POWERTIP TECH. CORP.

SPECIFICATIONS

CUSTOMER	:	
SAMPLE CODE	:	SH102600T013-ZFC04
MASS PRODUCTION CODE	:	PH102600T013-ZFC04
SAMPLE VERSION	:	01
SPECIFICATIONS EDITION	:	003
DRAWING NO. (Ver.)	:	LMD-PH102600T013-ZFC04 (Ver.001)
PACKAGING NO. (Ver.)	:	PKG-PH102600T013-ZFC04 (Ver.001)

Customer Approved

Date:

Approved	Checked	Designer
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POWERTIP
2022.11.03
TWRD APR
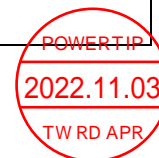
☐ Preliminary specification for design input

■ Specification for sample approval

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History of Version

Date (mm / dd / yyyy)	Ver.	Edi.	Description	Page	Design by
10/13/2021	01	001	New Drawing	-	Yuan
12/16/2021	01	002	First Sample	-	Yuan
11/02/2022	01	003	Modify Life Time from 20000hrs to 50000Hrs	9	Yuan

Contents

1. SPECIFICATIONS

1.1 Features

Item	Standard Value
Display Type	1024 * 3 (RGB) * 600 Dots
LCD Type	Full Viewing Angle , Normally Black , Transmissive type
Screen size(inch)	7.0 inch
Color configuration	RGB-Strip
Backlight Type	LED B/L
Interface	LVDS Interface
Other(controller/driver IC)	ST5021-G3-1 + ST5651CB-G3-1 (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

1.2 Mechanical Specifications

Item	Standard Value	Unit
Outline Dimension	192.96(W) * 121.4(L) * 4.7(H)	mm

LCD panel

Item	Standard Value	Unit
Viewing Area	155.01(W) x 86.92 (L)	mm
Active Area	154.214 (W) * 85.92 (L)	mm

Note : For detailed information please refer to LCM drawing

1.3 Absolute Maximum Ratings

Module

Item	Symbol	Condition	Min.	Max.	Unit
Power Voltage	V_{DD}	-	-0.5	5	V
	AV_{DD}	-	-0.5	15	V
	VGH	-	-0.3	40	V
	VGL	-	-20	0.3	V
Operating Temperature	T_{OP} (Ts)	Note 1	-20	70	°C
Storage Temperature	T_{ST} (Ta)	Note 2	-30	80	°C

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.

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

Note 2：Ta is the ambient temperature of samples.

1.4 DC Electrical Characteristics

Module GND = 0V, Ta = 25°C

Item	Symbol	Condition	Min.	Typ.	Max.	Unit	Remark
	V_{DD}	-	2.5	3.3	3.6	V	
	AV_{DD}	-	11.9	12.1	12.3	V	
	VGH	-	16.8	17.0	17.2	V	
	VGL	-	-7.2	-7.0	-6.8	V	
Input signal Voltage	VCOM	-	4.0	4.2	4.4	V	
Input Signal Voltage	VIH	-	$0.7DV_{DD}$	-	DV_{DD}	V	
	VIL	-	0	-	$0.3 DV_{DD}$	V	
Supply Current	I_{DD}	DV_{DD} = 3.3 V Pattern= Red	-	15	25	mA	Note1
	I_{ADD}	AV_{DD}=12.1V Pattern= Red	-	30	40	mA	
	I_{GH}	V_{GH}=17.0V Pattern= Red	-	0.5	1	mA	
	I_{GL}	VGL=-7.0V Pattern= Red	-	0.5	1	mA	

Note1:Maximum current display

1.5 Optical Characteristics

TFT LCD Module   VDD = 3.3 V, Ta=25°C

Item		Symbol	Condition	Min.	Typ.	Max.	unit	
Response time		Tr + Tf	Ta = 25°C θX, θY = 0°	-	32	48	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		650	800	-	-	Note 3
Color of CIE Coordinate (With B/L)	White	X	Ta = 25°C θX , θY = 0°	0.24	0.29	0.34	-	Note1
		Y		0.26	0.31	0.36		
	Red	X		0.54	0.59	0.64		
		Y		0.31	0.36	0.41		
	Green	X		0.27	0.32	0.37		
		Y		0.51	0.56	0.61		
	Blue	X		0.08	0.13	0.18		
		Y		0.03	0.08	0.13		
Average Brightness Pattern=white display (With LCD & CTP)*1		IV	IF=200 mA	365	435	-	cd/m^2	Note1
Uniformity (With LCD& CTP)*2		△B	IF=200 mA	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
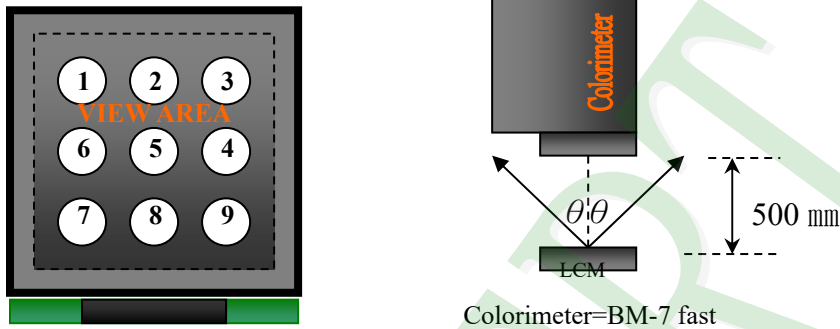
To be measured at the center area of panel with a viewing cone of 1° by Topcon luminance meter BM-7, after 10 minutes operation (module)

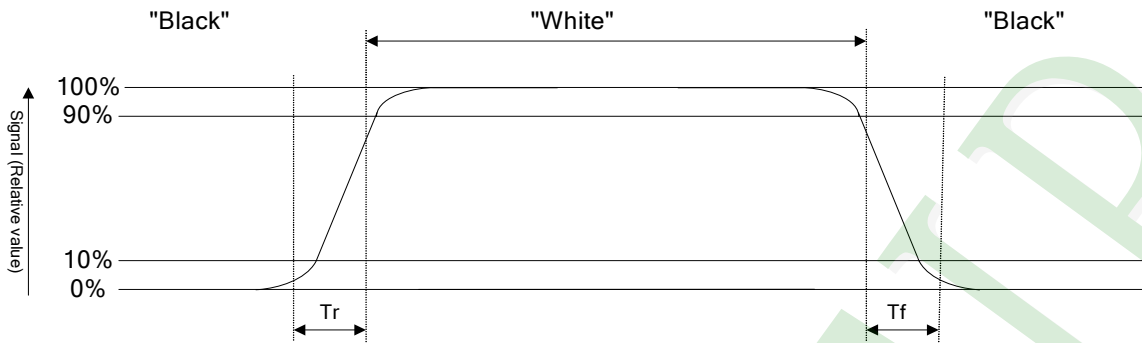Note2: Definition of response time:

