SPECIFICATIONS

CUSTOMER	:	**PTC**
SAMPLE CODE	:	**SH480272T009-IBB**
MASS PRODUCTION CODE	:	**PH480272T009-IBB**
SAMPLE VERSION	:	**01**
SPECIFICATIONS EDITION	:	**003**
DRAWING NO. (Ver.)	:	**JLMD-PH480272T009-IBB_002**
PACKAGING NO. (Ver.)	:	**JPKG-PH480272T009-IBB_001**

Customer Approved

Date:

POWERTIP
2017.02.22
JS RD APPROVED

Approved	Checked	Designer
閆偉	劉進	楊威

☐ Preliminary specification for design input

■ Specification for sample approval

POWERTIP TECH. CORP.

History of Version

Date	Ver.	Edi.	Description	Page	Design by
03/14/2016	01	001	New Drawing	-	周志仙
05/24/2016	01	002	New Sample	-	周志仙
02/15/2017	01	003	Modify LCM Drawing	4	楊威

Total: 30Page

Contents

Note: For detailed information please refer to IC data sheet:ILITEK--- ILI6480B

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
Display Interface	Digital 24-bits RGB
Driver IC	ILI6480B
ROHS	THIS PRODUCT CONFORMS THE ROHS OF PTC Detail information please refer website : http://www.powertip.com.tw/news.php?area_id_view=1085560481/

1.2   Mechanical Specifications

Item	Standard Value	Unit
Outline Dimension	105.5(W) x 67.2 (L) x 5.05(H)	mm

LCD panel

Item	Standard Value	Unit
Viewing Area	99.5 (W) * 58 (L)	mm
Active Area	95.04 (W) x 53.856 (L)	mm
Pixel Size	0.198 (W) * 0.198 (H)	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_{OP}	-	-20	+70	°C
Storage Temperature	T_{ST}	-	-30	+80	°C
Storage Humidity	H_D	Ta ≦ 60 °C	10	90	%RH

1.4 DC Electrical Characteristics

Module

GND = 0V, Ta = 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_{IH}	-	0.7*VDD	-	VDD	V
"L" Input Voltage	V_{IL}	-	GND	-	0.3* GND	V
"H" Output Voltage	V_{OH}	-	VDD-0.4	-	VDD	V
"L" Output Voltage	V_{OL}	-	GND	-	GND +0.4	V
Supply Current	IDD	VDD=3.3V *1	-	20	30	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	-	-	30	45	ms	Note2
Viewing angle	Top	θ+	CR ≥ 10	-	60	-	Deg.	Note4
	Bottom	θ-		-	60	-		
	Left	θL		-	60	-		
	Right	θR		-	60	-		
Contrast ratio		CR		500	600	-	-	-
Color of CIE Coordinate	White	X	IF= 20 mA	0.26	0.31	0.36	-	Note1
		Y		0.28	0.33	0.38		
	Red	X		0.52	0.57	0.62		
		Y		0.29	0.34	0.39		
	Green	X		0.29	0.34	0.39		
		Y		0.56	0.61	0.66		
	Blue	X		0.10	0.15	0.20		
		Y		0.03	0.08	0.13		
Average Brightness Pattern=white display		IV	IF= 20 mA	400	440	-	cd/m²	Note1
Uniformity		△B	IF= 20 mA	70	-	-	%	Note1

Note1:

1：△B=B(min) / B(max) × 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 ㎜ ，(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
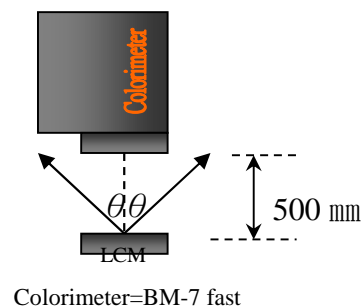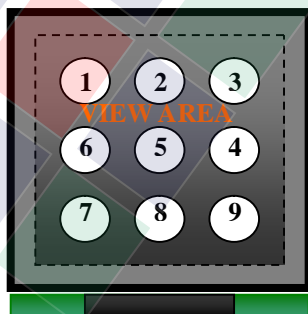
Note2: Definition of response time:
The output signals of photo detector are measured when the input signals are changed from "black" to "white"(falling time) and from "white" to "black"(rising time), respectively. The response time is defined as the time interval between the 10% and 90% of Amplitudes.
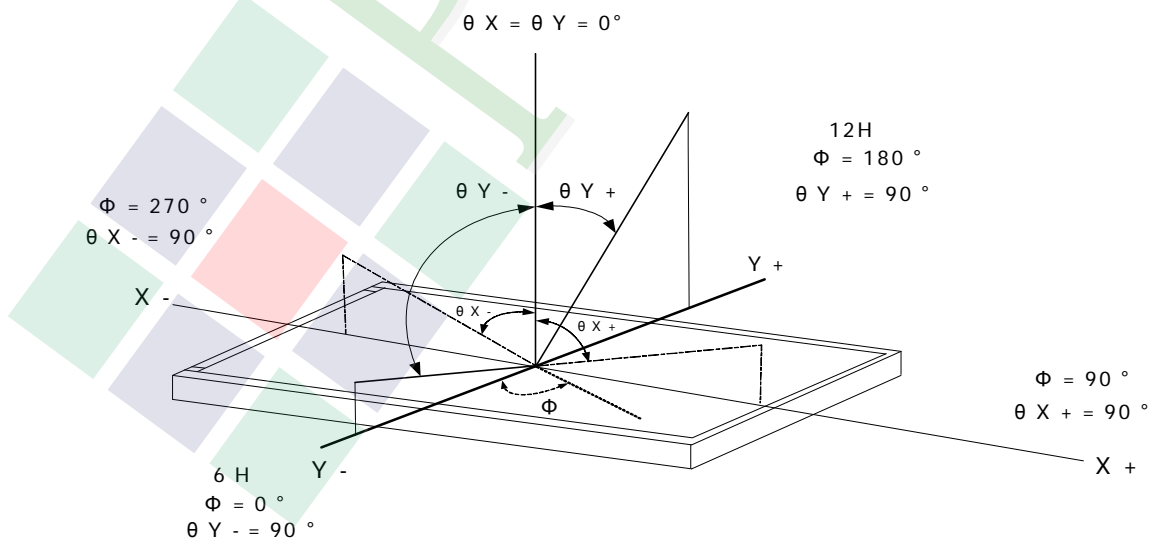Refer to figure as below:
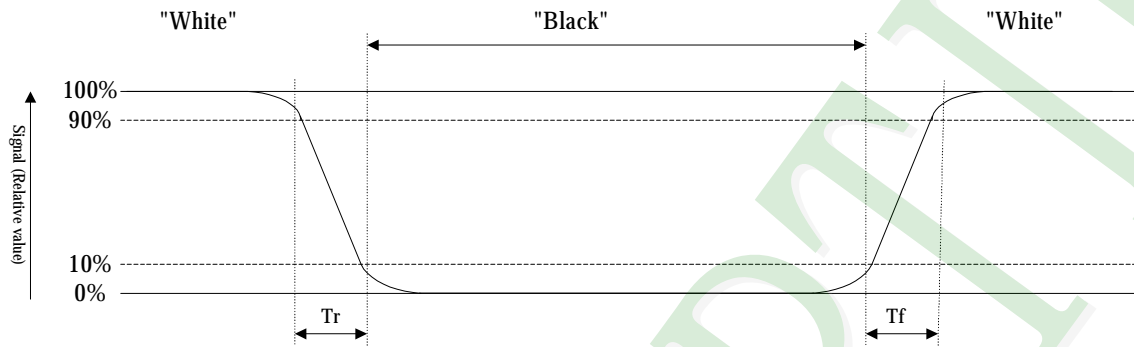
Note3: Definition of contrast ratio:
Contrast ratio is calculated with the following formula

