POWERTIP TECH. CORP.

SPECIFICATIONS

CUSTOMER	:	CBE005
SAMPLE CODE	:	SH720128T005-ZBC20
MASS PRODUCTION CODE	:	PH720128T005-ZBC20
SAMPLE VERSION	:	01
SPECIFICATIONS EDITION	:	002
DRAWING NO. (Ver.)	:	JLMD- PH720128T005-ZBC20_001
PACKAGING NO. (Ver.)	:	JPKG- PH720128T005-ZBC20_001

Customer Approved

Date:

POWERTIP
2026.07.02
JS RD APPROVED

Approved	Checked	Designer
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☐ Preliminary specification for design input

■ Specification for sample approval

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History of Version

Date (mm / dd / yyyy)	Ver.	Edi.	Description	Page	Design by
05/13/2026	01	001	Preliminary	-	陳璐
06/30/2026	01	002	First Sample	-	陳璐

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1. SPECIFICATIONS

1.1 Features

Item	Standard Value
Display Type	720 * (RGB) * 1280
LCD Type	Full Viewing Angle, Normally Black , Transmissive type
Screen size(Inch)	7.0 Inch
Control IC	ILI9881C (TFT Unit)
Interface	MIPI Interface (TFT Unit)
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	120.24 (W) * 189.32 (L) * 5.45(H)	mm
Viewing Area	87.74 (W) * 155.36 (L)	mm
Active Area	86.94 (W) *154.56 (L)	mm

Note : For detailed information please refer to LCM drawing.

1.3 Absolute Maximum Ratings

Item	Symbol	Condition	Min.	Max.	Unit	Remark
Supply Voltage	VDD	GND=0	-0.3	+3.8	V	-
	VCI		-0.3	+7.0	V	
Operating Temperature	$T_{OP(Ts)}$	-	-20	+70	°C	
Storage Temperature	$T_{ST(Ta)}$	-	-30	+80	°C	

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

GND = 0V, Ta = 25°C

Item	Symbol	Min.	Typ.	Max.	Unit	Remark
Supply Voltage	VDD	3.0	3.3	3.6	V	Note2
	VCI	3.0	3.3	3.6		
Input signal Voltage	V_{IH}	0.7*VDD	-	VDD		
	V_{IL}	-0.3	-	0.3*VDD		
	V_{OH}	0.8*VDD	-	VDD		
	V_{OL}	0	-	0.2*VDD		
Supply Current	IDD	-	60mA	90mA	mA	Note1

Note1: Maximum current display.
Note2: For DSI DC level please refer to driver IC ILI9881C Specifications

1.5 Optical Characteristics

VDD= 3.3 V, Ta=25°C

Item		Symbol	Condition	Min.	Typ.	Max.	unit	-
Response time		Tr +Tf	Ta = 25°C θX, θY = 0°	-	36	54	ms	Note 2
Viewing angle	Top	θY+	CR ≥ 10	-	80	-	Deg.	Note 4
	Bottom	θY-		-	80	-		
	Left	θX-		-	80	-		
	Right	θX+		-	80	-		
Contrast ratio		CR	Ta = 25°C θX , θY = 0°	650	800	-		Note 3
Color of CIE Coordinate	White	X		0.27	0.32	0.37	-	Note1
		Y		0.30	0.35	0.40		
	Red	X		0.58	0.63	0.68		
		Y		0.30	0.35	0.40		
	Green	X		0.27	0.32	0.37		
		Y		0.56	0.61	0.66		
	Blue	X		0.12	0.17	0.22		
		Y		0.01	0.06	0.11		
Average Brightness Pattern=white display （With LCD & TP）*2		IV	IF=90mA	320	400		-	Note1
Uniformity （With LCD & TP）*1		△B		70	-	-	%	Note1

Note 1:

*1：△B=B(min) / B(max) * 100%

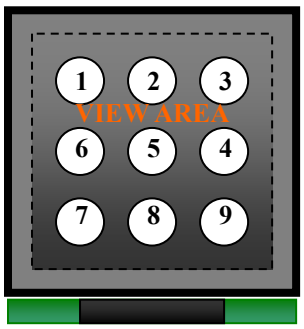
*2：Measurement Condition for Optical Characteristics:

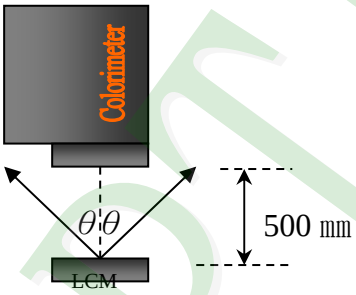
a：Environment: 25℃±5℃ / 60±20%R.H，no wind，dark room below 10 Lux at typical lamp current and typical operating frequency.

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

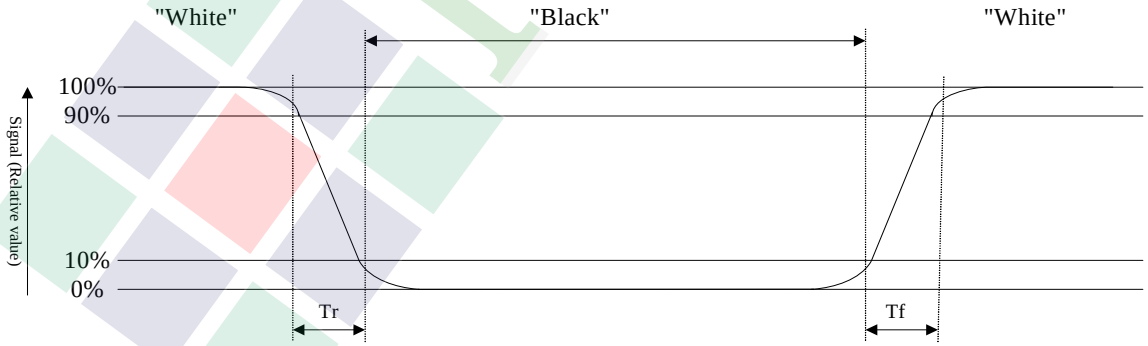
To be measured at the center area of panel with a viewing cone of 1° by Topcon luminance meter BM-7, after 10 minutes operation (module)

Note2: Definition of response time:

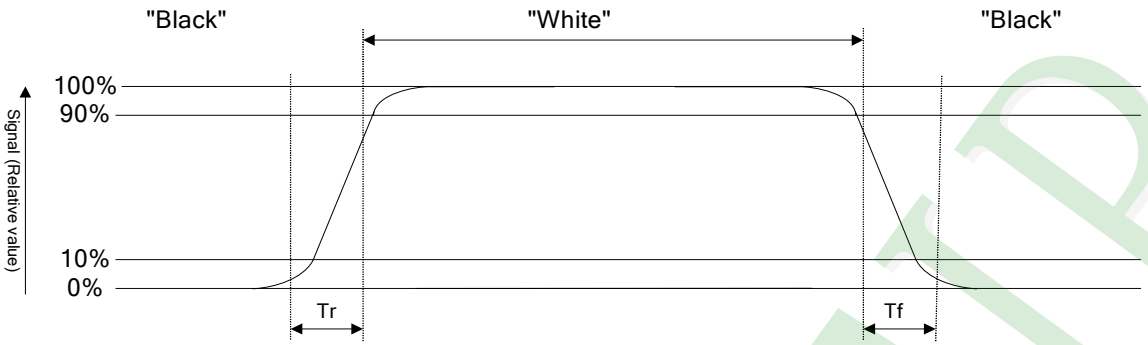
The output signals of photo detector are measured when the input signals are changed from “black” to “white”(falling time) and from “white” to “black”(rising time), respectively. The response time is defined as the time interval between the 10% and 90% of Amplitudes.

