LCD Module SPECIFICATION

液晶显示模组规格书

Customer Name 客户名称	
Customer Model 客户机型	
Project Name 机种名	ENH-TV0210A001
Date 日期	2023-12-01
Version 版本	V1.0

■ Preliminary Specification
□ Final Specification

Customer's Acceptance 客户承认：

This module uses RoHS material. 模块使用环保材料.

Comment 承认意见	Approved by 承认人

Written by 撰写	Checked by 审核	Approved by 批准
研发部	研发部	总经理

Revision Record

修改记录

Rev No 版本号	Date 时间	Description 内容
A/0	2023.12.01	首次发行

CONTENTS 目录

1 General Specifications 基本规格

No.	Item 项目	Specification 规格	Unit 单位	Remark
1	LCD Size 液晶面板尺寸	2.1	inch	-
2	Panel Type 面板类型	IPS	-	-
3	Resolution 分辨率	480xRGBx480	Pixel	-
4	Display Mode 显示模式	Normally Black	-	-
5	Number of Colors 颜色数量	16.7M	-	-
6	Viewing Direction 使用视角	ALL	-	Note1
7	NTSC 色彩饱和度	70%	-	Typ.
8	Contrast Ratio 对比度	1000	-	Min.
9	Luminance 亮度	300	cd/m2	Typ.
10	Module Size 模组尺寸	56.18(H)x59.71(V)x2.26(D)	mm	Note1
11	Panel Active Area 可视区域	53.28*53.28	mm	Note1
12	Pixel Pitch 像素尺寸	0.111*0.111	mm	-
13	Pixel Arrangement 像素排列	RGB-stripe		-
14	Weight 重量	TBD	g	-
15	Driver IC 驱动芯片	ST7701S	-	-
16	Driver IC RAM Size 记忆体	RAM Less	bit	-
17	Light Source 背光源	4 white LEDs	-	-
18	Interface 接口方式	3W-SPI+RGB666	-	-
19	Operating Temperature 工作温度	-20～+70	℃	-
20	Storage Temperature 存储温度	-30～+80	℃	-

Note 1: Please refer to the mechanical drawing；注 1：请参照模组图；

2 Electrical Specification 电气特性

2.1 Absolute Maximum Ratings 极限参数

Item 项目	Symbol	Value	Unit	Remark
Analog Power Supply Voltage 模拟供电电压	VCC	-0.3~+4.6	V	-
Digital Power Supply Voltage 数字电源电压	VDDI	-0.3~+4.6	V	-
I/O Power Supply Voltage I/O端口供电电压	IOVCC	0.5~(VDDI+0.5)	V	-

2.2 Typical Operation Conditions 典型工作条件

Item 项目	Symbol	Min.最小	Typ.典型	Max.最大	Unit
Analog Supply Voltage 模拟供电电压	VCI	2.7	2.8	3.3	V
Digital Supply Voltage 数字电源电压	VDD	2.7	2.8	3.3	V
I/O Supply Voltage 接口供电电压	IOVCC	1.65	1.8/2.8	3.3	V
Input High Voltage 输入高电平	V_{IH}	0.7*IOVCC	-	IOVCC	V
Input Low Voltage 输入低电平	V_{IL}	0	-	0.3*IOVCC	V
Output High Voltage 输出高电平	V_{OH}	0.8*IOVCC	-	-	V
Output Low Voltage 输出低电平	V_{OL}	-	-	0.2*IOVCC	V

2.3 Backlight Circuit Characteristics 背光功耗

Item	Symbol	Min.	Typ.	Max.	Unit
LED Current背光电流	I_B	-	80	-	mA
LED Voltage背光电压	Vf	-	12	-	V
Power Consumption功耗	P_{BL}	-	960	-	mW

2.4 LCD Current Consumption 液晶面板功耗

Item	Symbol	Typ.	Max.	Unit
Full Mode正常模式	VCI	-	-	mA
测试条件：VCI=2.8V，IOVCC=2.8V； Interface 驱动类型：行翻转或者列翻转； 　　　　TN Type=>All Black Pattern. TN型液晶面板=>黑色画面； 　　　　IPS Type=>All White Pattern. IPS型液晶面板=>白色画面； 　　　　Temperature：25℃；温度：室温25摄氏度；				
Sleep Mode 休眠模式	VCI	-	-	uA
测试条件：VCI=2.8V，IOVCC=2.8V； DC/DC converter is enabled. Internal oscillator is started and panel scanning is started. 除IC内部晶振和面板扫描外，其他功能都暂停工作； 　　　　Temperature：25℃；温度：室温25摄氏度；				