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

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℃	-	30	mA
LED Reverse Voltage (Each LED)	VR	Ta =25℃	-	5.0	V
Power Dissipation	PD	Ta =25℃	-	508	mW

Electrical / Optical Characteristics

Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
Forward Voltage	VF		-	22.8	24.5	V
Average Brightness (Without LCD)	IV	IF=20mA	6000	7200	-	cd/m²
CIE Color Coordinate (Without LCD)	X		0.26	0.30	0.33	-
	Y		0.26	0.30	0.33	
Color			White			

Internal Circuit Diagram

Other Description

Item	Conditions	Description
Life Time	Ta =25℃ IF= 20mA	20000 hrs

1.7 Touch Panel Characteristics

1.7.1 Optical Characteristics

Item	Specification
1.Transparency	80% Min

1.7.2 Mechanical Characteristic

| Item	Specification
1.Input Method	Finger or stylus pen
2.Hardness of surface	3H -pressure 500g of ,45deg.
3.FPC peeling strength	500gf min(Peeling upward by 90°）
4.Activation Force	50gf(Typical 20gf) less individual point with stylus pen(R0.8mm) Activation force guarantee area:5.0mm inside of Active Area.
5.Linearity Force	100gf less input with stylus pen(R0.8mm) Linearity force guarantee area:3.0mm inside of Active Area.

1.7.3 Electrical Characteristics

Item	Specification
1.Rated Voltage	DC 5V(DC 7V Max)
2.Resistance Between Terminals.	Direction X (Glass side): 350Ω~ 1240Ω
	Direction Y (Film side): 160Ω~ 640Ω
3.Insulation Resistance	20 MΩ or more (DC 25Ⅴ 1min)
4.Linearity	±1.5%. Linearity(%)= ΔV/（EV-SV）*100. ΔV: The difference between the ideal voltage and measured voltage on the each measuring line. SV: Voltage of starting Points. EV: Voltage of Ending Points. (Test condition refers to 1.7.2 item5)
5.Bouncing	<10ms (Tip R 3.75mm, hardness 10°~20° ,silicon rubber ,500gf operation : 40 mm/sec)

1.7.4 Reliability Characteristic

Item	Specification	Test Result
1.Hitting Durability	1,000,000times min.(Tip R 8mm&R0.8mm)	Follow 1.7.3 item2 and item4.
2.Pen Sliding Durability	100,000 times min(Tip R0.8mm).	Follow 1.7.3 item2 and item4.
3.Impact Resistance	No damage when ψ9mm steel ball is dropped on the surface from 30 cm height at 1 time.	No Crack
4.Flexible pattern Bending Resistance	Bending 3 times by bending radius R1.0 mm	Follow 1.7.3 item2.
5.Flexible Pattern Insert/Pull Out Resistance	5times at least .	Follow 1.7.3 item2.

1.7.5 Touch Panel Design/Handing Guide

(1) Keep the gap, for example 0.2 to 0.3mm, between bezel edge and T/P edge.
   The reason is to avoid the bezel edge from contacting T/P surface that may cause "short" with bottom layer

(2) Insertion a cushion material is recommended.

(3) The cushion material should be limited on the busbar insulation paste area. If it is over the transparent insulation paste area, a "short" may be occurred.

(4) Do not to use an adhesive tape to bond it on the front of T/P and hang it to the housing bezel.

(5) Never expand the T/P top layer (PET Film) like a balloon by internal air pressure. The life of the T/P will extremely decreasing.

(6) Top layer, PET, dimension is changing base on environment temperature and humidity. Please avoid a stress from housing bezel to top layer, because it may cause "waving".

(7) The input to the Touch Panel sometimes distorts touch panel itself.

(8)To use the stylus pen or fingernail sliding at the edge of the housing is prohibited. It would cause the cracking of the ITO coating and damage the touch panel. It also request not to press this area while assembling

(9) Purpose: In order to prevent accidental use and performance deterioration, please keep the following precautions.
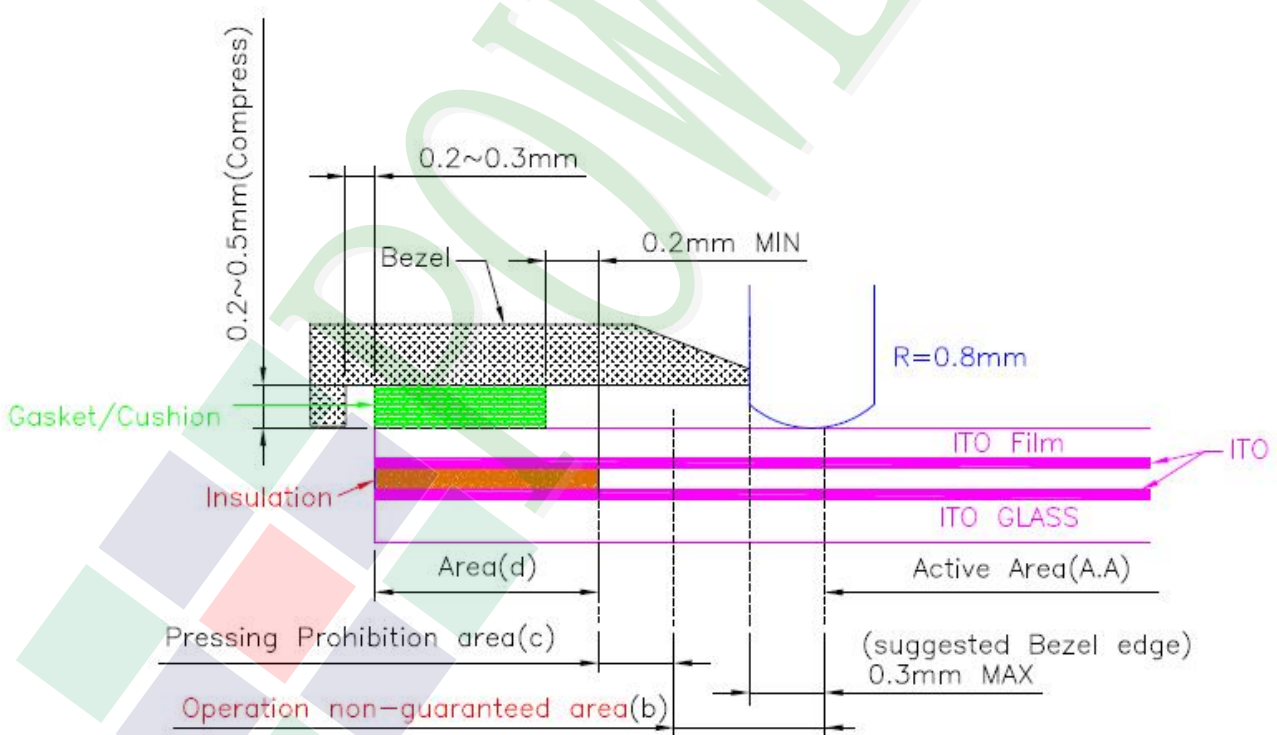
In order to prevent unusual performance degradation and malfunction of a touch panel, please carry out the set case designing and a touch panel assembling method after surely considering the definition of each area illustrated in above figure.