Refer to figure as below:

Normally White



Normally Black



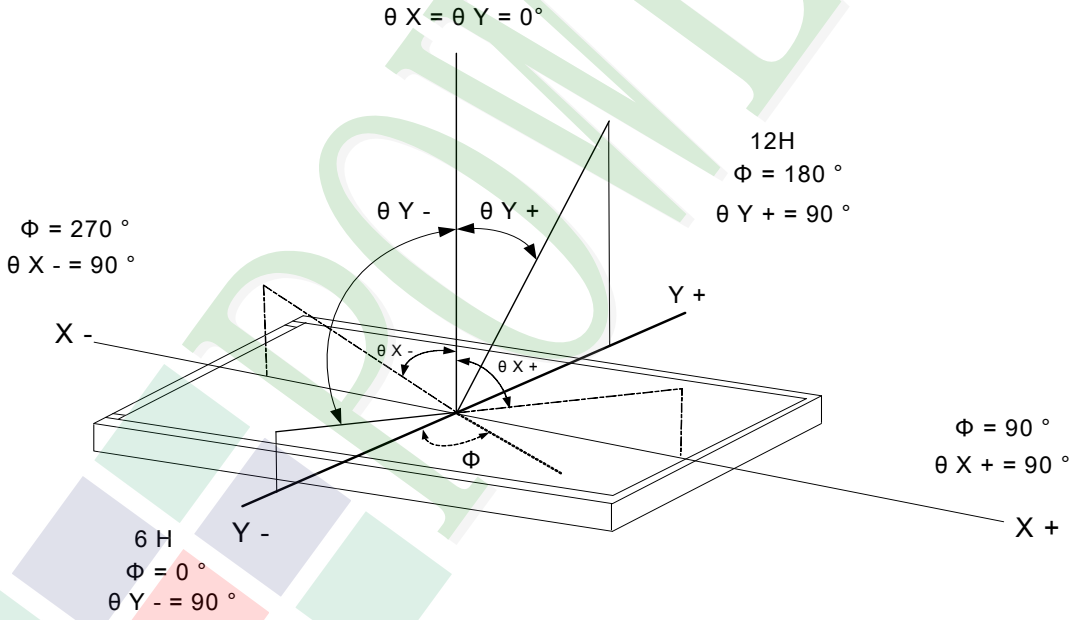
Note3: Definition of contrast ratio:

Contrast ratio is calculated with the following formula

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

Note4: Definition of viewing angle:

Refer to figure as below:



1.6 Backlight Unit Characteristics

Maximum Ratings

Item	Symbol	Conditions	Min.	Max.	Unit
LED Forward Current	IF	Ta =25℃	-	30*3	mA
LED Reverse Voltage	VR	Ta =25℃	-	7	V
Power Dissipation	PD	Ta =25℃	-	1.79	W

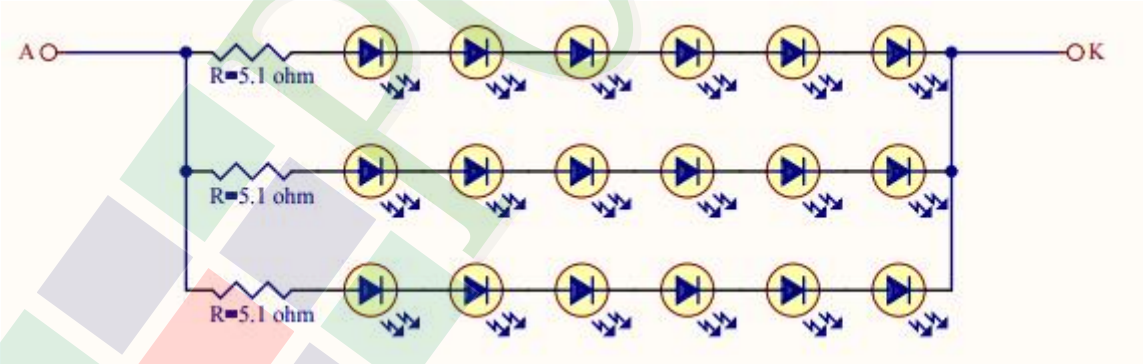
Backlight Characteristics

Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
Forward Voltage	VF	IF= 90 mA	16.2	19.2	21.0	V
Average Brightness (Without LCD)	IV		10000	12500	-	cd/m^2
CIE Color Coordinate (Without LCD)	X		0.27	0.30	0.33	-
	Y		0.27	0.30	0.33	
Uniformity *1	△B		80	-	-	*2
Color	White					

*1：This value will be changed while mass production.

*2：△B=B(min) / B(max)%

B/L Internal Circuit Diagram



Other Description

Item	Conditions	Description
Life Time	Ta =25℃ IF=90mA	20000 hrs

1.7 Touch Panel Unit Characteristics

Features

Item	Standard Value
Touch Panel Size	7”
Touch type	Projective capacitive touch panel
Input Method	Finger or Conductive Pen
Support Operation	5 Points touch
Firmware Ver.	V70
Output Interface	I²C
IC	GT911

I²C Address

Bit7	Bit6	Bit5	Bit4	Bit3	Bit2	Bit1	Bit0
0	0	1	0	1	0	0	**R/W**

Absolute Maximum Ratings

Item	Symbol	Condition	Min.	Max.	unit
Operating Temperature	T_{OP}	-	-20	+70	°C
Storage Temperature	T_{ST}	-	-30	+80	°C

DC Electrical Characteristics

Item	Symbol	Condition	Min.	Typ.	Max.	unit
Power Supply Voltage	TPVDD	-	2.8	3.3	3.6	V

Optical Characteristics

Item	Standard Value	unit
Total light transmittance	85% or more	-
Hardness	7H or more	-

