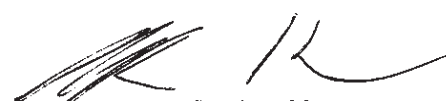


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<i>Test Report No.:</i>		<i>Page 1 of 17</i>													
Auftraggeber: <i>Client:</i>		Compal Electronics, Inc. No. 581, Ruiguang Rd., Neihu District, Taipei City 11492 Taiwan													
Gegenstand der Prüfung: LCD Monitor <i>Test item:</i>															
Bezeichnung: <i>Identification:</i>		Serien-Nr.: Engineer sample <i>Serial No.:</i>													
Wareneingangs-Nr.: TPE55836 <i>Receipt No.:</i>		Eingangsdatum: 23.Aug.2010 <i>Date of receipt:</i>													
Prüfort: <i>Testing location:</i>		TÜV Rheinland Taiwan Ltd. 7F, No.2, Min Chuan E. Rd., Sec. 3, Taipei 104, Taiwan, R.O.C.													
Prüfgrundlage: <i>Test specification:</i>		ISO 9241-307:2008 for artificial information													
Prüfergebnis: <i>Test result:</i>		Der Prüfgegenstand entspricht oben genannter Prüfgrundlage(n). <i>The test item passed the test specification(s).</i>													
Prüflaboratorium: <i>Testing Laboratory:</i>		TÜV Rheinland Taiwan Ltd. Ergonomics and Optics Laboratory 7F, No.2, Min Chuan E. Rd., Sec. 3, Taipei 104, Taiwan, R.O.C.													
geprüft/ tested by:		kontrolliert/ reviewed by:													
 24.Sep.2010 C. Peschel/Project Engineer <table border="0" style="width: 100%;"> <tr> <td style="width: 33%;">Datum</td> <td style="width: 33%;">Name/Stellung</td> <td style="width: 33%;">Unterschrift</td> </tr> <tr> <td>Date</td> <td>Name/Position</td> <td>Signature</td> </tr> </table>		Datum	Name/Stellung	Unterschrift	Date	Name/Position	Signature	 24.Sep.2011 D. Hsu/Project Manager <table border="0" style="width: 100%;"> <tr> <td style="width: 33%;">Datum</td> <td style="width: 33%;">Name/Stellung</td> <td style="width: 33%;">Unterschrift</td> </tr> <tr> <td>Date</td> <td>Name/Position</td> <td>Signature</td> </tr> </table>		Datum	Name/Stellung	Unterschrift	Date	Name/Position	Signature
Datum	Name/Stellung	Unterschrift													
Date	Name/Position	Signature													
Datum	Name/Stellung	Unterschrift													
Date	Name/Position	Signature													
Sonstiges / Other Aspects: Per application letter dated: 09.Aug.2010 project order: 113136149 LCD panel and LCD panel manufacturer: LM190E09 (LG Display) The Test result is valid for the Intended context of use as mentioned on page 3 of this test report and for the following content and perception in accordance with ISO 9241-307: artificial information															
Abkürzungen: P(ass) = entspricht Prüfgrundlage F(all) = entspricht nicht Prüfgrundlage N/A = nicht anwendbar N/T = nicht getestet		Abbreviations: P(ass) = passed F(all) = failed N/A = not applicable N/T = not tested													
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. <i>This test report relates to the a. m. test sample. Without permission of the test center this report is not permitted to be duplicated in extracts. This test report does not entitle to carry any safety mark on this or similar products.</i>															

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Verwendete Messgeräte/Prüfmittel / Used measuring instrument/test equipment

Measurement equipment	Device No.	Next calibration
Superspot 210 Display Analysis System <i>Luminance, Distance and Color</i>	TÜV-TW-Ergo-065	04-2011
Superspot 220 Display Analysis System <i>Luminance, Distance and Color</i>	TUV-TW-Ergo-036	10-2010
Processing PC: IBM compatible <i>HP Vectra VR (Pentium)</i>	TUV-TW-Ergo-020	N/A
Reflexionsnormal SRS-99-020 <i>Diffuse reflectance</i>	TUV-TW-Ergo-078	10-2010
Reflexionsnormal 15-154 <i>Diffuse reflectance</i>	TUV-TW-Ergo-039	02-2011

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Summary of the test results

Attribute	artificial inf.	reality inf.
1. Design viewing distance	P	
2. Design viewing direction	P	
3. Gaze and head tilt angles	N/A	
4. Virtual images	N/A	
5. Illuminance	P	
6. Display luminance	P	P
7. Luminance Balance and Glare	N/A	
8. Luminance and contrast adjustment	N/A	N/A
9. Vibration	N/A	
10. Wind and rain	N/A	
11. Excessive temperatures	N/A	
12. Luminance non-uniformity	P	F
13. Colour non-uniformity	P	P
14. Contrast non-uniformity	P	
15. Geometric distortions	N/A	
16. Screen and faceplate defects	P	
17. Temporal instability (flicker)	N/A	
18. Spatial instability (jitter)	N/A	
19. Moiré effects	P	
20. Other visual artefacts	P	
21. Unwanted reflections	P	P
22. Unintended depths effects	N/A	
23. Luminance contrast	P	P
24. Image polarity	P	N/A
25. Character height	P	N/A
26. Text size constancy	N/A	N/A
27. Character stroke width	P	N/A
28. Character width-to-height ratio	P	N/A
29. Character format	P	N/A
30. Between-character spacing	P	N/A
31. Between word spacing	P	N/A
32. Between-line spacing	P	N/A
33. Luminance coding	P	N/A
34. Blink coding	N/A	
35. Colour coding	P	N/A
36. Geometrical coding	N/A	
37. Monochrome and multicolour object size	N/A	
38. Contrast for object legibility	N/A	
39. Colour considerations for graphics	N/A	
40. Background and surrounding image effects	N/A	
41. Number of colours	N/A	
42. Colour gamut and reference white	P	F
43. Electro optical transfer function and grey scale	P	F
44. Rendering of moving images	P	
45. Colour misconvergence	N/A	
46. Image formation time	P	
47. Spatial resolution	P	
48. Raster modulation	N/A	
49. Fill factor	N/A	
50. Pixel density	P	

