SPECIFICATION
FOR
CTP MODULE

MODULE NO: YB-TG1024768S04A-C-B

Doc.Version:00

Customer Approval:

☐ Accept ☐ Reject

YEEBO	NAME	SIGNATURE	DATE
Prepare	Electronic Engineer	舒玲莹	2018-02-07
Check	Mechanical Engineer	郭彤军	2018-02-07
Verify		陈长松	2018-20-07
Approval		唐红	2018-02-07

■APPROVAL FOR SPECIFICATIONS ONLY

☐APPROVAL FOR SPECIFICATIONS AND SAMPLE

WIMRD005-02-C

1. Revision History

Sample Version	DOC. Version	DATE	DESCRIPTION		CHANGED BY
A1	00	2018-02-06	Spec only	First issue	Lin caihua

2. Table of Contents:

'

3. Module Numbering System:

(Example)

YB - T G 1024768 S 04 A - C - A

Sample Version: A~Z

T:With Resistive touch panel
C:With Capacitive touch panel
N:Without Touch panel

Version:A~Z

Serial No:01~99

S:STD Product
C:Customer Made

Display Function:
Segment Number of Segment
Characters Lines of Character
Column and Row of Graphic
Length * Width of Other

LCM Display Type:
C:Character Type
G:Graphic Type
S:Segment Type

LCD Model:
C:CSTN; T:TFT; L:LTPS; O:OLED;
P:PLED;S:B/W STN;Y:Yeetek;
N:Others;

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4. General Specification:

ITEM	CONTENTS
LCD Module Size	236.0(W) * 176.9(H) * 5.7(T) mm
Module Size (With FPC and PCB)	249.70W) * 305.28(H) * 7.80(T) mm
Display Size(Diagonal)	10.4 inch
Display Format	1024(RGB) * 768 Pixels
Active Area	211.2(W) * 158.4(H) mm
Pixel Pitch	0.20625 * 0.20625 mm
LCD Type	TFT(16.7M) / Transmissive / Normal White / Anti-Glare
View Direction (Gray Inversion)	6 O'clock
The Best Viewing Direction:	12 O'clock
LCD Module Interface	LVDS
CTP IC	ILI2510
CTP Interface	USB
Weight	TBD
FW version	TBD
Config test	TBD

5. LCM drawing:

Specification:

1> OGS 1.8mm Chemical strengthen glass
2> Interface:USB
3> Resolution : 1024*768
4> Channel : 30*22
5> Controller IC : ILI2510
6> Surface hardness : 9H (Pencil) /HV550 kgf/mm^2
7> Transmittance Rate: >86%,Support: glove mode / Water proof etc.;
8> Operating temprature : -20~70℃
9> Storage temprature : -30~80℃
10> Unspecified tolerance:±0.20,( ) is reference dimension
10> ROHS compliant

Count drawing & Spec.revision record during discussion with customer

Rec.	Revision content description	Date
#1	FIRST ISSUE	2018-02-05

YEEBO

UNIT	mm
SIZE	A4
SCALE	N-T-S

MOD. NO. YB-TG1024768S04A-C-B

DESIGNED	CHECKED	VERIFIED	APPROVED

FILE NAME : Count drawing

| Sheet | 1 |
| Of | 1 |

USB PIN OUT

1	VBUS
2	D-
3	D+
4	GND
5	GND

6. Electrical Characteristics (Ta=25℃)

6-1 CTP Absolute Maximum Ratings

Item	Specification					Remarks
6-1 Supply voltage	Symbol	Min	Typ	Max	Unit	-
	V_{BUS}	4.5	5.0	5.5	V	
6-2 Normal mode Current consumption	Symbol	Min	Typ	Max	Unit	-
	I_{OPR}	--	78.5	130	mA	
	I_{SLP}	--	15	22.5	uA	
6-3 Insulation resistance	≧20M Ω(DC 25V)					-

6-2 TFT Absolute Maximum Ratings   (Ta=25℃ VSS=0V)

Item	Symbol	Min.	Type	Max.	Unit	Note
Power Supply voltage	VDD	-0.3	-	3.96	Volt	(1)(2)
	VLED	-0.3	-	20.0	Volt	
Operating Temperature	Topr	-20	-	+70	℃	(3)(4)(5)(6)
Storage Temperature	Tstg	-30	-	+80	℃	

Note (1) Permanent damage may occur to the LCD module if beyond this specification. Functional operation should be restricted to the conditions described under normal operating conditions.

Note (2) Operating temperature 25 ℃, humidity 55%RH.

Note (3) (T<=40℃) Note static electricity. Maximum wet bulb temperature at 39℃ or less. (T>40℃) No condensation.

Note (4) There is a possibility of causing deterioration in the irregularity and others of the screen and the display fineness though the liquid crystal module doesn't arrive at destruction when using it at 60~70℃ or -20~0℃.

Note (5) There is a possibility of causing the fineness deterioration by the prolonged use in the (high temperature) humidity environment (60%RH or more).

Note (6) In the operating temperature item, the low temperature side is the ambient temperature regulations. The high temperature side is the panel surface temperature regulations.

Absolute Ratings of Environment of the LCD Module
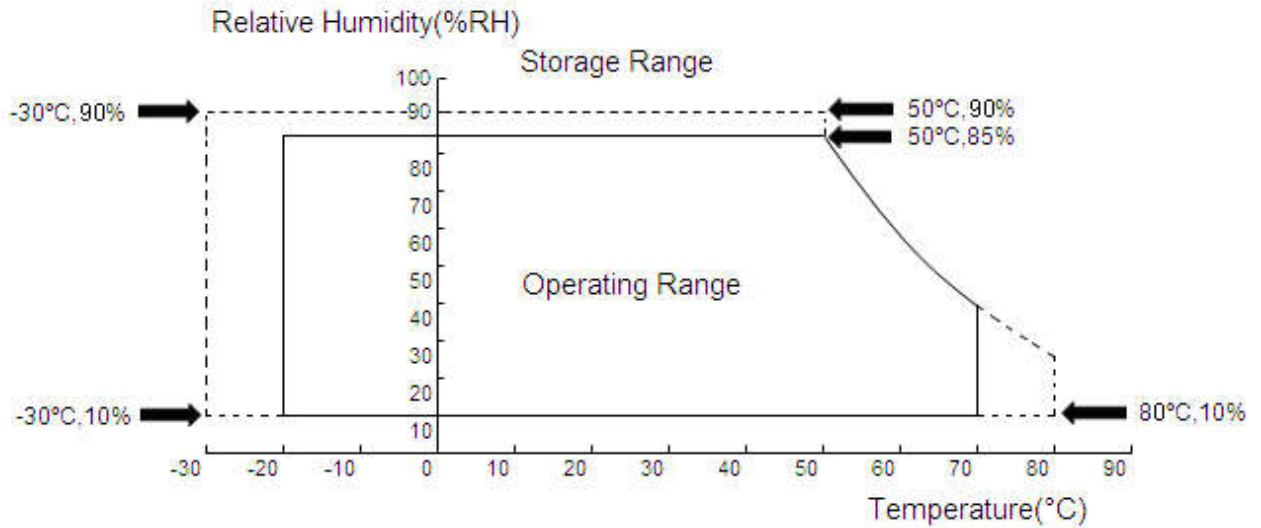
6-3 Operating Conditions (Ta=25℃)

