POWERTIP TECH. CORP.

SPECIFICATIONS

CUSTOMER	:	CPL013
SAMPLE CODE	:	SH800480T013-IBC17
MASS PRODUCTION CODE	:	PH800480T013-IBC17
SAMPLE VERSION	:	01
SPECIFICATIONS EDITION	:	004
DRAWING NO. (Ver.)	:	LMD-PH800480T013-IBC17 (Ver.002)
PACKAGING NO. (Ver.)	:	PKG-PH800480T013-IBC17 (Ver.001)

Customer Approved

Date:

Approved	Checked	Designer
廖志豪 Rex Liao	張慶源 Yuan Chang	陳宗淇 Howard Chen

POWERTIP
2018.07.09
TW RD APR

☐ 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
04/02/2018	**01**	**001**	**New Drawing.**	**-**	**Howard**
04/26/2018	**01**	**002**	**Second Drawing.** **For customer Request Modify** **Modify DC Electrical Characteristics** **PIN 47,48 Power For LED backlight(+5.0V)** **Change to (+3.3v)**	**-** **6** **14**	**Howard**
06/28/2018	**01**	**003**	**New Sample** **Modify IC** **Himax modify to Sitronix** **Source IC HX8264-E modify to ST5623CA** **Gate IC HX8664-B modify to ST5091** **Modify BL FPC position & FPC design**	**-** **3,4** **Appendix**	**Howard**
06/28/2018	**01**	**004**	**Modify Reliability test Condition** **70℃ Change to 80℃** **-20℃ Change to -30℃**	**28**	**Howard**

Total: 29 Page

Contents

Primacy(TFT LCD): Sitronix Source IC-- ST5623CA / Gate IC-- ST5091

1. SPECIFICATIONS

1.1 Features

Item	Standard Value
Display Resolution	800 *3 (RGB) * 480 Dots
LCD Type	a-Si TFT , Normally white , Transmissive type
Screen size(inch)	7.0 inch
Viewing Direction	6 O'clock (Gray scale Inversion) *1
	12 O'clock *2
Color configuration	R.G.B. Vertical Stripe
Backlight Type	White LED B/L
Weight	180 g
Interface	24 Bits RGB Interface
Other(controller/driver IC)	Source IC ST5623CA / Gate IC: ST5091 (Or Compatible IC)
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

Note:

*1. For saturated color display content (eg. pure-red, pure-green, pure-blue or pure-colors -combinations).

*2. "For display content based upon multicolor images eg. photos, RGB defined user interfaces"

1.2 Mechanical Specifications

Item	Standard Value	Unit
Outline Dimension	192.96 (W) * 110.76 (L) * 5.45 (H)	**mm**

LCD panel

Item	Standard Value	Unit
Viewing Area	154.88 (W) * 86.72 (L)	mm
Active Area	154.08 (W) x 85.92 (L)	mm
Pixel Size	0.1926 (W) * 0.179 (H)	mm

Touch panel

Item	Standard Value	Unit
Viewing Area	154.88 (W) * 86.72 (L)	mm

Note : For detailed information please refer to LCM drawing.

1.3 Absolute Maximum Ratings

Module

Item	Symbol	Condition	Min.	Max.	Unit
Power Supply for TFT Panel	VDD	GND=0V	-0.3	+5.0	V
Power Supply for Backlight Unit	VCC	GND=0V	-	+6.0	V
Operating Temperature	T_{OP}	-	-20	+70	℃
Storage Temperature	T_{ST}	-	-30	+80	℃

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.

1.4 DC Electrical Characteristics

Module GND = 0V, Ta = 25℃

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Power Supply for TFT Panel	VDD	GND=0V	3.0	3.3	3.6	V
Power Supply for Backlight Unit	VCC	GND=0V	2.6	3.3	5.5	V
Input Voltage for TFT Panel	V_{IH}	GND=0V	0.7VDD	-	VDD	V
	V_{IL}	GND=0V	0	-	0.3VDD	V
Supply Current for TFT Panel	IDD	IDD@VDD=3.3V	-	110	165	mA
Supply Current for Backlight Unit	ICC	ICC@VCC=3.3V	-	750	1125	mA

1.5 Optical Characteristics

TFT LCD Module VDD = 3.3 V, Ta=25℃

Item		Symbol	Condition	Min.	Typ.	Max.	unit	
Response time	Rise	Tr	Ta = 25℃ θX, θY = 0°	-	10	20	ms	Note 2
	Fall	Tf		-	15	30		
Viewing angle	Top	θY+	**CR ≥ 10**	**-**	60	**-**	Deg.	Note 4
	Bottom	θY-		-	60	-		
	Left	θX-		**-**	60	-		
	Right	θX+		-	60	-		
Contrast ratio		CR	Ta = 25℃ θX , θY = 0°	500	600	-	**-**	Note 3
Color of CIE Coordinate (With B/L & T/P)	White	X		0.25	0.30	0.35	**-**	**Note1**
		Y		0.27	0.32	0.37		
	Red	X		0.51	0.56	0.61		
		Y		0.27	0.32	0.37		
	Green	X		0.29	0.34	0.39		
		Y		0.55	0.60	0.65		
	Blue	X		0.09	0.14	0.19		
		Y		0.02	0.07	0.12		
Average Brightness Pattern=white display (With LCD & T/P) *1		IV	VCC=3.3V PWM="High" (Duty=100%)	340	410	-	cd/m^2	Note1
Uniformity (With LCD & T/P) *2		△B	VCC=3.3V PWM="High" (Duty=100%)	70	-	-	%	Note1

Note 1:

*1：△B=B(min) / B(max) * 100%

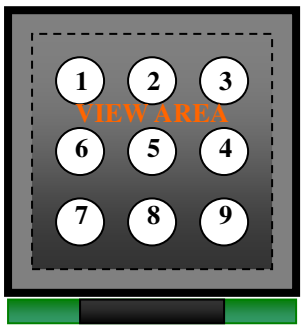
*2：Measurement Condition for Optical Characteristics:

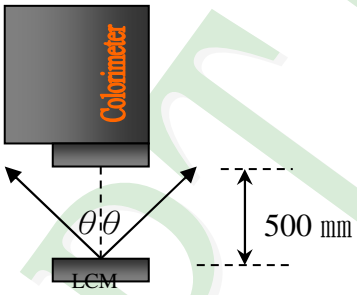
a：Environment: 25℃±5℃ / 60±20%R.H，no wind，dark room below 10 Lux at typical lamp current and typical operating frequency.

