.12	90.95	0.1801	0.204	0.34
28 c50v	0.0	0.5	1.0	53.37	10.02	-67.62	68.37	276	22.44	21.38	89.33	0.1685	0.1606	0.2414
29 c63v	0.0	0.375	1.0	44.84	31.31	-81.6	87.41	290	19.23	14.43	88.29	0.1577	0.1183	0.1628
30 c75v	0.0	0.25	1.0	37.25	52.3	-94.04	107.62	298	17.02	9.67	87.38	0.1492	0.0848	0.1092
31 c88v	0.0	0.125	1.0	33.58	63.94	-100.42	119.06	302	16.27	7.81	87.45	0.1459	0.07	0.0881
32 v00m	0.0	0.0	1.0	33.4	63.27	-100.11	118.43	302	16.02	7.72	86.57	0.1452	0.07	0.0872
33 v13m	0.125	0.0	1.0	33.76	63.95	-100.02	118.72	302	16.41	7.89	87.32	0.147	0.0707	0.0891
34 v25m	0.25	0.0	1.0	36.14	65.42	-95.89	116.09	304	18.57	9.08	87.28	0.1616	0.079	0.1025
35 v38m	0.375	0.0	1.0	39.92	68.67	-89.58	112.88	307	22.58	11.2	87.57	0.1861	0.0923	0.1264
36 v50m	0.5	0.0	1.0	44.48	73.01	-82.23	109.98	311	28.25	14.17	88.31	0.2161	0.1084	0.16
37 v63m	0.625	0.0	1.0	49.17	76.2	-73.8	106.09	315	34.63	17.73	87.83	0.247	0.1265	0.2002
38 v75m	0.75	0.0	1.0	54.0	80.89	-66.0	104.41	320	42.59	21.98	88.59	0.2781	0.1435	0.2481
39 v88m	0.875	0.0	1.0	58.64	85.03	-58.09	102.99	325	51.17	26.64	88.71	0.3073	0.16	0.3008
40 m00o	1.0	0.0	1.0	63.05	89.51	-50.96	103.0	330	60.56	31.65	89.38	0.3335	0.1743	0.3573
41 m13o	1.0	0.0	0.875	61.53	87.25	-38.83	95.5	336	56.9	29.85	69.87	0.3633	0.1906	0.337
42 m25o	1.0	0.0	0.75	60.16	84.9	-25.02	88.51	344	53.63	28.3	52.01	0.4004	0.2113	0.3194
43 m38o	1.0	0.0	0.675	58.9	82.72	-9.32	83.25	354	50.72	26.92	36.13	0.4458	0.2366	0.3038
44 m50o	1.0	0.0	0.5	57.81	85.9	4.99	86.05	4	50.15	25.76	24.88	0.4976	0.2556	0.2908
45 m63o	1.0	0.0	0.375	56.92	79.09	28.43	84.05	21	46.29	24.84	12.53	0.5533	0.2969	0.2804
46 m75o	1.0	0.0	0.25	56.33	78.02	50.44	92.9	35	45.03	24.24	5.58	0.6016	0.3239	0.2737
47 m88o	1.0	0.0	0.125	56.09	77.63	65.6	101.63	42	44.54	24.01	2.75	0.6247	0.3367	0.271
48 o00y	1.0	0.0	0.0	56.02	77.48	66.45	102.07	42	44.38	23.93	2.62	0.6257	0.3374	0.2701
49 o00w	0.0	0.0	0.0	0.46	-0.16	-0.09	0.2	0	0.04	0.05	0.06	0.2802	0.323	0.0006
50 n13w	0.125	0.125	0.125	2.38	4.33	1.25	4.5	18	0.36	0.26	0.2	0.435	0.3218	0.003
51 n25w	0.25	0.25	0.25	22.26	7.95	2.57	8.36	25	3.93	3.59	3.47	0.3576	0.3267	0.0405
52 n38w	0.375	0.375	0.375	39.92	6.15	1.68	6.38	33	11.48	11.2	11.57	0.3352	0.327	0.1264
53 n50w	0.5	0.5	0.5	54.11	5.42	0.6	5.45	37	22.13	22.08	23.68	0.326	0.3252	0.2492
54 n63w	0.625	0.625	0.625	66.29	5.06	-0.08	5.06	44	35.4	35.7	38.95	0.3217	0.3244	0.403
55 n75w	0.75	0.75	0.75	77.06	4.96	-1.02	5.06	43	50.91	51.63	57.3	0.3185	0.323	0.5828
56 n88w	0.875	0.875	0.875	86.67	5.13	-1.86	5.06	27	68.21	69.33	77.9	0.3166	0.3218	0.7826
57 n99w	1.0	1.0	1.0	95.41	4.95	-2.4	5.51	0	86.83	88.59	100.14	0.3151	0.3215	1.0

TUB-test chart KE37; Hue circle and colorimetric data
Measurement: LCD and CRT display, and LCD projectorinput: $olv^* setrgbcolor$
output: no change compared to input

Colorimetric data of Television Luminous System TLS00 for CIE lightness $L^*_N=00$ of black System: standard CIELAB (a^* , b^*) chroma diagram

TLS00

Y Yellow

Monitor:

$LCH^* = 91.9 \ 88.1 \ 98$

CRT

$LAB^* = 91.9 \ -13.0 \ 87.1$

L Leaf green

$LCH^* = 80.2 \ 115.2 \ 140$

$LAB^* = 80.2 \ -88.5 \ 73.8$

O Orange red

$LCH^* = 56.0 \ 102.1 \ 41$

$LAB^* = 56.0 \ 77.5 \ 66.4$

M Magenta red

$LCH^* = 63.1 \ 103.0 \ 330$

$LAB^* = 63.1 \ 89.5 \ -51.0$

C Cyan blue

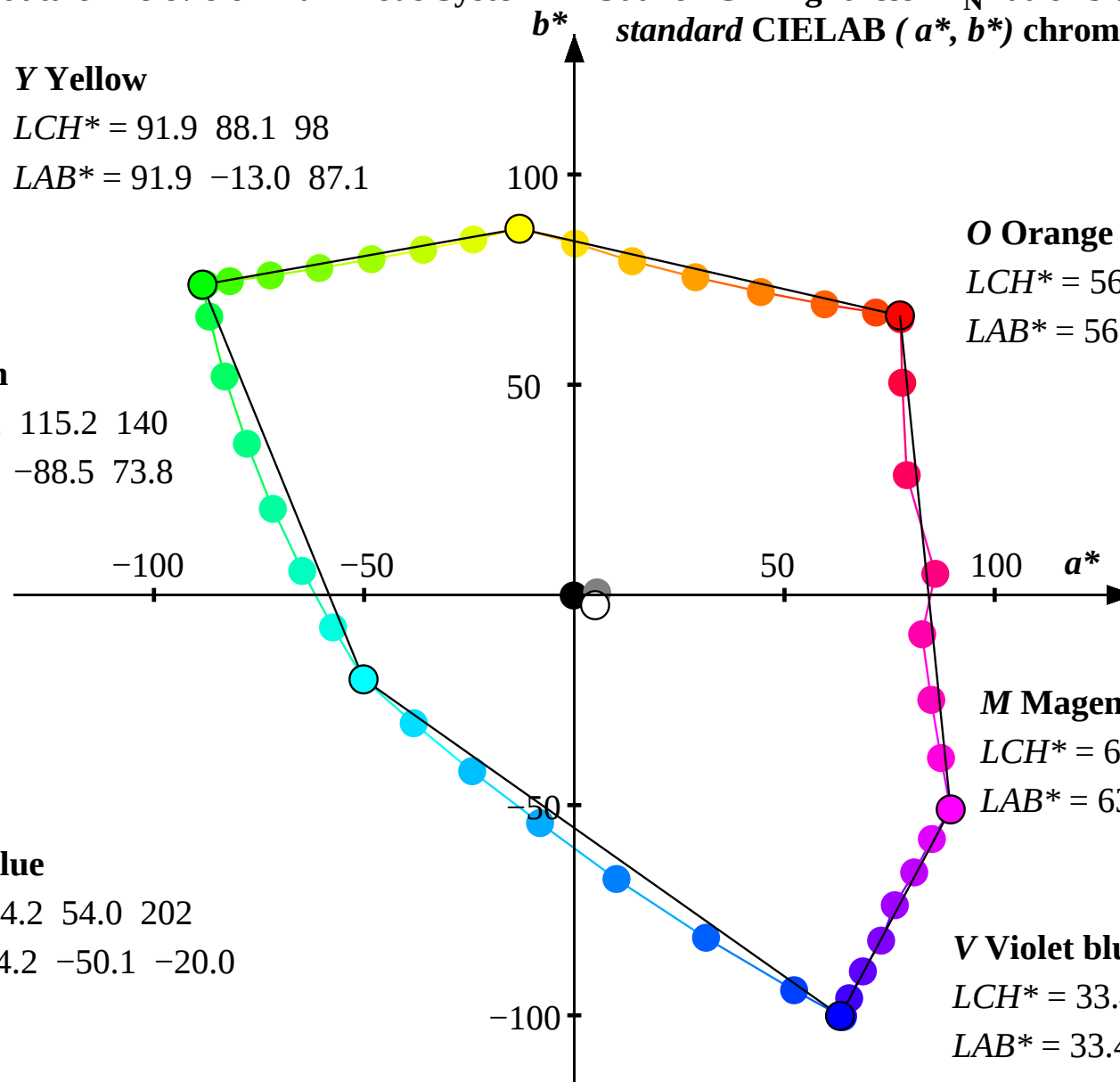
$LCH^* = 84.2 \ 54.0 \ 202$

$LAB^* = 84.2 \ -50.1 \ -20.0$

V Violet blue

$LCH^* = 33.4 \ 118.4 \ 302$

$LAB^* = 33.4 \ 63.3 \ -100.1$



See original or copy: <http://web.me.com/klaus.richter/KE37/KE37L0NP.PDF> /.PS
Technical information: <http://www.ps.bam.de> or <http://130.149.60.45/~farbmetrik>

TUB registration: 20100601-KE37/KE37L0NP.PDF /.PS
application for measurement of printer or monitor systems

TUB material: code=rha4ta

Colorimetric data of Television Luminous System TLS00a for CIE lightness $L^*_N=00$ of black

System:

TLS00a

Monitor:

CRT

Color	$r=olv*1$	$g=olv*2$	$b=olv*3$	$L^*_a=LAB*1a$	$a^*_a=LAB*2a$	$b^*_a=LAB*3a$	$C^*_{ab,a}=LAB*ra$	$h_{ab,a}$	$X_a=XYZ1a$	$Y_a=XYZ2a$	$Z_a=XYZ3a$	x_a	y_a	$Y_a/88.59$
00 o00y	1.0	0.0	0.0	56.02	74.66	67.9	100.92	42	43.41	23.93	2.42	0.6223	0.343	0.2701
01 o13y	1.0	0.125	0.0	56.02	74.46	67.87	100.75	42	43.35	23.93	2.43	0.6219	0.3433	0.2701
02 o25y	1.0	0.25	0.0	57.92	68.88	68.69	97.27	45	44.24	25.88	2.76	0.607	0.3551	0.2921
03 o38y	1.0	0.375	0.0	62.19	56.34	70.73	90.43	51	46.28	30.62	3.58	0.575	0.3805	0.3457
04 o50y	1.0	0.5	0.0	67.72	40.94	73.83	84.42	61	49.32	37.59	4.77	0.5379	0.41	0.4243
05 o63y	1.0	0.625	0.0	73.76	25.04	77.43	81.38	72	53.15	46.33	6.29	0.5025	0.438	0.523
06 o75y	1.0	0.75	0.0	79.96	9.64	81.42	81.99	83	57.65	56.61	8.07	0.4713	0.4627	0.639
07 o88y	1.0	0.875	0.0	86.01	-4.23	85.82	85.92	93	62.79	68.01	9.94	0.4461	0.4832	0.7677
08 y00l	1.0	1.0	0.0	91.93	-17.76	89.45	91.2	101	68.11	80.55	12.28	0.4232	0.5005	0.9092
09 y13l	0.875	1.0	0.0	89.64	-28.64	86.85	91.46	108	59.06	75.52	11.77	0.4035	0.516	0.8525
10 y25l	0.75	1.0	0.0	87.47	-40.44	84.34	93.54	116	50.72	70.97	11.32	0.3813	0.5336	0.8011
11 y38l	0.625	1.0	0.0	85.44	-52.65	82.01	97.46	123	43.24	66.87	10.91	0.3573	0.5526	0.7548
12 y50l	0.5	1.0	0.0	83.56	-64.96	79.85	102.95	129	36.72	63.22	10.53	0.3324	0.5723	0.7136
13 y63l	0.375	1.0	0.0	82.02	-76.53	78.03	109.3	134	31.48	60.33	10.25	0.3085	0.5911	0.681
14 y75l	0.25	1.0	0.0	80.88	-86.16	76.68	115.35	138	27.67	58.25	10.04	0.2884	0.607	0.6575
15 y88l	0.125	1.0	0.0	80.25	-91.85	75.94	119.18	140	25.62	57.12	9.92	0.2765	0.6164	0.6447
16 l00c	0.0	1.0	0.0	80.17	-92.61	75.83	119.7	141	25.36	56.98	9.92	0.2749	0.6176	0.6432
17 l13c	0.0	1.0	0.125	80.16	-92.56	75.45	119.42	141	25.36	56.96	10.04	0.2746	0.6167	0.643
18 l25c	0.0	1.0	0.25	80.28	-90.99	68.23	113.74	143	25.86	57.18	12.72	0.2701	0.5971	0.6454
19 l38c	0.0	1.0	0.375	80.6	-87.34	54.0	102.7	148	27.08	57.74	19.4	0.2598	0.554	0.6518
20 l50c	0.0	1.0	0.5	81.07	-82.05	38.0	90.43	155	28.93	58.59	29.46	0.2473	0.5009	0.6614
21 l63c	0.0	1.0	0.625	81.71	-75.92	22.55	79.2	163	31.29	59.76	42.28	0.2346	0.4482	0.6746
22 l75c	0.0	1.0	0.75	82.43	-68.95	7.82	69.4	174	34.11	61.1	57.75	0.223	0.3995	0.6897
23 l88c	0.0	1.0	0.875	83.26	-61.69	-5.66	61.96	185	37.32	62.66	75.23	0.213	0.3576	0.7073
24 c00v	0.0	1.0	1.0	84.22	-17.89	-54.47	57.34	198	40.9	64.49	94.37	0.2048	0.3228	0.728
25 c13v	0.0	0.875	1.0	77.24	-42.17	-28.5	50.91	214	35.39	51.93	92.28	0.197	0.2891	0.5862
26 c25v	0.0	0.75	1.0	69.81	-27.89	-40.18	48.93	235	30.4	40.48	90.62	0.1882	0.2506	0.4569
27 c38v	0.0	0.675	1.0	61.76	-11.26	-52.68	53.88	258	25.84	30.12	88.66	0.1787	0.2083	0.34
28 c50v	0.0	0.5	1.0	53.37	7.34	-66.23	66.65	276	21.86	21.38	87.36	0.1674	0.1637	0.2414
29 c63v	0.0	0.375	1.0	44.84	-80.42	29.09	85.52	290	18.8	14.43	86.62	0.1568	0.1204	0.1628
30 c75v	0.0	0.25	1.0	37.25	-93.04	50.49	105.87	298	16.69	9.67	85.98	0.1486	0.0861	0.1092
31 c88v	0.0	0.125	1.0	33.58	62.33	-99.51	117.43	302	15.99	7.81	86.17	0.1454	0.071	0.0881
32 v00m	0.0	0.0	1.0	33.4	61.66	-99.21	116.82	302	15.74	7.72	85.31	0.1447	0.071	0.0872
33 v13m	0.125	0.0	1.0	33.76	62.32	-99.11	117.08	302	16.12	7.89	86.04	0.1465	0.0717	0.0891
34 v25m	0.25	0.0	1.0	36.14	63.67	-94.92	114.3	304	18.24	9.08	85.92	0.1611	0.0802	0.1025
35 v38m	0.375	0.0	1.0	39.92	66.72	-88.51	110.85	307	22.16	11.2	86.08	0.1855	0.0938	0.1264
36 v50m	0.5	0.0	1.0	44.48	70.81	-81.06	107.64	311	27.69	14.17	86.65	0.2155	0.1103	0.16
37 v63m	0.625	0.0	1.0	49.17	73.75	-72.52	103.43	315	33.92	17.73	86.03	0.2464	0.1288	0.2002
38 v75m	0.75	0.0	1.0	54.0	78.18	-64.6	101.42	320	41.69	21.98	86.6	0.2774	0.1463	0.2481
39 v88m	0.875	0.0	1.0	58.64	82.07	-56.57	99.68	325	50.06	26.64	86.57	0.3066	0.1632	0.3008
40 m00o	1.0	0.0	1.0	63.05	86.31	-49.33	99.42	330	59.22	31.65	87.07	0.3328	0.1779	0.3573
41 m13o	1.0	0.0	0.875	61.53	84.13	-37.24	92.0	336	55.65	29.85	67.96	0.3626	0.1945	0.337
42 m25o	1.0	0.0	0.75	60.16	81.85	-23.47	85.15	344	52.45	28.3	50.47	0.3997	0.2157	0.3194
43 m38o	1.0	0.0	0.675	58.9	79.74	-7.8	80.12	354	49.61	26.92	34.95	0.445	0.2415	0.3038
44 m50o	1.0	0.0	0.5	57.81	82.98	6.49	83.23	4	49.07	25.76	23.97	0.4967	0.2607	0.2908
45 m63o	1.0	0.0	0.375	56.92	76.22	29.91	81.88	21	45.28	24.84	11.97	0.5516	0.3026	0.2804
46 m75o	1.0	0.0	0.25	56.33	75.18	51.9	91.35	35	44.05	24.24	5.25	0.5989	0.3296	0.2737
47 m88o	1.0	0.0	0.125	56.09	74.8	67.06	100.46	42	43.57	24.01	2.55	0.6213	0.3423	0.271
48 o00y	1.0	0.0	0.0	56.02	74.66	67.9	100.92	42	43.41	23.93	2.42	0.6223	0.343	0.2701
49 n00w	0.0	0.0	0.0	0.46	0.0	0.0	0.01	0	0.05	0.05	0.06	0.3127	0.329	0.0006
50 n13w	0.125	0.125	0.125	2.38	4.39	1.4	4.61	18	0.36	0.26	0.19	0.4418	0.3253	0.003
51 n25w	0.25	0.25	0.25	22.26	6.95	3.2	7.65	25	3.86	3.59	3.37	0.357	0.3319	0.0405
52 n38w	0.375	0.375	0.375	39.92	4.2	2.74	5.01	33	11.21	11.2	11.19	0.3337	0.3334	0.1264
53 n50w	0.5	0.5	0.5	54.11	2.7	2.01	3.37	37	21.55	22.08	22.86	0.3241	0.3321	0.2492
54 n63w	0.625	0.625	0.625	66.29	1.68	1.61	2.33	44	34.41	35.7	37.56	0.3196	0.3315	0.403
55 n75w	0.75	0.75	0.75	77.06	1.0	0.93	1.37	43	49.43	51.63	55.23	0.3163	0.3303	0.5828
56 n88w	0.875	0.875	0.875	86.67	0.65	0.33	0.73	27	66.18	69.33	75.06	0.3143	0.3292	0.7826
57 n99w	1.0	1.0	1.0	95.41	0.0	0.0	0.01	0	84.2	88.59	96.46	0.3127	0.329	1.0

KE370-7N, 25/66

TUB-test chart KE37; Hue circle and colorimetric data
Measurement: LCD and CRT display, and LCD projector

input: $olv^* setrgbcolor$
output: no change compared to input

Colorimetric data of Television Luminous System TLS00a for CIE lightness $L^*_N=00$ of black

System:

TLS00a

Y Yellow

Monitor:

$LCH^*_a = 91.9 \ 91.2 \ 101$

CRT

$LAB^*_a = 91.9 \ -17.8 \ 89.5$

*adapted CIELAB (a^*_a , b^*_a) chroma diagram*

O Orange red

$LCH^*_a = 56.0 \ 100.9 \ 42$

$LAB^*_a = 56.0 \ 74.7 \ 67.9$

L Leaf green

$LCH^*_a = 80.2 \ 119.7 \ 141$

$LAB^*_a = 80.2 \ -92.6 \ 75.8$

C Cyan blue

$LCH^*_a = 84.2 \ 57.3 \ 198$

$LAB^*_a = 84.2 \ -54.5 \ -17.9$

M Magenta red

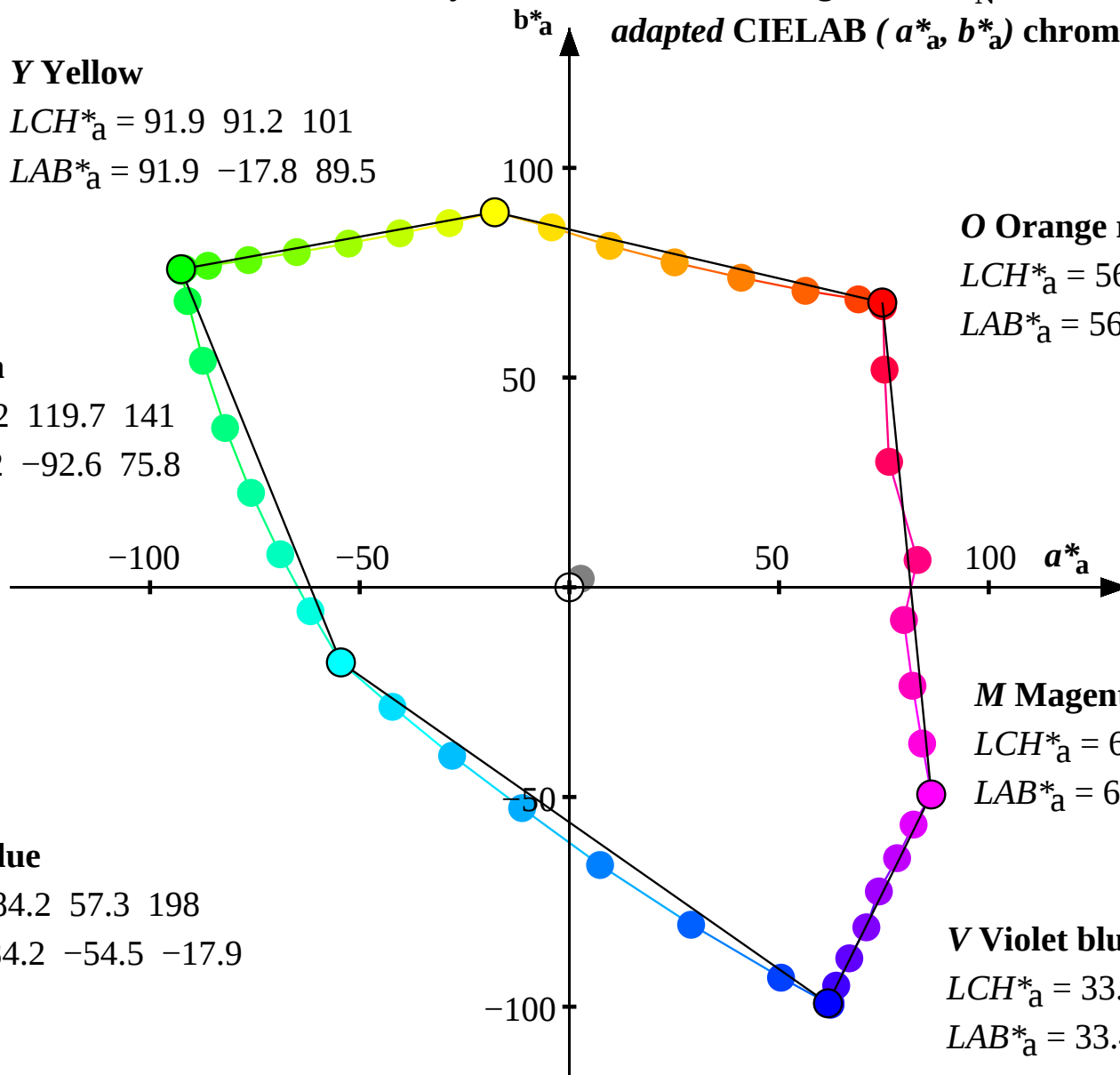
$LCH^*_a = 63.1 \ 99.4 \ 330$

$LAB^*_a = 63.1 \ 86.3 \ -49.3$

V Violet blue

$LCH^*_a = 33.4 \ 116.8 \ 302$

$LAB^*_a = 33.4 \ 61.7 \ -99.2$



Colorimetric data of Television Luminous System TLS00a for CIE lightness $L^*_N=00$ of black

System:

TLS00a

Monitor:

CRT

Color	$r=olv^*_1$	$g=olv^*_2$	$b=olv^*_3$	$L^*_a=LAB^*_{1a}$	$a^*_a=LAB^*_{2a}$	$b^*_a=LAB^*_{3a}$	$C^*_{ab,a}=LAB^*_{ab,a}$	$h_{ab,a}$	$X_a=XYZ^*_{1a}$	$Y_a=XYZ^*_{2a}$	$Z_a=XYZ^*_{3a}$	x_a	y_a	$Y_a/88.59$
00 o00y	1.0	0.0	0.0	55.98	74.75	68.26	101.23	42	43.39	23.89	2.37	0.623	0.343	0.2966
01 o13y	1.0	0.125	0.0	55.98	74.55	68.22	101.06	42	43.32	23.89	2.37	0.6226	0.3433	0.2966
02 o25y	1.0	0.25	0.0	57.89	68.96	69.01	97.56	45	44.22	25.85	2.71	0.6076	0.3551	0.3209
03 o38y	1.0	0.375	0.0	62.16	56.4	71.0	90.68	52	46.26	30.59	3.53	0.5755	0.3806	0.3798
04 o50y	1.0	0.5	0.0	67.7	40.98	74.05	84.63	61	49.3	37.56	4.72	0.5383	0.4102	0.4664
05 o63y	1.0	0.625	0.0	73.74	25.06	77.62	81.56	72	53.13	46.31	6.24	0.5028	0.4382	0.575
06 o75y	1.0	0.75	0.0	79.95	9.65	81.58	82.15	83	57.64	56.59	8.02	0.4715	0.4629	0.7026
07 o88y	1.0	0.875	0.0	86.01	-4.23	85.96	86.06	93	62.77	68.0	9.89	0.4463	0.4834	0.8443
08 y00l	1.0	1.0	0.0	91.93	-17.77	89.58	91.32	101	68.1	80.54	12.23	0.4233	0.5006	1.0
09 y13l	0.875	1.0	0.0	89.63	-28.66	86.98	91.58	108	59.05	75.51	11.72	0.4036	0.5162	0.9376
10 y25l	0.75	1.0	0.0	87.47	-40.47	84.47	93.67	116	50.7	70.96	11.28	0.3814	0.5338	0.8811
11 y38l	0.625	1.0	0.0	85.43	-52.7	82.13	97.59	123	43.22	66.85	10.86	0.3574	0.5528	0.8301
12 y50l	0.5	1.0	0.0	83.55	-65.02	79.98	103.08	129	36.69	63.2	10.48	0.3324	0.5727	0.7847
13 y63l	0.375	1.0	0.0	82.01	-76.6	78.16	109.44	134	31.45	60.32	10.2	0.3085	0.5915	0.7489
14 y75l	0.25	1.0	0.0	80.87	-86.25	76.81	115.5	138	27.64	58.23	9.99	0.2883	0.6075	0.723
15 y88l	0.125	1.0	0.0	80.24	-91.95	76.07	119.34	140	25.59	57.1	9.87	0.2764	0.6169	0.7089
16 l00c	0.0	1.0	0.0	80.16	-92.71	75.96	119.86	141	25.33	56.96	9.87	0.2748	0.6181	0.7073
17 l13c	0.0	1.0	0.125	80.15	-92.66	75.58	119.58	141	25.33	56.95	9.99	0.2745	0.6172	0.707
18 l25c	0.0	1.0	0.25	80.27	-91.09	68.34	113.88	143	25.83	57.16	12.67	0.27	0.5976	0.7097
19 l38c	0.0	1.0	0.375	80.59	-87.43	54.07	102.81	148	27.05	57.73	19.36	0.2597	0.5544	0.7167
20 l50c	0.0	1.0	0.5	81.06	-82.13	38.04	90.52	155	28.9	58.58	29.42	0.2472	0.5011	0.7273
21 l63c	0.0	1.0	0.625	81.7	-75.99	22.57	79.28	163	31.26	59.75	42.25	0.2346	0.4484	0.7418
22 l75c	0.0	1.0	0.75	82.42	-69.01	7.82	69.46	174	34.08	61.08	57.72	0.2229	0.3995	0.7584
23 l88c	0.0	1.0	0.875	83.25	-61.74	-5.67	62.02	185	37.3	62.64	75.22	0.2129	0.3576	0.7778
24 c00v	0.0	1.0	1.0	84.21	-54.52	-17.9	57.39	198	40.88	64.48	94.37	0.2047	0.3228	0.8005
25 c13v	0.0	0.875	1.0	77.23	-42.21	-28.52	50.96	214	35.36	51.91	92.28	0.1969	0.2891	0.6445
26 c25v	0.0	0.75	1.0	69.79	-27.93	-40.21	48.97	235	30.37	40.45	90.62	0.1881	0.2505	0.5022
27 c38v	0.0	0.675	1.0	61.73	-11.28	-52.73	53.93	258	25.8	30.09	88.66	0.1785	0.2082	0.3736
28 c50v	0.0	0.5	1.0	53.33	7.35	-66.3	66.72	276	21.82	21.35	87.35	0.1672	0.1635	0.265
29 c63v	0.0	0.375	1.0	44.78	29.15	-80.52	85.64	290	18.76	14.38	86.61	0.1566	0.1201	0.1786
30 c75v	0.0	0.25	1.0	37.17	50.63	-93.18	106.06	299	16.66	9.63	85.98	0.1484	0.0858	0.1195
31 c88v	0.0	0.125	1.0	33.48	62.53	-99.68	117.67	302	15.95	7.76	86.17	0.1452	0.0706	0.0964
32 v00m	0.0	0.0	1.0	33.3	61.86	-99.37	117.06	302	15.7	7.68	85.31	0.1445	0.0706	0.0953
33 v13m	0.125	0.0	1.0	33.66	62.52	-99.27	117.33	302	16.08	7.85	86.04	0.1463	0.0713	0.0974
34 v25m	0.25	0.0	1.0	36.05	63.85	-95.06	114.52	304	18.2	9.03	85.91	0.1609	0.0798	0.1122
35 v38m	0.375	0.0	1.0	39.84	66.87	-88.64	111.04	307	22.12	11.16	86.07	0.1854	0.0935	0.1385
36 v50m	0.5	0.0	1.0	44.42	70.94	-81.16	107.8	311	27.66	14.13	86.65	0.2154	0.11	0.1754
37 v63m	0.625	0.0	1.0	49.12	73.86	-72.6	103.57	315	33.89	17.69	86.02	0.2463	0.1286	0.2197
38 v75m	0.75	0.0	1.0	53.96	78.28	-64.67	101.54	320	41.67	21.94	86.6	0.2774	0.1461	0.2724
39 v88m	0.875	0.0	1.0	58.61	82.16	-56.63	99.79	325	50.04	26.61	86.56	0.3066	0.163	0.3304
40 m00o	1.0	0.0	1.0	63.03	86.39	-49.38	99.51	330	59.2	31.62	87.07	0.3328	0.1777	0.3926
41 m13o	1.0	0.0	0.875	61.5	84.21	-37.28	92.1	336	55.63	29.82	67.94	0.3627	0.1944	0.3702
42 m25o	1.0	0.0	0.75	60.13	81.94	-23.49	85.24	344	52.43	28.26	50.44	0.3998	0.2155	0.3509
43 m38o	1.0	0.0	0.675	58.86	79.83	-7.81	80.21	354	49.59	26.88	34.92	0.4452	0.2413	0.3338
44 m50o	1.0	0.0	0.5	57.78	83.07	6.5	83.33	4	49.05	25.73	23.93	0.4969	0.2606	0.3194
45 m63o	1.0	0.0	0.375	56.88	76.31	29.98	81.98	21	45.26	24.8	11.92	0.5521	0.3025	0.3079
46 m75o	1.0	0.0	0.25	56.29	75.27	52.08	91.53	35	44.03	24.21	5.2	0.5995	0.3296	0.3005
47 m88o	1.0	0.0	0.125	56.06	74.89	67.4	100.75	42	43.55	23.97	2.5	0.622	0.3423	0.2976
48 o00y	1.0	0.0	0.0	55.98	74.75	68.26	101.23	42	43.39	23.89	2.37	0.623	0.343	0.2966
49 n00w	0.0	0.0	0.0	0.0	0.0	0.0	0.01	0	0.0	0.0	0.0	0.0	0.0	0.0
50 n13w	0.125	0.125	0.125	1.92	4.4	1.4	4.62	18	0.31	0.21	0.13	0.4723	0.3244	0.0026
51 n25w	0.25	0.25	0.25	22.09	7.01	3.24	7.72	25	3.81	3.54	3.31	0.3576	0.3319	0.044
52 n38w	0.375	0.375	0.375	39.84	4.21	2.75	5.03	33	11.17	11.16	11.14	0.3338	0.3334	0.1385
53 n50w	0.5	0.5	0.5	54.07	2.7	2.01	3.37	37	21.52	22.04	22.82	0.3242	0.3321	0.2737
54 n63w	0.625	0.625	0.625	66.27	1.69	1.61	2.33	44	34.39	35.67	37.53	0.3196	0.3316	0.4429
55 n75w	0.75	0.75	0.75	77.04	1.0	0.94	1.37	43	49.41	51.61	55.21	0.3163	0.3303	0.6407
56 n88w	0.875	0.875	0.875	86.66	0.65	0.33	0.73	27	66.17	69.32	75.05	0.3143	0.3292	0.8606
57 n99w	1.0	1.0	1.0	95.41	0.0	0.0	0.01	85	84.2	88.59	96.46	0.3127	0.329	1.0999

$$n = 88.59 / (88.59 - 0.05) = 1.001$$

TUB-test chart KE37; Hue circle and colorimetric data
Measurement: LCD and CRT display, and LCD projector

input: $olv^* setrgbcolor$
output: no change compared to input

Colorimetric data of Television Luminous System TLS00a for CIE lightness $L^*_N=00$ of black

System:

TLS00a

Y Yellow

Monitor:

$LCH^*_a = 91.9 \ 91.3 \ 101$

CRT

$LAB^*_a = 91.9 \ -17.8 \ 89.6$

*adapted CIELAB (a^*_a , b^*_a) chroma diagram*

O Orange red

$LCH^*_a = 56.0 \ 101.2 \ 42$

$LAB^*_a = 56.0 \ 74.7 \ 68.3$

L Leaf green

$LCH^*_a = 80.2 \ 119.9 \ 141$

$LAB^*_a = 80.2 \ -92.7 \ 76.0$

C Cyan blue

$LCH^*_a = 84.2 \ 57.4 \ 198$

$LAB^*_a = 84.2 \ -54.5 \ -17.9$

M Magenta red

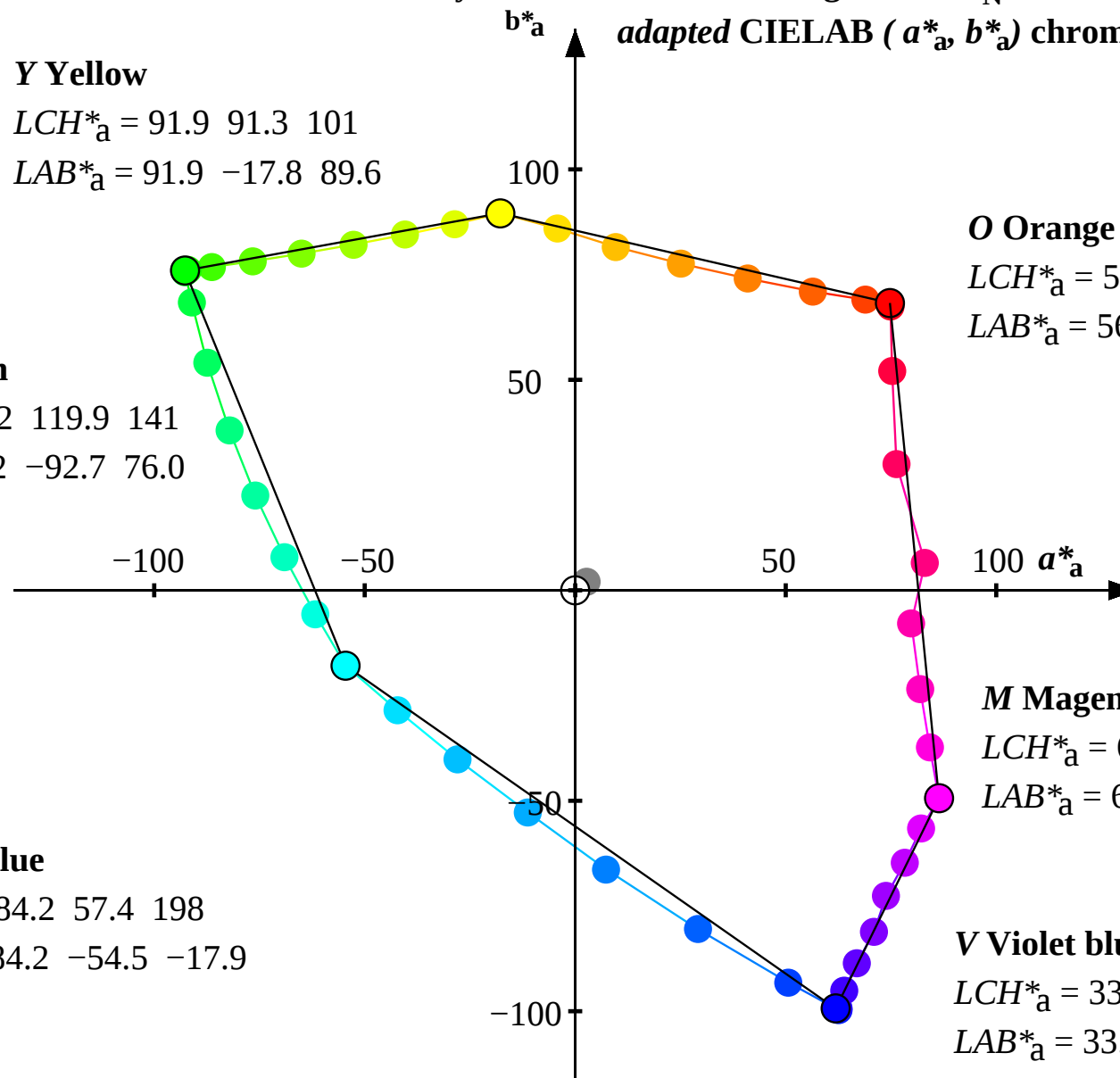
$LCH^*_a = 63.0 \ 99.5 \ 330$

$LAB^*_a = 63.0 \ 86.4 \ -49.4$

V Violet blue

$LCH^*_a = 33.3 \ 117.1 \ 302$

$LAB^*_a = 33.3 \ 61.9 \ -99.4$



See original or copy: <http://web.me.com/klaus.richter/KE37/KE37L0NP.PDF> /.PS
Technical information: <http://www.ps.bam.de> or <http://130.149.60.45/~farbmetrik>

TUB registration: 20100601-KE37/KE37L0NP.PDF /.PS
application for measurement of printer or monitor systems

TUB material: code=rha4ta

Colorimetric data of Television Luminous System TLS00a for CIE lightness $L^*_N=00$ of black

System:

TLS00a

Monitor:

CRT

Reflection:

