

UGRA

Display Analysis & Certification Tool

Report

Basics

Date: 2009-11-26 1:47:48
Report-Version: v1.3.1
Monitor-Name: iMac
EDID-Name: Color LCD
EDID-Serial:
Profile: /Library/ColorSync/.../imac27-copiasxl-6500K-22-120cd-voneries.icc
Created: 2009-11-26 1:42
Measurement device: eye-one display 2

Summary

The monitor has passed the certification according to the UGRA DACT specifications.

Calibration

White Point	yes
Gray balance	yes
Profile quality	yes

Softproofing

MultiColor, HighBody	no
Offset/Gravure Paper Type 1/2	yes
Offset on uncoated paper	yes
Newspaper Printing	yes
sRGB	yes
AdobeRGB	no
ECI-RGB	no

Diagram



Whitepoint

The whitepoint should be as close as possible to the black body curve and the calibration target. The maximum allowed distance to the target whitepoint is DeltaE 2.0.

XYZ:	95.29 100.55 108.96
XYZ (normalized):	94.76 100.00 108.36
Luminance:	100.6 Cd/m2
Next Temperature:	6501 Kelvin
Assumed Target Whitepoint:	6500 Kelvin
Distance to assumed Target Whitepoint:	0.6 deltaE

Blackpoint

The blackpoint is not defined in ISO 12646. Therefore UDACT does only measure but not assess it.

Luminance:	0.1 Cd/m2
Chromaticity:	0.8 Chroma (Lab)

Gray balance

Average and maximum calculation will respect measurements with 1% minimum luminance only. The maximum allowed deviations to comply with this test are an average of DeltaC 1.0 and a range of DeltaC 2.0.

%	Kelvin	Cd/m2	L	Chroma	Gamma
0	10685	0.14	1.23	0.79	
5	8144	0.27	2.40	0.73	2.24
10	6798	0.72	6.49	0.40	2.24
15	6627	1.67	13.59	0.33	2.21
20	6611	3.09	20.32	0.30	2.19
25	6510	4.81	26.12	0.16	2.22
30	6522	7.22	32.21	0.28	2.21
35	6535	10.04	37.81	0.57	2.20
40	6481	13.48	43.37	0.64	2.20
45	6477	17.25	48.45	0.33	2.22
50	6508	21.74	53.63	0.82	2.21
55	6509	26.98	58.82	0.61	2.20
60	6501	32.72	63.78	0.33	2.20
65	6507	38.53	68.25	0.65	2.22
70	6524	45.58	73.11	0.99	2.21
75	6474	53.57	78.03	0.33	2.19
80	6500	61.77	82.61	0.64	2.17
85	6518	70.04	86.83	0.47	2.21
90	6520	79.60	91.31	0.45	2.20
95	6490	89.70	95.67	0.40	2.20
100	6501	100.55	100.00	0.00	
Average	6517			0.46	2.21
Range				1.25	
Max				0.99	

Tone values = 95.8%

Through the calibration of a display tone values can be lost. A display for the printing industry should show at least 95% of the incoming tone values.

Profile Quality

This test displays and measures RGB values and compares them with the transformation of the profile. The maximum allowed deviations to comply with this test are an average of DeltaE 3.0 and a maximum of DeltaE 6.0.