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

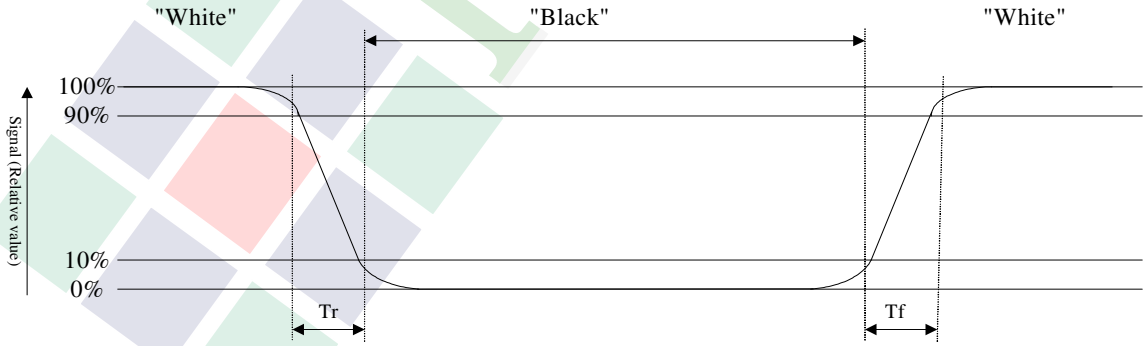
To be measured at the center area of panel with a viewing cone of 1° by Topcon luminance meter BM-7, after 10 minutes operation (module)

Note2: Definition of response time:

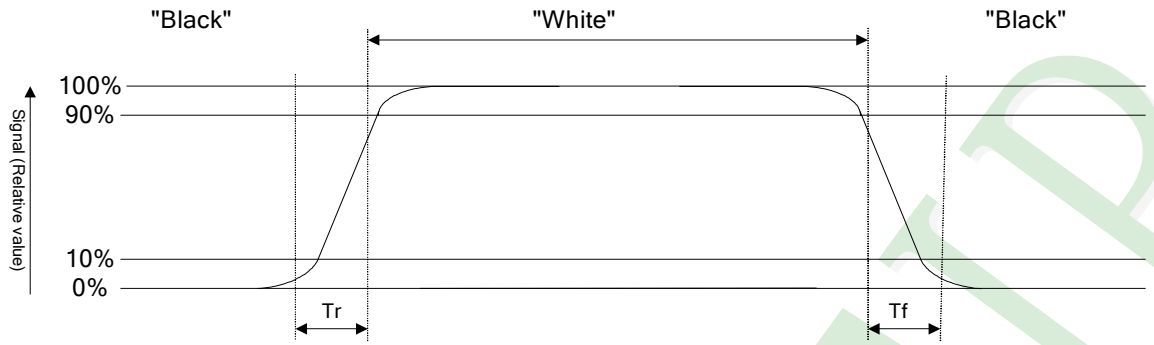
The output signals of photo detector are measured when the input signals are changed from “black” to “white”(falling time) and from “white” to “black”(rising time), respectively. The response time is defined as the time interval between the 10% and 90% of Amplitudes.

Refer to figure as below:

Normally White



Normally Black



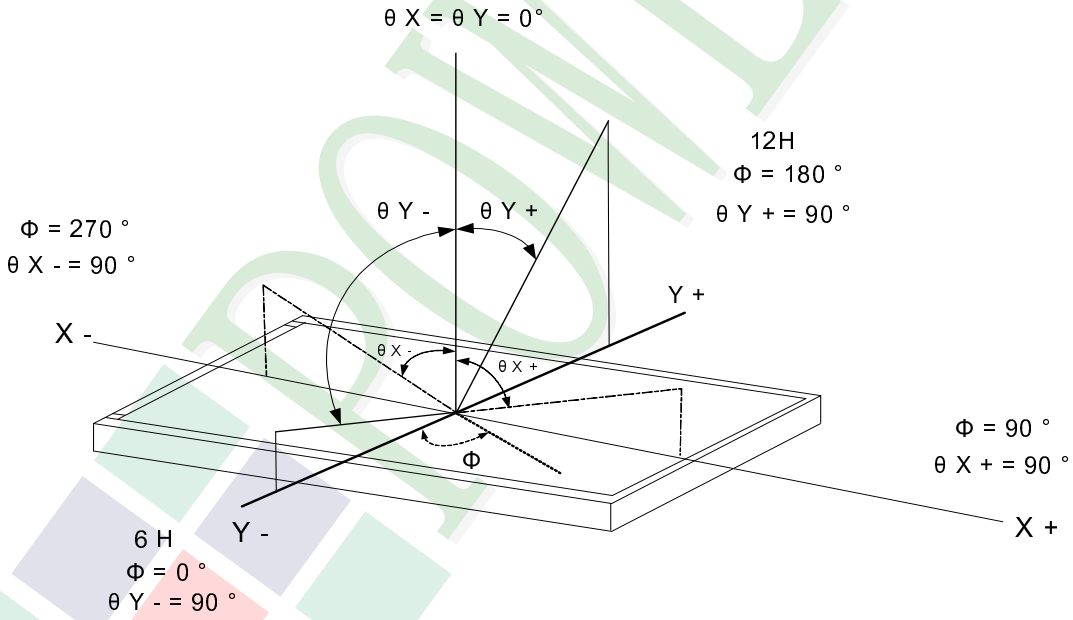
Note3: Definition of contrast ratio:

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 Characteristics

Maximum Ratings

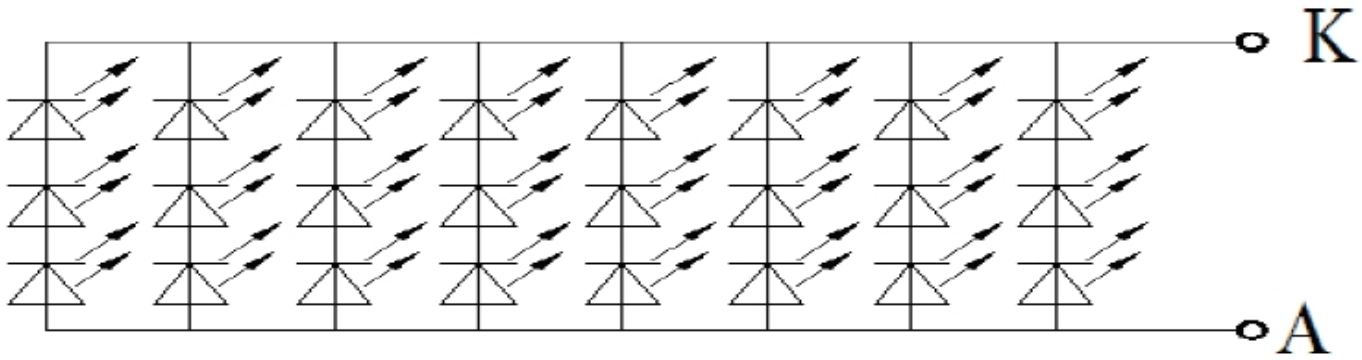
Item	Symbol	Min.	Max.	Unit	Remark
LED Forward Current	I_F	35		mA	One LED
LED Reverse Voltage	V_R	10		V	

Electrical / Optical Characteristics

Item	Symbol	Min.	Typ.	Max.	Unit	Remark
LED Voltage	V_L	9.0	9.6	10.2	V	Note1
LED Current	I_L	-	160	-	mA	-

Note 1: The LED Supply Voltage is defined by the number of LED at Ta=25 ℃ and I_L =160 mA.

Note 2: The “LED life time” is defined as the module brightness decrease to 50% original brightness at Ta=25 ℃ and I_L =160 mA. The LED life time could be decreased if operating I_L is larger than 160 mA.