 $Y_N = 0.0$ $L^*_N = 0.0$

Color	$r=olv*1$	$g=olv*2$	$b=olv*3$	$L^*_a=LAB*1a$	$a^*_a=LAB*2a$	$b^*_a=LAB*3a$	$C^*_{ab,a}=LAB*ab,a$	$h_{ab,a}$	$X_a=XYZ1a$	$Y_a=XYZ2a$	$Z_a=XYZ3a$	x_a	y_a	$Y_a/88.59$
00 o00y	1.0	0.0	0.0	55.98	74.75	68.26	101.23	42	43.39	23.89	2.37	0.623	0.343	0.2966
01 o13y	1.0	0.125	0.0	55.98	74.55	68.22	101.06	42	43.32	23.89	2.37	0.6226	0.3433	0.2966
02 o25y	1.0	0.25	0.0	57.89	68.96	69.01	97.56	45	44.22	25.85	2.71	0.6076	0.3551	0.3209
03 o38y	1.0	0.375	0.0	62.16	56.4	71.0	90.68	52	46.26	30.59	3.53	0.5755	0.3806	0.3798
04 o50y	1.0	0.5	0.0	67.7	40.98	74.05	84.63	61	49.3	37.56	4.72	0.5383	0.4102	0.4664
05 o63y	1.0	0.625	0.0	73.74	25.06	77.62	81.56	72	53.13	46.31	6.24	0.5028	0.4382	0.575
06 o75y	1.0	0.75	0.0	79.95	9.65	81.58	82.15	83	57.64	56.59	8.02	0.4715	0.4629	0.7026
07 o88y	1.0	0.875	0.0	86.01	-4.23	85.96	86.06	93	62.77	68.0	9.89	0.4463	0.4834	0.8443
08 y00l	1.0	1.0	0.0	91.93	-17.77	89.58	91.32	101	68.1	80.54	12.23	0.4233	0.5006	1.0
09 y13l	0.875	1.0	0.0	89.63	-28.66	86.98	91.58	108	59.05	75.51	11.72	0.4036	0.5162	0.9376
10 y25l	0.75	1.0	0.0	87.47	-40.47	84.47	93.67	116	50.7	70.96	11.28	0.3814	0.5338	0.8811
11 y38l	0.625	1.0	0.0	85.43	-52.7	82.13	97.59	123	43.22	66.85	10.86	0.3574	0.5528	0.8301
12 y50l	0.5	1.0	0.0	83.55	-65.02	79.98	103.08	129	36.69	63.2	10.48	0.3324	0.5727	0.7847
13 y63l	0.375	1.0	0.0	82.01	-76.6	78.16	109.44	134	31.45	60.32	10.2	0.3085	0.5915	0.7489
14 y75l	0.25	1.0	0.0	80.87	-86.25	76.81	115.5	138	27.64	58.23	9.99	0.2883	0.6075	0.723
15 y88l	0.125	1.0	0.0	80.24	-91.95	76.07	119.34	140	25.59	57.1	9.87	0.2764	0.6169	0.7089
16 l00c	0.0	1.0	0.0	80.16	-92.71	75.96	119.86	141	25.33	56.96	9.87	0.2748	0.6181	0.7073
17 l13c	0.0	1.0	0.125	80.15	-92.66	75.58	119.58	141	25.33	56.95	9.99	0.2745	0.6172	0.707
18 l25c	0.0	1.0	0.25	80.27	-91.09	68.34	113.88	143	25.83	57.16	12.67	0.27	0.5976	0.7097
19 l38c	0.0	1.0	0.375	80.59	-87.43	54.07	102.81	148	27.05	57.73	19.36	0.2597	0.5544	0.7167
20 l50c	0.0	1.0	0.5	81.06	-82.13	38.04	90.52	155	28.9	58.58	29.42	0.2472	0.5011	0.7273
21 l63c	0.0	1.0	0.625	81.7	-75.99	22.57	79.28	163	31.26	59.75	42.25	0.2346	0.4484	0.7418
22 l75c	0.0	1.0	0.75	82.42	-69.01	7.82	69.46	174	34.08	61.08	57.72	0.2229	0.3995	0.7584
23 l88c	0.0	1.0	0.875	83.25	-61.74	-5.67	62.02	185	37.3	62.64	75.22	0.2129	0.3576	0.7778
24 c00v	0.0	1.0	1.0	84.21	-54.52	-17.9	57.39	198	40.88	64.48	94.37	0.2047	0.3228	0.8005
25 c13v	0.0	0.875	1.0	77.23	-42.21	-28.52	50.96	214	35.36	51.91	92.28	0.1969	0.2891	0.6445
26 c25v	0.0	0.75	1.0	69.79	-27.93	-40.21	48.97	235	30.37	40.45	90.62	0.1881	0.2505	0.5022
27 c38v	0.0	0.675	1.0	61.73	-11.28	-52.73	53.93	258	25.8	30.09	88.66	0.1785	0.2082	0.3736
28 c50v	0.0	0.5	1.0	53.33	7.35	-66.3	66.72	276	21.82	21.35	87.35	0.1672	0.1635	0.265
29 c63v	0.0	0.375	1.0	44.78	29.15	-80.52	85.64	290	18.76	14.38	86.61	0.1566	0.1201	0.1786
30 c75v	0.0	0.25	1.0	37.17	50.63	-93.18	106.06	299	16.66	9.63	85.98	0.1484	0.0858	0.1195
31 c88v	0.0	0.125	1.0	33.48	62.53	-99.68	117.67	302	15.95	7.76	86.17	0.1452	0.0706	0.0964
32 v00m	0.0	0.0	1.0	33.3	61.86	-99.37	117.06	302	15.7	7.68	85.31	0.1445	0.0706	0.0953
33 v13m	0.125	0.0	1.0	33.66	62.52	-99.27	117.33	302	16.08	7.85	86.04	0.1463	0.0713	0.0974
34 v25m	0.25	0.0	1.0	36.05	63.85	-95.06	114.52	304	18.2	9.03	85.91	0.1609	0.0798	0.1122
35 v38m	0.375	0.0	1.0	39.84	66.87	-88.64	111.04	307	22.12	11.16	86.07	0.1854	0.0935	0.1385
36 v50m	0.5	0.0	1.0	44.42	70.94	-81.16	107.8	311	27.66	14.13	86.65	0.2154	0.11	0.1754
37 v63m	0.625	0.0	1.0	49.12	73.86	-72.6	103.57	315	33.89	17.69	86.02	0.2463	0.1286	0.2197
38 v75m	0.75	0.0	1.0	53.96	78.28	-64.67	101.54	320	41.67	21.94	86.6	0.2774	0.1461	0.2724
39 v88m	0.875	0.0	1.0	58.61	82.16	-56.63	99.79	325	50.04	26.61	86.56	0.3066	0.163	0.3304
40 m00o	1.0	0.0	1.0	63.03	86.39	-49.38	99.51	330	59.2	31.62	87.07	0.3328	0.1777	0.3926
41 m13o	1.0	0.0	0.875	61.5	84.21	-37.28	92.1	336	55.63	29.82	67.94	0.3627	0.1944	0.3702
42 m25o	1.0	0.0	0.75	60.13	81.94	-23.49	85.24	344	52.43	28.26	50.44	0.3998	0.2155	0.3509
43 m38o	1.0	0.0	0.675	58.86	79.83	-7.81	80.21	354	49.59	26.88	34.92	0.4452	0.2413	0.3338
44 m50o	1.0	0.0	0.5	57.78	83.07	6.5	83.33	4	49.05	25.73	23.93	0.4969	0.2606	0.3194
45 m63o	1.0	0.0	0.375	56.88	76.31	29.98	81.98	21	45.26	24.8	11.92	0.5521	0.3025	0.3079
46 m75o	1.0	0.0	0.25	56.29	75.27	52.08	91.53	35	44.03	24.21	5.2	0.5995	0.3296	0.3005
47 m88o	1.0	0.0	0.125	56.06	74.89	67.4	100.75	42	43.55	23.97	2.5	0.622	0.3423	0.2976
48 o00y	1.0	0.0	0.0	55.98	74.75	68.26	101.23	42	43.39	23.89	2.37	0.623	0.343	0.2966
49 n00w	0.0	0.0	0.0	0.0	0.0	0.0	0.01	0	0.0	0.0	0.0	0.0	0.0	0.0
50 n13w	0.125	0.125	0.125	1.92	4.4	1.4	4.62	18	0.31	0.21	0.13	0.4723	0.3244	0.0026
51 n25w	0.25	0.25	0.25	22.09	7.01	3.24	7.72	25	3.81	3.54	3.31	0.3576	0.3319	0.044
52 n38w	0.375	0.375	0.375	39.84	4.21	2.75	5.03	33	11.17	11.16	11.14	0.3338	0.3334	0.1385
53 n50w	0.5	0.5	0.5	54.07	2.7	2.01	3.37	37	21.52	22.04	22.82	0.3242	0.3321	0.2737
54 n63w	0.625	0.625	0.625	66.27	1.69	1.61	2.33	44	34.39	35.67	37.53	0.3196	0.3316	0.4429
55 n75w	0.75	0.75	0.75	77.04	1.0	0.94	1.37	43	49.41	51.61	55.21	0.3163	0.3303	0.6407
56 n88w	0.875	0.875	0.875	86.66	0.65	0.33	0.73	27	66.17	69.32	75.05	0.3143	0.3292	0.8606
57 n99w	1.0	1.0	1.0	95.41	0.0	0.0	0.01	85	84.2	88.59	96.46	0.3127	0.329	1.0999

 $n = 88.59 / (88.59 - 0.05) = 1.001$ TUB-test chart KE37; Hue circle and colorimetric data
Measurement: LCD and CRT display, and LCD projectorinput: $olv^* setrgbcolor$
output: no change compared to input

Colorimetric data of Television Luminous System TLS00a for CIE lightness $L^*_N=00$ of black

System:

TLS00a Y Yellow

Monitor: $LCH^*_a = 91.9 \ 91.3 \ 101$

CRT $LAB^*_a = 91.9 \ -17.8 \ 89.6$

Reflection:

$Y_N = 0.0$

$L^*_N = 0.0$

L Leaf green

$LCH^*_a = 80.2 \ 119.9 \ 141$

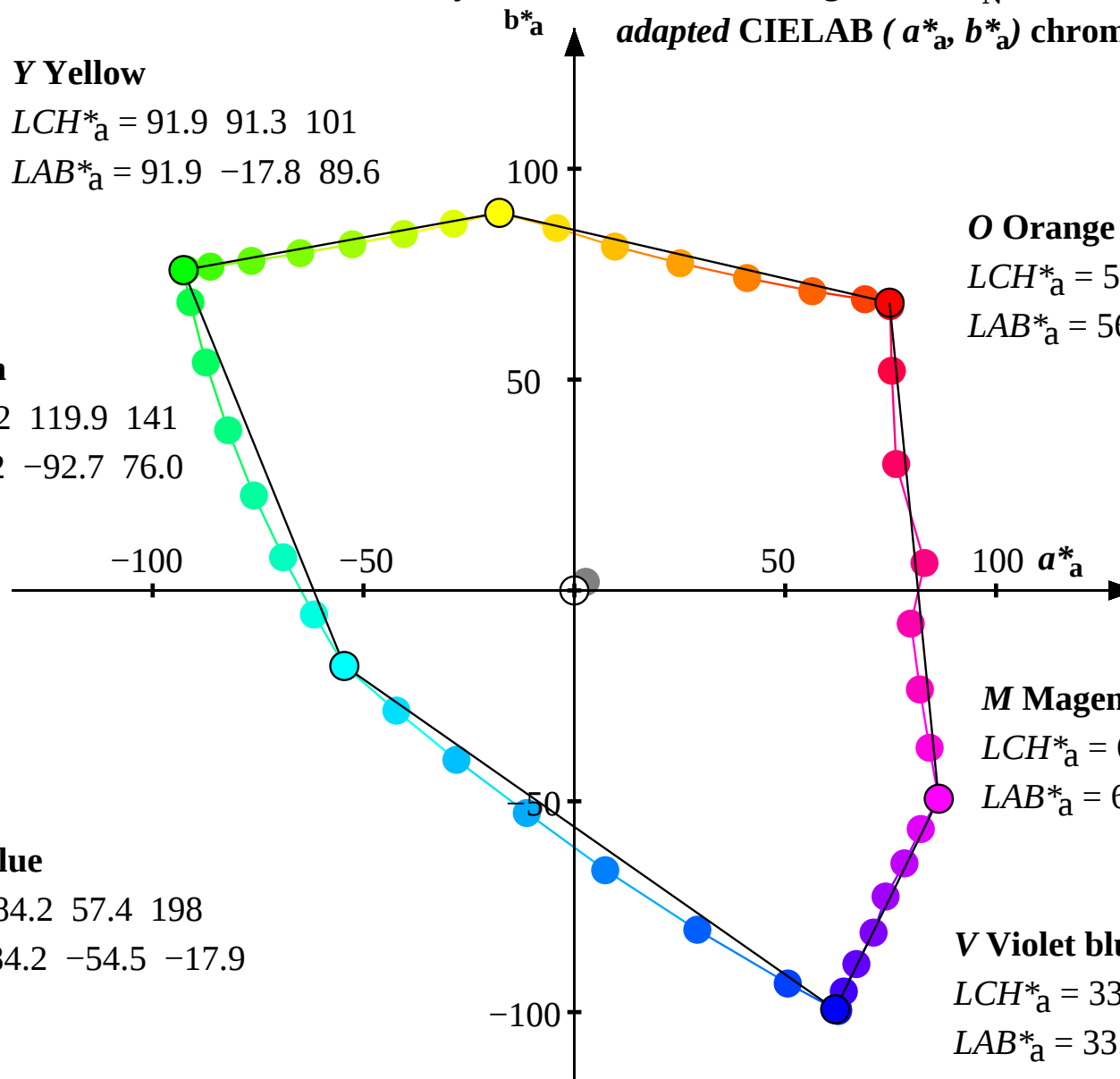
$LAB^*_a = 80.2 \ -92.7 \ 76.0$

C Cyan blue

$LCH^*_a = 84.2 \ 57.4 \ 198$

$LAB^*_a = 84.2 \ -54.5 \ -17.9$

adapted CIELAB (a^*_a , b^*_a) chroma diagram



O Orange red

$LCH^*_a = 56.0 \ 101.2 \ 42$

$LAB^*_a = 56.0 \ 74.7 \ 68.3$

M Magenta red

$LCH^*_a = 63.0 \ 99.5 \ 330$

$LAB^*_a = 63.0 \ 86.4 \ -49.4$

V Violet blue

$LCH^*_a = 33.3 \ 117.1 \ 302$

$LAB^*_a = 33.3 \ 61.9 \ -99.4$

Colorimetric data of Television Luminous System TLS06a for CIE lightness $L^*_N=06$ of black

System:

TLS06a

Monitor:

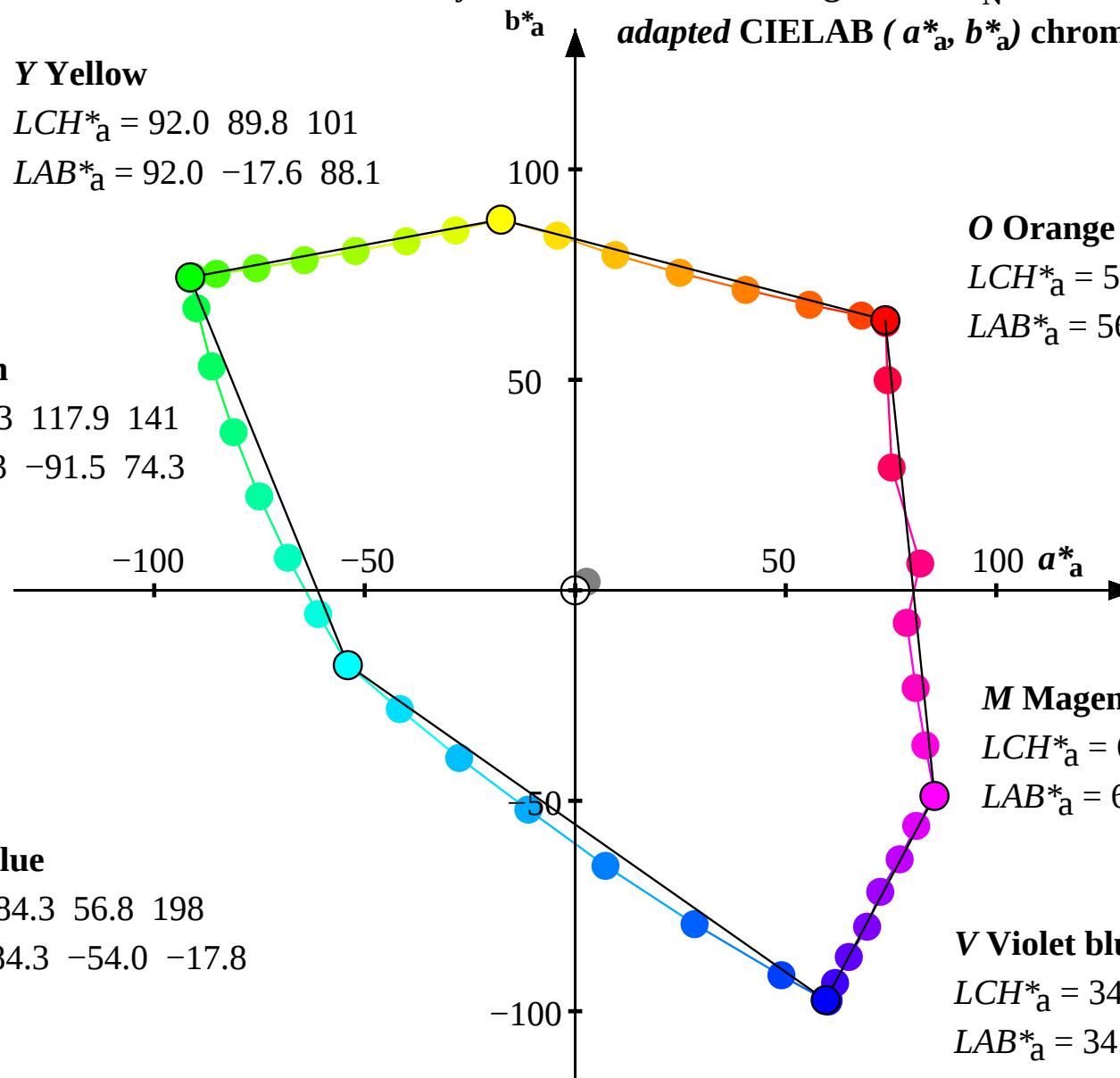
CRT

Reflection:

 $Y_N = 0.63$ $L^*_N = 5.69$

Color	$r=olv*1$	$g=olv*2$	$b=olv*3$	$L^*_a=LAB*1a$	$a^*_a=LAB*2a$	$b^*_a=LAB*3a$	$C^*_{ab,a}=LAB*ab,a$	$h_{ab,a}$	$X_a=XYZ1a$	$Y_a=XYZ2a$	$Z_a=XYZ3a$	x_a	y_a	$Y_a/88.59$
00 o00y	1.0	0.0	0.0	56.44	73.63	64.22	97.7	41	43.68	24.35	3.04	0.6146	0.3426	0.3021
01 o13y	1.0	0.125	0.0	56.44	73.43	64.19	97.53	41	43.61	24.35	3.04	0.6142	0.3429	0.3021
02 o25y	1.0	0.25	0.0	58.31	67.96	65.3	94.25	44	44.51	26.29	3.38	0.6	0.3545	0.3262
03 o38y	1.0	0.375	0.0	62.51	55.66	67.85	87.76	51	46.53	31.0	4.19	0.5694	0.3794	0.3847
04 o50y	1.0	0.5	0.0	67.97	40.49	71.42	82.1	60	49.55	37.92	5.37	0.5337	0.4085	0.4705
05 o63y	1.0	0.625	0.0	73.94	24.8	75.39	79.37	72	53.35	46.61	6.88	0.4993	0.4362	0.5783
06 o75y	1.0	0.75	0.0	80.08	9.56	79.67	80.24	83	57.82	56.82	8.65	0.469	0.4608	0.7049
07 o88y	1.0	0.875	0.0	86.08	-4.2	84.25	84.36	93	62.93	68.15	10.51	0.4444	0.4813	0.8455
08 y00l	1.0	1.0	0.0	91.95	-17.63	88.07	89.82	101	68.22	80.6	12.83	0.422	0.4986	1.0
09 y13l	0.875	1.0	0.0	89.68	-28.42	85.45	90.06	108	59.23	75.61	12.33	0.4025	0.5138	0.9381
10 y25l	0.75	1.0	0.0	87.53	-40.1	82.92	92.11	116	50.93	71.09	11.88	0.3804	0.5309	0.882
11 y38l	0.625	1.0	0.0	85.61	-52.17	80.57	95.99	123	43.51	67.01	11.47	0.3567	0.5493	0.8314
12 y50l	0.5	1.0	0.0	83.54	-64.31	78.4	101.41	129	37.03	63.38	11.09	0.3321	0.5685	0.7864
13 y63l	0.375	1.0	0.0	82.12	-75.7	76.56	107.67	135	31.83	60.52	10.81	0.3085	0.5867	0.7509
14 y75l	0.25	1.0	0.0	80.98	-85.17	75.2	113.63	139	28.04	58.44	10.6	0.2888	0.602	0.7251
15 y88l	0.125	1.0	0.0	80.36	-90.75	74.46	117.39	141	26.0	57.32	10.49	0.2772	0.611	0.7112
16 l00c	0.0	1.0	0.0	80.29	-91.49	74.35	117.9	141	25.75	57.19	10.48	0.2756	0.6122	0.7095
17 l13c	0.0	1.0	0.125	80.28	-91.44	73.99	117.63	141	25.75	57.17	10.6	0.2753	0.6113	0.7093
18 l25c	0.0	1.0	0.25	80.39	-89.9	67.04	112.16	143	26.24	57.38	13.27	0.2708	0.5922	0.7119
19 l38c	0.0	1.0	0.375	80.71	-86.32	53.23	101.42	148	27.45	57.95	19.91	0.2607	0.5503	0.719
20 l50c	0.0	1.0	0.5	81.18	-81.12	37.55	89.39	155	29.29	58.79	29.9	0.2483	0.4983	0.7294
21 l63c	0.0	1.0	0.625	81.81	-75.09	22.32	78.35	163	31.63	59.95	42.64	0.2357	0.4467	0.7438
22 l75c	0.0	1.0	0.75	82.53	-68.23	7.75	68.68	174	34.43	61.28	58.0	0.224	0.3987	0.7603
23 l88c	0.0	1.0	0.875	83.35	-61.08	-5.62	61.35	185	37.63	62.83	75.37	0.214	0.3573	0.7795
24 c00v	0.0	1.0	1.0	84.3	-53.95	-17.75	56.81	198	41.19	64.65	94.39	0.2057	0.3229	0.8021
25 c13v	0.0	0.875	1.0	77.38	-41.71	-28.27	50.4	214	35.71	52.17	92.31	0.1982	0.2895	0.6473
26 c25v	0.0	0.75	1.0	70.03	-27.54	-39.82	48.43	235	30.75	40.79	90.66	0.1896	0.2515	0.5061
27 c38v	0.0	0.675	1.0	62.09	-11.09	-52.15	53.33	258	26.22	30.51	88.71	0.1803	0.2098	0.3785
28 c50v	0.0	0.5	1.0	53.84	7.2	-65.46	65.87	276	22.26	21.82	87.42	0.1693	0.166	0.2708
29 c63v	0.0	0.375	1.0	45.51	28.37	-79.3	84.23	290	19.22	14.91	86.68	0.1591	0.1234	0.185
30 c75v	0.0	0.25	1.0	38.18	48.93	-91.49	103.76	298	17.14	10.19	86.05	0.1511	0.0899	0.1264
31 c88v	0.0	0.125	1.0	34.67	60.16	-97.67	114.72	302	16.44	8.34	86.24	0.1481	0.0751	0.1034
32 v00m	0.0	0.0	1.0	34.5	59.49	-97.36	114.1	301	16.19	8.25	85.39	0.1474	0.0751	0.1024
33 v13m	0.125	0.0	1.0	34.84	60.17	-97.29	114.4	302	16.57	8.42	86.11	0.1491	0.0758	0.1045
34 v25m	0.25	0.0	1.0	37.11	61.72	-93.28	111.86	303	18.67	9.6	85.99	0.1634	0.084	0.1191
35 v38m	0.375	0.0	1.0	40.75	65.01	-87.13	108.72	307	22.56	11.71	86.15	0.1874	0.0972	0.1453
36 v50m	0.5	0.0	1.0	45.16	69.33	-79.93	105.81	311	28.06	14.66	86.72	0.2168	0.1132	0.1819
37 v63m	0.625	0.0	1.0	49.74	72.46	-71.59	101.87	315	34.25	18.2	86.09	0.2472	0.1314	0.2258
38 v75m	0.75	0.0	1.0	54.46	77.04	-63.85	100.07	320	41.97	22.41	86.67	0.2779	0.1484	0.2781
39 v88m	0.875	0.0	1.0	59.02	81.04	-55.97	98.5	325	50.29	27.05	86.63	0.3067	0.165	0.3356
40 m00o	1.0	0.0	1.0	63.36	85.37	-48.84	98.36	330	59.38	32.02	87.13	0.3326	0.1794	0.3973
41 m13o	1.0	0.0	0.875	61.86	83.17	-36.83	90.96	336	55.83	30.24	68.15	0.362	0.1961	0.3752
42 m25o	1.0	0.0	0.75	60.51	80.87	-23.17	84.13	344	52.66	28.69	50.77	0.3985	0.2172	0.356
43 m38o	1.0	0.0	0.675	59.27	78.75	-7.68	79.12	354	49.83	27.32	35.35	0.4429	0.2428	0.339
44 m50o	1.0	0.0	0.5	58.2	81.92	6.37	82.17	4	49.3	26.17	24.45	0.4934	0.2619	0.3247
45 m63o	1.0	0.0	0.375	57.32	75.2	29.16	80.65	21	45.53	25.25	12.52	0.5466	0.3031	0.3133
46 m75o	1.0	0.0	0.25	56.75	74.15	49.96	89.41	34	44.31	24.66	5.85	0.5922	0.3296	0.306
47 m88o	1.0	0.0	0.125	56.51	73.77	63.52	97.35	41	43.84	24.43	3.17	0.6137	0.342	0.3031
48 o00y	1.0	0.0	0.0	56.44	73.63	64.22	97.7	41	43.68	24.35	3.04	0.6146	0.3426	0.3021
49 n00w	0.0	0.0	0.0	5.69	0.0	0.0	0.01	0	0.6	0.63	0.69	0.3127	0.329	0.0078
50 n13w	0.125	0.125	0.125	7.59	4.3	1.39	4.52	18	0.91	0.84	0.82	0.3531	0.3278	0.0104
51 n25w	0.25	0.25	0.25	24.15	6.31	2.87	6.93	24	4.39	4.15	3.97	0.3507	0.3315	0.0514
52 n38w	0.375	0.375	0.375	40.75	4.05	2.64	4.83	33	11.69	11.71	11.74	0.3326	0.3332	0.1453
53 n50w	0.5	0.5	0.5	54.57	2.65	1.97	3.3	37	21.96	22.51	23.34	0.3238	0.332	0.2793
54 n63w	0.625	0.625	0.625	66.55	1.66	1.59	2.3	44	34.74	36.04	37.95	0.3195	0.3315	0.4472
55 n75w	0.75	0.75	0.75	77.2	0.99	0.93	1.35	43	49.66	51.87	55.5	0.3162	0.3303	0.6435
56 n88w	0.875	0.875	0.875	86.73	0.65	0.33	0.72	27	66.3	69.45	75.2	0.3143	0.3292	0.8617
57 n99w	1.0	1.0	1.0	95.41	0.0	0.0	0.01	85	84.2	88.59	96.46	0.3127	0.329	1.0992

 $n = 88.59 / (88.59 - 0.05) = 1.001$ TUB-test chart KE37; Hue circle and colorimetric data
Measurement: LCD and CRT display, and LCD projectorinput: $olv^* setrgbcolor$
output: no change compared to input

Colorimetric data of Television Luminous System TLS06a for CIE lightness $L^*_N=06$ of black**System:****TLS06a****Y Yellow****Monitor:** $LCH^*_a = 92.0 \ 89.8 \ 101$ **CRT** $LAB^*_a = 92.0 \ -17.6 \ 88.1$ **Reflection:** $Y_N = 0.63$ $L^*_N = 5.69$ **L Leaf green** $LCH^*_a = 80.3 \ 117.9 \ 141$ $LAB^*_a = 80.3 \ -91.5 \ 74.3$ **C Cyan blue** $LCH^*_a = 84.3 \ 56.8 \ 198$ $LAB^*_a = 84.3 \ -54.0 \ -17.8$ **adapted CIELAB (a^*_a , b^*_a) chroma diagram**

Colorimetric data of Television Luminous System TLS11a for CIE lightness $L^*_{N=11}$ of black

System:

TLS11a

Monitor:

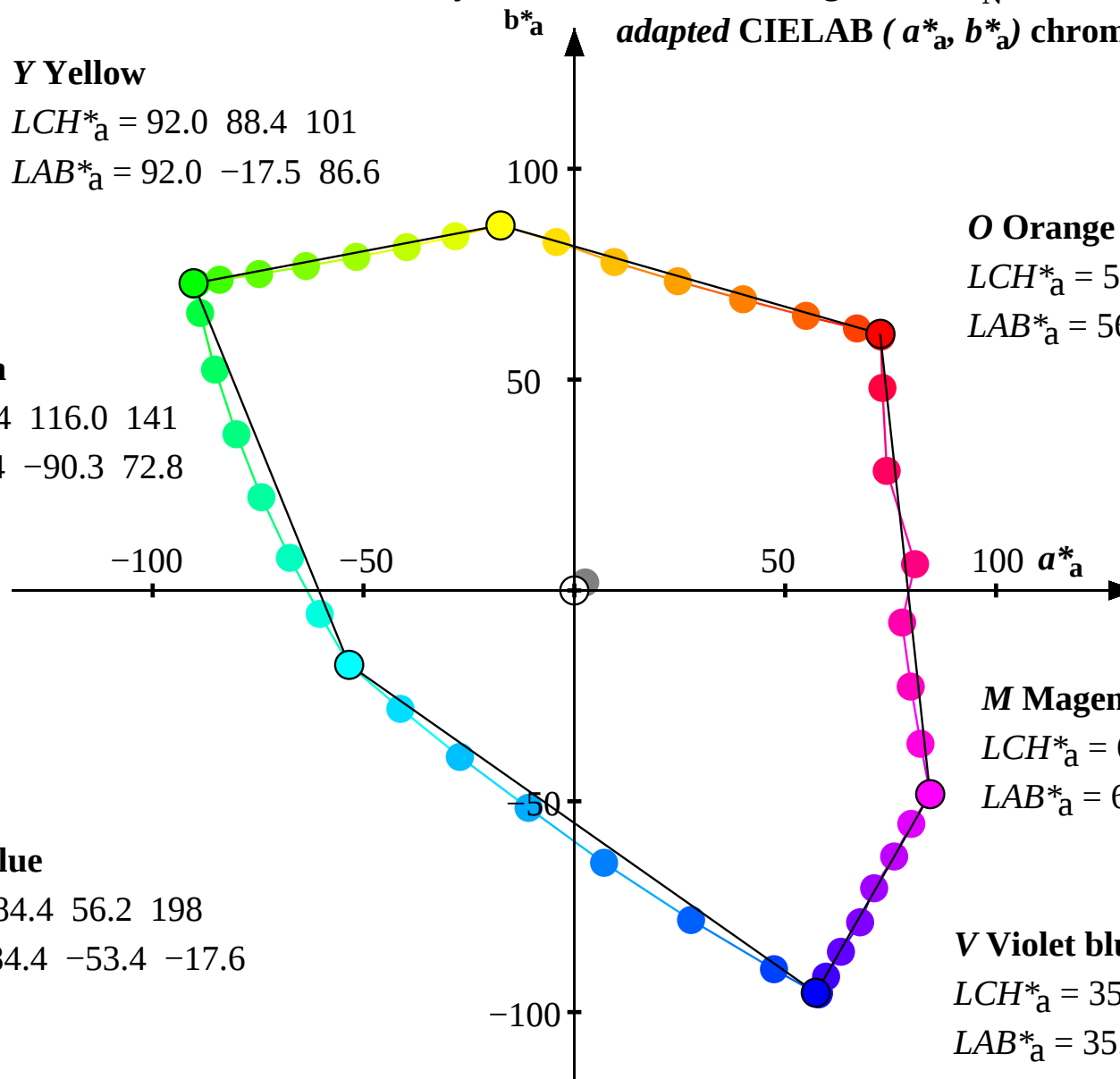
CRT

Reflection:

 $Y_N = 1.26$ $L^*_N = 11.0$

Color	$r=olv*1$	$g=olv*2$	$b=olv*3$	$L^*_a=LAB*1a$	$a^*_a=LAB*2a$	$b^*_a=LAB*3a$	$C^*_{ab,a}=LAB*ab,a$	$h_{ab,a}$	$X_a=XYZ1a$	$Y_a=XYZ2a$	$Z_a=XYZ3a$	x_a	y_a	$Y_a/88.59$
00 o00y	1.0	0.0	0.0	56.89	72.52	60.85	94.67	40	43.97	24.81	3.71	0.6066	0.3423	0.3076
01 o13y	1.0	0.125	0.0	56.89	72.33	60.82	94.5	40	43.91	24.81	3.71	0.6062	0.3426	0.3076
02 o25y	1.0	0.25	0.0	58.73	66.99	62.13	91.36	43	44.79	26.74	4.04	0.5927	0.3538	0.3315
03 o38y	1.0	0.375	0.0	62.86	54.92	65.07	85.15	50	46.8	31.42	4.85	0.5634	0.3782	0.3895
04 o50y	1.0	0.5	0.0	68.23	40.01	69.02	79.78	60	49.79	38.29	6.02	0.5291	0.4069	0.4747
05 o63y	1.0	0.625	0.0	74.13	24.53	73.32	77.32	71	53.57	46.91	7.52	0.496	0.4343	0.5816
06 o75y	1.0	0.75	0.0	80.2	9.47	77.85	78.43	83	58.01	57.04	9.28	0.4666	0.4588	0.7073
07 o88y	1.0	0.875	0.0	86.15	-4.16	82.62	82.73	93	63.08	68.29	11.13	0.4427	0.4793	0.8467
08 y00l	1.0	1.0	0.0	91.98	-17.49	86.61	88.36	101	68.33	80.66	13.43	0.4207	0.4966	1.0
09 y13l	0.875	1.0	0.0	89.72	-28.18	83.97	88.58	109	59.4	75.7	12.93	0.4013	0.5114	0.9386
10 y25l	0.75	1.0	0.0	87.59	-39.73	81.43	90.61	116	51.17	71.21	12.49	0.3794	0.528	0.8829
11 y38l	0.625	1.0	0.0	85.59	-51.65	79.06	94.44	123	43.8	67.16	12.08	0.3517	0.5459	0.8327
12 y50l	0.5	1.0	0.0	83.74	-63.61	76.88	99.79	130	37.36	63.56	11.7	0.336	0.5644	0.7881
13 y63l	0.375	1.0	0.0	82.23	-74.81	75.03	105.96	135	32.2	60.72	11.42	0.3086	0.5819	0.7528
14 y75l	0.25	1.0	0.0	81.1	-84.1	73.66	111.81	139	28.44	58.66	11.22	0.2893	0.5966	0.7273
15 y88l	0.125	1.0	0.0	80.49	-89.56	72.91	115.5	141	26.42	57.55	11.1	0.2779	0.6053	0.7135
16 l00c	0.0	1.0	0.0	80.41	-90.29	72.8	115.99	141	26.16	57.41	11.1	0.2764	0.6064	0.7118
17 l13c	0.0	1.0	0.125	80.4	-90.24	72.46	115.74	141	26.17	57.4	11.22	0.2761	0.6056	0.7116
18 l25c	0.0	1.0	0.25	80.52	-88.73	65.8	110.47	143	26.66	57.61	13.86	0.2717	0.5871	0.7142
19 l38c	0.0	1.0	0.375	80.83	-85.22	52.41	100.05	148	27.86	58.17	20.45	0.2616	0.5463	0.7212
20 l50c	0.0	1.0	0.5	81.29	-80.12	37.06	88.29	155	29.68	59.0	30.38	0.2493	0.4956	0.7315
21 l63c	0.0	1.0	0.625	81.92	-74.2	22.07	77.42	163	32.01	60.16	43.02	0.2368	0.445	0.7459
22 l75c	0.0	1.0	0.75	82.63	-67.46	7.67	67.9	174	34.79	61.47	58.27	0.2251	0.3978	0.7622
23 l88c	0.0	1.0	0.875	83.45	-60.41	-5.57	60.68	185	37.96	63.01	75.52	0.2151	0.357	0.7812
24 c00v	0.0	1.0	1.0	84.39	-53.39	-17.61	56.24	198	41.5	64.82	94.4	0.2067	0.3229	0.8037
25 c13v	0.0	0.875	1.0	77.54	-41.21	-28.03	49.85	214	36.06	52.43	92.34	0.1994	0.29	0.6501
26 c25v	0.0	0.75	1.0	70.27	-27.15	-39.44	47.89	235	31.14	41.13	90.7	0.1911	0.2524	0.51
27 c38v	0.0	0.675	1.0	62.44	-10.9	-51.58	52.73	258	26.63	30.92	88.77	0.182	0.2113	0.3834
28 c50v	0.0	0.5	1.0	54.35	7.05	-64.64	65.03	276	22.71	22.3	87.48	0.1714	0.1683	0.2765
29 c63v	0.0	0.375	1.0	46.23	27.63	-78.11	82.86	289	19.69	15.44	86.75	0.1616	0.1267	0.1914
30 c75v	0.0	0.25	1.0	39.16	47.33	-89.86	101.57	298	17.62	10.75	86.13	0.1539	0.0939	0.1333
31 c88v	0.0	0.125	1.0	35.81	57.96	-95.76	111.95	301	16.92	8.91	86.31	0.1509	0.0795	0.1105
32 v00m	0.0	0.0	1.0	35.65	57.29	-95.44	111.32	301	16.67	8.83	85.47	0.1503	0.0795	0.1094
33 v13m	0.125	0.0	1.0	35.97	57.99	-95.39	111.64	301	17.05	8.99	86.18	0.1519	0.0801	0.1115
34 v25m	0.25	0.0	1.0	38.14	59.72	-91.57	109.33	303	19.14	10.17	86.06	0.1659	0.0881	0.126
35 v38m	0.375	0.0	1.0	41.62	63.24	-85.67	106.49	306	23.01	12.26	86.22	0.1894	0.1009	0.152
36 v50m	0.5	0.0	1.0	45.89	67.77	-78.72	103.88	311	28.47	15.19	86.79	0.2182	0.1164	0.1883
37 v63m	0.625	0.0	1.0	50.34	71.1	-70.61	100.22	315	34.61	18.7	86.17	0.2481	0.1341	0.2319
38 v75m	0.75	0.0	1.0	54.96	75.82	-63.05	98.62	320	42.27	22.89	86.74	0.2783	0.1507	0.2838
39 v88m	0.875	0.0	1.0	59.43	79.95	-55.32	97.23	325	50.53	27.49	86.7	0.3068	0.1669	0.3408
40 m00o	1.0	0.0	1.0	63.7	84.36	-48.32	97.22	330	59.56	32.43	87.2	0.3324	0.181	0.4021
41 m13o	1.0	0.0	0.875	62.21	82.13	-36.38	89.84	336	56.04	30.65	68.35	0.3614	0.1977	0.3801
42 m25o	1.0	0.0	0.75	60.89	79.82	-22.84	83.03	344	52.88	29.12	51.1	0.3973	0.2188	0.3611
43 m38o	1.0	0.0	0.675	59.67	77.68	-7.55	78.05	354	50.08	27.76	35.79	0.4407	0.2443	0.3442
44 m50o	1.0	0.0	0.5	58.62	80.79	6.25	81.03	4	49.55	26.62	24.96	0.49	0.2632	0.3301
45 m63o	1.0	0.0	0.375	57.76	74.11	28.38	79.36	21	45.81	25.71	13.12	0.5412	0.3037	0.3187
46 m75o	1.0	0.0	0.25	57.19	73.06	48.03	87.43	33	44.6	25.12	6.5	0.5851	0.3296	0.3115
47 m88o	1.0	0.0	0.125	56.97	72.67	60.25	94.39	40	44.13	24.89	3.83	0.6057	0.3416	0.3086
48 o00y	1.0	0.0	0.0	56.89	72.52	60.85	94.67	40	43.97	24.81	3.71	0.6066	0.3423	0.3076
49 n00w	0.0	0.0	0.0	10.99	0.0	0.0	0.01	0	1.2	1.26	1.37	0.3127	0.329	0.0156
50 n13w	0.125	0.125	0.125	12.41	3.02	1.01	3.18	18	1.5	1.47	1.5	0.3357	0.3284	0.0182
51 n25w	0.25	0.25	0.25	26.01	5.74	2.59	6.3	24	4.96	4.75	4.64	0.3456	0.3311	0.0589
52 n38w	0.375	0.375	0.375	41.62	3.91	2.53	4.66	33	12.21	12.26	12.35	0.3316	0.3329	0.152
53 n50w	0.5	0.5	0.5	55.06	2.59	1.93	3.23	37	22.41	22.99	23.87	0.3235	0.3319	0.285
54 n63w	0.625	0.625	0.625	66.84	1.64	1.57	2.27	44	35.09	36.42	38.36	0.3194	0.3315	0.4516
55 n75w	0.75	0.75	0.75	77.36	0.98	0.92	1.34	43	49.91	52.13	55.8	0.3162	0.3303	0.6463
56 n88w	0.875	0.875	0.875	86.8	0.64	0.32	0.72	27	66.43	69.59	75.36	0.3143	0.3292	0.8628
57 n99w	1.0	1.0	1.0	95.41	0.0	0.0	0.01	85	84.2	88.59	96.46	0.3127	0.329	1.0984