![深圳市睿显熙电子有限公司 SHENZHEN ENRICH ELECTRONICS CO.,LTD]

3 MechanicalDrawing 模组图

LED CIRCUIT DIAGRAM:

LED+

LED−

技术要求:

1. 带*尺寸为基准尺寸, 带 ( ) 尺寸为参考尺寸
2. LCD切割断面顶角崩边≤1/3 (单层LCD的厚度)
3. 平面翘曲度≤0.35mm
4. 符合RoHS指令
5. 工作温度: -20℃~70℃
6. 储存温度: -30℃~80℃
7. 建议贴TP V.A开窗比LCD A.A单边大0.4mm
8. 溢胶开窗比LCD A.A单边大0.3mm

A0		睿光出图			
REV	SIGN	DESCRIPTION			

		Carl	2023.9.12
		PIC	DATE

DESIGNED			
CHECKED			
APPROVED			

PART DESCRIPTION	LCM
	UNIT	mm	SCALE	1.00	3rd ANGLE
PART NUMBER			
MODEL NAME	ENH-TV0210A001

深圳市睿显熙电子有限公司

LCD型号/类型/分辨率	2.1/TFT/480×480
扫描方向	ALL
偏光片	—
驱动IC	ST7701S
LED数量/连接方式/电流	4-LED/60mA

	SIZE	A4	DRAWING REV.	A
	SHEET NUMBER	1 of 1	PART NUMBER VER.	N/A

PIN	SYMBOL
1	LEDA
2	LEDK
3	LEDK
4	GND
5	VCI
6	RESET
7	NC
8	NC
9	SDA
10	SCK
11	CS
12	PCLK
13	DE
14	VSYNC
15	HSYNC
16~33	DB0~DB
34	GND
35	NC
36	NC
37	NC
38	NC
39	NC
40	GND

4 Pin Assignments 接口定义

Pin No. Pin 序号	Symbol 符号	Function 功能描述
1	LEDA	Backlight anode
2	LEDK	Backlight cathode
3	LEDK	Backlight cathode
4	GND	Ground
5	VCI	Analog Power Supply for LCM
6	RESET	LCM reset signal
7	NC	
8	NC	
9	SDA	Serial data input/output bidirectional pin for SPI Interface
10	SCK	Serial clock input for SPI interface
11	CS	chip select signal
12	PLCK	Dot clock signal for RGB interface operation
13	DE	Data enable signal for RGB interface operation
14	VSYNC	Frame synchronizing signal for RGB interface operation
15	HSYNC	Line synchronizing signal for RGB interface operation
16-33	DB0~DB17	data bus for RGB Interface
34	GND	Ground
35-39	NC	NC
40	GND	Ground

5 Optical Specification 光学参数

5.1 LCM Optical Characteristics 液晶模组光学特性

Item		Symbol	Condition	Min.	Typ.	Max.	Unit
Viewing Angle Range 视角	Left	θ_L	CR≧10	-	80	-	degree
	Right	θ_R		-	80	-	
	Top	θ_T		-	80	-	
	Bottom	θ_B		-	80	-	
Response Time 响应时间		Ton+Toff	$\theta=\Phi=0°$	-	30	40	ms
Contrast Ratio 对比度		CR	$\theta=\Phi=0°$	-	1000	-	-
Luminance亮度		L	$\theta=\Phi=0°$	-	300	-	cd/m^2
Color Chromaticity (CIE1931) 色坐标	White	W_x	Normal $\theta=\Phi=0°$	-0.02	0.308	+0.02	-
		W_y			0.325		
	Red	R_x			0.612		
		R_y			0.329		
	Green	G_x			0.299		
		G_y			0.567		
	Blue	B_x			0.144		
		B_y			0.110		
Uniformity均匀度		U_L	$\theta=\Phi=0°$	80	-	-	%
Flicker 闪烁		-	-	No Visible			-

