SPECIFICATION
FOR CTP MODULE
MODULE NO: YB-TG240240C02D-C-A0

Doc.Version:00

Customer Approval:

☐ Accept   ☐ Reject

YEEBO	NAME	SIGNATURE	DATE
Prepare	Mechanical Engineer	陳长b	2022/1/8
Check	Electronic Engineer	张北壮	2022/1/8
Verify			
Approval		孙玉苟	2022/1/8

■APPROVAL FOR SPECIFICATIONS ONLY

☐APPROVAL FOR SPECIFICATIONS AND SAMPLE

WIMRD005-02-C

1. Revision History

Sample Version	DOC. Version	DATE	DESCRIPTION		CHANGED BY
A0	00	2022-01-08	SPEC ONLY	First issue	Chen

2. Table of Contents:

3. Module Numbering System:

Module Numbering System:

YB- TG 240240 C 02 B - C –A- A1

Sample Version: A0~Z0

Version: A~Z

T: With 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: Yeti TFT;
N: Others;

YEEBO

4. General Specification:

| ITEM	CONTENTS
Module Size	33.66(W) *38.59(H) * 2.375(T) mm
Display Size(Diagonal)	1.3inch
Display Format	240 (RGB)* 240 Pixels
View Area	23.8 (W) *23.8(H) mm
Active Area	23.4(W) *23.4(H) mm
LCD Type	TFT (262K)/ Trans missive / Normal Black
Viewing Direction	Free
TFT Controller IC	ST7789H2
CTP Controller IC	ST1615
CTP Surface Hardness	>6H
Weight(g)	TBD

5. Module drawing:

Specification:
1.Glass material :soda-lime glass(0.7mm)
2.1.3"IPS,240(H)*240(v),Display colors:262k,
view Direction:80/80/80/80
Laminace Typ.320cd/m2(300-500)
3.Main LCD Driver IC:ST7789H2
4.Backlight :2chips leds parrellel.
5.Glass Type: OGS +TFT
6. Channel NO.: 5TX*4RX
7.CTP Controller IC: ST1615
8.Operating temperature: -20°C to +70°C
Storage temperature: -30°C to +80°C
9.Unspecified tolerance:±0.20mm.
10.ROHS compliant

CIRCUIT DIAGRAM
Vf=3.0V, If=20mA

背光电路图
A+
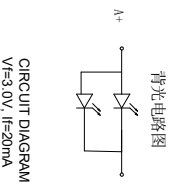
TP引脚定义

Pin	Pin Define
1	GND
2	SCL(2.8V)
3	SDA(2.8V)
4	RST(2.8V)
5	GND
6	GND
7	INT(2.8V)
8	NC
9	VDD2(2.8V)
10	GND

PIN	Pin Define
1	LCD_LED+
2	LCD_LED+
3	LCD_LED+
4	LCD_LED-
5	LCD_LED-
6	LCD_LED-
7	GND
8	GND
9	VDD(2.8V)
10	VDD(2.8V)
11	GND
12	GND
13	VDDIO(1.8V)
14	VDDIO(1.8V)
15	GND
16	GND
17	LCD_CS
18	LCD_SDIN
19	LCD_SCLK
20	GND
21	LCD_RS
22	LCD_RST
23	GND
24	LCD_TE

Customer Model

Customer Approval

YEEBO
UNIT mm
SIZE A4
SCALE N-T-S

MOD. NO. YB-TG240240C02D-C-A
DESIGNED | CHECKED | VERIFIED | APPROVED
Sheet 1 Of 1
FILE NAME
COUNT DWG.

Rec.	01	FIRST ISSUE	2022-1-05
Count drawing & Spec.revision record during discussion with customer
Revision content description
Date

Module P/N: YB-TG240240C02D-C-A0
Doc.Version:00

6 Module Interface

6.1 TFT module interface

NO	SYMBOL	FUNCTION
1	LEDA	LED Anode
2	LEDA	LED Anode
3	LEDA	LED Anode
4	LEDK	LED Cathode
5	LEDK	LED Cathode
6	LEDK	LED Cathode
7	GND	Power Ground
8	GND	Power Ground
9-10	VDD	Power Supply for Analog, VDD_2.8V=2.4V~3.3V.
11-12	GND	Power Ground
13-14	VDDIO	Power Supply for I/O system. IOVCC=1.65V~3.3V
15-16	GND	Power Ground
17	CS	Chip selection pin; Low enable, High disable.
18	SDA	SPI interface input/output pin. The data is latched on the rising edge of the SCL signal.
19	SCL	This pin is used to be serial interface clock.
20	GND	Power Ground
21	RS	Display data/command selection pin
22	RES	This signal will reset the device and it must be applied to properly initialize the chip. Signal is active low.
23	GND	Power Ground
24	TE	TE-Tearing effect signal is used to synchronize mcu to frame memory.