 $n = 88.59 / (88.59 - 0.05) = 1.001$ TUB-test chart KE37; Hue circle and colorimetric data
Measurement: LCD and CRT display, and LCD projectorinput: $olv^* setrgbcolor$
output: no change compared to input

Colorimetric data of Television Luminous System TLS11a for CIE lightness $L^*_N=11$ of black**System:****TLS11a** **Y Yellow****Monitor:** $LCH^*_a = 92.0 \ 88.4 \ 101$ **CRT** $LAB^*_a = 92.0 \ -17.5 \ 86.6$ **Reflection:** $Y_N = 1.26$ $L^*_N = 11.0$ **L Leaf green** $LCH^*_a = 80.4 \ 116.0 \ 141$ $LAB^*_a = 80.4 \ -90.3 \ 72.8$ **C Cyan blue** $LCH^*_a = 84.4 \ 56.2 \ 198$ $LAB^*_a = 84.4 \ -53.4 \ -17.6$ **adapted CIELAB (a^*_a , b^*_a) chroma diagram****O Orange red** $LCH^*_a = 56.9 \ 94.7 \ 40$ $LAB^*_a = 56.9 \ 72.5 \ 60.8$ **M Magenta red** $LCH^*_a = 63.7 \ 97.2 \ 330$ $LAB^*_a = 63.7 \ 84.4 \ -48.3$ **V Violet blue** $LCH^*_a = 35.6 \ 111.3 \ 301$ $LAB^*_a = 35.6 \ 57.3 \ -95.4$

Colorimetric data of Television Luminous System TLS18a for CIE lightness $L^*_N=18$ of black

System:

TLS18a

Monitor:

CRT

Reflection:

 $Y_N = 2.52$ $L^*_N = 18.01$

Color	$r=olv^*_1$	$g=olv^*_2$	$b=olv^*_3$	$L^*_a=LAB^*_1a$	$a^*_a=LAB^*_2a$	$b^*_a=LAB^*_3a$	$C^*_{ab,a}=LAB^*_{ab,a}$	$h_{ab,a}$	$X_a=XYZ^*_1a$	$Y_a=XYZ^*_2a$	$Z_a=XYZ^*_3a$	x_a	y_a	$Y_a/88.59$
00 o00y	1.0	0.0	0.0	57.78	70.38	55.37	89.55	38	44.55	25.73	5.05	0.5914	0.3416	0.3186
01 o13y	1.0	0.125	0.0	57.78	70.19	55.35	89.39	38	44.49	25.73	5.05	0.591	0.3419	0.3186
02 o25y	1.0	0.25	0.0	59.55	65.08	56.89	86.44	41	45.36	27.63	5.38	0.5788	0.3526	0.3421
03 o38y	1.0	0.375	0.0	63.54	53.49	60.32	80.62	48	47.34	32.24	6.17	0.552	0.376	0.3992
04 o50y	1.0	0.5	0.0	68.76	39.07	64.79	75.65	59	50.29	39.01	7.33	0.5204	0.4037	0.483
05 o63y	1.0	0.625	0.0	74.51	24.01	69.56	73.59	71	54.01	47.51	8.81	0.4896	0.4306	0.5882
06 o75y	1.0	0.75	0.0	80.46	9.29	74.48	75.06	83	58.39	57.5	10.54	0.4619	0.4548	0.7119
07 o88y	1.0	0.875	0.0	86.3	-4.09	79.55	79.65	93	63.38	68.59	12.36	0.4392	0.4752	0.8492
08 y00l	1.0	1.0	0.0	92.03	-17.21	83.82	85.57	102	68.56	80.77	14.63	0.4182	0.4926	1.0
09 y13l	0.875	1.0	0.0	89.81	-27.69	81.16	85.76	109	59.76	75.89	14.13	0.399	0.5066	0.9395
10 y25l	0.75	1.0	0.0	87.71	-38.99	78.59	87.74	116	51.65	71.47	13.7	0.3775	0.5224	0.8848
11 y38l	0.625	1.0	0.0	85.74	-50.61	76.2	91.48	124	44.38	67.47	13.29	0.3546	0.5391	0.8354
12 y50l	0.5	1.0	0.0	83.93	-62.23	74.0	96.69	130	38.04	63.93	12.92	0.3311	0.5564	0.7915
13 y63l	0.375	1.0	0.0	82.44	-73.05	72.14	102.68	135	32.95	61.12	12.65	0.3088	0.5727	0.7567
14 y75l	0.25	1.0	0.0	81.34	-82.0	70.77	108.32	139	29.25	59.09	12.45	0.2902	0.5863	0.7316
15 y88l	0.125	1.0	0.0	80.74	-87.24	70.01	111.87	141	27.25	57.99	12.34	0.2793	0.5943	0.718
16 l00c	0.0	1.0	0.0	80.66	-87.94	69.9	112.35	142	27.0	57.86	12.33	0.2778	0.5953	0.7164
17 l13c	0.0	1.0	0.125	80.65	-87.89	69.58	112.11	142	27.0	57.85	12.45	0.2776	0.5945	0.7162
18 l25c	0.0	1.0	0.25	80.77	-86.44	63.42	107.22	144	27.49	58.05	15.05	0.2732	0.5771	0.7187
19 l38c	0.0	1.0	0.375	81.07	-83.07	50.81	97.39	149	28.67	58.6	21.55	0.2635	0.5385	0.7256
20 l50c	0.0	1.0	0.5	81.53	-78.16	36.11	86.11	155	30.47	59.43	31.33	0.2513	0.4902	0.7358
21 l63c	0.0	1.0	0.625	82.15	-72.45	21.59	75.61	163	32.76	60.57	43.79	0.2389	0.4417	0.7499
22 l75c	0.0	1.0	0.75	82.84	-65.93	7.52	66.37	173	35.5	61.86	58.82	0.2273	0.3961	0.7659
23 l88c	0.0	1.0	0.875	83.64	-59.1	-5.47	59.37	185	38.63	63.38	75.83	0.2172	0.3564	0.7847
24 c00v	0.0	1.0	1.0	84.57	-52.29	-17.33	55.1	198	42.11	65.16	94.43	0.2088	0.3231	0.8068
25 c13v	0.0	0.875	1.0	77.85	-40.24	-27.53	48.77	214	36.75	52.95	92.4	0.2018	0.2908	0.6556
26 c25v	0.0	0.75	1.0	70.75	-26.4	-38.67	46.84	236	31.9	41.82	90.79	0.1939	0.2542	0.5177
27 c38v	0.0	0.675	1.0	63.14	-10.54	-50.46	51.56	258	27.46	31.75	88.88	0.1855	0.2144	0.3931
28 c50v	0.0	0.5	1.0	55.34	6.76	-63.02	63.39	276	23.6	23.26	87.61	0.1755	0.173	0.288
29 c63v	0.0	0.375	1.0	47.62	26.24	-75.82	80.24	289	20.62	16.49	86.89	0.1663	0.133	0.2042
30 c75v	0.0	0.25	1.0	41.02	44.41	-86.76	97.48	297	18.58	11.87	86.28	0.1591	0.1017	0.147
31 c88v	0.0	0.125	1.0	37.95	54.02	-92.18	106.85	300	17.89	10.06	86.46	0.1564	0.0879	0.1245
32 v00m	0.0	0.0	1.0	37.8	53.36	-91.84	106.22	300	17.65	9.98	85.62	0.1558	0.0881	0.1235
33 v13m	0.125	0.0	1.0	38.1	54.08	-91.83	106.58	300	18.02	10.14	86.33	0.1574	0.0886	0.1256
34 v25m	0.25	0.0	1.0	40.08	56.08	-88.34	104.64	302	20.08	11.3	86.21	0.1707	0.0961	0.1399
35 v38m	0.375	0.0	1.0	43.3	59.95	-82.89	102.3	306	23.89	13.36	86.37	0.1933	0.1081	0.1654
36 v50m	0.5	0.0	1.0	47.3	64.83	-76.4	100.2	310	29.27	16.25	86.93	0.221	0.1227	0.2011
37 v63m	0.625	0.0	1.0	51.51	68.5	-68.7	97.02	315	35.32	19.71	86.32	0.2499	0.1394	0.244
38 v75m	0.75	0.0	1.0	55.92	73.47	-61.49	95.81	320	42.88	23.84	86.88	0.2792	0.1552	0.2951
39 v88m	0.875	0.0	1.0	60.22	77.8	-54.05	94.74	325	51.02	28.37	86.84	0.3069	0.1707	0.3513
40 m00o	1.0	0.0	1.0	64.35	82.37	-47.28	94.98	330	59.91	33.24	87.34	0.332	0.1842	0.4115
41 m13o	1.0	0.0	0.875	62.92	80.11	-35.51	87.63	336	56.44	31.49	88.75	0.3602	0.201	0.3899
42 m25o	1.0	0.0	0.75	61.64	77.77	-22.22	80.88	344	53.33	29.98	51.75	0.3949	0.222	0.3712
43 m38o	1.0	0.0	0.675	60.46	75.6	-7.31	75.95	354	50.57	28.64	36.67	0.4364	0.2471	0.3545
44 m50o	1.0	0.0	0.5	59.45	78.58	6.01	78.81	4	50.05	27.51	25.99	0.4833	0.2657	0.3407
45 m63o	1.0	0.0	0.375	58.62	71.99	26.92	76.86	21	46.37	26.62	14.33	0.5311	0.3048	0.3295
46 m75o	1.0	0.0	0.25	58.07	70.92	44.66	83.81	32	45.17	26.04	7.8	0.5717	0.3296	0.3224
47 m88o	1.0	0.0	0.125	57.85	70.52	54.9	89.38	38	44.71	25.81	5.17	0.5907	0.341	0.3195
48 o00y	1.0	0.0	0.0	57.78	70.38	55.37	89.55	38	44.55	25.73	5.05	0.5914	0.3416	0.3186
49 n00w	0.0	0.0	0.0	18.01	0.0	0.0	0.01	0	2.4	2.52	2.74	0.3127	0.329	0.0312
50 n13w	0.125	0.125	0.125	18.91	1.99	0.65	2.1	18	2.7	2.73	2.87	0.3249	0.3287	0.0338
51 n25w	0.25	0.25	0.25	29.31	4.9	2.18	5.36	24	6.1	5.96	5.96	0.3385	0.3307	0.0738
52 n38w	0.375	0.375	0.375	43.3	3.64	2.35	4.33	33	13.25	13.36	13.56	0.3298	0.3326	0.1654
53 n50w	0.5	0.5	0.5	56.02	2.49	1.85	3.1	37	23.3	23.93	24.91	0.3229	0.3317	0.2963
54 n63w	0.625	0.625	0.625	67.41	1.59	1.52	2.2	44	35.8	37.17	39.2	0.3192	0.3314	0.4602
55 n75w	0.75	0.75	0.75	77.67	0.96	0.9	1.31	43	50.4	52.66	56.38	0.3161	0.3303	0.6519
56 n88w	0.875	0.875	0.875	86.93	0.63	0.32	0.71	27	66.68	69.86	75.66	0.3142	0.3292	0.865
57 n99w	1.0	1.0	1.0	95.41	0.0	0.0	0.01	85	84.2	88.59	96.46	0.3127	0.329	1.0968

 $n = 88.59 / (88.59 - 0.05) = 1.001$ TUB-test chart KE37; Hue circle and colorimetric data
Measurement: LCD and CRT display, and LCD projectorinput: $olv^* setrgbcolor$
output: no change compared to input

Colorimetric data of Television Luminous System TLS18a for CIE lightness $L^*_N=18$ of black

System:

TLS18a Y Yellow

Monitor: $LCH^*_a = 92.0 \ 85.6 \ 102$

CRT $LAB^*_a = 92.0 \ -17.2 \ 83.8$

Reflection:

$Y_N = 2.52$

$L^*_N = 18.01$

L Leaf green

$LCH^*_a = 80.7 \ 112.3 \ 142$

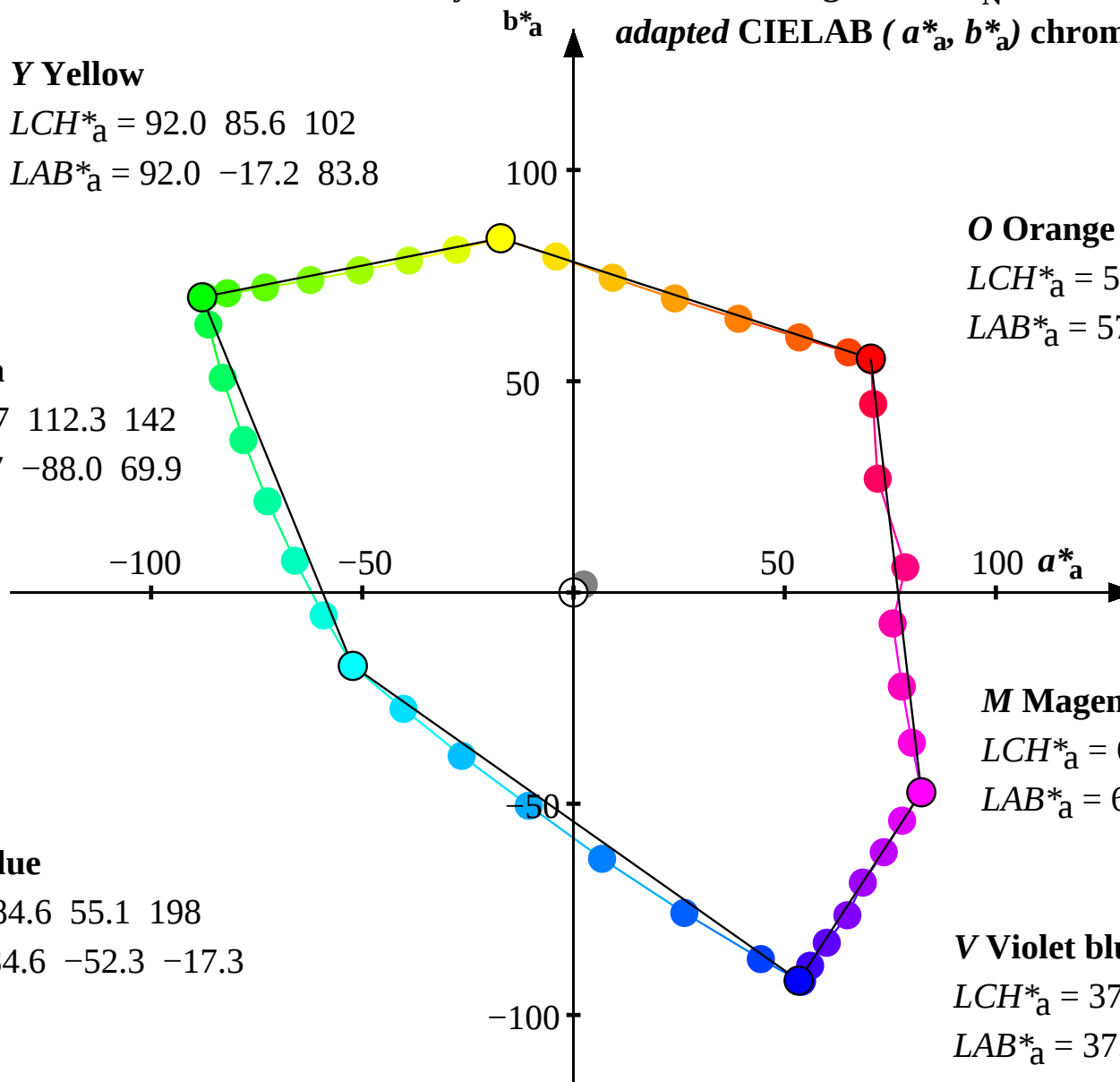
$LAB^*_a = 80.7 \ -88.0 \ 69.9$

C Cyan blue

$LCH^*_a = 84.6 \ 55.1 \ 198$

$LAB^*_a = 84.6 \ -52.3 \ -17.3$

adapted CIELAB (a^*_a , b^*_a) chroma diagram



O Orange red

$LCH^*_a = 57.8 \ 89.5 \ 38$

$LAB^*_a = 57.8 \ 70.4 \ 55.4$

M Magenta red

$LCH^*_a = 64.4 \ 95.0 \ 330$

$LAB^*_a = 64.4 \ 82.4 \ -47.3$

V Violet blue

$LCH^*_a = 37.8 \ 106.2 \ 300$

$LAB^*_a = 37.8 \ 53.4 \ -91.8$

See original or copy: <http://web.me.com/klaus.richter/KE37/KE37L0NP.PDF> /.PS
Technical information: <http://www.ps.bam.de> or <http://130.149.60.45/~farbmetrik>

TUB registration: 20100601-KE37/KE37L0NP.PDF /.PS
application for measurement of printer or monitor systems

TUB material: code=rha4ta

Colorimetric data of Television Luminous System TLS27a for CIE lightness $L^*_N=27$ of black

System:

TLS27a

Monitor:

CRT

Reflection:

$Y_N = 5.04$

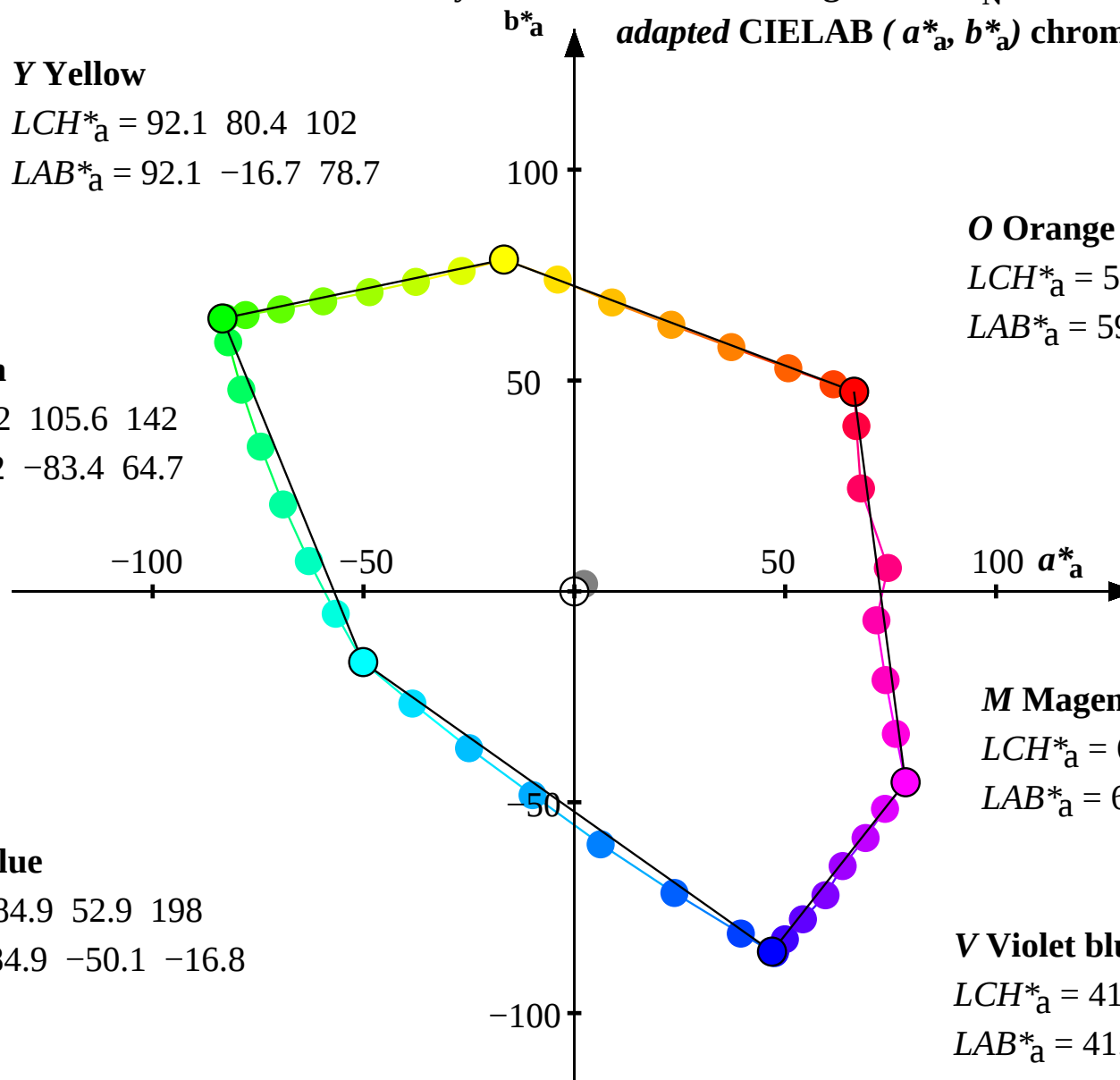
$L^*_N = 26.85$

Color	$r=olv^*_1$	$g=olv^*_2$	$b=olv^*_3$	$L^*_a=LAB^*_1a$	$a^*_a=LAB^*_2a$	$b^*_a=LAB^*_3a$	$C^*_{ab,a}=LAB^*_{ab,a}$	$h_{ab,a}$	$X_a=XYZ^*_1a$	$Y_a=XYZ^*_2a$	$Z_a=XYZ^*_3a$	x_a	y_a	$Y_a/88.59$
00 o00y	1.0	0.0	0.0	59.5	66.32	47.38	81.51	36	45.71	27.57	7.72	0.5643	0.3404	0.3404
01 o13y	1.0	0.125	0.0	59.5	66.14	47.37	81.35	36	45.65	27.57	7.73	0.5639	0.3406	0.3404
02 o25y	1.0	0.25	0.0	61.15	61.45	49.1	78.66	39	46.5	29.41	8.04	0.5538	0.3504	0.3632
03 o38y	1.0	0.375	0.0	64.88	50.73	52.92	73.31	46	48.42	33.89	8.81	0.5313	0.3719	0.4184
04 o50y	1.0	0.5	0.0	69.8	37.23	57.88	68.82	57	51.28	40.47	9.94	0.5043	0.3979	0.4996
05 o63y	1.0	0.625	0.0	75.27	22.99	63.17	67.23	70	54.9	48.71	11.37	0.4774	0.4236	0.6014
06 o75y	1.0	0.75	0.0	80.97	8.93	68.56	69.14	83	59.15	58.41	13.05	0.4529	0.4472	0.7211
07 o88y	1.0	0.875	0.0	86.59	-3.94	74.0	74.11	93	63.99	69.17	14.82	0.4324	0.4674	0.854
08 y00l	1.0	1.0	0.0	92.13	-16.65	78.69	80.43	102	69.02	81.0	17.02	0.4132	0.4849	1.0
09 y13l	0.875	1.0	0.0	89.98	-26.73	76.0	80.57	109	60.48	76.26	16.54	0.3946	0.4975	0.9415
10 y25l	0.75	1.0	0.0	87.95	-37.54	73.42	82.47	117	52.6	71.97	16.12	0.3739	0.5115	0.8885
11 y38l	0.625	1.0	0.0	86.05	-48.58	71.01	86.05	124	45.55	68.09	15.73	0.3521	0.5263	0.8406
12 y50l	0.5	1.0	0.0	84.3	-59.53	68.8	90.99	131	39.39	64.65	15.37	0.3299	0.5414	0.7981
13 y63l	0.375	1.0	0.0	82.87	-69.66	66.94	96.61	136	34.45	61.93	15.1	0.309	0.5555	0.7645
14 y75l	0.25	1.0	0.0	81.81	-77.96	65.57	101.87	140	30.86	59.96	14.91	0.2919	0.5671	0.7402
15 y88l	0.125	1.0	0.0	81.23	-82.79	64.81	105.14	142	28.92	58.89	14.8	0.2818	0.5739	0.7271
16 l00c	0.0	1.0	0.0	81.16	-83.43	64.7	105.59	142	28.68	58.76	14.79	0.2805	0.5748	0.7255
17 l13c	0.0	1.0	0.125	81.15	-83.38	64.43	105.38	142	28.68	58.75	14.9	0.2803	0.5741	0.7253
18 l25c	0.0	1.0	0.25	81.26	-82.04	59.08	101.11	144	29.15	58.95	17.44	0.2762	0.5586	0.7277
19 l38c	0.0	1.0	0.375	81.56	-78.93	47.82	92.29	149	30.3	59.48	23.74	0.2669	0.524	0.7344
20 l50c	0.0	1.0	0.5	81.99	-74.37	34.29	81.9	155	32.04	60.28	33.24	0.2552	0.4801	0.7443
21 l63c	0.0	1.0	0.625	82.59	-69.06	20.63	72.09	163	34.27	61.39	45.33	0.243	0.4354	0.7579
22 l75c	0.0	1.0	0.75	83.26	-62.96	7.23	63.39	173	36.93	62.65	59.93	0.2315	0.3928	0.7734
23 l88c	0.0	1.0	0.875	84.03	-56.55	-5.28	56.81	185	39.96	64.12	76.43	0.2214	0.3552	0.7916
24 c00v	0.0	1.0	1.0	84.92	-50.12	-16.76	52.86	198	43.34	65.85	94.49	0.2128	0.3233	0.813
25 c13v	0.0	0.875	1.0	78.46	-38.34	-26.56	46.66	215	38.14	54.0	92.52	0.2065	0.2924	0.6666
26 c25v	0.0	0.75	1.0	71.68	-24.97	-37.17	44.79	236	33.43	43.19	90.95	0.1995	0.2577	0.5332
27 c38v	0.0	0.675	1.0	64.5	-9.86	-48.27	49.28	258	29.13	33.42	89.1	0.1921	0.2204	0.4126
28 c50v	0.0	0.5	1.0	57.24	6.24	-59.92	60.25	276	25.37	25.17	87.87	0.1833	0.1819	0.3108
29 c63v	0.0	0.375	1.0	50.22	23.79	-71.53	75.39	288	22.48	18.6	87.17	0.1753	0.1451	0.2297
30 c75v	0.0	0.25	1.0	44.41	39.48	-81.13	90.23	296	20.5	14.12	86.57	0.1691	0.1165	0.1743
31 c88v	0.0	0.125	1.0	41.78	47.52	-85.78	98.07	299	19.83	12.36	86.75	0.1667	0.1039	0.1526
32 v00m	0.0	0.0	1.0	41.66	46.88	-85.42	97.44	299	19.6	12.28	85.94	0.1663	0.1042	0.1516
33 v13m	0.125	0.0	1.0	41.91	47.61	-85.48	97.85	299	19.96	12.44	86.63	0.1677	0.1045	0.1536
34 v25m	0.25	0.0	1.0	43.6	49.92	-82.48	96.42	301	21.96	13.56	86.51	0.1799	0.1111	0.1674
35 v38m	0.375	0.0	1.0	46.39	54.2	-77.76	94.8	305	25.65	15.56	86.66	0.2006	0.1217	0.1921
36 v50m	0.5	0.0	1.0	49.94	59.53	-72.04	93.46	310	30.88	18.36	87.2	0.2263	0.1346	0.2267
37 v63m	0.625	0.0	1.0	53.74	63.69	-65.07	91.06	314	36.75	21.73	86.61	0.2533	0.1497	0.2682
38 v75m	0.75	0.0	1.0	57.78	69.03	-58.48	90.48	320	44.09	25.73	87.16	0.2809	0.1639	0.3177
39 v88m	0.875	0.0	1.0	61.77	73.69	-51.58	89.96	325	51.99	30.14	87.12	0.3072	0.1781	0.372
40 m00o	1.0	0.0	1.0	65.64	78.52	-45.25	90.63	330	60.63	34.86	87.6	0.3311	0.1904	0.4304
41 m13o	1.0	0.0	0.875	64.29	76.2	-33.81	83.37	336	57.25	33.16	69.56	0.3579	0.2073	0.4094
42 m25o	1.0	0.0	0.75	63.09	73.82	-21.01	76.75	344	54.24	31.7	53.06	0.3902	0.228	0.3913
43 m38o	1.0	0.0	0.675	61.99	71.61	-6.85	71.94	355	51.56	30.39	38.42	0.4283	0.2525	0.3752
44 m50o	1.0	0.0	0.5	61.05	74.35	5.57	74.56	4	51.05	29.3	28.06	0.4709	0.2703	0.3618
45 m63o	1.0	0.0	0.375	60.28	67.95	24.38	72.19	20	47.47	28.43	16.73	0.5125	0.3069	0.351
46 m75o	1.0	0.0	0.25	59.77	66.87	39.24	77.53	30	46.31	27.87	10.39	0.5476	0.3295	0.3441
47 m88o	1.0	0.0	0.125	59.57	66.46	47.07	81.44	35	45.86	27.65	7.84	0.5638	0.3398	0.3413
48 o00y	1.0	0.0	0.0	59.5	66.32	47.38	81.51	36	45.71	27.57	7.72	0.5643	0.3404	0.3404
49 n00w	0.0	0.0	0.0	26.85	0.0	0.0	0.01	0	4.79	5.04	5.49	0.3127	0.329	0.0622
50 n13w	0.125	0.125	0.125	27.41	1.26	0.41	1.32	18	5.08	5.24	5.61	0.3189	0.3289	0.0647
51 n25w	0.25	0.25	0.25	34.76	3.82	1.67	4.17	24	8.39	8.38	8.61	0.3305	0.3302	0.1034
52 n38w	0.375	0.375	0.375	46.39	3.2	2.05	3.8	33	15.32	15.56	15.99	0.3269	0.332	0.1921
53 n50w	0.5	0.5	0.5	57.87	2.3	1.7	2.86	37	25.08	25.83	27.01	0.3219	0.3315	0.3189
54 n63w	0.625	0.625	0.625	68.52	1.51	1.44	2.08	44	37.22	38.68	40.88	0.3187	0.3312	0.4775
55 n75w	0.75	0.75	0.75	78.29	0.92	0.86	1.26	43	51.39	53.71	57.56	0.3159	0.3302	0.6631
56 n88w	0.875	0.875	0.875	87.2	0.61	0.31	0.68	27	67.2	70.41	76.27	0.3142	0.3292	0.8693
57 n99w	1.0	1.0	1.0	95.41	0.0	0.0	0.01	85	84.2	88.59	96.46	0.3127	0.329	1.0937

$n = 88.59 / (88.59 - 0.05) = 1.001$

TUB-test chart KE37; Hue circle and colorimetric data
Measurement: LCD and CRT display, and LCD projector

input: $olv^* setrgbcolor$
output: no change compared to input

Colorimetric data of Television Luminous System TLS27a for CIE lightness $L^*_N=27$ of black**System:****TLS27a** **Y Yellow****Monitor:** $LCH^*_a = 92.1 \ 80.4 \ 102$ **CRT** $LAB^*_a = 92.1 \ -16.7 \ 78.7$ **Reflection:** $Y_N = 5.04$ $L^*_N = 26.85$ **L Leaf green** $LCH^*_a = 81.2 \ 105.6 \ 142$ $LAB^*_a = 81.2 \ -83.4 \ 64.7$ **C Cyan blue** $LCH^*_a = 84.9 \ 52.9 \ 198$ $LAB^*_a = 84.9 \ -50.1 \ -16.8$ **adapted CIELAB (a^*_a , b^*_a) chroma diagram****O Orange red** $LCH^*_a = 59.5 \ 81.5 \ 36$ $LAB^*_a = 59.5 \ 66.3 \ 47.4$ **M Magenta red** $LCH^*_a = 65.6 \ 90.6 \ 330$ $LAB^*_a = 65.6 \ 78.5 \ -45.3$ **V Violet blue** $LCH^*_a = 41.7 \ 97.4 \ 299$ $LAB^*_a = 41.7 \ 46.9 \ -85.4$

Colorimetric data of Television Luminous System TLS38a for CIE lightness $L^*_{N=38}$ of black

System:

TLS38a

Monitor:

CRT

Reflection:

 $Y_N = 10.08$ $L^*_N = 37.99$

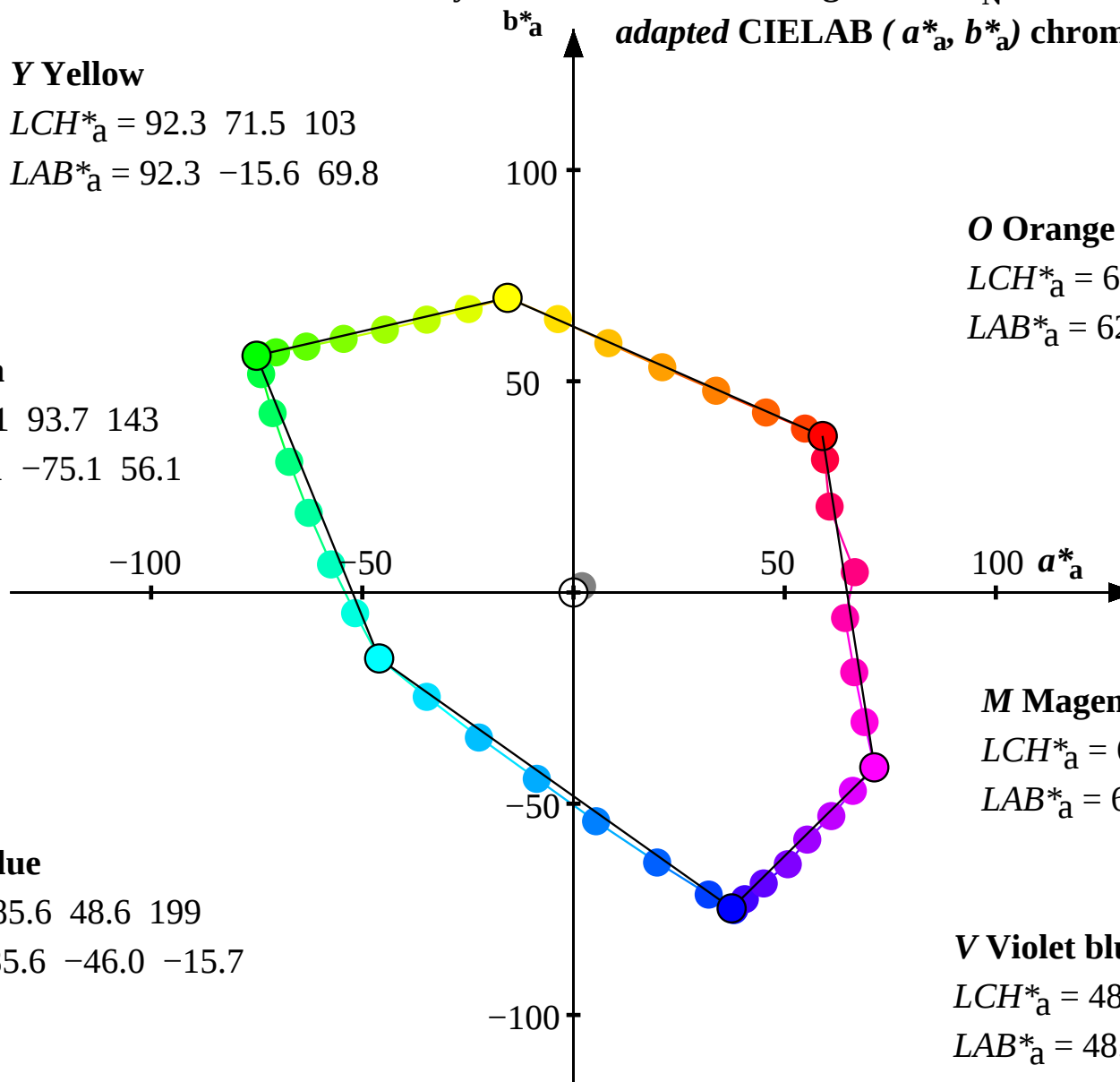
Color	$r=olv^*_1$	$g=olv^*_2$	$b=olv^*_3$	$L^*_a=LAB^*_{1a}$	$a^*_a=LAB^*_{2a}$	$b^*_a=LAB^*_{3a}$	$C^*_{ab,a}=LAB^*_{ab,a}$	$h_{ab,a}$	$X_a=XYZ^*_{1a}$	$Y_a=XYZ^*_{2a}$	$Z_a=XYZ^*_{3a}$	x_a	y_a	$Y_a/88.59$
00 o00y	1.0	0.0	0.0	62.72	58.96	37.05	69.64	32	48.03	31.25	13.08	0.5201	0.3384	0.3837
01 o13y	1.0	0.125	0.0	62.72	58.8	37.04	69.49	32	47.97	31.25	13.08	0.5197	0.3386	0.3837
02 o25y	1.0	0.25	0.0	64.15	54.83	38.76	67.15	35	48.77	32.98	13.38	0.5127	0.3467	0.4049
03 o38y	1.0	0.375	0.0	67.42	45.61	42.64	62.43	43	50.57	37.19	14.1	0.4965	0.3651	0.4566
04 o50y	1.0	0.5	0.0	71.8	33.78	47.73	58.48	55	53.27	43.37	15.16	0.4765	0.3879	0.5324
05 o63y	1.0	0.625	0.0	76.75	21.04	53.27	57.28	68	56.67	51.12	16.51	0.4559	0.4113	0.6276
06 o75y	1.0	0.75	0.0	81.96	8.24	58.96	59.54	82	60.66	60.23	18.08	0.4365	0.4334	0.7394
07 o88y	1.0	0.875	0.0	87.16	-3.66	64.67	64.77	93	65.21	70.34	19.74	0.4199	0.453	0.8636
08 y00l	1.0	1.0	0.0	92.33	-15.55	69.75	71.47	103	69.93	81.46	21.82	0.4038	0.4703	1.0
09 y13l	0.875	1.0	0.0	90.32	-24.85	67.1	71.55	110	61.91	77.0	21.36	0.3863	0.4804	0.9453
10 y25l	0.75	1.0	0.0	88.43	-34.71	64.56	73.31	118	54.51	72.97	20.97	0.3672	0.4916	0.8958
11 y38l	0.625	1.0	0.0	86.67	-44.67	62.2	76.58	126	47.88	69.33	20.6	0.3474	0.5031	0.8511
12 y50l	0.5	1.0	0.0	85.04	-54.39	60.03	81.01	132	42.09	66.09	20.26	0.3277	0.5145	0.8114
13 y63l	0.375	1.0	0.0	83.72	-63.25	58.22	85.98	137	37.45	63.53	20.01	0.3095	0.5251	0.78
14 y75l	0.25	1.0	0.0	82.74	-70.41	56.89	90.53	141	34.07	61.68	19.83	0.2948	0.5337	0.7572
15 y88l	0.125	1.0	0.0	82.21	-74.53	56.16	93.33	143	32.25	60.68	19.72	0.2863	0.5386	0.745
16 l00c	0.0	1.0	0.0	82.14	-75.08	56.06	93.71	143	32.03	60.56	19.72	0.2852	0.5393	0.7435
17 l13c	0.0	1.0	0.125	82.13	-75.04	55.84	93.54	143	32.03	60.55	19.82	0.2849	0.5387	0.7433
18 l25c	0.0	1.0	0.25	82.24	-73.89	51.65	90.16	145	32.47	60.73	22.2	0.2813	0.5263	0.7456
19 l38c	0.0	1.0	0.375	82.51	-71.22	42.46	82.92	149	33.55	61.24	28.13	0.2729	0.4982	0.7518
20 l50c	0.0	1.0	0.5	82.91	-67.29	30.9	74.05	155	35.19	61.99	37.05	0.2622	0.4618	0.761
21 l63c	0.0	1.0	0.625	83.46	-62.68	18.82	65.45	163	37.28	63.03	48.42	0.2507	0.4238	0.7738
22 l75c	0.0	1.0	0.75	84.08	-57.34	6.66	57.73	173	39.78	64.21	62.13	0.2395	0.3865	0.7883
23 l88c	0.0	1.0	0.875	84.79	-51.68	-4.89	51.92	185	42.63	65.6	77.64	0.2294	0.3529	0.8053
24 c00v	0.0	1.0	1.0	85.62	-45.96	-15.64	48.56	199	45.81	67.22	94.61	0.2206	0.3237	0.8252
25 c13v	0.0	0.875	1.0	79.66	-34.78	-24.65	42.64	215	40.92	56.08	92.76	0.2156	0.2956	0.6885
26 c25v	0.0	0.75	1.0	73.5	-22.33	-34.27	40.92	237	36.5	45.93	91.29	0.2101	0.2644	0.5638
27 c38v	0.0	0.675	1.0	67.09	-8.66	-44.12	44.97	259	32.45	36.75	89.54	0.2044	0.2315	0.4511
28 c50v	0.0	0.5	1.0	60.78	5.36	-54.18	54.46	276	28.92	29.0	88.39	0.1977	0.1982	0.356
29 c63v	0.0	0.375	1.0	54.89	19.86	-63.87	66.9	287	26.2	22.83	87.73	0.1916	0.1669	0.2802
30 c75v	0.0	0.25	1.0	50.23	32.04	-71.51	78.37	294	24.34	18.61	87.17	0.1871	0.143	0.2285
31 c88v	0.0	0.125	1.0	48.21	38.03	-75.12	84.21	297	23.72	16.96	87.34	0.1853	0.1325	0.2082
32 v00m	0.0	0.0	1.0	48.11	37.46	-74.74	83.61	297	23.49	16.88	86.58	0.1851	0.133	0.2073
33 v13m	0.125	0.0	1.0	48.3	38.15	-74.87	84.04	297	23.83	17.03	87.22	0.1861	0.133	0.2091
34 v25m	0.25	0.0	1.0	49.6	40.61	-72.56	83.16	299	25.71	18.09	87.11	0.1964	0.1382	0.222
35 v38m	0.375	0.0	1.0	51.8	45.09	-68.86	82.32	303	29.19	19.97	87.25	0.214	0.1464	0.2451
36 v50m	0.5	0.0	1.0	54.66	50.71	-64.3	81.9	308	34.09	22.6	87.76	0.236	0.1565	0.2775
37 v63m	0.625	0.0	1.0	57.81	55.35	-58.47	80.52	313	39.61	25.76	87.21	0.2596	0.1688	0.3163
38 v75m	0.75	0.0	1.0	61.24	61.08	-52.92	80.82	319	46.51	29.52	87.72	0.284	0.1803	0.3624
39 v88m	0.875	0.0	1.0	64.69	66.13	-46.94	81.1	325	53.93	33.66	87.69	0.3077	0.192	0.4132
40 m00o	1.0	0.0	1.0	68.09	71.27	-41.39	82.43	330	62.05	38.1	88.14	0.3295	0.2024	0.4677
41 m13o	1.0	0.0	0.875	66.9	68.9	-30.64	75.4	336	58.88	36.51	71.19	0.3535	0.2192	0.4482
42 m25o	1.0	0.0	0.75	65.85	66.49	-18.81	69.1	344	56.04	35.13	55.68	0.3816	0.2392	0.4313
43 m38o	1.0	0.0	0.675	64.89	64.26	-6.03	64.55	355	53.52	33.9	41.92	0.4138	0.2621	0.4162
44 m50o	1.0	0.0	0.5	64.06	66.59	4.81	66.76	4	53.05	32.88	32.18	0.4492	0.2784	0.4036
45 m63o	1.0	0.0	0.375	63.39	60.59	20.34	63.92	19	49.69	32.06	21.54	0.4811	0.3104	0.3936
46 m75o	1.0	0.0	0.25	62.95	59.51	31.51	67.34	28	48.6	31.53	15.58	0.5077	0.3294	0.3871
47 m88o	1.0	0.0	0.125	62.78	59.1	36.87	69.66	32	48.17	31.32	13.19	0.5198	0.3379	0.3845
48 o00y	1.0	0.0	0.0	62.72	58.96	37.05	69.64	32	48.03	31.25	13.08	0.5201	0.3384	0.3837
49 n00w	0.0	0.0	0.0	37.99	0.0	0.0	0.01	0	9.58	10.08	10.98	0.3127	0.329	0.1237
50 n13w	0.125	0.125	0.125	38.32	0.76	0.24	0.8	18	9.85	10.27	11.09	0.3157	0.3289	0.1261
51 n25w	0.25	0.25	0.25	43.09	2.67	1.15	2.9	23	12.96	13.22	13.91	0.3233	0.3297	0.1623
52 n38w	0.375	0.375	0.375	51.8	2.55	1.63	3.03	32	19.48	19.97	20.85	0.3231	0.3312	0.2451
53 n50w	0.5	0.5	0.5	61.32	1.97	1.46	2.45	36	28.65	29.61	31.2	0.3202	0.331	0.3635
54 n63w	0.625	0.625	0.625	70.66	1.35	1.28	1.86	44	40.05	41.69	44.23	0.3179	0.3309	0.5118
55 n75w	0.75	0.75	0.75	79.51	0.84	0.79	1.15	43	53.37	55.81	59.9	0.3156	0.3301	0.6852
56 n88w	0.875	0.875	0.875	87.73	0.57	0.29	0.63	27	68.22	71.51	77.49	0.3141	0.3292	0.8779
57 n99w	1.0	1.0	1.0	95.41	0.0	0.0	0.01	85	84.2	88.59	96.46	0.3127	0.329	1.0876

