TCO Certified Displays 6.0
VISUAL ERGONOMICS TEST REPORT

Report No.: SH12061106-VI01

Product:	LCD Monitor
Applicant:	Top Victory Electronic (Taiwan) Co.,Ltd.
Address:	10F, No.230, LIAN-CHANG ROAD, ZHANG-HE CITY TAIPEI COUNTY, 23553, TAIWAN
Manufacturer:	Same as applicant
Address:	Same as applicant
Brand Name:	AOC
Model/Type:	270LM00005
LCD:	L&T / LM270WF6(S2)(Z2), 27", wide color (LED Backlight)
Sample No.:	0120627-39-001
Rating:	External-Power Supply Input: 12Vdc,3.75A (Class III)
Test Standard:	TCO Certified Displays 6.0_Cl.2.1-2.5.
Test Mode:	1920x1080, fH:68kHz, fV:60Hz
Test Period:	Jun.28, 2012
Total number of pages:	10 pages of report; 3 pages of photograph
Limitation Regarding the Testing:	This report applies only to the sample(s) tested.
Type Key Definition:	N/A
Additional Information:	N/A

COMPLIANCE:

This model has shown compliance with requirements for visual ergonomics in *TCO Certified Displays 6.0.*

Intertek Testing Services
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Tested by

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Measurement Equipment and Test Conditions

Equipments	Manufacture	Model	Reg.No.	CALB.DUE
Goniometer	Microvision	SS320	EC3415-3	Apr.19, 2013
CCD / RTM Module	Microvision	SS310	EC3415-2	Apr.19, 2013
Gloss Meter	JFL	JFL-B60º	EC3865	Dec.1, 2012
Thermohygrograph	FengYun	ZJ 1-2B	EC3442	Oct.24, 2012

Enviroments	Contents
Ambient Temperature:	23℃
Ambient Humidity:	47%
Supply Voltage:	230 Vac
Supply Frequency:	50 Hz
Processing Unit:	Microvision SS320 System
Test Software:	Microvision 2.01.160q
Graphics Card:	PH-E128APVF
Operating Base System:	Windows XP
Display Interface:	VGA,HDMI

VDU Setting	Contents
CCT Setting	Warm
Default Contrast Setting	50
Default Brightness Setting	90
Default Backlight Setting	N/A
Tested Interface	HDMI

Test Mode	Contents:
Screen Resolution:	1920x1080, fH:68kHz, fV:60Hz
Test Luminance (cd/m2):	244.1
Test Font:	Arial 12pt
Measurement Distance:	55.88mm

Remark
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Attachment List and Test verdict

Attachment List

Att. A Image detail characteristics & Luminance characteristics I

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A.2.2.1 Luminance level

A.2.2.2 Luminance uniformity

Att. B Luminance characteristics II

A.2.2.3 Black level

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A.2.3.1 Luminance contrast-characters

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A.2.5.5 Colour greyscale linearity

Test case verdicts:

— Test case does not apply to the test object……: N/A

— Test case does meet the requirement……..: P(ass)

— Test object does not meet the requirement……..: F(ail)

Summary of Test

Clause	Test items	Result-Remark	Verdict
A.2.1.1	**Native display resolution requirement** The FPD shall have a pixel density ≥30 pixels/degree	(See att. A) 58 pixels/degree	**P**
A.2.2.1	**Luminance level** The luminance at default setting shall be ≥150 cd/m^2 The maximum luminance shall be ≥200 cd/m^2 The minimum luminance shall be ≤ 100 cd/m^2	(See att. A) $L_{default}$ = 244.1 cd/m^2 L_{max} = 260.8 cd/m^2 L_{min} = 50.4 cd/m^2	**P**
A.2.2.2	**Luminance uniformity** L_{max} : L_{min} shall be ≤ 1.50 : 1	(See att. A) 1.34	**P**
A.2.2.3	**Black level** The luminance of black shall be ≤ 2 cd/m^2 at ≥200 cd/m^2 white luminance setting.	(See att. B) L_{black}= 0.20 cd/m^2	**P**
A.2.2.4	**Luminance uniformity-angular dependence** For FPDs in landscape mode and in the horizontal direction L_{max} to L_{min} ratios at ±30º shall be ≤ 1.73 For FPDs in landscape mode and in the vertical direction L_{max} to L_{min} ratios at ±15º shall be ≤ 1.73	(See att. B) L_{Rhor}= 1.62 L_{Rver}= 1.58	**P**
A.2.2.5	**Greyscale gamma curve** shall be within the Max- and Min levels according to the table (See att. C)	(See att. B)	**P**
A.2.3.1	**Luminance contrast-characters** shall have a luminance contrast ≥ 0.70 measured orthogonally to the screen	(See att. C) 0.84	**P**
A.2.3.2	**Luminance contrast-angular dependence** For FPDs in landscape mode, shall be ≥ 0.80 at ±30º horizontally	(See att. C) 1.00	**P**
A.2.4.1	**Front frame gloss** If a gloss value G(60°) >30 gloss units, consideration note for the placement of the FPD shall be given in the language of the user manual . (See att. D)	(See att. C)	**P**
A.2.5.1	**Correlated colour temperature,CCT, variation** Δu'v' ≤ ± 0.012 The detailed mandate see att. E	(See att. D) 0.003	**P**
A.2.5.2	**Colour uniformity** Δu'v' ≤ ± 0.012	(See att. D) 0.005	**P**
A.2.5.3	**RGB settings** 1.The minimum colour triangle shall be ≥29%. 2. Red u'≥0.411 v'≥0.503 Green u'≤0.140 v'≥0.548 Blue u'≥0.150 v'≤0.210	(See att. E) A(%)= 31.8 u'= 0.445 v'= 0.523 u'= 0.128 v'= 0.570 u'= 0.174 v'= 0.172	**P**
A.2.5.4	**Colour uniformity-angular dependence** Δu'v' ≤ 0.025	(See att. E) 0.002	**P**
A.2.5.5	**Colour greyscale linearity** The Δu'v' ≤ the maximum allowed difference for each step (See att. G) For *displays* the step shall be 255,225,195,165,135,105,75 and 45	(See att. F)	**P**

Att.A Image detail characteristics & Luminance characteristics I

A.2.1.1 Native display resolution requirement

Background: *Image quality is negatively affected by a low fill factor, visble jaggies, a low rendering of details etc.All of these parameters are related to pixel array of the display.*
For pixel array characteristics, it is important to take the viewing distance into account.

Mandate:

The FPD shall have a pixel density≥30 pixel/degree of viewing angle.

Overall uncertainty: N/A

Measured values:

1) The Pix./Deg. Of view angle at design viewing distance is:

58	±	0.2	Pix. / Deg.

2) Or the mandates requirements with display formats below:

Panel format (D:W:H)	Min. no. of horizontal	Min. no. of vertical	EUT_Horizontal pixels	EUT_Vertical pixels	Size (inch)
18.36:16:9	972	557	1920	1080	27

A2.2.1 Luminance level

Background: *Poor luminance can lead to low contrast and consequently affect legibility and colour discrimination and by that cause misinterpretations. It shall be possible to set a sufficiently high luminance level with respect to the ambient lighting in order to present a comfortable viewing situation and to avoid eyestrain.*
It is also important that it is possible to set the luminance to a suitable level in low ambient light i.e.100 cd/m2.

Mandate:

The luminance at default setting shall be ≥150 cd/m^2.
The maximum luminance shall be ≥200 cd/m^2.
The minimun luminance shall be ≤100 cd/m^2.

Overall uncertainty: ≤ ±10% in luminance.

Measured values:

	Brightness	Contrast	Backlight	Luminance
Default setting luminance	90	50	N/A	244.1 ± 4.6 cd/m^2
Maximum luminance	100	85	N/A	260.8 ± 4.3 cd/m^2
Minimum luminance	0	0	N/A	50.4 ± 0.9 cd/m^2

A.2.2.2 Luminance uniformity

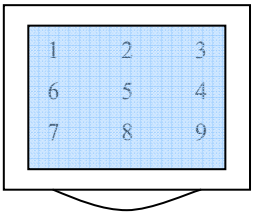
Background: *Image quality is badly affected by non-uniform luminance. When poor luminance uniformity is visible it can locally affect he contrast and consequently the legibility of information on the display.*
The areas of deviating luminance can have different sizes and cause varying border sharpness.

