Request information

PRODUCT SPECIFICATION

TFT-LCD MODULE

Module No: 312265-01

☑ Preliminary Specification

☐ Approval Specification

Designed by	Checked by	Approved by

Final Approval by Customer

Approved by	Comment

For more information, contact us:

WWW.DCLTEK.COM | 1-800-407-8917 | SALES@DCLTEK.COM

※The specification of “TBD” should refer to the measured value of sample . If there is difference between the design specification and measured value, we naturally shall negotiate and agree to solution with customer.

This document contains confidential and proprietary information of DCL Technologies, Inc. It is provided solely for the recipient's evaluation and may not be reproduced, disclosed, or distributed, in whole or in part, without the prior written consent of DCL Technologies, Inc.

1.Document Revision History

Version	Contents	Date	Note
V0	Original	2023.03.15	
V1	Remove the double-sided adhesive on the back of the CTP	2023.06.28	

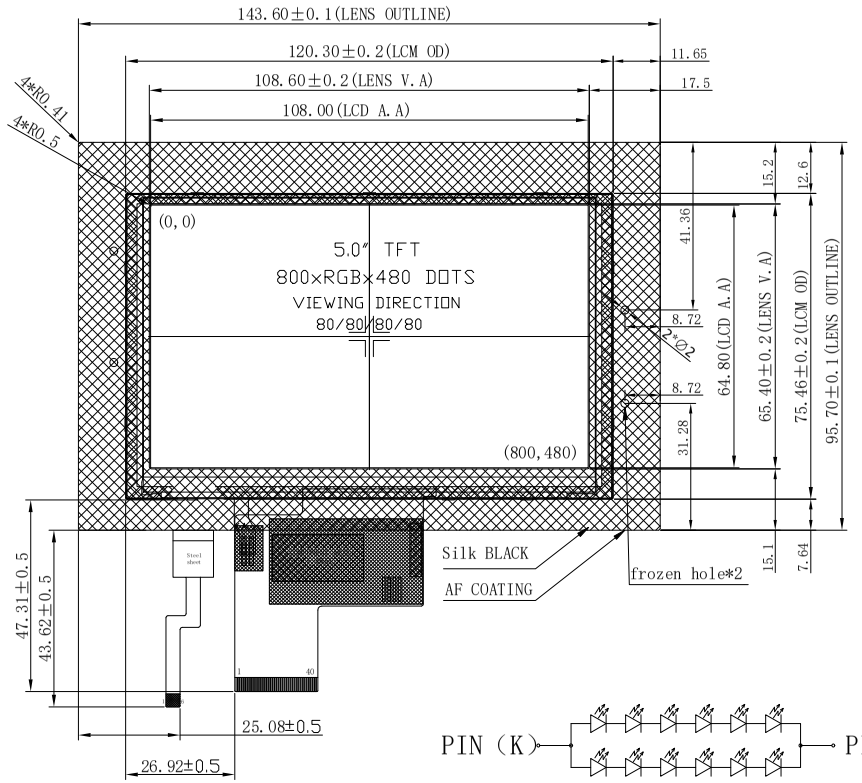
2.0 GENERAL INFORMATION

ITEM	STANDARD VALUES	UNITS
LCD type	5.0”TFT	--
Dot arrangement	800(RGB)×480	dots
Color filter array	RGB vertical stripe	--
Display mode	Normally Black	--
Viewing Direction	ALL	--
CTP type	G+G	
Surface hardness	6H	--
CTP Driver IC	FT5426	--
LCM+CTP Outline Dimension	143.60(W)×95.70(H)×4.60(T)	mm
Active area	108.00(W)×64.80(H)	mm
Dot pitch	0.08625(H) x 0.08625(V)	mm
Interface	24bit RGB	--
Operating temperature	-20 ~ +70	℃
Storage temperature	-30 ~ +80	℃
Back Light	12pcs White LED	--
Weight	TBD	g

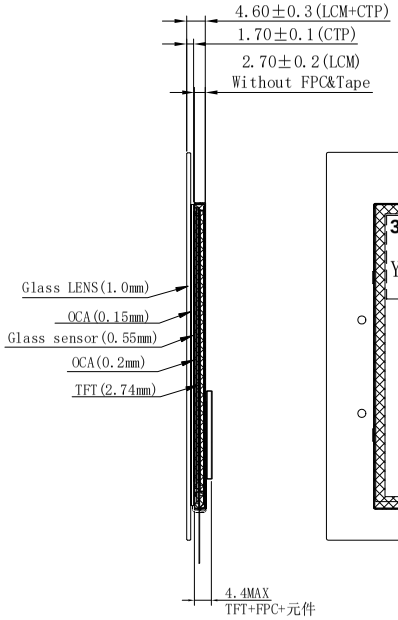
2.1 Mechanical Drawing

This document contains confidential and proprietary information of DCL Technologies, Inc. It is provided solely for the recipient's evaluation and may not be reproduced, disclosed, or distributed, in whole or in part, without the prior written consent of DCL Technologies, Inc.

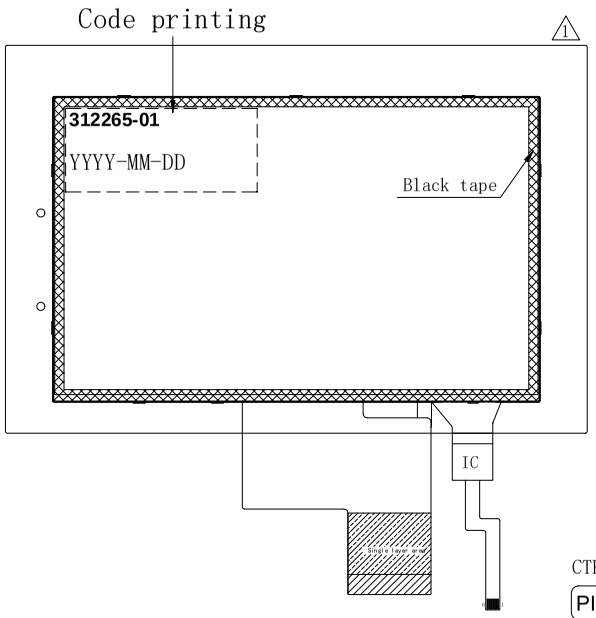
Front View



Side View



Back View

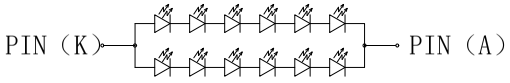


TFT-PIN

PIN	SYMBOL
1	K
2	A
3	NC
4	DVDD
5	R0
6	R1
7	R2
8	R3
9	R4
10	R5
11	R6
12	R7
13	G0
14	G1
15	G2
16	G3
17	G4
18	G5
19	G6
20	G7
21	B0
22	B1
23	B2
24	B3
25	B4
26	B5
27	B6
28	B7
29	GND
30	CLK
31	DISP
32	HSYNC
33	VSYNC
34	DE
35	NC
36	GND
37	XR
38	YD
39	XL
40	YU