6.2 CTP Interface

NO	SYMBOL	FUNCTION
1	GND	Power Ground
2	SCL	I2C serial clock
3	SDA	I2C serial date
4	RST	System reset signal input, active low
5	GND	Power Ground
6	GND	Power Ground
7	INT	Indicate coordinate data ready
8	NC	No connect
9	VDD	Power supply, connect to 1uF capacitor
10	GND	Power Ground

7 ELECTRICAL SPECIFICATIONS
7.1 DC characteristics

Item	Symbol	Unit	Condition	Min.	Type	Max.
Operating Voltage	VDD	V	Operation Voltage	2.4	2.8	3.3
Supply voltage for I/O	VDDI	V	I/O Supply Voltage	1.65	2.8	3.3
Input Voltage	VIH	V	-	0.7*VDDI	-	VDDI
	VIL	V	-	GND	-	0.3*VDDI
Power Supply Current for LCM	Idd	mA	VDDI =2.8V	-	TBD	-

7.2 AC Characteristics
7.2.1 Serial Interface Characteristics (4-line serial):
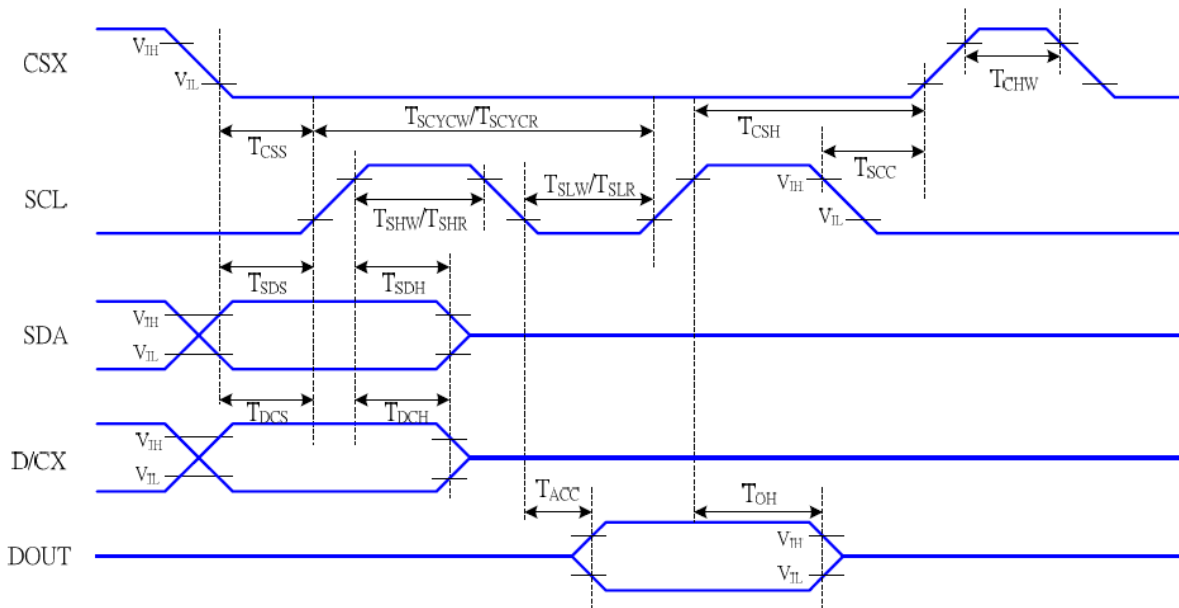
4-line serial Interface Timing Characteristics

(VDDI=1.65 to 3.3V, VDD=2.4 to 3.3V, AGND=DGND=0V, Ta=-30 to 70 ℃)