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.
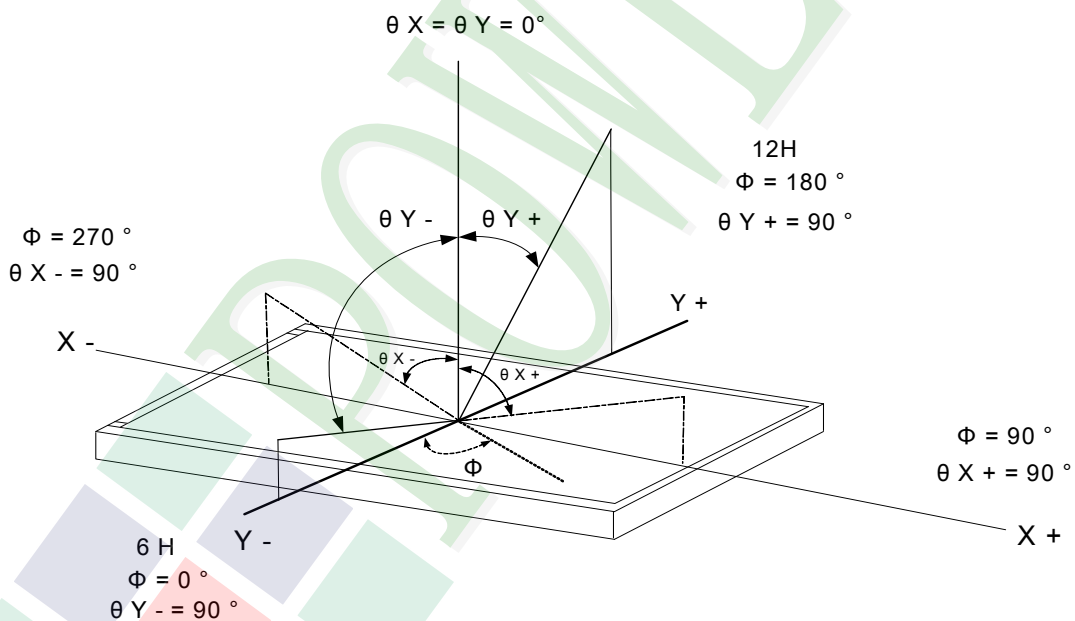
Refer to figure as below:
Normally White

Normally Black

Note3: Definition of contrast ratio:

Contrast ratio is calculated with the following formula

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

Note4: Definition of viewing angle:

Refer to figure as below:

Note5: Applying with spectrophotometer in the condition of 400 to 700nm, 10nm/each; in accordance with JIS Z 8701 2 degree viewing XYZ system, measuring the reflective rate of 5 degree

1.6 Backlight Characteristics

Maximum Ratings

Item	Symbol	Conditions	Min.	Max.	Unit
LED Forward Current	IF	Ta =25℃	-	300	mA
LED Reverse Voltage	VR	Ta =25℃	-	5	V
Power Dissipation	PD	Ta =25℃	-	3.06	W

Backlight Characteristics

Item	Symbol	Conditions	Min.	Typ.	Max.	Unit
Forward Voltage	VF		8.4	9.0	10.2	V
Average Brightness (Without LCD)	IV		10000	12000	14000	cd/m^2
CIE Color Coordinate (Without LCD)	X	IF=200mA	0.24	0.27	0.30	-
	Y		0.22	0.25	0.28	
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
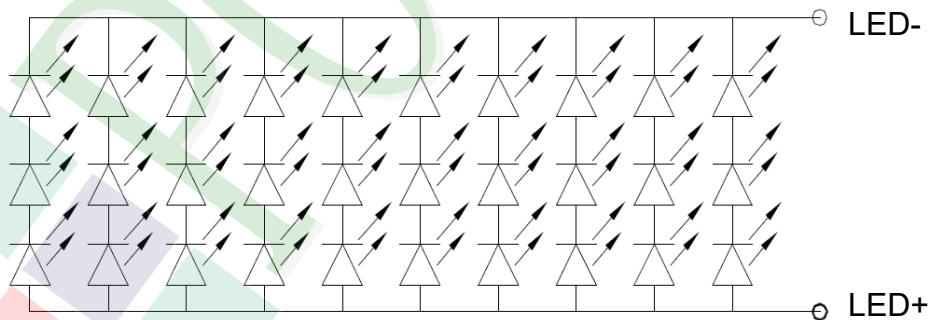
Other Description

Item	Conditions	Description
Life Time	Ta =25℃ IF=200mA	50000 hrs

1.7 Touch Panel Characteristics

Features

Item	Standard Value
Touch Panel Size	7.0"
Touch type	True Multi-Touch Capacitive Touch Panel
Input Method	True Multi-touch with up to 5 Points of Absolution X and Y Coordinates
Output Interface	I^{2}C
IC	ICNT8952

I^{2}C Address

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

Bit 0: 0 for Write / 1 for Read

Absolute Maximum Ratings

Item	Symbol	Condition	Min.	Max.	Unit
Supply voltage	TPVDD	-	-0.3	3.6	V
Operating Temperature	T$_{OP}$	Non condensing	-20	70	°C
Storage Temperature	T$_{ST}$	Non condensing	-30	80	°C

DC Electrical Characteristics

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Supply voltage	TPVDD	25°C	-	3.3	-	V
Input high-level voltage	VIH	--	0.7 x TPVDD	-	TPVDD	V
Input low -level voltage	VIL	--	-0.3	-	0.3 x TPVDD	V
Output high -level voltage	VOH	--	0.7 x TPVDD	-	-	V
Output low -level voltage	VOL	--	-	-	0.3 x TPVDD	V

