



# SPECIFICATION FOR AMOLED MODULE

MODULE NO: YB-OG466466S02A-N-A0

**Doc.Version:00**

Customer Approval:

<input type="checkbox"/> Accept	<input type="checkbox"/> Reject
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YEEBO	NAME	SIGNATURE	DATE
Prepare	Electronic Engineer		
Check	Mechanical Engineer		
Verify			
Approval			

■ APPROVAL FOR SPECIFICATIONS ONLY

□ APPROVAL FOR SPECIFICATIONS AND SAMPLE

WIMRD005-02-D



## 2. Table of Contents:

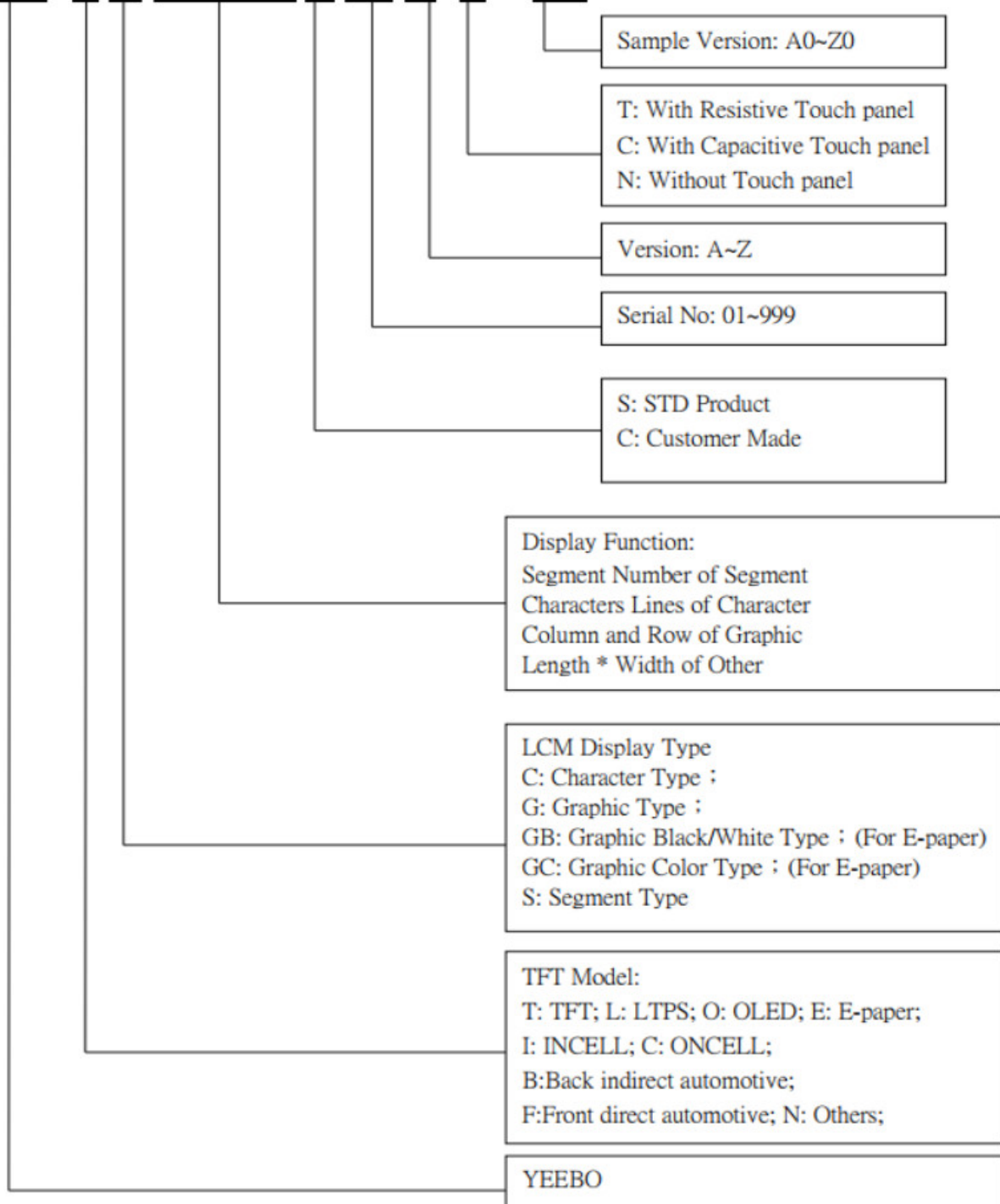
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### 3. Module Numbering System:

