



## SPECIFICATIONS

<b>CUSTOMER</b>	:	<b>HCTW185A</b>
<b>SAMPLE CODE</b>	:	<b>SH480272T009-IAF01</b>
<b>MASS PRODUCTION CODE</b>	:	<b>PH480272T009-IAF01</b>
<b>SAMPLE VERSION</b>	:	<b>02</b>
<b>SPECIFICATIONS EDITION</b>	:	<b>006</b>
<b>DRAWING NO. (Ver.)</b>	:	<b>LMD-PH480272T009-IAF01 (Ver.004)</b>
<b>PACKAGING NO. (Ver.)</b>	:	<b>PKG-PH480272T009-IAF01 (Ver.002)</b>

**Customer Approved**

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**Date:**

Approved	Checked	Designer
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- Preliminary specification for design input
- Specification for sample approval

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Note: For detailed information please refer to IC data sheet:

TFT LCD : ILITEK--- ILI6480B

CTP : Sitronix—ST1633

## 1.1 Features

Item	Standard Value
Display Type	480 * 3 (RGB) * 272 Dots
LCD Type	Normally white TN , Transmissive Type
Screen size(inch)	4.3"(Diagonal)
Viewing Direction	6 O'clock
Color configuration	R,G, B vertical stripe
Backlight	White LED B/L
Display Interface	Digital 24-bits RGB
Driver IC	ILI6480B
ROHS	THIS PRODUCT CONFORMS THE ROHS OF PTC Detail information please refer website : <a href="http://www.powertip.com.tw/news_detail.php?Key=1&amp;cID=1">http://www.powertip.com.tw/news_detail.php?Key=1&amp;cID=1</a>

## 1.2 Mechanical Specifications

Item	Standard Value	Unit
Outline Dimension	105.5(W) x 67.2 (L) x 2.6(H) +0,-0.2	mm

### LCD panel

Item	Standard Value	Unit
Viewing Area	96.7 (W) * 55.3 (L)	mm
Active Area	95.04 (W) x 53.856 (L)	mm
Pixel Size	0.198 (W) * 0.198 (H)	mm

### Touch panel

Item	Standard Value	Unit
Viewing Area	97.1 (W) x 55.9 (L)	mm

Note : For detailed information please refer to LCM drawing.

### 1.3 Absolute Maximum Ratings

#### Module

Item	Symbol	Condition	Min.	Max.	Unit
System Power Supply Voltage	VDD	GND=0	-0.5	+5.0	V
Operating Temperature	T <sub>OP</sub>	-	-20	+70	°C
Storage Temperature	T <sub>ST</sub>	-	-30	+80	°C
Storage Humidity	H <sub>D</sub>	T <sub>a</sub> ≤ 60 °C	10	90	%RH

### 1.4 DC Electrical Characteristics

#### Module

GND = 0V, T<sub>a</sub> = 25°C

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Power supply	VDD	-	3.0	3.3	3.6	V
	VGH	-	-	15	-	V
	VGL	-	-	-10	-	V
“H” Input Voltage	V <sub>IH</sub>	-	0.7*VDD	-	VDD	V
“L” Input Voltage	V <sub>IL</sub>	-	GND	-	0.3* GND	V
“H” Output Voltage	V <sub>OH</sub>	-	VDD-0.4	-	VDD	V
“L” Output Voltage	V <sub>OL</sub>	-	GND	-	GND +0.4	V
Supply Current	IDD	VDD=3.3V Pattern= Full display *1	-	15	25	mA

Note1: Maximum current display.

## 1.5 Optical Characteristics

### TFT LCD Panel

VDD =3.3V, Ta=25°C

Item	Symbol	Condition	Min.	Typ.	Max.	unit		
Response time	Tr + Tf	Ta = 25°C θX, θY = 0°	-	35	53	ms	Note2	
Viewing angle	Top	θY+	CR ≥ 10	-	80	-	Deg.	Note4
	Bottom	θY-		-	80	-		
	Left	θX-		-	80	-		
	Right	θX+		-	80	-		
Contrast ratio	CR		480	600	-	-	-	
Color of CIE Coordinate	White	X	Ta = 25°C θX , θY = 0°	0.23	0.28	0.33	-	Note1
		Y		0.27	0.32	0.37		
	Red	X		0.52	0.57	0.62		
		Y		0.28	0.33	0.38		
	Green	X		0.28	0.33	0.38		
		Y		0.56	0.61	0.66		
	Blue	X		0.09	0.14	0.19		
		Y		0.02	0.07	0.12		
Average Brightness Pattern=white display	IV	IF= 20 mA	270	360	-	cd/m <sup>2</sup>	Note1	
Uniformity	△B	IF= 20 mA	70	-	-	%	Note1	

Note1:

1 :  $\Delta B = B(\min) / B(\max) \times 100\%$

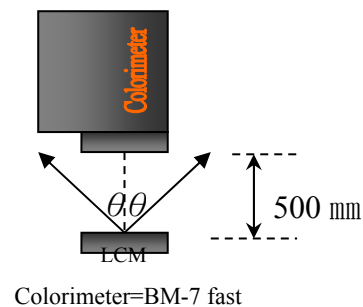
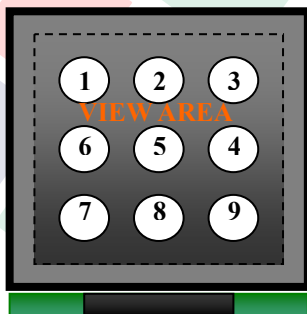
2 : Measurement Condition for Optical Characteristics:

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

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

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

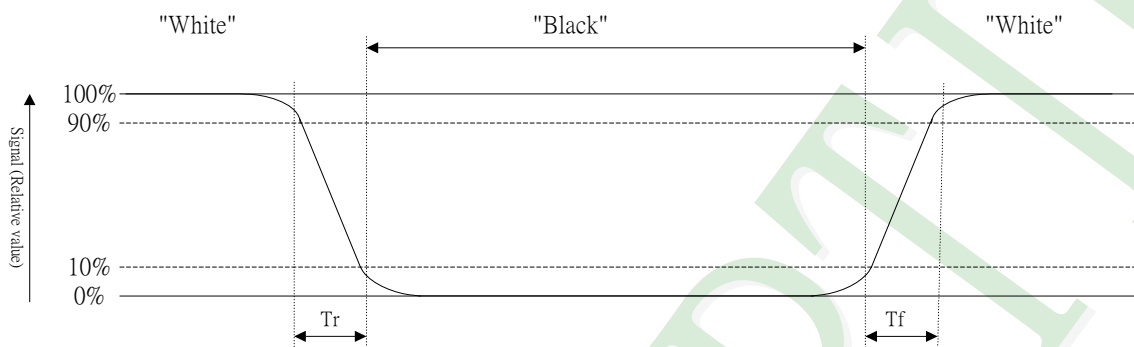
d : The uncertainty of the C.I.E coordinate measurement ± 0.01 , Average Brightness ± 4%



