SPECIFICATION

Customer :_____

Customer No.:_____

Product Type: 8”TFT LCD Module

LCD Nunmber: HE080IA-01D

HADBEST NO. : HB080-DM877-33H

CUSTOMER APPROVED	PREPARE BY	CHECK BY	APPROVED BY
SUPPLIER APPROVED	PREPARE BY	CHECK BY	APPROVED BY
	曹岸霖	彭国兴	曹俊威

深圳市瀚达美电子有限公司
SHENZHEN HADBEST ELECTRONICS CO., LTD
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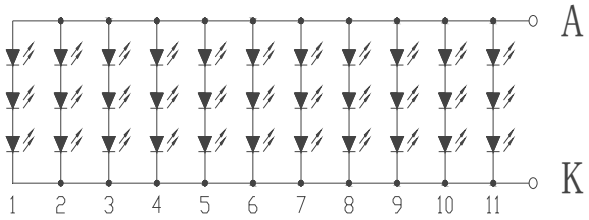
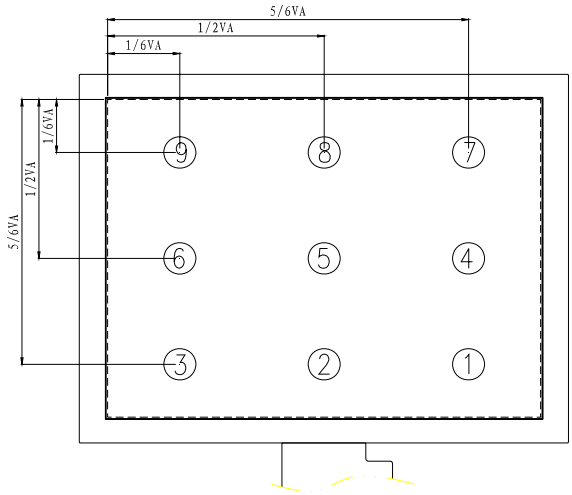
变更记录表				
变更序号 Change No.	日期 Date	内容及理由 Subject And Reason	版本号 Version No.	负责人 Responser
1	13.09.09	新版发行	A0	曹 岸 霖

目　　录

一.测试电路图 Test Circuit Diagram:

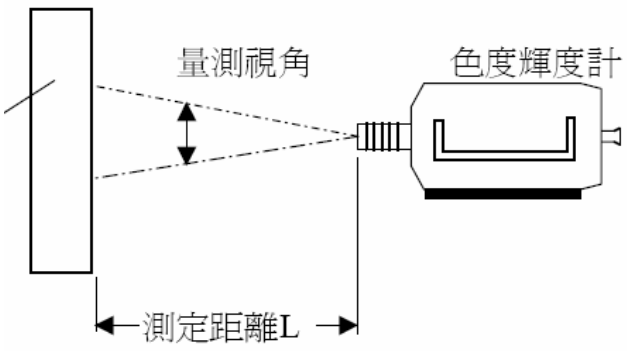


二.测试点位置图 Test Point Space Diagram:



三.测试条件如下 Test Condition as follow:

1. 环境温度：25±2℃
2. 环境湿度：55%±10%。
3. 环境照度：Dark Room10 LUX 以下,无风状态。
4. 使用限流电源测试： 11x20mA(单组 LED 灯 20mA)
5. 测量仪器：BM-7 (TOPCON)
6. 电流表：FLUKE 187
7. 色彩辉度计：BM-7(TOPCON)
8. 量测视角 1°
9. 测定距离 L= 500mm
10. 测量方式：(如右图)



四.极限参数 Absolute Maximum Rating:

（除非特别说明，环境温度 Ta=25℃,Unless specified,The Ambient temperature Ta=25℃）

项 目 Item	符 号 Symbol	条 件 Conditions	值 Rating	单 位 Unit
1 极限直流正向电流 Absolutemaximumforward current	Ifm	---	11x30	mA
2 脉冲驱动时极限正向电流 Peak forward current	Ifp	1 msec 脉冲，1/10 占空比 1 msec Plus 10% Duty Cycle	11x60	mA
3 极限功耗 Power dissipation	Pd	---	330x10.5	mW
4 工作温度 Operating Temperature Range	Topr	---	-20∽+50℃	℃
5 贮存温度 Storage Temperature Range	Tstg	---	-30∽+60℃	℃

当工作温度高于 25℃时，Ifm,Ifp 和 Pd 必须降低；电流降低率是-0.36mA/℃(直流驱动)，或-0.86mA/℃(脉冲驱动)，功耗降低率是-0.75mW/℃产品的工作电流不能大于对应工作温度条件 Ifm 或 Ifp 的 60%.

For operation above 25℃,The Ifm Ifp & Pd must be derated,the Current derating is -0.36mA/℃ for DC drive and-0.86mA/℃ for Pulse drive,the Power dissipation is -0.75mW/℃.The product working current must not more than the 60% of the Ifm or Ifp according to the working temperature.

五.电光特性 Electric Light Characteristic:

（除非特别说明，环境温度 Ta=25℃,Unless specified,The Ambient temperature Ta=25℃）

项目 Item	符号 Symbol	最小值 Min.	典型值 Typ	最大值 Max.	单位 Unit	测试条件 Condition
1.正向电压 Forward Voltage	Vf	9.00	9.60	10.50	V	IF=220mA
2.色坐标 Chromaticity Coordinate	X	0.26	--	0.33	---	IF=220mA
	Y	0.27	--	0.34	---	IF=220mA
3.亮度 （AVG） Luminance	Lv	280	350	---	cd/㎡	IF=220mA
4.均匀性 Uniformity	△Lv	75	---	---	%	IF=220mA

备注：因白色 LED 无波长特性,供货时无法做到整批颜色一致.

Note: There is no wavelength feature for white led, and there will be a few difference of that color when producing.

六.外观检验规格 Backlight Visual Inspection Spec:

检查范围：必须在 25±2℃，60±20%RH,300LUX,200-300mm 的距离，

上下左右各 45 度视觉在标准的电流下检验。

1.点亮外观：

检验项目	条件	规格	备 注
亮点、黑点、污点	动作试验	0.3＜D：不可有 0.25＜D≦0.3：1EA OK 0.2≦D≦0.25：2EA OK; D＜0.2：不计	1. 点距 20mm 2. 盖上 LCD 仍能明显看见判 NG
亮线、刮伤、异物	动作试验	0.03＜W：不可有 ；3.0＜L：不可有 L≦2.0 0.02＜W≦0.03：2EA OK L≦3.0 0.01＜W≦0.02：3EA OK W≦0.01：不计	---
MURA	动作试验	点灯时发光面上不可有亮线等明暗现象，如果出现时，盖上 LCD 不可看见	---
牛顿环	动作试验	盖上 LCD 不可看见	---

2. 非点亮外观：项目重缺点轻缺点判定基准

2.1 包装箱	2.1.1	不可有破裂
	2.1.2	若有特殊记号必须检附相关证明档
2.2 塑料框	2.2.1	不可有龟裂
	2.2.2	灌口残料不得高于胶框表面
	2.2.3	不可有缺角破损脏污现象
	2.2.4	毛边不可影响 LCD 模块组装作业
	2.2.5	不可附着有黏性的异物
2.3 标签贴纸	2.3.1	内容必须正确
	2.3.2	字体清晰
	2.3.3	贴附位置必须正确
	2.3.4	不可短缺或误配
	2.3.5	不可重迭贴附
2.4 膜片	2.4.1	逆翘不可有，正翘程度不可超过 0.5mm
	2.4.2	不可有龟裂,缺角,破损现象
	2.4.3	不可有变形,毛边等现象
	2.3.4	必须平整,不可造成 LCD 之 Pooling 现象
2.5 线材	2.5.1.	不可有裸线或断线
	2.5.2.	长度、线径、颜色必须正确，不可刺伤、压伤或破损
	2.5.3.	热缩套管不可破损
	2.5.4.	不可有组装不良现象
	2.5.5.	A.K 不可反接,(A 为正极,K 为负极)

