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CERT. No.: 282Q19070712006

CERT. No.: 282E19070712007

## Product Specification

Model: TOH240XVT-03CG

**2.4"AMOLED Display Module(450\*600)**

This module uses RoHS material

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## 1 General Description 规格简介

2.42 inch 450x600 is a color active matrix AMOLED module.

This module has a 2.42 inch diagonally measured active area with 450\*600 resolutions (450 horizontal by 600vertical pixel arrays). Each pixel is divided into RED, GREEN, BLUE dots and this module can display 16.7M colors.

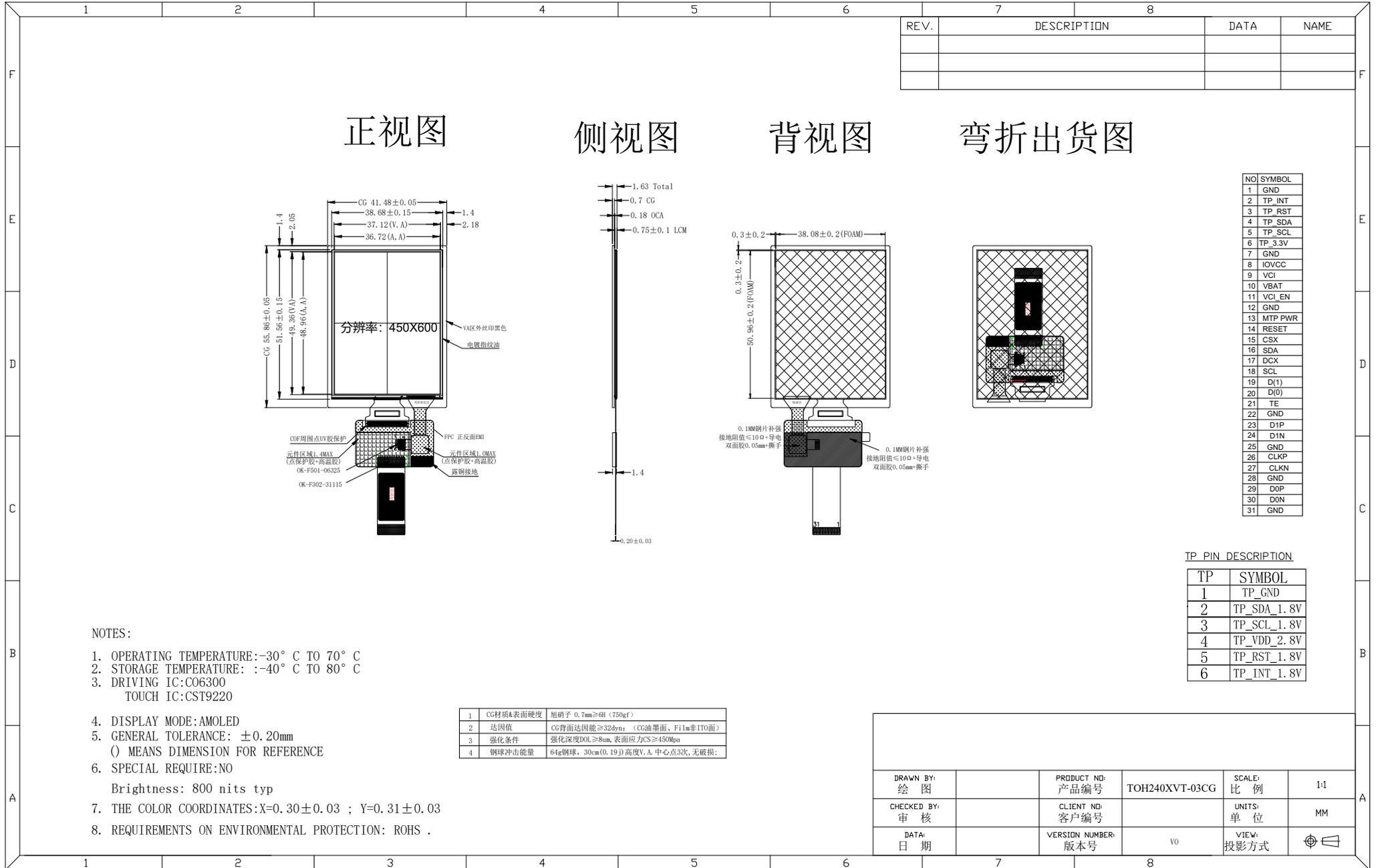
2.42 英寸 450x600 是一个彩色有源矩阵 AMOLED 模块。该模块有一个 2.42 英寸的对角线测量的活动区域，分辨率为 450x600（450 水平和 600 垂直像素数组）。每个像素被分为红色、绿色、蓝点，该模块可以显示 16.7M 的颜色。

## 2 Module Parameter 模组参数

Features	Details	Unit
Display Size(Diagonal) 显示尺寸(对角线)	2.42	inch
LCD type 液晶显示屏类型	AMOLED	-
Display Mode 显示模式	Transmissive OLED	-
Resolution 分辨率	450GB x 600	-
Active Area 显示区	36.72(H)×48.96(V)	mm
Module Outline 模组外形	38.68(H) ×51.56(V)×0.75(T)	mm
Display Colors 显示颜色	16.7M	-
Interface 接口	MIPI/QSPI/SPI	-
Driver IC 驱动 IC	CO6300	-
TP Viewing Area TP 视窗	37.12(H)×49.36(V)	mm
TP Outline(assembly) TP 外形	41.48(H) ×55.86(V)×0.7(T)	mm
TP IC	CST9220	-
Luminance on surface 亮度	800	cd/m <sup>2</sup>
View Direction 视角方向	All	Best image
Contrast ratio 对比度	100000:1	
Color gamut 色域	100%	
PPI 图像点密集度	311	-
Window effect 视窗效果	-	-
Cover plate surface effect 盖板表面效果	电镀 AF	-
Operating Temperature 工作温度	-30~70	°C
Storage Temperature 储存温度	-40~80	°C
Weight 重量	TBD	g

Note 1: Excluding hooks, posts , FPC/FPC tail etc.