VDDI=1.65 to 3.3V, VDD=2.4 to 3.3V, AGND=DGND=0V, Ta=-30 to 70 ℃

Signal	Symbol	Parameter	MIN	MAX	Unit	Description
CSX	T_{CSS}	Chip select setup time (write)	15		ns	
	T_{CSH}	Chip select hold time (write)	15		ns	
	T_{CSS}	Chip select setup time (read)	60		ns	
	T_{SCC}	Chip select hold time (read)	65		ns	
	T_{CHW}	Chip select "H" pulse width	40		ns	
SCL	T_{SCYCW}	Serial clock cycle (Write)	16		ns	-write command & data ram
	T_{SHW}	SCL "H" pulse width (Write)	7		ns	
	T_{SLW}	SCL "L" pulse width (Write)	7		ns	
	T_{SCYCR}	Serial clock cycle (Read)	150		ns	-read command & data ram
	T_{SHR}	SCL "H" pulse width (Read)	60		ns	
	T_{SLR}	SCL "L" pulse width (Read)	60		ns	
D/CX	T_{DCS}	D/CX setup time	10		ns	
	T_{DCH}	D/CX hold time	10		ns	
SDA (DIN)	T_{SDS}	Data setup time	7		ns	
	T_{SDH}	Data hold time	7		ns	
DOUT	T_{ACC}	Access time	10	50	ns	For maximum CL=30pF
	T_{OH}	Output disable time	15	50	ns	For minimum CL=8pF

Table 6 4-line serial Interface Characteristics
4-line serial Interface Characteristics

Note: The rising time and falling time (Try, Ft.) of input signal are specified at 15 ns or less. Logic high and low levels are specified as 30% and 70% of VDDI for Input signals

7-3 Absolute Maximum Ratings　　(TP)

Table 5-1　Absolute Maximum Ratings

Parameter	Symbol	Min.	Max.	Unit
VDD	V_{VDD}	-0.3	+6	V
IOVDD	V_{IOVDD}	-0.3	+6	V
Operating Ambient Temperature	T_A	-20	+80	℃
Storage Temperature	T_S	-40	+125	℃

*Note: Stresses above those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. All the ranges are stress ratings only. Functional operation of this device at these or any other conditions above those indicated in the operational sections of this specification is not implied or intended. Exposed to the absolute maximum rating conditions for extended periods may affect device reliability.

7-4 DC Electrical characteristics(TP)

Table 5-2　System DC Electrical Characteristics

Condition: VDD = IOVDD = 3.3V, T_A = 25°C, unless be specified individually.

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
VDD	V_{VDD}	2.7	-	3.6	V	
IOVDD	V_{IOVDD}	1.6	-	3.6	V	
Operating Current	I_{NML}	-	2.8	-	mA	
Idle Current	I_{IDLE}	-	900	-	uA	
Smart Wake Up Current	I_{SWU}	-	105	-	uA	
Power Down Current	I_{PD}	-	-	20	uA	
Input High Voltage	V_{IH}	0.85*IOVDD	-	-	V	
Input Low Voltage	V_{IL}	-	-	0.15*IOVDD	V	
Input Pull Up Resistor	R_{PU}	50	-	60	KOhm	
Output Driving Current	I_{DRV}	6	-	-	mA	V_{OH} = IOVDD x 0.8
Output Sinking Current	I_{SINK}	10	-	-	mA	V_{OL} = IOVDD x 0.2
Low Voltage Reset	V_{LVR}	-	-	2.3	V	

7-5 AC Electrical Characteristics(TP)
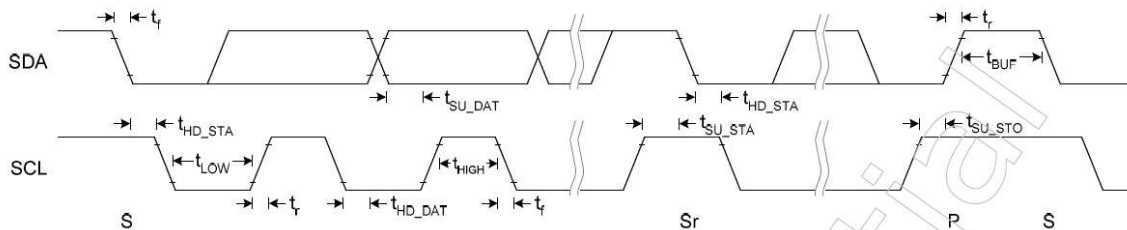
Figure 5-1   I2C Fast Mode Timing

