Chunghwa Picture Tubes, Ltd.
Product Specification

To : **Pioneer**
Part No. : CWX4183-A
Date : 110630

TFT LCD
CLAA069LA0HCW

ACCEPTED BY : (0.3)

APPROVED BY	CHECKED BY	PREPARED BY
張聖暉	李家銘	邱奕傑

Prepared by :
Product Planning Management Division
Small & Medium TFT Product Business Unit

CHUNGHWA PICTURE TUBES, LTD.
1127 Hopin Rd., Padeh, Taoyuan, Taiwan 334, R.O.C.
TEL: +886-3-3675151 FAX: +886-3-377-3858

REVISION STATUS

Revision Notice	Description	Page	Rev. Date
0.0	Formal version release	--	2011/05/19
0.1	Modify ABSOLUTE MAXIMUM RATINGS	P5	2011/05/25
0.2	Modify MECHANICAL DIMENSION rear view	P15	2011/06/09
0.3	Modify Power,Signal sequence	P7	2011/06/24

CONTENTS

1. OVERVIEW

CLAA069LA0HCW is 17.66cm (6.95") color TFT-LCD(Thin Film Transistor Liquid Crystal Display) module composed of LCD panel, driver ICs, control circuit, and backlight.

The 6.95" screen produces a high resolution image that is composed of 800×480 pixel elements in a stripe arrangement.Display 262K colors by 6 Bit R.G.B signal input.Inverter for backlight and drive board for panel are not included in this module.

General specifications are summarized in the following table:

ITEM	SPECIFICATION
Panel Size	6.95 inch (panel diagonal)
Display Area (mm)	156.6(H)×81.6(V)
Number of Pixels	800(H) × 3 (RGB) × 480(V)
Pixel Pitch (mm)	0.19575 (H) × 0.170 (V)
Color Pixel Arrangement	RGB vertical stripe
Display Mode	Normally white
Number of colors	262K
Viewing Direction	6 o´clock
Response Time (Tr+Tf)	20ms
Brightness (cd/m^2)	500nit (typ)
NTSC	70%(typ)
Contrast Ratio	400:1(typ)
Viewing Angle (CR≧10)	140 degree(H)，120degree(V)
Electrical Interface(data)	TTL
Power consumption(W)	1.93W(typ)
Outline Dimension (in mm)	167.0(W) × 93.0(H) × 6(D)
Weight(g)	165g(typ)
BL unit	LED
Surface Treament	Anti-Glare， Surface hardness: 3H

2. ABSOLUTE MAXIMUM RATINGS

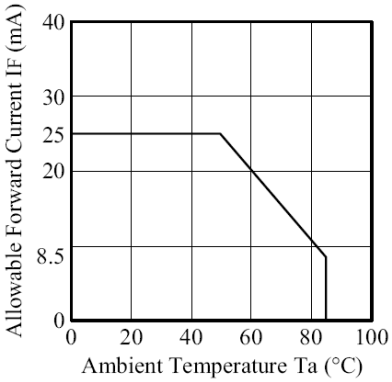
Item	Symbol	Min	Max	Unit	Remarks
Digital Power Supply Voltage	DVDD	-0.3	5	V	
Analog Power Supply Voltage	AVDD	-0.3	13.5	V	
Gate On Voltage	VDDG	-0.3	40	V	
Gate Off Voltage	VEEG	-20	0.3	V	
Operating temperature	Topa	-20	70	℃	*1)
Storage temperature	Tstg	-30	80	℃	*1)
Forward Current（per LED）	If	-	25	mA	
Reverse Voltage（per LED）	VR	-	5	V	
Pulse forward current（per LED）	Ifp	-	80	mA	*2)

Remarks：

*1) If the product were used out of the operation and storage range, it will have quality issue.

*2) Ifp Conditions ：Duty≦1/10 @ Pulse Width≦10msec。

*3) Each one of LED operation must be follow diagram of Ambient Temperature and Allowable Forward Current.



3. ELECTRICAL CHARACTERISTICS

a) TFT-LCD Power Supply Voltage

Ta=25℃

Item	Symbol	Min	Typ	Max	Unit	Remarks
Digital Power Supply Voltage	DVDD	3	3.3	3.6	V	
Analog Power Supply Voltage	AVDD	8.7	9.2	9.8	V	
Gate On Power Supply Voltage	VDDG	17	18	19	V	
Gate Off Power Supply Voltage	VEEG	-6.6	-6	-5.4	V	
Common Power Supply Voltage	VCOM	3.18	3.38	3.58	V	*1)
Gamma Voltage	VR 1	-	8.37	-	V	
	VR 2	-	6.89	-	V	
	VR 3	-	6.49	-	V	
	VR 4	-	6.15	-	V	
	VR 5	-	5.23	-	V	
	VR 6	-	3.71	-	V	
	VR 7	-	2.79	-	V	
	VR 8	-	2.45	-	V	
	VR 9	-	2.05	-	V	
	VR 10	-	0.57	-	V	
Input Signal Voltage	VIH	0.7DVDD	-	DVDD	V	
	VIL	GND	-	0.3DVDD	V	

Remarks：

*1) Please adjust VCOM to make the flicker level be minimum.

b) TFT-LCD Power Supply Current

Ta=25℃

Item	Symbol	Conditions	Min	Typ	Max	Unit	Remarks
Gate on Supply Voltage Current	IVDDG	VDDG =18V	-	0.5	1	mA	
Gate off Supply Voltage Current	IVEEG	VEEG= -6V	-	0.5	1	mA	
Digital Supply Voltage Current	IDVDD	DVDD = 3.3V	-	5	10	mA	
Analog Supply Voltage Current	IAVDD	AVDD =9.2V	-	40	50	mA	
Total Power Consumption	PC		-	396.5	517	mW	

Remarks：

*1)Typical：64 gray pattern，Maximum：Black pattern。

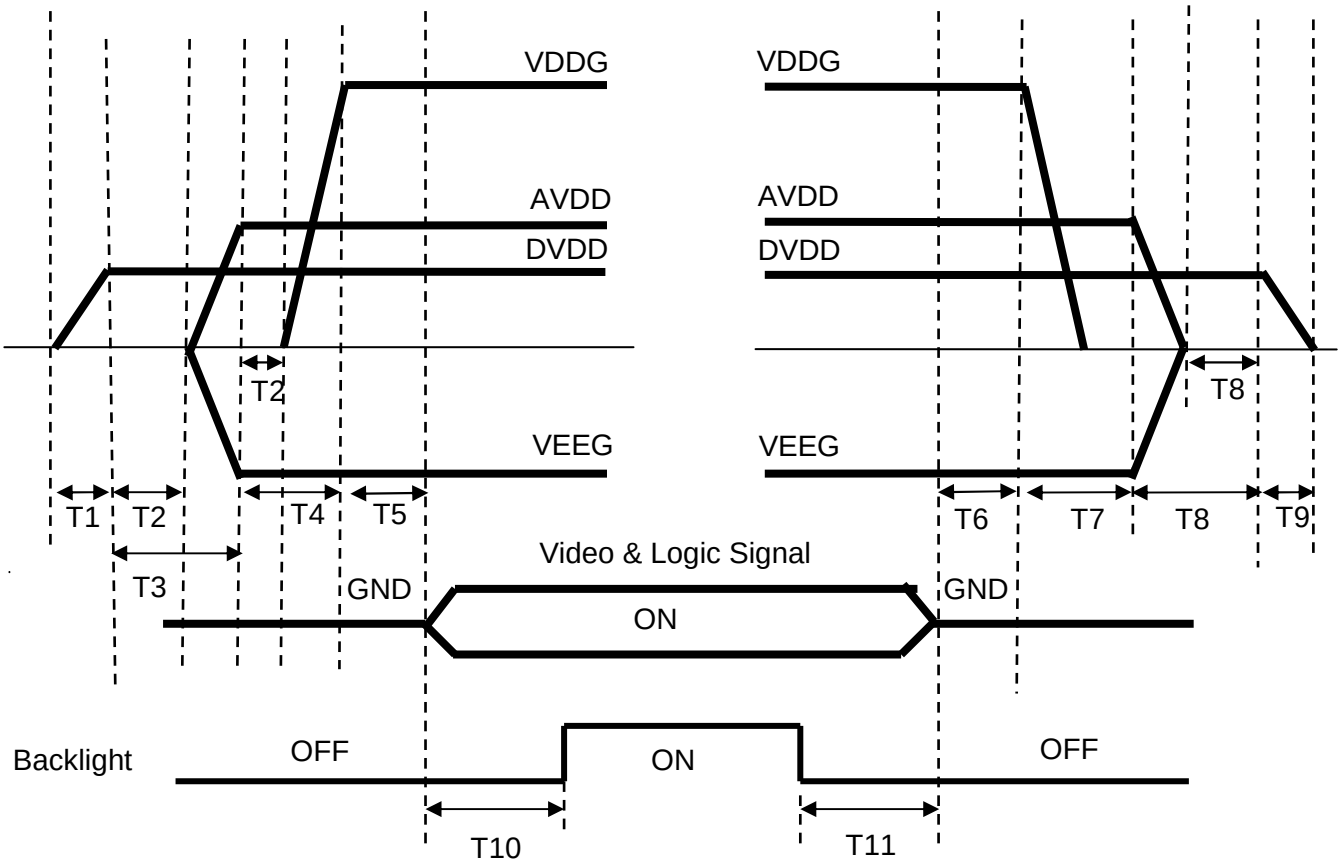
64 Gray Pattern

Black Pattern

c) Power、Signal sequence

Power On：DVDD→AVDD/VEEG→VDDG→Video &Logic Signal→Backlight

Power Off：Backlight→Video &Logic Signal→VDDG→AVDD/VEEG→DVDD



0<T1≦10ms
T2>0ms
T3>20ms
T4>10ms
0<T5≦10ms
T10≧200ms

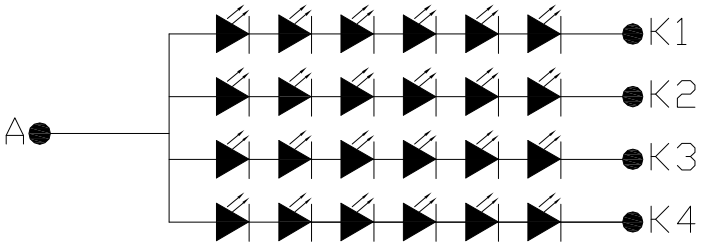
T6>0ms
T7>0ms
T8>0ms
0<T9≦10ms
T11≧200ms

d) Backlight

Item	Symbol	Condition	Min	Typ	Max	Unit	Remarks
LED current	IL	Ta=25℃ Each serial=20mA	--	80	--	mA	
LED voltage	VL	Ta=25℃ Each serial=20mA	16.62	19.2	21.18	V	
Power consumption	WL	Ta=25℃ Each serial=20mA	--	1.536	--	W	
LED Lifetime	-	Ta=25℃ Each serial=20mA	30000	--	--	Hr	
		Ta=60℃ Each serial=20mA	15000	--	--	Hr	

