POWERTIP TECH. CORP.

SPECIFICATIONS

CUSTOMER	:	
SAMPLE CODE	:	SH192120T001-ZHA
MASS PRODUCTION CODE	:	PH192120T001-ZHA
SAMPLE VERSION	:	01
SPECIFICATIONS EDITION	:	003
DRAWING NO. (Ver.)	:	LMD- PH192120T001-ZHA (Ver.002)
PACKAGING NO. (Ver.)	:	PKG- PH192120T001-ZHA (Ver.001)

Customer Approved

Date:

Approved	Checked	Designer
廖志豪 Rex Liao	陳宗淇 Howard Chen	黃丞毅 Ian Huang

POWERTIP
2024.04.02
TW RD APR

□ Preliminary specification for design input

■ Specification for sample approval

POWERTIP TECH. CORP.

Headquarters:

No.8, 6th Road, Taichung Industrial Park,
Taichung, Taiwan
台中市 407 工業區六路 8 號

TEL: 886-4-2355-8168
FAX: 886-4-2355-8166

E-mail: sales@powertip.com.tw
Http://www.powertip.com.tw

History of Version

Date (mm / dd / yyyy)	Ver.	Edi.	Description	Page	Design by
02/10/2023	01	001	Preliminary.	-	Ian
08/18/2023	01	002	First Sample	-	Ian
04/01/2024	01	003	Reduce VLED Current Reduce Backlight Current	5 9	Ian

Contents

1. SPECIFICATIONS

1.1 Features

Item	Standard Value
Display Resolution	1920*3 (RGB) * 1200 Dots
LCD Type	Full Viewing Angle, Normally Black , Transmissive type
Screen size(inch)	10.1 inch
Color configuration	B.G.R. Vertical Stripe
Weight	269g
Interface	eDP1.4
ROHS	THIS PRODUCT CONFORMS THE ROHS OF PTC Detail information please refer website: http://www.powertip.com.tw/news_detail.php?Key=1&cID=1

1.2 Mechanical Specifications

Item	Standard Value	Unit
Outline Dimension	228.0 (W) * 149.0 (L) * 8.6 (H)	mm

LCD panel

Item	Standard Value	Unit
Active Area	216.576(W) * 135.36(L)	mm

Note: For detailed information please refer to LCM drawing.

1.3 Absolute Maximum Ratings

Module

Item	Symbol	Condition	Min.	Max.	Unit	Remark
Supply Voltage	VDD	GND=0V	-0.5	11.2	V	
Operating Temperature	T_{OP} (Ts)	Note 1	-20	+70	°C	
Storage Temperature	T_{ST} (Ta)	Note 2	-30	+85	°C	
Operating Humidity	H_D	Ta ≦ 40 °C	-	90	%	

The absolute maximum rating values of this product are not allowed to be exceeded at any time. 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.

Note 1: Ts is the temperature of panel's surface

Note 2: Ta is the ambient temperature of samples

1.4 DC Electrical Characteristics

Module GND = 0V, Ta = 25°C

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Power Supply for TFT Panel	VDD	GND=0V	3.0	3.3	3.6	V
VDD Current	IDD	VDD=3.3V Red Pattern	-	650	980	mA
Power Supply for Backlight Unit	VLED	BL_GND =0V	2.7	12.0	24.0	V
VLED Current	ILED	VLED =12V	-	430	645	mA
PWM Signal Voltage LED Enable Voltage	VIH	GND=0V	1.6	-	-	V
	VIL		-	-	0.8	
Input PWM Frequency	F_{PWM}		100	-	8k	Hz
PWM Duty Ratio	PWM		1	-	100	%

1.5 Optical Characteristics

Optical Specification VDD=3.3V, Ta=25°C

Item	Symbol		Condition	Min.	Typ.	Max.	unit	
Response time	Tr+Tf		θx=θy=0°	-	30	35	ms	Note 2
Viewing angle	Top	θY+	CR ≥ 10	-	85	-	Deg.	Note 4
	Bottom	θY-		-	85	-		
	Left	θX-		-	85	-		
	Right	θX+		-	85	-		
Contrast ratio	CR		θx=θy=0° VLED=12V PWM="High" (Duty=100%)	800	1000	-	-	Note 3
Color of CIE Coordinate	White	X		0.26	0.31	0.36	-	Note1
		Y		0.31	0.36	0.41		
	Red	X		0.54	0.59	0.64		
		Y		0.30	0.35	0.40		
	Green	X		0.29	0.34	0.39		
		Y		0.54	0.59	0.64		
	Blue	X		0.08	0.13	0.18		
		Y		0.06	0.11	0.16		
Average Brightness Pattern=white display (With LCD)*1	IV			820	1000	-	cd/m^2	Note1
Uniformity (With LCD)*2	△B			75	80	-	%	Note1

Note 1:

*1: △B=B(min) / B(max) * 100%

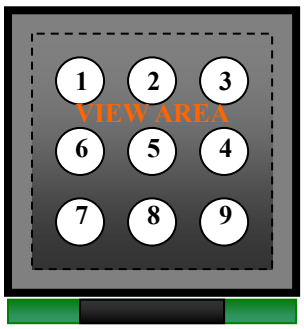
*2: Measurement Condition for Optical Characteristics:

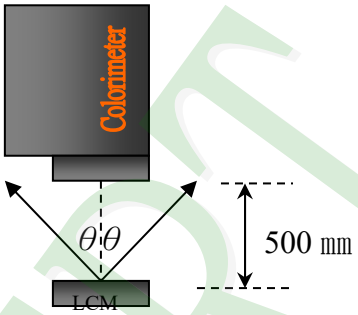
a: Environment: 25℃±5℃ / 60±20%R.H, no wind, dark room below 10 Lux at typical lamp current and typical operating frequency

b: Measurement Distance: 500 ± 50 ㎜, (θ= 0°)

c: Equipment: TOPCON BM-7 fast, (field 1°), after 10 minutes operation

d: The uncertainty of the C.I.E coordinate measurement ±0.01, Average Brightness ± 4%





Colorimeter=BM-7 fast

To be measured at the center area of panel with a viewing cone of 1° by Topcon luminance meter BM-7, after 10 minutes operation (module)

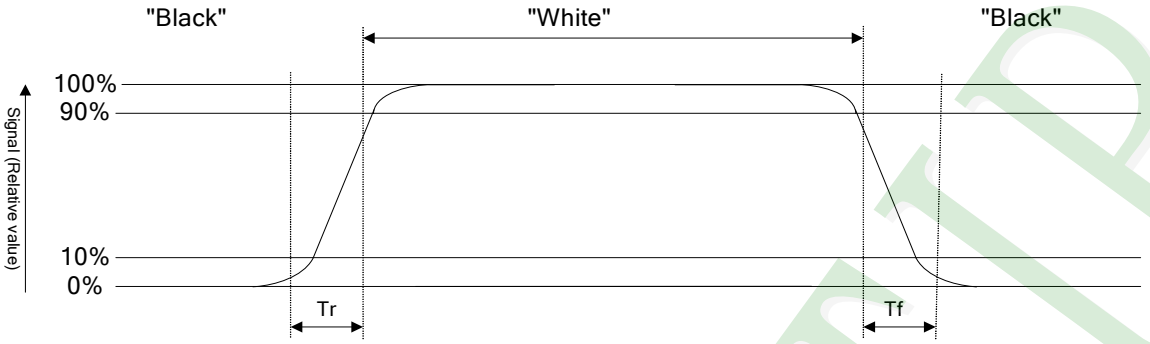
Note 2: Definition of response time:

The output signals of photo detector are measured when the input signals are changed from “black” to “white” (falling time) and from “white” to “black” (rising time), respectively. The response time is defined as the time interval between the 10% and 90% of Amplitudes.