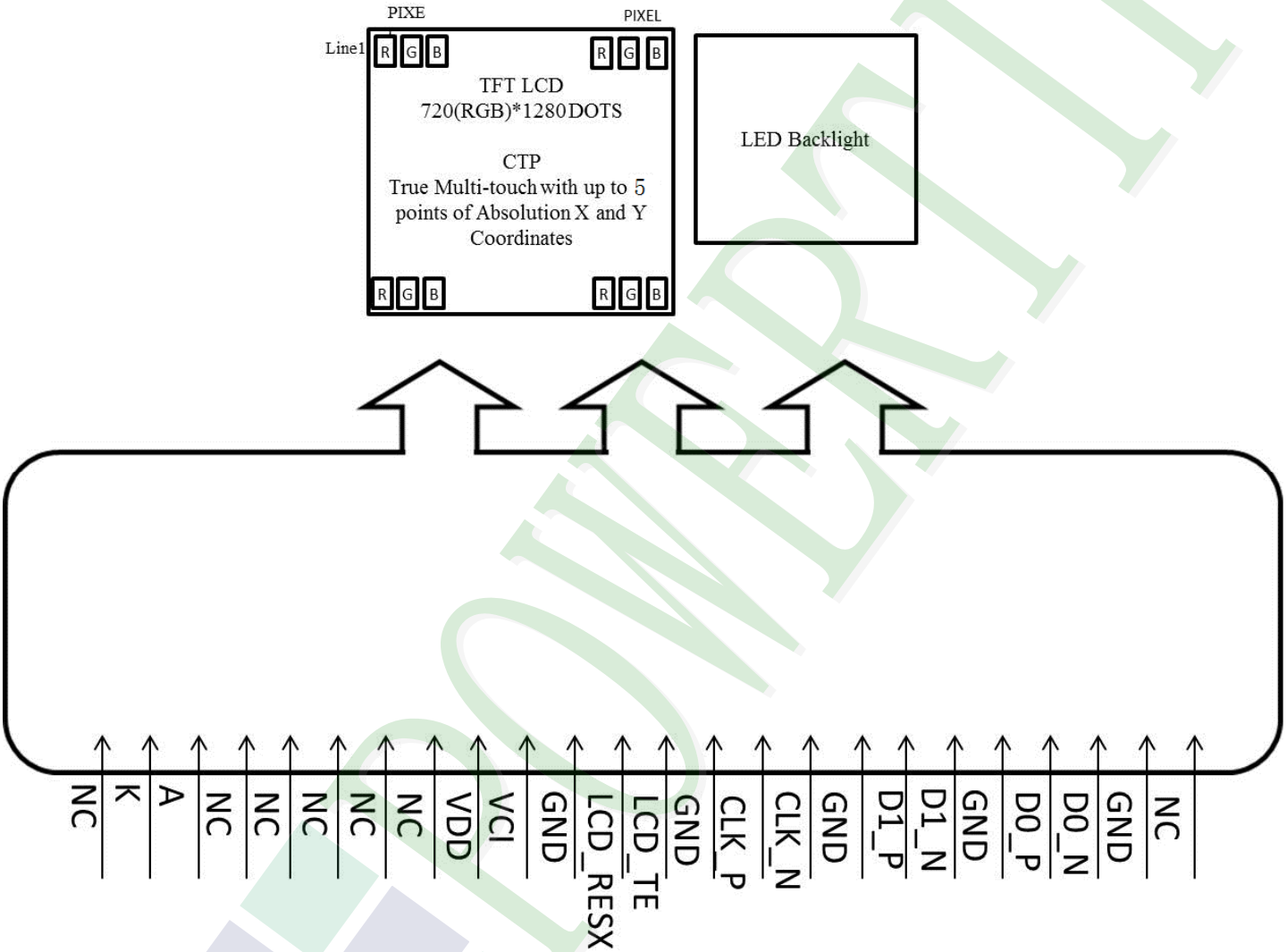
2. MODULE STRUCTURE

2.1 Counter Drawing

2.1.1 LCM Mechanical Diagram

* See Appendix

2.1.2 Block Diagram



2.2 Interface Pin Description

Interface for TFT display

Pin#	Name	DESCRIPTION
1	NC	No connection.
2	K	Power for LED backlight cathode input.
3	A	Power for LED backlight anode input.
4	NC	No connection.
5	NC	No connection.
6	GND	Ground
7	NC	No connection.
8	NC	No connection.
9	VDD	Power supply for internal logic regulator.
10	VCI	Power supply for analog circuit.
11	GND	Ground.
12	LCD_RESX	The external reset input Initializes the chip with a low input. Be sure to execute a power-on reset after supplying power.
13	LCD_TE	Tearing effect output pin.
14	GND	Ground.
15	CLK_P	MIPI DSI differential clock pair
16	CLK_N	MIPI DSI differential clock pair
17	GND	Ground.
18	D1_P	MIPI DSI differential data pair. (Data lane 1)
19	D1_N	MIPI DSI differential data pair. (Data lane 1)
20	GND	Ground.
21	D0_P	MIPI DSI differential data pair. (Data lane 0)
22	D0_N	MIPI DSI differential data pair. (Data lane 0)
23	GND	Ground.
24	NC	No connection.

Interface for CTP

Pin#	Name	Description
1	RST	Active low global reset signal input.
2	SCL	I2C Clock
3	SDA	I2C Data
4	INT	Active Low
5	TPVDD	Power Supply Voltage (3.3V)
6	GND	Ground.

2.2.1 Refer Initial Code

```
Void ILI9881C_ HSD070FHW1-D_(C0700)_3H_Initial Code(Void)
{// IOVCC=1.8V //VSP=5.5 VSN=-5.5 External
//************* Reset LCD Driver ****************//
LCD_nRESET = 1;
Delayms(1); // Delay 1ms
LCD_nRESET = 0;
Delayms(1); // Delay 1ms // This Delay time is necessary
LCD_nRESET = 1;
Delayms(10); // Delay 120 ms
//************* Start Initial Sequence **********//
LCD_ILI9881C_CMD(0xFF);
LCD_ILI9881C_INDEX(0x98);
LCD_ILI9881C_INDEX(0x81);
LCD_ILI9881C_INDEX(0x03);
LCD_ILI9881C_CMD(0x01);
LCD_ILI9881C_INDEX(0x00);
LCD_ILI9881C_CMD(0x02);
LCD_ILI9881C_INDEX(0x00);
LCD_ILI9881C_CMD(0x03);
LCD_ILI9881C_INDEX(0x73);
LCD_ILI9881C_CMD(0x04);
LCD_ILI9881C_INDEX(0x00);
LCD_ILI9881C_CMD(0x05);
LCD_ILI9881C_INDEX(0x00);
LCD_ILI9881C_CMD(0x06);
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LCD_ILI9881C_INDEX(0x00);
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LCD_ILI9881C_CMD(0x62);
LCD_ILI9881C_INDEX(0x0D);
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LCD_ILI9881C_INDEX(0x0C);
LCD_ILI9881C_CMD(0x78);
LCD_ILI9881C_INDEX(0x0D);
LCD_ILI9881C_CMD(0x79);
```

```
LCD_ILI9881C_INDEX(0x06);
LCD_ILI9881C_CMD(0x7A);
LCD_ILI9881C_INDEX(0x07);
LCD_ILI9881C_CMD(0x7B);
LCD_ILI9881C_INDEX(0x02);
LCD_ILI9881C_CMD(0x7C);
LCD_ILI9881C_INDEX(0x02);
LCD_ILI9881C_CMD(0x7D);
LCD_ILI9881C_INDEX(0x02);
LCD_ILI9881C_CMD(0x7E);
LCD_ILI9881C_INDEX(0x02);
LCD_ILI9881C_CMD(0x7F);
LCD_ILI9881C_INDEX(0x01);
LCD_ILI9881C_CMD(0x80);
LCD_ILI9881C_INDEX(0x00);
LCD_ILI9881C_CMD(0x81);
LCD_ILI9881C_INDEX(0x02);
LCD_ILI9881C_CMD(0x82);
LCD_ILI9881C_INDEX(0x14);
LCD_ILI9881C_CMD(0x83);
LCD_ILI9881C_INDEX(0x15);
LCD_ILI9881C_CMD(0x84);
LCD_ILI9881C_INDEX(0x02);
LCD_ILI9881C_CMD(0x85);
LCD_ILI9881C_INDEX(0x02);
LCD_ILI9881C_CMD(0x86);
```

```
LCD_ILI9881C_INDEX(0x02);
LCD_ILI9881C_CMD(0x87);
LCD_ILI9881C_INDEX(0x02);
LCD_ILI9881C_CMD(0x88);
LCD_ILI9881C_INDEX(0x02);
LCD_ILI9881C_CMD(0x89);
LCD_ILI9881C_INDEX(0x02);
LCD_ILI9881C_CMD(0x8A);
LCD_ILI9881C_INDEX(0x02);
LCD_ILI9881C_CMD(0xFF);
LCD_ILI9881C_INDEX(0x98);
LCD_ILI9881C_INDEX(0x81);
LCD_ILI9881C_INDEX(0x04);
LCD_ILI9881C_CMD(0x6C);
LCD_ILI9881C_INDEX(0x15);
LCD_ILI9881C_CMD(0x6E);
LCD_ILI9881C_INDEX(0x2A);
LCD_ILI9881C_CMD(0x6F);
LCD_ILI9881C_INDEX(0x33);
LCD_ILI9881C_CMD(0x3A);
LCD_ILI9881C_INDEX(0x94);
LCD_ILI9881C_CMD(0x8D);
LCD_ILI9881C_INDEX(0x14);
LCD_ILI9881C_CMD(0x87);
LCD_ILI9881C_INDEX(0xBA);
LCD_ILI9881C_CMD(0x26);
```

```
LCD_ILI9881C_INDEX(0x76);
LCD_ILI9881C_CMD(0xB2);
LCD_ILI9881C_INDEX(0xD1);
LCD_ILI9881C_CMD(0xB5);
LCD_ILI9881C_INDEX(0x06);
LCD_ILI9881C_CMD(0x38);
LCD_ILI9881C_INDEX(0x01);
LCD_ILI9881C_CMD(0x39);
LCD_ILI9881C_INDEX(0x00);
LCD_ILI9881C_CMD(0xFF);
LCD_ILI9881C_INDEX(0x98);
LCD_ILI9881C_INDEX(0x81);
LCD_ILI9881C_INDEX(0x01);
LCD_ILI9881C_CMD(0x22);
LCD_ILI9881C_INDEX(0x0A);
LCD_ILI9881C_CMD(0x31);
LCD_ILI9881C_INDEX(0x00);
LCD_ILI9881C_CMD(0x53);
LCD_ILI9881C_INDEX(0x7D);
LCD_ILI9881C_CMD(0x55);
LCD_ILI9881C_INDEX(0x8F);
LCD_ILI9881C_CMD(0x40);
LCD_ILI9881C_INDEX(0x33);
LCD_ILI9881C_CMD(0x50);
LCD_ILI9881C_INDEX(0x96);
LCD_ILI9881C_CMD(0x51);
```

```
LCD_ILI9881C_INDEX(0x96);
LCD_ILI9881C_CMD(0x60);
LCD_ILI9881C_INDEX(0x23);
LCD_ILI9881C_CMD(0xA0);
LCD_ILI9881C_INDEX(0x08);
LCD_ILI9881C_CMD(0xA1);
LCD_ILI9881C_INDEX(0x1D);
LCD_ILI9881C_CMD(0xA2);
LCD_ILI9881C_INDEX(0x2A);
LCD_ILI9881C_CMD(0xA3);
LCD_ILI9881C_INDEX(0x10);
LCD_ILI9881C_CMD(0xA4);
LCD_ILI9881C_INDEX(0x15);
LCD_ILI9881C_CMD(0xA5);
LCD_ILI9881C_INDEX(0x28);
LCD_ILI9881C_CMD(0xA6);
LCD_ILI9881C_INDEX(0x1C);
LCD_ILI9881C_CMD(0xA7);
LCD_ILI9881C_INDEX(0x1D);
LCD_ILI9881C_CMD(0xA8);
LCD_ILI9881C_INDEX(0x7E);
LCD_ILI9881C_CMD(0xA9);
LCD_ILI9881C_INDEX(0x1D);
LCD_ILI9881C_CMD(0xAA);
LCD_ILI9881C_INDEX(0x29);
LCD_ILI9881C_CMD(0xAB);
```