CTP-PIN

PIN	Name
1	VDD-2.8V
2	SCL
3	SDA
4	INT
5	RST
6	GND



IF=40mA, VF=18.6V(TYP)

Notes:
1. Display : 5.0", TFT
2. Resolution: 800xRGBx480
3. LCD Viewing Direction: ALL,
4. Display Mode: Normally Black
5. LCM Bringhtness: 400cd/m²(TYP)
   LCM+CTP Bringhtness: 350cd/m²(TYP)
6. unmark Tolerance:±0.2
7. OPERATING TEMP: -20° C~ +70° C
8. STORAGE TEMP: -30° C~ +80° C
9. Requirements on Environmental Protection: ROHS

COVER GLASS (1.0mm)
OCA (0.15mm)
GLASS SENSOR (0.55mm)
OCA (0.2mm)
LCM (2.5mm)

CTP NOTE:
1. G+G+FPC+OCA
   LENS GLASS: 1.0mm
   SENSOR GLASS: 0.55mm
   IC: FT5426
2. Operation Voltage: 2.8V-3.3 V
3. Transmittance: ≥82%
4. The cover hardness: 6H

REV	DESCRIPTION	DATE	NAME
3			
2			
1	Remove the double-sided adhesive on the back of the CTP	2023.06.28	
0	NEW	2023.03.15	

SCALE:1/1	UNIT:mm	PAGE:1/1	Approve	Check	Drawn
Part No:	312265-01	VER:V1			
Customer No:					

3.ABSOLUTE MAXIMUM RATINGS

AGND = GND = 0V, Ta = 25℃

Parameter	Symbol	Min	Max	Unit	Note
Power Supply voltage	VDD~GND	-0.3	+3.6	V	
Operating temperature	Topr	-20	+70	℃	
Storage temperature	Tstg	-30	+80	℃	
Operating Ambient Humidity	Hop	10	*2	RH	*1
Storage Humidity	Hst	10	*2	RH	*1

* The absolute maximum rating values of this product are not allowed to be exceeded at any times. Should a module be used with any of the absolute maximum ratings exceeded, the characteristics of the module may not be recovered, or in an extreme case, the module may be permanently destroyed.

*1 Non-condensation.

*2 Temp.≤ 60℃,90%RH Max. Temp. > 60℃,Absolute humidity shall be less than 90%RH.

4.ELECTRICAL CHARACTERISTICS

4.1 Driving TFT LCD Panel

AGND = GND = 0V, Ta = 25℃

Parameter	Symbol	Min	Typ	Max	Unit
Digital Supply Voltage	VDD	3.0	3.3	3.6	V
Gate On Voltage	VGH	-	(15)	-	V
Gate Off Voltage	VGL	-	(-10)	-	V
Common Electrode Driving Signal	VCOM(*1)	-	(0)	-	V
Input voltage 'H' level	V_{IH}	0.7*VDD	—	VDD	V
Input voltage 'L' level	V_{IL}	GND	—	0.3*VDD	V
Output voltage 'H' level	V_{OH}	VDD-0.4	—	VDD	V
Output voltage 'L' level	V_{OL}	GND	—	GND+0.4	V

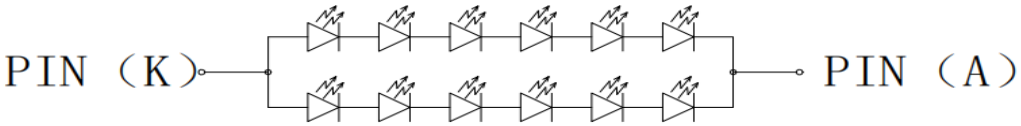
*1. Typical VCOM is only a reference value, it must be optimized according to each LCM. Please adjust VCOM to make the flicker level be minimum for getting excellent image.

4.2 Backlight Characteristics

Ta = 25℃

Item	Symbol	Min	Typ	Max	Unit	Condition
Forward voltage	Vf	16.8	18.6	19.8	V	If=40 mA
Number of LED	-	6X2			Piece	-
Connection mode	S/P	6Serial/2Parallel			-	-

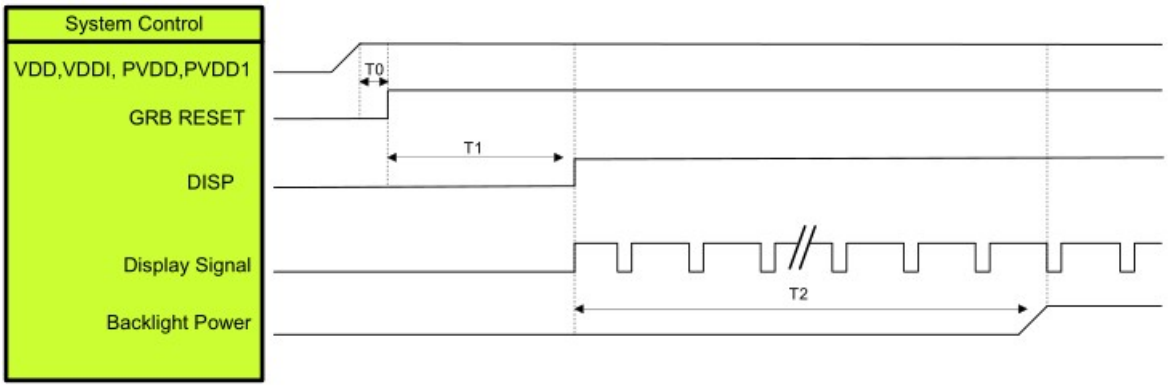
Using condition: constant current driving method If= 2×20mA (+/-10%)



IF=40mA, VF=18.6V(TYP)

