



# Chunghwa Picture Tubes, Ltd.

## Product Specification

**TFT LCD**  
**CLAA050LA0ACW**

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## 1. OVERVIEW

CPT CLAA050LA01CW is 5" color TFT-LCD (Thin Film Transistor Liquid Crystal Display) module composed of LCD panel, driver ICs and backlight. The 5" screen produces a high resolution image that is composed of 384,000 (800x480) pixel elements and 16.2M-color images are displayed on the 5" diagonal screen. General specifications are summarized in the following table :

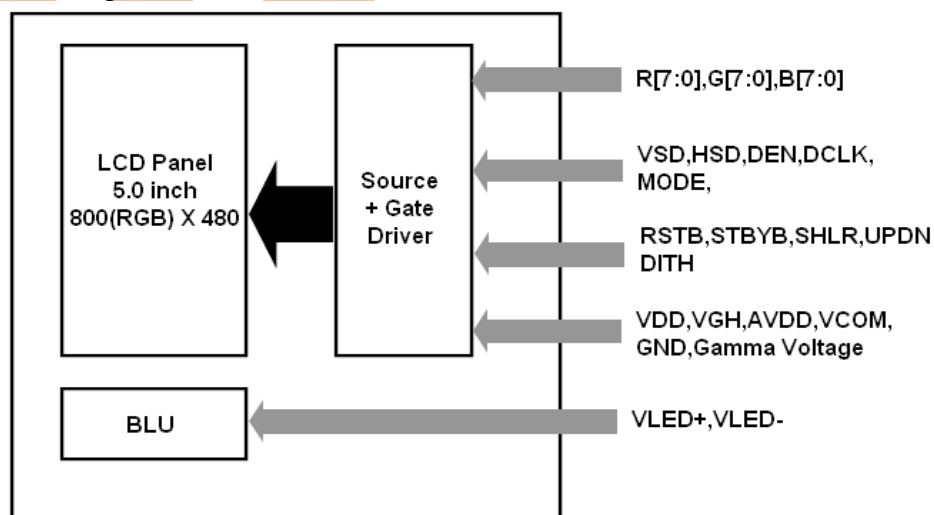
General specifications are summarized in the following table:

ITEM	SPECIFICATION
Panel Size	5" inch
Display Area (mm)	108.0(H) x 64.8(V)
Number of Pixels (dot)	800(H) x 3(RGB) x 480(V)
Pixel Pitch(mm)	0.135(H) x 0.135(V)
Color Pixel Arrangement	RGB island
Display Mode	Normally white TN
Number of color	16.2M
Luminance (cd/m <sup>2</sup> )	500(Typ)
Contrast Ratio	500:1 (Typ.) 350:1 (Min.)
Optimum Viewing Angle	6' o'clock
Electrical Interface	RGB 24Bits
Power Consumption(W)	1.42 (Typical)
Surface Treatment	HC
Outline Dimension (mm)	118.5(W) x 77.55(H) x 2.8(D)
Weight (g)	65g(MAX)

Note 1. Outline Dimension define without FPC

The LCD Products listed on this document are not suitable for use of aerospace equipments, submarine cables, nuclear reactor control systems and life support systems. If customers intend to use these LCD products for above applications or not listed in "Standard" as follows, please contact our sales people in advance.

### 1.1 Block Diagram



## 2. ABSOLUTE MAXIMUM RATINGS

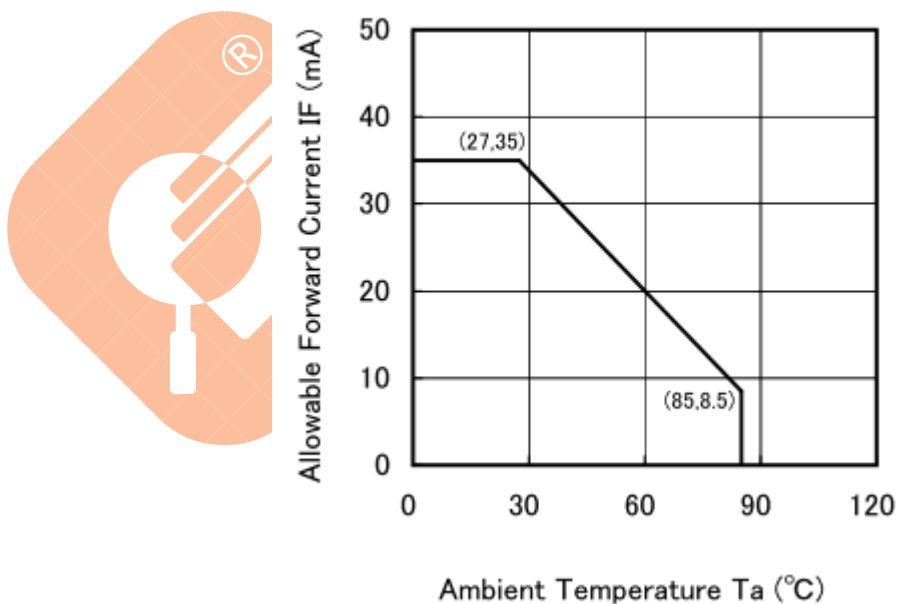
ITEM	SYMBOL	MIN	MAX	UNIT	NOTE
Digital Power Supply Voltage	VDD	-0.3	+3.96	V	
Analog Power Supply Voltage	AVDD	-0.5	+14.85	V	
Gate On Voltage	VGH	-0.3	40	V	
Gate Off Voltage	VGL	-20	0.3	V	
Signal Input Voltage	R0 ~ R7 G0 ~ G7 B0~B7	-0.3	+3.96	V	
GAMMA Voltage	Vr1~Vr10	-0.5	+14.85	V	
Forward Current ( per LED )	If		35	mA	
Reverse Voltage ( per LED )	VR		5	V	
Pulse forward current ( per LED )	I <sub>fp</sub>		100	mA	Note1
Operating temperature	Topa	-20	70	°C	Note3
Storage temperature	Tstg	-30	80	°C	Note3

Note 1 : Absolute maximum rating is the limit value. When the panel is exposed operating environment beyond this range, the Panel can not assure operations and may be damaged permanently, not be able to be recovered

Note 2 : condition: 1 pcs LED 、 1/10 duty 、 10ms width

Note 3 : Ambient temperature and the maximum input are fulfilling the following operating conditions

Ambient Temperature vs.  
Allowable Forward Current



Note 4 : While the panel is used in normal temperature, the temperature in the center of panel's surface must be low than 40 °C

### 3. ELECTRICAL CHARACTERISTICS

#### 3.1. Typical operation conditions

Ta=25°C

ITEM	SYMBOL	MIN	TYP	MAX	UNIT	NOTE
Digital Power Supply Voltage For LCD	VDD	3	3.3	3.6	V	
Logic Input Voltage	VIL	0	-	0.3xVDD	V	
	VIH	0.7xVDD	-	VDD	V	
Analog Power Supply Voltage	AVDD	9.4	9.6	9.8	V	
Gate On Power Supply Voltage	VGH	17	18	19	V	
Gate Off Power Supply Voltage	VGL	-6.6	-6	-5.4	V	
Common Power Supply Voltage	VCOM	3.6	3.8	4.0	V	Note1

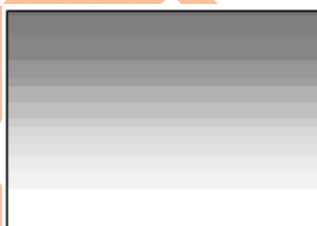
Note1: Please adjust VCOM to make the flicker level be minimum.

#### 3.2. TFT-LCD current consumption

ITEM	SYMBOL	CONDITIONS	MIN	Typ	MAX	UNIT	NOTE
Gate on power current	IVGH	VGH =18V	-	2	3	mA	Note1
Gate off power current	IVGL	VGL= -6V	-	2	3	mA	Note1
Digital power current	IVDD	VDD = 3.3V	-	15	25	mA	Note1
Analog power current	IAVDD	AVDD = Vr1+0.8	-	25	40	mA	Note1
Total Power Consumption	PC		-	338	539	mW	Note1

Note 1 : Typ. specification : Gray-256 test Pattern

Max. specification : Black test Pattern



(a) Gray-256 Pattern



(b) Black Pattern

#### 3.3. Gamma Voltage Setting

Symbol	Value	Symbol	Value	Unit
Vr1	9.0	Vr6	3.9	V
Vr2	7.3	Vr7	2.7	
Vr3	6.8	Vr8	2.4	
Vr4	6.5	Vr9	1.9	
Vr5	5.4	Vr10	0.1	

## 3.4. Backlight system

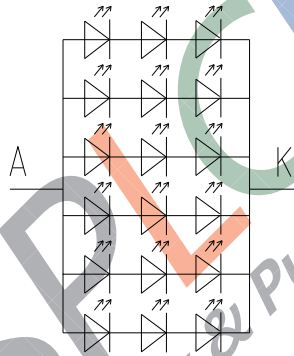
Ta=25°C

ITEM	SYMBOL	CONDITION	MIN	TYP	MAX	UNIT	NOTE
LED Voltage	VL	Ta=25°C Each serial=20mA	—	9	10.05	V	
LED Current	IL	Ta=25°C Each serial=20mA	—	120	210	mA	
Power consumption	WL	Ta=25°C Each serial=20mA	—	1080	1206	mW	Note1
LED Lifetime	-	Ta=60°C Each serial=20mA	10000			Hr	Note 2

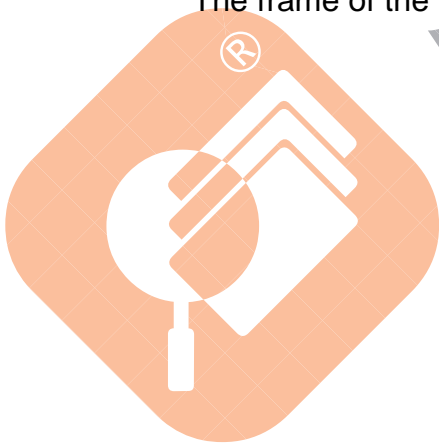
Note 1 :  $W_L = V_L \times I_L$  ,  $I_L = 120\text{mA}$

Note 2 : Brightness to be decreased to 50% of the initial value.

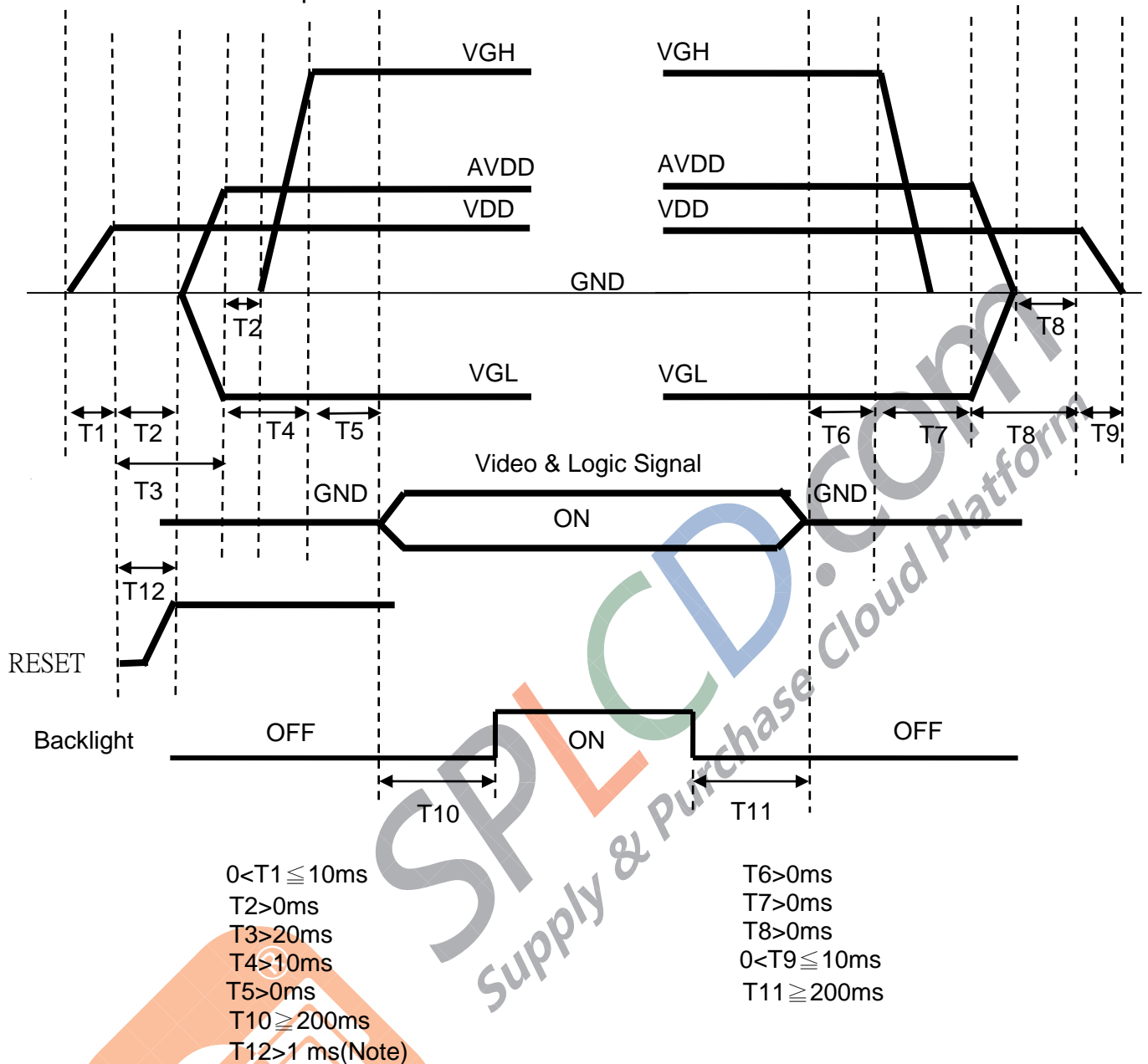
Note 3 : LED Circuit Diagram(A : Anode(+), K : Cathode(-)).



The frame of the LEDs is 3 series-6 parallel connection.



3.5. Power on/off sequence



Note: If reset pin without RC, please follow T12 timing to power on reset panel function.