Area(a)：Active area

The active area is guaranteed the position data detectable precision, operation force and other operations. it is strongly recommended to place the operation button or menu keys within the active area. Due to structure, the active area is less durable at the edge or close to the edge.

Area(b)：Operation non-guaranteed area

This area does not guarantee a touch panel operation and its function. When this area is pressed, touch panel shows degradation of its performance and durability such as a pen sliding durability becomes about one-tenth compared with the active area (area-(a) as guaranteed area) and its operation force requires about double. About 0.5 mm outside from a boundary of the active area corresponds to this area.

Area(c)：Pressing prohibition area

The area which forbids pressing, because an excessive load is applied to a transparent electrode (ITO) and a serious damage is given to a touch panel function by pressing. About 0.5 mm outside from Operation non-guaranteed area .

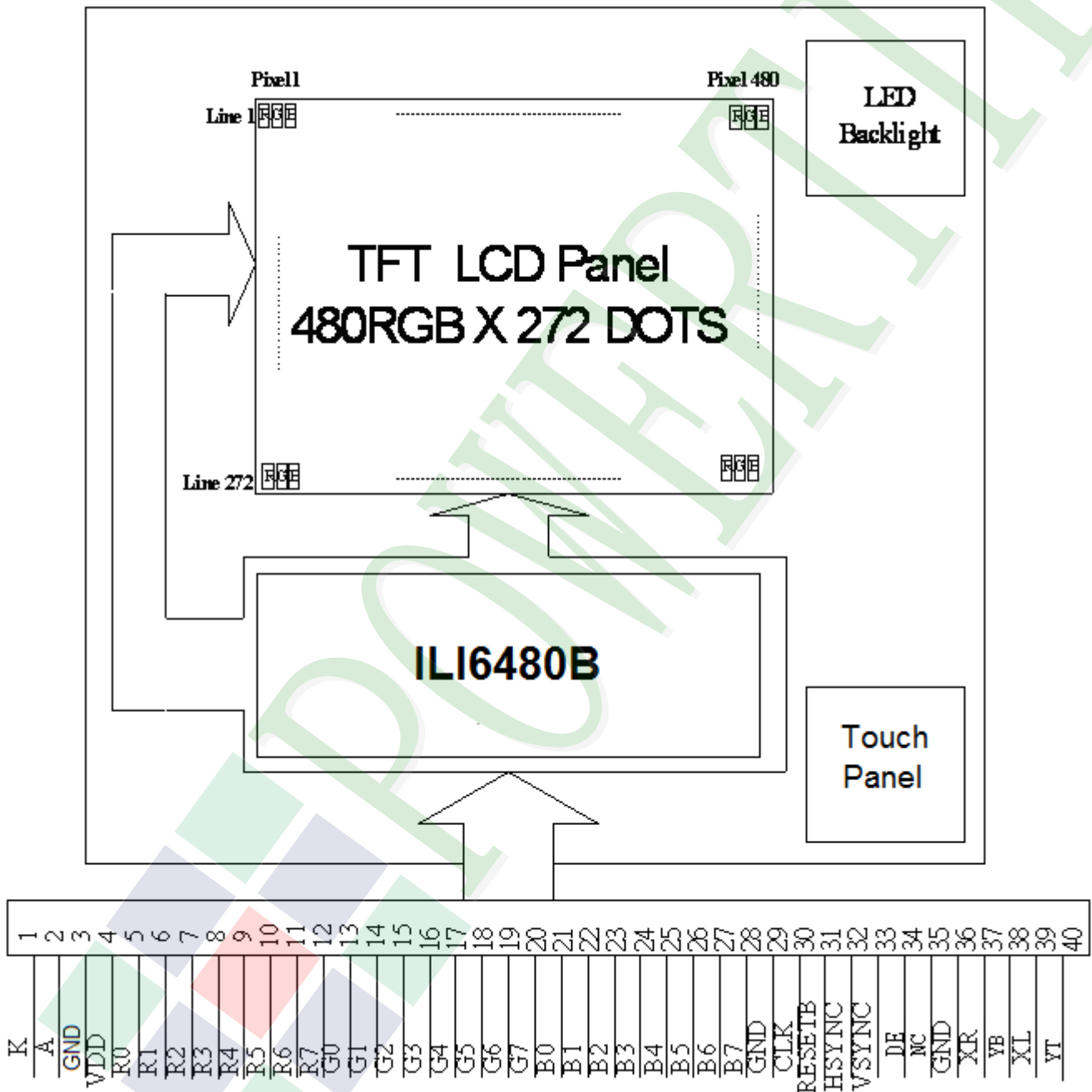Area(d)：Non-Active area

The area does not activate even if pressed.

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

Pin No.	Symbol	Function
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	Touch Panel control pin. X Right Side.
38	YB	Touch Panel control pin. Y Down Side.
39	XL	Touch Panel control pin. X Left Side.
40	YT	Touch Panel control pin. Y Up Side.

