



OLED SPECIFICATION

1.78Inch 368*448 Dots

MODULE NO.: ORC-Z017818C-V01

Rev: 01

Date: 2023-08-23

APPROVED	CHECKED	PREPARED

Customer Approval:	☐ Accept ☐ Reject Comment: Approved by:_____
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Over Ten Years LCD/LCM Manufacturer!

REVISION RECORD

Date	Ver	Description	Modify Location	Checked
2023-08-23	01	New sample	/	Zhaohui

1. LCM Specification

1.1 Description

HX-Z017818C-V01 is HuaXin Display Technology Co.,Ltd.,it is a color active matrix AMOLED module using Low Temperature Poly-silicon AMOLED's (Thin Film Transistors) as active switching devices. This module has a 1.78 inch diagonally measured active area with 368RGBx448 resolutions (368 horizontal by 448 vertical pixel arrays). Each pixel is divided into RED, GREEN, BLUE dots.

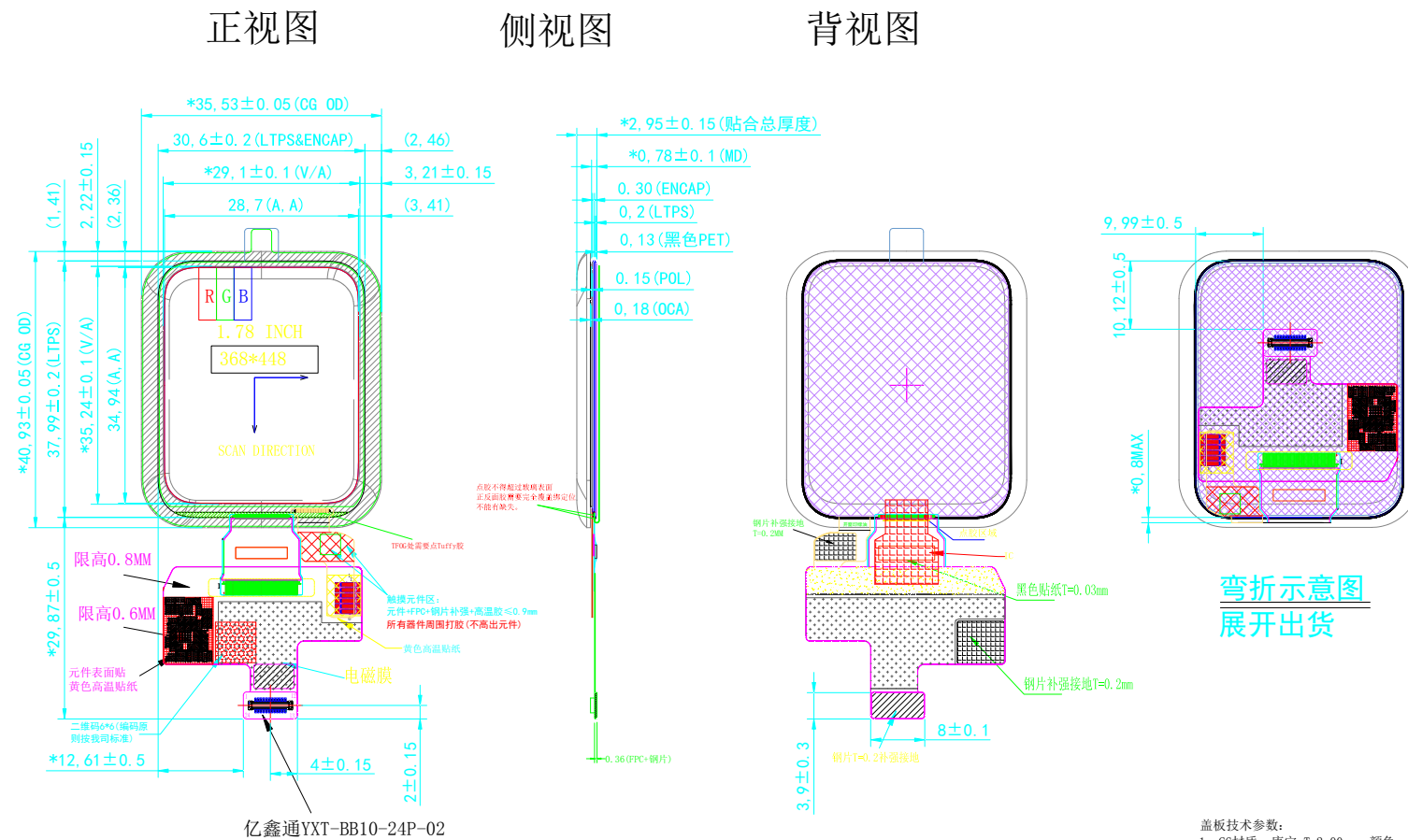
1. GENERAL SPECIFICATIONS(主要特征描述)