Refer to figure as below:

Normally White

Normally Black



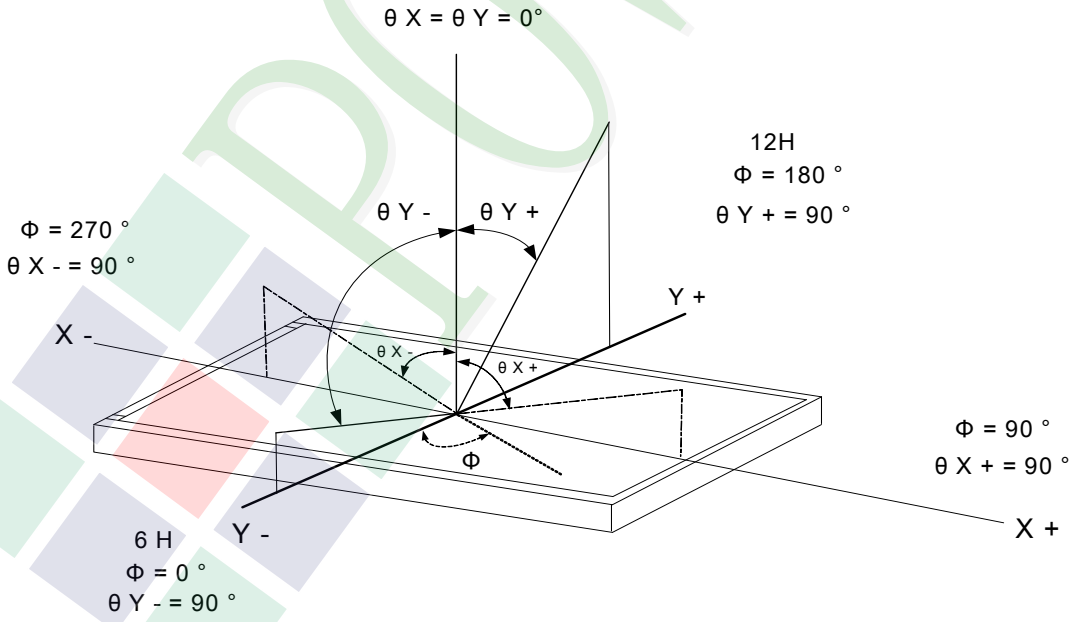
Note 3: Definition of contrast ratio:

Contrast ratio is calculated with the following formula

$$\text{Contrast ratio (CR)} = \frac{\text{Photo detector output when LCD is at “White” state}}{\text{Photo detector output when LCD is at “Black” state}}$$

Note 4: Definition of viewing angle:

Refer to figure as below:

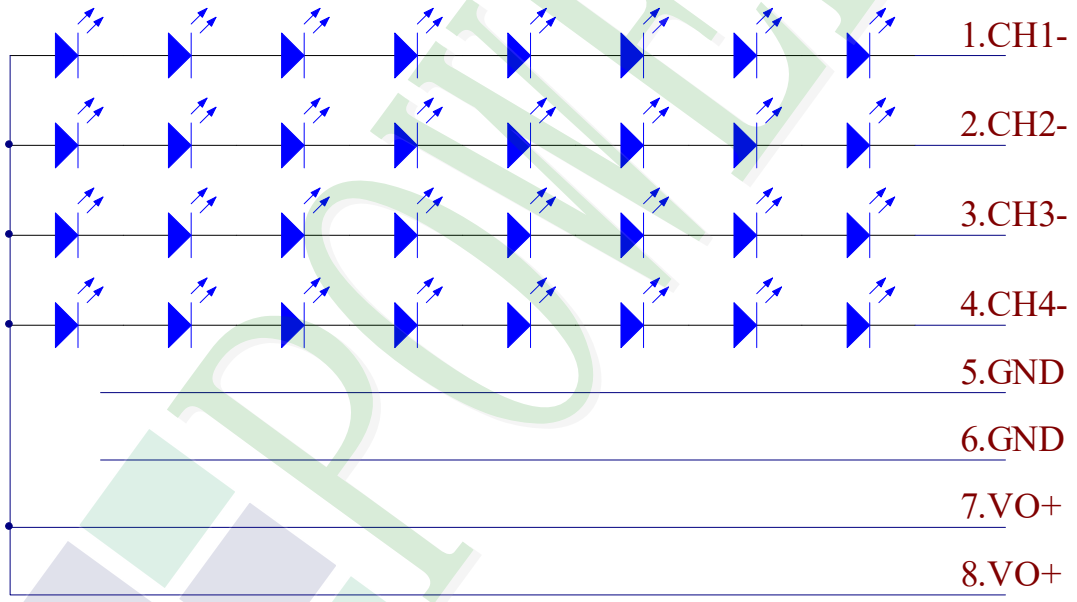


1.6 Backlight Unit Characteristics

Electrical / Optical Characteristics

Item	Symbol	Min.	Typ.	Max.	Unit	Remark
LED Voltage	Vf	22.4	24	26.8	V	Note1
LED Current	If	-	200	-	mA	-
Average Brightness (without LCD) *1	IV	10600	14100	25600	-	cd/m^2
CIE Color Coordinate (Without LCD)	X	0.25	0.28	0.31		
	Y	0.25	0.28	0.31		

Note 1: The LED Supply Voltage is defined by the number of LED at Ta=25℃ and If =200 mA