(Example)

**YB- T G 240320 S 01 D -T - A0**



#### **4. GENERAL INFORMATION:**

<b>Item</b>	<b>Contents</b>	<b>Unit</b>
Display Mode	AMOLED	/
LTPS Glass Outline (W×H)	39.3x39.15	mm
Encapsulation Glass Outline (W×H)	(38.6x39.15)	mm
Active area	(36.348x36.348)	mm
Number of Dots	466×3(RGB)×466	/
Diagonal Inch	1.43	inch
Pixel pitch (W×H)	78× 78	um
Module Thickness(with LENS)	0.786(Total)	mm



## 6. ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Min	Max	Unit
Supply voltage (Display)	VCC	-0.3	5.5	V
	IOVCC	-0.3	5.5	V
	ELVDD	2.0	5.0	V
	ELVSS	-5.0	-0.2	V
Operating temperature	Top	-20	70	°C
Storage temperature	T <sub>ST</sub>	-30	80	°C
Humidity	RH	-	90	%RH

**Note:** Absolute maximum ratings means the product can withstand short-term, NOT more than 120 hours. If the product is a long time to withstand these conditions, the life time would be shorter.

## 7. ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Condition	Min	Typ	Max	Unit	
Supply voltage (Display)	VCC		3.2	3.3	3.4	V	
	IOVCC		1.75	1.8	1.85	V	
	ELVDD	-	4.55	4.6	4.65	V	
	ELVSS	-	-2.25	-2.2	-2.15	V	
Supply voltage (TP)	TSP_IOVCC(1.8)		1.75	1.8	1.8	V	
	TSP_VCC(2.8)		2.65	2.8	2.95	V	
Input voltage	'L' level	VIL	IOVCC=1.65V ~3.3V	GND	-	0.2*IOVCC	V
	'H' level	VIH		0.8*IOVCC	-	IOVCC	V
Output voltage	'L' level	VOL	I(OH)=-1mA I(OL)=+1mA	GND	-	0.2*IOVCC	V
	'H' level	VOH		0.8*IOVCC	-	IOVCC	V
Current (Display)	Sleep out mode	I <sub>VCC</sub>	Full white display	-	2.5	6	mA
		I <sub>IOVCC</sub>		2.5	4	mA	
		I <sub>ELVDD</sub>		-	20	30	mA
		I <sub>ELVSS</sub>		20	30	mA	
	Deep Standby Mode	I <sub>VCC</sub>		-	20	40	uA
		I <sub>IOVCC</sub>		50	100	uA	
		I <sub>ELVDD</sub>		1	3	uA	
		I <sub>ELVSS</sub>		-	1	3	uA
Frame Frequency	f <sub>FRM</sub>		-	60	-	Hz	

## 8. ELECTRO-OPTICAL CHARACTERISTICS

Item	Symbol	Condition	Min	Type	Max	Unit	Note
Surface Luminance	Lv	$\theta=0^\circ$	350	400	-	cd/m <sup>2</sup>	Note1
Luminance uniformity	$\delta$ WHITE	$\varnothing=0^\circ$	85	-	-	%	Note2
Contrast Ratio	Cr	Ta=25°C	60000	-	-	-	Note3
Viewing Angle	$\theta$	Up/Down/Right/Left Cr $\geq$ 200	88	-	-	deg	Note4
Color Coordinate of CIE1931	Red x	$\theta=0^\circ$ $\varnothing=0^\circ$ Ta=25°C.	0.630	0.660	0.690	-	Note 5
	Red y		0.310	0.340	0.370	-	
	Green x		0.180	0.220	0.260	-	
	Green y		0.690	0.730	0.770	-	
	Blue x		0.110	0.140	0.170	-	
	Blue y		0.020	0.050	0.080	-	
	White x		0.280	0.300	0.320	-	
	White y		0.290	0.310	0.330	-	
NTSC ratio	-	-	90	100	-	%	CIE1931
Gamma	-	$\theta=0^\circ$ $\varnothing=0^\circ$ Ta=25°C V(Gray)=44,68,100, 132,164,196,228,25 2,255	2.0	2.2	2.4	-	
Lifetime	T95	25°C	240			h	