Remarks：

*1)LED Circuit Diagram：



*2) A：Anode(＋)，K：Cathode(－)

*3) LED control must use the constant current control to avoid the leakage light and brightness quality issue.

*4) Definition LED lifetime：Luminance will decay less than 50%.

*5) Measure the each serial voltage for Vf1, Vf2, Vf3, Vf4 , must follow condition: MAX(Vf1,Vf2,Vf3,Vf4) - MIN(Vf1,Vf2,Vf3,Vf4)< 2.388V

4. INTERFACE CONNECTION

a) CN1 (Input signal)

Pin NO.	Symbol	Description
1	GND	Power Ground
2	DIO1	Horizontal start Pulse Signal I/O
3	NC	NC
4	VR 1	Gamma Voltage Level 1
5	VR 2	Gamma Voltage Level 2
6	VR 3	Gamma Voltage Level 3
7	VR 4	Gamma Voltage Level 4
8	VR 5	Gamma Voltage Level 5
9	VR 6	Gamma Voltage Level 6
10	VR 7	Gamma Voltage Level 7
11	VR 8	Gamma Voltage Level 8
12	VR 9	Gamma Voltage Level 9
13	VR 10	Gamma Voltage Level 10
14	D20	Blue Data (LSB)
15	D21	Blue Data
16	D22	Blue Data
17	D23	Blue Data
18	D24	Blue Data
19	D25	Blue Data (MSB)
20	D10	Green Data (LSB)
21	D11	Green Data
22	D12	Green Data
23	D13	Green Data
24	D14	Green Data
25	D15	Green Data (MSB)
26	D00	Red Data (LSB)
27	D01	Red Data
28	D02	Red Data
29	D03	Red Data
30	D04	Red Data
31	D05	Red Data (MSB)
32	LD	Latch The Polarity of Output and Switch The New Data to Output
33	SHL	Select Left / Right Shift
34	AVDD	Power Supply for Analog Circuit
35	AVDD	Power Supply for Analog Circuit
36	GND	Power Ground
37	GND	Power Ground
38	CLK	Horizontal Clock
39	DVDD	Digital Power +3.3V
40	DIO2	Horizontal start Pulse Signal I/O
41	GND	Power Ground
42	GND	Power Ground
43	GND	Power Ground
44	STV2	Vertical start Pulse Signal I/O
45	UD	Up / Down Control Pin
46	OEV	Output Enable
47	VCLK	Vertical Clock
48	GND	Power Ground
49	GND	Power Ground
50	POL	Polarity Selection
51	XON	Gate Output all-on control
52	NC	NC

53	VEEG	Gate OFF Voltage -6V
54	NC	NC
55	VDDG	Gate ON Voltage +18V
56	NC	NC
57	STV1	Vertical start Pulse Signal I/O
58	NC	NC
59	VCOM	Common Voltage
60	VCOM	Common Voltage

Remarks：

*1) GND Pin must connect to ground and don't float it.

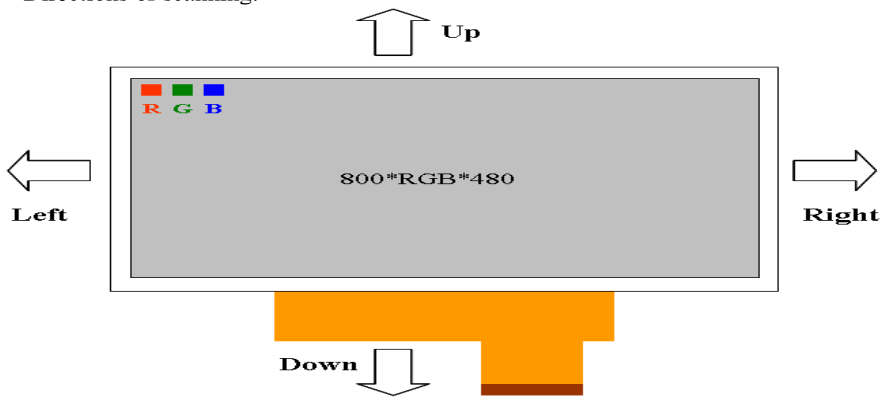
*2) SHL：Select left or right

SHL	DIO1	DIO2	SHIFT
DVDD	Input	Output	Right
GND	Output	Input	Left

UD：Shift up or down control

UD	STV1	STV2	SHIFT
DVDD	Input	Output	UP
GND	Output	Input	Down

Directions of scanning:



3) XON: Gate Output all-on control

XON=GND, all Gate outputs are all-on at the same time.

XON=DVDD, Gate output don't care this signal.

b).CN2 (Backlight)

Mating connector: FR03-S10DHF-2-E3000(CONN-TECK)

Pin No.	Symbol	Function
1	A	Anode
2	A	Anode
3	A	Anode
4	NC	NC
5	K1	Cathode 1
6	K2	Cathode 2
7	K3	Cathode 3
8	K4	Cathode 4
9	NC	NC
10	NC	NC

5. INPUT SIGNAL(TTL)

a) Timing Specification

Horizontal Timing

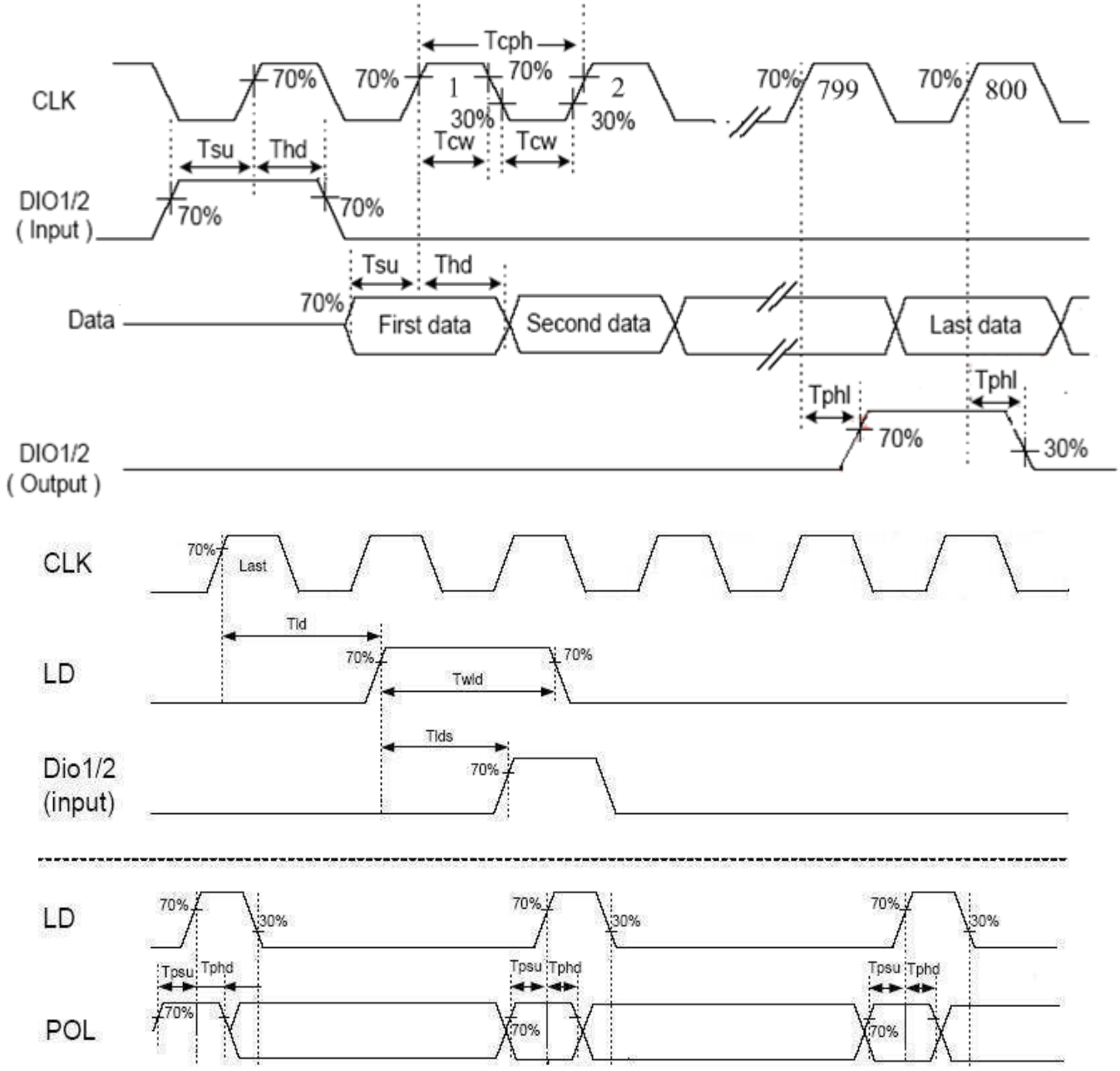
Item	Symbol	Min.	Typ.	Max.	Unit
CLK Frequency	1/Tcph	25	32	40	MHz
CLK Pulse Width	Tcw	40%	-	60%	Tcph
Data Set-up Time	Tsu	4	-	-	ns
Data Hold Time	Thd	2	-	-	ns
Propagation Delay of DIO2/1	Tphl	6	10	15	ns
Time That The Last Data to LD	Tld	1	-	-	Tcph
Pulse Width of LD	Twld	2	-	-	Tcph
Time That LD to DIO1/2	Tlds	5	-	-	Tcph
POL Set-up Time	Tpsu	6	-	-	ns
POL Hold Time	Tphd	6	-	-	ns