Item	Symbol	Min.	Typ.	Max.	Unit	Note
Power Supply voltage	VDD	3.0	3.3	3.6	Volt	(2)(4)
Power Supply Current	IDD	-	-	0.25	A	(3)(4)
VDD Power Consumption	PDD	-	-	0.84	W	(3)(4)
Rush Current	Irush	-	-	1.5	A	(1)(4)
Allowable Logic/LCD LCD Ripple Voltage	VDDrp	-	-	200	[mV]p-p	(4)

Note (1) Measure Condition

VDD Rising Time
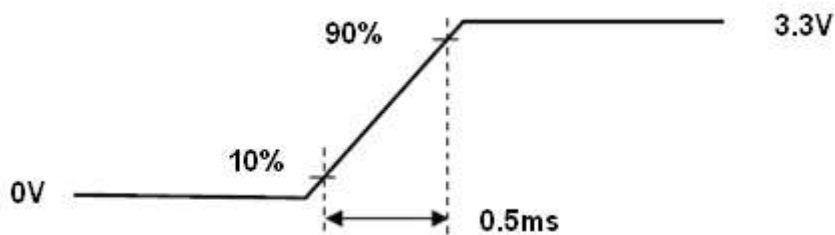
Note (2) VDD Power Dip Condition
If VTH＜VDD≤Vmin，then td≤10ms；when the voltage return to normal our panel must revive automatically.

VDD Power Dip
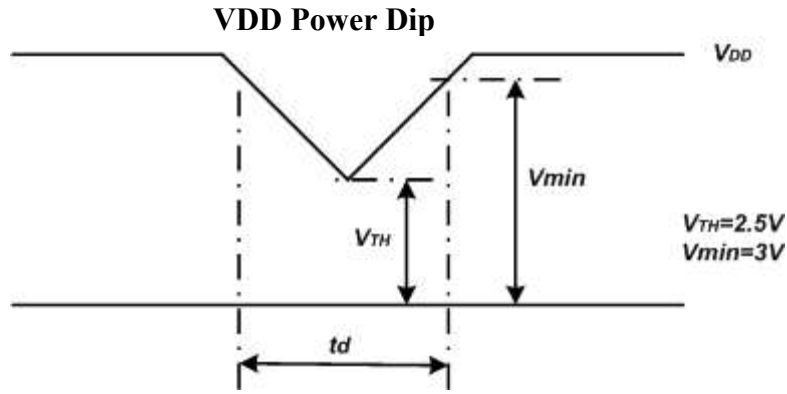
Note (3) Frame Rate=60Hz, VDD=3.3V,DC Current.
Note (4) Operating temperature 25℃, humidity 55%RH.

6-4 LVDS Receiver

6-3-1 Signal Electrical Characteristics For LVDS Receiver

LVDS Receiver Electrical Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Differential Input High Threshold	Vth	-	-	+100	mV	VCM=1.2V
Differential Input Low Threshold	Vtl	-100	-	-	mV	VCM=1.2V
Magnitude Differential Input	$|V_{ID}|$	200	-	600	mV	-
Common Mode Voltage	VCM	1.0	1.2	1.4	V	Vth – Vtl=200 mV
Common Mode Voltage offset	△VCM	-50	-	+50	mV	Vth – Vtl=200 mV

Note
(1) Input signals shall be low or Hi-Z state when VDD is off.
(2) All electrical characteristics for LVDS signal are defined and shall be measured at the interface connector of LCD.

Voltage Definitions
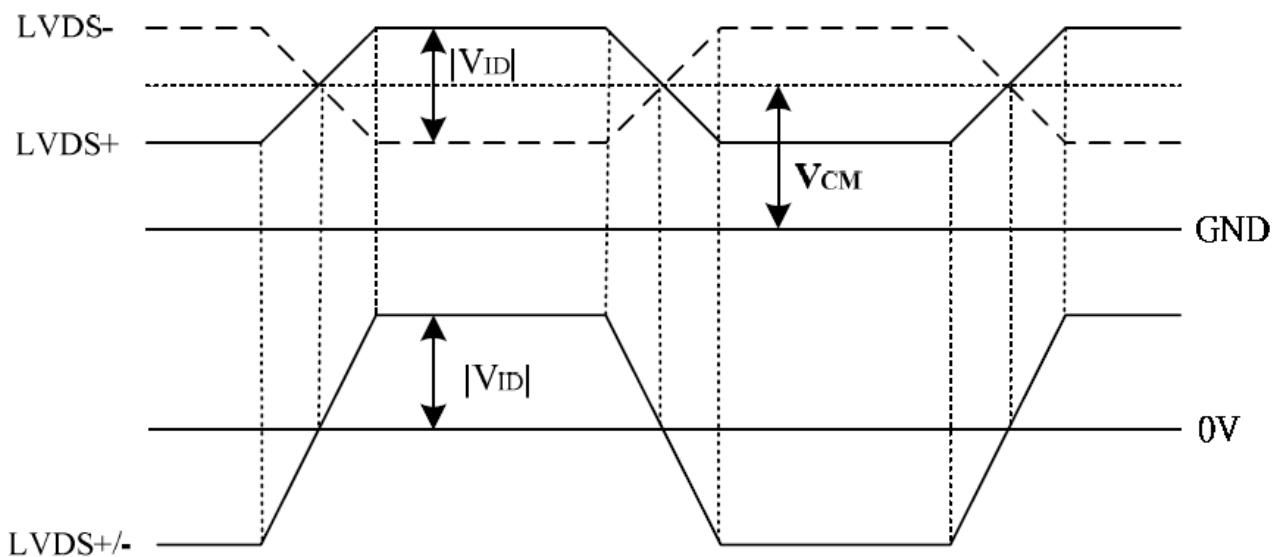
LVDS Data Mapping (6 Bit)
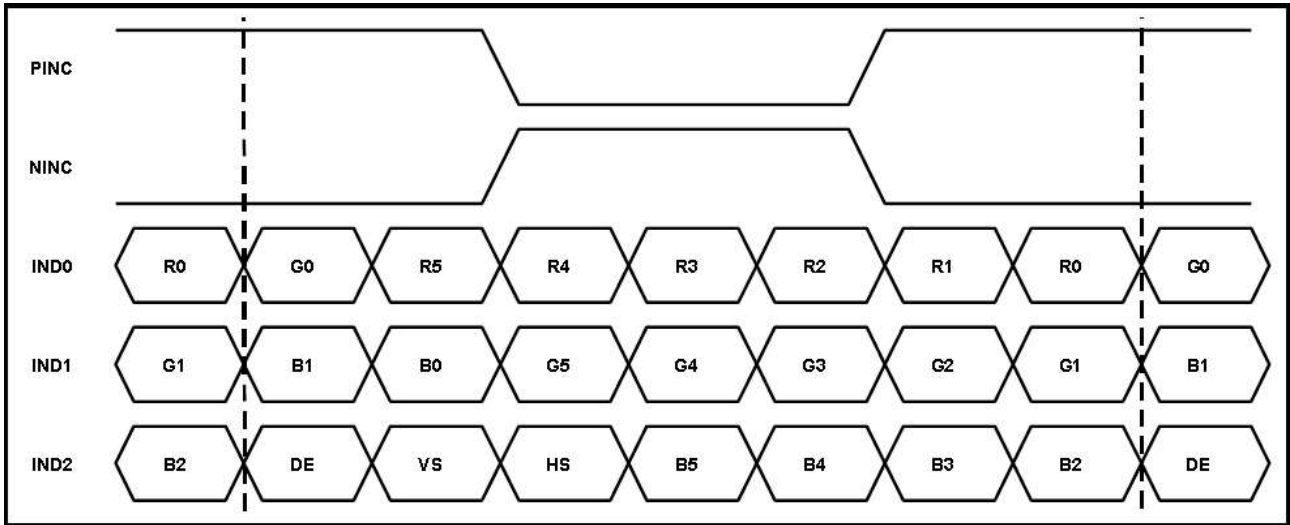
LVDS Data Mapping (8 Bit)
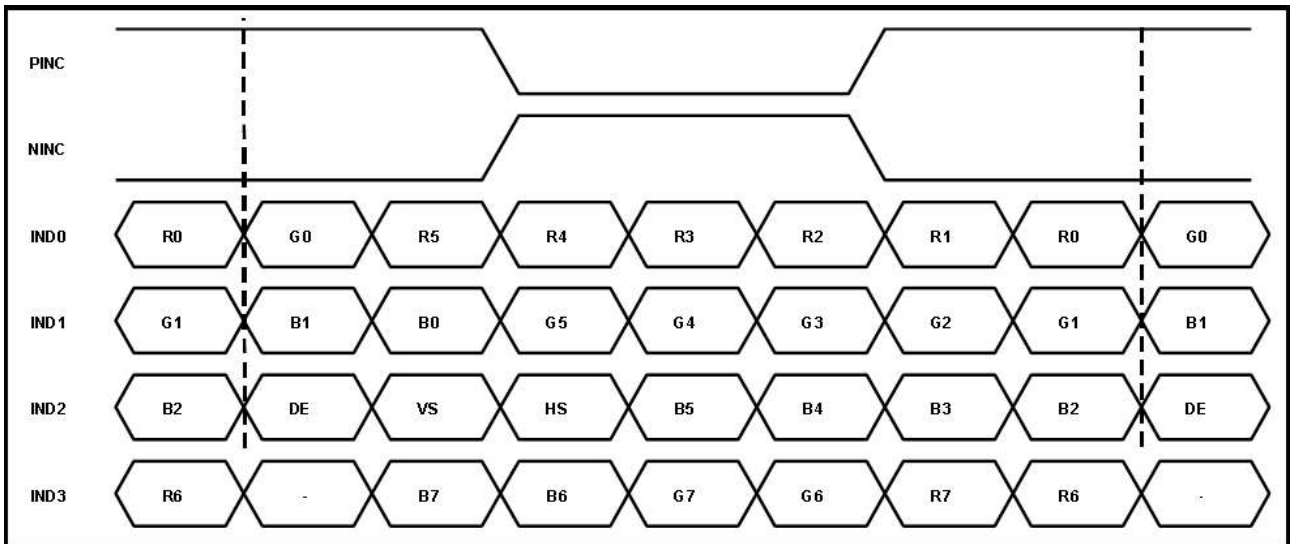
6-5 Interface Timings