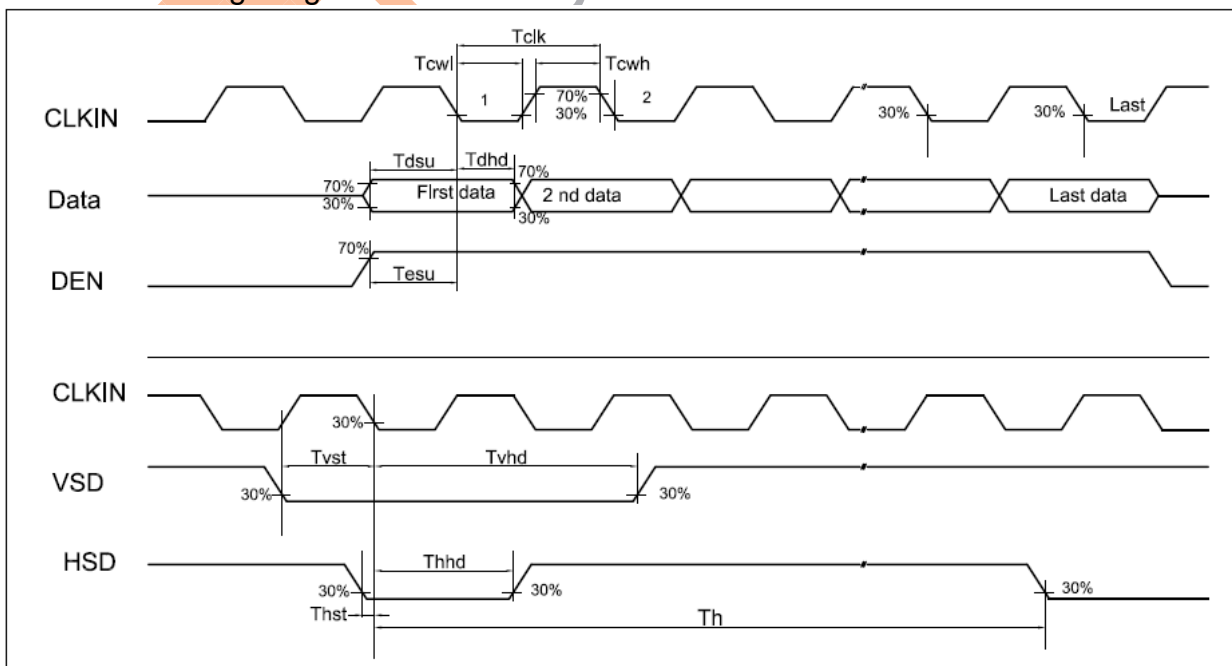
### 4. INPUT SIGNAL TIMING

#### 4.1 TTL Timing

##### 4.1.1 Timing Specification

ITEM		SYMBOL	MIN.	TYP.	MAX.	UNIT	Note
DCLK	Dot Clock	1/Tclk	28.5	30	38	MHz	
	DCLK pulse duty	Tcwh	40	50	60	%	
DE	Setup Time	Tesu	8	-	-	ns	
	Hold time	Tehd	8	-	-	ns	
	Horizontal Period	t <sub>H</sub>	908	928	1000	t <sub>CLK</sub>	
	Horizontal Valid	t <sub>HA</sub>	800			t <sub>CLK</sub>	
	Horizontal Blank	t <sub>HB</sub>	108	128	200	t <sub>CLK</sub>	
	Vertical Period	t <sub>V</sub>	523	538	633	t <sub>H</sub>	
	Vertical Valid	t <sub>VA</sub>	480			t <sub>H</sub>	
	Vertical Blank	t <sub>VB</sub>	43	58	153	t <sub>H</sub>	
SYNC	HSYNC Setup Time	Thst	8	-	-	ns	
	HSYNC Hold Time	Thhd	8	-	-	ns	
	VSYNC Setup Time	Tvst	8	-	-	ns	
	VSYNC Hold Time	Tvhd	8	-	-	ns	
	Horizontal Period	t <sub>H</sub>	908	928	1000	t <sub>CLK</sub>	
	Horizontal Pulse Width	thpw	4	48	60	t <sub>CLK</sub>	thb + thpw=88DCLK is fixed
	Horizontal Back Porch	thb	28	40	84	t <sub>CLK</sub>	
	Horizontal Front Porch	thfp	20	40	112	t <sub>CLK</sub>	
	Horizontal Valid	t <sub>HD</sub>	800			t <sub>CLK</sub>	
	Vertical Period	t <sub>V</sub>	523	538	633	t <sub>H</sub>	
	Vertical Pulse Width	tpw	3	3	3	t <sub>H</sub>	tpw + tvb = 32t <sub>H</sub> is fixed
	Vertical Back Porch	tvb	29	29	29	t <sub>H</sub>	
	Vertical Front Porch	tvfp	11	26	121	t <sub>H</sub>	
Vertical Valid	t <sub>VD</sub>	480			t <sub>H</sub>		
DATA	Setup Time	Tdsu	8	-	-	ns	
	Hold Time	Tdhd	8	-	-	ns	

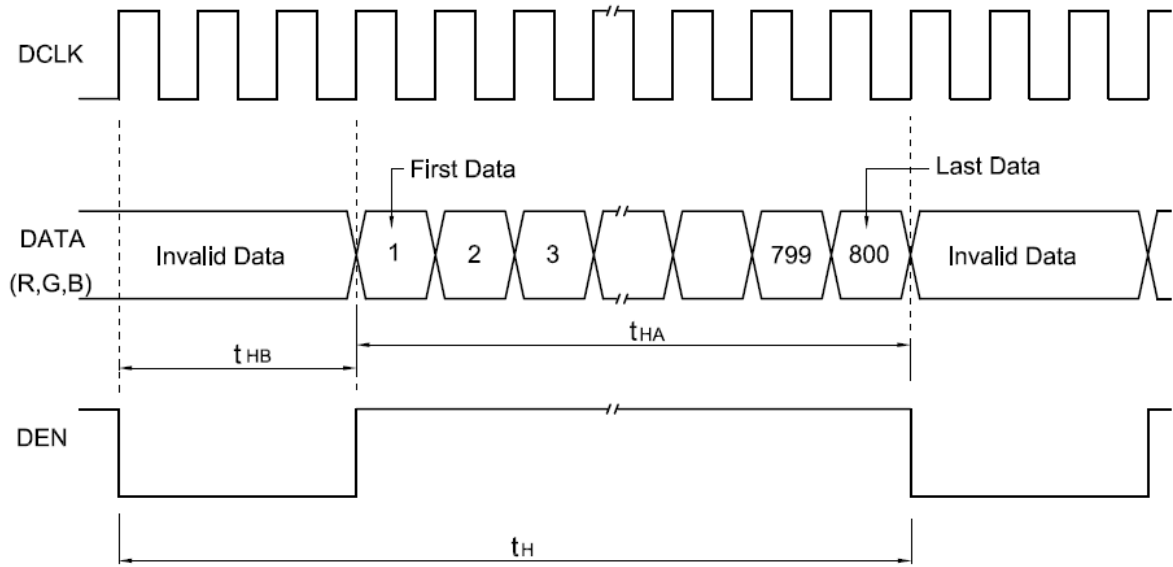
##### 4.1.2 Timing Diagram



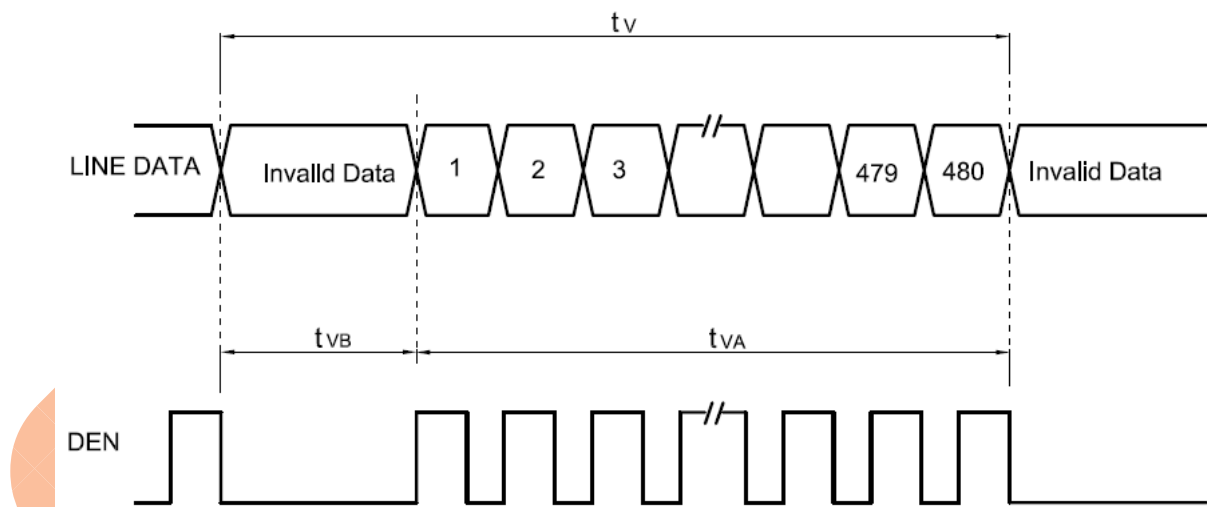
4.2 Timing Sequence(Timing Chart)

4.2.1 DE mode :

Horizontal timing :

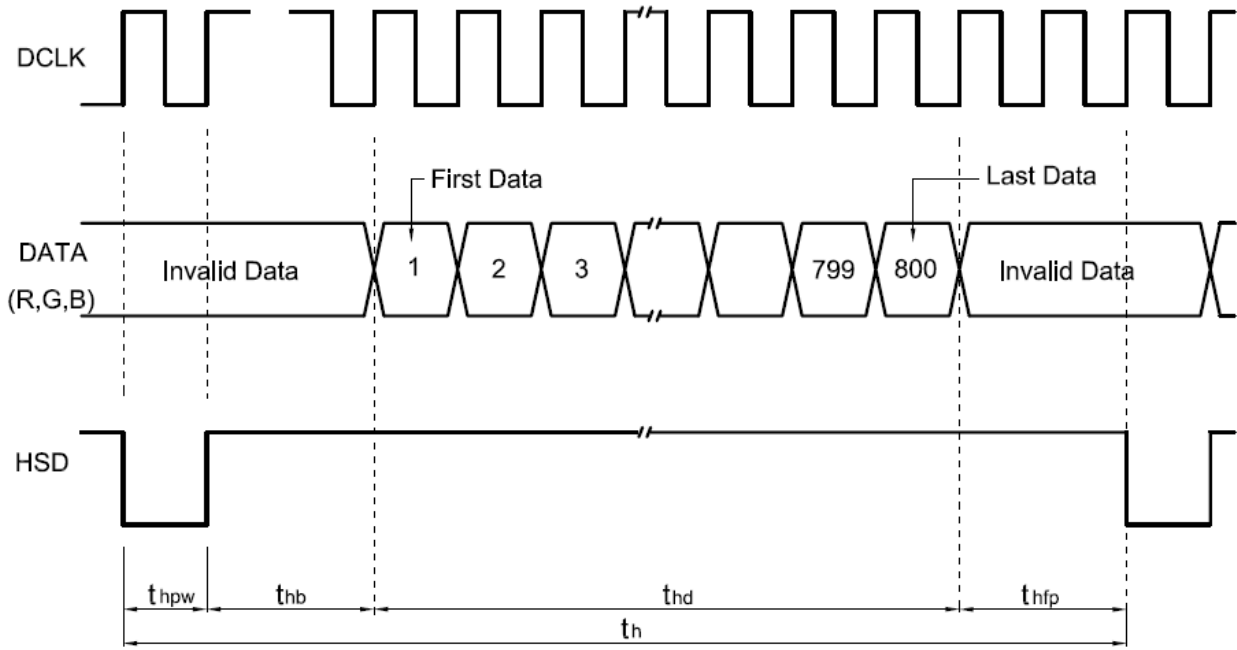


Vertical timing :

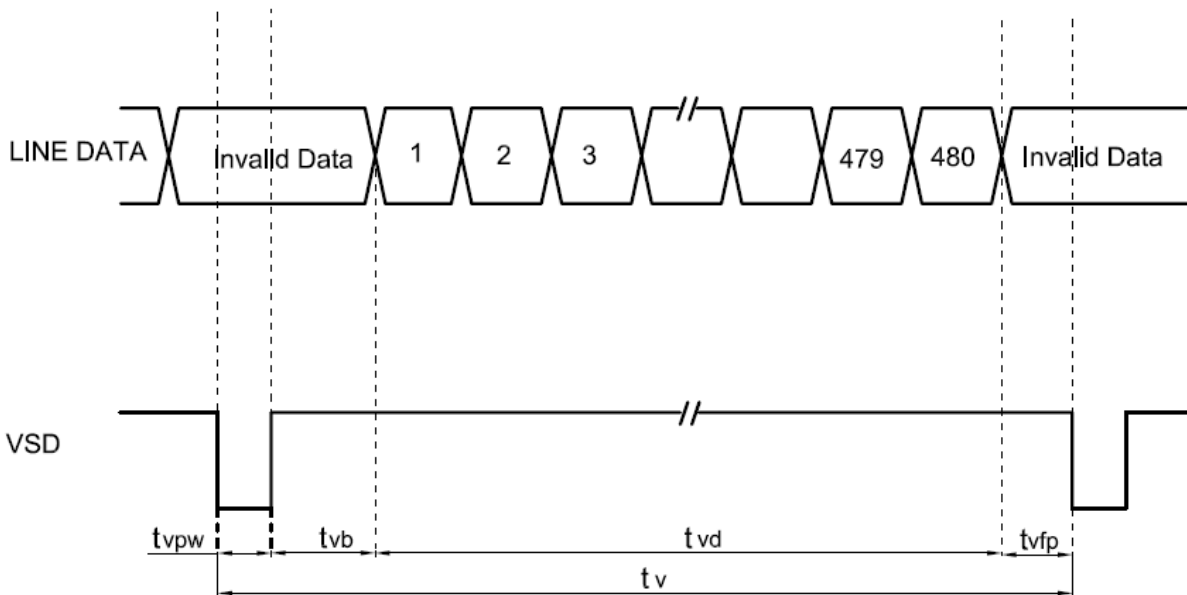


4.2.2 SYNC mode

Horizontal timing :



Vertical timing :



4.3 Color data definition

COLOR	INPUT DATA	R DATA								G DATA								B DATA							
		R7	R6	R5	R4	R3	R2	R1	R0	G7	G6	G5	G4	G3	G2	G1	G0	B7	B6	B5	B4	B3	B2	B1	B0
		MSB				LSB				MSB				LSB				MSB				LSB			
BASIC COLOR	BLACK	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	RED(255)	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	GREEN(255)	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	
	BLUE(255)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	
	CYAN	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
	MAGENTA	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	
	YELLOW	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	
	WHITE	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
RED	RED(0)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	RED(1)	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	RED(2)	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	RED(254)	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	RED(255)	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
GREEN	GREEN(0)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	GREEN(1)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	
	GREEN(2)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	
	GREEN(254)	0	0	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	
	GREEN(255)	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	
BLUE	BLUE(0)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	BLUE(1)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
	BLUE(2)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	
	BLUE(254)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0	
	BLUE(255)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	

Note 1 : Definition of gray scale:  
 Color (n): n means level of gray scale. Larger n means brighter level.

Note 2 : Data: 1= High, 0 = Low

## 5. INTERFACE CONNECTION

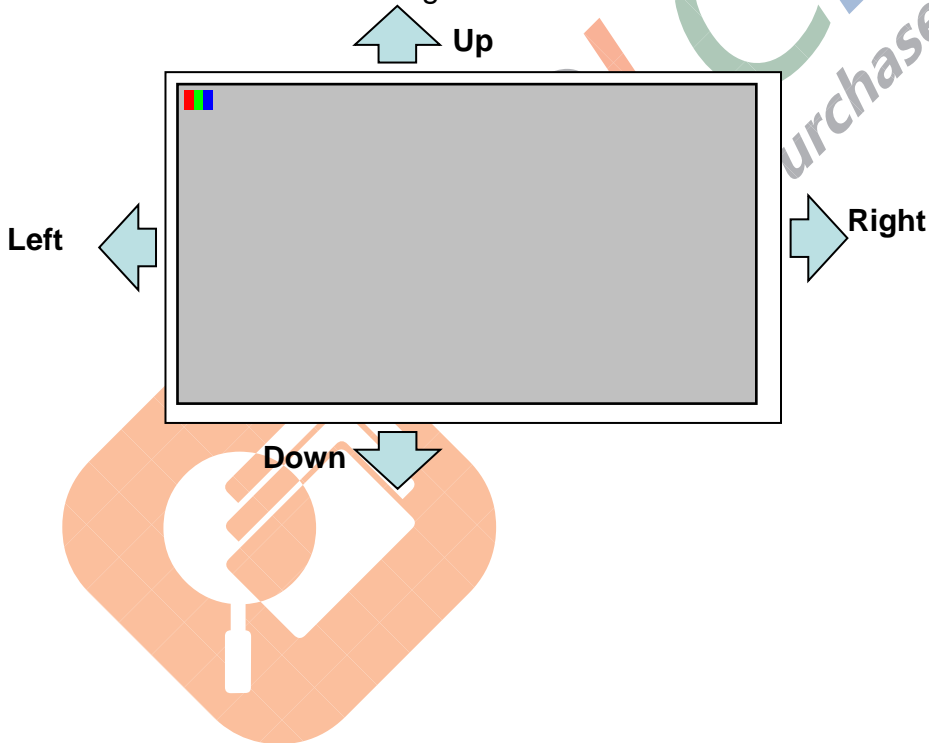
Pin NO.	SYMBOL	DESCRIPTION
1	GND	GND
2	VDDA	Analog Power
3	VDD	Digital Power
4	R0	Red data Input (LSB)
5	R1	Red data Input
6	R2	Red data Input
7	R3	Red data Input
8	R4	Red data Input
9	R5	Red data Input
10	R6	Red data Input
11	R7	Red data Input (MSB)
12	G0	Green data Input (LSB)
13	G1	Green data Input
14	G2	Green data Input
15	G3	Green data Input
16	G4	Green data Input
17	G5	Green data Input
18	G6	Green data Input
19	G7	Green data Input (MSB)
20	B0	Blue data Input (LSB)
21	B1	Blue data Input
22	B2	Blue data Input
23	B3	Blue data Input
24	B4	Blue data Input
25	B5	Blue data Input
26	B6	Blue data Input
27	B7	Blue data Input
28	DCLK	Pixel clock
29	DE	Data Enable. When MODE="0", this pin is OPEN
30	HSD	Horizontal Sync Signal
31	VSD	Vertical Sync Signal
32	MODE	DE/SYNC mode select · Normal pull high MODE="1" DE mode MODE="0" SYNC mode
33	RSTB	Global reset pin. Active low to enter reset state. Suggest to connecting with an RC reset circuit for stability. Normally pull high. (R=10KΩ · C=1μF)
34	STBYB	Standby mode, normally pull high STBYB="1", normal operation STBYB="0", timing control, source driver will turn off, all output are high-Z
35	SHLR	Shift left or right control
36	VDD	Digital Power
37	UPDN	Shift up or down control
38	GND	GND
39	GND	GND
40	VDDA	Analog Power
41	VCOM	VCOM DC input
42	DITH	Dithering function enable control. DITHB = "1", Disable internal dithering function · LSB0 and LSB1 connect to ground. DITHB = "0", Enable internal dithering function
43	VR10	Gamma Voltage input
44	VR9	Gamma Voltage input
45	VR8	Gamma Voltage input
46	VR7	Gamma Voltage input
47	VR6	Gamma Voltage input
48	VR5	Gamma Voltage input
49	VR4	Gamma Voltage input
50	VR3	Gamma Voltage input