Conditions: VDD = 3.3V, GND = 0V, T_A = 25°C

Symbol	Parameter	Min.	Typ.	Max.	Unit
f_{SCL}	SCL clock frequency	0	-	400	kHz
t_{LOW}	Low period of the SCL clock	1.3	-	-	us
t_{HIGH}	High period of the SCL clock	0.6	-	-	us
t_f	Signal falling time	-	-	300	ns
t_r	Signal rising time	-	-	300	ns
t_{SU_STA}	Set up time for a repeated START condition	0.6	-	-	us
t_{HD_STA}	Hold time (repeated) START condition. After this period, the first clock pulse is generated	0.6	-	-	us
t_{SU_DAT}	Data set up time	100	-	-	ns
t_{HD_DAT}	Data hold time	0	-	0.9	us
t_{SU_STO}	Set up time for STOP condition	0.6	-	-	us
t_{BUF}	Bus free time between a STOP and START condition	1.3	-	-	us
C_b	Capacitive load for each bus line	-	-	400	pF

8. Optical Specifications

Item		Symbol	Conditions	Specifications			Unit	Note
				Min	Typ	Max		
Transmittance (With PL)		T(%)	-	3.65	4.3	-	-	-
Contrast Ratio		CR	Θ=0 Normal Viewing Angle	800	1200	-	-	(1) (2)
Response time		TR+TF	-	-	30	35	ms	(1) (3)
NTSC		%	-	45	50	-	-	-
Viewing angle	Hor	Θx+	CR≧10	70	80	-	deg.	-
		Θx-		70	80	-		
	Ver	Θy+		70	80	-		
		Θy-		70	80	-		

Measuring Condition

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

Color of CIE Coordinate:

Item		Symbol	Condition	Min.	Typ.	Max.
Chromaticity Coordinates (Transmissive)	Red	x	θ = ϕ = 0° LED Backlight	TBD	0.604	TBD
		y		TBD	0.307	TBD
	Green	x		TBD	0.275	TBD
		y		TBD	0.507	TBD
	Blue	x		TBD	0.139	TBD
		y		TBD	0.117	TBD
	White	x		TBD	0.297	TBD
		y		TBD	0.320	TBD

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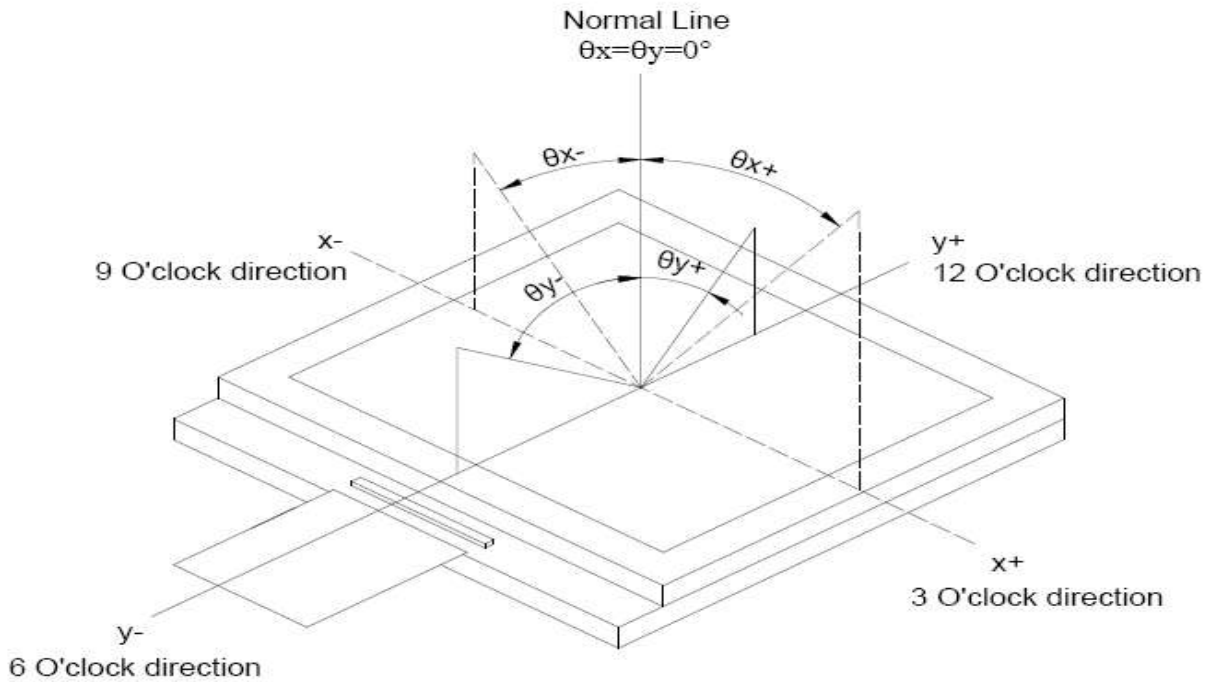
Note (2) Definition of Contrast Ratio(CR) :
measured at the center point of panel