6-5-1 Timing Characteristics

Synchronization method should be DE mode.

Interface Timings

| Parameter	Symbol	Unit	Min.	Typ.	Max.
LVDS Clock Frequency	Fclk	MHz	52	65	71
H Total Time	HT	Clocks	1,114	1,344	1,400
H Active Time	HA	Clocks	1,024	1,024	1,024
V Total Time	VT	Lines	778	806	845
V Active Time	VA	Lines	768	768	768
Frame Rate	Vsync	Hz	55	60	65

6-6 Power ON/OFF Sequence

Power on/off sequence is as follows. Interface signals are also shown in the chart. Signals from any system shall be Hi-Z state or low level when VDD is off.
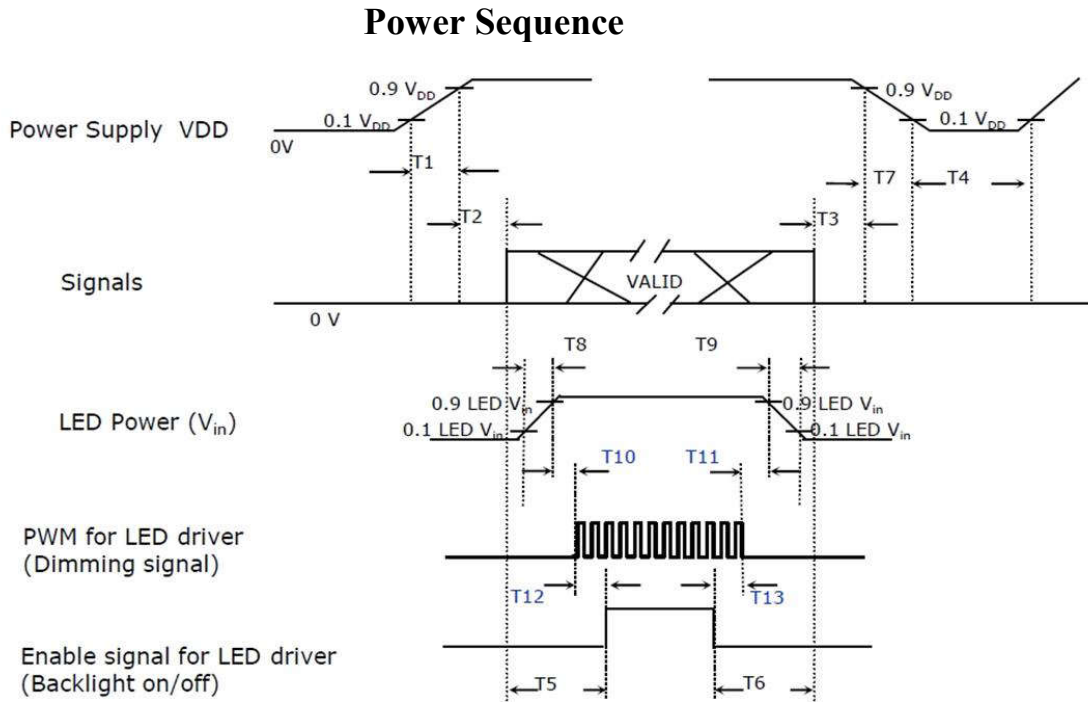
Power Sequence

Power Sequencing Requirements

Parameter	Symbol	Min	Typ.	Max	Unit
VDD rising time from 10% to 90%	T1	0.5	--	10	ms
Delay from VDD to valid data at power ON	T2	30	--	50	ms
Delay from valid data OFF to VDD OFF at power OFF	T3	0	--	50	ms
VDD OFF time for windows restart	T4	500	--	--	ms
Delay from valid data to B/L enable at power ON	T5	200	--	--	ms
Delay from valid data off to B/L disable at power Off	T6	200	--	--	ms
VDD falling time from 90% to 10%	T7	0.5	--	10	ms
LED Vin rising time from 10% to 90%	T8	0.5	--	10	ms
LED Vin falling time from 90% to 10%	T9	0.5	--	10	ms
Delay from LED driver Vin rising time 90% to PWM ON	T10	0	--	--	ms
Delay from PWM Off to LED driver Vin falling time 10%,Must keep rule	T11	0	--	--	ms
Delay from PWM ON to B/L Enable ON, Must keep rule	T12	0	--	--	ms
Delay from B/L Enable Off to PWM Off	T13	0	--	--	ms

