NISIN

产品规格承认书

客户： 客户型号：			NS430WV3101AZ01		
批准 APPROVED	审核 CHECKED	拟制 DESIGNED	批准 APPROVED	审核 CHECKED	拟制 DESIGNED

R-R-020-A0

修改记录

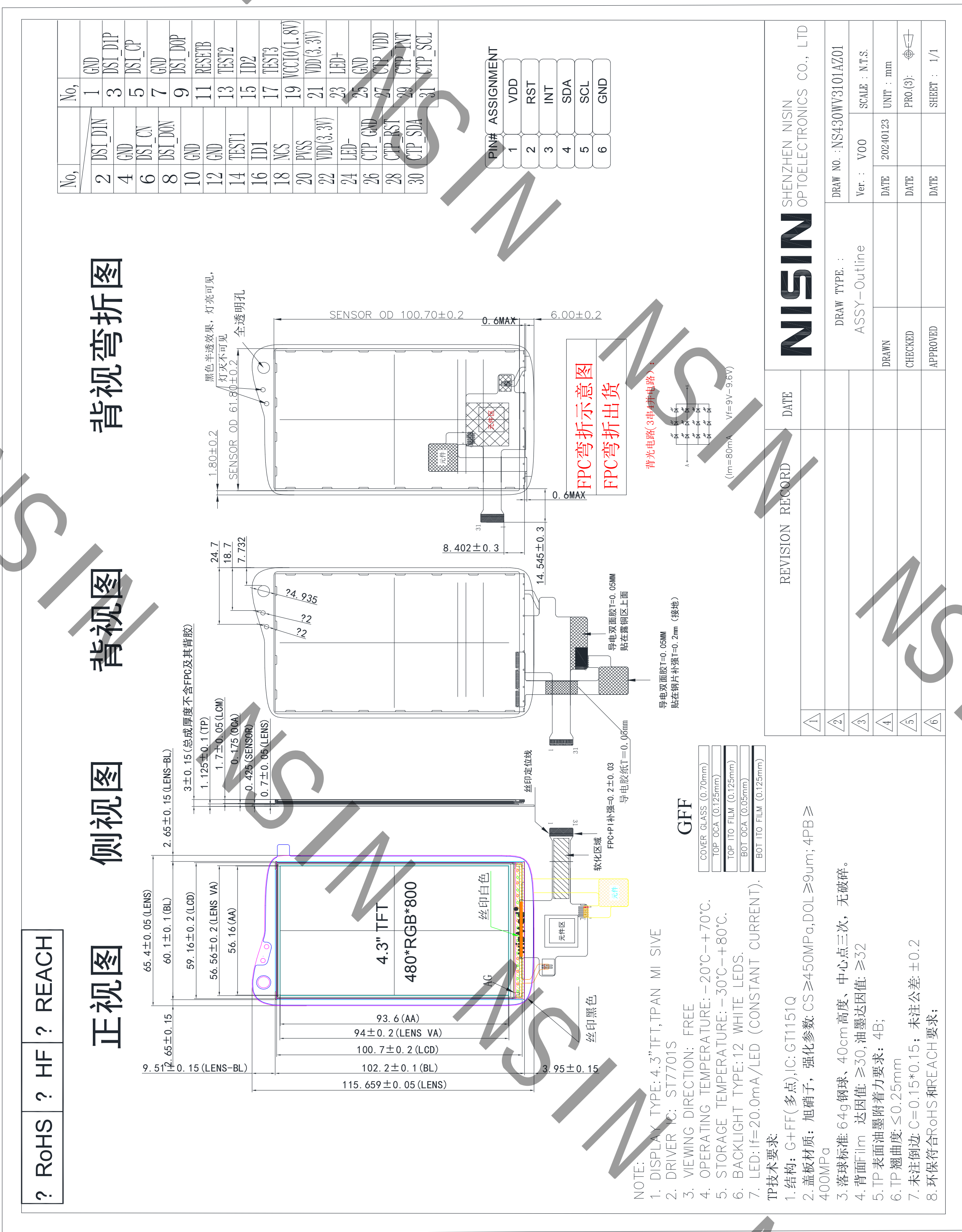
日期	版本	修改内容	页数	拟制
2024-3-25	V00	初版发行	所有	

目录

1.产品规格（Product Specifications）

面板类型（Panel Type）	TFT LCD
面板尺寸(Panel Size)	4.3 inch
显示类型（Display Type）	Normal Black
分辨率（Resolution）	480(RGB) x 800 (dot)
显示点间距（Dot Pitch）	0.084mm X 0.084mm
显示色彩（color）	16.7M
视角（View Angle）	U/D/L/R: 80/80/80/80
显示驱动 IC（Display Driver IC）	ST7701S
接口类型（Interface Type）	MIPI 2 Lane
触摸类型（TP Type）	外挂
触摸 IC （TP IC）	GT1151QM
外形尺寸（Dimensions）	65.4(H) X 115.659(V) X 3 (T) (mm)
显示区尺寸（Display area）	56.16x 93.6(mm)
模组亮度（Module Brightness）	550cd/m2（MIN）
触摸点数 Touch points	5
触摸按键 Touch Key Number	0
触摸屏固件版本	Version:

2.产品图纸（Product Drawings）



3.接口定义（The Interface Definition）

详见 CAD 图纸

4.电性特性（Electrical Characteristics）

Sitronix ST7701S

7 DRIVER ELECTRICAL CHARACTERISTICS

7.1 Absolute Operation Range

Item	Symbol	Rating	Unit
Supply Voltage	VDD	-0.3 ~ +3.6	V
Supply Voltage (Logic)	VDDI	- 0.3 ~ +3.6	V
Driver Supply Voltage	VGH-VGL	-0.3 ~ +30.0	V
Logic Input Voltage Range	VIN	-0.3 ~ VDDI + 0.5	V
Logic Output Voltage Range	VO	-0.3 ~ VDDI + 0.5	V
Operating Temperature Range	TOPR	-30 ~ +85	℃
Storage Temperature Range	TSTG	-40 ~ +125	℃

Table 1 Absolute Operation Range