### Note1. Surface Luminance

- Measurement equipment: CS2000 or similar equipment.
- Measuring surroundings: Dark room.
- Measuring temperature: Ta=25°C.
- The data are measured after OLEDs are lighted on for more than 5 minutes and all pixels are fully white.
- The Surface Luminance is the average value of 5 measured spots (Fig-1):  
Lv = Average Luminance with all white pixels (P1, P2, P3, P4, P5)

### Note2. Luminance Uniformity

- Measurement equipment: CS2000 or similar equipment.
- Measuring surroundings: Dark room.
- Measuring temperature: Ta=25°C.
- The data are measured after OLEDs are lighted on for more than 5 minutes and all pixels are fully white.
- The Luminance Uniformity is calculated by using following formula:  
 $\delta$  WHITE = Lp (Min.) / Lp (Max.) $\times$ 100 (%)  
Lp (Min.) = Minimum Luminance with all white pixels (P1, P2, P3, P4, P5)  
Lp (Max.) = Maximum Luminance with all white pixels (P1, P2, P3, P4, P5)

### Note3. Contrast Ratio

- Measurement equipment: CS2000 or similar equipment.
- Measuring surroundings: Dark room.
- Measuring temperature: Ta=25°C.

- Measurement equipment: CS2000 or similar equipment.
- Measuring surroundings: Dark room.
- Measuring temperature:  $T_a=25^\circ\text{C}$ .
- The data are measured after OLEDs are lighted on for more than 5 minutes.
- The Contrast Ratio is calculated by using following formula:

$$\text{Contrast Ratio}(\text{Cr}) = L_w / L_b$$

$L_w$  = Average Luminance with all white pixels (P1, P2, P3, P4, P5)

$L_b$  = Average Luminance with all black pixels (P1, P2, P3, P4, P5)

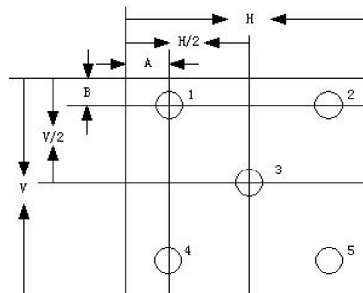


Fig-1

Note4. Viewing Angle

- Measurement equipment: DMS803 or similar equipment.
- Measuring surroundings: Dark room.
- Measuring temperature:  $T_a=25^\circ\text{C}$ .
- The Viewing Angle is the angle at which the contrast ratio is greater than 10. The angles are determined for the horizontal or x axis and the vertical or y axis with respect to the z axis which is normal to the display surface.

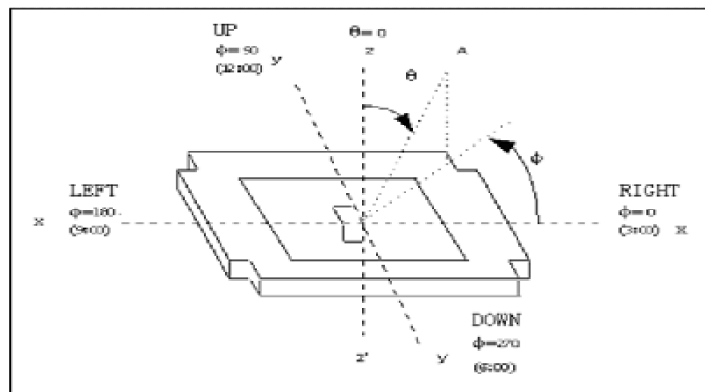


Fig-2

Note5. Color Coordinate of CIE1931

- Measurement equipment: CS2000 or similar equipment.
- Measuring surroundings: Dark room.
- Measuring temperature:  $T_a=25^\circ\text{C}$ .
- The x, y value of Color Coordinate is determined by measuring at center position of the display panel.