**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:



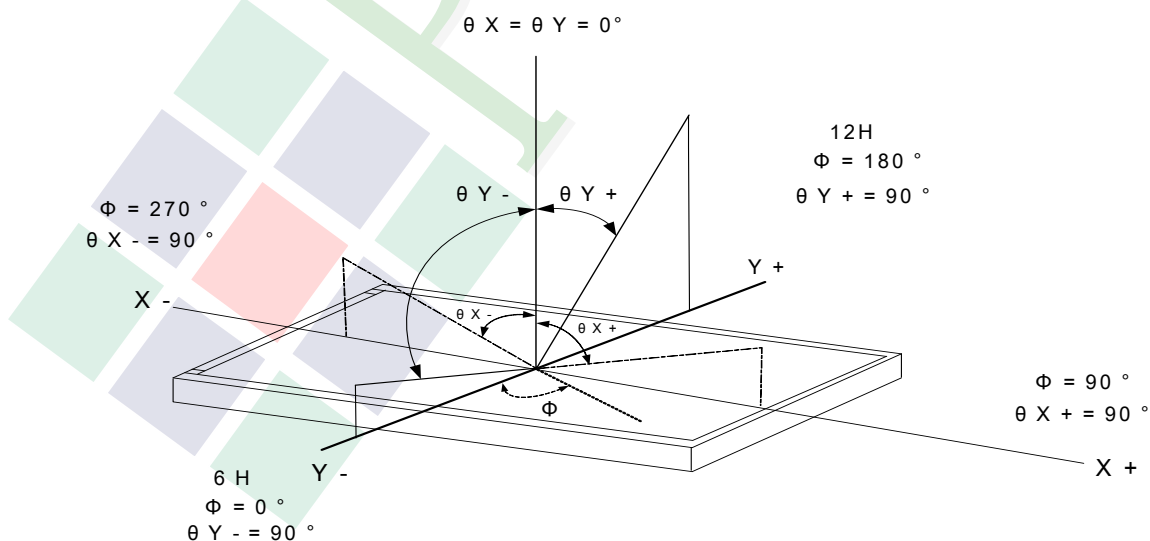
**Note3: Definition of contrast ratio:**

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

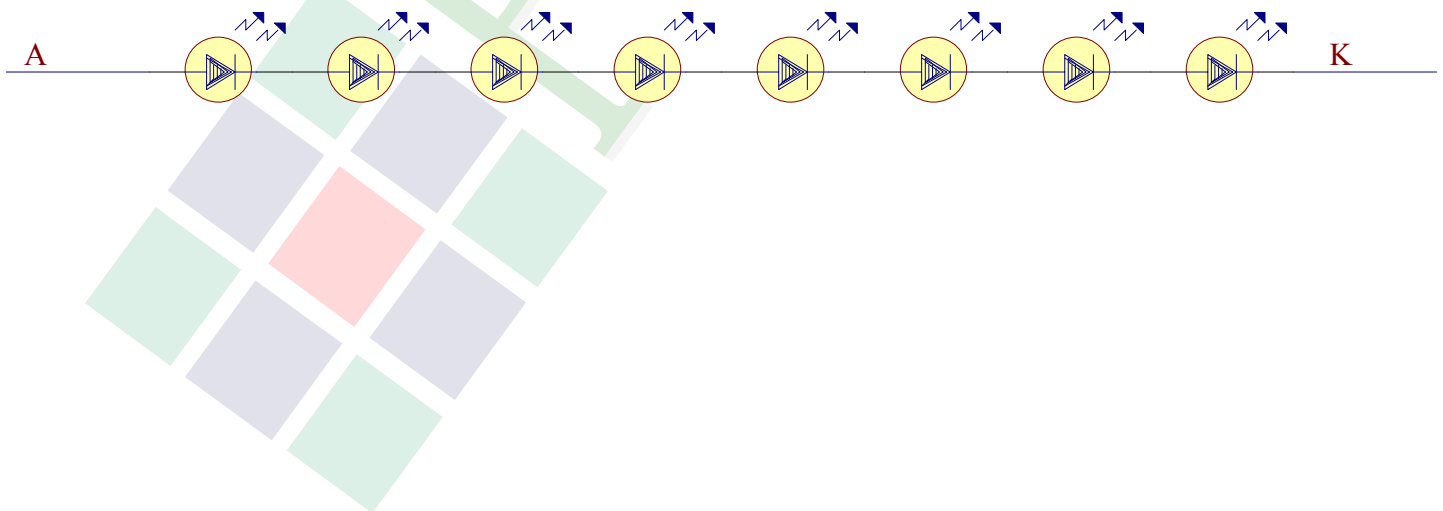
Item	Symbol	Conditions	Min.	Max.	Unit
LED Forward Current (Each LED)	IF	Ta =25°C	-	30*1	mA
LED Reverse Voltage (Each LED)	VR	Ta =25°C	-	5.0	V
Power Dissipation	PD	Ta =25°C	-	90*8	mW

### Electrical / Optical Characteristics

Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
Forward Voltage	VF	IF=20mA	23.5	25.6	-	V
LED life time*1	-	-	30,000			Hr
Color	White					

\*1 : The “LED life time” is defined as the module brightness decrease to 50% original brightness at Ta=25°C and  $I_L=20\text{mA}$ . The LED lifetime could be decreased if operating  $I_L$  is larger than 20 mA.

### Internal Circuit Diagram





## 1.7 Touch Panel Characteristics

### Features

Item	Standard Value
Touch Panel Size	4.3 Inch
Touch type	Projective Capacitive Touch Panel
Input Method	True Multi-touch with up to 5 Points of Absolution X and Y coordinates
Output Interface	I <sup>2</sup> C
IC	ST1633

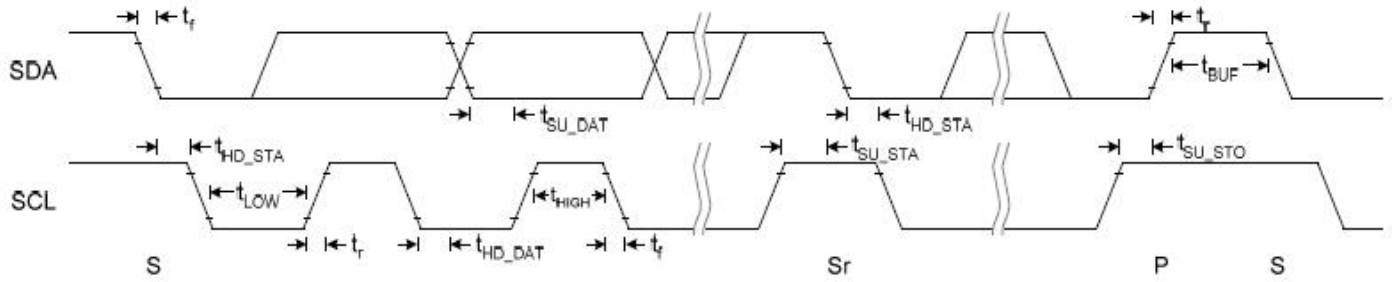
### Absolute Maximum Ratings

Item	Symbol	Condition	Min.	Max.	Unit
Supply voltage	TPVDD	-	-0.3	3.6	V
Operating Temperature	T <sub>OP</sub>	-	-20	+70	°C
Storage Temperature	T <sub>ST</sub>	-	-30	+80	°C