Vertical Timing

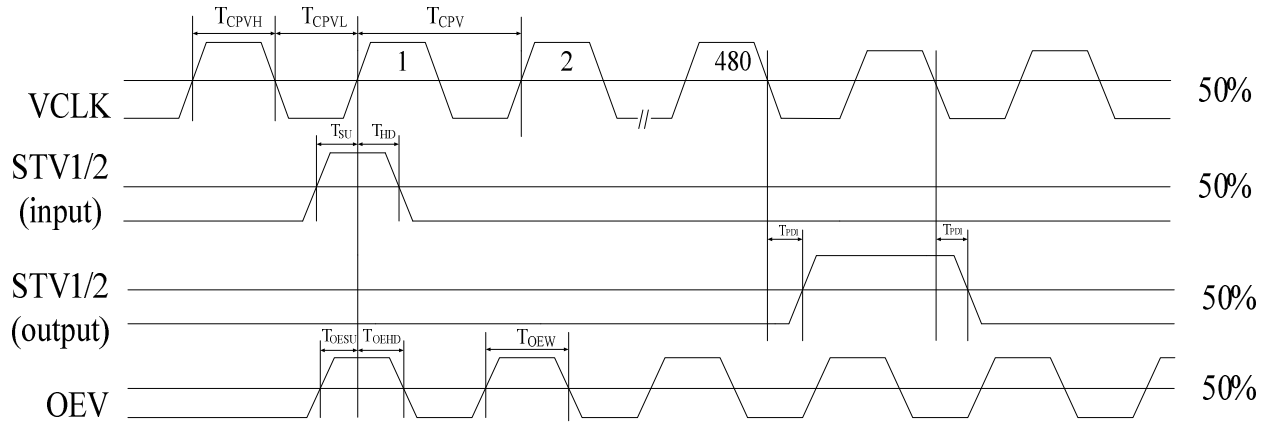
Item	Symbol	Min.	Typ.	Max.	Unit
VCLK Frequency	$1/T_{CPV}$	-	-	200	Khz
VCLK Pulse Width	T_{CPVH} / T_{CPVL}	2.5	-	-	us
STV1/2 Set-up Time	T_{SU}	700	-	-	ns
STV1/2 Hold Time	T_{HD}	700	-	-	ns
Output delay time of STV1/2	T_{PD1}	-	-	0.8	us
OEV Set-up Time	T_{OESU}	0.5	-	2	us
OEV Hold Time	T_{OEHD}	0.5	-	2	us
OEV pulse width	T_{OEW}	1	-	4	us