Optical Characteristics

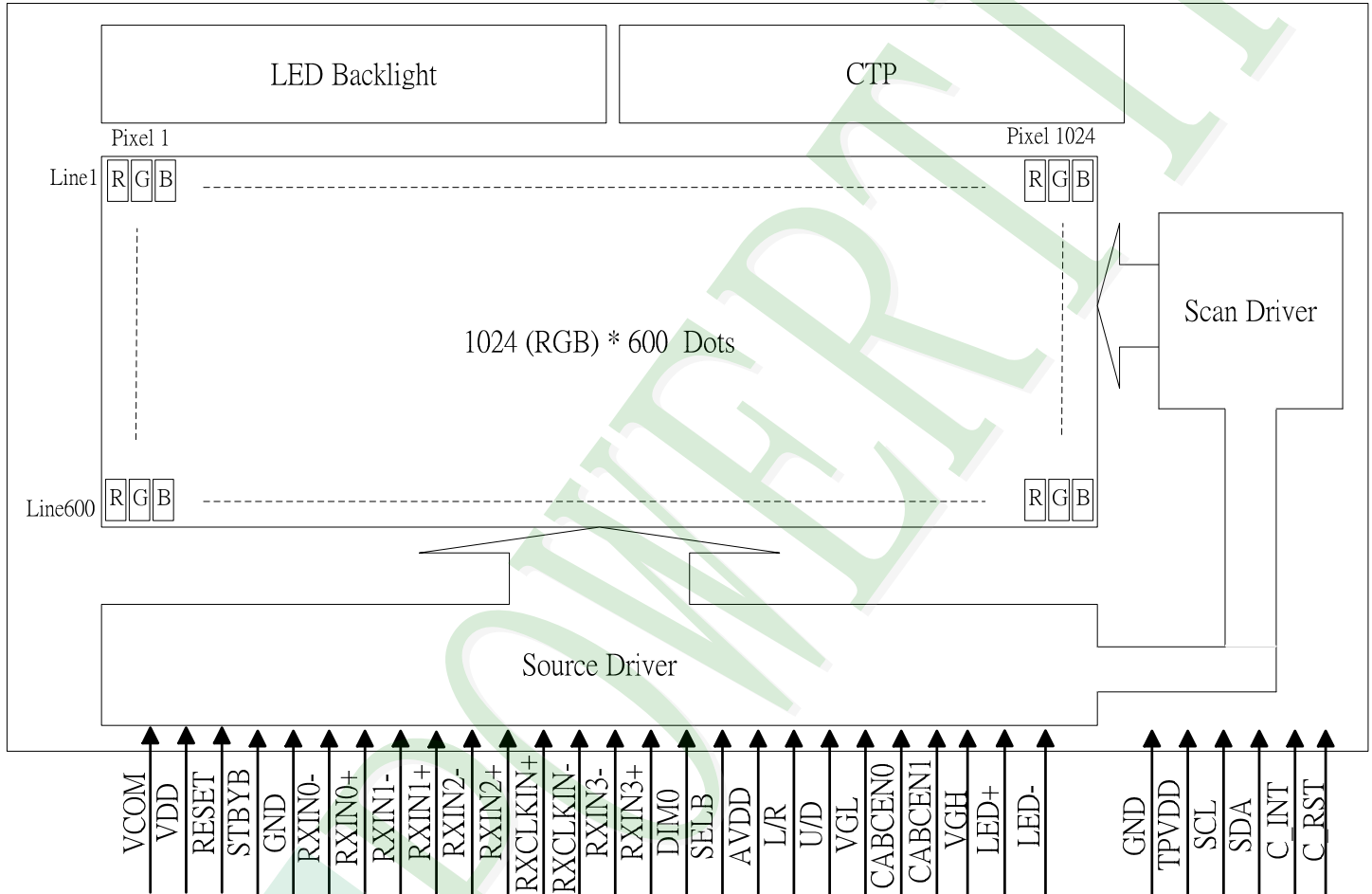| Item	Standard Value	Unit
Total light transmittance	87% or more	-
Hardness	≥6H	-

Note: Not Support Gesture Function

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	VCOM	Common Voltage
2	VDD	Power Voltage for digital circuit
3	VDD	Power Voltage for digital circuit
4	NC	No connection
5	Reset	Global reset pin
6	STBYB	Standby mode, Normally pulled high STBYB ="1", normal operation STBYB ="0", timing controller, source driver will turn off, all output are High-Z
7	GND	Ground
8	RXIN0-	- LVDS differential data input
9	RXIN0+	+ LVDS differential data input
10	GND	Ground
11	RXIN1-	- LVDS differential data input
12	RXIN1+	+ LVDS differential data input
13	GND	Ground
14	RXIN2-	- LVDS differential data input
15	RXIN2+	+ LVDS differential data input
16	GND	Ground
17	RXCLKIN-	- LVDS differential clock input
18	RXCLKIN+	+ LVDS differential clock input
19	GND	Ground
20	RXIN3-	- LVDS differential data input
21	RXIN3+	+ LVDS differential data input
22	GND	Ground
23	NC	No Connection
24	NC	No Connection
25	GND	Ground

Pin No.	Symbol	Function
26	NC	No Connection
27	DIM0	Backlight CABC controller signal output DIMO=L Turn off external backlight controller DIMO=H Logical control signal to turn on external backlight controller
28	SELB	6bit/8bit mode select If LVDS input data is 6 bits ,SELB must be set to High; If LVDS input data is 8 bits ,SELB must be set to Low.
29	AVDD	Power for Analog Circuit
30	GND	Ground
31	LED-	LED Cathode
32	LED-	LED Cathode
33	L/R	Horizontal inversion When L/R="0", set right to left scan direction. When L/R="1", set left to right scan direction.
34	U/D	Vertical inversion When U/D="0", set top to bottom scan direction. When U/D="1", set bottom to top scan direction.
35	VGL	Gate OFF Voltage
36	CABCEN1	CABC H/W enable Note:1
37	CABCEN0	CABC H/W enable Note:1
38	VGH	Gate ON Voltage
39	LED+	LED Anode
40	LED+	LED Anode

Note1:

CABCEN1	CABCEN0	DESCRIPTION
L	L	CABC OFF
L	H	User interface Image
H	L	Still Picture
H	H	Moving Image

Capacitive Touch Panel (CTP) Interface

Pin No.	Symbol	Function
1	GND	Ground.
2	TPVDD	Power.
3	SCL	I²C Clock.
4	SDA	I²C Data.
5	C_INT	The interrupt from the CTP to the Host H: CTP interrupt not requested L: CTP request interrupt
6	C_RST	RESET.

2.3 Timing Characteristics

DE mode

Parameter	Symbol	Value			Unit
		Min.	Typ.	Max.	
CLKIN frequency@ Frame rate = 60Hz	fclk	40.8	51.2	67.2	MHz
Horizontal display area	thd		1024		CLKIN
1 Horizontal Line	th	1114	1344	1400	
HSD Blanking	thb+thfp	90	320	376	
Vertical display area	tvd		600		H
1 vertical Line	tv	610	635	800	
VSD Blankking	tvb+tvfp	10	35	200	

SYNC mode

Horizontal input timing

Parameter	Symbol	Value			Uint
		Min.	Typ.	Max.	
CLKIN frequency@ Frame rate = 60Hz	fclk	44.9	51.2	63	MHz
Horizontal display area	thd		1024		CLKIN
1 Horizontal Line	th	1200	1344	1400	
HSD pulse width	thpw	1	-	140	
HSD Blanking	thb		160		
HSD Front Porch	thfp	16	160	216	

Vertical input timing

Parameter	Symbol	Value			Uint
		Min.	Typ.	Max.	
Vertical display area	tvd		600		H
VSD period time	tv	624	635	750	
VSD pulse width	tvpw	1	-	20	
VSD Blanking	tvb		23		
VSD Front Porch	tvfp	1	12	127	