KE370-7N, 39/66

 $n = 88.59 / (88.59 - 0.05) = 1.001$

TUB-test chart KE37; Hue circle and colorimetric data
Measurement: LCD and CRT display, and LCD projector

input: $olv^* setrgbcolor$
output: no change compared to input

Colorimetric data of Television Luminous System TLS38a for CIE lightness $L^*_N=38$ of black**System:****TLS38a** **Y Yellow****Monitor:** $LCH^*_a = 92.3 \ 71.5 \ 103$ **CRT** $LAB^*_a = 92.3 \ -15.6 \ 69.8$ **Reflection:** $Y_N = 10.08$ $L^*_N = 37.99$ **L Leaf green** $LCH^*_a = 82.1 \ 93.7 \ 143$ $LAB^*_a = 82.1 \ -75.1 \ 56.1$ **C Cyan blue** $LCH^*_a = 85.6 \ 48.6 \ 199$ $LAB^*_a = 85.6 \ -46.0 \ -15.7$ **adapted CIELAB (a^*_a , b^*_a) chroma diagram****O Orange red** $LCH^*_a = 62.7 \ 69.6 \ 32$ $LAB^*_a = 62.7 \ 59.0 \ 37.1$ **M Magenta red** $LCH^*_a = 68.1 \ 82.4 \ 330$ $LAB^*_a = 68.1 \ 71.3 \ -41.4$ **V Violet blue** $LCH^*_a = 48.1 \ 83.6 \ 297$ $LAB^*_a = 48.1 \ 37.5 \ -74.8$

Colorimetric data of Television Luminous System TLS52a for CIE lightness $L^*_N=52$ of black

System:

TLS52a

Monitor:

CRT

Reflection:

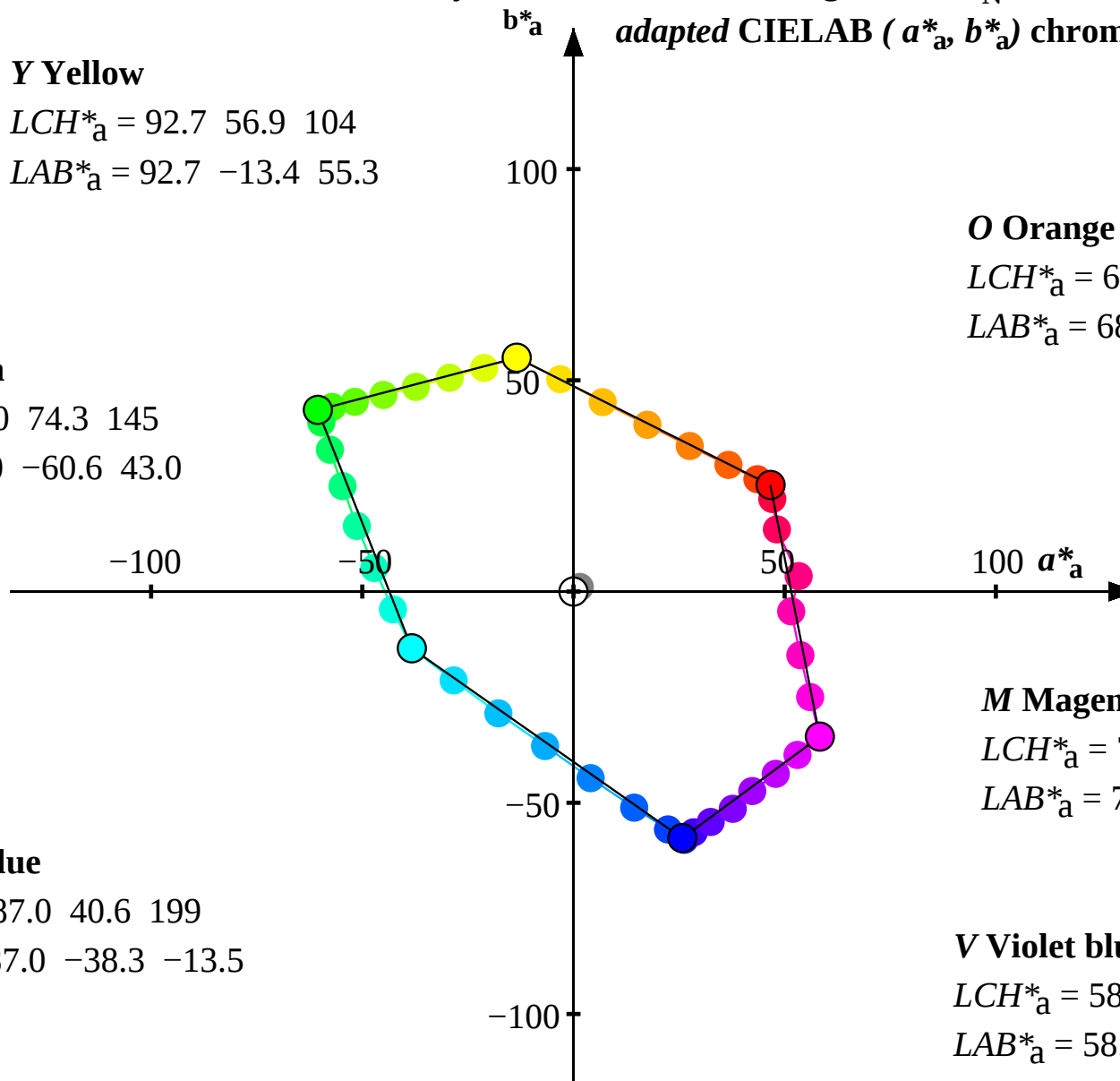
 $Y_N = 20.16$ $L^*_N = 52.02$

Color	$r=olv*_1$	$g=olv*_2$	$b=olv*_3$	$L^*_a=LAB^*_{1a}$	$a^*_a=LAB^*_{2a}$	$b^*_a=LAB^*_{3a}$	$C^*_{ab,a}=LAB^*_{ab,a}$	$h_{ab,a}$	$X_a=XYZ^*_{1a}$	$Y_a=XYZ^*_{2a}$	$Z_a=XYZ^*_{3a}$	x_a	y_a	$Y_a/88.59$
00 o00y	1.0	0.0	0.0	68.47	46.61	25.2	52.99	28	52.68	38.62	23.78	0.4578	0.3356	0.4688
01 o13y	1.0	0.125	0.0	68.47	46.48	25.19	52.87	28	52.63	38.62	23.78	0.4575	0.3357	0.4688
02 o25y	1.0	0.25	0.0	69.56	43.59	26.63	51.08	31	53.32	40.12	24.04	0.4538	0.3415	0.4871
03 o38y	1.0	0.375	0.0	72.09	36.7	29.94	47.36	39	54.89	43.79	24.68	0.445	0.355	0.5316
04 o50y	1.0	0.5	0.0	75.56	27.59	34.43	44.12	51	57.24	49.17	25.6	0.4336	0.3725	0.597
05 o63y	1.0	0.625	0.0	79.57	17.45	39.49	43.17	66	60.2	55.93	26.77	0.4213	0.3914	0.679
06 o75y	1.0	0.75	0.0	83.9	6.93	44.83	45.36	81	63.68	63.87	28.15	0.409	0.4102	0.7754
07 o88y	1.0	0.875	0.0	88.3	-3.12	50.27	50.37	94	67.65	72.69	29.59	0.3981	0.4277	0.8824
08 y00l	1.0	1.0	0.0	92.74	-13.39	55.35	56.94	104	71.76	82.37	31.4	0.3868	0.444	1.0
09 y13l	0.875	1.0	0.0	91.0	-21.2	52.91	57.0	112	64.77	78.49	31.01	0.3717	0.4504	0.9529
10 y25l	0.75	1.0	0.0	89.38	-29.33	50.6	58.49	120	58.32	74.97	30.66	0.3557	0.4573	0.9102
11 y38l	0.625	1.0	0.0	87.87	-37.35	48.46	61.19	128	52.54	71.8	30.34	0.3397	0.4642	0.8717
12 y50l	0.5	1.0	0.0	86.49	-44.98	46.51	64.71	134	47.5	68.98	30.04	0.3242	0.4708	0.8374
13 y63l	0.375	1.0	0.0	85.38	-51.77	44.9	68.53	139	43.45	66.75	29.63	0.3103	0.4767	0.8103
14 y75l	0.25	1.0	0.0	84.55	-57.13	43.71	71.94	143	40.51	65.14	29.86	0.2994	0.4814	0.7908
15 y88l	0.125	1.0	0.0	84.1	-60.16	43.06	73.99	144	38.92	64.27	29.58	0.2932	0.4841	0.7802
16 l00c	0.0	1.0	0.0	84.05	-60.56	42.98	74.27	145	38.72	64.16	29.57	0.2924	0.4844	0.7789
17 l13c	0.0	1.0	0.125	84.04	-60.52	42.83	74.16	145	38.73	64.15	29.66	0.2922	0.484	0.7787
18 l25c	0.0	1.0	0.25	84.13	-59.68	40.03	71.86	146	39.11	64.31	31.74	0.2894	0.4758	0.7807
19 l38c	0.0	1.0	0.375	84.35	-57.69	33.58	66.76	150	40.05	64.75	36.9	0.2826	0.4569	0.7861
20 l50c	0.0	1.0	0.5	84.69	-54.74	24.99	60.18	155	41.48	65.41	44.68	0.2737	0.4315	0.794
21 l63c	0.0	1.0	0.625	85.15	-51.26	15.52	53.56	163	43.3	66.31	54.59	0.2637	0.4038	0.805
22 l75c	0.0	1.0	0.75	85.68	-47.15	5.58	47.49	173	45.48	67.34	66.54	0.2536	0.3755	0.8175
23 l88c	0.0	1.0	0.875	86.28	-42.75	-4.16	42.97	186	47.97	68.55	80.05	0.244	0.3487	0.8322
24 c00v	0.0	1.0	1.0	86.98	-38.26	-13.45	40.56	199	50.74	69.96	94.85	0.2354	0.3246	0.8494
25 c13v	0.0	0.875	1.0	81.98	-28.39	-20.98	35.32	216	46.47	60.26	93.23	0.2324	0.3013	0.7315
26 c25v	0.0	0.75	1.0	76.92	-17.81	-28.82	33.89	238	42.62	51.4	91.95	0.2292	0.2764	0.624
27 c38v	0.0	0.675	1.0	71.83	-6.71	-36.56	37.18	260	39.09	43.4	90.43	0.2261	0.251	0.5269
28 c50v	0.0	0.5	1.0	67.01	4.01	-44.16	44.36	275	36.02	36.65	89.42	0.2222	0.2261	0.4449
29 c63v	0.0	0.375	1.0	62.73	14.35	-51.14	53.12	286	33.65	31.27	88.85	0.2188	0.2034	0.3796
30 c75v	0.0	0.25	1.0	59.52	22.4	-56.33	60.63	292	32.03	27.6	88.36	0.2164	0.1865	0.335
31 c88v	0.0	0.125	1.0	58.18	26.2	-58.74	64.33	294	31.48	26.15	88.51	0.2154	0.179	0.3175
32 v00m	0.0	0.0	1.0	58.12	25.76	-58.38	63.82	294	31.29	26.09	87.84	0.2154	0.1796	0.3167
33 v13m	0.125	0.0	1.0	58.25	26.31	-58.57	64.21	294	31.58	26.22	88.41	0.216	0.1793	0.3183
34 v25m	0.25	0.0	1.0	59.1	28.49	-57.02	63.75	297	33.22	27.14	88.31	0.2234	0.1825	0.3295
35 v38m	0.375	0.0	1.0	60.58	32.5	-54.55	63.51	301	36.25	28.78	88.44	0.2362	0.1875	0.3494
36 v50m	0.5	0.0	1.0	62.57	37.68	-51.44	63.78	306	40.53	31.07	88.88	0.2525	0.1936	0.3772
37 v63m	0.625	0.0	1.0	64.83	42.3	-47.21	63.39	312	45.34	33.83	88.39	0.2706	0.2019	0.4107
38 v75m	0.75	0.0	1.0	67.36	47.93	-43.16	64.5	318	51.35	37.11	88.84	0.2896	0.2093	0.4505
39 v88m	0.875	0.0	1.0	69.98	53.08	-38.63	65.65	324	57.82	40.71	88.81	0.3086	0.2173	0.4943
40 m00o	1.0	0.0	1.0	72.62	58.31	-34.35	67.68	329	64.89	44.58	89.2	0.3266	0.2244	0.5412
41 m13o	1.0	0.0	0.875	71.69	55.99	-24.99	61.32	336	62.13	43.19	74.43	0.3456	0.2403	0.5244
42 m25o	1.0	0.0	0.75	70.87	53.69	-15.02	59.75	344	59.66	41.99	60.91	0.367	0.2583	0.5098
43 m38o	1.0	0.0	0.675	70.12	51.58	-4.69	51.79	355	57.46	40.92	48.92	0.3901	0.2778	0.4968
44 m50o	1.0	0.0	0.5	69.49	53.28	3.64	53.41	4	57.05	40.03	40.44	0.4149	0.2911	0.486
45 m63o	1.0	0.0	0.375	68.98	48.13	14.72	50.34	17	54.12	39.32	31.16	0.4344	0.3156	0.4773
46 m75o	1.0	0.0	0.25	68.65	47.13	21.92	51.97	25	53.17	38.86	25.97	0.4506	0.3293	0.4717
47 m88o	1.0	0.0	0.125	68.51	46.75	25.1	53.06	28	52.8	38.67	23.88	0.4577	0.3353	0.4695
48 o00y	1.0	0.0	0.0	68.47	46.61	25.2	52.99	28	52.68	38.62	23.78	0.4578	0.3356	0.4688
49 n00w	0.0	0.0	0.0	52.02	0.0	0.0	0.01	0	19.16	20.16	21.95	0.3127	0.329	0.2447
50 n13w	0.125	0.125	0.125	52.2	0.42	0.13	0.44	18	19.4	20.32	22.05	0.314	0.329	0.2467
51 n25w	0.25	0.25	0.25	54.96	1.62	0.69	1.76	23	22.11	22.89	24.51	0.318	0.3294	0.2779
52 n38w	0.375	0.375	0.375	60.58	1.75	1.11	2.07	32	27.79	28.78	30.55	0.319	0.3303	0.3494
53 n50w	0.5	0.5	0.5	67.42	1.48	1.09	1.84	36	35.78	37.19	39.58	0.3179	0.3304	0.4514
54 n63w	0.625	0.625	0.625	74.64	1.07	1.02	1.48	44	45.72	47.71	50.94	0.3167	0.3305	0.5792
55 n75w	0.75	0.75	0.75	81.85	0.7	0.65	0.95	43	57.33	60.02	64.6	0.3151	0.3299	0.7287
56 n88w	0.875	0.875	0.875	88.78	0.48	0.24	0.54	27	70.27	73.7	79.92	0.3139	0.3292	0.8947
57 n99w	1.0	1.0	1.0	95.41	0.0	0.0	0.01	0	84.2	88.59	96.46	0.3127	0.329	1.0755

$$n = 88.59 / (88.59 - 0.05) = 1.001$$

TUB-test chart KE37; Hue circle and colorimetric data
Measurement: LCD and CRT display, and LCD projector

input: olv^* setrgbcolor
output: no change compared to input

Colorimetric data of Television Luminous System TLS52a for CIE lightness $L^*_N=52$ of black**System:****TLS52a** **Y Yellow****Monitor:** $LCH^*_a = 92.7 \ 56.9 \ 104$ **CRT** $LAB^*_a = 92.7 \ -13.4 \ 55.3$ **Reflection:** $Y_N = 20.16$ $L^*_N = 52.02$ **L Leaf green** $LCH^*_a = 84.0 \ 74.3 \ 145$ $LAB^*_a = 84.0 \ -60.6 \ 43.0$ **C Cyan blue** $LCH^*_a = 87.0 \ 40.6 \ 199$ $LAB^*_a = 87.0 \ -38.3 \ -13.5$ **adapted CIELAB (a^*_a , b^*_a) chroma diagram****O Orange red** $LCH^*_a = 68.5 \ 53.0 \ 28$ $LAB^*_a = 68.5 \ 46.6 \ 25.2$ **M Magenta red** $LCH^*_a = 72.6 \ 67.7 \ 329$ $LAB^*_a = 72.6 \ 58.3 \ -34.4$ **V Violet blue** $LCH^*_a = 58.1 \ 63.8 \ 294$ $LAB^*_a = 58.1 \ 25.8 \ -58.4$

Colorimetric data of Television Luminous System TLS70a for CIE lightness $L^*_N=70$ of black

System:

TLS70a

Monitor:

CRT

Reflection:

 $Y_N = 40.32$ $L^*_N = 69.7$

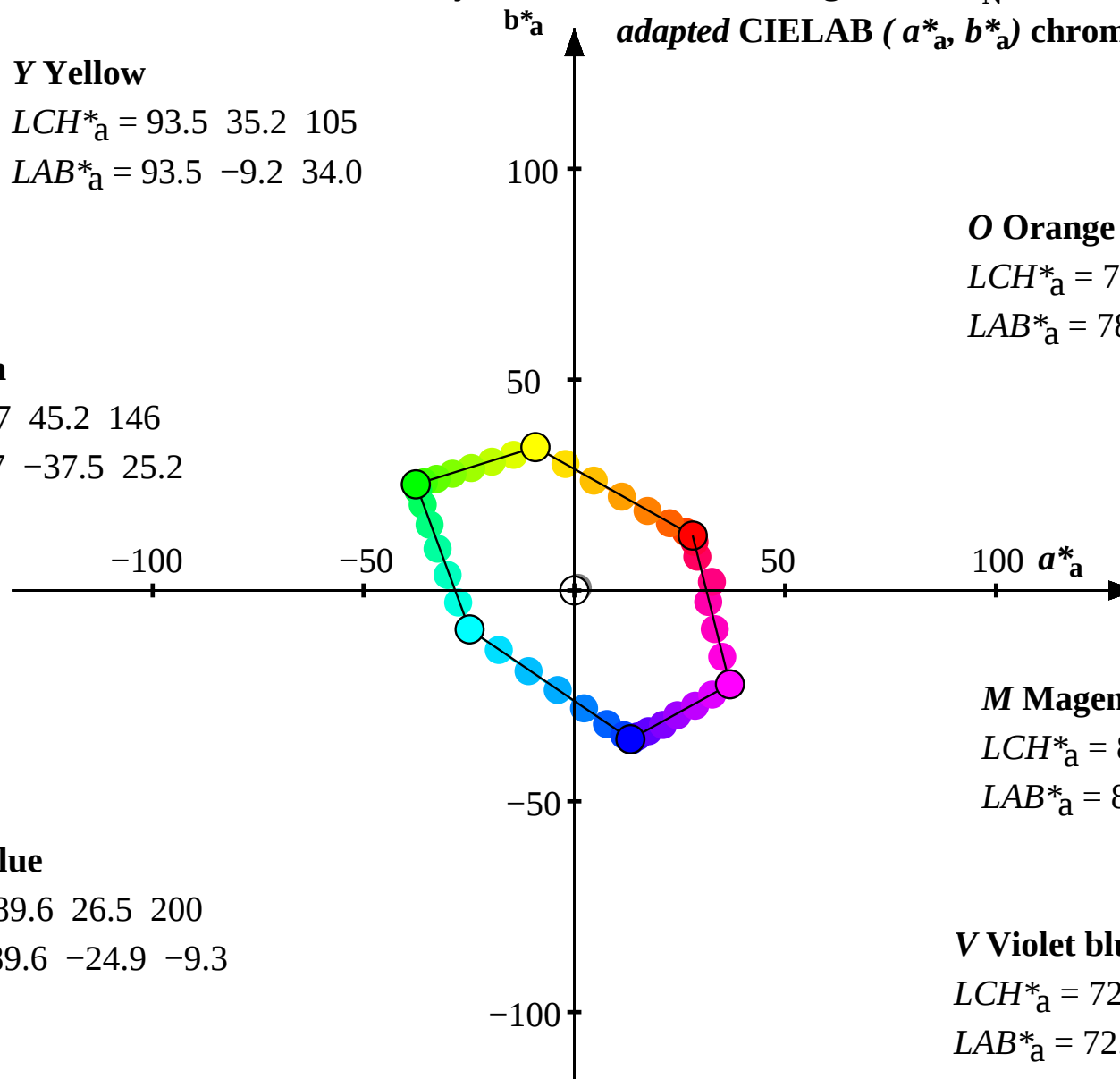
Color	$r=olv*_1$	$g=olv*_2$	$b=olv*_3$	$L^*_a=LAB^*_1a$	$a^*_a=LAB^*_2a$	$b^*_a=LAB^*_3a$	$C^*_{ab,a}=LAB^*_{ab,a}$	$h_{ab,a}$	$X_a=XYZ^*_1a$	$Y_a=XYZ^*_2a$	$Z_a=XYZ^*_3a$	x_a	y_a	$Y_a/88.59$
00 o00y	1.0	0.0	0.0	78.07	28.06	13.01	30.93	25	61.96	53.34	45.19	0.3861	0.3323	0.6334
01 o13y	1.0	0.125	0.0	78.07	27.98	13.01	30.85	25	61.93	53.34	45.19	0.3859	0.3324	0.6334
02 o25y	1.0	0.25	0.0	78.7	26.44	13.88	29.86	28	62.42	54.4	45.38	0.3848	0.3354	0.6461
03 o38y	1.0	0.375	0.0	80.17	22.63	15.94	27.68	35	63.52	56.99	45.82	0.3819	0.3426	0.6768
04 o50y	1.0	0.5	0.0	82.26	17.38	18.84	25.63	47	65.18	60.79	46.47	0.378	0.3525	0.7219
05 o63y	1.0	0.625	0.0	84.77	11.25	22.26	24.95	63	67.27	65.55	47.3	0.3735	0.3639	0.7785
06 o75y	1.0	0.75	0.0	87.56	4.57	26.05	26.45	80	69.72	71.15	48.27	0.3686	0.3762	0.845
07 o88y	1.0	0.875	0.0	90.49	-2.1	30.04	30.11	94	72.52	77.37	49.29	0.3641	0.3884	0.9189
08 y00l	1.0	1.0	0.0	93.54	-9.22	33.98	35.21	105	75.43	84.2	50.57	0.3588	0.4006	1.0
09 y13l	0.875	1.0	0.0	92.34	-14.36	32.19	35.26	114	70.49	81.47	50.29	0.3485	0.4028	0.9675
10 y25l	0.75	1.0	0.0	91.23	-19.53	30.53	36.25	123	65.94	78.99	50.04	0.3382	0.4051	0.938
11 y38l	0.625	1.0	0.0	90.2	-24.44	29.0	37.93	130	61.87	76.75	49.82	0.3283	0.4073	0.9114
12 y50l	0.5	1.0	0.0	89.28	-28.92	27.62	39.99	136	58.31	74.76	49.61	0.3192	0.4092	0.8878
13 y63l	0.375	1.0	0.0	88.54	-32.76	26.49	42.14	141	55.46	73.18	49.46	0.3114	0.4109	0.8691
14 y75l	0.25	1.0	0.0	87.99	-35.69	25.67	43.98	144	53.38	72.05	49.34	0.3054	0.4122	0.8556
15 y88l	0.125	1.0	0.0	87.69	-37.32	25.23	45.05	146	52.26	71.43	49.28	0.3021	0.413	0.8483
16 l00c	0.0	1.0	0.0	87.66	-37.53	25.17	45.2	146	52.12	71.36	49.28	0.3017	0.4131	0.8474
17 l13c	0.0	1.0	0.125	87.65	-37.51	25.09	45.13	146	52.12	71.35	49.34	0.3016	0.4129	0.8473
18 l25c	0.0	1.0	0.25	87.71	-37.04	23.69	43.98	147	52.39	71.46	50.8	0.3	0.4092	0.8487
19 l38c	0.0	1.0	0.375	87.86	-35.96	20.32	41.31	151	53.06	71.77	54.45	0.2959	0.4003	0.8524
20 l50c	0.0	1.0	0.5	88.08	-34.33	15.54	37.69	156	54.07	72.24	59.93	0.2903	0.3879	0.8579
21 l63c	0.0	1.0	0.625	88.39	-32.39	9.93	33.89	163	55.35	72.87	66.92	0.2836	0.3734	0.8655
22 l75c	0.0	1.0	0.75	88.73	-30.05	3.67	30.28	173	56.89	73.6	75.35	0.2764	0.3576	0.8741
23 l88c	0.0	1.0	0.875	89.14	-27.49	-2.8	27.65	186	58.64	74.45	84.89	0.269	0.3416	0.8842
24 c00v	0.0	1.0	1.0	89.6	-24.84	-9.24	26.52	200	60.59	75.45	95.32	0.2619	0.3261	0.8961
25 c13v	0.0	0.875	1.0	86.31	-17.87	-14.16	22.81	218	57.59	68.6	94.18	0.2613	0.3113	0.8147
26 c25v	0.0	0.75	1.0	83.1	-10.83	-19.07	21.94	240	54.87	62.36	93.28	0.2607	0.2962	0.7406
27 c38v	0.0	0.675	1.0	80.02	-3.92	-23.66	23.99	261	52.38	56.72	92.21	0.2602	0.2817	0.6735
28 c50v	0.0	0.5	1.0	77.25	2.26	-27.95	28.05	275	50.21	51.95	91.5	0.2593	0.2683	0.617
29 c63v	0.0	0.375	1.0	74.92	7.76	-31.68	32.63	284	48.54	48.16	91.09	0.2585	0.2564	0.5719
30 c75v	0.0	0.25	1.0	73.26	11.75	-34.3	36.27	289	47.39	45.57	90.75	0.258	0.248	0.5411
31 c88v	0.0	0.125	1.0	72.59	13.56	-35.53	38.04	291	47.01	44.55	90.85	0.2577	0.2442	0.5291
32 v00m	0.0	0.0	1.0	72.56	13.31	-35.26	37.7	291	46.87	44.5	90.38	0.2579	0.2448	0.5285
33 v13m	0.125	0.0	1.0	72.62	13.63	-35.43	37.97	291	47.08	44.59	90.78	0.2581	0.2444	0.5296
34 v25m	0.25	0.0	1.0	73.05	15.0	-34.65	37.76	293	48.24	45.24	90.71	0.2619	0.2456	0.5373
35 v38m	0.375	0.0	1.0	73.8	17.56	-33.41	37.75	298	50.37	46.4	90.8	0.2686	0.2474	0.551
36 v50m	0.5	0.0	1.0	74.84	21.03	-31.84	38.17	303	53.39	48.02	91.11	0.2773	0.2494	0.5703
37 v63m	0.625	0.0	1.0	76.05	24.38	-29.52	38.3	310	56.79	49.96	90.77	0.2875	0.2529	0.5933
38 v75m	0.75	0.0	1.0	77.44	28.58	-27.33	39.55	316	61.02	52.27	91.08	0.2986	0.2558	0.6208
39 v88m	0.875	0.0	1.0	78.94	32.64	-24.74	40.96	323	65.59	54.82	91.06	0.3101	0.2592	0.651
40 m00o	1.0	0.0	1.0	80.49	36.89	-22.26	43.09	329	70.58	57.55	91.34	0.3216	0.2622	0.6834
41 m13o	1.0	0.0	0.875	79.94	35.07	-15.75	38.44	336	68.63	56.57	80.92	0.333	0.2744	0.6718
42 m25o	1.0	0.0	0.75	79.45	33.31	-9.16	34.55	345	66.89	55.72	71.39	0.3448	0.2872	0.6617
43 m38o	1.0	0.0	0.675	79.02	31.71	-2.75	31.83	355	65.34	54.97	62.93	0.3566	0.3	0.6528
44 m50o	1.0	0.0	0.5	78.66	32.63	2.07	32.69	4	65.05	54.34	56.94	0.3689	0.3082	0.6453
45 m63o	1.0	0.0	0.375	78.36	29.17	7.99	30.25	15	62.98	53.83	50.4	0.3767	0.322	0.6393
46 m75o	1.0	0.0	0.25	78.17	28.44	11.5	30.68	22	62.31	53.51	46.73	0.3833	0.3292	0.6355
47 m88o	1.0	0.0	0.125	78.1	28.16	12.97	31.0	25	62.05	53.38	45.26	0.3861	0.3322	0.6339
48 o00y	1.0	0.0	0.0	78.07	28.06	13.01	30.93	25	61.96	53.34	45.19	0.3861	0.3323	0.6334
49 n00w	0.0	0.0	0.0	69.7	0.0	0.0	0.01	0	38.32	40.32	43.9	0.3127	0.329	0.4788
50 n13w	0.125	0.125	0.125	69.78	0.19	0.06	0.2	18	38.49	40.44	43.97	0.3132	0.329	0.4802
51 n25w	0.25	0.25	0.25	71.04	0.76	0.32	0.83	23	40.4	42.25	45.71	0.3147	0.3292	0.5017
52 n38w	0.375	0.375	0.375	73.8	0.9	0.56	1.06	32	44.41	46.4	49.97	0.3154	0.3296	0.551
53 n50w	0.5	0.5	0.5	77.48	0.83	0.61	1.03	36	50.04	52.33	56.33	0.3153	0.3297	0.6215
54 n63w	0.625	0.625	0.625	81.7	0.65	0.62	0.9	43	57.06	59.75	64.35	0.3149	0.3298	0.7096
55 n75w	0.75	0.75	0.75	86.23	0.45	0.42	0.62	43	65.24	68.44	73.98	0.3142	0.3296	0.8128
56 n88w	0.875	0.875	0.875	90.82	0.33	0.17	0.37	27	74.37	78.09	84.79	0.3135	0.3291	0.9274
57 n99w	1.0	1.0	1.0	95.41	0.0	0.0	0.01	0	84.2	88.59	96.46	0.3127	0.329	1.0521

KE370-7N, 43/66

 $n = 88.59 / (88.59 - 0.05) = 1.001$

TUB-test chart KE37; Hue circle and colorimetric data
Measurement: LCD and CRT display, and LCD projector

input: $olv^* setrgbcolor$
output: no change compared to input

Colorimetric data of Television Luminous System TLS70a for CIE lightness $L^*_N=70$ of black**System:****TLS70a** **Y Yellow****Monitor:** $LCH^*_a = 93.5 \ 35.2 \ 105$ **CRT** $LAB^*_a = 93.5 \ -9.2 \ 34.0$ **Reflection:** $Y_N = 40.32$ $L^*_N = 69.7$ **L Leaf green** $LCH^*_a = 87.7 \ 45.2 \ 146$ $LAB^*_a = 87.7 \ -37.5 \ 25.2$ **C Cyan blue** $LCH^*_a = 89.6 \ 26.5 \ 200$ $LAB^*_a = 89.6 \ -24.9 \ -9.3$ **adapted CIELAB (a^*_a , b^*_a) chroma diagram****O Orange red** $LCH^*_a = 78.1 \ 30.9 \ 25$ $LAB^*_a = 78.1 \ 28.1 \ 13.0$ **M Magenta red** $LCH^*_a = 80.5 \ 43.1 \ 329$ $LAB^*_a = 80.5 \ 36.9 \ -22.3$ **V Violet blue** $LCH^*_a = 72.6 \ 37.7 \ 291$ $LAB^*_a = 72.6 \ 13.3 \ -35.3$

Colorimetric data of Television Luminous System TLS03 for CIE lightness $L^*_N=03$ of black**System:****TLS03****Projector:****LCD**