Note: If one of the above items is exceeded its maximum limitation momentarily, the quality of the product may be degraded. Absolute maximum limitation, therefore, specify the values exceeding which the product may be physically damaged. Be sure to use the product within the recommend range.

7.2 DC Characteristics

Parameter	Symbol	Condition	Specification			Unit	Related Pins
			MIN.	TYP.	MAX.		
Power & Operation Voltage							
System Voltage	VDD	Operating voltage	2.5	2.8	3.6	V	
Interface Operation Voltage	VDDI	I/O Supply Voltage	1.65	1.8	3.3	V	
Gate Driver High Voltage	VGH		11.5		17	V	
Gate Driver Low Voltage	VGL		-7.6		-12	V	
Gate Driver Supply Voltage		| VGH-VGL |	-		30	V	
Input / Output							
Logic-High Input Voltage	VIH		0.7VDDI		VDDI	V	Note 1
Logic-Low Input Voltage	VIL		VSS		0.3VDDI	V	Note 1
Logic-High Output Voltage	VOH	IOH = -1.0mA	0.8VDDI		VDDI	V	Note 1
Differential Input High Threshold Voltage	VIT+			0	50	mV	MIPI_CLK MIPI_Data
Differential Input Low Threshold Voltage	VIT-		-50	0		mV	
Single-ended Receiver Input Operation Voltage Range	VIR		0.5		1.2	V	
Logic-Low Output Voltage	VOL	IOL = +1.0mA	VSS		0.2VDDI	V	Note 1
Logic-High Input Current	IIH	VIN = VDDI			1	uA	Note 1
Logic-Low Input Current	IIL	VIN = VSS	-1			uA	Note 1
Input Leakage Current	IIL	IOH = -1.0mA	-0.1		0.1	uA	Note 1
VCOM Voltage							
VCOM amplitude	VCOM			VSS		V	
Source Driver							
Gamma Reference Voltage(Positive)	VAP		4.4		6.4	V	
Gamma Reference Voltage(Negative)	VAN		-2.6		-4.6	V	
Source Output Settling Time	Tr	Below with 99% precision			10	us	Note 2