### DC Electrical Characteristics

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Power Supply Voltage	TPVDD	-	3.0	3.3	3.6	V
Input High Voltage	V <sub>IH</sub>	-	0.7 TPVDD	-	TPVDD	V
Input Low Voltage	V <sub>IL</sub>	-	-0.3	-	0.3 TPVDD	V
Output High Voltage	V <sub>OH</sub>	I <sub>OH</sub> =-0.1mA	0.7 TPVDD	-	-	V
Output Low Voltage	V <sub>OL</sub>	I <sub>OL</sub> =+0.1mA	-	-	0.3 TPVDD	V

### 1.7.1 I<sup>2</sup>C Timing Characteristics



Symbol	Parameter	Rating			Unit
		Min.	Typ	Max.	
$f_{SCL}$	SCL clock frequency	0	-	400	kHz
$t_{LOW}$	Low period of the SCL clock	1.3	-	-	us
$t_{High}$	High period of SCL clock	0.6	-	-	us
$t_f$	Signal falling time	-	-	300	ns
$t_r$	Signal rising time	-	-	300	ns
$t_{SU\_STA}$	Set up time for a repeated START condition	0.6	-	-	us
$t_{HD\_STA}$	Hold time (repeated) START condition. After this period the first clock pulse is generated	0.6	-	-	us
$t_{SU\_DAT}$	Data set up time	100	-	-	ns
$t_{HD\_DAT}$	Data hold time	0	-	09	us
$t_{SU\_STO}$	Set up time for STOP condition	0.6	-	-	us
$t_{BUF}$	Bus free time between a STOP and START condition	1.3	-	-	us
$C_b$	Capacitive load for each bus line	-	-	400	pF

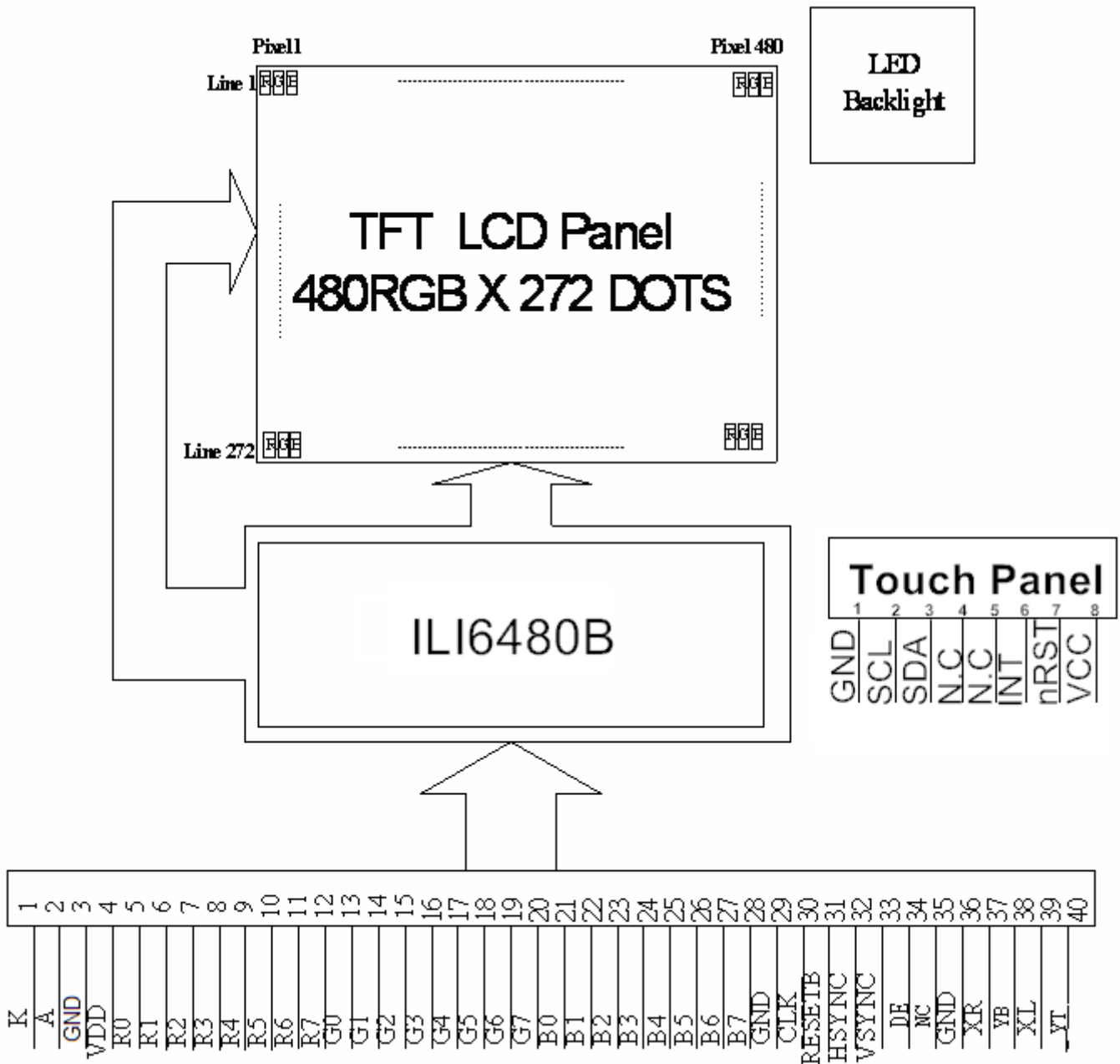
## 2. MODULE STRUCTURE

### 2.1 Counter Drawing

#### 2.1.1 LCM Mechanical Diagram

\* See Appendix

#### 2.1.2 Block Diagram



## 2.2 Interface Pin Description

Pin No.	Symbol	Function
1	K	Power supply for LED Backlight cathode input
2	A	Power supply for LED Backlight anode input
3	GND	Ground
4	VDD	Digital power
5	R0	Red data bit 0
6	R1	Red data bit 1
7	R2	Red data bit 2
8	R3	Red data bit 3
9	R4	Red data bit 4
10	R5	Red data bit 5
11	R6	Red data bit 6
12	R7	Red data bit 7
13	G0	Green data bit 0
14	G1	Green data bit 1
15	G2	Green data bit 2
16	G3	Green data bit 3
17	G4	Green data bit 4
18	G5	Green data bit 5
19	G6	Green data bit 6
20	G7	Green data bit 7
21	B0	Blue data bit 0
22	B1	Blue data bit 1
23	B2	Blue data bit 2
24	B3	Blue data bit 3
25	B4	Blue data bit 4
26	B5	Blue data bit 5
27	B6	Blue data bit 6
28	B7	Blue data bit 7