## 3 Mechanical Drawings 结构图



REV.	DESCRIPTION	DATA	NAME

NO	SYMBOL
1	GND
2	TP_INT
3	TP_RST
4	TP_SDA
5	TP_SCL
6	TP_3.3V
7	GND
8	IOVCC
9	VCI
10	VBAT
11	VCI_EN
12	GND
13	MTP_PWR
14	RESET
15	CSX
16	SDA
17	DCX
18	SCL
19	D(1)
20	D(0)
21	TE
22	GND
23	D1P
24	D1N
25	GND
26	CLKP
27	CLKN
28	GND
29	DOP
30	DON
31	GND

TP\_PIN\_DESCRIPTION

TP	SYMBOL
1	TP_GND
2	TP_SDA_1.8V
3	TP_SCL_1.8V
4	TP_VDD_2.8V
5	TP_RST_1.8V
6	TP_INT_1.8V

NOTES:

- OPERATING TEMPERATURE: -30° C TO 70° C
- STORAGE TEMPERATURE: -40° C TO 80° C
- DRIVING IC: CO6300  
TOUCH IC: CST9220
- DISPLAY MODE: AMOLED
- GENERAL TOLERANCE: ±0.20mm  
( ) MEANS DIMENSION FOR REFERENCE
- SPECIAL REQUIRE: NO  
Brightness: 800 nits typ
- THE COLOR COORDINATES: X=0.30±0.03 ; Y=0.31±0.03
- REQUIREMENTS ON ENVIRONMENTAL PROTECTION: ROHS .

1	CG材质&表面硬度	旭硝子 0.7mm≥0H (750gf)
2	达因值	CG背面达因能≥32dyne; (CG油墨面、F1≠非ITO面)
3	强化条件	强化深度DOL≥8um, 表面应力CS≥450Mpa
4	钢球冲击能量	64g钢球, 30cm(0.19J)高度V.A.中心点3次, 无破损;

DRAWN BY: 绘图	PRODUCT NO: 产品编号	TOH240XVT-03CG	SCALE: 比例	1:1
CHECKED BY: 审核	CLIENT NO: 客户编号		UNITS: 单位	MM
DATE: 日期	VERSION NUMBER: 版本号	V0	VIEW: 投影方式	第一角

## 4 Module Interface 模组接口定义

NO	SYMBOL	FUNCTION
1	GND	Power Ground
2	TP-INT	Touch panel interrupt output.If not used, please open it.
3	TP-RST	Touch panel rese.If not used, please open it.
4	TP-SDA	Touch panel I2C data.If not used, please open it.
5	TP-SCL	Touch panel I2C clock..If not used, please open it
6	TP-3.3V	Touch panel Power Supply.
7	GND	Power Ground
8	IOVCC	Power Supply for I/O, IOVCC=1.65V~3.3V
9	VCI	Power Supply for Analog, VCC=2.5V~3.6V
10	VBAT	Power Input for SIBO VBAT=3.7~4.5V
11	VCI-EN	Power IC enable control pin,VCI-EN=2.5~3.6V
12	GND	Power Ground
13	MTP PWR	MTP programming power supply pin. Must be left open or connected to VSSD in normal condition.
14	RESET	This signal will reset the device and it must be applied to properly initialize the chip. Signal is active low
15	CSX	Chip select input pin (“Low” enable) in 80-series MPU I/F and SPI I/F.
16	SDA	SPI interface input/output pin.the data is latched on the rising edge of the SCL signal
17	DCX	Display data / command selection in 80-series MPU I/F and 4-wire SPI I/F.
18	SCL	WRX : Writes strobe signal to write data when WRX is “Low” in 80-series MPU I/F. SCL: A synchronous clock signal in SPI I/F.
19	D(1)	8-bit bi-directional data bus for 80-series MPU I/F and 8-bit input data bus for RGB I/F. - These pins are not used for SPI, MIPI, please open this pin.
20	D(0)	
21	TE	Tearing effect output pin to synchronize MCU to frame writing. This pin is low when it is not activated. If not used, please open it.
22	GND	Power Ground
23	D1P	MIPI DSI differential data pair. (Data lane 1 positive polarity)
24	D1N	MIPI DSI differential data pair. (Data lane 1 negative polarity)
25	GND	Power Ground
26	CLKP	MIPI DSI differential clock pair
27	CLKN	MIPI DSI differential clock pair
28	GND	Power Ground
29	D0P	MIPI DSI differential data pair. (Data lane 0 positive polarity)
30	D0N	MIPI DSI differential data pair. (Data lane 0 negative polarity)
31	GND	Power Ground

## 5 Application Circuit 应用电路

TBD

## 6 Absolute Maximum Ratings 绝对最大额定值

VSS=0V, Ta=25°C

Item 项目	Symbol	Min.最小	Max.最大	Unit 单位	
Supply Voltage 电源电压	Power supply 电力供应	VBAT	-0.3	+4.5	V
	Analog 模拟	VCI	-0.3	+3.6	V
	IO	IOVCC	-0.3	+3.6	V
Input Voltage 输入电压	$V_i$	-0.3	IOVCC+0.3	V	
Storage temperature 储存温度	$T_{stg}$	-40	+80	°C	
Operating temperature 工作温度	$T_{op}$	-30	+70	°C	
Storage humidity 存储湿度	$H_{stg}$	10	Note 1	%RH	
Operating humidity 操作湿度	$H_{op}$	10	Note 1	%RH	

Note 1: 90%RH max, If Ta is below 50°C; 60%RH max, If Ta is over 60°C.