Compliance route **5.2 Emissive flat panel Liquid Crystal Display (LCD) for indoor use**
– display laboratory method –

5.2.1 Intended context of use

User with normal or to normal corrected vision
User's age 7 years and older (typically up to 65 years)
Intended environment e.g. visual display workplace in offices, where alpha is the screen tilt angle

Screen tilt angle 80°
Design screen illuminance 293 lx

max. possible screen illuminance
for artificial information approximately: 1500 lx
for reality information approximately: N/A

Typical components of the illumination	artificial inf. pos. Pol.	artificial inf. neg. Pol.	reality inf.
Luminance of the large aperture source	200 cd/m ²	200 cd/m ²	200 cd/m ²
Luminance of the small aperture source	2000 cd/m ²	2000 cd/m ²	2000 cd/m ²

Typical environment according to the luminance of the large/small aperture source for artificial information:
suitable for general office use

Illuminant D65
Ambient temperature 15°C to 35°C
Content and perception artificial information
Amount of information visualization of A4 sized paper:
two times complete dialogue information horizontal
Image type from still to moving image
Design viewing distance 500 mm
ΘD 0.0°
ΦD 90.0°
Θrange 51.5°
Eye and head position from fixed to moving
Number of users typical single
Display handling stationary display handling

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5.2.2 Information about the technology

Identification on typeplate L190NY (NEC)

Rated voltage and Rated frequency AC 100-240 V

Rated frequency 50/60 Hz

Rated current 0.60 - 0.35 A

Rated power consumption not specified

Additional data on type label N/A

Manufacturer Compal Electronics, Inc.
No. 581, Ruiguang Rd., Neihu District, Taipei City 11492 Taiwan

LCD panel and LCD Panel manufacturer LG Display: LM190E09
Technology Emissive flat panel Liquid Crystal Display (LCD)
display mode: TN, normally white
Hard coating (3H), Anti-glare treatment of the front polarizer
Suffix number:TLB1

Number of Pixels 1280 x 1024

Pixel arrangement RGB vertical stripe

pixel size horizontal / vertical

horizontal / vertical display size

active area diagonal

specified gamma value

0.294 mm	0.294 mm
376.3 mm	301.1 mm
481.9 mm	19.0"

2.20

typ. colour coordinates at $\Theta = \Phi = 0^\circ$

red
green
blue
white

x	Uncertainty	y	Uncertainty
TBD	± 0.030	TBD	± 0.030
TBD	± 0.030	TBD	± 0.030
TBD	± 0.030	TBD	± 0.030
0.313	± 0.030	0.329	± 0.030

5.2.3 Compliance assessment

Test setup

Ambient temperature and humidity	23°C +3°C/-3°C , 40% - 60%
Supply voltage and Supply frequency	AC 230 V, 50 Hz
darkroom condition	< 2 lx
Processing unit	TÜV Test PC
Operating System	Windows 2000 (2.00.2195)
Graphics-board	GIGABYTE's GV-NX66T128D / NVIDIA GeForce 6600GT
Test software	SS230 V1.74b7
Display mode	digital drive 1280x1024@60 Hz (24 bit)
video input used	analogue

Displayed colours and RGB values

No.	Name	R	G	B	NOTE
0 =	Black	0	0	0	R=G=B=0%
1 =	Blue	0	0	128	R,G,B=50%
2 =	Green	0	128	0	R,G,B=50%
3 =	Cyan	0	128	128	R,G,B=50%
4 =	Red	128	0	0	R,G,B=50%
5 =	Magenta	128	0	128	R,G,B=50%
6 =	Yellow	128	128	0	R,G,B=50%
7 =	White	192	192	192	R=G=B=75%
8 =	Grey	128	128	128	R=G=B=50%
9 =	Light Blue	0	0	255	R,G,B=100%
10 =	Light Green	0	255	0	R,G,B=100%
11 =	Light Cyan	0	255	255	R,G,B=100%
12 =	Light Red	255	0	0	R,G,B=100%
13 =	Light Magenta	255	0	255	R,G,B=100%
14 =	Light Yellow	255	255	0	R,G,B=100%
15 =	Bright White	255	255	255	R=G=B=100%

Adjustment of the visual display

clock	AUTO adjustment used
phase	AUTO adjustment used
screen position	AUTO adjustment used
colour/colour mode	factory setting ; (NATIVE)
gain	R=G=B=50
brightness	80%
contrast	50%
sharpness	N/A
black level	N/A
reference white	factory setting
reference white adjustable	no
other settings 1	factory setting
other settings 2	