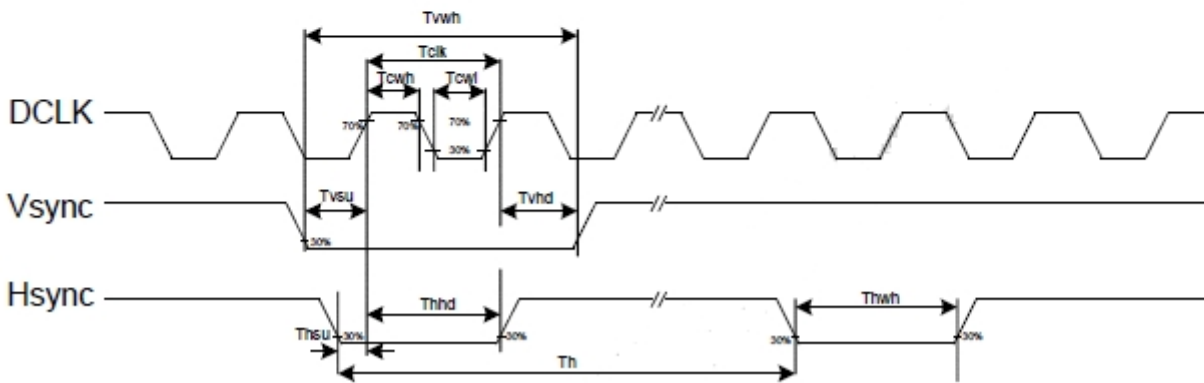
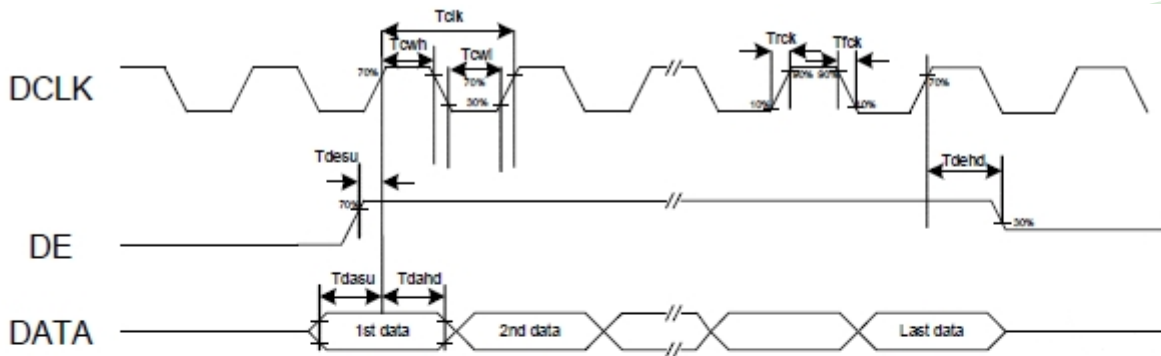
29	GND	Ground
30	CLK	Dot data clock
31	DISP	Display control / standby mode selection "High" : Normal display
32	HSYNC	Horizontal sync input
33	VSYNC	Vertical sync input
34	DE	Data input enable. Active High to enable the data input
35	N.C	Not Connect.
36	GND	Ground
37	XR	Not Connect.
38	YB	Not Connect.
39	XL	Not Connect.
40	YT	Not Connect.

### CTP Interface

Pin No.	Symbol	Function
1	GND	Ground
2	SCL	I <sup>2</sup> C Clock.
3	SDA	I <sup>2</sup> C Data
4	N.C	Not Connect.
5	N.C	Not Connect.
6	INT	The interrupt from the CTP to the Host
7	XRES	RESET
8	VDD	Power Supply

## 2.3 Timing Characteristics

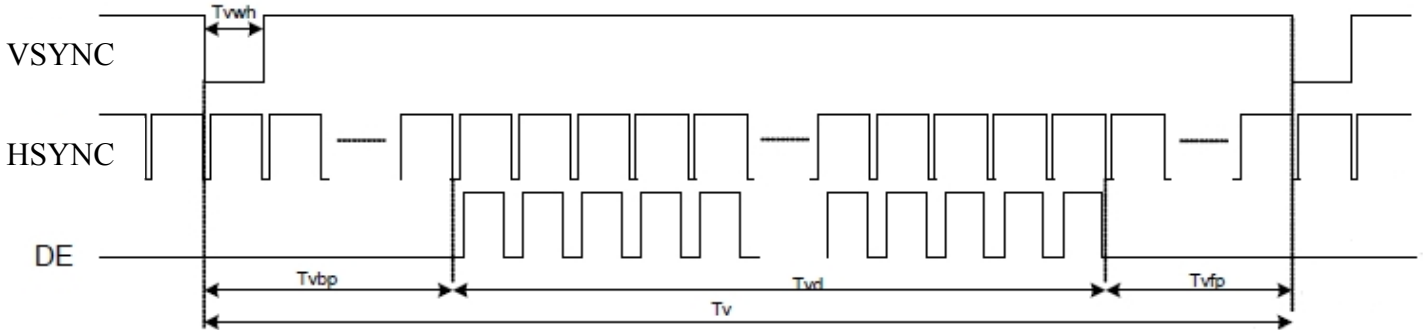
### 2.3.1 Clock and Data Input Waveforms



Parameters	Symbol	Min.	Typ.	Max.	Unit	Conditions
<b>System operation timing</b>						
VDD power source slew time	TPOR	-	-	20	ms	From 0V to 99% VDD
GRB pulse width	tRSTW	10	50	-	us	R=10Kohm, C=1uF
<b>Input Output timing</b>						
DCLK clock time	Tclk	33.3	-	-	ns	DCLK=30MHz
DCLK clock low period	Tcwl	40	-	60	%	
DCLK clock high period	Tcwh	40	-	60	%	
Clock rising time	Trck	9	-	-	ns	
Clock falling time	Tfck	9	-	-	ns	
HSD width	Thwh	1	-	-	DCLK	
HSD period time	Th	55	60	65	us	
HSD setup time	Thsu	12	-	-	ns	
HSD hold time	Thhd	12	-	-	ns	
VSD width	Twvh	1	-	-	Th	
VSD setup time	Tvsu	12	-	-	ns	
VSD hold time	Tvhd	12	-	-	ns	
Data setup time	Tdasu	12	-	-	ns	
Data hold time	Tdahd	12	-	-	ns	
DE setup time	Tdesu	12	-	-	ns	
DE hold time	Tdehd	12	-	-	ns	
Source output setting time	Tsst	-	-	TBD	us	10% to 90% CL=60pF, RL=2Kohm
Gate output setting time	Tgst	-	-	1200	ns	10% to 90%, CL=60pF
VCOM output setting time	Tcst	-	-	TBD	us	10% to 90%, CL=40nF, RL=50ohm
Time from VSD to 1st line data input	Tvs	3	8	31	Th	HV mode By HDL[4:0] setting