7. Optical Characteristics:

Item		Symbol	Conditions	Specifications			Unit	Note
				Min	Typ	Max		
Contrast Ratio		CR	Normal θ=Φ=0°	720	900	-		(2)
Response time		Rising +Falling			16	-	ms	(3)
NTSC					45		%	
Viewing angle (CR≧10) B/L ON	Hor.	θL	Φ=180°(9 o'clock)	70	75	-	deg.	(1)
		θR	Φ=0°(3 o'clock)	70	75	-		
	Ver.	θT	Φ=90°(12 o'clock)	70	75	-		
		θB	Φ=270°(6 o'clock)	70	75	-		

Measuring Condition
   1. Measuring surrounding: dark room
   2. Ambient temperature: 25±2℃
   3. 30 min. Warm-up time.

Color of CIE Coordinate:

Item		Symbol	Min.	Typ.	Max.
Chromaticity Coordinates	Red	x	0.552	0.602	0.652
		y	0.302	0.352	0.402
	Green	x	0.270	0.320	0.370
		y	0.520	0.570	0 620
	Blue	x	0.105	0.155	0.205
		y	0.082	0.132	0.182
	White	x	0.260	0.310	0.360
		y	0.280	0.330	0.380

Note (1) Definition of Viewing Angle :
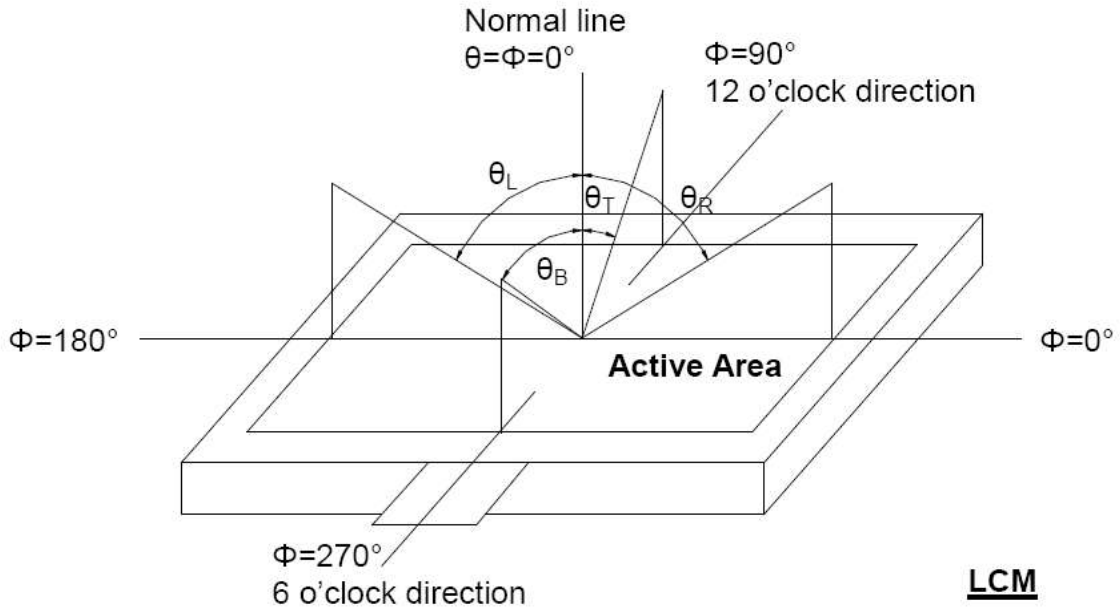
Note (2) Definition of Contrast Ratio(CR) :
measured at the center point of panel

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

Note (3) Definition of Response Time : Sum of TR and TF
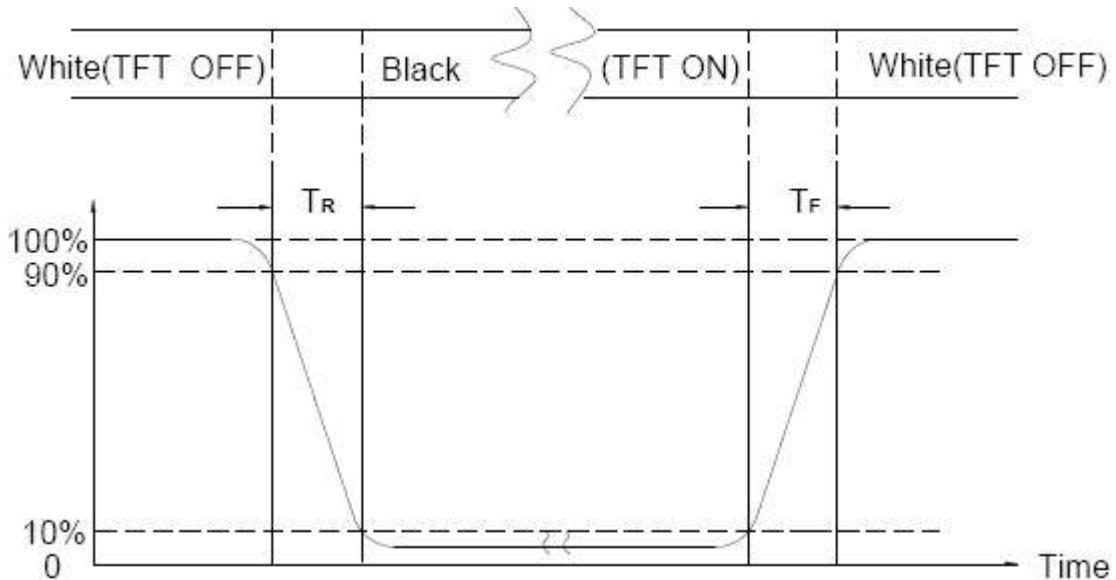
8. Interface Pin Assignment:

8-1 LCM FPC Interface

No.	Symbol	Function	Remark
1	VDD	Power Supply, 3.3V (typical)	
2	VDD	Power Supply, 3.3V (typical)	
3	VSS	Ground	
4	REV	Reverse Scan selection {High:2.5(min), 3.3(typ),3.6(max); Low: 0.5(max)}	
5	Rin1-	-LVDS differential data input(R0-R5,G0)	
6	Rin1+	+LVDS differential data input(R0-R5,G0)	
7	VSS	Ground	
8	Rin2-	-LVDS differential data input(G1-G5,B0-B1)	
9	Rin2+	+LVDS differential data input(G1-G5,B0-B1)	
10	VSS	Ground	
11	Rin3-	-LVDS differential data input(B2-B5,HS,VS,DE)	
12	Rin3+	+LVDS differential data input(B2-B5,HS,VS,DE)	
13	VSS	Ground	
14	CIkIN-	-LVDS differential clock input	
15	CIkIN+	+LVDS differential clock input	
16	VSS	Ground	
17	Rin4-	-LVDS differential data input(R6-R7,G6-G7,B6-B7)	
18	Rin4+	+LVDS differential data input(R6-R7,G6-G7,B6-B7)	
19	SEL68	6/8 bits LVDS data input selection(H:8bits L/NC:6bits)	
20	Bist	Internal use	