7.5.4 MIPI Interface Characteristics:

7.5.4.1 High Speed Mode

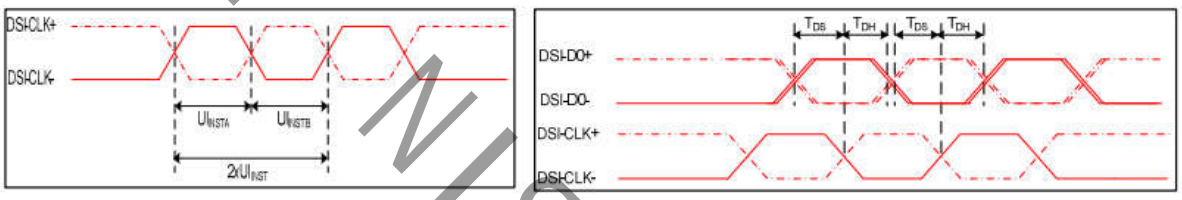


Figure 4 DSI clock channel timing

Figure 5 Rising and falling time on clock and data channel

VDDI=1.8,VDD=2.8, AGND=DGND=0V, Ta=25 ℃

Signal	Symbol	Parameter	MIN	MAX	Unit	Description
DSI-CLK+/-	$2xUI_{INSTA}$	Double UI instantaneous	4	25	ns	
DSI-CLK+/-	UI_{INSTA} UI_{INSTB}	UI instantaneous halfs	2	12.5	ns	UI = UI_{INSTA}= UI_{INSTB}
DSI-Dn+/-	tDS	Data to clock setup time	0.15	-	UI	
DSI-Dn+/-	tDH	Data to clock hold time	0.15	-	UI	