The assumed chromatic adaptation is: von Kries

RGB	Lab	deltaLab	deltaE
0 0 0	1.2 -0.2 -0.8	-1.2 0.2 0.8	1.5
0 0 128	12.5 33.6 -69.0	-0.7 0.8 -0.5	1.1
0 0 255	30.3 56.9 -115.5	-0.1 0.1 0.3	0.3
0 128 0	46.5 -47.0 57.6	-0.1 -0.3 1.4	1.4
0 128 128	48.2 -32.1 -10.1	-0.0 -0.3 0.5	0.6
0 170 255	65.9 -19.7 -56.0	0.2 -0.2 0.7	0.8
0 255 0	87.5 -78.5 97.9	-0.1 0.2 -0.1	0.2
0 255 170	88.8 -67.6 27.7	-0.1 0.2 0.2	0.3
0 255 255	90.5 -54.0 -16.1	-0.1 0.3 0.2	0.3
85 85 85	36.0 0.3 -0.3	-0.2 -0.3 0.3	0.5
128 0 0	27.2 49.7 41.0	-0.4 0.3 1.6	1.7
128 0 128	30.7 55.0 -38.1	-0.3 -0.1 0.1	0.3
128 128 0	52.6 -7.3 66.1	-0.1 -0.4 0.9	1.0
128 128 128	54.1 0.5 -0.4	-0.1 -0.5 0.4	0.6
128 128 255	58.9 21.2 -67.3	-0.0 -0.3 0.4	0.5
128 255 128	90.6 -54.4 54.1	-0.1 0.0 0.1	0.2
170 0 255	46.7 75.0 -87.6	-0.1 -0.3 0.3	0.4
170 170 170	70.1 0.7 -0.6	0.1 -0.7 0.6	0.9
170 255 0	91.9 -45.5 104.1	-0.1 0.0 -0.4	0.5
170 255 255	94.6 -27.7 -9.1	-0.1 0.0 0.1	0.1
255 0 0	55.1 83.1 78.7	-0.2 -0.2 -0.1	0.3
255 0 170	57.6 86.8 -19.6	-0.1 -0.4 0.3	0.5
255 0 255	61.0 91.3 -63.2	-0.1 -0.4 0.3	0.5
255 128 128	69.3 51.0 24.7	0.0 -0.4 0.2	0.5
255 170 0	77.1 28.1 94.2	0.1 -0.9 -0.2	0.9
255 170 255	80.8 40.6 -30.8	0.1 -0.6 0.4	0.7
255 255 0	97.7 -12.7 112.0	-0.2 0.0 -0.9	0.9
255 255 170	98.7 -7.2 43.7	-0.1 -0.1 0.0	0.1
255 255 255	100.0 0.0 0.0	0.0 -0.0 0.0	0.0
170 85 85	47.5 38.0 18.4	-0.2 -0.3 0.2	0.4
85 170 85	63.0 -40.2 39.8	0.1 -0.3 0.6	0.7
85 85 170	39.6 16.0 -50.2	-0.1 -0.4 0.3	0.5
85 170 170	64.5 -28.5 -9.7	0.2 -0.5 0.7	0.9
170 85 170	49.9 44.8 -32.8	-0.1 -0.4 0.3	0.5
170 170 85	68.7 -6.7 48.8	0.1 -0.5 0.4	0.7
Average			0.6
Maximum			1.7

Gamut-Volume

These measurements are only informative.

Gamut-Volume	
ISO	94 %
sRGB	99 %
AdobeRGB	78 %
ECI-RGB v1.0	75 %

ISO-Gamut

This test displays and measures Lab values and compares them with the reference. The maximum allowed deviations to comply with this test are an average of DeltaE 4.0 and a minimum Gamut volume of 90% for ISOcoated.

Reference	Lab	deltaLab
55.0 -37.0 -50.0	57.7 -20.1 -46.1	17.5
66.9 -24.7 -37.1	66.7 -24.3 -38.2	1.2
79.7 -12.5 -21.8	79.9 -12.4 -22.1	0.4
48.0 74.0 -3.0	48.2 74.4 -3.4	0.6
60.8 50.6 -6.7	61.0 51.1 -6.5	0.6
76.4 25.8 -6.9	76.3 26.7 -7.8	1.3
89.0 -5.0 93.0	89.1 -4.8 93.2	0.3
90.3 -4.7 62.6	90.5 -4.4 62.7	0.4
92.2 -3.5 31.1	92.3 -3.2 31.2	0.3
53.1 37.7 28.9	53.2 38.2 28.6	0.5
41.5 22.7 16.8	41.7 23.0 16.2	0.6
31.9 40.0 24.0	32.2 39.9 23.0	1.0
32.5 44.4 -1.8	32.8 44.4 -2.0	0.3
51.3 1.3 44.5	51.3 1.8 44.0	0.8
34.6 -36.4 13.9	35.2 -32.9 14.5	3.7
36.0 -26.2 -20.9	36.7 -21.0 -19.8	5.3
20.9 9.6 -23.6	21.5 9.1 -23.2	0.9
89.0 0.0 -1.8	89.2 0.1 -1.9	0.3
82.8 0.0 -1.7	82.9 0.5 -2.1	0.6
69.3 0.0 -1.4	69.3 0.4 -1.8	0.6
54.1 0.0 -1.0	54.1 0.8 -1.5	1.0
36.6 -0.0 -0.5	36.9 0.4 -0.4	0.5
16.0 0.0 0.0	16.9 -0.1 -0.2	0.9
24.0 22.0 -46.0	24.6 21.6 -45.8	0.7
40.9 17.9 -36.6	40.8 18.4 -36.8	0.5
63.7 10.3 -23.8	63.8 10.5 -24.1	0.4
47.0 68.0 48.0	47.2 68.1 47.5	0.6
58.5 47.1 37.9	58.6 47.8 38.0	0.7
74.2 22.9 21.4	74.1 23.8 21.3	0.9
50.0 -65.0 27.0	52.0 -46.5 29.7	18.8
62.1 -39.8 21.0	62.0 -39.5 20.5	0.6
77.0 -19.1 11.0	77.0 -19.1 10.6	0.4
71.2 18.8 17.3	71.2 19.3 17.0	0.5
71.2 22.2 73.1	71.5 22.4 73.3	0.4
47.7 71.2 16.2	47.9 71.4 15.9	0.5
38.0 55.4 -20.9	38.3 55.4 -20.7	0.4
73.7 -22.8 67.6	73.9 -23.2 67.7	0.5
52.3 -52.3 -20.2	54.7 -33.2 -16.4	19.6
43.3 -17.0 -48.6	44.3 -10.3 -47.7	6.8
95.0 0.0 -2.0	95.0 0.3 -2.3	0.5
88.5 -0.4 -3.1	88.8 -0.4 -3.4	0.3
82.0 -0.9 -4.1	82.1 -0.3 -4.5	0.7
67.7 -2.0 -4.4	67.5 -1.4 -5.5	1.2
52.2 -2.5 -3.5	52.3 -1.7 -3.8	0.8
37.5 -3.9 -3.1	37.7 -3.9 -3.2	0.3
26.3 -6.8 -3.4	26.7 -6.9 -3.7	0.5
Average		2.1
Gamut-Volume		94 %