Note(1) REV=LOW/NC

8-1-1 Connector Name / Designation

Item	Description
Type / Part Number	MSB24013P20HA (Manufacture by STM)
Mating Model Number	P24013P20 or Compatible

8-2 Black Light Interface

No.	Symbol	Function
1	VCC	Power Supply For LED Circuit , 12V (Typ.)
2	GND	Ground
3	EN	On/Off(5V-ON,0V-OFF)
4	Dimming	PWM Dimming or Analog Dimming
5	NC	Not Connection

8-2-1 Connector Name / Designation

| Connector Name / Designation	LED Driver Connector
Manufacturer	SMT or Compatible
Connector Model Number	MSB24038P5A or Compatible
Mating Model Number	P24038P5 or Compatible

8-3 -1 CTP Interface

No.	Symbol	Function
1	VBUS	USB Supply Power
2	D-	USB Data Negative
3	D+	USB Data Positive
4	GND	Ground
5	GND	Ground

8-3-2 Connector Name / Designation

Connector Name / Designation	Connector
USB	2417RJ-05-SM2 or equivalent

9. Block Diagram:
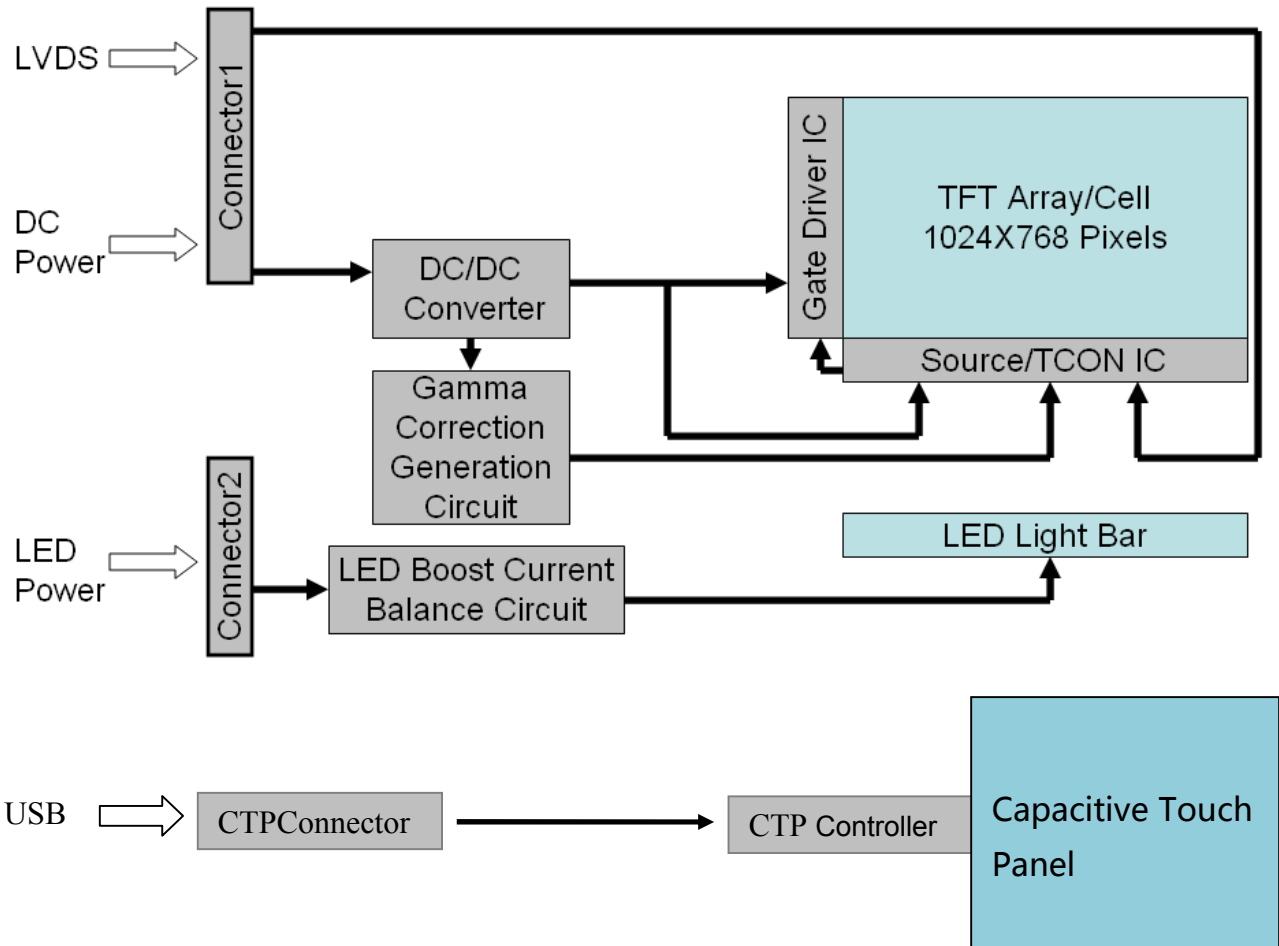
10. Backlight Characteristics:

LED driver Input and Output Specification **(Ta=25℃)**

Item	Symbol		Min.	Typ.	Max.	Unit	Note
LED input Voltage	V_LED		10.8	12	12.6	V	(2)(3)
LED Power Consumption	P_LED		-	-	2.88	W	(2)(3)
LED Forward Voltage	V_F		2.8	3.2	3.6	V	
LED Forward Current	I_F		-	20	30	mA	
PWM Signal Voltage	V_{PWM_EN}	High	4.5	5	5.5	V	(2)
		Low	0	-	0.4		
LED Enable Voltage	V_{LED_EN}	High	2.0	5	5.5	V	
		Low	0	-	0.4		
Input PWM Frequency	FPWM		100	-	1K	Hz	
Duty Ratio	PWM		5	-	100	%	
Module Luminance (White)			300	350	-	cd/m^2	
Luminance Uniformity	-		75	80	-	%	
Life Time	-		30,000	-	-	Hr.	(1)(2)

Note 1: The LED life time define as the estimated time to 50% degradation of initial luminous.
Note 2:Operating temperature 25℃, humidity 55%RH.
Note 3: A higher LED power supply voltage will result in better power efficiency. Keep the VLED between 12V and 12.6V is strongly recommended.