5.2 Measurement system 测量系统

5.2.1. LCM Viewing Angle
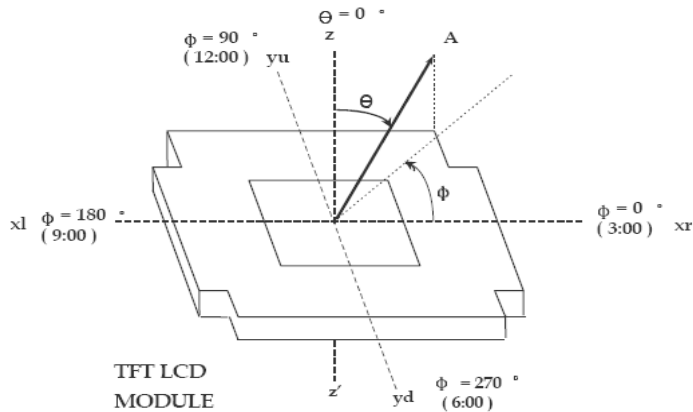
Viewing angle is the angle at which the contrast ratio is greater than 10.The angles are determined for the horizontal or x axis and the vertical or y axis with respect to the z axis which is normal to the LCD surface.

5.2.2. Response time
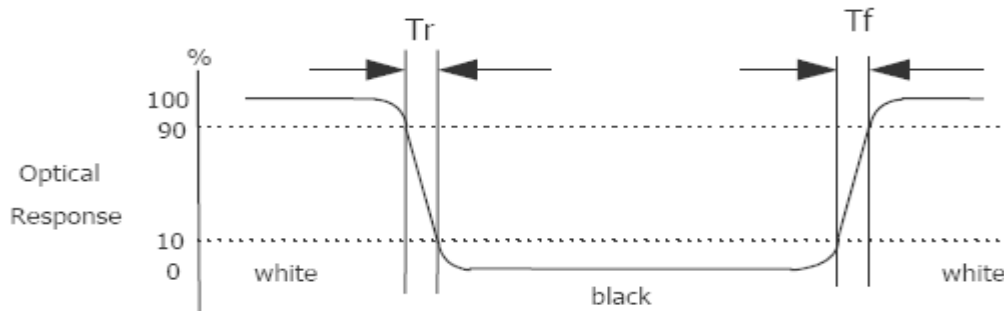
Response time is the time required for the display to transition from white to black (Rising time, Tr) and from black to white (Falling time, Tf) for additional information.

5.2.3. Contrast Ratio (CR)

Contrast Ratio (CR) is defined mathematically as:

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

Surface luminance is the center point across the LCD surface 500mm from the surface with all pixels displaying white.

6 Typical Connection Diagram 典型接口线路图

PIN	SYMBOL	
1	LEDA	R —— 3.3V
2	LEDK	
3	LEDK	
4	GND	
5	VCI	2.8V~3.3V
6	RESET	MCU_IO
7	NC	
8	NC	
9	SDA	MCU_IO
10	SCK	MCU_IO
11	CS	MCU_IO
12	PCLK	MCU_IO
13	DE	MCU_IO
14	VSYNC	MCU_IO
15	HSYNC	MCU_IO
16~33	DB0~DB17	MCU_IO
34	GND	
35	NC	
36	NC	
37	NC	
38	NC	
39	NC	
40	GND	