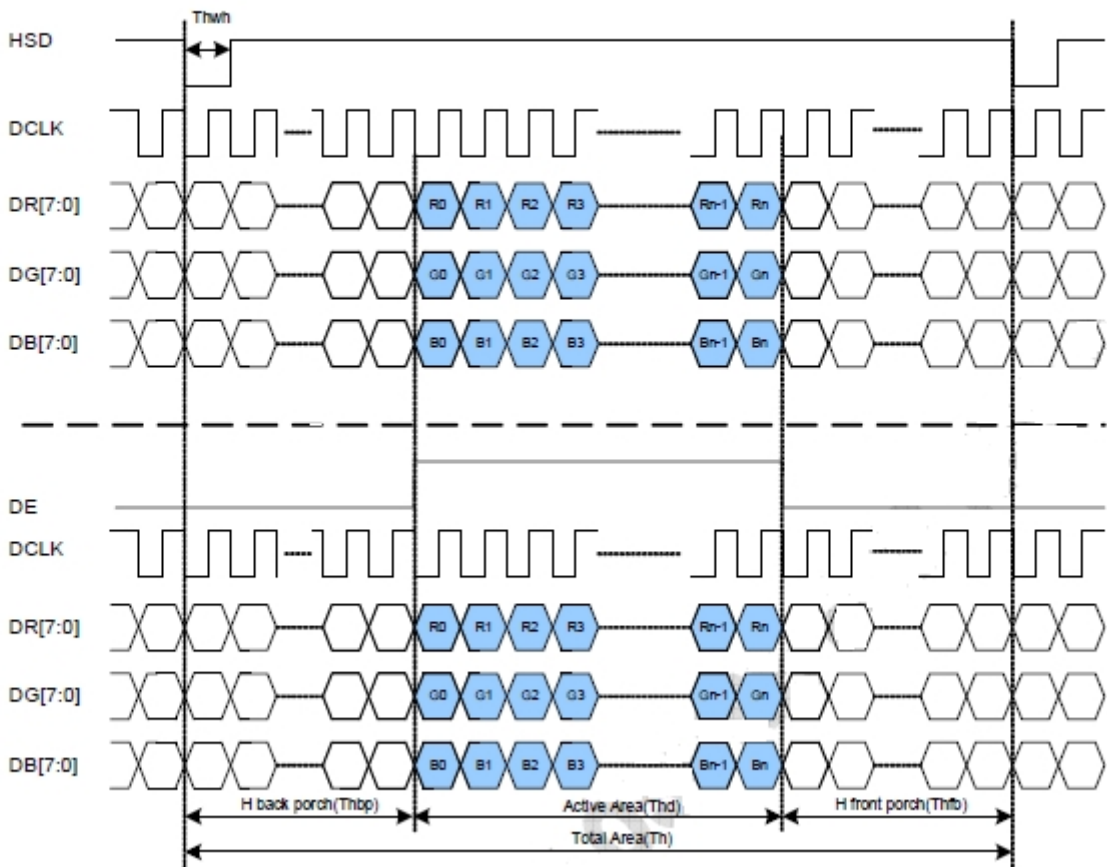
### 2.3.2 Data Input Format

#### Vertical input timing



#### Parallel RGB Mode Data format

##### (HV Mode)



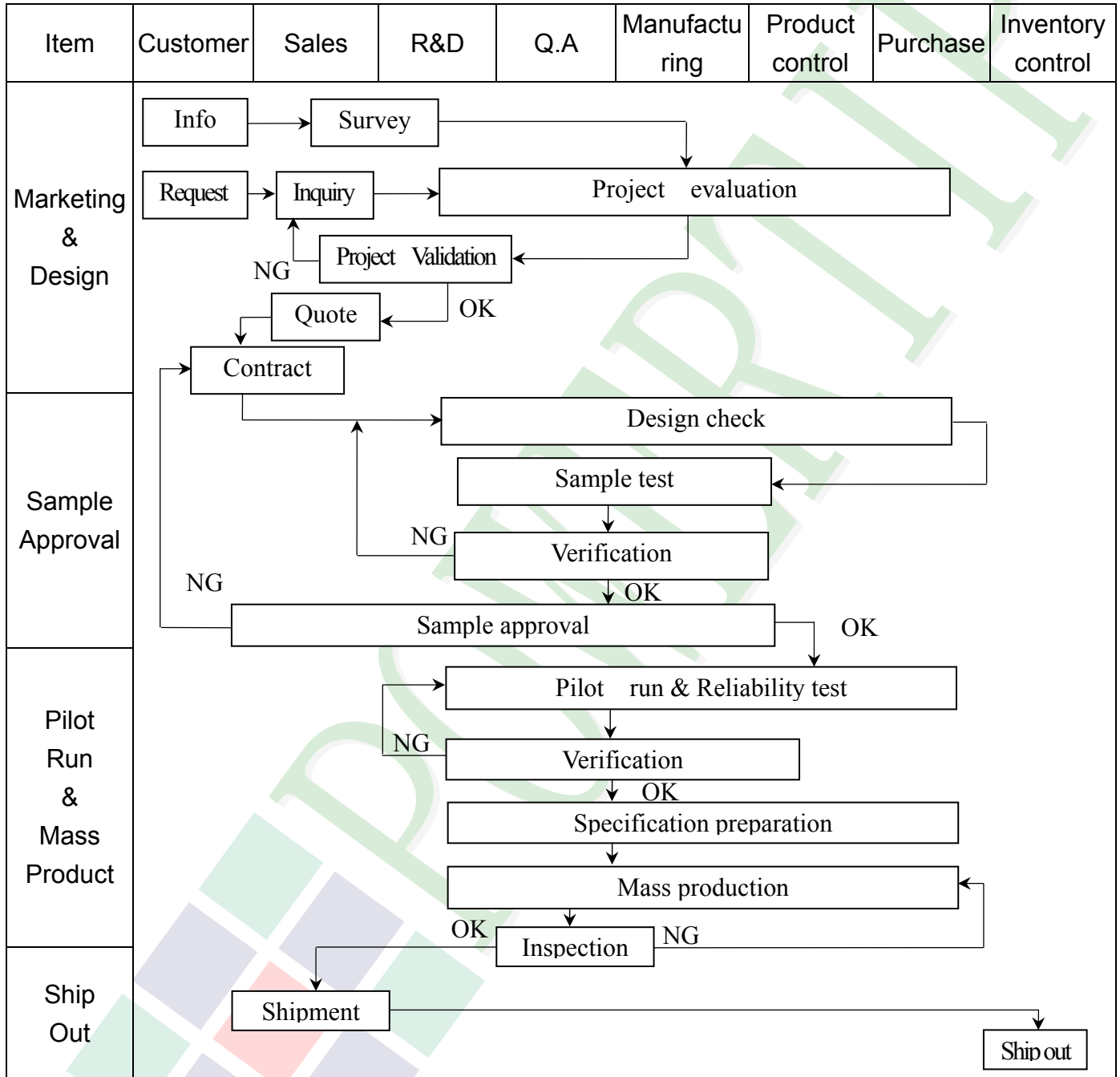


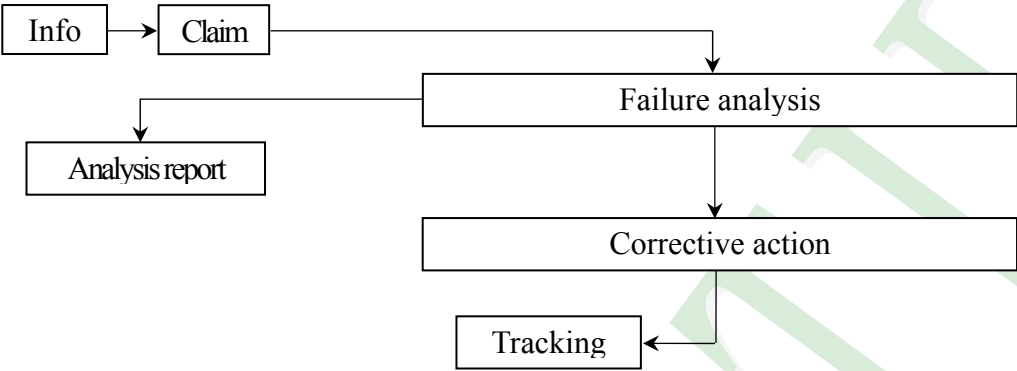
**Parallel RGB input timing table**

Parameters	Symbol	Value			Unit
		Min.	Typ.	Max.	
DCLK frequency	Fclk	5	9	12	MHz
VSYNC period time	Tv	277	288	400	H
VSYNC display area	Tvd	272			H
VSYNC back porch	Tvb	3	8	31	H
VSYNC front porch	Tvfp	2	8	97	H
HSYNC period time	Th	520	525	800	DCLK
HSYNC display area	Thd	480			DCLK
HSYNC back porch	Thbp	36	40	255	DCLK
HSYNC front porch	Thfp	4	5	65	DCLK

### 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	 <pre> graph TD     Info[Info] --&gt; Claim[Claim]     Claim --&gt; FA[Failure analysis]     