5.TIMING CHARACTERISTICS

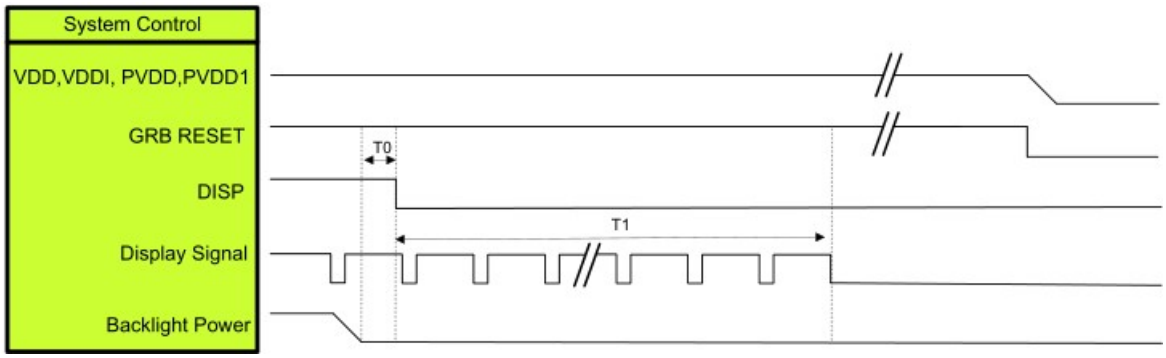
5.1 Power On Sequence



Symbol	Description	Min.Time	Unit
T0	System power stability to GRB RESET signal	0	ms
T1	GRB RESET= “High” to DISP=”High”	10	ms
T2	Display Signal output to Backlight Power on	250	ms

Note: RGB interface Display signal: DCLK; VSYNC; HSYNC; DE; DR[7:0]; DG[7:0]; DB[7:0]

5.2 Power Off Sequence

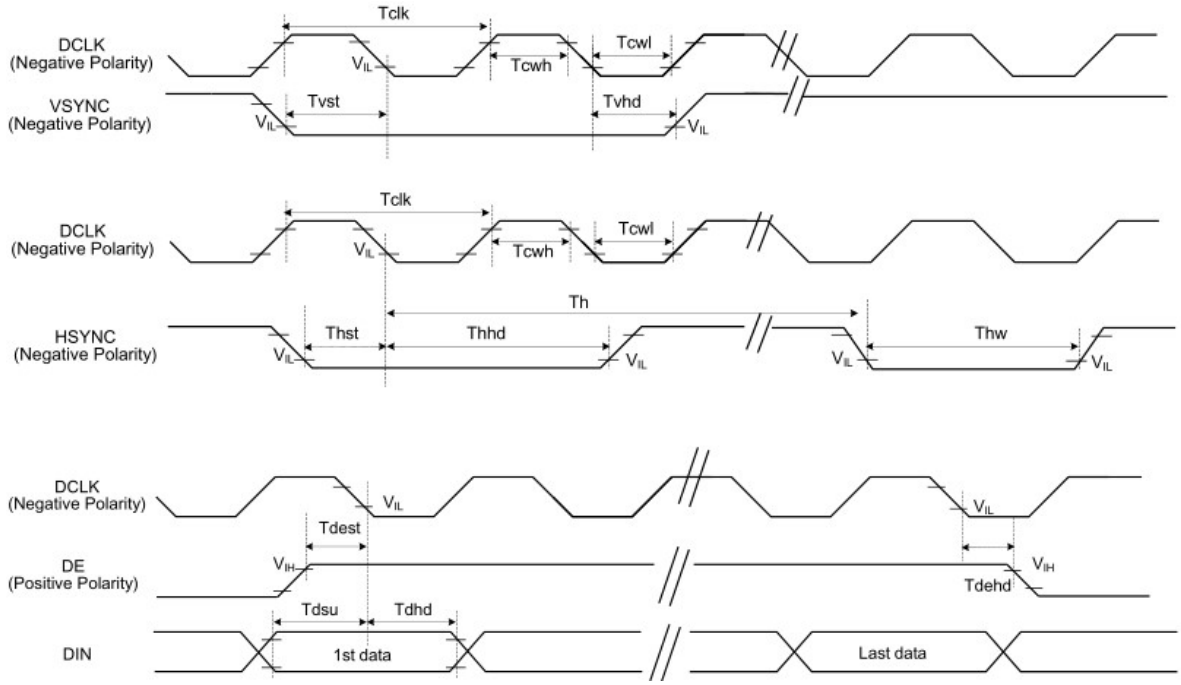


Symbol	Description	Min.Time	Unit
T0	Backlight Power off to DISP=”Low”	5	ms
T1	DISP=”Low” to IC internal voltage discharge complete	100	ms

Note: RGB interface Display signal: DCLK; VSYNC; HSYNC; DE; DR[7:0]; DG[7:0]; DB[7:0]

5.3 Timing for RGB Interface

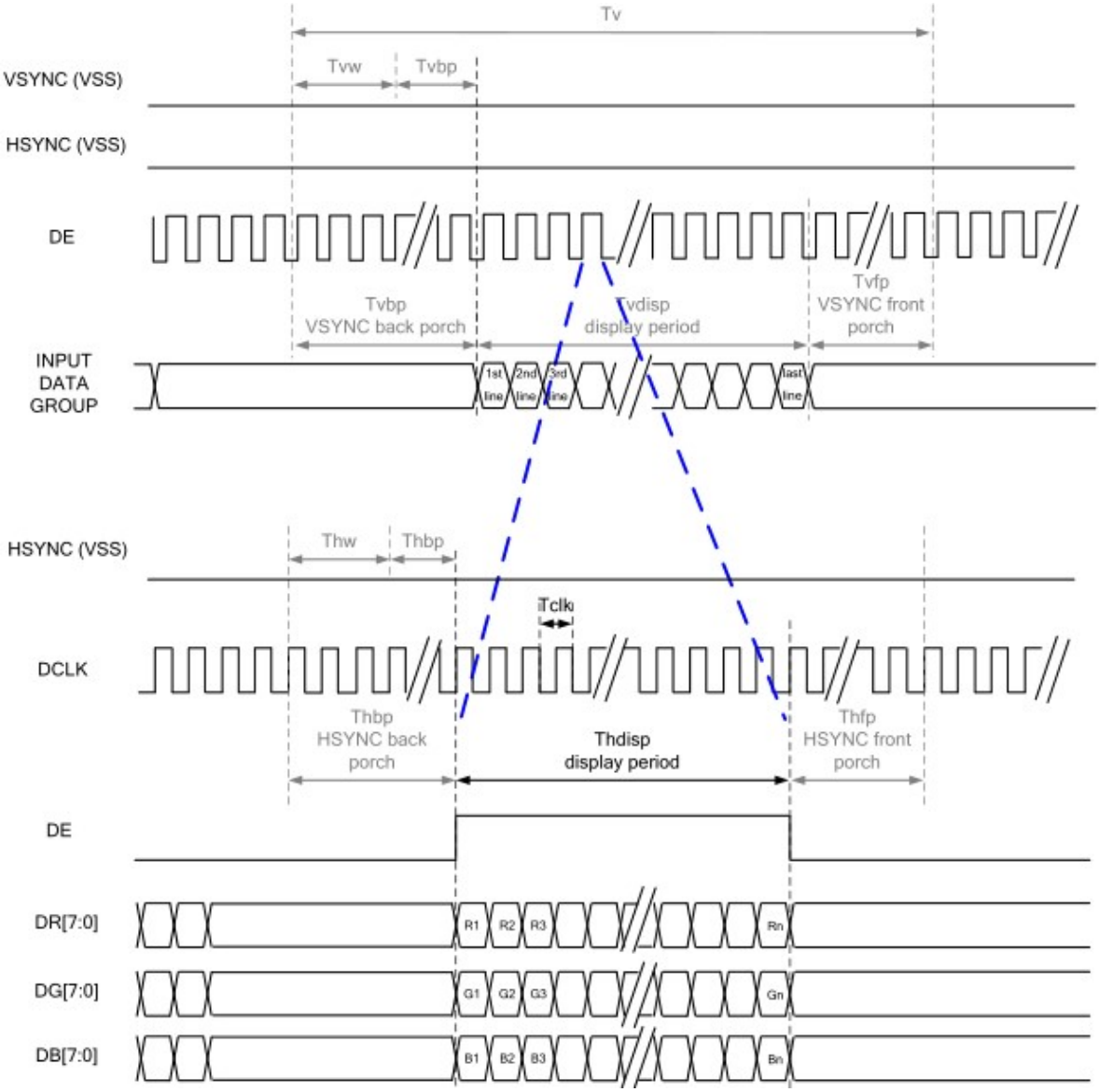
5.3.1 System Bus Timing for RGB Interface