Pin NO.	SYMBOL	DESCRIPTION
51	VR2	Gamma Voltage input
52	VR1	Gamma Voltage input
53	VGH	Get on Voltage
54	VDD	Digital Power
55	VGL	Get off Voltage
56	GND	GND
57	VLED+	Power Supply for LED (Anode)
58	VLED+	Power Supply for LED (Anode)
59	VLED-	LED GND (Cathode)
60	VLED-	LED GND (Cathode)

【Note1】 SHLR : left or right setting  
UPDN : up or down setting

SHLR	UPDN	Data shifting
VDD	GND	Left→Right , Up→Down(default)
GND	GND	Right→Left , Up→Down
VDD	VDD	Left→Right , Down→Up
GND	VDD	Right→Left , Down→Up

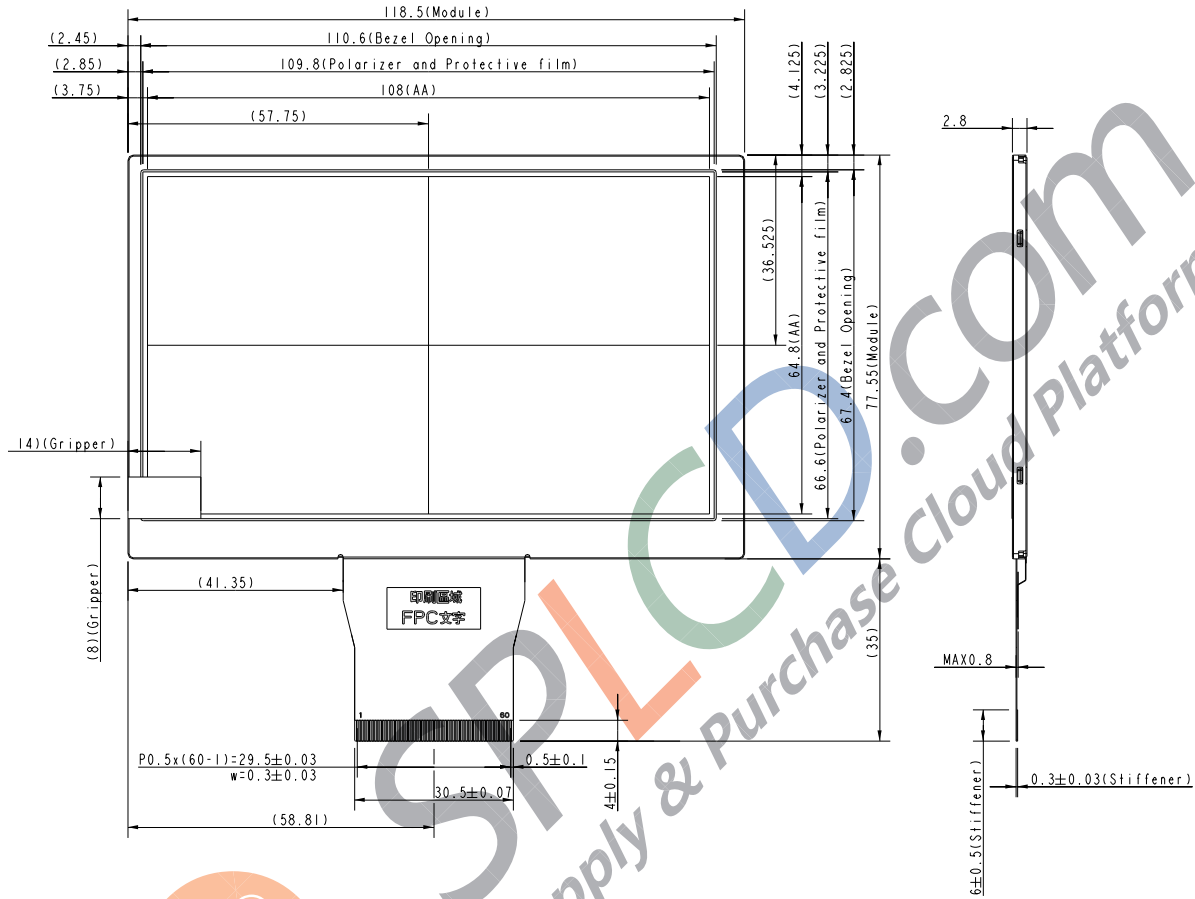
Definition of scanning direction.



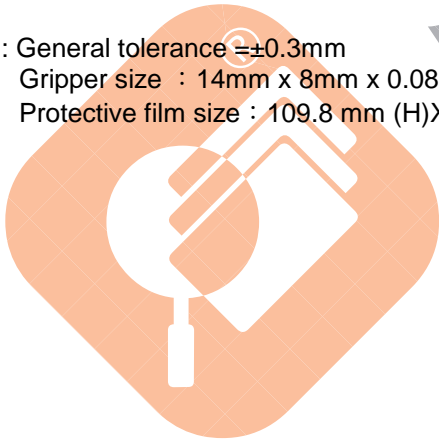
6. MECHANICAL SPECIFICATION

(Front View)

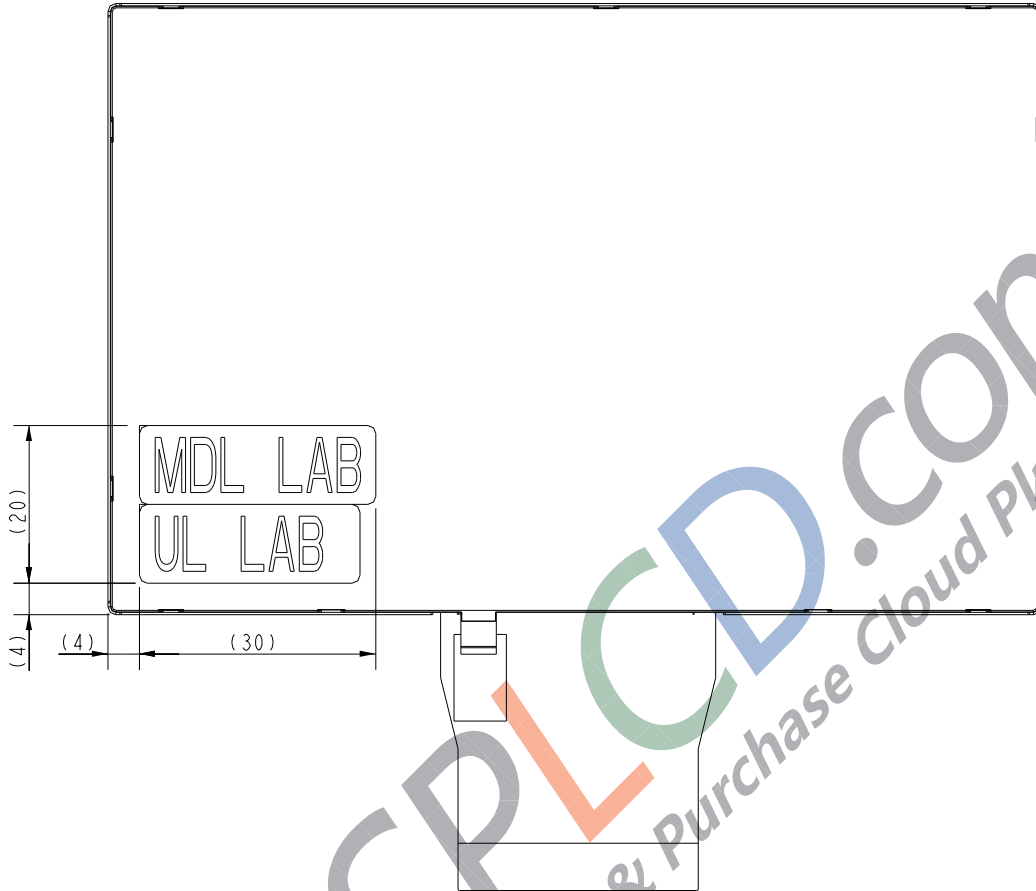
Unit:mm



Note : General tolerance  $\pm 0.3$ mm  
 Gripper size : 14mm x 8mm x 0.08mm  
 Protective film size : 109.8 mm (H)X66.6 mm (V)



**(Rear View)**



Note : General tolerance =±0.3mm



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## 7. OPTICAL SPECIFICATION

Item	Symbol	Condition	Min.	Typ.	Max.	Unit	Remark
Contrast Ratio	CR	$\theta = \psi = 0^\circ$ Point-5	350	500	--		Note 3
Luminance	L	$\theta = \psi = 0^\circ$ Point-5	400	500	--	cd/m <sup>2</sup>	
Luminance Uniformity	$\Delta L$	$\theta = \psi = 0^\circ$	70	80	--	%	Note 4
Response Time	Tr+Tf	$\theta = \psi = 0^\circ$	--	20	35	ms	Note 5
NTSC			45	50	--	%	
View angle	Horizontal	$\phi$	CR $\geq$ 10 Point-5	60(Right)	70(Right)	--	Note 6
				60(Left)	70(Left)		
	Vertical	$\theta$		45(Up)	55(Up)	--	
				65(Down)	75(Down)		
Color Coordinate	R	x	$\theta = \psi = 0^\circ$ Point-5	0.585	0.625	0.665	
		y		0.313	0.353	0.393	
	G	x		0.313	0.353	0.393	
		y		0.554	0.594	0.634	
	B	x		0.122	0.162	0.202	
		y		0.066	0.106	0.146	
	W	x		0.273	0.313	0.353	
		y		0.289	0.329	0.369	

Note 1. Ambient condition : 25°C $\pm$ 2°C , 60 $\pm$ 10%RH , under 10 Lux in the darkroom .  
Lighting the LCM and measuring after 10 minutes.

Note 2. Measure device : BM-5A (TOPCON) , viewing cone=1° , I<sub>L</sub>=80mA .

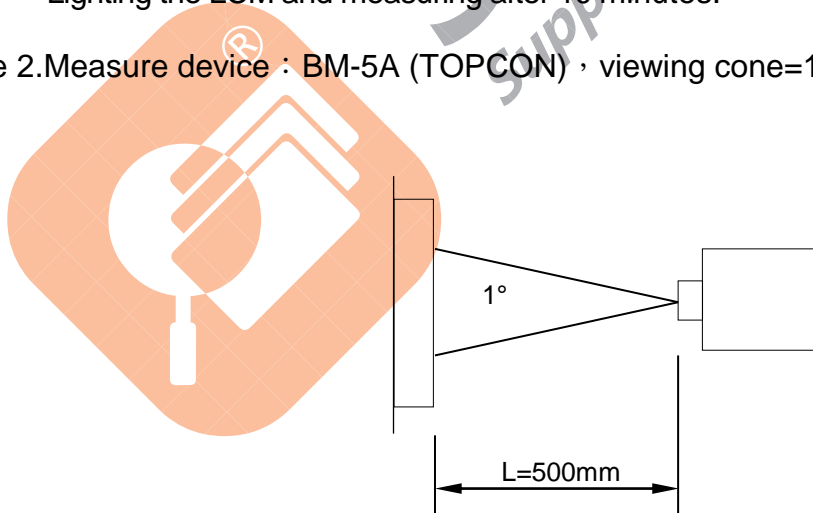


Fig.8-1 viewing cone=1°

Note 3. Definition of Contrast Ratio :

$$CR = \text{White Luminance (ON)} / \text{Black Luminance (OFF)}$$

Note 4. Definition of Luminance Uniformity :  $\Delta L = L(\text{MIN}) / L(\text{MAX}) \times 100\%$

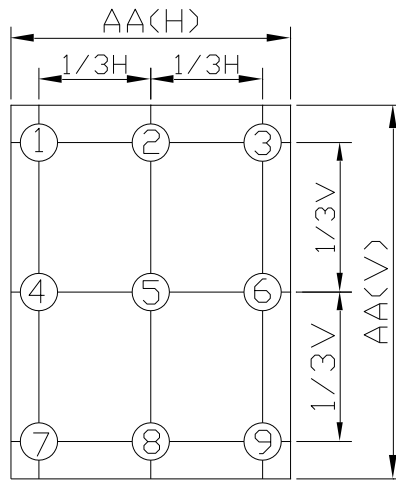


Fig.8-2 Measuring point

Note 5. Definition of response time : The response time is defined as the time interval between the 10% and 90% amplitudes.

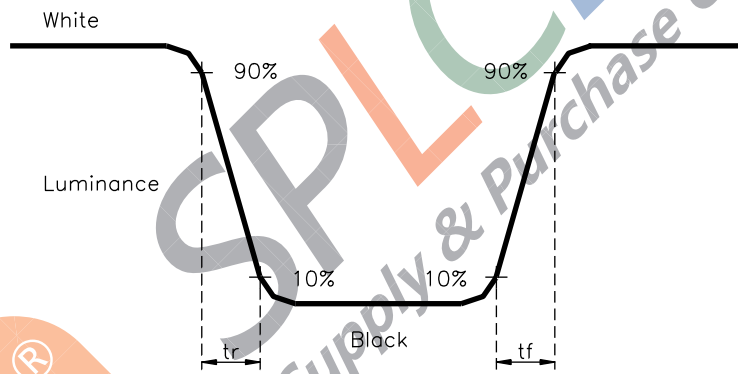


Fig.8-3 Definition of Response Time (White - Black)

Note 6. Definition of view angle( $\theta$  ,  $\psi$ ) :

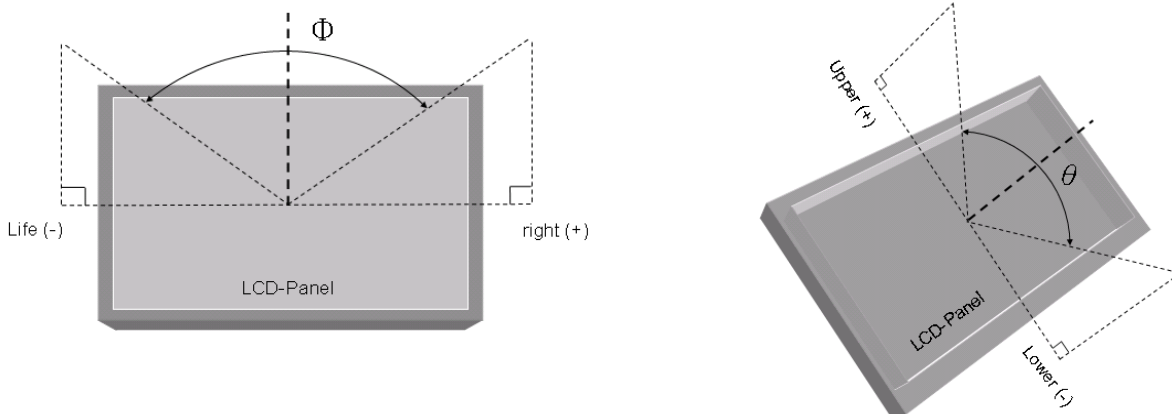


Fig.8-4 Definition of Viewing Angle

## 8. RELIABILITY TEST

### 8.1 Temperature and Humidity

TEST ITEMS	CONDITIONS
HIGH TEMPERATURE OPERATION	70° C ; 240Hrs
HIGH TEMPERATURE STORAGE	80° C ; 240Hrs
HIGH TEMPERATURE AND HIGH HUMIDITY OPERATION	60° C ; 90% RH ; 240Hrs
LOW TEMPERATURE OPERATION	-20° C ; 240Hrs
LOW TEMPERATURE STORAGE	-30° C ; 240Hrs

### 8.2 Shock & Vibration

TEST ITEMS	CONDITIONS
SHOCK (Non operation)	<ul style="list-style-type: none"> <li>● Shock level: 980m/s<sup>2</sup>(equal to 100G).</li> <li>● Waveform: half sinusoidal wave,6ms.</li> <li>● Number of shocks: one shock input in each direction of three mutually perpendicular axes(±X, ±Y, ±Z)for a total of 6 shock inputs.</li> </ul>
VIBRATION (Non operation)	<ul style="list-style-type: none"> <li>● Frequency range:8~33.3Hz</li> <li>● Stroke:1.3 mm</li> <li>● Vibration:sinusoidal wave, perpendicular axis Each direction on X, Z axes: 2hrs, Y axes: 4hrs.</li> <li>● Sweep:2.9G,33.3 Hz ~ 400 Hz</li> <li>● Cycle:15 min</li> </ul>

### 8.3 ESD

TEST ITEM	CONDITIONS	Note
ESD (Non operation)	150 pF · 330Ω · ±8KV,±15KV	Air mode
	150 pF · 330Ω · ±8KV,±15KV	Contact mode
	200pF · 0Ω · ±200V	Connector mode

### 8.4 Judgment standard

The judgment of the above test should be made as follow:

Pass : Normal display image with no obvious non-uniformity and no line defect.