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Attribute	Assessment and Reporting	Result																																																												
1. Design viewing distance	500 mm	artificial & reality inf. P																																																												
2. Design viewing direction	a) The visual display has optically anisotropic behavior. b) Viewing cone with a single visual display Θ_D 0.0° Φ_D 90.0° Θ_{range} 51.5° c) Number of measurement locations (mloc): CL, HL and LL from 11+9 ini. sites d) Measurement directions (mdir): <table><tr><td>mdir</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td></tr><tr><td>Θ</td><td>0.0°</td><td>25.7°</td><td>25.7°</td><td>25.7°</td><td>25.7°</td><td>25.7°</td><td>25.7°</td><td>0.0°</td></tr><tr><td>Φ</td><td>---</td><td>218.7°</td><td>154.3°</td><td>270.0°</td><td>90.0°</td><td>25.7°</td><td>321.3°</td><td>90.0°</td></tr></table>	mdir	0	1	2	3	4	5	6	7	Θ	0.0°	25.7°	25.7°	25.7°	25.7°	25.7°	25.7°	0.0°	Φ	---	218.7°	154.3°	270.0°	90.0°	25.7°	321.3°	90.0°	artificial & reality inf. P																																	
mdir	0	1	2	3	4	5	6	7																																																						
Θ	0.0°	25.7°	25.7°	25.7°	25.7°	25.7°	25.7°	0.0°																																																						
Φ	---	218.7°	154.3°	270.0°	90.0°	25.7°	321.3°	90.0°																																																						
3. Gaze and head tilt angles	Not applicable.	artificial & reality inf. N/A																																																												
4. Virtual images	Not applicable.	artificial & reality inf. N/A																																																												
5. Illuminance	a) Design screen illuminance 293 lx b) Screen tilt angle 80° c) Illuminant D65	artificial & reality inf. P																																																												
6. Display luminance	Luminance of the mloc (perpendicular) <table><tr><td>mloc</td><td>11</td><td>22</td><td>33</td><td>44</td><td>55</td><td>66</td><td>77</td><td>88</td><td></td></tr><tr><td>L [cd/m²]</td><td>201.0</td><td>194.6</td><td>213.1</td><td>227.3</td><td>225.8</td><td>224.0</td><td>211.1</td><td>195.0</td><td>170.5</td></tr><tr><td>mloc</td><td>91</td><td>19</td><td>---</td><td>---</td><td>---</td><td>---</td><td>---</td><td>---</td><td>---</td></tr><tr><td>L [cd/m²]</td><td>211.4</td><td>219.1</td><td>---</td><td>---</td><td>---</td><td>---</td><td>---</td><td>---</td><td>---</td></tr><tr><td>mloc</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td></tr><tr><td>L [cd/m²]</td><td>195.4</td><td>214.2</td><td>226.2</td><td>205.4</td><td>225.8</td><td>212.3</td><td>208.2</td><td>210.4</td><td>196.6</td></tr></table> Minimum luminance in cd/m² of all measurement directions for mloc: CL 154.3 ±10.6 HL 153.2 ±10.6 LL 115.8 ±8.0	mloc	11	22	33	44	55	66	77	88		L [cd/m²]	201.0	194.6	213.1	227.3	225.8	224.0	211.1	195.0	170.5	mloc	91	19	---	---	---	---	---	---	---	L [cd/m²]	211.4	219.1	---	---	---	---	---	---	---	mloc	1	2	3	4	5	6	7	8	9	L [cd/m²]	195.4	214.2	226.2	205.4	225.8	212.3	208.2	210.4	196.6	artificial inf. P reality inf. P
mloc	11	22	33	44	55	66	77	88																																																						
L [cd/m²]	201.0	194.6	213.1	227.3	225.8	224.0	211.1	195.0	170.5																																																					
mloc	91	19	---	---	---	---	---	---	---																																																					
L [cd/m²]	211.4	219.1	---	---	---	---	---	---	---																																																					
mloc	1	2	3	4	5	6	7	8	9																																																					
L [cd/m²]	195.4	214.2	226.2	205.4	225.8	212.3	208.2	210.4	196.6																																																					
7. Luminance Balance and Glare	a) Luminance balance: Not applicable. b) Disturbing glare: b1) Description of the surface design: The housing has mostly flat surfaces. Edges are rounded. b2) Gloss of the housing determined with gloss reference sample sheets Front = N/T Side = N/T Rear = N/T b3) Gloss of the housing measured in gloss units Front = 11 ±1.3 Side = 4 ±1.3 Rear = 4 ±1.3	artificial & reality inf. N/A																																																												

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Attribute	Assessment and Reporting				Result
8. Luminance and contrast adjustment	The brightness control adjusts the luminance of the backlight. The contrast control adjusts the maximum luminance. The display luminance of the low state is manually adjustable. The display luminance of the high state is manually adjustable. Independent adjustment of low/high state is technically provided. Visual discrimination of grey levels with 10% step size is provided.				artificial inf. N/A reality inf. N/A
9. Vibration	Not applicable.				artificial & reality inf. N/A
10. Wind and rain	Not applicable.				artificial & reality inf. N/A
11. Excessive temperatures	Not applicable.				artificial & reality inf. N/A
12. Luminance non-uniformity	a) lateral criterion	meas. value	Limit artificial	Limit reality inf.	artificial inf. P reality inf. F
	Bright White	CL-LL 1.34 ±0.18	1.7	1.4	
		CL-HL 1.00 ±0.14	1.6	1.35	
		HL-LL 1.35 ±0.19	1.7	1.4	
	Grey	CL-LL 1.47 ±0.20	1.7	1.4	
		CL-HL 1.03 ±0.14	1.6	1.35	
		HL-LL 1.42 ±0.20	1.7	1.4	
	b) directional criterion				
	Bright White	1.46 ±0.20	1.7	1.4	
	Grey	18.83 ±2.60	1.7	1.4	
13. Colour non-uniformity	a) lateral criterion	b) directional criterion			artificial inf. P reality inf. P
	max. $\Delta u'v'$	max. $\Delta u'v'$			
	Black	N/A			
	Blue	0.002		0.231	
	Green	0.000		0.027	
	Cyan	0.001		0.043	
	Red	0.005		0.124	
	Magenta	0.003		0.109	
	Yellow	0.002		0.026	
	White	0.002		0.022	
	Grey	0.002		0.036	
	Light Blue	0.001		0.018	
	Light Green	0.000		0.004	
	Light Cyan	0.001		0.028	
	Light Red	0.002		0.008	
	Light Magenta	0.001		0.045	
	Light Yellow	0.000		0.008	
	Bright White	0.001		0.026	
	overall max. $\Delta u'v'$	0.005		0.231	
	Class (artificial information)	low class chromaticity uniformity			
	Class (reality information)	low class chromaticity uniformity			