(TA = 25℃,VDD=3.3V, GND=AGND=0V)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
DCLK Pulse Duty	Tcw	40	50	60	%	
HSYNC Width	Thw	2	-	-	DCLK	
HSYNC Period	Th	55	60	65	us	
VSYNC Setup Time	Tvst	10	-	-	ns	
VSYNC Hold Time	Tvhd	10	-	-	ns	
HSYNC Setup Time	Thst	10	-	-	ns	
HSYNC Hold Time	Thhd	10	-	-	ns	
Data Setup Time	Tdsu	10	-	-	ns	
Data Hold Time	Tdhd	10	-	-	ns	
DE Setup Time	Tdesu	10	-	-	ns	
DE Hold Time	Tdehd	10	-	-	ns	

5.3.2 Timing for RGB Interface DE Mode.



5.3.3 Parallel 24-bit RGB Input Timing Table

(TA = 25℃,VDD=3.3V, GND=AGND=0V)

Parallel 24-bit RGB Input Timing Table							
Item		Symbol	Min.	Typ.	Max.	Unit	Conditions
DCLK Frequency		Fclk	23	25	27	MHz	
HSYNC	Period Time	Th	808	816	896	DCLK	
	Display Period	Thdisp	800			DCLK	
	Back Porch	Thbp	4	8	48	DCLK	
	Front Porch	Thfp	4	8	48	DCLK	
	Pulse Width	Thw	2	4	8	DCLK	
VSYNC	Period Time	Tv	488	496	504	HSYNC	
	Display Period	Tvdisp	480			HSYNC	
	Back Porch	Tvbp	4	8	12	HSYNC	
	Front Porch	Tvfp	4	8	12	HSYNC	
	Pulse Width	Tvw	2	4	8	HSYNC	

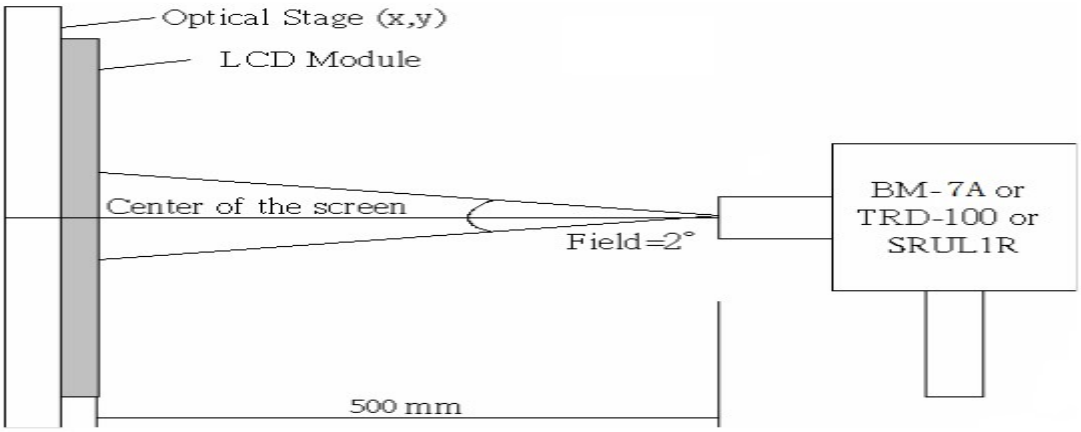
6.INTERFACE SIGNAL

Pin No.	Symbol	Description
1	VLED-	LED backlight cathode.
2	VLED+	LED backlight anode.
3	NC	NC
4	VDD	Power supply for the analog power.
5	R0	Red data bus(LSB)
6~11	R1~R6	Red data bus
12	R7	Red data bus(MSB)
13	G0	Green data bus(LSB)
14~19	G1~G6	Green data bus
20	G7	Green data bus(MSB)
21	B0	Blue data bus(LSB)
22~27	B1~B6	Blue data bus
28	B7	Blue data bus(MSB)
29	GND	Power ground
30	DCLK	Parallel RGB clock input.
31	DISP	External standby mode selection,low active.
32	HSYNC	Horizontal sync input.
33	VSYNC	Vertical sync input..
34	DE	Data Enable signal input
35	NC	NC
36	GND	Power ground
37	XR	NC
38	YD	NC
39	XL	NC
40	YU	NC

7.ELECTRO-OPTICAL CHARACTERISTICS

Item		Symbol		Condition	Min	Typ	Max	Unit	Note
Transmittance (w/o DBEF)		T%		θ=0° Ta=25℃	-	4.8	-	%	1
Contrast ratio		Cr			800	1000	-	-	3
Response time		T_R+T_F			-	30	40	ms	4
Luminance		LV			-	350	-	cd/㎡	2
Viewing angle range		Hor	Θ_{x+}	Center CR>10	70	80	-	deg	5
			Θ_{x-}		70	80	-	deg	
		Ver	Θ_{Y+}		70	80	-	deg	
			Θ_{Y-}		70	80	-	deg	
CIE(x,y) chromaticity	Red	x		Viewing normal angle Θx=θy=0° Ta=25℃	0.55	0.59	0.63	-	6
		y			0.31	0.35	0.39	-	
	Green	x			0.30	0.34	0.39	-	
		y			0.55	0.59	0.63	-	
	Blue	x			0.11	0.15	0.19	-	
		y			0.05	0.09	0.13	-	
	White	x			0.27	0.30	0.34	-	
		y			0.28	0.31	0.35	-	