b) Timing Chart

Horizontal Timing：

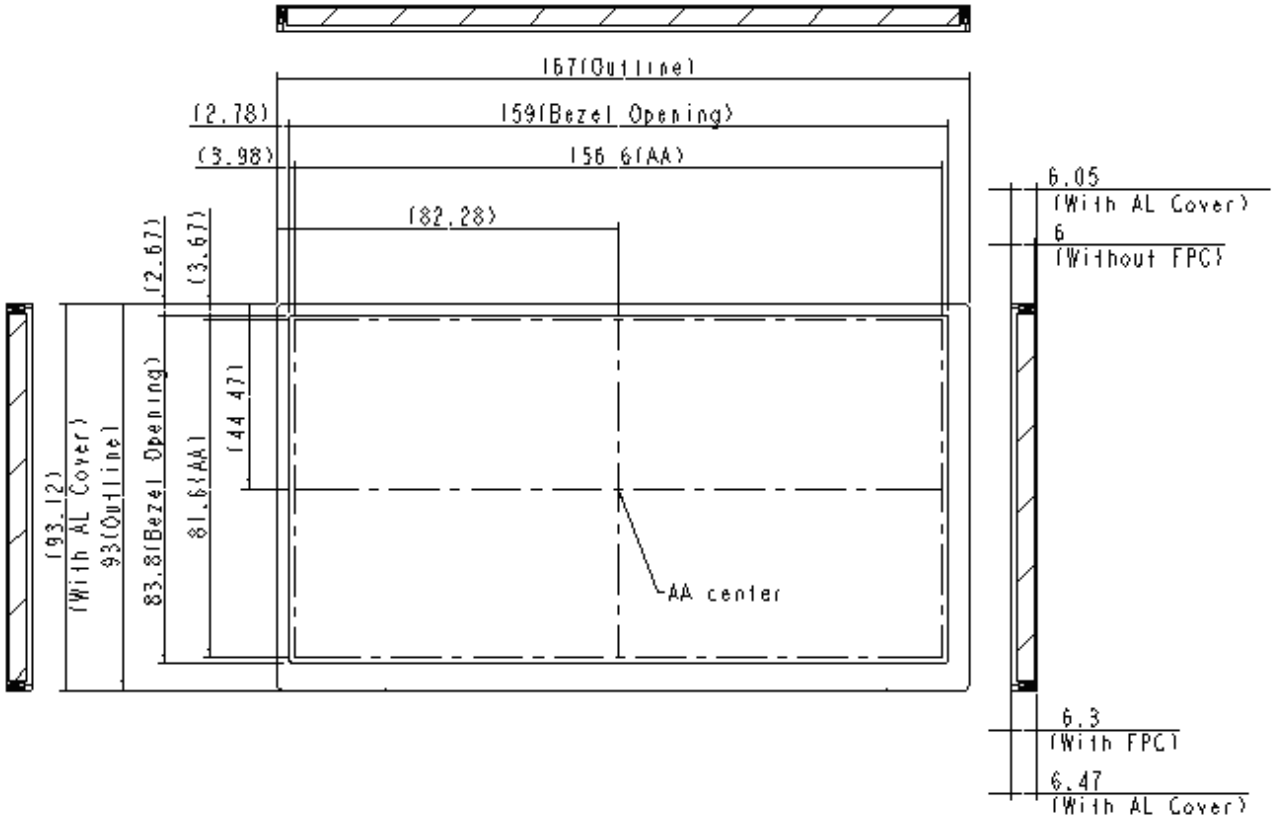


Vertical Timing：



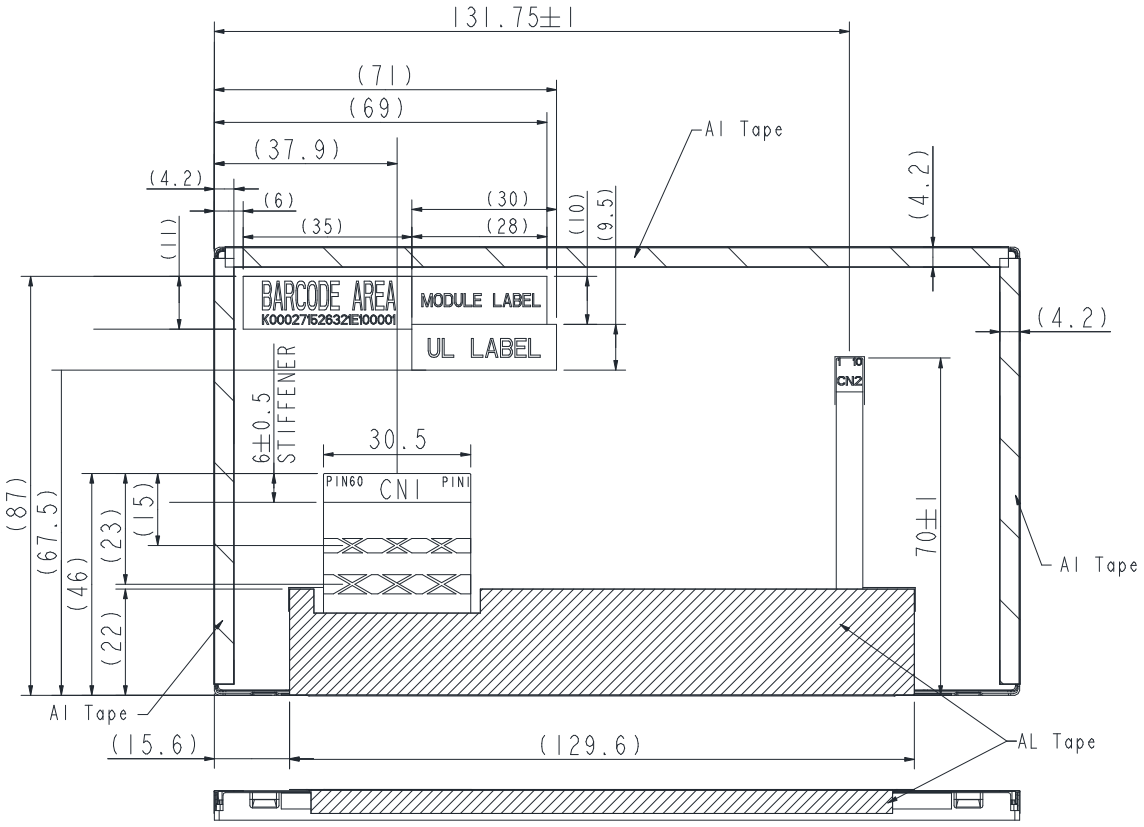
6. MECHANICAL DIMENSION

a) Front View



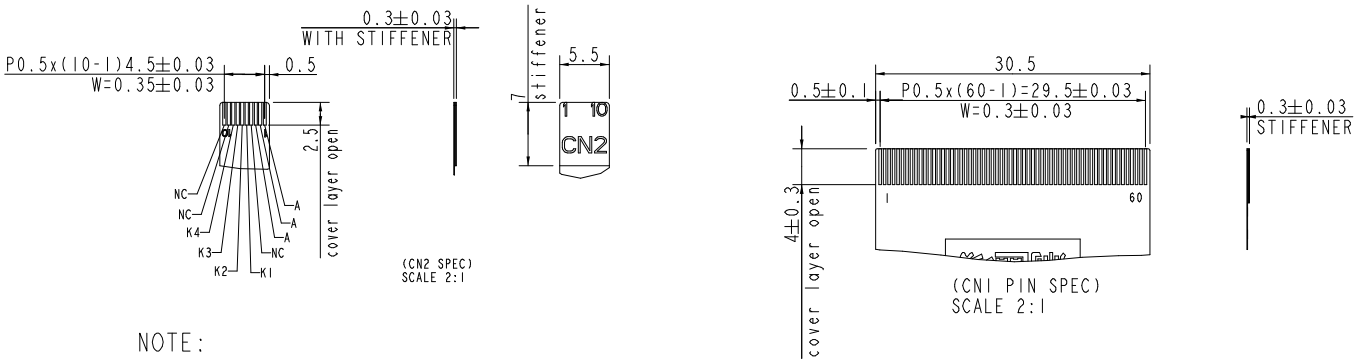
General tolerance = ±0.3mm

b) Rear View



General tolerance = ±0.3mm

c) connector



NOTE:

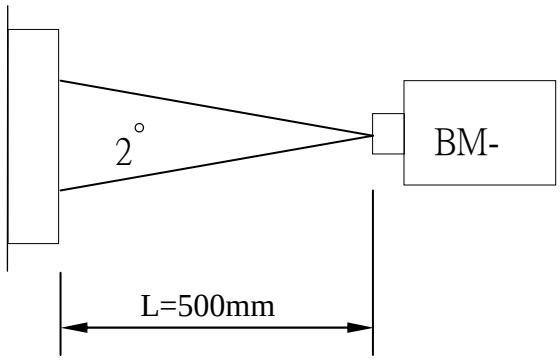
1.General tolerance=±0.3mm
2.CN1 suggested connector(60pin):
STARCONN 089K60-000100-G2-R(or other compatible connectors)
3.CN2 suggested connector(10pin):
CONN-TECK FR03-S10DHF-2-E3000(or other compatible connectors

7. OPTICAL CHARACTERISTICS

Item		Symbol	Condition	Min.	Typ.	Max.	Unit	Remarks
Contrast		CR	Point-5	300	400	--	--	*1)*2)*3)
Luminance	Center point	Lw		400	500	--	cd/m^2	*2)*3)
	Uniformity	ΔL		70	80	--	%	*2)*3)
Response Time (White - Black)		Tr+ Tf		--	20	35	ms	*1)*3)*5)
NTSC		-	Point-5	60	70		%	*1)*3)
View angle	Horizontal	Ø	CR≧10	120	140	--	°	*1)*2)*4)
	Vertical	θ	Point-5	100	120	--	°	*1)*2)*4)
Color Coordination	White	Wx Wy	Point-5	0.273 0.289	0.313 0.329	0.353 0.369	--	*1)*3)
	Red	Rx Ry		(TBD) (TBD)	(TBD) (TBD)	(TBD) (TBD)		
	Green	Gx Gy		(TBD) (TBD)	(TBD) (TBD)	(TBD) (TBD)		
	Blue	Bx By		(TBD) (TBD)	(TBD) (TBD)	(TBD) (TBD)		

Remarks：

*1) Measuring conditions：25℃±2℃，60±10%RH，under 10 Lux in dark room。BM-5A (TOPCON)，view cone=2°，VCC=3.3V，IL=80mA（Backlight current），after 10 minutes operation。

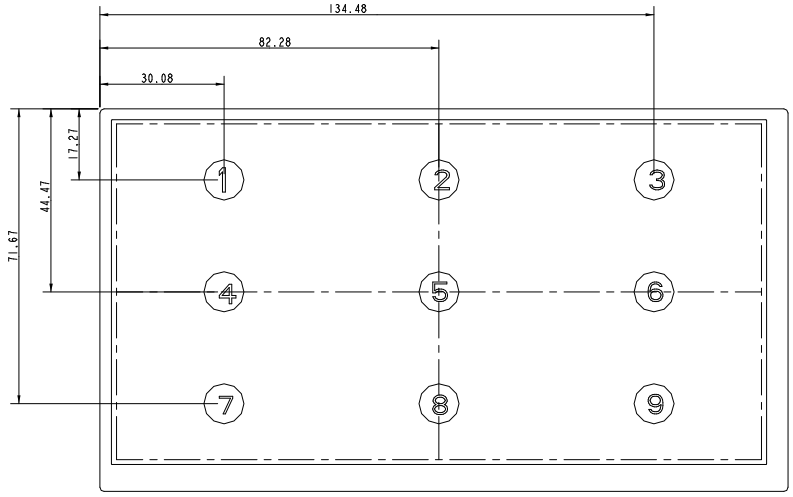


*2) Contrast：CR= On (White Luminance) / Off (Black Luminance)

*3) Luminance and Uniformity：

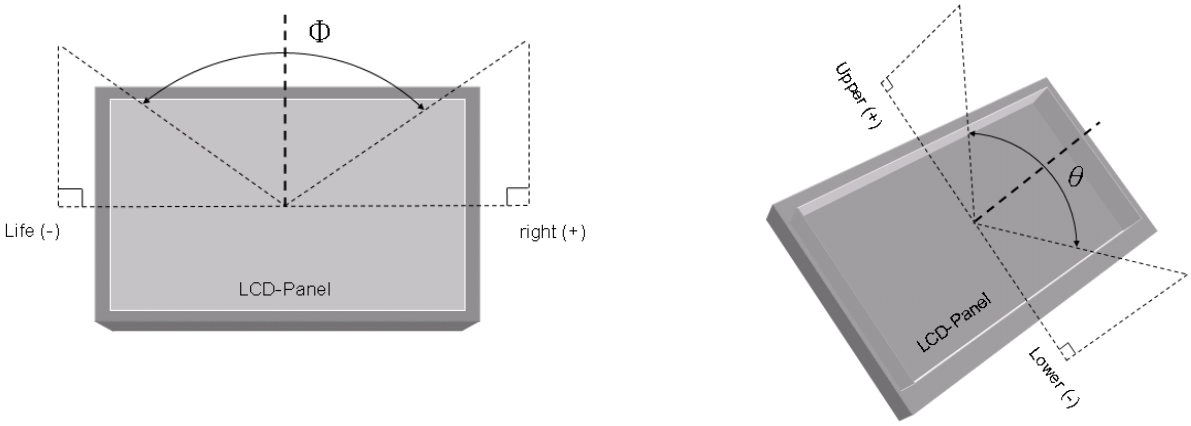
The center point of the Luminance：No 5 point.

Uniformity：△L = [L(MIN)/L(MAX)]×100。



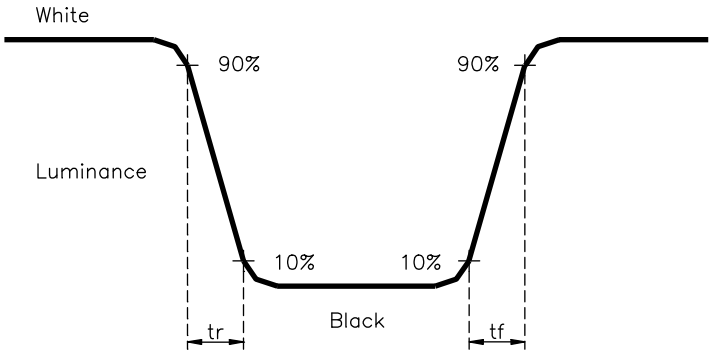
Measuring point

*4) Viewing Angle (θ，ψ)：(Measuring Device：EZ-CONTRAST)



Definition of View Angle

*5) Response Time (White - Black)



Definition of Response Time

8. RELIABILITY TEST

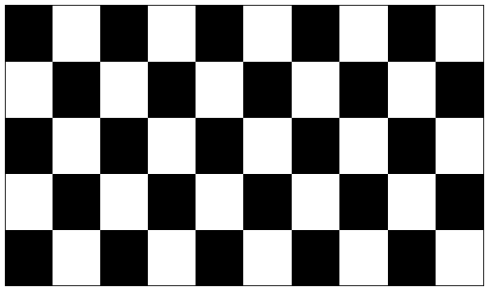
a) Temperature and Humidity

Item	Condition
High Temperature Operation	70° C , 240Hrs
High Temperature Storage	80° C , 240Hrs
High Temperature and High Humidity Operation	60° C , 90% RH, 240Hrs(No condensation)
Low Temperature Operation	-20° C , 240Hrs
Low Temperature Storage	-30° C ；240Hrs
Thermal Shock	-30° C (0.5 hr)～85° C (0.5 hr), 200 CYCLE
Image Sticking	White background and black square 4hrs

Condition of Image Sticking test：25 ℃± 2 ℃

Operation with test pattern sustained for 4 hrs, then change to gray pattern immediately.