FA --&gt; AR[Analysis report]     FA --&gt; CA[Corrective action]     CA --&gt; Tracking[Tracking]           </pre>							
Q.A Activity	1. ISO 9001 Maintenance Activities 3. Equipment calibration 5. Standardization Management				2. Process improvement proposal 4. Education And Training Activities			

### 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.

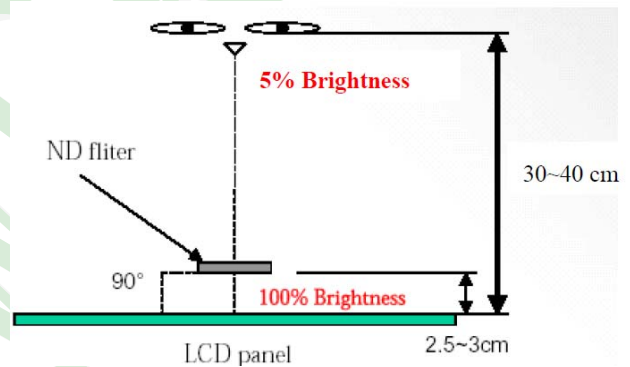
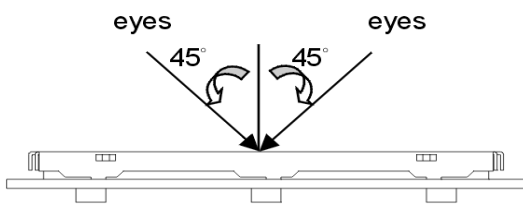
◆Standard of the product appearance test :

a. Manner of appearance test :

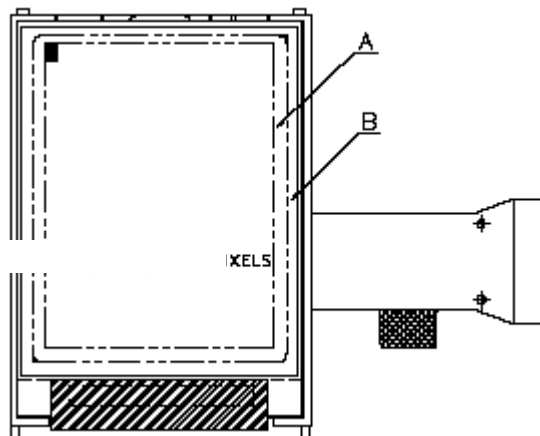
(1). The test best be under 20W×2 fluorescent light(about 300lux ~500lux)

， 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.

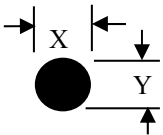
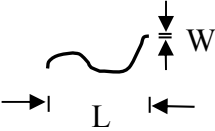


