承 认 书

产品型号：DW1563B5Z0

产品规格：1920RGB * 1080 INNO TFT 液晶显示屏

送承方：

制 订	审 查	核 准	公司印章
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承 认 方：

研发部	工程部	品质部	核 准	公司印章

☑ 临时规格书

☐ 正式规格书

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Index

Contents **Page**

1. FOB Specification ……4
2. Mechanical Specification……5
3. Pin Descriptions……6
4. Electrical Units……7
5. AC Characteristics……9
6. Power On/Off Sequence…… ……13
7.Optical Specifications……15
8. Reliability Test Items……19
9. Handling Precautions……20
10. QC……21

1. FOB Specification

1.1 Description

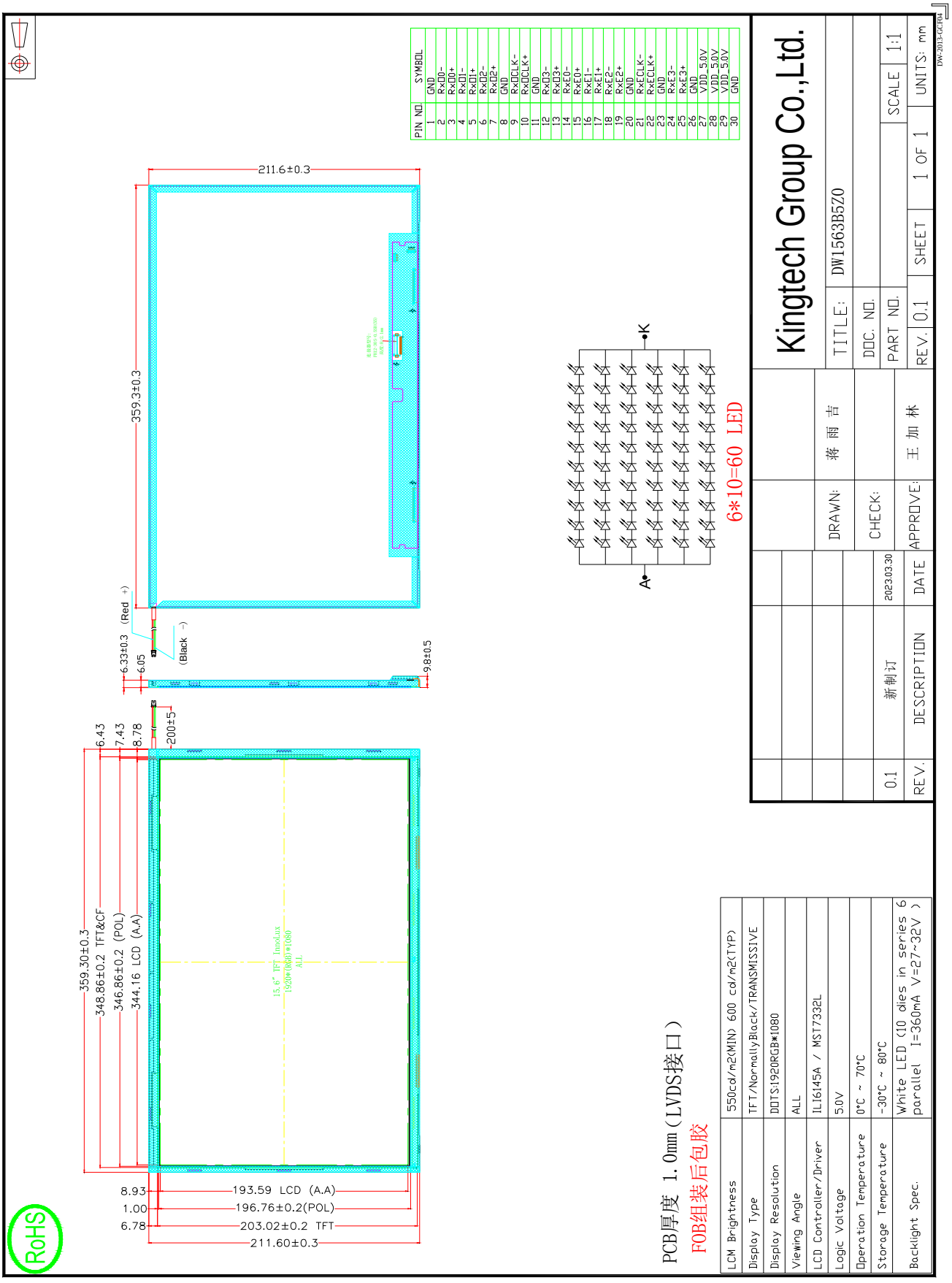
DW1563B5Z0 is a transmissive type color active matrix liquid crystal display(LCD) which uses amorphous thin film transistor(TFT) as switching devices. This product is composed of a TFT LCD panel, 4 drives IC, a PCBA and a LED-backlight unit. The active display area is 15.6 inches diagonally measured and the native resolution is 1920*RGB*1080.Features of this product are listed in the following table.