After 5 mins, the mura must be disappeared completely.



b) Shock and Vibration

Item	Condition
Shock (Non-Operation)	735m/s^2(equal to 75G) 11msec 1/2 Sine wave,. ±X，±Y，±Z，each axis 3times.
Vibration (Non-Operation)	15～60Hz 29.4m/s2 (equal to 3G) 2mm XYZ 2hrs each axis Sin wave

c) ESD

Item	Condition	Remarks
E S D	150pF，330Ω，±8KV&±15KV air & contact test	*1)
	200pF，0Ω，±200V contact test	*2)

Remarks：

*1) LCD glass and metal bezel。

*2) IF connector pins。

d) 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.

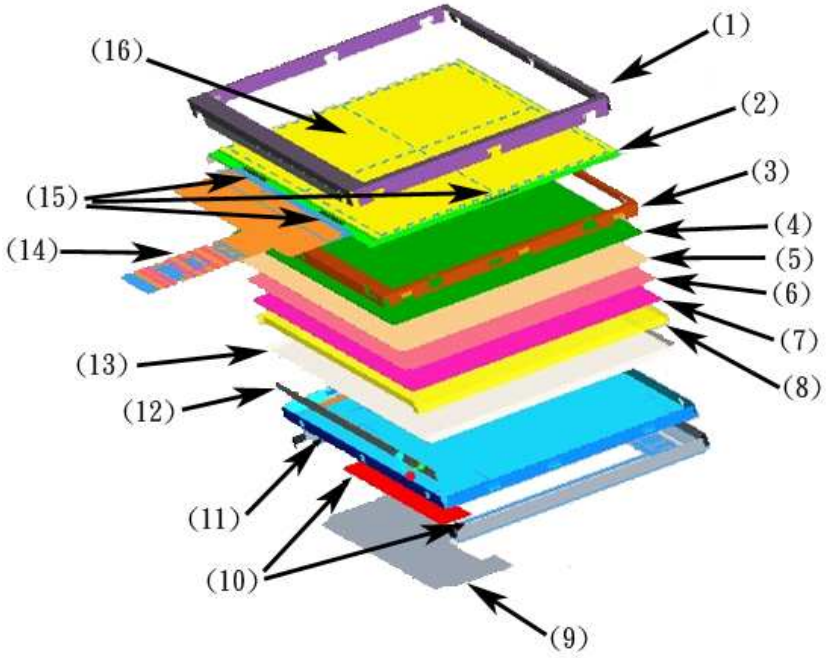
Fail: No display image, obvious non-uniformity, or line defects.

9. APPENDIX

9.1 CPT factory Location

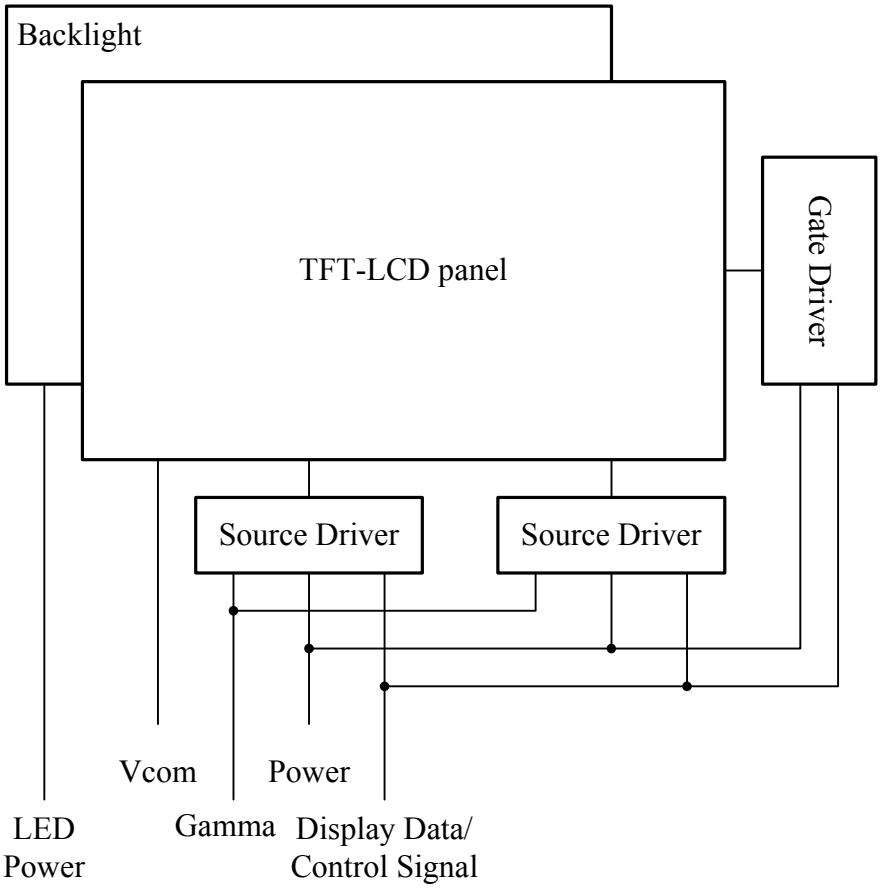
Factory name	Location
TFT Lungtan Plant	1 Huaying Rd., Lungtan Shiang, Taoyuan, Taiwan
Fuzhou Module plant	NO.1 Xing Ye Road., Mawei Hi-tech Development Zone, FuZhou, China

9.2 Internal structure materials drawing



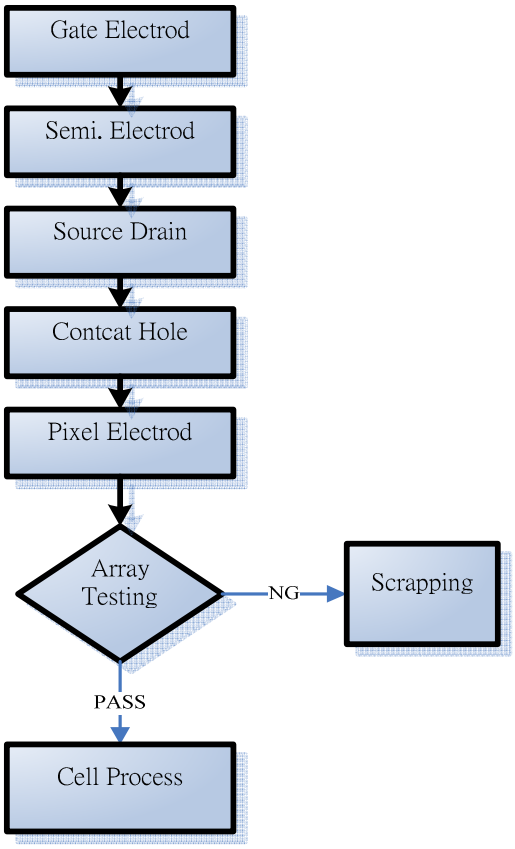
No.	Component	Material
(1)	Front Bezel	Stainless Steel (SUS430)
(2)	LCD Panel	Glass
(3)	BL Bezel(front)	Stainless Steel (SUS430)
(4)	DBEFD	PET (Polyethylene Terephthalate)
(5)	Lens1	PET (Polyethylene Terephthalate)
(6)	Lens2	PET (Polyethylene Terephthalate)
(7)	Diffuser	PET (Polyethylene Terephthalate)
(8)	LGP	PMMA (PolymethylMethacrylate)
(9)	Aluminum Foil	Al (Aluminum), Adhesive
(10)	Tapes	PET (Polythylene terephthalate), Adhesive
(11)	BL Bezel(rear)	Stainless Steel (SUS430)
(12)	LED Light_bar	PET (Polythylene terephthalate), PI (Polyimide), Cu (Copper), Adhesive
(13)	Reflector	PET (Polythylene terephthalate)
(14)	FPC	PET (Polythylene terephthalate), PI (Polyimide), Cu (Copper), Adhesive NI:2.35um; Au:0.03um
(15)	Driver IC	Semiconductor
(16)	Polarizer	PET (Polythylene terephthalate), PVA (Polyvinyl alcohol), TAC (Triacetate cellulose)