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

Note (3) Definition of Response Time : Sum of TR and TF
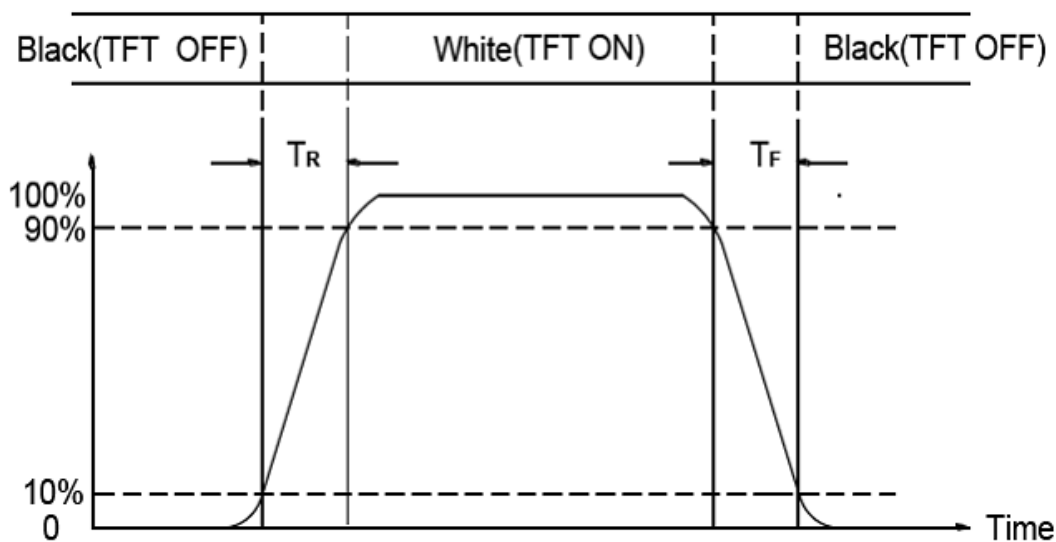
9. Backlight:

1. Standard Lamp Styles (Edge Lighting Type):
   The LED chips are distributed over the edge light area of the
   illumination unit, which gives the less power consumption:

2. The Main Advantages of the LED Backlight are as following:
   2.1 The brightness of the backlight can simply be adjusted.
      By a resistor or a potentiometer.

3. Data About LED Backlight: (Ta=25℃)

PARAMETER	Sym.	Min.	Typ.	Max.	Unit	Test Condition	Note
Supply Current	I	-	20	-	mA		
Supply Voltage	V	2.8	3.1	3.4	V	If=20mA	
Luminous Intensity for LCM+CTP	IV	200	260	-	Cd/m2	If=20mA	2
Uniformity for LCM	-	70	-	-	%		3
Life Time	-	20000	-	-	Hr.		4
Color	White						

NOTE:
1. Backlight Only
2. Average Luminous Intensity of P1-P5
3. Uniformity = Min/Max * 100%
4. LED life time defined as follows: The final brightness is at 50% of original brightness

Measured Method: (X*Y: Light Area)   **Internal Circuit Diagram**
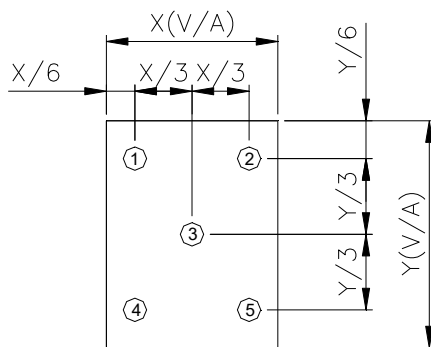
Circuit Diagram(LED 2 PCS)

A(+) ○   ○ K(−)
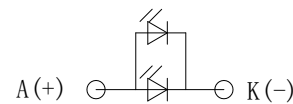
(Effective spatial Distribution)

Using aperture of 1°,distance 50cm.

10. <u>Standard Specification for Reliability :</u>

10–1. Standard Specifications for Reliability of LCD Module

No	Item	Description
01	High temperature operation	The sample should be allowed to stand at 70℃ for 120 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 120 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 : -30℃ for 30 minutes → normal temperature for 5 minutes → +80℃ 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

10 - 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 12.1, 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.

10- 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.

11. Specification of Quality Assurance:

11-1. Purpose

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

11-2. 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 **ISO2859-1**.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

11-3. 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.

11-4. 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.