Other Description

Item	Conditions	Description
Life Time	Ta =25℃ IF= 160 mA	50,000 hrs

1.7 Touch Panel Characteristics

Features

Item	Standard Value
Touch Panel Size	7.0”
Touch type	Projective Capacitive Touch Panel
Input Method	Finger / 5 Points touch
Output Interface	I²C
IC	FT5426
I²C Address	0x38(7 Bits)

I²C Address

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
0	1	1	1	0	0	0	R/W

Bit 0: 0 for Write / 1 for Read

Mechanical Specifications

Item	Standard Value	Unit
Number of sensing channel	TX23 * RX13	

Absolute Maximum Ratings

Item	Symbol	Condition	Min.	Max.	Unit
Supply voltage	TPVDD	-	-0.3	+6.0	V
Operating Temperature	T_{OP}	-	-20	+70	℃
Storage Temperature	T_{ST}	-	-30	+80	℃

DC Electrical Characteristics

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Power Supply Voltage	TPVDD	-	2.8	3.3	3.6	**V**
Input High Voltage	VIH	-	0.7 * TPVDD	-	TPVDD	**V**
Input Low Voltage	VIL	-	-0.3	-	0.3 * TPVDD	**V**

Touch Panel IC Read/Write description & Register Mapping

Reference : FTS_AN_CTPM_Standard

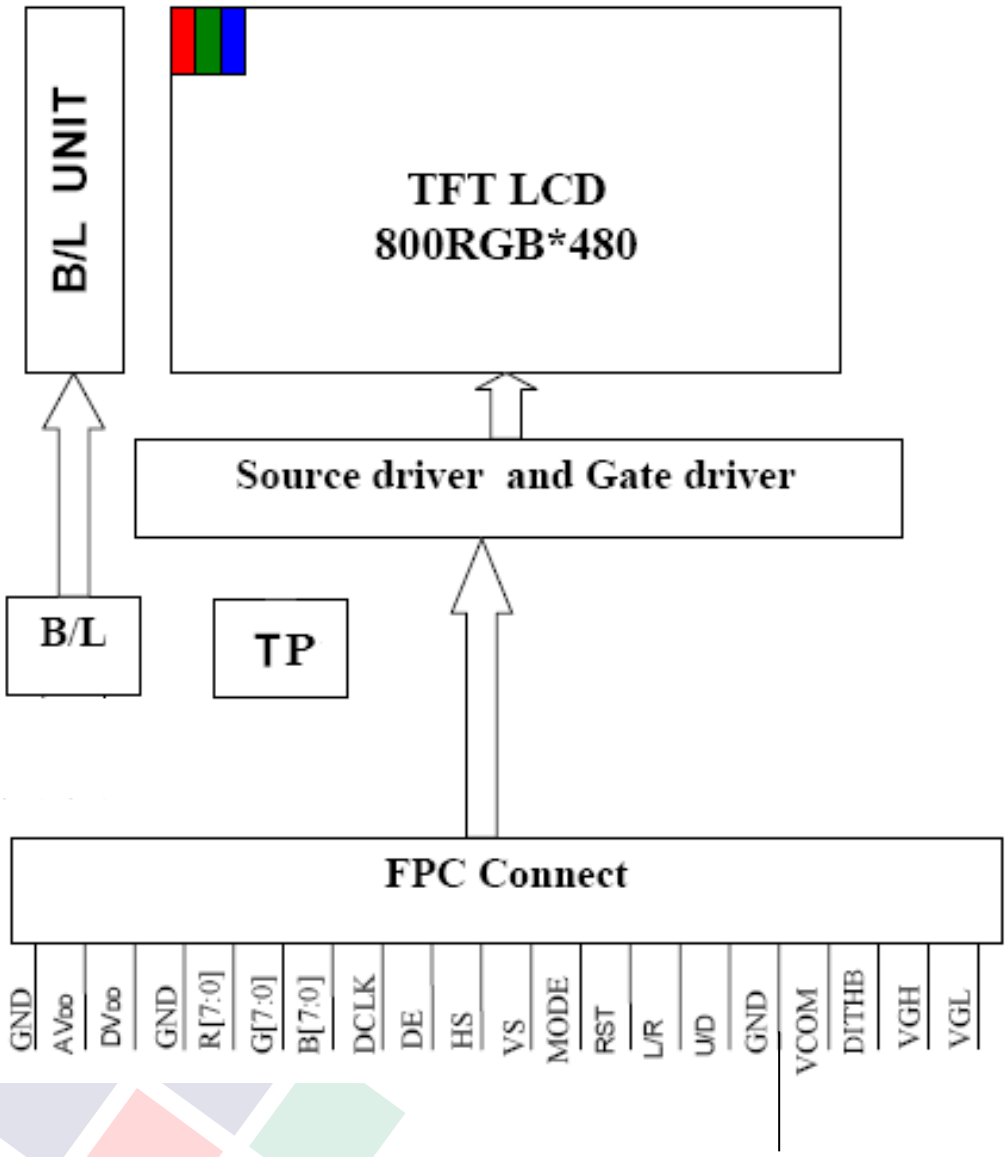
2. MODULE STRUCTURE

2.1 Counter Drawing

2.1.1 LCM Mechanical Diagram

* See Appendix

2.1.2 Block Diagram



2.2 Interface Pin Description

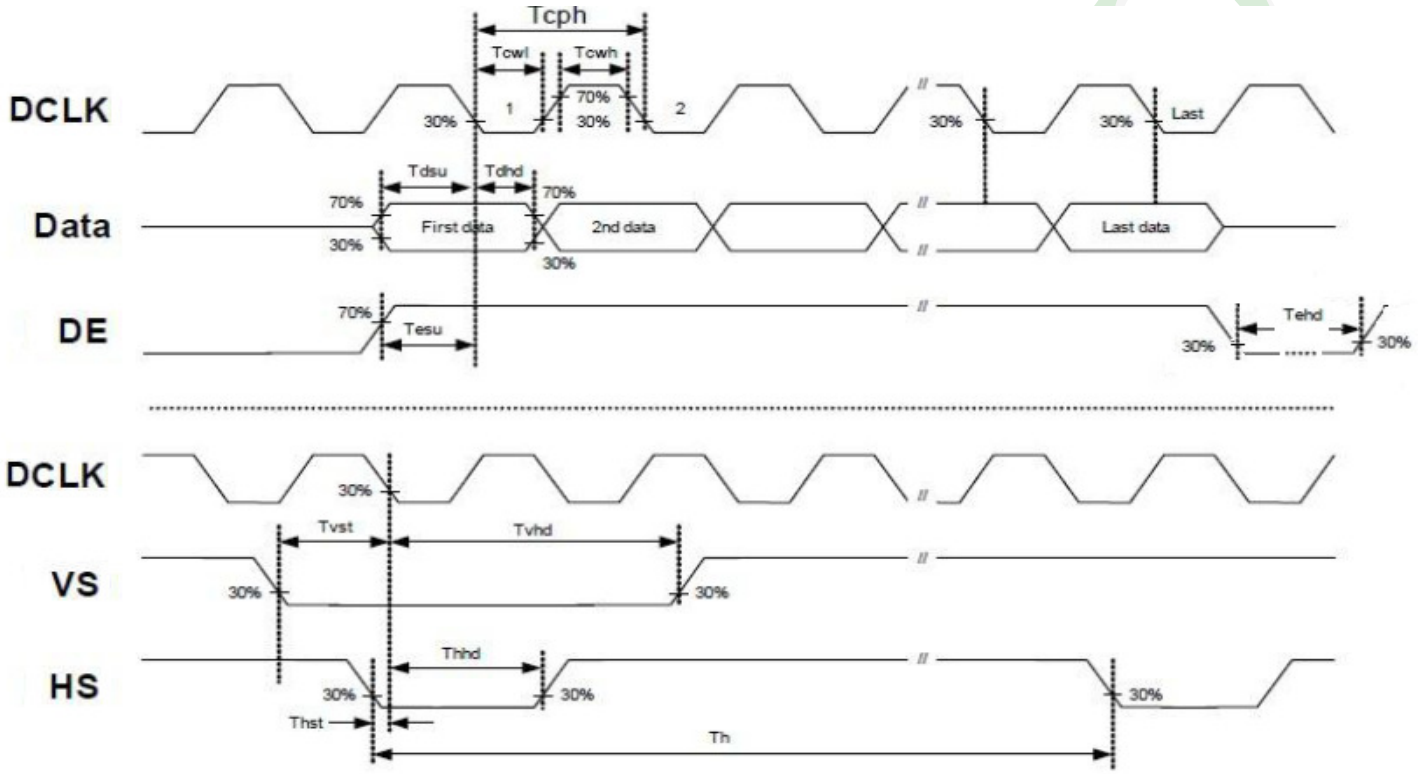
TFT LCM Interface

Pin#	Name	DESCRIPTION
1	B0	Blue Data.
2	B1	Blue Data.
3	B2	Blue Data.
4	B3	Blue Data.
5	B4	Blue Data.
6	B5	Blue Data.
7	B6	Blue Data.
8	B7	Blue Data.
9	GND	Power Ground.
10	G0	Green Data.
11	G1	Green Data.
12	G2	Green Data.
13	G3	Green Data.
14	G4	Green Data.
15	G5	Green Data.
16	G6	Green Data.
17	G7	Green Data.
18	GND	Power Ground.