Measurement Data

This table lists all RGB measurements. The XYZ values represent the values from the measurement device.

RGB	XYZ	RGB	XYZ
255 255 255	95.29 100.55 108.96	85 85 170	14.27 11.08 42.45
0 0 0	0.13 0.14 0.20	85 170 170	25.05 33.66 44.63
12 12 12	0.24 0.27 0.33	170 85 170	28.29 18.40 42.76
25 25 25	0.68 0.72 0.80	170 170 85	33.54 39.10 12.49
38 38 38	1.58 1.67 1.84	0 148 213	22.25 25.87 70.70
51 51 51	2.92 3.09 3.39	61 174 225	29.96 36.47 80.43
63 63 63	4.55 4.81 5.20	156 204 235	50.57 56.88 89.66
76 76 76	6.81 7.22 7.80	213 18 120	33.13 16.96 20.23
89 89 89	9.56 10.04 11.02	221 106 157	43.12 29.34 36.81
102 102 102	12.87 13.48 14.73	229 169 200	58.72 50.55 63.35
114 114 114	16.40 17.25 18.73	240 225 51	65.09 74.82 9.30
127 127 127	20.75 21.74 23.84	240 229 115	68.52 77.68 24.03
140 140 140	25.69 26.98 29.48	239 234 175	74.17 81.91 51.34
153 153 153	31.08 32.72 35.58	188 99 83	28.34 21.24 10.13
165 165 165	36.67 38.53 42.07	135 84 75	15.03 12.36 7.87
178 178 178	43.44 45.58 50.00	130 46 46	11.31 7.16 2.95
191 191 191	50.89 53.57 58.04	133 42 81	12.61 7.44 8.69
204 204 204	58.76 61.77 67.33	136 120 54	18.13 19.60 5.09
216 216 216	66.51 70.04 76.33	0 96 62	4.85 8.67 5.47
229 229 229	75.58 79.60 86.75	0 96 115	7.10 9.46 18.46
242 242 242	85.20 89.70 97.40	55 49 84	4.08 3.40 9.24
0 0 128	3.99 1.51 22.50	222 223 226	71.26 75.03 83.85
0 0 255	17.65 6.44 101.49	204 205 208	59.42 62.36 70.10
0 128 0	7.59 15.74 1.71	167 168 170	38.14 40.05 45.01
0 128 128	11.46 17.12 24.03	128 128 130	21.25 22.21 25.00
0 170 255	31.53 35.45 104.34	87 87 87	9.10 9.54 10.46
0 255 0	34.22 71.47 7.09	44 44 44	2.17 2.29 2.51
0 255 170	41.50 74.19 48.73	63 48 124	6.63 4.31 21.17
0 255 255	51.82 77.93 108.36	104 86 152	14.96 11.83 33.37
85 85 85	8.64 9.08 9.94	158 147 193	35.13 32.80 57.62
128 0 0	9.75 5.16 0.41	209 38 45	29.43 16.18 3.18
128 0 128	13.63 6.53 22.73	219 103 82	37.53 26.70 10.16
128 128 0	17.23 20.78 1.93	228 165 145	52.53 47.11 32.87
128 128 128	21.12 22.17 24.26	0 142 76	10.77 20.29 9.15
128 128 255	34.80 27.12 103.21	73 167 114	19.21 30.58 20.11
128 255 128	47.83 78.07 29.68	156 199 169	41.84 51.81 45.66
170 0 255	35.65 15.83 101.91	211 160 144	46.26 42.60 32.21
170 170 170	39.19 41.10 45.09	227 158 51	46.51 43.00 6.34
170 255 0	52.28 81.04 7.51	212 31 91	31.50 16.72 11.44
170 255 255	69.78 87.30 108.66	156 39 121	18.95 10.26 20.35
255 0 0	43.83 22.96 1.15	159 192 64	34.79 46.86 9.07
255 0 170	51.03 25.52 42.79	0 145 155	15.80 22.77 35.93
255 0 255	61.37 29.27 102.44	0 110 178	13.47 14.16 47.49
255 128 128	55.04 39.86 24.96	239 240 244	83.84 88.09 99.01
255 170 0	57.71 51.87 3.97	219 222 227	70.27 74.12 84.86
255 170 255	75.23 58.30 105.19	199 203 210	57.73 60.76 71.21
255 255 0	78.04 94.54 8.06	157 164 171	35.35 37.49 45.41
255 255 170	85.23 97.07 49.73	118 125 129	19.24 20.55 24.52
170 85 85	22.74 16.46 10.29	81 91 93	9.06 10.00 11.98
85 170 85	19.48 31.76 12.17	52 67 69	4.27 5.00 6.27