Mandate:

Luminance variation across the active screen, L_{max}:L_{min} shall be ≤1.50:1 at test luminance settings.

Overall uncertainty: ≤± 10% in luminance;
≤± 0.1 unit in luminance uniformity.

Measured values:



Position	Lum.(cd/m^2)
Position 2	273.4 ± 4.75
Position 4	204.0 ± 3.92
Lmax:Lmin	1.34 ± 0.06

Att.B Luminance characteristics II

A.2.2.3 Black Level

Background: *It is important that a display can produce a black level dark enough to show shadow details in pictures at high and low white luminance levels when showing material produced by the movie industry.*

Mandate:

The luminance of black shall be ⩽ 2 cd/m^2 at a white luminance setting of ⩾ 200 cd/m^2.

Overall uncertain ⩽± 10% in luminance;

Measured values:

0.2 ± 0.01 cd/m^2

A.2.2.4 Luminance uniformity-angular dependence

Background: *The luminance of an FPD are often angular-dependent. i.e. that screen luminance decreases when the FPD is viewed slightly from the side. This can have a negative effect on contrast and can affect the legibility of the screen.*

Mandate:

1) For FPDs in landscape mode, when the screen is rotated around the vertical axis through the centre of the screen the mean value of the Lmax to Lmin ratios at ±30° shall be ⩽ 1.73.

2) For FPDs in landscape mode, when the screen is rotated around the horizontal axis through the centre of the screen, the largest value of the Lmax to Lmin ratios at ±15° shall be ⩽ 1.73.

Overall uncertain ⩽ ± 10% in luminance;
⩽ ± 0.3° in rotation angle;
⩽ ± 0.1 unit in luminance uniformity.

Measured values:

Pivot and Non-pivot displays in landscape mode			
L_{max}+30°	194.4 ± 4.41 cd/m^2	L_T+15°	177.2 ± 2.75 cd/m^2
L_{min}+30°	123.9 ± 1.75 cd/m^2	L_B+15°	202.9 ± 3.91 cd/m^2
L_{max}-30°	206.2 ± 4.71 cd/m^2	L_T-15°	245.4 ± 4.40 cd/m^2
L_{min}-30°	123.1 ± 2.35 cd/m^2	L_B-15°	155.0 ± 2.74 cd/m^2
LR_{hor}	1.62 ± 0.08	LR_{ver}	1.58 ± 0.05

A.2.2.5 Greyscale gamma curve

Background: *A well-tuned greyscale is the basis for accurate detail rendering of any imaging device. Each greyscale step, regardless of grey level, shall have a luminance level close to what is specified by the common standard sRGB in order to give accurate rendering of the greyscale of the original image.*

Mandate:

The different grey scale luminance levels shall be within the Max- and Min levels according to the table below, where 100% means the luminance level measured for white, RGB 255, 255, 255.

Grey level	L_{sRGB}	Lmax	Lmin
	%	%	%
255	100	100	100
225	75	93	70
195	55	68	46
165	38	49	29
135	24	36	17
105	14	24	8
75	7	14	3
45	3	7	1

Grey level	Luminance	$\%L_{white}$
	cd/m^2	%
255	244.9 ± 4.40	100
225	177.5 ± 2.75	72
195	127.2 ± 2.81	52
165	87.7 ± 2.81	36
135	53.5 ± 2.81	22
105	27.2 ± 2.81	11
75	10.6 ± 2.81	4
45	3.1 ± 2.81	1

Overall uncertain ⩽ ±10% in luminance.

Measured values:

The detail data please see above right table.

Att.C Luminance contrast characteristics & Reflection characteristics

A.2.3.1 Luminance contrast-characters

Background: *The degree of contrast is important for legibility and for the capability to distinguish one character from another.*

Mandate:
The FPD shall have a luminance contrast ⩾ 0.70 measured orthogonally to the screen.

Overall uncertainty: ⩽ ± 0.05 in contrast.

Measured values:

H	L_{max}	236.2 ± 4.16 cd/m^2	Cm(H)	0.84 ± 0.009
	L_{min}	20.9 ± 0.37 cd/m^2		

A.2.3.2 Luminance contrast-angular dependence

Background: *For FPDs the luminance and consequently the contrast on the display is angular –dependent. The luminance variations can influence both bright white and dark areas o fthe screen, causing a change in contrast. This can have a negative effect on the legibility of the screen.*

Mandate:
The FPD shall have a luminance contrast ⩾ 0.80 measured orthogonally to the screen.

Overall uncertainty: ⩽ ± 10% in luminance;
⩽ ± 0.05 unit in contrast.

Measured values:

Angle	+30°	Angle	-30°
L_{white}	172.01 ± 2.65 cd/m^2	L_{white}	178.41 ± 2.85 cd/m^2
L_{black}	0.17 ± 0.038 cd/m^2	L_{black}	0.26 ± 0.058 cd/m^2
C_m	1.00 ± 0.0001 cd/m^2	C_m	1.00 ± 0.0001 cd/m^2

A.2.4.1 Front frame gloss

Background: *Front frame gloss influences visual comfort and legibility by drawing attention away from the task at hand. The higher the gloss value the more likely it is that the surface will create irritating specular reflexes (mirror-like reflexes) from ambient lighting.*

Mandate:
For displays that have a gloss value G(60°) >30 gloss units the following consideration note for the placement of the FPD shall be given in the user manual .
"For displays with glossy bezels the user should consider the placement of the display as the bezel may cause disturbing reflections from surrounding light and bright surfaces."

Overall uncertainty: ⩽ ± 2 gloss units.

Measured values:

Front frame (Position or part name)	Gloss
Black	59.8 ± 2 GU

Note: For displays with glossy bezels the user should consider the placement of the display as the bezel may cause disturbing reflections from surrounding light and bright surfaces.

Att.D Screen colour characteristics I

A.2.5.1 Correlated colour temperature (CCT) variation

Background: *Most FPDs are today equipped with a number of pre-set correlated colour temperature settings. This makes it possible to more accurately evaluate the colour of an image on the FPD compared to real scenes or prints. For the editing of photos, pictures or video, it is important to be able to set a colour temperature of 6500K or sRGB, since most productions are made using that standard.*

Mandate:

The FPD shall have at least two predefined possibilities for pre-set correlated colour temperatures between 5000K and 10000K and one and onepossibility for the user to adjust the CCT (total of three settings).
Each pre-set correlated colour temperature shall have a colour difference $\Delta u'v' \leqslant 0.012$ when compared to CIE u' and v' chromaticity co-ordinates for corresponding correlated colour temperatures.

Overall uncertainty: $\leqslant \pm 0.003$ in u' and v'.

Measured values:

0.003 ± 0.001

Preset CCT (K)	Measured u'	Measured v'	Δu'v'
sRGB	0.198 ± 0.002	0.466 ± 0.001	0.0026 ± 0.001
Warm	0.198 ± 0.002	0.466 ± 0.001	N/A
Normal	0.199 ± 0.002	0.456 ± 0.001	N/A
Cool	0.194 ± 0.002	0.447 ± 0.001	N/A
User			N/A

Note: N/A

A.2.5.2 Colour uniformity

Background: *The human visual system is very sensitive to changes in colour hue in white and grey areas. Since the white or grey colour hues are the background on which most colours are judged, the white or grey areas are the reference colours on the screen.*

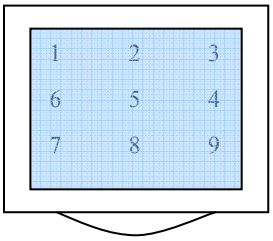
Mandate:

$\Delta u'v' \leqslant 0.012$ for the maximun colour deviation between measured active areas on the screen that are intended to maintain the same colour.

Overall uncertainty: $\leqslant \pm 0.003$ in u' and v'.

Measured values:

0.005 ± 0.002



Position	Measured u'	Measured v'
Position 7	0.196 ± 0.002	0.464 ± 0.002
Position 1	0.200 ± 0.001	0.468 ± 0.001
Δu'v'	0.005 ± 0.002	

Att.E Screen colour characteristics II

A.2.5.3 RGB Settings

Background: *Accurate colour rendering is important when realistic colour images or colour resentations are presented on the FPD screen. Poor colour rendering can lead to poor legibility and misinterpretation.*
The u' and v' chromaticity co-ordinates of the primary colours red (R), green (G) and blue (B) of the screen shall aim at values given in international IEC, EBU and ITU standards.