Color	$r=olv*1$	$g=olv*2$	$b=olv*3$	$L^*_c=LAB*1_c$	$a^*_c=LAB*2_c$	$b^*_c=LAB*3_c$	$C^*_{ab,c}=LAB*rc$	$h_{ab,c}$	$X_c=XYZ1_c$	$Y_c=XYZ2_c$	$Z_c=XYZ3_c$	x_c	y_c	$Y_c/88.59$
00 o00y	1.0	0.0	0.0	37.1	58.78	56.51	81.54	44	18.1	9.59	0.52	0.6415	0.34	0.1083
01 o13y	1.0	0.125	0.0	37.41	58.02	56.42	80.93	44	18.21	9.76	0.57	0.6381	0.3421	0.1102
02 o25y	1.0	0.25	0.0	38.83	54.44	57.1	78.89	46	18.69	10.56	0.69	0.6243	0.3527	0.1192
03 o38y	1.0	0.375	0.0	42.44	42.95	59.04	73.01	54	19.48	12.78	0.99	0.5859	0.3844	0.1443
04 o50y	1.0	0.5	0.0	47.08	35.41	60.09	69.75	59	22.06	16.08	1.57	0.5556	0.4049	0.1815
05 o63y	1.0	0.625	0.0	54.15	21.26	63.91	67.35	71	25.77	22.11	2.53	0.5112	0.4387	0.2496
06 o75y	1.0	0.75	0.0	62.27	7.09	69.0	69.37	84	31.07	30.71	3.9	0.473	0.4676	0.3467
07 o88y	1.0	0.875	0.0	70.64	-4.64	74.95	75.09	93	38.14	41.66	5.61	0.4465	0.4878	0.4703
08 y00l	1.0	1.0	0.0	83.13	-16.8	84.65	86.31	101	52.58	62.4	8.73	0.425	0.5044	0.7044
09 y13l	0.875	1.0	0.0	81.19	-24.79	81.99	85.66	106	46.56	58.82	8.53	0.4087	0.5164	0.664
10 y25l	0.75	1.0	0.0	75.03	-33.74	75.48	82.68	114	35.07	48.33	7.36	0.3864	0.5325	0.5455
11 y38l	0.625	1.0	0.0	74.08	-40.51	73.85	84.23	118	31.97	46.83	7.36	0.3711	0.5435	0.5286
12 y50l	0.5	1.0	0.0	73.46	-45.58	72.79	85.89	122	29.89	45.87	7.36	0.3596	0.5519	0.5178
13 y63l	0.375	1.0	0.0	73.1	-48.78	72.15	87.1	124	28.66	45.32	7.36	0.3523	0.5572	0.5116
14 y75l	0.25	1.0	0.0	72.92	-50.49	71.84	87.82	125	28.02	45.04	7.36	0.3484	0.5601	0.5084
15 y88l	0.125	1.0	0.0	72.84	-51.23	71.69	88.12	125	27.75	44.92	7.36	0.3467	0.5613	0.5071
16 l00c	0.0	1.0	0.0	72.83	-51.36	71.66	88.17	125	27.7	44.91	7.37	0.3464	0.5615	0.5069
17 l13c	0.0	1.0	0.125	72.87	-51.21	70.8	87.39	126	27.78	44.96	7.62	0.3457	0.5595	0.5075
18 l25c	0.0	1.0	0.25	72.97	-50.7	67.1	84.11	127	28.02	45.12	8.75	0.3422	0.551	0.5093
19 l38c	0.0	1.0	0.375	73.17	-49.55	59.71	77.6	129	28.53	45.42	11.31	0.3346	0.5327	0.5127
20 l50c	0.0	1.0	0.5	73.55	-47.47	48.77	68.07	134	29.49	46.01	16.04	0.3222	0.5026	0.5193
21 l63c	0.0	1.0	0.625	74.19	-44.2	34.93	56.34	141	31.09	47.0	23.86	0.305	0.461	0.5305
22 l75c	0.0	1.0	0.75	74.8	-39.66	19.62	44.25	153	33.08	47.96	34.95	0.2852	0.4135	0.5414
23 l88c	0.0	1.0	0.875	76.29	-33.9	3.44	34.08	174	36.63	50.36	51.35	0.2648	0.364	0.5684
24 c00v	0.0	1.0	1.0	77.63	-27.89	-10.73	29.9	201	40.31	52.59	69.46	0.2483	0.3239	0.5936
25 c13v	0.0	0.875	1.0	69.94	-19.11	-22.45	29.5	230	32.97	40.66	67.61	0.2334	0.2879	0.459
26 c25v	0.0	0.75	1.0	60.8	-7.27	-36.62	37.35	260	25.8	29.02	65.75	0.214	0.2407	0.3276
27 c38v	0.0	0.675	1.0	51.55	6.79	-51.31	51.77	278	20.11	19.75	64.29	0.1931	0.1896	0.2229
28 c50v	0.0	0.5	1.0	43.25	21.59	-64.77	68.28	289	16.15	13.32	63.31	0.1741	0.1436	0.1504
29 c63v	0.0	0.375	1.0	36.87	34.74	-75.21	82.86	295	13.78	9.47	62.69	0.1603	0.1102	0.1069
30 c75v	0.0	0.25	1.0	32.68	44.51	-82.18	93.47	299	12.51	7.39	62.38	0.152	0.0898	0.0834
31 c88v	0.0	0.125	1.0	30.75	49.23	-85.41	98.59	300	11.99	6.55	62.29	0.1483	0.081	0.0739
32 v00m	0.0	0.0	1.0	30.28	50.46	-86.21	99.9	301	11.87	6.35	62.28	0.1475	0.0789	0.0717
33 v13m	0.125	0.0	1.0	30.52	50.74	-86.47	100.26	301	12.06	6.45	63.03	0.1479	0.0791	0.0728
34 v25m	0.25	0.0	1.0	30.67	50.94	-85.47	99.51	301	12.18	6.51	62.19	0.1506	0.0805	0.0735
35 v38m	0.375	0.0	1.0	31.48	51.96	-83.92	98.71	302	12.85	6.86	62.02	0.1572	0.0839	0.0774
36 v50m	0.5	0.0	1.0	33.02	53.8	-81.29	97.49	304	14.17	7.55	62.06	0.1691	0.0901	0.0852
37 v63m	0.625	0.0	1.0	35.31	56.61	-76.94	95.53	307	16.3	8.66	61.6	0.1883	0.1	0.0977
38 v75m	0.75	0.0	1.0	38.29	60.25	-71.06	93.17	310	19.37	10.25	60.77	0.2143	0.1134	0.1157
39 v88m	0.875	0.0	1.0	43.55	65.86	-65.4	92.82	315	25.51	13.53	64.62	0.2461	0.1305	0.1527
40 m00o	1.0	0.0	1.0	48.39	71.08	-60.47	93.32	320	32.22	17.11	68.65	0.2731	0.145	0.1931
41 m13o	1.0	0.0	0.875	44.49	67.04	-44.55	80.49	327	26.78	14.18	44.89	0.3119	0.1652	0.1601
42 m25o	1.0	0.0	0.75	41.5	64.08	-26.13	69.21	338	23.08	12.18	26.76	0.3721	0.1964	0.1375
43 m38o	1.0	0.0	0.675	39.82	62.04	-9.33	62.74	351	21.08	11.14	16.02	0.4369	0.231	0.1258
44 m50o	1.0	0.0	0.5	38.6	60.58	8.07	61.11	7	19.7	10.43	8.68	0.5077	0.2687	0.1177
45 m63o	1.0	0.0	0.375	37.83	59.69	25.05	64.73	23	18.87	9.99	4.23	0.5702	0.3019	0.1128
46 m75o	1.0	0.0	0.25	37.41	59.19	40.82	71.9	34	18.43	9.76	1.83	0.6138	0.3251	0.1102
47 m88o	1.0	0.0	0.125	37.23	58.94	53.08	79.32	42	18.24	9.67	0.78	0.6359	0.337	0.1091
48 o00y	1.0	0.0	0.0	37.1	58.78	56.51	81.54	44	18.1	9.59	0.52	0.6415	0.34	0.1083
49 n00w	0.0	0.0	0.0	2.5	-0.41	0.23	0.48	0	0.25	0.28	0.29	0.3103	0.3398	0.0031
50 n13w	0.125	0.125	0.125	4.56	-0.87	-0.48	1.01	238	0.46	0.5	0.58	0.2962	0.3263	0.0057
51 n25w	0.25	0.25	0.25	12.6	-1.6	-0.76	1.79	260	1.4	1.5	1.8	0.2978	0.3193	0.0169
52 n38w	0.375	0.375	0.375	23.36	-0.66	-1.79	1.92	264	3.67	3.91	4.6	0.3013	0.3208	0.0441
53 n50w	0.5	0.5	0.5	34.78	-0.55	-1.92	2.01	267	7.91	8.39	9.75	0.3037	0.322	0.0947
54 n63w	0.625	0.625	0.625	46.81	-0.46	-2.0	2.06	270	15.01	15.88	18.26	0.3054	0.323	0.1792
55 n75w	0.75	0.75	0.75	61.39	-0.67	-1.71	1.84	264	28.05	29.7	33.6	0.3071	0.3251	0.3352
56 n88w	0.875	0.875	0.875	80.86	-0.46	-0.03	0.48	324	55.14	58.21	63.43	0.3119	0.3293	0.6571
57 n99w	1.0	1.0	1.0	95.41	-0.54	-0.04	0.55	0	83.91	88.59	96.53	0.3119	0.3293	1.0

KE370-7N, 45/66

TUB-test chart KE37; Hue circle and colorimetric data
Measurement: LCD and CRT display, and LCD projector

input: $olv^* setrgbcolor$
output: no change compared to input

Colorimetric data of Television Luminous System TLS03 for CIE lightness $L^*_N=03$ of black System: **standard CIELAB (a^* , b^*)** chroma diagram

TLS03

Y Yellow

Projector:

$LCH^* = 83.1 \ 86.3 \ 101$

LCD

$LAB^* = 83.1 \ -16.8 \ 84.7$

L Leaf green

$LCH^* = 72.8 \ 88.2 \ 126$

$LAB^* = 72.8 \ -51.4 \ 71.7$

O Orange red

$LCH^* = 37.1 \ 81.5 \ 44$

$LAB^* = 37.1 \ 58.8 \ 56.5$

M Magenta red

$LCH^* = 48.4 \ 93.3 \ 320$

$LAB^* = 48.4 \ 71.1 \ -60.5$

C Cyan blue

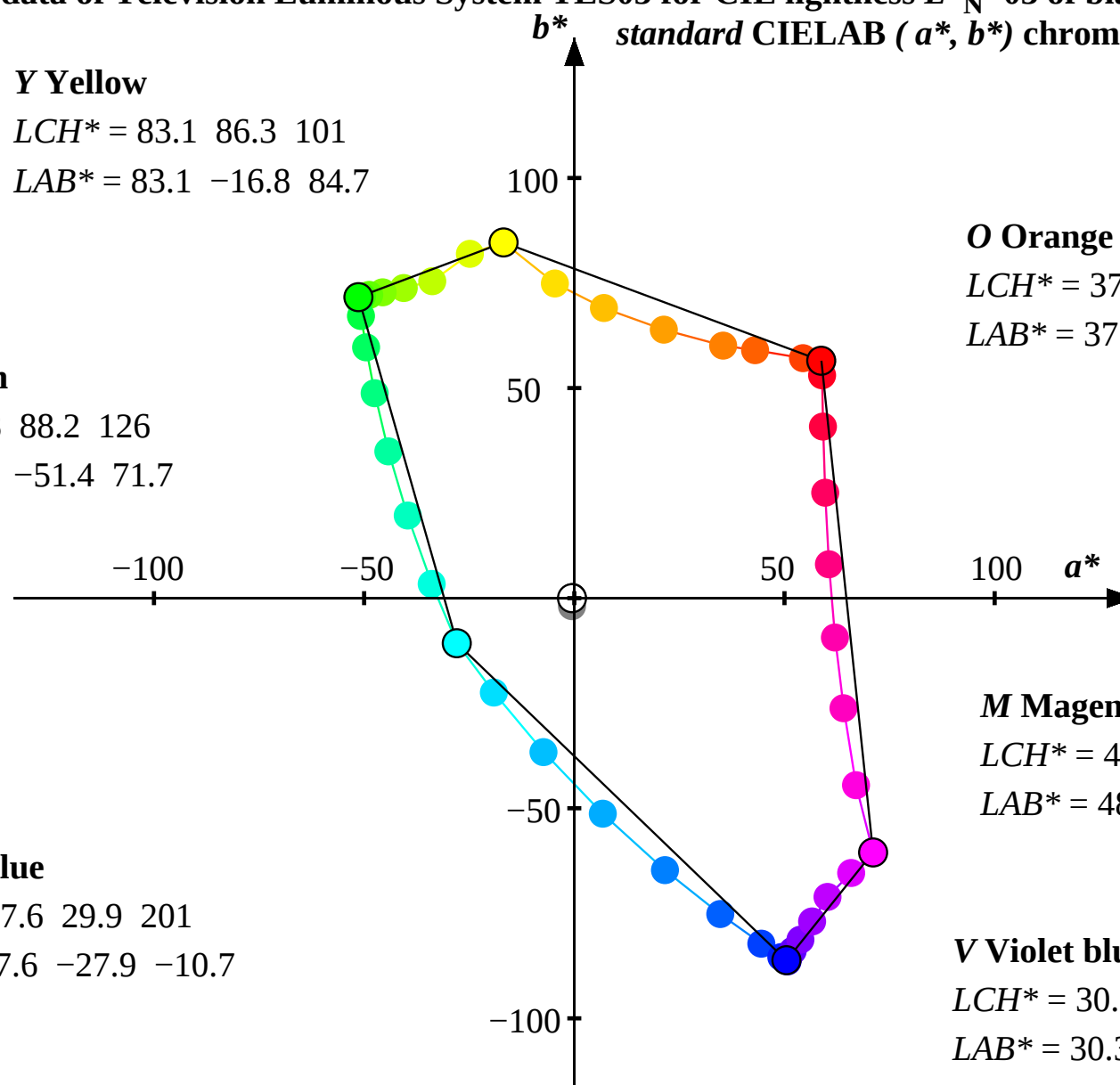
$LCH^* = 77.6 \ 29.9 \ 201$

$LAB^* = 77.6 \ -27.9 \ -10.7$

V Violet blue

$LCH^* = 30.3 \ 99.9 \ 300$

$LAB^* = 30.3 \ 50.5 \ -86.2$



Colorimetric data of Television Luminous System TLS03a for CIE lightness $L^*_N=03$ of black

System:

TLS03a

Projector:

LCD

Color	$r=olv*1$	$g=olv*2$	$b=olv*3$	$L^*_a=LAB*1a$	$a^*_a=LAB*2a$	$b^*_a=LAB*3a$	$C^*_{ab,a}=LAB*ra$	$h_{ab,a}$	$X_a=XYZ1a$	$Y_a=XYZ2a$	$Z_a=XYZ3a$	x_a	y_a	$Y_a/88.59$
00 o00y	1.0	0.0	0.0	37.1	59.25	56.38	81.79	44	18.19	9.59	0.53	0.6424	0.3388	0.1083
01 o13y	1.0	0.125	0.0	37.41	58.49	56.29	81.18	44	18.3	9.76	0.57	0.639	0.3409	0.1102
02 o25y	1.0	0.25	0.0	38.83	54.91	56.97	79.13	46	18.78	10.56	0.7	0.6253	0.3515	0.1192
03 o38y	1.0	0.375	0.0	42.44	43.43	58.93	73.2	54	19.58	12.78	1.0	0.5869	0.3832	0.1443
04 o50y	1.0	0.5	0.0	47.08	35.89	59.99	69.91	59	22.17	16.08	1.58	0.5566	0.4037	0.1815
05 o63y	1.0	0.625	0.0	54.15	21.75	63.83	67.43	71	25.88	22.11	2.54	0.5122	0.4376	0.2496
06 o75y	1.0	0.75	0.0	62.27	7.59	68.95	69.37	84	31.21	30.71	3.91	0.474	0.4666	0.3467
07 o88y	1.0	0.875	0.0	70.64	-4.13	74.92	75.03	93	38.3	41.66	5.62	0.4475	0.4869	0.4703
08 y00l	1.0	1.0	0.0	83.13	-16.27	84.66	86.21	101	52.78	62.4	8.73	0.426	0.5036	0.7044
09 y13l	0.875	1.0	0.0	81.19	-24.26	82.0	85.51	106	46.74	58.82	8.53	0.4097	0.5156	0.664
10 y25l	0.75	1.0	0.0	75.03	-33.22	75.46	82.45	114	35.22	48.33	7.36	0.3874	0.5316	0.5455
11 y38l	0.625	1.0	0.0	74.08	-40.0	73.83	83.97	118	32.12	46.83	7.36	0.3721	0.5426	0.5286
12 y50l	0.5	1.0	0.0	73.46	-45.07	72.77	85.6	122	30.03	45.87	7.36	0.3606	0.551	0.5178
13 y63l	0.375	1.0	0.0	73.1	-48.26	72.13	86.79	124	28.79	45.32	7.37	0.3533	0.5563	0.5116
14 y75l	0.25	1.0	0.0	72.92	-49.98	71.82	87.5	125	28.15	45.04	7.36	0.3494	0.5592	0.5084
15 y88l	0.125	1.0	0.0	72.84	-50.71	71.67	87.8	125	27.88	44.92	7.37	0.3477	0.5603	0.5071
16 l00c	0.0	1.0	0.0	72.83	-50.84	71.64	87.85	125	27.83	44.91	7.37	0.3474	0.5605	0.5069
17 l13c	0.0	1.0	0.125	72.87	-50.69	70.78	87.07	126	27.91	44.96	7.62	0.3467	0.5586	0.5075
18 l25c	0.0	1.0	0.25	72.97	-50.18	67.08	83.78	127	28.15	45.12	8.75	0.3432	0.5501	0.5093
19 l38c	0.0	1.0	0.375	73.17	-49.03	59.69	77.25	129	28.66	45.42	11.32	0.3356	0.5318	0.5127
20 l50c	0.0	1.0	0.5	73.55	-46.95	48.75	67.69	134	29.63	46.01	16.05	0.3232	0.5018	0.5193
21 l63c	0.0	1.0	0.625	74.19	-43.69	34.91	55.93	141	31.23	47.0	23.87	0.3059	0.4603	0.5305
22 l75c	0.0	1.0	0.75	74.8	-39.14	19.6	43.78	153	33.23	47.96	34.96	0.2861	0.4129	0.5414
23 l88c	0.0	1.0	0.875	76.29	-33.38	3.42	33.56	174	36.79	50.36	51.36	0.2656	0.3636	0.5684
24 c00v	0.0	1.0	1.0	77.63	-27.37	-10.73	29.41	201	40.48	52.59	69.47	0.2491	0.3235	0.5936
25 c13v	0.0	0.875	1.0	69.94	-18.6	-22.48	29.19	230	33.11	40.66	67.65	0.2341	0.2875	0.459
26 c25v	0.0	0.75	1.0	60.8	-6.77	-36.68	37.31	260	25.92	29.02	65.82	0.2147	0.2403	0.3276
27 c38v	0.0	0.675	1.0	51.55	7.28	-51.4	51.92	278	20.21	19.75	64.39	0.1937	0.1892	0.2229
28 c50v	0.0	0.5	1.0	43.25	22.07	-64.88	68.54	289	16.24	13.32	63.43	0.1746	0.1433	0.1504
29 c63v	0.0	0.375	1.0	36.87	35.21	-75.34	83.17	295	13.85	9.47	62.84	0.1607	0.1099	0.1069
30 c75v	0.0	0.25	1.0	32.68	44.97	-82.32	93.81	299	12.57	7.39	62.54	0.1524	0.0895	0.0834
31 c88v	0.0	0.125	1.0	30.75	49.69	-85.56	98.95	300	12.05	6.55	62.46	0.1487	0.0808	0.0739
32 v00m	0.0	0.0	1.0	30.28	50.92	-86.36	100.27	301	11.94	6.35	62.45	0.1479	0.0787	0.0717
33 v13m	0.125	0.0	1.0	30.52	51.2	-86.62	100.62	301	12.13	6.45	63.2	0.1483	0.0789	0.0728
34 v25m	0.25	0.0	1.0	30.67	51.4	-85.62	99.88	301	12.25	6.51	62.36	0.151	0.0803	0.0735
35 v38m	0.375	0.0	1.0	31.48	52.42	-84.07	99.08	302	12.92	6.86	62.19	0.1576	0.0837	0.0774
36 v50m	0.5	0.0	1.0	33.02	54.26	-81.43	97.86	304	14.24	7.55	62.22	0.1695	0.0898	0.0852
37 v63m	0.625	0.0	1.0	35.31	57.08	-77.07	95.92	307	16.38	8.66	61.75	0.1887	0.0997	0.0977
38 v75m	0.75	0.0	1.0	38.29	60.72	-71.18	93.57	310	19.46	10.25	60.91	0.2148	0.1131	0.1157
39 v88m	0.875	0.0	1.0	43.55	66.34	-65.51	93.24	315	25.62	13.53	64.75	0.2466	0.1302	0.1527
40 m00o	1.0	0.0	1.0	48.39	71.56	-60.56	93.75	320	32.35	17.11	68.77	0.2737	0.1447	0.1931
41 m13o	1.0	0.0	0.875	44.49	67.52	-44.66	80.95	327	26.9	14.18	44.99	0.3125	0.1648	0.1601
42 m25o	1.0	0.0	0.75	41.5	64.56	-26.25	69.69	338	23.18	12.18	26.84	0.3727	0.1958	0.1375
43 m38o	1.0	0.0	0.675	39.82	62.51	-9.45	63.22	351	21.18	11.14	16.08	0.4375	0.2303	0.1258
44 m50o	1.0	0.0	0.5	38.6	61.05	7.94	61.56	7	19.8	10.43	8.71	0.5084	0.2678	0.1177
45 m63o	1.0	0.0	0.375	37.83	60.16	24.93	65.12	23	18.97	9.99	4.26	0.571	0.3009	0.1128
46 m75o	1.0	0.0	0.25	37.41	59.66	40.69	72.21	34	18.52	9.76	1.85	0.6147	0.324	0.1102
47 m88o	1.0	0.0	0.125	37.23	59.41	52.95	79.58	42	18.33	9.67	0.79	0.6368	0.3359	0.1091
48 o00y	1.0	0.0	0.0	37.1	59.25	56.38	81.79	44	18.19	9.59	0.53	0.6424	0.3388	0.1083
49 n00w	0.0	0.0	0.0	2.5	0.0	0.0	0.01	0	0.26	0.28	0.3	0.3127	0.329	0.0031
50 n13w	0.125	0.125	0.125	4.56	-0.45	-0.71	0.85	238	0.47	0.5	0.6	0.2978	0.3208	0.0057
51 n25w	0.25	0.25	0.25	12.6	-1.81	-1.81	1.85	260	1.41	1.5	1.82	0.2987	0.3168	0.0169
52 n38w	0.375	0.375	0.375	23.36	-0.21	-1.97	1.99	264	3.7	3.91	4.64	0.3021	0.3191	0.0441
53 n50w	0.5	0.5	0.5	34.78	-0.08	-2.06	2.07	267	7.96	8.39	9.8	0.3045	0.3208	0.0947
54 n63w	0.625	0.625	0.625	46.81	0.02	-2.1	2.11	270	15.09	15.88	18.31	0.3062	0.3221	0.1792
55 n75w	0.75	0.75	0.75	61.39	-0.17	-1.76	1.78	264	28.18	29.7	33.64	0.3079	0.3245	0.3352
56 n88w	0.875	0.875	0.875	80.86	0.05	-0.03	0.07	324	55.35	58.21	63.43	0.3127	0.3289	0.6571
57 n99w	1.0	1.0	1.0	95.41	0.0	0.0	0.01	0	84.2	88.59	96.46	0.3127	0.329	1.0

KE370-7N, 47/66

TUB-test chart KE37; Hue circle and colorimetric data
Measurement: LCD and CRT display, and LCD projector

input: $olv^* setrgbcolor$
output: no change compared to input

Colorimetric data of Television Luminous System TLS03a for CIE lightness $L^*_N=03$ of black

System:

TLS03a

Y Yellow

Projector:

$LCH^*_a = 83.1 \ 86.2 \ 101$

LCD

$LAB^*_a = 83.1 \ -16.3 \ 84.7$

L Leaf green

$LCH^*_a = 72.8 \ 87.9 \ 125$

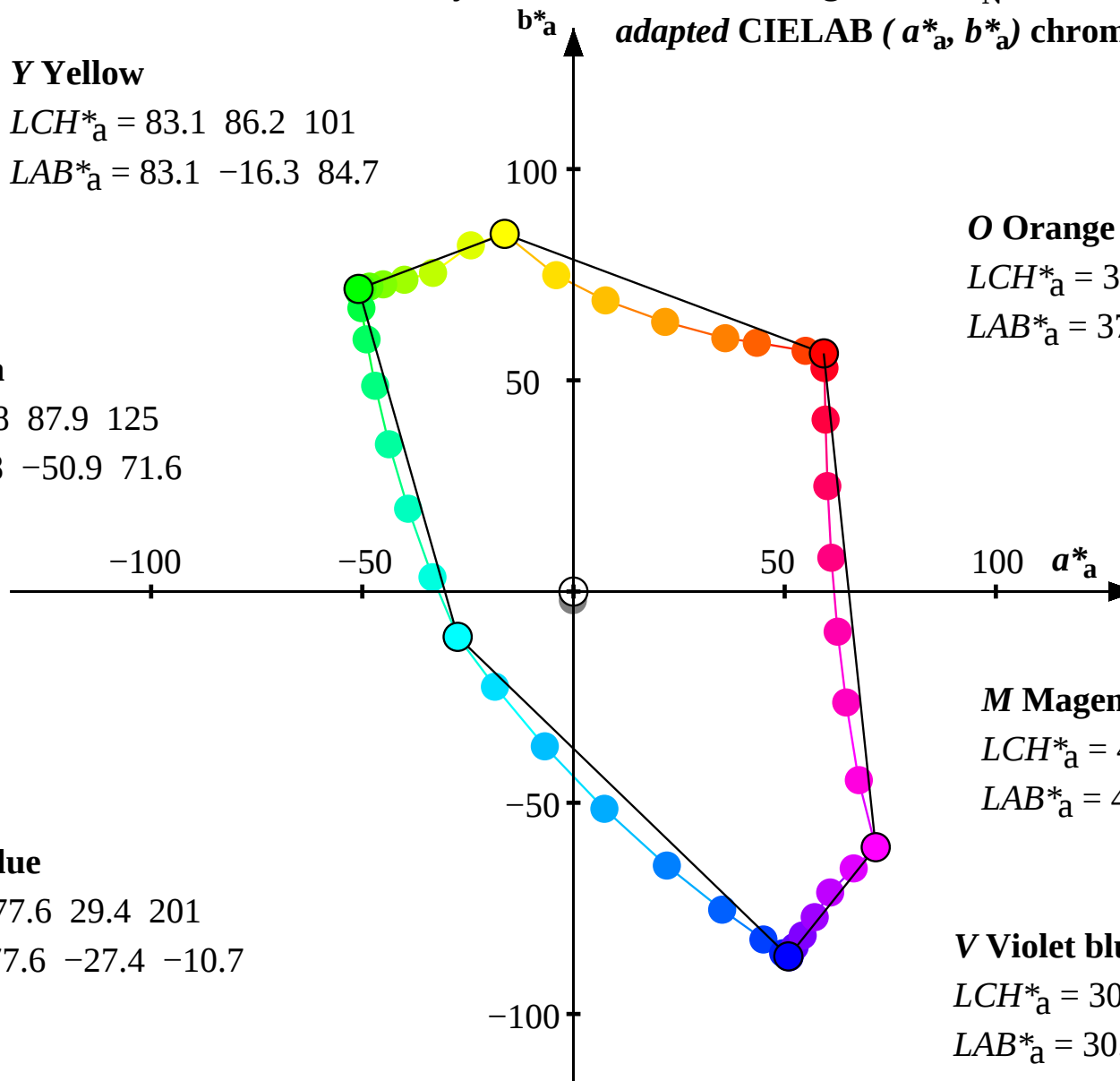
$LAB^*_a = 72.8 \ -50.9 \ 71.6$

C Cyan blue

$LCH^*_a = 77.6 \ 29.4 \ 201$

$LAB^*_a = 77.6 \ -27.4 \ -10.7$

adapted CIELAB (a^*_a , b^*_a) chroma diagram



Colorimetric data of Television Luminous System TLS00a for CIE lightness $L^*_{N=00}$ of black

System:

TLS00a

Projector:

LCD

Color	$r=olv^*_1$	$g=olv^*_2$	$b=olv^*_3$	$L^*_a=LAB^*_{1a}$	$a^*_a=LAB^*_{2a}$	$b^*_a=LAB^*_{3a}$	$C^*_{ab,a}=LAB^*_{ab,a}$	$h_{ab,a}$	$X_a=XYZ^*_{1a}$	$Y_a=XYZ^*_{2a}$	$Z_a=XYZ^*_{3a}$	x_a	y_a	$Y_a/88.59$
00 o00y	1.0	0.0	0.0	36.64	60.14	59.89	84.88	45	17.98	9.35	0.23	0.6525	0.3391	0.15
01 o13y	1.0	0.125	0.0	36.96	59.36	59.82	84.27	45	18.09	9.52	0.27	0.6489	0.3413	0.1527
02 o25y	1.0	0.25	0.0	38.4	55.69	60.54	82.25	47	18.58	10.32	0.4	0.6343	0.3522	0.1655
03 o38y	1.0	0.375	0.0	42.07	43.97	62.58	76.48	55	19.38	12.55	0.7	0.594	0.3846	0.2013
04 o50y	1.0	0.5	0.0	46.78	36.28	62.76	72.49	60	21.97	15.85	1.28	0.5619	0.4054	0.2544
05 o63y	1.0	0.625	0.0	53.92	21.94	65.75	69.31	72	25.7	21.9	2.24	0.5156	0.4394	0.3515
06 o75y	1.0	0.75	0.0	62.11	7.64	70.36	70.77	84	31.04	30.53	3.62	0.4761	0.4683	0.4899
07 o88y	1.0	0.875	0.0	70.54	-4.15	76.03	76.14	93	38.15	41.52	5.33	0.4488	0.4884	0.6662
08 y00l	1.0	1.0	0.0	83.08	-16.34	85.5	87.05	101	52.69	62.32	8.46	0.4267	0.5048	1.0
09 y13l	0.875	1.0	0.0	81.14	-24.37	82.84	86.35	106	46.63	58.73	8.26	0.4104	0.5169	0.9424
10 y25l	0.75	1.0	0.0	74.95	-33.4	76.37	83.36	114	35.07	48.2	7.08	0.3881	0.5335	0.7734
11 y38l	0.625	1.0	0.0	74.0	-40.23	74.73	84.87	118	31.95	46.7	7.08	0.3727	0.5447	0.7493
12 y50l	0.5	1.0	0.0	73.8	-45.34	73.66	86.5	122	29.86	45.74	7.08	0.3611	0.5532	0.7339
13 y63l	0.375	1.0	0.0	73.02	-48.56	73.02	87.7	124	28.62	45.19	7.09	0.3538	0.5586	0.7251
14 y75l	0.25	1.0	0.0	72.83	-50.28	72.71	88.41	125	27.97	44.9	7.08	0.3498	0.5616	0.7205
15 y88l	0.125	1.0	0.0	72.75	-51.03	72.56	88.71	125	27.7	44.79	7.09	0.3481	0.5628	0.7187
16 l00c	0.0	1.0	0.0	72.74	-51.16	72.53	88.76	125	27.66	44.77	7.09	0.3478	0.563	0.7184
17 l13c	0.0	1.0	0.125	72.78	-51.0	71.64	87.95	125	27.73	44.82	7.35	0.3471	0.561	0.7192
18 l25c	0.0	1.0	0.25	72.88	-50.49	67.84	84.57	127	27.98	44.98	8.48	0.3435	0.5524	0.7218
19 l38c	0.0	1.0	0.375	73.08	-49.33	60.28	77.9	129	28.49	45.29	11.05	0.3358	0.5338	0.7266
20 l50c	0.0	1.0	0.5	73.46	-47.23	49.16	68.18	134	29.46	45.87	15.79	0.3233	0.5034	0.736
21 l63c	0.0	1.0	0.625	74.1	-43.94	35.15	56.27	141	31.07	46.87	23.64	0.3059	0.4614	0.752
22 l75c	0.0	1.0	0.75	74.72	-39.36	19.71	44.03	153	33.07	47.84	34.77	0.2859	0.4135	0.7676
23 l88c	0.0	1.0	0.875	76.21	-33.56	3.44	33.74	174	36.64	50.24	51.22	0.2653	0.3638	0.8061
24 c00v	0.0	1.0	1.0	77.56	-27.51	-10.78	29.55	201	40.34	52.47	69.38	0.2487	0.3235	0.842
25 c13v	0.0	0.875	1.0	69.83	-18.71	-22.59	29.34	230	32.95	40.51	67.56	0.2337	0.2873	0.6501
26 c25v	0.0	0.75	1.0	60.64	-6.82	-36.88	37.52	260	25.74	28.84	65.72	0.214	0.2397	0.4627
27 c38v	0.0	0.675	1.0	51.3	7.35	-51.74	52.27	278	20.01	19.53	64.29	0.1927	0.1881	0.3134
28 c50v	0.0	0.5	1.0	42.9	22.36	-65.4	69.12	289	16.02	13.09	63.33	0.1733	0.1416	0.21
29 c63v	0.0	0.375	1.0	36.41	35.81	-76.05	84.07	295	13.63	9.22	62.73	0.1592	0.1078	0.148
30 c75v	0.0	0.25	1.0	32.11	45.89	-83.2	95.03	299	12.35	7.13	62.44	0.1508	0.0871	0.1145
31 c88v	0.0	0.125	1.0	30.13	50.78	-86.54	100.35	300	11.83	6.29	62.35	0.147	0.0782	0.1009
32 v00m	0.0	0.0	1.0	29.65	52.07	-87.36	101.71	301	11.71	6.09	62.34	0.1461	0.076	0.0978
33 v13m	0.125	0.0	1.0	29.89	52.33	-87.61	102.06	301	11.9	6.19	63.09	0.1466	0.0763	0.0993
34 v25m	0.25	0.0	1.0	30.04	52.53	-86.6	101.3	301	12.02	6.25	62.26	0.1493	0.0777	0.1003
35 v38m	0.375	0.0	1.0	30.88	53.51	-85.01	100.46	302	12.69	6.6	62.08	0.156	0.0811	0.1059
36 v50m	0.5	0.0	1.0	32.47	55.29	-82.3	99.16	304	14.02	7.29	62.11	0.1681	0.0874	0.117
37 v63m	0.625	0.0	1.0	34.81	58.03	-77.84	97.1	307	16.17	8.4	61.64	0.1875	0.0975	0.1349
38 v75m	0.75	0.0	1.0	37.85	61.58	-71.84	94.62	311	19.26	10.0	60.8	0.2139	0.1111	0.1605
39 v88m	0.875	0.0	1.0	43.2	67.07	-66.02	94.12	315	25.44	13.29	64.65	0.2461	0.1286	0.2133
40 m00o	1.0	0.0	1.0	48.11	72.19	-60.98	94.51	320	32.19	16.88	68.68	0.2734	0.1434	0.2709
41 m13o	1.0	0.0	0.875	44.16	68.22	-45.05	81.76	327	26.72	13.95	44.83	0.3125	0.1632	0.2238
42 m25o	1.0	0.0	0.75	41.12	65.33	-26.56	70.53	338	22.99	11.94	26.62	0.3735	0.194	0.1916
43 m38o	1.0	0.0	0.675	39.41	63.33	-9.6	64.05	351	20.98	10.9	15.83	0.4398	0.2285	0.1749
44 m50o	1.0	0.0	0.5	38.17	61.9	8.12	62.43	7	19.59	10.18	8.44	0.5127	0.2664	0.1634
45 m63o	1.0	0.0	0.375	37.38	61.03	25.73	66.23	23	18.76	9.75	3.97	0.5777	0.3001	0.1564
46 m75o	1.0	0.0	0.25	36.96	60.54	42.82	74.15	35	18.32	9.52	1.55	0.6234	0.3238	0.1527
47 m88o	1.0	0.0	0.125	36.78	60.29	56.46	82.6	43	18.12	9.42	0.49	0.6466	0.3361	0.1511
48 o00y	1.0	0.0	0.0	36.64	60.14	59.89	84.88	45	17.98	9.35	0.23	0.6525	0.3391	0.15
49 n00w	0.0	0.0	0.0	0.0	0.0	0.0	0.01	0	0.0	0.0	0.0	0.0	0.0	0.0
50 n13w	0.125	0.125	0.125	2.06	-0.45	-0.71	0.86	238	0.21	0.23	0.3	0.2807	0.3114	0.0037
51 n25w	0.25	0.25	0.25	10.74	-2.06	-2.06	2.1	259	1.15	1.23	1.52	0.2956	0.3142	0.0197
52 n38w	0.375	0.375	0.375	22.45	-0.22	-2.06	2.09	264	3.45	3.64	4.35	0.3014	0.3184	0.0584
53 n50w	0.5	0.5	0.5	34.27	-0.08	-2.1	2.12	267	7.72	8.14	9.52	0.3043	0.3205	0.1306
54 n63w	0.625	0.625	0.625	46.51	0.02	-2.12	2.13	270	14.87	15.65	18.07	0.3061	0.322	0.2511
55 n75w	0.75	0.75	0.75	61.23	-0.17	-1.78	1.79	264	28.0	29.51	33.44	0.3079	0.3245	0.4735
56 n88w	0.875	0.875	0.875	80.8	0.05	-0.03	0.07	324	55.26	58.12	63.32	0.3127	0.3289	0.9326
57 n99w	1.0	1.0	1.0	95.41	0.0	0.0	0.01	0	84.2	88.59	96.46	0.3127	0.329	1.4215

$$n = 88.59 / (88.59 - 0.28) = 1.003$$

TUB-test chart KE37; Hue circle and colorimetric data
Measurement: LCD and CRT display, and LCD projector

input: $olv^* setrgbcolor$
output: no change compared to input

Colorimetric data of Television Luminous System TLS00a for CIE lightness $L^*_N=00$ of black

System:

TLS00a

Y Yellow

Projector:

$LCH^*_a = 83.1 \ 87.1 \ 101$

LCD

$LAB^*_a = 83.1 \ -16.3 \ 85.5$

L Leaf green

$LCH^*_a = 72.7 \ 88.8 \ 125$

$LAB^*_a = 72.7 \ -51.2 \ 72.5$

C Cyan blue

$LCH^*_a = 77.6 \ 29.6 \ 201$

$LAB^*_a = 77.6 \ -27.5 \ -10.8$

O Orange red

$LCH^*_a = 36.6 \ 84.9 \ 45$

$LAB^*_a = 36.6 \ 60.1 \ 59.9$

M Magenta red

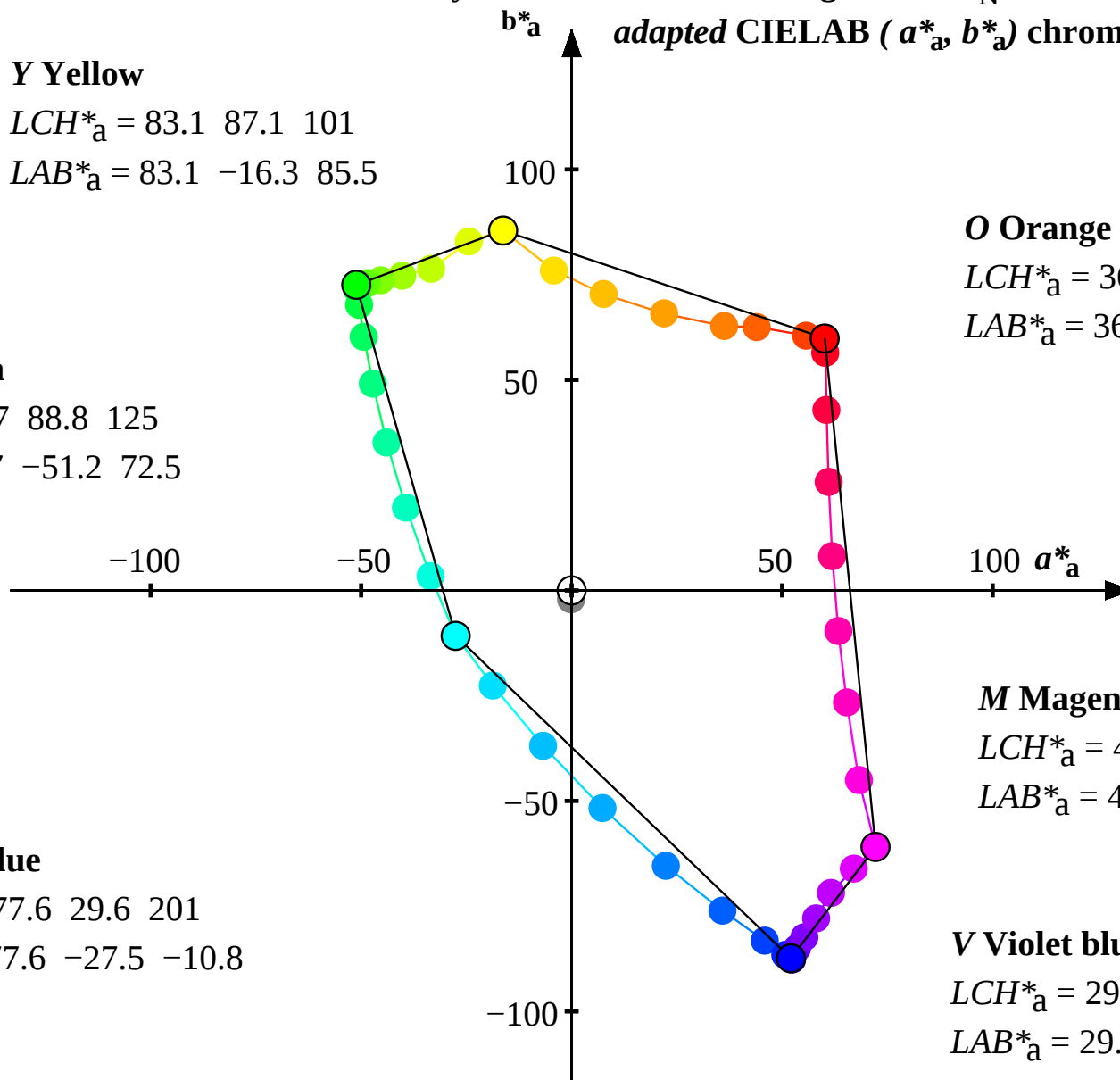
$LCH^*_a = 48.1 \ 94.5 \ 320$

$LAB^*_a = 48.1 \ 72.2 \ -61.0$

V Violet blue

$LCH^*_a = 29.6 \ 101.7 \ 301$

$LAB^*_a = 29.6 \ 52.1 \ -87.4$



Colorimetric data of Television Luminous System TLS00a for CIE lightness $L^*_N=00$ of black