7 Example Initialization Code 初始化代码示例

```
WriteComm (0xFF);
WriteData (0x77);
WriteData (0x01);
WriteData (0x00);
WriteData (0x00);
WriteData (0x10);
WriteComm (0xC0);
WriteData (0x3B);
WriteData (0x00);
WriteComm (0xC1);
WriteData (0x10);
WriteData (0x0C);
WriteComm (0xC2);
WriteData (0x21);
WriteData (0x0A);
WriteComm (0xB0);
WriteData (0x40);
WriteData (0x09);
WriteData (0x4F);
WriteData (0x0B);
WriteData (0x10);
WriteData (0x07);
WriteData (0x00);
WriteData (0x08);
WriteData (0x06);
WriteData (0x20);
WriteData (0x02);
WriteData (0x12);
WriteData (0x0F);
WriteData (0x67);
WriteData (0x2E);
WriteData (0xDF);
WriteComm (0xB1);
WriteData (0x4F);
WriteData (0x18);
WriteData (0x60);
WriteData (0x0E);
WriteData (0x10);
WriteData (0x04);
WriteData (0x0C);
WriteData (0x08);
WriteData (0x09);
WriteData (0x26);
WriteData (0x07);
WriteData (0x13);
WriteData (0x11);
WriteData (0x71);
WriteData (0x39);
WriteData (0xDF);
WriteComm (0xFF);
WriteData (0x77);
WriteData (0x01);
WriteData (0x00);
```

```
WriteData (0x00);
WriteData (0x11);
WriteComm (0xB0);
WriteData (0x4D);
WriteComm (0xb1);
WriteData (0x41);
WriteComm (0xb2);
WriteData (0x87);
WriteComm (0xb3);
WriteData (0x80);
WriteComm (0xb5);
WriteData (0x49);
WriteComm (0xB7);
WriteData (0x87);
WriteComm (0xB8);
WriteData (0x23);
WriteComm (0xC0);
WriteData (0x07);
WriteComm (0xC1);
WriteData (0x78);
WriteComm (0xC2);
WriteData (0x78);
WriteComm (0xD0);
WriteData (0x88);
Delayms (100);
WriteComm (0xE0);
WriteData (0x00);
WriteData (0x00);
WriteData (0x00);
WriteData (0x00);
WriteComm (0xE1);
WriteData (0x04);
WriteData (0xA0);
WriteData (0x06);
WriteData (0xA0);
WriteData (0x05);
WriteData (0xA0);
WriteData (0x07);
WriteData (0xA0);
WriteData (0x00);
WriteData (0x44);
WriteData (0x44);
WriteComm (0xE2);
WriteData (0x11);
WriteData (0x11);
WriteData (0x44);
WriteData (0x44);
WriteData (0xE9);
WriteData (0xA0);
WriteData (0xEB);
WriteData (0xA0);
WriteData (0xEA);
WriteData (0xA0);
WriteData (0xEC);
WriteData (0xA0);
WriteData (0x00);
```

```
WriteComm (0xE3);
WriteData (0x00);
WriteData (0x00);
WriteData (0x11);
WriteData (0x11);
WriteComm (0xE4);
WriteData (0x44);
WriteData (0x44);
WriteComm (0xE5);
WriteData (0x06);
WriteData (0xEA);
WriteData (0xA0);
WriteData (0xA0);
WriteData (0x08);
WriteData (0xEC);
WriteData (0xA0);
WriteData (0xA0);
WriteData (0x0A);
WriteData (0xEE);
WriteData (0xA0);
WriteData (0xA0);
WriteData (0x0C);
WriteData (0xF0);
WriteData (0xA0);
WriteData (0xA0);
WriteComm (0xE6);
WriteData (0x00);
WriteData (0x00);
WriteData (0x11);
WriteData (0x11);
WriteComm (0xE7);
WriteData (0x44);
WriteData (0x44);
WriteComm (0xE8);
WriteData (0x07);
WriteData (0xEB);
WriteData (0xA0);
WriteData (0xA0);
WriteData (0x09);
WriteData (0xED);
WriteData (0xA0);
WriteData (0xA0);
WriteData (0x0B);
WriteData (0xEF);
WriteData (0xA0);
WriteData (0xA0);
WriteData (0x0D);
WriteData (0xF1);
WriteData (0xA0);
WriteData (0xA0);
WriteComm (0xE9);
WriteData (0x36);
WriteData (0x00);
WriteComm (0xEB);
WriteData (0x00);
WriteData (0x00);
```

```
WriteData (0x4E);
WriteData (0x4E);
WriteData (0xEE);
WriteData (0x44);
WriteData (0x40);
WriteComm (0xED);
WriteData (0xFF);
WriteData (0xFF);
WriteData (0x76);
WriteData (0x54);
WriteData (0xC1);
WriteData (0x0F);
WriteData (0xB2);
WriteData (0x3F);
WriteData (0x32);
WriteData (0xBF);
WriteData (0x01);
WriteData (0xC4);
WriteData (0x56);
WriteData (0x7F);
WriteData (0xFF);
WriteData (0xFF);
WriteComm (0xFF);
WriteData (0x77);
WriteData (0x01);
WriteData (0x00);
WriteData (0x00);
WriteData (0x00);
WriteComm (0x11);
Delay_ms(200);
WriteComm (0x35);
WriteData (0x00);
WriteComm (0x36);
WriteData (0x00);
WriteComm (0x29);
```

8 品质检验标准 LCM Quality Criteria

8.1 检验条件 Inspection conditions

观察距离： 目视距离 30CM~50CM
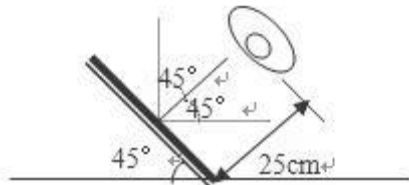
检视角度： U/D:45° /45° ,L/R:45° /45°