Mandate:

1. The minimum colour triangle shall be ⩾ 29%.
2. The following tolerances to the sRGB coordinates:

	Red		Green		Blue	
Co-ordinate	U’	V’	U’	V’	U’	V’
Mandate	⩾0.411	⩾0.503	⩽0.140	⩾0.548	⩾0.150	⩽0.210

Overall uncertainty: ⩽ ± 0.003 in u’ and v’ for red and green;
⩽ ± 0.007 in u’ and v’ for blue.

Measured values:

Colour Gamut
A(%)= 31.8

	Red		Green		Blue	
	U’	V’	U’	V’	U’	V’
Measured	0.445 ± 0.003	0.523 ± 0.001	0.128 ± 0.001	0.570 ± 0.000	0.174 ± 0.003	0.172 ± 0.004
Variance	0.034	0.020	0.012	0.022	0.024	0.038

A.2.5.4 Colour uniformity-angular dependence

Background: *The human visual system is very sensitive to changes in colour hue in white and grey areas.*
Since the white or grey colour hues are the background on which most colours are judged, the white or grey areas are the reference colours on the screen. Angular-dependent colour variations on an active white or grey screen could be disturbing and affect legibility, colour rendering and colour differentiation.

Mandate:

For an FPD in landscape mode, the Δu'v' between areas on the left side and the right side of the screen when it is positioned at+30° and at -30° horizontally to the screen normal (rotated around the vertical axis through the centre of the screen) shall be Δu'v' ⩽ 0.025.

Overall uncertainty: ⩽ ± 10% in luminance;
⩽ ± 0.003 units for u’ and v’;
⩽ ± 0.3° in rotation angle.

Measured values:

Angle	Δu'v'
+30°	0.001 ± 0.002
-30°	0.002 ± 0.002

Att.F Screen colour characteristics III

A.2.5.5 Colour grayscale linearity

Background: *A well-tuned colour greyscale is the basis for good colour rendering on the screen. This is measured via steps in a greyscale on the screen. Each greyscale step shall have similar colour hues in order to simplify colour interpretation and to avoid confusion for the user, only the luminance shall vary.*

Mandate:

The Δu'v' ⩽ the maximum allowed difference for each step according to following table.

	Maximum Δu´v´difference						
	255	225	195	165	135	105	75
225	0.015						
195	0.015	0.015					
165	0.020	0.020	0.020				
135	0.025	0.025	0.020	0.020			
105	0.025	0.025	0.025	0.025	0.020		
75	0.035	0.035	0.035	0.035	0.035	0.025	
45	0.035	0.035	0.035	0.035	0.035	0.035	0.035

For *displays* the steps to be used are 255, 225, 195, 165, 135, 105, 75 and 45.

Overall uncertainty: ⩽ ± 10% in luminance;
⩽ ± 0.003 units for u' and v'.

Measured values:

Level	Luminance	U'	V'
255	244.9 ± 4.40	0.1982 ± 0.002	0.4663 ± 0.001
225	177.5 ± 2.75	0.1994 ± 0.002	0.4703 ± 0.001
195	127.2 ± 2.81	0.1998 ± 0.002	0.4705 ± 0.001
165	87.7 ± 2.81	0.1997 ± 0.002	0.4706 ± 0.001
135	53.5 ± 2.81	0.1996 ± 0.002	0.4704 ± 0.001
105	27.2 ± 2.81	0.1995 ± 0.002	0.4698 ± 0.001
75	10.6 ± 2.81	0.1989 ± 0.002	0.4687 ± 0.001
45	3.1 ± 2.81	0.1975 ± 0.002	0.4648 ± 0.001

Δu'v'	255	225	195	165	135	105	75
225	0.004 ± 0.002						
195	0.005 ± 0.002	0.000 ± 0.002					
165	0.005 ± 0.002	0.000 ± 0.002	0.000 ± 0.002				
135	0.004 ± 0.002	0.000 ± 0.002	0.000 ± 0.002	0.000 ± 0.002			
105	0.004 ± 0.002	0.001 ± 0.002	0.001 ± 0.002	0.001 ± 0.002	0.001 ± 0.002		
75	0.003 ± 0.002	0.002 ± 0.002	0.002 ± 0.002	0.002 ± 0.002	0.002 ± 0.002	0.001 ± 0.002	
45	0.002 ± 0.002	0.006 ± 0.002	0.006 ± 0.002	0.006 ± 0.002	0.006 ± 0.002	0.005 ± 0.002	0.004 ± 0.002

TCO Certified Displays 6.0
LOW EMISSION TEST REPORT

Report No.: SH12061106-EM01

Product:	LCD Monitor
Application:	Top Victory Electronic (Taiwan) Co.,Ltd.
Address:	10F, No.230, LIAN-CHANG ROAD, ZHANG-HE CITY TAIPEI COUNTY, 23553, TAIWAN
Manufacture:	Same as applicant
Address:	Same as applicant
Brand Name:	AOC
Model/Type:	270LM00005
LCD:	L&T / LM270WF6(S2)(Z2), 27", wide color (LED Backlight)
Sample No.:	0120627-39-001
Rating:	External-Power Supply Input: 12Vdc,3.75A (Class III)
Test Standard:	TCO Certified Displays 6.0_Cl.4.1-4.2.
Test Mode:	1920x1080, fH:68kHz, fV:60Hz
Test Period:	Jun.29, 2012
Total number of pages:	4 pages of report; 3 pages of photograph
Limitation Regarding the Testing:	This report applies only to the sample(s) tested.
Type Key Definition:	N/A
Additional Information:	N/A

COMPLIANCE:

This model has shown compliance with requirements for low emission in TCO *Certified Displays 6.0.*

Intertek Testing Services
Shanghai

Tested by

Chris Chen

Reviewed by

Jessica He

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Product information and measurement configuration

Production information	
Product Name	LCD Monitor
Brand Name	AOC
Model Name	270LM00005
Ratings	Input: 12Vdc,3.75A (Class III)
Power unit's manufacture and type	TPV/ADPC1245
Power unit's input rating	100-240Vac,50-60Hz,1.5A
Power unit's output rating	12Vdc,3.75A
CRT / LCD panel information	L&T / LM270WF6(S2)(Z2), 27", wide color
Inverter's manufacture and type	N/A
Screen size	27"
Additional information:	

Test conditions			
Brightness setting	Contrast setting	Backlight setting	Luminance (cd/m^2)
90	50	N/A	244.1
Display resolution	Horizontal frequency	Vertical frequency	
1920x1080	68kHz	60Hz	
Ambient temperature	Ambient humidity	Mains voltage & Frequency	
20℃	53%	230 Vac, 50 Hz	

System Configuration	
Pattern generator	HP Notebook Computer
Test pattern	Full screen "H" characters
Graphic card	Intel Integrated Graphic card
Video signal level	0.7 Vpp

Test Equipment				
Item	Instrument name	Manufacture	Model	Due. Date
1	Electric Field Meter Band I / II	Combinove	EFM 200	Feb.13, 2013
2	Magnetic Field Meter Band I / II	Combinove	MFM 2000	Jan.13, 2013
3	Programmable AC Source	APS	AFC-1102	--