2.3 Timing Characteristics

2.3.1 Clock and Data Input Waveforms
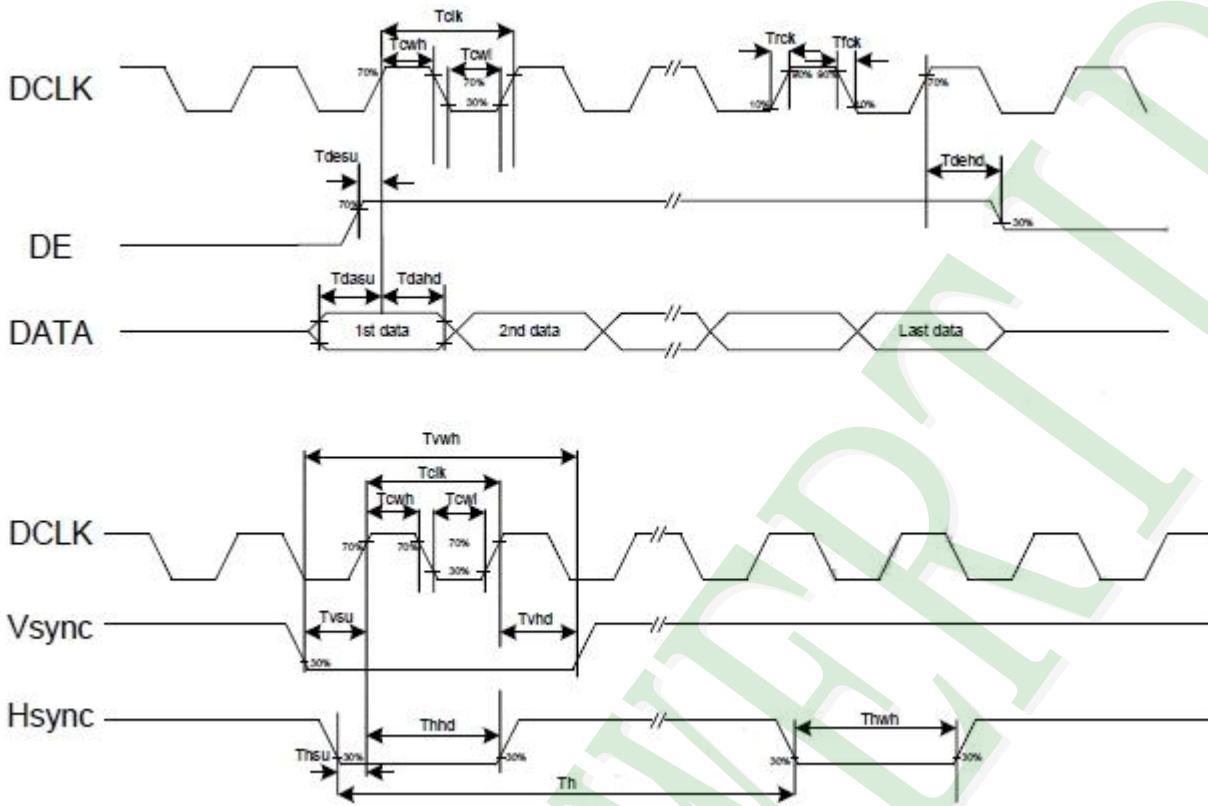
| Parameters	Symbol	Min.	Typ.	Max.	Unit	Conditions
System operation timing						
VDD power source slew time	TPOR	-	-	20	ms	From 0V to 99% VDD
GRB pulse width	tRSTW	10	50	-	us	R=10Kohm, C=1uF
Input Output timing						
DCLK clock time	Tclk	33.3	-	-	ns	DCLK=30MHz
DCLK clock low period	Tcwl	40	-	60	%	
DCLK 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	Tvwh	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
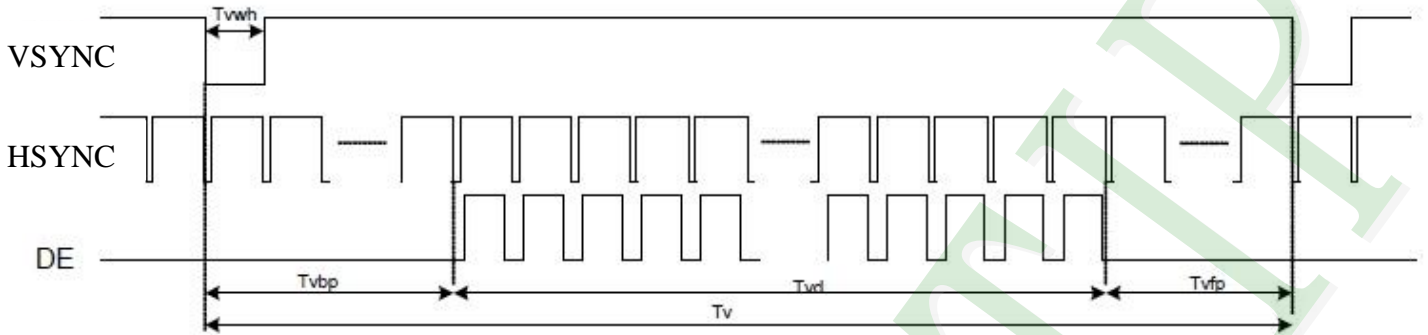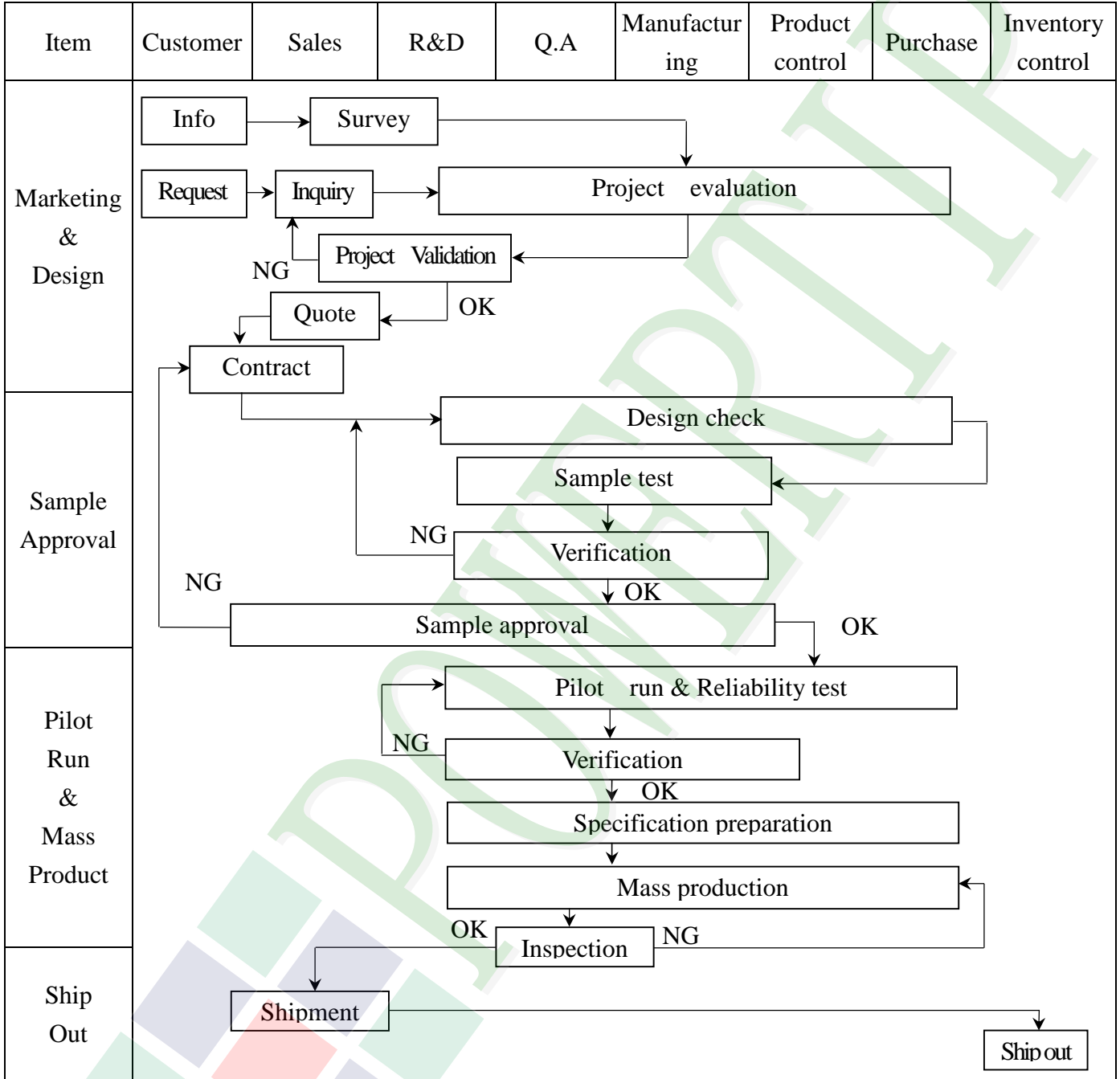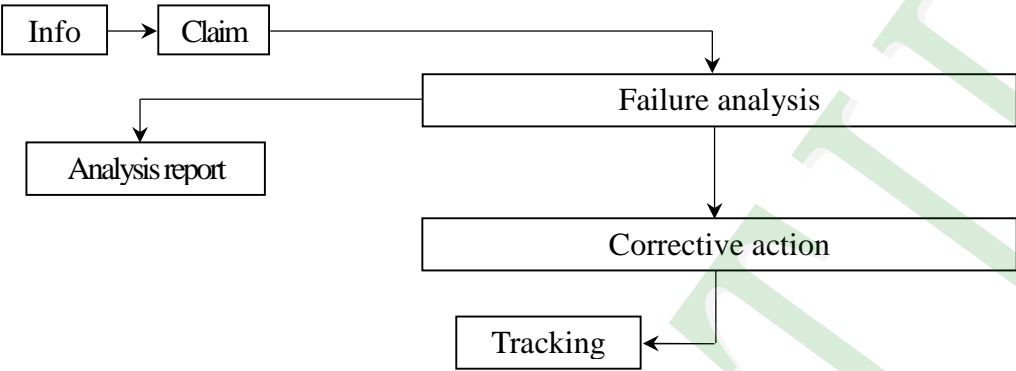