Data Input Format For LVDS

6 bit LVDS input

IND0	R0	G0	R5	R4	R3	R2	R1	R0	G0	R5	R4
IND1	G1	B1	B0	G5	G4	G3	G2	G1	B1	B0	G5
IND2	B2	DE	VS	HS	B5	B4	B3	B2	DE	VS	HS

8 bit LVDS input

IND0	R0	G0	R5	R4	R3	R2	R1	R0	G0	R5	R4
IND1	G1	B1	B0	G5	G4	G3	G2	G1	B1	B0	G5
IND2	B2	DE	VS	HS	B5	B4	B3	B2	DE	VS	HS
IND3	R6	-	B7	B6	G7	G6	R7	R6	-	B7	B6
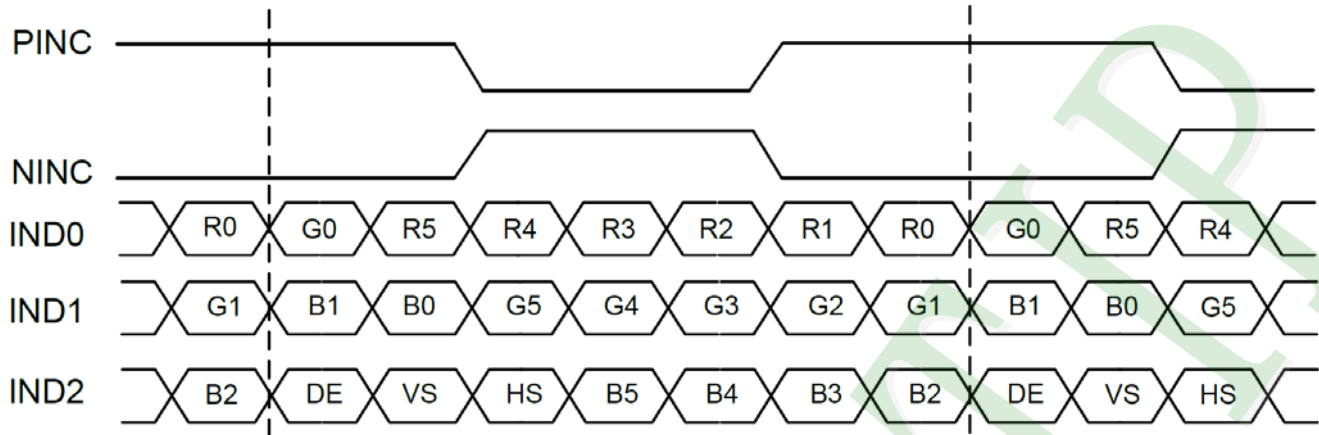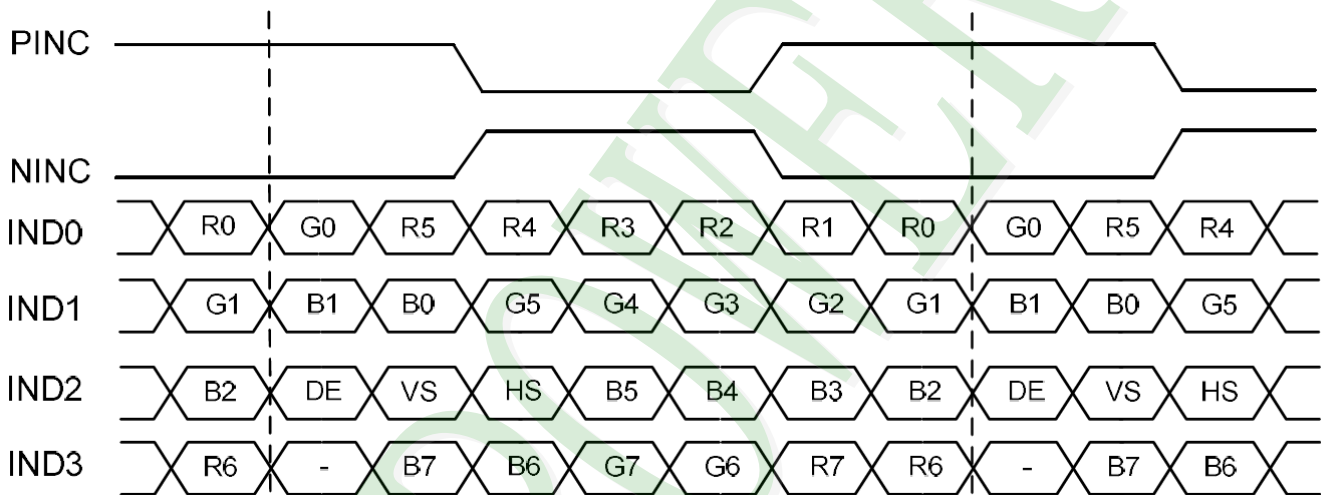
SDRRS (Seamless Display Refresh Rate Switching) Timing Diagram

When showing the still picture , it is accept to reduce the refresh rate from 60Hz to low refresh rate(For example 40Hz). The purpose is mainly for power saving. INTEL defined a timing chart switch between different refresh rates. Following this timing chart , the switch between different refresh rates is seamless for end user.

T1-Min delay from start of vert blank to start of timing change: 2 lines(HSD periods)
T2-Max delay for clock to transition to new frequency: 100us
T3-Max receiver lock delay from stable clock: Display specific(TBD)
T4-Max period during which panel maintains display (T2+T3): Display specific(TBD)
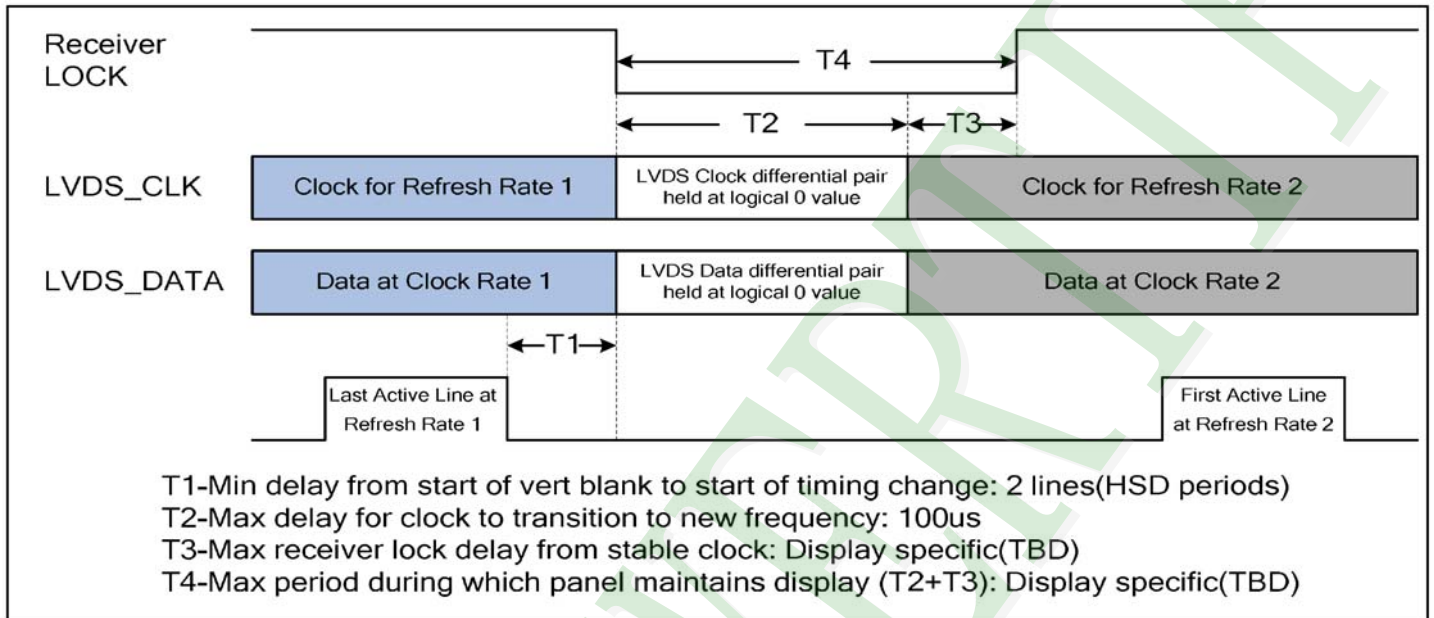
2.4 Power Sequence