11-5. 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
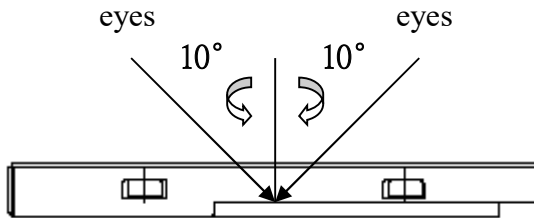
  (iv) Definition of area:
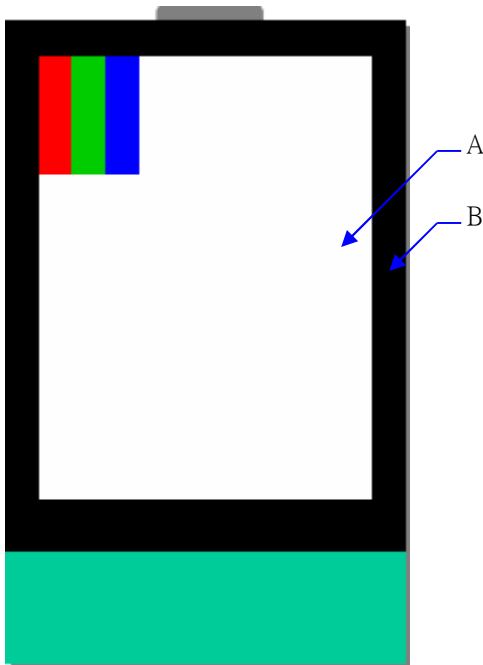
A. Area: Viewing area.

B. Area: Out of viewing area.
   (Outside viewing area)
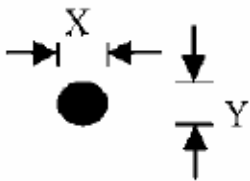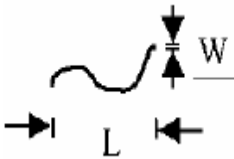
 b. Basic principle:
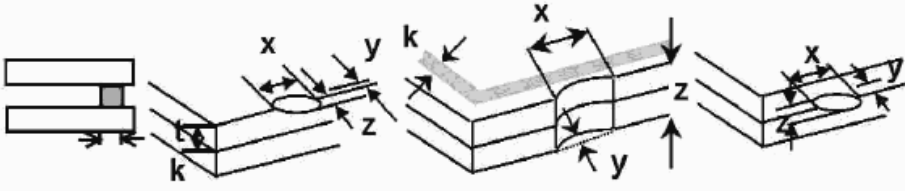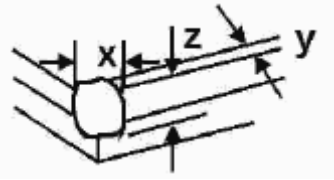
  (i) It will accord to the AQL when the standard can not be described.

  (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.
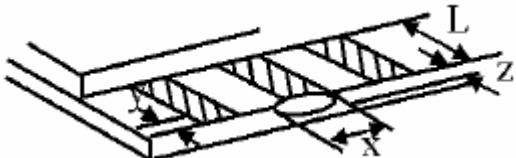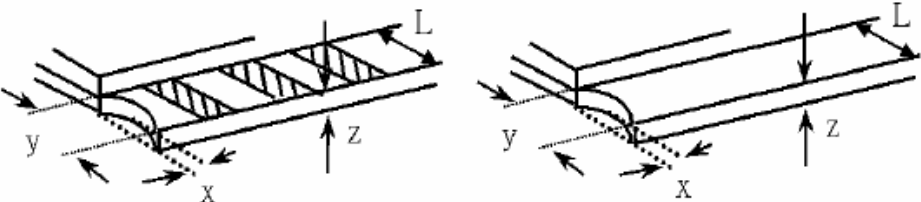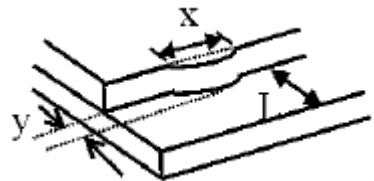
 c. Standard of inspection: (Unit: mm)