Parallel RGB Mode Data format

(HV Mode)

(DE Mode)
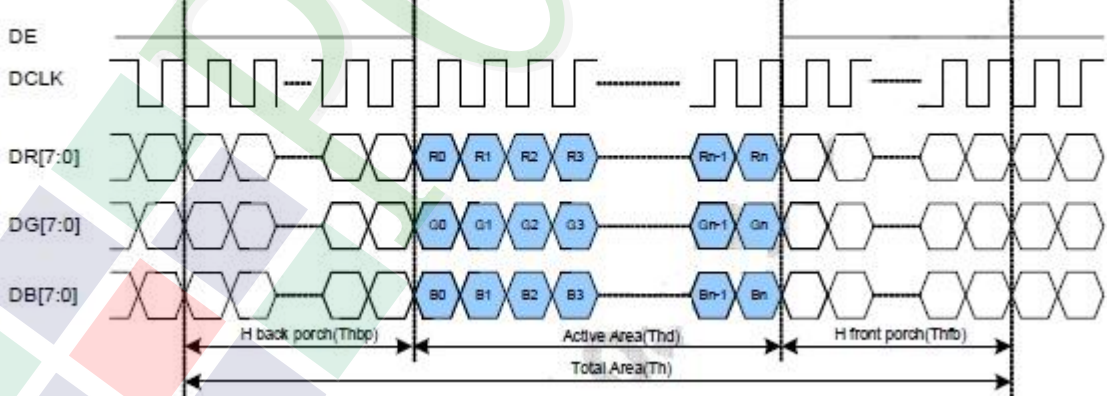
Parallel RGB input timign table

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
Marketing & Design	Info → Survey; Request → Inquiry	Project evaluation; Project Validation (NG/OK); Quote; Contract						
Sample Approval		Design check; Sample test; Verification (NG/OK); Sample approval						
Pilot Run & Mass Product		Pilot run & Reliability test; Verification (NG/OK); Specification preparation; Mass production; Inspection (OK/NG)						
Ship Out		Shipment; Ship out						

Item	Customer	Sales	R&D	Q.A	Manufactu ring	Product control	Purchase	Inventory control
Sales Service	Info → Claim → Failure analysis → Analysis report; Failure analysis → Corrective action → Tracking							
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，and distance of view must be at 30 cm.

　　(2). The test direction is base on about around 45° of vertical line.
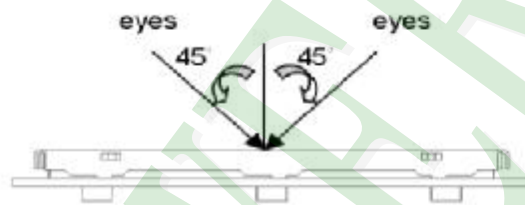
　　(3). Definition of area.
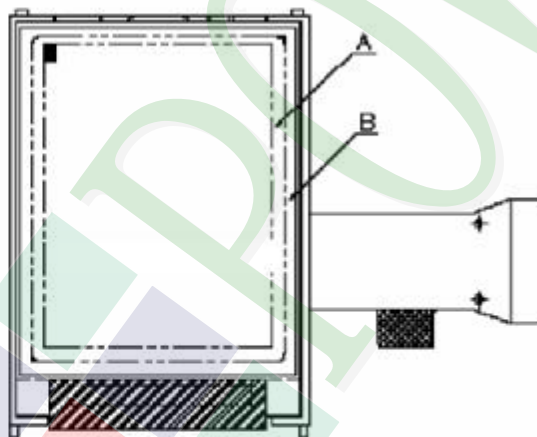
A area : viewing area

B area : Outside of viewing area

　　(4). Standard of inspection： (Unit：mm)
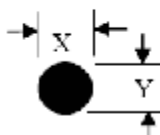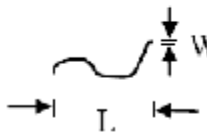
◆Specification For TFT-LCD Module 3.5″ ~10″ : (Ver.B01)