19	R0	Red Data.
20	R1	Red Data.
21	R2	Red Data.
22	R3	Red Data.
23	R4	Red Data.
24	R5	Red Data.
25	R6	Red Data.
26	R7	Red Data.
27	GND	Power Ground.
28	DE	Display enable pin from controller. Data Input Enable.
29	HSYNC	Line synchronization signal. Horizontal Sync Input.

Pin#	Name	DESCRIPTION
30	VSYNC	Frame synchronization signal. Vertical Sync Input.
31	GND	Power Ground.
32	DCLK	Sample clock. Data will be latched at the falling edge of DCLK.
33	GND	Power Ground.
34	N.C	Not Connect
35	N.C	Not Connect
36	TP_INT	Touch Panel Interrupt request pin
37	PWM	Backlight PWM Control Signal
38	N.C	Not Connect
39	N.C	Not Connect
40	N.C	Not Connect
41	N.C	Not Connect
42	TP_SCL	Touch Panel I^2C serial Clock.
43	TP_SDA	Touch Panel I^2C serial Data
44	GND	Power Ground.
45	VDD	Power for Digital Circuit. (+3.3V)
46	VDD	Power for Digital Circuit.(+3.3V)
47	VCC	Power For LED backlight.(+3.3V)
48	VCC	Power For LED backlight. (+3.3V)
49	TP_RESET	Global Reset(Low Active).
50	PWREN	Backlight ON/OFF

2.3 Timing Characteristics

2.3.1 Signal AC Characteristics



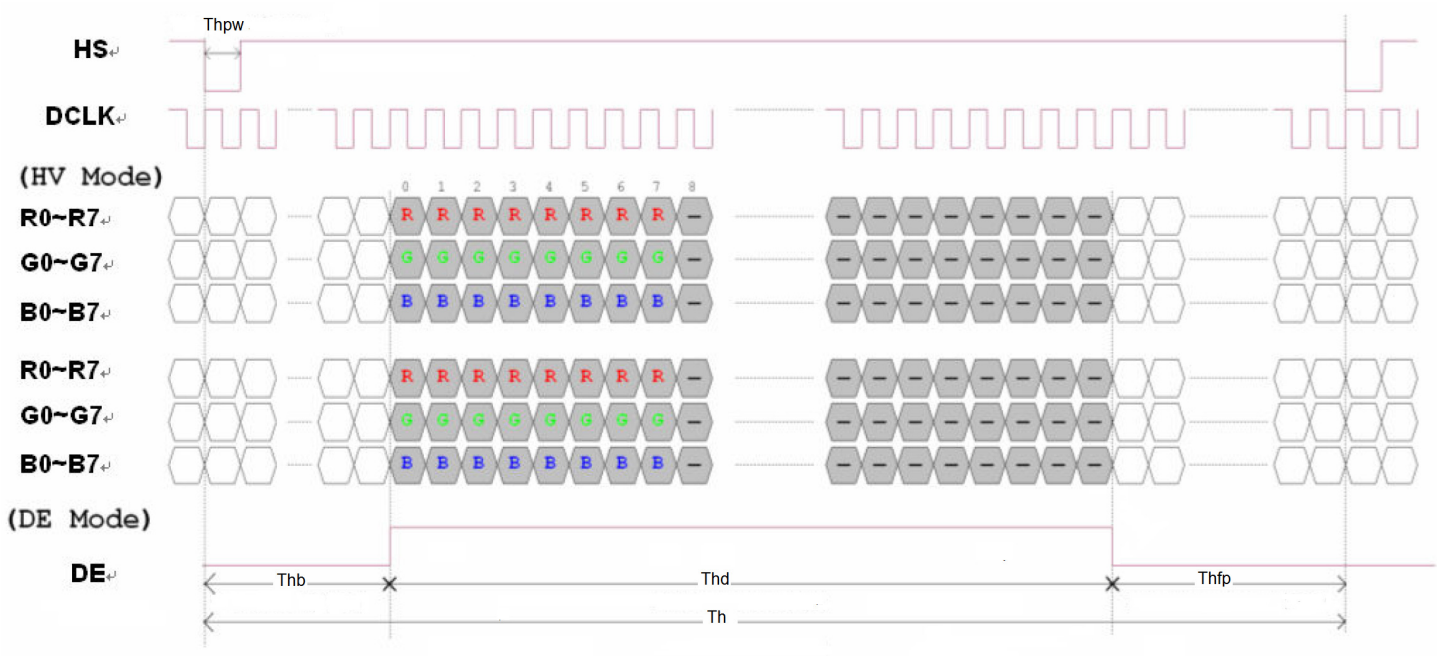
Item	Symbol	Values			Unit	Remark
		Min	Typ	Max		
HS setup time	Thst	8	-	-	ns	
HS hold time	Thhd	8	-	-	ns	
VS setup time	Tvst	8	-	-	ns	
VS hold time	Tvhd	8	-	-	ns	
Data setup time	Tdsu	8	-	-	ns	
Data hole time	Tdhd	8	-	-	ns	
DE setup time	Tesu	8	-	-	ns	
DE hold time	Tehd	8	-	-	ns	
DVDD Power On Slew rate	TPOR	-	-	20	ms	From 0 to 90% DVDD
RESET pulse width	TRst	1	-	-	ms	
DCLK cycle time	Tcph	20	30	-	ns	
Low Level Width	Tcwl	8	-	-	ns	
High Level Width	Tcwh	8	-	-	ns	
DCLK pulse duty	Duty	40	50	60	%	Tcwh / Tcph