Table 7 Mipi Interface- High Speed Mode Timing Characteristics

7.5.4.2 Lowe Power Mode

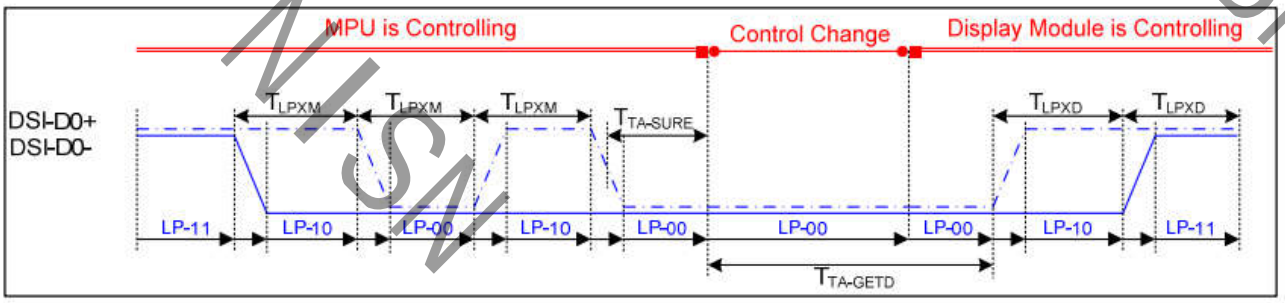


Figure 6 Bus Turnaround (BTA) from display module to MPU Timing

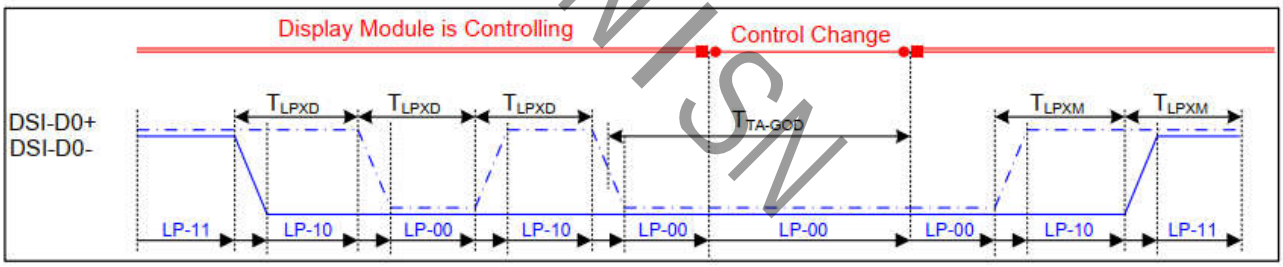


Figure 7 Bus Turnaround (BTA) from MPU to display module Timing

VDDI=1.8,VDD=2.8, AGND=DGND=0V, Ta=25 ℃

Signal	Symbol	Parameter	MIN	MAX	Unit	Description
DSI-D0+/-	TLPXM	Length of LP-00,LP-01, LP-10 or LP-11 periods MPU→Display Module	50	75	ns	Input
DSI-D0+/-	TLPXD	Length of LP-00,LP-01, LP-10 or LP-11 periods MPU→Display Module	50	75	ns	Output
DSI-D0+/-	TTA-SURED	Time-out before the MPU start driving	T_{LPXD}	$2xT_{LPXD}$	ns	Output
DSI-D0+/-	TTA-GETD	Time to drive LP-00 by display module	$5xT_{LPXD}$		ns	Input
DSI-D0+/-	TTA-GOD	Time to drive LP-00 after turnaround request-MPU	$4xT_{LPXD}$		ns	Output

Table 8 Mipi Interface Low Power Mode Timing Characteristics

7.5.5 Reset Timing:

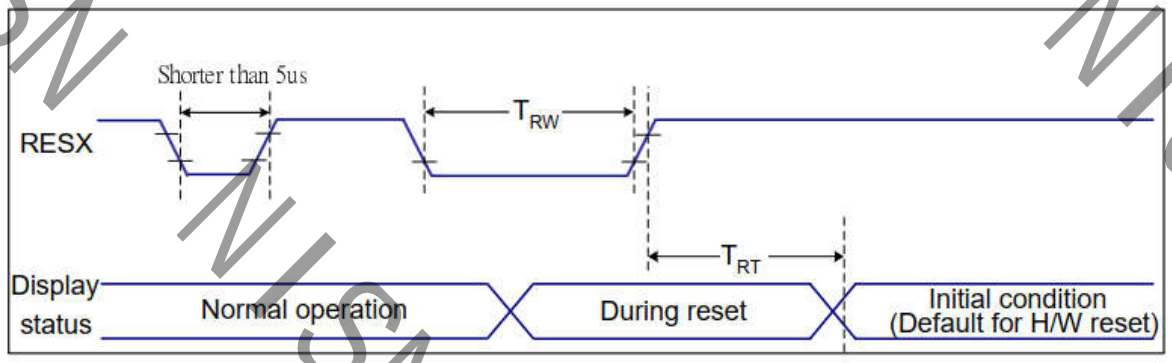


Figure 9 Reset Timing

VDDI=1.8,VDD=2.8, AGND=DGND=0V, Ta=25 ℃

Related Pins	Symbol	Parameter	MIN	MAX	Unit
RESX	TRW	Reset pulse duration	10	-	us
	TRT	Reset cancel	-	5 (Note 1, 5)	ms
				120(Note 1, 6, 7)	ms

Table 9 Reset Timing

Notes:

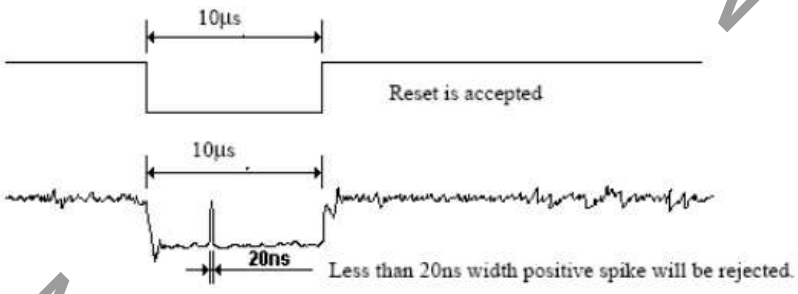
1. The reset cancel includes also required time for loading ID bytes, VCOM setting and other settings from NVM (or similar device) to registers. This loading is done every time when there is HW reset cancel time (tRT) within 5 ms after a rising edge of RESX.

2. Spike due to an electrostatic discharge on RESX line does not cause irregular system reset according to the table below:

RESX Pulse	Action
Shorter than 5us	Reset Rejected
Longer than 9us	Reset
Between 5us and 9us	Reset starts

3. During the Resetting period, the display will be blanked (The display is entering blanking sequence, which maximum time is 120 ms, when Reset Starts in Sleep Out –mode. The display remains the blank state in Sleep In –mode.) and then return to Default condition for Hardware Reset.

4. Spike Rejection also applies during a valid reset pulse as shown below:

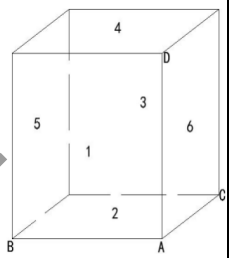


5. When Reset applied during Sleep In Mode.

6. When Reset applied during Sleep Out Mode.

7. It is necessary to wait 5msec after releasing RESX before sending commands. Also Sleep Out command cannot be sent for 120msec.

7.可靠性实验测试(Reliability Test Conditions And Methods)

<table>
<tr><th>序号</th><th>试验项目</th><th>试验条件及方法</th><th>试验设备</th><th>检验项目</th><th>检验工具</th></tr>
<tr><td>1</td><td>高温高湿(静、动态)试验</td><td>温度 60℃±3℃,湿度 90%±3%,要求选择时间分别为 96 小时,静、动态（产品点亮）在室温下恢复 2 小时后进行外观,显示功能检查。</td><td>恒温恒湿试验机</td><td>检验外观、功能、抗腐蚀性</td><td rowspan="2">目视/测试架/客户样机/显微镜</td></tr>
<tr><td>2</td><td>高、低温冲击试验</td><td>静态-30℃（30 分钟）∽ 80℃（30 分钟）∽ -30℃（30 分钟），24 个循环，在室温下恢复 2 小时后进行外观,显示功能检查。</td><td>冷热冲击试验机</td><td>检验外观、功能</td></tr>
<tr><td>3</td><td>高温存贮试验</td><td>常温70℃+-3℃、宽温80℃+/-3℃、96小时后在室温状态下恢复1 小时在2 小时内完成外观、显示功能检查。</td><td>烤箱</td><td>检验外观、功能</td><td rowspan="2">目视/测试架/客户样机</td></tr>
<tr><td>4</td><td>低温存贮试验</td><td>常温-20℃+/-3℃、宽温-30℃+/-3℃、条件的试验箱内保存96小时后在室温状态下恢复1 小时,在2 小时完成外观、显示功能检查，特别注意检查是否有漏液、断线、腐蚀、偏光片不良现象。</td><td>低温冰箱</td><td>检验外观、功能</td></tr>
<tr><td>5</td><td>低温存贮试验（动态）</td><td>常温-20℃+/-3℃、宽温-30℃+/-3℃条件的试验箱内点亮刷屏，过程中每1小时观察一次，检查显示功能，如：异常，卡机，花屏等。特别注意检查是否有漏液、断线、腐蚀、偏光片不良现象。</td><td>低温冰箱</td><td>检验外观、功能</td><td>目视/测试架/客户样机</td></tr>
<tr><td>6</td><td>包装模组跌落试验</td><td>1、跌落重量及自由落体高度:
(图二)
 