9.3 Block Diagram

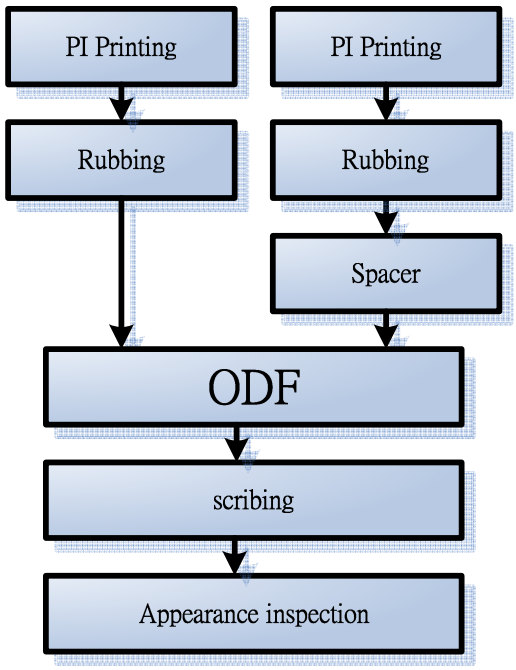


9.4 QC flow chart

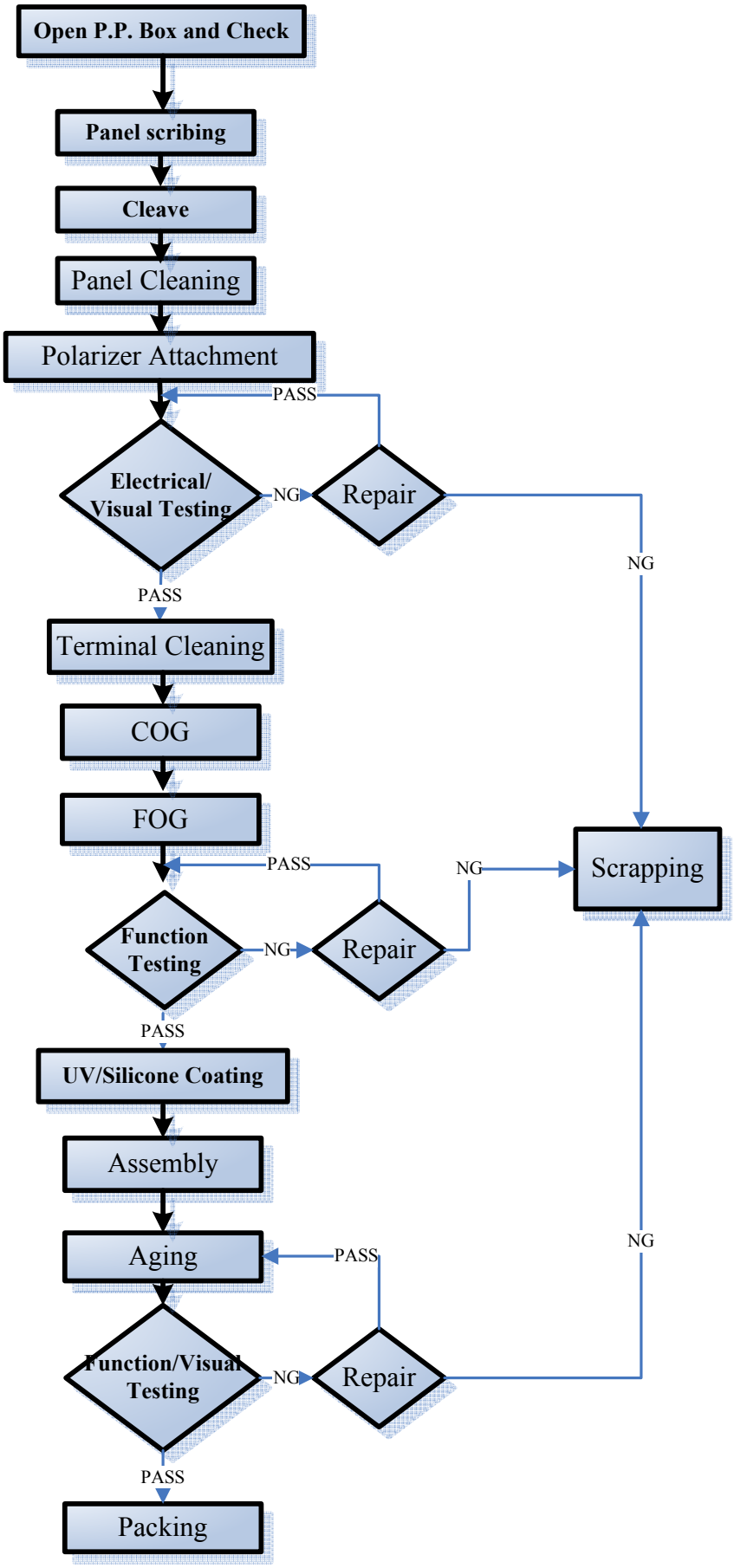
Array Process：



Cell Process：



MD Process：


Open P.P. Box and Check
Panel scribing
Cleave
Panel Cleaning
Polarizer Attachment
PASS
Electrical/ Visual Testing
NG
Repair
NG
PASS
Terminal Cleaning
COG
FOG
PASS
NG
Scrapping
Function Testing
NG
Repair
PASS
UV/Silicone Coating
Assembly
Aging
PASS
NG
Function/Visual Testing
NG
Repair
PASS
Packing

9.5 Safty Standard

- CPT UL certificate number is E194548.
- This component is without any regrind resin material.

9.6 Product Storage Condition.

- Ambient temperature is 25 ± 5℃
- Ambient humidity is 60 ± 10% RH

9.7 Handling precaution

(1) Don't disassemble and reassemble the module by self.

(2) Acid, alkali, alcohol or touched directly by hand will damage the display.

(3) Static electricity will damage the module. Please configure grounding device.

(4) The strong vibration, shock, twist or bend will cause material damage, even module broken.

(5) It is easy to cause image sticking while displaying the same pattern for very long time.

(6) The response time, brightness and performance will vary from different temperature.

(7) LCD Devices are made of fragile material such as Glass and may be broken or cracked if dropped it, so please handle them with care. Please be careful not to cut your hand if you break the glass.

(8) Do not stack the LCDs to avoid the LCDs damage and contamination.

(9) Before use the LCDs, please check the specification.

(10) LCDs contain a small amount of Liquid Crystal. Please follow local ordinances or regulations for disposal.

(11) LCD shall be stored in same packing material during import, and under the condition of room temperature (20-30 degree C).

(12) Please do not leave LCD modules under the direct sunlight or strong infra-red radiation for a long period time to prevent liquid crystal deteriorating.

(13) Please turn off the power supply before plugging or unplugging LCD module.

(14) Please do not rub, push, or hit LCD surface with hard tool etc.Film on surface is easily scratched,when droplets of water or dirt are on the surface,please gently remove them with soft fabric.

(15) Handling of main and LED FPC (Flexible Printed Circuit),please be careful,do not strongly pull or scratch FPC, to avoid failure of the components and bonding part.

9.8 Incoming Inspection Standards

9.8.1 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 7days.
(2) The Customer shall notify CPT inspection result in writing within 14 day, otherwise goods will be deemed accepted by customer.
(3) Criteria shall be reviewed by both parties if customer notify need for discussion after observation of value distribution by customer side on shipped products at initial mass production stage.
(4) The period is within 12 months since the date of shipping out under normal using and storage conditions.
(5) The warranty will be avoided in case of defect induced by customer.

9.9.2. 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 ± 5℃
(4) Ambient humidity is 60 ± 5% RH
(5) Ambient illuminance is from 300 ~ 500 Lux.
(6) Input signal timing should be typical value.
(7) Mura & Light leakage inspection at ND-Filter 5%

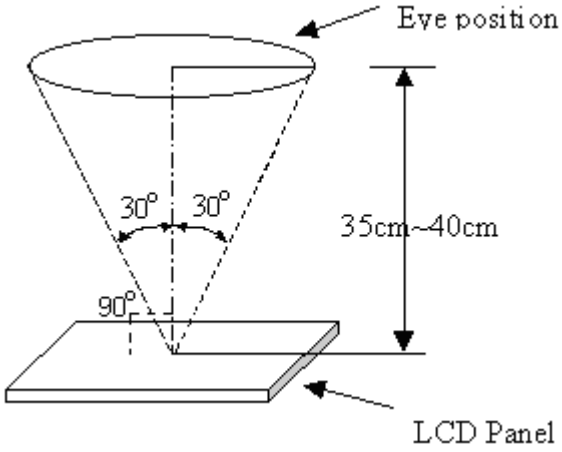


Fig _ 1

9.8.3. 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 ± 40°while inspec ted image-sticking.