Item 项目	Contents 内容	Unit 单位
Display type 显示类型	AMOLED	/
Diagonal length 尺寸	1.78	inch
Recommended Viewing Direction 推荐使用方向	ALL	0' Clock
Dot arrangement 点阵	368(R.G.B)*448	Dot
Module size (W*H*T) 模块外围尺寸 (宽*高*厚)	33.8*40.9*2.43	mm
Active area (W*H) 有效显示区域 (宽*高)	28.70*34.95	mm
Pixel size (W*H) 像素大小 (宽*高)	0.078*0.078	mm
Drive IC 驱动 IC	CO5300AF-05	/
TP IC 触控 IC	FT6146-M00	/
Interface Type 接口类型	Display interface:QSPI TP interface:I2C	/

2.EXTERNAL DIMENSIONS(外形尺寸)

Customer Approved By:

VER	REVISION RECORD	ISSUER	DATE
A00	初版发行 First Issue	DESON	2023-8-23
A01	根据客户要求改盖板尺寸和连接器型号	DESON	2023-8-31



MAIN FPC PIN DESCRIPTION
1 LCD_RESET
2 GND
3 LCD_TE
4 LCD_CS
5 SPI_CLK
6 SPI_ST01
7 SPI_ST00
8 GND (热插拔管脚, 屏需要接地)
9 NTP
10 I/O=NC
11 VBAT
12 VBAT
13 GND
14 GND
15 VDD
16 CTP_VDD
17 TP_INT
18 TP_RST
19 TP_SDA
20 TP_SCL
21 GND
22 SPI_ST03
23 SPI_ST02
24 VCI_EN

Pin#	Assignment
1	TP_SCL
2	TP_SDA
3	TP_RST
4	TP_INT
5	TP_VDD
6	TP_GND

亿鑫通YXT-BB10-24P-02

OLED Note:

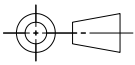
- Display mode: 1.78" AMOLED 368*RGB*448; Viewing direction: FREE;
- Interface Type: Input voltage;
- OLED Driver IC: 集创北方 C05300AF-05; Power IC: BV6802W; TP IC: FT6146-M00;
- Luminance: 450cd/m² (MIN), 500cd/m² (TYP);
- Chromaticity White(X,Y): x=0.29±0.02, y=0.31±0.02;
- NTSC: 100% (TYP); Contrast: 10000 (MIN); Uniformity: 80% MIN;
- Operating temperature: -20° C ~ +70° C
- Storage temperature: -30° C ~ +80° C
- Interface connector:
- "(") Reference dimension: "*" Control dimensions; 翘曲度: ≤0.3mm;
- Unmarked dimensional tolerance: ±0.20
- If the customer does full lamination, considering the material tolerance and fitting tolerance, it is recommended that the CTP window be expanded by 0.2mm from one side of LCD AA area.

盖板技术参数:

- CG材质: 康宁 T=2.00mm, 颜色: 黑色, 结构: 2.5D
表面硬度≥6H(750g), 翘曲度≤0.25mm; CS>700Mpa, DOL≥40um, CT≤67Mpa
Cover plate material: Gorilla
Glass, T=2.0mm, Color: Black, Structure: 2.5D,
Glass hardness should be
≥6H(750g), Warpage? Degree≤0.25mm; CS>700Mpa, DOL≥40um, CT≤67Mpa
- 油墨不透明性 (OD值): 黑/白≥5.0, 测试设备X-Rite 341;
Opacity of ink (OD): Black/White≥5.0, Test equipment X-Rite 341;
- 底色丝印黑色 (不能透光): 油墨要求附着力≥4B;
盖底油墨绝缘阻抗≥500MΩ;
The background color is silk screen black (no light transmission);
Adhesion required for printing ink ≥ 4B
Insulation resistance of cover bottom ink ≥ 500M Ω
- 32g钢球 62.5cm高度自由跌落在玻璃盖板上 (整机测试),
中心和四角各跌1次共计5次
32g ball, 62.5cm height, Center and four corners,
Each corner falls once, 5 times in total (Complete machine test)



HuaXin Display Technology Co.,Ltd



CUSTOM:	APPROVED:	UNITS:mm
DESIGN: Z017818CL-V02	CHECKED: ZZH	SCALE:1:1
MODEL:	DRAWING: DESON	SHEET:1/1

3. ABSOLUTE MAXIMUM RATINGS(极限参数)

Parameter of absolute maximum ratings 参数	Symbol 符号	Min 最小值	Max 最大值	Unit 单位	Remark 备注
Operating temperature 操作温度	Top	-20	70	°C	
Storage temperature 储存温度	Tst	-30	80	°C	
Power Voltage 电源电压	VCI VDDIO	-0.3	3.6	V	