Partial transformation of the module parts should be ignored.

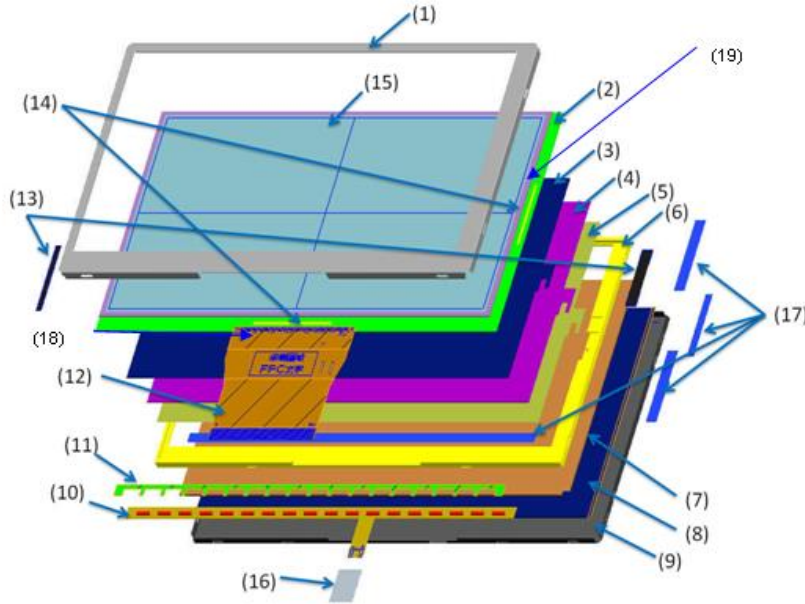
Fail : No display image, obvious non-uniformity, or line defects. Transformation of the carton which occurs at Shock and VIBRATION test should be ignored.

## 9. APPENDIX

## 9.1 Manufactory Location

Material	Manufactory	Location
CELL2/ MDL	CPTF	No. 1 Xing Ye road, Mawei Hi-tech Development Zone Fuzhou, Fujian, China

## 9.2 Internal structure materials drawing



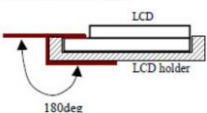
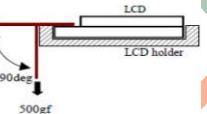
⊕

No.	Component	Material
(1)	Front-frame	Stainless Steel (SUS304)
(2)	LCD Panel	Glass
(3)	DBEF	PET (Polyethylene Terephthalate)
(4)	Lens1	PET (Polyethylene Terephthalate)
(5)	Diffuser	PET (Polyethylene Terephthalate)
(6)	Mold	PC (Polycarbonate)
(7)	LGP	PC (Polycarbonate)
(8)	Reflector	PET (Polyethylene Terephthalate)
(9)	Rear-frame	Stainless Steel (SUS304)
(10)	LED Light_bar	PET (Polyethylene terephthalate), PI (Polyimide), Cu (Copper), Adhesive
(11)	Tapes (L/B)	PET (Polyethylene terephthalate), Adhesive
(12)	FPC	PET (Polyethylene terephthalate), PI (Polyimide), Cu (Copper), Adhesive
(13)	Tapes(FILM)	PET (Polyethylene terephthalate), Adhesive
(14)	Driver IC	Semiconductor
(15)	Polarizer	PET (Polyethylene terephthalate), PVA (Polyvinyl alcohol), TAC (Triacetate cellulose)
(16)	Tapes(FPC)	PET (Polyethylene terephthalate), Adhesive
(17)	Tapes(MOLD)	PET (Polyethylene terephthalate), Adhesive
(18)	FPC ACF	Separator, Adhesive
(19)	IC ACF	Separator, Adhesive

## 9.3 Safty Standard

CPT UL certificate number is E194548.

## 9.4 Reliability Panasonic Reliability test

Item	RT Condition
Thermal Shock Test	-30°C (30min) <=> 70°C (30min), 50cycle, AT 前後光學 與 FPC/IC 接合強度測試共同試驗(+70°C/20 秒 POWER ON)
High Temperature and High Humidity Operation Test	40°C/90%/120h 與 FPC/IC 接合強度測試共同試驗(+70°C/20 秒 POWER ON)
High Temperature and High Humidity Operation Test	40°C/90%/500h
FPC 彎曲試驗	<p>條件 1 : Bending Degree: 180 deg Heavy Laden : N/A Bending times: 30 (Assemble simulation)</p>  <p>條件 2 : Bending Degree: 90 deg Heavy Laden : 500 g Bending times: 30 (Assemble simulation)</p> 
FPC/IC 接合強度試驗	70°C/20sec POWER ON This test must do with No.1 ~ No.6, and No.8.
梱包振動	10-55Hz/1.5mm/1min XYZ 各 2h
包装落下	梱包重量による 梱包状態中落下試験 一角 3 稜 6 面,各 1 回 高度 10kg 以下 : 底面,稜:75cm/ 其他:60cm 10kg~20kg : 底面,稜:70cm/其他:55cm

## Electrical Environment

ESD	MM:200pF 0Ω±200V One for each terminal
	HM:150pF 330Ω±8KV /±15KV 25time/point 4point/panel(Air mode) HM:150pF 330Ω±8KV /±15KV 25time/point (Contact mode)

[Note] These reliability test are Panasonic request. And CPT has already passed these request. CPT reliability test assurance is based on section 8.

9.5 Control Plan



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□ 原型樣品 (Prototype) □ 量試 (Pilot Run) ■ 量產 (Mass Production)			管制計劃編號 Product Control Number		LSN-5240005-064		版本 Version		New				
產品/製程名稱 Product/Process			專案負責人/分機 Team Leader/Ext		蘇秋霖/65-1013		初版日期 1st Issue date		2011/05/13				
產品/製程說明 Product/Process Description			專案小組 Project Team Member		王裕芳、馬建人、黎世凱、黃木上、黃銘崗、張蘭俊、陳能順		修訂日期 Revised date						
製程名稱 Process Name	副流程 Sub-process	編號 No.	特性要項 Characteristics		特殊 特性 等級 Special Char. Class	方法 Method			管制方式 Control Method	反應計畫 Reaction Plan	權責單位 Account- able Dept.	相關 文件 Document No.	
			產品 管制要項 Product	製程 管制要項 Process		產品/製程 規格(公差) Product/Process Spec.(Tol.)	評估/量測技巧/Evaluation/ Measurement Tech	取樣 Sample					
						樣本 Size	頻率 Freq.						
GE	MoTa sputtering	1	Particle			LSN-5173002-001	Tony (ACCO10)	5Sh	1 times/day	SPC Control	LSN-5241017-001	MF EN	LSN-5173002-001
		2		MoTa_RS-average	★	LSN-5181002-004	Tony (ACCO10)	15h/CH	2 times/week	SPC control	LSN-5241017-001	MF EN	LSN-5181002-004
		3		MoTa_RS-uniformity	☆	LSN-5181002-004	S-RESISTANCE MEASURER(ASR010)	15h/CH	3 times/week	SPC control	LSN-5241017-001	MF EN	LSN-5181002-004 LSN-5183002-002
		5		MoTa Thickness		LSN-5181002-004	Profile(AS1010)	15h/CH	1 time/Month	SPC control	LSN-5241017-001	MF EN	LSN-5181002-004 LSN-5184002-002
		6	Macro			LSN-5241013-003	ACM010-030	5Sh	according to the sampling planT-5240002-012-B	product abnormal report	LSN-5241017-001	MF EN	LSN-5241002-001
		7	DefectImp.& Review			LSN-5241013-002	ACK010-040.	5Sh	according to the sampling planT-5240002-012-B	product abnormal report	LSN-5241017-001	MF EN	LSN-5241002-001
		GE_D Photo	DefectImp.& Review	1	CD			LSN-5240013-064	APW020 - 030	25h	according to the sampling planT-5240002-012-B	SPC control	LSN-5241017-001
2				Particle		LSN-5200002-003	Tony (ACCO10)	25h	1Times/After PM and 1 Times/Per Week	SPC control	LSN-5241017-001	MF EN	LSN-5200002-003
3						LSN-5241013-002	ACK010-040.	5Sh	according to the sampling planT-5240002-012-B	product abnormal report	LSN-5241017-001	MF EN	LSN-5200002-003
4				PR GE Pattern Thickness		LSN-5200002-003	Optical Thickness Meter (Nanonetics)	25h	1Times/After PM and 1 Times/Per Week	SPC control	LSN-5241017-001	MF EN	LSN-5200002-003
5	Macro					LSN-5241013-003	ACM010-030	5Sh	according to the sampling planT-5240002-012-B	product abnormal report	LSN-5241017-001	MF EN	LSN-5241002-001
MoTa etching	DefectImp.& Review	1	Particle			LSN-5177002-001	Tony (ACCO10)	35h	1 times/week	SPC control	LSN-5241017-001	MF EN	LSN-5177002-001
		2		Etching Rate		LSN-5177002-001	Stylus Profile(AS1010) (BS1010)	15h	1 times/week	SPC control	LSN-5241017-001	MF EN	LSN-5177002-001
		3				LSN-5241013-002	ACK010-040.	5Sh	according to the sampling planT-5240002-012-B	product abnormal report	LSN-5241017-001	MF EN	LSN-5241002-001



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			產品 管制要項 Product	製程 管制要項 Process		產品/製程 規格(公差) Product/Process Spec.(Tol.)	評估/量測技巧/Evaluation/ Measurement Tech	取樣 Sample					
						樣本 Size	頻率 Freq.						
MoTa Stripping		1		Particle		LSN-5172002-001	Tony (ACCO10)	15h	1 times/week	SPC control	LSN-5241017-001	MF EN	LSN-5172002-001
		2		Contact angle		LSN-5172002-001	DATA PHYSICS (ACCO10)	15h	1 times/week	SPC control	LSN-5241017-001	MF EN	LSN-5172002-001
		3	DefectImp.& Review			LSN-5241013-002	ACK010-040.	5Sh	according to the sampling planT-5240002-012-B	product abnormal report	LSN-5241017-001	MF EN	LSN-5241002-001
		4	CD			LSN-5240013-064	APW020 - 030	35h	according to the sampling planT-5240002-012-B	SPC control	LSN-5241017-001	MF EN	LSN-5241002-001
SE	GL_S SiNx depo.	1		SiNx_Thk		LSN-5191002-002	Optical Thickness Meter (Nanonetics)	20Sh	1 time/2Week	SPC control	LSN-5241017-001	MF EN	LSN-5191002-002
		2		SiNx_particle		LSN-5191002-002	Tony (ACCO10)	20Sh	1 time/2Week	SPC control	LSN-5241017-001	MF EN	LSN-5191002-002
3L Pre Clean		1		Particle		LSN-5171102-001	Tony (ACCO10)	15h	1 times/week	SPC control	LSN-5241017-001	MF EN	LSN-5171102-001
		2		Contact angle		LSN-5171102-001	DATA PHYSICS (ACCO10)	15h	1 times/week	SPC control	LSN-5241017-001	MF EN	LSN-5171102-001
E_S 3 L depo.	DefectImp.& Review	1				LSN-5241013-002	ACK010-040.	5Sh	according to the sampling planT-5240002-012-B	product abnormal report	LSN-5241017-001	MF EN	LSN-5241002-001
		2		a-SiN <sup>+</sup> -a-Si <sub>2</sub> Thk-aver- age	★	LSN-5191002-002	Optical Thickness Meter (Nanonetics)	20Sh	1 time/2Week	SPC control	LSN-5241017-001	MF EN	LSN-5191002-002
		3		a-SiN <sup>+</sup> -a-Si <sub>2</sub> Thk-unif- ormity	☆	LSN-5191002-002	Tony (ACCO10)	20Sh	1 time/2Week	SPC control	LSN-5241017-001	MF EN	LSN-5191002-002
		4	Macro			LSN-5240005-001	ACM010-030	20Sh	according to the sampling planT-5240002-012-B	product abnormal report	LSN-5241017-001	MF EN	LSN-5241002-001
SE_D Photo	DefectImp.& Review	1	CD			LSN-5240013-064	APW020 - 030	25h	according to the sampling planT-5240002-012-B	SPC control	LSN-5241017-001	MF EN	LSN-5200002-003
		2	OVL			LSN-5240013-064	APW020 - 030	25h	according to the sampling planT-5240002-012-B	SPC control	LSN-5241017-001	MF EN	LSN-5200002-003
		3		Particle		LSN-5200002-003	Tony (ACCO10)	25h	1Times/After PM and	SPC control	LSN-5241017-001	MF EN	LSN-5200002-003
		4				LSN-5241013-002	ACK010-040.	5Sh	according to the sampling planT-5240002-012-B	product abnormal report	LSN-5241017-001	MF EN	LSN-5241002-001



