

Colorimetric "Standard data": Television Luminous System TLS11 for CIE lightness  $L^*_N=11$  of black for illuminant D65

System TLS11

LCD monitor

D65 reflection:

$Y_N = 1.23$

$L^*_N = 10.76$

| Color | $r=olv*_1$ | $g=olv*_2$ | $b=olv*_3$ | $L^*$ | $a^*$  | $b^*$  | $C^*_{ab}$ | $h_{ab}$ | $X=XYZ_1$ | $Y=XYZ_2$ | $Z=XYZ_3$ | $x$    | $y$    | $Y/88.59$ |
|-------|------------|------------|------------|-------|--------|--------|------------|----------|-----------|-----------|-----------|--------|--------|-----------|
| O (R) | 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    |
| Y     | 1.0        | 1.0        | 0.0        | 94.11 | -15.83 | 89.38  | 90.77      | 100      | 73.43     | 85.54     | 13.8      | 0.425  | 0.4951 | 0.9655    |
| L (G) | 0.0        | 1.0        | 0.0        | 84.21 | -81.1  | 76.13  | 111.24     | 137      | 32.83     | 64.47     | 12.29     | 0.2996 | 0.5883 | 0.7278    |
| C     | 0.0        | 1.0        | 1.0        | 87.18 | -51.1  | -9.41  | 51.97      | 190      | 46.37     | 70.38     | 89.45     | 0.2249 | 0.3413 | 0.7944    |
| V (B) | 0.0        | 0.0        | 1.0        | 33.09 | 59.26  | -94.9  | 111.9      | 302      | 15.11     | 7.58      | 78.79     | 0.1489 | 0.0747 | 0.0856    |
| M     | 1.0        | 0.0        | 1.0        | 59.56 | 89.09  | -50.27 | 102.3      | 331      | 54.26     | 27.64     | 80.12     | 0.3349 | 0.1706 | 0.312     |
| N     | 0.0        | 0.0        | 0.0        | 10.76 | 5.51   | -3.96  | 6.79       | 324      | 1.34      | 1.23      | 1.71      | 0.3134 | 0.2867 | 0.0139    |
| W     | 1.0        | 1.0        | 1.0        | 95.41 | -0.21  | 4.78   | 4.79       | 93       | 84.08     | 88.59     | 89.43     | 0.3208 | 0.338  | 1.0       |
| N0    | 0.0        | 0.0        | 0.0        | 10.76 | 5.51   | -3.96  | 6.79       | 324      | 1.34      | 1.23      | 1.71      | 0.3134 | 0.2867 | 0.0139    |
| W1    | 1.0        | 1.0        | 1.0        | 95.41 | -0.21  | 4.78   | 4.79       | 93       | 84.08     | 88.59     | 89.43     | 0.3208 | 0.338  | 1.0       |

Colorimetric "Adapted data (a)": Television Luminous System TLS11a for CIE lightness  $L^*_N=11$  of black for illuminant D65

System TLS11a

LCD monitor

D65 reflection:

$Y_N = 1.23$

$L^*_N = 10.76$

| Color | $r=olv*_1$ | $g=olv*_2$ | $b=olv*_3$ | $L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h_{ab,a}$ | $X_a=XYZ_{1a}$ | $Y_a=XYZ_{2a}$ | $Z_a=XYZ_{3a}$ | $x_a$  | $y_a$  | $Y_a/88.59$ |
|-------|------------|------------|------------|---------|---------|---------|--------------|------------|----------------|----------------|----------------|--------|--------|-------------|
| O (R) | 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      |
| Y     | 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      |
| L (G) | 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      |
| C     | 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      |
| V (B) | 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      |
| M     | 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       |
| N     | 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      |
| W     | 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         |
| N0    | 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      |
| W1    | 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         |

Colorimetric "Adapted data (a0)": Television Luminous System TLS00a0 for CIE lightness  $L^*_N=00$  of black for illuminant D65

System TLS00a0

LCD monitor

D65 reflection:

$Y_N = 0.0$

$L^*_N = 0.0$

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

| Color | $r=olv*_1$ | $g=olv*_2$ | $b=olv*_3$ | $L^*_{a0}$ | $a^*_{a0}$ | $b^*_{a0}$ | $C^*_{ab,a0}$ | $h_{ab,a0}$ | $X_{a0}=XYZ_{1a0}$    | $Y_{a0}=XYZ_{2a0}$    | $Z_{a0}=XYZ_{3a0}$    | $x_{a0}$ | $y_{a0}$ | $Y_{a0}/88.59$ |
|-------|------------|------------|------------|------------|------------|------------|---------------|-------------|-----------------------|-----------------------|-----------------------|----------|----------|----------------|
| O (R) | 1.0        | 0.0        | 0.0        | 53.21      | 78.53      | 65.65      | 102.36        | 40          | $40.69=k(41.29-1.17)$ | $21.24=k(22.17-1.23)$ | $2.1=k(3.41-1.34)$    | 0.6355   | 0.3317   | 0.2397         |
| Y     | 1.0        | 1.0        | 0.0        | 94.1       | -15.93     | 87.27      | 88.72         | 100         | $73.34=k(73.49-1.17)$ | $85.49=k(85.54-1.23)$ | $14.68=k(15.81-1.34)$ | 0.4227   | 0.4927   | 0.9651         |
| L (G) | 0.0        | 1.0        | 0.0        | 84.03      | -83.48     | 75.12      | 112.31        | 138         | $31.96=k(32.68-1.17)$ | $64.13=k(64.47-1.23)$ | $12.56=k(13.72-1.34)$ | 0.2941   | 0.5903   | 0.7239         |
| C     | 0.0        | 1.0        | 1.0        | 87.06      | -52.42     | -13.54     | 54.15         | 194         | $45.72=k(46.25-1.17)$ | $70.12=k(70.38-1.23)$ | $95.18=k(95.2-1.34)$  | 0.2167   | 0.3323   | 0.7915         |
| V (B) | 0.0        | 0.0        | 1.0        | 30.5       | 60.26      | -97.5      | 114.62        | 302         | $13.47=k(14.45-1.17)$ | $6.44=k(7.58-1.23)$   | $76.35=k(76.63-1.34)$ | 0.14     | 0.0669   | 0.0727         |
| M     | 1.0        | 0.0        | 1.0        | 58.77      | 89.16      | -52.55     | 103.5         | 329         | $52.97=k(53.4-1.17)$  | $26.78=k(27.64-1.23)$ | $81.35=k(81.56-1.34)$ | 0.3288   | 0.1663   | 0.3023         |
| N     | 0.0        | 0.0        | 0.0        | 0.0        | 0.0        | 0.0        | 0.01          | 358         | $0.0=k(1.17-1.17)$    | $0.0=k(1.23-1.23)$    | $0.0=k(1.34-1.34)$    | 0.0      | 0.0      | 0.0            |
| W     | 1.0        | 1.0        | 1.0        | 95.41      | 0.0        | 0.0        | 0.01          | 0           | $84.2=k(84.2-1.17)$   | $88.59=k(88.59-1.23)$ | $96.46=k(96.46-1.34)$ | 0.3127   | 0.329    | 1.0            |
| N0    | 0.0        | 0.0        | 0.0        | 0.0        | 0.0        | 0.0        | 0.01          | 358         | $0.0=k(1.17-1.17)$    | $0.0=k(1.23-1.23)$    | $0.0=k(1.34-1.34)$    | 0.0      | 0.0      | 0.0            |
| W1    | 1.0        | 1.0        | 1.0        | 95.41      | 0.0        | 0.0        | 0.01          | 0           | $84.2=k(84.2-1.17)$   | $88.59=k(88.59-1.23)$ | $96.46=k(96.46-1.34)$ | 0.3127   | 0.329    | 1.0            |

Colorimetric "Adapted data (a0)": Television Luminous System TLS00a0 for CIE lightness  $L^*_N=00$  of black for illuminant D65

System TLS00a0

LCD monitor

D65 reflection:

$Y_N = 0.0$

$L^*_N = 0.0$

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

| Color | $r=olv*_1$ | $g=olv*_2$ | $b=olv*_3$ | $L^*_{a0}$ | $a^*_{a0}$ | $b^*_{a0}$ | $C^*_{ab,a0}$ | $h_{ab,a0}$ | $X_{a0}=XYZ_{1a0}$    | $Y_{a0}=XYZ_{2a0}$    | $Z_{a0}=XYZ_{3a0}$    | $x_{a0}$ | $y_{a0}$ | $Y_{a0}/88.59$ |
|-------|------------|------------|------------|------------|------------|------------|---------------|-------------|-----------------------|-----------------------|-----------------------|----------|----------|----------------|
| O (R) | 1.0        | 0.0        | 0.0        | 53.21      | 78.53      | 65.65      | 102.36        | 40          | $40.69=k(41.29-1.17)$ | $21.24=k(22.17-1.23)$ | $2.1=k(3.41-1.34)$    | 0.6355   | 0.3317   | 0.2397         |
| Y     | 1.0        | 1.0        | 0.0        | 94.1       | -15.93     | 87.27      | 88.72         | 100         | $73.34=k(73.49-1.17)$ | $85.49=k(85.54-1.23)$ | $14.68=k(15.81-1.34)$ | 0.4227   | 0.4927   | 0.9651         |
| L (G) | 0.0        | 1.0        | 0.0        | 84.03      | -83.48     | 75.12      | 112.31        | 138         | $31.96=k(32.68-1.17)$ | $64.13=k(64.47-1.23)$ | $12.56=k(13.72-1.34)$ | 0.2941   | 0.5903   | 0.7239         |
| C     | 0.0        | 1.0        | 1.0        | 87.06      | -52.42     | -13.54     | 54.15         | 194         | $45.72=k(46.25-1.17)$ | $70.12=k(70.38-1.23)$ | $95.18=k(95.2-1.34)$  | 0.2167   | 0.3323   | 0.7915         |
| V (B) | 0.0        | 0.0        | 1.0        | 30.5       | 60.26      | -97.5      | 114.62        | 302         | $13.47=k(14.45-1.17)$ | $6.44=k(7.58-1.23)$   | $76.35=k(76.63-1.34)$ | 0.14     | 0.0669   | 0.0727         |
| M     | 1.0        | 0.0        | 1.0        | 58.77      | 89.16      | -52.55     | 103.5         | 329         | $52.97=k(53.4-1.17)$  | $26.78=k(27.64-1.23)$ | $81.35=k(81.56-1.34)$ | 0.3288   | 0.1663   | 0.3023         |
| N     | 0.0        | 0.0        | 0.0        | 0.0        | 0.0        | 0.0        | 0.01          | 358         | $0.0=k(1.17-1.17)$    | $0.0=k(1.23-1.23)$    | $0.0=k(1.34-1.34)$    | 0.0      | 0.0      | 0.0            |
| W     | 1.0        | 1.0        | 1.0        | 95.41      | 0.0        | 0.0        | 0.01          | 0           | $84.2=k(84.2-1.17)$   | $88.59=k(88.59-1.23)$ | $96.46=k(96.46-1.34)$ | 0.3127   | 0.329    | 1.0            |
| N0    | 0.0        | 0.0        | 0.0        | 0.0        | 0.0        | 0.0        | 0.01          | 358         | $0.0=k(1.17-1.17)$    | $0.0=k(1.23-1.23)$    | $0.0=k(1.34-1.34)$    | 0.0      | 0.0      | 0.0            |
| W1    | 1.0        | 1.0        | 1.0        | 95.41      | 0.0        | 0.0        | 0.01          | 0           | $84.2=k(84.2-1.17)$   | $88.59=k(88.59-1.23)$ | $96.46=k(96.46-1.34)$ | 0.3127   | 0.329    | 1.0            |

Calculated colorimetric data: Television Luminous Systems TLSxxa for CIE lightness  $L^*_N=00, 06, 11, 18$  of black for illuminant D65

System TLS00a

LCD monitor

D65 reflection:

$Y_N = 0.0$

$L^*_N = 0.0$

$n = 88.59 / (88.59 + 0.0)$   
 $= 1.0$

| Color | $r=olv*_1$ | $g=olv*_2$ | $b=olv*_3$ | $L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h_{ab,a}$ | $X_a=XYZ_{1a}$       | $Y_a=XYZ_{2a}$       | $Z_a=XYZ_{3a}$       | $x_a$  | $y_a$  | $Y_a/88.59$ |
|-------|------------|------------|------------|---------|---------|---------|--------------|------------|----------------------|----------------------|----------------------|--------|--------|-------------|
| O (R) | 1.0        | 0.0        | 0.0        | 53.21   | 78.53   | 65.65   | 102.36       | 40         | $40.69=n(40.69+0.0)$ | $21.24=n(21.24+0.0)$ | $2.1=n(2.1+0.0)$     | 0.6355 | 0.3317 | 0.2397      |
| Y     | 1.0        | 1.0        | 0.0        | 94.1    | -15.93  | 87.27   | 88.72        | 100        | $73.34=n(73.34+0.0)$ | $85.49=n(85.49+0.0)$ | $14.68=n(14.68+0.0)$ | 0.4227 | 0.4927 | 0.9651      |
| L (G) | 0.0        | 1.0        | 0.0        | 84.03   | -83.48  | 75.12   | 112.31       | 138        | $31.96=n(31.96+0.0)$ | $64.13=n(64.13+0.0)$ | $12.56=n(12.56+0.0)$ | 0.2941 | 0.5903 | 0.7239      |
| C     | 0.0        | 1.0        | 1.0        | 87.06   | -52.42  | -13.54  | 54.15        | 194        | $45.72=n(45.72+0.0)$ | $70.12=n(70.12+0.0)$ | $95.18=n(95.18+0.0)$ | 0.2167 | 0.3323 | 0.7915      |
| V (B) | 0.0        | 0.0        | 1.0        | 30.5    | 60.26   | -97.5   | 114.62       | 302        | $13.47=n(13.47+0.0)$ | $6.44=n(6.44+0.0)$   | $76.35=n(76.35+0.0)$ | 0.14   | 0.0669 | 0.0727      |
| M     | 1.0        | 0.0        | 1.0        | 58.77   | 89.16   | -52.55  | 103.5        | 329        | $52.97=n(52.97+0.0)$ | $26.78=n(26.78+0.0)$ | $81.35=n(81.35+0.0)$ | 0.3288 | 0.1663 | 0.3023      |
| N     | 0.0        | 0.0        | 0.0        | 0.0     | 0.0     | 0.0     | 0.0          | 358        | $0.0=n(0.0+0.0)$     | $0.0=n(0.0+0.0)$     | $0.0=n(0.0+0.0)$     | 0.0    | 0.0    | 0.0         |
| W     | 1.0        | 1.0        | 1.0        | 95.41   | 0.0     | 0.0     | 0.0          | 0          | $84.2=n(84.2+0.0)$   | $88.59=n(88.59+0.0)$ | $96.46=n(96.46+0.0)$ | 0.3127 | 0.329  | 1.0         |
| N0    | 0.0        | 0.0        | 0.0        | 0.0     | 0.0     | 0.0     | 0.0          | 358        | $0.0=n(0.0+0.0)$     | $0.0=n(0.0+0.0)$     | $0.0=n(0.0+0.0)$     | 0.0    | 0.0    | 0.0         |
| W1    | 1.0        | 1.0        | 1.0        | 95.41   | 0.0     | 0.0     | 0.0          | 0          | $84.2=n(84.2+0.0)$   | $88.59=n(88.59+0.0)$ | $96.46=n(96.46+0.0)$ | 0.3127 | 0.329  | 1.0         |

System TLS06a

LCD monitor

D65 reflection:

$Y_N = 0.63$

$L^*_N = 5.69$

$n = 88.59 / (88.59 + 0.63)$   
 $= 0.993$

| Color | $r=olv*_1$ | $g=olv*_2$ | $b=olv*_3$ | $L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h_{ab,a}$ | $X_a=XYZ_{1a}$       | $Y_a=XYZ_{2a}$        | $Z_a=XYZ_{3a}$        | $x_a$  | $y_a$  | $Y_a/88.59$ |
|-------|------------|------------|------------|---------|---------|---------|--------------|------------|----------------------|-----------------------|-----------------------|--------|--------|-------------|
| O (R) | 1.0        | 0.0        | 0.0        | 53.72   | 77.26   | 61.39   | 98.68        | 38         | $41.0=n(40.69+0.6)$  | $21.71=n(21.24+0.63)$ | $2.77=n(2.1+0.69)$    | 0.6261 | 0.3316 | 0.2451      |
| Y     | 1.0        | 1.0        | 0.0        | 94.11   | -15.81  | 85.96   | 87.4         | 100        | $73.41=n(73.34+0.6)$ | $85.52=n(85.49+0.63)$ | $15.25=n(14.68+0.69)$ | 0.4215 | 0.4909 | 0.9653      |
| L (G) | 0.0        | 1.0        | 0.0        | 84.12   | -82.54  | 73.77   | 110.71       | 138        | $32.33=n(31.96+0.6)$ | $64.31=n(64.13+0.63)$ | $13.15=n(12.56+0.69)$ | 0.2945 | 0.5858 | 0.7259      |
| C     | 0.0        | 1.0        | 1.0        | 87.12   | -51.92  | -13.44  | 53.64        | 195        | $45.99=n(45.72+0.6)$ | $70.25=n(70.12+0.63)$ | $95.19=n(95.18+0.69)$ | 0.2175 | 0.3323 | 0.793       |
| V (B) | 0.0        | 0.0        | 1.0        | 31.86   | 57.6    | -95.27  | 111.34       | 301        | $13.97=n(13.47+0.6)$ | $7.02=n(6.44+0.63)$   | $76.49=n(76.35+0.69)$ | 0.1433 | 0.072  | 0.0793      |
| M     | 1.0        | 0.0        | 1.0        | 59.18   | 87.99   | -51.93  | 102.18       | 329        | $53.19=n(52.97+0.6)$ | $27.22=n(26.78+0.63)$ | $81.46=n(81.35+0.69)$ | 0.3286 | 0.1682 | 0.3073      |
| N     | 0.0        | 0.0        | 0.0        | 5.65    | 0.0     | 0.0     | 0.0          | 358        | $0.59=n(0.0+0.6)$    | $0.63=n(0.0+0.63)$    | $0.68=n(0.0+0.69)$    | 0.3127 | 0.329  | 0.0071      |
| W     | 1.0        | 1.0        | 1.0        | 95.41   | 0.0     | 0.0     | 0.0          | 0          | $84.2=n(84.2+0.6)$   | $88.59=n(88.59+0.63)$ | $96.46=n(96.46+0.69)$ | 0.3127 | 0.329  | 1.0         |
| N0    | 0.0        | 0.0        | 0.0        | 5.65    | 0.0     | 0.0     | 0.0          | 358        | $0.59=n(0.0+0.6)$    | $0.63=n(0.0+0.63)$    | $0.68=n(0.0+0.69)$    | 0.3127 | 0.329  | 0.0071      |
| W1    | 1.0        | 1.0        | 1.0        | 95.41   | 0.0     | 0.0     | 0.0          | 0          | $84.2=n(84.2+0.6)$   | $88.59=n(88.59+0.63)$ | $96.46=n(96.46+0.69)$ | 0.3127 | 0.329  | 1.0         |