2.4.1 Power On/Off Sequence

In order to prevent IC from power on reset fail, the rising time (TPOR) of the digital power supply VDD should be maintained within the given specifications. Refer to "AC Characteristics" for more detail on timing.
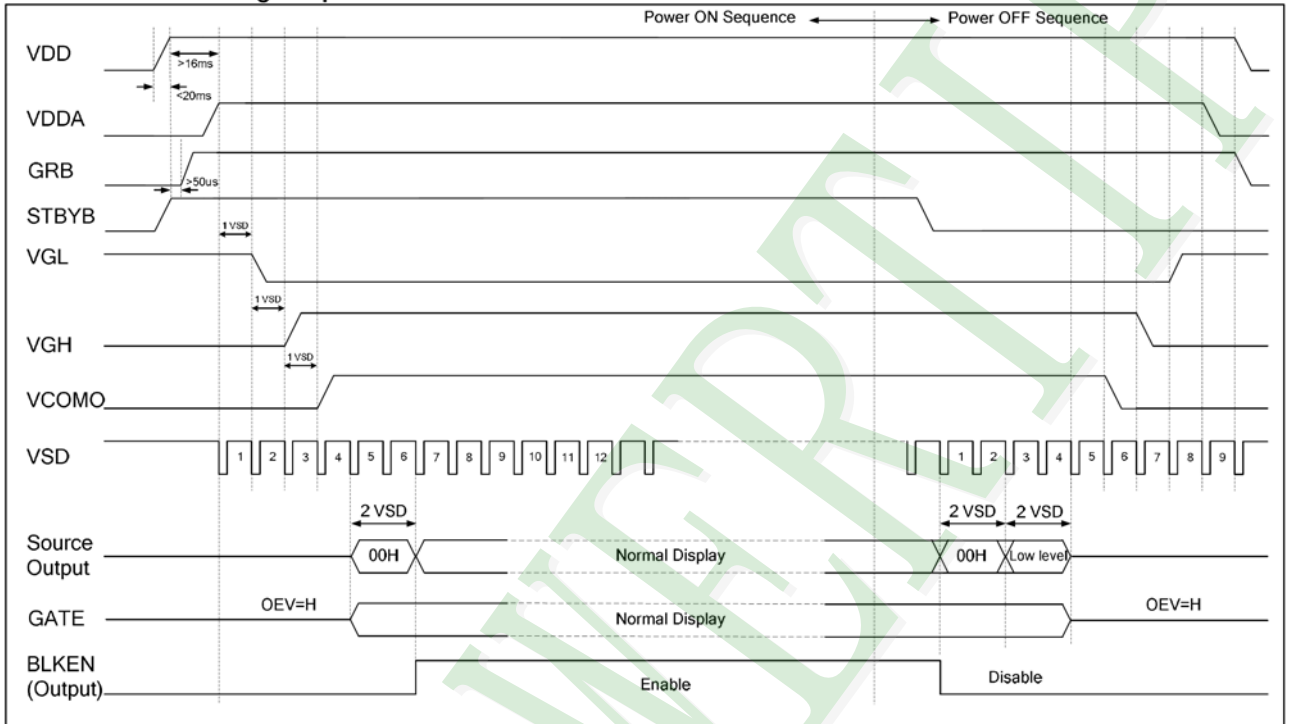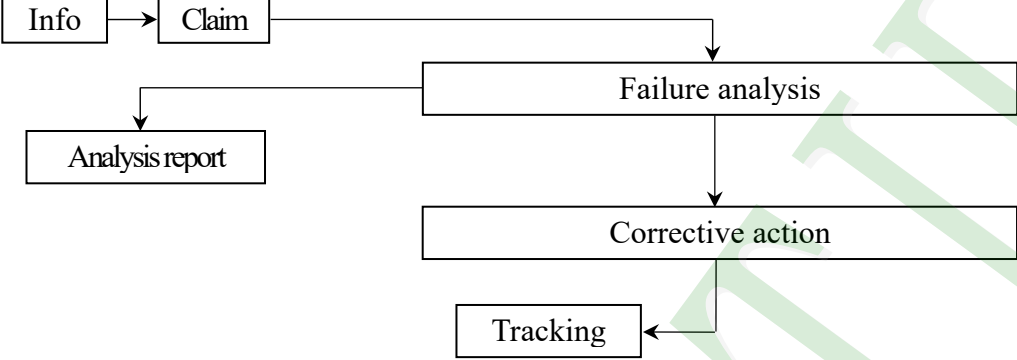
2.4.2 Standby mode Sequence
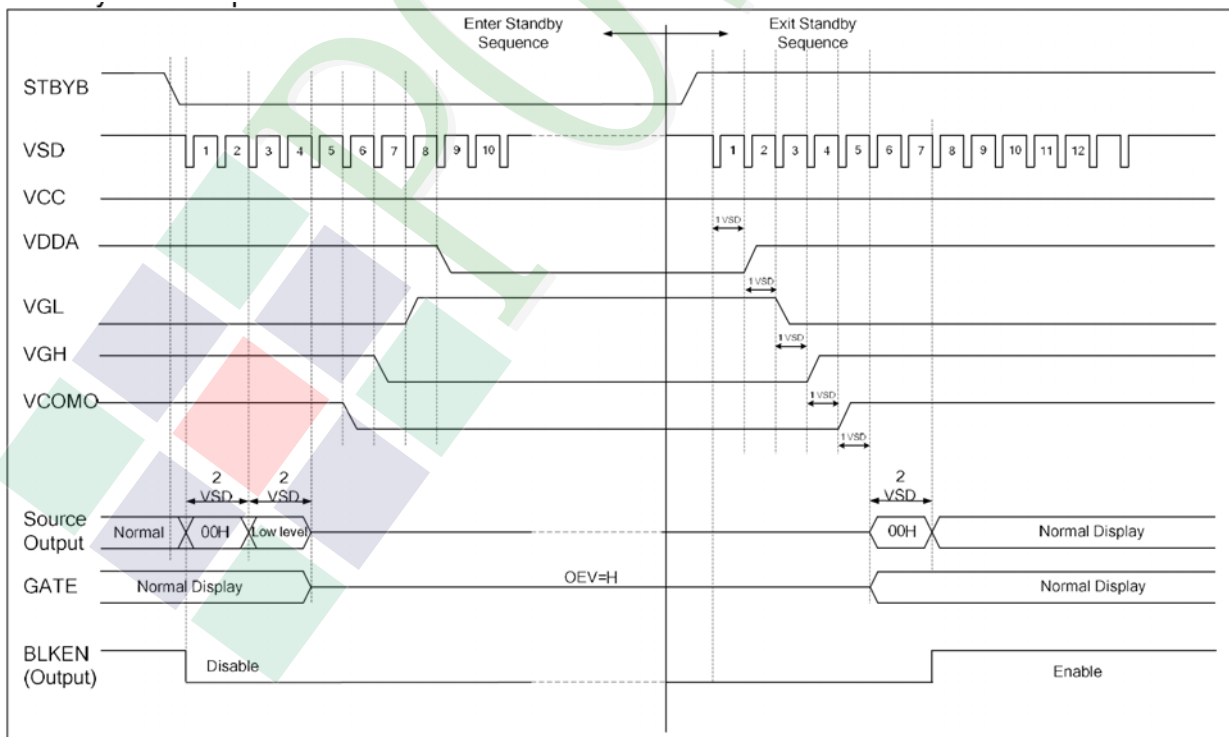
3. QUALITY ASSURANCE SYSTEM