1.2 Functions & Features

Table 1.1 Module Functions & Features

Parameter	Value	Unit
LCD Mode	TFT/Transmissive	-
Color Depth	16.7M	-
Display Resolution	1920RGB*1080	pixels
Module Size	211.6(H)*359.3(W)*6.33(T)(Exclude PCBA)	mm
Active Area (A.A)	193.59(H)*344.16(W)	mm
Pixel Arrangement	RGB-stripe	-
Viewing Direction	ALL	
Display Mode	Normally Black	
LCD Controller/Driver	ILI6145A	-
IC Package Type	COG	-
Interface	LVDS	-
Power Supply Voltage	5.0	V
LCM Brightness	600	cd /㎡
Back-light	60	PCS

2. Mechanical Specification



3. Pin Descriptions

Pin No.	Symbol	I/O	Functional	Remark
1	GND	P	System ground.	
2	RxO0-	I	LVDS RX PHY Port-A Data Lane-0 Negative Input	
3	RxO0+	I	LVDS RX PHY Port-A Data Lane-0 Positive Input	
4	RxO1-	I	LVDS RX PHY Port-A Data Lane-1 Negative Input	
5	RxO1+	I	LVDS RX PHY Port-A Data Lane-1 Positive Input	
6	RxO2-	I	LVDS RX PHY Port-A Data Lane-2 Negative Input	
7	RxO2+	I	LVDS RX PHY Port-A Data Lane-2 Positive Input	
8	GND	P	System ground.	
9	RxOCLK-	I	LVDS RX PHY Port-A Data Clock Lane Negative Input	
10	RxOCLK+	I	LVDS RX PHY Port-A Data Clock Lane Positive Input	
11	GND	P	System ground.	
12	RxO3-	I	LVDS RX PHY Port-A Data Lane-3 Negative Input	
13	RxO3+	I	LVDS RX PHY Port-A Data Lane-3 Positive Input	
14	RxE0-	I	LVDS RX PHY Port-B Data Lane-0 Negative Input	
15	RxE0+	I	LVDS RX PHY Port-B Data Lane-0 Positive Input	
16	RxE1-	I	LVDS RX PHY Port-B Data Lane-1 Negative Input	
17	RxE1+	I	LVDS RX PHY Port-B Data Lane-1 Positive Input	
18	RxE2-	I	LVDS RX PHY Port-B Data Lane-2 Negative Input	
19	RxE2+	I	LVDS RX PHY Port-B Data Lane-2 Positive Input	
20	GND	P	System ground.	
21	RxECLK-	I	LVDS RX PHY Port-B Data Clock Lane Negative Input	
22	RxECLK+	I	LVDS RX PHY Port-B Data Clock Lane Positive Input	
23	GND	P	System ground.	
24	RxE3-	I	LVDS RX PHY Port-B Data Lane-3 Negative Input	
25	RxE3+	I	LVDS RX PHY Port-B Data Lane-3 Positive Input	
26	GND	P	System ground.	
27-29	VCC_5.0V	P	Power Supply, 5.0V (typ.)	
30	GND	P	System ground.	

4. Electrical Units

4.1 Absolute Maximum Ratings

The absolute maximum ratings are list on Table 4.1. When used out of the absolute maximum ratings, the LCM may be permanently damaged. Using the LCM within the following electrical characteristics limit is strongly recommended for normal operation. If these electrical characteristic conditions are exceeded during normal operation, the LCM will malfunction and cause poor reliability.