2.3.2 Input Timing Setting

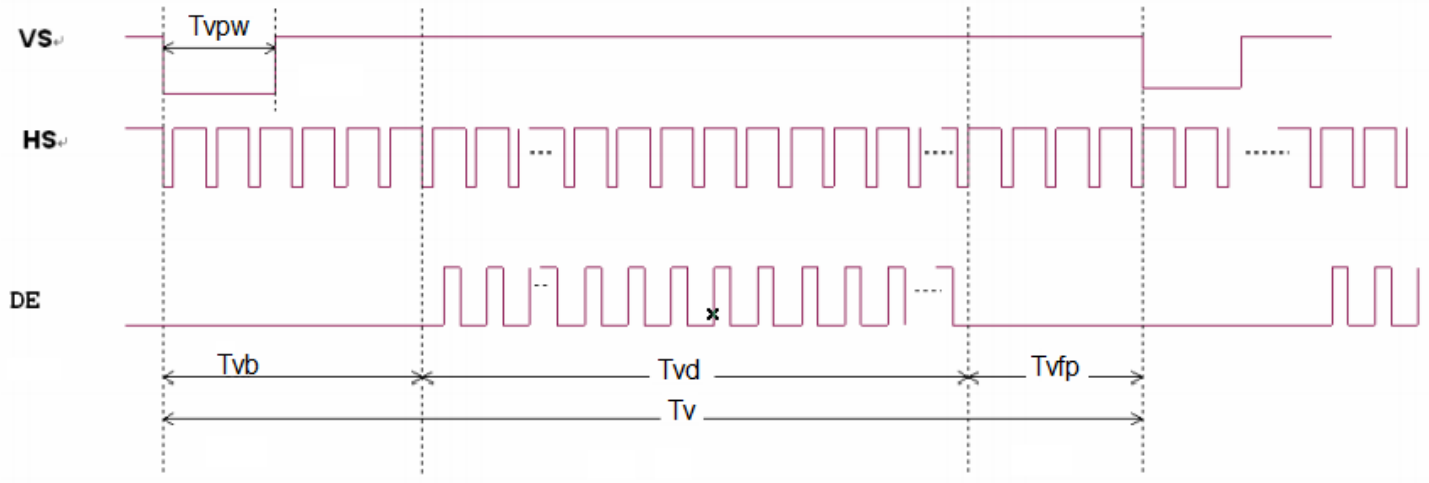
Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Horizontal Display Area	Thd		800		DCLK	
DCLK Frequency	Fclk	26.4	33.3	46.8	MHz	
One Horizontal Line	Th	862	1056	1200	DCLK	
HS pulse width	Thpw	1		40	DCLK	
HS Blanking	Thb	46	46	46	DCLK	
HS Front Porch	Thfp	16	210	354	DCLK	

Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Vertical Display Area	Tvd		480		TH	
VS period time	Tv	510	525	650	TH	
VS pulse width	Tvpw	1		20	TH	
VS Blanking	Tvb	23	23	23	TH	
VS Front Porch	Tvfp	7	22	147	TH	