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Attribute	Assessment and Reporting	Result																																																				
14. Contrast non-uniformity	a) lateral criterion 20% ±6% b) directional criterion CR > CRmin; see 23. Luminance contrast	artificial & reality inf. P																																																				
15. Geometric distortions	Not applicable.	artificial & reality inf. N/A																																																				
16. Screen and faceplate defects	Specified Class _{Pixel} of the visual display 0 Multiplier n _{ClassPixel} 1 Observed faults: <table><tr><th>Type 1</th><th>Type 2</th><th>Type 3 stuck high</th><th>Type 3 stuck low</th><th>Cluster Type 1 / 2</th><th>Cluster Type 3</th></tr><tr><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td><td>0</td></tr></table>	Type 1	Type 2	Type 3 stuck high	Type 3 stuck low	Cluster Type 1 / 2	Cluster Type 3	0	0	0	0	0	0	artificial & reality inf. P																																								
Type 1	Type 2	Type 3 stuck high	Type 3 stuck low	Cluster Type 1 / 2	Cluster Type 3																																																	
0	0	0	0	0	0																																																	
17. Temporal instability (flicker)	Eobs,n ≤ Epred,n → The visual display is flickerfree. screen diagonal 51.5° pupil area 5.22 mm² c₀ 225.1 cd/m² <table><tr><th>n =</th><th>1</th><th>2</th><th>3</th></tr><tr><td>f,n [Hz]</td><td></td><td></td><td></td></tr><tr><td>AMPn [1]</td><td></td><td></td><td></td></tr><tr><td>Eobs,n [td]</td><td></td><td></td><td></td></tr><tr><td>Epred,n [td]</td><td></td><td></td><td></td></tr></table> Up to 120 Hz no harmonics have been observed. It was no flicker visible by visible inspection.	n =	1	2	3	f,n [Hz]				AMPn [1]				Eobs,n [td]				Epred,n [td]				artificial & reality inf. P																																
n =	1	2	3																																																			
f,n [Hz]																																																						
AMPn [1]																																																						
Eobs,n [td]																																																						
Epred,n [td]																																																						
18. Spatial instability (jitter)	Not applicable.	artificial & reality inf. N/A																																																				
19. Moiré effects	horizontal bars P vertical bars P pixel checkerboard P	artificial & reality inf. P																																																				
20. Other visual artefacts	none	artificial inf. reality inf. P																																																				
21. Unwanted reflections	a) Illumination conditions for artificial inf. and positive image polarity Luminance of the large aperture source (L-REF,EXT) 200 cd/m² and Luminance of the small aperture source (L-REF,SML) 2000 cd/m² Contrast of unwanted reflections $\frac{L_H + L_D + L_S}{L_H + L_D} \leq 1,25$ <table><tr><th></th><th>mloc-mdir</th><th>CL-1S</th><th>CL-2S</th><th>CL-3S</th><th>CL-4S</th><th>CL-5S</th><th>CL-6S</th></tr><tr><td rowspan="3">L-REF,EXT</td><td>left side</td><td>1.03</td><td>1.03</td><td>1.03</td><td>1.03</td><td>1.03</td><td>1.03</td></tr><tr><td>≤</td><td>±0.17</td><td>±0.17</td><td>±0.17</td><td>±0.17</td><td>±0.17</td><td>±0.17</td></tr><tr><td>right side</td><td>1.25</td><td>1.25</td><td>1.25</td><td>1.25</td><td>1.25</td><td>1.25</td></tr><tr><td rowspan="3">L-REF,SML</td><td>left side</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td><td>1.00</td></tr><tr><td>≤</td><td>±0.17</td><td>±0.17</td><td>±0.18</td><td>±0.18</td><td>±0.18</td><td>±0.18</td></tr><tr><td>right side</td><td>1.25</td><td>1.25</td><td>1.25</td><td>1.25</td><td>1.25</td><td>1.25</td></tr></table>		mloc-mdir	CL-1S	CL-2S	CL-3S	CL-4S	CL-5S	CL-6S	L-REF,EXT	left side	1.03	1.03	1.03	1.03	1.03	1.03	≤	±0.17	±0.17	±0.17	±0.17	±0.17	±0.17	right side	1.25	1.25	1.25	1.25	1.25	1.25	L-REF,SML	left side	1.00	1.00	1.00	1.00	1.00	1.00	≤	±0.17	±0.17	±0.18	±0.18	±0.18	±0.18	right side	1.25	1.25	1.25	1.25	1.25	1.25	artificial inf. P reality inf. P
	mloc-mdir	CL-1S	CL-2S	CL-3S	CL-4S	CL-5S	CL-6S																																															
L-REF,EXT	left side	1.03	1.03	1.03	1.03	1.03	1.03																																															
	≤	±0.17	±0.17	±0.17	±0.17	±0.17	±0.17																																															
	right side	1.25	1.25	1.25	1.25	1.25	1.25																																															
L-REF,SML	left side	1.00	1.00	1.00	1.00	1.00	1.00																																															
	≤	±0.17	±0.17	±0.18	±0.18	±0.18	±0.18																																															
	right side	1.25	1.25	1.25	1.25	1.25	1.25																																															