## 7 Electrical Specification 电性规格

DC Characteristics 直流特性

Item 项目	Symbol	Min.最小	Typ.中间	Max.最大	Unit 单位	
Supply Voltage 电源电压	Powersupply 电力供应	VBAT	3.7	4.2	4.5	V
	Analog	VCI	2.8	3.3	3.3	V
	IO	IOVDD	1.65	1.8	3.3	V
Logic Low input voltage 输入电压低	$V_{IL}$	-0.3IOVCC	-	0.3IOVCC	V	
Logic High input voltage 输入电压高	$V_{IH}$	0.7IOVCC	-	IOVCC	V	
Logic Low output voltage 输出电压低	$V_{OL}$	-	-	0.2IOVCC	V	
Logic High output voltage 输出电压高	$V_{OH}$	0.8IOVCC	-	IOVCC	V	
Current Consumption 电流消耗	Normal display 正常的显示	Ivdd	-	TBD	-	mA
	Standby mode 待机模式	Ivdd	-	TBD	-	uA
Frame Frequency 帧频	$f_{FR}$	-	60	-	Hz	

## 8 Initialization Code 初始化代码

TBD

## 9 Optical Specifications 光学规格

### 9.1 Optical Specifications 光学规格

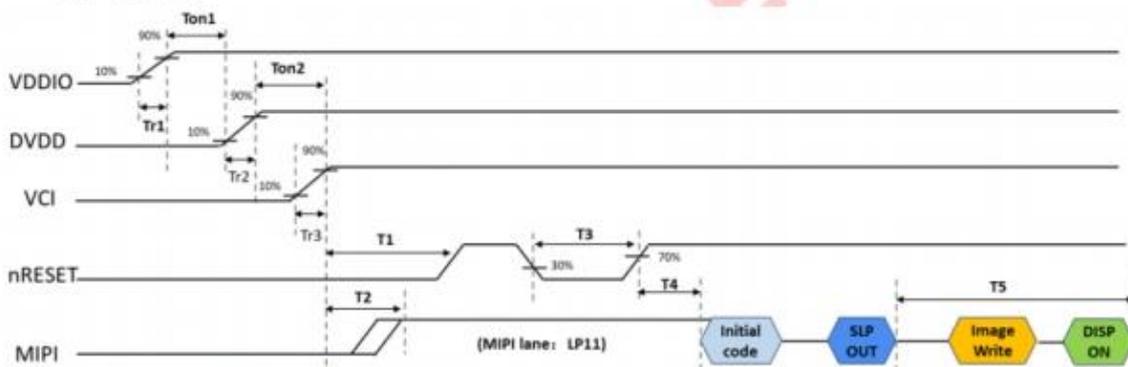
Ta=25°C, VDD=2.8V

	Item 项目	Symbol 标志	Condition 条件	Specification 规范			Unit 单位	
				Min. 最小	Typ. 中间	Max. 最大		
Backlight On (Transmissive Mode)	Luminance on surface( $I_f=20\text{Ma}$ ) 表面亮度	$L_v$	Normally viewing angle	700	800	-	cd/m <sup>2</sup>	
	Contrast ratio 对比度	$CR$	$\theta_x = \theta_y = 0^\circ$	100000	-	-	-	
	Response time 响应时间	$TR$	-	-	-	-	4	ms
		$TF$			-	-	4	
	Chromaticity Transmissive 色度	Red 红	$XR$	-	0.650	0.680	0.710	-
			$YR$		0.289	0.319	0.349	-
		Green 绿	$XG$		0.200	0.240	0.280	-
			$YG$		0.682	0.722	0.762	-
		Blue 蓝	$XB$		0.110	0.140	0.170	-
			$YB$		0.012	0.042	0.072	-
		White 白	$XW$		-	-	-	-
			$YW$		-	-	-	-
	Viewing Angle 视角	Horizo ntal	$\Theta_{x+}$	Center $CR \geq 10$	80	-	-	Deg.
			$\Theta_{x-}$		80	-	-	
		Vertical	$\Theta_{y+}$		80	-	-	
$\Theta_{y-}$			80		-	-		
NTSC Ratio(Gamut)		-	-	-	100	-	%	