4. ELECTRICAL CHARACTERISTICS(模块电气特性)

Parameter of DC characteristics 参数	Symbol 符号	Min 最小值	Typ 典型值	Max 最大值	Unit 单位
Supply voltage for logic 逻辑电压	VCI	2.7	3.3	3.3	V
I/O pin Power Supply Voltage I/O 电压	VDDIO	1.65	1.8	3.6	V
TP Power 触控工作电压	TP_VDD	2.8	3.0	3.3	V
AMOLED Power IC	Vbat	3.3	3.8	5.5	V
Input Current 输入电流	Ivcl	-	4	4.5	mA Note1
	Ivddio	-	4	6.5	
	I _{ELVDD/ELVSS}	-	30	40	
Input voltage 'H' level 输入高电平	V _{IH}	0.8*VDDI	-	VDDI	V
Input voltage 'L' level 输入低电平	V _{IL}	VSS	-	0.2*VDDI	V
Output voltage 'H' level 输出高电平	V _{OH}	0.8*VDDI	-	VDDI	V
Output voltage 'L' level 输出低电平	V _{OL}	VSS	-	0.2*VDDI	V

Note1: Full white display 500nits,60Hz

5. ELECTRO-OPTICAL CHARACTERISTICS(光电参数)

Item of electro-optical characteristics 项目		Symbo l 符号	Condition 条件	Min 最小值	Typ 典型值	Max 最大值	Unit 单位	Note 备注
Surface Luminance 表面亮度		Lv	$\theta=0^\circ$ $\square=0^\circ$ $Ta=25^\circ C$	450	500	550	cd/m^2	Note 1
Luminance uniformity 均匀度		$\square$ WHITE		80	85		%	Note 2
Contrast Ratio 对比度		CR		10000	10000	--	--	Note 3
Viewing angle 视角范围		$\square$	Up/Down/Rig ht/Left Cr≥200	80	--	--	Deg	Note 4
Color chromaticity (CIE 1931) 色度坐标值	Whit e	X	$\theta=0^\circ$ $\varnothing=0^\circ$ $Ta=25^\circ C$	-0.02	0.290	+0.02		Note 5
		Y			0.310			
	Red	X			0.691			
		Y			0.309			
	Gree n	X			0.234			
		Y			0.726			
	Blue	X			0.143			
		Y			0.042			
NTSC ratio 色域	--	--	--	90	105	--	%	CIE1931

Note1. Surface Luminance

- Measurement equipment: CA310 or similar equipment.
- Measuring surroundings: Dark room.
- Measuring temperature: $Ta=25^\circ\text{C}$.
- The data are measured after OLEDs are lighted on for more than 5 minutes and all pixels are fully white.
 - The Surface Luminance is the average value of 5 measured spots (Fig-1): L_v = Average Luminance with all white pixels (P1, P2, P3, P4, P5)

Note2. Luminance Uniformity

- Measurement equipment: CA310 or similar equipment.
- Measuring surroundings: Dark room.
- Measuring temperature: $Ta=25^\circ\text{C}$.
- The data are measured after OLEDs are lighted on for more than 5 minutes and all pixels are fully white.
 - The Luminance Uniformity is calculated by using following formula:
 $\square \text{ WHITE} = L_p (\text{Min.}) / L_p (\text{Max.}) \times 100 (\%)$
 $L_p (\text{Min.})$ = Minimum Luminance with all white pixels (P1, P2, P3, P4, P5)
 $L_p (\text{Max.})$ = Maximum Luminance with all white pixels (P1, P2, P3, P4, P5)

Note3. Contrast Ratio

- Measurement equipment: CA310 or similar equipment.
- Measuring surroundings: Dark room.
- Measuring temperature: $T_a=25^{\circ}\text{C}$.
- The data are measured after OLEDs are lighted on for more than 5 minutes.
- The Contrast Ratio is calculated by using following

formula: Contrast Ratio(Cr) = L_w / L_b

L_w = Average Luminance with all white pixels (P1, P2, P3, P4, P5)

L_b = Average Luminance with all black pixels (P1, P2, P3, P4, P5)

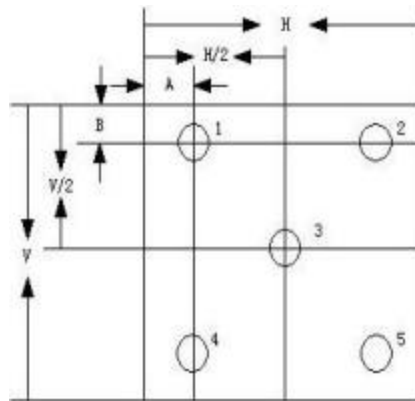


Fig-1

Note4. Viewing Angle

- Measurement equipment: DMS803 or similar equipment.
- Measuring surroundings: Dark room.
- Measuring temperature: $T_a=25^{\circ}\text{C}$.
- The 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 display surface.