Attribute	Assessment and Reporting	Result								
21. Unwanted reflections (continued)	b) Illumination conditions for artificial inf. and negative image polarity									
	Luminance of the large aperture source (L-REF,EXT)		200 cd/m ²							
			and							
	Luminance of the small aperture source (L-REF,SML)		2000 cd/m ²							
	Contrast of unwanted reflections		$\frac{L_L + L_D + L_S}{L_L + L_D} \leq 1,2 + \frac{L_H + L_D}{15 \times (L_L + L_D)}$							
	L-REF,EXT	mloc-mdir	CL-1S	CL-2S	CL-3S	CL-4S	CL-5S	CL-6S		
		left side	3.99	4.00	3.89	4.07	4.16	4.04		
		≤	±0.85	±0.86	±0.83	±0.87	±0.89	±0.87		
		right side	8.92	8.97	7.88	8.01	8.12	7.97		
	L-REF,SML	left side	1.28	1.26	1.26	1.25	1.28	1.27		
		≤	±0.23	±0.23	±0.23	±0.22	±0.23	±0.23		
		right side	8.92	8.97	7.88	8.01	8.12	7.97		
			±1.25	±1.25	±1.08	±1.10	±1.12	±1.11		
c) Illumination conditions for reality information										
Luminance of the large aperture source (L-REF,EXT)		200 cd/m ²								
		and								
Luminance of the small aperture source (L-REF,SML)		2000 cd/m ²								
Contrast in the presence of reflections		$\frac{L_H + L_D + L_S}{L_L + L_D + L_S} \geq 6,7 + 6,7^2 \times (L_L + L_D + L_S)^{-0,65}$								
L-REF,EXT	mloc-mdir	CL-1S	CL-2S	CL-3S	CL-4S	CL-5S	CL-6S			
	left side	29.8	29.9	26.5	25.8	25.8	25.9			
	≥	±6.4	±6.4	±5.7	±5.6	±5.5	±5.6			
	right side	18.8	18.6	18.8	18.4	18.4	18.8			
		±1.6	±1.6	±1.6	±1.6	±1.6	±1.6			
	L-REF,SML	left side	90.6	92.7	79.4	81.9	81.5	80.0		
		≥	±17.5	±17.9	±15.4	±15.8	±15.8	±15.5		
		right side	31.9	32.0	31.8	31.8	31.9	32.3		
	±2.0	±2.0	±2.0	±2.0	±2.0	±2.0				
22. Unintended depths effects	Not applicable.							artificial & reality inf. N/A		
23. Luminance contrast	artificial information n =		1	2	3	4	5	6	7	artificial inf. P reality inf. P
	CL-n left side	112.1	115.3	70.5	83.9	95.3	91.9	118.8		
		±18.3	±18.6	±11.5	±13.7	±15.6	±15.2	±19.2		
		≥ right side	5.5	5.4	5.1	5.3	5.4	5.5	5.4	
		±0.3	±0.3	±0.3	±0.3	±0.3	±0.3	±0.3		
	reality information n =		1	2	3	4	5	6	7	
	CL-n left side	112.1	115.3	70.5	83.9	95.3	91.9	118.8		
		±18.3	±18.6	±11.5	±13.7	±15.6	±15.2	±19.2		
		≥ right side	37.3	36.2	33.6	35.3	36.2	37.3	36.2	
		±0.3	±0.3	±0.3	±0.3	±0.3	±0.3	±0.3		

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Attribute	Assessment and Reporting			Result
24. Image polarity	for artificial information: positive and negative polarity			artificial inf. P reality inf. N/A
25. Character height	Minimum character height Font Arial, 10 pt, large Font Font type Latin-origin Character height $N_{H,Height}$ 13 Pixel / 3.82 mm / 26.3 minutes of arc. Default mode Font Arial, 10 pt, large Font Font type Latin-origin Character height $N_{H,Height,default}$ 13 Pixel / 3.82 mm / 26.3 minutes of arc.			artificial inf. P reality inf. N/A
26. Text size constancy	Not applicable.			artificial inf. N/A reality inf. N/A
27. Character stroke width	horizontal stroke width	2 Pixel	15.4% of character height	artificial inf. P reality inf. N/A
	vertical stroke width	2 Pixel	15.4% of character height	
28. Character width-to-height ratio	Character width $N_{H,Width}$	11 Pixel		artificial inf. P reality inf. N/A
	Character height $N_{H,Height}$	13 Pixel		
	Character width-to-height ratio	0.85 : 1		
29. Character format	Character format	13 x 11		artificial inf. P reality inf. N/A
30. Between-character spacing	Font with serifs	No		artificial inf. P reality inf. N/A
	Between-character spacing	2 Pixel		
31. Between word spacing	Print font	Yes		artificial inf. P reality inf. N/A
	Between-word-spacing	7 Pixel		
32. Between-line spacing	Between-line-spacing	1 Pixel		artificial inf. P reality inf. N/A
33. Luminance coding	Level 1	Black	Level 3	artificial inf. P reality inf. N/A
	Level 2	Gray	Level 4	
	Bright White			
	Ratio			
	actual value			
	set value			
	Level 1,max			
Level 2,min / Level 1,max			25.46	$\geq 1,5$
Level 3,min / Level 2,max			2.49	$\geq 1,5$
Level 4,min / Level 3,max			1.87	$\geq 1,5$

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Attribute	Assessment and Reporting	Result
34. Blink coding	Not applicable.	artificial & reality inf. N/A
35. Colour coding	minimum ΔE 24.4 $\pm$ 18.3 between the following two colours: No. of Colour 1 8 (Grey) No. of Colour 2 3 (Cyan)	artificial inf. P reality inf. N/A
36. Geometrical coding	Not applicable.	artificial & reality inf. N/A
37. Mono-chrome and multicolour object size	Not applicable.	artificial & reality inf. N/A
38. Contrast for object legibility	Not applicable.	artificial & reality inf. N/A
39. Colour considerations for graphics	Not applicable.	artificial & reality inf. N/A
40. Background and surrounding image effects	Not applicable.	artificial & reality inf. N/A
41. Number of colours	Not applicable.	artificial & reality inf. N/A
42. Colour gamut and reference white	for artificial information 1. Colour gamut 32.6% $\pm$ 5.2% 2.a Reference white (measured) 7358 K 2.b Reference white (specified) 6488 K 2.c Abs. difference to meas. 870 K 3. Adjustability of the ref. white no for reality information 1. Colour gamut acceptable to less than 50% of the population 2.a ITU reference white 6500 K 2.b Abs. difference to meas. 858 K 3. Skin tone N/A	artificial inf. P reality inf. F
43. Electro optical transfer function and grey scale	1. Electro optical transfer function See figures on page 12 and 13. Monotonicity of first derivative Monotonicity is not given Second derivative > 0 No Measured gamma value 2.17 Specified gamma value 2.20 Max. deviation from specified gamma value 0.03 2. max. Δu^*v^* of different grey levels 0.014	artificial inf. P reality inf. F
44. Rendering of moving images	Depending on the viewing conditions and image content, motion blur may occur. The visual display has sufficient temporal fidelity to show typical workplace applications like text processing, table calculation etc. with acceptable low blur, smear and other noticeable artefacts.	artificial & reality inf. P