2、自由落体角度如下：
<table><tr><th>总重量</th><th>自由落体高度</th></tr><tr><td>0-9kg</td><td>92cm</td></tr><tr><td>9-25kg</td><td>76cm</td></tr><tr><td>25-45kg</td><td>53cm</td></tr><tr><td>45-68kg</td><td>46cm</td></tr><tr><td>大于 68kg</td><td>41cm</td></tr><tr><td></td><td></td></tr></table>1） 一角：A 角
2） 三菱：A-B, A-D, A-C
3） 六面：面 1，面 2，面 3，面 4，面 5，面 6;</td><td>包装模组跌落架</td><td>测试电性能无异常、外观检验无破损，无脱离现象</td><td>目视/测试架/客户样机</td></tr>
</table>

7	盐雾试验	标准条件:中性盐雾试验（NSS 试验）：5%的氯化钠盐水溶液,溶液 PH 值中性（6.5～7.2），试验温度 35±2℃,盐雾的沉降率在 1～2ml/80cm².h 之间,时间 24h。2.其它特殊要求条件:醋酸盐雾试验(ASS 试验)：5%氯化钠溶液中配入冰醋酸,溶液 PH 值为 3 左右，试验温度 35±2℃,盐雾的沉降率在 1～2ml/80cm².h 之间，时间 24h。	盐雾试验设备	检验外观、功能，盐雾试验结果的判定方法，腐蚀物出现判定法：定性判定，试验后功能测试应 OK，外观观察产品无腐蚀现象产生。	目视/测试架/客户样机/显微镜
8	ESD 抗静电试验	测试架测试状态下试验：接触 4KV,非接触(空气) 8KV 放电测试	抗静电枪（尖头接触放电，圆头空气放电）	检验外观、功能	目视/测试架

8. 光电参数（Optical Characteristics）

8.1 光学规格（Optical Specifications）

5.1 Overview

The test of optical specifications shall be measured in a dark room (ambient luminance <1lux and temperature=25±2℃) with the equipment of luminance meter system (Goniometer system and CS2000/CA310) and test unit shall be located at an approximate distance 50cm from the LCD surface at a viewing angle of θ and Φ equal to 0°. We refer to Ø=0 (=θ3) as the 3 o'clock direction (the "right"), Ø=90 (=θ12) as the 12 o'clock direction ("upward"), Ø=180 (=θ9) as the 9 o'clock direction ("left") and Ø=270(=θ6) as the 6 o'clock direction ("bottom"). While scanning θ and/or Ø, the center of the measuring spot on the Display surface shall stay fixed.

The backlight should be operating for 30 minutes prior to measurement.