11-6. Inspection specification
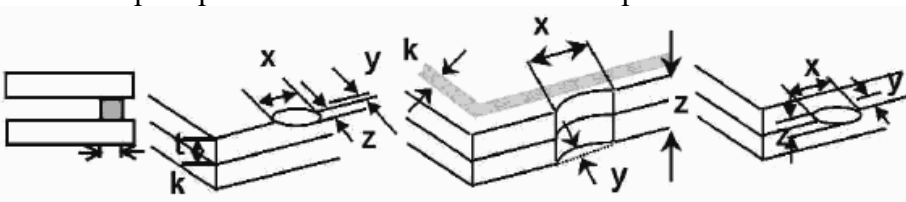
Defect out of viewing area can be neglected.
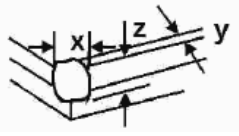
NO	Item	Criterion	AQL
01	Electrical Testing	1.1 Missing vertical, horizontal segment, segment contrast defect. 1.2 Missing character, dot or icon. 1.3 Display malfunction. 1.4 No function or no display. 1.5 Current consumption exceeds product specifications. 1.6 LCD viewing angle defect. 1.7 Mixed product types. 1.8 Flicker	**0.65**
02	Black or White spots or Bright spots or Color spots on LCD (Display only)	2.1 White and black or color spots on display $\leq$ 0.25mm, no more than Five spots. 2.2 Densely spaced: No more than three spots within 3mm. 2.3 Not visible through 5% ND filter	**2.5**

NO	Item	Criterion	AQL
03	LCD and Touch Panel black spots, white spots, contamination (non – display)	3.1 Round type: As following drawing $\Phi = (X+Y) / 2$	**2.5**

Size(mm)	Acceptable Q'ty
$\Phi \leq 0.10$	Accept no dense
$0.10 < \Phi \leq 0.20$	2
$0.20 < \Phi \leq 0.25$	2
$0.25 < \Phi \leq 0.30$	1
$0.30 < \Phi$	0

* Densely spaced: No more than two spots within 3mm.

3.2 Line type: (As following drawing)

Length(mm)	Width(mm)	Acceptable Q'ty
$L \leq 8.0$	$W \leq 0.03$	Accept no dense
$L \leq 5$	$0.02 < W \leq 0.05$	2
$L \leq 5$	$0.03 < W \leq 0.08$	
---	$0.08 < W$	Rejection

* Densely spaced: No more than two lines within 3mm.

(AQL for item 03 line type: **2.5**)
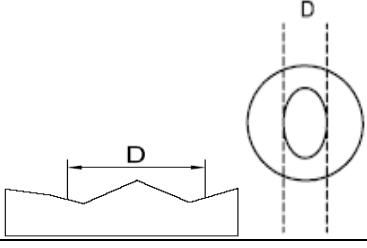
NO	Item	Criterion	AQL
04	Polarizer bubbles	If bubbles are visible, judge using black spot specifications, not easy to find, must check in specify direction 	Size Φ(mm)	Acceptable Q'ty	 Φ≦0.20	Accept no dense	 0.20< Φ≦0.50	3	 0.50< Φ≦1.00	2	 1.00< Φ	0	 Total Q'ty	3		2.5
05	Scratches	Follow NO.3 -2 Line Type.	
06	Mura	Not visible through 5% ND filter in 50% gray.	**2.5**
07	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 7.1 General glass chip: 7.1.1 Chip on panel surface and crack between panels: 7.1.2 Corner crack: 	2.5

For row 04 the right criterion table:

Size Φ(mm)	Acceptable Q'ty
Φ≦0.20	Accept no dense
0.20< Φ≦0.50	3
0.50< Φ≦1.00	2
1.00< Φ	0
Total Q'ty	3

7.1.1 table:

z: Chip thickness	y: Chip width	x: Chip length
Z≦1/2t	Not over viewing area	x≦1/8a
1/2t< z≦2t	Not exceed 1/3k	x≦1/8a

⊙ Unit: mm

⊙ If there are 2 or more chips, x is the total length of each chip

7.1.2 table:

z: Chip thickness	y: Chip width	x: Chip length
Z≦1/2t	Not over viewing area	x≦1/8a
1/2t< z≦2t	Not exceed 1/3k	x≦1/8a

⊙ Unit: mm

⊙ If there are 2 or more chips, x is the total length of each chip

NO	Item	Criterion	AQL
08	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 8.1 Protrusion over terminal: 8.1.1 Chip on electrode pad: 8.1.2 Non-conductive portion: ⊙ 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. 8.1.3 Substrate protuberance and internal crack 	2.5

8.1.1 table:

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

8.1.2 table:

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

8.1.3 table:

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

NO	Item	Criterion	AQL
09	Cracked glass	The LCD with extensive crack is not acceptable.	2.5
10	Backlight elements	10.1 Illumination source flickers when lit. 10.2 Spots or scratches that appear when lit must be judged. Using LCD spot, lines and contamination standards. 10.3 Backlight doesn't light or color is wrong.	2.5 2.5 0.65
11	Bezel	Bezel must comply with product specifications.	2.5
12	PCB、COB	12.1 COB seal may not have pinholes larger than 0.2mm or contamination. 12.2 COB seal surface may not have pinholes through to the IC. 12.3 The height of the COB should not exceed the height indicated in the assembly diagram. 12.4 There may not be more than 2mm of sealant outside the seal area on PCB. And there should be no more than three places. 12.5 Parts on PCB must be the same as on the production characteristic chart, There should be no wrong parts, missing parts or excess parts. 12.6 The jumper on the PCB should conform to the product characteristic chart. 12.7 PCBA cosmetic control base on latest IPC standard,IPC-A-610,acceptalbe limit of grade 2.	2.5 2.5 2.5 2.5 0.65 0.65 2.5
13	FPC	13.1 FPC terminal damage $\leqq$ 1/2 FPC terminal width and can not affect the function , we judge accept. 13.2 FPC alignment hole damage $\leqq$ 1/2 alignment area and can not affect the function , we judge accept.	2.5 2.5
14	Soldering	14.1 No cold solder joints, missing solder connections, oxidation or icicle. 14.2 No short circuits in components on PCB or FPC.	2.5 0.65

NO	Item	Criterion	AQL
15	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 15.1 General glass chip: 15.1.1 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></table>	2.5

Z≦t	≦1/2 k and not over viewing area	x≦1/8a	

⊙ Unit: mm
⊙ If there are 2 or more chips, x is the total length of each chip

15.1.2 Corner crack:

z: Chip thickness	y: Chip width	x: Chip length
z≦t	≦1/2 k and not over viewing area	x≦1/8a

⊙ Unit: mm
⊙ If there are 2 or more chips, x is the total length of each chip

NO	Item	Criterion	AQL
16	Touch Panel(Fish eye、dent and bubble on film)	SIZE(mm) / Acceptable Q'ty: Φ≦0.2 — Accept no dense 0.2＜D≦0.4 — 5 0.4＜D≦0.5 — 2 0.5＜D — 0	2.5
17	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
18	Touch Panel Linearity	Less than 2.5% is acceptable.	2.5
19	LCD Ripple	Touch the touch panel , can not see the LCD ripple. Pen: R 1.0mm silicon rubber. Operation Force: 80g	2.5
20	General appearance	20.1 Pin type must match type in specification sheet. 20.2 LCD pin loose or missing pins. 20.3 Product packaging must the same as specified on packaging specification sheet. 20.4 Product dimension and structure must conform to product specification sheet.	0.65 0.65 0.65 0.65

12. Handling Precaution:

12-1 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 PCB 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.

12-2 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.

12-3 Soldering

- Use only soldering irons with proper grounding and no leakage.
- Iron: No higher than 310±10℃ and less than 3 sec during Hand soldering.
- Rewiring: no more than 2 times.

13. Warranty

This product has been manufactured to specifications as a part for use in your company's general Electronic products. It is guaranteed to perform according to delivery specifications. For any other Use apart from general electronic equipment, we will not take responsibility if the product is used in Medical devices, nuclear power control equipment, aerospace equipment, fire and security systems, or any other applications in which there is a direct risk to human life and where extremely high levels of reliability are required. If the product is to be used in any of the above applications, we will need to enter into a separate product liability agreement.

1. We cannot accept responsibility for any defect arise after additional process of the product (including disassembly and reassembly), after product delivery.

2. We cannot accept responsibility for any defect, which may arise after the application of strong external force to the product.

3. We cannot accept responsibility for any defect, which may arise due to the application of static electricity after the product has passed your company's acceptance inspection procedures.

4. We can not accept responsibility for industrial property, which may arise through the use of your product , with exception to those issues relating directly to the structure or method of manufacturing of our product within one year from YEEBO shipment.

5. For Heatseal Product which required to heatseal by customer side, parts must be used within three months after delivery from factory.

6. For TAB Product which required to solder by customer side, parts must be used within three months after delivery from factory.

7. The liability of YB is limited to repair or replacement on the terms set forth below. YB will not be responsible for any subsequent or consequential events or injury or damage to any personnel or user including third party personnel and/or user. Unless otherwise agreed in writing between YB and the customer, YB will only replace or repair any of its LCD which is found defective electrically or visually when inspected in accordance with YB GENERAL LCD INSPECTION STANDARD.

14. Guarantee:

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