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Attribute	Assessment and Reporting	Result
45. Colour misconvergence	Not applicable.	artificial & reality inf. N/A
46. Image formation time	Minimum 20.1 ms Maximum 41.4 ms Mean value 30.2 ms Standard deviation 6.4 ms NOTE: mean value switching time t-on 21.2 ms mean value switching time t-off 9.0 ms	artificial & reality inf. P
47. Spatial resolution	a) Resolution horizontal x vertical 1280 x 1024 b) Spatial resolution horizontal 2.0' (at the design viewing distance) vertical 2.0'	artificial & reality inf. P
48. Raster modulation	Not applicable.	artificial & reality inf. N/A
49. Fill factor	Pixel density 30.6 Pixel per degree Fill factor N/A	artificial & reality inf. N/A
50. Pixel density	Pixel density horizontal 86.4 ppi Pixel density vertical 86.4 ppi	artificial & reality inf. P

Remarks

Classification result according to ISO 13406-2:2001:

Class viewing contrast: I
 Class viewing colour: IV
 Reflection class positive Polarity: I
 Reflection class negative Polarity: I
 Pixel Fault Class: 0
 Design Azimuth/Inclination: 90/0
 digital drive 1280x1024@60 Hz (24 bit), Arial, 10 pt, large Font

Figures and Tables

Figure 1: Electro-optical transfer function for the design viewing direction (linear)

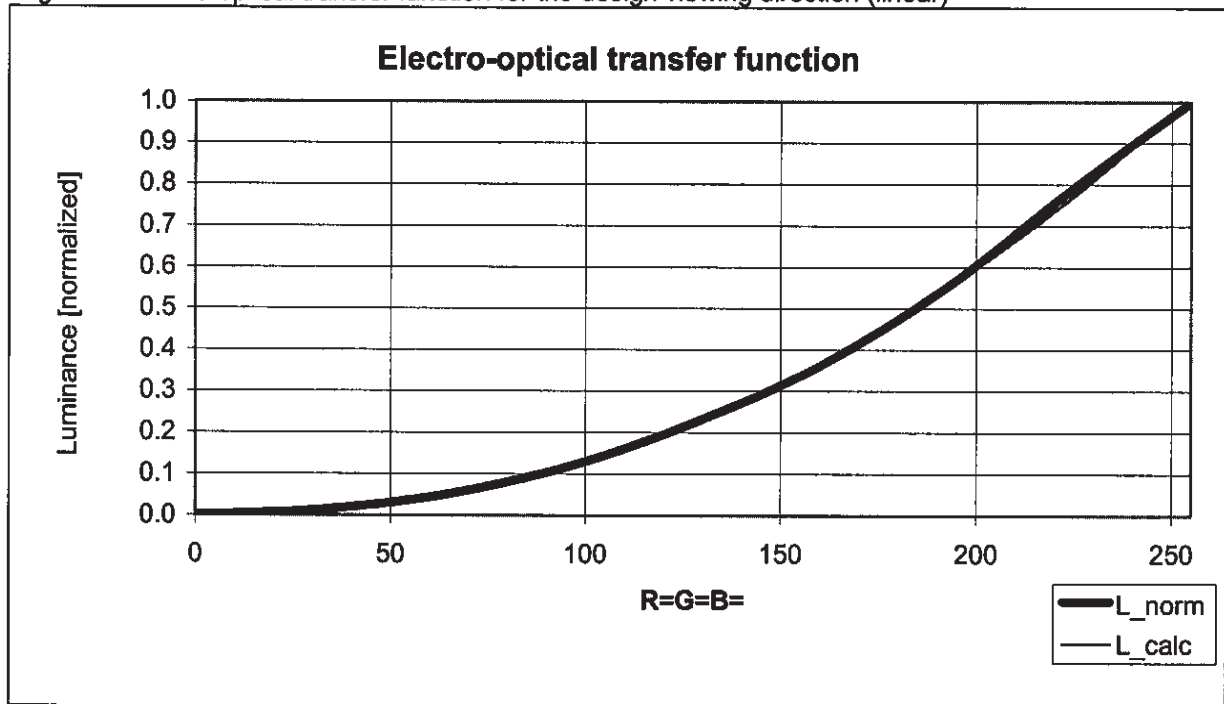
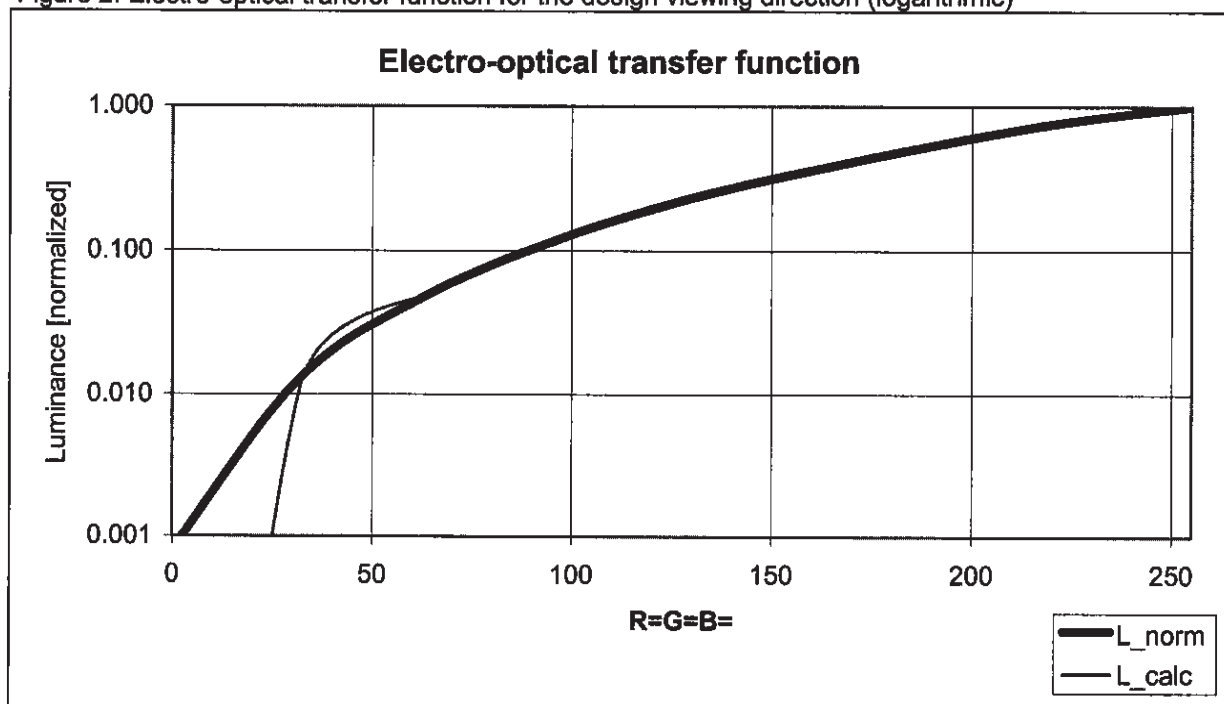