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						樣本 Size	頻率 Freq.								
3L etching		5		PR SE Pattern Thickness		LSN-520002-003	Optical Thickness Meter (Nanometrics)	25h	1Times/After PM and 1 Times/Per Week	SPC control	LSN-5241017-001	MF EN	LSN-520002-003		
		6	Macro			LSN-5241013-003	ACM010-030	55h	according to the sampling plan T-5240002-012-B	product abnormal report	LSN-5241017-001	MF EN	LSN-5241002-001		
		1		Particle			LSN-5212002-001	Tony (ACCO10)	45h	1 times/week	SPC control	LSN-5241017-001	MF EN	LSN-5212002-001	
		2	DefectInsp.& Review		☆	LSN-5241013-002	ACK010-040	55h	according to the sampling plan T-5240005-001-B	product abnormal report	LSN-5241017-001	MF EN	LSN-5241002-001		
		3		Etching Rate			LSN-5212002-001	Nanometrics (AVT010)	45h	1 times/week	SPC control	LSN-5241017-001	MF EN	LSN-5212002-001	
	3L Stripping		1		Particle		LSN-5172002-001	Tony (ACCO10)	15h	1 times/week	SPC control	LSN-5241017-001	MF EN	LSN-5172002-001	
			2		Contact angle			LSN-5172002-001	DATA PHYSICS (ACCO10)	15h	1 times/week	SPC control	LSN-5241017-001	MF EN	LSN-5172002-001
			3	DefectInsp.& Review				LSN-5241013-002	ACK010-040	55h	according to the sampling plan T-5240002-012-B	product abnormal report	LSN-5241017-001	MF EN	LSN-5241002-001
			4	CD				LSN-5240013-064	APW020 - 030	35h	according to the sampling plan T-5240002-012-B	SPC control	LSN-5241017-001	MF EN	LSN-5241002-001
			5		Particle			LSN-5181002-004	Tony (ACCO10)	15h/CH	2 time/week	SPC control	LSN-5241017-001	MF EN	LSN-5181002-004
SD	MoTa sputtering	2		MoTa_RS-avgnet	★	LSN-5181002-004	5-RESISTANCE MEASURE(ASR010)	15h/CH	3 time/week	SPC control	LSN-5241017-001	MF EN	LSN-5181002-004		
				MoTa_RS-uniformity	☆										
		3		MoTa_Thickness			LSN-5181002-004	Profile(AS7010)	15h/CH	2 time/Month	SPC control	LSN-5241017-001	MF EN	LSN-5181002-004	
		4	DefectInsp.& Review		☆		LSN-5241013-002	ACK010-040	55h	according to the sampling plan T-5240002-012-B	product abnormal report	LSN-5241017-001	MF EN	LSN-5194002-001	
		5	Macro				LSN-5241013-003	ACM010-030	55h	according to the sampling plan T-5240002-012-B	product abnormal report	LSN-5241017-001	MF EN	LSN-5241002-001	
SD_D Photo		1		CD			LSN-5240013-064	APW020 - 030	25h	according to the sampling plan T-5240002-012-B	SPC control	LSN-5241017-001	MF EN	LSN-520002-003	
		2		OVL			LSN-5240013-064	APW020 - 030	25h	according to the sampling plan T-5240002-012-B	SPC control	LSN-5241017-001	MF EN	LSN-520002-003	
		3		Particle			LSN-520002-003	Tony ACC010	25h	1Times/After PM and 1 Times/Per Week	SPC control	LSN-5241017-001	MF EN	LSN-520002-003	



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						樣本 Size	頻率 Freq.								
CH	Post Bake	4	DefectInsp.& Review				LSN-5241013-002	ACK010-040	55h	according to the sampling plan T-5240002-012-B	product abnormal report	LSN-5241017-001	MF EN	LSN-5241002-001	
		5		PR SD Pattern Thickness			LSN-520002-003	Optical Thickness Meter (Nanometrics)	25h	1Times/After PM and 1 Times/Per Week	SPC control	LSN-5241017-001	MF EN	LSN-520002-003	
		6	Macro				LSN-5241013-003	ACM010-030	55h	according to the sampling plan T-5240002-012-B	product abnormal report	LSN-5241017-001	MF EN	LSN-5241002-001	
	MoTa etching		1		Particle			LSN-5211002-001	Tony (ACCO10)	25h	1 times/week	SPC control	LSN-5241017-001	MF EN	LSN-5211002-001
			2		Etching Rate			LSN-5177002-001	Stylus Profile(AS7010) (BS7010)	15h	1 times/week	SPC control	LSN-5241017-001	MF EN	LSN-5177002-001
		3	結晶刮傷	蝕刻機	☆		LSN-5241013-002	Orbo	55h	according to the sampling plan T-5240002-012-B	product abnormal report	LSN-5241017-001	MF EN	LSN-5241002-001	
								人員目視							
	MoTa Stripping		1		Particle			LSN-5172002-001	Tony (ACCO10)	15h	1 times/week	SPC control	LSN-5241017-001	MF EN	LSN-5172002-001
			2		Contact angle			LSN-5172002-001	DATA PHYSICS (ACCO10)	15h	1 times/week	SPC control	LSN-5241017-001	MF EN	LSN-5172002-001
			3	DefectInsp.& Review				LSN-5241013-002	ACK010-040	55h	according to the sampling plan T-5240002-012-B	product abnormal report	LSN-5241017-001	MF EN	LSN-5241002-001
	Back channel etching		1		Particle			LSN-5212002-001	Tony (ACCO10)	45h	1 times/week	SPC control	LSN-5241017-001	MF EN	LSN-5212002-001
			2		Etching Rate			LSN-5212002-001	Nanometrics (AVT010)	45h	1 times/week	SPC control	LSN-5241017-001	MF EN	LSN-5212002-001
			3	DefectInsp.& Review		☆		LSN-5241013-002	ACK010-040	55h	according to the sampling plan T-5240002-012-B	product abnormal report	LSN-5241017-001	MF EN	LSN-5241002-001
			4	CD				LSN-5240013-064	APW020 - 030	35h	according to the sampling plan T-5240002-012-B	SPC control	LSN-5241017-001	MF EN	LSN-5241002-001
	CH_S PSINt		1		PSIN_Thk			LSN-5191002-002	Optical Thickness Meter (Nanometrics)	205h	1 time/2Week	SPC control	LSN-5241017-001	MF EN	LSN-5191002-002
2				Pin_particle			LSN-5191002-002	Tony (ACCO10)	205h	1 time/2Week	SPC control	LSN-5241017-001	MF EN	LSN-5191002-002	



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		編號 No.	產品 管制要項 Product	製程 管制要項 Process		產品/製程 規格(公差) Product/Process Spec. (Tol.)	評估/量測技巧/Evaluation/ Measurement Tech.	取樣 Sample					
主流程 Process							樣本 Size	頻率 Freq.					
PE	CH_D Photo	3	Macro		LSN-5240005-001	ACM010-030	20Sh	according to the sampling plant-5240002-012-B	product abnormal report	LSN-5241017-001	MF EN	LSN-5241002-001	
		4	DefectInsp.& Review		LSN-5241013-002	ACK010-040	5Sh	according to the sampling plant-5240002-012-B	product abnormal report	LSN-5241017-001	MF EN	LSN-5241002-001	
	PSINx etching	1	CD		LSN-5240013-064	APW020 + 030	2Sh	according to the sampling plant-5240002-012-B	SPC control	LSN-5241017-001	MF EN	LSN-5200002-003	
		2	OVL		LSN-5240013-064	APW020 + 030	2Sh	according to the sampling plant-5240002-012-B	SPC control	LSN-5241017-001	MF EN	LSN-5200002-003	
		3		Particle		LSN-5200002-003	Tony (ACG010)	2Sh	1 Times/After PM and 1 Times/Per Week	SPC control	LSN-5241017-001	MF EN	LSN-5200002-003
		4	DefectInsp.& Review		LSN-5241013-002	ACK010-040	5Sh	according to the sampling plant-5240002-012-B	product abnormal report	LSN-5241017-001	MF EN	LSN-5241002-001	
		5		PR CH Pattern Thickness		LSN-5200002-003	Optical Thickness Meter (Nanometrics)	2Sh	1 Times/After PM and 1 Times/Per Week	SPC control	LSN-5241017-001	MF EN	LSN-5200002-003
		6	Macro		LSN-5241013-003	ACM010-030	5Sh	according to the sampling plant-5240002-012-B	product abnormal report	LSN-5241017-001	MF EN	LSN-5241002-001	
	PSINx Stripping	1		Particle		LSN-5213002-001	Tony (ACG010)	3Sh	1 times/week	SPC control	LSN-5241017-001	MF EN	LSN-5213002-001
		2		Etching Rate		LSN-5213002-001	Nanometrics (AVT010)	3Sh	1 times/week	SPC control	LSN-5241017-001	MF EN	LSN-5213002-001
		3	DefectInsp.& Review		LSN-5241013-002	ACK010-040	5Sh	according to the sampling plant-5240002-012-B	product abnormal report	LSN-5241017-001	MF EN	LSN-5241002-001	
		4		Contact angle		LSN-5172002-001	Tony (ACG010)	1Sh	1 times/week	SPC control	LSN-5241017-001	MF EN	LSN-5172002-001
	ITO sputtering	1				LSN-5172002-001	DATAPHYSICS (ACCU010)	1Sh	1 times/week	SPC control	LSN-5241017-001	MF EN	LSN-5172002-001
		2	DefectInsp.& Review			LSN-5241013-002	ACK010-040	5Sh	according to the sampling plant-5240002-012-B	product abnormal report	LSN-5241017-001	MF EN	LSN-5241002-001
		3		ITO_RS		LSN-5181002-004	S-RESISTANCE MEASURER(ASR010)	1Sh/ CH	3 times/week	SPC control	LSN-5241017-001	MF EN	LSN-5181002-004
	ITO sputtering	1		ITO_particle		LSN-5181002-004	Tony (ACG010)	1Sh/ CH	2 times/week	SPC control	LSN-5241017-001	MF EN	LSN-5181002-004
		2	DefectInsp.& Review			LSN-5241013-002	ACK010-040	5Sh	according to the sampling plant-5240002-012-B	product abnormal report	LSN-5241017-001	MF EN	LSN-5241002-001
	3					LSN-5181002-004	S-RESISTANCE MEASURER(ASR010)	1Sh/ CH	3 times/week	SPC control	LSN-5241017-001	MF EN	LSN-5181002-004



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製程名稱 Process Name	副流程 Sub-process	特性要項 Characteristics			特殊 特性 等級 Special Char. Class	方法 Method			管制方式 Control Method	反應計畫 Reaction Plan	權責單位 Account- able Dept.	相關 文件 Document No.		
		編號 No.	產品 管制要項 Product	製程 管制要項 Process		產品/製程 規格(公差) Product/Process Spec. (Tol.)	評估/量測技巧/Evaluation/ Measurement Tech.	取樣 Sample						
主流程 Process							樣本 Size	頻率 Freq.						
PE	PE_D Photo	4		ITO Thickness		LSN-5181002-004	Optical Thickness Meter (Nanometrics)	1Sh/ CH	3 times/week	SPC control	LSN-5241017-001	MF EN	LSN-5181002-004	
		1	CD		LSN-5240013-064	APW020 + 030	2Sh	according to the sampling plant-5240002-012-B	SPC control	LSN-5241017-001	MF EN	LSN-5200002-003		
		2	OVL		LSN-5240013-064	APW020 + 030	2Sh	according to the sampling plant-5240002-012-B	SPC control	LSN-5241017-001	MF EN	LSN-5200002-003		
		3		Particle		LSN-5200002-003	Tony (ACG010)	2Sh	1 Times/After PM and 1 Times/Per Week	SPC control	LSN-5241017-001	MF EN	LSN-5200002-003	
		4	DefectInsp.& Review		LSN-5241013-002	ACK010-040	5Sh	according to the sampling plant-5240002-012-B	product abnormal report	LSN-5241017-001	MF EN	LSN-5241002-001		
		5		PR PE Pattern Thickness		LSN-5240013-064	Optical Thickness Meter (Nanometrics)	2Sh	1 Times/After PM and 1 Times/Per Week	SPC control	LSN-5241017-001	MF EN	LSN-5200002-003	
	ITO etching	1		Particle		LSN-5241013-003	ACM010-030	5Sh	according to the sampling plant-5240002-012-B	product abnormal report	LSN-5241017-001	MF EN	LSN-5241002-001	
		2		Etching Rate		LSN-5177002-001	Tony (ACG010)	1Sh	1 times/week	SPC control	LSN-5241017-001	MF EN	LSN-5177002-001	
		3	DefectInsp.& Review			LSN-5241013-002	ACK010-040	5Sh	according to the sampling plant-5240002-012-B	product abnormal report	LSN-5241017-001	MF EN	LSN-5241002-001	
	ITO Stripping	1		Particle		LSN-5172002-001	Tony (ACG010)	1Sh	1 times/week	SPC control	LSN-5241017-001	MF EN	LSN-5172002-001	
		2		Contact angle		LSN-5172002-001	DATAPHYSICS (ACCU010)	1Sh	1 times/week	SPC control	LSN-5241017-001	MF EN	LSN-5172002-001	
		3	DefectInsp.& Review			LSN-5241013-002	ACK010-040	5Sh	according to the sampling plant-5240002-012-B	product abnormal report	LSN-5241017-001	MF EN	LSN-5241002-001	
	4		CD		LSN-5240013-064	APW020 + 030	3Sh	according to the sampling plant-5240002-012-B	SPC control	LSN-5241017-001	MF EN	LSN-5241002-001		
	Annual Oven	Annual Oven	1		Particle		LSN-5211002-001	Tony (ACG010)	2Sh	1 times/week	SPC control	LSN-5241017-001	MF EN	LSN-5211002-001
	TEG test	TEG test	1	TEG		LSN-5304013-001	AT-MDC	4Sh	All Lots	L1 web report system	LSN-5241017-003	MF EN	LSN-5304013-033	
	Amey Test	Amey Test	1	Yield		LSN-5304013-088	AT-MDC	25Sh	Sampling lot	L1 web report system	LSN-5241017-002	MF EN	LSN-5302013-001	





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產品管制計劃

Product Control Plan

<input type="checkbox"/> 原型樣品 (Prototype) <input checked="" type="checkbox"/> 量試 (Pilot Run) <input type="checkbox"/> 量產 (Mass Production)				管制計劃編號 Product Control Number		LSN-531000-032		版次 Edition		01						
產品/製程名稱 Product/Process				050LA01/CELL 工程		專案負責人/分機 Team Leader/Ext.		魏心怡/68-3617		初版日期 1st Issue date		2011/08/11				
產品/製程說明 Product/Process Description				/ PS(SOC)、轉寫、配向、ODF、切裂 PS(SOC) · PI Printing · Rubbing · ODF · scribing		專案小組 Project Team Member		陳宗源、張家榮、林瑩翠、薛又翰、 陳俊任、盧德偉、王清華、施裕敦		修訂日期 Revised date		2012/04/20				
製程名稱 Process Name				特性要項 Characteristics			特殊 特性 等級 Specia 1 Char. Class	方法 Methods				反應計畫 Reaction Plan	權責 單位 Account -able Dept.	相關 文件 Document No.		
主流程 Process		副流程 Sub-process		設備/治具 Machine, Device, Jig, Tools for Mfg.	編 號 No.	產品 管制要項 Product		製程 管制要項 Process	產品/製程 規格(公差) Product/Process Spec.(ToI.)	評估/量測技巧 Evaluation/ Measurement Tech.	取樣 Sample				管制方法 Control method	
編號	名稱	編號	名稱								樣本 Size					頻率 Freq.
1	Photo Spacer 量測	1	Photo Spacer Measure equipment	Photo Spacer Measure equipment	1	PS 高度 PS height			SNU PSIS-4504	全量 All	全量 All	SPC	LSN- 5310002-602	MF	LSN-5481402-001 T-5481422-002-A T-5481422-002-B T-5481422-002-C	
2	PI Printing	1	Cleaning before PI (CF)	Washing machine before alignment film printing (CF)	1		上/下 風刀元 壓 Air Knife up/down Pressure perpressure		壓力計 Pressure meter	1sh	每班或機 種切換 Each shift or product change	Interlock	LSN- 5310002-602	MF	LSN-5331102-001 T-5331102-001-A	



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製程名稱 Process Name				特性要項 Characteristics			特殊 特性 等級 Specia 1 Char. Class	方法 Methods				反應計畫 Reaction Plan	權責 單位 Account -able Dept.	相關 文件 Document No.		
主流程 Process		副流程 Sub-process		設備/治具 Machine, Device, Jig, Tools for Mfg.	編 號 No.	產品 管制要項 Product		製程 管制要項 Process	產品/製程 規格(公差) Product/Process Spec.(ToI.)	評估/量測技巧 Evaluation/ Measurement Tech.	取樣 Sample				管制方法 Control method	
編號	名稱	編號	名稱								樣本 Size					頻率 Freq.
2	PI Printing	1	Cleaning before PI (CF)	Washing machine before alignment film printing (CF)	2		接觸角 Contact angle		AST VCA-4640S	3sh	每週量測 2 次 2 times/ Week	SPC	LSN- 5310002-602	MF	LSN-5331104-003 T-5331104-603-A	
2	PI Printing	1	Clean before PI (TFI)	Washing machine before alignment film printing (TFI)	1		上/下 風刀元 壓 Air Knife up/down Pressure perpressure		壓力計 Pressure meter	1sh	每班或機 種切換 Each shift or product change	Interlock	LSN- 5310002-602	MF	LSN-5331102-001 T-5331102-001-A	
					2		接觸角 Contact angle		AST VCA-4640S	3sh	每週量測 2 次 2 times/ week	SPC	LSN- 5310002-602	MF	LSN-5331104-003 T-5331104-603-A	
2	PI Printing	2	Alignment film printing (CF)	Alignment film printing machine (CF)	1		PI 膜厚 PI Thickness	★	HORIBA FF1000	3sh	換版 APR plate change	SPC	LSN- 5310002-602	MF	LSN-5481102-001 T-5481102-001-D	