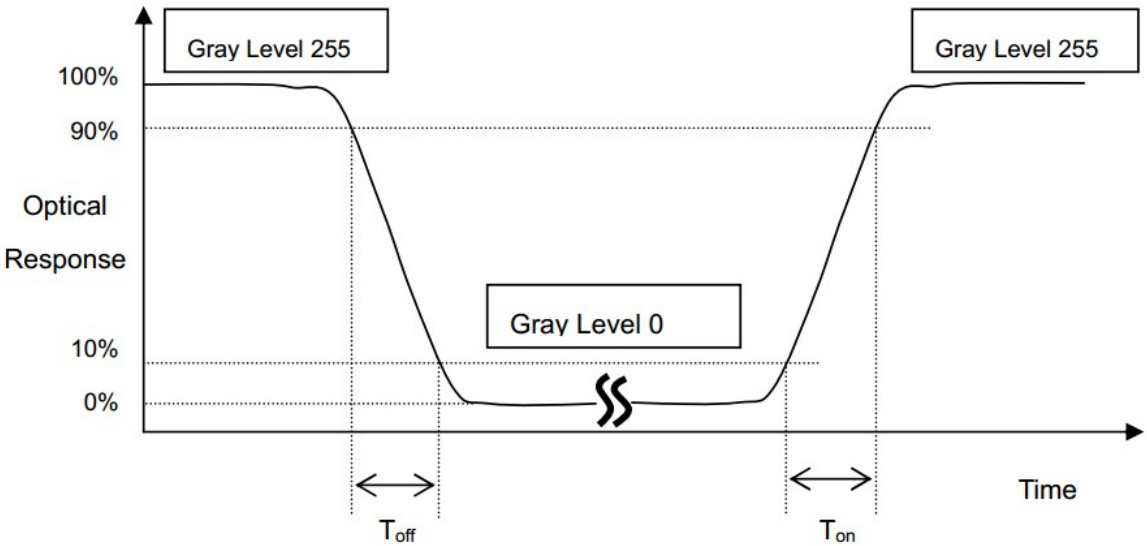
Note 1.Ambient condition：25℃±2℃，60±10%RH，under 10 Lunx in the darkroom。
Note 2.Measure device：BM-7A (TOPCON)，viewing cone=2°
Lv = Average Surface Luminance with all white pixels (P1,P2,P3,P4,P5)



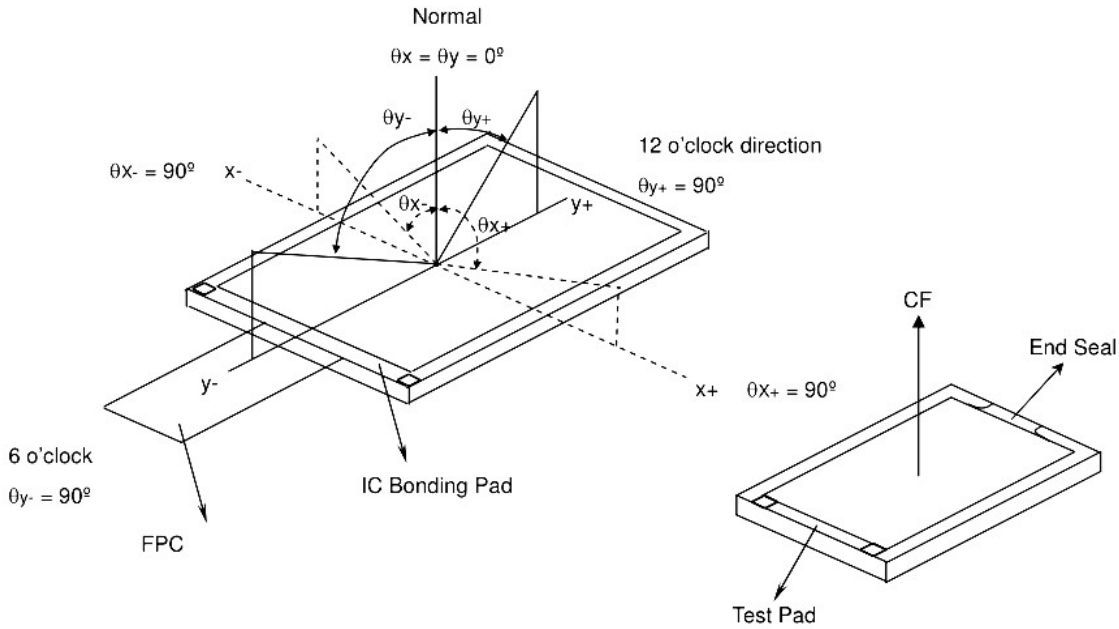
Note 3. Definition of Contrast Ratio：

$$CR = \frac{\text{Average Surface Luminance with all black pixels (P1,P2,P3,P4,P5)}}{\text{Average Surface Luminance with all white pixels (P1,P2,P3,P4,P5)}}$$

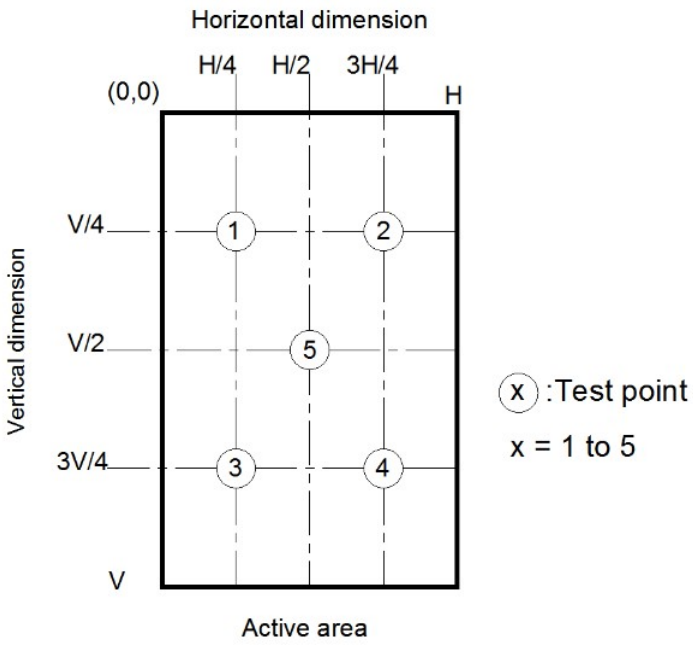
Note 4. Definition of Response Time (Ton, Toff), The response time is defined as the time interval between the 10% and 90% amplitudes.