Remark
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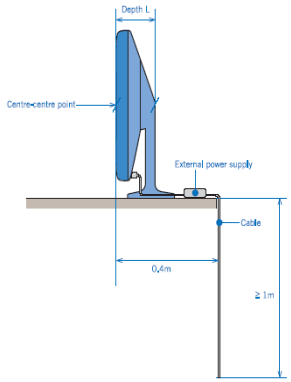
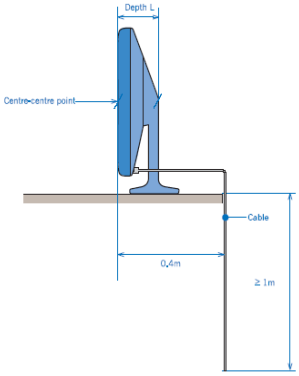
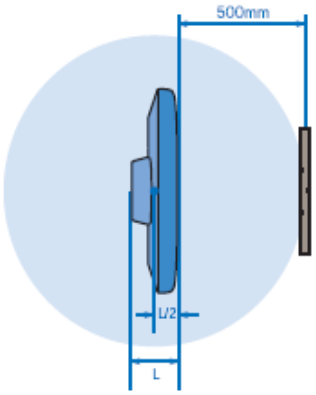
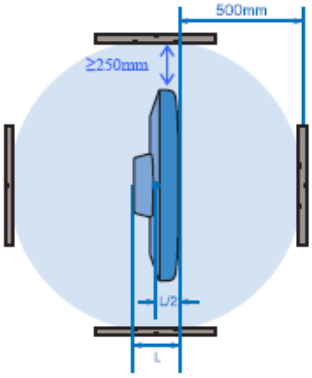
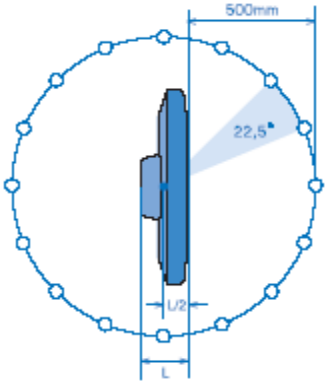
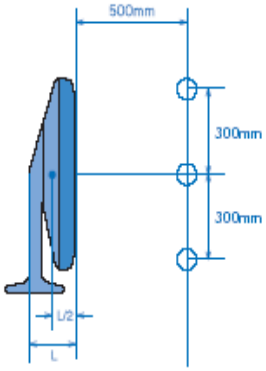
Measurement Geometry

LCD Power Cable arrangement (External power)	LCD Power Cable arrangement (Building-in power)
	
Alternating Electrical Field Band I	**Alternating Electrical Field Band II**
FPDs≤26": 30 and 50 cm in front of the FPD FPDs>26": measured at 50 cm in front of the FPD	FPDs ⩽ 26":30 cm in front of- and 50 cm from the rotation point around the FPD. FPDs > 26":50 cm from the surface of the product around the FPD
	

Alternating Magnetic field Band I and Band II	
Band I	FPDs ⩽ 26":30 cm in front of- and at 50 cm from the rotation point around the FPD FPDs >26" :50 cm from the surface of the product around the FPD
Band II	FPDs ⩽ 26": 50 cm from the rotation point around the FPD FPDs > 26":50 cm from the surface of the product around the FPD





Measured Values

Alternating Electrical Field		Ambient Band I	Ambient Band II	Compliance
		0.19	0.008	Pass
Band I: 5Hz – 2kHz (ELF)		Band II: 2kHz – 400kHz (VLF)		
Position	Measured value(V/m)	Position	Measured value(V/m)	
0° at 30cm	N/A	0° at 30cm	N/A	
0° at 50cm	4.53 ±0.50	0° at 50cm	0.133 ±0.050	
		90° at 50cm	0.257 ±0.050	
		180° at 50cm	0.613 ±0.050	
		270° at 50cm	0.493 ±0.050	
Maximum value		Maximum value		
E:	4.53 ±0.50	E:	0.613 ±0.050	
Angular:	0°	Angular:	180°	
MD:	30 cm	MD:	30 cm	
Requirements:	≤10 V/m (TCO)	Requirements:	≤1.0 V/m (TCO)	
Compliance:	PASS	Compliance:	PASS	

Alternating Magnetic Field				Ambient Band I	Ambient Band II	Compliance
				32.7	0.0	Pass
Item	Band I: 5Hz – 2kHz (ELF)			Band II: 2kHz – 400kHz (VLF)		
	nT			nT		
	Z=-30cm	Z=0cm	Z=+30cm	Z=-30cm	Z=0cm	Z=+30cm
30cm		N/A				
50cm				50cm		
0.0°	<200 ±34	<200 ±34	<200 ±34	<10 ±1.5	<10 ±1.5	<10 ±1.5
22.5°	N/A	N/A	N/A	N/A	N/A	N/A
45.0°	N/A	N/A	N/A	N/A	N/A	N/A
67.5°	N/A	N/A	N/A	N/A	N/A	N/A
90.0°	<200 ±34	<200 ±34	<200 ±34	<10 ±1.5	<10 ±1.5	<10 ±1.5
112.5°	N/A	N/A	N/A	N/A	N/A	N/A
135.0°	N/A	N/A	N/A	N/A	N/A	N/A
157.5°	N/A	N/A	N/A	N/A	N/A	N/A
180.0°	<200 ±34	<200 ±34	<200 ±34	<10 ±1.5	<10 ±1.5	<10 ±1.5
202.5°	N/A	N/A	N/A	N/A	N/A	N/A
225.0°	N/A	N/A	N/A	N/A	N/A	N/A
247.5°	N/A	N/A	N/A	N/A	N/A	N/A
270.0°	<200 ±34	<200 ±34	<200 ±34	<10 ±1.5	<10 ±1.5	<10 ±1.5
292.5°	N/A	N/A	N/A	N/A	N/A	N/A
315.0°	N/A	N/A	N/A	N/A	N/A	N/A
337.5°	N/A	N/A	N/A	N/A	N/A	N/A
Maximum value				Maximum value		
B:		<200 ±34		B:	<10 ±1.5	
Angular:		180 °		Angular:	337.5 °	
MD:		50 cm		MD:	50 cm	
Z:		0 cm		Z:	30 cm	
Requirements:		≤200 nT (TCO)		Requirements:	≤25 nT (TCO)	
Compliance:		PASS		Compliance:	PASS	

TCO Certified Displays 6.0
ENERGY CONSUMPTION TEST REPORT

Report No.: SH12061106-EN01

Product:	LCD Monitor
Application:	Top Victory Electronic (Taiwan) Co.,Ltd.
Address:	10F, No.230, LIAN-CHANG ROAD, ZHANG-HE CITY TAIPEI COUNTY, 23553, TAIWAN
Manufacture:	Same as applicant
Address:	Same as applicant
Brand Name:	AOC
Model/Type:	270LM00005
LCD:	L&T / LM270WF6(S2)(Z2), 27", wide color (LED Backlight)
Sample No.:	0120627-39-001
Rating:	External-Power Supply Input: 12Vdc,3.75A (Class III)
Test Standard:	TCO Certified Displays 6.0_Cl.6.3.
Test Mode:	1920x1080, fH:68kHz, fV:60Hz
Test Period:	Jun.28, 2012
Total number of pages:	2 pages of report; 3 pages of photograph
Limitation Regarding the Testing:	This report applies only to the sample(s) tested.
Type Key Definition:	N/A
Additional Information:	N/A

COMPLIANCE:

This model has shown compliance with requirements for energy consumption in *TCO Certified Displays 6.0.*

Intertek Testing Services
Shanghai

Tested by

Chris Chen

Chris Chen

Reviewed by

Jessica He

Jessica He

Measurement Equipment / Test Conditions / Test result

Equipment	Manufacture	Model	Reg. No.	Calib. DUE
Digital Power Meter	Yokogawa	WT210	EC3630	Jun.7, 2013
Programmable AC Source	Chroma	6430	EC3428	Oct.9, 2012
Stop Watch	DIAMOND	DM1-010	EC3440	Oct.20, 2012
Thermohygrograph	FengYun	ZJ 1-2B	EC3442	Oct.24, 2012

Enviroments:	Contents:
Ambient Temperature:	24 ℃
Ambient Humidity:	60 %
Supply Voltage:	230 Vac
Supply Frequency:	50 Hz
Display resolution:	1920x1080
Horizontal frequency:	68kHz
Vertical frequency:	60Hz
Backlight setting:	N/A
Brightness setting:	60
Contrast setting:	63
Display luminance(load image):	200.4 cd/m2
Tested Interface:	VGA

	On Mode (W)	Sleep Mode (W)	Off Mode (W)
Requirement:	37.2	2.0	1.0
Results:	27.1 ± 0.152	0.4 ± 0.152	0.3 ± 0.152
Compliance:	PASS	PASS	PASS

Remark :
TCO 3E report can be used in full or in parts if permitted by Intertek Shanghai. This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory. The measurement uncertainty calculation corresponds with coverage factor K=2.