LED Rush Current Measure Condition
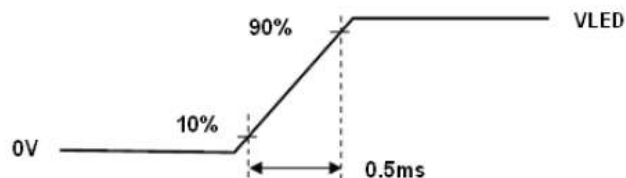
Measured Method: (H*V: Light Area)
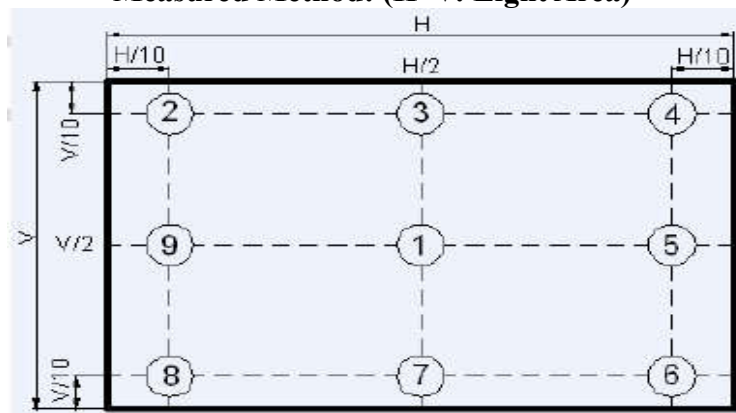
11. Standard Specification for Reliability .:

11−1. Standard Specifications for Reliability of LCD Module

No	Item	Description
01	High temperature operation	The sample should be allowed to stand at 70℃ for 240 hours under driving condition and then returning it to normal temperature condition, and allowing it stand for 2 hours.
02	Low temperature operation	The sample should be allowed to stand at -20℃ for 240 hours under driving condition and then returning it to normal temperature condition, and allowing it stand for 2 hours.
03	High temperature storage	The sample should be allowed to stand at 80℃ for 240 hours under no-load condition, and then returning it to normal temperature condition, and allowing it stand for 2 hours.
04	Low temperature storage	The sample should be allowed to stand at -30℃ for 240 hours under no-load condition, then returning it to normal temperature condition, and allowing it stand for 2 hours.
05	Moisture storage	The sample should be allowed to stand at 60℃,90%RH MAX for 240 hours under no-load condition, then taking it out and drying it at normal temperature for 2 hours.
06	Thermal shock storage	The sample should be allowed to stand the following 10 cycles : -20℃ for 30 minutes → normal temperature for 5 minutes → +60℃ for 30 minutes → normal temperature for 5 minutes, as one cycle.
07	Packing vibration	Frequency range : 10Hz ~ 55Hz Amplitude of vibration : 1.5mm Sweep time: 12 min X,Y,Z 2 hours for each direction.
08	Packing drop test	According to ISTA 1A 2001.

*Sample size for each test item is 3~5pcs

11 - 2. Testing Conditions and Inspection Criteria

For the final test the testing sample must be stored at room temperature for 24 hours, after the tests listed in Table 11.1, Standard specifications for Reliability have been executed in order to ensure stability.

No	Item	Test Model	In section Criteria
01	Current Consumption	Refer To Specification	The current consumption should conform to the product specification.
02	Contrast	Refer To Specification	After the tests have been executed, the contrast must be larger than half of its initial value prior to the tests.
03	Appearance	Visual inspection	Defect free.

11- 3. MTBF

MTBF	Functions, performance, appearance, etc. shall be free from remarkable deterioration within 50,000 hours under ordinary operating and storage conditions room temperature (25±5℃), normal humidity (50±10% RH), and in area not exposed to direct sun light.

12. Specification of Quality Assurance:

12-1. Purpose

This standard for Quality Assurance should affirm the quality of LCD module products to supply to purchaser by YEEBO CORPORATION (Supplier).

12-2. Standard for Quality Test

a. Inspection:

Before delivering, the supplier should take the following tests, and affirm the quality of product.

b. Electro-Optical Characteristics:

According to the individual specification to test the product.

c. Test of Appearance Characteristics:

According to the individual specification to test the product.

d. Test of Reliability Characteristics:

According to the definition of reliability on the specification for testing products.

e. Delivery Test:

Before delivering, the supplier should take the delivery test.

(i) Test method: According to MIL-STD105E.General Inspection Level Ⅱ take a single time.

(ii) The defects classify of AQL as following:

Major defect: AQL = 0.65%

Minor defect: AQL = 2.5%

Total defects: AQL = 2.5%

12-3. Non- conforming Analysis & Deal With Manners

a. Non- conforming Analysis:

(i) Purchaser should supply the detail data of non- conforming sample and the non-conforming.

(ii) After accepting the detail data from purchaser, the analysis of non- conforming should be finished in two weeks.

(iii) If supplier can not finish analysis on time, must announce purchaser before 3 days.

b. Disposition of non- conforming:

(i) If find any product defect of supplier during assembly time, supplier must change the good product for every defect after recognition.

(ii) Both supplier and customer should analyze the reason and discuss the disposition of non- conforming when the reason of nonconforming is not sure.

12-4. Agreement items

Both sides should discuss together when the following problems happen.

a. There is any problem of standard of quality assurance, and both sides should think that must be modified.

b. There is any argument item which does not record in the standard of quality assurance.

c. Any other special problem.