Note 5. Definition of view angle(θ，ψ)：



Note 6. The LCD module should be stabilized at a given temperature for 20 minutes to avoid abrupt temperature change during measuring. In order to stabilize the luminance, the measurement should be executed after lighting Backlight for 20 minutes in a windless room. Measouring method for Contrast ratio, surface luminance, Luminance uniformity,CIE(x,y) chromaticity.



Light spot size □=7mm, 500mm distance from the LCD surface to detector lens measurement instrument is TOPCON's luminance meter BM-7A

8.RELIABILITY TEST

Reliability test conditions (Polarizer characteristics null)

No.	Items	Condition	Inspection after test
1	High Temperature Storage	T = 80℃±2℃ for 48 hr	Inspection after 4 hours storage at room temperature, the sample shall be free from defects: 1.Air bubble in the LCD 2.Sealleak; 3.Non-display; 4.missing segments; 5.Glass crack; 6.Current Idd is twice higher than initial value.
2	Low Temperature Storage	T = -30℃±2℃ for 48 hr	
3	High Temperature Operating	T = 70℃±2℃ for 48 hr	
4	Low Temperature Operating	T = -20℃±2℃ for 48 hr (But no condensation of dew)	
5	High Temp. and High Humidity Operating	T = 50℃±5℃ /90% for 48 hr (But no condensation dew)	
6	Thermal Shock	-20±2℃~25~70±2℃×10cycles (30min.) (5min.) (30min.)	
7	Dropping test (non-operation)	Drop to the ground from 76cm height, one time, every side of carton. (Packing condition)	
8	Packing Vibration (non-operation)	Frequency：10Hz~55Hz~10Hz Amplitude：1.0mm, X，Y，Z direction for total 3hours (Packing condition)	
9	ESD	Voltage:±6KV R: 330Ω C: 150pF Air discharge, 10time	

Note:

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

(2)Sample size for each test item is 5~10pcs.

(3)In case of malfunction defect caused by ESD damage, if it would be recovered to normal state after resetting, it would be judge as a good part.

Using ionizer(an antistatic blower) is recommended at working area in order to reduce electro-static voltage.

When removing protection film from LCM panel, peel off the tag slowly (recommended more than one second) while blowing with ionizer toward the peeling face to minimize ESD which may damage electrical circuit.

(4) Please use automatic switch testing mode when test operating mode.

9 PRECAUTIONS FOR USE OF LCD MODULES

1. Handling Precautions

(1) The display panel is made of glass and polarizer. 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.

(2) If the display panel is damaged and the liquid crystal substance leaks out, be sure not to get any in your mouth. If the substance contacts your skin or clothes, wash it off using soap and water.

(3) 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).

(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. 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 is contacting with room temperature air.

(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.

(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 contacting oil and fats.

(7) Exercise care to minimize corrosion of the electrode. Corrosion of the electrodes is accelerated by water droplets, moisture condensation or a current flow in a high-humidity environment.

(8) Install the LCD Module by using the mounting holes. When mounting the LCD module make sure it is free of twisting, warping and distortion. In particular, do not forcibly pull or bend the I/O cable or the backlight cable.

(9) Do not attempt to disassemble or process the LCD module.

(10) NC terminal should be open. Do not connect anything.

(11) If the logic circuit power is off, do not apply the input signals.

(12) 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.

- Before remove LCM from its packing case or incorporating it into a set, be sure the module and your body have the same electric potential. Be sure to ground the body when handling the LCD modules.
- Tools required for assembling, such as soldering irons, must be properly grounded. Make certain the AC power source for the soldering iron does not leak. When using an electric screwdriver to attach LCM, the screwdriver should be of ground potentiality to minimize as much as possible any transmission of electromagnetic waves produced sparks coming from the commutator of the motor.
- To reduce the amount of static electricity generated, do not conduct assembling and other work under dry conditions. To reduce the generation of static electricity be careful that the air in the work is not too dried. A relative humidity of 50%-60% is recommended. As far as possible make the electric potential of your work clothes and that of the work bench the ground potential
- The LCD module is coated with a film to protect the display surface. Exercise care when peeling off this protective film since static electricity may be generated

(13)Since LCM has been assembled and adjusted with a high degree of precision, avoid applying excessive shocks to the module or making any alterations or modifications to it.

- Do not alter, modify or change the shape of the tab on the metal frame.
- Do not make extra holes on the printed circuit board, modify its shape or change the positions of components to be attached.
- Do not damage or modify the pattern writing on the printed circuit board.
- Absolutely do not modify the zebra rubber strip (conductive rubber) or heat seal connector.
- Except for soldering the interface, do not make any alterations or modifications with a soldering iron.
- Do not drop, bend or twist LCM.

2. Storage precautions

2.1 When storing the LCD modules, avoid exposure to direct sunlight or to the light of fluorescent lamps.

2.2 The LCD modules should be stored under the storage temperature range. If the LCD modules will be stored for a long time, the recommend condition is:

Temperature : 0℃ ～ 40℃ Relatively humidity: ≤80%

2.3 The LCD modules should be stored in the room without acid, alkali and harmful gas.

2.4 The LCD modules should be no falling and violent shocking during transportation, and also should avoid excessive press, water, damp and sunshine.

深圳市丽台电子有限公司

Quality inspection standards

品质允收标准

MODEL No. / 产品型号: Applies 0.95~5.0 TFT-LCD Panel
UPDATED DATE / 生效日期: 2022-05-20
VERSION / 版 本: A0
Customer Signature/客户签字: _____

RECORD OF REVISION/修订履历:

Version 版本	Revision Record 修订内容	Compile 修订者	Date of Revision 修订日期
V0	首发/Starting	Green	2022.05.20

1.Scope 1适用范围

This document shall be applied to 0.95~5.0 TFT-LCD Panel.

本文件适用于0.95~5.0 TFT-LCD Panel.