七.信赖性测试 Reliability Test ：

项目	试验方法	判定基准
高温动作试验	温度 50±2℃ 96Hr 动作后、常温放置 2Hr	A, B, C, D, E
低温动作试验	温度-20±2℃、常湿 ， 96Hr 动作后、常温放置 2Hr	A, B, C, D, E
高温高湿保存试验	温度 60±2℃、湿度 90% RH, 96Hr 放置后、常温放置 2Hr	A, B, C, D, E
高温保存试验	温度 60±2℃、常湿 96Hr 放置后、常温放置 2Hr	A, B, C, D, E
低温保存试验	温度-30±2℃、常湿 96Hr 放置后、常温放置 2Hr	A, B, C, D, E
冷热冲击试验	-20℃(0.5h)→60℃(0.5h)为 1 次 温度循环、50 次温度循环后常温放置 2Hr	A, B, C, D, E
振动试验（非动作）	X、Y、Z 每个方向,频率：10~50Hz；2G；1 小时	A, B, C

判定标准:

A：点亮无问题

B：辉度维持 80%以上

C：外观无异常变化(损坏、伤痕、锈蚀、严重变形等情形)

D：均匀变化在 30%以内

E：色度变化在 0.02 以内

八.产品寿命 Product Life:

1. 背光源模块寿命之定义：当辉度变为最初始值的 50%时。
2. 规格：MTBF 30,000Hrs。
3. 条件：在供电电流为 220MA, 25±2℃ , 60±20%RH 时测试.

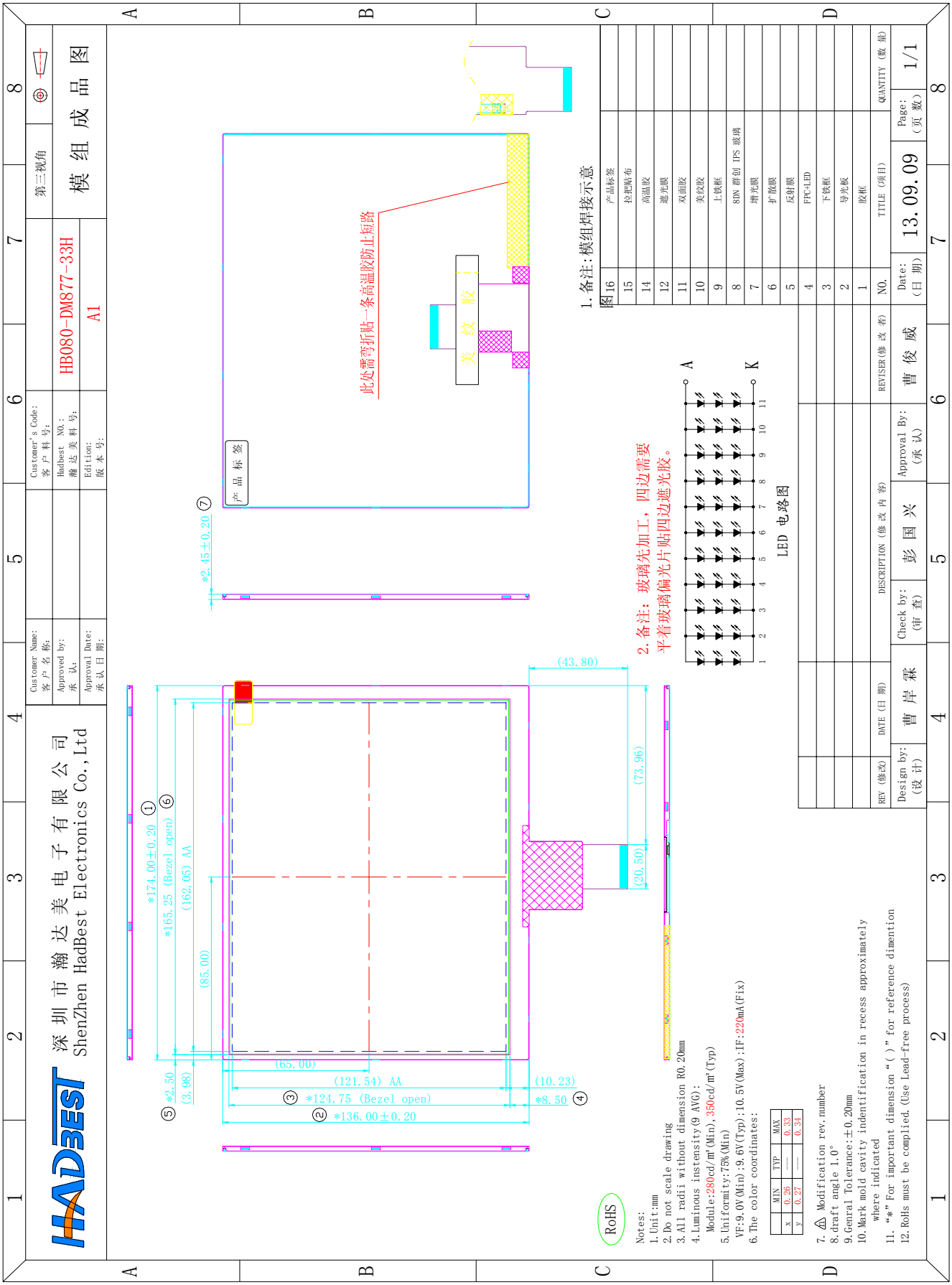
九. 欧盟 RoHS 标准 European Union RoHS Standard：

有害物质名称	铅 (Pb)	镉 (Cd)	汞 (Hg)	六价铬 (Cr^{6+})	多溴联苯 (PBBs)	多溴联苯醚 (PBDEs)	包装材料 (Pb+Cd+Hg+Cr^{6+})
限定标准（ppm）	1000	100	1000	1000	1000	1000	100

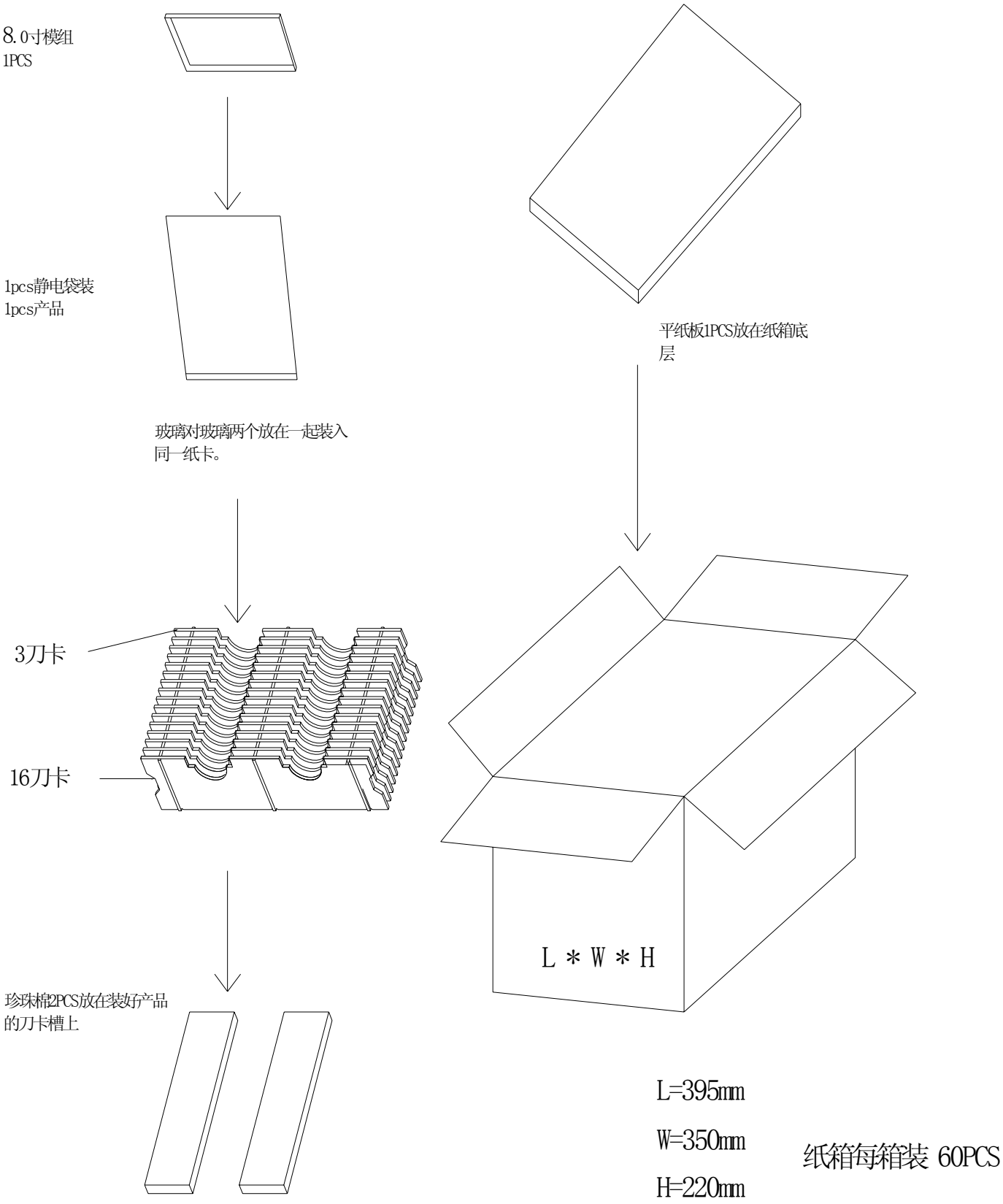
十. 其它 Others:

1. **客户提供的 TFT-LCD 进行加背光组装 TFT-LCM，关于 TFT-LCD 电性部分请参考原厂 TFT-LCD 规格书.**
2. **本承认书如有疑问,双方协议解决.**

十一. 模组成品图 Finished Module Drawing ：



十二.包装示意图 Mold train packing chart：



CHIMEI INNOLUX DISPLAY CORPORATION

LCD MODULE

SPECIFICATION

Customer: _____

Model Name: TBD

Date: 2012/07/03

Version: 01

■ **Preliminary Specification**

□ **Final Specification**

For Customer's Acceptance

Approved by	Comment

Approved by	Reviewed by	Prepared by
STANLEY CW LEUNG 2012/07/**	Wenyi Wang 2012/07/**	Laurels.Yang 2012/07/03

Record of Revision

Version	Revise Date	Page	Content
Pre-Spec.01	2011/07/03		Initial Release.

CHIMEI INNOLUX

Contents

1. General Specifications

No.	Item	Specification	Remark
1	LCD size	8.0 inch(Diagonal)	
2	Driver element	a-Si TFT active matrix	
3	Resolution	1024 × 3(RGB) × 768	
4	Display mode	Normally Black	
5	Dot pitch	0.05275(W) × 0.15825(H) mm	
6	Active area	162.05(W) × 121.54(H) mm	
7	Panel size	171.12 (W) ×132.62 (H) × 1.07(D) mm	Note 1
8	Surface treatment	Hard coating	
9	Color arrangement	RGB-stripe	
10	Interface	Digital	
11	Panel power consumption	0.383W (Typ.)	
12	Weight	TBD	

Note 1: Refer to Mechanical Drawing.

2. Pin Assignment

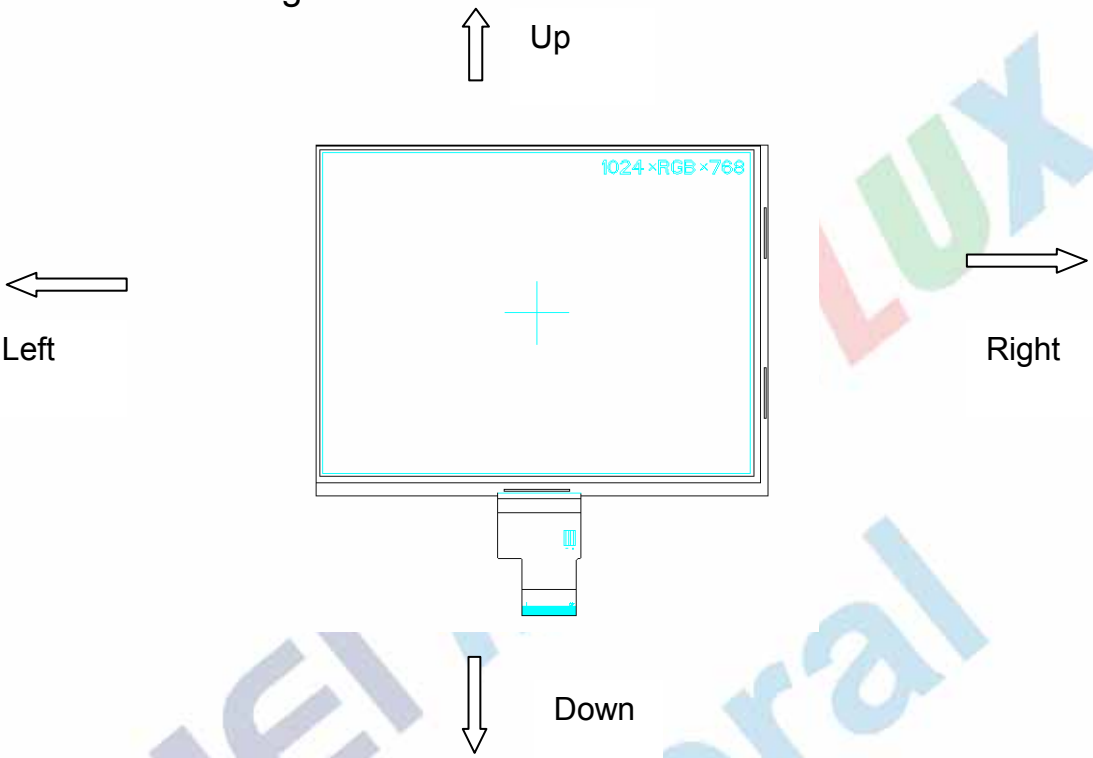
2.1. TFT LCD Panel Driving Section

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

25	GND	P	Ground	
26	NC	---	No connection	
27	DIMO	O	Backlight CABC controller signal output	
28	SELB	I	6bit/8bit mode select	Note1
29	AVDD	P	Power for Analog Circuit	
30	GND	P	Ground	
31	LED-	P	LED Cathode	
32	LED-	P	LED Cathode	
33	L/R	I	Horizontal inversion	Note3
34	U/D	I	Vertical inversion	Note3
35	VGL	P	Gate OFF Voltage	
36	CABCEN1	I	CABC H/W enable	Note2
37	CABCEN0	I	CABC H/W enable	Note2
38	VGH	P	Gate ON Voltage	
39	LED+	P	LED Anode	
40	LED+	P	LED Anode	

I: input, O: output, P: Power
Note1: If LVDS input data is 6 bits ,SELB must be set to High;
If LVDS input data is 8 bits ,SELB must be set to Low.
Note2: When CABC_EN=”00”, CABC OFF.
When CABC_EN=”01”, user interface image.
When CABC_EN=”10”, still picture.
When CABC_EN=”11”, moving image.
When CABC off, don’t connect DIMO, else connect it to backlight.
Note3: When L/R=”0”, set right to left scan direction.
When L/R=”1”, set left to right scan direction.
When U/D=”0”, set top to bottom scan direction.
When U/D=”1”, set bottom to top scan direction.