12-5. Standard of The Product Appearance Test
  a. Manner of appearance test:
   (i) The test must be under 20W × 2 or 40W fluorescent light, and the distance of view must be at 30±5cm.
   (ii) When test the model of transmissive product must add the reflective plate.
   (iii)The test direction is base on around 10° of vertical line.
   (iiii)Temperature: 25±5℃   Humidity: 60±10%RH
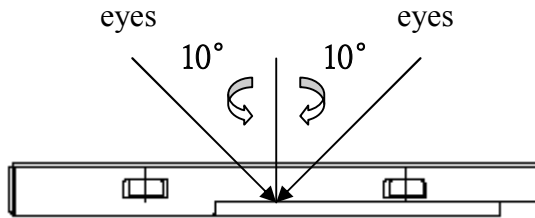
   (iv) Definition of area:
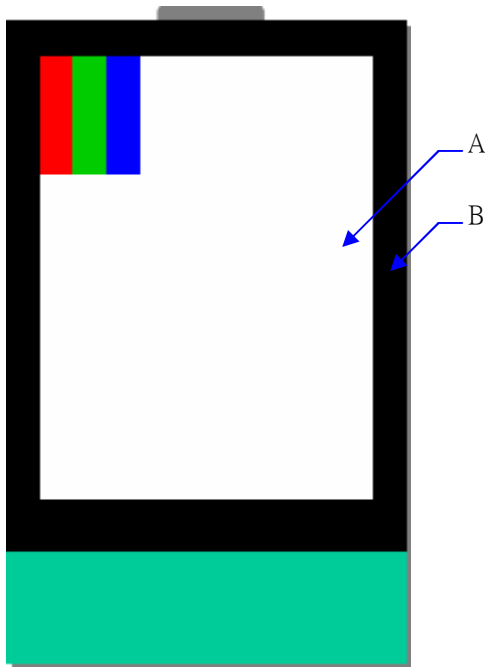
A. Area: Viewing area.
B. Area: Out of viewing area.
       (Outside viewing area)
b. Basic principle:
 (i) It will accord to the AQL when the standard can not be described.
 (ii) The sample of the lowest acceptable quality level must be discussed by both supplier and customer when any dispute happened.
 (iii) Must add new item on time when it is necessary.
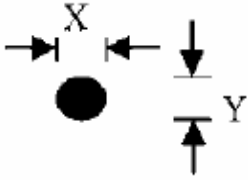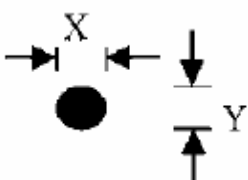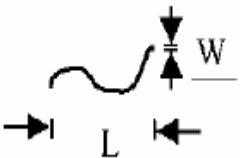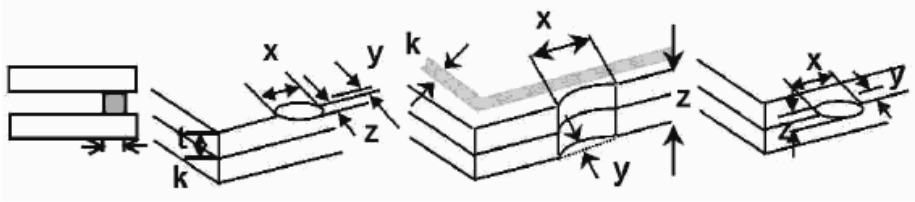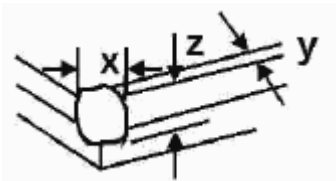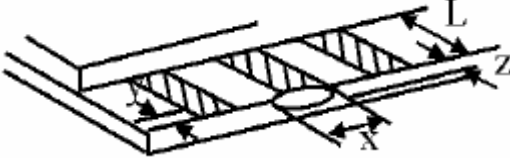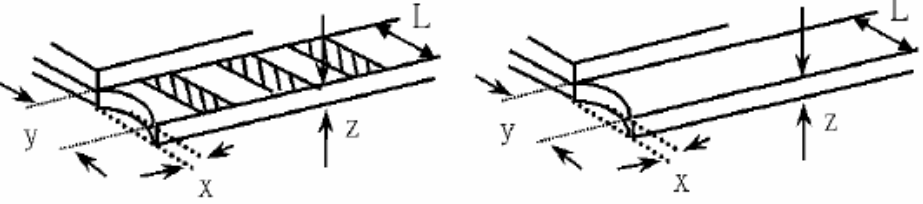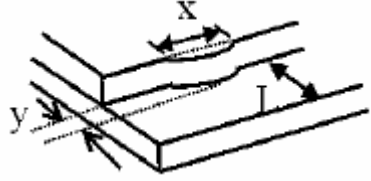
 c. Standard of inspection: (Unit: mm)

12-6. Inspection specification

Defect out of viewing area can be neglected.
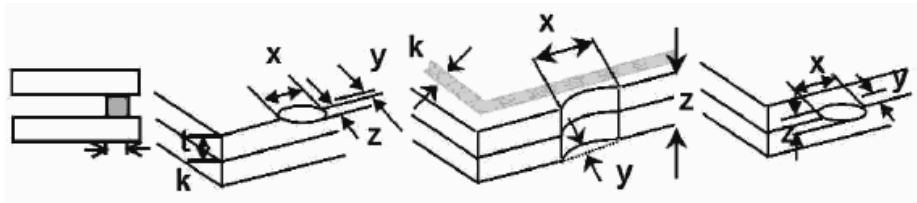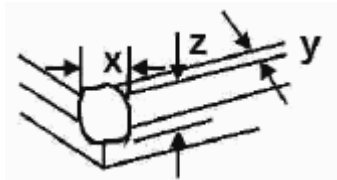
NO	Item	Criterion	AQL
01	Electrical Testing	1.1 Missing vertical, horizontal segment, segment contrast defect. 1.2 Missing character, dot or icon. 1.3 Display malfunction. 1.4 No function or no display. 1.5 Current consumption exceeds product specifications. 1.6 LCD viewing angle defect. 1.7 Mixed product types. 1.8 Flicker	0.65
02	Black or White spots or Bright spots or Color spots on LCD (Display only)	2.1 Dot dimension as below drawing: $\Phi = (X+Y) / 2$ <table><tr><td>Size(mm)</td><td>Acceptable Q'ty</td></tr><tr><td>$\Phi \leqq 0.20$</td><td>Accept no dense</td></tr><tr><td>$0.20 < \Phi \leqq 0.50$</td><td>5</td></tr><tr><td>$0.50 < \Phi$</td><td>0</td></tr></table> * Densely spaced: No more than two spots within 3mm.	2.5
03	LCD and Touch Panel black spots, white spots, contamination (non – display)	3.1 Round type: As following drawing $\Phi = (X+Y) / 2$ <table><tr><td>Size(mm)</td><td>Acceptable Q'ty</td></tr><tr><td>$\Phi \leqq 0.20$</td><td>Accept no dense</td></tr><tr><td>$0.20 < \Phi \leqq 0.50$</td><td>5</td></tr><tr><td>$0.50 < \Phi$</td><td>0</td></tr></table> * Densely spaced: No more than two spots within 3mm. 3.2 Line type: (As following drawing) <table><tr><td>Length(mm)</td><td>Width(mm)</td><td>Acceptable Q'ty</td></tr><tr><td>$L \leqq 10$</td><td>$W \leqq 0.1$</td><td>Accept no dense</td></tr><tr><td>$L \leqq 10.0$</td><td>$0.1 < W \leqq 0.25$</td><td>4</td></tr><tr><td>$L > 10$</td><td>– – – –</td><td>Rejection</td></tr><tr><td>----</td><td>$0.25 < W$</td><td>Rejection</td></tr></table> * Densely spaced: No more than two lines within 3mm.	2.5 2.5

NO	Item	Criterion	AQL
04	Polarizer bubbles	If bubbles are visible, judge using black spot specifications, not easy to find, must check in specify direction <table><tr><td>Size Φ(mm)</td><td>Acceptable Q'ty</td></tr><tr><td>Φ≦0.20</td><td>Accept no dense</td></tr><tr><td>0.20< Φ≦0.50</td><td>4</td></tr><tr><td>0.50< Φ≦1.00</td><td>3</td></tr><tr><td>1.00< Φ</td><td>0</td></tr><tr><td>Total Q'ty</td><td>4</td></tr></table>	2.5
05	Scratches	Follow NO.3 -2 Line Type.	
06	Chipped glass	Symbols: x: Chip length y: Chip width z: Chip thickness k: Seal width t: Glass thickness a: LCD side length L: Electrode pad length 6.1 General glass chip: 6.1.1 Chip on panel surface and crack between panels: <table><tr><td>z: Chip thickness</td><td>y: Chip width</td><td>x: Chip length</td></tr><tr><td>Z≦1/2t</td><td>Not over viewing area</td><td>x≦1/8a</td></tr><tr><td>1/2t< z≦2t</td><td>Not exceed 1/3k</td><td>x≦1/8a</td></tr></table> ⊙ Unit: mm ⊙ If there are 2 or more chips, x is the total length of each chip 6.1.2 Corner crack: <table><tr><td>z: Chip thickness</td><td>y: Chip width</td><td>x: Chip length</td></tr><tr><td>Z≦1/2t</td><td>Not over viewing area</td><td>x≦1/8a</td></tr><tr><td>1/2t< z≦2t</td><td>Not exceed 1/3k</td><td>x≦1/8a</td></tr></table> ⊙ Unit: mm ⊙ If there are 2 or more chips, x is the total length of each chip	2.5