System TLS11a

LCD monitor

D65 reflection:

$Y_N = 1.26$

$L^*_N = 11.0$

$n = 88.59 / (88.59 + 1.26)$   
 $= 0.986$

| Color | $r=olv*_1$ | $g=olv*_2$ | $b=olv*_3$ | $L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h_{ab,a}$ | $X_a=XYZ_{1a}$       | $Y_a=XYZ_{2a}$        | $Z_a=XYZ_{3a}$        | $x_a$  | $y_a$  | $Y_a/88.59$ |
|-------|------------|------------|------------|---------|---------|---------|--------------|------------|----------------------|-----------------------|-----------------------|--------|--------|-------------|
| O (R) | 1.0        | 0.0        | 0.0        | 54.22   | 76.05   | 57.92   | 95.59        | 37         | $41.3=n(40.69+1.2)$  | $22.18=n(21.24+1.26)$ | $3.43=n(2.1+1.37)$    | 0.6172 | 0.3315 | 0.2504      |
| Y     | 1.0        | 1.0        | 0.0        | 94.11   | -15.69  | 84.7    | 86.14        | 101        | $73.49=n(73.34+1.2)$ | $85.54=n(85.49+1.26)$ | $15.82=n(14.68+1.37)$ | 0.4203 | 0.4892 | 0.9655      |
| L (G) | 0.0        | 1.0        | 0.0        | 84.21   | -81.61  | 72.48   | 109.16       | 138        | $32.69=n(31.96+1.2)$ | $64.48=n(64.13+1.26)$ | $13.73=n(12.56+1.37)$ | 0.2948 | 0.5814 | 0.7278      |
| C     | 0.0        | 1.0        | 1.0        | 87.18   | -51.43  | -13.34  | 53.14        | 195        | $46.26=n(45.72+1.2)$ | $70.38=n(70.12+1.26)$ | $95.2=n(95.18+1.37)$  | 0.2184 | 0.3322 | 0.7944      |
| V (B) | 0.0        | 0.0        | 1.0        | 33.12   | 55.21   | -93.2   | 108.33       | 301        | $14.46=n(13.47+1.2)$ | $7.59=n(6.44+1.26)$   | $76.63=n(76.35+1.37)$ | 0.1466 | 0.077  | 0.0857      |
| M     | 1.0        | 0.0        | 1.0        | 59.57   | 86.86   | -51.33  | 100.9        | 329        | $53.4=n(52.97+1.2)$  | $27.65=n(26.78+1.26)$ | $81.56=n(81.35+1.37)$ | 0.3284 | 0.17   | 0.3121      |
| N     | 0.0        | 0.0        | 0.0        | 10.87   | 0.0     | 0.0     | 0.0          | 358        | $1.18=n(0.0+1.2)$    | $1.24=n(0.0+1.26)$    | $1.35=n(0.0+1.37)$    | 0.3127 | 0.329  | 0.014       |
| W     | 1.0        | 1.0        | 1.0        | 95.41   | 0.0     | 0.0     | 0.0          | 0          | $84.2=n(84.2+1.2)$   | $88.59=n(88.59+1.26)$ | $96.46=n(96.46+1.37)$ | 0.3127 | 0.329  | 1.0         |
| N0    | 0.0        | 0.0        | 0.0        | 10.87   | 0.0     | 0.0     | 0.0          | 358        | $1.18=n(0.0+1.2)$    | $1.24=n(0.0+1.26)$    | $1.35=n(0.0+1.37)$    | 0.3127 | 0.329  | 0.014       |
| W1    | 1.0        | 1.0        | 1.0        | 95.41   | 0.0     | 0.0     | 0.0          | 0          | $84.2=n(84.2+1.2)$   | $88.59=n(88.59+1.26)$ | $96.46=n(96.46+1.37)$ | 0.3127 | 0.329  | 1.0         |

System TLS18a

LCD monitor

D65 reflection:

$Y_N = 2.52$

$L^*_N = 18.01$

$n = 88.59 / (88.59 + 2.52)$   
 $= 0.972$

| Color | $r=olv*_1$ | $g=olv*_2$ | $b=olv*_3$ | $L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h_{ab,a}$ | $X_a=XYZ_{1a}$       | $Y_a=XYZ_{2a}$        | $Z_a=XYZ_{3a}$        | $x_a$  | $y_a$  | $Y_a/88.59$ |
|-------|------------|------------|------------|---------|---------|---------|--------------|------------|----------------------|-----------------------|-----------------------|--------|--------|-------------|
| O (R) | 1.0        | 0.0        | 0.0        | 55.18   | 73.73   | 52.49   | 90.51        | 35         | $41.89=n(40.69+2.4)$ | $23.1=n(21.24+2.52)$  | $4.71=n(2.1+2.74)$    | 0.601  | 0.3314 | 0.2608      |
| Y     | 1.0        | 1.0        | 0.0        | 94.13   | -15.46  | 82.32   | 83.76        | 101        | $73.64=n(73.34+2.4)$ | $85.58=n(85.49+2.52)$ | $16.94=n(14.68+2.74)$ | 0.418  | 0.4858 | 0.966       |
| L (G) | 0.0        | 1.0        | 0.0        | 84.39   | -79.83  | 70.06   | 106.23       | 139        | $33.4=n(31.96+2.4)$  | $64.81=n(64.13+2.52)$ | $14.88=n(12.56+2.74)$ | 0.2954 | 0.5731 | 0.7316      |
| C     | 0.0        | 1.0        | 1.0        | 87.31   | -50.48  | -13.14  | 52.17        | 195        | $46.79=n(45.72+2.4)$ | $70.63=n(70.12+2.52)$ | $95.22=n(95.18+2.74)$ | 0.22   | 0.3322 | 0.7973      |
| V (B) | 0.0        | 0.0        | 1.0        | 35.43   | 51.08   | -89.43  | 103.0        | 300        | $15.43=n(13.47+2.4)$ | $8.71=n(6.44+2.52)$   | $76.9=n(76.35+2.74)$  | 0.1527 | 0.0862 | 0.0984      |
| M     | 1.0        | 0.0        | 1.0        | 60.33   | 84.67   | -50.18  | 98.43        | 329        | $53.83=n(52.97+2.4)$ | $28.49=n(26.78+2.52)$ | $81.77=n(81.35+2.74)$ | 0.328  | 0.1736 | 0.3216      |
| N     | 0.0        | 0.0        | 0.0        | 17.69   | 0.0     | 0.0     | 0.0          | 0          | $2.33=n(0.0+2.4)$    | $2.67=n(0.0+2.52)$    | $2.67=n(0.0+2.74)$    | 0.3127 | 0.329  | 0.0277      |
| W     | 1.0        | 1.0        | 1.0        | 95.41   | 0.0     | 0.0     | 0.0          | 0          | $84.2=n(84.2+2.4)$   | $88.59=n(88.59+2.52)$ | $96.46=n(96.46+2.74)$ | 0.3127 | 0.329  | 1.0         |
| N0    | 0.0        | 0.0        | 0.0        | 17.69   | 0.0     | 0.0     | 0.0          | 0          | $2.33=n(0.0+2.4)$    | $2.67=n(0.0+2.52)$    | $2.67=n(0.0+2.74)$    | 0.3127 | 0.329  | 0.0277      |
| W1    | 1.0        | 1.0        | 1.0        | 95.41   | 0.0     | 0.0     | 0.0          | 0          | $84.2=n(84.2+2.4)$   | $88.59=n(88.59+2.52)$ | $96.46=n(96.46+2.74)$ | 0.3127 | 0.329  | 1.0         |

IE330-7N, Colorimetric data of Television Luminous System TLS11a for CIE standard illuminant D65; LCD monitor; Page: 2/9

TUB-test chart IE33; Hue circle and colorimetric data

input:  $olv^* \text{ setrgbcolor}$

Display measurement: LCD, CRT and LCD projector, page 2/9

output: no change compared to input

Colorimetric "Adapted data (a0)": Television Luminous System TLS00a0 for CIE lightness  $L^*_N=00$  of black for illuminant D65

System TLS00a0

| Color       | r=olv* <sub>1</sub> | g=olv* <sub>2</sub> | b=olv* <sub>3</sub> | L* <sub>a0</sub> | a* <sub>a0</sub> | b* <sub>a0</sub> | C* <sub>ab,a0</sub> | h <sub>ab,a0</sub> | X <sub>a0</sub> =XYZ <sub>1a0</sub> | Y <sub>a0</sub> =XYZ <sub>2a0</sub> | Z <sub>a0</sub> =XYZ <sub>3a0</sub> | x <sub>a0</sub> | y <sub>a0</sub> | Y <sub>a0</sub> /88.59 |
|-------------|---------------------|---------------------|---------------------|------------------|------------------|------------------|---------------------|--------------------|-------------------------------------|-------------------------------------|-------------------------------------|-----------------|-----------------|------------------------|
| LCD monitor |                     |                     |                     |                  |                  |                  |                     |                    |                                     |                                     |                                     |                 |                 |                        |
| O (R)       | 1.0                 | 0.0                 | 0.0                 | 53.21            | 78.53            | 65.65            | 102.36              | 40                 | 40.69=k(41.29-1.17)                 | 21.24=k(22.17-1.23)                 | 2.1=k(3.41-1.34)                    | 0.6355          | 0.3317          | 0.2397                 |
| Y           | 1.0                 | 1.0                 | 0.0                 | 94.1             | -15.93           | 87.27            | 88.72               | 100                | 73.34=k(73.49-1.17)                 | 85.49=k(85.54-1.23)                 | 14.68=k(15.81-1.34)                 | 0.4227          | 0.4927          | 0.9651                 |
| L (G)       | 0.0                 | 1.0                 | 0.0                 | 84.03            | -83.48           | 75.12            | 112.31              | 138                | 31.96=k(32.68-1.17)                 | 64.13=k(64.47-1.23)                 | 12.56=k(13.72-1.34)                 | 0.2941          | 0.5903          | 0.7239                 |
| C           | 0.0                 | 1.0                 | 1.0                 | 87.06            | -52.42           | -13.54           | 54.15               | 194                | 45.72=k(46.25-1.17)                 | 70.12=k(70.38-1.23)                 | 95.18=k(95.2-1.34)                  | 0.2167          | 0.3323          | 0.7915                 |
| V (B)       | 0.0                 | 0.0                 | 1.0                 | 30.5             | 60.26            | -97.5            | 114.62              | 302                | 13.47=k(14.45-1.17)                 | 6.44=k(7.58-1.23)                   | 76.35=k(76.63-1.34)                 | 0.14            | 0.0669          | 0.0727                 |
| M           | 1.0                 | 0.0                 | 1.0                 | 58.77            | 89.16            | -52.55           | 103.5               | 329                | 52.97=k(53.4-1.17)                  | 26.78=k(27.64-1.23)                 | 81.35=k(81.56-1.34)                 | 0.3288          | 0.1663          | 0.3023                 |
| N           | 0.0                 | 0.0                 | 0.0                 | 0.0              | 0.0              | 0.0              | 0.01                | 358                | 0.0=k(1.17-1.17)                    | 0.0=k(1.23-1.23)                    | 0.0=k(1.34-1.34)                    | 0.0             | 0.0             | 0.0                    |
| W           | 1.0                 | 1.0                 | 1.0                 | 95.41            | 0.0              | 0.0              | 0.01                | 0                  | 84.2=k(84.2-1.17)                   | 88.59=k(88.59-1.23)                 | 96.46=k(96.46-1.34)                 | 0.3127          | 0.329           | 1.0                    |
| N0          | 0.0                 | 0.0                 | 0.0                 | 0.0              | 0.0              | 0.0              | 0.01                | 358                | 0.0=k(1.17-1.17)                    | 0.0=k(1.23-1.23)                    | 0.0=k(1.34-1.34)                    | 0.0             | 0.0             | 0.0                    |
| W1          | 1.0                 | 1.0                 | 1.0                 | 95.41            | 0.0              | 0.0              | 0.01                | 0                  | 84.2=k(84.2-1.17)                   | 88.59=k(88.59-1.23)                 | 96.46=k(96.46-1.34)                 | 0.3127          | 0.329           | 1.0                    |

Calculated colorimetric data: Television Luminous Systems TLSxxa for CIE lightness  $L^*_N=27, 33, 52, 70$  of black for illuminant D65

System TLS27a

| Color       | r=olv* <sub>1</sub> | g=olv* <sub>2</sub> | b=olv* <sub>3</sub> | L* <sub>a</sub> | a* <sub>a</sub> | b* <sub>a</sub> | C* <sub>ab,a</sub> | h <sub>ab,a</sub> | X <sub>a</sub> =XYZ <sub>1a</sub> | Y <sub>a</sub> =XYZ <sub>2a</sub> | Z <sub>a</sub> =XYZ <sub>3a</sub> | x <sub>a</sub> | y <sub>a</sub> | Y <sub>a</sub> /88.59 |
|-------------|---------------------|---------------------|---------------------|-----------------|-----------------|-----------------|--------------------|-------------------|-----------------------------------|-----------------------------------|-----------------------------------|----------------|----------------|-----------------------|
| LCD monitor |                     |                     |                     |                 |                 |                 |                    |                   |                                   |                                   |                                   |                |                |                       |
| O (R)       | 1.0                 | 0.0                 | 0.0                 | 56.94           | 69.53           | 44.95           | 82.8               | 33                | 43.03=n(40.69+4.79)               | 24.86=n(21.24+5.04)               | 7.18=n(2.1+5.49)                  | 0.5732         | 0.3312         | 0.2807                |
| Y           | 1.0                 | 1.0                 | 0.0                 | 94.17           | -15.02          | 78.03           | 79.46              | 101               | 73.92=n(73.34+4.79)               | 85.66=n(85.49+5.04)               | 19.08=n(14.68+5.49)               | 0.4138         | 0.4795         | 0.9669                |
| L (G)       | 0.0                 | 1.0                 | 0.0                 | 84.71           | -76.5           | 65.8            | 100.91             | 139               | 34.77=n(31.96+4.79)               | 65.45=n(64.13+5.04)               | 17.07=n(12.56+5.49)               | 0.2964         | 0.558          | 0.7388                |
| C           | 0.0                 | 1.0                 | 1.0                 | 87.54           | -48.68          | -12.75          | 50.33              | 195               | 47.79=n(45.72+4.79)               | 71.11=n(70.12+5.04)               | 95.25=n(95.18+5.49)               | 0.2232         | 0.3321         | 0.8027                |
| V (B)       | 0.0                 | 0.0                 | 1.0                 | 39.35           | 44.67           | -83.08          | 94.33              | 298               | 17.28=n(13.47+4.79)               | 10.86=n(6.44+5.04)                | 77.43=n(76.35+5.49)               | 0.1637         | 0.1029         | 0.1226                |
| M           | 1.0                 | 0.0                 | 1.0                 | 61.75           | 80.64           | -48.02          | 93.87              | 329               | 54.65=n(52.97+4.79)               | 30.11=n(26.78+5.04)               | 82.16=n(81.35+5.49)               | 0.3274         | 0.1804         | 0.3399                |
| N           | 0.0                 | 0.0                 | 0.0                 | 26.07           | 0.0             | 0.0             | 0.0                | 0                 | 4.53=n(0.0+4.79)                  | 4.77=n(0.0+5.04)                  | 5.19=n(0.0+5.49)                  | 0.3127         | 0.329          | 0.0538                |
| W           | 1.0                 | 1.0                 | 1.0                 | 95.41           | 0.0             | 0.0             | 0.0                | 0                 | 84.2=n(84.2+4.79)                 | 88.59=n(88.59+5.04)               | 96.46=n(96.46+5.49)               | 0.3127         | 0.329          | 1.0                   |
| N0          | 0.0                 | 0.0                 | 0.0                 | 26.07           | 0.0             | 0.0             | 0.0                | 0                 | 4.53=n(0.0+4.79)                  | 4.77=n(0.0+5.04)                  | 5.19=n(0.0+5.49)                  | 0.3127         | 0.329          | 0.0538                |
| W1          | 1.0                 | 1.0                 | 1.0                 | 95.41           | 0.0             | 0.0             | 0.0                | 0                 | 84.2=n(84.2+4.79)                 | 88.59=n(88.59+5.04)               | 96.46=n(96.46+5.49)               | 0.3127         | 0.329          | 1.0                   |