Table 4.1 Module Absolute Maximum Ratings

Item	Symbol	Unit	Value	Note
Power Supply Voltage (1)	Vdd	V	-0.3 to +6.0	
Power Supply Voltage (2)	VGH ~ VSS	V	-0.3 to +25	
Power Supply Voltage (3)	VSS ~ VGL	V	0 to -10.0	
Operating Temperature	Top	°C	0 to +70	
Storage Temperature	Tst	°C	-10 to +70	
Operating Humidity	Hop	%(RH)	10~85	

(VSS=0V)

4.2 Electrical characteristics (Ta=25°C)

Table 4.2:DC Characteristic (Vcc = 4.5 ~ 5.5V)

Item		Symbol	Condition	Min.	Type.	Max.	Unit
Supply Voltage	Logic	Vdd	---	4.5	5.0	5.5	V
Input Voltage	H level	V_{IH}	---	--	---	50	mV
	L level	V_{IL}		-50	---	--	
Current Consumption		I_{DD}	With internal voltage generation; VDD=5.0V; Tamb=2 5℃;	---	TBD	---	mA

4.3 Back-light Specification

Table 4.3 Back-light Characteristics

Item	Symbol	Conditions	Min.	Type.	Max.	Unit
Supply Voltage	VF	Only Backlight	26	30	34	V
Supply Current	IF			360		mA
Average Brightness	IV	Backlight Current IF=360mA	6600	7200	8500	Cd/ m^2
CIE Color Coordinate (Without LCD)	X	Backlight Current IF=360mA	0.303	--	0.313	–
	Y		0.324	--	0.336	
Uniformity	B	Backlight Current IF=360mA	--	80%	–	%
Color	White					

Note: 10 LEDs in series 6 parallel connection.

5. AC Characteristics

LVDS Receiver AC Specifications					
Symbol	**Parameter**	**Min**	**Typ**	**Max**	**Unit**
CLK	Ouput clk cycle	6.25	Tc	37.0	ns
t_{rise}	VOD rise time, 20% to 80%	250	350	500	ps
t_{fall}	VOD fall time, 20% to 80%	250	350	500	ps
T_0	Input data position0	-0.15	0	0.15	ns
T_1	Input data position1	Tc/7-0.15		Tc/7+0.15	ns
T_2	Input data position2	2Tc/7-0.15		2Tc/7+0.15	ns
T_3	Input data position3	3Tc/7-0.15		3Tc/7+0.15	ns
T_4	Inputdata position4	4Tc/7-0.15		4Tc/7+0.15	ns
T_5	Input data position5	5Tc/7-0.15		5Tc/7+0.15	ns
T_6	Input data position6	6Tc/7-0.15		6Tc/7+0.15	ns
Rterm	Termination Resister	80	100	125	Ω

6. Power Consumption

Resolution	Input	Output	Power Consumption (mA)
1366x768	2-Port 8-bit Mode LVDS	1-Lane/2.7G/Level0	245
		1-Lane/2.7G/Level1	259
		1-Lane/2.7G/Level2	255
		1-Lane/2.7G/Level3	260
1080P	2-Port 8-bit Mode LVDS	2-Lane/2.7G/Level0	281
		2-Lane/2.7G/Level1	291
		2-Lane/2.7G/Level2	298
		2-Lane/2.7G/Level3	309

7. Optical Specifications

Optical characteristics are determined after the unit has been 'ON' and stable for approximately 30 minutes in a dark environment at 25℃. The values specified are at an approximate distance 50cm from the TFT-LCD surface at a viewing angle of Φ and θ equal to 0° .

Measurement condition: Refer to next pages (C-light source, Halogen Lamp)

*1): with Polarizer *2): without Polarizer *3): Only Color Filter glass

Item		Symbol	Conditions	Specifications			Unit
				Min.	Typ.	Max.	
Transmittance (w/o APCF, w/o Haze) (w/o WPA)		T%	Viewing normal angle $\theta_X = \theta_Y = 0°$	--	6.38	--	%
Contrast Ratio (w/o WPA)		CR		800	1000	--	--
Response Time (w/o WPA)		$T_{on} + T_{off}$		--	--	30	ms
Viewing Angle	Hor.	θ_{X+}	Center CR>10	--	80	--	deg.
		θ_{X-}		--	80	--	
	Ver.	θ_{Y+}		--	80	--	
		θ_{Y-}		--	80	--	
CF only Color Chromaticity (CIE 1931)	Red	Rx	Viewing normal angle $\theta_X = \theta_Y = 0°$	0.577	0.597	0.617	-
		Ry		0.314	0.334	0.354	-
	Green	Gx		0.274	0.294	0.314	-
		Gy		0.498	0.518	0.538	-
	Blue	Bx		0.122	0.142	0.162	-
		By		0.131	0.151	0.171	-
	White	Wx		0.286	0.306	0.326	-
		Wy		0.308	0.328	0.348	-
	NTSC% (x, y)			34	44		%

Notes : 1. Contrast Ratio(CR) is defined mathematically as :

$$\text{Contrast Ratio} = \frac{\text{Surface Luminance with all white pixels}}{\text{Surface Luminance with all black pixels}}$$

2. Surface luminance is the center point across the TFT-LCD surface 500mm from the surface with all pixels displaying white. For more information see FIG 1.