## 9. INTERFACE DESCRIPTION

Interface NO.	Symbol	I/O or Connected to	Description	When not in use
1	MTP_PWR	Power	MTP programming power supply pin. (7.5V typical)	Left open or connected to GND
2	GND	Connected to GND	Ground.	/
3	D0P	I/O	MIPI interface.	Connected to GND
4	D0N			
5	GND	Connected to GND	Ground.	/
6	CLKP	I	MIPI interface.	Connected to GND
7	CLKN			
8	GND	Connected to GND	Ground.	/
9	D1P	I	MIPI interface.	Connected to GND
10	D1N			
11	GND	Connected to GND	Ground.	/
12	IM0	I	Interface type selection pin.	/
13	IM1			
14	GND	Connected to GND	Ground.	/
15	TSP_SDA	I/O	Touch I2C data	/
16	TSP_SCL	I	Touch I2C clock	/
17	TSP_RST	I	TSP Reset signal. Active low.	/
18	TSP_INT	O	Touch State change interrupt	/
19	TSP_VCC	Power	TP Power Supply	/
20	TSP_IOVCC	Power	TP Power Supply	/
21	D[1]	I/O	8-bit bi-directional data bus for 80-series MPU I/F .	Open
22	D[0]			
23	GND	Connected to GND	Ground.	Open
24	CSX	I	Chip select input pin (“Low” enable) in SPI I/F.	Connected to IOVCC
25	WRX_SCL	I	SCL: A synchronous clock signal in SPI I/F.	Connected to GND
26	DCX	I	Display data / command selection in 4-wire SPI I/F. DCX = ”0” : Command DCX = ”1” : Display data or Parameter	Connected to GND
27	SDI_RDX	I/O	SDI: Serial inputs signal in SPI I/F. The data is input on the rising edge of the SCL signal.	Open
28	SDO	O	Serial outputs signal in SPI I/F. The data is output on the rising/falling edge of the SCL signal. If the host places the SDI line into high-impedance state during the read interval, the SDI and SDO can be tied together.	Open
29	RESET	I	This signal will reset the device and must be applied to properly initialize the chip. Signal is active low.	/
30	TE	O	Tearing effect output pin to synchronize MCU to frame writing, activated by S/W command.	Open

31	OLED_EN	O	Power IC enable control pin (Note: “H” = IOVCC level, “L” = GND level.)	/
32	SWIRE	O	Swire protocol setting pin (Note: “H” = IOVCC level, “L” = GND level.)	/
33	GND	Connected to GND	Ground.	/
34	VCC	Power	Input Voltage for analog power supply	/
35	IOVCC	Power	Input voltage for logic/interface power supply	/
36	GND	Connected to GND	Ground.	/
37	ELVDD	Power	Power supply for pixel circuit.	/
38	ELVDD			
39	ELVDD			
40	GND	Connected to GND	Ground.	/
41	ELVSS	Power	Power supply for pixel circuit.	/
42	ELVSS			
43	ELVSS			
44	GND	Connected to GND	Ground.	/
45	GND	Connected to GND	Ground.	

## **10. REFERENCE APPLICATION CIRCUIT**

Please consult our technical department for detail information.  
详细信息请联系我们的技术部



## 11. RELIABILITY TEST CONDITIONS

No.	Test Item	Test Condition	Qty	Inspection after test
1	High Temperature Storage	80°C±2°C/240 hours	5	Inspection after 2 hours storage at room temperature, the sample shall be free from defects:  1. Remarkable deterioration of No clearly visible defects or display quality. However, any polarizer's deteriorations by the high temperature/ High humidity Storage test and the High temperature/ High humidity Operation test are permitted. 2. No function-related abnormalities. 3. Optical criteria : .White $\Delta u'v' \leq 0.02$ 4. No visible defects .(optical / mechanical) . 5. No function-related abnormalities
2	Low Temperature Storage	-30°C±2°C/240 hours	5	
3	High Temperature Operating	70°C±2°C/120 hours	5	
4	Low Temperature Operating	-20°C±2°C/120 hours	5	
5	Temperature Cycle storage	-20°C±2°C~25~60°C±2°C×10cycles (30min.) (5min.) (30min.)	5	
6	High Temperature Humidity Storage	50°C±5°C×90%RH/120 hours	5	
7	ESD test	Voltage:±8KV R: 330Ω C: 150pF Air discharge, 10time	5	
8	Vibration Test	Frequency: 10Hz~55Hz~10Hz Amplitude: 1.5mm, X, Y, Z direction for total 3hours (Packing condition)	5	
9	Dropping test	Drop to the ground from 1m height, one time,every side of carton. (Packing condition)	5	

**Remark:**

- The test samples should be applied to only one test item.
- For Damp Proof Test, Pure water(Resistance> 10MΩ) should be used.
- In case of malfunction defect caused by ESD damage, if it would be recovered to normal state after resetting, it would be judged as a good part.
- Failure Judgment Criterion: Basic Specification, Electrical Characteristic, Mechanical Characteristic, Optical Characteristic.