System TLS38a

| Color       | r=olv* <sub>1</sub> | g=olv* <sub>2</sub> | b=olv* <sub>3</sub> | L* <sub>a</sub> | a* <sub>a</sub> | b* <sub>a</sub> | C* <sub>ab,a</sub> | h <sub>ab,a</sub> | X <sub>a</sub> =XYZ <sub>1a</sub> | Y <sub>a</sub> =XYZ <sub>2a</sub> | Z <sub>a</sub> =XYZ <sub>3a</sub> | x <sub>a</sub> | y <sub>a</sub> | Y <sub>a</sub> /88.59 |
|-------------|---------------------|---------------------|---------------------|-----------------|-----------------|-----------------|--------------------|-------------------|-----------------------------------|-----------------------------------|-----------------------------------|----------------|----------------|-----------------------|
| LCD monitor |                     |                     |                     |                 |                 |                 |                    |                   |                                   |                                   |                                   |                |                |                       |
| O (R)       | 1.0                 | 0.0                 | 0.0                 | 60.0            | 62.53           | 35.83           | 72.06              | 30                | 45.14=n(40.69+9.58)               | 28.12=n(21.24+10.08)              | 11.74=n(2.1+10.98)                | 0.531          | 0.3308         | 0.3174                |
| Y           | 1.0                 | 1.0                 | 0.0                 | 94.23           | -14.21          | 70.89           | 72.3               | 101               | 74.45=n(73.34+9.58)               | 85.81=n(85.49+10.08)              | 23.03=n(14.68+10.98)              | 0.4062         | 0.4682         | 0.9686                |
| L (G)       | 0.0                 | 1.0                 | 0.0                 | 85.32           | -70.65          | 58.9            | 91.98              | 140               | 37.29=n(31.96+9.58)               | 66.63=n(64.13+10.08)              | 21.13=n(12.56+10.98)              | 0.2982         | 0.5328         | 0.7521                |
| C           | 0.0                 | 1.0                 | 1.0                 | 87.97           | -45.45          | -12.05          | 47.03              | 195               | 49.65=n(45.72+9.58)               | 72.01=n(70.12+10.08)              | 95.31=n(95.18+10.98)              | 0.2288         | 0.3319         | 0.8128                |
| V (B)       | 0.0                 | 0.0                 | 1.0                 | 45.41           | 36.13           | -73.38          | 81.8               | 296               | 20.7=n(13.47+9.58)                | 14.83=n(6.44+10.08)               | 78.4=n(76.35+10.98)               | 0.1817         | 0.1302         | 0.1675                |
| M           | 1.0                 | 0.0                 | 1.0                 | 64.24           | 73.7            | -44.27          | 85.98              | 329               | 56.16=n(52.97+9.58)               | 33.1=n(26.78+10.08)               | 82.89=n(81.35+10.98)              | 0.3262         | 0.1923         | 0.3736                |
| N           | 0.0                 | 0.0                 | 0.0                 | 36.08           | 0.0             | 0.0             | 0.0                | 0                 | 8.6=n(0.0+9.58)                   | 9.05=n(0.0+10.08)                 | 9.85=n(0.0+10.98)                 | 0.3127         | 0.329          | 0.1022                |
| W           | 1.0                 | 1.0                 | 1.0                 | 95.41           | 0.0             | 0.0             | 0.0                | 0                 | 84.2=n(84.2+9.58)                 | 88.59=n(88.59+10.08)              | 96.46=n(96.46+10.98)              | 0.3127         | 0.329          | 1.0                   |
| N0          | 0.0                 | 0.0                 | 0.0                 | 36.08           | 0.0             | 0.0             | 0.0                | 0                 | 8.6=n(0.0+9.58)                   | 9.05=n(0.0+10.08)                 | 9.85=n(0.0+10.98)                 | 0.3127         | 0.329          | 0.1022                |
| W1          | 1.0                 | 1.0                 | 1.0                 | 95.41           | 0.0             | 0.0             | 0.0                | 0                 | 84.2=n(84.2+9.58)                 | 88.59=n(88.59+10.08)              | 96.46=n(96.46+10.98)              | 0.3127         | 0.329          | 1.0                   |

System TLS52a

| Color       | r=olv* <sub>1</sub> | g=olv* <sub>2</sub> | b=olv* <sub>3</sub> | L* <sub>a</sub> | a* <sub>a</sub> | b* <sub>a</sub> | C* <sub>ab,a</sub> | h <sub>ab,a</sub> | X <sub>a</sub> =XYZ <sub>1a</sub> | Y <sub>a</sub> =XYZ <sub>2a</sub> | Z <sub>a</sub> =XYZ <sub>3a</sub> | x <sub>a</sub> | y <sub>a</sub> | Y <sub>a</sub> /88.59 |
|-------------|---------------------|---------------------|---------------------|-----------------|-----------------|-----------------|--------------------|-------------------|-----------------------------------|-----------------------------------|-----------------------------------|----------------|----------------|-----------------------|
| LCD monitor |                     |                     |                     |                 |                 |                 |                    |                   |                                   |                                   |                                   |                |                |                       |
| O (R)       | 1.0                 | 0.0                 | 0.0                 | 64.74           | 52.23           | 26.29           | 58.48              | 27                | 48.76=n(40.69+19.16)              | 33.72=n(21.24+20.16)              | 19.6=n(2.1+21.95)                 | 0.4776         | 0.3304         | 0.3807                |
| Y           | 1.0                 | 1.0                 | 0.0                 | 94.34           | -12.83          | 60.34           | 61.69              | 102               | 75.35=n(73.34+19.16)              | 86.07=n(85.49+20.16)              | 29.84=n(14.68+21.95)              | 0.394          | 0.45           | 0.9715                |
| L (G)       | 0.0                 | 1.0                 | 0.0                 | 86.34           | -61.34          | 49.09           | 78.58              | 141               | 41.64=n(31.96+19.16)              | 68.67=n(64.13+20.16)              | 28.11=n(12.56+21.95)              | 0.3008         | 0.4961         | 0.7751                |
| C           | 0.0                 | 1.0                 | 1.0                 | 88.71           | -40.14          | -10.86          | 41.59              | 195               | 52.85=n(45.72+19.16)              | 73.54=n(70.12+20.16)              | 95.42=n(95.18+21.95)              | 0.2383         | 0.3316         | 0.8302                |
| V (B)       | 0.0                 | 0.0                 | 1.0                 | 53.68           | 26.66           | -60.39          | 66.02              | 294               | 26.58=n(13.47+19.16)              | 21.67=n(6.44+20.16)               | 80.08=n(76.35+21.95)              | 0.2071         | 0.1689         | 0.2446                |
| M           | 1.0                 | 0.0                 | 1.0                 | 68.2            | 63.02           | -38.36          | 73.78              | 329               | 58.76=n(52.97+19.16)              | 38.24=n(26.78+20.16)              | 84.15=n(81.35+21.95)              | 0.3244         | 0.2111         | 0.4317                |
| N           | 0.0                 | 0.0                 | 0.0                 | 47.52           | 0.0             | 0.0             | 0.0                | 0                 | 15.61=n(0.0+19.16)                | 16.42=n(0.0+20.16)                | 17.88=n(0.0+21.95)                | 0.3127         | 0.329          | 0.1854                |
| W           | 1.0                 | 1.0                 | 1.0                 | 95.41           | 0.0             | 0.0             | 0.0                | 353               | 84.2=n(84.2+19.16)                | 88.59=n(88.59+20.16)              | 96.46=n(96.46+21.95)              | 0.3127         | 0.329          | 1.0                   |
| N0          | 0.0                 | 0.0                 | 0.0                 | 47.52           | 0.0             | 0.0             | 0.0                | 0                 | 15.61=n(0.0+19.16)                | 16.42=n(0.0+20.16)                | 17.88=n(0.0+21.95)                | 0.3127         | 0.329          | 0.1854                |
| W1          | 1.0                 | 1.0                 | 1.0                 | 95.41           | 0.0             | 0.0             | 0.0                | 353               | 84.2=n(84.2+19.16)                | 88.59=n(88.59+20.16)              | 96.46=n(96.46+21.95)              | 0.3127         | 0.329          | 1.0                   |

System TLS70a

| Color       | r=olv* <sub>1</sub> | g=olv* <sub>2</sub> | b=olv* <sub>3</sub> | L* <sub>a</sub> | a* <sub>a</sub> | b* <sub>a</sub> | C* <sub>ab,a</sub> | h <sub>ab,a</sub> | X <sub>a</sub> =XYZ <sub>1a</sub> | Y <sub>a</sub> =XYZ <sub>2a</sub> | Z <sub>a</sub> =XYZ <sub>3a</sub> | x <sub>a</sub> | y <sub>a</sub> | Y <sub>a</sub> /88.59 |
|-------------|---------------------|---------------------|---------------------|-----------------|-----------------|-----------------|--------------------|-------------------|-----------------------------------|-----------------------------------|-----------------------------------|----------------|----------------|-----------------------|
| LCD monitor |                     |                     |                     |                 |                 |                 |                    |                   |                                   |                                   |                                   |                |                |                       |
| O (R)       | 1.0                 | 0.0                 | 0.0                 | 71.08           | 39.54           | 17.7            | 43.32              | 24                | 54.31=n(40.69+38.32)              | 42.31=n(21.24+40.32)              | 31.62=n(2.1+43.9)                 | 0.4235         | 0.3299         | 0.4775                |
| Y           | 1.0                 | 1.0                 | 0.0                 | 94.51           | -10.74          | 46.99           | 48.2               | 103               | 76.73=n(73.34+38.32)              | 86.46=n(85.49+40.32)              | 40.26=n(14.68+43.9)               | 0.3772         | 0.425          | 0.976                 |
| L (G)       | 0.0                 | 1.0                 | 0.0                 | 87.86           | -48.68          | 37.28           | 61.32              | 143               | 48.3=n(31.96+38.32)               | 71.78=n(64.13+40.32)              | 38.8=n(12.56+43.9)                | 0.304          | 0.4518         | 0.8103                |
| C           | 0.0                 | 1.0                 | 1.0                 | 89.81           | -32.56          | -9.06           | 33.81              | 196               | 57.76=n(45.72+38.32)              | 75.9=n(70.12+40.32)               | 95.58=n(95.18+43.9)               | 0.2519         | 0.3311         | 0.8567                |
| V (B)       | 0.0                 | 0.0                 | 1.0                 | 63.46           | 17.92           | -45.43          | 48.85              | 292               | 35.59=n(13.47+38.32)              | 32.14=n(6.44+40.32)               | 82.64=n(76.35+43.9)               | 0.2367         | 0.2137         | 0.3628                |
| M           | 1.0                 | 0.0                 | 1.0                 | 73.62           | 49.05           | -30.4           | 57.71              | 328               | 62.73=n(52.97+38.32)              | 46.12=n(26.78+40.32)              | 86.07=n(81.35+43.9)               | 0.3218         | 0.2366         | 0.5205                |
| N           | 0.0                 | 0.0                 | 0.0                 | 59.62           | 0.0             | 0.0             | 0.0                | 10                | 26.33=n(0.0+38.32)                | 27.71=n(0.0+40.32)                | 30.17=n(0.0+43.9)                 | 0.3127         | 0.329          | 0.3128                |
| W           | 1.0                 | 1.0                 | 1.0                 | 95.41           | 0.0             | 0.0             | 0.0                | 10                | 84.2=n(84.2+38.32)                | 88.59=n(88.59+40.32)              | 96.46=n(96.46+43.9)               | 0.3127         | 0.329          | 1.0                   |
| N0          | 0.0                 | 0.0                 | 0.0                 | 59.62           | 0.0             | 0.0             | 0.0                | 10                | 26.33=n(0.0+38.32)                | 27.71=n(0.0+40.32)                | 30.17=n(0.0+43.9)                 | 0.3127         | 0.329          | 0.3128                |
| W1          | 1.0                 | 1.0                 | 1.0                 | 95.41           | 0.0             | 0.0             | 0.0                | 0                 | 84.2=n(84.2+38.32)                | 88.59=n(88.59+40.32)              | 96.46=n(96.46+43.9)               | 0.3127         | 0.329          | 1.0                   |

IE330-7N, Colorimetric data of Television Luminous System TLS11a for CIE standard illuminant D65; LCD monitor; Page: 3/9

TUB-test chart IE33; Hue circle and colorimetric data

input: olv\* setrgbcolor

Display measurement: LCD, CRT and LCD projector, page 3/9 output: no change compared to input

Colorimetric "Standard data": Television Luminous System TLS00 for CIE lightness  $L^*_N=00$  of black for illuminant D65

System TLS00

| Color           | $r=olv*_1$ | $g=olv*_2$ | $b=olv*_3$ | $L^*$ | $a^*$  | $b^*$   | $C^*_{ab}$ | $h_{ab}$ | $X=XYZ_1$ | $Y=XYZ_2$ | $Z=XYZ_3$ | $x$    | $y$    | $Y/88.59$ |
|-----------------|------------|------------|------------|-------|--------|---------|------------|----------|-----------|-----------|-----------|--------|--------|-----------|
| CRT monitor     |            |            |            |       |        |         |            |          |           |           |           |        |        |           |
| O (R)           | 1.0        | 0.0        | 0.0        | 56.02 | 77.48  | 66.45   | 102.07     | 41       | 44.38     | 23.93     | 2.62      | 0.6257 | 0.3374 | 0.2701    |
| Y               | 1.0        | 1.0        | 0.0        | 91.93 | -12.99 | 87.13   | 88.09      | 98       | 70.31     | 80.55     | 13.19     | 0.4286 | 0.491  | 0.9092    |
| D65 reflection: |            |            |            |       |        |         |            |          |           |           |           |        |        |           |
| L (G)           | 0.0        | 1.0        | 0.0        | 80.17 | -88.48 | 73.79   | 115.22     | 140      | 26.35     | 56.98     | 10.61     | 0.2805 | 0.6066 | 0.6432    |
| C               | 0.0        | 1.0        | 1.0        | 84.22 | -50.12 | -20.03  | 53.99      | 202      | 42.33     | 64.49     | 97.58     | 0.2071 | 0.3155 | 0.728     |
| $Y_N = 0.05$    |            |            |            |       |        |         |            |          |           |           |           |        |        |           |
| V (B)           | 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    |
| M               | 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    |
| N               | 0.0        | 0.0        | 0.0        | 0.46  | -0.16  | -0.09   | 0.2        | 210      | 0.04      | 0.05      | 0.06      | 0.2802 | 0.323  | 0.0006    |
| W               | 1.0        | 1.0        | 1.0        | 95.41 | 4.95   | -2.4    | 5.51       | 334      | 86.83     | 88.59     | 100.14    | 0.3151 | 0.3215 | 1.0       |
| N0              | 0.0        | 0.0        | 0.0        | 0.46  | -0.16  | -0.09   | 0.2        | 210      | 0.04      | 0.05      | 0.06      | 0.2802 | 0.323  | 0.0006    |
| W1              | 1.0        | 1.0        | 1.0        | 95.41 | 4.95   | -2.4    | 5.51       | 334      | 86.83     | 88.59     | 100.14    | 0.3151 | 0.3215 | 1.0       |

Colorimetric "Adapted data (a)": Television Luminous System TLS00a for CIE lightness  $L^*_N=00$  of black for illuminant D65

System TLS00a

| Color           | $r=olv*_1$ | $g=olv*_2$ | $b=olv*_3$ | $L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h_{ab,a}$ | $X_a=XYZ_{1a}$ | $Y_a=XYZ_{2a}$ | $Z_a=XYZ_{3a}$ | $x_a$  | $y_a$  | $Y_a/88.59$ |
|-----------------|------------|------------|------------|---------|---------|---------|--------------|------------|----------------|----------------|----------------|--------|--------|-------------|
| CRT monitor     |            |            |            |         |         |         |              |            |                |                |                |        |        |             |
| O (R)           | 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      |
| Y               | 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      |
| D65 reflection: |            |            |            |         |         |         |              |            |                |                |                |        |        |             |
| L (G)           | 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      |
| C               | 0.0        | 1.0        | 1.0        | 84.22   | -54.47  | -17.89  | 57.34        | 198        | 40.9           | 64.49          | 94.37          | 0.2048 | 0.3228 | 0.728       |
| V (B)           | 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      |
| M               | 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      |
| N               | 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      |
| W               | 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         |
| N0              | 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      |
| W1              | 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         |

Colorimetric "Adapted data (a0)": Television Luminous System TLS00a0 for CIE lightness  $L^*_N=00$  of black for illuminant D65

System TLS00a0

| Color           | $r=olv*_1$ | $g=olv*_2$ | $b=olv*_3$ | $L^*_{a0}$ | $a^*_{a0}$ | $b^*_{a0}$ | $C^*_{ab,a0}$ | $h_{ab,a0}$ | $X_{a0}=XYZ_{1a0}$    | $Y_{a0}=XYZ_{2a0}$    | $Z_{a0}=XYZ_{3a0}$    | $x_{a0}$ | $y_{a0}$ | $Y_{a0}/88.59$ |
|-----------------|------------|------------|------------|------------|------------|------------|---------------|-------------|-----------------------|-----------------------|-----------------------|----------|----------|----------------|
| CRT monitor     |            |            |            |            |            |            |               |             |                       |                       |                       |          |          |                |
| O (R)           | 1.0        | 0.0        | 0.0        | 55.98      | 74.75      | 68.26      | 101.23        | 42          | $43.39=k(43.41-0.05)$ | $23.89=k(23.93-0.05)$ | $2.37=k(2.42-0.06)$   | 0.623    | 0.343    | 0.2697         |
| Y               | 1.0        | 1.0        | 0.0        | 91.93      | -17.77     | 89.58      | 91.32         | 101         | $68.1=k(68.11-0.05)$  | $80.54=k(80.55-0.05)$ | $12.23=k(12.28-0.06)$ | 0.4233   | 0.5006   | 0.9091         |
| D65 reflection: |            |            |            |            |            |            |               |             |                       |                       |                       |          |          |                |
| L (G)           | 0.0        | 1.0        | 0.0        | 80.16      | -92.71     | 75.96      | 119.86        | 141         | $25.33=k(25.36-0.05)$ | $56.96=k(56.98-0.05)$ | $9.87=k(9.92-0.06)$   | 0.2748   | 0.6181   | 0.643          |
| C               | 0.0        | 1.0        | 1.0        | 84.21      | -54.52     | -17.9      | 57.39         | 198         | $40.88=k(40.9-0.05)$  | $64.48=k(64.49-0.05)$ | $94.37=k(94.37-0.06)$ | 0.2047   | 0.3228   | 0.7278         |
| V (B)           | 0.0        | 0.0        | 1.0        | 33.3       | 61.86      | -99.37     | 117.06        | 302         | $15.7=k(15.74-0.05)$  | $7.68=k(7.72-0.05)$   | $85.31=k(85.31-0.06)$ | 0.1445   | 0.0706   | 0.0866         |
| M               | 1.0        | 0.0        | 1.0        | 63.03      | 86.39      | -49.38     | 99.51         | 330         | $59.2=k(59.22-0.05)$  | $31.62=k(31.65-0.05)$ | $87.07=k(87.07-0.06)$ | 0.3328   | 0.1777   | 0.3569         |
| N               | 0.0        | 0.0        | 0.0        | 0.0        | 0.0        | 0.0        | 0.01          | 0           | $0.0=k(0.05-0.05)$    | $0.0=k(0.05-0.05)$    | $0.0=k(0.06-0.06)$    | 0.0      | 0.0      | 0.0            |
| W               | 1.0        | 1.0        | 1.0        | 95.41      | 0.0        | 0.0        | 0.01          | 7           | $84.2=k(84.2-0.05)$   | $88.59=k(88.59-0.05)$ | $96.46=k(96.46-0.06)$ | 0.3127   | 0.329    | 1.0            |
| N0              | 0.0        | 0.0        | 0.0        | 0.0        | 0.0        | 0.0        | 0.01          | 0           | $0.0=k(0.05-0.05)$    | $0.0=k(0.05-0.05)$    | $0.0=k(0.06-0.06)$    | 0.0      | 0.0      | 0.0            |
| W1              | 1.0        | 1.0        | 1.0        | 95.41      | 0.0        | 0.0        | 0.01          | 7           | $84.2=k(84.2-0.05)$   | $88.59=k(88.59-0.05)$ | $96.46=k(96.46-0.06)$ | 0.3127   | 0.329    | 1.0            |