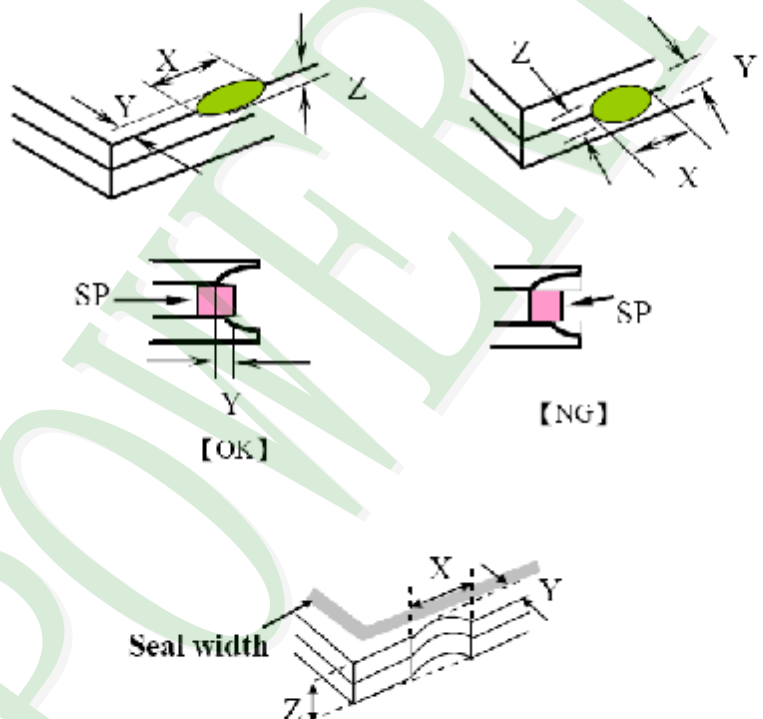| NO	Item	Criterion	Level
01	Product condition	1.1 The part number is inconsistent with work order of production.	Major
		1.2 Mixed product types.	Major
		1.3 Assembled in inverse direction.	Major
02	Quantity	2.1 The quantity is inconsistent with work order of production.	Major
03	Outline dimension	3.1 Product dimension and structure must conform to structure diagram.	Major
		4.1 Missing line character and icon.	Major
04	Electrical Testing	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
05	Dot defect (Bright dot、Dark dot) On -display	<table><tr><td colspan="2">Dot Defect</td><td>Item</td><td>Acceptance (Q'ty)</td></tr><tr><td></td><td></td><td>Bright Dot</td><td>≦ 4</td></tr><tr><td></td><td></td><td>Dark Dot</td><td>≦ 5</td></tr><tr><td></td><td></td><td>Joint Dot</td><td>≦ 3</td></tr><tr><td></td><td></td><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 $\geqq 5$ mm.	Minor

NO	Item	Criterion	Level
06	Black or white dot、scratch、contamination Round type $\Phi=(x+y)/2$ Line type 	**6.1 Round type (Non-display or display) :** 	Dimension (diameter：Φ)	Acceptance (Q'ty)	
	A area	B area
Φ ≦ 0.25	Ignore	
0.25 ＜ Φ ≦ 0.50	5	Ignore
Φ ＞ 0.50	0	
Total	5	| **6.2 Line type(Non-display or display) :** | Length (L)	Width (W)	Acceptance (Q'ty)	
		A area	B area
---	W ≦ 0.03	Ignore	
L ≦10.0	0.03 ＜ W ≦ 0.05	4	
L ≦5.0	0.05 ＜ W ≦ 0.10	2	Ignore
---	W ＞0.10	As round type	
	Total	5			Minor
07	Polarizer Bubble		Dimension (diameter：Φ)	Acceptance (Q'ty)	
	A area	B area
Φ ≦ 0.25	Ignore	
0.25 ＜ Φ ≦ 0.50	4	
0.50 ＜ Φ ≦ 0.80	1	Ignore
Φ ＞ 0.80	0	
Total	5			Minor

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: 【OK】 【NG】 	Minor

	X	Y	Z
	$\leqq a$	Crack can't enter viewing area	$\leqq 1/2\ t$
	$\leqq a$	Crack can't exceed the half of SP width.	$1/2\ t < Z \leqq 2\ t$
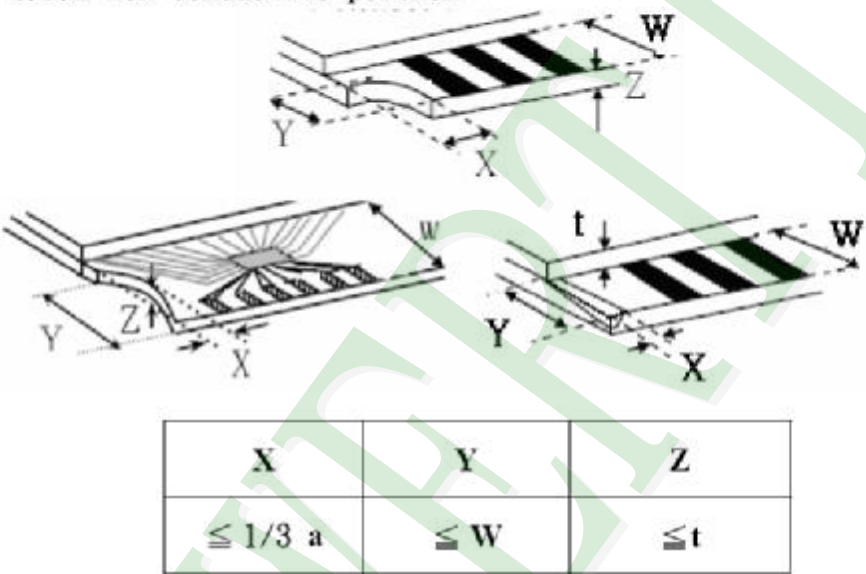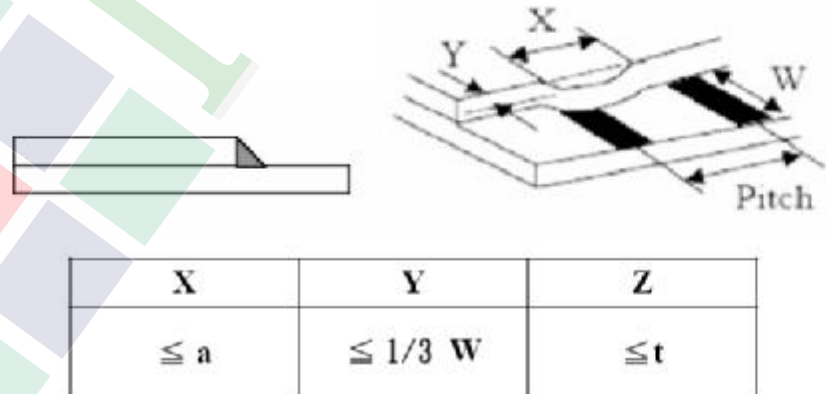
NO	Item	Criterion	Level
08	The crack of glass	**Symbols :** X : The length of crack Y : The width of crack. Z : The thickness of crack W : terminal length t : The thickness of glass a : LCD side length 8.1.2 Corner crack : 8.2 Protrusion over terminal : 8.2.1 Chip on electrode pad : 	Minor