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製程名稱 Process Name				設備/治具 Machine, Device, Jig, Tools for Mfg.	特性要項 Characteristics			特殊 特性 等級 Specia l Char. Class	方法 Methods				反應計畫 Reaction Plan	權責 單位 Account -able Dept.	相關 文件 Document No.	
主流程 Process		副流程 Sub-process			編號 No.	產品 管制要項 Product	製程 管制要項 Process		產品/製程 規格(公差) Product/Process Spec.(ToL)	評估/量測技巧 Evaluation/ Measurement Tech.	取樣 Sample					管制方法 Control method
編號	名稱	編號	名稱								樣本 Size	頻率 Freq.				
2	PI Printing	2	Alignment film printing (CF)	Alignment film printing machine (CF)	2	幅寬 Nip B		目視檢查 Visual Inspection	1sh	每班或機 種切換 Each shift or product change	點檢紀錄表 Check Sheet	LSN- 5310002-602	MF	LSN-5341102-001 T-5341122-002-A T-5341122-002-B T-5341122-002-C		
					3	品位 Mura		目視檢查 Visual Inspection	1sh	100 sh	點檢紀錄表 Check Sheet	LSN-531000 2-602	MF	LSN-5341105-001 T-5341105-001-A		
2	PI Printing	3	Alignment film pre-baking (CF)	Alignment film prebaking machine (CF)	1	各 position 溫 度 Temp. for each position		熱電耦 thermocouple	1sh	每班或機種 切換 Each shift or product change	Interlock	LSN- 5310002-602	MF	LSN-5341102-001 T-5341122-002-A T-5341122-002-B T-5341122-002-C		
					2	燒成時間 Curing time		點檢 Check	1sh	每班或機種 切換 Each shift or product change	Interlock	LSN- 5310002-602	MF	LSN-5341102-001 T-5341122-002-A T-5341122-002-B T-5341122-002-C		



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製程名稱 Process Name				設備/治具 Machine, Device, Jig, Tools for Mfg.	特性要項 Characteristics			特殊 特性 等級 Specia l Char. Class	方法 Methods				反應計畫 Reaction Plan	權責 單位 Account -able Dept.	相關 文件 Document No.	
主流程 Process		副流程 Sub-process			編號 No.	產品 管制要項 Product	製程 管制要項 Process		產品/製程 規格(公差) Product/Process Spec.(ToL)	評估/量測技巧 Evaluation/ Measurement Tech.	取樣 Sample					管制方法 Control method
編號	名稱	編號	名稱								樣本 Size	頻率 Freq.				
2	PI Printing	4	Alignment film curing (CF)	Alignment film curing machine (CF)	1	硬烤溫度 Curing temp.		熱電耦 thermocouple	1sh	每班或機種 切換 Each shift or product change	Interlock	LSN- 5310002-602	MF	LSN-5341408-001 T-5341322-002-A T-5341322-002-B T-5341322-002-C		
					2	硬烤時間 Curing time		點檢 Check	1sh	每班或機種 切換 Each shift or product change	Interlock	LSN- 5310002-602	MF	LSN-5341408-001 T-5341322-002-A T-5341322-002-B T-5341322-002-C		
2	PI Printing	4	Alignment film curing (CF)	Alignment film curing machine (CF)	3	冷卻時間 Cooling time		點檢 Check	1sh	每班或機 種切換 Each shift or product change	Interlock	LSN- 5310002-602	MF	LSN-5341408-001 T-5341322-002-A T-5341322-002-B T-5341322-002-C		
2	PI Printing	2	Alignment film printing (TFT)	Alignment film printing machine (TFT)	1	PI 膜厚 PI Thickness	★	HORIBA FF1000	3sh	換版 APR plate change	SPC	LSN- 5310002-602	MF	LSN-5481102-001 T-5481102-001-D		



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製程名稱 Process Name				設備/治具 Machine, Device, Jig, Tools for Mfg.	特性要項 Characteristics			特殊特性等級 Special Char. Class	方法 Methods				反應計畫 Reaction Plan	權責單位 Account-able Dept.	相關文件 Document No.	
主流程 Process		副流程 Sub-process			編號 No.	產品管制要項 Product	製程管制要項 Process		產品/製程規格(公差) Product/Process Spec.(Tol.)	評估/量測技巧 Evaluation/ Measurement Tech.	取樣 Sample					管制方法 Control method
編號	名稱	編號	名稱								樣本 Size	頻率 Freq.				
					2	幅寬 Nip B		目視檢查 Visual Inspection	Ish	每班或機種切換 Each shift or product change	點檢紀錄表 Check Sheet	LSN-5310002-602	MF	LSN-5341102-001 T-5341122-002-A T-5341122-002-B T-5341122-002-C		
					3	品位 Mura		目視檢查 Visual Inspection	Ish	100 sh	點檢紀錄表 Check Sheet	LSN-5310002-602	MF	LSN-5341105-001 T-5341105-001-A		
2	PI Printing	3	Alignment film Prebaking (TFT)	Alignment film prebaking machine (TFT)	1	各 position 溫度 Temp. for each position		熱電耦 thermocouple	Ish	每班或機種切換 Each shift or product change	Interlock	LSN-5310002-602	MF	LSN-5341102-001 T-5341122-002-A T-5341122-002-B T-5341122-002-C		
					2	燒成時間 Curing time		點檢 Check	Ish	每班或機種切換 Each shift or product change	Interlock	LSN-5310002-602	MF	LSN-5341102-001 T-5341122-002-A T-5341122-002-B T-5341122-002-C		



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製程名稱 Process Name				設備/治具 Machine, Device, Jig, Tools for Mfg.	特性要項 Characteristics			特殊特性等級 Special Char. Class	方法 Methods				反應計畫 Reaction Plan	權責單位 Account-able Dept.	相關文件 Document No.	
主流程 Process		副流程 Sub-process			編號 No.	產品管制要項 Product	製程管制要項 Process		產品/製程規格(公差) Product/Process Spec.(Tol.)	評估/量測技巧 Evaluation/ Measurement Tech.	取樣 Sample					管制方法 Control method
編號	名稱	編號	名稱								樣本 Size	頻率 Freq.				
2	PI Printing	4	Alignment film Curing (TFT)	Alignment film curing machine (TFT)	1	硬烤溫度 Curing temp.		熱電耦 thermocouple	Ish	每班或機種切換 Each shift or product change	Interlock	LSN-5310002-602	MF	LSN-5341408-001 T-5341322-002-A T-5341322-002-B T-5341322-002-C		
					2	硬烤時間 Curing time		點檢 Check	Ish	每班或機種切換 Each shift or product change	Interlock	LSN-5310002-602	MF	LSN-5341408-001 T-5341322-002-A T-5341322-002-B T-5341322-002-C		
					3	冷卻時間 Cooling time		點檢 Check	Ish	每班或機種切換 Each shift or product change	Interlock	LSN-5310002-602	MF	LSN-5341408-001 T-5341322-002-A T-5341322-002-B T-5341322-002-C		
3	Rubbing	1	Rubbing (CF)	Rubbing machine (CF1/CF2) (CF3/CF4)	1	滾輪轉數 Roller Speed		伺服馬達回饋 Server Motor feedback	Ish	每班或機種切換 Each shift or product change	點檢紀錄表 Check Sheet	LSN-5310002-602	MF	LSN-5351102-002 LSN-5351102-001 T-5351122-003-A T-5351122-003-B T-5351122-003-C		



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製程名稱 Process Name				設備/治具 Machine, Device, Jig, Tools for Mfg.	特性要項 Characteristics			特殊 特性 等級 Specia 1 Char. Class	方法 Methods				反應計畫 Reaction Plan	權責 單位 Account -able Dept.	相關 文件 Document No.	
主流程 Process		副流程 Sub-process			編 號 No.	產品 管制要項 Product	製程 管制要項 Process		產品/製程 規格(公差) Product/Process Spec.(Tol.)	評估/量測技巧 Evaluation/ Measurement Tech.	取樣 Sample					管制方法 Control method
編號	名稱	編號	名稱								樣本 Size	頻率 Freq.				
						Stage 速度 Stage Speed		點檢 Check	Ish	每班或機 種切換 Each shift or product change	點檢紀錄表 Check Sheet	LSN- 5310002-602	MF	T-5351122-002-A T-5351122-002-B T-5351122-002-C		
3	Rubbing	1	Rubbing (CF)	Rubbing machine (CF1/CF2) (CF3/CF4)	3	滾輪間隙設 定 Roller Gap		間隙 sensor Gap sensor	Ish	每班或機 種切換 Each shift or product change	Interlock	LSN- 5310002-602	MF	LSN-5351102-002 LSN-5351102-001		
					4	滾輪角度 Roller Angle		目視檢查 Visual Inspection	Ish	每班或機 種切換 Each shift or product change	點檢紀錄表 Check Sheet	LSN- 5310002-602	MF	T-5351122-003-A T-5351122-003-B T-5351122-003-C		
					5	基板投入角 度 Glass Flow Direction		角度 sensor Angel sensor	Ish	每班或機 種切換 Each shift or product change	Interlock	LSN- 5310002-602	MF	T-5351122-002-A T-5351122-002-B T-5351122-002-C		



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製程名稱 Process Name				設備/治具 Machine, Device, Jig, Tools for Mfg.	特性要項 Characteristics			特殊 特性 等級 Specia 1 Char. Class	方法 Methods				反應計畫 Reaction Plan	權責 單位 Account -able Dept.	相關 文件 Document No.	
主流程 Process		副流程 Sub-process			編 號 No.	產品 管制要項 Product	製程 管制要項 Process		產品/製程 規格(公差) Product/Process Spec.(Tol.)	評估/量測技巧 Evaluation/ Measurement Tech.	取樣 Sample					管制方法 Control method
編號	名稱	編號	名稱								樣本 Size	頻率 Freq.				
						品位 Mura		目視檢查 Visual Inspection	Ish	50 sh	點檢紀錄表 Check Sheet	LSN- 5310002-602	MF	LSN-5351105-001 T-5351105-001-D		
3	Rubbing	2	Cleaning after Rubbing (CF)	Cleaning machine after rubbing (CF)	1	Conveyor 速 度 Conveyor speed		點檢 Check	Ish	每班或機 種切 換 Each shift or product change	Interlock	LSN- 5310002-602	MF	LSN-5361102-001 T-5361122-002-A T-5361122-002-B T-5361122-002-C		
					2	IPA 處理時間 IPA Process time		點檢 Check	Ish	每班或機 種切 換 Each shift or product change	Interlock					
3	Rubbing	3	Bake drying after rubbing cleaning (CF)	Bake drying Oven after Rubbing cleaning (CF)	1	乾燥時間 Curing time		點檢 Check	Ish	每班或機 種切 換 Each shift or product change	Interlock	LSN- 5310002-602	MF	LSN-5361102-001 T-5361122-002-A T-5361122-002-B T-5361122-002-C		



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製程名稱 Process Name				設備/治具 Machine, Device, Jig, Tools for Mfg.	特性要項 Characteristics			特殊特性等級 Special Char. Class	方法 Methods				反應計畫 Reaction Plan	權責單位 Accountable Dept.	相關文件 Document No.	
主流程 Process		副流程 Sub-process			編號 No.	產品管制要項 Product	製程管制要項 Process		產品/製程規格(公差) Product/Process Spec.(Tol.)	評估/量測技巧 Evaluation/Measurement Tech.	取樣 Sample					管制方法 Control method
編號	名稱	編號	名稱								樣本 Size	頻率 Freq.				
						乾燥溫度 Temp.		熱電耦 thermocouple	1sh	每班或機種 切換 Each shift or product change	Interlock					
3	Rubbing	1	Rubbing (TFT)	Rubbing machine (TFT1/TFT2) (TFT3/TFT4)	1	滾輪轉數 Roller Speed		伺服馬達回饋 Server Motor feedback	1sh	每班或機種 切換 Each shift or product change	點檢紀錄表 Check Sheet	LSN-5310002-602	MF	LSN-5351102-002 LSN-5351102-001 T-5351122-003-D T-5351122-003-E T-5351122-003-F		
					2	Stage 速度 Stage Speed		點檢 Check	1sh	每班或機種 切換 Each shift or product change	點檢紀錄表 Check Sheet	LSN-5310002-602	MF			
					3	滾輪間隙設定 Roller Gap		間隙 sensor Gap sensor	1sh	每班或機種 切換 Each shift or product change	Interlock	LSN-5310002-602	MF			



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製程名稱 Process Name				設備/治具 Machine, Device, Jig, Tools for Mfg.	特性要項 Characteristics			特殊特性等級 Special Char. Class	方法 Methods				反應計畫 Reaction Plan	權責單位 Accountable Dept.	相關文件 Document No.	
主流程 Process		副流程 Sub-process			編號 No.	產品管制要項 Product	製程管制要項 Process		產品/製程規格(公差) Product/Process Spec.(Tol.)	評估/量測技巧 Evaluation/Measurement Tech.	取樣 Sample					管制方法 Control method
編號	名稱	編號	名稱								樣本 Size	頻率 Freq.				
						滾輪角度 Roller Angle		目視檢查 Visual Inspection	1sh	每班或機種 切換 Each shift or product change	點檢紀錄表 Check Sheet	LSN-5310002-602	MF			
3	Rubbing	1	Rubbing (TFT)	Rubbing machine (TFT1/TFT2) (TFT3/TFT4)	5	基板投入角度 Glass flow direction		角度 sensor Angel sensor	1sh	每班或機種 切換 Each shift or product change	Interlock	LSN-5310002-602	MF			
					6	品位 Mura		目視檢查 Visual Inspection	1sh	50 sh	點檢紀錄表 Check Sheet	LSN-5310002-602	MF	LSN-5351105-001 T-5351105-001-D		
3	Rubbing	2	Cleaning after Rubbing (TFT)	Cleaning machine after rubbing (TFT)	1	Conveyor 速度 Conveyor speed		點檢 Check	1sh	每班或機種 切換 Each shift or product change	Interlock	LSN-5310002-602	MF	LSN-5361102-001 T-5361122-002-A T-5361122-002-B T-5361122-002-C		



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主流程 Process		副流程 Sub-process			編號 No.	產品 管制要項 Product	製程 管制要項 Process		產品/製程 規格(公差) Product/Process Spec.(Tol.)	評估/量測技巧 Evaluation/ Measurement Tech.	取樣 Sample					管制方法 Control method
編號	名稱	編號	名稱								樣本 Size	頻率 Freq.				
						IPA 處理時間 IPA Process time		點檢 Check	Ish	每班或機種 切換 Each shift or product change	Interlock					
3	Rubbing	3	Bake drying (TFT)	Bake drying oven after rubbing washing(TFT)	1	乾燥時間 Curing time		點檢 Check	Ish	每班或機 種切換 Each shift or product change	Interlock	LSN- 5310002-602	MF	LSN-5361102-001 T-5361122-002-A T-5361122-002-B T-5361122-002-C		
					2	乾燥溫度 Temp.		熱電偶 thermocouple								
3	Rubbing	4	Rubbing	Pretilt angle measuring machine	1	Pretilt angle		NAVITAR OMS-CP52H Axometrics 20H Axometrics 60H	3sh	流品批號 或機種切 換 Panel lot or product change	SPC	LSN- 5310002-602	MF	LSN-5481204-001		