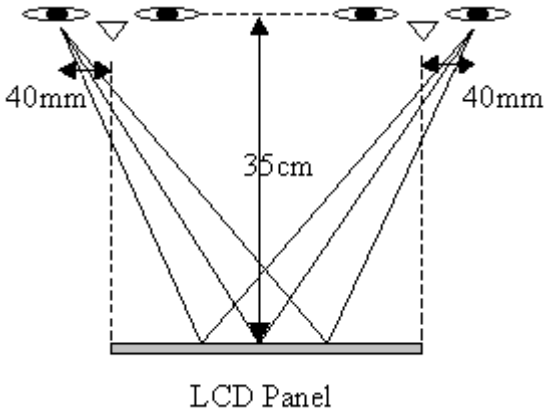


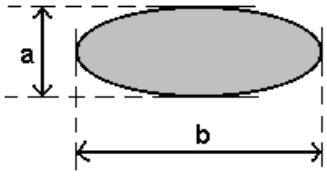
Fig _ 2

9.8.4. Inspection Criteria

<table>
<tr><th colspan="3">DEFECT TYPE</th><th colspan="4">LIMIT</th><th>Note</th></tr>
<tr><td rowspan="12">VISUAL DEFECT</td><td colspan="2" rowspan="3">SCRATCH</td><td colspan="3">W≦0.05mm</td><td>Ignore</td><td rowspan="3">Note1</td></tr>
<tr><td colspan="3">0.05mm＜W≦0.1mm
L≦10mm</td><td>N≦3</td></tr>
<tr><td colspan="3">10mm＜L, 0.1mm＜W</td><td>N=0</td></tr>
<tr><td rowspan="9">INTERNAL</td><td rowspan="3">SPOT</td><td colspan="3">φ＜0.2mm</td><td>Ignore</td><td rowspan="3">Note1</td></tr>
<tr><td colspan="3">0.2mm≦φ≦0.4mm</td><td>N≦3</td></tr>
<tr><td colspan="3">0.4mm＜φ</td><td>N=0</td></tr>
<tr><td rowspan="2">FIBER</td><td colspan="3">0.1mm≦W≦0.2mm,
L≦2.5mm</td><td>N≦4</td><td rowspan="2">Note1</td></tr>
<tr><td colspan="3">0.2mm＜W, 2.5mm＜L</td><td>N=0</td></tr>
<tr><td rowspan="3">POLARIZER
BUBBLE</td><td colspan="3">φ＜0.25mm</td><td>Ignore</td><td rowspan="3">Note1</td></tr>
<tr><td colspan="3">0.25mm≦φ≦0.4mm</td><td>N≦2</td></tr>
<tr><td colspan="3">0.4mm＜φ</td><td>N=0</td></tr>
<tr><td rowspan="3">Dent</td><td colspan="3">φ＜0.25mm</td><td>Ignore</td><td rowspan="3">Note1</td></tr>
<tr><td colspan="3">0.25mm≦φ≦0.5mm</td><td>N≦4</td></tr>
<tr><td colspan="3">0.5mm＜φ</td><td>N=0</td></tr>
<tr><td rowspan="7">ELECTRICAL
DEFECT</td><td colspan="2" rowspan="2">BRIGHT DOT</td><td>C Area</td><td>O Area</td><td>Total</td><td rowspan="4">Note2
Note3</td></tr>
<tr><td>N≦0</td><td>N≦0</td><td>N≦0</td></tr>
<tr><td colspan="2">DARK DOT</td><td>N≦2</td><td>N≦3</td><td>N≦3</td></tr>
<tr><td colspan="2">TOTAL DOT</td><td>N≦2</td><td>N≦3</td><td>N≦3</td></tr>
<tr><td colspan="2">TWO ADJACENT DOT</td><td>N≦0</td><td>N≦1</td><td>N≦1</td><td rowspan="2">Note4</td></tr>
<tr><td colspan="2">THREE OR MORE
ADJACENT DOT</td><td colspan="3">NOT ALLOWED</td></tr>
<tr><td colspan="2">LINE DEFECT</td><td colspan="3">NOT ALLOWED</td><td>-</td></tr>
<tr><td colspan="8">(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.</td></tr>
</table>

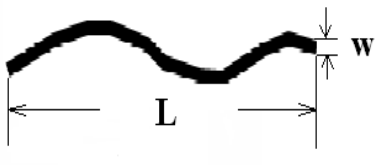
[Note1]

L : Length[mm], N : Number, φ : Average Diameter



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

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

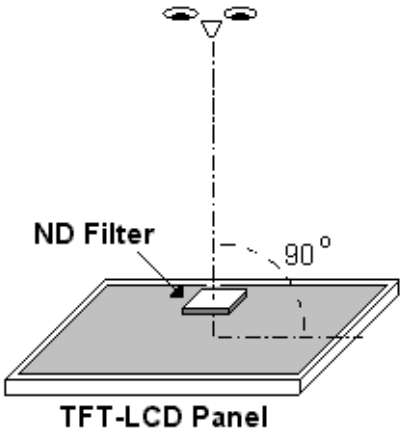


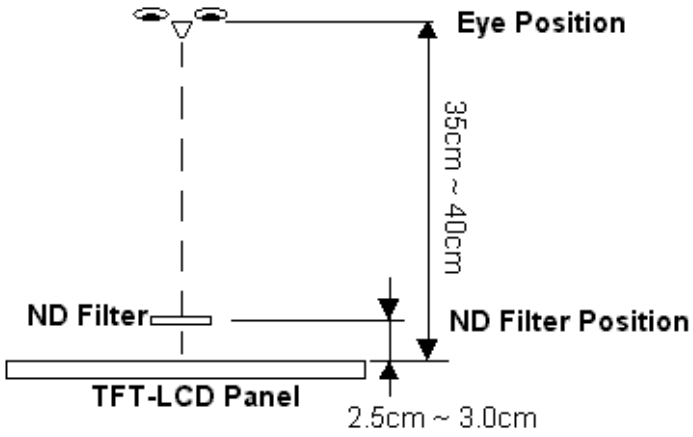
Scratch & Fiber

[Note2] The definition of Bright dot

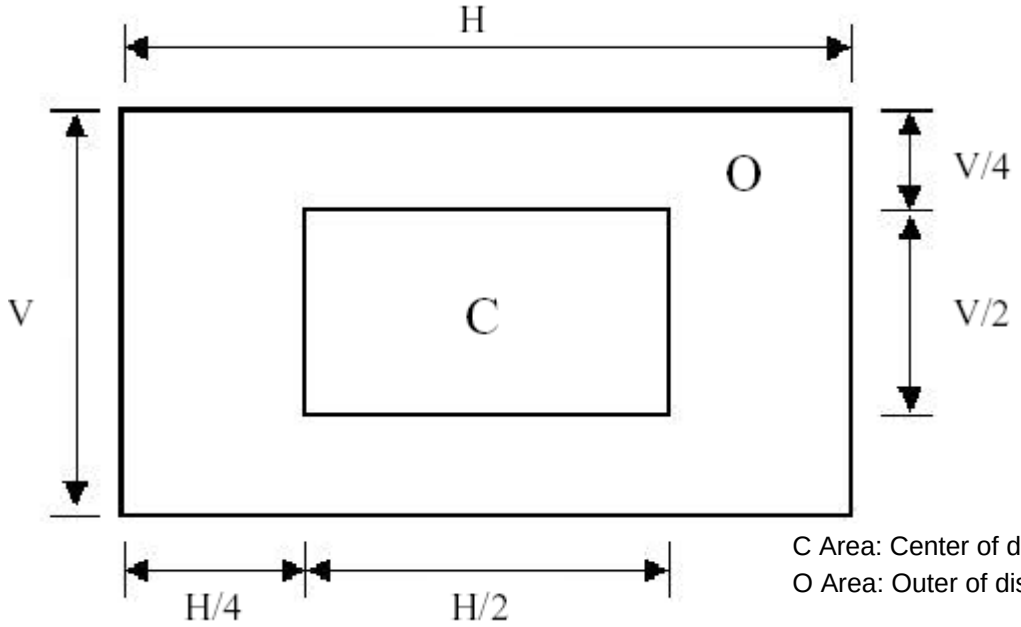
(1)The defective area of the dot is larger than 50% of one sub-pixel area.

(2)The bright dot shall be visible under ND-Filter 5%as following.





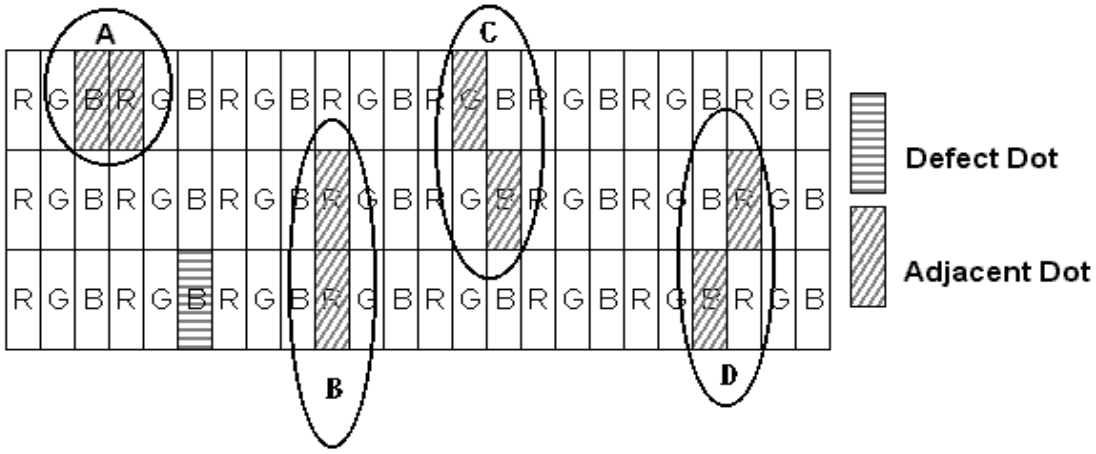
[Note3]



C Area: Center of display area

O Area: Outer of display area

[Note4] Judge defect dot and adjacent dot as following. Allow below (as A, B, C and D status) adjacent defect dots, including bright and dart 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.

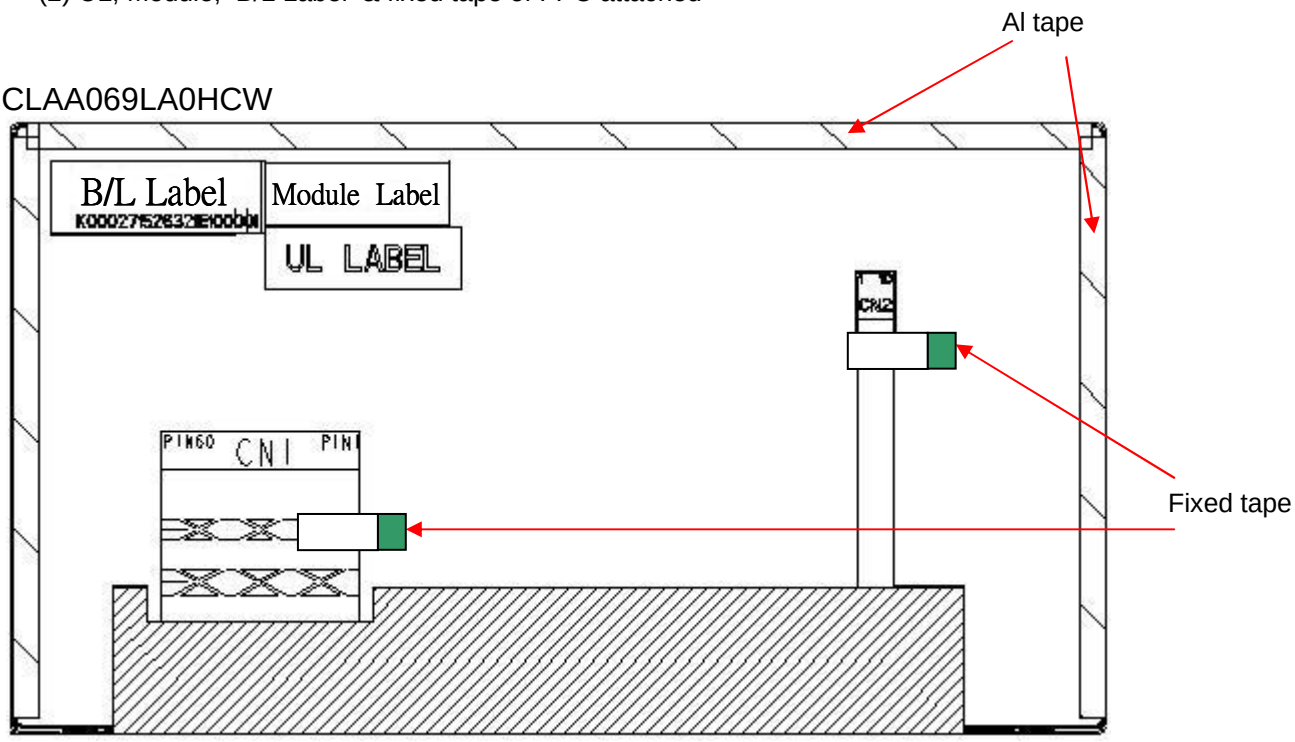
9.9 Packing Procedure

9.9.1 Packing 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

CLAA069LA0HCW



(3) The code principle of Module ID Label.