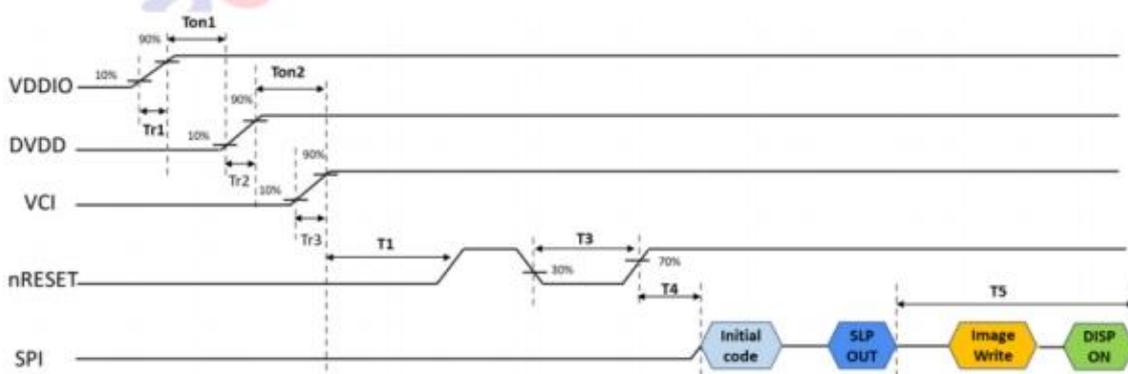
9.2 The power on/off sequence is illustrated below 电源启动/关闭顺序

The Power on sequence is shown as below.

MIPI CASE:

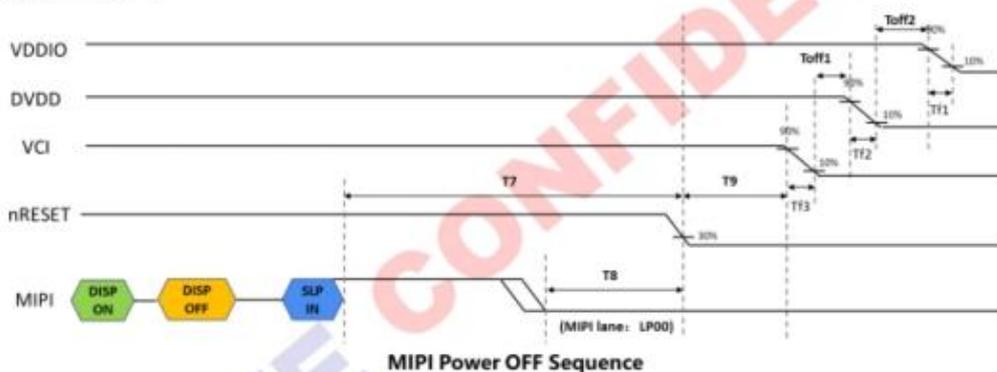


SPI CASE:



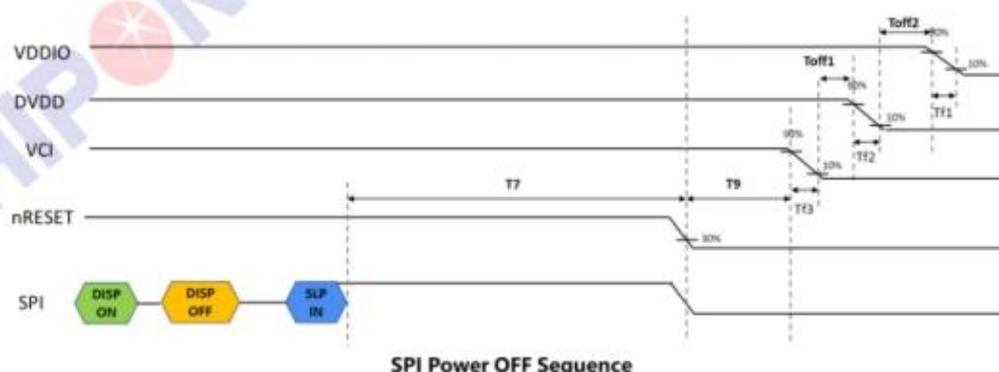
The power off sequence is shown as below:

MIPI CASE:



MIPI Power OFF Sequence

SPI CASE:



SPI Power OFF Sequence

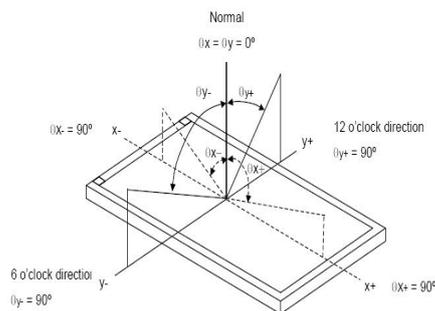
**9.3 Definition of Contrast Ratio 对比度的定义**

Contrast is measured perpendicular to display surface in reflective and transmissive mode. The measurement condition is:

<b>Measuring Equipment 测量设备</b>	<b>BM-7 or EQUI</b>
Measuring Point Diameter 测点直径	3mm//1mm
Measuring Point Location 测点位置	Active Area centre point
Test pattern 测试模式	A: All Pixels white
	B: All Pixel black
Contrast setting	Maximum

Definitions: CR (Contrast) = Luminance of White Pixel / Luminance of Black Pixel

**9.4 Definition of Viewing Angles 视角的定义**



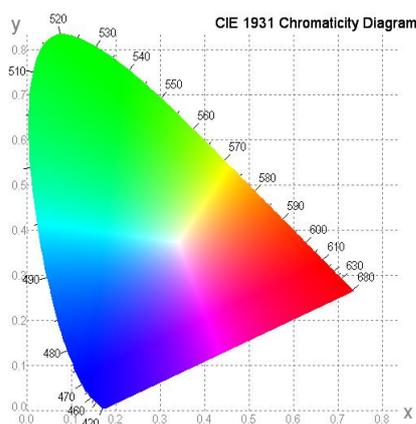
Measuring machine: LCD-5100 or EQUI

**9.5 Definition of Color Appearance 色域的定义**

R,G,B and W are defined by (x, y) on the IE chromaticity diagram

NTSC=area of RGB triangle/area of NTSC triangleX100%

Measuring picture: Red, Green, Blue and White (Measuring machine: BM-7)