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



Colorimetric "Adapted data (a0)": Television Luminous System TLS00a0 for CIE lightness  $L^*_N=00$  of black for illuminant D65

System TLS00a0

CRT monitor

D65 reflection:

$Y_N = 0.0$

$L^*_N = 0.0$

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

| Color | r=olv* <sub>1</sub> | g=olv* <sub>2</sub> | b=olv* <sub>3</sub> | L* <sub>a0</sub> | a* <sub>a0</sub> | b* <sub>a0</sub> | C* <sub>ab,a0</sub> | h <sub>ab,a0</sub> | X <sub>a0</sub> =XYZ <sub>1a0</sub> | Y <sub>a0</sub> =XYZ <sub>2a0</sub> | Z <sub>a0</sub> =XYZ <sub>3a0</sub> | x <sub>a0</sub> | y <sub>a0</sub> | Y <sub>a0</sub> /88.59 |
|-------|---------------------|---------------------|---------------------|------------------|------------------|------------------|---------------------|--------------------|-------------------------------------|-------------------------------------|-------------------------------------|-----------------|-----------------|------------------------|
| O (R) | 1.0                 | 0.0                 | 0.0                 | 55.98            | 74.75            | 68.26            | 101.23              | 42                 | 43.39=k(43.41-0.05)                 | 23.89=k(23.93-0.05)                 | 2.37=k(2.42-0.06)                   | 0.623           | 0.343           | 0.2697                 |
| Y     | 1.0                 | 1.0                 | 0.0                 | 91.93            | -17.77           | 89.58            | 91.32               | 101                | 68.1=k(68.11-0.05)                  | 80.54=k(80.55-0.05)                 | 12.23=k(12.28-0.06)                 | 0.4233          | 0.5006          | 0.9091                 |
| L (G) | 0.0                 | 1.0                 | 0.0                 | 80.16            | -92.71           | 75.96            | 119.86              | 141                | 25.33=k(25.36-0.05)                 | 56.96=k(56.98-0.05)                 | 9.87=k(9.92-0.06)                   | 0.2748          | 0.6181          | 0.643                  |
| C     | 0.0                 | 1.0                 | 1.0                 | 84.21            | -54.52           | -17.9            | 57.39               | 198                | 40.88=k(40.9-0.05)                  | 64.48=k(64.49-0.05)                 | 94.37=k(94.37-0.06)                 | 0.2047          | 0.3228          | 0.7278                 |
| V (B) | 0.0                 | 0.0                 | 1.0                 | 33.3             | 61.86            | -99.37           | 117.06              | 302                | 15.7=k(15.74-0.05)                  | 7.68=k(7.72-0.05)                   | 85.31=k(85.31-0.06)                 | 0.1445          | 0.0706          | 0.0866                 |
| M     | 1.0                 | 0.0                 | 1.0                 | 63.03            | 86.39            | -49.38           | 99.51               | 330                | 59.2=k(59.22-0.05)                  | 31.62=k(31.65-0.05)                 | 87.07=k(87.07-0.06)                 | 0.3328          | 0.1777          | 0.3569                 |
| N     | 0.0                 | 0.0                 | 0.0                 | 0.0              | 0.0              | 0.0              | 0.01                | 0                  | 0.0=k(0.05-0.05)                    | 0.0=k(0.05-0.05)                    | 0.0=k(0.06-0.06)                    | 0.0             | 0.0             | 0.0                    |
| W     | 1.0                 | 1.0                 | 1.0                 | 95.41            | 0.0              | 0.0              | 0.01                | 7                  | 84.2=k(84.2-0.05)                   | 88.59=k(88.59-0.05)                 | 96.46=k(96.46-0.06)                 | 0.3127          | 0.329           | 1.0                    |
| N0    | 0.0                 | 0.0                 | 0.0                 | 0.0              | 0.0              | 0.0              | 0.01                | 0                  | 0.0=k(0.05-0.05)                    | 0.0=k(0.05-0.05)                    | 0.0=k(0.06-0.06)                    | 0.0             | 0.0             | 0.0                    |
| W1    | 1.0                 | 1.0                 | 1.0                 | 95.41            | 0.0              | 0.0              | 0.01                | 7                  | 84.2=k(84.2-0.05)                   | 88.59=k(88.59-0.05)                 | 96.46=k(96.46-0.06)                 | 0.3127          | 0.329           | 1.0                    |

Calculated colorimetric data: Television Luminous Systems TLSxxa for CIE lightness  $L^*_N=00, 06, 11, 18$  of black for illuminant D65

System TLS00a

CRT monitor

D65 reflection:

$Y_N = 0.0$

$L^*_N = 0.0$

$n = 88.59 / (88.59 + 0.0)$   
 $= 1.0$

| Color | r=olv* <sub>1</sub> | g=olv* <sub>2</sub> | b=olv* <sub>3</sub> | L* <sub>a</sub> | a* <sub>a</sub> | b* <sub>a</sub> | C* <sub>ab,a</sub> | h <sub>ab,a</sub> | X <sub>a</sub> =XYZ <sub>1a</sub> | Y <sub>a</sub> =XYZ <sub>2a</sub> | Z <sub>a</sub> =XYZ <sub>3a</sub> | x <sub>a</sub> | y <sub>a</sub> | Y <sub>a</sub> /88.59 |
|-------|---------------------|---------------------|---------------------|-----------------|-----------------|-----------------|--------------------|-------------------|-----------------------------------|-----------------------------------|-----------------------------------|----------------|----------------|-----------------------|
| O (R) | 1.0                 | 0.0                 | 0.0                 | 55.98           | 74.75           | 68.26           | 101.23             | 42                | 43.39=n(43.39+0.0)                | 23.89=n(23.89+0.0)                | 2.37=n(2.37+0.0)                  | 0.623          | 0.343          | 0.2697                |
| Y     | 1.0                 | 1.0                 | 0.0                 | 91.93           | -17.77          | 89.58           | 91.32              | 101               | 68.1=n(68.1+0.0)                  | 80.54=n(80.54+0.0)                | 12.23=n(12.23+0.0)                | 0.4233         | 0.5006         | 0.9091                |
| L (G) | 0.0                 | 1.0                 | 0.0                 | 80.16           | -92.71          | 75.96           | 119.86             | 141               | 25.33=n(25.33+0.0)                | 56.96=n(56.96+0.0)                | 9.87=n(9.87+0.0)                  | 0.2748         | 0.6181         | 0.643                 |
| C     | 0.0                 | 1.0                 | 1.0                 | 84.21           | -54.52          | -17.9           | 57.39              | 198               | 40.88=n(40.88+0.0)                | 64.48=n(64.48+0.0)                | 94.37=n(94.37+0.0)                | 0.2047         | 0.3228         | 0.7278                |
| V (B) | 0.0                 | 0.0                 | 1.0                 | 33.3            | 61.86           | -99.37          | 117.06             | 302               | 15.7=n(15.7+0.0)                  | 7.68=n(7.68+0.0)                  | 85.31=n(85.31+0.0)                | 0.1445         | 0.0706         | 0.0866                |
| M     | 1.0                 | 0.0                 | 1.0                 | 63.03           | 86.39           | -49.38          | 99.51              | 330               | 59.2=n(59.2+0.0)                  | 31.62=n(31.62+0.0)                | 87.07=n(87.07+0.0)                | 0.3328         | 0.1777         | 0.3569                |
| N     | 0.0                 | 0.0                 | 0.0                 | 0.0             | 0.0             | 0.0             | 0.0                | 0                 | 0.0=n(0.0+0.0)                    | 0.0=n(0.0+0.0)                    | 0.0=n(0.0+0.0)                    | 0.0            | 0.0            | 0.0                   |
| W     | 1.0                 | 1.0                 | 1.0                 | 95.41           | 0.0             | 0.0             | 0.0                | 7                 | 84.2=n(84.2+0.0)                  | 88.59=n(88.59+0.0)                | 96.46=n(96.46+0.0)                | 0.3127         | 0.329          | 1.0                   |
| N0    | 0.0                 | 0.0                 | 0.0                 | 0.0             | 0.0             | 0.0             | 0.0                | 0                 | 0.0=n(0.0+0.0)                    | 0.0=n(0.0+0.0)                    | 0.0=n(0.0+0.0)                    | 0.0            | 0.0            | 0.0                   |
| W1    | 1.0                 | 1.0                 | 1.0                 | 95.41           | 0.0             | 0.0             | 0.0                | 7                 | 84.2=n(84.2+0.0)                  | 88.59=n(88.59+0.0)                | 96.46=n(96.46+0.0)                | 0.3127         | 0.329          | 1.0                   |

System TLS06a

CRT monitor

D65 reflection:

$Y_N = 0.63$

$L^*_N = 5.69$

$n = 88.59 / (88.59 + 0.63)$   
 $= 0.993$

| Color | r=olv* <sub>1</sub> | g=olv* <sub>2</sub> | b=olv* <sub>3</sub> | L* <sub>a</sub> | a* <sub>a</sub> | b* <sub>a</sub> | C* <sub>ab,a</sub> | h <sub>ab,a</sub> | X <sub>a</sub> =XYZ <sub>1a</sub> | Y <sub>a</sub> =XYZ <sub>2a</sub> | Z <sub>a</sub> =XYZ <sub>3a</sub> | x <sub>a</sub> | y <sub>a</sub> | Y <sub>a</sub> /88.59 |
|-------|---------------------|---------------------|---------------------|-----------------|-----------------|-----------------|--------------------|-------------------|-----------------------------------|-----------------------------------|-----------------------------------|----------------|----------------|-----------------------|
| O (R) | 1.0                 | 0.0                 | 0.0                 | 56.44           | 73.63           | 64.25           | 97.72              | 41                | 43.68=n(43.39+0.6)                | 24.35=n(23.89+0.63)               | 3.03=n(2.37+0.69)                 | 0.6147         | 0.3426         | 0.2749                |
| Y     | 1.0                 | 1.0                 | 0.0                 | 91.95           | -17.63          | 88.08           | 89.83              | 101               | 68.22=n(68.1+0.6)                 | 80.6=n(80.54+0.63)                | 12.83=n(12.23+0.69)               | 0.422          | 0.4986         | 0.9098                |
| L (G) | 0.0                 | 1.0                 | 0.0                 | 80.28           | -91.5           | 74.36           | 117.91             | 141               | 25.74=n(25.33+0.6)                | 57.19=n(56.96+0.63)               | 10.48=n(9.87+0.69)                | 0.2756         | 0.6122         | 0.6455                |
| C     | 0.0                 | 1.0                 | 1.0                 | 84.3            | -53.96          | -17.76          | 56.82              | 198               | 41.18=n(40.88+0.6)                | 64.65=n(64.48+0.63)               | 94.39=n(94.37+0.69)               | 0.2057         | 0.3229         | 0.7297                |
| V (B) | 0.0                 | 0.0                 | 1.0                 | 34.49           | 59.5            | -97.37          | 114.12             | 301               | 16.18=n(15.7+0.6)                 | 8.25=n(7.68+0.63)                 | 85.39=n(85.31+0.69)               | 0.1474         | 0.0751         | 0.0931                |
| M     | 1.0                 | 0.0                 | 1.0                 | 63.36           | 85.38           | -48.85          | 98.37              | 330               | 59.38=n(59.2+0.6)                 | 32.02=n(31.62+0.63)               | 87.13=n(87.07+0.69)               | 0.3326         | 0.1794         | 0.3615                |
| N     | 0.0                 | 0.0                 | 0.0                 | 5.65            | 0.0             | 0.0             | 0.0                | 0                 | 0.59=n(0.0+0.6)                   | 0.63=n(0.0+0.63)                  | 0.68=n(0.0+0.69)                  | 0.3127         | 0.329          | 0.0071                |
| W     | 1.0                 | 1.0                 | 1.0                 | 95.41           | 0.0             | 0.0             | 0.0                | 7                 | 84.2=n(84.2+0.6)                  | 88.59=n(88.59+0.63)               | 96.46=n(96.46+0.69)               | 0.3127         | 0.329          | 1.0                   |
| N0    | 0.0                 | 0.0                 | 0.0                 | 5.65            | 0.0             | 0.0             | 0.0                | 0                 | 0.59=n(0.0+0.6)                   | 0.63=n(0.0+0.63)                  | 0.68=n(0.0+0.69)                  | 0.3127         | 0.329          | 0.0071                |
| W1    | 1.0                 | 1.0                 | 1.0                 | 95.41           | 0.0             | 0.0             | 0.0                | 7                 | 84.2=n(84.2+0.6)                  | 88.59=n(88.59+0.63)               | 96.46=n(96.46+0.69)               | 0.3127         | 0.329          | 1.0                   |

System TLS11a

CRT monitor

D65 reflection:

$Y_N = 1.26$

$L^*_N = 11.0$

$n = 88.59 / (88.59 + 1.26)$   
 $= 0.986$

| Color | r=olv* <sub>1</sub> | g=olv* <sub>2</sub> | b=olv* <sub>3</sub> | L* <sub>a</sub> | a* <sub>a</sub> | b* <sub>a</sub> | C* <sub>ab,a</sub> | h <sub>ab,a</sub> | X <sub>a</sub> =XYZ <sub>1a</sub> | Y <sub>a</sub> =XYZ <sub>2a</sub> | Z <sub>a</sub> =XYZ <sub>3a</sub> | x <sub>a</sub> | y <sub>a</sub> | Y <sub>a</sub> /88.59 |
|-------|---------------------|---------------------|---------------------|-----------------|-----------------|-----------------|--------------------|-------------------|-----------------------------------|-----------------------------------|-----------------------------------|----------------|----------------|-----------------------|
| O (R) | 1.0                 | 0.0                 | 0.0                 | 56.88           | 72.55           | 60.93           | 94.75              | 40                | 43.96=n(43.39+1.2)                | 24.8=n(23.89+1.26)                | 3.69=n(2.37+1.37)                 | 0.6068         | 0.3423         | 0.2799                |
| Y     | 1.0                 | 1.0                 | 0.0                 | 91.98           | -17.49          | 86.65           | 88.4               | 101               | 68.33=n(68.1+1.2)                 | 80.65=n(80.54+1.26)               | 13.41=n(12.23+1.37)               | 0.4208         | 0.4967         | 0.9104                |
| L (G) | 0.0                 | 1.0                 | 0.0                 | 80.41           | -90.32          | 72.85           | 116.05             | 141               | 26.15=n(25.33+1.2)                | 57.41=n(56.96+1.26)               | 11.08=n(9.87+1.37)                | 0.2763         | 0.6066         | 0.648                 |
| C     | 0.0                 | 1.0                 | 1.0                 | 84.39           | -53.41          | -17.62          | 56.25              | 198               | 41.49=n(40.88+1.2)                | 64.82=n(64.48+1.26)               | 94.4=n(94.37+1.37)                | 0.2067         | 0.3229         | 0.7316                |
| V (B) | 0.0                 | 0.0                 | 1.0                 | 35.62           | 57.35           | -95.49          | 111.4              | 301               | 16.66=n(15.7+1.2)                 | 8.81=n(7.68+1.26)                 | 85.46=n(85.31+1.37)               | 0.1502         | 0.0794         | 0.0994                |
| M     | 1.0                 | 0.0                 | 1.0                 | 63.69           | 84.39           | -48.33          | 97.25              | 330               | 59.55=n(59.2+1.2)                 | 32.42=n(31.62+1.26)               | 87.2=n(87.07+1.37)                | 0.3324         | 0.1809         | 0.3659                |
| N     | 0.0                 | 0.0                 | 0.0                 | 10.87           | 0.0             | 0.0             | 0.0                | 358               | 1.18=n(0.0+1.2)                   | 1.24=n(0.0+1.26)                  | 1.35=n(0.0+1.37)                  | 0.3127         | 0.329          | 0.014                 |
| W     | 1.0                 | 1.0                 | 1.0                 | 95.41           | 0.0             | 0.0             | 0.0                | 7                 | 84.2=n(84.2+1.2)                  | 88.59=n(88.59+1.26)               | 96.46=n(96.46+1.37)               | 0.3127         | 0.329          | 1.0                   |
| N0    | 0.0                 | 0.0                 | 0.0                 | 10.87           | 0.0             | 0.0             | 0.0                | 358               | 1.18=n(0.0+1.2)                   | 1.24=n(0.0+1.26)                  | 1.35=n(0.0+1.37)                  | 0.3127         | 0.329          | 0.014                 |
| W1    | 1.0                 | 1.0                 | 1.0                 | 95.41           | 0.0             | 0.0             | 0.0                | 7                 | 84.2=n(84.2+1.2)                  | 88.59=n(88.59+1.26)               | 96.46=n(96.46+1.37)               | 0.3127         | 0.329          | 1.0                   |