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主流程 Process		副流程 Sub-process			編號 No.	產品 管制要項 Product	製程 管制要項 Process		產品/製程 規格(公差) Product/Process Spec.(Tol.)	評估/量測技巧 Evaluation/ Measurement Tech.	取樣 Sample					管制方法 Control method
編號	名稱	編號	名稱								樣本 Size	頻率 Freq.				
3	Rubbing	5	Rubbing	Sealant strength measuring machine	1	框膠強度 量測 Sealant strength measuremen t		SE 1220S	5 pcs / sh	換 Roller 前 100 枚 Before change roller	點檢紀錄表 Check Sheet	LSN-531000 2-602	MF	LSN-5385007-002		
5	ODF	1	Sealant dispenser	Sealant dispenser	1	塗佈位置 精度 Dispensing position accuracy		塗佈機 CCD Dispenser CCD	1sh / 台	每班或機 種切換 Each shift or product change	點檢紀錄表 Check Sheet	LSN- 5310002-001	MF	LSN-5385107-001 T-5385122-002-A T-5385122-002-B T-5385122-002-C		
					2	框膠幅寬 Seal width		大基板顯微鏡 Optical microscope of full size	1sh / 台	每班或機 種切換 Each shift or product change	點檢紀錄表 Check Sheet	LSN- 5310002-001				
					3	斷面積 Cross section area	☆	Laser focus displacement	1sh	六檢一 One of six	SPC	LSN- 5310002-602			MF	LSN-5385107-001 T-5385122-002-A T-5385122-002-B



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主流程 Process		副流程 Sub-process			編 號 No.	產品 管制要項 Product	製程 管制要項 Process		產品/製程 規格(公差) Product/Process Spec.(Tol.)	評估/量測技巧 Evaluation/ Measurement Tech.	取樣 Sample					管制方法 Control method
編號	名稱	編號	名稱								樣本 Size	頻率 Freq.				
5	ODF	2	Sealant Defect Inspection	Seal defect inspection	1	斷線 Line defect		HIROSE HSCPTFSE-SE0 2	Ish	全檢 All inspection	Interlock	LSN- 5310002-602	MF	T-5385122-002-C LSN-5385202-001 T-5385122-002-A T-5385122-002-B T-5385122-002-C		
5	ODF	3	LC Dispenser	Liquid crystal dropping machine	1	液晶比抵抗值 LC resistivity		TOYO SR-6517	Ish	每次 J/C 或補充液 品 J/C or add LC	點檢紀錄表 Check Sheet	LSN- 5310002-602	MF	LSN-5401000-001 T-5401000-001-A		
				Liquid crystal dropping machine	2	液晶滴入量 Weight		手動校正 Manual adjustment	Ish	機台自動 啓動前 Before Auto-run	點檢紀錄表 Check Sheet	LSN- 5310002-602	MF	LSN-5401102-001 T-5401122-002-A T-5401122-002-B T-5401122-002-C		
5	ODF	4	Vacuum Aligner	Vacuum alignment machine	1	Chamber 壓力 Chamber pressure		真空度計 Vacuum Gauge	Ish	全檢 All inspection	Interlock	LSN- 5310002-001	MF	LSN-5411215-001 T-5411002-001-E		



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主流程 Process		副流程 Sub-process			編 號 No.	產品 管制要項 Product	製程 管制要項 Process		產品/製程 規格(公差) Product/Process Spec.(Tol.)	評估/量測技巧 Evaluation/ Measurement Tech.	取樣 Sample					管制方法 Control method
編號	名稱	編號	名稱								樣本 Size	頻率 Freq.				
					2	組立精度 assembly accuracy		組立機 CCD VA CCD	Ish	全檢 All inspection	Interlock	LSN- 5310002-001	MF	LSN-5411215-001 T-5411222-002-A T-5411222-002-B T-5411222-002-C		
5	ODF	5	UV Curing	UV Curing Machine	1	Total lamp energy 積算光量		UV 照度計 UV Meter	Ish	每班或機 種切換 Each shift or product change	點檢紀錄表 Check Sheet	LSN- 5310002-001	MF	LSN-5421102-001 T-5421122-002-A T-5421122-002-B T-5421122-002-C		
5	ODF	6	Alignment Inspection	Alignment inspection machine	1	補正前偏 移量 Unmodified alignment		ShinEtsu SE-DEDM	Ish	全檢 All inspection	Interlock	LSN- 5310002-001	MF	LSN-5411302-001 T-5411322-002-A T-5411322-002-B T-5411322-002-C		
					2	補正後偏 移量 modified alignment	☆	ShinEtsu SE-DEDM	Ish	全檢 All inspection	SPC	LSN- 5310002-001	MF	LSN-5411302-001 T-5411322-002-A T-5411322-002-B T-5411322-002-C		
5	ODF	7	After Curing	After Curing Oven	1	溫度 Temperature		Thermocouple	Ish	全檢 All inspection	Interlock	LSN- 5310002-001	MF	LSN-5421202-001 T-5411322-002-A T-5411322-002-B		



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編號	名稱	編號	名稱								樣本 Size	頻率 Freq.				
														T-5411322-002-C		
					2	燒成時間 Curing time		PLC counter		1sh 全檢 All inspection	Interlock	LSN- 5310002-001	MF	LSN-5421202-001 T-5411322-002-A T-5411322-002-B T-5411322-002-C		
5	ODF	8	inspection		1	輝度 Luminance		手持式輝度計 Luminance meter	20 point /per time	每月 1 次 Once / per month	點檢紀錄表 Check Sheet	LSN- 5421300-602	MF	LSN-5421300-001		
					2	缺陷 defect		目視人工 檢查 operator check		1sh 全檢 All inspection	點檢紀錄表 Check Sheet	LSN- 5421313-602	MF	LSN-5421313-001		
6	GMO	1	GMO	拓志	1	缺陷 defect		目視人工 檢查 operator check		1sh 一次/ 批	QC-data	LSN-548181 7-001	MF	LSN-5481817-001		
7	scribing scribing	1	scribing	Panel scribing machine	1	切裂精度 scribing accuracy		Microscope	2pcs	3 hr	抽檢	LSN- 5431205-601	MF	LSN-5431205-001		
					2	Air 原壓 Air Pressure		點檢表頭 Check meter		1 次 班 Each shift	點檢紀錄表 Check Sheet	LSN- 5431210-601	MF	LSN-5431210-001		



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編號	名稱	編號	名稱								樣本 Size	頻率 Freq.				
					3	刀輪切割距離 wheel Cutting Distance		PC MONITOR 顯示 Show in PC MONITOR		1 次 班 Each shift	點檢紀錄表 Check Sheet	LSN- 5431222-601	MF	LSN-5431222-001		
					4	Stage 吸著壓 Stage attraction pressure		點檢表頭 Check meter		1 次 班 Each shift	點檢紀錄表 Check Sheet	LSN- 5431210-601	MF	LSN-5431210-001		
		2	inspection		1	外觀檢 Visual inspection		目視人工 檢查 Operator check		1pcs 全檢 All Inspection	點檢紀錄表 Check Sheet	LSN- 5431205-002	MF	LSN-5431210-001		
9	Cell gap	1	Cell gap		1	Cell gap 監測 Cell gap monitor	Cell gap monitor	NAVITAR OMS-CP52H Axometrics 20H Axometrics 60H		1pcs	3SH/批	SPC LSN- 5452107-001 LSN- 5452119-001	MF	LSN-5481204-001 T-5481204-001-B		
15	package	1	package	packing machine	1	品位 Quality		Operator check		1pcs 全檢 All inspection	QC-data	LSN-547100 2-001 LSN-547100 2-008	MF	LSN-5471002-001 LSN-5471002-008 LSN-5471002-009		





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製程名稱 Process Name				特性要項 Characteristics			特殊特性等級 Special Char. Class	方法 Methods				反應計畫 Reaction Plan	權責單位 Account-able Dept.	相關文件 Document No.		
主流程 Process		副流程 Sub-process		設備/治具 Machine, Device, Jig, Tools for Mfg.	編號 No.	產品管制要項 Product		製程管制要項 Process	產品/製程規格(公差) Product/Process Spec.(Tol.)	評估/量測技巧 Evaluation/ Measurement Tech.	取樣 Sample				管制方法 Control method	
編號	名稱	編號	名稱								樣本 Size					頻率 Freq.
												LSN-547100-2-009 LSN-547100-2-004		LSN-5471002-004		

改訂記錄：

改訂副號	改訂記錄	改訂者	年/月/日
NEW	1. 新規作成	許名育	2011/08/11
01	1.文件標題(原) L1A-CELL-050LA01 管制計畫表→(新) L1A_CELL_050LA01 管制計畫表 2.專案負責人:(原)許名育→(新)魏心怡 3.專案小組(原) 張家榮、王閔正、秦成隆、許時毓、陳恩祈、陳能順→(新) 陳宗源、張家榮、林瑩翠、薛又綸、陳俊任、盧德偉、王清華、施裕敦 4.修改產品/製程規格(公差) 5. Cell gap 用機台(原) OMS-CP5 → (新) Axometrics	魏心怡	2012/04/20



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<input type="checkbox"/> 原型樣品 (Prototype) <input type="checkbox"/> 量試 (Pilot Run) <input checked="" type="checkbox"/> 量產 (Mass Production)				管制計劃編號 Product Control Number		LSN-7530001-003							
產品/製程名稱 Product /Process		全機種		專案負責人/分機 Team Leader/Ext.		林許誠(8325)		初版日期 1st Issue date		2010/01/28			
產品/製程說明 Product/Process Description		機檢作業流程		專案小組 Project Team Member		蔡炳宏(8326)		修訂日期 Revised date					
製程名稱 Process Name		設備/治具 Machine, Device, Jig, Tools for Mfg.	特性要項 Characteristics		特殊特性等級 Special Char. Class	方法 Methods				反應計畫 Reaction Plan	權責單位 Account-able Dept.	相關文件 Document No.	
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							樣本 Size	頻率 Freq.					
高溫爐 Burn-in	組立後面板投入		1							著手報告			
	高溫檢查	高溫爐	1	電壓	△	註一	高溫爐電壓計	1		點檢表	調整後重測, 若有NG通知擔當工程師	MF /EN	依各機種枚業 檢查規範
			2	溫度	△	註二	高溫爐溫度計	1	每班開始時/ 換線時/ 維修 調整/ 異常時	點檢表			LSN-7530004-069
			3	高溫時間	△	註三	高溫爐定時計	1		點檢表			LSN-7530004-059
			4	環境照度		註四	照度計	1	每班作業開始時	點檢表	調整現場照明後重測	MF	LSN-7530404-201



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		樣本 Size			頻率 Freq.								
				不良項目、等級		依限度及規格判定	目視	1	1次/每片	檢移票	不判定,將不良記錄於檢移票流至M檢	MF/EN	依各機種枚葉檢查規範
	面板靜置			時間		靜置 4 小時	現場時鐘			檢移票		MF	LSN-7530004-059
模檢 點燈 檢查	EDID	燒錄機台	1	版本確認		依指示書	MES	100%	連續	紀錄單	不良記錄於檢移票/ Repair 品透解析		LSN-7530004-205
	點燈檢查	點燈機台	1	不良項目、等級	△	依限度及規格判定	目視	1	1次/每片	檢移票	不良現象紀錄於檢移票 R/F 品轉 RC 製程 M檢監控指標離異時通知擔當工程師	MF/EN	LSN-7530004-229 LSN-7530413-002 M-000302-7 TCN出貨暫行指示書
			2	FPC指壓檢查	△	依點燈規格判定	目視	1	1次/每片	檢移票	不良現象紀錄		LSN-7530004-234



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主流程 Process	副流程 Sub-process		編號 No.	產品 管制要項 Product		製程 管制要項 Process	產品/製程 規格(公差) Product/Process Spec.(Tol.)	評估/量測技巧 Evaluation/ Measurement Tech.	取樣 Sample				管制方法 Control method
		樣本 Size			頻率 Freq.								
				環境照度	△	註4	照度計	1	每班作業開始時	點檢表	轉 RC 製程/ M檢監控指標離異時通知擔當工程師		
		照度計	3	環境照度	△	註4	照度計	1	每班作業開始時	點檢表	調整現場照明後重測	MF	LSN-7530404-201 M-000304-18
		ND FILTER	4	透射率	△	±1%	光學量測機	1	1季	點檢表	不良品報廢	MF	M-090398-1
	T/P測試	T/P測試工具	1	T/P檢查程式		依照公版規格判定	目視	1	1次/每片	檢移票	不良現象紀錄於檢移票 R/F 品轉 RC 製程 M檢監控指標離異時通知擔當工程師	MF	LSN-7530005-001
	M檢完了 面板仕分	內部網路連線PC	1	RANK分類		依限度及規格判定	目視	1	1次/每箱	K/P於面板後流前確認通箱面板品位	M檢盤點卡	MF	T-7530004-033-A

備註:

- 註一：電壓設定主要依各機種進行區分。
- 註二：溫度設定主要依各機種進行區分。
- 註三：高溫時間主要依客戶及機種有所區分。
- 註四：M 檢照度是依據各機種進行區分。

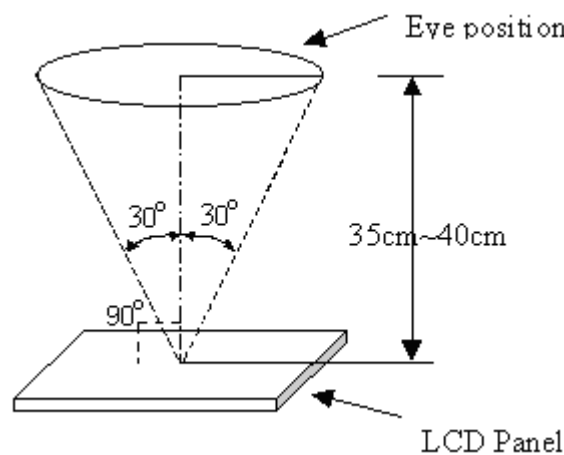
## 9.6 Incoming Inspection Standards

### 9.6.1 Incoming inspection right

- (1) The Incoming Inspection Standard will be agreed and signed by both sides (Customer and CPT) before CPT receives the PO (Purchase Order) forward 7 days.
- (2) The Customer shall notify CPT inspection result in writing within 14 days, otherwise goods will be deemed accepted by customer.

### 9.6.2 Inspection conditions is as follows:

- (1) Viewing distance is approximately 35 ~ 40 cm
- (2) Viewing angle is normal to the LCD panel as Fig \_1 (30°)
- (3) Ambient temperature is approximately  $25 \pm 5^\circ\text{C}$
- (4) Ambient humidity is  $60 \pm 5\%$  RH
- (5) Ambient luminance is from 300 ~ 500 Lux.
- (6) Input signal timing should be typical value.
- (7) Mura & Light leakage inspection at ND-Filter 5%
- (8) If Panel without B/L, please judgment by module with luminance (200~250nits)



### 9.6.3 Special condition

- (1) Viewing distance is close for inspection of adjacent dots and distance between defect dots.
- (2) Viewing condition of "Shot block non-uniformity from oblique angle" is as Fig \_2.
- (3) Exceptional case: View angle  $\pm 40^\circ$  while inspected image-sticking.