**9.6 Definition of Surface Luminance, Uniformity and Transmittance**

表面亮度、均匀性和透光率的定义

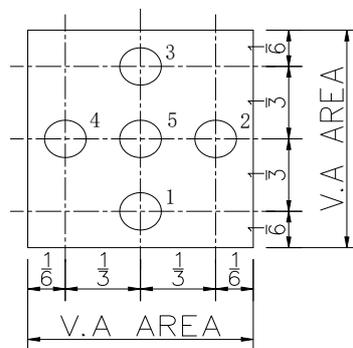
Using the transmissive mode measurement approach, measure the white screen luminance of the display panel and backlight.

9.6.1 Surface Luminance: LV = average (LP1:LP5)

9.6.2 Uniformity = Minimal (LP1:LP5) / Maximal (LP1:LP5) \* 100%

9.6.3 Transmittance = LV on LCD / LV on Backlight \* 100%

Note :Measuring machine:BM-7



## 10 Quality Assurance 质量标准

### 10.1 Purpose 目的

This standard for Quality Assurance assures the quality of LCD module products supplied to customer by Tailorpixels .

### 10.2 Agreement Items 协议项目

Tailorpixels and customer shall negotiate if the following situation occurs:

- 10.2.1 Discrepancies between Tailorpixels 's QA standards and customer's QA standards.
- 10.2.2 Additional requirement to be added in product specification.
- 10.2.3 Any other special problem.

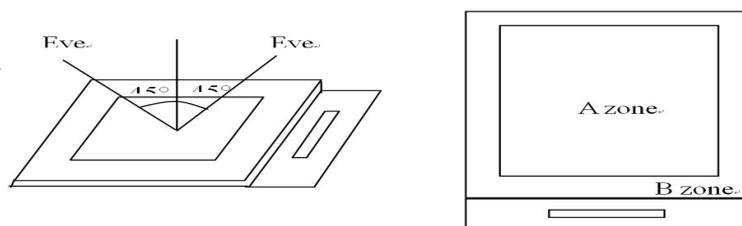
### 10.3 Standard of the Product Visual Inspection 产品外观检验标准

#### 10.3.1 Appearance inspection:

10.3.1.1 The inspection must be under illumination about 1000 – 1500 lx, and the distance of view must be at 30cm  $\pm$  2cm.

10.3.1.2 The viewing angle should be 45° from the vertical line without reflection light or follows customer's viewing angle specifications.

10.3.1.3 Definition of area: A Zone: Active Area, B Zone: Viewing Area.



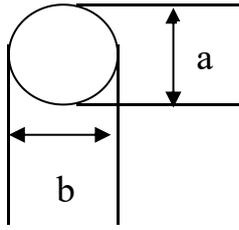
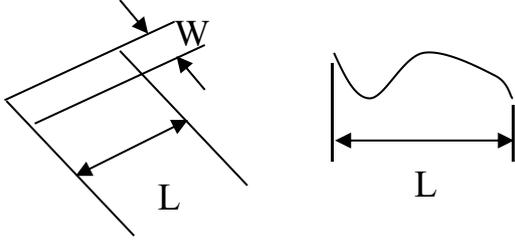
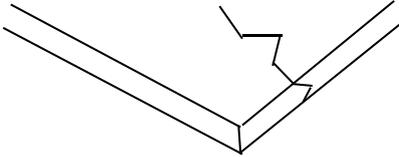
10.3.2 Basic principle: A set of sample to indicate the limit of acceptable quality level must be discussed by both Tailorpixels and customer when there is any dispute happened.

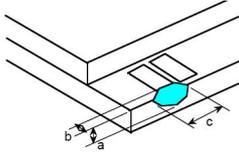
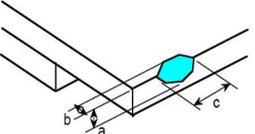
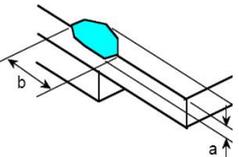
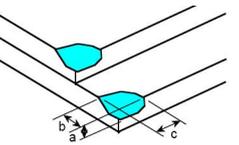
### 10.4 Inspection Specification 检验标准

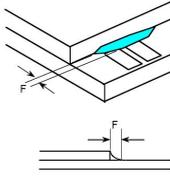
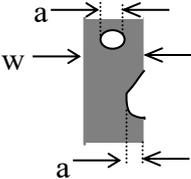
Sampling plan according to GB/T2828.1-2012/ISO 2859-1: 1999 and ANSI/ASQC Z1.4-1993, normal level 2 and based on:

Major defect: AQL 0.4

Minor defect: AQL 1.0

No.	Item 项目	Criteria (Unit: mm) 标准															
01	Black / White spot Foreign material (Round type) Pinholes Stain Particles inside cell. (Minor defect) 黑/白斑/异物 (圆类型)细胞内的针孔染色颗粒。(小瑕疵)	 <table border="1" data-bbox="951 197 1433 600"> <thead> <tr> <th>Size \ Area</th> <th>Acc. Qty</th> </tr> </thead> <tbody> <tr> <td><math>\phi \leq 0.10</math></td> <td>Ignore</td> </tr> <tr> <td><math>0.10 &lt; \phi \leq 0.2</math></td> <td>2</td> </tr> <tr> <td><math>0.2 &lt; \phi</math></td> <td>0</td> </tr> <tr> <td>Total</td> <td><math>N \leq 3</math> NO include <math>\phi \leq 0.10</math></td> </tr> </tbody> </table> <p><math>\phi = (a + b) / 2</math>                      Distance between 2 defects should more than 10mm apart.</p>	Size \ Area	Acc. Qty	$\phi \leq 0.10$	Ignore	$0.10 < \phi \leq 0.2$	2	$0.2 < \phi$	0	Total	$N \leq 3$ NO include $\phi \leq 0.10$					
Size \ Area	Acc. Qty																
$\phi \leq 0.10$	Ignore																
$0.10 < \phi \leq 0.2$	2																
$0.2 < \phi$	0																
Total	$N \leq 3$ NO include $\phi \leq 0.10$																
02	Black and White line Scratch Foreign material (Line type) (Minor defect) 黑白线刮伤异物(类型)行 (小瑕疵)	 <table border="1" data-bbox="632 943 1257 1234"> <thead> <tr> <th>Length</th> <th>Width</th> <th>Acc. Qty</th> </tr> </thead> <tbody> <tr> <td>/</td> <td><math>W \leq 0.03</math></td> <td>Ignore</td> </tr> <tr> <td><math>L \leq 3</math></td> <td><math>0.05 &lt; W \leq 0.08</math></td> <td>2</td> </tr> <tr> <td>/</td> <td><math>0.08 &lt; W</math></td> <td>0</td> </tr> <tr> <td colspan="2">Total</td> <td><math>N \leq 2</math></td> </tr> </tbody> </table> <p>Distance between 2 defects should more than 10mm apart.                      Scratches not viewable through the back of the display are acceptable.</p>	Length	Width	Acc. Qty	/	$W \leq 0.03$	Ignore	$L \leq 3$	$0.05 < W \leq 0.08$	2	/	$0.08 < W$	0	Total		$N \leq 2$
Length	Width	Acc. Qty															
/	$W \leq 0.03$	Ignore															
$L \leq 3$	$0.05 < W \leq 0.08$	2															
/	$0.08 < W$	0															
Total		$N \leq 2$															
03	Glass Crack (Minor defect) 玻璃裂纹(小瑕疵)	 <p>LCD with extensible crack line is unacceptable(When press the cracked LCD area, the line will expand, we define it is extensible crack line)</p>															
04	Glass Chipping Pad Area: (Minor defect) 玻璃碎片面积⊗轻微缺陷)	<table border="1" data-bbox="775 1921 1246 2022"> <thead> <tr> <th>Length and Width</th> <th>Acc. Qty</th> </tr> </thead> <tbody> <tr> <td><math>c &lt; 5.0, b &lt; 0.4</math></td> <td>Ignore</td> </tr> </tbody> </table>	Length and Width	Acc. Qty	$c < 5.0, b < 0.4$	Ignore											
Length and Width	Acc. Qty																
$c < 5.0, b < 0.4$	Ignore																

No.	Item 项目	Criteria (Unit: mm) 标准										
												
05	<p>Glass Chipping Rear of PadArea⊗Minordefect                      ) 玻璃切屑垫区后方:                      (小瑕疵)</p> 	<table border="1"> <thead> <tr> <th>Length and Width</th> <th>Acc. Qty</th> </tr> </thead> <tbody> <tr> <td><math>c &gt; 3.0, b &lt; 1.0</math></td> <td>1</td> </tr> <tr> <td><math>c &lt; 3.0, b &lt; 1.0</math></td> <td>2</td> </tr> <tr> <td><math>c &lt; 3.0, b &lt; 0.5</math></td> <td>4</td> </tr> <tr> <td colspan="2" style="text-align: center;"><math>a &lt; \text{Glass Thickness}</math></td> </tr> </tbody> </table>	Length and Width	Acc. Qty	$c > 3.0, b < 1.0$	1	$c < 3.0, b < 1.0$	2	$c < 3.0, b < 0.5$	4	$a < \text{Glass Thickness}$	
Length and Width	Acc. Qty											
$c > 3.0, b < 1.0$	1											
$c < 3.0, b < 1.0$	2											
$c < 3.0, b < 0.5$	4											
$a < \text{Glass Thickness}$												
06	<p>Glass Chipping Except Pad Area: (Minor defect) 除垫区外的玻璃切屑⊗小瑕疵)</p> 	<table border="1"> <thead> <tr> <th>Length and Width</th> <th>Acc. Qty</th> </tr> </thead> <tbody> <tr> <td><math>c \leq 0.6, b &lt; 5.0</math></td> <td>Ignore</td> </tr> <tr> <td colspan="2" style="text-align: center;"><math>a &lt; \text{Glass Thickness}</math></td> </tr> </tbody> </table>	Length and Width	Acc. Qty	$c \leq 0.6, b < 5.0$	Ignore	$a < \text{Glass Thickness}$					
Length and Width	Acc. Qty											
$c \leq 0.6, b < 5.0$	Ignore											
$a < \text{Glass Thickness}$												
07	<p>Glass Corner Chipping: (Minor defect) 玻璃切角⊗小瑕疵)</p> 	<table border="1"> <thead> <tr> <th>Length and Width</th> <th>Acc. Qty</th> </tr> </thead> <tbody> <tr> <td><math>c &lt; 2.0, b &lt; 1.5</math></td> <td>Ignore</td> </tr> <tr> <td><math>c &lt; 1.5, b &lt; 2</math></td> <td>Ignore</td> </tr> <tr> <td colspan="2" style="text-align: center;"><math>a &lt; \text{Glass Thickness}</math></td> </tr> </tbody> </table>	Length and Width	Acc. Qty	$c < 2.0, b < 1.5$	Ignore	$c < 1.5, b < 2$	Ignore	$a < \text{Glass Thickness}$			
Length and Width	Acc. Qty											
$c < 2.0, b < 1.5$	Ignore											
$c < 1.5, b < 2$	Ignore											
$a < \text{Glass Thickness}$												