8.1.2 Corner crack table:

X	Y	Z
≦1/5 a	Crack can't enter viewing area	Z ≦ 1/2 t
≦1/5 a	Crack can't exceed the half of SP width.	1/2 t < Z ≦ 2 t

8.2.1 Chip on electrode pad table:

	X	Y	Z
Front	≦ a	≦ 1/2 W	≦ t
Back	≦ a	≦ W	≦ 1/2 t

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 8.2.2 Non-conductive portion : | X	Y	Z
---	---	---
≤ 1/3 a	≤ W	≤ t | ⊙ 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 : | X	Y	Z
---	---	---
≤ a	≤ 1/3 W	≤ t		Minor

◆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 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)

NO.	TEST ITEM	TEST CONDITION
1	**High Temperature Storage Test**	**Keep in +80 ±2℃ 96 hrs** **Surrounding temperature, then storage at normal condition 4hrs.**
2	**Low Temperature Storage Test**	**Keep in -30 ±2℃ 96 hrs** **Surrounding temperature, then storage at normal condition 4hrs.**
3	**High Temperature / High Humidity Storage Test**	**Keep in +60℃ / 90% R.H duration for 96 hrs** **Surrounding temperature, then storage at normal condition 4hrs.**
4	**Temperature Cycling Storage Test**	**-30℃ → +25℃ → +80℃ → +25℃** **(30mins) (5mins) (30mins) (5mins)** **10 Cycle** **Surrounding temperature, then storage at normal condition 4hrs.**
5	**ESD Test**	**Air Discharge:** / **Contact Discharge:** **Apply 2 KV with 10 times** / **Apply 250 V with 10 times** **Discharge for each polarity +/-** / **discharge for each polarity +/-** 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%)**
6	**Vibration Test (Packaged)**	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**
7	**Drop Test (Packaged)**	See table below

Drop Test (Packaged):

Packing Weight (Kg)	Drop Height (cm)
0 ～ 45.4	122
45.4 ～ 90.8	76
90.8 ～ 454	61
Over 454	46

Drop Direction :※1 corner / 3 edges / 6 sides each 1time

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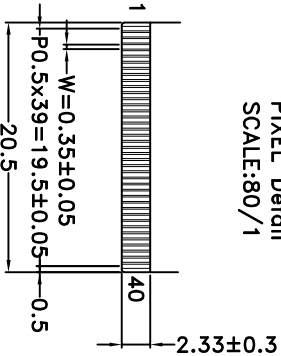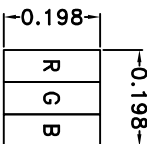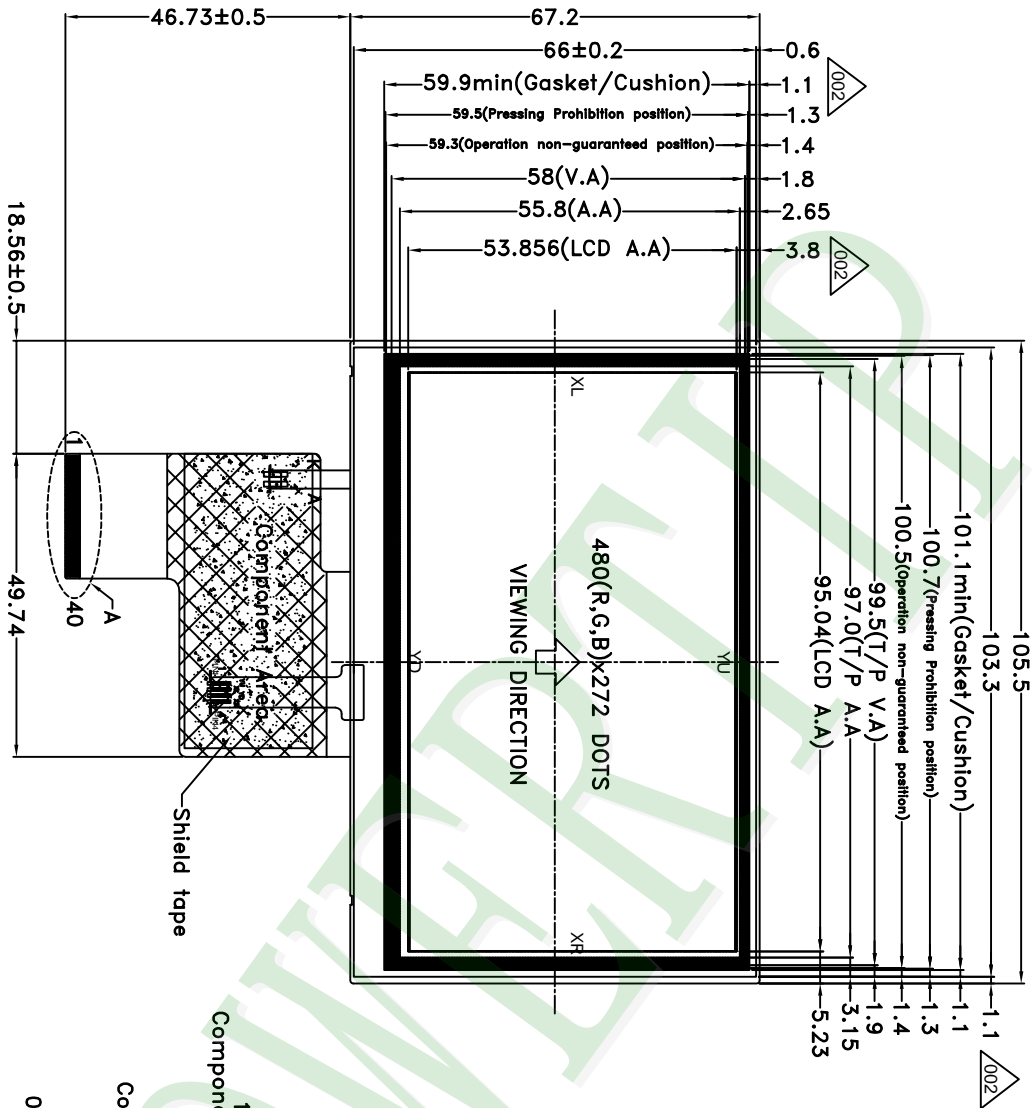
5.2.1   Avoid any strong mechanical shock which can break the glass.

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

5.3 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.