Sample Photo

Front view


Back view


Sample Photo

Panel view


Panel Marking Label


Sample Photo

Power Adapter view


TCO Certified Displays 6.0
VISUAL ERGONOMICS TEST REPORT

Report No.: SH12061106-VI02

Product:	LCD Monitor
Applicant: Address:	Top Victory Electronic (Taiwan) Co.,Ltd. 10F, No.230, LIAN-CHANG ROAD, ZHANG-HE CITY TAIPEI COUNTY, 23553, TAIWAN
Manufacturer: Address:	Same as applicant Same as applicant
Brand Name: Model/Type: LCD: Sample No.: Rating:	AOC 270LM00005 L&T / LM270WF5(S2)(A2) , 27", wide color (LED Backlight) 0120816-54-001 External-Power Supply Input: 12Vdc,3.75A (Class III)
Test Standard:	TCO Certified Displays 6.0_Cl.2.1-2.5.
Test Mode:	1920x1080, fH:68kHz, fV:60Hz
Test Period:	Aug.24, 2012
Total number of pages:	10 pages of report; 3 pages of photograph
Limitation Regarding the Testing:	This report applies only to the sample(s) tested.
Type Key Definition:	N/A
Additional Information:	N/A

COMPLIANCE:

This model has shown compliance with requirements for visual ergonomics in *TCO Certified Displays 6.0.*

Intertek Testing Services
Shanghai

Tested by

Chris Chen

Reviewed by

Jessica He

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Measurement Equipment and Test Conditions

Equipments	Manufacture	Model	Reg.No.	CALB.DUE
Goniometer	Microvision	SS320	EC3415-3	Apr.19, 2013
CCD / RTM Module	Microvision	SS310	EC3415-2	Apr.19, 2013
Gloss Meter	JFL	JFL-B60º	EC3865	Dec.1, 2012
Thermohygrograph	FengYun	ZJ 1-2B	EC3442	Oct.24, 2012

Enviroments	Contents
Ambient Temperature:	23℃
Ambient Humidity:	57%
Supply Voltage:	230 Vac
Supply Frequency:	50 Hz
Processing Unit:	Microvision SS320 System
Test Software:	Microvision 2.01.160q
Graphics Card:	PH-E128APVF
Operating Base System:	Windows XP
Display Interface:	VGA,HDMI

VDU Setting	Contents
CCT Setting	Warm
Default Contrast Setting	50
Default Brightness Setting	90
Default Backlight Setting	N/A
Tested Interface	HDMI

Test Mode	Contents:
Screen Resolution:	1920x1080, fH:68kHz, fV:60Hz
Test Luminance (cd/m2):	226.0
Test Font:	Arial 12pt
Measurement Distance:	55.88mm

Remark
TCO 3E report can be used in full or in parts if permitted by Intertek Shanghai. This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory. Investigation shows that Microvision SS320 spectrometer measured at 55.88mm gives equivalent measurement results as TCO default test method. The measurement uncertainty calculation corresponds with coverage factor K=2.

Attachment List and Test verdict

Attachment List

Att. A Image detail characteristics & Luminance characteristics I

A.2.1.1 Native display resolution requirement

A.2.2.1 Luminance level

A.2.2.2 Luminance uniformity

Att. B Luminance characteristics II

A.2.2.3 Black level

A.2.2.4 Luminance uniformity-angular dependence

A.2.2.5 Greyscale gamma curve

Att. C Luminance contrast characteristics & Reflection characteristics

A.2.3.1 Luminance contrast-characters

A.2.3.2 Luminance contrast-angular dependence

A.2.4.1 Front frame gloss

Att. D Screen colour characteristics I

A.2.5.1 Correlated colour temperature,CCT, variation

A.2.5.2 Colour uniformity

Att. E Screen colour characteristics II

A.2.5.3 RGB settings

A.2.5.4 Colour uniformity-angular dependence

Att. F Screen colour characteristics III

A.2.5.5 Colour greyscale linearity

Test case verdicts:

— Test case does not apply to the test object……: N/A

— Test case does meet the requirement……..: P(ass)

— Test object does not meet the requirement……..: F(ail)

Summary of Test

Clause	Test items	Result-Remark	Verdict
A.2.1.1	**Native display resolution requirement** The FPD shall have a pixel density ≥30 pixels/degree	(See att. A) 58 pixels/degree	**P**
A.2.2.1	**Luminance level** The luminance at default setting shall be ≥150 cd/m^2 The maximum luminance shall be ≥200 cd/m^2 The minimum luminance shall be ≤ 100 cd/m^2	(See att. A) $L_{default}$ = 226 cd/m^2 L_{max} = 243.6 cd/m^2 L_{min} = 17.2 cd/m^2	**P**
A.2.2.2	**Luminance uniformity** L_{max} : L_{min} shall be ≤ 1.50 : 1	(See att. A) 1.41	**P**
A.2.2.3	**Black level** The luminance of black shall be ≤ 2 cd/m^2 at ≥200 cd/m^2 white luminance setting.	(See att. B) L_{black}= 0.23 cd/m^2	**P**
A.2.2.4	**Luminance uniformity-angular dependence** For FPDs in landscape mode and in the horizontal direction L_{max} to L_{min} ratios at ±30º shall be ≤ 1.73 For FPDs in landscape mode and in the vertical direction L_{max} to L_{min} ratios at ±15º shall be ≤ 1.73	(See att. B) L_{Rhor}= 1.62 L_{Rver}= 1.54	**P**
A.2.2.5	**Greyscale gamma curve** shall be within the Max- and Min levels according to the table (See att. C)	(See att. B)	**P**
A.2.3.1	**Luminance contrast-characters** shall have a luminance contrast ≥ 0.70 measured orthogonally to the screen	(See att. C) 0.87	**P**
A.2.3.2	**Luminance contrast-angular dependence** For FPDs in landscape mode, shall be ≥ 0.80 at ±30º horizontally	(See att. C) 1.00	**P**
A.2.4.1	**Front frame gloss** If a gloss value G(60°) >30 gloss units, consideration note for the placement of the FPD shall be given in the language of the user manual . (See att. D)	(See att. C)	**P**
A.2.5.1	**Correlated colour temperature,CCT, variation** Δu'v' ≤ ± 0.012 The detailed mandate see att. E	(See att. D) 0.003	**P**
A.2.5.2	**Colour uniformity** Δu'v' ≤ ± 0.012	(See att. D) 0.005	**P**
A.2.5.3	**RGB settings** 1.The minimum colour triangle shall be ≥29%. 2. Red u'≥0.411 v'≥0.503 Green u'≤0.140 v'≥0.548 Blue u'≥0.150 v'≤0.210	(See att. E) A(%)= 31.7 u'= 0.445 v'= 0.523 u'= 0.127 v'= 0.570 u'= 0.173 v'= 0.173	**P**
A.2.5.4	**Colour uniformity-angular dependence** Δu'v' ≤ 0.025	(See att. E) 0.004	**P**
A.2.5.5	**Colour greyscale linearity** The Δu'v' ≤ the maximum allowed difference for each step (See att. G) For *displays* the step shall be 255,225,195,165,135,105,75 and 45	(See att. F)	**P**

Att.A Image detail characteristics & Luminance characteristics I

A.2.1.1 Native display resolution requirement

Background: *Image quality is negatively affected by a low fill factor, visble jaggies, a low rendering of details etc.All of these parameters are related to pixel array of the display.*
For pixel array characteristics, it is important to take the viewing distance into account.

Mandate:

The FPD shall have a pixel density≥30 pixel/degree of viewing angle.

Overall uncertainty: N/A

Measured values:

1) The Pix./Deg. Of view angle at design viewing distance is:

58	±	0.2	Pix. / Deg.

2) Or the mandates requirements with display formats below:

Panel format (D:W:H)	Min. no. of horizontal	Min. no. of vertical	EUT_Horizontal pixels	EUT_Vertical pixels	Size (inch)
18.36:16:9	972	557	1920	1080	27

A2.2.1 Luminance level

Background: *Poor luminance can lead to low contrast and consequently affect legibility and colour discrimination and by that cause misinterpretations. It shall be possible to set a sufficiently high luminance level with respect to the ambient lighting in order to present a comfortable viewing situation and to avoid eyestrain.*
It is also important that it is possible to set the luminance to a suitable level in low ambient light i.e.100 cd/m2.

Mandate:

The luminance at default setting shall be ≥150 cd/m^2.
The maximum luminance shall be ≥200 cd/m^2.
The minimun luminance shall be ≤100 cd/m^2.

Overall uncertainty: ≤ ±10% in luminance.