Note: Definition of scanning direction.
Refer to the figure as below:



3. Operation Specifications

3.1. Absolute Maximum Rating

(GND=AV_{SS}=0V, Note 1)

Item	Symbol	Values		Unit	Remark
		Min.	Max.		
Power voltage	V_{CC}	-0.3	5.0	V	
	AV_{DD}	6.5	13.5	V	
	V_{GH}	-0.3	40	V	
	V_{GL}	-20	0.3	V	
	V_{GH}-V_{GL}	-	40	V	
Operation Temperature	T_{OP}	-10	50	℃	
Storage Temperature	T_{ST}	-20	60	℃	

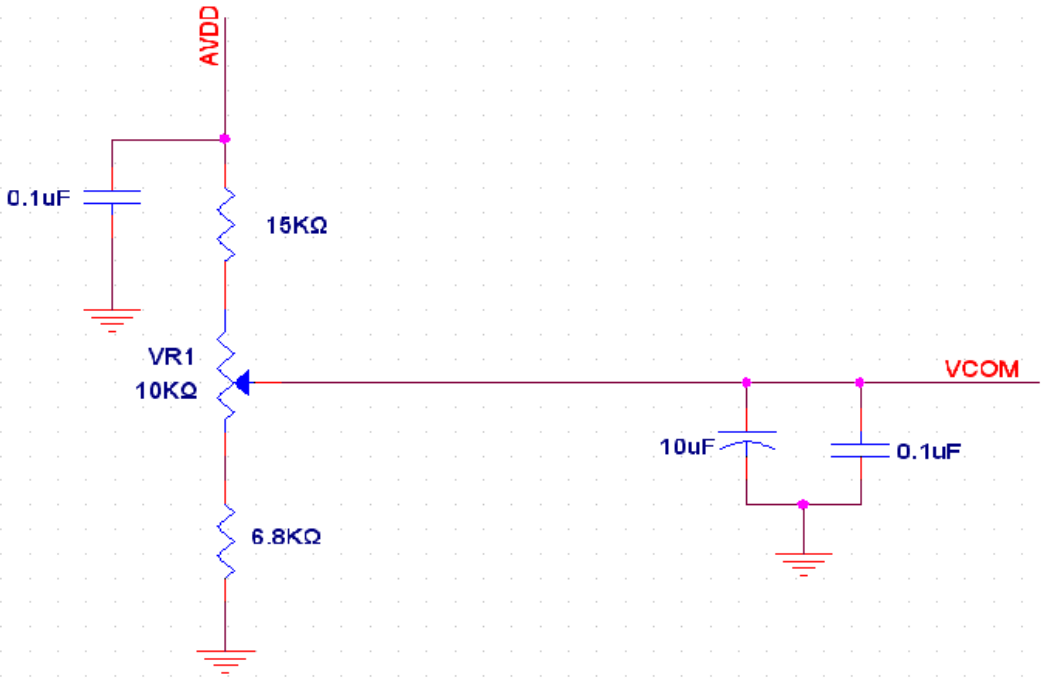
Note 1: The absolute maximum rating values of this product are not allowed to be exceeded at any times. Should a module be used with any of the absolute maximum ratings exceeded, the characteristics of the module may not be recovered, or in an extreme case, the module may be permanently destroyed.

3.1.1. Typical Operation Conditions

(GND=AV_{SS}=0V, Note 1)

Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Power voltage	V_{CC}	3.0	3.3	3.6	V	Note 2
	AV_{DD}	9.8	10	10.2	V	
	V_{GH}	18.6	18.9	19.2	V	
	V_{GL}	-8.1	-7.8	-7.5	V	
Input signal voltage	V_{COM}	2.6	3.6	4.6	V	Note 3
Input logic high voltage	V_{IH}	0.7Vcc	-	Vcc	V	Note 4
Input logic low voltage	V_{IL}	0	-	0.3Vcc	V	

Note 1: Be sure to apply V_{CC} and V_{GL} to the LCD first, and then apply V_{GH}.
Note 2: V_{CC} setting should match the signals output voltage (refer to Note 3) of customer's system board .
Note 3:Typical Vcom is only a reference value, it must be optimized according to each LCM,please use VR and base on below application circuit.
Note 4: RESET,STBYB,SELB,L/R,U/D,CABCEN0,CABCEN1.



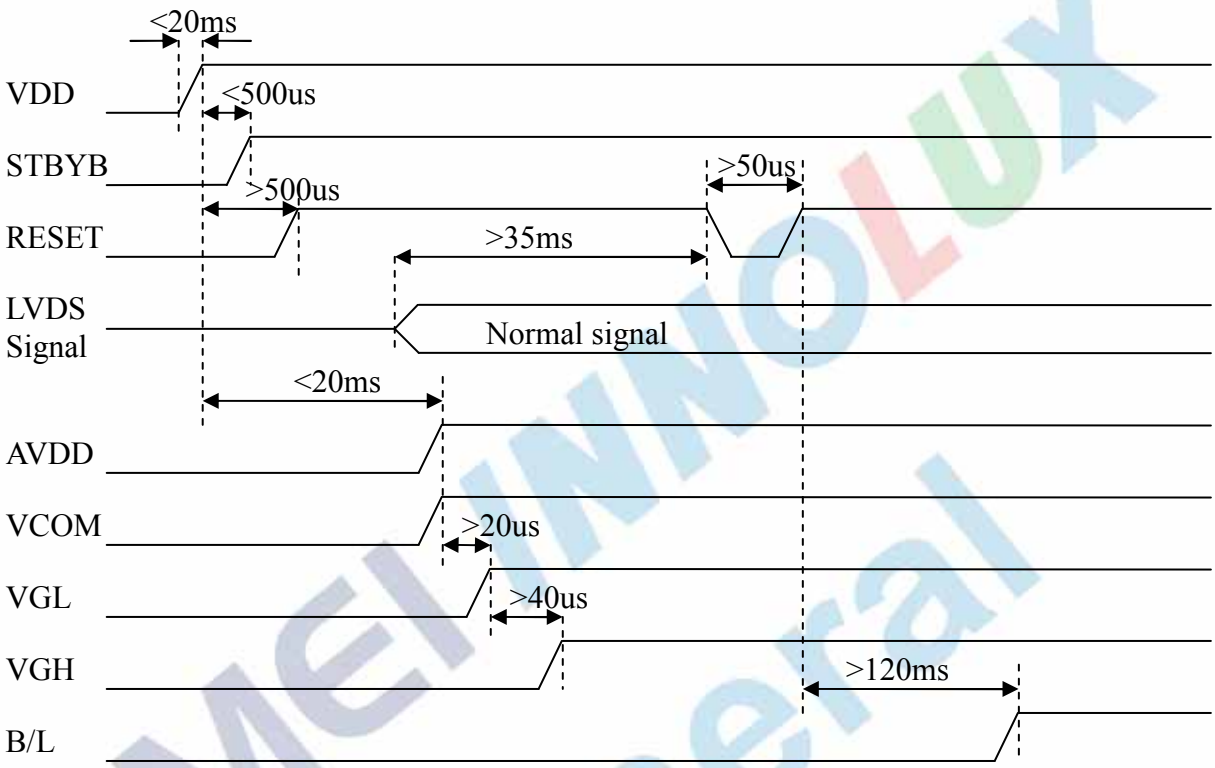
3.1.2. Current Consumption

(GND=AV_{SS}=0V)

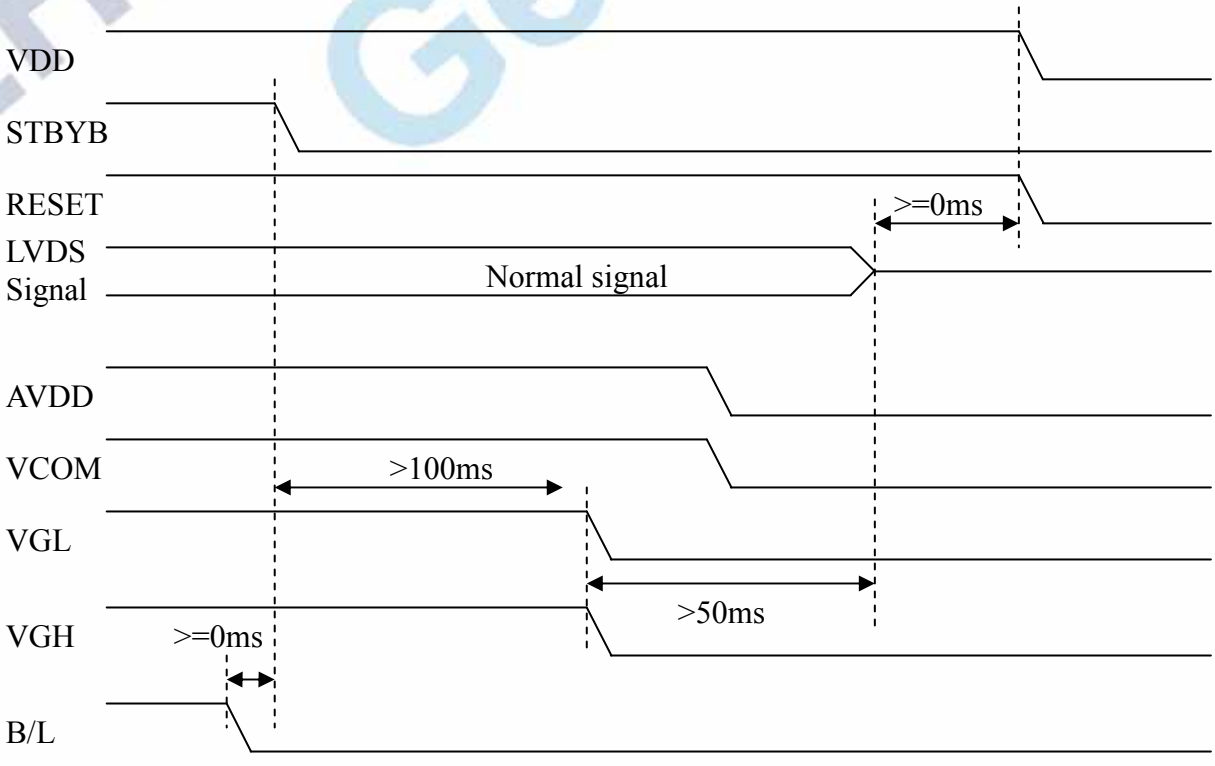
Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Current for Driver	I_{GH}	-	0.65	1.0	mA	VGH=18.9V
	I_{GL}	-	0.65	1.0	mA	VGL=-7.8V
	I_{CC}	-	35	60	mA	Vcc=3.3V
	IAV_{DD}	-	25	40	mA	AVDD=10.0V