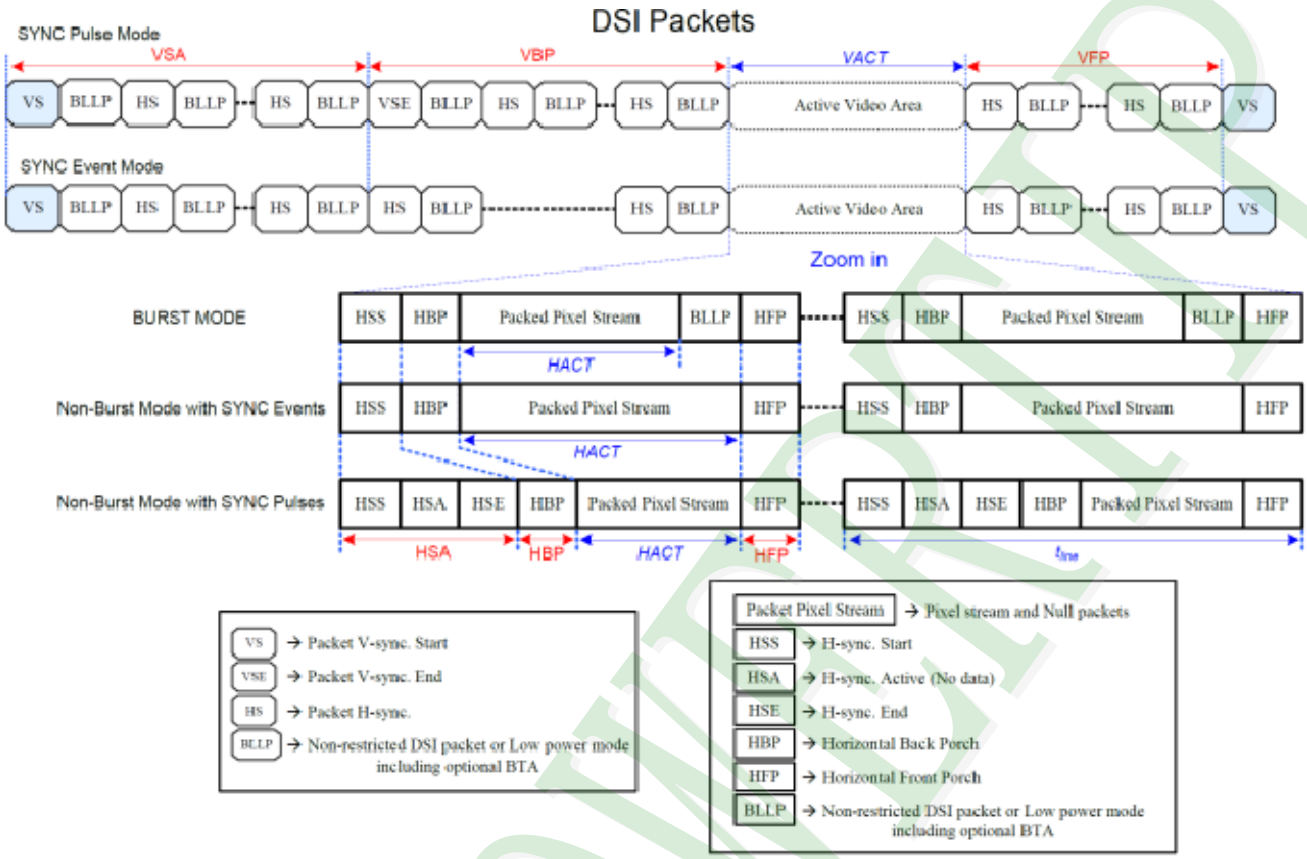
```
LCD_ILI9881C_INDEX(0x6B);
LCD_ILI9881C_CMD(0xAC);
LCD_ILI9881C_INDEX(0x1A);
LCD_ILI9881C_CMD(0xAD);
LCD_ILI9881C_INDEX(0x18);
LCD_ILI9881C_CMD(0xAE);
LCD_ILI9881C_INDEX(0x4B);
LCD_ILI9881C_CMD(0xAF);
LCD_ILI9881C_INDEX(0x20);
LCD_ILI9881C_CMD(0xB0);
LCD_ILI9881C_INDEX(0x27);
LCD_ILI9881C_CMD(0xB1);
LCD_ILI9881C_INDEX(0x50);
LCD_ILI9881C_CMD(0xB2);
LCD_ILI9881C_INDEX(0x64);
LCD_ILI9881C_CMD(0xB3);
LCD_ILI9881C_INDEX(0x39);
LCD_ILI9881C_CMD(0xC0);
LCD_ILI9881C_INDEX(0x08);
LCD_ILI9881C_CMD(0xC1);
LCD_ILI9881C_INDEX(0x1D);
LCD_ILI9881C_CMD(0xC2);
LCD_ILI9881C_INDEX(0x2A);
LCD_ILI9881C_CMD(0xC3);
LCD_ILI9881C_INDEX(0x10);
LCD_ILI9881C_CMD(0xC4);
```

```
LCD_ILI9881C_INDEX(0x15);
LCD_ILI9881C_CMD(0xC5);
LCD_ILI9881C_INDEX(0x28);
LCD_ILI9881C_CMD(0xC6);
LCD_ILI9881C_INDEX(0x1C);
LCD_ILI9881C_CMD(0xC7);
LCD_ILI9881C_INDEX(0x1D);
LCD_ILI9881C_CMD(0xC8);
LCD_ILI9881C_INDEX(0x7E);
LCD_ILI9881C_CMD(0xC9);
LCD_ILI9881C_INDEX(0x1D);
LCD_ILI9881C_CMD(0xCA);
LCD_ILI9881C_INDEX(0x29);
LCD_ILI9881C_CMD(0xCB);
LCD_ILI9881C_INDEX(0x6B);
LCD_ILI9881C_CMD(0xCC);
LCD_ILI9881C_INDEX(0x1A);
LCD_ILI9881C_CMD(0xCD);
LCD_ILI9881C_INDEX(0x18);
LCD_ILI9881C_CMD(0xCE);
LCD_ILI9881C_INDEX(0x4B);
LCD_ILI9881C_CMD(0xCF);
LCD_ILI9881C_INDEX(0x20);
LCD_ILI9881C_CMD(0xD0);
LCD_ILI9881C_INDEX(0x27);
LCD_ILI9881C_CMD(0xD1);
```

```
LCD_ILI9881C_INDEX(0x50);
LCD_ILI9881C_CMD(0xD2);
LCD_ILI9881C_INDEX(0x64);
LCD_ILI9881C_CMD(0xD3);
LCD_ILI9881C_INDEX(0x39);
LCD_ILI9881C_CMD(0xFF);
LCD_ILI9881C_INDEX(0x98);
LCD_ILI9881C_INDEX(0x81);
LCD_ILI9881C_INDEX(0x00);
LCD_ILI9881C_CMD(0x35);
LCD_ILI9881C_INDEX(0x00);
Void ILI9881C_ExitSleep_Code(Void)
{
LCD_ILI9881C_CMD(0x11); // Sleep Out
Delayms(120);
LCD_ILI9881C_CMD(0x29) //Display on
Delayms(20);
}
```