NO	Item	Criterion	AQL
07	Glass crack	Symbols: x: Chip length　　y: Chip width　　z: Chip thickness k: Seal width　　　t: Glass thickness　a: LCD side length L: Electrode pad length 7.2 Protrusion over terminal: 7.2.1 Chip on electrode pad: _(diagram)_ 7.2.2 Non-conductive portion: _(diagrams)_ ⊙ If there chipped area touches the ITO terminal, over 2/3 of the ITO must remain and be inspected according to electrode terminal specifications. ⊙ If the product will be heat sealed by the customer, the alignment mark must mot be damaged. 7.2.3 Substrate protuberance and internal crack _(diagram)_	2.5

Table for 7.2.1:

y: Chip width	x: Chip length	z: Chip thickness
$y \leqq 0.5mm$	$x \leqq 1/8a$	$0 < z \leqq t$

Table for 7.2.2:

y: Chip width	x: Chip length	z: Chip thickness
$y \leqq L$	$x \leqq 1/8a$	$0 < z \leqq t$

Table for 7.2.3:

y: width	x: length
$y \leqq 1/3L$	$X \leqq a$

NO	Item	Criterion	AQL
08	Cracked glass	The LCD with extensive crack is not acceptable.	2.5
09	Backlight elements	9.1 Illumination source flickers when lit. 9.2 Spots or scratches that appear when lit must be judged. 　　Using LCD spot, lines and contamination standards. 9.3 Backlight doesn't light or color is wrong.	2.5 2.5 0.65
10	Bezel	Bezel must comply with product specifications.	2.5
11	PCB、COB	11.1 COB seal may not have pinholes larger than 0.2mm or contamination. 11.2 COB seal surface may not have pinholes through to the IC. 11.3 The height of the COB should not exceed the height indicated in the assembly diagram. 11.4 There may not be more than 2mm of sealant outside the seal area on PCB. And there should be no more than three places. 11.5 Parts on PCB must be the same as on the production characteristic chart, There should be no wrong parts, missing parts or excess parts. 11.6 The jumper on the PCB should conform to the product characteristic chart.	2.5 2.5 2.5 2.5 0.65 0.65
12	FPC	12.1 FPC terminal damage $\leqq$ 1/2 FPC terminal width and can not affect the function , we judge accept. 12.2 FPC alignment hole damage $\leqq$ 1/2 alignment area and can not affect the function , we judge accept.	2.5 2.5
13	Soldering	13.1 No cold solder joints, missing solder connections, oxidation or icicle. 13.2 No short circuits in components on PCB or FPC.	2.5 0.65

NO	Item	Criterion	AQL
14	Touch Panel Chipped glass	Symbols: x: Chip length　　　y: Chip width　　　z: Chip thickness k: Seal width　　　t: Touch Panel Total thickness　a: LCD side length L: Electrode pad length 14.1 General glass chip: 14.1.1 Chip on panel surface and crack between panels: | z: Chip thickness	y: Chip width	x: Chip length
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$Z \leqq t$	$\leqq 1/2$ k and not over viewing area	$x \leqq 1/8a$ | ⊙ Unit: mm ⊙ If there are 2 or more chips, x is the total length of each chip 14.1.2 Corner crack: | z: Chip thickness	y: Chip width	x: Chip length
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$z \leqq t$	$\leqq 1/2$ k and not over viewing area	$x \leqq 1/8a$ | ⊙ Unit: mm ⊙ If there are 2 or more chips, x is the total length of each chip	2.5

NO	Item	Criterion	AQL
15	Touch Panel Fish eye	<table><tr><td>SIZE(mm)</td><td>Acceptable Q'ty</td></tr><tr><td>L≦1.0</td><td>Accept no dense</td></tr><tr><td>L>1.0mm</td><td>0</td></tr></table> L	2.5
16	Touch Panel Newton ring	Newton ring dimension ≦ 1/2 touch panel area and not affect font and line distortion(≦2.5%) , it is acceptable.	2.5
17	Touch Panel Linearity	Less than 2.5% is acceptable.	2.5
18	LCD Ripple	Touch the touch panel , cannot see the LCD ripple. Pen: R 1.0mm silicon rubber. Operation Force: 10~100g	2.5
19	General appearance	19.1 Pin type must match type in specification sheet. 19.2 LCD pin loose or missing pins. 19.3 Product packaging must the same as specified on packaging specification sheet. 19.4 Product dimension and structure must conform to product specification sheet.	0.65 0.65 0.65 0.65

20	Definition of Pixel	Pixel : Group of Three Sub-pixels (Red, Green ,Blue):
		
		Dot : Red or Green or Blue
		
		 or or
		Dot : Any sub-pixel
		   Bright Dot Defects
		   Dots (sub-pixels) on display which is bright in the picture and visible at Black Pattern.
		   Dark Dot Defects
		   Dots(sub-pixels) on display which is dark in the picture and visible at Red/Green/Black/White Pattern.
		   Neighbour Dot Defects
		   Two or three neighbour dots (dot: sub-pixel) cluster(R&G,G&B,B&R,or R&G&B).Dot Defects Inspection Criteria
		NOTE : Dot out of VA can be ignored.
		
		（see table below）
		● Size of dot defect is larger than half of one sub-pixel.	

Inspection Criteria table:

Items	Inspection Criteria	
	Details	Allowed quantity
Bright Dot	Not Neighbour Dot	2
Dark Dot	Not Neighbour Dot	3
Total acceptable Qty		5

13. <u>Handling Precaution:</u>

13-1 Handling of LCM

- Don't give external shock.
- Don't apply excessive force on the surface.
- Liquid in LCD is hazardous substance. Must not lick and swallow. when the liquid is attach to your hand, skin, cloth etc. Wash it out thoroughly and immediately.
- Don't operate it above the absolute maximum rating.
- Don't disassemble the LCM.
- The operators should be grounded whenever he/she comes into contact with the module. Never touch any of the conductive parts such as the LSI pads,the copper leads on the FPC and the interface terminals with any parts of the human body.
- The modules should be kept in antistatic bags or other containers resistant to static for storage.
- The module is coated with a film to protect the display surface. Be care when peeling off this protective film since static electricity may be generated.

13-2 Storage

- Store in an ambient temperature of 25±10℃, and in a relative humidity of 50±10%RH. Don't expose to sunlight or fluorescent light.
- Storage in a clean environment, free from dust, active gas, and solvent.
- Store in anti-static electricity container.
- Store without any physical load.
- Heat-seal must be stored at 25　C or less and 50% R.H. or less in a sealed condition, and must be used within three months after delivery from our factory.

13-3 Soldering

- Use only soldering irons with proper grounding and no leakage.
- Iron: No higher than 280±10℃ and less than 3 sec during Hand soldering.
- Rewiring: no more than 2 times.

14. <u>Guarantee:</u>

Our products meet requirements of the environment.
YEEBO ROHS requirement is based on European Union Directive 2011/65/EU (ROHS) Requirements and Update.