3.2. Power Sequence

3.2.1. Power on:



3.2.2. Power off:

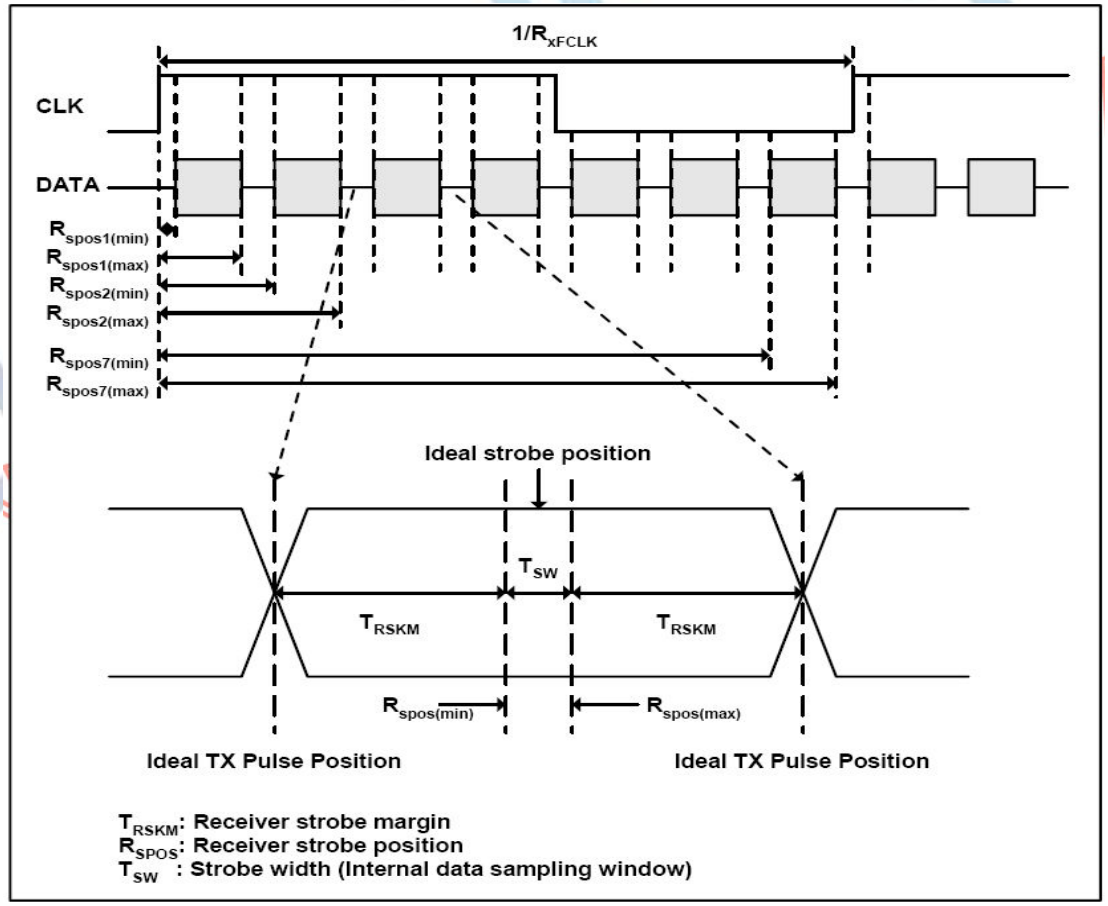


3.3. Timing Characteristics

3.3.1. AC Electrical Characteristics

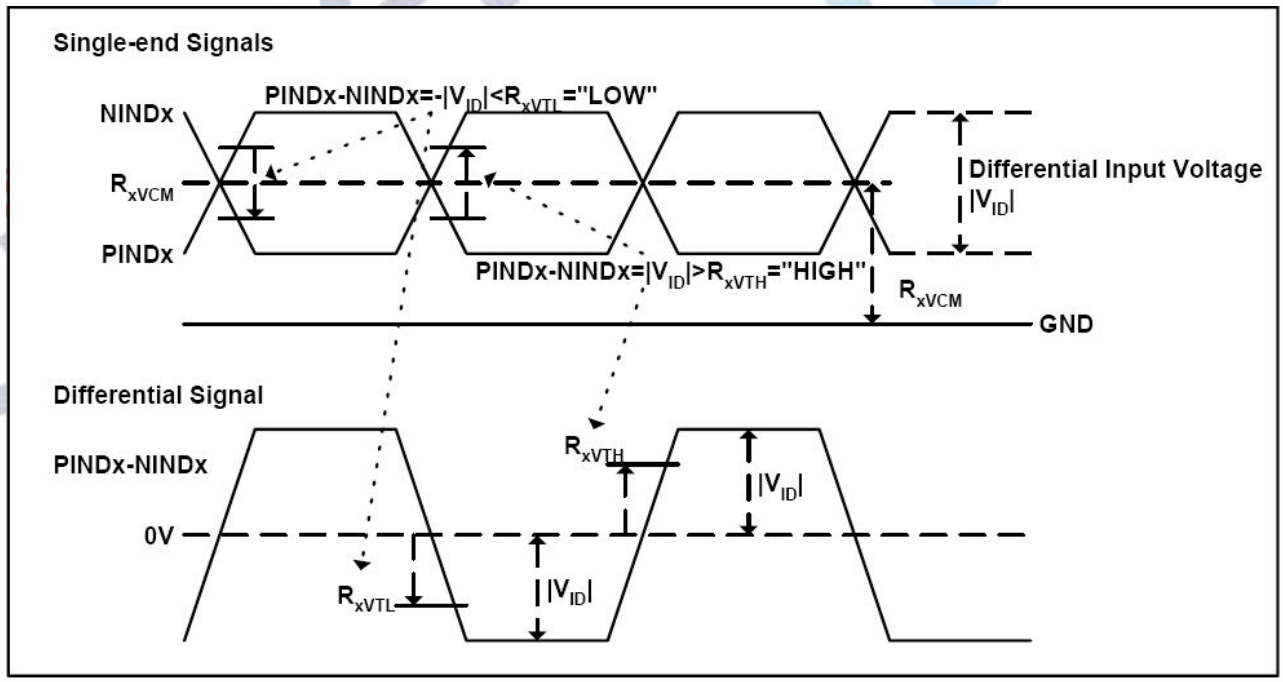
Parameter	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Clock frequency	R_{xFCLK}	20	-	71	MHz	
Input data skew margin	T_{RSKM}	500	-	-	ps	
Clock high time	T_{LVCH}	-	4/(7* R_{xFCLK})	-	ns	
Clock low time	T_{LVCL}	-	3/(7* R_{xFCLK})	-	ns	