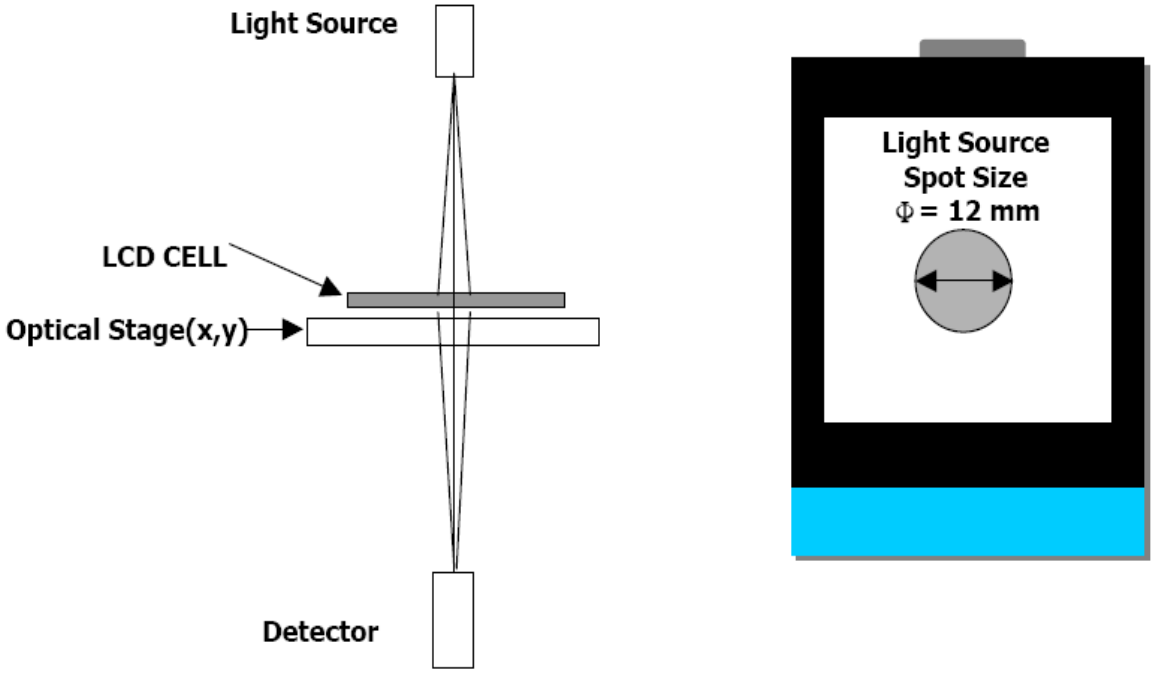
3. Response time is the time required for the display to transition from white to black(Rise Time, Tr) and from black to white(Falling Time, Tf). For additional information see FIG 3.

4. Viewing angle is the angle at which the contrast ratio is greater than 10. The angles are determined for the horizontal or x axis and the vertical or y axis with respect to the z axis which is normal to the TFT-LCD surface. For more information see FIG 4.