## 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 **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

### 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

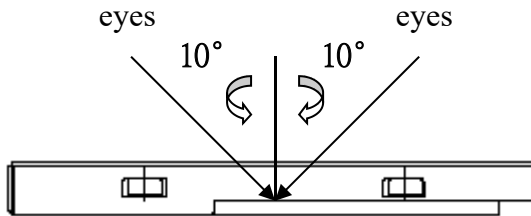
a. Manner of appearance test:

(i) The test must be under 20W × 2 or 40W fluorescent light, and the distance of view must be at 30±5cm.

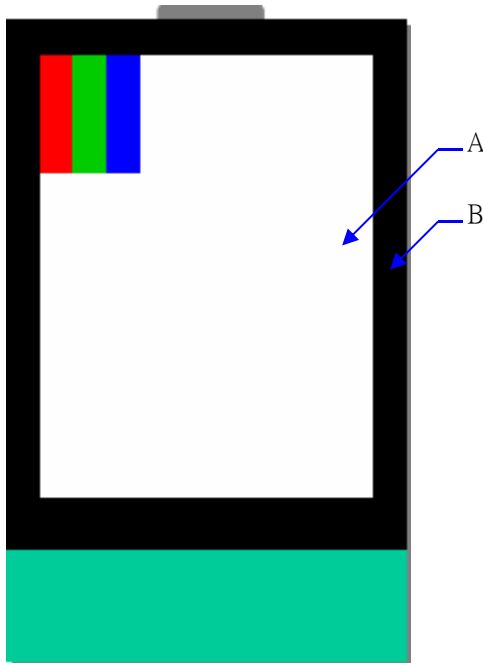
(ii) When test the model of transmissive product must add the reflective plate.

(iii) The test direction is base on around 10° of vertical line.

(iiii) Temperature: 25±5°C 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.

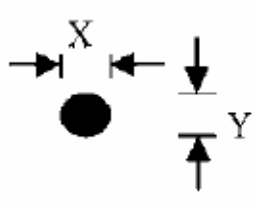
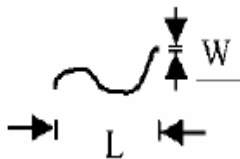
(ii) The sample of the lowest acceptable quality level must be discussed by both supplier and customer when any dispute happened.

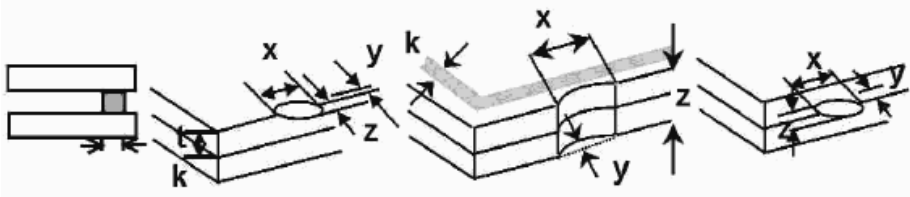
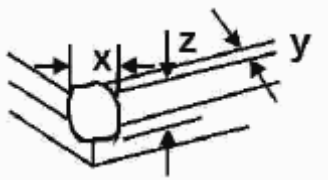
(iii) Must add new item on time when it is necessary.

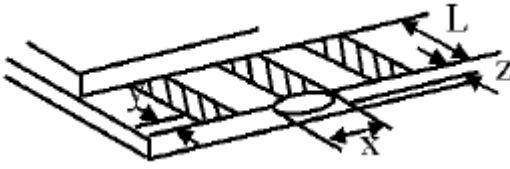
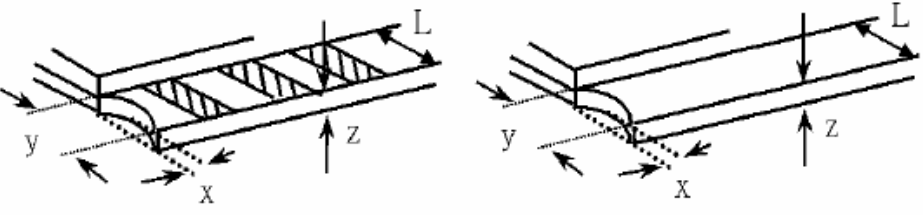
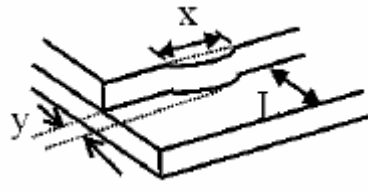
c. Standard of inspection: (Unit: mm)

12-6. Inspection specification

Defect out of viewing area can be neglected.