Measured values:

	Brightness	Contrast	Backlight	Luminance
Default setting luminance	90	50	N/A	226.0 ± 4.4 cd/m^2
Maximum luminance	100	76	N/A	243.6 ± 4.1 cd/m^2
Minimum luminance	0	0	N/A	17.2 ± 0.3 cd/m^2

A.2.2.2 Luminance uniformity

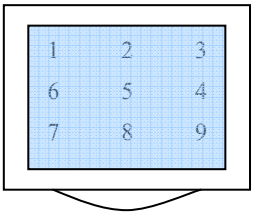
Background: *Image quality is badly affected by non-uniform luminance. When poor luminance uniformity is visible it can locally affect he contrast and consequently the legibility of information on the display.*
The areas of deviating luminance can have different sizes and cause varying border sharpness.

Mandate:

Luminance variation across the active screen, L_{max}:L_{min} shall be ≤1.50:1 at test luminance settings.

Overall uncertainty: ≤± 10% in luminance;
≤± 0.1 unit in luminance uniformity.

Measured values:



Position	Lum.(cd/m^2)
Position 2	245.1 ± 4.40
Position 7	173.5 ± 2.75
Lmax:Lmin	1.41 ± 0.06

Att.B Luminance characteristics II

A.2.2.3 Black Level

Background: *It is important that a display can produce a black level dark enough to show shadow details in pictures at high and low white luminance levels when showing material produced by the movie industry.*

Mandate:

The luminance of black shall be ⩽ 2 cd/m^2 at a white luminance setting of ⩾ 200 cd/m^2.

Overall uncertain ⩽± 10% in luminance;

Measured values:

0.2 ± 0.01 cd/m^2

A.2.2.4 Luminance uniformity-angular dependence

Background: *The luminance of an FPD are often angular-dependent. i.e. that screen luminance decreases when the FPD is viewed slightly from the side. This can have a negative effect on contrast and can affect the legibility of the screen.*

Mandate:

1) For FPDs in landscape mode, when the screen is rotated around the vertical axis through the centre of the screen the mean value of the Lmax to Lmin ratios at ±30° shall be ⩽ 1.73.
2) For FPDs in landscape mode, when the screen is rotated around the horizontal axis through the centre of the screen, the largest value of the Lmax to Lmin ratios at ±15° shall be ⩽ 1.73.

Overall uncertain ⩽ ± 10% in luminance;
⩽ ± 0.3° in rotation angle;
⩽ ± 0.1 unit in luminance uniformity.

Measured values:

Pivot and Non-pivot displays in landscape mode			
L_{max}+30°	186.4 ± 4.72 cd/m^2	L_T+15°	168.6 ± 2.75 cd/m^2
L_{min}+30°	111.0 ± 1.64 cd/m^2	L_B+15°	192.7 ± 2.75 cd/m^2
L_{max}-30°	186.4 ± 4.41 cd/m^2	L_T-15°	223.9 ± 4.15 cd/m^2
L_{min}-30°	119.0 ± 1.75 cd/m^2	L_B-15°	145.0 ± 2.81 cd/m^2
LR_{hor}	1.62 ± 0.08	LR_{ver}	1.54 ± 0.05

A.2.2.5 Greyscale gamma curve

Background: *A well-tuned greyscale is the basis for accurate detail rendering of any imaging device. Each greyscale step, regardless of grey level, shall have a luminance level close to what is specified by the common standard sRGB in order to give accurate rendering of the greyscale of the original image.*

Mandate:

The different grey scale luminance levels shall be within the Max- and Min levels according to the table below, where 100% means the luminance level measured for white, RGB 255, 255, 255.

Grey level	L_{sRGB}	Lmax	Lmin
	%	%	%
255	100	100	100
225	75	93	70
195	55	68	46
165	38	49	29
135	24	36	17
105	14	24	8
75	7	14	3
45	3	7	1

Grey level	Luminance	$\%L_{white}$
	cd/m^2	%
255	225.4 ± 4.16	100
225	163.7 ± 2.74	73
195	117.2 ± 2.81	52
165	81.3 ± 2.81	36
135	50.0 ± 2.81	22
105	25.9 ± 2.81	11
75	10.2 ± 2.81	5
45	3.1 ± 2.81	1

Overall uncertain ⩽ ±10% in luminance.

Measured values:

The detail data please see above right table.

Att.C Luminance contrast characteristics & Reflection characteristics

A.2.3.1 Luminance contrast-characters

Background: *The degree of contrast is important for legibility and for the capability to distinguish one character from another.*

Mandate:
The FPD shall have a luminance contrast ⩾ 0.70 measured orthogonally to the screen.

Overall uncertainty: ⩽ ± 0.05 in contrast.

Measured values:

H	L_{max}	215.4 ± 3.87 cd/m^2	Cm(H)	0.87 ± 0.007
	L_{min}	14.4 ± 0.26 cd/m^2		

A.2.3.2 Luminance contrast-angular dependence

Background: *For FPDs the luminance and consequently the contrast on the display is angular –dependent. The luminance variations can influence both bright white and dark areas o fthe screen, causing a change in contrast. This can have a negative effect on the legibility of the screen.*

Mandate:
The FPD shall have a luminance contrast ⩾ 0.80 measured orthogonally to the screen.

Overall uncertainty: ⩽ ± 10% in luminance;
⩽ ± 0.05 unit in contrast.

Measured values:

Angle	+30°	Angle	-30°
L_{white}	163.59 ± 2.68 cd/m^2	L_{white}	167.62 ± 2.81 cd/m^2
L_{black}	0.27 ± 0.060 cd/m^2	L_{black}	0.27 ± 0.058 cd/m^2
C_m	1.00 ± 0.0001 cd/m^2	C_m	1.00 ± 0.0001 cd/m^2

A.2.4.1 Front frame gloss

Background: *Front frame gloss influences visual comfort and legibility by drawing attention away from the task at hand. The higher the gloss value the more likely it is that the surface will create irritating specular reflexes (mirror-like reflexes) from ambient lighting.*

Mandate:
For displays that have a gloss value G(60°) >30 gloss units the following consideration note for the placement of the FPD shall be given in the user manual .
"For displays with glossy bezels the user should consider the placement of the display as the bezel may cause disturbing reflections from surrounding light and bright surfaces."

Overall uncertainty: ⩽ ± 2 gloss units.

Measured values:

Front frame (Position or part name)	Gloss
Black	58.1 ± 2 GU

Note: For displays with glossy bezels the user should consider the placement of the display as the bezel may cause disturbing reflections from surrounding light and bright surfaces.

Att.D Screen colour characteristics I

A.2.5.1 Correlated colour temperature (CCT) variation

Background: *Most FPDs are today equipped with a number of pre-set correlated colour temperature settings. This makes it possible to more accurately evaluate the colour of an image on the FPD compared to real scenes or prints. For the editing of photos, pictures or video, it is important to be able to set a colour temperature of 6500K or sRGB, since most productions are made using that standard.*

Mandate:

The FPD shall have at least two predefined possibilities for pre-set correlated colour temperatures between 5000K and 10000K and one and onepossibility for the user to adjust the CCT (total of three settings).
Each pre-set correlated colour temperature shall have a colour difference $\Delta u'v' \leqslant 0.012$ when compared to CIE u' and v' chromaticity co-ordinates for corresponding correlated colour temperatures.

Overall uncertainty: $\leqslant \pm 0.003$ in u' and v'.

Measured values:

0.003 ± 0.001

Preset CCT (K)	Measured u'	Measured v'	Δu'v'
sRGB	0.197 ± 0.002	0.465 ± 0.001	0.0033 ± 0.001
Warm	0.197 ± 0.002	0.465 ± 0.001	N/A
Normal	0.195 ± 0.002	0.462 ± 0.001	N/A
Cool	0.189 ± 0.002	0.446 ± 0.001	N/A
User			N/A

Note: N/A

A.2.5.2 Colour uniformity

Background: *The human visual system is very sensitive to changes in colour hue in white and grey areas. Since the white or grey colour hues are the background on which most colours are judged, the white or grey areas are the reference colours on the screen.*

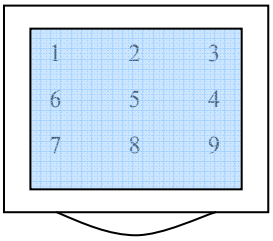
Mandate:

$\Delta u'v' \leqslant 0.012$ for the maximun colour deviation between measured active areas on the screen that are intended to maintain the same colour.

