

# SPECIFICATION FOR TFT MODULE

**MODULE NO: YB-TG1024600S18A-N-A0**

**Doc.Version:00**

Customer Approval:

Accept  Reject

YEEBO	NAME	SIGNATURE	DATE
Prepare	Electronic Engineer	黄松	2025-03-18
Check	Mechanical Engineer	张雷	2025/4/1
Verify			
Approval		孙五南	2025/4/1

■ APPROVAL FOR SPECIFICATIONS ONLY

APPROVAL FOR SPECIFICATIONS AND SAMPLE

WIMRD005-02-D



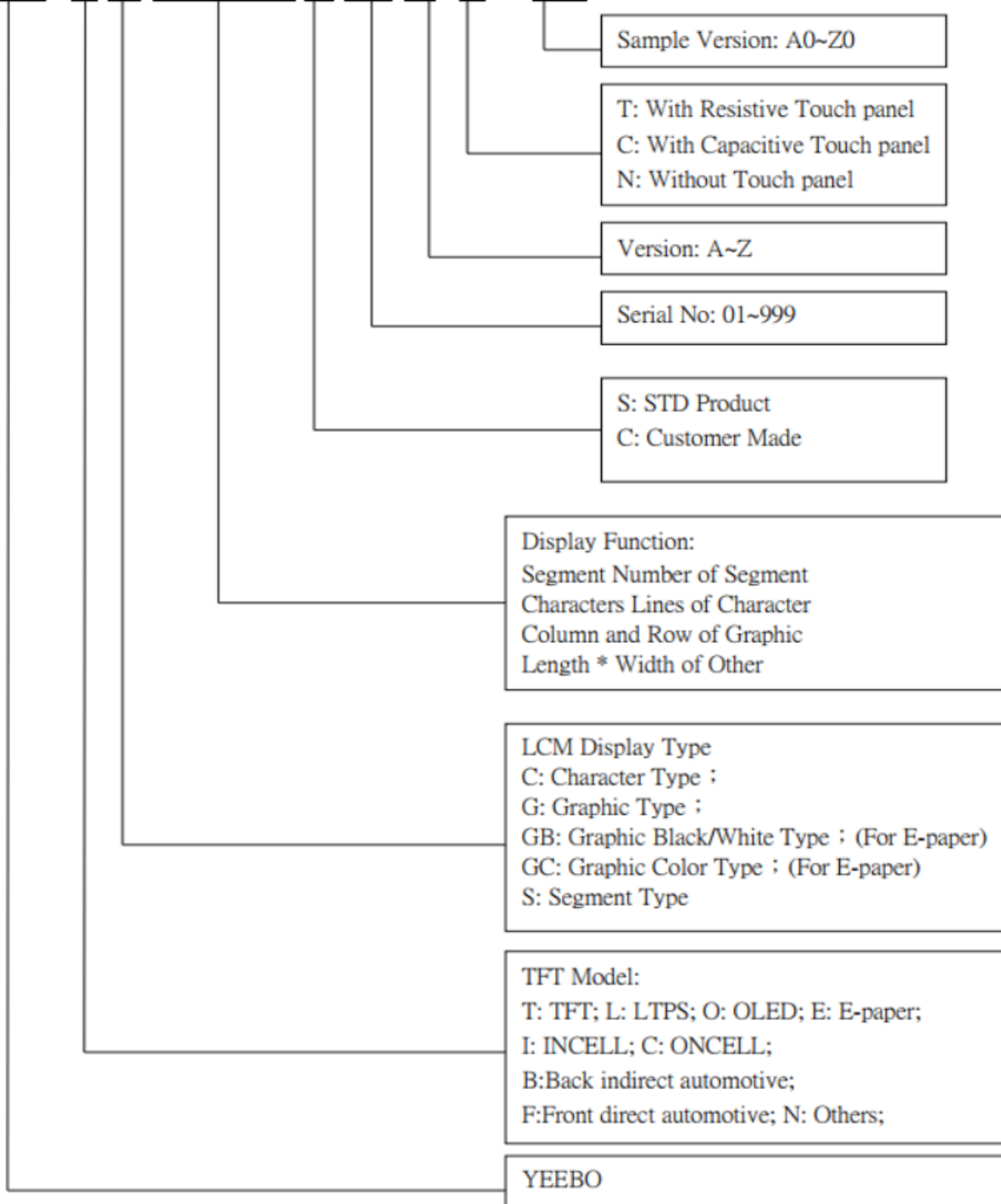
## **2. Table of Contents:**

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### 3. Module Numbering System:

(Example)

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

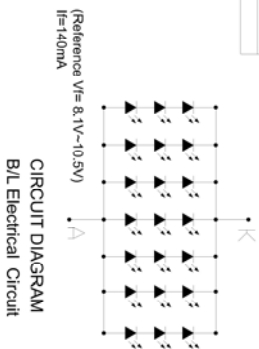
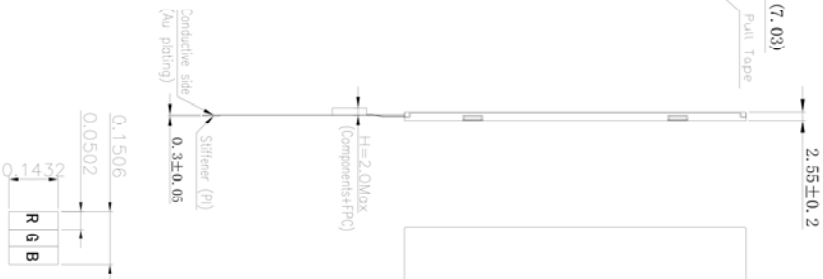
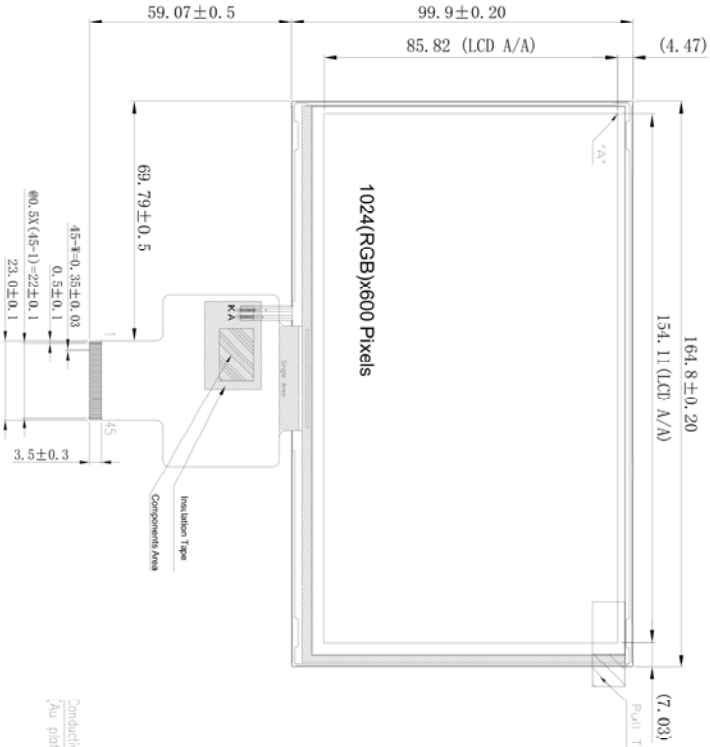


#### 4. General Specification:

ITEM	CONTENTS
Module Size	50 (W) * 69.2 (H) * 2.8 (T) mm
Display Size(Diagonal)	7 inch
Display Format	1024(RGB) * 600 Pixels
Active Area	154.2144 (W) * 85.92 (H) mm
Pixel Pitch	0.1506*0.1432 mm
LCD Type	16.7M Color / Transmissive / Normal Black
View Direction	Free
Controller IC	JD9165BA
Weight	TBD

## 5. LCM drawing:

Count drawing & Spec. revision record during discussion with customer	
Rec. 01	Revision content: description
	FIRST ISSUE
Date	2025-03-18