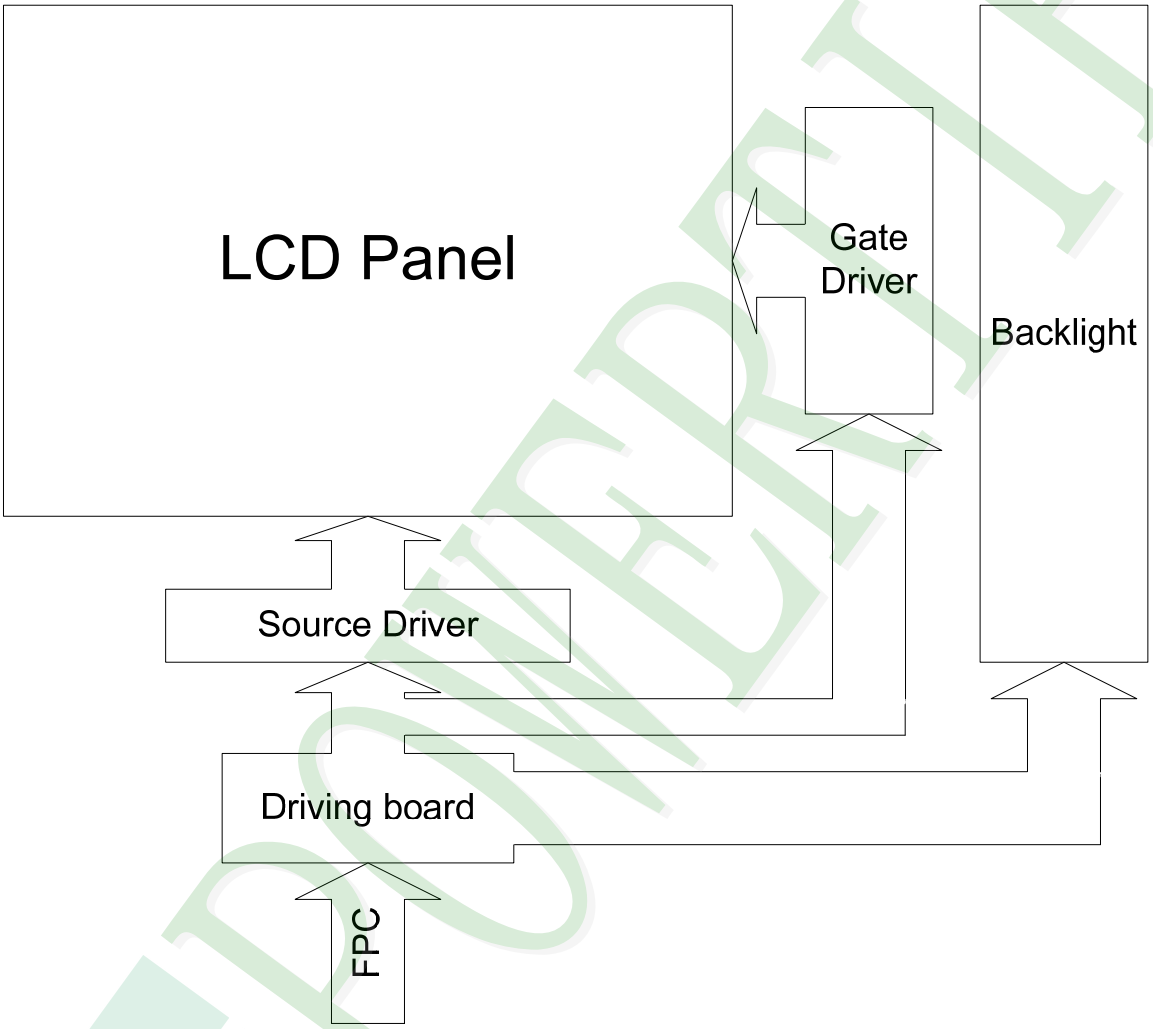
2. Module Structure

2.1 Counter Drawing

2.1.1 LCM Mechanical Diagram

* See Appendix

2.1.2 Block Diagram



2.2 Interface Pin Description

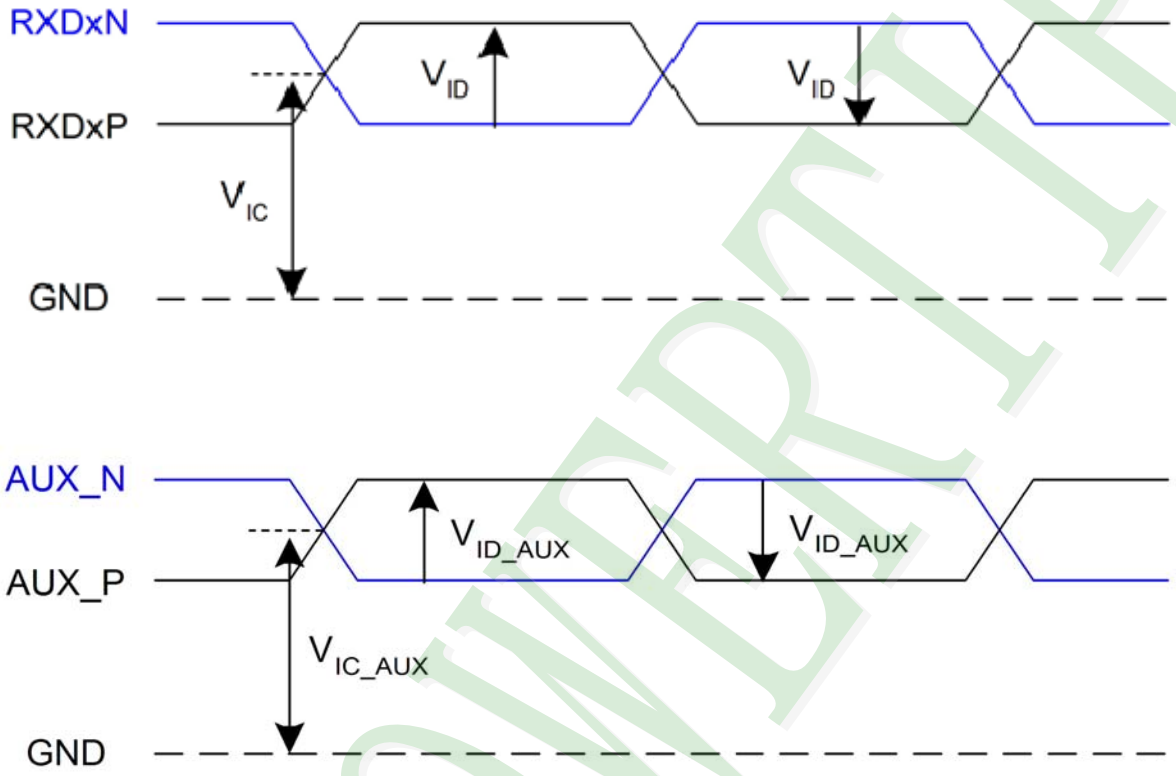
TFT LCM Interface

Pin No.	Symbol	Function
1	NC	No connection
2	H-GND	Ground
3	LAN1_N	Main link Lane1 negative input (RXD1N)
4	LAN1_P	Main link Lane1 positive input (RXD1P)
5	H-GND	Ground
6	LAN0_N	Main link Lane0 negative input (RXD0N)
7	LAN0_P	Main link Lane0 positive input (RXD0P)
8	H-GND	High Speed Ground
9	AUX_P	True Signal Link _Auxiliry Channel
10	AUX_N	Complement Signal Link _Auxiliry Channel
11	H-Gnd	Ground
12	VDD	Power Supply, 3.3V (typ.)
13	VDD	Power Supply, 3.3V (typ.)
14	NC	No connection
15	H-GND	Ground
16	H-GND	Ground
17	HPD	HPD(Hot Plug Detect) Signal Pin
18	BL_GND	High Speed Ground
19	BL_GND	High Speed Ground
20	BL_GND	High Speed Ground
21	BL_GND	High Speed Ground
22	BL_EN	Backlight on/off Control pin
23	BL_PWM	Back light PWM Dimming
24	NC	No connection
25	NC	No connection
26	VLED	Backlight power
27	VLED	Backlight power
28	VLED	Backlight power
29	VLED	Backlight power
30	NC	No connection

2.3 Timing Characteristics

2.3.1 Signal Electrical Characteristics

Input signals shall be low or High-impedance state when VDD is off. Signal electrical characteristics are as follows;



Parameter	Symbol	Condition	Min.	Max,	Unit
Main link common mode voltage	VIC	-	0	2.0	V
Main link swing voltage	VID	2.7Gbps	±100	±600	mV
		1.62Gbps	±100	±600	mV
AUX common mode voltage	VIC_AUX	-	0	2.0	V
AUX swing voltage	VID_AUX	Transmitting	±0.195	±0.69	V
		Receiving	±0.16	±0.68	V