Overall uncertainty: $\leqslant \pm 0.003$ in u' and v'.

Measured values:

0.005 ± 0.002



Position	Measured u'	Measured v'
Position 3	0.199 ± 0.002	0.468 ± 0.002
Position 8	0.196 ± 0.001	0.464 ± 0.001
Δu'v'	0.005 ± 0.002	

Att.E Screen colour characteristics II

A.2.5.3 RGB Settings

Background: *Accurate colour rendering is important when realistic colour images or colour resentations are presented on the FPD screen. Poor colour rendering can lead to poor legibility and misinterpretation.*
The u' and v' chromaticity co-ordinates of the primary colours red (R), green (G) and blue (B) of the screen shall aim at values given in international IEC, EBU and ITU standards.

Mandate:

1. The minimum colour triangle shall be ⩾ 29%.
2. The following tolerances to the sRGB coordinates:

	Red		Green		Blue	
Co-ordinate	U’	V’	U’	V’	U’	V’
Mandate	⩾0.411	⩾0.503	⩽0.140	⩾0.548	⩾0.150	⩽0.210

Overall uncertainty: ⩽ ± 0.003 in u’ and v’ for red and green;
⩽ ± 0.007 in u’ and v’ for blue.

Measured values:

Colour Gamut
A(%)= 31.73

	Red		Green		Blue	
	U’	V’	U’	V’	U’	V’
Measured	0.445 ± 0.003	0.523 ± 0.001	0.127 ± 0.001	0.570 ± 0.000	0.173 ± 0.003	0.173 ± 0.004
Variance	0.034	0.020	0.013	0.022	0.023	0.037

A.2.5.4 Colour uniformity-angular dependence

Background: *The human visual system is very sensitive to changes in colour hue in white and grey areas.*
Since the white or grey colour hues are the background on which most colours are judged, the white or grey areas are the reference colours on the screen. Angular-dependent colour variations on an active white or grey screen could be disturbing and affect legibility, colour rendering and colour differentiation.

Mandate:

For an FPD in landscape mode, the Δu'v' between areas on the left side and the right side of the screen when it is positioned at+30° and at -30° horizontally to the screen normal (rotated around the vertical axis through the centre of the screen) shall be Δu'v' ⩽ 0.025.

Overall uncertainty: ⩽ ± 10% in luminance;
⩽ ± 0.003 units for u’ and v’;
⩽ ± 0.3° in rotation angle.

Measured values:

Angle	Δu'v'
+30°	0.001 ± 0.002
-30°	0.004 ± 0.002

Att.F Screen colour characteristics III

A.2.5.5 Colour grayscale linearity

Background: *A well-tuned colour greyscale is the basis for good colour rendering on the screen. This is measured via steps in a greyscale on the screen. Each greyscale step shall have similar colour hues in order to simplify colour interpretation and to avoid confusion for the user, only the luminance shall vary.*

Mandate:

The Δu'v' ⩽ the maximum allowed difference for each step according to following table.

	Maximum Δu´v´difference						
	255	225	195	165	135	105	75
225	0.015						
195	0.015	0.015					
165	0.020	0.020	0.020				
135	0.025	0.025	0.020	0.020			
105	0.025	0.025	0.025	0.025	0.020		
75	0.035	0.035	0.035	0.035	0.035	0.025	
45	0.035	0.035	0.035	0.035	0.035	0.035	0.035

For *displays* the steps to be used are 255, 225, 195, 165, 135, 105, 75 and 45.

Overall uncertainty: ⩽ ± 10% in luminance;
⩽ ± 0.003 units for u' and v'.

Measured values:

Level	Luminance	U'	V'
255	225.4 ± 4.16	0.1967 ± 0.002	0.4656 ± 0.001
225	163.7 ± 2.74	0.1978 ± 0.002	0.4692 ± 0.001
195	117.2 ± 2.81	0.1980 ± 0.002	0.4696 ± 0.001
165	81.3 ± 2.81	0.1982 ± 0.002	0.4695 ± 0.001
135	50.0 ± 2.81	0.1983 ± 0.002	0.4694 ± 0.001
105	25.9 ± 2.81	0.1983 ± 0.002	0.4689 ± 0.001
75	10.2 ± 2.81	0.1976 ± 0.002	0.4680 ± 0.001
45	3.1 ± 2.81	0.1974 ± 0.002	0.4643 ± 0.001

Δu'v'	255	225	195	165	135	105	75
225	0.004 ± 0.002						
195	0.004 ± 0.002	0.000 ± 0.002					
165	0.004 ± 0.002	0.001 ± 0.002	0.000 ± 0.002				
135	0.004 ± 0.002	0.000 ± 0.002	0.000 ± 0.002	0.000 ± 0.002			
105	0.004 ± 0.002	0.001 ± 0.002	0.001 ± 0.002	0.001 ± 0.002	0.000 ± 0.002		
75	0.003 ± 0.002	0.001 ± 0.002	0.002 ± 0.002	0.002 ± 0.002	0.002 ± 0.002	0.001 ± 0.002	
45	0.002 ± 0.002	0.005 ± 0.002	0.005 ± 0.002	0.005 ± 0.002	0.005 ± 0.002	0.005 ± 0.002	0.004 ± 0.002

TCO Certified Displays 6.0
LOW EMISSION TEST REPORT

Report No.: SH12061106-EM02

Product:	LCD Monitor
Application:	Top Victory Electronic (Taiwan) Co.,Ltd.
Address:	10F, No.230, LIAN-CHANG ROAD, ZHANG-HE CITY TAIPEI COUNTY, 23553, TAIWAN
Manufacture:	Same as applicant
Address:	Same as applicant
Brand Name:	AOC
Model/Type:	270LM00005
LCD:	L&T / LM270WF5(S2)(A2) , 27", wide color (LED Backlight)
Sample No.:	0120816-54-001
Rating:	External-Power Supply Input: 12Vdc,3.75A (Class III)
Test Standard:	TCO Certified Displays 6.0_Cl.4.1-4.2.
Test Mode:	1920x1080, fH:68kHz, fV:60Hz
Test Period:	Aug.28, 2012
Total number of pages:	4 pages of report; 3 pages of photograph
Limitation Regarding the Testing:	This report applies only to the sample(s) tested.
Type Key Definition:	N/A
Additional Information:	N/A

COMPLIANCE:

This model has shown compliance with requirements for low emission in TCO *Certified Displays 6.0.*

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Product information and measurement configuration

Production information	
Product Name	LCD Monitor
Brand Name	AOC
Model Name	270LM00005
Ratings	Input: 12Vdc,3.75A (Class III)
Power unit's manufacture and type	TPV/ADPC1245
Power unit's input rating	100-240Vac,50-60Hz,1.5A
Power unit's output rating	12Vdc,3.75A
CRT / LCD panel information	L&T / LM270WF5(S2)(A2) , 27", wide color
Inverter's manufacture and type	N/A
Screen size	27"
Additional information:	

Test conditions			
Brightness setting	Contrast setting	Backlight setting	Luminance (cd/m^2)
90	50	N/A	226.0
Display resolution	Horizontal frequency	Vertical frequency	
1920x1080	68kHz	60Hz	
Ambient temperature	Ambient humidity	Mains voltage & Frequency	
22℃	57%	230 Vac, 50 Hz	

System Configuration	
Pattern generator	HP Notebook Computer
Test pattern	Full screen "H" characters
Graphic card	Intel Integrated Graphic card
Video signal level	0.7 Vpp

Test Equipment				
Item	Instrument name	Manufacture	Model	Due. Date
1	Electric Field Meter Band I / II	Combinove	EFM 200	Feb.13, 2013
2	Magnetic Field Meter Band I / II	Combinove	MFM 2000	Jan.13, 2013
3	Programmable AC Source	APS	AFC-1102	--