Figure 2: Electro-optical transfer function for the design viewing direction (logarithmic)



Figures and Tables (continued)

Figure 3: First derivative of electro-optical transfer function for the design viewing direction

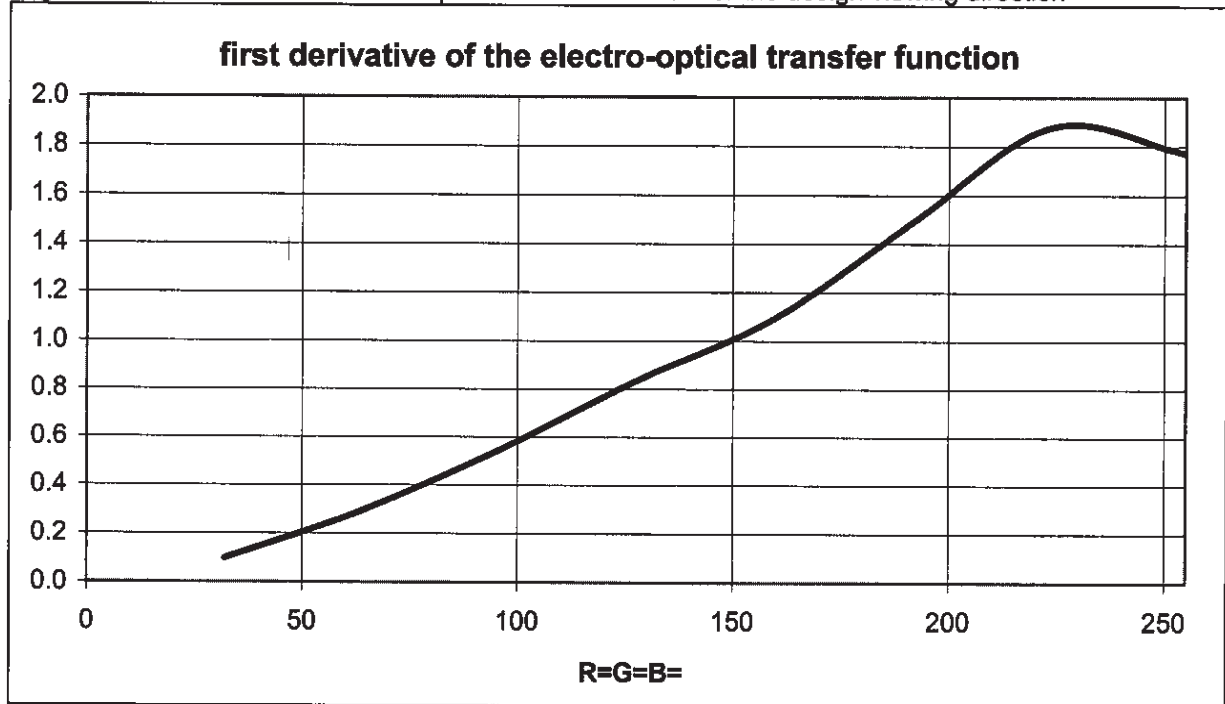
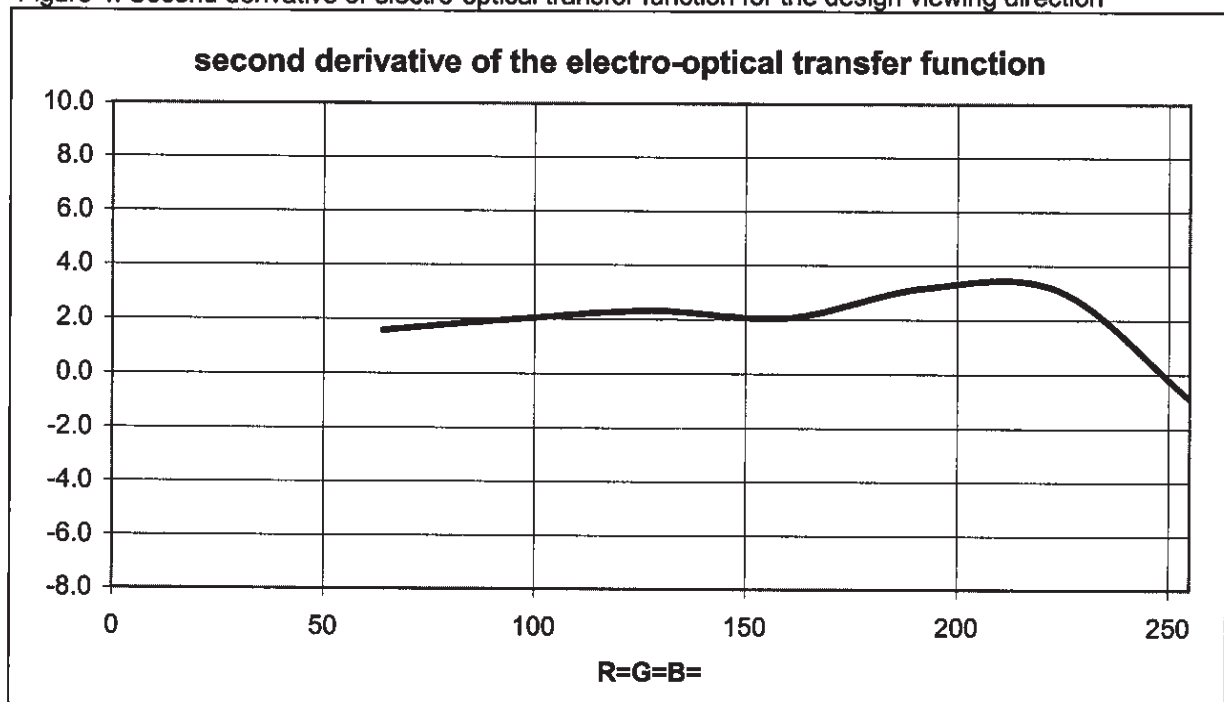