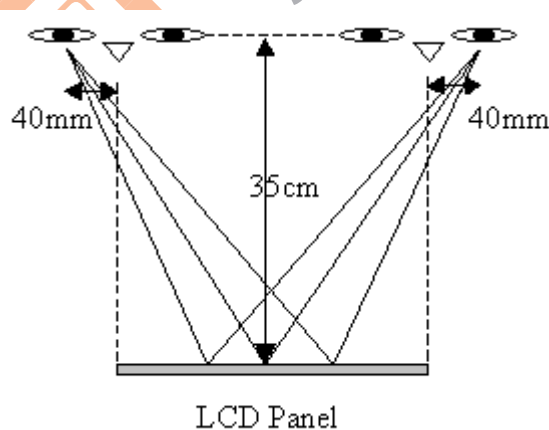
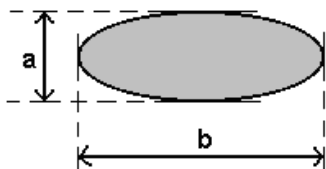


Fig \_ 2

9.6.4 Inspection Criteria

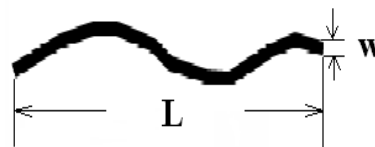
DEFECT TYPE		LIMIT			Note	
VISUAL DEFECT	SCRATCH		$W \leq 0.05\text{mm}$	Ignore	Note1	
			$0.05\text{mm} < W \leq 0.1\text{mm}$	$N \leq 3$		
			$L \leq 10\text{mm}$	$N=0$		
	INTERNAL	SPOT		$\phi < 0.2\text{mm}$	Ignore	Note1
				$0.2\text{mm} \leq \phi \leq 0.4\text{mm}$	$N \leq 3$	
				$0.4\text{mm} < \phi$	$N=0$	
		FIBER		$0.1\text{mm} \leq W \leq 0.2\text{mm},$ $L \leq 2.5\text{mm}$	$N \leq 4$	Note1
				$0.2\text{mm} < W, 2.5\text{mm} < L$	$N=0$	
		POLARIZER BUBBLE		$\phi < 0.25\text{mm}$	Ignore	Note1
				$0.25\text{mm} \leq \phi \leq 0.4\text{mm}$	$N \leq 2$	
				$0.4\text{mm} < \phi$	$N=0$	
		Dent		$\phi < 0.25\text{mm}$	Ignore	Note1
$0.25\text{mm} \leq \phi \leq 0.5\text{mm}$	$N \leq 4$					
$0.5\text{mm} < \phi$	$N=0$					
ELECTRICAL DEFECT	BRIGHT DOT		C Area	O Area	Total	Note2
			0	0	0	
	DARK DOT		2	3	3	Note3
	TOTAL DOT		2	3	3	
	TWO ADJACENT DOT		0	2	2	Note4
	THREE OR MORE ADJACENT DOT		NOT ALLOWED			
LINE DEFECT		NOT ALLOWED			-	
(1) One pixel consists of 3 sub-pixels, including R, G, and B dot. (Sub-pixel = Dot) (2) Panel is acceptable if distance between 2 dot defects are greater or equal to 15mm. (3) Total Dot 3 is including two adjacent dot.						

Width[mm], L : Length[mm], N : Number,  $\phi$ : Average Diameter



$$\phi = (a + b) / 2$$

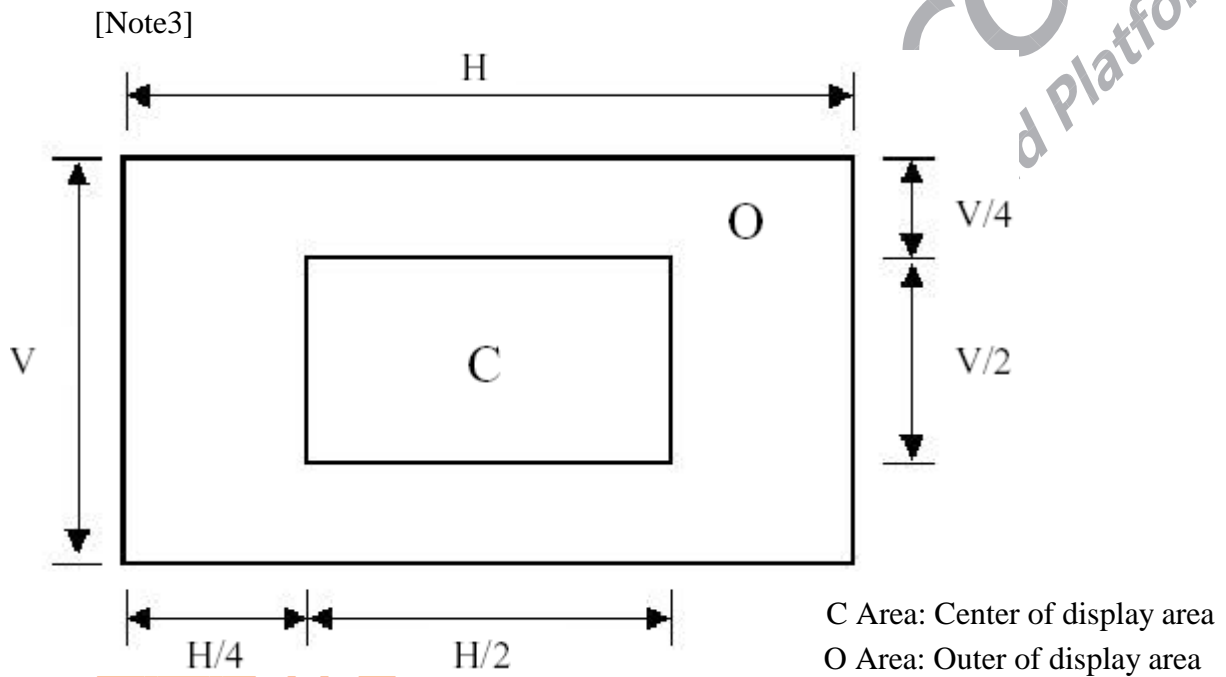
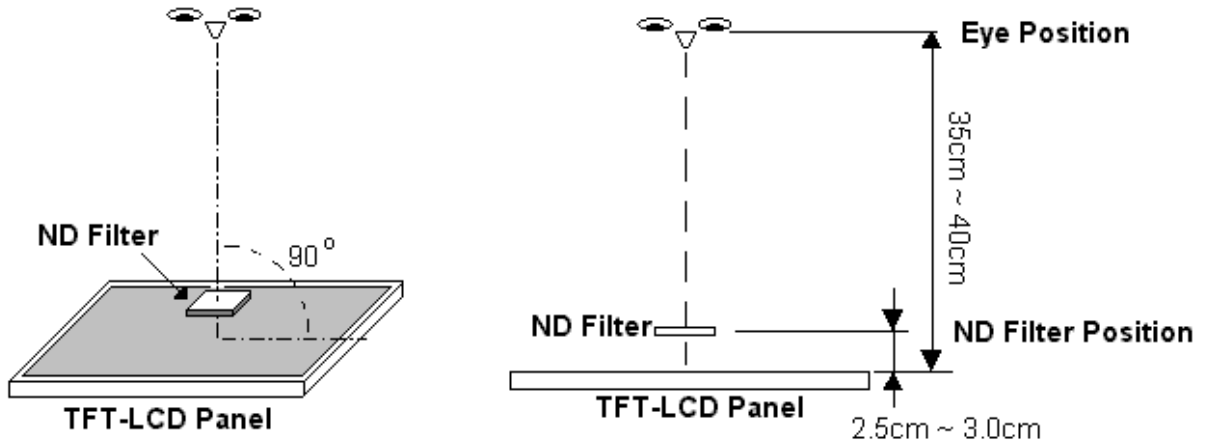
1. (White, black) Spot
2. Polarizer Bubble



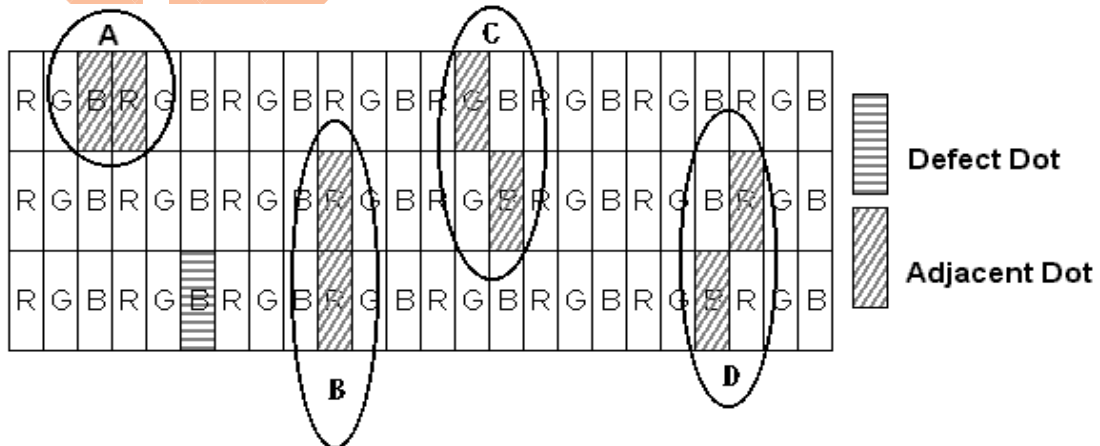
Scratch & Fiber

[Note2] The definition of Bright dot

- (1)The defective area of the dot is larger than 50% of one sub-pixel area.
- (2)The bright dot shall be visible under ND-Filter 5% as following.



[Note4] Judge defect dot and adjacent dot as following. Allow below (as A, B, C and D status) adjacent defect dots, including dark adjacent dot. And they will be counted 2 defect dots in total quantity.



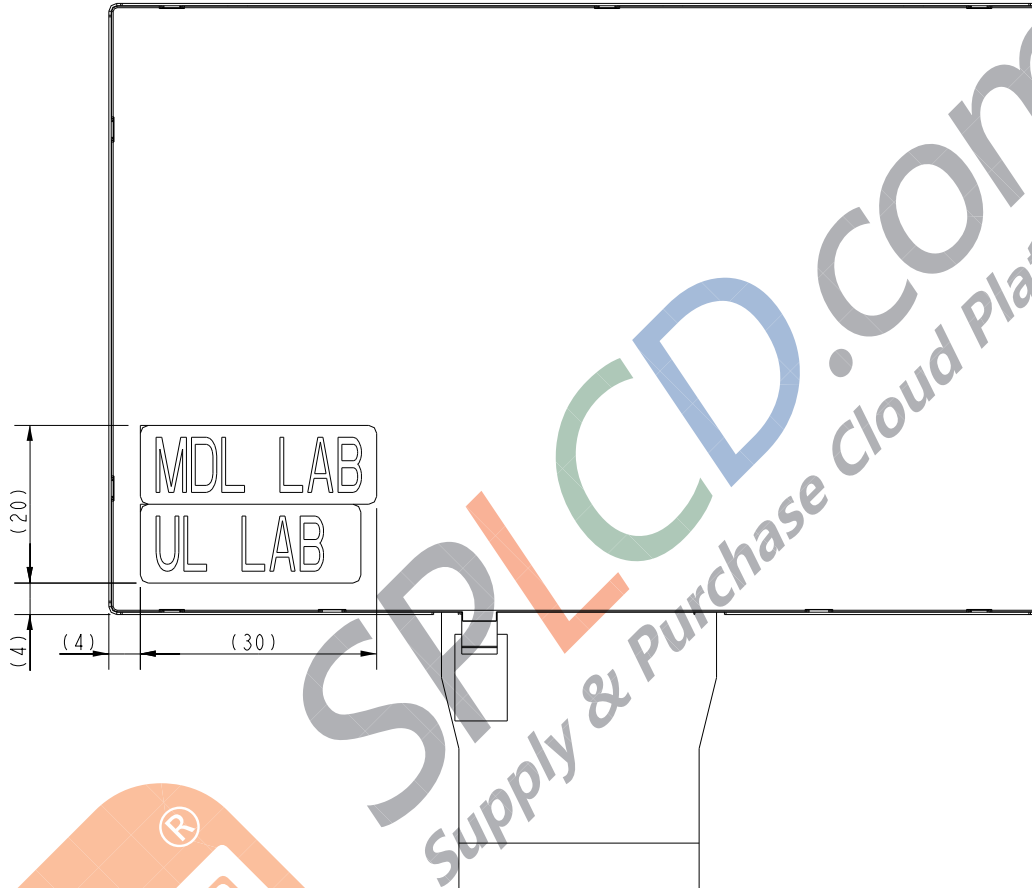
[Note5] Other condition

- (1) The defects that are not defined above and considered to be problem shall be reviewed and discussed by both parties.
- (2) Defects on the Black Matrix, out of Display area, are not considered as a defect or counted.

9.6.5Packing Procedure

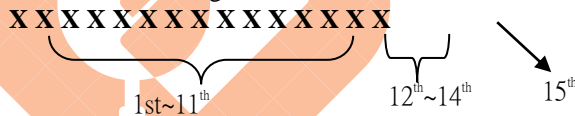
- (1) To wipe the surface of module surface with clean cloth, then attached the hard type protect film.
- (2) UL, Module, B/L Label & fixed tape of FPC attached.

CLAA050LA0ACW



(3) The code principle of Module ID Label. (Mass production product only)

The Panel ID has 15 figures as below:



Discrimination Method for manufacture date:

In this figures, The 1st~11th are internal codes.

In this figures, the 12th, 13th and 14th figure is representative "Year", "Month" and "Day".

Ex "Year":

"8"→2008, "9"→2009, "0"→2010, "1"→2011

Ex "Month":

"1", "2", "3", . . . "9", "A", "B", "C" ("A"→October)

Ex "Day":

"1", "2", "3", . . . "9", "A", "B", "C" . . . "V" ("A"→10th) (Without I,O)

Discrimination Method for module manufacture factory

In this figures, 15th figure is representative module manufacture factory

CPTF factory → "T".

#### 9.6.6 Warranty

- (1) The period is within 12 months since the date of shipping out under normal using and storage ( $25\pm 5^{\circ}\text{C}$  ;  $60\%\pm 10\%\text{RH}$ ).
- (2) The warranty will be avoided in case of defect induced by customer.

#### 9.6.7 Handling precaution

- (1) Don't disassemble and reassemble the module by self. (禁止自行拆解。)
- (2) Acid, alkali, alcohol or touched directly by hand will damage the display. (酸性、鹼性、酒精或手的直接接觸將會損傷顯示面。)
- (3) Static electricity will damage the module. Please configure grounding device. (靜電會損傷模組。請裝配接地設備。)
- (4) The strong vibration, shock, twist or bend will cause material damage, even module broken. (強烈的衝擊、震動、扭轉或彎曲將會造成原材損傷，甚至面板破裂。)
- (5) It is easy to cause image sticking while displaying the same pattern for very long time. (長期顯示同一畫面亦造成影像殘留。)
- (6) The response time, brightness and performance will vary from different temperature. (反應時間、亮度與均勻性會因溫度而有所變化。)
- (7) LCD Devices are made of fragile material such as Glass and may be broken or cracked when user drops, twists or bends the module, so please handle them with care and prevent the unsuitable external force for display module during assembly. (LCD成品部份組成材料為易碎特性、易刮傷特性，例如玻璃。摔落、扭轉、彎折LCD模組有可能會造成破損或者破裂。在組裝過程中，請避免不適當的外力施加於顯示屏模組)
- (8) Do not stack the LCDs to avoid the LCDs' damage and contamination. (請不要堆疊LCD模組以避免造成損傷或者汙染)
- (9) Before use the LCDs, please check the Engineering specification. (在使用LCD模組前，請詳細參閱工程規格書)
- (10) When Handling of main and LED FPC (Flexible Printed Circuit), please be careful, do not strongly pull or bend. (在拿取LCD模組的主要FPC或LED的FPC時，請勿大力拉扯或者彎折)
- (11) Please avoid dust or oil mist during assembly. (在組裝工程中請避免灰塵或者油汙)
- (12) Please make sure to operate the LCD module in suitable temperature. (請確保於適當的溫度下操作LCD模組)
- (13) Please do not rub, push, or hit LCD surface with hard tool etc. The polarizer of LCD is easily scratched. (偏光板為易刮傷材質，請避免用硬物摩擦、擠壓、敲擊LCD模組表面)
- (14) Please avoid exposing LCD module to the direct sunlight and high humidity place or the performance of LCD module may degrade. (避免將LCD模組直接暴露於日照或者高溫高濕的環境之中，顯示品質將會降低)
- (15) Please avoid external force for the area of stiffener on FPC during assembly. (在組裝過程中，請避免FPC補強板的區域遭受外力彎折)

#### 9.6.8 Suggestions

- (16) When storing modules as spares for a long time, the following precautions are necessary. High temperature or humidity may reduce the performance of module. It is highly recommended to store the Module with temperature form  $5^{\circ}\text{C}$  to  $35^{\circ}\text{C}$  and relative humidity of less than 70%. (當需要長時間存放模組時，請依照以下建議存放條件)
- (17) Dew Drop environment must be avoided. Condensation or moisture make damage to polarizer or electrical contacted parts. And after fading condensation, smear or spot will occur. (結露有可能造成偏光板損傷請避免將LCD模組置於劇烈地環境溫度變化之中)

#### 9.6.9 Delivery Notice

- (1) Module shipping attach with outgoing inspection.