2.Inspection and Environment onditions/检查条件与环境

2. 1 Inspection Conditions 检查条件:

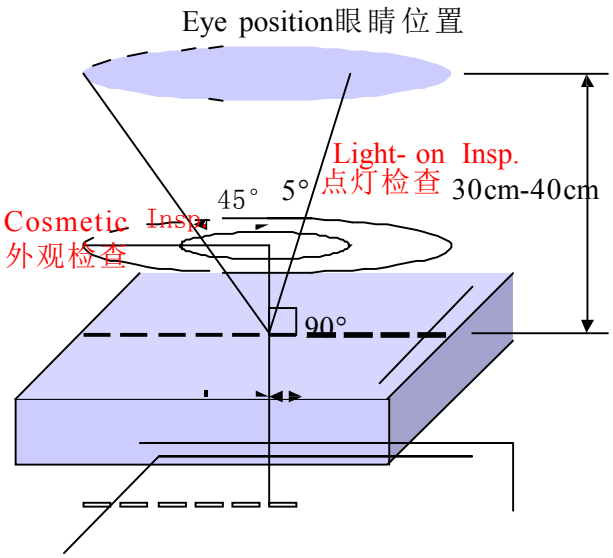
(1) Inspection Distance检测距离: 35 cm±5cm

(2) Each picture /每个画面：2~3 secs/秒，Cosmetic Inspection/外观10~12 secs/秒

(3) View Angle观看角度:

Light-on Inspection Angle点灯检验角度 ： ±45°

Cosmetic Inspection Angle外观检验角度 ： ±45°



(Perpendicular to LCD panel surface垂直于液晶显示表面)

2.2 Environment Conditions环境条件:

Ambient Temperature 温度		25℃±5℃
Ambient Humidity 湿度		55±5%RH
Ambient Illumination 亮度	Cosmetic Inspection 外观检验	800-1000 Lux
	Functional Inspection 点灯检验	200~300Lux

2.3 Sampling Conditions 抽样条件:

(1) Lot Size：Quantity of shipment lot per model/.

批量：单次运送单一机型数量

(2) Sampling Method ：
抽样方法：

Sampling Plan 抽样计划		GB2828/2003
		Normal Inspection, Single Sampling 正常检验、单次抽样
		Geneal II Inspection 普通二级
AQL	Major Defect 主要缺点	0.25
	Minor Defect 次要缺点	0.65

(3) The classification of Major(MA) and Minor(MI) defects is shown as 3. Inspection Criteria.
主缺(MA)及次缺(MI)定义于”3.检查标准”

3.Terms and Definitions/术语和定义

3.1 Classification of defects缺陷的分类:

Major defects: A major defect is a defect that is likely to result in failure, or to reduce materially the usability of the product for its intended purpose.

主要缺陷：会导致产品功能失效或减少产品可用性的缺陷。

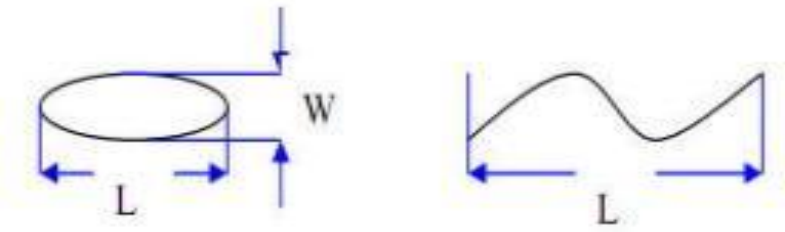
Minor defects: A minor defect either is a defect that is not likely to reduce materially the usability of the product for its intended purpose, or is a departure from an established having little bearing on the effective use or operation of the product.

次要缺陷：不会导致产品功能失效，不会减少产品的有效使用和操作。

3.2 Extraneous substances that can be wiped out ,like Finger point,Particles are not cnsidered as a defect . 可以被擦拭干净的表面物质不视为缺陷 (如手指印，尘粒) 。

3.3 Defects on the Black Matraix(outside ofActive Area) are not considered as a defect . BM 区域 (AA 区以外) 的缺陷不视为缺陷。

3.4 Size of circular defect,is defined by diameter”D” 。The defect average diameter D=1/2(W+L) 圆形缺陷的大小是由直径 D 定义的。缺陷的平均直径 D=1/2(W+L)



3.5 When defect size L≥2W,the defect count as liner type defect.Size of linear defect is defined by length(L) and the maximum width(W).

当缺陷尺寸 L≥2W 时，被视为线状缺陷。线状缺陷是由长度 (L) 和最大宽度 (W) 定义的。 3.6 3.6 Mura criteria :judged by ND filter6%,and can't be seen under at ND filter 6% .

3.6 MURA 判断标准：使用 ND6%判定，且透过 ND6%，遮住不可见.

3.7 Dot defect is defind as the defective area of the dot is larger than 50% of the dot area and is visible through 6% ND filter

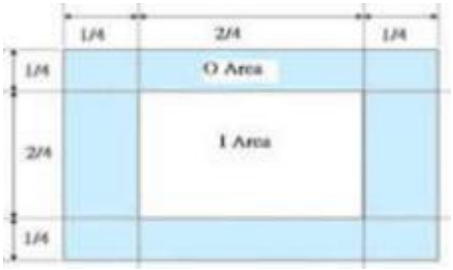
DOT 定义为点缺陷面积大于 50% DOT 面积, 且透过 ND6%遮住是可见的.

The drawing of 1/2 area sub-pixel definition: The 1/2 area sub-pixel can be defined as below one or more of specific shapes

1/2 面积的子像素定义绘图：1 / 2 面积的子像素可以定义为如下一个或多个特定形状图：

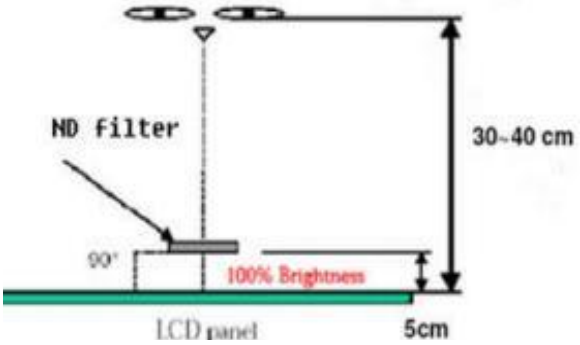
3.8 A dot defect that is smaller than the defined dot defect will be treated as small bright dot. 细碎亮点：小于"DOT 定义"的点缺陷视为细碎亮点。

I 区与 O 区比例：1：2：1



3.9 Inspection method of ND Filter - holding ND filter in front of the panel around 5cm and examine the panel from 35±5 cm in the front view for 2~3 second.