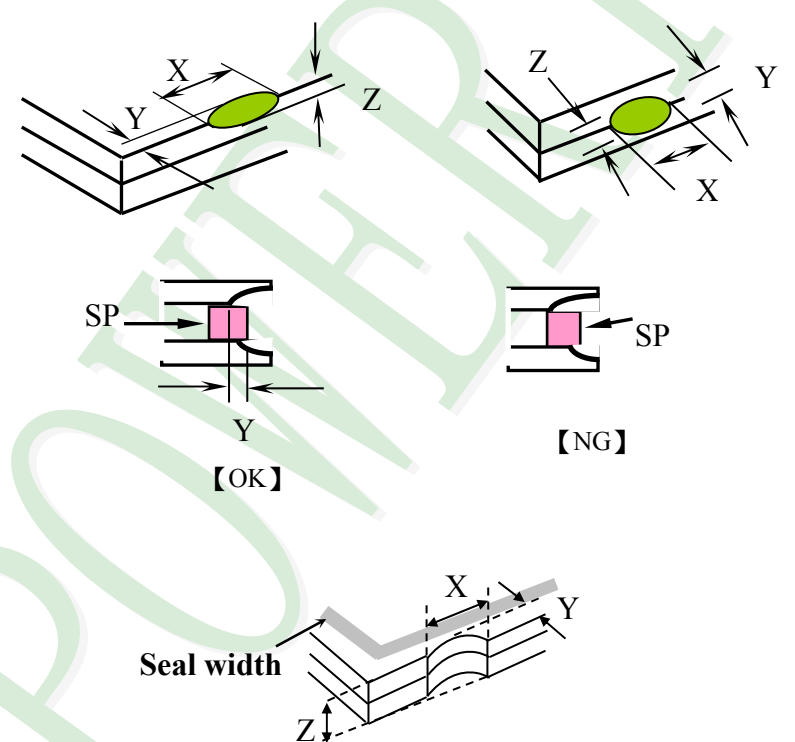
*A* area : viewing area

*B* area : Outside of viewing area

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

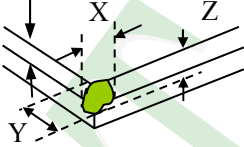
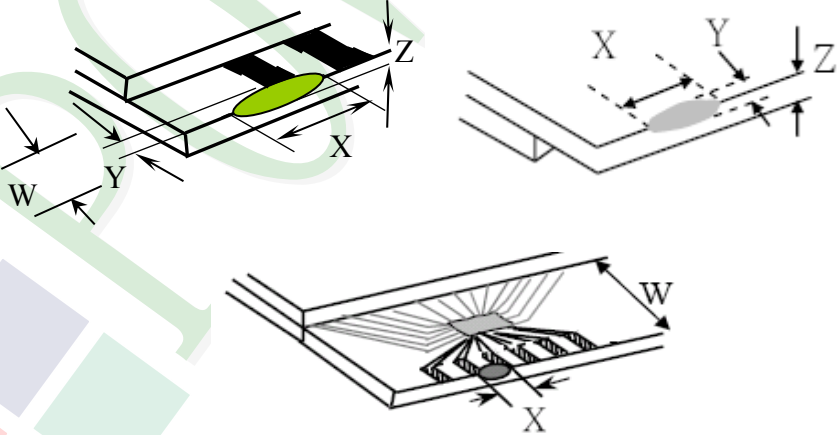
NO	Item	Criterion	Level												
01	Product condition	1.1 The part number is inconsistent with work order of production.	Major												
		1.2 Mixed product types.	Major												
		1.3 Assembled in inverse direction.	Major												
02	Quantity	2.1 The quantity is inconsistent with work order of production.	Major												
03	Outline dimension	3.1 Product dimension and structure must conform to structure diagram.	Major												
04	Electrical Testing	4.1 Missing line character and icon.	Major												
		4.2 No function or no display.	Major												
		4.3 Display malfunction.	Major												
		4.4 LCD viewing angle defect.	Major												
		4.5 Current consumption exceeds product specifications.	Major												
		4.6 Mura can not be seen through 5% ND filter at 50% Gray screen , should be judged by the viewing angle of 90 degree.	Minor												
05	Dot defect (Bright dot 、 Dark dot) On -display	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th colspan="2">Item</th> <th>Acceptance (Q'ty)</th> </tr> </thead> <tbody> <tr> <td rowspan="4" style="text-align: center; vertical-align: middle;"><b>Dot Defect</b></td> <td style="text-align: center;">Bright Dot</td> <td style="text-align: center;"><math>\leq 4</math></td> </tr> <tr> <td style="text-align: center;">Dark Dot</td> <td style="text-align: center;"><math>\leq 5</math></td> </tr> <tr> <td style="text-align: center;">Joint Dot</td> <td style="text-align: center;"><math>\leq 3</math></td> </tr> <tr> <td style="text-align: center;">Total</td> <td style="text-align: center;"><math>\leq 7</math></td> </tr> </tbody> </table>	Item		Acceptance (Q'ty)	<b>Dot Defect</b>	Bright Dot	$\leq 4$	Dark Dot	$\leq 5$	Joint Dot	$\leq 3$	Total	$\leq 7$	Minor
		Item		Acceptance (Q'ty)											
<b>Dot Defect</b>	Bright Dot	$\leq 4$													
	Dark Dot	$\leq 5$													
	Joint Dot	$\leq 3$													
	Total	$\leq 7$													
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 $\geq 5$ mm. 5.4 Bright dot that can not be seen through 5% ND filter.															

NO	Item	Criterion	Level																																																					
06	<p><b>Black or white dot、scratch、contamination</b></p> <p><b>Round type</b></p>  <p><math>\Phi = (x + y) / 2</math></p> <p><b>Line type</b></p> 	<p><b>6.1 Round type ( Non-display or display ) :</b></p> <table border="1" data-bbox="526 436 1305 712"> <thead> <tr> <th rowspan="2">Dimension (diameter : <math>\Phi</math>)</th> <th colspan="2">Acceptance (Q'ty)</th> </tr> <tr> <th>A area</th> <th>B area</th> </tr> </thead> <tbody> <tr> <td><math>\Phi \leq 0.25</math></td> <td>Ignore</td> <td rowspan="3">Ignore</td> </tr> <tr> <td><math>0.25 &lt; \Phi \leq 0.50</math></td> <td>5</td> </tr> <tr> <td><math>\Phi &gt; 0.50</math></td> <td>0</td> </tr> <tr> <td>Total</td> <td>5</td> <td></td> </tr> </tbody> </table> <p><b>6.2 Line type( Non-display or display ) :</b></p> <table border="1" data-bbox="450 828 1383 1478"> <thead> <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> </thead> <tbody> <tr> <td rowspan="5">3.5" to less 9"</td> <td>---</td> <td><math>W \leq 0.03</math></td> <td>Ignore</td> <td rowspan="5">Ignore</td> </tr> <tr> <td><math>L \leq 10.0</math></td> <td><math>0.03 &lt; W \leq 0.05</math></td> <td>4</td> </tr> <tr> <td><math>L \leq 5.0</math></td> <td><math>0.05 &lt; W \leq 0.10</math></td> <td>2</td> </tr> <tr> <td>---</td> <td><math>W &gt; 0.10</math></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><math>W \leq 0.05</math></td> <td>Ignore</td> <td rowspan="4">Ignore</td> </tr> <tr> <td><math>L \leq 10.0</math></td> <td><math>0.05 &lt; W \leq 0.10</math></td> <td>5</td> </tr> <tr> <td>---</td> <td><math>W &gt; 0.10</math></td> <td>As round type</td> </tr> <tr> <td colspan="2">Total</td> <td>5</td> </tr> </tbody> </table>	Dimension (diameter : $\Phi$ )	Acceptance (Q'ty)		A area	B area	$\Phi \leq 0.25$	Ignore	Ignore	$0.25 < \Phi \leq 0.50$	5	$\Phi > 0.50$	0	Total	5		module size	Length (L)	Width (W)	Acceptance (Q'ty)		A area	B area	3.5" to less 9"	---	$W \leq 0.03$	Ignore	Ignore	$L \leq 10.0$	$0.03 < W \leq 0.05$	4	$L \leq 5.0$	$0.05 < W \leq 0.10$	2	---	$W > 0.10$	As round type	Total		5	9" to 15"	---	$W \leq 0.05$	Ignore	Ignore	$L \leq 10.0$	$0.05 < W \leq 0.10$	5	---	$W > 0.10$	As round type	Total		5	Minor
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◆Specification For TFT-LCD Module 3.5" ~15" :