Horizontal input timing diaqram

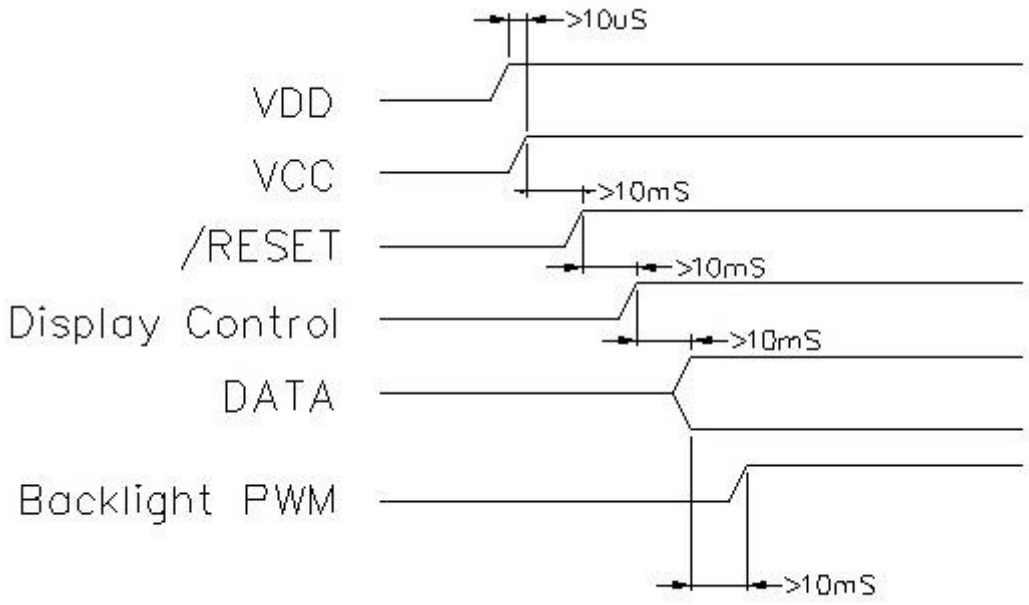


Vertical input timing diaqram

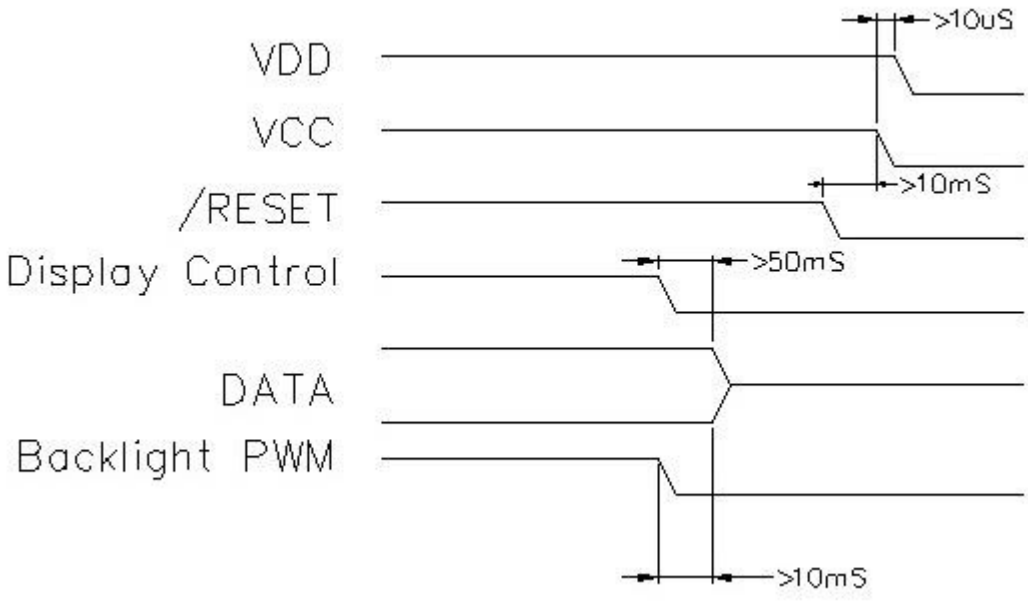


2.3.3 Power Sequence

POWER ON

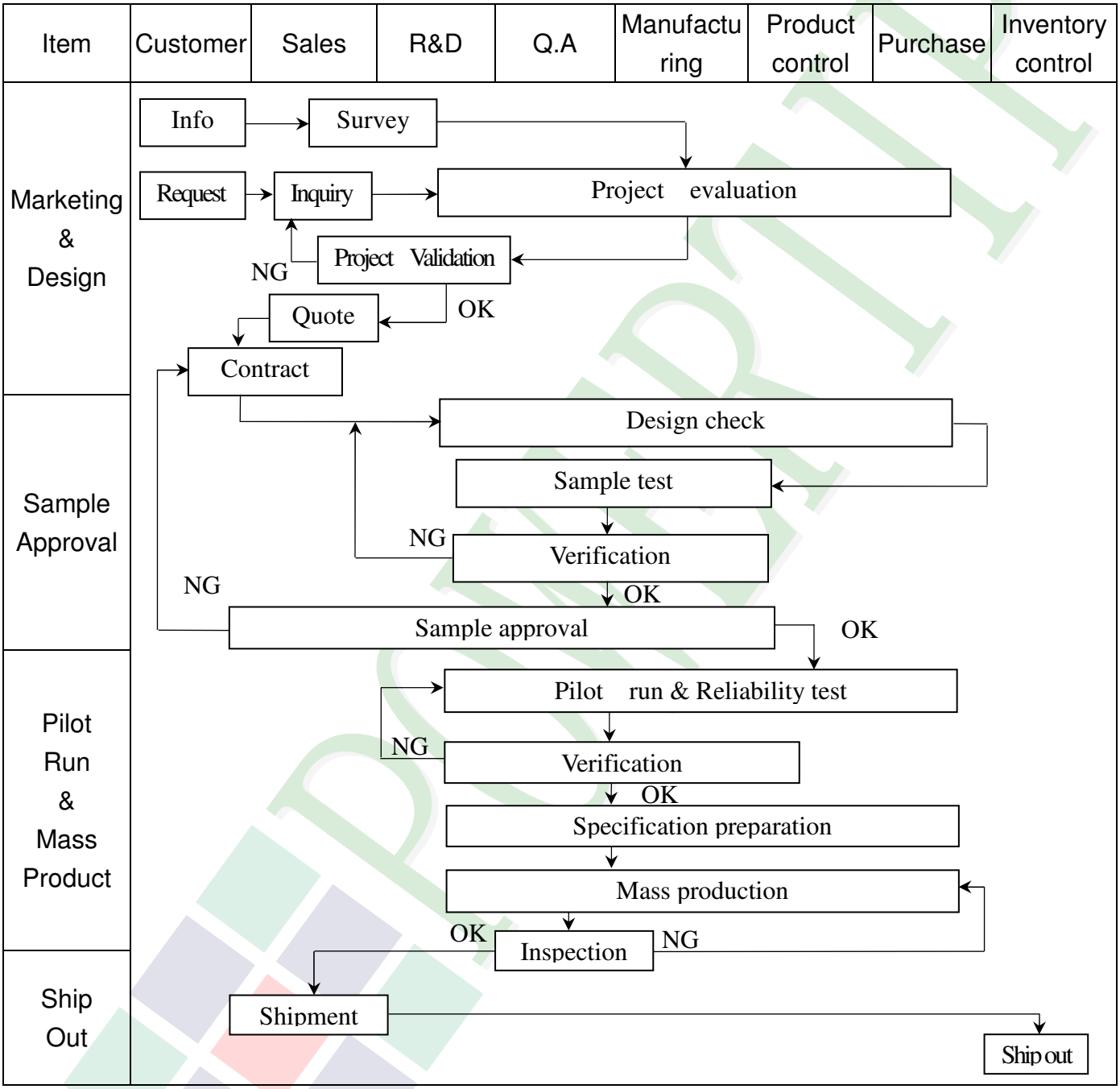


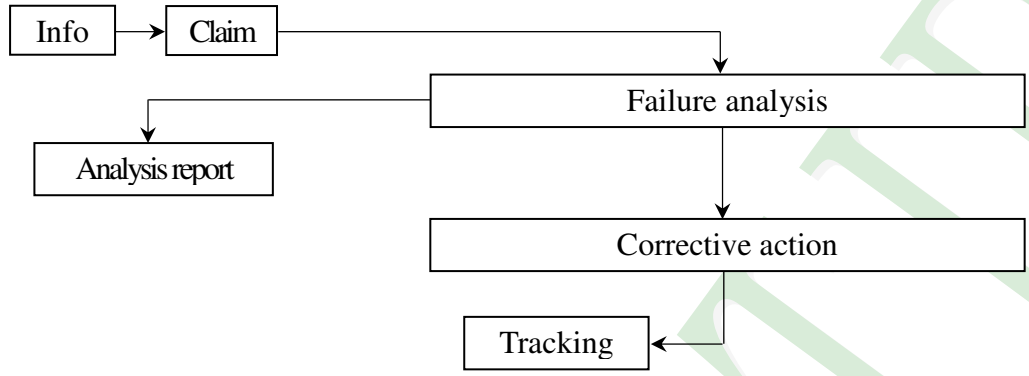
POWER OFF



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

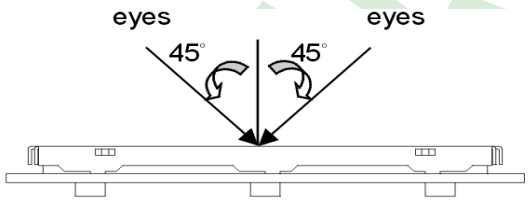
◆OUT Going Defect Level：Sampling.

◆Standard of the product appearance test：

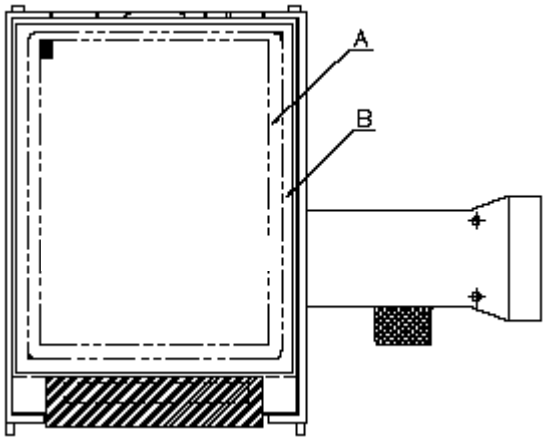
a. Manner of appearance test：

(1). The test best be under 20W×2 fluorescent light，and distance of view must be at 30 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)

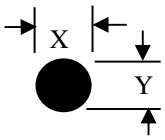
◆Specification For TFT-LCD Module 3.5″ ~15″：　(Ver.B01)

<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>3.1 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 can not be seen through 5% ND filter, 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 that can not be seen through 5% ND filter.
</td><td>Minor</td></tr>
</table>

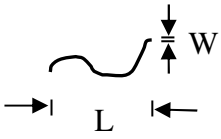
◆Specification For TFT-LCD Module 3.5″ ~15″：

(Ver.B01)

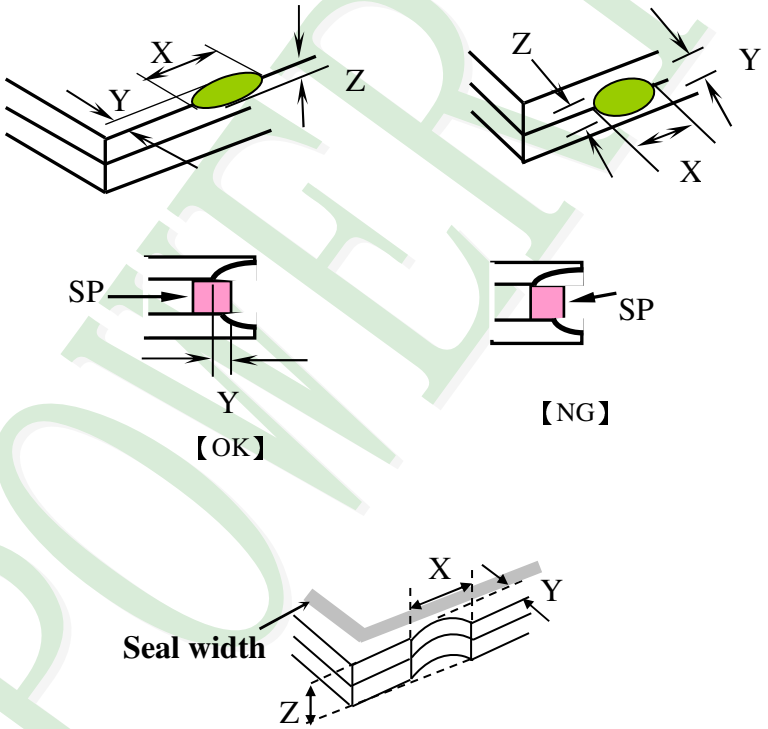
<table>
<tr><th>NO</th><th>Item</th><th>Criterion</th><th>Level</th></tr>
<tr><td>06</td><td>Black or white dot、scratch、contamination