System TLS18a

CRT monitor

D65 reflection:

$Y_N = 2.52$

$L^*_N = 18.01$

$n = 88.59 / (88.59 + 2.52)$   
 $= 0.972$

| Color | r=olv* <sub>1</sub> | g=olv* <sub>2</sub> | b=olv* <sub>3</sub> | L* <sub>a</sub> | a* <sub>a</sub> | b* <sub>a</sub> | C* <sub>ab,a</sub> | h <sub>ab,a</sub> | X <sub>a</sub> =XYZ <sub>1a</sub> | Y <sub>a</sub> =XYZ <sub>2a</sub> | Z <sub>a</sub> =XYZ <sub>3a</sub> | x <sub>a</sub> | y <sub>a</sub> | Y <sub>a</sub> /88.59 |
|-------|---------------------|---------------------|---------------------|-----------------|-----------------|-----------------|--------------------|-------------------|-----------------------------------|-----------------------------------|-----------------------------------|----------------|----------------|-----------------------|
| O (R) | 1.0                 | 0.0                 | 0.0                 | 57.73           | 70.5            | 55.64           | 89.81              | 38                | 44.52=n(43.39+2.4)                | 25.68=n(23.89+2.52)               | 4.97=n(2.37+2.74)                 | 0.5922         | 0.3416         | 0.2899                |
| Y     | 1.0                 | 1.0                 | 0.0                 | 92.03           | -17.22          | 83.97           | 85.72              | 102               | 68.55=n(68.1+2.4)                 | 80.76=n(80.54+2.52)               | 14.56=n(12.23+2.74)               | 0.4183         | 0.4928         | 0.9117                |
| L (G) | 0.0                 | 1.0                 | 0.0                 | 80.65           | -88.07          | 70.06           | 112.54             | 142               | 26.96=n(25.33+2.4)                | 57.84=n(56.96+2.52)               | 12.26=n(9.87+2.74)                | 0.2777         | 0.5959         | 0.6529                |
| C     | 0.0                 | 1.0                 | 1.0                 | 84.56           | -52.35          | -17.34          | 55.16              | 198               | 42.08=n(40.88+2.4)                | 65.14=n(64.48+2.52)               | 94.43=n(94.37+2.74)               | 0.2087         | 0.3231         | 0.7353                |
| V (B) | 0.0                 | 0.0                 | 1.0                 | 37.69           | 53.56           | -92.03          | 106.49             | 300               | 17.6=n(15.7+2.4)                  | 9.91=n(7.68+2.52)                 | 85.62=n(85.31+2.74)               | 0.1555         | 0.0876         | 0.1119                |
| M     | 1.0                 | 0.0                 | 1.0                 | 64.32           | 82.48           | -47.33          | 95.1               | 330               | 59.89=n(59.2+2.4)                 | 33.19=n(31.62+2.52)               | 87.33=n(87.07+2.74)               | 0.332          | 0.184          | 0.3747                |
| N     | 0.0                 | 0.0                 | 0.0                 | 17.69           | 0.0             | 0.0             | 0.0                | 0                 | 2.33=n(0.0+2.4)                   | 2.67=n(0.0+2.52)                  | 2.67=n(0.0+2.74)                  | 0.3127         | 0.329          | 0.0277                |
| W     | 1.0                 | 1.0                 | 1.0                 | 95.41           | 0.0             | 0.0             | 0.0                | 10                | 84.2=n(84.2+2.4)                  | 88.59=n(88.59+2.52)               | 96.46=n(96.46+2.74)               | 0.3127         | 0.329          | 1.0                   |
| N0    | 0.0                 | 0.0                 | 0.0                 | 17.69           | 0.0             | 0.0             | 0.0                | 0                 | 2.33=n(0.0+2.4)                   | 2.45=n(0.0+2.52)                  | 2.67=n(0.0+2.74)                  | 0.3127         | 0.329          | 0.0277                |
| W1    | 1.0                 | 1.0                 | 1.0                 | 95.41           | 0.0             | 0.0             | 0.0                | 10                | 84.2=n(84.2+2.4)                  | 88.59=n(88.59+2.52)               | 96.46=n(96.46+2.74)               | 0.3127         | 0.329          | 1.0                   |

IE330-7N, Colorimetric data of Television Luminous System TLS00a for CIE standard illuminant D65; CRT monitor; Page: 5/9

TUB-test chart IE33; Hue circle and colorimetric data

input: olv\* setrgbcolor

Display measurement: LCD, CRT and LCD projector, page 5/9

output: no change compared to input

Colorimetric "Adapted data (a0)": Television Luminous System TLS00a0 for CIE lightness  $L^*_N=00$  of black for illuminant D65

System TLS00a0

CRT monitor

D65 reflection:

$Y_N = 0.0$

$L^*_N = 0.0$

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

| Color | $r=olv*_1$ | $g=olv*_2$ | $b=olv*_3$ | $L^*_{a0}$ | $a^*_{a0}$ | $b^*_{a0}$ | $C^*_{ab,a0}$ | $h_{ab,a0}$ | $X_{a0}=XYZ_{1a0}$    | $Y_{a0}=XYZ_{2a0}$    | $Z_{a0}=XYZ_{3a0}$    | $x_{a0}$ | $y_{a0}$ | $Y_{a0}/88.59$ |
|-------|------------|------------|------------|------------|------------|------------|---------------|-------------|-----------------------|-----------------------|-----------------------|----------|----------|----------------|
| O (R) | 1.0        | 0.0        | 0.0        | 55.98      | 74.75      | 68.26      | 101.23        | 42          | $43.39=k(43.41-0.05)$ | $23.89=k(23.93-0.05)$ | $2.37=k(2.42-0.06)$   | 0.623    | 0.343    | 0.2697         |
| Y     | 1.0        | 1.0        | 0.0        | 91.93      | -17.77     | 89.58      | 91.32         | 101         | $68.1=k(68.11-0.05)$  | $80.54=k(80.55-0.05)$ | $12.23=k(12.28-0.06)$ | 0.4233   | 0.5006   | 0.9091         |
| L (G) | 0.0        | 1.0        | 0.0        | 80.16      | -92.71     | 75.96      | 119.86        | 141         | $25.33=k(25.36-0.05)$ | $56.96=k(56.98-0.05)$ | $9.87=k(9.92-0.06)$   | 0.2748   | 0.6181   | 0.643          |
| C     | 0.0        | 1.0        | 1.0        | 84.21      | -54.52     | -17.9      | 57.39         | 198         | $40.88=k(40.9-0.05)$  | $64.48=k(64.49-0.05)$ | $94.37=k(94.37-0.06)$ | 0.2047   | 0.3228   | 0.7278         |
| V (B) | 0.0        | 0.0        | 1.0        | 33.3       | 61.86      | -99.37     | 117.06        | 302         | $15.7=k(15.74-0.05)$  | $7.68=k(7.72-0.05)$   | $85.31=k(85.31-0.06)$ | 0.1445   | 0.0706   | 0.0866         |
| M     | 1.0        | 0.0        | 1.0        | 63.03      | 86.39      | -49.38     | 99.51         | 330         | $59.2=k(59.22-0.05)$  | $31.62=k(31.65-0.05)$ | $87.07=k(87.07-0.06)$ | 0.3328   | 0.1777   | 0.3569         |
| N     | 0.0        | 0.0        | 0.0        | 0.0        | 0.0        | 0.0        | 0.01          | 0           | $0.0=k(0.05-0.05)$    | $0.0=k(0.05-0.05)$    | $0.0=k(0.06-0.06)$    | 0.0      | 0.0      | 0.0            |
| W     | 1.0        | 1.0        | 1.0        | 95.41      | 0.0        | 0.0        | 0.01          | 7           | $84.2=k(84.2-0.05)$   | $88.59=k(88.59-0.05)$ | $96.46=k(96.46-0.06)$ | 0.3127   | 0.329    | 1.0            |
| N0    | 0.0        | 0.0        | 0.0        | 0.0        | 0.0        | 0.0        | 0.01          | 0           | $0.0=k(0.05-0.05)$    | $0.0=k(0.05-0.05)$    | $0.0=k(0.06-0.06)$    | 0.0      | 0.0      | 0.0            |
| W1    | 1.0        | 1.0        | 1.0        | 95.41      | 0.0        | 0.0        | 0.01          | 7           | $84.2=k(84.2-0.05)$   | $88.59=k(88.59-0.05)$ | $96.46=k(96.46-0.06)$ | 0.3127   | 0.329    | 1.0            |

Calculated colorimetric data: Television Luminous Systems TLSxxa for CIE lightness  $L^*_N=27, 33, 52, 70$  of black for illuminant D65

System TLS27a

CRT monitor

D65 reflection:

$Y_N = 5.04$

$L^*_N = 26.85$

$n = 88.59 / (88.59 + 5.04)$   
 $= 0.946$

| Color | $r=olv*_1$ | $g=olv*_2$ | $b=olv*_3$ | $L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h_{ab,a}$ | $X_a=XYZ_{1a}$        | $Y_a=XYZ_{2a}$        | $Z_a=XYZ_{3a}$        | $x_a$  | $y_a$  | $Y_a/88.59$ |
|-------|------------|------------|------------|---------|---------|---------|--------------|------------|-----------------------|-----------------------|-----------------------|--------|--------|-------------|
| O (R) | 1.0        | 0.0        | 0.0        | 59.32   | 66.74   | 48.11   | 82.28        | 36         | $45.59=n(43.39+4.79)$ | $27.37=n(23.89+5.04)$ | $7.43=n(2.37+5.49)$   | 0.567  | 0.3405 | 0.309       |
| Y     | 1.0        | 1.0        | 0.0        | 92.12   | -16.71  | 79.22   | 80.96        | 102        | $68.97=n(68.11+4.79)$ | $80.97=n(80.54+5.04)$ | $16.77=n(12.23+5.49)$ | 0.4137 | 0.4857 | 0.914       |
| L (G) | 0.0        | 1.0        | 0.0        | 81.11   | -83.9   | 65.23   | 106.28       | 142        | $28.5=n(25.33+4.79)$  | $58.67=n(56.96+5.04)$ | $14.53=n(9.87+5.49)$  | 0.2802 | 0.5769 | 0.6622      |
| C     | 0.0        | 1.0        | 1.0        | 84.88   | -50.35  | -16.82  | 53.1         | 198        | $43.21=n(40.88+4.79)$ | $65.77=n(64.48+5.04)$ | $94.48=n(94.37+5.49)$ | 0.2124 | 0.3233 | 0.7425      |
| V (B) | 0.0        | 0.0        | 1.0        | 41.27   | 47.5    | -86.07  | 98.31        | 299        | $19.39=n(15.7+4.79)$  | $12.03=n(7.68+5.04)$  | $85.91=n(85.31+5.49)$ | 0.1652 | 0.1025 | 0.1358      |
| M     | 1.0        | 0.0        | 1.0        | 65.5    | 78.93   | -45.46  | 91.09        | 330        | $60.55=n(59.2+4.79)$  | $34.69=n(31.62+5.04)$ | $87.57=n(87.07+5.49)$ | 0.3312 | 0.1897 | 0.3915      |
| N     | 0.0        | 0.0        | 0.0        | 26.07   | 0.0     | 0.0     | 0.0          | 0          | $4.53=n(0.0+4.79)$    | $4.77=n(0.0+5.04)$    | $5.19=n(0.0+5.49)$    | 0.3127 | 0.329  | 0.0538      |
| W     | 1.0        | 1.0        | 1.0        | 95.41   | 0.0     | 0.0     | 0.0          | 7          | $84.2=n(84.2+4.79)$   | $88.59=n(88.59+5.04)$ | $96.46=n(96.46+5.49)$ | 0.3127 | 0.329  | 1.0         |
| N0    | 0.0        | 0.0        | 0.0        | 26.07   | 0.0     | 0.0     | 0.0          | 0          | $4.53=n(0.0+4.79)$    | $4.77=n(0.0+5.04)$    | $5.19=n(0.0+5.49)$    | 0.3127 | 0.329  | 0.0538      |
| W1    | 1.0        | 1.0        | 1.0        | 95.41   | 0.0     | 0.0     | 0.0          | 7          | $84.2=n(84.2+4.79)$   | $88.59=n(88.59+5.04)$ | $96.46=n(96.46+5.49)$ | 0.3127 | 0.329  | 1.0         |

System TLS38a

CRT monitor

D65 reflection:

$Y_N = 10.08$

$L^*_N = 37.99$

$n = 88.59 / (88.59 + 10.08)$   
 $= 0.898$

| Color | $r=olv*_1$ | $g=olv*_2$ | $b=olv*_3$ | $L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h_{ab,a}$ | $X_a=XYZ_{1a}$        | $Y_a=XYZ_{2a}$         | $Z_a=XYZ_{3a}$         | $x_a$  | $y_a$  | $Y_a/88.59$ |
|-------|------------|------------|------------|---------|---------|---------|--------------|------------|-----------------------|------------------------|------------------------|--------|--------|-------------|
| O (R) | 1.0        | 0.0        | 0.0        | 62.08   | 60.39   | 38.79   | 71.77        | 33         | $47.56=n(43.39+9.58)$ | $30.5=n(23.89+10.08)$  | $11.98=n(2.37+10.98)$  | 0.5282 | 0.3387 | 0.3443      |
| Y     | 1.0        | 1.0        | 0.0        | 92.29   | -15.77  | 71.46   | 73.18        | 102        | $69.75=n(68.11+9.58)$ | $81.36=n(80.54+10.08)$ | $20.84=n(12.23+10.98)$ | 0.4056 | 0.4732 | 0.9184      |
| L (G) | 0.0        | 1.0        | 0.0        | 81.94   | -76.72  | 57.67   | 95.99        | 143        | $31.34=n(25.33+9.58)$ | $60.19=n(56.96+10.08)$ | $18.71=n(9.87+10.98)$  | 0.2843 | 0.546  | 0.6795      |
| C     | 0.0        | 1.0        | 1.0        | 85.47   | -46.79  | -15.87  | 49.42        | 199        | $45.3=n(40.88+9.58)$  | $66.94=n(64.48+10.08)$ | $94.58=n(94.37+10.98)$ | 0.219  | 0.3237 | 0.7556      |
| V (B) | 0.0        | 0.0        | 1.0        | 46.9    | 39.1    | -76.74  | 86.14        | 297        | $22.7=n(15.7+9.58)$   | $15.94=n(7.68+10.08)$  | $86.45=n(85.31+10.98)$ | 0.1815 | 0.1274 | 0.1799      |
| M     | 1.0        | 0.0        | 1.0        | 67.6    | 72.71   | -42.16  | 84.05        | 330        | $61.76=n(59.2+9.58)$  | $37.44=n(31.62+10.08)$ | $88.03=n(87.07+10.98)$ | 0.3299 | 0.2    | 0.4226      |
| N     | 0.0        | 0.0        | 0.0        | 36.08   | 0.0     | 0.0     | 0.0          | 0          | $8.6=n(0.0+9.58)$     | $9.05=n(0.0+10.08)$    | $9.85=n(0.0+10.98)$    | 0.3127 | 0.329  | 0.1022      |
| W     | 1.0        | 1.0        | 1.0        | 95.41   | 0.0     | 0.0     | 0.0          | 7          | $84.2=n(84.2+9.58)$   | $88.59=n(88.59+10.08)$ | $96.46=n(96.46+10.98)$ | 0.3127 | 0.329  | 1.0         |
| N0    | 0.0        | 0.0        | 0.0        | 36.08   | 0.0     | 0.0     | 0.0          | 0          | $8.6=n(0.0+9.58)$     | $9.05=n(0.0+10.08)$    | $9.85=n(0.0+10.98)$    | 0.3127 | 0.329  | 0.1022      |
| W1    | 1.0        | 1.0        | 1.0        | 95.41   | 0.0     | 0.0     | 0.0          | 7          | $84.2=n(84.2+9.58)$   | $88.59=n(88.59+10.08)$ | $96.46=n(96.46+10.98)$ | 0.3127 | 0.329  | 1.0         |

System TLS52a

CRT monitor

D65 reflection:

$Y_N = 20.16$

$L^*_N = 52.02$

$n = 88.59 / (88.59 + 20.16)$   
 $= 0.815$

| Color | $r=olv*_1$ | $g=olv*_2$ | $b=olv*_3$ | $L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h_{ab,a}$ | $X_a=XYZ_{1a}$         | $Y_a=XYZ_{2a}$         | $Z_a=XYZ_{3a}$         | $x_a$  | $y_a$  | $Y_a/88.59$ |
|-------|------------|------------|------------|---------|---------|---------|--------------|------------|------------------------|------------------------|------------------------|--------|--------|-------------|
| O (R) | 1.0        | 0.0        | 0.0        | 66.43   | 50.88   | 28.79   | 58.46        | 30         | $50.96=n(43.39+19.16)$ | $35.89=n(23.89+20.16)$ | $19.81=n(2.37+21.95)$  | 0.4778 | 0.3365 | 0.4051      |
| Y     | 1.0        | 1.0        | 0.0        | 92.59   | -14.18  | 60.27   | 61.92        | 103        | $71.09=n(68.11+19.16)$ | $82.03=n(80.54+20.16)$ | $27.85=n(12.23+21.95)$ | 0.3928 | 0.4533 | 0.926       |
| L (G) | 0.0        | 1.0        | 0.0        | 83.35   | -65.65  | 47.34   | 80.95        | 144        | $36.24=n(25.33+19.16)$ | $62.83=n(56.96+20.16)$ | $25.92=n(9.87+21.95)$  | 0.29   | 0.5027 | 0.7092      |
| C     | 0.0        | 1.0        | 1.0        | 86.48   | -41.02  | -14.25  | 43.44        | 199        | $48.91=n(40.88+19.16)$ | $68.95=n(64.48+20.16)$ | $94.76=n(94.37+21.95)$ | 0.23   | 0.3243 | 0.7783      |
| V (B) | 0.0        | 0.0        | 1.0        | 54.74   | 29.37   | -63.89  | 70.32        | 295        | $22.68=n(15.7+19.16)$  | $22.68=n(7.68+20.16)$  | $87.37=n(85.31+21.95)$ | 0.2051 | 0.1638 | 0.256       |
| M     | 1.0        | 0.0        | 1.0        | 70.99   | 62.9    | -36.87  | 72.92        | 330        | $63.84=n(59.2+19.16)$  | $42.18=n(31.62+20.16)$ | $88.81=n(87.07+21.95)$ | 0.3277 | 0.2165 | 0.4761      |
| N     | 0.0        | 0.0        | 0.0        | 47.52   | 0.0     | 0.0     | 0.0          | 0          | $15.61=n(0.0+19.16)$   | $16.42=n(0.0+20.16)$   | $17.88=n(0.0+21.95)$   | 0.3127 | 0.329  | 0.1854      |
| W     | 1.0        | 1.0        | 1.0        | 95.41   | 0.0     | 0.0     | 0.0          | 0          | $84.2=n(84.2+19.16)$   | $88.59=n(88.59+20.16)$ | $96.46=n(96.46+21.95)$ | 0.3127 | 0.329  | 1.0         |
| N0    | 0.0        | 0.0        | 0.0        | 47.52   | 0.0     | 0.0     | 0.0          | 0          | $15.61=n(0.0+19.16)$   | $16.42=n(0.0+20.16)$   | $17.88=n(0.0+21.95)$   | 0.3127 | 0.329  | 0.1854      |
| W1    | 1.0        | 1.0        | 1.0        | 95.41   | 0.0     | 0.0     | 0.0          | 0          | $84.2=n(84.2+19.16)$   | $88.59=n(88.59+20.16)$ | $96.46=n(96.46+21.95)$ | 0.3127 | 0.329  | 1.0         |

System TLS70a

CRT monitor

D65 reflection:

$Y_N = 40.32$

$L^*_N = 69.7$

$n = 88.59 / (88.59 + 40.32)$   
 $= 0.687$

| Color | $r=olv*_1$ | $g=olv*_2$ | $b=olv*_3$ | $L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h_{ab,a}$ | $X_a=XYZ_{1a}$         | $Y_a=XYZ_{2a}$         | $Z_a=XYZ_{3a}$        | $x_a$  | $y_a$  | $Y_a/88.59$ |
|-------|------------|------------|------------|---------|---------|---------|--------------|------------|------------------------|------------------------|-----------------------|--------|--------|-------------|
| O (R) | 1.0        | 0.0        | 0.0        | 72.31   | 38.9    | 19.57   | 43.54        | 27         | $56.15=n(43.39+38.32)$ | $44.13=n(23.89+40.32)$ | $31.8=n(2.37+43.9)$   | 0.4251 | 0.3341 | 0.4981      |
| Y     | 1.0        | 1.0        | 0.0        | 93.04   | -11.8   | 46.48   | 47.96        | 104        | $73.14=n(68.11+38.32)$ | $83.06=n(80.54+40.32)$ | $38.58=n(12.23+43.9)$ | 0.3755 | 0.4264 | 0.9376      |
| L (G) | 0.0        | 1.0        | 0.0        | 85.43   | -51.16  | 35.38   | 62.21        | 145        | $43.74=n(25.33+38.32)$ | $66.86=n(56.96+40.32)$ | $36.95=n(9.87+43.9)$  | 0.2965 | 0.4531 | 0.7547      |
| C     | 0.0        | 1.0        | 1.0        | 87.98   | -32.95  | -11.85  | 35.03        | 200        | $54.43=n(40.88+38.32)$ | $72.02=n(64.48+40.32)$ | $95.02=n(94.37+43.9)$ | 0.2458 | 0.3252 | 0.8129      |
| V (B) | 0.0        | 0.0        | 1.0        | 64.15   | 20.04   | -48.66  | 52.63        | 292        | $37.12=n(15.7+38.32)$  | $32.98=n(7.68+40.32)$  | $88.79=n(85.31+43.9)$ | 0.2336 | 0.2076 | 0.3723      |
| M     | 1.0        | 0.0        | 1.0        | 75.72   | 49.69   | -29.55  | 57.81        | 329        | $67.02=n(59.2+38.32)$  | $49.44=n(31.62+40.32)$ | $90.0=n(87.07+43.9)$  | 0.3246 | 0.2395 | 0.5581      |
| N     | 0.0        | 0.0        | 0.0        | 59.62   | 0.0     | 0.0     | 0.0          | 10         | $26.33=n(0.0+38.32)$   | $27.71=n(0.0+40.32)$   | $30.17=n(0.0+43.9)$   | 0.3127 | 0.329  | 0.3128      |
| W     | 1.0        | 1.0        | 1.0        | 95.41   | 0.0     | 0.0     | 0.0          | 7          | $84.2=n(84.2+38.32)$   | $88.59=n(88.59+40.32)$ | $96.46=n(96.46+43.9)$ | 0.3127 | 0.329  | 1.0         |
| N0    | 0.0        | 0.0        | 0.0        | 59.62   | 0.0     | 0.0     | 0.0          | 10         | $26.33=n(0.0+38.32)$   | $27.71=n(0.0+40.32)$   | $30.17=n(0.0+43.9)$   | 0.3127 | 0.329  | 0.3128      |
| W1    | 1.0        | 1.0        | 1.0        | 95.41   | 0.0     | 0.0     | 0.0          | 7          | $84.2=n(84.2+38.32)$   | $88.59=n(88.59+40.32)$ | $96.46=n(96.46+43.9)$ | 0.3127 | 0.329  | 1.0         |

IE330-7N, Colorimetric data of Television Luminous System TLS00a for CIE standard illuminant D65; CRT monitor; Page: 6/9

TUB-test chart IE33; Hue circle and colorimetric data

Display measurement: LCD, CRT and LCD projector, page 6/9

input:  $olv^* \text{ setrgbcolor}$

output: no change compared to input

Colorimetric "Standard data": Television Luminous System TLS03 for CIE lightness  $L^*_N=03$  of black for illuminant D65

System TLS03

LCD projector

D65 reflection:

$Y_N = 0.28$

$L^*_N = 2.5$

| Color | $r=olv*_1$ | $g=olv*_2$ | $b=olv*_3$ | $L^*$ | $a^*$  | $b^*$  | $C^*_{ab}$ | $h_{ab}$ | $X=XYZ_1$ | $Y=XYZ_2$ | $Z=XYZ_3$ | $x$    | $y$    | $Y/88.59$ |
|-------|------------|------------|------------|-------|--------|--------|------------|----------|-----------|-----------|-----------|--------|--------|-----------|
| O (R) | 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    |
| Y     | 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    |
| L (G) | 0.0        | 1.0        | 0.0        | 72.83 | -51.36 | 71.66  | 88.17      | 126      | 27.7      | 44.91     | 7.37      | 0.3464 | 0.5615 | 0.5069    |
| C     | 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    |
| V (B) | 0.0        | 0.0        | 1.0        | 30.28 | 50.46  | -86.21 | 99.9       | 300      | 11.87     | 6.35      | 62.28     | 0.1475 | 0.0789 | 0.0717    |
| M     | 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    |
| N     | 0.0        | 0.0        | 0.0        | 2.5   | -0.41  | 0.23   | 0.48       | 151      | 0.25      | 0.28      | 0.29      | 0.3103 | 0.3398 | 0.0031    |
| W     | 1.0        | 1.0        | 1.0        | 95.41 | -0.54  | -0.04  | 0.55       | 185      | 83.91     | 88.59     | 96.53     | 0.3119 | 0.3293 | 1.0       |
| N0    | 0.0        | 0.0        | 0.0        | 2.5   | -0.41  | 0.23   | 0.48       | 151      | 0.25      | 0.28      | 0.29      | 0.3103 | 0.3398 | 0.0031    |
| W1    | 1.0        | 1.0        | 1.0        | 95.41 | -0.54  | -0.04  | 0.55       | 185      | 83.91     | 88.59     | 96.53     | 0.3119 | 0.3293 | 1.0       |

Colorimetric "Adapted data (a)": Television Luminous System TLS03a for CIE lightness  $L^*_N=03$  of black for illuminant D65

System TLS03a

LCD projector

D65 reflection:

$Y_N = 0.28$

$L^*_N = 2.5$

| Color | $r=olv*_1$ | $g=olv*_2$ | $b=olv*_3$ | $L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h_{ab,a}$ | $X_a=XYZ_{1a}$ | $Y_a=XYZ_{2a}$ | $Z_a=XYZ_{3a}$ | $x_a$  | $y_a$  | $Y_a/88.59$ |
|-------|------------|------------|------------|---------|---------|---------|--------------|------------|----------------|----------------|----------------|--------|--------|-------------|
| O (R) | 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      |
| Y     | 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      |
| L (G) | 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      |
| C     | 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      |
| V (B) | 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      |
| M     | 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      |
| N     | 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      |
| W     | 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         |
| N0    | 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      |
| W1    | 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         |

Colorimetric "Adapted data (a0)": Television Luminous System TLS00a0 for CIE lightness  $L^*_N=00$  of black for illuminant D65

System TLS00a0

LCD projector

D65 reflection:

$Y_N = 0.0$

$L^*_N = 0.0$

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

| Color | $r=olv*_1$ | $g=olv*_2$ | $b=olv*_3$ | $L^*_{a0}$ | $a^*_{a0}$ | $b^*_{a0}$ | $C^*_{ab,a0}$ | $h_{ab,a0}$ | $X_{a0}=XYZ_{1a0}$    | $Y_{a0}=XYZ_{2a0}$    | $Z_{a0}=XYZ_{3a0}$   | $x_{a0}$ | $y_{a0}$ | $Y_{a0}/88.59$ |
|-------|------------|------------|------------|------------|------------|------------|---------------|-------------|-----------------------|-----------------------|----------------------|----------|----------|----------------|
| O (R) | 1.0        | 0.0        | 0.0        | 36.64      | 60.14      | 59.89      | 84.88         | 45          | $17.98=k(18.19-0.26)$ | $9.35=k(9.59-0.28)$   | $0.23=k(0.53-0.3)$   | 0.6525   | 0.3391   | 0.1055         |
| Y     | 1.0        | 1.0        | 0.0        | 83.08      | -16.34     | 85.5       | 87.05         | 101         | $52.69=k(52.78-0.26)$ | $62.32=k(62.4-0.28)$  | $8.46=k(8.73-0.3)$   | 0.4267   | 0.5048   | 0.7035         |
| L (G) | 0.0        | 1.0        | 0.0        | 72.74      | -51.16     | 72.53      | 88.76         | 125         | $27.66=k(27.83-0.26)$ | $44.77=k(44.91-0.28)$ | $7.09=k(7.37-0.3)$   | 0.3478   | 0.563    | 0.5054         |
| C     | 0.0        | 1.0        | 1.0        | 77.56      | -27.51     | -10.78     | 29.55         | 201         | $40.34=k(40.48-0.26)$ | $52.47=k(52.59-0.28)$ | $69.38=k(69.47-0.3)$ | 0.2487   | 0.3235   | 0.5923         |
| V (B) | 0.0        | 0.0        | 1.0        | 29.65      | 52.07      | -87.36     | 101.71        | 301         | $11.71=k(11.94-0.26)$ | $6.09=k(6.35-0.28)$   | $62.34=k(62.45-0.3)$ | 0.1461   | 0.076    | 0.0688         |
| M     | 1.0        | 0.0        | 1.0        | 48.11      | 72.19      | -60.98     | 94.51         | 320         | $32.19=k(32.35-0.26)$ | $16.88=k(17.11-0.28)$ | $68.68=k(68.77-0.3)$ | 0.2734   | 0.1434   | 0.1906         |
| N     | 0.0        | 0.0        | 0.0        | 0.0        | 0.0        | 0.0        | 0.01          | 0           | $0.0=k(0.26-0.26)$    | $0.0=k(0.28-0.28)$    | $0.0=k(0.3-0.3)$     | 0.0      | 0.0      | 0.0            |
| W     | 1.0        | 1.0        | 1.0        | 95.41      | 0.0        | 0.0        | 0.01          | 0           | $84.2=k(84.2-0.26)$   | $88.59=k(88.59-0.28)$ | $96.46=k(96.46-0.3)$ | 0.3127   | 0.329    | 1.0            |
| N0    | 0.0        | 0.0        | 0.0        | 0.0        | 0.0        | 0.0        | 0.01          | 0           | $0.0=k(0.26-0.26)$    | $0.0=k(0.28-0.28)$    | $0.0=k(0.3-0.3)$     | 0.0      | 0.0      | 0.0            |
| W1    | 1.0        | 1.0        | 1.0        | 95.41      | 0.0        | 0.0        | 0.01          | 0           | $84.2=k(84.2-0.26)$   | $88.59=k(88.59-0.28)$ | $96.46=k(96.46-0.3)$ | 0.3127   | 0.329    | 1.0            |

Colorimetric "Adapted data (a0)": Television Luminous System TLS00a0 for CIE lightness  $L^*_N=00$  of black for illuminant D65

System TLS00a0

LCD projector

D65 reflection:

$Y_N = 0.0$

$L^*_N = 0.0$

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

| Color | $r=olv*_1$ | $g=olv*_2$ | $b=olv*_3$ | $L^*_{a0}$ | $a^*_{a0}$ | $b^*_{a0}$ | $C^*_{ab,a0}$ | $h_{ab,a0}$ | $X_{a0}=XYZ_{1a0}$    | $Y_{a0}=XYZ_{2a0}$    | $Z_{a0}=XYZ_{3a0}$   | $x_{a0}$ | $y_{a0}$ | $Y_{a0}/88.59$ |
|-------|------------|------------|------------|------------|------------|------------|---------------|-------------|-----------------------|-----------------------|----------------------|----------|----------|----------------|
| O (R) | 1.0        | 0.0        | 0.0        | 36.64      | 60.14      | 59.89      | 84.88         | 45          | $17.98=k(18.19-0.26)$ | $9.35=k(9.59-0.28)$   | $0.23=k(0.53-0.3)$   | 0.6525   | 0.3391   | 0.1055         |
| Y     | 1.0        | 1.0        | 0.0        | 83.08      | -16.34     | 85.5       | 87.05         | 101         | $52.69=k(52.78-0.26)$ | $62.32=k(62.4-0.28)$  | $8.46=k(8.73-0.3)$   | 0.4267   | 0.5048   | 0.7035         |
| L (G) | 0.0        | 1.0        | 0.0        | 72.74      | -51.16     | 72.53      | 88.76         | 125         | $27.66=k(27.83-0.26)$ | $44.77=k(44.91-0.28)$ | $7.09=k(7.37-0.3)$   | 0.3478   | 0.563    | 0.5054         |
| C     | 0.0        | 1.0        | 1.0        | 77.56      | -27.51     | -10.78     | 29.55         | 201         | $40.34=k(40.48-0.26)$ | $52.47=k(52.59-0.28)$ | $69.38=k(69.47-0.3)$ | 0.2487   | 0.3235   | 0.5923         |
| V (B) | 0.0        | 0.0        | 1.0        | 29.65      | 52.07      | -87.36     | 101.71        | 301         | $11.71=k(11.94-0.26)$ | $6.09=k(6.35-0.28)$   | $62.34=k(62.45-0.3)$ | 0.1461   | 0.076    | 0.0688         |
| M     | 1.0        | 0.0        | 1.0        | 48.11      | 72.19      | -60.98     | 94.51         | 320         | $32.19=k(32.35-0.26)$ | $16.88=k(17.11-0.28)$ | $68.68=k(68.77-0.3)$ | 0.2734   | 0.1434   | 0.1906         |
| N     | 0.0        | 0.0        | 0.0        | 0.0        | 0.0        | 0.0        | 0.01          | 0           | $0.0=k(0.26-0.26)$    | $0.0=k(0.3-0.3)$      | $0.0=k(0.3-0.3)$     | 0.0      | 0.0      | 0.0            |
| W     | 1.0        | 1.0        | 1.0        | 95.41      | 0.0        | 0.0        | 0.01          | 0           | $84.2=k(84.2-0.26)$   | $88.59=k(88.59-0.28)$ | $96.46=k(96.46-0.3)$ | 0.3127   | 0.329    | 1.0            |
| N0    | 0.0        | 0.0        | 0.0        | 0.0        | 0.0        | 0.0        | 0.01          | 0           | $0.0=k(0.26-0.26)$    | $0.0=k(0.3-0.3)$      | $0.0=k(0.3-0.3)$     | 0.0      | 0.0      | 0.0            |
| W1    | 1.0        | 1.0        | 1.0        | 95.41      | 0.0        | 0.0        | 0.01          | 0           | $84.2=k(84.2-0.26)$   | $88.59=k(88.59-0.28)$ | $96.46=k(96.46-0.3)$ | 0.3127   | 0.329    | 1.0            |

Calculated colorimetric data: Television Luminous Systems TLSxxa for CIE lightness  $L^*_N=00, 06, 11, 18$  of black for illuminant D65

System TLS00a

LCD projector

D65 reflection:

$Y_N = 0.0$

$L^*_N = 0.0$

$n = 88.59 / (88.59 + 0.0)$   
 $= 1.0$

| Color | $r=olv*_1$ | $g=olv*_2$ | $b=olv*_3$ | $L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h_{ab,a}$ | $X_a=XYZ_{1a}$       | $Y_a=XYZ_{2a}$       | $Z_a=XYZ_{3a}$       | $x_a$  | $y_a$  | $Y_a/88.59$ |
|-------|------------|------------|------------|---------|---------|---------|--------------|------------|----------------------|----------------------|----------------------|--------|--------|-------------|
| O (R) | 1.0        | 0.0        | 0.0        | 36.64   | 60.14   | 59.89   | 84.88        | 45         | $17.98=n(17.98+0.0)$ | $9.35=n(9.35+0.0)$   | $0.23=n(0.23+0.0)$   | 0.6525 | 0.3391 | 0.1055      |
| Y     | 1.0        | 1.0        | 0.0        | 83.08   | -16.34  | 85.5    | 87.05        | 101        | $52.69=n(52.69+0.0)$ | $62.32=n(62.32+0.0)$ | $8.46=n(8.46+0.0)$   | 0.4267 | 0.5048 | 0.7035      |
| L (G) | 0.0        | 1.0        | 0.0        | 72.74   | -51.16  | 72.53   | 88.76        | 125        | $27.66=n(27.66+0.0)$ | $44.77=n(44.77+0.0)$ | $7.09=n(7.09+0.0)$   | 0.3478 | 0.563  | 0.5054      |
| C     | 0.0        | 1.0        | 1.0        | 77.56   | -27.51  | -10.78  | 29.55        | 201        | $40.34=n(40.34+0.0)$ | $52.47=n(52.47+0.0)$ | $69.38=n(69.38+0.0)$ | 0.2487 | 0.3235 | 0.5923      |
| V (B) | 0.0        | 0.0        | 1.0        | 29.65   | 52.07   | -87.36  | 101.71       | 301        | $11.71=n(11.71+0.0)$ | $6.09=n(6.09+0.0)$   | $62.34=n(62.34+0.0)$ | 0.1461 | 0.076  | 0.0688      |
| M     | 1.0        | 0.0        | 1.0        | 48.11   | 72.19   | -60.98  | 94.51        | 320        | $32.19=n(32.19+0.0)$ | $16.88=n(16.88+0.0)$ | $68.68=n(68.68+0.0)$ | 0.2734 | 0.1434 | 0.1906      |
| N     | 0.0        | 0.0        | 0.0        | 0.0     | 0.0     | 0.0     | 0.0          | 0          | $0.0=n(0.0+0.0)$     | $0.0=n(0.0+0.0)$     | $0.0=n(0.0+0.0)$     | 0.0    | 0.0    | 0.0         |
| W     | 1.0        | 1.0        | 1.0        | 95.41   | 0.0     | 0.0     | 0.0          | 0          | $84.2=n(84.2+0.0)$   | $88.59=n(88.59+0.0)$ | $96.46=n(96.46+0.0)$ | 0.3127 | 0.329  | 1.0         |
| N0    | 0.0        | 0.0        | 0.0        | 0.0     | 0.0     | 0.0     | 0.0          | 0          | $0.0=n(0.0+0.0)$     | $0.0=n(0.0+0.0)$     | $0.0=n(0.0+0.0)$     | 0.0    | 0.0    | 0.0         |
| W1    | 1.0        | 1.0        | 1.0        | 95.41   | 0.0     | 0.0     | 0.0          | 0          | $84.2=n(84.2+0.0)$   | $88.59=n(88.59+0.0)$ | $96.46=n(96.46+0.0)$ | 0.3127 | 0.329  | 1.0         |

System TLS06a

LCD projector

D65 reflection:

$Y_N = 0.63$

$L^*_N = 5.69$

$n = 88.59 / (88.59 + 0.63)$   
 $= 0.993$

| Color | $r=olv*_1$ | $g=olv*_2$ | $b=olv*_3$ | $L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h_{ab,a}$ | $X_a=XYZ_{1a}$       | $Y_a=XYZ_{2a}$        | $Z_a=XYZ_{3a}$        | $x_a$  | $y_a$  | $Y_a/88.59$ |
|-------|------------|------------|------------|---------|---------|---------|--------------|------------|----------------------|-----------------------|-----------------------|--------|--------|-------------|
| O (R) | 1.0        | 0.0        | 0.0        | 37.67   | 58.17   | 51.95   | 77.99        | 42         | $18.45=n(17.98+0.6)$ | $9.91=n(9.35+0.63)$   | $0.91=n(0.23+0.69)$   | 0.6305 | 0.3385 | 0.1118      |
| Y     | 1.0        | 1.0        | 0.0        | 83.18   | -16.18  | 83.63   | 85.19        | 101        | $52.91=n(52.69+0.6)$ | $62.51=n(62.32+0.63)$ | $9.08=n(8.46+0.69)$   | 0.425  | 0.5021 | 0.7056      |
| L (G) | 0.0        | 1.0        | 0.0        | 72.94   | -50.45  | 70.56   | 86.75        | 126        | $28.06=n(27.66+0.6)$ | $45.08=n(44.77+0.63)$ | $7.72=n(7.09+0.69)$   | 0.347  | 0.5575 | 0.5088      |
| C     | 0.0        | 1.0        | 1.0        | 77.72   | -27.2   | -10.68  | 29.23        | 201        | $40.65=n(40.34+0.6)$ | $52.73=n(52.47+0.63)$ | $69.57=n(69.38+0.69)$ | 0.2495 | 0.3236 | 0.5952      |
| V (B) | 0.0        | 0.0        | 1.0        | 31.06   | 49.56   | -85.15  | 98.53        | 300        | $12.23=n(11.71+0.6)$ | $6.68=n(6.09+0.63)$   | $62.58=n(62.34+0.69)$ | 0.15   | 0.0819 | 0.0754      |
| M     | 1.0        | 0.0        | 1.0        | 48.75   | 70.78   | -60.05  | 92.82        | 320        | $32.56=n(32.19+0.6)$ | $17.39=n(16.88+0.63)$ | $68.88=n(68.68+0.69)$ | 0.274  | 0.1463 | 0.1963      |
| N     | 0.0        | 0.0        | 0.0        | 5.65    | 0.0     | 0.0     | 0.0          | 0          | $0.59=n(0.0+0.6)$    | $0.63=n(0.0+0.63)$    | $0.68=n(0.0+0.69)$    | 0.3127 | 0.329  | 0.0071      |
| W     | 1.0        | 1.0        | 1.0        | 95.41   | 0.0     | 0.0     | 0.0          | 0          | $84.2=n(84.2+0.6)$   | $88.59=n(88.59+0.63)$ | $96.46=n(96.46+0.69)$ | 0.3127 | 0.329  | 1.0         |
| N0    | 0.0        | 0.0        | 0.0        | 5.65    | 0.0     | 0.0     | 0.0          | 0          | $0.59=n(0.0+0.6)$    | $0.63=n(0.0+0.63)$    | $0.68=n(0.0+0.69)$    | 0.3127 | 0.329  | 0.0071      |
| W1    | 1.0        | 1.0        | 1.0        | 95.41   | 0.0     | 0.0     | 0.0          | 0          | $84.2=n(84.2+0.6)$   | $88.59=n(88.59+0.63)$ | $96.46=n(96.46+0.69)$ | 0.3127 | 0.329  | 1.0         |

System TLS11a

LCD projector

D65 reflection:

$Y_N = 1.26$

$L^*_N = 11.0$

$n = 88.59 / (88.59 + 1.26)$   
 $= 0.986$

| Color | $r=olv*_1$ | $g=olv*_2$ | $b=olv*_3$ | $L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h_{ab,a}$ | $X_a=XYZ_{1a}$       | $Y_a=XYZ_{2a}$        | $Z_a=XYZ_{3a}$        | $x_a$  | $y_a$  | $Y_a/88.59$ |
|-------|------------|------------|------------|---------|---------|---------|--------------|------------|----------------------|-----------------------|-----------------------|--------|--------|-------------|
| O (R) | 1.0        | 0.0        | 0.0        | 38.65   | 56.34   | 45.45   | 72.39        | 39         | $18.91=n(17.98+1.2)$ | $10.46=n(9.35+1.26)$  | $1.58=n(0.23+1.37)$   | 0.6111 | 0.3379 | 0.118       |
| Y     | 1.0        | 1.0        | 0.0        | 83.28   | -16.03  | 81.88   | 83.43        | 101        | $53.13=n(52.69+1.2)$ | $62.69=n(62.32+1.26)$ | $9.69=n(8.46+1.37)$   | 0.4233 | 0.4995 | 0.7076      |
| L (G) | 0.0        | 1.0        | 0.0        | 73.14   | -49.76  | 68.74   | 84.87        | 126        | $28.45=n(27.66+1.2)$ | $45.38=n(44.77+1.26)$ | $8.35=n(7.09+1.37)$   | 0.3462 | 0.5523 | 0.5123      |
| C     | 0.0        | 1.0        | 1.0        | 77.86   | -26.9   | -10.57  | 28.92        | 201        | $40.96=n(40.34+1.2)$ | $52.98=n(52.47+1.26)$ | $69.76=n(69.38+1.37)$ | 0.2502 | 0.3236 | 0.598       |
| V (B) | 0.0        | 0.0        | 1.0        | 32.37   | 47.33   | -83.09  | 95.64        | 300        | $12.73=n(11.71+1.2)$ | $7.25=n(6.09+1.26)$   | $62.82=n(62.34+1.37)$ | 0.1537 | 0.0876 | 0.0818      |
| M     | 1.0        | 0.0        | 1.0        | 49.36   | 69.42   | -59.15  | 91.21        | 320        | $32.92=n(32.19+1.2)$ | $17.89=n(16.88+1.26)$ | $69.07=n(68.68+1.37)$ | 0.2746 | 0.1492 | 0.2019      |
| N     | 0.0        | 0.0        | 0.0        | 10.87   | 0.0     | 0.0     | 0.0          | 358        | $1.18=n(0.0+1.2)$    | $1.24=n(0.0+1.26)$    | $1.35=n(0.0+1.37)$    | 0.3127 | 0.329  | 0.014       |
| W     | 1.0        | 1.0        | 1.0        | 95.41   | 0.0     | 0.0     | 0.0          | 0          | $84.2=n(84.2+1.2)$   | $88.59=n(88.59+1.26)$ | $96.46=n(96.46+1.37)$ | 0.3127 | 0.329  | 1.0         |
| N0    | 0.0        | 0.0        | 0.0        | 10.87   | 0.0     | 0.0     | 0.0          | 358        | $1.18=n(0.0+1.2)$    | $1.24=n(0.0+1.26)$    | $1.35=n(0.0+1.37)$    | 0.3127 | 0.329  | 0.014       |
| W1    | 1.0        | 1.0        | 1.0        | 95.41   | 0.0     | 0.0     | 0.0          | 0          | $84.2=n(84.2+1.2)$   | $88.59=n(88.59+1.26)$ | $96.46=n(96.46+1.37)$ | 0.3127 | 0.329  | 1.0         |

System TLS18a

LCD projector

D65 reflection:

$Y_N = 2.52$

$L^*_N = 18.01$

$n = 88.59 / (88.59 + 2.52)$   
 $= 0.972$

| Color | $r=olv*_1$ | $g=olv*_2$ | $b=olv*_3$ | $L^*_a$ | $a^*_a$ | $b^*_a$ | $C^*_{ab,a}$ | $h_{ab,a}$ | $X_a=XYZ_{1a}$       | $Y_a=XYZ_{2a}$        | $Z_a=XYZ_{3a}$        | $x_a$  | $y_a$  | $Y_a/88.59$ |
|-------|------------|------------|------------|---------|---------|---------|--------------|------------|----------------------|-----------------------|-----------------------|--------|--------|-------------|
| O (R) | 1.0        | 0.0        | 0.0        | 40.47   | 53.07   | 37.7    | 65.09        | 35         | $19.82=n(17.98+2.4)$ | $11.54=n(9.35+2.52)$  | $2.89=n(0.23+2.74)$   | 0.5786 | 0.3369 | 0.1302      |
| Y     | 1.0        | 1.0        | 0.0        | 83.47   | -15.74  | 78.66   | 80.22        | 101        | $53.56=n(52.69+2.4)$ | $63.05=n(62.32+2.52)$ | $10.89=n(8.46+2.74)$  | 0.4201 | 0.4945 | 0.7117      |
| L (G) | 0.0        | 1.0        | 0.0        | 73.53   | -48.45  | 65.46   | 81.45        | 127        | $29.22=n(27.66+2.4)$ | $45.98=n(44.77+2.52)$ | $9.56=n(7.09+2.74)$   | 0.3447 | 0.5425 | 0.519       |
| C     | 0.0        | 1.0        | 1.0        | 78.15   | -26.32  | -10.38  | 28.31        | 202        | $41.56=n(40.34+2.4)$ | $53.47=n(52.47+2.52)$ | $70.13=n(69.38+2.74)$ | 0.2516 | 0.3238 | 0.6036      |
| V (B) | 0.0        | 0.0        | 1.0        | 34.75   | 43.52   | -79.4   | 90.55        | 299        | $13.72=n(11.71+2.4)$ | $8.38=n(6.09+2.52)$   | $63.29=n(62.34+2.74)$ | 0.1607 | 0.0981 | 0.0945      |
| M     | 1.0        | 0.0        | 1.0        | 50.53   | 66.89   | -57.44  | 88.17        | 319        | $33.63=n(32.19+2.4)$ | $18.87=n(16.88+2.52)$ | $69.45=n(68.68+2.74)$ | 0.2758 | 0.1547 | 0.213       |
| N     | 0.0        | 0.0        | 0.0        | 17.69   | 0.0     | 0.0     | 0.0          | 0          | $2.33=n(0.0+2.4)$    | $2.67=n(0.0+2.52)$    | $2.89=n(0.0+2.74)$    | 0.3127 | 0.329  | 0.0277      |
| W     | 1.0        | 1.0        | 1.0        | 95.41   | 0.0     | 0.0     | 0.0          | 0          | $84.2=n(84.2+2.4)$   | $88.59=n(88.59+2.52)$ | $96.46=n(96.46+2.74)$ | 0.3127 | 0.329  | 1.0         |
| N0    | 0.0        | 0.0        | 0.0        | 17.69   | 0.0     | 0.0     | 0.0          | 0          | $2.33=n(0.0+2.4)$    | $2.67=n(0.0+2.52)$    | $2.89=n(0.0+2.74)$    | 0.3127 | 0.329  | 0.0277      |
| W1    | 1.0        | 1.0        | 1.0        | 95.41   | 0.0     | 0.0     | 0.0          | 0          | $84.2=n(84.2+2.4)$   | $88.59=n(88.59+2.52)$ | $96.46=n(96.46+2.74)$ | 0.3127 | 0.329  | 1.0         |

IE330-7N, Colorimetric data of Television Luminous System TLS03a for CIE standard illuminant D65; LCD projector; Page: 8/9

TUB-test chart IE33; Hue circle and colorimetric data

input:  $olv^* \text{ setrgbcolor}$

Display measurement: LCD, CRT and LCD projector, page 8/9

output: no change compared to input



Colorimetric "Adapted data (a0)": Television Luminous System TLS00a0 for CIE lightness  $L^*_N=00$  of black for illuminant D65

| System TLS00a0             | Color | r=olv* <sub>1</sub> | g=olv* <sub>2</sub> | b=olv* <sub>3</sub> | L* <sub>a0</sub> | a* <sub>a0</sub> | b* <sub>a0</sub> | C* <sub>ab,a0</sub> | h <sub>ab,a0</sub> | X <sub>a0</sub> =XYZ <sub>1a0</sub> | Y <sub>a0</sub> =XYZ <sub>2a0</sub> | Z <sub>a0</sub> =XYZ <sub>3a0</sub> | x <sub>a0</sub> | y <sub>a0</sub> | Y <sub>a0</sub> /88.59 |
|----------------------------|-------|---------------------|---------------------|---------------------|------------------|------------------|------------------|---------------------|--------------------|-------------------------------------|-------------------------------------|-------------------------------------|-----------------|-----------------|------------------------|
| LCD projector              | O (R) | 1.0                 | 0.0                 | 0.0                 | 36.64            | 60.14            | 59.89            | 84.88               | 45                 | 17.98=k(18.19-0.26)                 | 9.35=k(9.59-0.28)                   | 0.23=k(0.53-0.3)                    | 0.6525          | 0.3391          | 0.1055                 |
|                            | Y     | 1.0                 | 1.0                 | 0.0                 | 83.08            | -16.34           | 85.5             | 87.05               | 101                | 52.69=k(52.78-0.26)                 | 62.32=k(62.4-0.28)                  | 8.46=k(8.73-0.3)                    | 0.4267          | 0.5048          | 0.7035                 |
| D65 reflection:            | L (G) | 0.0                 | 1.0                 | 0.0                 | 72.74            | -51.16           | 72.53            | 88.76               | 125                | 27.66=k(27.83-0.26)                 | 44.77=k(44.91-0.28)                 | 7.09=k(7.37-0.3)                    | 0.3478          | 0.563           | 0.5054                 |
|                            | C     | 0.0                 | 1.0                 | 1.0                 | 77.56            | -27.51           | -10.78           | 29.55               | 201                | 40.34=k(40.48-0.26)                 | 52.47=k(52.59-0.28)                 | 69.38=k(69.47-0.3)                  | 0.2487          | 0.3235          | 0.5923                 |
| Y <sub>N</sub> = 0.0       | V (B) | 0.0                 | 0.0                 | 1.0                 | 29.65            | 52.07            | -87.36           | 101.71              | 301                | 11.71=k(11.94-0.26)                 | 6.09=k(6.35-0.28)                   | 62.34=k(62.45-0.3)                  | 0.1461          | 0.076           | 0.0688                 |
| L* <sub>N</sub> = 0.0      | M     | 1.0                 | 0.0                 | 1.0                 | 48.11            | 72.19            | -60.98           | 94.51               | 320                | 32.19=k(32.35-0.26)                 | 16.88=k(17.11-0.28)                 | 68.68=k(68.77-0.3)                  | 0.2734          | 0.1434          | 0.1906                 |
|                            | N     | 0.0                 | 0.0                 | 0.0                 | 0.0              | 0.0              | 0.0              | 0.01                | 0                  | 0.0=k(0.26-0.26)                    | 0.0=k(0.3-0.3)                      | 0.0=k(0.3-0.3)                      | 0.0             | 0.0             | 0.0                    |
| k = 88.59 / (88.59 - 0.28) | W     | 1.0                 | 1.0                 | 1.0                 | 95.41            | 0.0              | 0.0              | 0.01                | 0                  | 84.2=k(84.2-0.26)                   | 88.59=k(88.59-0.28)                 | 96.46=k(96.46-0.3)                  | 0.3127          | 0.329           | 1.0                    |
| = 1.003                    | N0    | 0.0                 | 0.0                 | 0.0                 | 0.0              | 0.0              | 0.0              | 0.01                | 0                  | 0.0=k(0.26-0.26)                    | 0.0=k(0.3-0.3)                      | 0.0=k(0.3-0.3)                      | 0.0             | 0.0             | 0.0                    |
|                            | W1    | 1.0                 | 1.0                 | 1.0                 | 95.41            | 0.0              | 0.0              | 0.01                | 0                  | 84.2=k(84.2-0.26)                   | 88.59=k(88.59-0.28)                 | 96.46=k(96.46-0.3)                  | 0.3127          | 0.329           | 1.0                    |