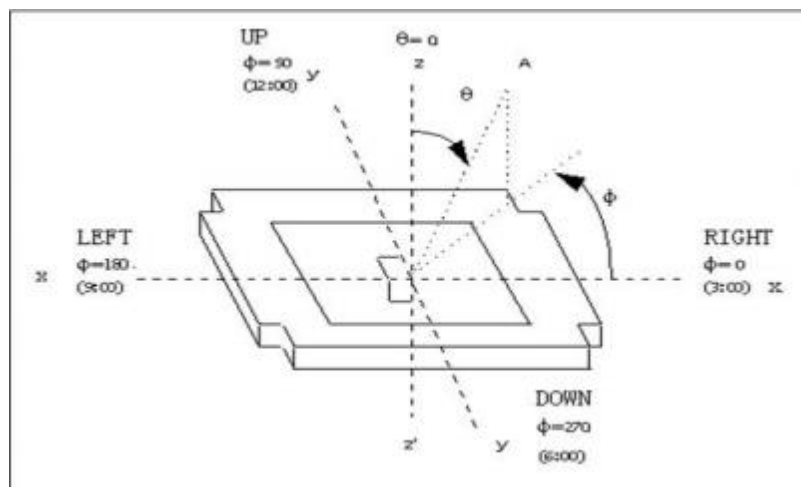


Fig-2

Note5. Color Coordinate of CIE1931

- Measurement equipment: CA310 or similar equipment.
- Measuring surroundings: Dark room.
- Measuring temperature: Ta=25℃.
- The x, y value of Color Coordinate is determined by measuring at center position of the display panel.

6. INTERFACE DESCRIPTION(接口定义描述)

Pin No. Pin脚	Symbol 符 号	Description 描 述	When not in use
1	LCD_RST	LED reset	
2	GND	Ground	
3	LCD_TE	Tearing effect signal	
4	LCD_CS	Chip selection pin,Low-active	
5	LCD_CLK	used serial interface clock	
6	SPI_SIO1	Serial input signal in QSPI serial data	
7	SPI_SIO0	Serial input signal in QSPI serial data	
8	GND	Ground	
9	MTP	MTP programming power supply pin	
10	NC	NC	
11	VBAT	Power IC VIN	
12	VBAT	Power IC VIN	
13	GND	Ground	
14	GND	Ground	
15	VDDI0(3.3V)	Power supply	
16	TP_VDD(3.3V)	Touch panel power supply	
17	TP_INT	Touch panel interrupt output	
18	TP_RST	Touch panel reset	
19	TP_SDA	Touch panel I2C data	
20	TP_SCL	Touch panel I2C clock	
21	GND	Ground	
22	SPI_SIO3	Serial input signal in QSPI serial data	
23	SPI_SIO2	Serial input signal in QSPI serial data	
24	VCI_EN	VCI Power enable control pin	

7. DSI TIMING CHARACTERIST (时序特征)

Reference Resources CO5300AF-05 Datashee

8. RELIABILITY TEST CONDITIONS(可靠性实验条件)

NO. 序号	Test Item 实验项目	Test Condition 实验条件	Inspection after test 判定标准
1	High Temperature Storage 高温存放	80±2°C,72 hours	Inspection after 2~4 hours storage at room temperature, the sample shall be free from defects. (试验结束后须正常室温存放2~4个小时之后才能测试判定, 不允许有以下缺陷) 1. Air bubble in the LCD (模块中有气泡); 2. Seal leak (漏液); 3. Non-display (不显示); 4. Missing segments(漏笔); 5. Glass crack (玻璃破碎); 6. Current IDD is twice higher than initial value (电流 Idd 大于初时值的 2倍); 7. The surface damage (表面损伤); 8. Do not meet the electrical characteristics (不满足模块电气性能);
2	Low Temperature Storage 低温存放	-30±2°C,72 hours	
3	High Temperature Operating 高温操作	70±2°C,72 hours	
4	Low Temperature Operating 低温操作	-20±2°C,72 hours	
5	Damp proof Test Storage 高温高湿存放	60±2°C,90%RH,72 hours	
6	Temperature Cycle Storage 冷热循环存放	-20±2°C(30min) ~ 25°C(5min) 70±2°C(30min), 10Cycle.	
7	Vibration Test 振荡试验	Frequency(频率):10HZ-55Hz, Amplitude(振幅):1.5mm, x,y,z every direction for 1 hour (Packing condition) (包装状态, X,Y,Z 每个方向各 1 小时)	
8	Dropping Test 跌落试验	Drop to the ground from 1M height, one time, every side of carton (Packing condition) (包装状态, 一米高度, 6 面各一次)	
9	ESD Test 静电测试	C:150pf; R:330Ω; Voltage:8KV; Air discharge(空气放电),10 time	