Round type
 

Φ＝(x＋y) / 2

Line type
 
</td><td>
6. 1 Round type (Non-display or display)：
<table>
<tr><th 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="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 rowspan="2">module size</th><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 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 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="4">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)

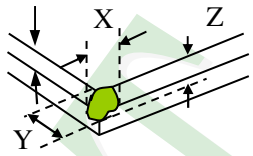
NO	Item	Criterion	Level
08	The crack of glass	Symbols : X : The length of crack　Y : The width of crack. Z : The thickness of crack　W : terminal length t : The thickness of glass　a : LCD side length 8.1 General glass chip : 8.1.1 Chip on panel surface and crack between panels: 	Minor

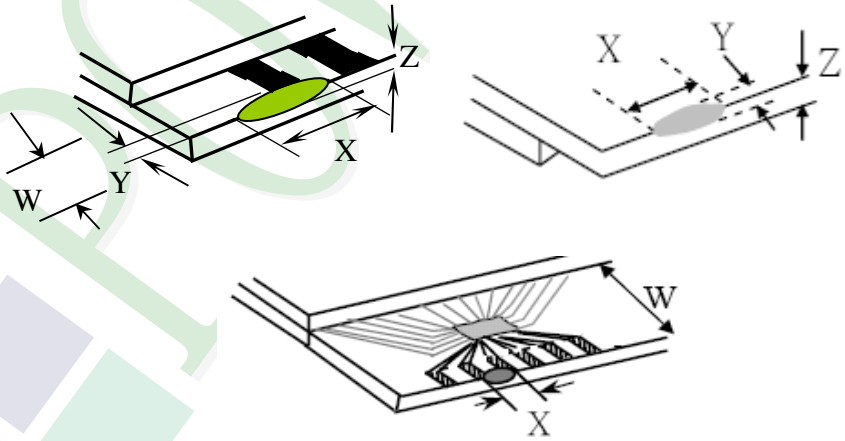
X	Y	Z
≦ a	Crack can't enter viewing area	≦1/2 t
≦ a	Crack can't exceed the half of SP width.	1/2 t < Z ≦2 t

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

8.1.2 Corner crack :
 

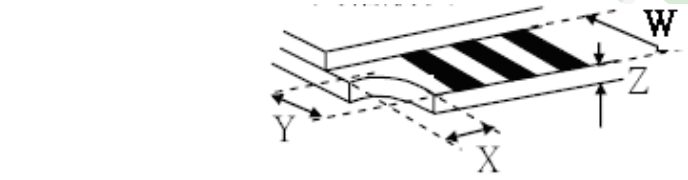
<table><tr><th>X</th><th>Y</th><th>Z</th></tr><tr><td>≦1/5 a</td><td>Crack can’t enter viewing area</td><td>Z ≦ 1/2 t</td></tr><tr><td>≦1/5 a</td><td>Crack can’t exceed the half of SP width.</td><td>1/2 t < Z ≦ 2 t</td></tr></table></td><td rowspan="2">Minor</td></tr>
<tr><td>8.2 Protrusion over terminal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

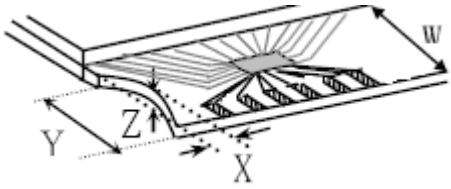
<table><tr><th></th><th>X</th><th>Y</th><th>Z</th></tr><tr><td>Front</td><td>≦ a</td><td>≦ 1/2 W</td><td>≦ t</td></tr><tr><td>Back</td><td>≦ a</td><td>≦ W</td><td>≦ 1/2 t</td></tr></table></td></tr>
</table>

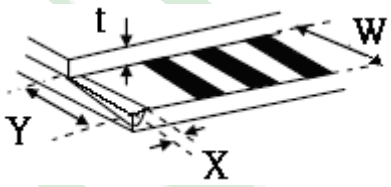
◆Specification For TFT-LCD Module 3.5″ ~15″ : (Ver.B01)

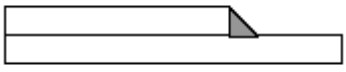
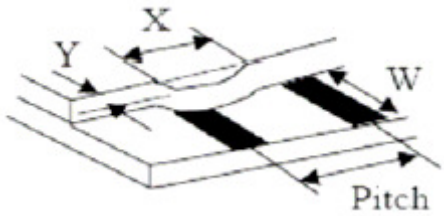
<table>
<tr><th>NO</th><th>Item</th><th>Criterion</th><th>Level</th></tr>
<tr><td>08</td><td>The crack of glass</td><td>
Symbols :

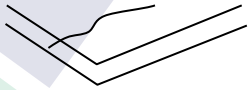
X : The length of crack Y : The width of crack.
Z : The thickness of crack W : terminal length
t : The thickness of glass a : LCD side length

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 the same as on the production characteristic chart .There should 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 80 ±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℃ → 80℃ → +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℃

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℃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.

5.3 STORAGE

5.3.1 Store the panel or module in a dark place where the temperature is 25℃ ±5℃ 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.