5. Optimum contrast is obtained by adjusting the TFT-LCD Threshold voltage(Vth & Vsat)

FIG. 1 Optical Characteristic Measurement Equipment and Method

LCD-7000 System



<Transmissive Mode>

FIG. 2 The definition of Vth and Vsat

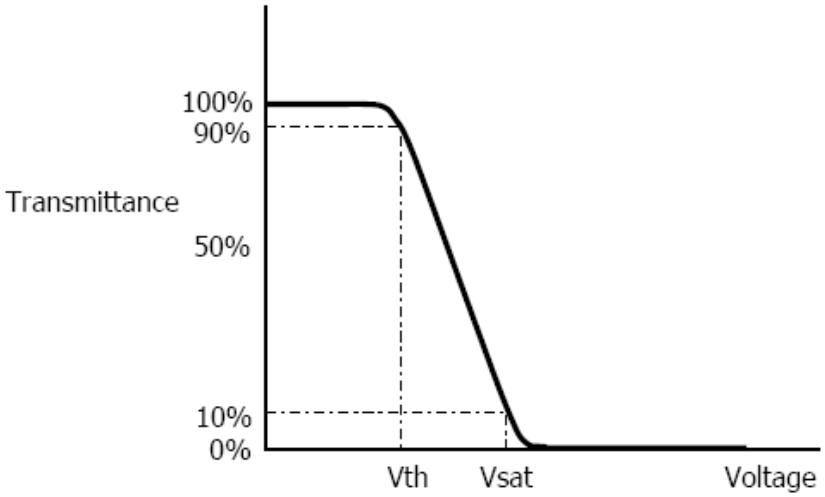
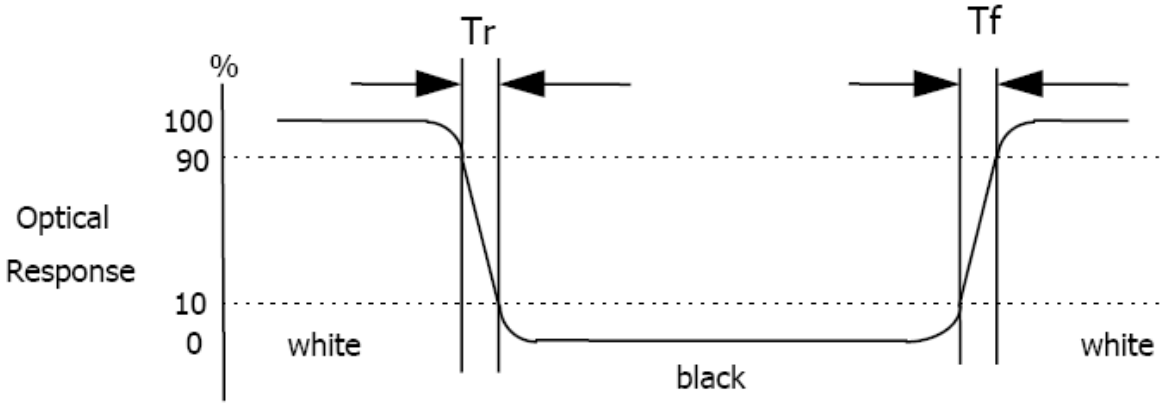


FIG. 3 The definition of Response Time

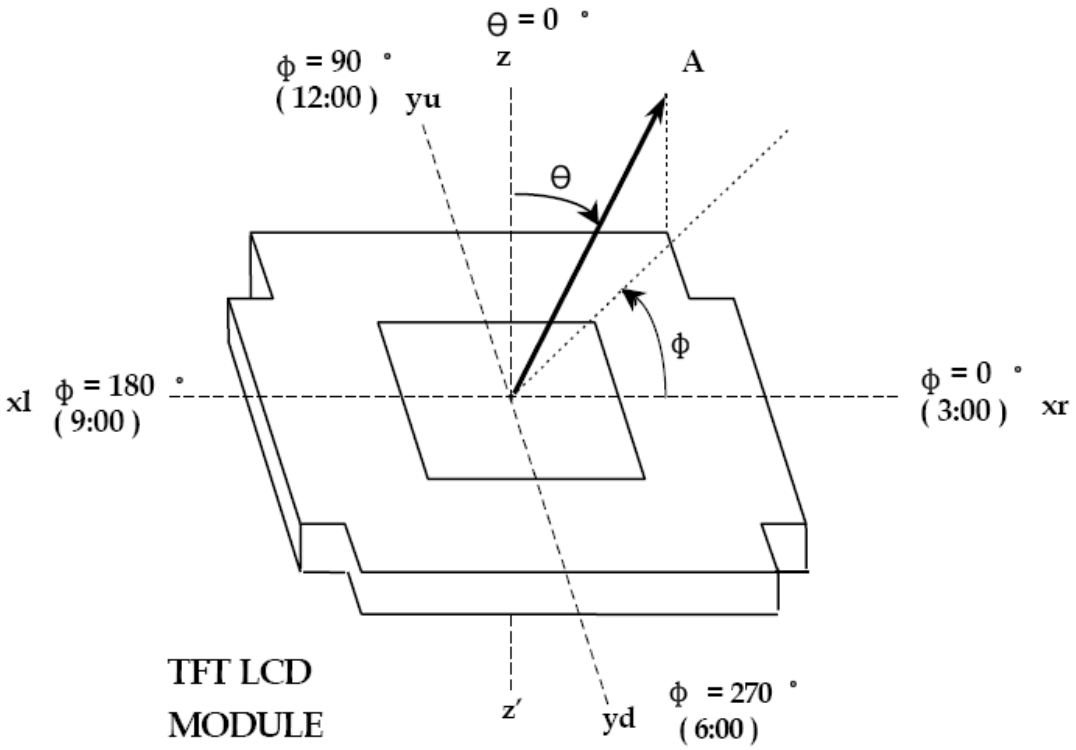
The response time is defined as the following figure and shall be measured by switching the input signal for "black" and "white".