System:

TLS00a

Projector:

LCD

Reflection:

 $Y_N = 0.0$ $L^*_N = 0.0$

Color	$r=olv*_1$	$g=olv*_2$	$b=olv*_3$	$L^*_a=LAB^*_{1a}$	$a^*_a=LAB^*_{2a}$	$b^*_a=LAB^*_{3a}$	$C^*_{ab,a}=LAB^*_{ab,a}$	$h_{ab,a}$	$X_a=XYZ^*_{1a}$	$Y_a=XYZ^*_{2a}$	$Z_a=XYZ^*_{3a}$	x_a	y_a	$Y_a/88.59$
00 o00y	1.0	0.0	0.0	36.64	60.14	59.89	84.88	45	17.98	9.35	0.23	0.6525	0.3391	0.15
01 o13y	1.0	0.125	0.0	36.96	59.36	59.82	84.27	45	18.09	9.52	0.27	0.6489	0.3413	0.1527
02 o25y	1.0	0.25	0.0	38.4	55.69	60.54	82.25	47	18.58	10.32	0.4	0.6343	0.3522	0.1655
03 o38y	1.0	0.375	0.0	42.07	43.97	62.58	76.48	55	19.38	12.55	0.7	0.594	0.3846	0.2013
04 o50y	1.0	0.5	0.0	46.78	36.28	62.76	72.49	60	21.97	15.85	1.28	0.5619	0.4054	0.2544
05 o63y	1.0	0.625	0.0	53.92	21.94	65.75	69.31	72	25.7	21.9	2.24	0.5156	0.4394	0.3515
06 o75y	1.0	0.75	0.0	62.11	7.64	70.36	70.77	84	31.04	30.53	3.62	0.4761	0.4683	0.4899
07 o88y	1.0	0.875	0.0	70.54	-4.15	76.03	76.14	93	38.15	41.52	5.33	0.4488	0.4884	0.6662
08 y00l	1.0	1.0	0.0	83.08	-16.34	85.5	87.05	101	52.69	62.32	8.46	0.4267	0.5048	1.0
09 y13l	0.875	1.0	0.0	81.14	-24.37	82.84	86.35	106	46.63	58.73	8.26	0.4104	0.5169	0.9424
10 y25l	0.75	1.0	0.0	74.95	-33.4	76.37	83.36	114	35.07	48.2	7.08	0.3881	0.5335	0.7734
11 y38l	0.625	1.0	0.0	74.0	-40.23	74.73	84.87	118	31.95	46.7	7.08	0.3727	0.5447	0.7493
12 y50l	0.5	1.0	0.0	73.38	-45.34	73.66	86.5	122	29.86	45.74	7.08	0.3611	0.5532	0.7339
13 y63l	0.375	1.0	0.0	73.02	-48.56	73.02	87.7	124	28.62	45.19	7.09	0.3538	0.5586	0.7251
14 y75l	0.25	1.0	0.0	72.83	-50.28	72.71	88.41	125	27.97	44.9	7.08	0.3498	0.5616	0.7205
15 y88l	0.125	1.0	0.0	72.75	-51.03	72.56	88.71	125	27.7	44.79	7.09	0.3481	0.5628	0.7187
16 l00c	0.0	1.0	0.0	72.74	-51.16	72.53	88.76	125	27.66	44.77	7.09	0.3478	0.563	0.7184
17 l13c	0.0	1.0	0.125	72.78	-51.0	71.64	87.95	125	27.73	44.82	7.35	0.3471	0.561	0.7192
18 l25c	0.0	1.0	0.25	72.88	-50.49	67.84	84.57	127	27.98	44.98	8.48	0.3435	0.5524	0.7218
19 l38c	0.0	1.0	0.375	73.08	-49.33	60.28	77.9	129	28.49	45.29	11.05	0.3358	0.5338	0.7266
20 l50c	0.0	1.0	0.5	73.46	-47.23	49.16	68.18	134	29.46	45.87	15.79	0.3233	0.5034	0.736
21 l63c	0.0	1.0	0.625	74.1	-43.94	35.15	56.27	141	31.07	46.87	23.64	0.3059	0.4614	0.752
22 l75c	0.0	1.0	0.75	74.72	-39.36	19.71	44.03	153	33.07	47.84	34.77	0.2859	0.4135	0.7676
23 l88c	0.0	1.0	0.875	76.21	-33.56	3.44	33.74	174	36.64	50.24	51.22	0.2653	0.3638	0.8061
24 c00v	0.0	1.0	1.0	77.56	-27.51	-10.78	29.55	201	40.34	52.47	69.38	0.2487	0.3235	0.842
25 c13v	0.0	0.875	1.0	69.83	-18.71	-22.59	29.34	230	32.95	40.51	67.56	0.2337	0.2873	0.6501
26 c25v	0.0	0.75	1.0	60.64	-6.82	-36.88	37.52	260	25.74	28.84	65.72	0.214	0.2397	0.4627
27 c38v	0.0	0.675	1.0	51.3	7.35	-51.74	52.27	278	20.01	19.53	64.29	0.1927	0.1881	0.3134
28 c50v	0.0	0.5	1.0	42.9	22.36	-65.4	69.12	289	16.02	13.09	63.33	0.1733	0.1416	0.21
29 c63v	0.0	0.375	1.0	36.41	35.81	-76.05	84.07	295	13.63	9.22	62.73	0.1592	0.1078	0.148
30 c75v	0.0	0.25	1.0	32.11	45.89	-83.2	95.03	299	12.35	7.13	62.44	0.1508	0.0871	0.1145
31 c88v	0.0	0.125	1.0	30.13	50.78	-86.54	100.35	300	11.83	6.29	62.35	0.147	0.0782	0.1009
32 v00m	0.0	0.0	1.0	29.65	52.07	-87.36	101.71	301	11.71	6.09	62.34	0.1461	0.076	0.0978
33 v13m	0.125	0.0	1.0	29.89	52.33	-87.61	102.06	301	11.9	6.19	63.09	0.1466	0.0763	0.0993
34 v25m	0.25	0.0	1.0	30.04	52.53	-86.6	101.3	301	12.02	6.25	62.26	0.1493	0.0777	0.1003
35 v38m	0.375	0.0	1.0	30.88	53.51	-85.01	100.46	302	12.69	6.6	62.08	0.156	0.0811	0.1059
36 v50m	0.5	0.0	1.0	32.47	55.29	-82.3	99.16	304	14.02	7.29	62.11	0.1681	0.0874	0.117
37 v63m	0.625	0.0	1.0	34.81	58.03	-77.84	97.1	307	16.17	8.4	61.64	0.1875	0.0975	0.1349
38 v75m	0.75	0.0	1.0	37.85	61.58	-71.84	94.62	311	19.26	10.0	60.8	0.2139	0.1111	0.1605
39 v88m	0.875	0.0	1.0	43.2	67.07	-66.02	94.12	315	25.44	13.29	64.65	0.2461	0.1286	0.2133
40 m00o	1.0	0.0	1.0	48.11	72.19	-60.98	94.51	320	32.19	16.88	68.68	0.2734	0.1434	0.2709
41 m13o	1.0	0.0	0.875	44.16	68.22	-45.05	81.76	327	26.72	13.95	44.83	0.3125	0.1632	0.2238
42 m25o	1.0	0.0	0.75	41.12	65.33	-26.56	70.53	338	22.99	11.94	26.62	0.3735	0.194	0.1916
43 m38o	1.0	0.0	0.675	39.41	63.33	-9.6	64.05	351	20.98	10.9	15.83	0.4398	0.2285	0.1749
44 m50o	1.0	0.0	0.5	38.17	61.9	8.12	62.43	7	19.59	10.18	8.44	0.5127	0.2664	0.1634
45 m63o	1.0	0.0	0.375	37.38	61.03	25.73	66.23	23	18.76	9.75	3.97	0.5777	0.3001	0.1564
46 m75o	1.0	0.0	0.25	36.96	60.54	42.82	74.15	35	18.32	9.52	1.55	0.6234	0.3238	0.1527
47 m88o	1.0	0.0	0.125	36.78	60.29	56.46	82.6	43	18.12	9.42	0.49	0.6466	0.3361	0.1511
48 o00y	1.0	0.0	0.0	36.64	60.14	59.89	84.88	45	17.98	9.35	0.23	0.6525	0.3391	0.15
49 n00w	0.0	0.0	0.0	0.0	0.0	0.0	0.01	0	0.0	0.0	0.0	0.0	0.0	0.0
50 n13w	0.125	0.125	0.125	2.06	-0.45	-0.71	0.86	238	0.21	0.23	0.3	0.2807	0.3114	0.0037
51 n25w	0.25	0.25	0.25	10.74	-2.06	-2.06	2.1	259	1.15	1.23	1.52	0.2956	0.3142	0.0197
52 n38w	0.375	0.375	0.375	22.45	-0.22	-2.06	2.09	264	3.45	3.64	4.35	0.3014	0.3184	0.0584
53 n50w	0.5	0.5	0.5	34.27	-0.08	-2.1	2.12	267	7.72	8.14	9.52	0.3043	0.3205	0.1306
54 n63w	0.625	0.625	0.625	46.51	0.02	-2.12	2.13	270	14.87	15.65	18.07	0.3061	0.322	0.2511
55 n75w	0.75	0.75	0.75	61.23	-0.17	-1.78	1.79	264	28.0	29.51	33.44	0.3079	0.3245	0.4735
56 n88w	0.875	0.875	0.875	80.8	0.05	-0.03	0.07	324	55.26	58.12	63.32	0.3127	0.3289	0.9326
57 n99w	1.0	1.0	1.0	95.41	0.0	0.0	0.01	0	84.2	88.59	96.46	0.3127	0.329	1.4215

KE370-7N, 51/66

 $n = 88.59 / (88.59 - 0.28) = 1.003$ TUB-test chart KE37; Hue circle and colorimetric data
Measurement: LCD and CRT display, and LCD projectorinput: $olv^* setrgbcolor$
output: no change compared to input

Colorimetric data of Television Luminous System TLS00a for CIE lightness $L^*_N=00$ of black

System:

TLS00a **Y Yellow**

Projector: $LCH^*_a = 83.1 \ 87.1 \ 101$

LCD $LAB^*_a = 83.1 \ -16.3 \ 85.5$

Reflection:

$Y_N = 0.0$

$L^*_N = 0.0$

L Leaf green

$LCH^*_a = 72.7 \ 88.8 \ 125$

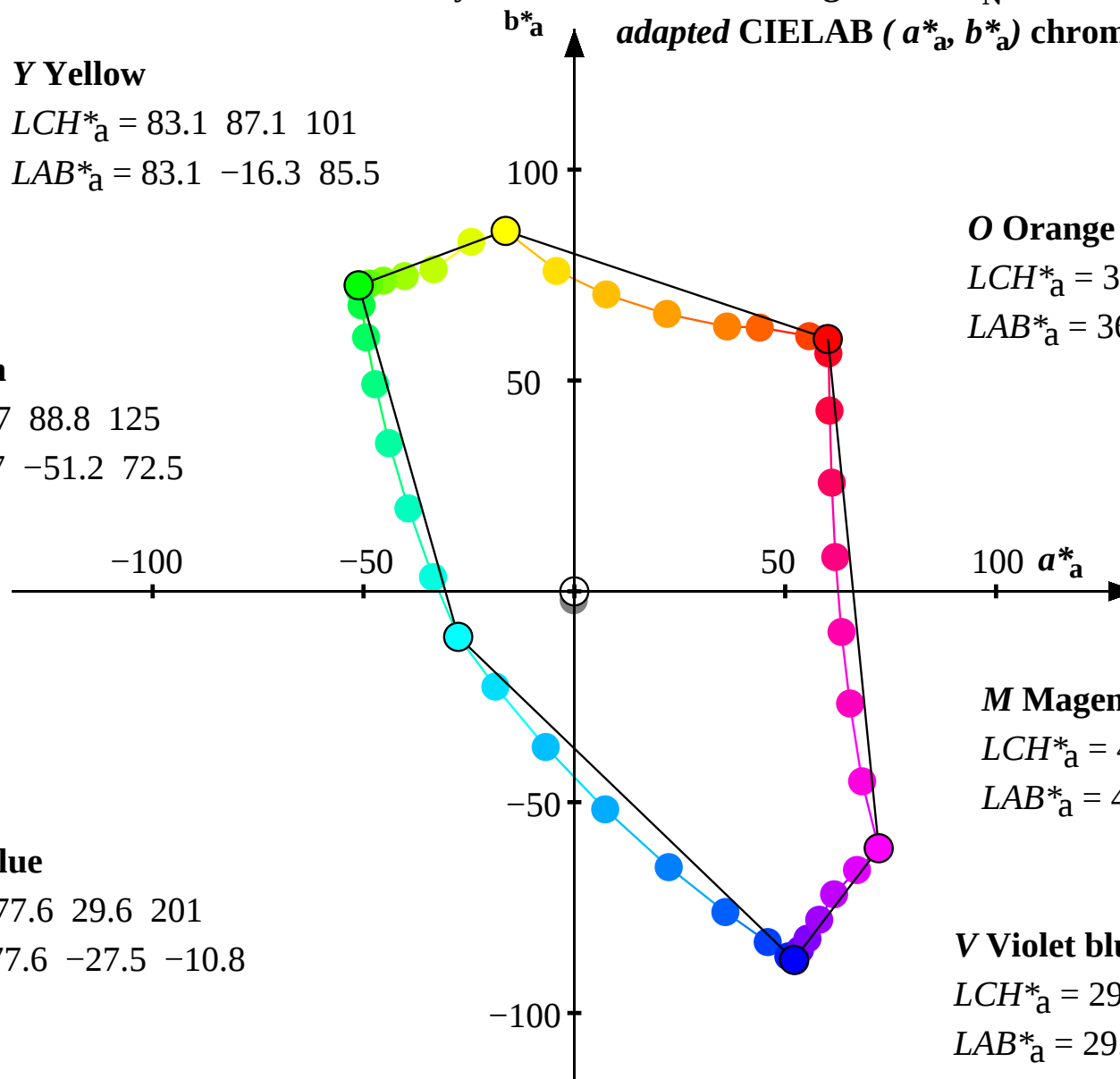
$LAB^*_a = 72.7 \ -51.2 \ 72.5$

C Cyan blue

$LCH^*_a = 77.6 \ 29.6 \ 201$

$LAB^*_a = 77.6 \ -27.5 \ -10.8$

*adapted CIELAB (a^*_a , b^*_a) chroma diagram*



O Orange red

$LCH^*_a = 36.6 \ 84.9 \ 45$

$LAB^*_a = 36.6 \ 60.1 \ 59.9$

M Magenta red

$LCH^*_a = 48.1 \ 94.5 \ 320$

$LAB^*_a = 48.1 \ 72.2 \ -61.0$

V Violet blue

$LCH^*_a = 29.6 \ 101.7 \ 301$

$LAB^*_a = 29.6 \ 52.1 \ -87.4$

Colorimetric data of Television Luminous System TLS06a for CIE lightness $L^*_N=06$ of black

System:

TLS06a

Projector:

LCD

Reflection:

 $Y_N = 0.63$ $L^*_N = 5.69$

Color	$r=olv*1$	$g=olv*2$	$b=olv*3$	$L^*_a=LAB*1a$	$a^*_a=LAB*2a$	$b^*_a=LAB*3a$	$C^*_{ab,a}=LAB*ab,a$	$h_{ab,a}$	$X_a=XYZ1a$	$Y_a=XYZ2a$	$Z_a=XYZ3a$	x_a	y_a	$Y_a/88.59$
00 o00y	1.0	0.0	0.0	37.68	58.16	51.89	77.94	42	18.45	9.91	0.91	0.6303	0.3385	0.1585
01 o13y	1.0	0.125	0.0	37.98	57.42	51.8	77.33	42	18.56	10.08	0.96	0.6272	0.3405	0.1612
02 o25y	1.0	0.25	0.0	39.36	53.95	52.48	75.27	44	19.04	10.87	1.08	0.6144	0.3507	0.1739
03 o38y	1.0	0.375	0.0	42.89	42.74	54.94	69.61	52	19.84	13.09	1.38	0.5783	0.3815	0.2094
04 o50y	1.0	0.5	0.0	47.45	35.41	57.01	67.12	58	22.42	16.37	1.96	0.5502	0.4018	0.2619
05 o63y	1.0	0.625	0.0	54.43	21.51	61.62	65.27	71	26.12	22.38	2.91	0.5081	0.4353	0.358
06 o75y	1.0	0.75	0.0	62.46	7.52	67.27	67.69	84	31.42	30.95	4.28	0.4714	0.4643	0.4951
07 o88y	1.0	0.875	0.0	70.77	-4.1	73.57	73.69	93	38.48	41.85	5.98	0.4458	0.4849	0.6695
08 y00l	1.0	1.0	0.0	83.18	-16.18	83.62	85.17	101	52.91	62.51	9.08	0.425	0.5021	1.0
09 y13l	0.875	1.0	0.0	81.26	-24.12	80.95	84.47	107	46.89	58.94	8.88	0.4088	0.5138	0.943
10 y25l	0.75	1.0	0.0	75.13	-32.99	74.34	81.34	114	35.42	48.49	7.72	0.3865	0.5292	0.7757
11 y38l	0.625	1.0	0.0	74.19	-39.71	72.72	82.86	119	32.33	47.0	7.72	0.3714	0.5399	0.7518
12 y50l	0.5	1.0	0.0	73.57	-44.73	71.67	84.49	122	30.24	46.04	7.72	0.36	0.5481	0.7366
13 y63l	0.375	1.0	0.0	73.22	-47.89	71.03	85.68	124	29.01	45.5	7.72	0.3528	0.5533	0.7278
14 y75l	0.25	1.0	0.0	73.03	-49.59	70.73	86.38	125	28.37	45.21	7.72	0.3489	0.5561	0.7233
15 y88l	0.125	1.0	0.0	72.96	-50.32	70.58	86.68	125	28.1	45.1	7.73	0.3473	0.5573	0.7215
16 l00c	0.0	1.0	0.0	72.95	-50.44	70.55	86.73	126	28.06	45.08	7.73	0.347	0.5575	0.7212
17 l13c	0.0	1.0	0.125	72.98	-50.29	69.72	85.97	126	28.13	45.13	7.98	0.3463	0.5555	0.7221
18 l25c	0.0	1.0	0.25	73.08	-49.79	66.14	82.8	127	28.38	45.29	9.1	0.3428	0.5472	0.7246
19 l38c	0.0	1.0	0.375	73.28	-48.66	58.95	76.44	130	28.88	45.59	11.66	0.3353	0.5293	0.7294
20 l50c	0.0	1.0	0.5	73.66	-46.6	48.24	67.08	134	29.85	46.18	16.37	0.323	0.4998	0.7387
21 l63c	0.0	1.0	0.625	74.29	-43.37	34.6	55.49	141	31.45	47.16	24.16	0.306	0.4589	0.7545
22 l75c	0.0	1.0	0.75	74.9	-38.86	19.46	43.47	153	33.43	48.13	35.21	0.2863	0.4122	0.7699
23 l88c	0.0	1.0	0.875	76.38	-33.16	3.4	33.34	174	36.98	50.51	51.54	0.266	0.3633	0.808
24 c00v	0.0	1.0	1.0	77.72	-27.2	-10.67	29.23	201	40.66	52.73	69.57	0.2495	0.3236	0.8436
25 c13v	0.0	0.875	1.0	70.07	-18.46	-22.34	29.0	230	33.31	40.85	67.76	0.2347	0.2878	0.6536
26 c25v	0.0	0.75	1.0	61.01	-6.7	-36.42	37.05	260	26.16	29.26	65.94	0.2155	0.2411	0.4681
27 c38v	0.0	0.675	1.0	51.86	7.19	-50.97	51.49	278	20.47	20.02	64.52	0.1949	0.1907	0.3203
28 c50v	0.0	0.5	1.0	43.69	21.7	-64.23	67.81	289	16.51	13.62	63.57	0.1762	0.1454	0.218
29 c63v	0.0	0.375	1.0	37.46	34.47	-74.46	82.06	295	14.13	9.79	62.97	0.1626	0.1126	0.1566
30 c75v	0.0	0.25	1.0	33.38	43.86	-81.23	92.33	298	12.86	7.71	62.68	0.1545	0.0926	0.1234
31 c88v	0.0	0.125	1.0	31.52	48.36	-84.36	97.25	300	12.34	6.87	62.6	0.1508	0.084	0.11
32 v00m	0.0	0.0	1.0	31.07	49.54	-85.13	98.51	300	12.23	6.68	62.59	0.1501	0.082	0.1069
33 v13m	0.125	0.0	1.0	31.29	49.83	-85.4	98.88	300	12.41	6.78	63.33	0.1504	0.0821	0.1084
34 v25m	0.25	0.0	1.0	31.44	50.04	-84.42	98.14	301	12.54	6.84	62.5	0.1531	0.0835	0.1094
35 v38m	0.375	0.0	1.0	32.22	51.1	-82.91	97.4	302	13.2	7.18	62.32	0.1596	0.0869	0.1149
36 v50m	0.5	0.0	1.0	33.71	53.01	-80.36	96.28	303	14.52	7.87	62.36	0.1713	0.0929	0.1259
37 v63m	0.625	0.0	1.0	35.94	55.92	-76.12	94.46	306	16.65	8.97	61.89	0.1903	0.1025	0.1436
38 v75m	0.75	0.0	1.0	38.83	59.66	-70.37	92.26	310	19.72	10.56	61.05	0.2159	0.1157	0.169
39 v88m	0.875	0.0	1.0	43.98	65.44	-64.87	92.15	315	25.86	13.83	64.88	0.2473	0.1322	0.2212
40 m00o	1.0	0.0	1.0	48.75	70.77	-60.04	92.81	320	32.56	17.39	68.88	0.274	0.1464	0.2782
41 m13o	1.0	0.0	0.875	44.91	66.64	-44.16	79.94	326	27.12	14.48	45.2	0.3125	0.1668	0.2317
42 m25o	1.0	0.0	0.75	41.98	63.6	-25.86	68.66	338	23.43	12.49	27.12	0.3717	0.1981	0.1998
43 m38o	1.0	0.0	0.675	40.33	61.5	-9.27	62.2	351	21.43	11.45	16.4	0.4348	0.2324	0.1832
44 m50o	1.0	0.0	0.5	39.14	60.0	7.73	60.5	7	20.05	10.74	9.07	0.5031	0.2694	0.1718
45 m63o	1.0	0.0	0.375	38.39	59.08	23.98	63.77	22	19.23	10.31	4.63	0.5628	0.3017	0.1649
46 m75o	1.0	0.0	0.25	37.98	58.57	38.38	70.03	33	18.78	10.08	2.23	0.6042	0.3242	0.1612
47 m88o	1.0	0.0	0.125	37.81	58.31	48.66	75.95	40	18.59	9.98	1.17	0.6251	0.3356	0.1597
48 o00y	1.0	0.0	0.0	37.68	58.16	51.89	77.94	42	18.45	9.91	0.91	0.6303	0.3385	0.1585
49 n00w	0.0	0.0	0.0	5.69	0.0	0.0	0.01	0	0.6	0.63	0.69	0.3127	0.329	0.0101
50 n13w	0.125	0.125	0.125	7.74	-0.44	-0.71	0.85	238	0.8	0.86	0.98	0.3039	0.3242	0.0137
51 n25w	0.25	0.25	0.25	14.66	-0.28	-1.58	1.61	260	1.74	1.85	2.2	0.3013	0.3191	0.0295
52 n38w	0.375	0.375	0.375	24.47	-0.2	-1.86	1.88	264	4.02	4.25	5.0	0.303	0.3199	0.0679
53 n50w	0.5	0.5	0.5	35.42	-0.08	-2.0	2.01	267	8.27	8.71	10.14	0.3049	0.3211	0.1393
54 n63w	0.625	0.625	0.625	47.19	0.02	-2.06	2.07	270	15.37	16.17	18.63	0.3064	0.3223	0.2586
55 n75w	0.75	0.75	0.75	61.59	-0.16	-1.75	1.76	264	28.4	29.93	33.89	0.308	0.3246	0.4788
56 n88w	0.875	0.875	0.875	80.92	0.05	-0.03	0.06	324	55.46	58.33	63.56	0.3127	0.3289	0.9332
57 n99w	1.0	1.0	1.0	95.41	0.0	0.0	0.01	0	84.2	88.59	96.46	0.3127	0.329	1.4173

KE370-7N, 53/66

 $n = 88.59 / (88.59 - 0.28) = 1.003$

TUB-test chart KE37; Hue circle and colorimetric data
Measurement: LCD and CRT display, and LCD projector

input: $olv^* setrgbcolor$
output: no change compared to input

Colorimetric data of Television Luminous System TLS06a for CIE lightness $L^*_N=06$ of black

System:

TLS06a Y Yellow

Projector: $LCH^*_a = 83.2 \ 85.2 \ 101$

LCD $LAB^*_a = 83.2 \ -16.2 \ 83.6$

Reflection:

$Y_N = 0.63$

$L^*_N = 5.69$

L Leaf green

$LCH^*_a = 72.9 \ 86.7 \ 126$

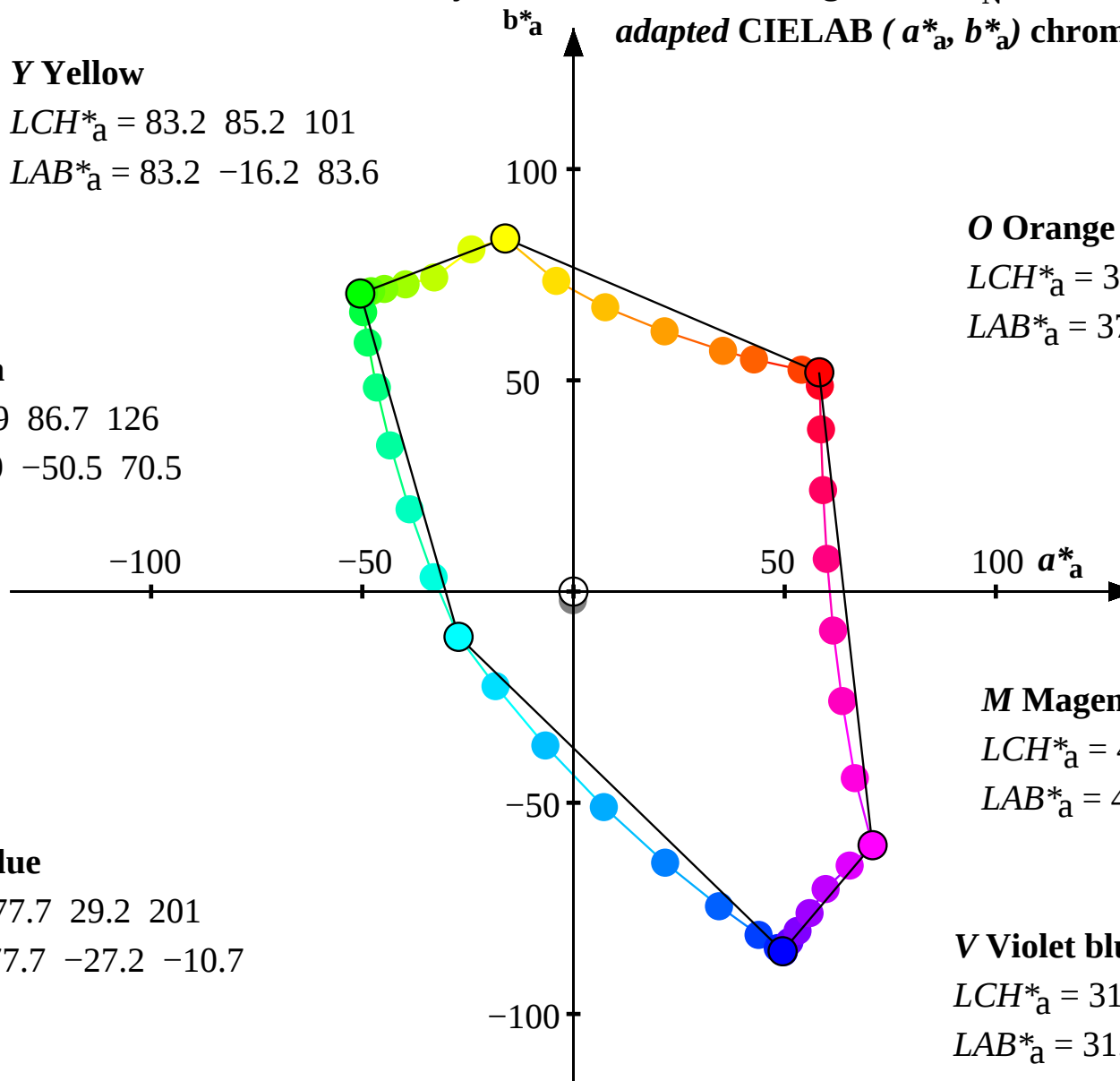
$LAB^*_a = 72.9 \ -50.5 \ 70.5$

C Cyan blue

$LCH^*_a = 77.7 \ 29.2 \ 201$

$LAB^*_a = 77.7 \ -27.2 \ -10.7$

b^*_a adapted CIELAB (a^*_a, b^*_a) chroma diagram



O Orange red

$LCH^*_a = 37.7 \ 77.9 \ 42$

$LAB^*_a = 37.7 \ 58.2 \ 51.9$

M Magenta red

$LCH^*_a = 48.8 \ 92.8 \ 320$

$LAB^*_a = 48.8 \ 70.8 \ -60.0$

V Violet blue

$LCH^*_a = 31.1 \ 98.5 \ 300$

$LAB^*_a = 31.1 \ 49.5 \ -85.1$

Colorimetric data of Television Luminous System TLS11a for CIE lightness $L^*_N=11$ of black

System:

TLS11a

Projector:

LCD

Reflection:

 $Y_N = 1.26$ $L^*_N = 11.0$

Color	$r=olv*_1$	$g=olv*_2$	$b=olv*_3$	$L^*_a=LAB^*_1a$	$a^*_a=LAB^*_2a$	$b^*_a=LAB^*_3a$	$C^*_{ab,a}=LAB^*_{ab,a}$	$h_{ab,a}$	$X_a=XYZ^*_1a$	$Y_a=XYZ^*_2a$	$Z_a=XYZ^*_3a$	x_a	y_a	$Y_a/88.59$
00 o00y	1.0	0.0	0.0	38.68	56.29	45.3	72.26	39	18.93	10.47	1.6	0.6105	0.3379	0.1671
01 o13y	1.0	0.125	0.0	38.97	55.6	45.37	71.76	39	19.03	10.64	1.64	0.6078	0.3398	0.1697
02 o25y	1.0	0.25	0.0	40.29	52.32	46.46	69.97	42	19.51	11.43	1.76	0.5966	0.3495	0.1823
03 o38y	1.0	0.375	0.0	43.69	41.57	49.64	64.75	50	20.3	13.63	2.06	0.5641	0.3787	0.2174
04 o50y	1.0	0.5	0.0	48.12	34.58	52.7	63.03	57	22.86	16.89	2.63	0.5394	0.3985	0.2693
05 o63y	1.0	0.625	0.0	54.92	21.1	58.2	61.9	70	26.53	22.85	3.58	0.5009	0.4314	0.3645
06 o75y	1.0	0.75	0.0	62.81	7.4	64.54	64.96	83	31.79	31.36	4.94	0.4669	0.4605	0.5002
07 o88y	1.0	0.875	0.0	71.0	-4.05	71.32	71.43	93	38.81	42.19	6.63	0.4429	0.4815	0.6729
08 y00l	1.0	1.0	0.0	83.28	-16.03	81.83	83.38	101	53.13	62.69	9.71	0.4233	0.4994	1.0
09 y13l	0.875	1.0	0.0	81.38	-23.87	79.16	82.68	107	47.16	59.16	9.51	0.4072	0.5107	0.9435
10 y25l	0.75	1.0	0.0	75.31	-32.59	72.44	79.44	114	35.76	48.77	8.36	0.385	0.525	0.778
11 y38l	0.625	1.0	0.0	74.38	-39.19	70.84	80.96	119	32.7	47.29	8.35	0.3701	0.5353	0.7543
12 y50l	0.5	1.0	0.0	73.77	-44.13	69.8	82.58	122	30.63	46.35	8.35	0.3589	0.5432	0.7393
13 y63l	0.375	1.0	0.0	73.42	-47.24	69.17	83.77	124	29.41	45.8	8.36	0.3519	0.5481	0.7306
14 y75l	0.25	1.0	0.0	73.24	-48.9	68.87	84.47	125	28.77	45.52	8.36	0.3481	0.5508	0.7261
15 y88l	0.125	1.0	0.0	73.16	-49.62	68.72	84.76	126	28.51	45.41	8.36	0.3465	0.5519	0.7243
16 l00c	0.0	1.0	0.0	73.15	-49.74	68.69	84.81	126	28.46	45.39	8.36	0.3462	0.5521	0.724
17 l13c	0.0	1.0	0.125	73.18	-49.6	67.91	84.1	126	28.54	45.45	8.61	0.3455	0.5502	0.7249
18 l25c	0.0	1.0	0.25	73.29	-49.1	64.53	81.1	127	28.78	45.6	9.73	0.3421	0.5422	0.7274
19 l38c	0.0	1.0	0.375	73.48	-47.99	57.67	75.04	130	29.28	45.9	12.27	0.3348	0.5249	0.7321
20 l50c	0.0	1.0	0.5	73.86	-45.97	47.35	66.0	134	30.24	46.48	16.94	0.3228	0.4963	0.7414
21 l63c	0.0	1.0	0.625	74.48	-42.8	34.07	54.71	141	31.82	47.46	24.67	0.3061	0.4565	0.757
22 l75c	0.0	1.0	0.75	75.09	-38.37	19.2	42.92	153	33.79	48.42	35.65	0.2867	0.4108	0.7722
23 l88c	0.0	1.0	0.875	76.55	-32.76	3.37	32.95	174	37.32	50.78	51.86	0.2666	0.3628	0.81
24 c00v	0.0	1.0	1.0	77.87	-26.89	-10.57	28.91	201	40.97	52.99	69.77	0.2502	0.3236	0.8452
25 c13v	0.0	0.875	1.0	70.31	-18.21	-22.1	28.65	231	33.68	41.2	67.97	0.2358	0.2884	0.6571
26 c25v	0.0	0.75	1.0	61.38	-6.59	-35.97	36.58	260	26.57	29.69	66.16	0.2171	0.2425	0.4735
27 c38v	0.0	0.675	1.0	52.41	7.03	-50.22	50.72	278	20.92	20.51	64.75	0.197	0.1932	0.3272
28 c50v	0.0	0.5	1.0	44.46	21.07	-63.1	66.54	288	16.99	14.16	63.8	0.179	0.1491	0.2259
29 c63v	0.0	0.375	1.0	38.46	33.22	-72.93	80.15	294	14.63	10.35	63.21	0.1659	0.1174	0.1651
30 c75v	0.0	0.25	1.0	34.58	42.02	-79.37	89.81	298	13.37	8.29	62.92	0.1581	0.098	0.1323
31 c88v	0.0	0.125	1.0	32.83	46.18	-82.31	94.39	299	12.86	7.46	62.84	0.1546	0.0897	0.119
32 v00m	0.0	0.0	1.0	32.41	47.27	-83.04	95.56	300	12.74	7.27	62.83	0.1538	0.0877	0.1159
33 v13m	0.125	0.0	1.0	32.62	47.57	-83.32	95.95	300	12.93	7.36	63.57	0.1542	0.0878	0.1174
34 v25m	0.25	0.0	1.0	32.75	47.79	-82.36	95.23	300	13.05	7.42	62.74	0.1568	0.0892	0.1184
35 v38m	0.375	0.0	1.0	33.49	48.9	-80.94	94.57	301	13.71	7.77	62.57	0.1631	0.0924	0.1239
36 v50m	0.5	0.0	1.0	34.9	50.91	-78.53	93.6	303	15.02	8.45	62.6	0.1745	0.0982	0.1348
37 v63m	0.625	0.0	1.0	37.01	53.96	-74.48	91.98	306	17.13	9.54	62.14	0.1929	0.1075	0.1522
38 v75m	0.75	0.0	1.0	39.78	57.86	-68.96	90.02	310	20.18	11.12	61.3	0.2179	0.1201	0.1774
39 v88m	0.875	0.0	1.0	44.75	63.88	-63.74	90.25	315	26.28	14.36	65.1	0.2485	0.1358	0.2291
40 m00o	1.0	0.0	1.0	49.38	69.39	-59.12	91.17	320	32.93	17.9	69.08	0.2746	0.1493	0.2855
41 m13o	1.0	0.0	0.875	45.65	65.11	-43.29	78.2	326	27.53	15.01	45.56	0.3125	0.1704	0.2394
42 m25o	1.0	0.0	0.75	42.81	61.94	-25.19	66.87	338	23.86	13.03	27.61	0.3699	0.202	0.2079
43 m38o	1.0	0.0	0.675	41.23	59.77	-8.96	60.44	351	21.88	12.01	16.97	0.4302	0.2361	0.1915
44 m50o	1.0	0.0	0.5	40.08	58.21	7.38	58.68	7	20.51	11.3	9.69	0.4943	0.2722	0.1802
45 m63o	1.0	0.0	0.375	39.36	57.26	22.49	61.52	21	19.69	10.87	5.28	0.5494	0.3032	0.1733
46 m75o	1.0	0.0	0.25	38.97	56.72	35.03	66.67	32	19.25	10.64	2.9	0.5871	0.3244	0.1697
47 m88o	1.0	0.0	0.125	38.8	56.46	43.06	71.0	37	19.06	10.54	1.85	0.606	0.3352	0.1682
48 o00y	1.0	0.0	0.0	38.68	56.29	45.3	72.26	39	18.93	10.47	1.6	0.6105	0.3379	0.1671
49 n00w	0.0	0.0	0.0	10.99	0.0	0.0	0.01	0	1.2	1.26	1.37	0.3127	0.329	0.0201
50 n13w	0.125	0.125	0.125	12.51	-0.31	-0.49	0.59	237	1.4	1.49	1.67	0.3076	0.3262	0.0237
51 n25w	0.25	0.25	0.25	17.77	-0.23	-1.3	1.33	260	2.33	2.47	2.87	0.3041	0.3216	0.0394
52 n38w	0.375	0.375	0.375	26.3	-0.18	-1.69	1.71	264	4.6	4.85	5.66	0.3042	0.3211	0.0774
53 n50w	0.5	0.5	0.5	36.52	-0.07	-1.91	1.92	267	8.81	9.28	10.76	0.3054	0.3217	0.1481
54 n63w	0.625	0.625	0.625	47.86	0.02	-2.01	2.02	270	15.86	16.68	19.18	0.3066	0.3225	0.2661
55 n75w	0.75	0.75	0.75	61.96	-0.16	-1.72	1.74	264	28.8	30.35	34.34	0.3081	0.3246	0.4841
56 n88w	0.875	0.875	0.875	81.04	0.05	-0.03	0.06	324	55.67	58.55	63.79	0.3127	0.3289	0.9339
57 n99w	1.0	1.0	1.0	95.41	0.0	0.0	0.01	0	84.2	88.59	96.46	0.3127	0.329	1.413