检验环境： 温度： （23± 2）℃ ；   湿度： （55± 10）%RH

光照亮度： 电性： ＜200Lux ；   外观： 1000±200Lux

检验设备： 数显卡尺、 测试架、 测试台、 菲林卡

8.2 定义 Definition
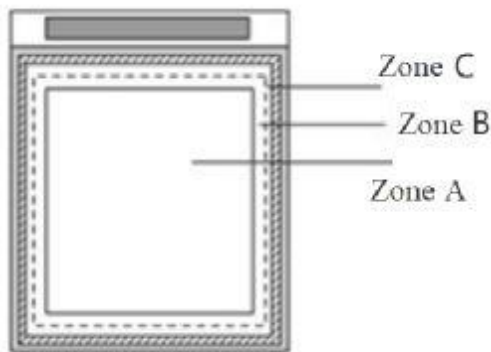
视区定义区

Zone A：有效显示区域（ 显示图像的区域） Effective Viewing Area(Character or Digit can be seen)

Zone B：观察区 Zone A 除外 Viewing Area except Zone A

Zone C：外形边框 Outside (Zone A+Zone B) which can not be seen after assembly by customer)

Note:

一般情况下，在不影响客户产品装配后的功能或外观， Zone C 的缺损可忽略不计；

As a general rule ,visual defects in Zone C can be ignored when it doesn't effect product function or appearance after assembly by customer.

8.3 抽样计划 Sampling Plan

根据 GB／ T 2828-2003 Ⅱ类标准正常检验；

According to GB/T 2828-2003；, normal inspection, Class Ⅱ

可接受的质量标准 AQL:

主要缺陷 Major defect	次要缺陷 Minor defect
0.65	1.5
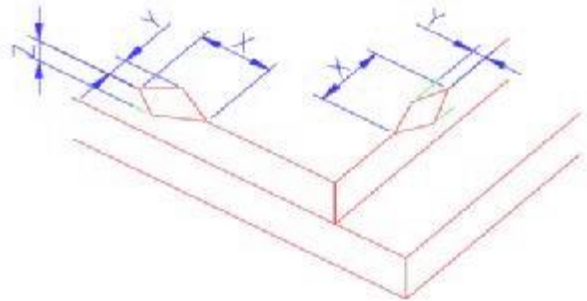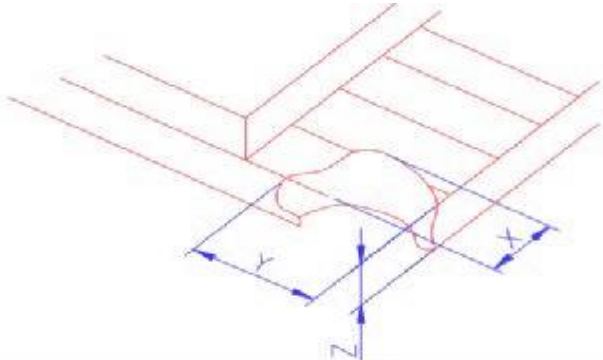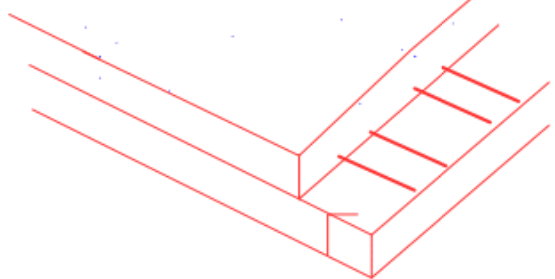
LCD: Liquid Crystal Display
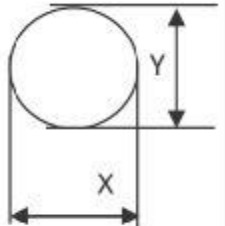
TP: Touch Panel

LCM: Liquid Crystal Module
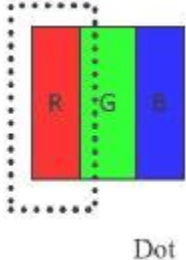
编号 No	检查项目 Items to be inspected	标准 Criteria	缺陷分类 Classification of defects
1	功能缺陷 Functional defects	1．无显 No display 2．显示异常 Display abnormally 3．缺画 Missing vertical，horizontal egment 4．短路 Short circuit 5．背光不亮、闪烁或者异常 Back-light no lighting,lickering and abnormal lighting 6．信号交叉串扰 Cross-Talk 7．噪声 Noise 8．色彩对比度不一致 Color contrast	主要缺陷 Major
2	缺少 Missing	缺少的组件 Missing component	
3	外形尺寸 Outline dimension	整体外形尺寸超出图纸是不允许的范围； Overall outline dimension beyond the drawing is not allowed	
4	色调 Color tone	指与样品的色调有差异； Color unevenness, refer to limited sample	次要缺陷 Minor
5	焊接外观 Solderingappearance	良好的焊接，不允许虚焊； Good soldering，Peeling off is not allowed.	
6	玻璃/偏光片 LCD/Polarizer	黑白点/线，划痕，裂纹等。 Black/White spot/line, scratch, crack, etc.	