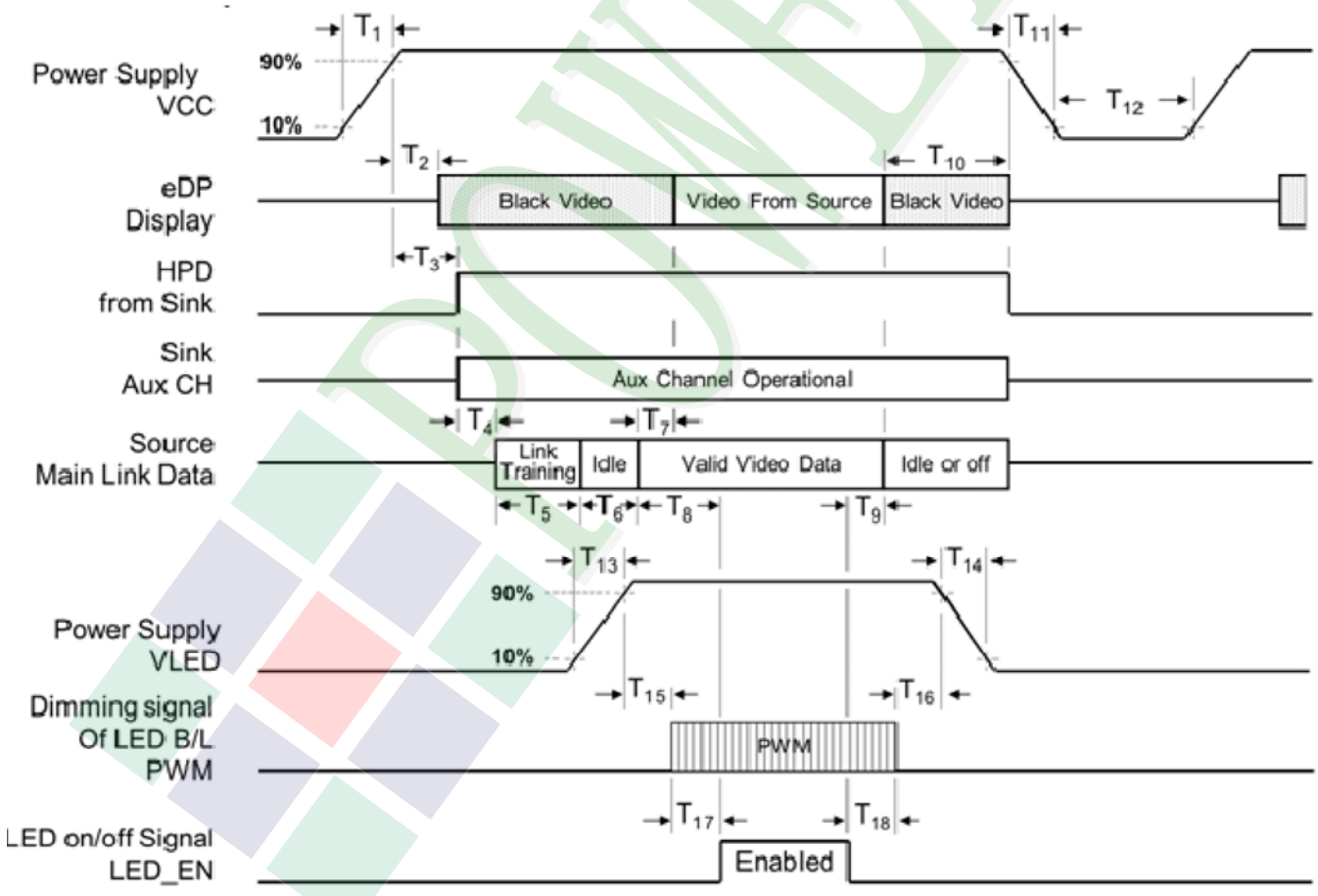
2.3.2 Interface Timings

DE mode

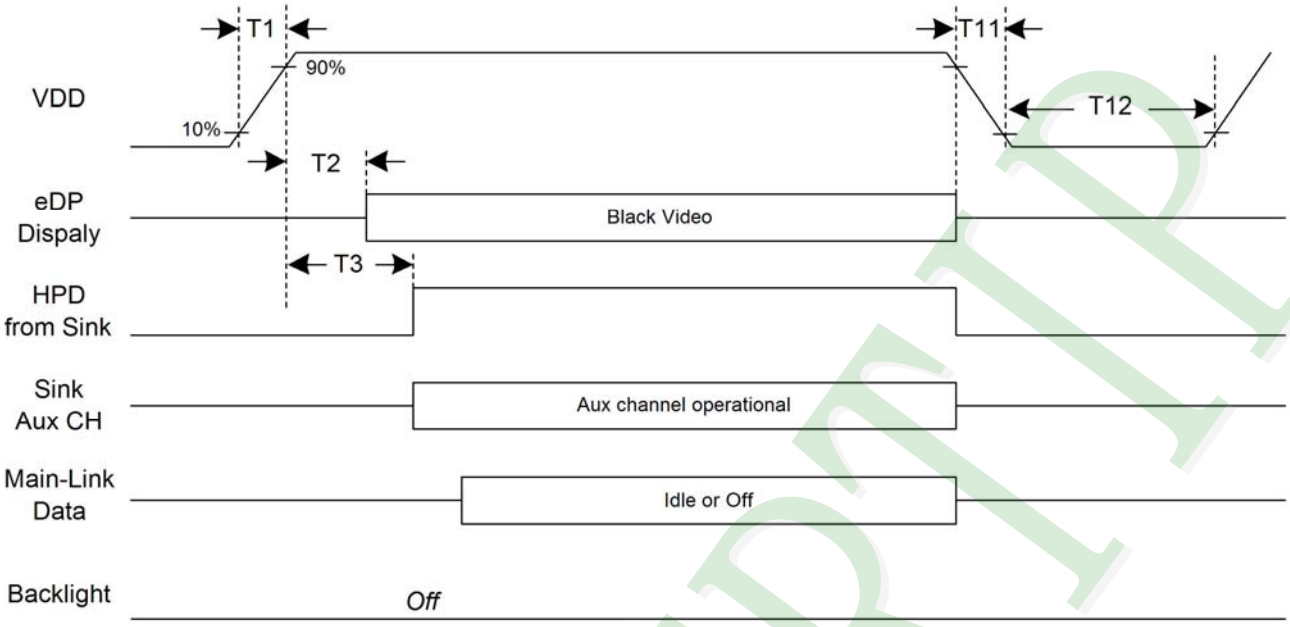
Item	Min.	Typ.	Max.	Unit
Frame Rate	58	60	62	Hz
Frame Period	1230	1250	1270	line
Vertical Display Time		1200		line
Vertical Blanking Time	30	50	70	line
1 Line Scanning Time	2040	2060	2080	clock
Horizontal Display Time		1920		clock
Horizontal Blanking Time	120	140	160	clock
Clock Rate	153.21	154.5	155.57	MHz

2.3.3 Power ON/OFF Sequence

Display port panel power sequence:



Display port AUX_CH transaction only:



Parameter	Min	Max	Unit	Note
T1	0.5	8	ms	
T2	0	200	ms	Note1
T3	0	200	ms	
T4	--	--	--	
T5	--	--	--	
T6	--	--	--	
T7	16	50	ms	
T8	--	--	--	
T9	--	--	--	Note1
T10	32	500	ms	
T11	--	20	ms	
T12	700	--	ms	
T13	0.5	10	ms	
T14	0.5	10	ms	
T15	10		ms	
T16	10		ms	
T17	0		ms	
T18	0		ms	

Note 1: The Sink must include the ability to generate black video autonomously. The Sink mustautomatically enable black video under the following conditions:

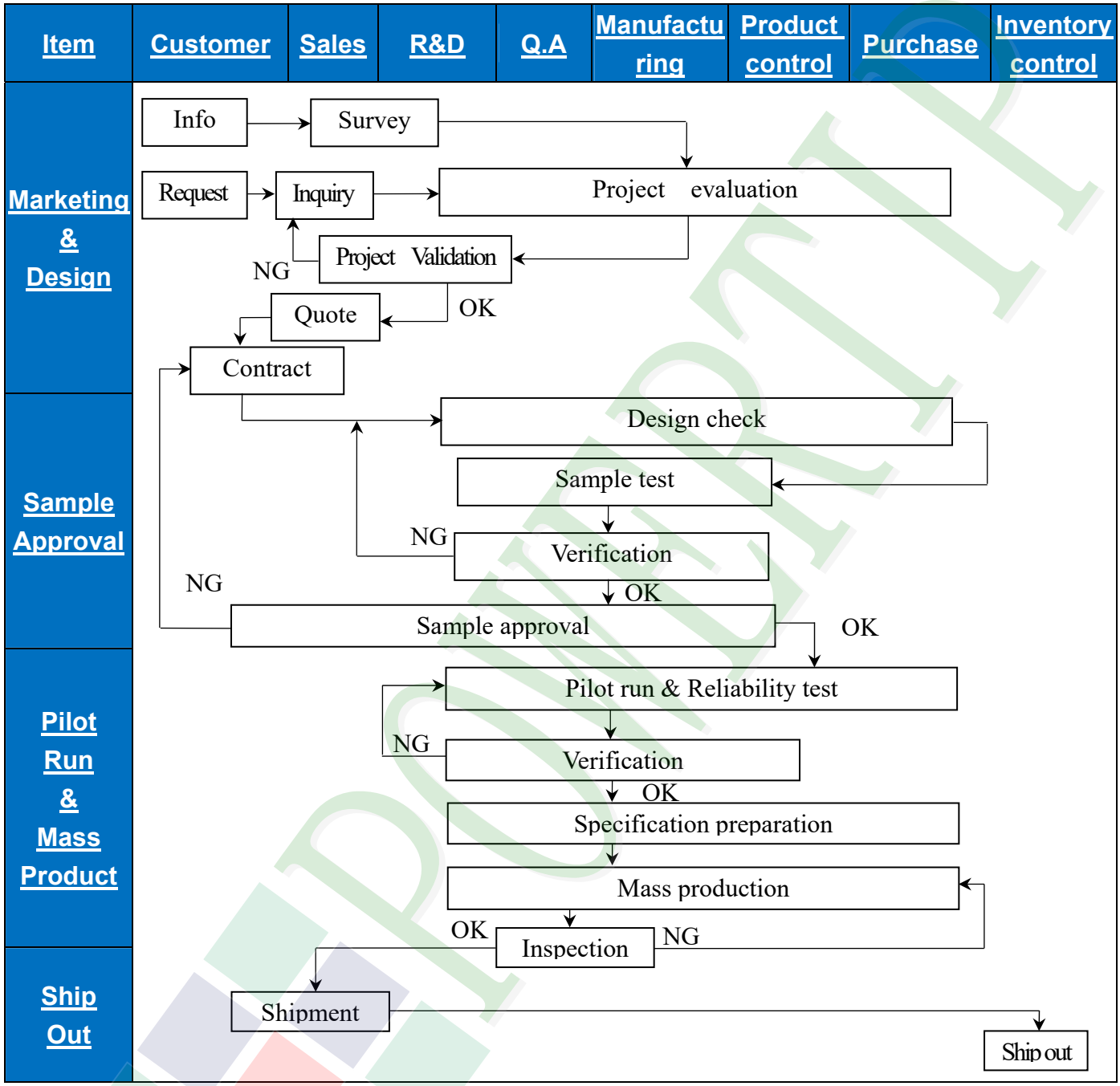
- Up on VDD power-on (within T2 max)
- When the “No Video Stream_Flag” (VB-ID Bit 3) is received from the Source (at the end ofT9)
- When no Main Link data, or invalid video data, is received from the Source. Black video must be displayed within 50ms (max) from the start of either condition. Video data can bedeemed invalid

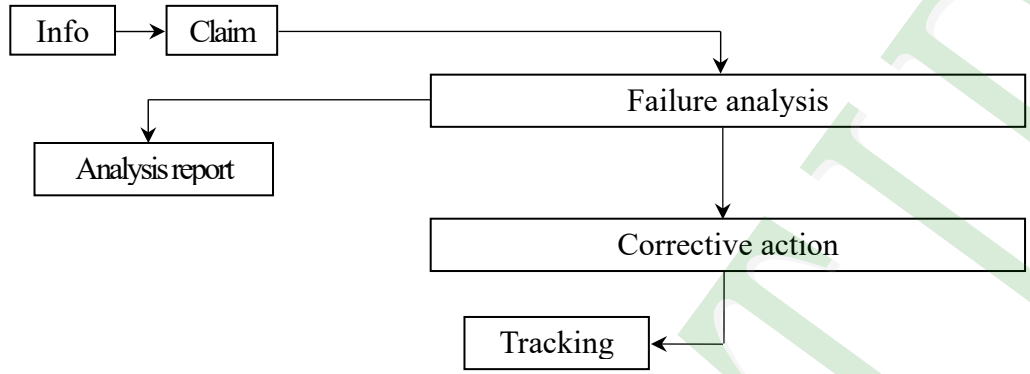
Note 2: The Sink may implement the ability to disable the black video function, as described in Notes1, above, for system development and debugging purposes.