* Voltage conditions for Response time
  Vgate : 19V DC
  Vdata : 0V~3.3V DC
  Vcom : 0V (Ground)

FIG. 4 The definition of viewing angle

<dimension of viewing angle range>



8. Reliability Test Items

No.	Test Item	Test Condition	Check Time
1	High temp storage	T=80℃	96Hrs
2	Low temp storage	T=-30℃	96Hrs
3	High temp operation	T=70℃	96Hrs
4	Low temp operation	T=0℃	96Hrs
5	High temp & high humidity	T=50℃ H=90%	96Hrs

Reliability Test Criteria:

Display function should be no change under normal operating condition.

9.Handling Precautions

9.1 Safety

The liquid crystal in the LCD is poisonous. Keep away from your mouth and eyes. If the liquid crystal contacts with your skin, mouse or clothes, use soap to wash it off immediately.

9.2 Handling

i. The LCD panel is made of very thin glass. Mechanical impact or extrusion to the surface should be prevented.

ii. The polarizer attached on the display is very easy to be damaged, handle it with special attention.

iii. To avoid contamination on the display surface, do not touch the display surface with bare hands.

iv. The transparent electrodes may be disconnected if you use the LCD panel under dew-condensing environment.

v. The characteristics of the semiconductor devices may be affected when they are exposed to light, possibly resulting in malfunctioning of the ICs. To prevent such malfunctioning of the ICs, make sure the application and the mounting of the panel are designed so that the IC is not exposed to light.

9.3 Static Electricity

Ground soldering iron tips, tools and testers when you operate. Also ground your body when handling the products and store the products in an anti-electrostatic container.

9.4 Storage

Store the products in a dark place where the temperature is within the range of 25±10℃ and with low humidity (60%RH or less). Do not store the LCD product in an atmosphere containing organic solvents or corrosive gases.

9.5 Cleaning

Do not wipe the polarizer with dry cloth, as it might cause scratching. Wipe the polarizer with a soft cloth soaked with petroleum IPA. Other chemical might damage the panel.

10. QC

10.1 目的

制定 15.6 寸模组产品出货检验标准，明确检验内容和规范；

10.2 范围

使用原装模组、FOG或自购LCD所生产的模组、FOG出货；

10.3 定义

黑白点：显示的点是黑色或者白色，当对比变化时，这些缺陷在大小或强度上没有变化；

亮点：显示中的点（子像素），在显示区域显示为明亮，大小大于 1/2dot，通过 5%的 ND 卡在黑色画面下可见；

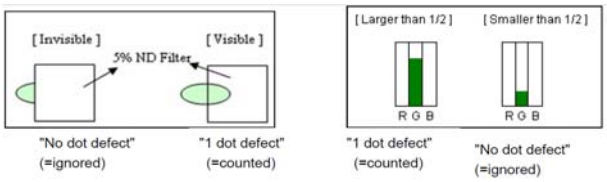
碎亮点：在黑画面下看到的发亮的，大小小于 1/2dot 的点；

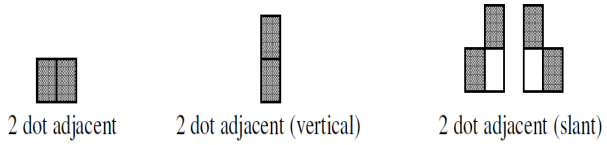
暗点：显示中的点（子像素），大小大于 1/2dot，在红绿蓝画面的显示区域显示为黑色；