Remark (备注) :

1. **The samples should be applied to only on test item** (每个被测试样品只能用于其中的一个测试项目) ;
2. **Sample size for each test item is 5~10 pcs** (每个测试项目的样品数量为 5~10 片);
3. **For Damp Proof Test, Pure water (Resistance > 10M Ω) should be used** (对于防潮试验, 试验箱的用水必须是电阻大于 10M 欧姆的纯水) ;
4. **In case of malfunction defect caused by ESD damage, if it would be recovered to normal state after resetting, it would be judged as a good part** (如果由静电引起产品故障, 当放置一段时间后能够恢复正常, 则不视为产品缺陷) ;
5. **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. INSPECTION CRITERION(检查标准)

1. Sample plan (检验方案)

Sampling plan according to GB/T2828.1-2003/ISO 2859-1:1999 and ANSI/ASQC Z1.4-1993,normal level 2 and based on: 参考国标 GB T2828.1-2003 等, 2 级检验水准。

Major defect (重缺陷) : AQL 0.4

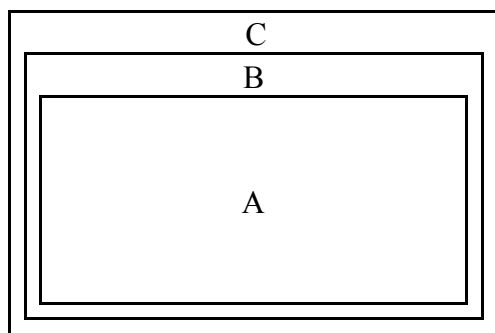
Minor defect (轻缺陷) : AQL 0.65

2. Inspection condition (检查条件)

Viewing distance for cosmetic inspection is about 30cm with bare eyes,and under an environment of 20~40W light intensity,all directions for inspecting the sample should be within 45° against perpendicular line.

目视被检产品 30cm, 在 20 至 40W 的日光灯环境下(外观检查亮度 1000 ± 200 LUX;功能检查亮度 100~300 LUX), 检视角为 LCD 平面法线 $\pm 45^\circ$ 以内(正常温度和湿度分别为 $20 \sim 25^\circ\text{C}$, $60 \pm 15\%\text{RH}$)。

3. Definition of inspection zone in LCD (检查范围定义).



Zone A: character/Digit area 显示区域

Zone B: viewing area except Zone A (Zone A+Zone B=minimum Viewing area)

显示区域外的可视区域 (区域 A+B 等于最小可视区域)

Zone C: outside viewing area(invisible area after assembly in customer's product)

非可视区, 客户装机后不能观察到的区域

Note : As a general rule ,visual defects in Zone C are permissible, when it is no trouble for quality and assembly of customer's product.

一般情况下, 非可视区的外观缺陷在不影响质量和客户装机时是允许的。

亮点: 一个像素由 3 个 DOT 点 (R,G,B) 构成, 任一 DOT 点面积的 1/2 称之为 1/2DOT;

在黑色界面下, 有红或绿或蓝任意一个像素被点亮, 统称为 DOT 亮点, 面积

超过 1/2DOT 点即为不良 (小于 1/2 的 DOT 点不计入亮点数)

暗点: 在白色画面下, 有红或绿或蓝任意一个像素未点亮, 统称为 DOT 暗点, 面积

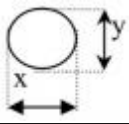
超过 1/2DOT 点即为不良 (小于 1/2 的 DOT 点不计入暗点数)

异物亮点: 在黑色画面的由偏光片贴附或盒内异物导致发光的点;