Note 3: The Sink must support Aux Channel polling by the Source immediately following VDD power-on without causing damage to the Sink device (the Source can re-try if the Sink is notready). The Sink must be able to respond to an Aux Channel transaction with the time specified within T3 max.

3. Quality Assurance System

3.1 Quality Assurance Flow Chart



Item	Customer	Sales	R&D	Q.A	Manufacturing	Product control	Purchase	Inventory control
Sales Service								
Q.A Activity	1. ISO 9001 Maintenance Activities 2. Process improvement proposal 3. Equipment calibration 4. Education And Training Activities 5. Standardization Management							

3.2. Inspection Specification

◆Scope: The document shall be applied to TFT-LCD Module for 3.5”-15″ (Ver.B01).

◆Inspection Standard: MIL-STD-105E Table Normal Inspection Single Sampling Level Ⅱ.

◆Equipment: Gauge, MIL-STD, Powertip Tester, Sample

◆Defect Level: Major Defect AQL: 0.4; Minor Defect AQL: 1.5

◆OUT Going Defect Level: Sampling.

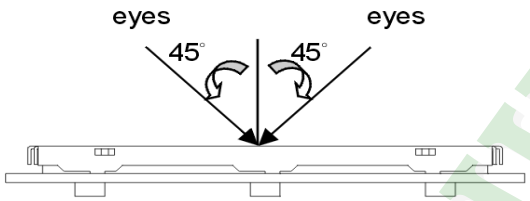
◆Standard of the product appearance test:

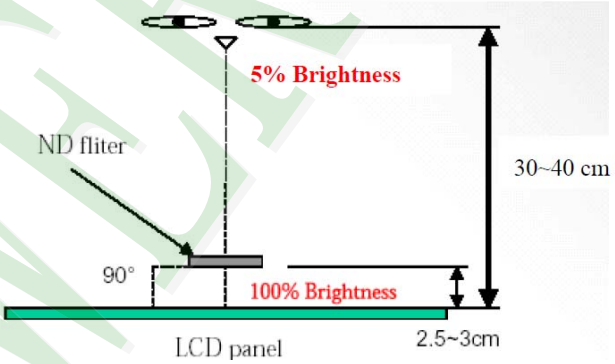
a. Manner of appearance test:

(1). The test best be under 20W×2 fluorescent light(about 300lux ～500lux)

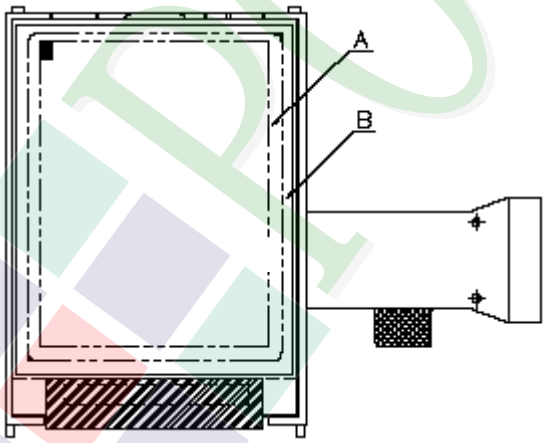
, and distance of view must be at 30~40 cm.

(2). The test direction is base on about around 45˚ of vertical line.





(3). Definition of area.



A area: viewing area

B area: Outside of viewing area

(4). Standard of inspection： (Unit：mm)

◆Specification For TFT-LCD Module 3.5”~15”: (Ver.B01)

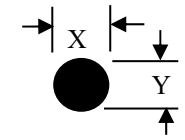
<table>
<tr><th>NO</th><th>Item</th><th>Criterion</th><th>Level</th></tr>
<tr><td rowspan="3">01</td><td rowspan="3">Product condition</td><td>1.1The part number is inconsistent with work order of production.</td><td>Major</td></tr>
<tr><td>1.2 Mixed product types.</td><td>Major</td></tr>
<tr><td>1.3 Assembled in inverse direction.</td><td>Major</td></tr>
<tr><td>02</td><td>Quantity</td><td>2.1The quantity is inconsistent with work order of production.</td><td>Major</td></tr>
<tr><td>03</td><td>Outline dimension</td><td>3.1Product dimension and structure must conform to structure diagram.</td><td>Major</td></tr>
<tr><td rowspan="6">04</td><td rowspan="6">Electrical Testing</td><td>4.1 Missing line character and icon.</td><td>Major</td></tr>
<tr><td>4.2 No function or no display.</td><td>Major</td></tr>
<tr><td>4.3 Display malfunction.</td><td>Major</td></tr>
<tr><td>4.4 LCD viewing angle defect.</td><td>Major</td></tr>
<tr><td>4.5 Current consumption exceeds product specifications.</td><td>Major</td></tr>
<tr><td>4.6Mura cannot be seen through 5% ND filter at 50% Gray , should be judged by the viewing angle of 90 degree.</td><td>Minor</td></tr>
<tr><td>05</td><td>Dot defect

(Bright dot, Dark dot)

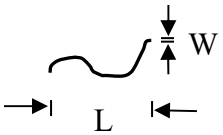
On -display</td><td>
<table>
<tr><th colspan="2">Item</th><th>Acceptance (Q’ty)</th></tr>
<tr><td rowspan="4">Dot Defect</td><td>Bright Dot</td><td>≦ 4</td></tr>
<tr><td>Dark Dot</td><td>≦ 5</td></tr>
<tr><td>Joint Dot</td><td>≦ 3</td></tr>
<tr><td>Total</td><td>≦ 7</td></tr>
</table>
5.1 Inspection pattern: full white, full black, Red, Green and blue screens.
5.2 It is defined as dot defect if defect area ＞1/2 dot.
5.3 The distance between two dot defect ≧5 mm.
5.4 Bright dot : Dots appear bright and unchanged in visible with 5% ND filter is defined.
5.5 Tiny bright dot: bright dot area ≦1/2 dot.
a. Dots appear bright and unchanged in visible with 5% ND filter is defined defect and is judged in accordance with 6.1
b. Dots invisible with 5% ND Filter is Ignored.
</td><td>Minor</td></tr>
</table>

◆Specification For TFT-LCD Module 3.5″ ~15″ : (Ver.B01)

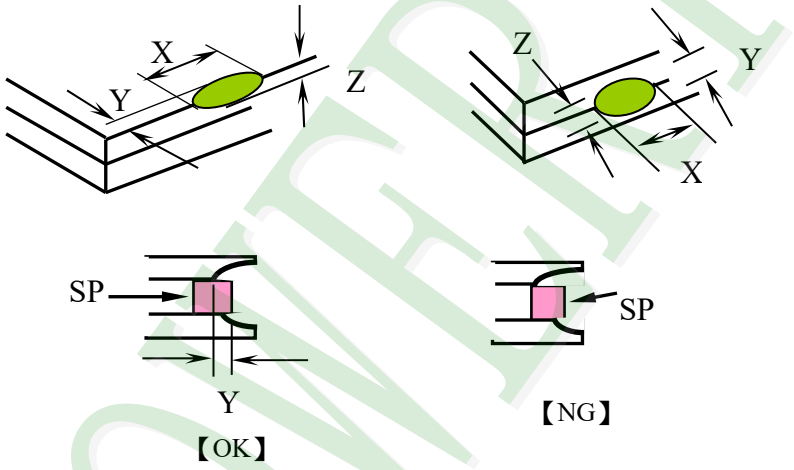
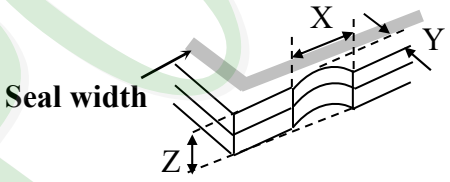
<table>
<tr><th>NO</th><th>Item</th><th>Criterion</th><th>Level</th></tr>
<tr><td>06</td><td>Black or white Dot, scratch, contamination