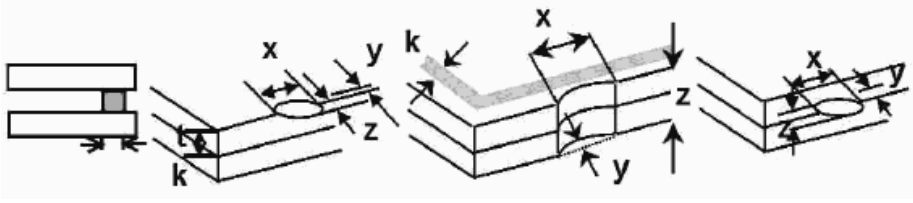
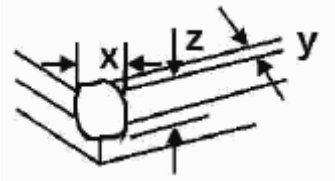
NO	Item	Criterion	AQL												
01	Electrical Testing	1.1 Missing vertical, horizontal segment, segment contrast defect. 1.2 Missing character, dot or icon. 1.3 Display malfunction. 1.4 No function or no display. 1.5 Current consumption exceeds product specifications. 1.6 LCD viewing angle defect. 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 White and black or color spots on display $\leq 0.25\text{mm}$ , 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												
03	LCD and Touch Panel black spots, white spots, contamination (non – display)	3.1 Round type: As following drawing $\Phi = (X+Y) / 2$  <table border="1" data-bbox="826 996 1364 1249"> <thead> <tr> <th>Size(mm)</th> <th>Acceptable Q'ty</th> </tr> </thead> <tbody> <tr> <td><math>\Phi \leq 0.10</math></td> <td>Accept no dense</td> </tr> <tr> <td><math>0.10 &lt; \Phi \leq 0.20</math></td> <td>2</td> </tr> <tr> <td><math>0.20 &lt; \Phi \leq 0.25</math></td> <td>2</td> </tr> <tr> <td><math>0.25 &lt; \Phi \leq 0.30</math></td> <td>1</td> </tr> <tr> <td><math>0.30 &lt; \Phi</math></td> <td>0</td> </tr> </tbody> </table> <p>* Densely spaced: No more than two spots within 3mm.</p>	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	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														
3.2 Line type: (As following drawing)  <table border="1" data-bbox="730 1400 1364 1680"> <thead> <tr> <th>Length(mm)</th> <th>Width(mm)</th> <th>Acceptable Q'ty</th> </tr> </thead> <tbody> <tr> <td>---</td> <td><math>W \leq 0.02</math></td> <td>Accept no dense</td> </tr> <tr> <td><math>L \leq 3.0</math></td> <td><math>0.02 &lt; W \leq 0.05</math></td> <td rowspan="2">2</td> </tr> <tr> <td><math>L \leq 2.5</math></td> <td><math>0.03 &lt; W \leq 0.08</math></td> </tr> <tr> <td>---</td> <td><math>0.08 &lt; W</math></td> <td>Rejection</td> </tr> </tbody> </table> <p>* Densely spaced: No more than two lines within 3mm.</p>	Length(mm)	Width(mm)	Acceptable Q'ty	---	$W \leq 0.02$	Accept no dense	$L \leq 3.0$	$0.02 < W \leq 0.05$	2	$L \leq 2.5$	$0.03 < W \leq 0.08$	---	$0.08 < W$	Rejection	2.5
Length(mm)	Width(mm)	Acceptable Q'ty													
---	$W \leq 0.02$	Accept no dense													
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$L \leq 2.5$	$0.03 < W \leq 0.08$														
---	$0.08 < W$	Rejection													