 $n = 88.59 / (88.59 - 0.28) = 1.003$ TUB-test chart KE37; Hue circle and colorimetric data
Measurement: LCD and CRT display, and LCD projectorinput: $olv^* setrgbcolor$
output: no change compared to input

Colorimetric data of Television Luminous System TLS11a for CIE lightness $L^*_N=11$ of black

System:

TLS11a **Y Yellow**

Projector: $LCH^*_a = 83.3 \ 83.4 \ 101$

LCD $LAB^*_a = 83.3 \ -16.0 \ 81.8$

Reflection:

$Y_N = 1.26$

$L^*_N = 11.0$

L Leaf green

$LCH^*_a = 73.1 \ 84.8 \ 126$

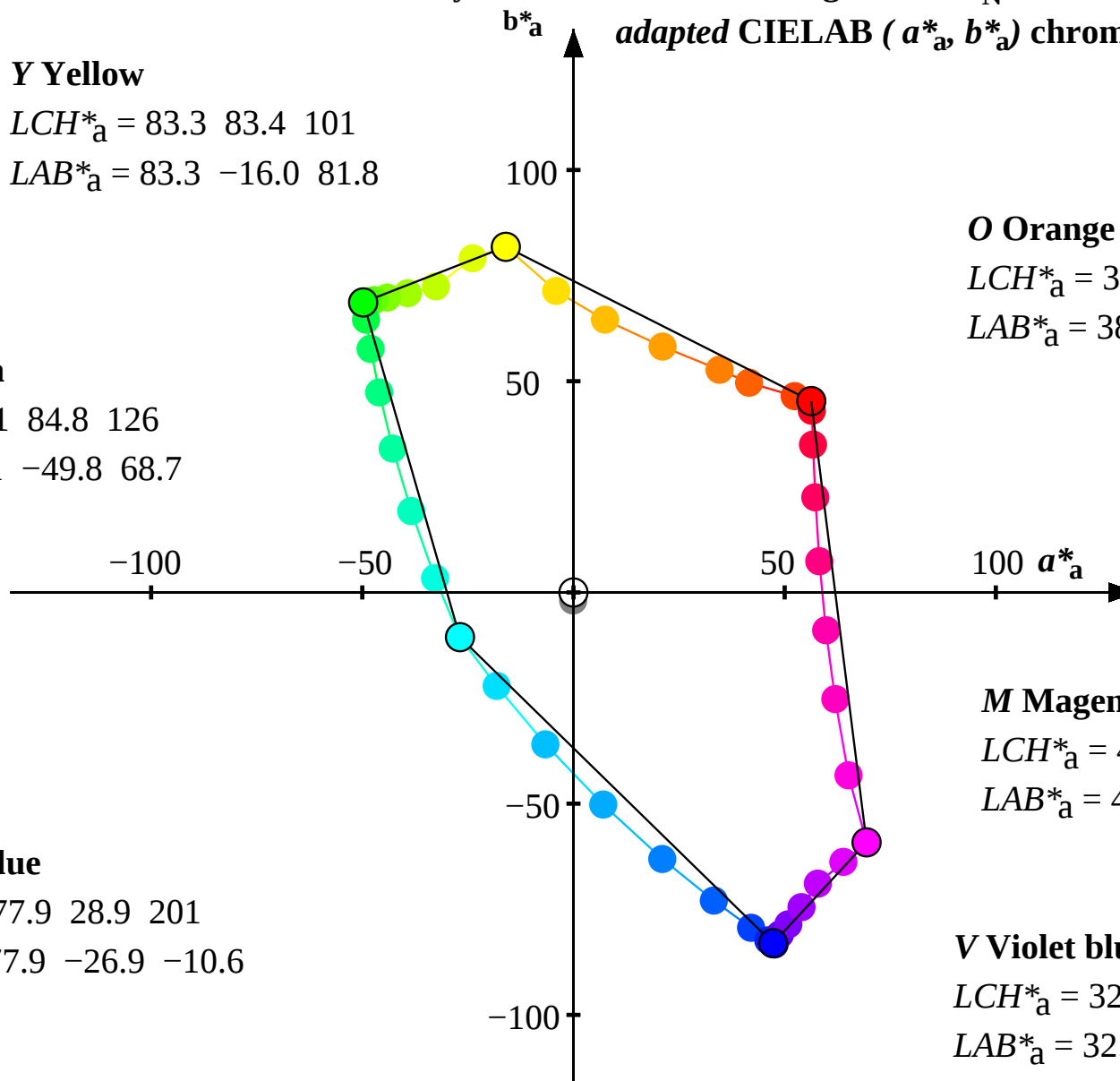
$LAB^*_a = 73.1 \ -49.8 \ 68.7$

C Cyan blue

$LCH^*_a = 77.9 \ 28.9 \ 201$

$LAB^*_a = 77.9 \ -26.9 \ -10.6$

*adapted CIELAB (a^*_a , b^*_a) chroma diagram*



O Orange red

$LCH^*_a = 38.7 \ 72.3 \ 39$

$LAB^*_a = 38.7 \ 56.3 \ 45.3$

M Magenta red

$LCH^*_a = 49.4 \ 91.2 \ 320$

$LAB^*_a = 49.4 \ 69.4 \ -59.1$

V Violet blue

$LCH^*_a = 32.4 \ 95.6 \ 300$

$LAB^*_a = 32.4 \ 47.3 \ -83.0$

Colorimetric data of Television Luminous System TLS18a for CIE lightness $L^*_N=18$ of black**System:****TLS18a****Projector:****LCD****Reflection:** $Y_N = 2.52$ $L^*_N = 18.01$

Color	$r=olv*1$	$g=olv*2$	$b=olv*3$	$L^*_a=LAB*1a$	$a^*_a=LAB*2a$	$b^*_a=LAB*3a$	$C^*_{ab,a}=LAB*ab,a$	$h_{ab,a}$	$X_a=XYZ1a$	$Y_a=XYZ2a$	$Z_a=XYZ3a$	x_a	y_a	$Y_a/88.59$
00 o00y	1.0	0.0	0.0	40.57	52.89	37.36	64.75	35	19.87	11.6	2.97	0.577	0.3369	0.1839
01 o13y	1.0	0.125	0.0	40.84	52.27	37.53	64.35	36	19.97	11.76	3.01	0.5748	0.3386	0.1865
02 o25y	1.0	0.25	0.0	42.06	49.31	38.85	62.78	38	20.44	12.54	3.13	0.5661	0.3473	0.1989
03 o38y	1.0	0.375	0.0	45.23	39.4	42.47	57.93	47	21.22	14.71	3.42	0.5393	0.3738	0.2332
04 o50y	1.0	0.5	0.0	49.4	33.01	46.34	56.89	55	23.74	17.92	3.99	0.5201	0.3926	0.2841
05 o63y	1.0	0.625	0.0	55.89	20.31	52.7	56.48	69	27.36	23.8	4.92	0.4879	0.4244	0.3774
06 o75y	1.0	0.75	0.0	63.49	7.18	59.86	60.29	83	32.55	32.18	6.26	0.4585	0.4533	0.5103
07 o88y	1.0	0.875	0.0	71.46	-3.94	67.28	67.4	93	39.46	42.86	7.92	0.4373	0.4749	0.6795
08 y00l	1.0	1.0	0.0	83.48	-15.72	78.48	80.04	101	53.58	63.07	10.96	0.4199	0.4942	1.0
09 y13l	0.875	1.0	0.0	81.61	-23.39	75.81	79.34	107	47.69	59.58	10.76	0.4041	0.5048	0.9447
10 y25l	0.75	1.0	0.0	75.67	-31.79	68.95	75.93	115	36.46	49.35	9.63	0.3821	0.5171	0.7825
11 y38l	0.625	1.0	0.0	74.76	-38.19	67.38	77.45	120	33.44	47.89	9.63	0.3677	0.5265	0.7593
12 y50l	0.5	1.0	0.0	74.16	-42.96	66.36	79.06	123	31.4	46.96	9.62	0.3569	0.5337	0.7445
13 y63l	0.375	1.0	0.0	73.82	-45.96	65.75	80.23	125	30.2	46.42	9.63	0.3501	0.5382	0.7361
14 y75l	0.25	1.0	0.0	73.64	-47.56	65.45	80.92	126	29.57	46.15	9.63	0.3465	0.5407	0.7317
15 y88l	0.125	1.0	0.0	73.57	-48.25	65.31	81.21	126	29.31	46.03	9.63	0.3449	0.5417	0.7299
16 l00c	0.0	1.0	0.0	73.56	-48.37	65.28	81.26	127	29.26	46.02	9.63	0.3446	0.5419	0.7296
17 l13c	0.0	1.0	0.125	73.59	-48.23	64.59	80.62	127	29.34	46.07	9.88	0.344	0.5402	0.7304
18 l25c	0.0	1.0	0.25	73.69	-47.76	61.55	77.91	128	29.58	46.22	10.98	0.3408	0.5327	0.7329
19 l38c	0.0	1.0	0.375	73.88	-46.69	55.27	72.36	130	30.07	46.52	13.48	0.3339	0.5164	0.7376
20 l50c	0.0	1.0	0.5	74.25	-44.75	45.65	63.93	134	31.01	47.09	18.09	0.3224	0.4895	0.7466
21 l63c	0.0	1.0	0.625	74.86	-41.69	33.04	53.2	142	32.58	48.05	25.71	0.3064	0.4519	0.7619
22 l75c	0.0	1.0	0.75	75.45	-37.41	18.71	41.84	153	34.52	48.99	36.52	0.2876	0.4082	0.7769
23 l88c	0.0	1.0	0.875	76.88	-31.99	3.29	32.17	174	37.99	51.33	52.51	0.2679	0.3619	0.8138
24 c00v	0.0	1.0	1.0	78.17	-26.29	-10.37	28.27	202	41.59	53.5	70.15	0.2517	0.3238	0.8483
25 c13v	0.0	0.875	1.0	70.79	-17.72	-21.63	27.98	231	34.41	41.88	68.38	0.2378	0.2895	0.664
26 c25v	0.0	0.75	1.0	62.11	-6.37	-35.08	35.67	260	27.4	30.54	66.6	0.22	0.2452	0.4842
27 c38v	0.0	0.675	1.0	53.49	6.72	-48.77	49.24	278	21.84	21.5	65.21	0.2012	0.198	0.3408
28 c50v	0.0	0.5	1.0	45.96	19.9	-60.94	64.12	288	17.96	15.24	64.27	0.1843	0.1563	0.2416
29 c63v	0.0	0.375	1.0	40.38	30.97	-70.06	76.61	294	15.64	11.48	63.69	0.1722	0.1264	0.182
30 c75v	0.0	0.25	1.0	36.84	38.77	-75.91	85.24	297	14.39	9.45	63.41	0.165	0.1083	0.1498
31 c88v	0.0	0.125	1.0	35.26	42.38	-78.55	89.26	298	13.88	8.63	63.32	0.1618	0.1005	0.1368
32 v00m	0.0	0.0	1.0	34.88	43.32	-79.19	90.28	299	13.78	8.44	63.31	0.1611	0.0987	0.1338
33 v13m	0.125	0.0	1.0	35.07	43.64	-79.5	90.7	299	13.96	8.54	64.04	0.1613	0.0986	0.1353
34 v25m	0.25	0.0	1.0	35.19	43.87	-78.58	90.01	299	14.08	8.6	63.23	0.1639	0.1001	0.1363
35 v38m	0.375	0.0	1.0	35.85	45.05	-77.3	89.47	300	14.73	8.93	63.06	0.1698	0.103	0.1416
36 v50m	0.5	0.0	1.0	37.13	47.19	-75.13	88.73	302	16.02	9.61	63.09	0.1806	0.1083	0.1523
37 v63m	0.625	0.0	1.0	39.05	50.42	-71.42	87.43	305	18.1	10.69	62.63	0.198	0.1169	0.1694
38 v75m	0.75	0.0	1.0	41.59	54.54	-66.29	85.85	309	21.11	12.24	61.81	0.2218	0.1286	0.1941
39 v88m	0.875	0.0	1.0	46.22	60.94	-61.59	86.65	315	27.11	15.43	65.56	0.2508	0.1428	0.2447
40 m00o	1.0	0.0	1.0	50.6	66.74	-57.35	88.0	319	33.67	18.92	69.47	0.2758	0.155	0.3
41 m13o	1.0	0.0	0.875	47.07	62.23	-41.64	74.89	326	28.35	16.07	66.3	0.3125	0.1772	0.2548
42 m25o	1.0	0.0	0.75	44.41	58.85	-23.93	63.53	338	24.73	14.12	28.61	0.3666	0.2093	0.2239
43 m38o	1.0	0.0	0.675	42.93	56.57	-8.39	57.19	352	22.78	13.11	18.12	0.4217	0.2428	0.2079
44 m50o	1.0	0.0	0.5	41.86	54.92	6.78	55.34	7	21.43	12.41	10.94	0.4785	0.2771	0.1968
45 m63o	1.0	0.0	0.375	41.2	53.91	20.06	57.52	20	20.62	11.99	6.6	0.5259	0.3058	0.1901
46 m75o	1.0	0.0	0.25	40.84	53.34	30.15	61.27	29	20.19	11.76	4.25	0.5576	0.3249	0.1865
47 m88o	1.0	0.0	0.125	40.69	53.06	35.91	64.07	34	20.0	11.67	3.22	0.5733	0.3345	0.185
48 o00y	1.0	0.0	0.0	40.57	52.89	37.36	64.75	35	19.87	11.6	2.97	0.577	0.3369	0.1839
49 n00w	0.0	0.0	0.0	18.01	0.0	0.0	0.01	0	2.4	2.52	2.74	0.3127	0.329	0.04
50 n13w	0.125	0.125	0.125	18.98	-0.2	-0.32	0.39	237	2.6	2.74	3.03	0.31	0.3275	0.0435
51 n25w	0.25	0.25	0.25	22.69	-0.17	-0.98	1.01	260	3.52	3.71	4.02	0.3071	0.3241	0.0588
52 n38w	0.375	0.375	0.375	29.56	-0.15	-1.44	1.46	264	5.74	6.06	6.97	0.306	0.3227	0.0961
53 n50w	0.5	0.5	0.5	38.6	-0.07	-1.74	1.75	267	9.9	10.43	12.0	0.3063	0.3226	0.1653
54 n63w	0.625	0.625	0.625	49.16	0.01	-1.9	1.91	270	16.85	17.72	20.3	0.307	0.323	0.281
55 n75w	0.75	0.75	0.75	62.67	-0.16	-1.66	1.68	264	29.6	31.19	35.23	0.3083	0.3248	0.4946
56 n88w	0.875	0.875	0.875	81.28	0.05	-0.03	0.06	324	56.08	58.98	64.26	0.3127	0.3289	0.9352
57 n99w	1.0	1.0	1.0	95.41	0.0	0.0	0.01	0	84.2	88.59	96.46	0.3127	0.329	1.4047

KE370-7N, 57/66

 $n = 88.59 / (88.59 - 0.28) = 1.003$ TUB-test chart KE37; Hue circle and colorimetric data
Measurement: LCD and CRT display, and LCD projectorinput: $olv^* setrgbcolor$
output: no change compared to input

Colorimetric data of Television Luminous System TLS18a for CIE lightness $L^*_N=18$ of black

System:

TLS18a **Y Yellow**

Projector: $LCH^*_a = 83.5 \ 80.0 \ 101$

LCD $LAB^*_a = 83.5 \ -15.7 \ 78.5$

Reflection:

$Y_N = 2.52$

$L^*_N = 18.01$

L Leaf green

$LCH^*_a = 73.6 \ 81.3 \ 127$

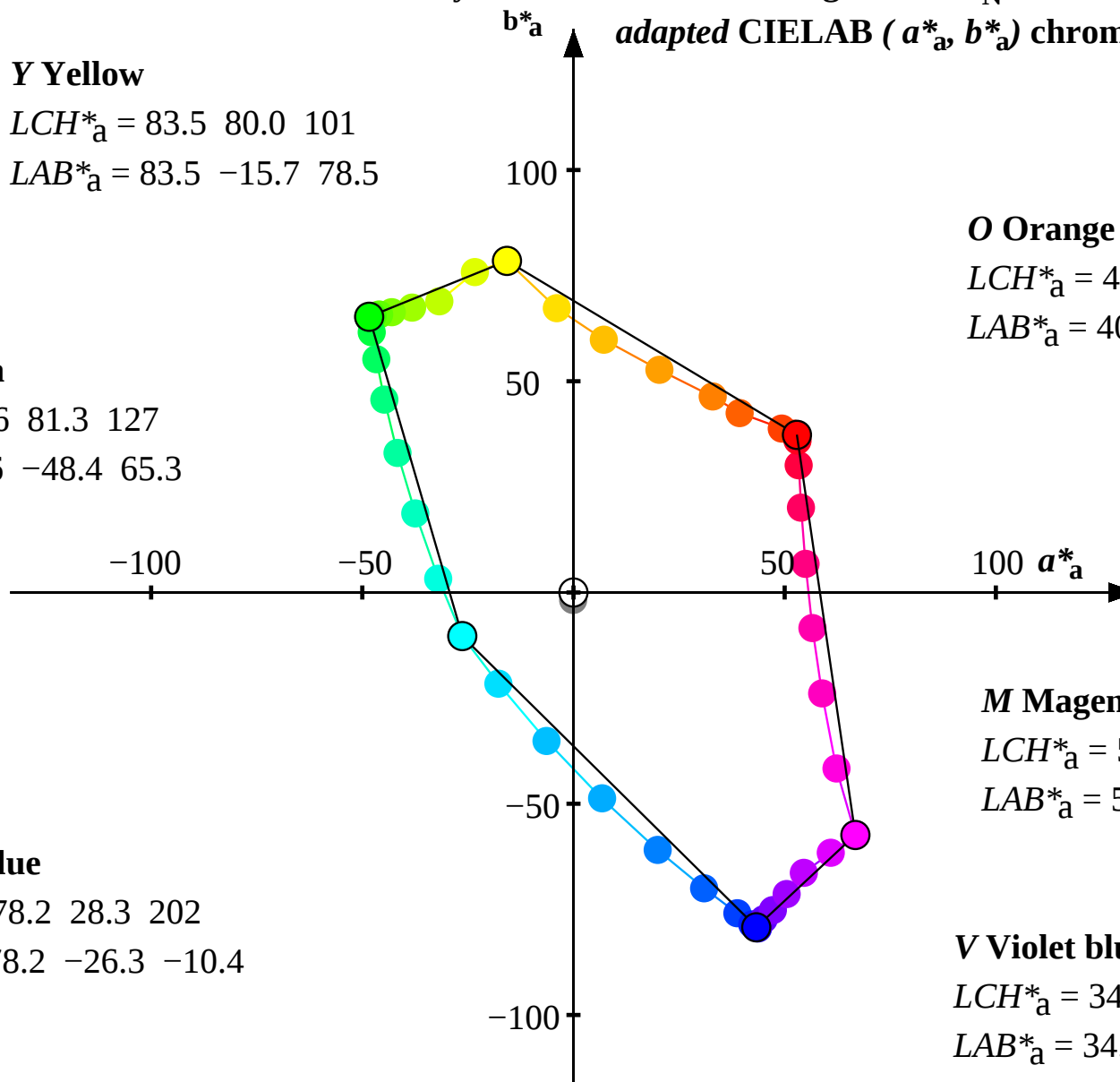
$LAB^*_a = 73.6 \ -48.4 \ 65.3$

C Cyan blue

$LCH^*_a = 78.2 \ 28.3 \ 202$

$LAB^*_a = 78.2 \ -26.3 \ -10.4$

*adapted CIELAB (a^*_a , b^*_a) chroma diagram*



O Orange red

$LCH^*_a = 40.6 \ 64.8 \ 35$

$LAB^*_a = 40.6 \ 52.9 \ 37.4$

M Magenta red

$LCH^*_a = 50.6 \ 88.0 \ 319$

$LAB^*_a = 50.6 \ 66.7 \ -57.4$

V Violet blue

$LCH^*_a = 34.9 \ 90.3 \ 299$

$LAB^*_a = 34.9 \ 43.3 \ -79.2$

Colorimetric data of Television Luminous System TLS27a for CIE lightness $L^*_N=27$ of black

System:

TLS27a

Projector:

LCD

Reflection:

 $Y_N = 5.04$ $L^*_N = 26.85$

Color	$r=olv*1$	$g=olv*2$	$b=olv*3$	$L^*_a=LAB*1a$	$a^*_a=LAB*2a$	$b^*_a=LAB*3a$	$C^*_{ab,a}=LAB*ab,a$	$h_{ab,a}$	$X_a=XYZ1a$	$Y_a=XYZ2a$	$Z_a=XYZ3a$	x_a	y_a	$Y_a/88.59$
00 o00y	1.0	0.0	0.0	44.02	47.12	28.65	55.14	31	21.75	13.85	5.7	0.5265	0.3354	0.2171
01 o13y	1.0	0.125	0.0	44.25	46.61	28.87	54.82	32	21.85	14.01	5.75	0.5252	0.3368	0.2196
02 o25y	1.0	0.25	0.0	45.32	44.15	30.2	53.49	34	22.31	14.77	5.86	0.5196	0.3439	0.2314
03 o38y	1.0	0.375	0.0	48.1	35.59	33.8	49.08	44	23.06	16.87	6.14	0.5005	0.3661	0.2644
04 o50y	1.0	0.5	0.0	51.83	30.19	38.0	48.53	52	25.51	19.99	6.7	0.4888	0.383	0.3132
05 o63y	1.0	0.625	0.0	57.75	18.84	44.8	48.6	67	29.03	25.7	7.6	0.4658	0.4123	0.4027
06 o75y	1.0	0.75	0.0	64.83	6.75	52.56	52.99	83	34.06	33.84	8.9	0.4435	0.4406	0.5302
07 o88y	1.0	0.875	0.0	72.36	-3.75	60.58	60.69	94	40.77	44.2	10.52	0.427	0.4629	0.6925
08 y00l	1.0	1.0	0.0	83.87	-15.12	72.55	74.11	102	54.48	63.82	13.46	0.4135	0.4843	1.0
09 y13l	0.875	1.0	0.0	82.07	-22.43	69.92	73.43	108	48.76	60.43	13.27	0.3982	0.4934	0.9469
10 y25l	0.75	1.0	0.0	76.37	-30.25	62.93	69.82	116	37.86	50.5	12.17	0.3766	0.5023	0.7913
11 y38l	0.625	1.0	0.0	75.5	-36.25	61.43	71.33	121	34.93	49.08	12.17	0.3632	0.5103	0.7691
12 y50l	0.5	1.0	0.0	74.94	-40.71	60.45	72.89	124	32.95	48.18	12.17	0.3532	0.5164	0.7549
13 y63l	0.375	1.0	0.0	74.61	-43.51	59.87	74.02	126	31.78	47.66	12.17	0.3469	0.5202	0.7468
14 y75l	0.25	1.0	0.0	74.44	-45.0	59.59	74.68	127	31.17	47.39	12.17	0.3436	0.5223	0.7426
15 y88l	0.125	1.0	0.0	74.37	-45.64	59.46	74.96	128	30.92	47.28	12.17	0.3421	0.5232	0.7409
16 l00c	0.0	1.0	0.0	74.36	-45.75	59.43	75.01	128	30.87	47.26	12.18	0.3418	0.5233	0.7406
17 l13c	0.0	1.0	0.125	74.39	-45.62	58.86	74.48	128	30.94	47.31	12.41	0.3413	0.5218	0.7414
18 l25c	0.0	1.0	0.25	74.49	-45.19	56.32	72.22	129	31.17	47.46	13.48	0.3384	0.5152	0.7438
19 l38c	0.0	1.0	0.375	74.67	-44.2	50.97	67.47	131	31.66	47.75	15.91	0.3321	0.5009	0.7482
20 l50c	0.0	1.0	0.5	75.01	-42.4	42.51	60.05	135	32.57	48.3	20.38	0.3217	0.477	0.7569
21 l63c	0.0	1.0	0.625	75.6	-39.56	31.08	50.32	142	34.09	49.24	27.78	0.3068	0.4432	0.7716
22 l75c	0.0	1.0	0.75	76.16	-35.55	17.75	39.75	153	35.98	50.15	38.28	0.2892	0.4031	0.7859
23 l88c	0.0	1.0	0.875	77.53	-30.48	3.15	30.66	174	39.35	52.42	53.79	0.2703	0.3601	0.8214
24 c00v	0.0	1.0	1.0	78.77	-25.11	-9.96	27.03	202	42.84	54.53	70.92	0.2546	0.324	0.8545
25 c13v	0.0	0.875	1.0	71.72	-16.79	-20.7	26.67	231	35.87	43.25	69.2	0.2418	0.2916	0.6777
26 c25v	0.0	0.75	1.0	63.54	-5.95	-33.37	33.91	260	29.07	32.23	67.47	0.2257	0.2503	0.5051
27 c38v	0.0	0.675	1.0	55.54	6.17	-46.01	46.43	278	23.66	23.46	66.12	0.2089	0.2072	0.3676
28 c50v	0.0	0.5	1.0	48.74	17.87	-56.96	59.71	287	19.9	17.38	65.22	0.1942	0.1696	0.2724
29 c63v	0.0	0.375	1.0	43.85	27.24	-64.9	70.39	293	17.64	13.74	64.65	0.1837	0.143	0.2153
30 c75v	0.0	0.25	1.0	40.84	33.56	-69.84	77.49	296	16.44	11.77	64.37	0.1775	0.1271	0.1844
31 c88v	0.0	0.125	1.0	39.53	36.39	-72.04	80.72	297	15.94	10.97	64.29	0.1748	0.1203	0.1719
32 v00m	0.0	0.0	1.0	39.22	37.13	-72.57	81.52	297	15.84	10.79	64.28	0.1742	0.1187	0.169
33 v13m	0.125	0.0	1.0	39.38	37.46	-72.91	81.98	297	16.01	10.88	64.99	0.1743	0.1184	0.1705
34 v25m	0.25	0.0	1.0	39.48	37.7	-72.05	81.33	298	16.13	10.94	64.2	0.1767	0.1198	0.1714
35 v38m	0.375	0.0	1.0	40.02	38.92	-70.97	80.94	299	16.76	11.26	64.04	0.1821	0.1224	0.1765
36 v50m	0.5	0.0	1.0	41.09	41.15	-69.16	80.48	301	18.01	11.92	64.07	0.1916	0.1268	0.1868
37 v63m	0.625	0.0	1.0	42.71	44.52	-65.97	79.59	304	20.04	12.97	63.62	0.2074	0.1342	0.2032
38 v75m	0.75	0.0	1.0	44.91	48.85	-61.48	78.54	308	22.95	14.47	62.82	0.229	0.1444	0.2268
39 v88m	0.875	0.0	1.0	48.98	55.7	-57.61	80.14	314	28.78	17.58	66.46	0.2551	0.1558	0.2754
40 m00o	1.0	0.0	1.0	52.91	61.89	-54.01	82.15	319	35.15	20.96	70.26	0.2781	0.1659	0.3285
41 m13o	1.0	0.0	0.875	49.73	57.06	-38.63	68.91	326	29.99	18.2	47.77	0.3125	0.1896	0.2851
42 m25o	1.0	0.0	0.75	47.37	53.41	-21.73	57.66	338	26.47	16.3	30.59	0.3608	0.2222	0.2555
43 m38o	1.0	0.0	0.675	46.07	51.0	-7.44	51.54	352	24.58	15.32	20.41	0.4075	0.254	0.2401
44 m50o	1.0	0.0	0.5	45.14	49.26	5.82	49.6	7	23.27	14.64	13.45	0.4531	0.2851	0.2294
45 m63o	1.0	0.0	0.375	44.56	48.18	16.56	50.95	19	22.48	14.23	9.23	0.4894	0.3098	0.223
46 m75o	1.0	0.0	0.25	44.25	47.59	23.95	53.28	27	22.06	14.01	6.95	0.5128	0.3257	0.2196
47 m88o	1.0	0.0	0.125	44.12	47.3	27.78	54.85	30	21.88	13.92	5.95	0.5241	0.3335	0.2182
48 o00y	1.0	0.0	0.0	44.02	47.12	28.65	55.14	31	21.75	13.85	5.7	0.5265	0.3354	0.2171
49 n00w	0.0	0.0	0.0	26.85	0.0	0.0	0.01	0	4.79	5.04	5.49	0.3127	0.329	0.079
50 n13w	0.125	0.125	0.125	27.45	-0.12	-0.2	0.25	238	4.98	5.26	5.77	0.3113	0.3283	0.0824
51 n25w	0.25	0.25	0.25	29.9	-0.11	-0.68	0.7	260	5.88	6.2	6.92	0.3094	0.3262	0.0971
52 n38w	0.375	0.375	0.375	34.95	-0.11	-1.12	1.14	264	8.04	8.47	9.59	0.308	0.3246	0.1328
53 n50w	0.5	0.5	0.5	42.33	-0.06	-1.49	1.5	268	12.07	12.71	14.47	0.3076	0.3239	0.1992
54 n63w	0.625	0.625	0.625	51.61	0.01	-1.72	1.73	270	18.82	19.8	22.53	0.3078	0.3238	0.3102
55 n75w	0.75	0.75	0.75	64.06	-0.14	-1.56	1.58	264	31.2	32.87	37.03	0.3086	0.3252	0.5151
56 n88w	0.875	0.875	0.875	81.76	0.05	-0.03	0.06	324	56.9	59.85	65.21	0.3127	0.3289	0.9379
57 n99w	1.0	1.0	1.0	95.41	0.0	0.0	0.01	0	84.2	88.59	96.46	0.3127	0.329	1.3882

KE370-7N, 59/66

 $n = 88.59 / (88.59 - 0.28) = 1.003$

TUB-test chart KE37; Hue circle and colorimetric data
Measurement: LCD and CRT display, and LCD projector

input: $olv^* setrgbcolor$
output: no change compared to input

Colorimetric data of Television Luminous System TLS27a for CIE lightness $L^*_N=27$ of black

System:

TLS27a **Y Yellow**

Projector: $LCH^*_a = 83.9 \ 74.1 \ 102$

LCD $LAB^*_a = 83.9 \ -15.1 \ 72.6$

Reflection:

$Y_N = 5.04$

$L^*_N = 26.85$

L Leaf green

$LCH^*_a = 74.4 \ 75.0 \ 128$

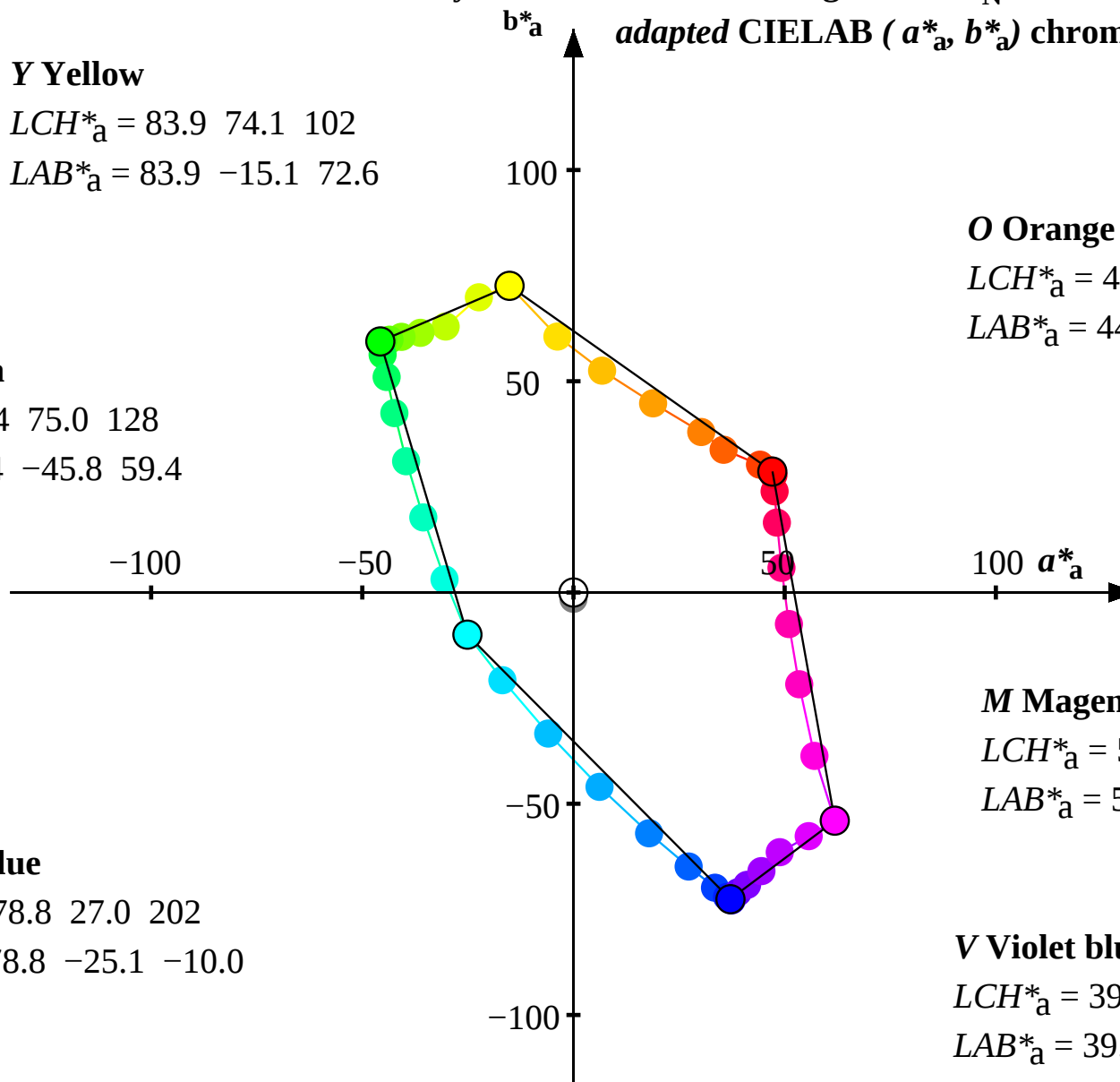
$LAB^*_a = 74.4 \ -45.8 \ 59.4$

C Cyan blue

$LCH^*_a = 78.8 \ 27.0 \ 202$

$LAB^*_a = 78.8 \ -25.1 \ -10.0$

*adapted CIELAB (a^*_a , b^*_a) chroma diagram*



O Orange red

$LCH^*_a = 44.0 \ 55.1 \ 31$

$LAB^*_a = 44.0 \ 47.1 \ 28.7$

M Magenta red

$LCH^*_a = 52.9 \ 82.1 \ 319$

$LAB^*_a = 52.9 \ 61.9 \ -54.0$

V Violet blue

$LCH^*_a = 39.2 \ 81.5 \ 297$

$LAB^*_a = 39.2 \ 37.1 \ -72.6$

Colorimetric data of Television Luminous System TLS38a for CIE lightness $L^*_N=38$ of black

System:

TLS38a

Projector:

LCD

Reflection:

 $Y_N = 10.08$ $L^*_N = 37.99$

Color	$r=olv^*_1$	$g=olv^*_2$	$b=olv^*_3$	$L^*_a=LAB^*_{1a}$	$a^*_a=LAB^*_{2a}$	$b^*_a=LAB^*_{3a}$	$C^*_{ab,a}=LAB^*_{ab,a}$	$h_{ab,a}$	$X_a=XYZ^*_{1a}$	$Y_a=XYZ^*_{2a}$	$Z_a=XYZ^*_{3a}$	x_a	y_a	$Y_a/88.59$
00 o00y	1.0	0.0	0.0	49.93	38.37	20.03	43.28	28	25.52	18.36	11.18	0.4635	0.3335	0.2812
01 o13y	1.0	0.125	0.0	50.11	38.0	20.23	43.05	28	25.61	18.51	11.22	0.4628	0.3345	0.2835
02 o25y	1.0	0.25	0.0	50.95	36.21	21.36	42.04	31	26.04	19.22	11.33	0.4602	0.3396	0.2943
03 o38y	1.0	0.375	0.0	53.17	29.55	24.46	38.36	40	26.75	21.2	11.59	0.4493	0.356	0.3246
04 o50y	1.0	0.5	0.0	56.22	25.55	28.33	38.15	48	29.05	24.13	12.11	0.445	0.3695	0.3694
05 o63y	1.0	0.625	0.0	61.21	16.32	34.74	38.38	65	32.36	29.49	12.96	0.4325	0.3942	0.4516
06 o75y	1.0	0.75	0.0	67.38	5.98	42.37	42.79	82	37.09	37.14	14.18	0.4195	0.4201	0.5687
07 o88y	1.0	0.875	0.0	74.11	-3.38	50.48	50.59	94	43.39	46.87	15.7	0.4095	0.4423	0.7177
08 y00l	1.0	1.0	0.0	84.64	-13.95	62.81	64.34	103	56.27	65.31	18.47	0.4018	0.4663	1.0
09 y13l	0.875	1.0	0.0	82.98	-20.59	60.3	63.72	109	50.9	62.13	18.29	0.3876	0.4731	0.9513
10 y25l	0.75	1.0	0.0	77.75	-27.36	53.42	60.02	117	40.66	52.8	17.25	0.3672	0.4769	0.8084
11 y38l	0.625	1.0	0.0	76.96	-32.65	52.05	61.45	122	37.9	51.46	17.25	0.3555	0.4827	0.788
12 y50l	0.5	1.0	0.0	76.44	-36.56	51.16	62.89	126	36.04	50.61	17.25	0.3468	0.4871	0.775
13 y63l	0.375	1.0	0.0	76.15	-38.99	50.64	63.92	128	34.94	50.13	17.26	0.3415	0.4899	0.7675
14 y75l	0.25	1.0	0.0	75.99	-40.28	50.38	64.51	129	34.37	49.87	17.25	0.3386	0.4914	0.7636
15 y88l	0.125	1.0	0.0	75.93	-40.84	50.26	64.77	129	34.13	49.77	17.26	0.3374	0.492	0.7621
16 l00c	0.0	1.0	0.0	75.92	-40.94	50.24	64.81	129	34.09	49.76	17.26	0.3372	0.4921	0.7618
17 l13c	0.0	1.0	0.125	75.95	-40.83	49.82	64.42	129	34.16	49.8	17.48	0.3367	0.4909	0.7626
18 l25c	0.0	1.0	0.25	76.04	-40.46	47.93	62.73	130	34.37	49.94	18.49	0.3344	0.4858	0.7647
19 l38c	0.0	1.0	0.375	76.2	-39.6	43.83	59.08	132	34.83	50.21	20.77	0.3291	0.4745	0.7688
20 l50c	0.0	1.0	0.5	76.52	-38.05	37.09	53.15	136	35.68	50.73	24.97	0.3204	0.4555	0.7768
21 l63c	0.0	1.0	0.625	77.05	-35.6	27.56	45.03	142	37.11	51.61	31.92	0.3076	0.4278	0.7903
22 l75c	0.0	1.0	0.75	77.56	-32.09	15.97	35.85	154	38.89	52.47	41.79	0.2921	0.3941	0.8034
23 l88c	0.0	1.0	0.875	78.81	-27.65	2.87	27.81	174	42.05	54.6	56.37	0.2748	0.3568	0.836
24 c00v	0.0	1.0	1.0	79.94	-22.88	-9.18	24.66	202	45.33	56.58	72.46	0.26	0.3245	0.8664
25 c13v	0.0	0.875	1.0	73.53	-15.06	-18.93	24.2	231	38.78	45.98	70.85	0.2492	0.2955	0.7041
26 c25v	0.0	0.75	1.0	66.24	-5.22	-30.17	30.63	260	32.39	35.63	69.22	0.236	0.2596	0.5456
27 c38v	0.0	0.675	1.0	59.33	5.25	-41.02	41.37	277	27.31	27.39	67.95	0.2227	0.2233	0.4194
28 c50v	0.0	0.5	1.0	53.68	14.71	-50.04	52.17	286	23.78	21.68	67.1	0.2113	0.1926	0.3319
29 c63v	0.0	0.375	1.0	49.8	21.78	-56.29	60.37	291	21.66	18.25	66.57	0.2034	0.1714	0.2795
30 c75v	0.0	0.25	1.0	47.5	26.28	-60.04	65.55	294	20.52	16.4	66.31	0.1988	0.1589	0.2511
31 c88v	0.0	0.125	1.0	46.52	28.23	-61.67	67.83	295	20.06	15.65	66.23	0.1968	0.1535	0.2397
32 v00m	0.0	0.0	1.0	46.29	28.74	-62.06	68.4	295	19.96	15.48	66.22	0.1963	0.1523	0.237
33 v13m	0.125	0.0	1.0	46.4	29.05	-62.42	68.86	295	20.13	15.57	66.89	0.1962	0.1518	0.2384
34 v25m	0.25	0.0	1.0	46.47	29.27	-61.66	68.27	295	20.23	15.62	66.15	0.1984	0.1532	0.2392
35 v38m	0.375	0.0	1.0	46.88	30.41	-60.83	68.02	297	20.83	15.93	65.99	0.2027	0.155	0.2439
36 v50m	0.5	0.0	1.0	47.68	32.55	-59.48	67.81	299	22.01	16.54	66.02	0.2104	0.1582	0.2533
37 v63m	0.625	0.0	1.0	48.92	35.81	-56.98	67.31	302	23.91	17.53	65.6	0.2234	0.1638	0.2684
38 v75m	0.75	0.0	1.0	50.62	40.09	-53.4	66.78	307	26.65	18.95	64.85	0.2413	0.1715	0.2901
39 v88m	0.875	0.0	1.0	53.88	47.1	-50.69	69.2	313	32.13	21.86	68.27	0.2628	0.1788	0.3347
40 m00o	1.0	0.0	1.0	57.12	53.55	-48.04	71.95	318	38.11	25.04	71.84	0.2823	0.1855	0.3834
41 m13o	1.0	0.0	0.875	54.49	48.49	-33.47	58.92	325	33.26	22.44	50.7	0.3126	0.2109	0.3436
42 m25o	1.0	0.0	0.75	52.58	44.68	-18.19	48.24	338	29.96	20.66	34.57	0.3517	0.2426	0.3164
43 m38o	1.0	0.0	0.675	51.54	42.25	-6.01	42.67	352	28.17	19.74	25.0	0.3864	0.2707	0.3023
44 m50o	1.0	0.0	0.5	50.81	40.5	4.5	40.75	6	26.94	19.1	18.45	0.4177	0.2962	0.2925
45 m63o	1.0	0.0	0.375	50.35	39.43	12.29	41.3	17	26.21	18.72	14.49	0.4411	0.315	0.2866
46 m75o	1.0	0.0	0.25	50.11	38.83	17.17	42.46	24	25.81	18.51	12.35	0.4554	0.3266	0.2835
47 m88o	1.0	0.0	0.125	50.01	38.55	19.53	43.21	27	25.64	18.43	11.41	0.4622	0.3322	0.2821
48 o00y	1.0	0.0	0.0	49.93	38.37	20.03	43.28	28	25.52	18.36	11.18	0.4635	0.3335	0.2812
49 n00w	0.0	0.0	0.0	37.99	0.0	0.0	0.01	0	9.58	10.08	10.98	0.3127	0.329	0.1543
50 n13w	0.125	0.125	0.125	38.34	-0.07	-0.11	0.15	238	9.76	10.28	11.24	0.312	0.3287	0.1574
51 n25w	0.25	0.25	0.25	39.86	-0.07	-0.43	0.44	260	10.6	11.17	12.32	0.311	0.3275	0.171
52 n38w	0.375	0.375	0.375	43.22	-0.08	-0.78	0.8	264	12.63	13.31	14.83	0.3099	0.3264	0.2038
53 n50w	0.5	0.5	0.5	48.63	-0.04	-1.14	1.15	268	16.43	17.29	19.42	0.3091	0.3254	0.2648
54 n63w	0.625	0.625	0.625	56.03	0.01	-1.43	1.44	270	22.76	23.95	26.99	0.3089	0.3249	0.3667
55 n75w	0.75	0.75	0.75	66.7	-0.13	-1.37	1.39	264	34.4	36.23	40.61	0.3092	0.3257	0.5548
56 n88w	0.875	0.875	0.875	82.69	0.04	-0.02	0.06	324	58.55	61.58	67.09	0.3127	0.3289	0.943
57 n99w	1.0	1.0	1.0	95.41	0.0	0.0	0.01	0	84.2	88.59	96.46	0.3127	0.329	1.3565