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 — OK

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	Manufact uring	Product control	Purchase	Inventory control
Sales Service								
Q.A Activity	1. ISO 9001 Maintenance Activities 3. Equipment calibration 5. Standardization Management			2. Process improvement proposal 4. Education And Training Activities				

Flow within Sales Service row:

Info → Claim → Failure analysis → Corrective action → Tracking

Analysis report

3.2. Inspection Specification

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

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

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

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

◆OUT Going Defect Level: Sampling.

◆Standard of the product appearance test:

　　a. Manner of appearance test:

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

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

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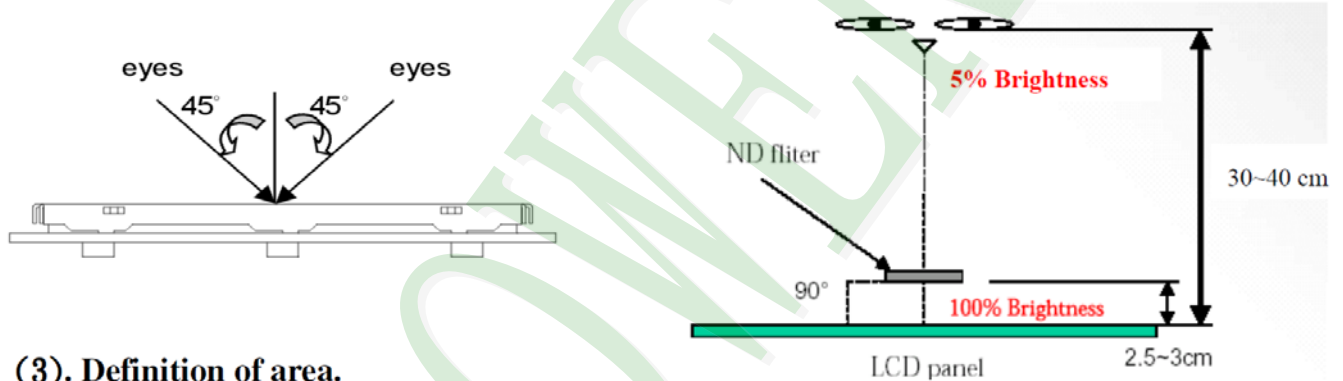
　（3）. Definition of area.
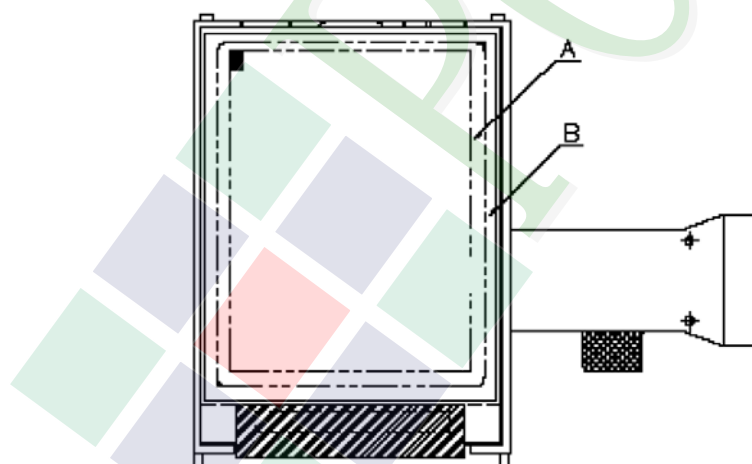
A area: viewing area

B area: Outside of viewing area

　（4）. Standard of inspection：　(Unit：mm)
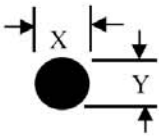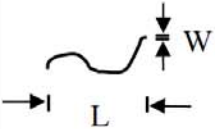
◆Specification For TFT-LCD Module 3.5" ~15" :　　　　　　　　　　　　　(Ver.B01)
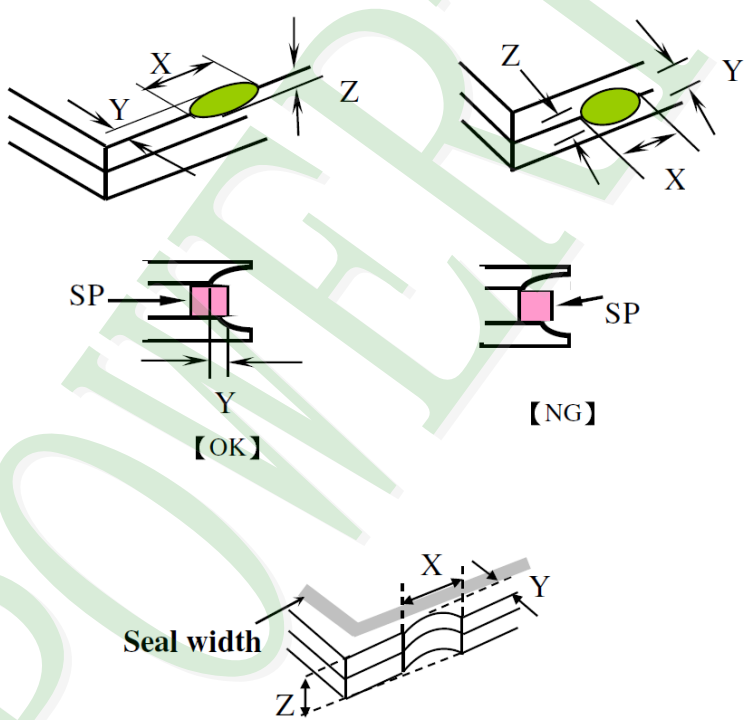
NO	Item	Criterion	Level
01	Product condition	1.1 The part number is inconsistent with work order of production.	Major
		1.2 Mixed product types.	Major
		1.3 Assembled in inverse direction.	Major
02	Quantity	2.1 The quantity is inconsistent with work order of production.	Major
03	Outline dimension	3.1 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 cannot be seen through 5% ND filter at 50% Gray , should be judged by the viewing angle of 90 degree.	Minor
05	Dot defect (Bright dot, Dark dot) On -display	<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.	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):** **6.2 Line type(Non-display or display):**	Minor
07	Polarizer Bubble		Minor