碎亮点: 在黑色画面的由偏光片贴附或盒内异物导致发光的点; 直径 $<0.1\text{mm}$

10. Inspection Standard (检查标准)

10.1 Major Defect(重缺陷)

NO. 序号	Items to be inspected 检查项目	Inspection Standard 检查标准			Classification of defects 缺陷级别		
10.1.1	All functional defects 全部功能缺陷	1. no display 不显示 2. Display abnormally 显示异常 3. Missing vertical,horizontal segment 缺线 4. Short circuit 短路 5. Touch panel no function 触摸屏无功能			Major defect (重缺陷)		
10.1.2	Missing 掉落	Missing component 零件掉落					
10.1.3	Outline dimension 外形尺寸	Overall outline dimension beyond the drawing is not allowed 外形尺寸超过图纸允许范围					
10.2 Cosmetic Defect (外观缺陷)							
NO. 序号	Items to be inspected 检查项目	Inspection Standard 检查标准			Classificatio n of defects 缺陷级别		
10.2.1	Clear Spots 明显点	For dark/white spot, size Φ is defined as $\Phi=(x+y)/2$. 			Minor defect (轻缺陷)		
	Black and white Spot defect pinhole, Foreign Particle, Dirt under polarizer or TP 黑白点, 针孔, 异物点, 偏光片污点, TP 污点	Size(mm)	Zone			Acceptable Qty	
			A	B		C	
		$\Phi \leq 0.10$	Ignore			Ignore 忽略不计	
		$0.10 < \Phi \leq 0.15$	2,DS $\geq$ 5mm				
		$0.15 < \Phi \leq 0.2$	1,DS $\geq$ 5mm				
$\Phi > 0.2$	0						
10.2.2	碎亮点	$\Phi < 0.1\text{mm}$; 个数不计, 用 6%的 ND Filter 遮盖看不见 OK					
	异物亮点	$\Phi \leq 0.1$, 不计, DS $\geq$ 2mm; $0.1 < \Phi \leq 0.2\text{mm}$, N $\leq$ 2, DS $\geq$ 5mm; $\Phi > 0.2\text{mm}$, 不允许					
	亮点	不允许					
	暗点	允许 2 个; DS $\geq$ 5mm					
10.2.3	Line defect 线缺陷	Defined: L line length; W line width 			Minor defect (轻缺陷)		
	Black line,White line, Foreign material under polarizer 黑白线, 偏光片异物	Size(mm)		Acceptable Qty			
		Width	Length	A		B	C
		$W \leq 0.03$	Ignore	Ignore		Ignore 忽略不计	
		$0.03 < W \leq 0.06$	L $\leq$ 5.0	不允许			N $\leq$ 1
$W > 0.06$	Define as spot defect 按点缺陷处理						

NO. 序号	Items to be inspected 检查项目	Inspection Standard 检查标准	Classification of defects 缺陷 等级						
10.2.4	Polarize scratch 偏光片划伤	If the Polarizer scratch can be seen after mobile phone cover assembling or in the operating condition, judge by the line defect of 10.2.3, (片划伤可以在客户组装后或操作状态下按 10.2.3 标准进行判定)	Minor defect (轻缺陷)						
		If the Polarizer scratch can be seen only in non-operating condition or some special angle, judge by the following (如片划伤只能在非操作状态下或某个角度可见, 则按以下标准判定)							
		Size(mm)		Acceptable Qty					
		Width		Length	A	B	C		
		W≤0.03		Ignore	Ignore				
		0.03< W≤0.05		L≤10.0	2				
W>0.05	/	0							
10.2.5	Polarize Air bubble, bubble 偏光片气泡, 气泡 (鱼眼)	Air bubbles between glass & polarizer 玻璃与片之间	Minor defect (轻缺陷)						
		Size(mm)		Acceptable Qty					
				A	B	C			
		Φ≤0.1		Ignore					
		0.1<Φ≤0.2		2 (DS≥5mm)					
Φ>0.20	0								
10.2.6	Glass defect 玻璃缺陷	1. Chips on corner (崩角) <table><tr><td>X</td><td>Y</td><td>Z</td></tr><tr><td>≤3</td><td>≤S</td><td>≤T</td></tr></table> Remark: S= contact pad length; T= the thickness of glass	X	Y	Z	≤3	≤S	≤T	Minor defect (轻缺陷)
		X	Y	Z					
		≤3	≤S	≤T					
2. Usual surface cracks (一般边崩) <table><tr><td>X</td><td>Y</td><td>Z</td></tr><tr><td>≤3</td><td><S</td><td>Ignore</td></tr></table> Remark: S= Inner border line of the seal; S= 玻璃内部边缘环氧框	X	Y	Z	≤3	<S	Ignore			
X	Y	Z							
≤3	<S	Ignore							
3. Crack (裂纹) Cracks tend to break are not allowed 任何区域向内延伸的裂纹都不允许	Major defect (重缺陷)								
10.2.7	其他外观	1.Mura : 用 ND3%的滤光片来遮盖, 能够看见为 NG Mura 定义:在黑色画面及灰阶画面出现有显示不均及不规则的细条纹状判断为玻璃 MURA 现象 2. 残影: 在常温下, 点亮 8*8 黑白棋盘格画面 2 个小时后, 然后切换到 127 灰画面检查, 判断标准: 15 分钟消失。 3. 混色: 3% ND Filter 在 255 灰阶下观察不可视 OK, 特殊要求参考客户签样	Minor defect (轻缺陷)						