2.3 AC Electrical Characteristics

Timing for DSI video mode



Parameters	Symbols	Min.	Typ.	Max.	Units
Vertical sync. active	VSA	2 (Note 6)	-	-	Line
Vertical Back Porch	VBP	14 (Note 6)	-	-	Line
Vertical Front Porch	VFP	8 (Note 6)	-	-	Line
Active lines per frame	VACT	-	1280	-	Line
Horizontal sync. active	HSA	2	-	-	Pixel
Horizontal Porch period	HSA + HBP + HFP	1.6	-	-	us
Active pixels per line	HACT	-	720	-	Pixel
Bit rate	BR_{bps}	385		Note 5	Mbps/lane

1 UI=1/Bit rate

HSA(pixel)= (tHSA*lane number) / (UI* pixel format)

HBP(pixel)= (tHBP*lane number) / (UI* pixel format)

HFP(pixel)= (tHFP*lane number) / (UI* pixel format)

$$\text{Frame Rate} = \frac{BR_{bps} \times Lane_{num}}{(VACT+VSA+VBP+VFP) \times (HACT+HSA+HBP+HFP) \times \text{Pixel Format}}$$

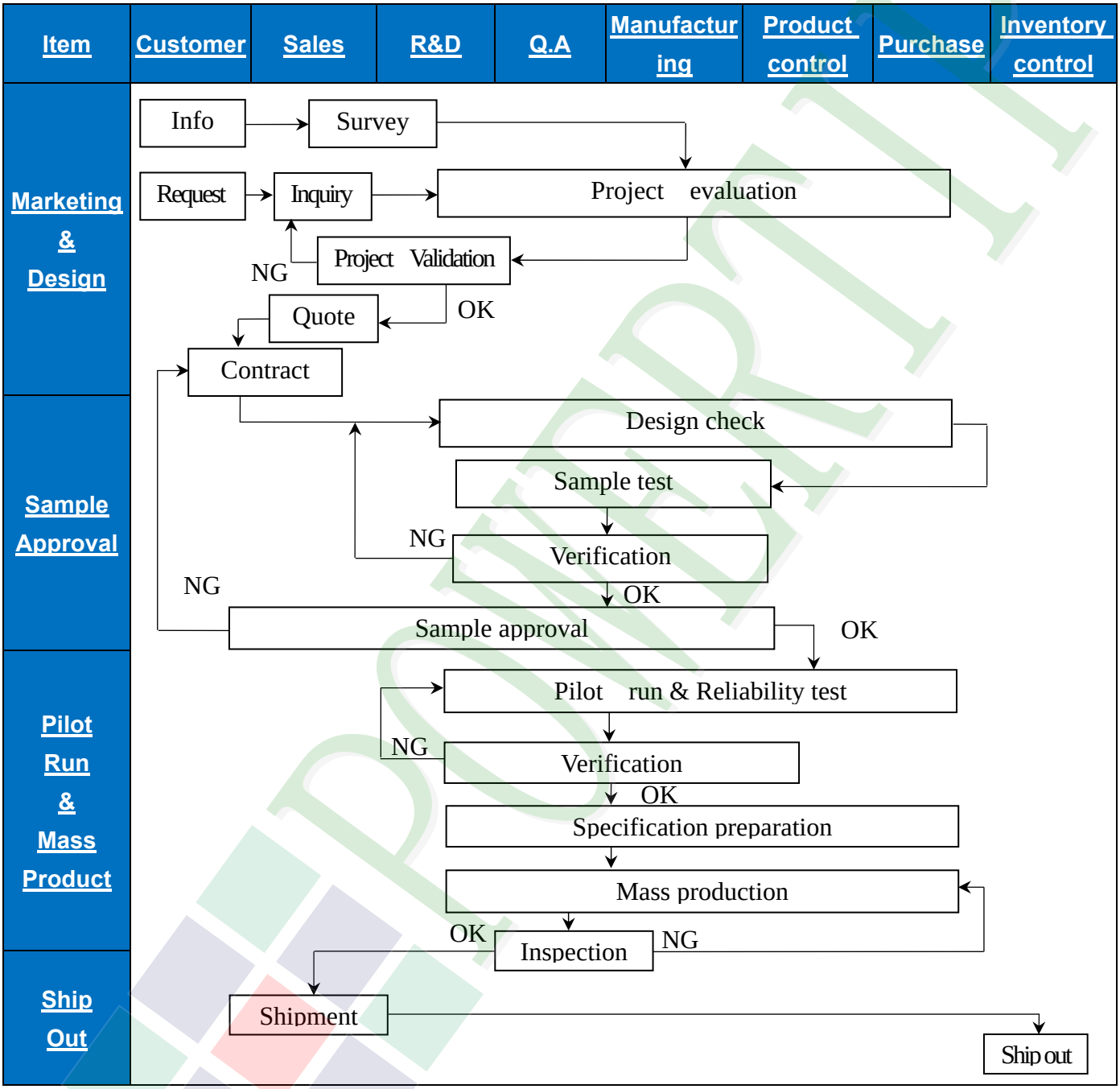
Example : BR_{bps} = 457Mbps/lane, 1UI=2.1883ns, Frame rate=60Hz, VACT=1280, VSA=2, VBP=30, VFP=20, HACT=720, HSA=33, HBP=100, HFP=100, $Lane_{num}$=4(lane), Pixel Format=24(bit).

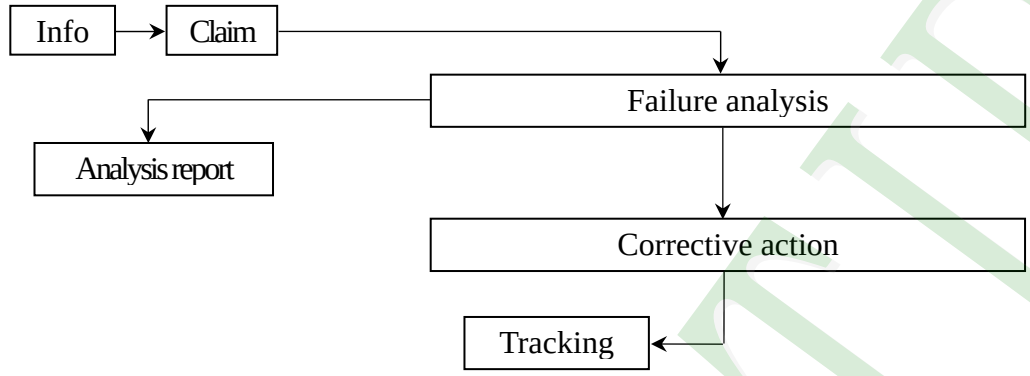
Note:

1. $Lane_{num}$: Date lane of MIPI-DSI.
2. Pixel Format: Please reference to “4.1DSI System Interface”.
3. The formula exists slightly error because of the host-transmission way.
4. The best frame rate setting： 2 data lanes：50~60 Hz / 3 data lanes：50~70 Hz / 4 data lanes：50~70 Hz.
5. Please reference to “Table 39: Limited Clock Channel Speed”.
6. The minimum values of this table mean the limitation of IC without considering the panel GIP. The actual values of VSA, VBP and VFP will be changed by different panel GIP setting.

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" -10" (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

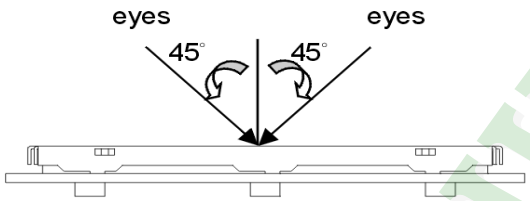
◆OUT Going Defect Level: Sampling.