Figure 4: Second derivative of electro-optical transfer function for the design viewing direction



Figures and Tables (continued)

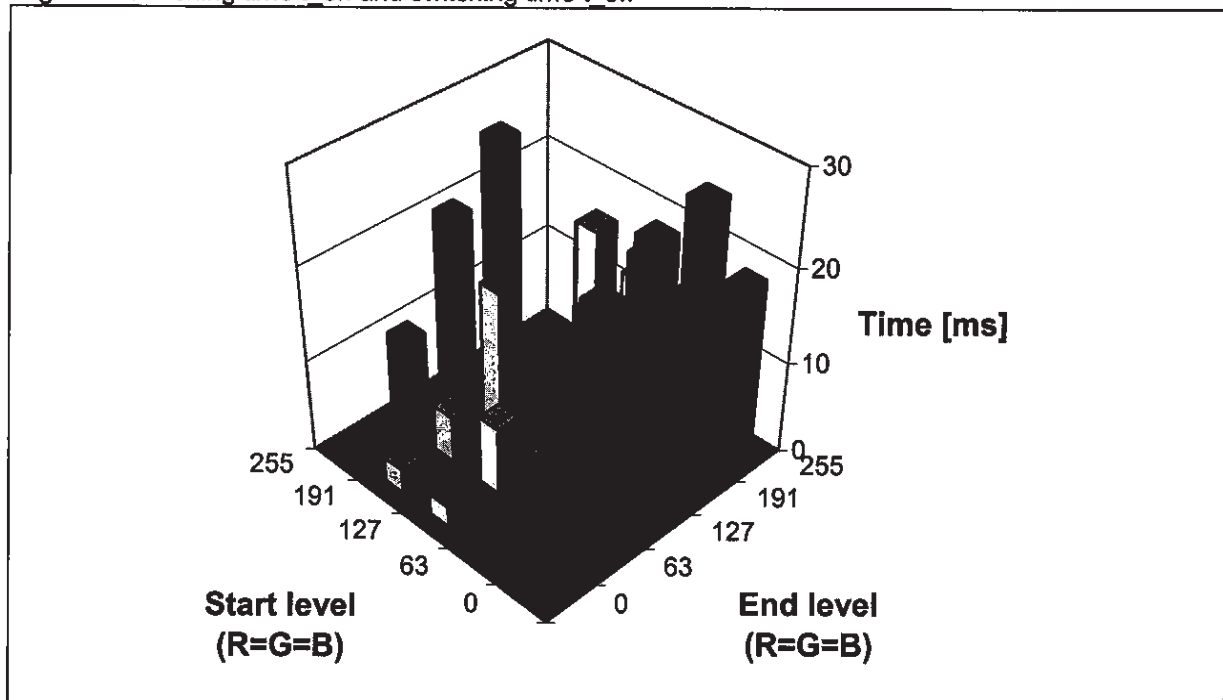
Table 1: Image formation time

Switching time t_{on}		End level (R=G=B)				
		0	63	127	191	255
Start level (R=G=B)	0	X	26.3 ms	29.3 ms	30.5 ms	18.8 ms
	63		X	19.4 ms	21.7 ms	14.6 ms
	127			X	21.8 ms	13.6 ms
	191				X	16.0 ms
	255					X

Evaluation of the switching time	
mean value switching time t_{on}	21.2 ms
mean value t_{off}	

Image formation time		End level (R=G=B)				
		0	63	127	191	255
Start level (R=G=B)	0	X	X	X	X	X
	63	27.0 ms	X	X	X	X
	127	31.6 ms	26.8 ms	X	X	X
	191	33.2 ms	26.8 ms	37.2 ms	X	X
	255	20.1 ms	24.5 ms	33.6 ms	41.4 ms	X

Figure 5: switching time t_{on} and switching time t_{off}



Figures and Tables (continued)

Figure 6: CIE 1976 UCS chromaticity diagram