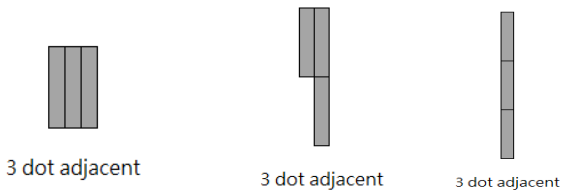
Mura：相对于显示区域的部分背景亮度，部分区域更暗或者更亮的现象（显示画面不均匀）；

二连点：两个相邻的 dot 点；

三连点：三个相邻的 dot 点；







10.4 检验条件

10.4.1 环境要求：温度：25±5℃、湿度：30%-70%RH；

10.4.2 外观检验灯光：20w 荧光灯或等效照度；

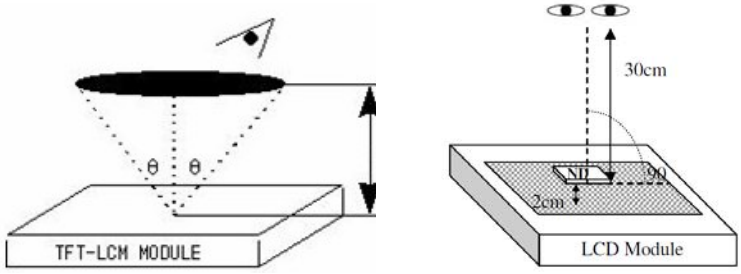
10.4.3 检验距离：30cm；

10.4.4 电性检验照度要求：100-200Lux；

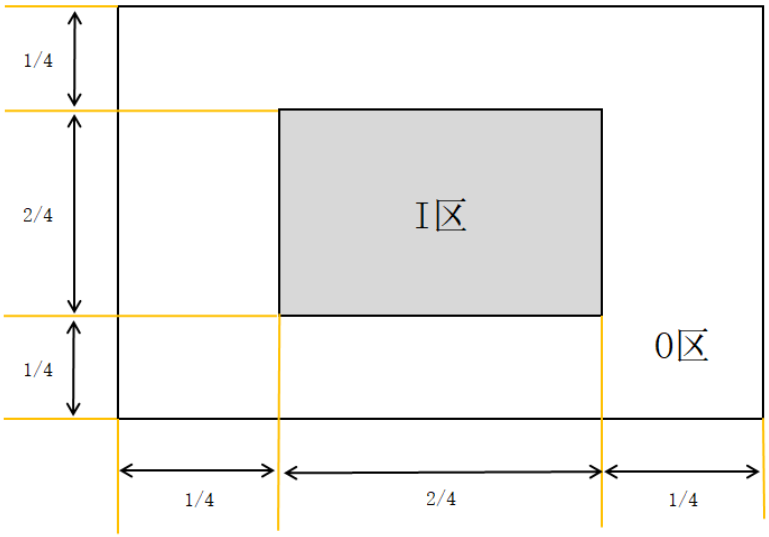
10.4.5 外观检验照度要求：500-700Lux；

10.4.6 ND 卡检验要求：ND 放于距 cell 表面 2cm 处，从 30cm 距离检验；

10.4.7 检验角度：做垂直方向±45°，水平方向±45°夹角检验；



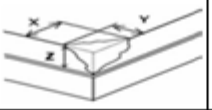
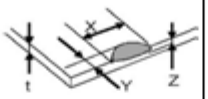
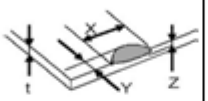
10.4.8 显示区域划分：将显示区长度和宽度方向均匀分为 4 等分，中间 2/4 区域为 I 区，四周为 0 区，见下图：