(Ver.B01)

NO	Item	Criterion	Level										
08	The crack of glass	<p>Symbols :</p> <p>X : The length of crack                      Z : The thickness of crack                      t : The thickness of glass</p> <p>Y : The width of crack.                      W : terminal length                      a : LCD side length</p> <hr/> <p>8.1.2 Corner crack :</p>  <table border="1" data-bbox="520 779 1337 1070"> <thead> <tr> <th>X</th> <th>Y</th> <th>Z</th> </tr> </thead> <tbody> <tr> <td><math>\leq 1/5 a</math></td> <td>Crack can't enter viewing area</td> <td><math>Z \leq 1/2 t</math></td> </tr> <tr> <td><math>\leq 1/5 a</math></td> <td>Crack can't exceed the half of SP width.</td> <td><math>1/2 t &lt; Z \leq 2 t</math></td> </tr> </tbody> </table>	X	Y	Z	$\leq 1/5 a$	Crack can't enter viewing area	$Z \leq 1/2 t$	$\leq 1/5 a$	Crack can't exceed the half of SP width.	$1/2 t < Z \leq 2 t$		
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◆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 $\leq 1.5$ mm.	Minor



## 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  $320 \pm 10^{\circ}\text{C}$  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.

### 5.3 STORAGE

- 5.3.1 Store the panel or module in a dark place where the temperature is  $25^{\circ}\text{C} \pm 5^{\circ}\text{C}$  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.



Ver.002

Documents NO. PKG-PH480272T009-IAF01

# LCM包裝規格書

## LCM Packaging Specifications

Approve

Check

Contact

Oliver

Sam

Stone

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

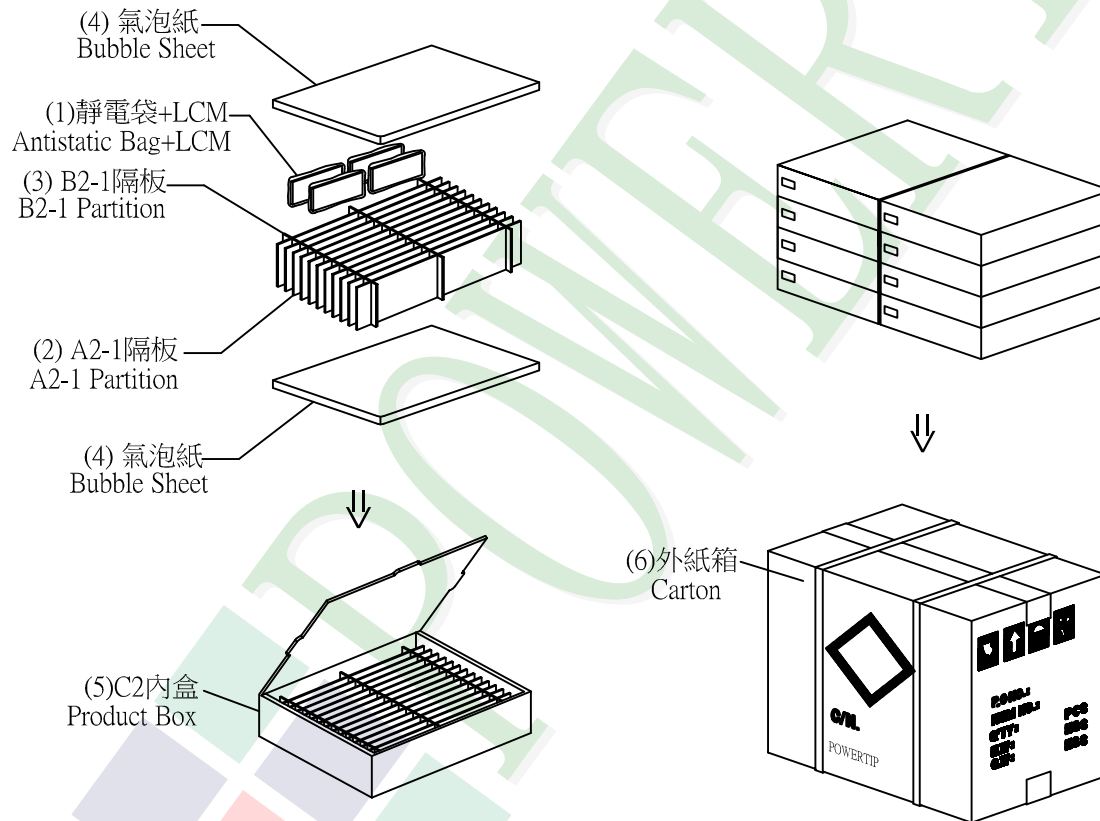
No.	Item	Model	Dimensions (mm)	1Pcs Weight	Quantity	Total Weight
1	成品 (LCM)	PH480272T009-IAF01	105.5 X 67.2	0.062	192	11.904
2	靜電袋(1)Antistatic Bag	BAG0000000005	150 X 120	0.002	192	0.384
3	A2-1隔板(2)A2-1 Partition	BX29500072BZBA	295 X 72 X 3.0	0.0109	104	1.1336
4	B2-1隔板(3)B2-1 Partition	BX24500072BZBA	245 X 72 X 3.0	0.0094	24	0.2256
5	氣泡紙(4)Bubble Sheet	BAG280240BWABA	280 X 240	0.006	16	0.096
6	C2內盒(5)Product Box	BX31025580AABA	310 X 255 X 80	0.221	8	1.768
7	外紙箱(6)Carton	BX52732536CCBA	527 X 325 X 360	1.092	1	1.092
8						
9						

2. 一整箱總重量 (Total LCD Weight in carton) : 16.6 Kg±10%

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

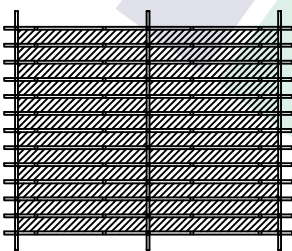
(1) Quantity Of Spacer : A2-1隔板 X 13 , B2-1隔板 X 3

(2) Total LCM quantity in carton : quantity per box 24 x no of boxes 8 = 192



### 特 記 事 項 (REMARK)

4. LCM排放示意圖(前後間隔不放置):

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

模組(LCM) X 1pcs.