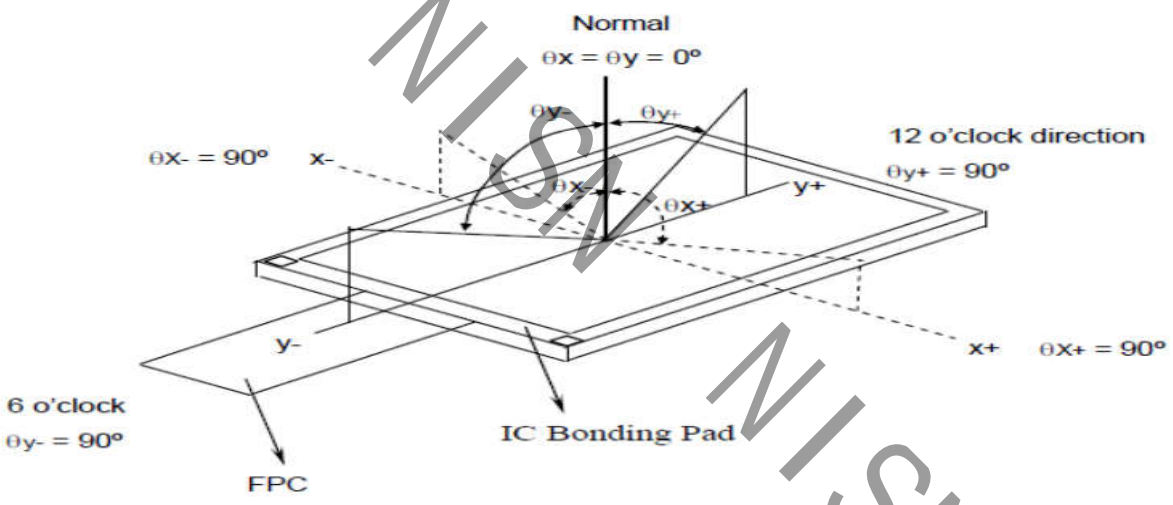
5.2 Optical Specifications

<Table 5. Optical Specifications> [Ta=25±2℃]

Parameter		Symbol	Condition	Min.	Typ.	Max.	Unit	Remark
Viewing Angle Range	Horizontal	Θ_3	CR > 10	80	85	-	Deg.	Note 4.1
		Θ_9		80	85	-	Deg.	
	Vertical	Θ_{12}		80	85	-	Deg.	
		Θ_6		80	85	-	Deg.	
Contrast Ratio		CR	Θ = 0°	800	1000	-		With APF & Silicate BLU and With B-ITO Note 4.2/4.3
Cell Transmittance		Tr		3.75	4.4	-	%	
Reproduction of color		Rx	Θ = 0°	0.635	0.655	0.675	-	CF @C Light Note 4.4
		Ry		0.298	0.318	0.338	-	
		Gx		0.229	0.249	0.269	-	
		Gy		0.543	0.563	0.583	-	
		Bx		0.119	0.139	0.159	-	
		By		0.069	0.089	0.109	-	
		Wx		0.277	0.297	0.317	-	
		Wy		0.303	0.323	0.343	-	
Color Gamut			Θ = 0°	64	69	-	%	
Response Time		Tr+Tf	Ta= 25°C Θ = 0°		30	35	ms	Note 4.5

8.2 视角定义（Description of View Angle）

Measurement Set Up



9.检验标准（Inspection standard）

9.1 Inspection conditions is as follows

1) Viewing angle is within +-30° from vertical direction, as fig 1

2) Viewing angle is the angle defined in the drawing

3) Ambient temperature is approximately 25+-5° C

4) Ambient luminance is about 300~500 Lux.

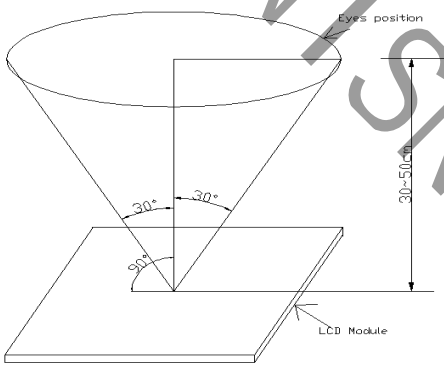
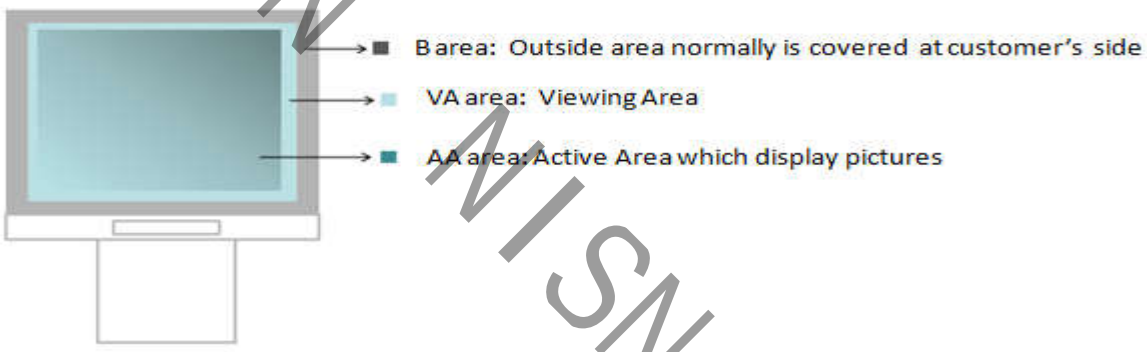
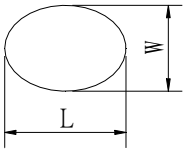