ND 卡的检查方法：在面板上方大约 5CM 处握住 ND 卡，眼睛距离面板 30-40CM，通过 2~3 秒观察。



4. Inspection Criteria 检验标准

4.1 Appearance Inspection specification 外观检查规格:

Judge area 区域	Judge item 项目	Specification inspection 检查规格	Judge criterion	
			Major	Minor
Silicone 硅胶	Silicone spread 硅胶涂布	The height can't over C/F， color filter， or gomu 高度不能过超 C/F		MI
	Silicone residue 硅胶残余	Can't cover polarizer，FPC …etc. 不能覆盖 POL，FPC 等		MI
LCD 玻璃	Wire(on Array) 线路	No damage 不能损伤	MA	
	Edge 边缘	No extended crack 不可有延伸性裂纹	MA	
PCBA Connector FPC/FFC	Appearance 外观	Scratch or damage result in copper expose is not allowed 划伤或损伤不允许导致出现露铜		MI
	Component 零件	No damage 不能损伤	MA	
	Connection status 连接状况	Need correct connection 需要正确连接	MA	
	Broken 破裂	Not allowable 不允许	MA	
	Folding sign 对位记号折叠	Not allowable 不允许	MA	
POL 偏光片	Scract on the polarizer 偏光片划伤	1.W≤0.05mm；L≤5mm，Ignore（忽略）		MI
		2.0.05mm<W≦0.10mm ; L≤5mm ; N≤3 ; DS≥10mm		
		3.0. 10mm＜W；5mm＜ L， Not allowable不允许		

Judge area 区域	Judge item 项目	Specification inspection 检查规格	Judge criterion	
			Major	Minor
POL 偏光片	Dent on the polarizer 偏光片凹痕	1.D＜0. 15mm，Ignore（忽略）		MI
		2.0.15mm＜D≤0.30mm；N≤3；DS≥10mm		
		3.0.30mm＜D，Not allowable不允许		
	POL Linear bubble 线状气泡	1.W≤0.05mm；L≤5mm，Ignore（忽略）		MI
		2.0.05mm<W≦0.10mm ; L≤5mm ; N≤3 ; DS≥10mm		
		3.0. 10mm＜W；5mm＜ L ，Not allowable不允许		
	POL dot bubble 点状气泡	1.D＜0. 15mm，Ignore（忽略）		MI
		2.0.15mm＜D≤0.30mm；N≤3；DS≥10mm		
		3.0.30mm＜D，Not allowable不允许		
	POL edge bubble 片边缘气泡	1. The display area is 1/2BM outside，Not allowable 显示区往外 1/2BM 区域内，不允许 2. The display area is outside the outer 1/2BM area，Not allowable 显示区往外1/2BM区域以外，不管控		MI

Judge area 区域	Judge item 项目	Specification inspection 检查规格	Judge criterion	
			Major	Minor
TP&CG	Foreign Material in spot shape 点状异物	1.D≤0.15mm；Ignored（忽略） 2.0.15mm＜D≤0.30mm；N≤3；DS≥10mm 3.D＞0.30mm；Not allowable不允许		MI
	Fisheye/bubbles 鱼眼/气泡	1.D≤0.15mm；Ignored（忽略） 2.0.15mm＜D≤0.30mm；N≤3；DS≥10mm 3.D＞0.30mm；Not allowable不允许		MI
	Scratches on the surface 表面划伤	1.W≤0.05mm；Ignored（忽略） 2.0.05mm<W≤0.10mm，L≤5mm；N≤3；DS≥10mm 3.W＞0.10mm，L＞5mm；Not allowable不允许		MI
	Collapse corner、Crash edge 崩角、崩边	Product front:/产品正面： collapse corners, collapsed edges are not allowed 崩角、崩边不允许； Product back/产品背面： X≤ 0.5 , Y≤0.5，Z≤1/2T；N≤2；DS≥10mm	MA	
	Printed fonts/LOGO 丝印/LOGO	Printed fonts/LOGO clarity、complete、content right 字体/LOGO丝印清晰、完整、内容正确		MI
	Broken 破损	Not allowable不允许	MA	
	Dirty surfaces 表面脏污	Dirt cannot be wiped， Not allowable 不可擦拭的脏污，不允许		MI
	IR hole IR孔	Black spots/黑点： W ≤0.15mm，N≤2，Not visible against a black background/黑色背景下不可见		MI
		IR hole Scratches： 1.W＜0.03mm，Ignored（忽略） （Dense points Not allowable 不允许密集）； 2.0.03mm＜W≤0.08mm；L≤2mm；N≤2； 3.W＞0.08mm，L＞2mm，Not allowable 不允许		MI

4.2 Electrical Inspection specification电性检查规格:

Item 项目	Judgment Criteria 判定标准	Judge criterion	
		Major	Minor
LCD Bright /Dark dot 玻璃亮点/暗点	1.D≦0. 15mm， Ignored（忽略），Not dense（不可密集） 2.0.15mm<D≦0.30mm ； N≦3 ； DS≥10mm 3.D＞0.30mm ，Not allowed/不允许		MI
Mura	Invisible through 6% ND filter，200~300Lux 透过ND6% 遮住 ， 目测不可见即为OK， 200~300Lux		MI
Small bright dot 细碎亮点	Not allowed if it can be observed through ND Filter6% 透过ND6%目测看得见，不允许		MI
ZBD Rate 玻璃亮点比率	90:10		MI
Light Leakage 漏光	Invisible through 6% ND filter，OK 透过ND6%遮住目测不可见即为OK If necessary,set up set up Limit Sample. 如果有必要，可制订限度样品		MI
Bubble in Cell (LC Bubble/Actice Area) CELL气泡 (AA区LCD气泡)	Eyes should not find it . 目视观察不可见，视为 OK	MA	

Item 项目	Judgment Criteria 判定标准	Judge criterion	
		Major	Minor
Foreign Material in spot shape 点状异物	1.D≦0.15mm， Ignored（忽略） 2.0.15mm<D≦0.30mm ； N≦3； DS≥10mm 3.D＞0.30mm ， Not allowable/不允许		MI
Foreign Material in line or spiral shape 线状异物	1.W≦0.05mm ， Ignored（忽略） 2. L≤5mm ； 0.05mm<W≦0.10mm ； N≦3 3.W＞0.10mm ； L＞5mm ， Not allowable/不允许		MI
White dot in back-light 白点	1.D≦0. 15mm，Ignored（忽略） 2.0.15mm<D≦0.30mm ； N≦3 ； DS≥10mm 3.D＞0.30mm ， Not allowed/不允许		MI
TP no touch 无触摸	Not allowable 不允许	MA	
Abnormal Disply 显示异常	Not Allowed 不允许	MA	
NO display 无显示	Not Allowed 不允许	MA	
Line Defect 缺线	Not Allowed 不允许	MA	
Angle of view error 视角错误	Not Allowed 不允许	MA	
Tect crostalk 不消失的残影	Not Allowed 不允许	MA	