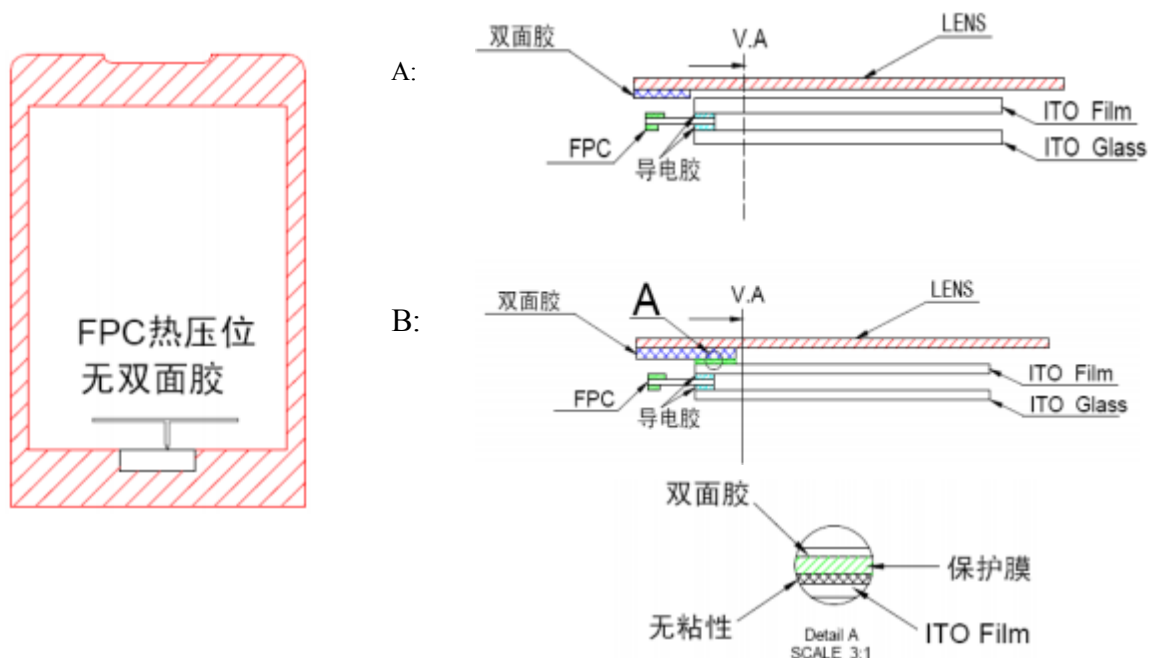
11. PRECAUTIONS FOR USING LCD MODULES(使用注意事项)