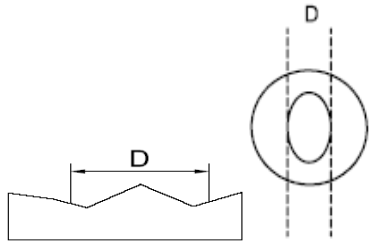
NO	Item	Criterion	AQL																		
04	Polarizer bubbles	<p>If bubbles are visible, judge using black spot specifications, not easy to find, must check in specify direction</p> <table border="1"> <thead> <tr> <th>Size <math>\Phi</math>(mm)</th> <th>Acceptable Q'ty</th> </tr> </thead> <tbody> <tr> <td><math>\Phi \leq 0.20</math></td> <td>Accept no dense</td> </tr> <tr> <td><math>0.20 &lt; \Phi \leq 0.50</math></td> <td>3</td> </tr> <tr> <td><math>0.50 &lt; \Phi \leq 1.00</math></td> <td>2</td> </tr> <tr> <td><math>1.00 &lt; \Phi</math></td> <td>0</td> </tr> <tr> <td>Total Q'ty</td> <td>3</td> </tr> </tbody> </table>	Size $\Phi$ (mm)	Acceptable Q'ty	$\Phi \leq 0.20$	Accept no dense	$0.20 < \Phi \leq 0.50$	3	$0.50 < \Phi \leq 1.00$	2	$1.00 < \Phi$	0	Total Q'ty	3	2.5						
Size $\Phi$ (mm)	Acceptable Q'ty																				
$\Phi \leq 0.20$	Accept no dense																				
$0.20 < \Phi \leq 0.50$	3																				
$0.50 < \Phi \leq 1.00$	2																				
$1.00 < \Phi$	0																				
Total Q'ty	3																				
05	Scratches	Follow NO.3 -2 Line Type.																			
06	Mura	Not visible through 5% ND filter.	2.5																		
07	Chipped glass	<p>Symbols:            x: Chip length      y: Chip width      z: Chip thickness            k: Seal width      t: Glass thickness      a: LCD side length            L: Electrode pad length</p> <p>7.1 General glass chip:            7.1.1 Chip on panel surface and crack between panels:</p>  <table border="1"> <thead> <tr> <th>z: Chip thickness</th> <th>y: Chip width</th> <th>x: Chip length</th> </tr> </thead> <tbody> <tr> <td><math>Z \leq 1/2t</math></td> <td>Not over viewing area</td> <td><math>x \leq 1/8a</math></td> </tr> <tr> <td><math>1/2t &lt; z \leq 2t</math></td> <td>Not exceed 1/3k</td> <td><math>x \leq 1/8a</math></td> </tr> </tbody> </table> <p>⊙ Unit: mm            ⊙ If there are 2 or more chips, x is the total length of each chip</p> <p>7.1.2 Corner crack:</p>  <table border="1"> <thead> <tr> <th>z: Chip thickness</th> <th>y: Chip width</th> <th>x: Chip length</th> </tr> </thead> <tbody> <tr> <td><math>Z \leq 1/2t</math></td> <td>Not over viewing area</td> <td><math>x \leq 1/8a</math></td> </tr> <tr> <td><math>1/2t &lt; z \leq 2t</math></td> <td>Not exceed 1/3k</td> <td><math>x \leq 1/8a</math></td> </tr> </tbody> </table> <p>⊙ Unit: mm            ⊙ If there are 2 or more chips, x is the total length of each chip</p>	z: Chip thickness	y: Chip width	x: Chip length	$Z \leq 1/2t$	Not over viewing area	$x \leq 1/8a$	$1/2t < z \leq 2t$	Not exceed 1/3k	$x \leq 1/8a$	z: Chip thickness	y: Chip width	x: Chip length	$Z \leq 1/2t$	Not over viewing area	$x \leq 1/8a$	$1/2t < z \leq 2t$	Not exceed 1/3k	$x \leq 1/8a$	2.5
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NO	Item	Criterion	AQL																
08	Glass crack	<p>Symbols:            x: Chip length      y: Chip width      z: Chip thickness            k: Seal width      t: Glass thickness      a: LCD side length            L: Electrode pad length</p> <p>8.1 Protrusion over terminal:            8.1.1 Chip on electrode pad:</p>  <table border="1" data-bbox="555 651 1241 808"> <tr> <td>y: Chip width</td> <td>x: Chip length</td> <td>z: Chip thickness</td> </tr> <tr> <td><math>y \leq 0.5\text{mm}</math></td> <td><math>x \leq 1/8a</math></td> <td><math>0 &lt; z \leq t</math></td> </tr> </table> <p>8.1.2 Non-conductive portion:</p>  <table border="1" data-bbox="555 1167 1241 1323"> <tr> <td>y: Chip width</td> <td>x: Chip length</td> <td>z: Chip thickness</td> </tr> <tr> <td><math>y \leq L</math></td> <td><math>x \leq 1/8a</math></td> <td><math>0 &lt; z \leq t</math></td> </tr> </table> <p>⊙ 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 not be damaged.</p> <p>8.1.3 Substrate protuberance and internal crack</p>  <table border="1" data-bbox="874 1641 1316 1798"> <tr> <td>y: width</td> <td>x: length</td> </tr> <tr> <td><math>y \leq 1/3L</math></td> <td><math>X \leq a</math></td> </tr> </table>	y: Chip width	x: Chip length	z: Chip thickness	$y \leq 0.5\text{mm}$	$x \leq 1/8a$	$0 < z \leq t$	y: Chip width	x: Chip length	z: Chip thickness	$y \leq L$	$x \leq 1/8a$	$0 < z \leq t$	y: width	x: length	$y \leq 1/3L$	$X \leq a$	2.5