Round type
 

Φ= (x+y) / 2

Line type
 
</td><td>6.1 Round type (Non-display or display):
<table><tr><th>Dimension (diameter: Φ)</th><th>Acceptance (Q'ty)
A area</th><th>B area</th></tr><tr><td>Φ ≦ 0.25</td><td>Ignore</td><td rowspan="4">Ignore</td></tr><tr><td>0.25 < Φ ≦ 0.50</td><td>5</td></tr><tr><td>Φ > 0.50</td><td>0</td></tr><tr><td>Total</td><td>5</td></tr></table>
6.2 Line type(Non-display or display):
<table><tr><th>module size</th><th>Length (L)</th><th>Width (W)</th><th>Acceptance (Q'ty)
A area</th><th>B area</th></tr><tr><td rowspan="5">3.5" to less 9"</td><td>---</td><td>W ≦ 0.03</td><td>Ignore</td><td rowspan="5">Ignore</td></tr><tr><td>L≦10.0</td><td>0.03<W≦0.05</td><td>4</td></tr><tr><td>L ≦5.0</td><td>0.05<W≦0.10</td><td>2</td></tr><tr><td>---</td><td>W >0.10</td><td>As round type</td></tr><tr><td colspan="2">Total</td><td>5</td></tr><tr><td rowspan="4">9" to 15"</td><td>---</td><td>W ≦ 0.05</td><td>Ignore</td><td rowspan="4">Ignore</td></tr><tr><td>L ≦10.0</td><td>0.05<W≦0.10</td><td>5</td></tr><tr><td>---</td><td>W >0.10</td><td>As round type</td></tr><tr><td colspan="2">Total</td><td>5</td></tr></table></td><td>Minor</td></tr>
<tr><td>07</td><td>Polarizer Bubble</td><td><table><tr><th>Dimension (diameter: Φ)</th><th>Acceptance (Q'ty)
A area</th><th>B area</th></tr><tr><td>Φ ≦ 0.25</td><td>Ignore</td><td rowspan="5">Ignore</td></tr><tr><td>0.25 < Φ ≦ 0.50</td><td>4</td></tr><tr><td>0.50 < Φ ≦ 0.80</td><td>1</td></tr><tr><td>Φ >0.80</td><td>0</td></tr><tr><td>Total</td><td>5</td></tr></table></td><td>Minor</td></tr>
</table>

◆Specification For TFT-LCD Module 3.5″ ~15″ : (Ver.B01)

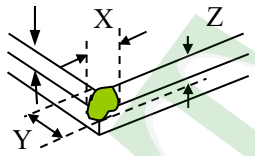
NO	Item	Criterion	Level
08	The crack of glass	Symbols : X: The length of crack Y: The width of crack. Z: The thickness of crack W: terminal length T: The thickness of glass a : LCD side length 8.1 General glass chip: 8.1.1 Chip on panel surface and crack between panels:   	Minor

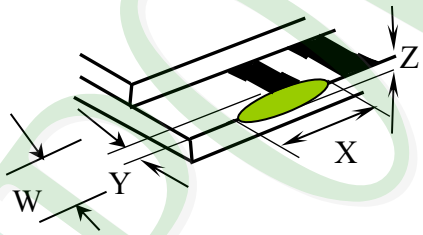
X	Y	Z
≦ a	Crack can't enter viewing area	≦1/2 t
≦a	Crack can't exceed the half of SP width.	1/2 t < Z ≦2 t

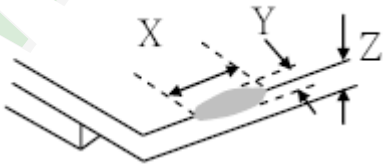
◆Specification For TFT-LCD Module 3.5″ ~15″ : (Ver.B01)

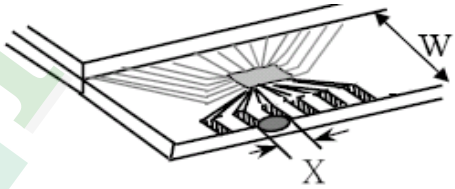
<table>
<tr><th>NO</th><th>Item</th><th>Criterion</th><th>Level</th></tr>
<tr><td rowspan="2">08</td><td rowspan="2">The crack of glass</td><td>
Symbols :

X: The length of crack Y: The width of crack.
Z: The thickness of crack W: terminal length
t: The thickness of glass a: LCD side length

8.1.2 Corner crack:


<table>
<tr><th>X</th><th>Y</th><th>Z</th></tr>
<tr><td>≦1/5 a</td><td>Crack can’t enter viewing area</td><td>Z ≦ 1/2 t</td></tr>
<tr><td>≦1/5 a</td><td>Crack can’t exceed the half of SP width.</td><td>1/2 t < Z ≦ 2 t</td></tr>
</table>
</td><td rowspan="2">Minor</td></tr>
<tr><td>
8.2 Protrusion over terminal:
8.2.1 Chip on electrode pad:




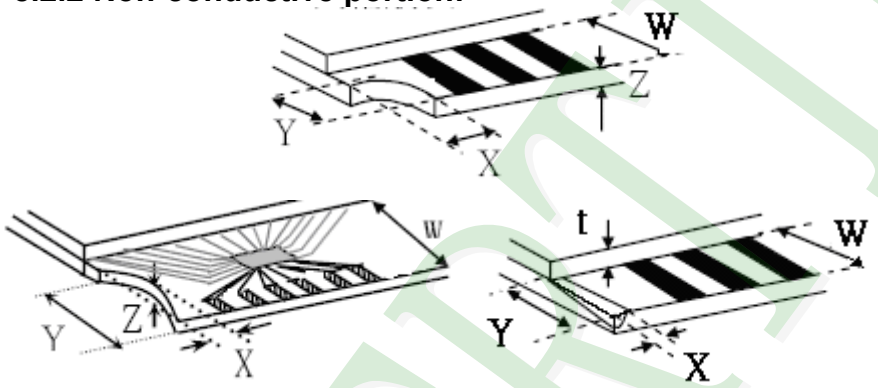


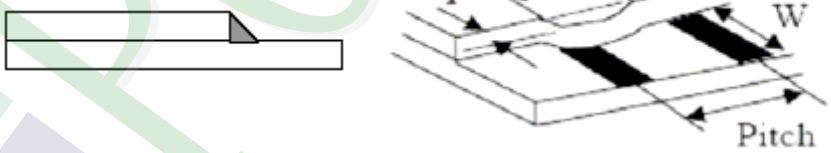
<table>
<tr><th></th><th>X</th><th>Y</th><th>Z</th></tr>
<tr><td>Front</td><td>≦ a</td><td>≦ 1/2 W</td><td>≦ t</td></tr>
<tr><td>Back</td><td>≦ a</td><td>≦ W</td><td>≦ 1/2 t</td></tr>
</table>
</td></tr>
</table>

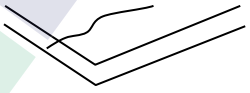
◆Specification For TFT-LCD Module 3.5″ ~15″ : (Ver.B01)

<table>
<tr><th>NO</th><th>Item</th><th>Criterion</th><th>Level</th></tr>
<tr><td>08</td><td>The crack of glass</td><td>
Symbols:

X: The length of crack Y: The width of crack.
Z: The thickness of crack W: terminal length
t: The thickness of glass a: LCD side length

8.2.2 Non-conductive portion:


<table>
<tr><th>X</th><th>Y</th><th>Z</th></tr>
<tr><td>≦ 1/3 a</td><td>≦ W</td><td>≦t</td></tr>
</table>
⊙ If the chipped area touches the ITO terminal, over 2/3 of the ITO must remain and be inspected according to electrode terminal specifications
8.2.3 Glass remain:


<table>
<tr><th>X</th><th>Y</th><th>Z</th></tr>
<tr><td>≦ a</td><td>≦ 1/3 W</td><td>≦t</td></tr>
</table>
8.2.4 Cracking:

Not Allowed
</td><td>Minor</td></tr>
</table>

◆Specification For TFT-LCD Module 3.5″~15″: (Ver.B01)