The Panel ID has 15 figures as below:

X X X X X X X X X X X X X X X

1st 7th~11th 13th~14th

Discrimination Method for manufacture date:

In this figures, the 1st, 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)

Discrimination Method for serial number of panel:

In this figures, the 7th, 8th, 9th and 10th figure is representative the serial number of panel. Number is from 0~9,A~Z without I, O.

Ex: 0001, 0002, …,0009, 000A, …, 000Z, 0010, 0011, …, ZZZZ.

Discrimination Method for assembling:

In this figures, the 11th figure is representative of the key part source.

Ex.1:

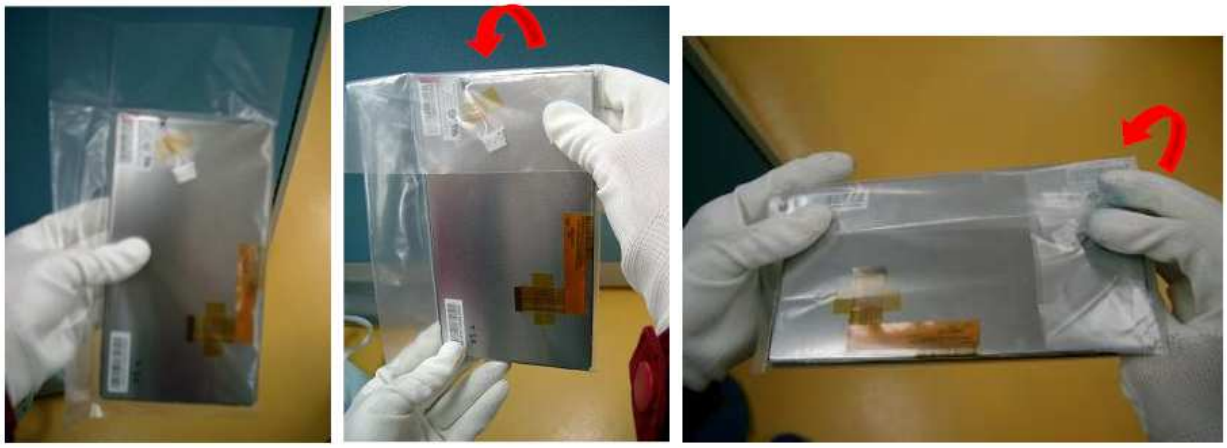
XXXXXXXXXX1XXXX → Assembling 1(01x)

Ex.2:

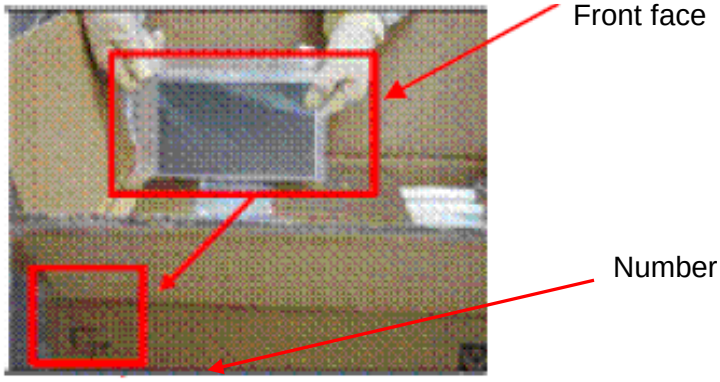
XXXXXXXXXX2XXXX → Assembling 2(02x)

9.9.2 Packing Method

(1). Put the Module in the bag.

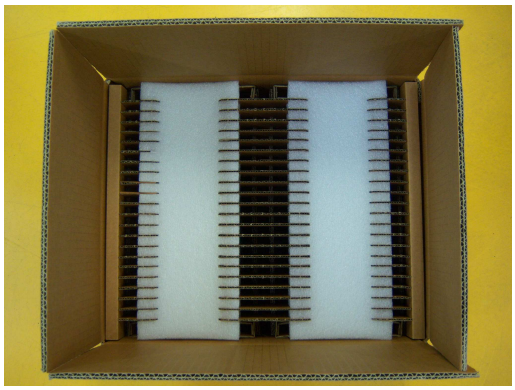


(2). Module front face on the number of box



(3). Fill 42 pcs in every box

(4). Put down two foams on the modules



(5). Label attachment

(6). Weighting and Marking the weight on the label

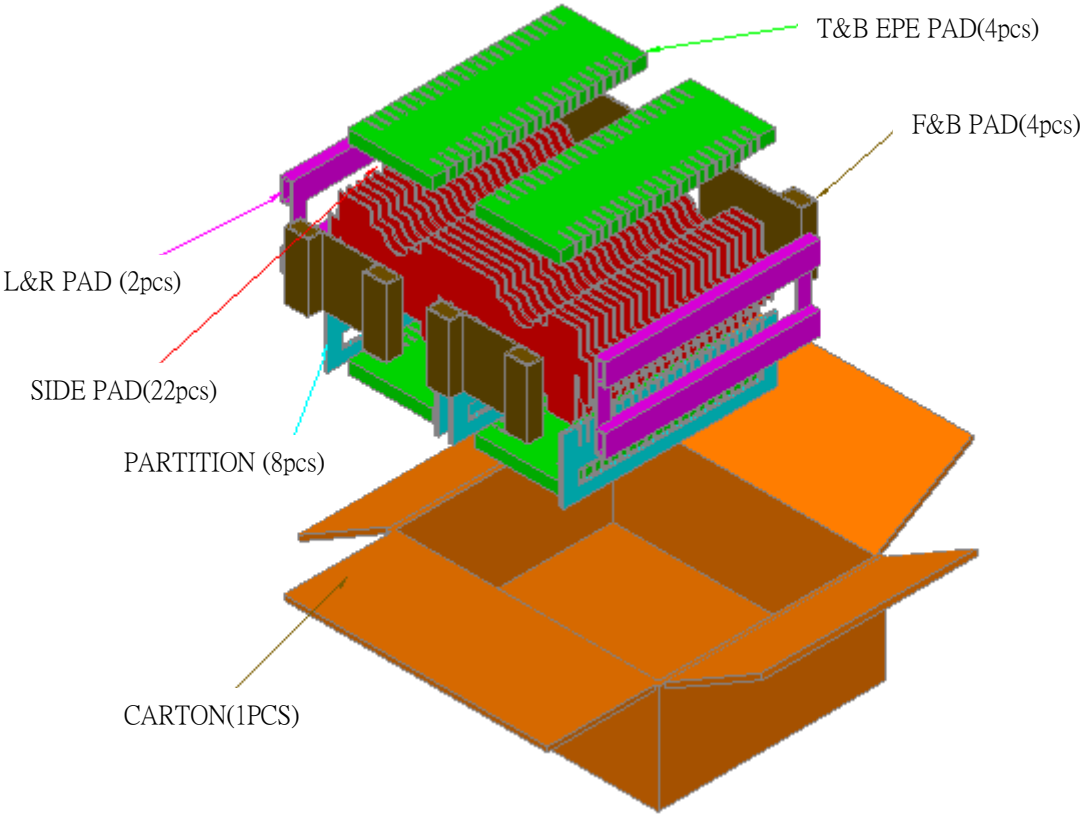
9.9.3 Label Form

CHUNGHWA PICTURE TUBES. LTD.

Customer	**Pioneer**		
Package No.		CPT No	
Type	**CLAA069LA0HCW**	**Suffix**	
PO No.		**CPT Customer No**	
Customer Item No.		Inspector	
Quantity		Date	2008/01/10
Description			
Remark	Rohs compliance 环保材料 GREEN PARTS		
Substrate type		Weight : kgs	

9.9.4 Packing Form

No	Item	Part Name	Dimension (mm)(±5%)
0	Assembly drawing	Corrugated papaer	L438XW365XH174
1	SIDE PAD	B FLUTE(A230＋100＋B175) (BS:12kgf/cm^2)	418X139
2	PARTITION	B FLUTE(A230＋100＋B175) (BS:12kgf/cm^2)	345X104
3	T&B EPE PAD	EPE	345X136
4	L&R PAD	B FLUTE(A230＋100＋B175) (BS:12kgf/cm^2)	345X266
5	CARTON	AB FLUTE(A230＋100＋100＋100＋B175) (BS:14kgf/cm^2)	1593X520
6	F&B PAD	B FLUTE(A230＋100＋B175) (BS:12kgf/cm^2)	417X93



Pallet size：1150X900 (mm)
Carton Number :36 sets（42pcs/set）
Pcs Number 36*42=1512 Pcs/pallet
Stack less than 6 cartons