6.1 Round type (Non-display or display):

Dimension (diameter : Φ)	Acceptance (Q'ty)	
	A area	B area
$\Phi \leqq 0.25$	Ignore	Ignore
$0.25 < \Phi \leqq 0.50$	5	
$\Phi > 0.50$	0	
Total	5	

6.2 Line type(Non-display or display):

module size	Length (L)	Width (W)	Acceptance (Q'ty)	
			A area	B area
3.5" to less 9"	---	$W \leqq 0.03$	Ignore	Ignore
	$L \leqq 10.0$	$0.03 < W \leqq 0.05$	4	
	$L \leqq 5.0$	$0.05 < W \leqq 0.10$	2	
	---	$W > 0.10$	As round type	
	Total		5	
9" to 15"	---	$W \leqq 0.05$	Ignore	Ignore
	$L \leqq 10.0$	$0.05 < W \leqq 0.10$	5	
	---	$W > 0.10$	As round type	
	Total		5	

Polarizer Bubble

Dimension (diameter: Φ)	Acceptance (Q'ty)	
	A area	B area
$\Phi \leqq 0.25$	Ignore	Ignore
$0.25 < \Phi \leqq 0.50$	4	
$0.50 < \Phi \leqq 0.80$	1	
$\Phi > 0.80$	0	
Total	5	

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: Seal width 【OK】 【NG】	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

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: 	Minor

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 Protrusion over terminal:

8.2.1 Chip on electrode pad:

	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: (see figure below) 8.2.3 Glass remain: 8.2.4 Cracking: **Not Allowed**	Minor

8.2.2 Non-conductive portion:

X	Y	Z
$\leq 1/3\ a$	$\leq W$	$\leq t$

⊙ 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
$\leq a$	$\leq 1/3\ W$	$\leq t$

8.2.4 Cracking:

Not Allowed

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

(Ver.B01)

NO.	TEST ITEM	TEST CONDITION		
1	High Temperature Storage Test	Keep in 80 ±5℃ 240 hrs		
2	Low Temperature Storage Test	Keep in −30 ±5℃ 240 hrs		
3	High Temperature / High Humidity Storage Test	Keep in 60 ℃ / 90% R.H duration for 240 hrs (Excluding the polarizer)		
4	Temperature Cycling Storage Test	−30℃ → +25℃ → 80℃ → +25℃ (30mins)　　(5mins)　　(30mins)　　(5mins) ←————— 20 Cycle —————→		
5	ESD Test	**Air Discharge:** Apply 2 KV with 5 times Discharge for each polarity +/-		**Contact Discharge:** Apply 250 V with 5 times 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)			

For item 7 (Drop Test):

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

◎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°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.
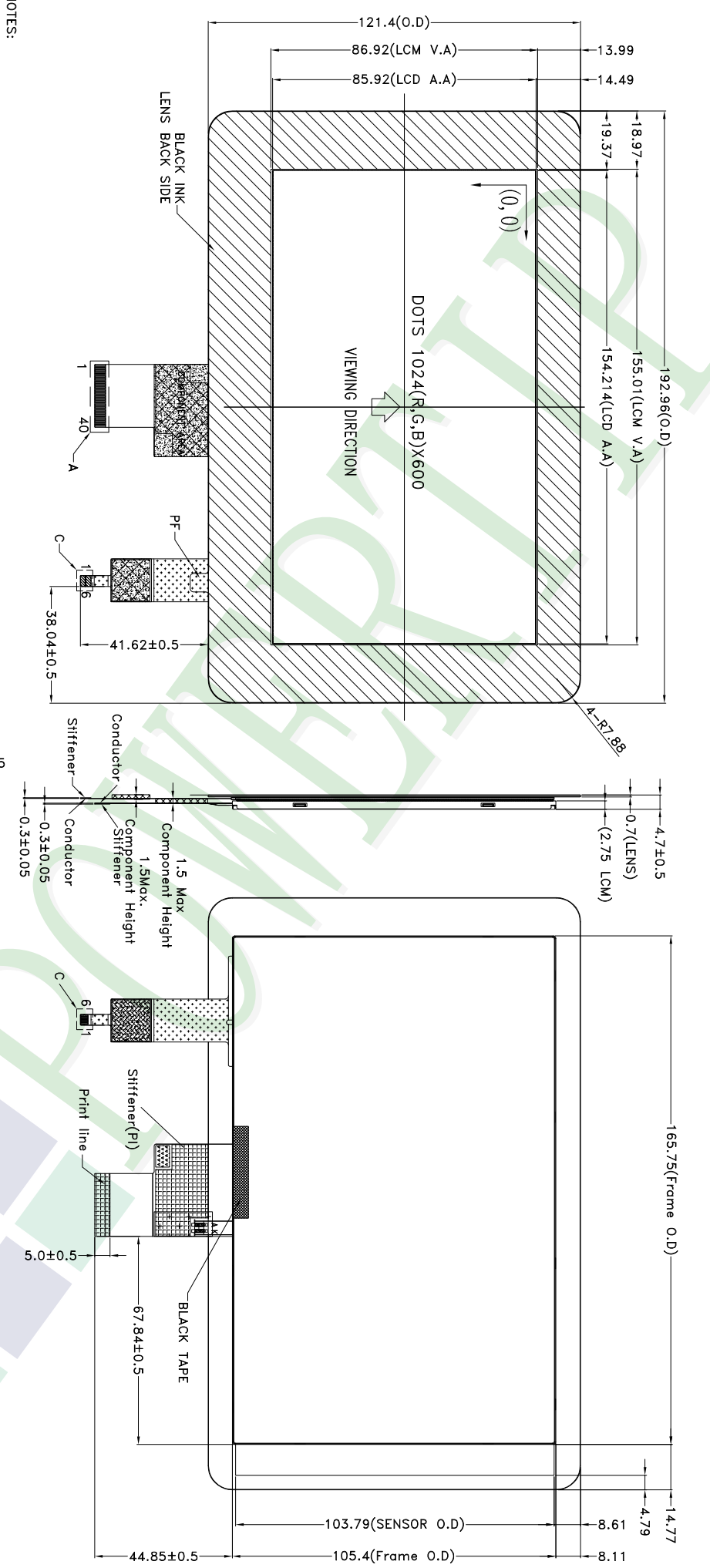
NOTES:
1.LCD TYPE: TFT LCD
2.LCD DISPLAY: Normally Black/TRANSMISSIVE
3.The tolerance unless classified ±0.3mm
4.BI:P0.5X39=19.5±0.05; W=0.3±0.05
5.▨▨▨:FPC Component Area & Unbending area;
   ▨▨▨:GND; ▨▨▨:Kapton tape; ▨▨▨:EMI Film;
   ▨▨▨:Stiffener(SUS t=0.2mm to GND)
6.FPC suggested connector : HIROSE FH12A-40S-0.5SH or compatible
   TP FPC suggested connector : HIROSE FH34S-6S-0.5SH or compatible