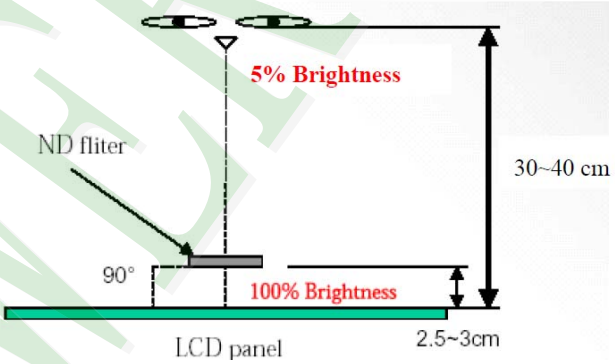
◆Standard of the product appearance test:

a. Manner of appearance test:

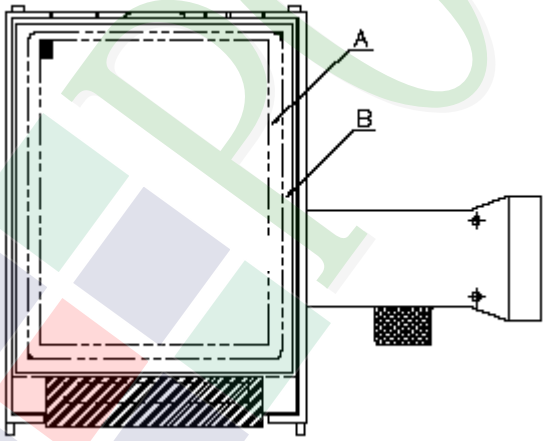
(1). The test best be under 20W×2 fluorescent light(about 300lux ～500lux) , and distance of view must be at 30~40 cm.

(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)

(5). Electrical testing and inspection judgment area: A area (B area ignore).

◆Specification For TFT-LCD Module 3.5" ~10" : (Ver.B01)

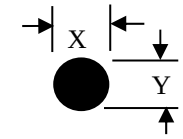
<table>
<tr><th>NO</th><th>Item</th><th>Criterion</th><th>Level</th></tr>
<tr><td rowspan="3">01</td><td rowspan="3">Product condition</td><td>1.1 The part number is inconsistent with work order of production.</td><td>Major</td></tr>
<tr><td>1.2 Mixed product types.</td><td>Major</td></tr>
<tr><td>1.3 Assembled in inverse direction.</td><td>Major</td></tr>
<tr><td>02</td><td>Quantity</td><td>2.1 The quantity is inconsistent with work order of production.</td><td>Major</td></tr>
<tr><td>03</td><td>Outline dimension</td><td>3.1 Product 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>4.6 Mura 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)

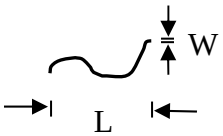
On -display</td><td>
<table>
<tr><th colspan="2">Item</th><th>Acceptance (Q'ty)</th></tr>
<tr><td rowspan="4">Dot Defect</td><td>Bright Dot</td><td>≦ 3</td></tr>
<tr><td>Dark Dot</td><td>≦ 3</td></tr>
<tr><td>Joint Dot</td><td>≦ 2</td></tr>
<tr><td>Total</td><td>≦ 6</td></tr>
</table>
5.1 Inspection 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″ ~10″ : (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

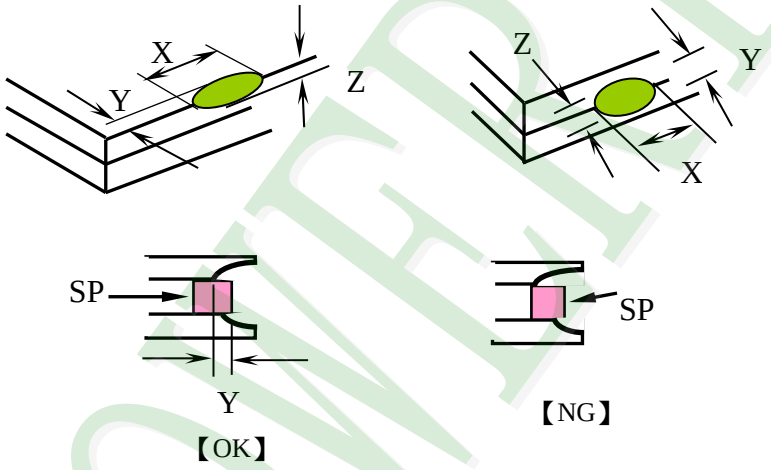
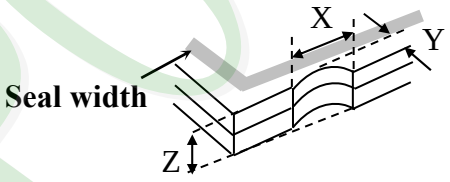
Round type


Φ= (x+y) / 2

Line type

</td><td>6.1 Round type (Non-display or display):
<table><tr><th rowspan="2">Dimension (diameter: Φ)</th><th colspan="2">Acceptance (Q'ty)</th></tr><tr><th>A area</th><th>B area</th></tr><tr><td>Φ≦0.20</td><td>Ignore</td><td rowspan="4">Ignore</td></tr><tr><td>0.20 ＜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 rowspan="2">Length (L)</th><th rowspan="2">Width (W)</th><th colspan="2">Acceptance (Q'ty)</th></tr><tr><th>A area</th><th>B area</th></tr><tr><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>3</td></tr><tr><td>L ≦ 5.0</td><td>0.05 ＜W ≦ 0.10</td><td>1</td></tr><tr><td>---</td><td>W ＞0.10</td><td>0</td></tr><tr><td colspan="2">Total</td><td>4</td></tr></table></td><td>Minor</td></tr>
<tr><td>07</td><td>Polarizer Bubble</td><td><table><tr><th rowspan="2">Dimension (diameter: Φ)</th><th colspan="2">Acceptance (Q'ty)</th></tr><tr><th>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≦ 1.0</td><td>1</td></tr><tr><td>Φ＞1.0</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″ ~10″：

(Ver.B01)

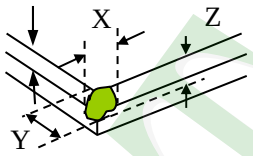
NO	Item	Criterion	Level
08	The crack of glass	Symbols： X: The length of crack　Y: The width of crack. Z: The thickness of crack　W: terminal length T: The thickness of glass　a : LCD side length 8.1 General glass chip: 8.1.1 Chip on panel surface and crack between panels:   	Minor

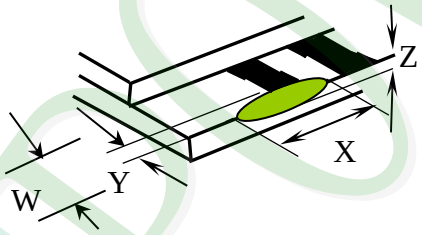
X	Y	Z
≦ a	Crack can't enter viewing area	≦1/2 t
≦a	Crack can't exceed the half of SP width.	1/2 t ＜ Z ≦2 t

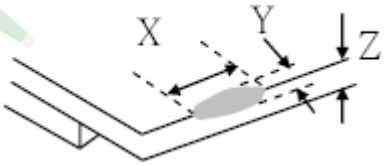
◆Specification For TFT-LCD Module 3.5″ ~10″ : (Ver.B01)

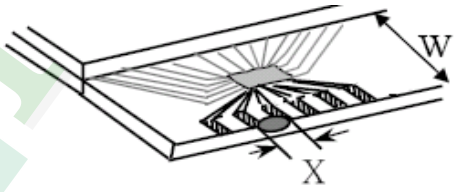
<table>
<tr><th>NO</th><th>Item</th><th>Criterion</th><th>Level</th></tr>
<tr><td rowspan="2">08</td><td rowspan="2">The crack of glass</td><td>
Symbols :

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:




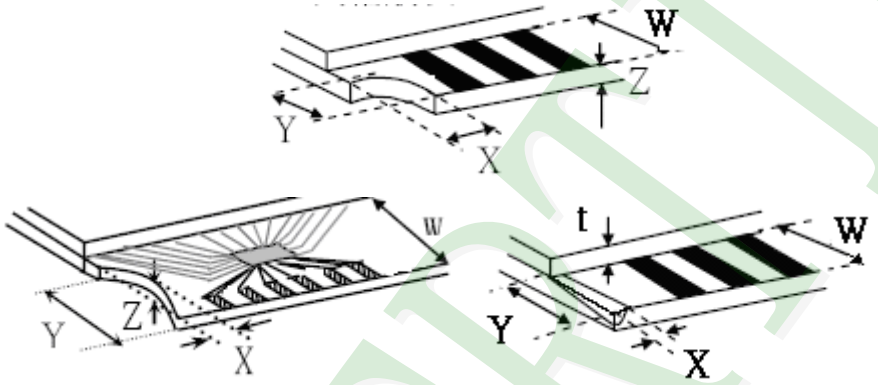


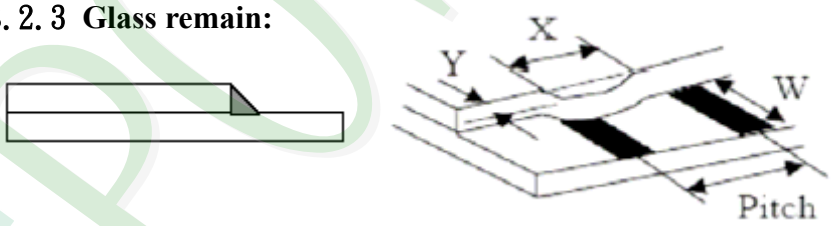
<table>
<tr><th></th><th>X</th><th>Y</th><th>Z</th></tr>
<tr><td>Front</td><td>≦ a</td><td>≦ 1/2 W</td><td>≦ t</td></tr>
<tr><td>Back</td><td>≦ a</td><td>≦ W</td><td>≦ 1/2 t</td></tr>
</table>
</td></tr>
</table>

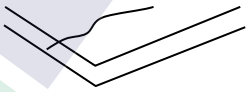
◆Specification For TFT-LCD Module 3.5″ ~10″ : (Ver.B01)

<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″ ~10″ : (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 Ta in +80 ±5℃ 240 hrs</td></tr>
<tr><td>2</td><td>High Temperature Operating Test</td><td>Keep Ts in +70 ±5℃ 240 hrs</td></tr>
<tr><td>3</td><td>Low Temperature Storage Test</td><td>Keep Ta in -30 ±5℃ 240 hrs</td></tr>
<tr><td>4</td><td>Low Temperature Operating Test</td><td>Keep Ts in -20 ±5℃ 240 hrs</td></tr>
<tr><td>5</td><td>High Temperature / High Humidity Storage Test</td><td>Keep Ta in +60 ℃ / 90% R.H duration for 240 hrs
(Excluding the polarizer)</td></tr>
<tr><td>6</td><td>Temperature Cycling Storage Test</td><td>-30℃ → +25℃ → +80℃ → +25℃
(30mins) (5mins) (30mins) (5mins)
20 Cycle</td></tr>
<tr><td rowspan="2">7</td><td rowspan="2">ESD Test</td><td>Air Discharge:
Apply 8 KV with 5 times Discharge for each polarity +/-</td><td>Contact Discharge:
Apply 4 KV with 5 times discharge for each polarity +/-</td></tr>
<tr><td colspan="2">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>8</td><td>Vibration Test (Packaged)</td><td colspan="2">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>9</td><td>Drop Test (Packaged)</td><td colspan="2"><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>

Reliability Test Evaluation Criteria :

The product was tested under standard display quality assessment conditions with normal operational parameters.

Altering these conditions may compromise practical display performance.

Environmental Specifications (Normal Operation State):

- Temperature: +20°C to +30°C

- Humidity: 50% to 70% RH
- Atmospheric Pressure: 86 kPa to 106 kPa

Note 1:Ta is the ambient temperature of samples
Note 2:Ts is the temperature of panel's suface.
Note 3: Before cosmetic and function test, the product must have enough recovery time, at least 2 hours at room temperature.

POWERTIP

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 attach with the customer's mechanical device, please follow up the rules and regulations published by the original manufacturer of double-sided 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.

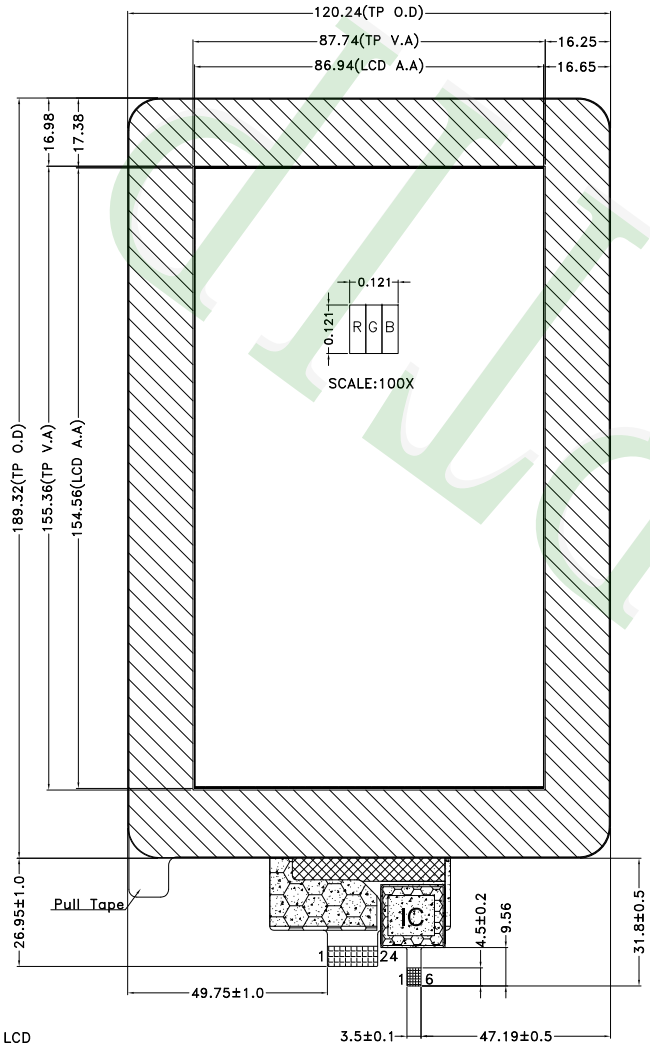
5.3.2 Do not place the module near organics solvents or corrosive gases.

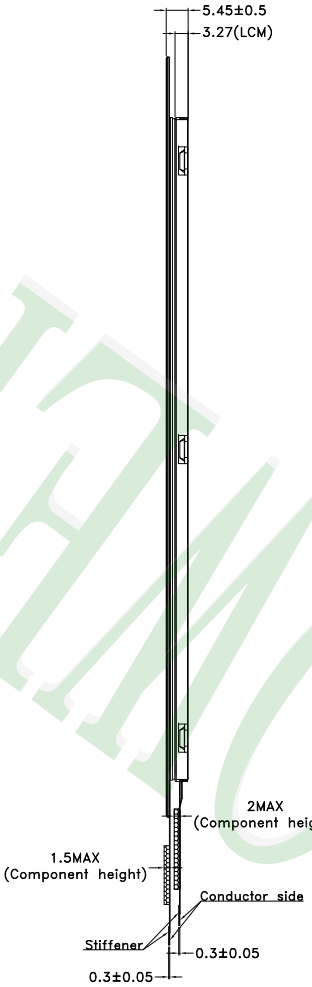
5.3.3 Do not crush, shake, or jolt the module.