NO	Item	Criterion	Level
09	Backlight elements	9.1 Backlight can't work normally.	Major
		9.2 Backlight doesn't light or color is wrong.	Major
		9.3 Illumination source flickers when lit.	Major
10	General appearance	10.1 Pin type, quantity, dimension must match type in structure diagram.	Major
		10.2 No short circuits in components on PCB or FPC.	Major
		10.3 Parts on PCB or FPC must be: no wrong parts, missing parts or excess parts.	Major
		10.4 Product packaging must the same as specified on packaging specification sheet.	Minor
		10.5 The folding and peeled off in polarizer are not acceptable.	Minor
		10.6 The PCB or FPC between B/L assembled distance(PCB or FPC) is ≦1.5 mm.	Minor

4. Reliability Test

4.1 Reliability Test Condition (Ver.B01)

<table>
<tr><th>NO.</th><th>TEST ITEM</th><th>TEST CONDITION</th></tr>
<tr><td>1</td><td>High Temperature Storage Test</td><td>Keep in 85 ±5℃ 240 hrs</td></tr>
<tr><td>2</td><td>Low Temperature Storage Test</td><td>Keep in -30 ±5℃ 240 hrs</td></tr>
<tr><td>3</td><td>High Temperature / High Humidity Storage Test</td><td>Keep in 60 ℃ / 90% R.H duration for 240 hrs
(Excluding the polarizer)</td></tr>
<tr><td>4</td><td>Temperature Cycling Storage Test</td><td>-30℃ → +25℃ → 85℃ → +25℃
(30mins) (5mins) (30mins) (5mins)
20 Cycle</td></tr>
<tr><td rowspan="2">5</td><td rowspan="2">ESD Test</td><td>Air Discharge:
Apply 2 KV with 5 times Discharge for each polarity +/-
Contact Discharge:
Apply 250 V with 5 times discharge for each polarity +/-</td></tr>
<tr><td>1. Temperature ambiance: 15℃～35℃
2. Humidity relative: 30%～60%
3. Energy Storage Capacitance(Cs+Cd): 150pF±10%
4. Discharge Resistance(Rd): 330Ω±10%
5. Discharge, mode of operation:
Single Discharge (time between successive discharges at least 1 sec) (Tolerance if the output voltage indication: ±5%)</td></tr>
<tr><td>6</td><td>Vibration Test (Packaged)</td><td>1. Sine wave 10～55 Hz frequency (1 min/sweep)
2. The amplitude of vibration: 1.5 mm
3. Each direction (X, Y, Z) duration for 2 hrs</td></tr>
<tr><td>7</td><td>Drop Test (Packaged)</td><td><table><tr><th>Packing Weight (Kg)</th><th>Drop Height (cm)</th></tr><tr><td>0 ~ 45.4</td><td>122</td></tr><tr><td>45.4 ~ 90.8</td><td>76</td></tr><tr><td>90.8 ~ 454</td><td>61</td></tr><tr><td>Over 454</td><td>46</td></tr></table>Drop Direction :※1 corner / 3 edges / 6 sides each 1time</td></tr>
</table>

◎Result Evaluation Criteria :
Under the display quality test conditions with normal operations with normal operation state. Do not change these conditions as such changes may affect practical display function.
(Normal operation state)
Temperature：+20~30°C
Humidity：50~70%
Atmospheric pressure：86~106Kpa

5. Precaution Relating Product Handling

5.1 Safety

5.1.1 If the LCD panel breaks, be careful not to get the liquid crystal to touch your skin.

5.1.2 If the liquid crystal touches your skin or clothes, please wash it off immediately by using soap and water.

5.2 Handling

5.2.1 Avoid any strong mechanical shock which can break the glass.

5.2.2 Avoid static electricity which can damage the CMOS LSI—When working with the module, be sure to ground your body and any electrical equipment you may be using.

5.2.3 Do not remove the panel or frame from the module.

5.2.4 The polarizing plate of the display is very fragile. So, please handle it very carefully, do not touch , push or rub the exposed polarizing with anything harder than an HB pencil lead (glass, tweezers ,etc.)

5.2.5 Do not wipe the polarizing plate with a dry cloth, as it may easily scratch the surface of plate.

5.2.6 Do not touch the display area with bare hands, this will stain the display area.

5.2.7 Do not use ketonics solvent & aromatic solvent. Use with a soft cloth soaked with a cleaning naphtha solvent.

5.2.8 To control temperature and time of soldering is 320 ± 10°C and 3-5 sec.

5.2.9 To avoid liquid (include organic solvent) stained on LCM

5.2.10 Caution! (LCM products with Capacitive Touch Panel)
Strong EMI-sources such as switch-mode power supplies (SMPS) can lead to touch malfunction (e.g. ghost-touches).
Therefore, the touch needs to be thoroughly tested inside the target application.

5.2.11 Caution: Continuously displaying same static image will result in high possibility of image sticking/image burn-in effect due to TFT panel characteristic.

5.2.12 Double-sided tape designed to be attached with the customer's mechanical device, please follow up the rules and regulations published by the original manufacturer of double-side tape for the attachment operation

5.3 Storage

5.3.1 Store the panel or module in a dark place where the temperature is 25°C ± 5°C and the humidity is below 65% RH.

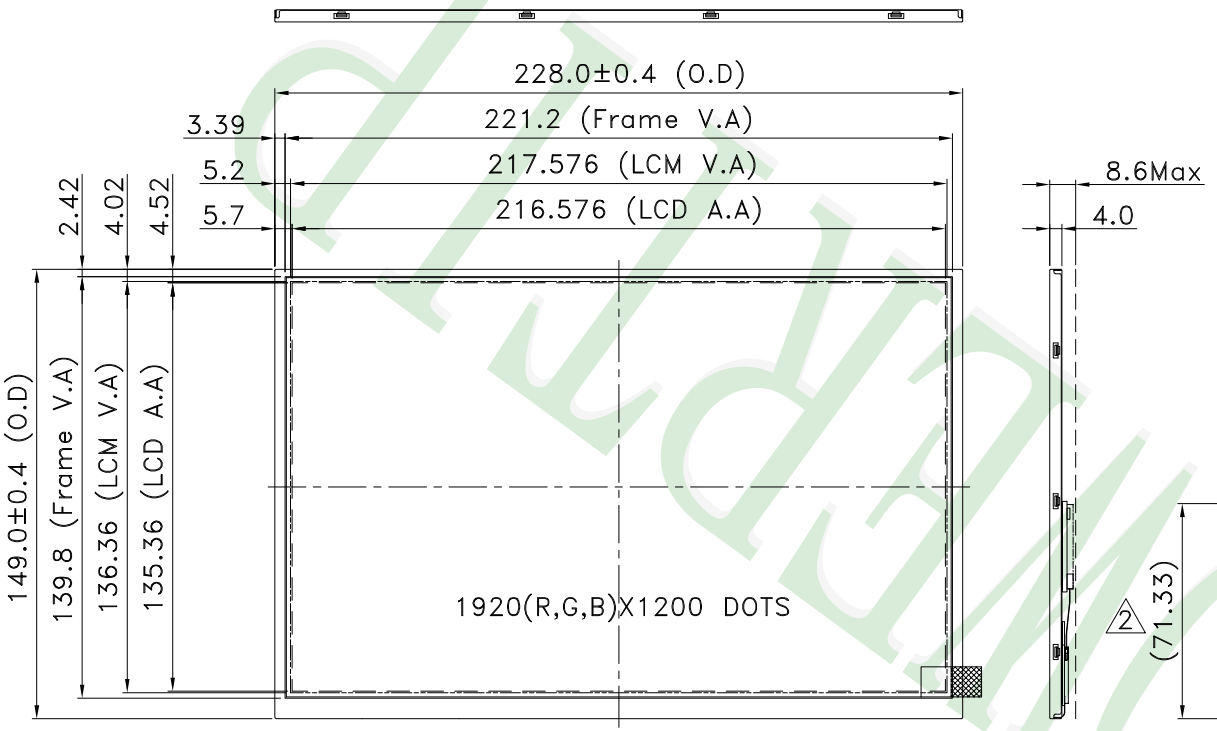
5.3.2 Do not place the module near organics solvents or corrosive gases.