BLACK INK
LENS BACK SIDE

121.4(O.D)
86.92(LCM V.A)
85.92(LCD A.A)
13.99
14.49
18.97
19.37
192.96(O.D)
155.01(LCM V.A)
154.214(LCD A.A)

(0,0)

DOTS 1024(R,G,B)X600

VIEWING DIRECTION

4-R7.88

1
40
A

Detail: C
SCALE:3X
Print line
3.5±0.1
3.5±0.5

0.5±0.1
2.5
P0.5X5=2.5±0.1
0.35±0.05

C
1
6
PF
38.04±0.5
41.62±0.5

Stiffener
Conductor
Conductor
Stiffener
Component Height
1.5 Max.
Component Height
1.5Max.
0.3±0.05
0.3±0.05
0.7(LENS)
4.7±0.5
(2.75 LCM)

165.75(Frame O.D)

Detail: A
SCALE:2X
0.5±0.1
20.5±0.1
B
3.5

Print line
Stiffener(PI)
BLACK TAPE
5.0±0.5
67.84±0.5

C
6
1

PIXEL Detail
SCALE:150X
R G B
0.1506
0.1432

44.85±0.5
103.79(SENSOR O.D)
105.4(Frame O.D)
8.61
8.11
14.77
4.79

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

	Design	Tina Chen	Unit	MM	Material		Length(mm) Tolerance	Precision Level
	Check	Clare Chen	Scale	1:1	Thickness	16 ~ 63	1 ~ 4	-
	Approve	Rex Liao	Page	1/1	Quantity	63 ~ 250	4 ~ 16	-
						250 ~ 1000	16 ~ 63	-

PART NO:
PH102600T013-ZFC04

DRAWING NAME:
LMD-PH102600T013-ZFC04

TITLE:
LCD MODULE DRAWING

007			
006			
005			
004			
003			
002			
001	NEW DRAWING	Tina	2021/10/14
REV		REVISER	DATE

PT-A-054-01

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)	PH102600T013-ZFC04	192.96 X 121.4	0.164	60	9.84
2	靜電袋(1)Antistatic Bag	BAG240170ARABA	240 X 170	0.0048	60	0.288
3	氣泡袋(2)Bubble Bag	BAG200160BRABA	200 X 160	0.0096	60	0.576
4	A9隔板(3)A9 Partition	BX00000000058	245 X 125 X 4	0.0204	36	0.7344
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) : 13.66 Kg±10%

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

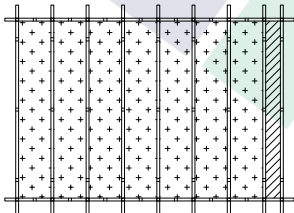(1)Quantity Of Spacer : A9隔板 X 9 , B9隔板 X 2

(2)Total LCM quantity in carton : quantity per box 15 x no of boxes 4 = 60

(5) 海綿墊
Foam Rubber Cushion

(1)靜電袋+(2)氣泡袋+LCM
Antistatic Bag+Bubble Bag+LCM

(3)(4)隔板
Partition
(註 Remark 1)

(5) 海綿墊
Foam Rubber Cushion

(6) C5內盒
Product Box

(8)保麗龍板
Polylon board

(7)外紙箱
Carton
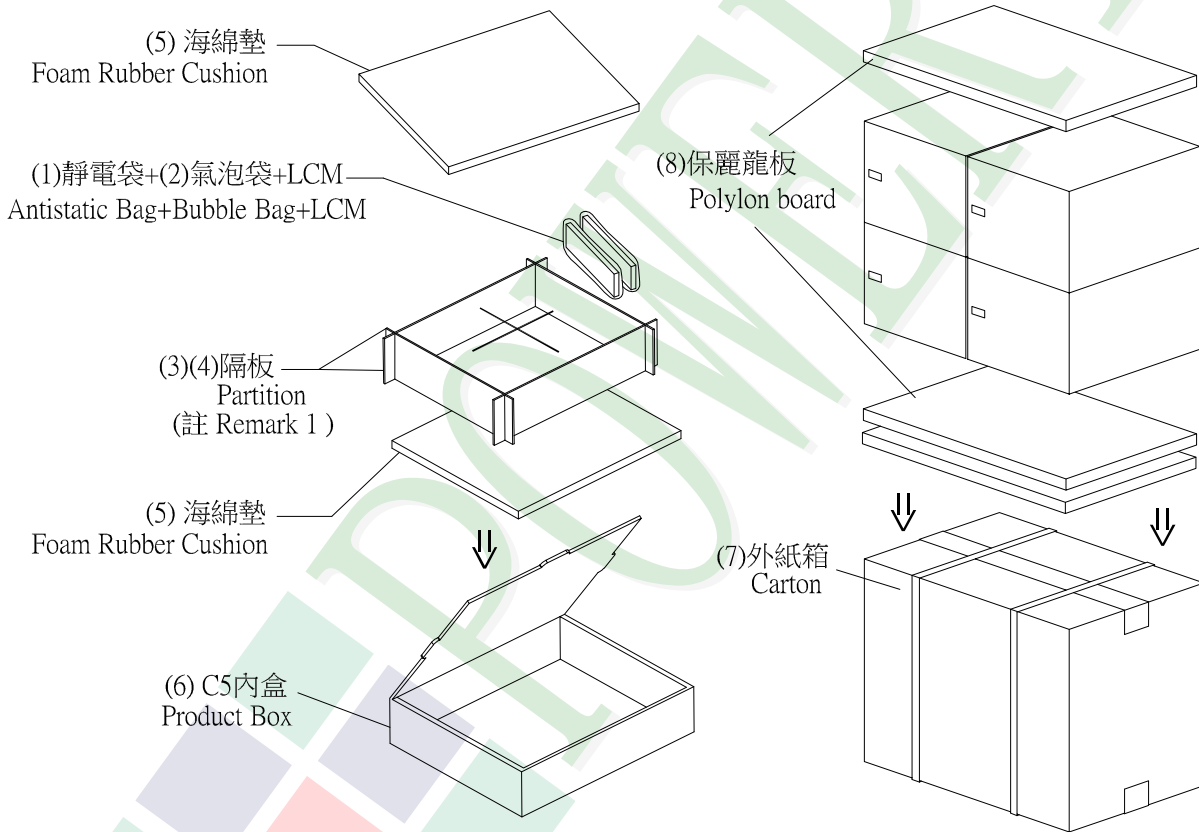
特 記 事 項 (REMARK)

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 2pcs.

模組(LCM) X 1pcs.