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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 $\leq$ 1/2 FPC terminal width and can not affect the function , we judge accept. 13.2 FPC alignment hole damage $\leq$ 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	<p>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</p> <p>15.1 General glass chip:            15.1.1 Chip on panel surface and crack between panels:</p>  <table border="1" data-bbox="411 770 1232 985"> <tr> <td>z: Chip thickness</td> <td>y: Chip width</td> <td>x: Chip length</td> </tr> <tr> <td><math>Z \leq t</math></td> <td><math>\leq 1/2 k</math> and not over viewing area</td> <td><math>x \leq 1/8a</math></td> </tr> </table> <p>⊙ Unit: mm            ⊙ If there are 2 or more chips, x is the total length of each chip</p> <p>15.1.2 Corner crack:</p>  <table border="1" data-bbox="411 1366 1232 1581"> <tr> <td>z: Chip thickness</td> <td>y: Chip width</td> <td>x: Chip length</td> </tr> <tr> <td><math>z \leq t</math></td> <td><math>\leq 1/2 k</math> and not over viewing area</td> <td><math>x \leq 1/8a</math></td> </tr> </table> <p>⊙ Unit: mm            ⊙ If there are 2 or more chips, x is the total length of each chip</p>	z: Chip thickness	y: Chip width	x: Chip length	$Z \leq t$	$\leq 1/2 k$ and not over viewing area	$x \leq 1/8a$	z: Chip thickness	y: Chip width	x: Chip length	$z \leq t$	$\leq 1/2 k$ and not over viewing area	$x \leq 1/8a$	2.5
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NO	Item	Criterion	AQL										
16	Touch Panel(Fish eye、dent and bubble on film)	<table border="1"> <thead> <tr> <th>SIZE(mm)</th> <th>Acceptable Q'ty</th> </tr> </thead> <tbody> <tr> <td><math>\Phi \leq 0.2</math></td> <td>Accept no dense</td> </tr> <tr> <td><math>0.2 &lt; D \leq 0.4</math></td> <td>5</td> </tr> <tr> <td><math>0.4 &lt; D \leq 0.5</math></td> <td>2</td> </tr> <tr> <td><math>0.5 &lt; D</math></td> <td>0</td> </tr> </tbody> </table>	SIZE(mm)	Acceptable Q'ty	$\Phi \leq 0.2$	Accept no dense	$0.2 < D \leq 0.4$	5	$0.4 < D \leq 0.5$	2	$0.5 < D$	0	2.5
		SIZE(mm)	Acceptable Q'ty										
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$0.5 < D$	0												
													
17	Touch Panel Newton ring	Newton ring dimension $\leq 1/2$ touch panel area and not affect font and line distortion( $\leq 2.5\%$ ) , 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.	0.65										
		20.2 LCD pin loose or missing pins.	0.65										
		20.3 Product packaging must the same as specified on packaging specification sheet.	0.65										
		20.4 Product dimension and structure must conform to product specification sheet.	0.65										

## **13. Handling Precaution**

### 14-1 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.

### 14-2 Storage

- Store in an ambient temperature of  $25\pm 10^{\circ}\text{C}$ , and in a relative humidity of  $50\pm 10\%\text{RH}$ . 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.

### 14-3 Soldering

- Use only soldering irons with proper grounding and no leakage.
- Iron: No higher than  $310\pm 10^{\circ}\text{C}$  and less than 3 sec during Hand soldering.
- Rewiring: no more than 2 times.

## **14. 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 INSPECTIONSTANDARD.

## **15. Guarantee**

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