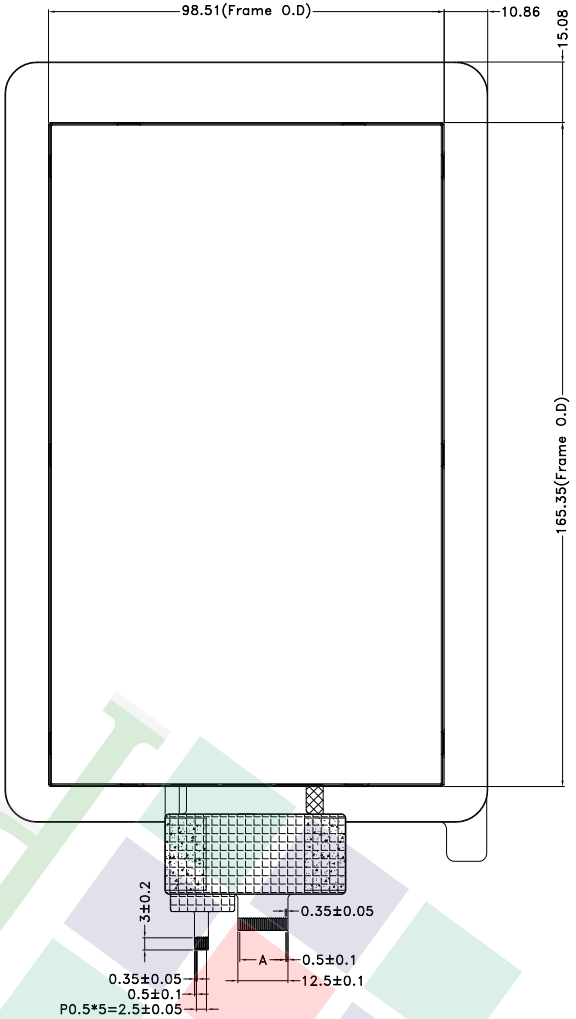
5.4 TERMS OF WARRANTY

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 LCD
2.LCD DISPLAY: Normally Black
3.The tolerance unless classified ±0.3mm
4.A:P0.5X23=11.5±0.05
5.TFT suggested connector: molex 54548-2433 OR EQUIVALENT
T/P suggested connector: "CviLux" CF31061D0R2-05-NH OR EQUIVALENT
6.Kapton tape;Component area;Stiffener;EMI

REV	REV BY	REVISER	DATE
007			
006			
005			
004			
003			
002			
001	NEW DRAWING	Qiufan	2026/05/14

PART NO: PH720128T005-ZBC20

DRAWING NAME : JLMD-PH720128T005-ZBC20

TITLE: LCD MODULE DRAWING

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

Design	Qiufan	(3)	Surface		
Check	Sally	Unit	MM	Material	
Approve	Liujin	Scale	FIT	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.	JPKG-PH720128T005-ZBC20

Packaging Specifications (For Tray)

Approve	Check	Contact
Liujin	Sally	Qiufan

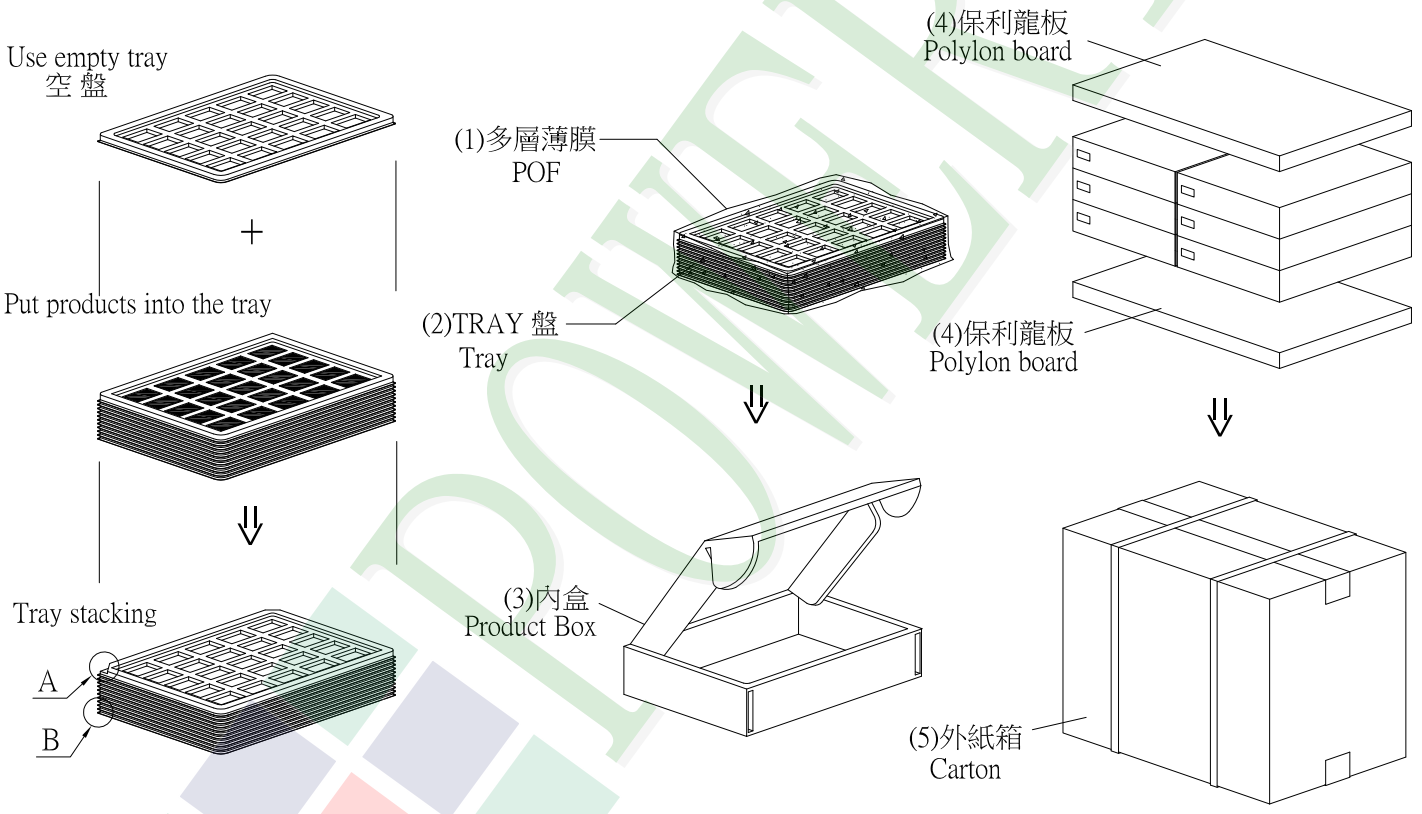
1.包裝材料規格表 (Packaging Material) : (per carton)

No.	Item	Model	Dimensions (mm)	1Pcs Weight	Quantity	Total Weight
1	成品 (LCM)	PH720128T005-ZBC20	120.24 X 189.32	0.167	48	8.016
2	多層薄膜(1)POF	OTFILM0BA03ABA	19"X350X0.015	——	6	——
3	TRAY 盤 (2)Tray	TYSG000000892	352 X 260 X 15.8	0.1	30	3
4	內盒(3)Product Box	BX36627063ABBA	383 X 270 X 66	0.182	6	1.092
5	保利龍板(4)Polylon board	OTPLB00PL08ABA	550 X 393 X 20	0.0284	2	0.0568
6	外紙箱(5)Carton	BX57041027CCBA	570 X 410 X 265	1.0	1	1.0
7						
8						
9						

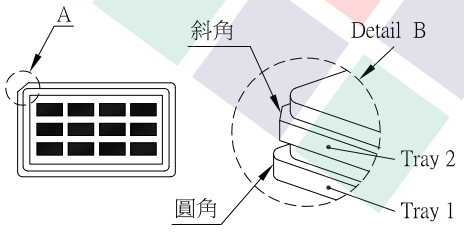
2.一 整箱總重量 (Total LCD Weight in carton) : 13.16 Kg±10%

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

(1)LCM quantity per box : no. per tray	2	x no. of tray	4	=	8
(2)Total LCM quantity in carton : quantity per box	8	x no. of boxes	6	=	48



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.

REV	REV BY	REVISER	DATE
001	NEW DRAWING	Qiufan	2026/06/25
002			
003			
004			
005			

POWERTIP