Uniformity

The uniformity test shows the luminance (in %) and the color deviation (in Delta C*) from the centre to the 8 measuring points around it. The maximum deviation for the luminance may be 10%. The average value and the chroma deviations are only informative. This test is not taken in consideration for the UDACT certification.

Results of the white measurements:

Absolute Luminance	91.73 Cd/m ²	94.54 Cd/m ²	92.70 Cd/m ²
Luminance to Centre	91 %	94 %	92 %
Lab-Chroma to Centre	2.27	1.99	2.71
Absolute Luminance	98.29 Cd/m ²	100.31 Cd/m ²	100.00 Cd/m ²
Luminance to Centre	98 %	100 %	100 %
Lab-Chroma to Centre	0.78	0.00	1.21
Absolute Luminance	98.75 Cd/m ²	98.60 Cd/m ²	98.37 Cd/m ²
Luminance to Centre	98 %	98 %	98 %
Lab-Chroma to Centre	1.36	0.94	3.13

Results of the gray measurements:

Absolute Luminance	20.02 Cd/m ²	20.53 Cd/m ²	20.05 Cd/m ²
Luminance to Centre	91 %	94 %	92 %
Lab-Chroma to Centre	1.73	1.76	2.25
Absolute Luminance	21.57 Cd/m ²	21.88 Cd/m ²	21.79 Cd/m ²
Luminance to Centre	99 %	100 %	100 %
Lab-Chroma to Centre	1.26	0.85	0.40
Absolute Luminance	22.46 Cd/m ²	21.78 Cd/m ²	22.27 Cd/m ²
Luminance to Centre	103 %	100 %	102 %
Lab-Chroma to Centre	0.34	0.66	1.67

Results of the dark measurements:

Absolute Luminance	4.37 Cd/m ²	4.51 Cd/m ²	4.44 Cd/m ²
Luminance to Centre	92 %	95 %	93 %
Lab-Chroma to Centre	0.83	0.65	0.92
Absolute Luminance	4.69 Cd/m ²	4.77 Cd/m ²	4.74 Cd/m ²
Luminance to Centre	98 %	100 %	99 %
Lab-Chroma to Centre	0.61	0.07	0.42
Absolute Luminance	4.93 Cd/m ²	4.73 Cd/m ²	4.84 Cd/m ²
Luminance to Centre	103 %	99 %	102 %
Lab-Chroma to Centre	0.51	0.94	1.51

Summary:

	Average	Max
Luminance Deviation	3%	9%
Chroma Deviation	1	3