8.4 目测检验标准 Criteria (Visual)

编号 **Number**	项目 **Items**	标准 **Criteria(mm)**
1.0 LCD Crack/Broken 裂痕/破裂 **NOTE:** X: Length Y: Width Z: Height L: Length of ITO, T: Height of LCD	(1) 玻璃边缘破 The edge of LCD broken	 | X	Y	Z
≤1.5mm	<Inner border line of the seal	≤T	
	(2) 玻璃蹦角 LCD corner broken	 | X	Y	Z
≤1.5mm	≤1.0mm	≤T	
	(3) 玻璃裂纹 LCD crack	 Crack 不允许； Not allowed

编号 **Number**	项目 **Items**	标准 **Criteria(mm)**		
2.0	(1) 点缺陷 Φ=(X+Y)/2	a) 光点（ LCD/TP/偏光片：黑/白点，轻点，针孔，凹陷， 彩点） light dot（ LCD/TP/Polarizer：black/white spot，light dot, pinhole, dent, stain）		

a) 光点（ LCD/TP/偏光片：黑/白点，轻点，针孔，凹陷， 彩点）
light dot（ LCD/TP/Polarizer：black/white spot，light dot, pinhole, dent, stain）

Zone Size (mm)	允许数量 Acceptable Qty		
	A	B	C
Φ ≤ 0.10	忽略 Ignore		忽略 Ignore
0.10 < Φ ≤ 0.15	2		
0.15 < Φ ≤ 0.2	1		
0.2 < Φ	0		

b) 暗点（LCD/TP/偏光片：漏光昏暗的点、黑点） Dim spot
（ LCD/TP/Polarizer：dim dot, light leakage、dark spot）

Zone Size (mm)	允许数量 Acceptable Qty		
	A	B	C
Φ ≤ 0.10	忽略 Ignore		忽略 Ignore
0.10 < Φ ≤ 0.2	2		
0.2 < Φ ≤0.3	1		
0.3 < Φ	0		

(2) 线缺陷
LCD/偏光片：黑/白线、划痕、彩色
Line defec
(LCD/Polarizer：black/white line, scratch,stain)

Width(mm)	Length(mm)	允许数量 Acceptable Qty
W ≤ 0.03	忽略 Ignore	
0.03 < W ≤ 0.05	L ≤ 2.0	1
0.05 < W	0	

编号 Number	项目 Items	标准 Criteria(mm)
3.0	(1) 偏光片划伤 Polarizer scratch	<table><tr><td>Width(mm)</td><td>Length(mm)</td><td>允许数量 Acceptable Qty</td></tr><tr><td>W ≤ 0.03</td><td colspan="2">忽略 Ignore</td></tr><tr><td>0.03 < W ≤ 0.05</td><td>L ≤ 2.0</td><td>2</td></tr><tr><td>0.05 < W ≤ 0.10</td><td>L ≤ 1.0</td><td>1</td></tr><tr><td colspan="2">(W > 0.10) or (L >2.0)</td><td>0</td></tr></table>
	(2) 偏光片气泡 Polarizer Bubble	<table><tr><td>Size (mm) / Zone</td><td>允许数量 Acceptable Qty</td></tr><tr><td>Φ ≤ 0.1</td><td>忽略 Ignore</td></tr><tr><td>0.1 < Φ ≤ 0.2</td><td>2</td></tr><tr><td>0.2 < Φ ≤ 0.3</td><td>1</td></tr><tr><td>0.3 < Φ</td><td>0</td></tr></table>
4.0	贴片电子元器件 **SMT**	根据<电子组件接受 IPC-A-610C 2 级标准>。组件丢失或功能缺陷是主要的缺陷，其他是次要缺陷。 According to the <Acceptability of electronic assemblies IPC-A-610C class 2 standard>. Component missing or function defect are Major defect, the others are Minor defect.
5.0	**TFT** Dot	<table><tr><td>区分 Distinguish</td><td>类型 Type</td><td>允许数量 Acceptable Qty</td></tr><tr><td rowspan="2">亮点 Bright dot</td><td>任何颜色 Any color window</td><td>**0**</td></tr><tr><td>相邻的亮点 Adjacent Bright dot</td><td>0</td></tr><tr><td rowspan="2">黑点 Dark dot</td><td>黑点 Dark dot</td><td>1</td></tr><tr><td>相邻黑点 Adjacent Dark dot</td><td>0</td></tr></table> **Note:** the red (R), green, blue (G), (B) 3 points constitute a pixel