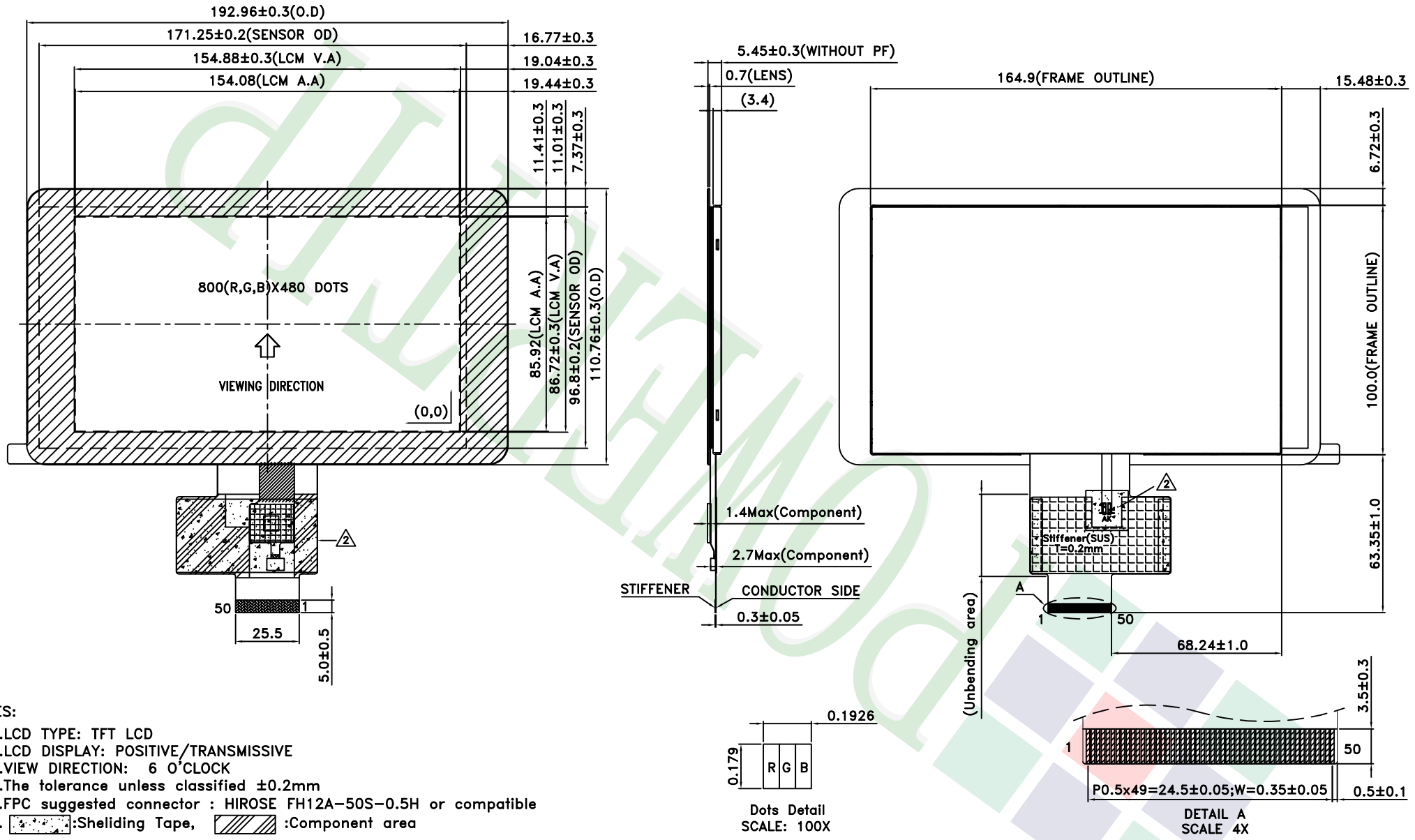
5.4 TERMS OF WARRANTY

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: POSITIVE/TRANSMISSIVE
3. VIEW DIRECTION: 6 O'CLOCK
4. The tolerance unless classified ±0.2mm
5. FPC suggested connector : HIROSE FH12A-50S-0.5H or compatible
6. :Sheliding Tape, :Component area

REV	REV BY	REVISER	DATE
007			
006			
005			
004			
003			
002	Modify BL FPC position & FPC design	Clare	2018/05/22
001	NEW DRAWING	Eva	2018/04/02

PART NO: PH800480T013-IBC17

DRAWING NAME : LMD-PH800480T013-IBC17

TITLE: LCD MODULE DRAWING

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

Design	Eva Liao	(3)	Surface		
Check	Tina Chen	Unit	MM	Material	
Approve	Jimmy Chen	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-PH800480T013-IBC17	LCM包裝規格書 LCM Packaging Specifications	Jimmy	Tina	Clare

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

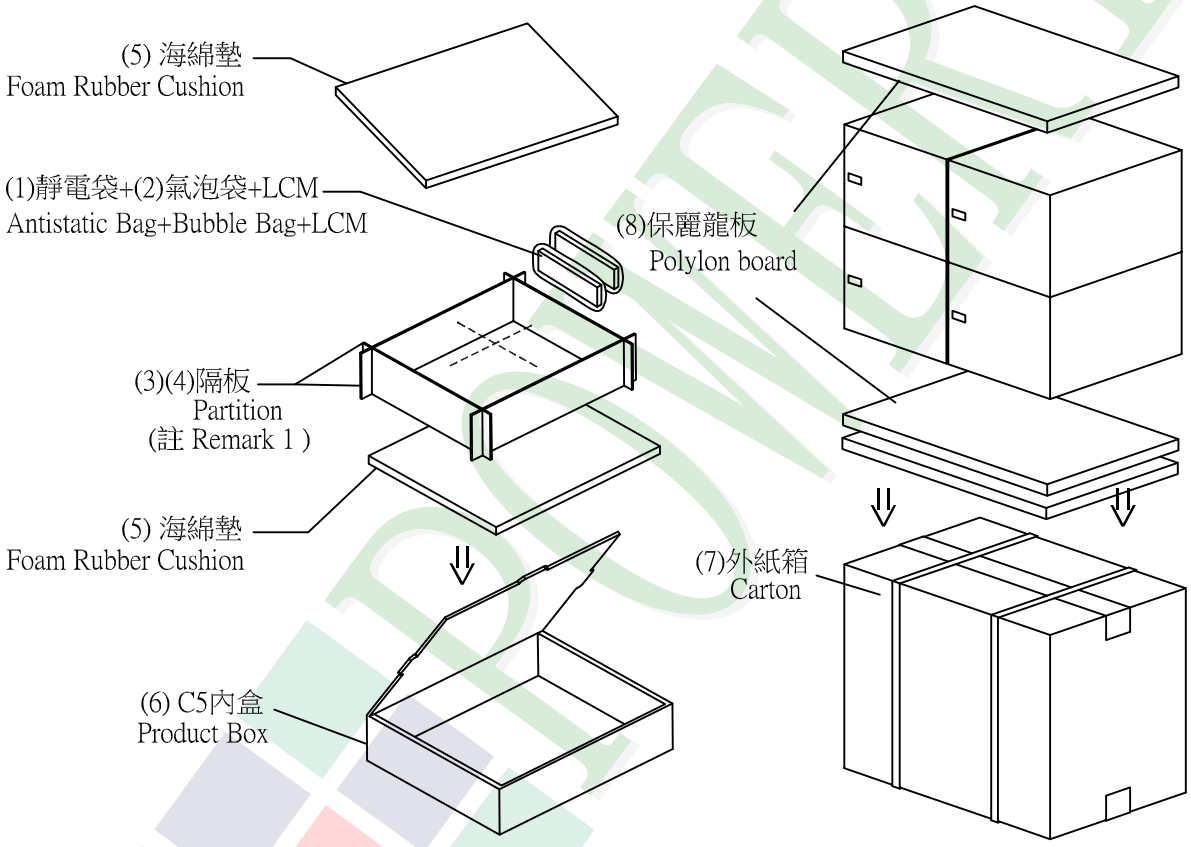
No.	Item	Model	Dimensions (mm)	1Pcs Weight	Quantity	Total Weight
1	成品 (LCM)	PH800480T013-IBC17	192.96 X 110.76 X 5.45	0.181	28	5.068
2	靜電袋(1)Antistatic Bag	BAG240170ARABA	240 X 170	0.0048	28	0.1344
3	氣泡袋(2)Bubble Bag	BAG300190BRABA	300 X 190	0.01	28	0.28
4	A9隔板(3)A9 Partition	BX00000000058	245 X 125 X 4	0.0204	32	0.6528
5	B9隔板(4)B9 Partition	BX00000000057	295 X 125 X 4	0.0209	8	0.1672
6	海綿墊(5)Foam Rubber Cushion	OTFOAM00006ABA	290 X 240 X 10	0.02	8	0.16
7	C5內盒(6)Product Box	BX00000000059	310 X 255 X 155	0.248	4	0.992
8	外紙箱(7)Carton	BX52732536CCBA	527 X 325 X 360	0.83	1	0.83
9	保麗龍板(8)Polylon board	OTPLB00000017	510 X 310 X 15	0.025	3	0.075

2.一 整箱總重量 (Total LCD Weight in carton) : 8.36 Kg±10%

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

(1)Quantity Of Spacer : A9隔板 X 8 , B9隔板 X 2

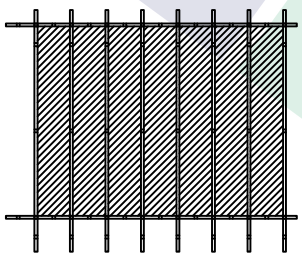
(2)Total LCM quantity in carton : quantity per box 7 x no of boxes 4 = 28



特 記 事 項 (REMARK)

1. LCM排放示意圖(前後間隔不放置):

1. LCM placed as figure showing:
(First and last slot should be empty)



模組(LCM) X 1pcs.