KE370-7N, 61/66

 $n = 88.59 / (88.59 - 0.28) = 1.003$ TUB-test chart KE37; Hue circle and colorimetric data
Measurement: LCD and CRT display, and LCD projectorinput: $olv^* setrgbcolor$
output: no change compared to input

Colorimetric data of Television Luminous System TLS38a for CIE lightness $L^*_N=38$ of black

System:

TLS38a Y Yellow

Projector: $LCH^*_a = 84.6 \ 64.3 \ 103$

LCD $LAB^*_a = 84.6 \ -14.0 \ 62.8$

Reflection:

$Y_N = 10.08$

$L^*_N = 37.99$

L Leaf green

$LCH^*_a = 75.9 \ 64.8 \ 129$

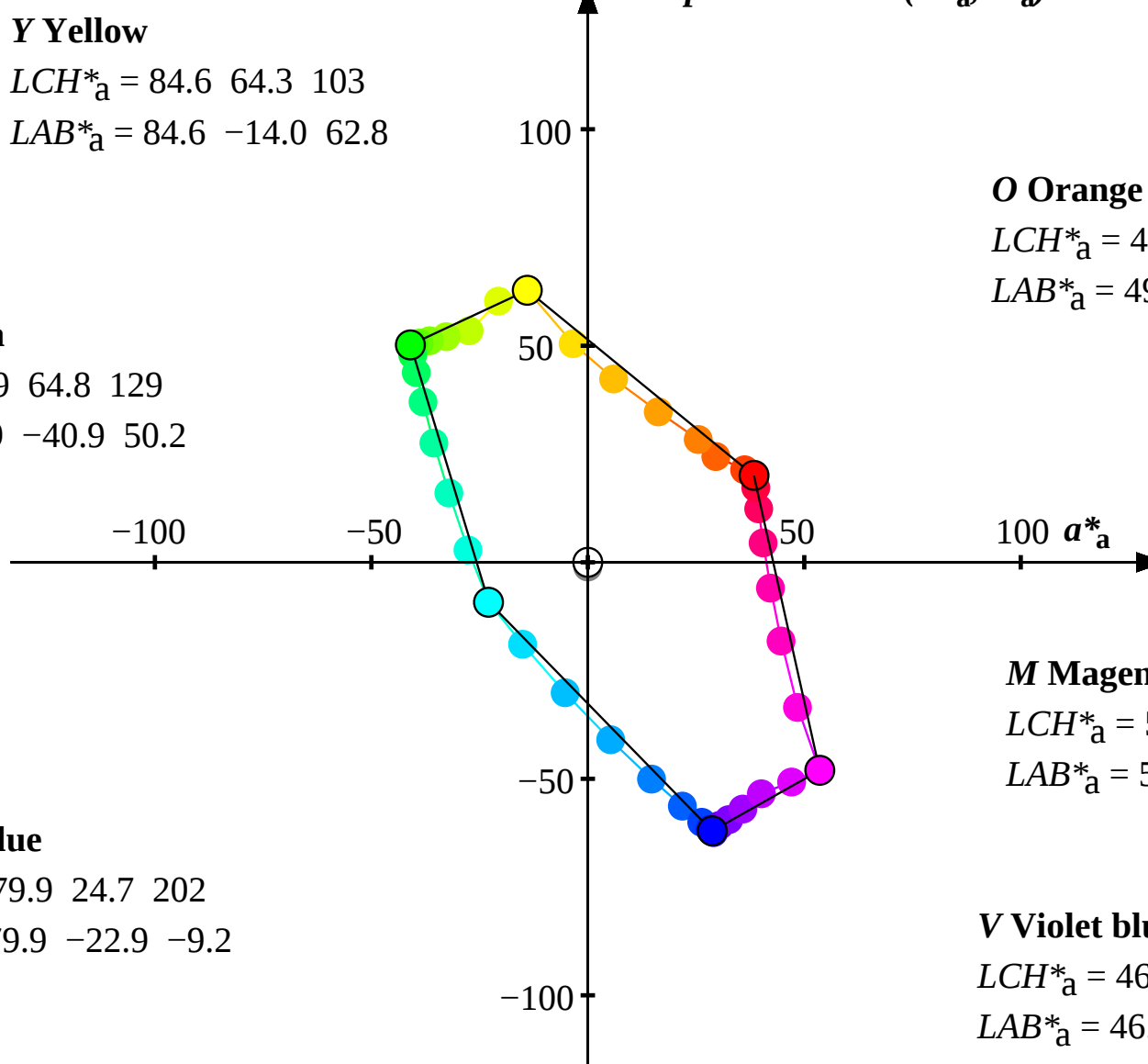
$LAB^*_a = 75.9 \ -40.9 \ 50.2$

C Cyan blue

$LCH^*_a = 79.9 \ 24.7 \ 202$

$LAB^*_a = 79.9 \ -22.9 \ -9.2$

b^*_a adapted CIELAB (a^*_a, b^*_a) chroma diagram



O Orange red

$LCH^*_a = 49.9 \ 43.3 \ 28$

$LAB^*_a = 49.9 \ 38.4 \ 20.0$

M Magenta red

$LCH^*_a = 57.1 \ 71.9 \ 318$

$LAB^*_a = 57.1 \ 53.5 \ -48.1$

V Violet blue

$LCH^*_a = 46.3 \ 68.4 \ 295$

$LAB^*_a = 46.3 \ 28.7 \ -62.1$

Colorimetric data of Television Luminous System TLS52a for CIE lightness $L^*_N=52$ of black

System:

TLS52a

Projector:

LCD

Reflection:

 $Y_N = 20.16$ $L^*_N = 52.02$

Color	$r=olv*_1$	$g=olv*_2$	$b=olv*_3$	$L^*_a=LAB^*_1a$	$a^*_a=LAB^*_2a$	$b^*_a=LAB^*_3a$	$C^*_{ab,a}=LAB^*_{ab,a}$	$h_{ab,a}$	$X_a=XYZ^*_1a$	$Y_a=XYZ^*_2a$	$Z_a=XYZ^*_3a$	x_a	y_a	$Y_a/88.59$
00 o00y	1.0	0.0	0.0	59.32	26.94	12.28	29.61	25	33.05	27.38	22.13	0.4003	0.3316	0.4009
01 o13y	1.0	0.125	0.0	59.44	26.72	12.43	29.47	25	33.13	27.51	22.16	0.4002	0.3322	0.4028
02 o25y	1.0	0.25	0.0	60.0	25.63	13.23	28.84	27	33.51	28.13	22.26	0.3994	0.3353	0.4118
03 o38y	1.0	0.375	0.0	61.53	21.23	15.44	26.25	36	34.13	29.85	22.49	0.3947	0.3452	0.4371
04 o50y	1.0	0.5	0.0	63.68	18.79	18.36	26.27	44	36.13	32.4	22.94	0.395	0.3542	0.4744
05 o63y	1.0	0.625	0.0	67.34	12.39	23.41	26.48	62	39.01	37.08	23.68	0.391	0.3716	0.5429
06 o75y	1.0	0.75	0.0	72.06	4.69	29.77	30.14	81	43.14	43.74	24.75	0.3864	0.3919	0.6405
07 o88y	1.0	0.875	0.0	77.42	-2.74	36.87	36.98	94	48.63	52.23	26.07	0.3831	0.4115	0.7647
08 y00l	1.0	1.0	0.0	86.16	-11.73	48.22	49.63	104	59.86	68.3	28.48	0.3821	0.436	1.0
09 y13l	0.875	1.0	0.0	84.75	-17.17	46.04	49.35	110	55.18	65.53	28.33	0.3702	0.4397	0.9594
10 y25l	0.75	1.0	0.0	80.4	-22.23	39.9	45.68	119	46.25	57.39	27.42	0.3529	0.4379	0.8403
11 y38l	0.625	1.0	0.0	79.75	-26.35	38.78	46.89	124	43.84	56.23	27.42	0.3439	0.441	0.8233
12 y50l	0.5	1.0	0.0	79.32	-29.35	38.05	48.06	128	42.22	55.49	27.42	0.3374	0.4435	0.8125
13 y63l	0.375	1.0	0.0	79.08	-31.2	37.62	48.88	130	41.26	55.06	27.42	0.3334	0.445	0.8062
14 y75l	0.25	1.0	0.0	78.95	-32.19	37.41	49.35	131	40.77	54.84	27.42	0.3313	0.4458	0.803
15 y88l	0.125	1.0	0.0	78.9	-32.61	37.31	49.56	131	40.56	54.76	27.43	0.3304	0.4461	0.8017
16 l00c	0.0	1.0	0.0	78.89	-32.68	37.29	49.59	131	40.52	54.74	27.43	0.3303	0.4462	0.8015
17 l13c	0.0	1.0	0.125	78.92	-32.6	37.04	49.35	131	40.58	54.78	27.62	0.33	0.4454	0.8021
18 l25c	0.0	1.0	0.25	78.99	-32.33	35.84	48.27	132	40.77	54.91	28.5	0.3283	0.4422	0.8039
19 l38c	0.0	1.0	0.375	79.12	-31.69	33.16	45.87	134	41.16	55.14	30.49	0.3247	0.4349	0.8073
20 l50c	0.0	1.0	0.5	79.38	-30.53	28.56	41.82	137	41.91	55.59	34.15	0.3184	0.4223	0.814
21 l63c	0.0	1.0	0.625	79.82	-28.69	21.72	35.99	143	43.16	56.36	40.21	0.3089	0.4034	0.8252
22 l75c	0.0	1.0	0.75	80.24	-25.98	12.87	29.0	154	44.7	57.11	48.81	0.2968	0.3792	0.8362
23 l88c	0.0	1.0	0.875	81.27	-22.57	2.37	22.71	174	47.46	58.96	61.52	0.2826	0.3511	0.8633
24 c00v	0.0	1.0	1.0	82.21	-18.82	-7.71	20.35	202	50.32	60.69	75.54	0.2697	0.3253	0.8886
25 c13v	0.0	0.875	1.0	76.95	-12.07	-15.68	19.8	232	44.61	51.45	74.13	0.2621	0.3023	0.7534
26 c25v	0.0	0.75	1.0	71.17	-4.03	-24.52	24.86	261	39.04	42.43	72.72	0.2532	0.2752	0.6213
27 c38v	0.0	0.675	1.0	65.94	-32.64	3.89	32.88	277	34.62	35.25	71.61	0.2447	0.2491	0.5161
28 c50v	0.0	0.5	1.0	61.89	-39.03	10.45	40.41	285	31.54	30.27	70.87	0.2377	0.2281	0.4432
29 c63v	0.0	0.375	1.0	59.24	-43.22	14.96	45.75	289	29.69	27.28	70.41	0.2331	0.2142	0.3995
30 c75v	0.0	0.25	1.0	57.72	-45.64	17.68	48.96	291	28.7	25.67	70.18	0.2304	0.2061	0.3758
31 c88v	0.0	0.125	1.0	57.09	-46.68	18.81	50.33	292	28.29	25.02	70.11	0.2292	0.2027	0.3663
32 v00m	0.0	0.0	1.0	56.95	19.1	-46.92	50.67	292	28.21	24.87	70.11	0.229	0.2019	0.3641
33 v13m	0.125	0.0	1.0	57.02	19.35	-47.27	51.09	292	28.35	24.94	70.68	0.2287	0.2012	0.3652
34 v25m	0.25	0.0	1.0	57.07	19.52	-46.66	50.59	293	28.45	24.99	70.04	0.2304	0.2024	0.3659
35 v38m	0.375	0.0	1.0	57.33	20.42	-46.1	50.43	294	28.96	25.26	69.9	0.2333	0.2035	0.3698
36 v50m	0.5	0.0	1.0	57.84	22.12	-45.23	50.36	296	29.99	25.79	69.93	0.2386	0.2052	0.3777
37 v63m	0.625	0.0	1.0	58.65	24.79	-43.54	50.11	300	31.65	26.65	69.56	0.2475	0.2084	0.3902
38 v75m	0.75	0.0	1.0	59.79	28.41	-41.04	49.92	305	34.04	27.89	68.91	0.2602	0.2131	0.4083
39 v88m	0.875	0.0	1.0	62.02	34.66	-39.62	52.65	311	38.81	30.43	71.89	0.275	0.2156	0.4455
40 m00o	1.0	0.0	1.0	64.32	40.66	-38.13	55.75	317	44.03	33.2	75.0	0.2892	0.2181	0.4861
41 m13o	1.0	0.0	0.875	62.45	35.91	-25.52	44.06	325	39.8	30.94	56.58	0.3126	0.243	0.4529
42 m25o	1.0	0.0	0.75	61.12	32.42	-13.2	35.01	338	36.92	29.38	42.51	0.3393	0.27	0.4302
43 m38o	1.0	0.0	0.675	60.41	30.28	-4.17	30.57	352	35.37	28.58	34.17	0.3604	0.2913	0.4185
44 m50o	1.0	0.0	0.5	59.91	28.77	2.99	28.92	6	34.29	28.02	28.47	0.3777	0.3087	0.4103
45 m63o	1.0	0.0	0.375	59.61	27.84	7.86	28.93	16	33.65	27.69	25.02	0.3897	0.3206	0.4054
46 m75o	1.0	0.0	0.25	59.44	27.33	10.71	29.36	21	33.31	27.51	23.15	0.3967	0.3276	0.4028
47 m88o	1.0	0.0	0.125	59.37	27.1	12.02	29.64	24	33.16	27.43	22.33	0.3999	0.3309	0.4017
48 o00y	1.0	0.0	0.0	59.32	26.94	12.28	29.61	25	33.05	27.38	22.13	0.4003	0.3316	0.4009
49 n00w	0.0	0.0	0.0	52.02	0.0	0.0	0.01	0	19.16	20.16	21.95	0.3127	0.329	0.2952
50 n13w	0.125	0.125	0.125	52.22	-0.03	-0.06	0.08	238	19.32	20.34	22.18	0.3124	0.3289	0.2978
51 n25w	0.25	0.25	0.25	53.07	-0.03	-0.24	0.25	260	20.05	21.11	23.13	0.3119	0.3283	0.309
52 n38w	0.375	0.375	0.375	55.04	-0.04	-0.47	0.48	264	21.82	22.97	25.31	0.3113	0.3277	0.3364
53 n50w	0.5	0.5	0.5	58.46	-0.02	-0.75	0.76	268	25.13	26.45	29.31	0.3107	0.327	0.3872
54 n63w	0.625	0.625	0.625	63.55	0.01	-1.02	1.03	270	30.65	32.25	35.91	0.3102	0.3264	0.4721
55 n75w	0.75	0.75	0.75	71.52	-0.1	-1.07	1.09	264	40.79	42.96	47.78	0.3101	0.3266	0.6289
56 n88w	0.875	0.875	0.875	84.51	0.04	-0.02	0.05	324	61.84	65.05	70.86	0.3127	0.329	0.9525
57 n99w	1.0	1.0	1.0	95.41	0.0	0.0	0.01	0	84.2	88.59	96.46	0.3127	0.329	1.2971

 $n = 88.59 / (88.59 - 0.28) = 1.003$ TUB-test chart KE37; Hue circle and colorimetric data
Measurement: LCD and CRT display, and LCD projectorinput: $olv^* setrgbcolor$
output: no change compared to input

Colorimetric data of Television Luminous System TLS52a for CIE lightness $L^*_N=52$ of black

System:

TLS52a Y Yellow

Projector: $LCH^*_a = 86.2 \ 49.6 \ 104$

LCD $LAB^*_a = 86.2 \ -11.7 \ 48.2$

Reflection:

$Y_N = 20.16$

$L^*_N = 52.02$

L Leaf green

$LCH^*_a = 78.9 \ 49.6 \ 131$

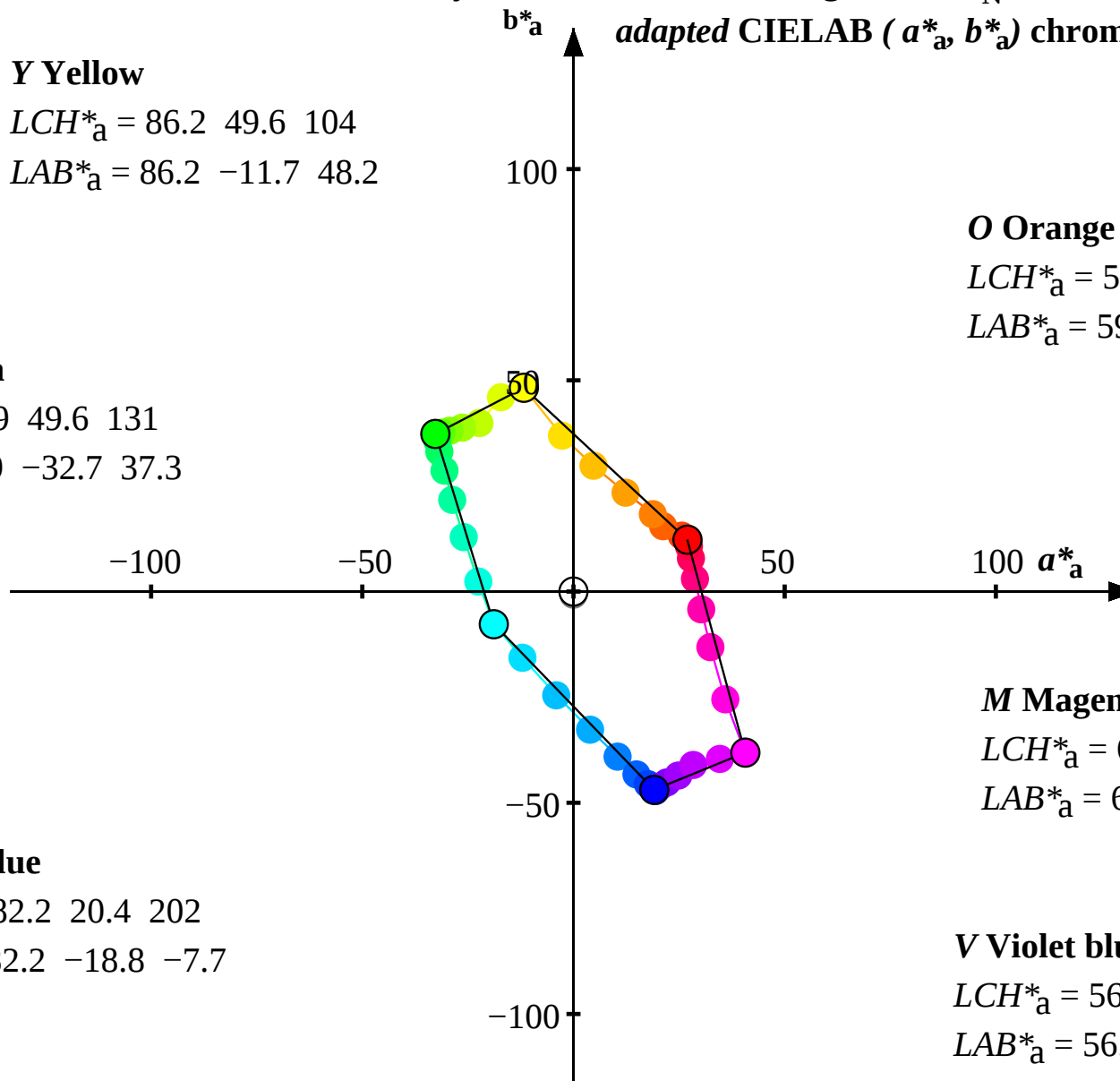
$LAB^*_a = 78.9 \ -32.7 \ 37.3$

C Cyan blue

$LCH^*_a = 82.2 \ 20.4 \ 202$

$LAB^*_a = 82.2 \ -18.8 \ -7.7$

*adapted CIELAB (a^*_a , b^*_a) chroma diagram*



O Orange red

$LCH^*_a = 59.3 \ 29.6 \ 25$

$LAB^*_a = 59.3 \ 26.9 \ 12.3$

M Magenta red

$LCH^*_a = 64.3 \ 55.7 \ 317$

$LAB^*_a = 64.3 \ 40.7 \ -38.1$

V Violet blue

$LCH^*_a = 56.9 \ 50.7 \ 292$

$LAB^*_a = 56.9 \ 19.1 \ -46.9$

See original or copy: <http://web.me.com/klaus.richter/KE37/KE37L0NP.PDF> /.PS
Technical information: <http://www.ps.bam.de> or <http://130.149.60.45/~farbmetrik>

TUB registration: 20100601-KE37/KE37L0NP.PDF /.PS
application for measurement of printer or monitor systems

TUB material: code=rha4ta

Colorimetric data of Television Luminous System TLS70a for CIE lightness $L^*_N=70$ of black

System:

TLS70a

Projector:

LCD

Reflection:

 $Y_N = 40.32$ $L^*_N = 69.7$

Color	$r=olv*_1$	$g=olv*_2$	$b=olv*_3$	$L^*_a=LAB^*_{1a}$	$a^*_a=LAB^*_{2a}$	$b^*_a=LAB^*_{3a}$	$C^*_{ab,a}=LAB^*_{ab,a}$	$h_{ab,a}$	$X_a=XYZ^*_{1a}$	$Y_a=XYZ^*_{2a}$	$Z_a=XYZ^*_{3a}$	x_a	y_a	$Y_a/88.59$
00 o00y	1.0	0.0	0.0	73.16	14.19	5.84	15.34	22	48.12	45.41	44.03	0.3498	0.3301	0.6114
01 o13y	1.0	0.125	0.0	73.22	14.09	5.91	15.28	23	48.18	45.5	44.05	0.3498	0.3304	0.6126
02 o25y	1.0	0.25	0.0	73.51	13.6	6.33	15.0	25	48.44	45.94	44.12	0.3498	0.3317	0.6185
03 o38y	1.0	0.375	0.0	74.29	11.42	7.49	13.66	33	48.88	47.16	44.28	0.3483	0.3361	0.6349
04 o50y	1.0	0.5	0.0	75.42	10.35	9.1	13.78	41	50.29	48.96	44.6	0.3496	0.3403	0.6591
05 o63y	1.0	0.625	0.0	77.43	7.07	11.98	13.91	59	52.32	52.25	45.12	0.3495	0.3491	0.7035
06 o75y	1.0	0.75	0.0	80.16	2.79	15.85	16.09	80	55.23	56.96	45.87	0.3494	0.3603	0.7668
07 o88y	1.0	0.875	0.0	83.41	-1.7	20.46	20.53	95	59.11	62.94	46.81	0.3501	0.3728	0.8474
08 y00l	1.0	1.0	0.0	89.05	-7.75	28.37	29.42	105	67.03	74.28	48.51	0.3531	0.3913	1.0
09 y13l	0.875	1.0	0.0	88.12	-11.17	26.89	29.12	113	63.72	72.32	48.4	0.3455	0.3921	0.9737
10 y25l	0.75	1.0	0.0	85.29	-13.89	22.68	26.6	122	57.43	66.58	47.76	0.3343	0.3876	0.8964
11 y38l	0.625	1.0	0.0	84.88	-16.3	21.96	27.35	127	55.73	65.76	47.76	0.3293	0.3886	0.8854
12 y50l	0.5	1.0	0.0	84.61	-18.02	21.5	28.06	130	54.59	65.24	47.76	0.3257	0.3893	0.8784
13 y63l	0.375	1.0	0.0	84.45	-19.08	21.23	28.55	132	53.91	64.94	47.76	0.3236	0.3898	0.8743
14 y75l	0.25	1.0	0.0	84.37	-19.63	21.1	28.83	133	53.56	64.79	47.76	0.3224	0.39	0.8722
15 y88l	0.125	1.0	0.0	84.34	-19.87	21.04	28.94	133	53.41	64.72	47.76	0.322	0.3901	0.8714
16 l00c	0.0	1.0	0.0	84.34	-19.91	21.03	28.97	133	53.39	64.71	47.76	0.3219	0.3902	0.8712
17 l13c	0.0	1.0	0.125	84.35	-19.87	20.91	28.85	134	53.43	64.74	47.9	0.3217	0.3898	0.8716
18 l25c	0.0	1.0	0.25	84.4	-19.72	20.33	28.34	134	53.56	64.83	48.52	0.3209	0.3884	0.8728
19 l38c	0.0	1.0	0.375	84.48	-19.38	19.02	27.16	136	53.84	64.99	49.92	0.319	0.3851	0.875
20 l50c	0.0	1.0	0.5	84.65	-18.74	16.69	25.1	138	54.37	65.31	52.51	0.3158	0.3793	0.8793
21 l63c	0.0	1.0	0.625	84.92	-17.71	13.02	21.99	144	55.25	65.86	56.78	0.3106	0.3702	0.8866
22 l75c	0.0	1.0	0.75	85.19	-16.14	7.95	18.0	154	56.34	66.38	62.84	0.3036	0.3577	0.8937
23 l88c	0.0	1.0	0.875	85.85	-14.21	1.52	14.3	174	58.28	67.69	71.81	0.2947	0.3422	0.9113
24 c00v	0.0	1.0	1.0	86.46	-11.98	-5.08	13.03	203	60.3	68.91	81.7	0.2859	0.3267	0.9278
25 c13v	0.0	0.875	1.0	83.12	-7.38	-10.09	12.52	234	56.27	62.39	80.71	0.2822	0.3129	0.84
26 c25v	0.0	0.75	1.0	79.63	-2.34	-15.36	15.55	261	52.34	56.03	79.71	0.2783	0.2979	0.7544
27 c38v	0.0	0.675	1.0	76.66	2.16	-19.9	20.03	276	49.22	50.96	78.93	0.2748	0.2845	0.6861
28 c50v	0.0	0.5	1.0	74.48	5.55	-23.26	23.92	283	47.05	47.45	78.41	0.2721	0.2744	0.6388
29 c63v	0.0	0.375	1.0	73.12	7.72	-25.36	26.51	287	45.75	45.34	78.08	0.2704	0.268	0.6105
30 c75v	0.0	0.25	1.0	72.37	8.96	-26.53	28.01	289	45.05	44.21	77.92	0.2695	0.2644	0.5952
31 c88v	0.0	0.125	1.0	72.06	9.46	-27.02	28.64	289	44.76	43.75	77.87	0.269	0.2629	0.589
32 v00m	0.0	0.0	1.0	71.99	9.59	-27.14	28.8	289	44.7	43.64	77.87	0.2689	0.2626	0.5875
33 v13m	0.125	0.0	1.0	72.02	9.73	-27.39	29.08	290	44.8	43.69	78.28	0.2686	0.262	0.5883
34 v25m	0.25	0.0	1.0	72.05	9.83	-27.01	28.75	290	44.87	43.73	77.82	0.2696	0.2628	0.5887
35 v38m	0.375	0.0	1.0	72.17	10.33	-26.71	28.65	291	45.24	43.92	77.73	0.2711	0.2632	0.5913
36 v50m	0.5	0.0	1.0	72.42	11.32	-26.29	28.63	293	45.96	44.29	77.74	0.2736	0.2637	0.5963
37 v63m	0.625	0.0	1.0	72.83	12.89	-25.41	28.5	297	47.13	44.9	77.49	0.278	0.2649	0.6045
38 v75m	0.75	0.0	1.0	73.4	15.09	-24.07	28.41	302	48.81	45.77	77.03	0.2844	0.2667	0.6162
39 v88m	0.875	0.0	1.0	74.55	19.13	-23.69	30.45	309	52.18	47.56	79.13	0.2917	0.2659	0.6403
40 m00o	1.0	0.0	1.0	75.77	23.26	-23.22	32.87	315	55.86	49.52	81.32	0.2992	0.2652	0.6667
41 m13o	1.0	0.0	0.875	74.77	19.96	-14.71	24.8	324	52.88	47.92	68.33	0.3127	0.2833	0.6452
42 m25o	1.0	0.0	0.75	74.08	17.64	-7.19	19.05	338	50.85	46.83	58.4	0.3258	0.3	0.6304
43 m38o	1.0	0.0	0.675	73.71	16.27	-2.17	16.41	352	49.75	46.26	52.52	0.3349	0.3114	0.6228
44 m50o	1.0	0.0	0.5	73.46	15.32	1.5	15.39	6	49.0	45.87	48.5	0.3418	0.3199	0.6175
45 m63o	1.0	0.0	0.375	73.31	14.74	3.83	15.23	15	48.54	45.63	46.06	0.3461	0.3254	0.6143
46 m75o	1.0	0.0	0.25	73.22	14.43	5.14	15.32	20	48.3	45.5	44.75	0.3486	0.3284	0.6126
47 m88o	1.0	0.0	0.125	73.19	14.28	5.72	15.39	22	48.19	45.45	44.17	0.3497	0.3298	0.6119
48 o00y	1.0	0.0	0.0	73.16	14.19	5.84	15.34	22	48.12	45.41	44.03	0.3498	0.3301	0.6114
49 n00w	0.0	0.0	0.0	69.7	0.0	0.0	0.01	0	38.32	40.32	43.9	0.3127	0.329	0.5428
50 n13w	0.125	0.125	0.125	69.78	-0.01	-0.02	0.04	238	38.43	40.44	44.06	0.3126	0.329	0.5445
51 n25w	0.25	0.25	0.25	70.17	-0.01	-0.1	0.12	260	38.95	40.99	44.73	0.3124	0.3288	0.5518
52 n38w	0.375	0.375	0.375	71.08	-0.01	-0.22	0.23	264	40.2	42.3	46.27	0.3122	0.3285	0.5695
53 n50w	0.5	0.5	0.5	72.73	-0.01	-0.37	0.38	268	42.53	44.75	49.09	0.3119	0.3282	0.6025
54 n63w	0.625	0.625	0.625	75.36	0.0	-0.54	0.55	270	46.42	48.85	53.75	0.3115	0.3278	0.6576
55 n75w	0.75	0.75	0.75	79.84	-0.05	-0.63	0.64	264	53.58	56.4	62.12	0.3113	0.3277	0.7593
56 n88w	0.875	0.875	0.875	87.96	0.02	-0.01	0.03	324	68.43	71.99	78.4	0.3127	0.329	0.9692
57 n99w	1.0	1.0	1.0	95.41	0.0	0.0	0.01	0	84.2	88.59	96.46	0.3127	0.329	1.1927

KE370-7N, 65/66

 $n = 88.59 / (88.59 - 0.28) = 1.003$

TUB-test chart KE37; Hue circle and colorimetric data
Measurement: LCD and CRT display, and LCD projector

input: $olv^* setrgbcolor$
output: no change compared to input

Colorimetric data of Television Luminous System TLS70a for CIE lightness $L^*_N=70$ of black

System:

TLS70a **Y Yellow**

Projector: $LCH^*_a = 89.1 \ 29.4 \ 105$

LCD $LAB^*_a = 89.1 \ -7.8 \ 28.4$

Reflection:

$Y_N = 40.32$

$L^*_N = 69.7$

L Leaf green

$LCH^*_a = 84.3 \ 29.0 \ 133$

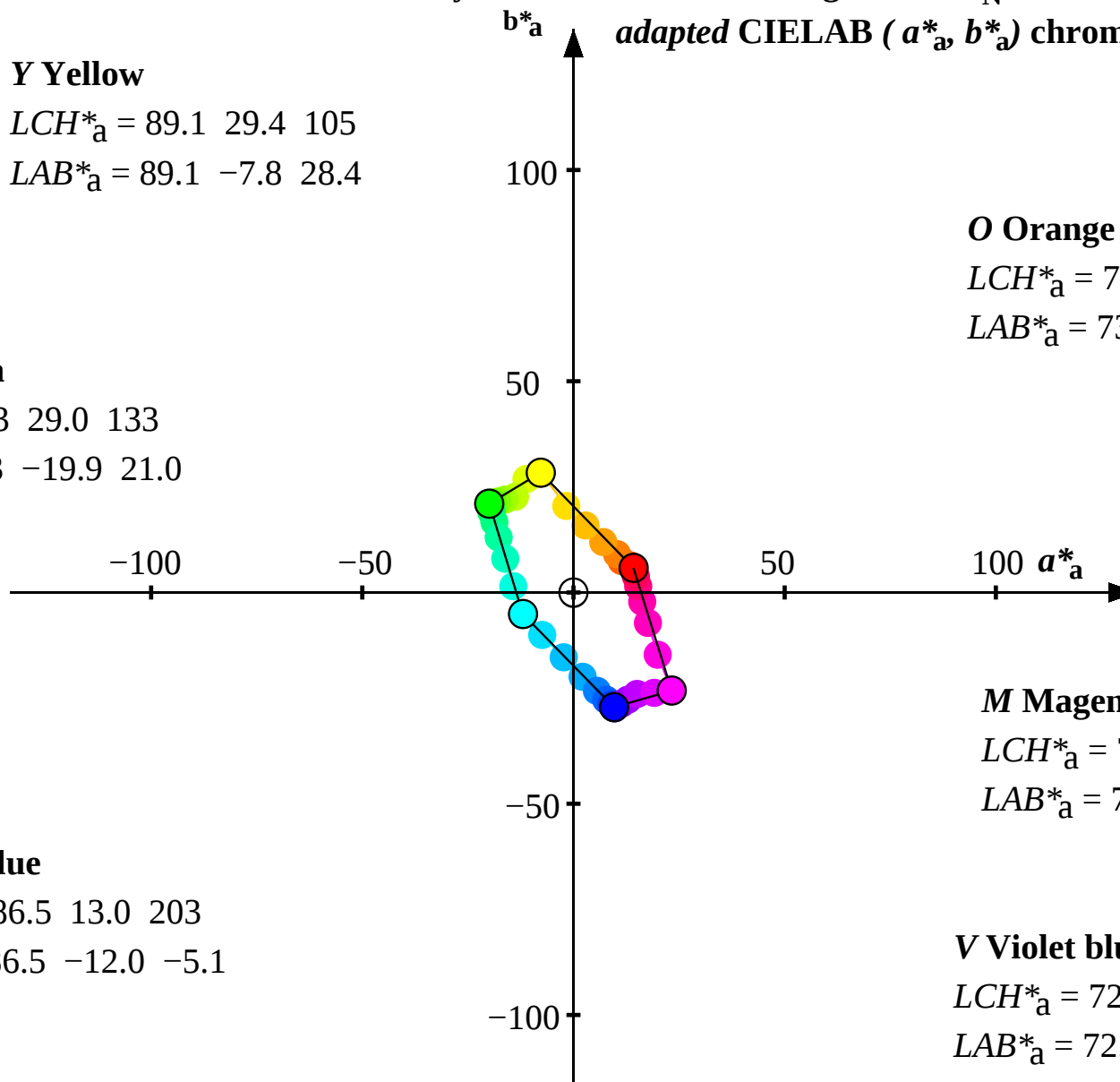
$LAB^*_a = 84.3 \ -19.9 \ 21.0$

C Cyan blue

$LCH^*_a = 86.5 \ 13.0 \ 203$

$LAB^*_a = 86.5 \ -12.0 \ -5.1$

adapted CIELAB (a^*_a , b^*_a) chroma diagram



O Orange red

$LCH^*_a = 73.2 \ 15.3 \ 22$

$LAB^*_a = 73.2 \ 14.2 \ 5.8$

M Magenta red

$LCH^*_a = 75.8 \ 32.9 \ 315$

$LAB^*_a = 75.8 \ 23.3 \ -23.2$

V Violet blue

$LCH^*_a = 72.0 \ 28.8 \ 289$

$LAB^*_a = 72.0 \ 9.6 \ -27.2$

See original or copy: <http://web.me.com/klaus.richter/KE37/KE37L0NP.PDF> /.PS
Technical information: <http://www.ps.bam.de> or <http://130.149.60.45/~farbmetrik>

TUB registration: 20100601-KE37/KE37L0NP.PDF /.PS
application for measurement of printer or monitor systems

TUB material: code=rha4ta