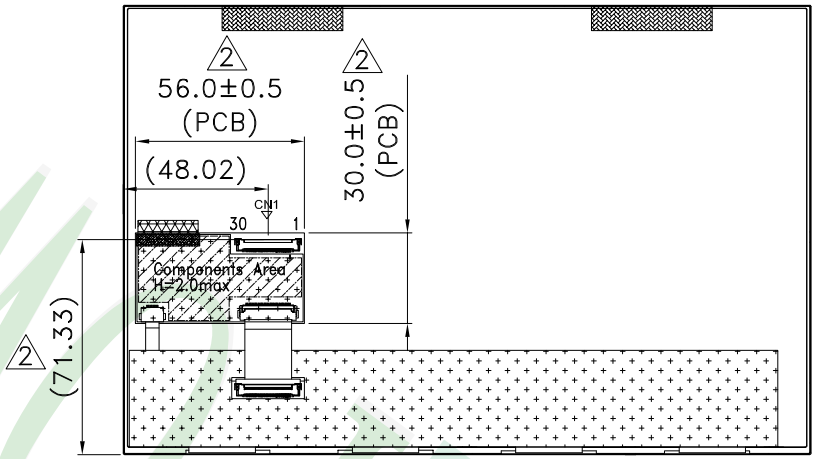
5.3.3 Do not crush, shake, or jolt the module.

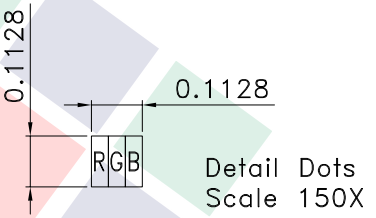
5.4 Terms of Warranty

5.4.1 Applicable warrant period
The period is within thirteen months since the date of shipping out under normal using and storage conditions.

5.4.2 Unaccepted responsibility
This product has been manufactured to your company's specification as a part for use in your company's general electronic products. It is guaranteed to perform according to delivery specifications. For any other use apart from general electronic equipment, we cannot take responsibility if the product is used in nuclear power control equipment, aerospace equipment, fire and security systems or any other applications in which there is a direct risk to human life and where extremely high levels of reliability are required.







NOTES:

1.LCD TYPE: TFT
2.LCD DISPLAY: Normally Black/Transmissive
3.The tolerance unless classified ±0.3mm
4. Insulating Tape; Electric Conductioncloth Tape
5.CN1 connector : I-PEX 20455-030E (0.5pitch ; 30pin) or equivalent.

REV	REV BY	REVISER	DATE
007			
006			
005			
004			
003			
002	Modify Dim & tolerance	Jason	2023/08/17
001	NEW DRAWING	Jason	2023/02/10

PART NO: PH192120T001-ZHA

DRAWING NAME : LMD-PH192120T001-ZHA

TITLE: LCD MODULE DRAWING

久正光電股份有限公司
POWERTIP TECHNOLOGY CORPORATION

Design	Jason	(3)	Surface		
Check	Tina	Unit	MM	Material	
Approve	Bright	Scale	1:1	Thickness	
		Page	1/1	Quantity	

Length(Min) (mm) \ Tolerance \ Precision	Precision Level
1 ~ 4	-
4 ~ 16	-
16 ~ 63	-
63 ~ 250	-
250 ~ 1000	-

Ver.001	
Documents NO.	PKG-PH192120T001-ZHA

Packaging Specifications

Approve	Check	Design
Bright	Tina	Jason

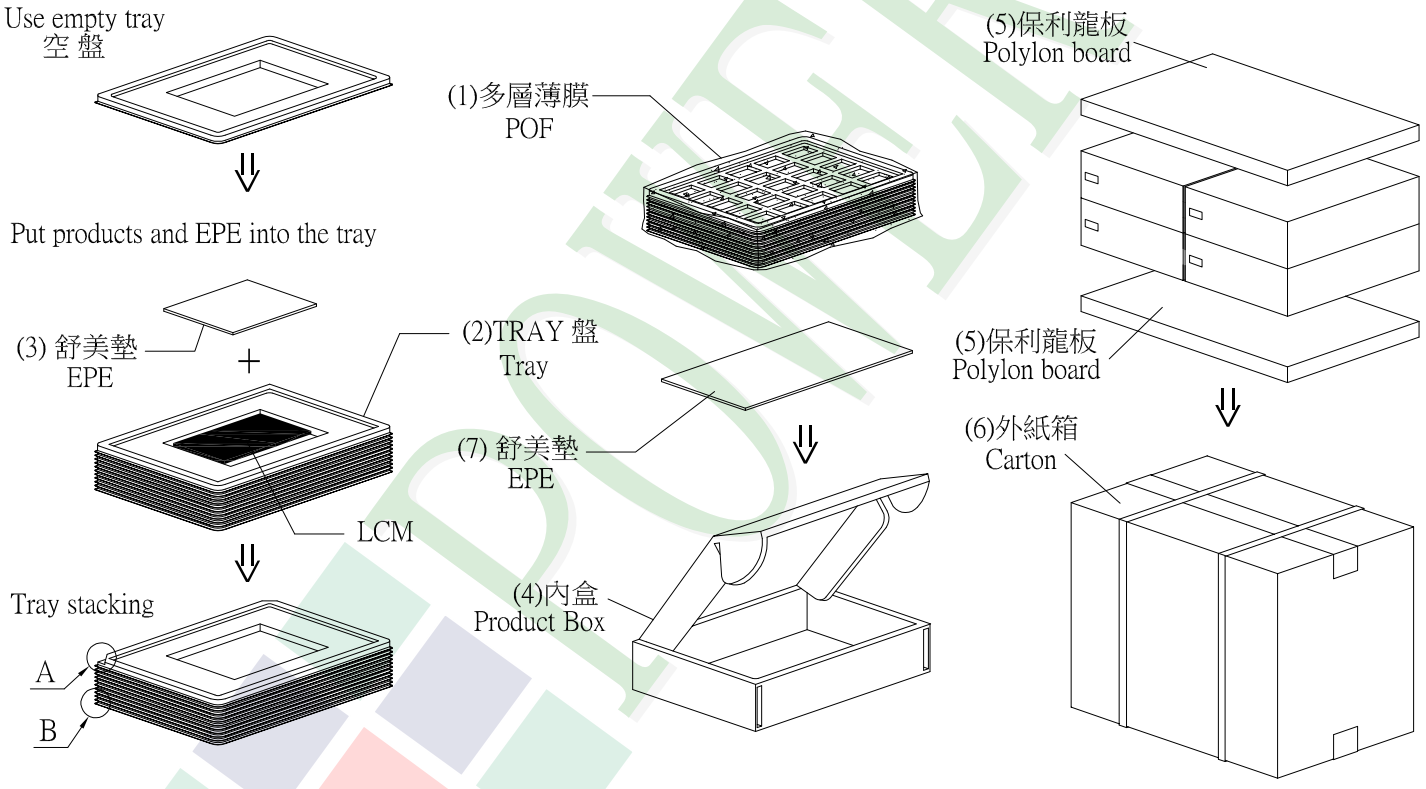
1.包裝材料規格表 (Packaging Material) : (per carton)

No.	Item	Model	Dimensions (mm)	1Pcs Weight	Quantity	Total Weight
1	成品 (LCM)	PH192120T001-ZHA	228.0 X 149.0 X 8.6	0.269	20	5.38
2	多層薄膜(1)POF	OTFILM0BA03ABA	———	———	———	———
3	TRAY 盤 (2)Tray	TYSG000000706	352 X 260 X 20.8	0.1	24	2.4
4	舒美墊(3)EPE	FOAM000000312	250 X 205 X 3	0.004	20	0.08
5	內盒(4)Product Box	BX00000000022	393 X 274 X 107	0.261	4	1.044
6	保利龍板(5)Polylon board	OTPLB00000008	550 X 393 X 15	0.022	2	0.044
7	外紙箱(6)Carton	BX57041027CCBA	570 X 410 X 265	1.39	1	1.39
8	舒美墊(7)EPE	FOAM000000047	350 X 255 X 5	0.011	4	0.044
9						
10						

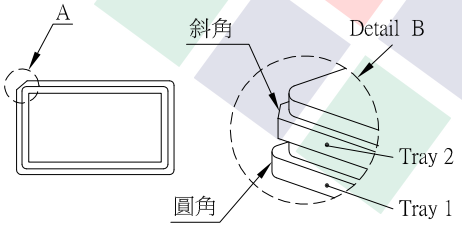
2.一 整箱總重量 (Total LCD Weight in carton) : 10.38 Kg±10%

3.單箱數量規格表 (Packaging Specifications and Quantity) :

(1)LCD quantity per box : no per tray	1	x no of tray	5	=	5
(2)Total LCD quantity in carton : quantity per box	5	x no of boxes	4	=	20



特 記 事 項 (REMARK)



4. TRAY盤相疊時,需旋轉180度,請詳見B視圖
Rotate tray 180 degrees and place on top of stack.
Check the tray stack using Fig. B.