11.1 Using LCD Modules 使用

- 11.1.1 As glass is fragile, It tends to become or chipped during handling especially on the edges. Please avoid dropping or jarring. Do not subject it to a mechanical shock by dropping it or impact. (由于玻璃是脆的, 使用过程请特别注意边缘区, 防止跌落或振动, 不能机械碰撞)。
- 11.1.2 Do not apply excessive force to the display surface or the adjoining areas since this may cause the color tone to vary. Do not touch the display with bare hands. This will stain the display area and degraded insulation between terminals(some cosmetics are determined to the polarizer)(请勿施加过大的压力于显示屏或连接部位, 否则会引起色调变化。不要裸手接触显示屏, 这将弄脏显示区和降低端子之间的绝缘能力。一些外观问题是由偏光片决定的)。
- 11.1.4 The polarizer covering the display surface of the LCD module is soft and easily scratched. Handle this polarizer carefully. Do not touch, push or rub the exposed polarizers with anything harder than an HB pencil lead (glass, tweezers, etc.). Do not put or attach anything on the display area to avoid leaving marks on it. Condensation on the surface and contact with terminals due to cold will damage, stain or dirty the polarizer. After products are tested at low temperature they must be warmed up in a container before coming in to contact with room temperature air. (覆盖液晶显示模块显示平面的偏光片是软性且易被擦伤, 请小心轻拿。请勿用任何硬度大于 HB 铅笔芯的物品(玻璃, 镊子等)接触、撞压或摩擦裸露偏光片。不要放置或粘附物体在显示区域上以免留下痕迹。冷凝在表面和端子将会损坏或弄脏偏光片。产品在低温下测试之后, 与室温空气接触之前必须在容器内升温)
- 11.1.5 If the display surface becomes contaminated, breathe on the surface and gently wipe it with a soft dry cloth. If it is heavily contaminated, moisten cloth with one of the following solvents: Isopropyl alcohol; Ethyl alcohol. Do not scrub hard to avoid damaging the display surface (如果显示平面受污, 可对平面吹热气且轻轻地用软性干布擦除。如果受污严重, 用含下列一种溶剂的湿布擦除: 甘油, 酒精。请勿用力擦拭以免损坏显示平面。)
- 11.1.6 Solvents other than those above-mentioned may damage the polarizer. Especially, do not use the following: Water, Ketone, Aromatic solvents. Wipe off saliva or water drops immediately, contact with water over a long period of time may cause deformation or color fading. Avoid contact with oil and fats. (除以上提到的溶剂外, 其他溶剂可能会损坏偏光片, 特别要避免使用以下溶剂: 水, 丙酮, 芳烃溶剂。立即擦掉唾液或水滴, 长时间与水接触会引起变形或褪色。避免接触油和油脂)
- 11.1.7 Do not attempt to disassemble or process the LCD module. (请勿拆卸液晶显示模块)
- 11.1.8 Electro-Static Discharge Control, Since this module uses a CMOS LSI, the same careful attention should be paid to electrostatic discharge as for an ordinary CMOS IC. To prevent destruction of the elements by static electricity, be careful to maintain an optimum work environment. (由于液晶显示模块使用 CMOS 集成, 要特别注意静电放电问题。对 CMOS 器件, 要特别注意静电。为防止静电损坏, 注意保持合宜的工作环境)
- 11.1.9 Input logic voltage before apply analog high voltage such as LCD driving voltage when power on. Remove analog high voltage before logic voltage when power off the module. Input each signal after the positive/negative voltage becomes stable. (开机时, 先让逻辑电压, 再接通模拟高压, 如显示屏驱动电压。关机时, 先断开模拟高压, 再关逻辑电压。正负电源都稳定后再送控制信号。)

11.1.10 In the use of connector products, the operating process of attention to turn off the power before pull off and insert action. To avoid damage to the module (在使用连接器的产品时，插接过程注意先关闭电源再进行拔插动作，避免损坏模块)

11.1.11 When use LENS ,you must be do the following things (当使用假纯平 TP 结构时，注意须按以下方法处理：LENS 的双面胶避开 RTP 的 FPC 热压位，或在热压位上加贴保护膜，避免 LENS 双面胶拉动 FPC 造成损伤而无触摸)



11.1.12 Precaution for assemble the module with BTB connector:

Please note the position of the male and female connector position, don't assemble or assemble like the method which the following picture shows

(用板对板连接器安装液晶显示模块注意事项： 请注意连接器的公母及连接位置，请勿出现下图所示的连接方式。)

11.2 Storage Modules 储存

11.2.1 Store them in a dark place. Do not expose to sunlight or fluorescent light, keep the temperature between 0°C and 35°C, and keep the relative humidity between 40%RH and 60%RH. (避光保存,避免直接暴露在太阳光或黄光灯下,保持温度在 0~35 摄氏度之间,保持相对湿度在 40%RH 和 60%RH 之间。)

11.2.2 The polarizer surface should not come in contact with any other objects (We advise you to store them in the anti-static electricity container in which they were shipped). (偏光片表面避免接触其他物质，建议存放在货运防静电包装中)

11.3 Soldering

- 11.3.1 Iron head temperature (烙铁头实际温度) : $350\pm 10^{\circ}\text{C}$, Soldering time (焊接时间) : <3-4S.
Soldering don't repeat above 3 times (焊接次数勿超过 3 次)
- 11.3.2 If soldering flux is used, be sure to remove any remaining flux after finishing to soldering operation (This does not apply in the of a non-halogen type of flux). It is recommended that you protect the LCD surface case with a cover during soldering to prevent any damage due to flux spatters. (如果使用助焊剂, 完成焊接后一定要清除剩余的助焊剂(除非卤化物助焊剂)。建议焊接时用盖子保护显示屏面以避免因焊剂油溅出造成的任何损坏。)

12 PRIOR CONSULT MATTER (提前商议事项)

- 13.1 For standard products, we keep the right to change material, process ... for improving the product property without prior notice to our customer.
(对于标准模块产品, 我们保留在不通知客户的情况下, 为提高产品性能而改变原材料及加工方法等的权利。)
- 13.2 For OEM products, if any changes are needed which may affect the product property, we will consult with our customer in advance.
(对于 OEM 产品, 如果需要做任何会影响到产品性能的改变, 我们会提前和客户商议。)
- 13.3 If you have special requirement about reliability condition, please let us know before you start the design on our samples.
(如对可靠性条件有特殊要求, 请在模块设计开发前通知我们。)