10.5 电性检测

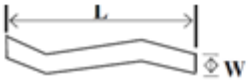
检验项目	检验标准																	
	A0 规			A1 规			A2 规			A3 规			A4 规			B 规		
	I 区	O 区	总数	I 区	O 区	总数	I 区	O 区	总数	I 区	O 区	总数	I 区	O 区	总数	I 区	O 区	总数
亮点	N≤0			N≤2			N≤4		N≤5，DS≥8mm	N≤8			N≤10			不计		
二连亮点	N≤0			N≤0			N≤1			N≤5			N≤10			不计		
三连亮点	N≤0			N≤0			N≤0			N≤5			N≤10			不计		
暗点	N≤1	N≤5，DS ≥ 10mm	N≤5，DS ≥ 10mm	N≤5，DS≥10mm		N≤5，DS ≥ 10mm	N≤7		N≤7，DS ≥ 8mm	N≤10			N≤20			不计		
二连暗点	N≤0			N≤1			N≤2，DS≥8mm			N≤7			N≤20			不计		
三连暗点	N≤0			N≤0			N≤1			N≤7			N≤20			不计		
亮点+暗点	N≤3，DS≥10mm			N≤5，DS≥10mm			N≤7，DS≥8mm			/			/			/		
聚亮点	10%ND 遮挡不可见，无视			5%ND 遮挡不可见，无视			不计（besides 显不可）			不计（besides 显不可）			不计（besides 显不可）			不计		
点状异物点、黑白点	D≤0.15mm，数量 N 不计； 0.15mm<D≤0.5mm，N≤5， 间距≥10mm； 0.5mm<D≤0.4mm，N≤1			D≤0.5mm，数量 N 不计； 0.5mm<D≤0.8mm，N≤5， 间距≥10mm；			D≤0.5mm，数量 N 不计； 0.5mm<D≤0.8mm，N≤5， 间距≥10mm； 0.8mm<D≤1.2mm，N≤1；			不计			不计			不计		
线状异物	W≤0.1mm，L≤0.5mm，不计； W≤0.1mm，L≤2mm，N≤2， DS≥10mm；			W≤0.1mm，不计； 0.1mm<W≤0.2mm， 0.8mm<L≤4mm，N≤5；			W≤0.1mm，不计； 0.1mm<W≤0.3mm， 0.8mm<L≤8mm，N≤5；			W≤0.1mm，不计； 0.1mm<W≤0.8mm， 0.8mm<L≤4mm，N≤5；			不计			不计		
POL 气泡	D≤0.2mm，不计； 0.2mm<D≤0.8mm，N≤2， DS≥10mm 线状按线状异物判定			线状及点状不良参照异物标准； 边缘气泡不进入 BM 区 1/2 为 OK			线状及点状不良参照异物标准； 边缘气泡不进入显示区为 OK			不计			5%ND 遮挡不可见			不计		
Mura	1. 全视角判定，距离 50cm-80cm 不可见为 OK 2. 轻微 mura 按 10%ND 遮挡不可见为 OK			MC5 和次阶画面不可见，黑画面可见，不计			5%ND 遮挡不可见			5%ND 遮挡不可见			不影响电性 OK			不计		
功能缺陷	显示异常、缺线（横线、竖线等）、无显、等影响功能的不良不可有																	

10.6 外观检验

检验项目	图示	检验标准					
		A0 级	A1 级	A2 级	A3 级	A4 级	B 级
PAD 区角落破损		X≤1.5mm，Y≤1.5mm，Z≤T，N≤2 不伤及线路，显示正常			不伤及线路，显示正常		
PAD 区边缘破损		Y≤0.5，X≤2.0，Z≤T，N ≤2 不伤及线路，显示正常			不伤及线路，显示正常		
非 PAD 区角落破损		X≤1.5mm，Y≤1.5mm，Z≤T，N≤2 ，不伤及线路，显示正常			不伤及线路，显示正常		
非 PAD 区边缘破损		X≤1.5mm，Y≤0.5mm，Z≤T，N 不计，不伤及线路，显示正常			不伤及线路，显示正常		
表面点	无图	D≤0.5mm，数量 N 不计； 0.5mm<D≤0.8mm，N≤3，间距≥10mm；			不计		
表面划伤	无图	W≤0.1mm，不计； 0.1mm<W≤0.2mm，0.5mm<L≤4mm，N≤3；			不计		
FPC/PCB	无图	1. 定位孔破损不可有 2. FPC 死折不可有 3. 元件脱落不可有 4. 元件虚焊、连锡等焊接不良不可有 5. 金手指断、脱不可有 6. 元件卡不到位不可有 7. FPC 组装对位偏移不可有 8. FPC 上双面胶脱落或异物不可有 9. 插座不能松动，不影响插拔			1. 元件脱落，不可有 2. 元件虚焊、连锡等焊接不良，不可有		
保护膜	无图	1. 划破不可有，其他划伤、印记等无视 2. 易撕贴胶面纸贴附			有保护膜		
裂纹		不可有					

1. W：Width
2. L：Length
3. D：Average Diameter
4. N：Count

D=(a+b)/2



W: width、L：length

10.7 质保期限

10.7.1 保修 12 个月（如有合同，以合同为准 ）。

end.