No.	Item 项目	Criteria (Unit: mm) 标准										
08	Glass Burr: (Minor defect) 玻璃磨⊗小瑕疵 	Glass burr don't affect assemble and module dimension.  <table border="1" data-bbox="775 338 1246 472"> <thead> <tr> <th>Length</th> <th>Acc. Qty</th> </tr> </thead> <tbody> <tr> <td><math>F &lt; 0.5</math></td> <td>Ignore</td> </tr> </tbody> </table>	Length	Acc. Qty	$F < 0.5$	Ignore						
Length	Acc. Qty											
$F < 0.5$	Ignore											
09	FPC Defect: (Minor defect) FPC 缺陷⊗小瑕疵 	9.1 Dent, pinhole width $a < w/3$ . (w: circuitry width.) 9.2 Open circuit is unacceptable. 9.3 No oxidation, contamination and distortion.										
10	Screen deformation 屏幕上的变形 	Test for insertion of plug gauge at highest warping point: (3.1-6.0inches) $H \leq 0.3\text{MM}$ The client has special requirements, according to drawing										
11	Bubble on Polarizer (Minor defect) 偏光片上的气泡(小瑕疵)	<table border="1" data-bbox="775 1234 1246 1489"> <thead> <tr> <th>Diameter</th> <th>Acc. Qty</th> </tr> </thead> <tbody> <tr> <td><math>\varphi \leq 0.15</math></td> <td>Ignore</td> </tr> <tr> <td><math>0.15 &lt; \varphi \leq 0.25</math></td> <td>2</td> </tr> <tr> <td><math>0.25 &lt; \varphi \leq 0.3</math></td> <td>1</td> </tr> <tr> <td><math>0.3 &lt; \varphi</math></td> <td>0</td> </tr> </tbody> </table>	Diameter	Acc. Qty	$\varphi \leq 0.15$	Ignore	$0.15 < \varphi \leq 0.25$	2	$0.25 < \varphi \leq 0.3$	1	$0.3 < \varphi$	0
Diameter	Acc. Qty											
$\varphi \leq 0.15$	Ignore											
$0.15 < \varphi \leq 0.25$	2											
$0.25 < \varphi \leq 0.3$	1											
$0.3 < \varphi$	0											
12	Dent on Polarizer (Minor defect) 偏光片上的凹痕(小瑕疵)	<table border="1" data-bbox="775 1507 1246 1762"> <thead> <tr> <th>Diameter</th> <th>Acc. Qty</th> </tr> </thead> <tbody> <tr> <td><math>\varphi \leq 0.15</math></td> <td>Ignore</td> </tr> <tr> <td><math>0.15 &lt; \varphi \leq 0.25</math></td> <td>2</td> </tr> <tr> <td><math>0.25 &lt; \varphi \leq 0.30</math></td> <td>1</td> </tr> <tr> <td><math>0.3 &lt; \varphi</math></td> <td>0</td> </tr> </tbody> </table>	Diameter	Acc. Qty	$\varphi \leq 0.15$	Ignore	$0.15 < \varphi \leq 0.25$	2	$0.25 < \varphi \leq 0.30$	1	$0.3 < \varphi$	0
Diameter	Acc. Qty											
$\varphi \leq 0.15$	Ignore											
$0.15 < \varphi \leq 0.25$	2											
$0.25 < \varphi \leq 0.30$	1											
$0.3 < \varphi$	0											
13	Bezel 边框	13.1 No rust, distortion on the Bezel.										

No.	Item 项目	Criteria (Unit: mm) 标准
14	Touch Panel 触控面板	<p>D: Diameter W: width L: length</p> <p>14.1 Spot: <math>D \leq 0.20</math> is acceptable  <math>0.20 &lt; D \leq 0.3</math>, acceptable QTY, 3  <math>D &gt; 0.3</math> is unacceptable</p> <p>14.2 Dent (dot) :  <math>D \leq 0.20</math> is acceptable  <math>0.20 &lt; D \leq 0.3</math>, acceptable QTY, 3  <math>D &gt; 0.30</math> is unacceptable            2dots are acceptable and the distance between defects should more than 10 mm.</p> <p>Dent (line) According to the limit sample</p> <p>14.3 Scratch: <math>W \leq 0.03</math>, <math>L \leq 10</math> is acceptable,  <math>0.03 &lt; W \leq 0.10</math>, <math>L \leq 10</math>, acceptable QTY, 3  <math>W &gt; 0.10</math> is unacceptable.            Distance between 2 defects should more than 10 mm.</p>
15	PCB	<p>15.1 No distortion or contamination on PCB terminals.</p> <p>15.2 All components on PCB must same as documented on the BOM/component layout.</p> <p>15.3 Follow IPC-A-600F.</p>
16	Soldering 焊接	Follow IPC-A-610C standard
17	Electrical Defect (Major defect) 电气缺陷(主要缺陷)	<p>The below defects must be rejected.</p> <p>17.1 Missing vertical / horizontal segment,            17.2 Abnormal Display.            17.3 No function or no display.            17.4 Current exceeds product specifications.            17.5 LCD viewing angle defect.            17.6 No Backlight.            17.7 Dark Backlight.            17.8 Touch Panel no function.            17.9 Dark Dot –one Allowed.            17.10 Bright Dot – one Allowed.</p> <p>Remark:            1. A pixel defect is acceptable if one color is none functional and causes a bright dot. The display may have one case where one color is out and cause a dark dot.            2. Bright dot caused by scratch and foreign object accords to item1.</p>
18	Light leak 漏光	Yellow light OK; White light, According to the limit sample

Remark: Visual and cosmetic defects are rejectable only if these fall within the LCD viewing area.