3.3.2. Input Clock and Data Timing Diagram



3.3.3. DC Electrical Characteristics

Parameter	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Differential input high Threshold voltage	R_{xVTH}	-	-	+0.1	V	
Differential input low Threshold voltage	R_{xVTL}	-0.1	-	-	V	
Input voltage range (singled-end)	R_{xVIN}	0	-	2.4	V	
Differential input common mode voltage	R_{xVCM}	$\|V_{ID}\|/2$	-	$2.4-\|V_{ID}\|/2$	V	
Differential voltage	$\|V_{ID}\|$	0.2	-	0.6	V	
Differential input leakage current	RV_{xliz}	-10	-	+10	uA	

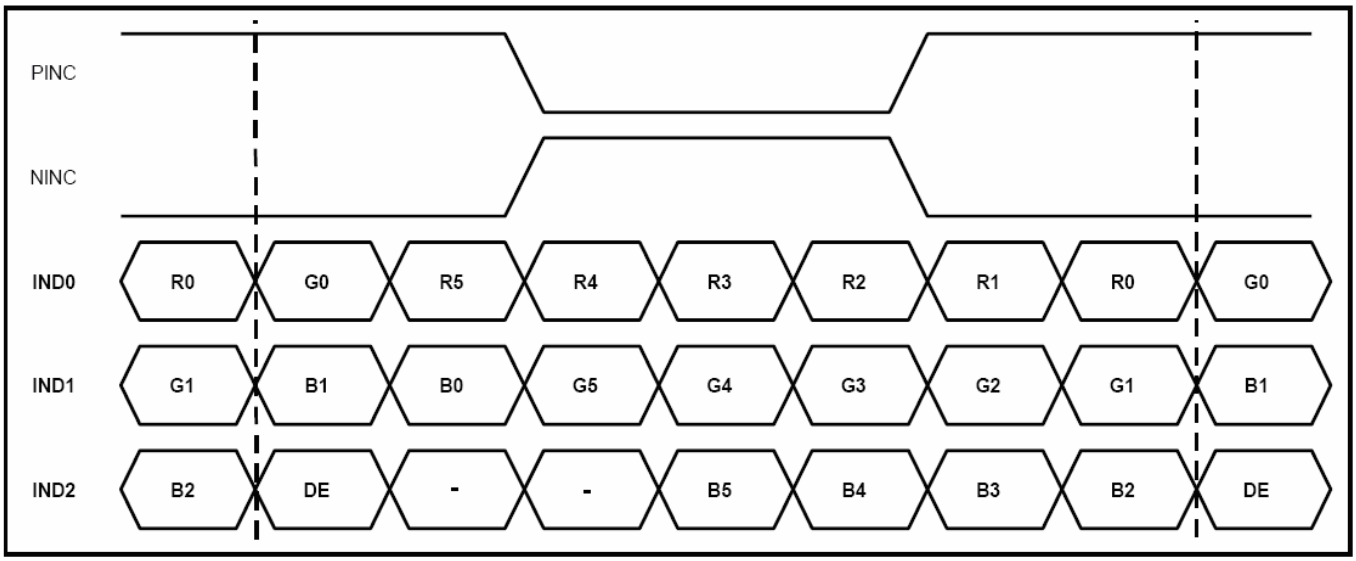


3.3.4. Timing

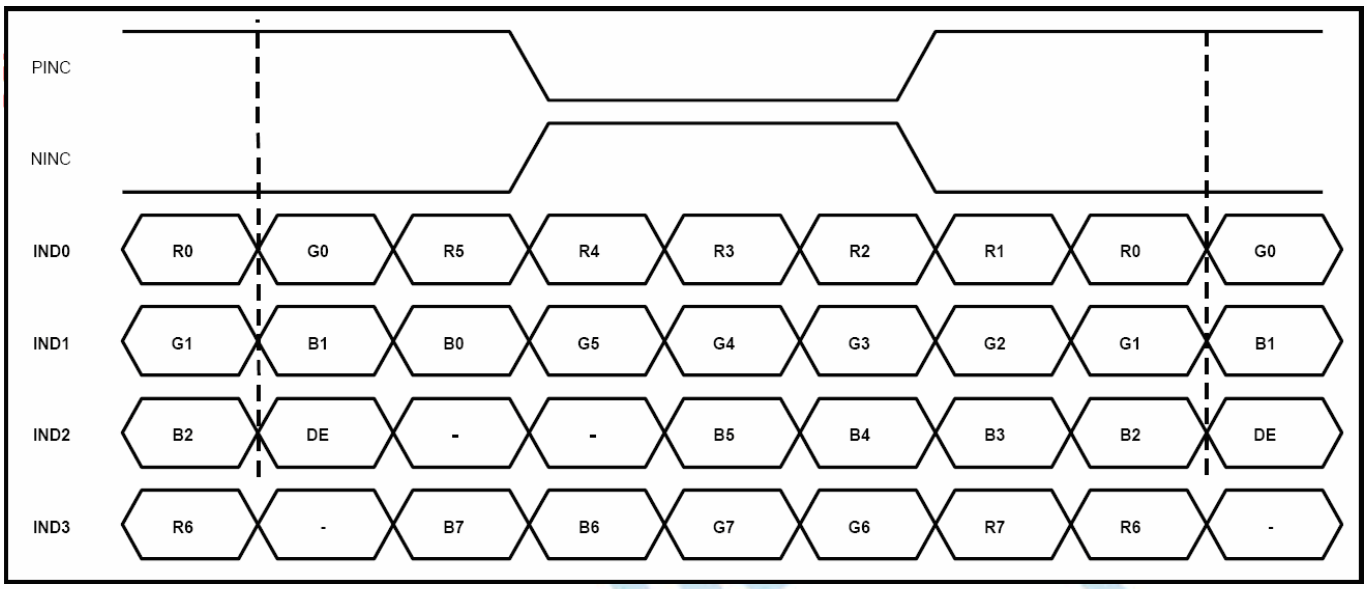
Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Clock Frequency	fclk	52	65	71	MHz	Frame rate =TBD
Horizontal display area	thd		1024			
HS period time	th	1114	1344	1400	DCLK	
HS Blanking	thb+thfp	90	320	376	DCLK	
Vertical display area	tvd		768			
VS period time	tv	778	806	845	H	
VS Blanking	tvb+tvfp	10	38	77	H	

3.3.5. Data Input Format

6bit LVDS input



8bit LVDS input



Note: Support DE timing mode only, SYNC mode not supported.

4. Optical Specifications

Item	Symbol	Condition	Values			Unit	Remark
			Min.	Typ.	Max.		
Viewing angle (CR≥ 10)	θ_L	Φ=180°(9 o'clock)	75	85	-	degree	Note 1
	θ_R	Φ=0°(3 o'clock)	75	85	-		
	θ_T	Φ=90°(12 o'clock)	75	85	-		
	θ_B	Φ=270°(6 o'clock)	75	85	-		
Response time	T_{ON+} T_{OFF}	Normal θ=Φ=0°		25	50	msec	Note 2 Note 3
Contrast ratio	CR		600	800	-	-	Note 4
Color chromaticity	W_X		0.238	0.288	0.338	-	Note 5
	W_Y		0.276	0.326	0.376	-	
Transmittance	Tr	-	3.8	4.3	-	%	

Test Conditions:

1. V_{CC}=3.3V, the ambient temperature is 25℃.
2. The test systems refer to Note 2.

Note 1: Definition of viewing angle range

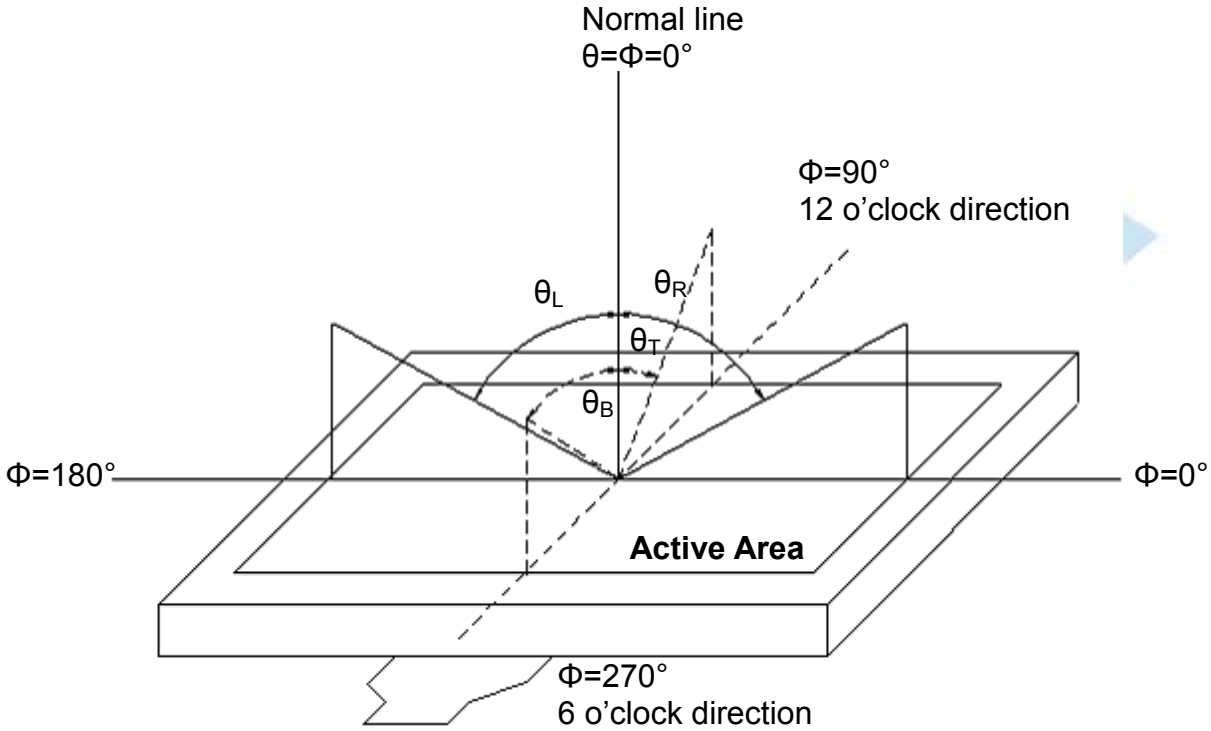


Fig. 4-1 Definition of viewing angle

Note 2: Definition of optical measurement system.

The optical characteristics should be measured in dark room. After 30 minutes operation, the optical properties are measured at the center point of the LCD screen. (Viewing angle is measured by ELDIM-EZ contrast/Height :1.2mm, Response time is measured by Photo detector TOPCON BM-7, other items are measured by BM-5A/ Field of view: 1°/Height: 500mm.)

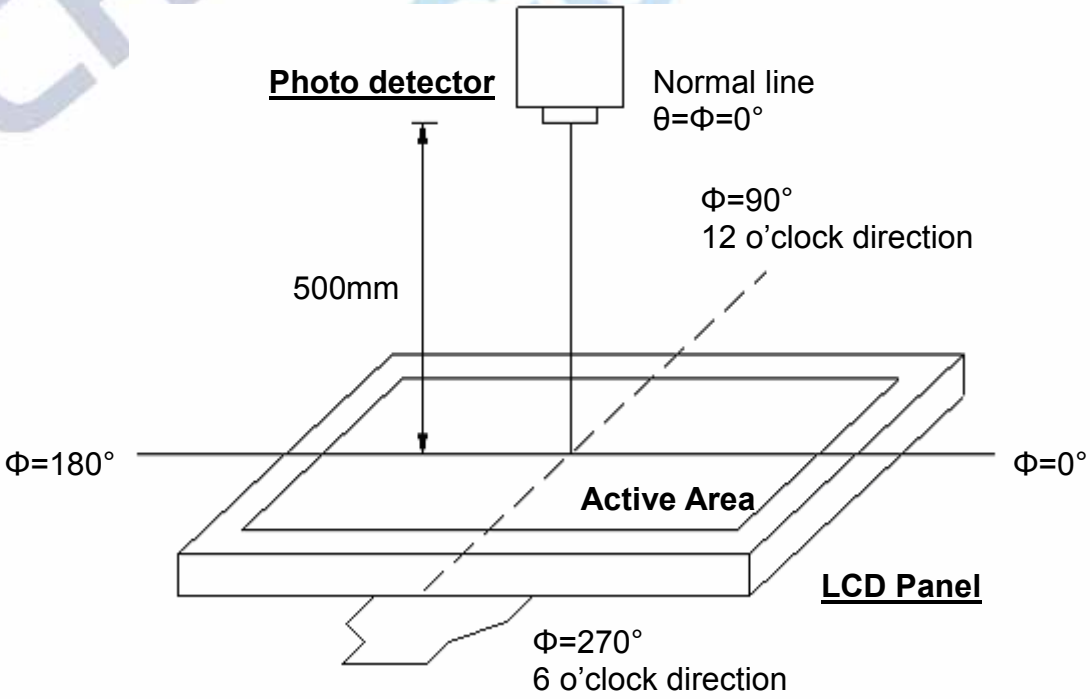


Fig. 4-2 Optical measurement system setup

Note 3: Definition of Response time

The response time is defined as the LCD optical switching time interval between "White" state and "Black" state. Rise time (T_{ON}) is the time between photo detector output intensity changed from 90% to 10%. And fall time (T_{OFF}) is the time between photo detector output intensity changed from 10% to 90%.

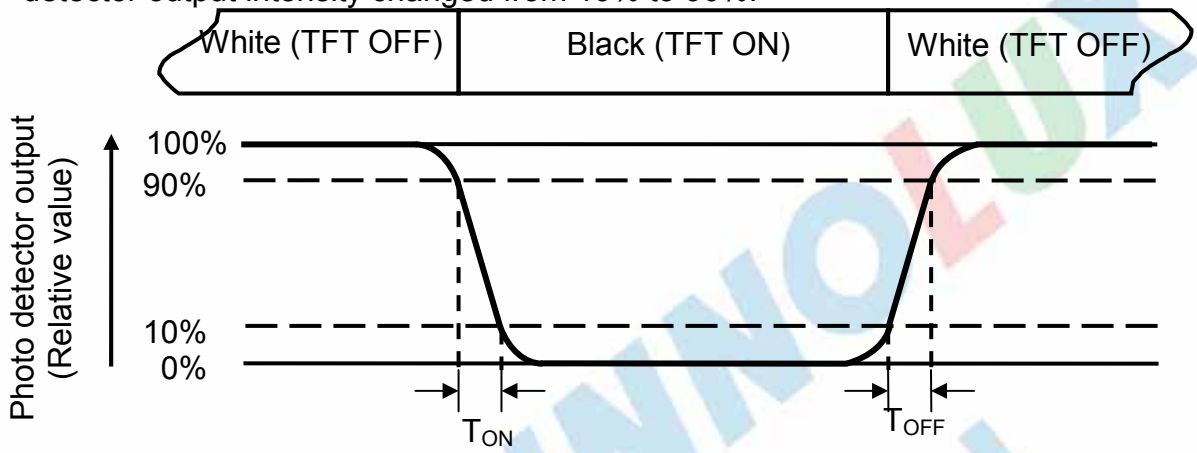


Fig. 4-3 Definition of response time

Note 4: Definition of contrast ratio

$$\text{Contrast ratio (CR)} = \frac{\text{Luminance measured when LCD on the "White" state}}{\text{Luminance measured when LCD on the "Black" state}}$$

Note 5: Definition of backlight

The backlight used C light.