Dimensions (top view):
- 105.5
- 103.3
- 101.1min(Gasket/Cushion)
- 100.7(Pressing Prohibition position)
- 100.5(Operation non-guaranteed position)
- 99.5(T/P V.A)
- 97.0(T/P A.A)
- 95.04(LCD A.A)
- 67.2
- 66±0.2
- 59.9min(Gasket/Cushion)
- 59.5(Pressing Prohibition position)
- 59.3(Operation non-guaranteed position)
- 58(V.A)
- 55.8(A.A)
- 53.856(LCD A.A)
- 46.73±0.5
- 18.56±0.5
- 49.74
- 0.6 / 1.1 / 1.3 / 1.4 / 1.8 / 2.65 / 3.8
- 1.1 / 1.3 / 1.4 / 1.9 / 3.15 / 5.23
- 40

480(R,G,B)x272 DOTS
VIEWING DIRECTION
XL YU YD XR

Shield tape
Component Area

Side view:
- 1.2Max Component Area
- 0.3±0.05
- 4.5±0.5
- Conductor
- Stiffener
- 5.05max.
- 3.6±0.2

Detail A Scale: 2/1
- W=0.35±0.05
- P0.5x39=19.5±0.05
- 20.5
- 0.5
- 2.33±0.3
- 1 ... 40

PIXEL Detail SCALE:80/1
- 0.198
- 0.198
- R G B

NOTES:
1. LCD TYPE: a-Si TFT
2. LCD DISPLAY:POSITIVE/TRANSMISSIVE
3. VIEW DIRECTION: 6 O'CLOCK
4. The tolerance unless classified ±0.3mm
5. FPC suggested connector :
   08 6262 040 340 846+(KYOCERA) or compatible
6. ☒ Component Area & Unbending Area

REV		REV BY	REVISER	DATE
001	NEW DRAWING		Air	2016/03/15
002	MODIFY A.A DIM.		Air	2017/02/15
003				
004				
005				
006				
007				

Ver.001		LCM包裝規格書	Approve	Check	Contact
Documents NO.	JPKG-PH480272T009-IBB	LCM Packaging Specifications (For Tray)	Ryan	Terry	Air

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-IBB	105.5 X 67.2 X 5.05	0.0653	120	7.836
2	多層薄膜(1)POF	OTFILM0BA03ABA	19"X350X0.015	——	6	——
3	TRAY 盤 (2)Tray	TYPH48027201BA	352 X 260 X 12.8	0.1	36	3.6
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) :　13.58　Kg±10%

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

(1)LCM quantity per box : no per tray　　4　　x no of tray　　5　　=　20

(2)Total LCM quantity in carton : quantity per box　20　　x no of boxes　　6　　=　120

Use empty tray
空 盤

+

Put products into the tray

Tray stacking

A
B

(1)多層薄膜 POF

(2)TRAY 盤 Tray

(4)保利龍板 Polylon board

(4)保利龍板 Polylon board

(3)內盒 Product Box

(5)外紙箱 Carton

特 記 事 項 (REMARK)

A

斜角　　　Detail B

Tray 2
Tray 1

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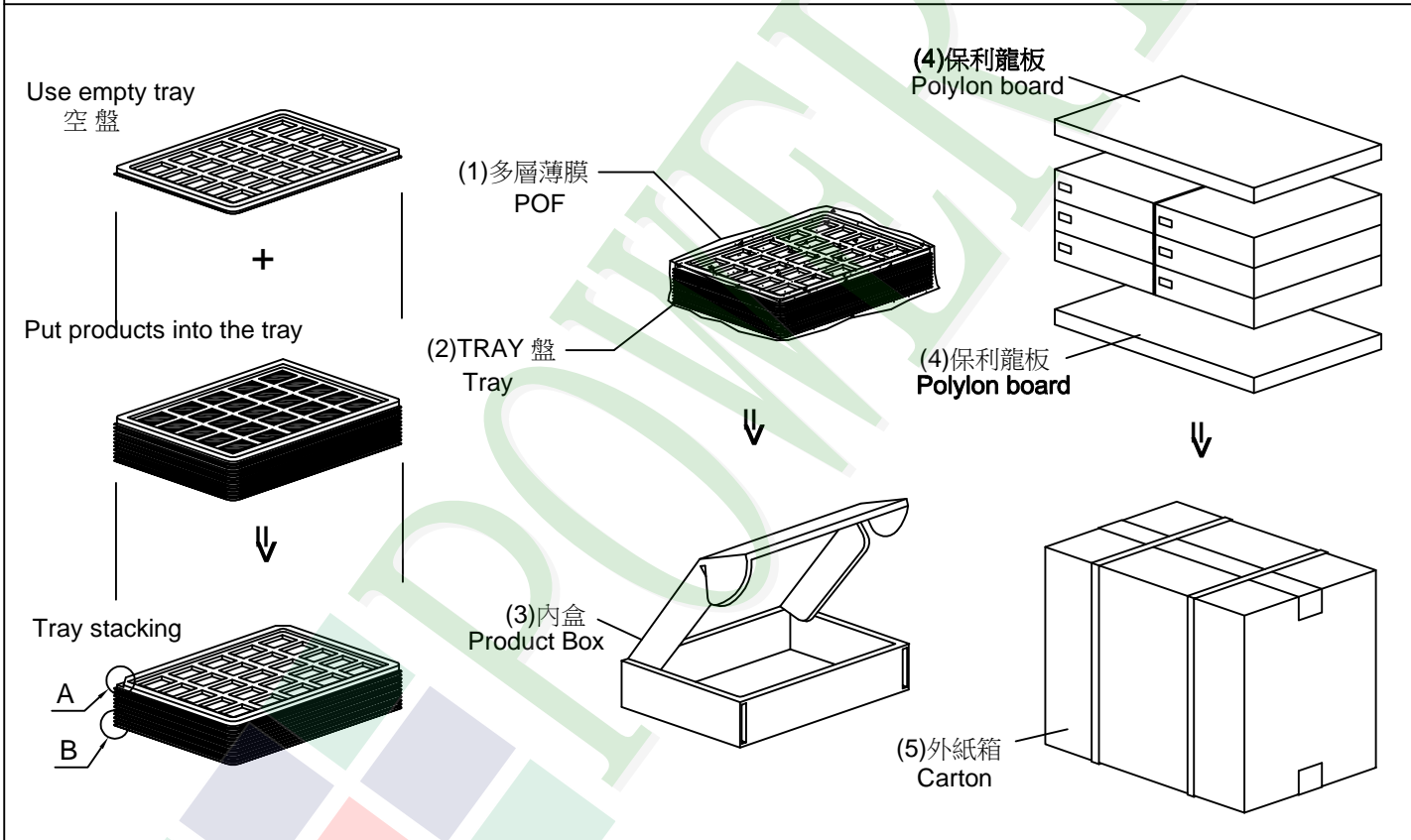
4.TRAY盤相疊時,需旋轉180度,請詳見B視圖
Rotate tray 180 degrees and place on top of stack.
Check the tray stack using Fig. B.

POWERTIP TECH. CORP.