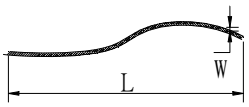
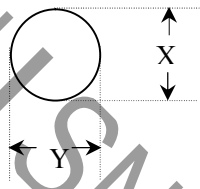
fig1

9.2 Panel area definition



9.3 Routine inspection standards

项目	不良定义	不良现象	判定标准			检验方法	
9.3.1	外观尺寸	与图纸尺寸不相符	NG			卡尺	
9.3.2	功能	显示少线	NG			目视	
		无显示	NG			目视	
		显示异常	NG			目视	主
		TP 功能不良，无触摸	NG			目视/用手触摸	主
9.3.3	*点亮产品可见及在 LCD 或 T/P 上有擦拭不掉的点状物*	*偏光片刺伤、脏点、圆形物、黑点*  *Φ=(L+W)/2*	LCM/总成 0.95 寸—2.4 寸			目 视 (用菲淋卡比对)	次
			Φ≦0.10mm		1、距产品 30mm 目视不见忽略。2、5mm 间距内只允许 3 个点。3、显示区只允许 10 个点，超过以上第 2 第 3 项则 NG 。		
			0.10mm<Φ≦0.15mm		1		
			Φ>0.15mm		NG		
			0.15mm<Φ≦0.2mm 按照 A-品入库				
			LCM/总成＞2.4 寸——6.0 寸			目 视 (用菲淋卡比对)	
			Φ≦0.10mm		1、10mm 间距内只允许 3		

<table>
<tr><td></td><td></td><td></td><td>0.1mm＜Φ≤0.15mm</td><td></td><td>4（TP、屏各允许 2 个）</td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td>0.15mm＜Φ≤0.2mm</td><td></td><td>2（TP、屏各允许 1 个）</td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td>Φ＞0.2mm</td><td></td><td>NG</td><td></td><td></td></tr>
<tr><td>9.3.4</td><td>点亮产品可见及在 LCD 或 T/P 上有擦拭不掉的线状物/刮伤</td><td>  </td><td colspan="3">LCM/总成 0.95 寸———6.0 寸
长(L) | 宽(W) | 允许个数
≦1mm | ≦0.03mm | 2
≦2mm | 0.03＜W≦0.05mm | 1
＞2mm | ＞0.05mm | NG
两条线毛之间必须距离 5mm 以上（0.95 寸—3.0 寸）.
两条线毛之间必须距离 10mm 以上（3.1 寸—6.0 寸）.</td><td>目视(用菲淋卡比对)</td><td>次</td></tr>
<tr><td>9.3.5</td><td>偏光片气泡</td><td>Φ=（X+Y）/2
  </td><td colspan="3">尺寸 | 允许个数
1、Φ≦0.1mm
2、不超过边框 1/3 | 不计（密集不可）
0.10＜Φ≦0.2mm | 1
Φ＞0.2mm | NG
0.2＜Φ≦1.5mm,（边框以外） | 3
0.95 寸-2.4 寸气泡间距大于 5mm 以上
＞2.4 寸-6.0 寸气泡间距大于 10mm 以上</td><td>在日光台灯下撕起保护膜,距待测物 30cm 目视</td><td>次</td></tr>
<tr><td>9.3.6</td><td>T/P 及偏光片凹凸点</td><td>T/P:LCD 偏光片上有凹凸点</td><td colspan="3">可视区有水纹（擦拭不掉）拒收
未进入可视区允收,客户装机后不见允收</td><td>在同一视角下用样品比对</td><td>次</td></tr>
</table>