Remark
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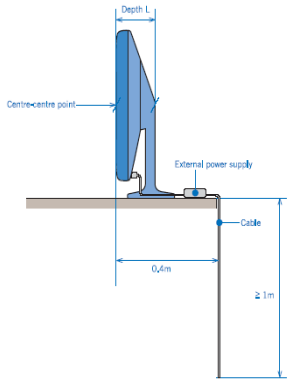
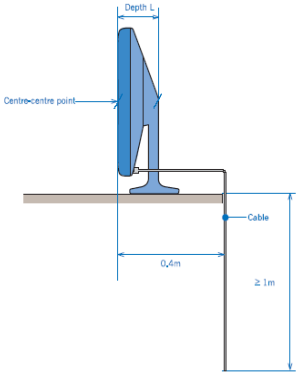
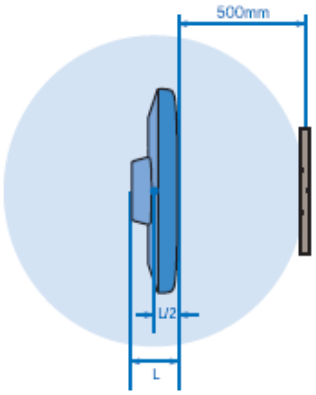
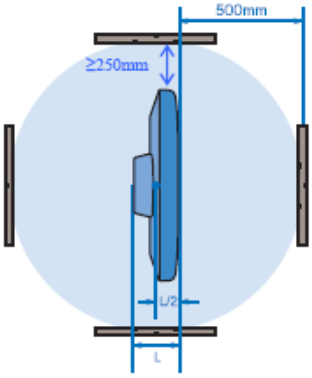
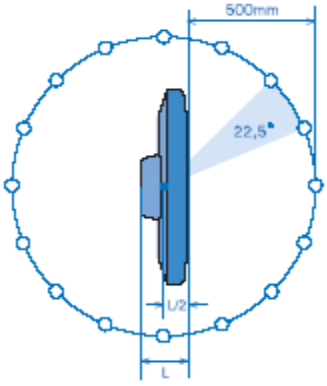
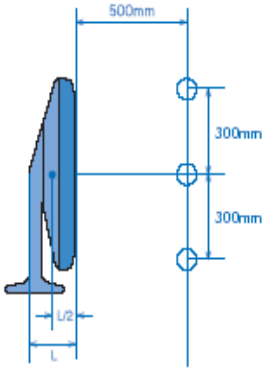
Measurement Geometry

LCD Power Cable arrangement (External power)	LCD Power Cable arrangement (Building-in power)
	
Alternating Electrical Field Band I	**Alternating Electrical Field Band II**
FPDs≤26": 30 and 50 cm in front of the FPD FPDs>26": measured at 50 cm in front of the FPD	FPDs ≤ 26":30 cm in front of- and 50 cm from the rotation point around the FPD. FPDs > 26":50 cm from the surface of the product around the FPD
	

Alternating Magnetic field Band I and Band II	
Band I	FPDs ≤ 26":30 cm in front of- and at 50 cm from the rotation point around the FPD FPDs >26" :50 cm from the surface of the product around the FPD
Band II	FPDs ≤ 26": 50 cm from the rotation point around the FPD FPDs > 26":50 cm from the surface of the product around the FPD





Measured Values

Alternating Electrical Field		Ambient Band I	Ambient Band II	Compliance
		0.19	0.008	Pass
Band I: 5Hz – 2kHz (ELF)		Band II: 2kHz – 400kHz (VLF)		
Position	Measured value(V/m)	Position	Measured value(V/m)	
0° at 30cm	N/A	0° at 30cm	N/A	
0° at 50cm	6.01 ±0.50	0° at 50cm	0.149 ±0.050	
		90° at 50cm	0.296 ±0.050	
		180° at 50cm	0.751 ±0.050	
		270° at 50cm	0.685 ±0.050	
Maximum value		Maximum value		
E:	6.01 ±0.50	E:	0.751 ±0.050	
Angular:	0°	Angular:	180°	
MD:	30 cm	MD:	30 cm	
Requirements:	≤10 V/m (TCO)	Requirements:	≤1.0 V/m (TCO)	
Compliance:	PASS	Compliance:	PASS	

Alternating Magnetic Field				Ambient Band I	Ambient Band II	Compliance
				26.7	0.0	Pass
Item	Band I: 5Hz – 2kHz (ELF)			Band II: 2kHz – 400kHz (VLF)		
	nT			nT		
	Z=-30cm	Z=0cm	Z=+30cm	Z=-30cm	Z=0cm	Z=+30cm
30cm		N/A				
50cm				50cm		
0.0°	<200 ±34	<200 ±34	<200 ±34	<10 ±1.5	<10 ±1.5	<10 ±1.5
22.5°	N/A	N/A	N/A	N/A	N/A	N/A
45.0°	N/A	N/A	N/A	N/A	N/A	N/A
67.5°	N/A	N/A	N/A	N/A	N/A	N/A
90.0°	<200 ±34	<200 ±34	<200 ±34	<10 ±1.5	<10 ±1.5	<10 ±1.5
112.5°	N/A	N/A	N/A	N/A	N/A	N/A
135.0°	N/A	N/A	N/A	N/A	N/A	N/A
157.5°	N/A	N/A	N/A	N/A	N/A	N/A
180.0°	<200 ±34	<200 ±34	<200 ±34	<10 ±1.5	<10 ±1.5	<10 ±1.5
202.5°	N/A	N/A	N/A	N/A	N/A	N/A
225.0°	N/A	N/A	N/A	N/A	N/A	N/A
247.5°	N/A	N/A	N/A	N/A	N/A	N/A
270.0°	<200 ±34	<200 ±34	<200 ±34	<10 ±1.5	<10 ±1.5	<10 ±1.5
292.5°	N/A	N/A	N/A	N/A	N/A	N/A
315.0°	N/A	N/A	N/A	N/A	N/A	N/A
337.5°	N/A	N/A	N/A	N/A	N/A	N/A
Maximum value				Maximum value		
B:		<200 ±34		B:	<10 ±1.5	
Angular:		180 °		Angular:	337.5 °	
MD:		50 cm		MD:	50 cm	
Z:		0 cm		Z:	30 cm	
Requirements:		≤200 nT (TCO)		Requirements:	≤25 nT (TCO)	
Compliance:		PASS		Compliance:	PASS	

TCO Certified Displays 6.0
ENERGY CONSUMPTION TEST REPORT

Report No.: SH12061106-EN02

Product:	LCD Monitor
Application:	Top Victory Electronic (Taiwan) Co.,Ltd.
Address:	10F, No.230, LIAN-CHANG ROAD, ZHANG-HE CITY TAIPEI COUNTY, 23553, TAIWAN
Manufacture:	Same as applicant
Address:	Same as applicant
Brand Name:	AOC
Model/Type:	270LM00005
LCD:	L&T / LM270WF5(S2)(A2) , 27", wide color (LED Backlight)
Sample No.:	0120816-54-001
Rating:	External-Power Supply Input: 12Vdc,3.75A (Class III)
Test Standard:	TCO Certified Displays 6.0_Cl.6.3.
Test Mode:	1920x1080, fH:68kHz, fV:60Hz
Test Period:	Aug.24, 2012
Total number of pages:	2 pages of report; 3 pages of photograph
Limitation Regarding the Testing:	This report applies only to the sample(s) tested.
Type Key Definition:	N/A
Additional Information:	N/A

COMPLIANCE:

This model has shown compliance with requirements for energy consumption in *TCO Certified Displays 6.0.*

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Measurement Equipment / Test Conditions / Test result

Equipment	Manufacture	Model	Reg. No.	Calib. DUE
Digital Power Meter	Yokogawa	WT210	EC3630	Jun.7, 2013
Programmable AC Source	Chroma	6430	EC3428	Oct.9, 2012
Stop Watch	DIAMOND	DM1-010	EC3440	Oct.20, 2012
Thermohygrograph	FengYun	ZJ 1-2B	EC3442	Oct.24, 2012

Enviroments:	Contents:
Ambient Temperature:	23 ℃
Ambient Humidity:	59 %
Supply Voltage:	230 Vac
Supply Frequency:	50 Hz
Display resolution:	1920x1080
Horizontal frequency:	68kHz
Vertical frequency:	60Hz
Backlight setting:	N/A
Brightness setting:	77
Contrast setting:	56
Display luminance(load image):	200.9 cd/m2
Tested Interface:	VGA

	On Mode (W)	Sleep Mode (W)	Off Mode (W)
Requirement:	37.2	2.0	1.0
Results:	27.1 ± 0.152	0.5 ± 0.152	0.4 ± 0.152
Compliance:	PASS	PASS	PASS

Remark :
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Sample Photo

Front view


Back view


Sample Photo

Panel view


Panel Marking Label


Sample Photo

Power Adapter view