8.5 功能性标准 Criteria (functional items)

编号	项目 Items	标准 Criteria
1	无显 No display	不允许； Not allowed
2	显示异常 Display abnormally	不允许； Not allowed
3	缺画 Missing vertical , horizontal	不允许； Not allowed
4	组件分离 Segment	不允许； Not allowed
5	短路 Short circuit	不允许； Not allowed
6	背光不亮 Back-light no lighting,	不允许； Not allowed
7	背光闪烁或异常 Flickering and abnormal lighting	不允许； Not allowed
8	信号交叉串扰 Cross-Talk	不允许； Not allowed
9	噪声 Noise	不允许； Not allowed
10	色彩对比度不一致 Color contrast	不允许； Not allowed
11	玻璃表面污垢 The LCD surface dirt	如果客户不能自行擦除干净，也是不可接受的； If you cannot use smudgy surface air clean and clear,coco is not acceptable
12	缺少元器件 Components off	不允许； Not allowed
13	FPC&PCB 不良 FPC&PCB undesirable	不允许； Not allowed
14	铁框支架变形 Iron frame deformation	不允许； Not allowed

9 Reliability Test Items 可靠性测试项目

Test Item 测试项目	Test Condition 测试条件	Test result determinant gist 实验结果判定
High temperature storage 高温存储	80±3℃，24H；	Inspection after 2~4hours storage at room temperature, the sample shall be free from defects: 试验结束后,已测试的LCD 样品必须在室内正常温湿 度环境下放置2~4个小时以上才 能进行功能和外观检查，样品不 允许有以下缺陷： 1.Air bubble in the LCD; 模块中有气泡； 2.Non-display; 不显示； 3.Glass crack; 玻璃破碎； 4. The electrical characteristics requirements shall be satisfied. 需要满足模块电气性能。
Low temperature storage 低温存储	-30±3℃，24H；	
High temperature operation 高温运行测试	70±3℃，24H；	
Low temperature operation 低温运行测试	-20±3℃，24H；	
High temperature /humidity 高温高湿	60℃±3℃,90%±3%RH，24H；	
Thermal Shock 冷热冲击	-30℃/0.5h~+80℃/0.5h for a total 24 cycles；	
Vibration Test 振动测试	Frequency10Hz~55Hz~10Hz Amplitude： 1.5mm, X，Y，Z direction for total 1H； (Packing condition)	
ESD test 静电测试	±2KV,Human Body Mode, 150pF/330Ω； ±8KV, Air Mode, 150pF/330Ω；	

Remark: 注意：

1. The test samples should be applied to only one test item.

每个被测试的模块只能用于其中的一个测试项目。

2. Sample size for each test item is 2pcs.

每个测试项目的样品数量为2片。

3. Failure Judgment Criterion: Basic Specification, Electrical Characteristic, Mechanical Characteristic, Optical Characteristic.

故障判断标准:基本规格,电气特性,机械特性,光电特性。

10 Packing and Storage Specification(Reference Only)包装存储

13.1　Packing Method 包装方法

1. Put module into tray cavity. 把模块放进托盘.

2. Tray stacking. 托盘叠装.

3. Put 1 foam under the tray stack and 1 foam above. 在托盘上下放卡板.

4. Fix the cardboard to the tray stack with adhesive tape. 绑胶带.

5. Put the tray stack into carton. 把邦好的托盘放进纸箱.

6. Carton sealing with adhesive tape. 封纸箱.

(1)

(2)

(3)

(4)

(5)