Calculated colorimetric data: Television Luminous Systems TLSxxa for CIE lightness  $L^*_N=27, 33, 52, 70$  of black for illuminant D65

| System TLS27a              | Color | r=olv* <sub>1</sub> | g=olv* <sub>2</sub> | b=olv* <sub>3</sub> | L* <sub>a</sub> | a* <sub>a</sub> | b* <sub>a</sub> | C* <sub>ab,a</sub> | h <sub>ab,a</sub> | X <sub>a</sub> =XYZ <sub>1a</sub> | Y <sub>a</sub> =XYZ <sub>2a</sub> | Z <sub>a</sub> =XYZ <sub>3a</sub> | x <sub>a</sub> | y <sub>a</sub> | Y <sub>a</sub> /88.59 |
|----------------------------|-------|---------------------|---------------------|---------------------|-----------------|-----------------|-----------------|--------------------|-------------------|-----------------------------------|-----------------------------------|-----------------------------------|----------------|----------------|-----------------------|
| LCD projector              | O (R) | 1.0                 | 0.0                 | 0.0                 | 43.67           | 47.68           | 29.36           | 55.99              | 32                | 21.55=n(17.98+4.79)               | 13.61=n(9.35+5.04)                | 5.41=n(0.23+5.49)                 | 0.5311         | 0.3355         | 0.1537                |
|                            | Y     | 1.0                 | 1.0                 | 0.0                 | 83.83           | -15.18          | 73.15           | 74.71              | 102               | 54.38=n(52.69+4.79)               | 63.74=n(62.32+5.04)               | 13.19=n(8.46+5.49)                | 0.4141         | 0.4854         | 0.7194                |
| D65 reflection:            | L (G) | 0.0                 | 1.0                 | 0.0                 | 74.27           | -46.02          | 60.01           | 75.63              | 127               | 30.7=n(27.66+4.79)                | 47.13=n(44.77+5.04)               | 11.9=n(7.09+5.49)                 | 0.3421         | 0.5252         | 0.532                 |
|                            | C     | 0.0                 | 1.0                 | 1.0                 | 78.71           | -25.24          | -10.01          | 27.16              | 202               | 42.71=n(40.34+4.79)               | 54.42=n(52.47+5.04)               | 70.84=n(69.38+5.49)               | 0.2543         | 0.324          | 0.6143                |
| Y <sub>N</sub> = 5.04      | V (B) | 0.0                 | 0.0                 | 1.0                 | 38.79           | 37.71           | -73.22          | 82.37              | 297               | 15.63=n(11.71+4.79)               | 10.53=n(6.09+5.04)                | 64.18=n(62.34+5.49)               | 0.1729         | 0.1166         | 0.1189                |
| L* <sub>N</sub> = 26.85    | M     | 1.0                 | 0.0                 | 1.0                 | 52.67           | 62.38           | -54.36          | 82.75              | 319               | 34.99=n(32.19+4.79)               | 20.74=n(16.88+5.04)               | 70.18=n(68.68+5.49)               | 0.2779         | 0.1647         | 0.2341                |
| n = 88.59 / (88.59 + 5.04) | N     | 0.0                 | 0.0                 | 0.0                 | 26.07           | 0.0             | 0.0             | 0.0                | 0                 | 4.53=n(0.0+4.79)                  | 4.77=n(0.0+5.04)                  | 5.19=n(0.0+5.49)                  | 0.3127         | 0.329          | 0.0538                |
| = 0.946                    | W     | 1.0                 | 1.0                 | 1.0                 | 95.41           | 0.0             | 0.0             | 0.0                | 0                 | 84.2=n(84.2+4.79)                 | 88.59=n(88.59+5.04)               | 96.46=n(96.46+5.49)               | 0.3127         | 0.329          | 1.0                   |
|                            | N0    | 0.0                 | 0.0                 | 0.0                 | 26.07           | 0.0             | 0.0             | 0.0                | 0                 | 4.53=n(0.0+4.79)                  | 4.77=n(0.0+5.04)                  | 5.19=n(0.0+5.49)                  | 0.3127         | 0.329          | 0.0538                |
|                            | W1    | 1.0                 | 1.0                 | 1.0                 | 95.41           | 0.0             | 0.0             | 0.0                | 0                 | 84.2=n(84.2+4.79)                 | 88.59=n(88.59+5.04)               | 96.46=n(96.46+5.49)               | 0.3127         | 0.329          | 1.0                   |

| System TLS38a               | Color | r=olv* <sub>1</sub> | g=olv* <sub>2</sub> | b=olv* <sub>3</sub> | L* <sub>a</sub> | a* <sub>a</sub> | b* <sub>a</sub> | C* <sub>ab,a</sub> | h <sub>ab,a</sub> | X <sub>a</sub> =XYZ <sub>1a</sub> | Y <sub>a</sub> =XYZ <sub>2a</sub> | Z <sub>a</sub> =XYZ <sub>3a</sub> | x <sub>a</sub> | y <sub>a</sub> | Y <sub>a</sub> /88.59 |
|-----------------------------|-------|---------------------|---------------------|---------------------|-----------------|-----------------|-----------------|--------------------|-------------------|-----------------------------------|-----------------------------------|-----------------------------------|----------------|----------------|-----------------------|
| LCD projector               | O (R) | 1.0                 | 0.0                 | 0.0                 | 48.81           | 39.92           | 21.33           | 45.26              | 28                | 24.75=n(17.98+9.58)               | 17.44=n(9.35+10.08)               | 10.06=n(0.23+10.98)               | 0.4736         | 0.3338         | 0.1969                |
|                             | Y     | 1.0                 | 1.0                 | 0.0                 | 84.49           | -14.18          | 64.62           | 66.16              | 102               | 55.9=n(52.69+9.58)                | 65.0=n(62.32+10.08)               | 17.45=n(8.46+10.98)               | 0.4041         | 0.4698         | 0.7338                |
| D65 reflection:             | L (G) | 0.0                 | 1.0                 | 0.0                 | 75.6            | -41.88          | 51.91           | 66.7               | 129               | 33.43=n(27.66+9.58)               | 49.25=n(44.77+10.08)              | 16.22=n(7.09+10.98)               | 0.338          | 0.4979         | 0.5559                |
|                             | C     | 0.0                 | 1.0                 | 1.0                 | 79.71           | -23.32          | -9.34           | 25.13              | 202               | 44.82=n(40.34+9.58)               | 56.16=n(52.47+10.08)              | 72.15=n(69.38+10.98)              | 0.2589         | 0.3244         | 0.634                 |
| Y <sub>N</sub> = 10.08      | V (B) | 0.0                 | 0.0                 | 1.0                 | 44.97           | 30.16           | -63.98          | 70.74              | 295               | 19.12=n(11.71+9.58)               | 14.52=n(6.09+10.08)               | 65.83=n(62.34+10.98)              | 0.1922         | 0.146          | 0.1639                |
| L* <sub>N</sub> = 37.99     | M     | 1.0                 | 0.0                 | 1.0                 | 56.3            | 55.12           | -49.2           | 73.89              | 318               | 37.5=n(32.19+9.58)                | 24.21=n(16.88+10.08)              | 71.52=n(68.68+10.98)              | 0.2815         | 0.1817         | 0.2733                |
| n = 88.59 / (88.59 + 10.08) | N     | 0.0                 | 0.0                 | 0.0                 | 36.08           | 0.0             | 0.0             | 0.0                | 0                 | 8.6=n(0.0+9.58)                   | 9.05=n(0.0+10.08)                 | 9.85=n(0.0+10.98)                 | 0.3127         | 0.329          | 0.1022                |
| = 0.898                     | W     | 1.0                 | 1.0                 | 1.0                 | 95.41           | 0.0             | 0.0             | 0.0                | 0                 | 84.2=n(84.2+9.58)                 | 88.59=n(88.59+10.08)              | 96.46=n(96.46+10.98)              | 0.3127         | 0.329          | 1.0                   |
|                             | N0    | 0.0                 | 0.0                 | 0.0                 | 36.08           | 0.0             | 0.0             | 0.0                | 0                 | 8.6=n(0.0+9.58)                   | 9.05=n(0.0+10.08)                 | 9.85=n(0.0+10.98)                 | 0.3127         | 0.329          | 0.1022                |
|                             | W1    | 1.0                 | 1.0                 | 1.0                 | 95.41           | 0.0             | 0.0             | 0.0                | 0                 | 84.2=n(84.2+9.58)                 | 88.59=n(88.59+10.08)              | 96.46=n(96.46+10.98)              | 0.3127         | 0.329          | 1.0                   |

| System TLS52a               | Color | r=olv* <sub>1</sub> | g=olv* <sub>2</sub> | b=olv* <sub>3</sub> | L* <sub>a</sub> | a* <sub>a</sub> | b* <sub>a</sub> | C* <sub>ab,a</sub> | h <sub>ab,a</sub> | X <sub>a</sub> =XYZ <sub>1a</sub> | Y <sub>a</sub> =XYZ <sub>2a</sub> | Z <sub>a</sub> =XYZ <sub>3a</sub> | x <sub>a</sub> | y <sub>a</sub> | Y <sub>a</sub> /88.59 |
|-----------------------------|-------|---------------------|---------------------|---------------------|-----------------|-----------------|-----------------|--------------------|-------------------|-----------------------------------|-----------------------------------|-----------------------------------|----------------|----------------|-----------------------|
| LCD projector               | O (R) | 1.0                 | 0.0                 | 0.0                 | 56.12           | 30.53           | 14.45           | 33.78              | 25                | 30.26=n(17.98+19.16)              | 24.04=n(9.35+20.16)               | 18.07=n(0.23+21.95)               | 0.4181         | 0.3322         | 0.2713                |
|                             | Y     | 1.0                 | 1.0                 | 0.0                 | 85.6            | -12.53          | 53.08           | 54.54              | 103               | 58.53=n(52.69+19.16)              | 67.19=n(62.32+20.16)              | 24.77=n(8.46+21.95)               | 0.3889         | 0.4465         | 0.7584                |
| D65 reflection:             | L (G) | 0.0                 | 1.0                 | 0.0                 | 77.81           | -35.56          | 41.51           | 54.66              | 131               | 38.14=n(27.66+19.16)              | 52.89=n(44.77+20.16)              | 23.66=n(7.09+21.95)               | 0.3325         | 0.4612         | 0.5971                |
|                             | C     | 0.0                 | 1.0                 | 1.0                 | 81.38           | -20.26          | -8.24           | 21.89              | 202               | 48.47=n(40.34+19.16)              | 59.17=n(52.47+20.16)              | 74.4=n(69.38+21.95)               | 0.2663         | 0.325          | 0.6679                |
| Y <sub>N</sub> = 20.16      | V (B) | 0.0                 | 0.0                 | 1.0                 | 53.37           | 22.0            | -51.9           | 56.38              | 293               | 25.15=n(11.71+19.16)              | 21.39=n(6.09+20.16)               | 68.67=n(62.34+21.95)              | 0.2183         | 0.1856         | 0.2414                |
| L* <sub>N</sub> = 52.02     | M     | 1.0                 | 0.0                 | 1.0                 | 61.81           | 44.97           | -41.55          | 61.23              | 317               | 41.83=n(32.19+19.16)              | 30.18=n(16.88+20.16)              | 73.83=n(68.68+21.95)              | 0.2868         | 0.2069         | 0.3406                |
| n = 88.59 / (88.59 + 20.16) | N     | 0.0                 | 0.0                 | 0.0                 | 47.52           | 0.0             | 0.0             | 0.0                | 0                 | 15.61=n(0.0+19.16)                | 16.42=n(0.0+20.16)                | 17.88=n(0.0+21.95)                | 0.3127         | 0.329          | 0.1854                |
| = 0.815                     | W     | 1.0                 | 1.0                 | 1.0                 | 95.41           | 0.0             | 0.0             | 0.0                | 353               | 84.2=n(84.2+19.16)                | 88.59=n(88.59+20.16)              | 96.46=n(96.46+21.95)              | 0.3127         | 0.329          | 1.0                   |
|                             | N0    | 0.0                 | 0.0                 | 0.0                 | 47.52           | 0.0             | 0.0             | 0.0                | 0                 | 15.61=n(0.0+19.16)                | 16.42=n(0.0+20.16)                | 17.88=n(0.0+21.95)                | 0.3127         | 0.329          | 0.1854                |
|                             | W1    | 1.0                 | 1.0                 | 1.0                 | 95.41           | 0.0             | 0.0             | 0.0                | 353               | 84.2=n(84.2+19.16)                | 88.59=n(88.59+20.16)              | 96.46=n(96.46+21.95)              | 0.3127         | 0.329          | 1.0                   |

| System TLS70a               | Color | r=olv* <sub>1</sub> | g=olv* <sub>2</sub> | b=olv* <sub>3</sub> | L* <sub>a</sub> | a* <sub>a</sub> | b* <sub>a</sub> | C* <sub>ab,a</sub> | h <sub>ab,a</sub> | X <sub>a</sub> =XYZ <sub>1a</sub> | Y <sub>a</sub> =XYZ <sub>2a</sub> | Z <sub>a</sub> =XYZ <sub>3a</sub> | x <sub>a</sub> | y <sub>a</sub> | Y <sub>a</sub> /88.59 |
|-----------------------------|-------|---------------------|---------------------|---------------------|-----------------|-----------------|-----------------|--------------------|-------------------|-----------------------------------|-----------------------------------|-----------------------------------|----------------|----------------|-----------------------|
| LCD projector               | O (R) | 1.0                 | 0.0                 | 0.0                 | 65.07           | 21.15           | 9.16            | 23.05              | 23                | 38.69=n(17.98+38.32)              | 34.13=n(9.35+40.32)               | 30.33=n(0.23+43.9)                | 0.3751         | 0.3309         | 0.3853                |
|                             | Y     | 1.0                 | 1.0                 | 0.0                 | 87.26           | -10.17          | 39.76           | 41.04              | 104               | 62.54=n(52.69+38.32)              | 70.54=n(62.32+40.32)              | 35.98=n(8.46+43.9)                | 0.3699         | 0.4172         | 0.7962                |
| D65 reflection:             | L (G) | 0.0                 | 1.0                 | 0.0                 | 81.0            | -27.42          | 30.18           | 40.78              | 132               | 45.34=n(27.66+38.32)              | 58.48=n(44.77+40.32)              | 35.04=n(7.09+43.9)                | 0.3265         | 0.4211         | 0.6601                |
|                             | C     | 0.0                 | 1.0                 | 1.0                 | 83.85           | -16.08          | -6.68           | 17.43              | 203               | 54.06=n(40.34+38.32)              | 63.77=n(52.47+40.32)              | 77.85=n(69.38+43.9)               | 0.2763         | 0.3259         | 0.7198                |
| Y <sub>N</sub> = 40.32      | V (B) | 0.0                 | 0.0                 | 1.0                 | 63.26           | 14.65           | -38.4           | 41.11              | 291               | 34.38=n(11.71+38.32)              | 31.9=n(6.09+40.32)                | 73.01=n(62.34+43.9)               | 0.2468         | 0.229          | 0.36                  |
| L* <sub>N</sub> = 69.7      | M     | 1.0                 | 0.0                 | 1.0                 | 68.98           | 33.17           | -31.95          | 46.06              | 316               | 48.46=n(32.19+38.32)              | 39.31=n(16.88+40.32)              | 77.37=n(68.68+43.9)               | 0.2934         | 0.2381         | 0.4437                |
| n = 88.59 / (88.59 + 40.32) | N     | 0.0                 | 0.0                 | 0.0                 | 59.62           | 0.0             | 0.0             | 0.0                | 10                | 26.33=n(0.0+38.32)                | 27.71=n(0.0+40.32)                | 30.17=n(0.0+43.9)                 | 0.3127         | 0.329          | 0.3128                |
| = 0.687                     | W     | 1.0                 | 1.0                 | 1.0                 | 95.41           | 0.0             | 0.0             | 0.0                | 10                | 84.2=n(84.2+38.32)                | 88.59=n(88.59+40.32)              | 96.46=n(96.46+43.9)               | 0.3127         | 0.329          | 1.0                   |
|                             | N0    | 0.0                 | 0.0                 | 0.0                 | 59.62           | 0.0             | 0.0             | 0.0                | 10                | 26.33=n(0.0+38.32)                | 27.71=n(0.0+40.32)                | 30.17=n(0.0+43.9)                 | 0.3127         | 0.329          | 0.3128                |
|                             | W1    | 1.0                 | 1.0                 | 1.0                 | 95.41           | 0.0             | 0.0             | 0.0                | 0                 | 84.2=n(84.2+38.32)                | 88.59=n(88.59+40.32)              | 96.46=n(96.46+43.9)               | 0.3127         | 0.329          | 1.0                   |

IE330-7N, Colorimetric data of Television Luminous System TLS03a for CIE standard illuminant D65; LCD projector; Page: 9/9

TUB-test chart IE33; Hue circle and colorimetric data

input: olv\* setrgbcolor

Display measurement: LCD, CRT and LCD projector, page 9/9 output: no change compared to input