Note 7: Definition of Luminance Uniformity

Active area is divided into 9 measuring areas (Refer to Fig. 4-4).Every measuring point is placed at the center of each measuring area.

$$Luminance\ \ Uniformity\ (Yu) = \frac{B_{min}}{B_{max}}$$

L-------Active area length W----- Active area width

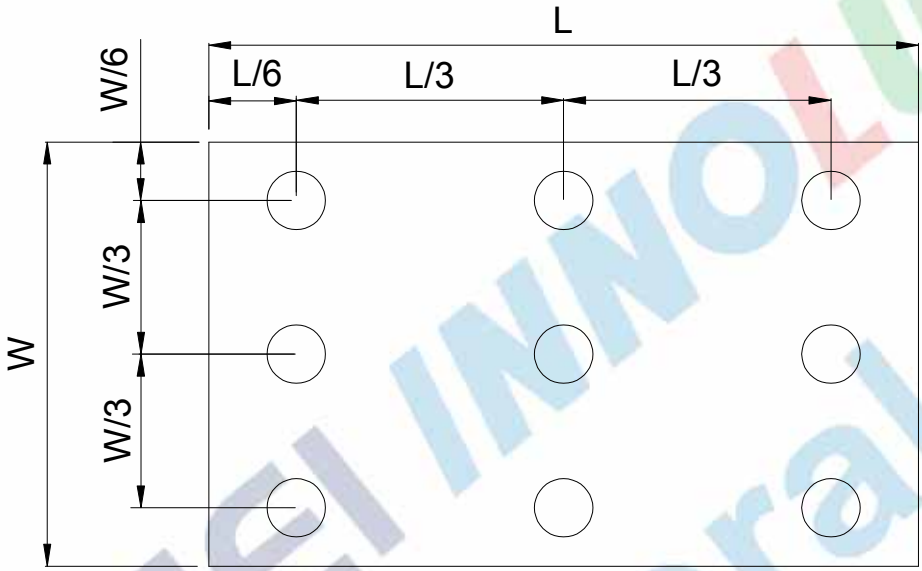


Fig. 4-4 Definition of measuring points

B_{max}: The measured maximum luminance of all measurement position.
B_{min}: The measured minimum luminance of all measurement position.

5. Reliability Test Items

(Note3)

Item	Test Conditions		Remark
High Temperature Storage	Ta = 60℃	240hrs	Note 1，Note 4
Low Temperature Storage	Ta = -20℃	240hrs	Note 1，Note 4
High Temperature Operation	Ts = 50℃	240hrs	Note 2，Note 4
Low Temperature Operation	Ta = -10℃	240hrs	Note 1，Note 4
Operate at High Temperature and Humidity	Ta=40℃ H=90%RH	240hrs	Note 4

Note 1: Ta is the ambient temperature of samples.
Note 2: Ts is the temperature of panel's surface.
Note 3: In the standard condition, there shall be no practical problem that may affect the display function. After the reliability test, the product only guarantees operation, but don't guarantee all of the cosmetic specification.
Note 4: Before cosmetic and function test, the product must have enough recovery time, at least 2 hours at room temperature.

6. General Precautions

6.1. Safety

Liquid crystal is poisonous. Do not put it in your mouth. If liquid crystal touches your skin or clothes, wash it off immediately by using soap and water.

6.2. Handling

1. The LCD panel is plate glass. Do not subject the panel to mechanical shock or to excessive force on its surface.
2. The polarizer attached to the display is easily damaged. Please handle it carefully to avoid scratch or other damages.
3. To avoid contamination on the display surface, do not touch the module surface with bare hands.
4. Keep a space so that the LCD panels do not touch other components.
5. Put cover board such as acrylic board on the surface of LCD panel to protect panel from damages.
6. Transparent electrodes may be disconnected if you use the LCD panel under environmental conditions where the condensation of dew occurs.
7. Do not leave module in direct sunlight to avoid malfunction of the ICs.

6.3. Static Electricity

1. Be sure to ground module before turning on power or operating module.
2. Do not apply voltage which exceeds the absolute maximum rating value.

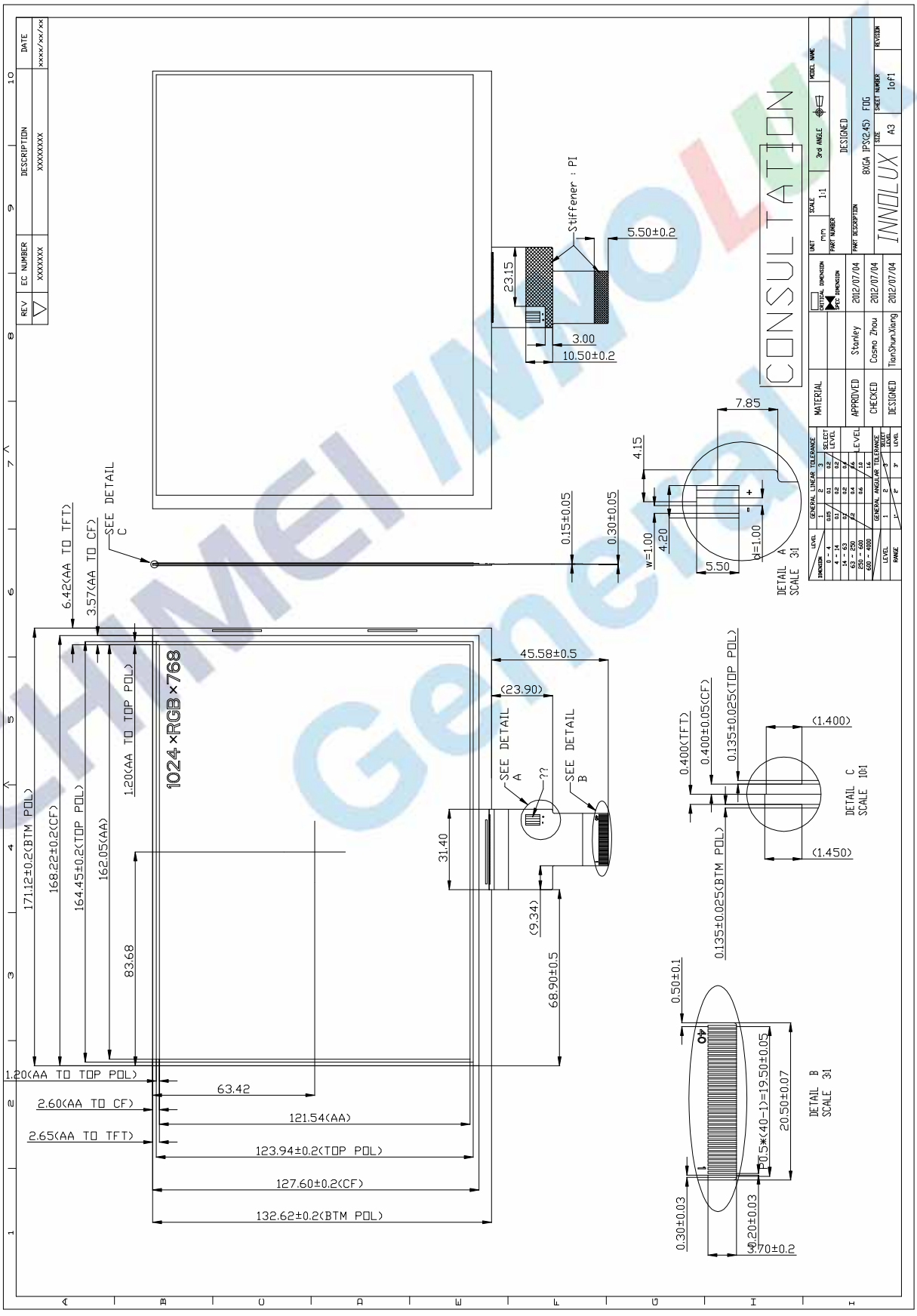
6.4. Storage

1. Store the module in a dark room where must keep at 25±10℃ and 65%RH or less.
2. Do not store the module in surroundings containing organic solvent or corrosive gas.
3. Store the module in an anti-electrostatic container or bag.

6.5. Cleaning

1. Do not wipe the polarizer with dry cloth. It might cause scratch.
2. Only use a soft sloth with IPA to wipe the polarizer, other chemicals might permanent damage to the polarizer.

7. Mechanical Drawing



8. Package Drawing

8.1 Packaging Material Table

No	Item	Model (Material)	Dimensions(mm)	Unit Weight (Kg)	Quantity (pcs)	Remark
1	Panel size	TBD	171.12×132.62×1.07	TBD	60	
2	Partition	BC Corrugated Paper	512 × 350 × 225	0.290	1	
3	Dust-Proof Bag	PE	700 × 530	0.050	1	
4	PET-Tray	PE	505 ×338×16.5	0.24	21	
5	Carton	Corrugated Paper	530 × 355 × 255	0.810	1	
6	Total weight	9.346KG±5%				

8.2 Packaging Quantity

(1) FOG quantity per PET-Tray: row x pcs = 3pcs
(2) Total FOG quantity in Carton: layer x pcs/PET-Tray = 60 pcs

8.3 Packaging Drawing