### 10.5 Classification of Defects 缺陷的分类

Visual defects (Except no / wrong label) are treated as minor defect and electrical defect is

major.

## 10.6 Identification/marketing criteria 识别/评分标准

Any unit with illegible / wrong /double or no marking/ label shall be rejected.

## 10.7 Packing 包装

10.7.1 There should be no damage of the outside carton box, each packaging box should has label in the correct location per packing drawing requirement.

10.7.2 All direct package materials shall offer ESD protection.

## 11 Reliability Specification 可靠性规范

Item 项目	Condition 条件	Cycle Time 周期时间	Quantity 数量	Remark 备注
Constant Temp. and Constant Humidity Operation Test 恒温恒湿运行试验	+60°C,90%RH	240hrs	--	*1
High Temp. Operation Test 高温操作试验	+70°C	240hrs	--	
Low Temp. Operation Test 低温操作试验	-30°C	240hrs	--	
High Temp. Storage Test 高温存储试验	+80°C	240hrs	--	
Low Temp. Storage Test 低温存储试验	-40°C	240hrs	--	
Thermal Shock Test 热冲击试验 (Non-operation)	-40°C →+80 °C (Per 30min)	100cycles	--	
ESD Test(end product) ESD 测试(最终产品)	150Pf 330Ω ±8KV(Air)/±4KV(Contact)	20point	--	*2, *3
Vibration Test(for packaging) 振动测试(包装)	Frequency: 10Hz to 55Hz to10Hz,Swing:1.5mm,time: X,Y,Z each 2H.	6hrs	One inner carton	*4

Note 1. For humidity test, DI water should be used.

Inspection Standard: Inspect after 1-2hrs storage at room temperature, the sample shall be free from the following defects:

- Air bubble in the LCD
- Seal Leakage
- Non-display
- Missing Segment
- Glass Crack
- IDD is greater than twice initial value.
- Others as per QA Inspection Criteria

Note 2. No defect is allowed after testing

The End Product ESD value is only indicative and depends on customer ESD

protection design for the whole system.

Note 3. ESD should be applied to LCD glass panel, not other areas (such as on IC and so on) IDD should be within twice initial value.

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.

Note 4. Only upon request.

## 12 Precautions and Warranty 注意事项和保证

### 12.1 Safety 安全

12.1.1 The liquid crystal in the LCD is poisonous. Do not put it in your mouth. If the liquid crystal touches your skin or clothes, wash it off immediately using soap and water.

12.1.2 Since the liquid crystal cells are made of glass, do not apply strong impact on them.

Handle with care.

### 12.2 Handling 处理

12.2.1 Reverse and use within ratings in order to keep performance and prevent damage.

12.2.2 Do not wipe the polarizer with dry cloth, as it might cause scratch. If the surface of the LCD needs to be cleaned, wipe it swiftly with cotton or other soft cloth soaked with petroleum IPA, do not use other chemicals.

### 12.3 Operation 操作

12.3.1 Do not drive LCD with DC voltage

12.3.2 Response time will increase below lower temperature

12.3.3 Display may change color with different temperature

12.3.4 Mechanical disturbance during operation, such as pressing on the display area, may cause the segments to appear “fractured”.

### 12.4 Static Electricity 静电

12.4.1 CMOS LSIs are equipped in this unit, so care must be taken to avoid the electro-static charge, by ground human body, etc.

12.4.2 The normal static prevention measures should be observed for work clothes and benches.

12.4.3 The module should be kept into anti-static bags or other containers resistant to static for storage.

### 12.5 Limited Warranty 有限质量保证

12.5.1 Unless otherwise agreed between Tailorpixels and customer, Tailorpixels will replace or repair any of its LCD and LCM which Tailorpixels found to be defective electrically and visually when inspected in accordance with Tailorpixels Quality Standards, for a period of one year from date of shipment.HU

12.5.2 The warranty liability of Tailorpixels is limited to repair and/or replacement. Tailorpixels will not be responsible for any consequential loss.

12.5.3 If possible, we suggest you use up all modules in six months. If the module storage time over twelve months, we suggest that recheck it before the module be used.

## 13 Packaging 包装

TBD

## 14 Prior Consult Matter 免责声明

1. For Tailorpixels standard products, we keep the right to change material, process for improving the product property without prior notice to our customer.

2. For OEM products, if any changes are needed which may affect the product property, we will consult with our customer in advance.

3. If you have special requirement about reliability condition, please let us know before you start the test on our samples.

### Reference 参考

Item 项目	Description 描述	Revision 修订
CO6300	IC Data sheet	V0
CST9220	IC Data sheet	V0
Panel 2.42 寸 450X600	LCM assembly drawing	V0