(6)
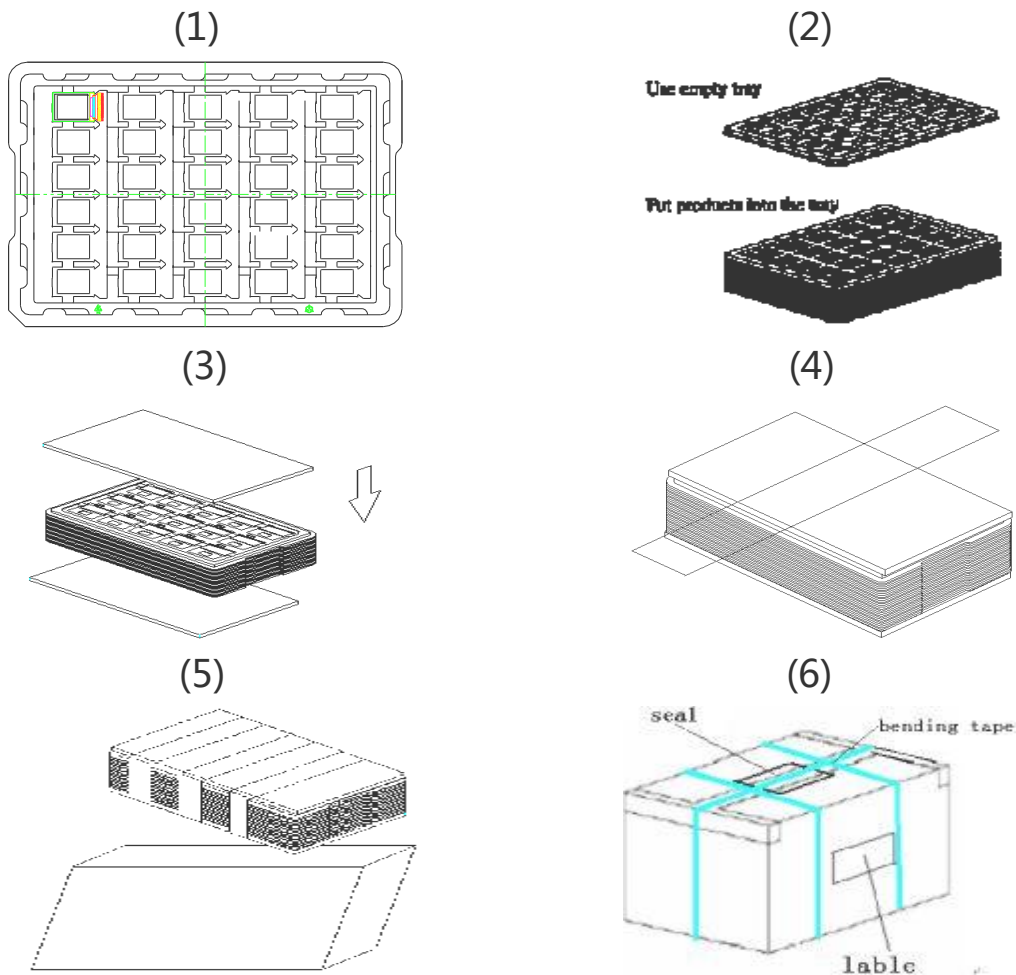
13.2　Storage Method 存储方法

1. Store in an ambient temperature of 23°C±5°C, and in a relative humidity of 55%±15%. Don't exceed 12 months and expose to sunlight or fluorescent light.

存储环境温度为 23±5°C，相对湿度为 55%±15%，存储不能超过 12 个月，不要长时间暴晒。

2. Store in a clean environment, free from dust, active gas, and solvent.

存储在一个干净的环境，不受灰尘，活性气体和溶剂污染。

3. Store in antistatic container.　存储在防静电环境。

11 Announcements 注意事项

1.Do not attempt to disassemble or process the LCD module.

请勿拆卸液晶显示模块。

2.Do not make extra holes on the printed circuit board, modify its shape or change the positions of components to be attached。

不要在印制电路板上钻额外的孔，修改形状或更改印制线路板上元件的位置。

3.Except for soldering the interface, do not make any alterations or modifications with a soldering iron; Ensure welding temperature at 320 ° C to 350 ° C, the welding time control within the 10 s, welding note don't stay too long in the same place to avoid scald FPC.

除焊接接口外，不要用烙铁做任何更改；焊接温度保证在 320℃-350℃，焊接时间控制在 10S 以内，焊接时注意不要在同一处停留时间太久以免烫伤 FPC。

4. Other matters in not clear before use, please contact our staff to guide.

其他事项在不清楚使用之前，请联系我司人员指导进行。

-END-