CIRCUIT DIAGRAM  
B/L Electrical Circuit

- Specification:**
1. Display mode: 7.0" TFT (16.7M) Normally Black / Transmissive
  2. Viewing direction: Full Viewing
  3. Operating temperature: -20°C to +70°C  
Storage temperature: -30°C to +80°C
  4. Drive IC is: JD9165BA
  5. Backlight: 21 CHIP WHITE LED
  6. Unspecified tolerance: ±0.30mm
  7. ROHS compliant
  8. Luminous Intensity for LCM: 300cd/m<sup>2</sup>(min), 400cd/m<sup>2</sup>(typ)
  9. 产品结构: TFT

		MOD. Name	DESIGNED	CHECKED	VERIFIED	APPROVED	FILE NAME
		YB-TG1024600S18A-N-A	张雷				Count Dwg.
UNIT	SIZE	SCALE					Sheet
mm	A4	N-T-S					Of
						1	

## 6. Electrical Characteristics

### 6-1 Absolute Maximum Ratings

(Ta=25°C)

Item	Symbol	Specification			Unit
		Min.	Typ	Max.	
TFT gate on voltage	VGH	19.5	20	20	V
TFT gate off voltage	VGL	-8.5	-8	-7.5	V
TFT common electrode voltage	Vcom	-	4.9	-	V

Note: (1) Vcom must be adjusted to optimize display quality :cross-talk, contrast ratio and etc.

(2) VGH is TFT gate operating voltage

(3) VGL is TFT gate operating voltage

(4) Environmental condition: 25±5°C

(5) Reference waveform for panel light on is as below:

### 6-2 Operating Conditions

(Ta=25°C )

Item	Symbol	Condition	Min.	Type	Max.	Unit	Remark
Power Supply Voltage	V <sub>DD</sub>	-	2.8	3.3	3.6	V	
Supply Voltage(Logic)	V <sub>DDI</sub>	-	2.8	3.3	3.6	V	
IO Supply Voltage	V <sub>IH</sub>	-	0.8 V <sub>DD</sub>	-	V <sub>DD</sub>	V	
	V <sub>IL</sub>	-	V <sub>SS</sub>	-	0.2 V <sub>DD</sub>	V	
	V <sub>OH</sub>	-	0.9 V <sub>DD</sub>	-	V <sub>DD</sub>	mA	
	V <sub>OL</sub>	-	V <sub>SS</sub>	-	0.1 V <sub>DD</sub>	V	
Power Supply Current	I <sub>DD</sub>	V <sub>DD</sub> =3.3V	-	TBD	-	mA	



### 6-3 DC Characteristics

Parameter	Symbol	Spec.			Unit	Note
		Min.	Typ.	Max.		
Supply power voltage	VDD	1.71	1.8	1.89	V	MIPI mode condition1
I/O power voltage	VDDIO	1.71	1.8	1.89	V	
Supply power voltage	VDD	2.8	3.3	3.6	V	TTL mode condition LVDS mode condition MIPI mode condition2
I/O power voltage	VDDIO	2.8	3.3	3.6	V	
AVDD voltage	AVDD	9	-	12	V	
VGH voltage	VGH	15	18	20	V	
VGL voltage	VGL	-12	-8	-6	V	
VMID voltage	VMID	4.5	5	6.0	V	
VMID_OP voltage	VMID_OP	4.5	5	6.0	V	
VQHO voltage	VQHO	-	0.75AVDD	-	V	
VQLO voltage	VQLO	-	0.25AVDD	-	V	
VCOM voltage	VCOM_OP	2.7	3.8	5.4	V	
VOTP	VOTP	8.0	8.25	8.5	V	
Low level input voltage	V <sub>IL</sub>	VSS	-	0.2xVDD	V	
High level input voltage	V <sub>IH</sub>	0.8xVDD	-	VDD	V	
Low level output voltage	V <sub>OL</sub>	VSS	-	0.1xVDD	V	
High level output voltage	V <sub>OH</sub>	0.9xVDD	-	VDD	V	

## 6-4 LVDS INPUT TIMING

### 6.4-1 LVDS data input format

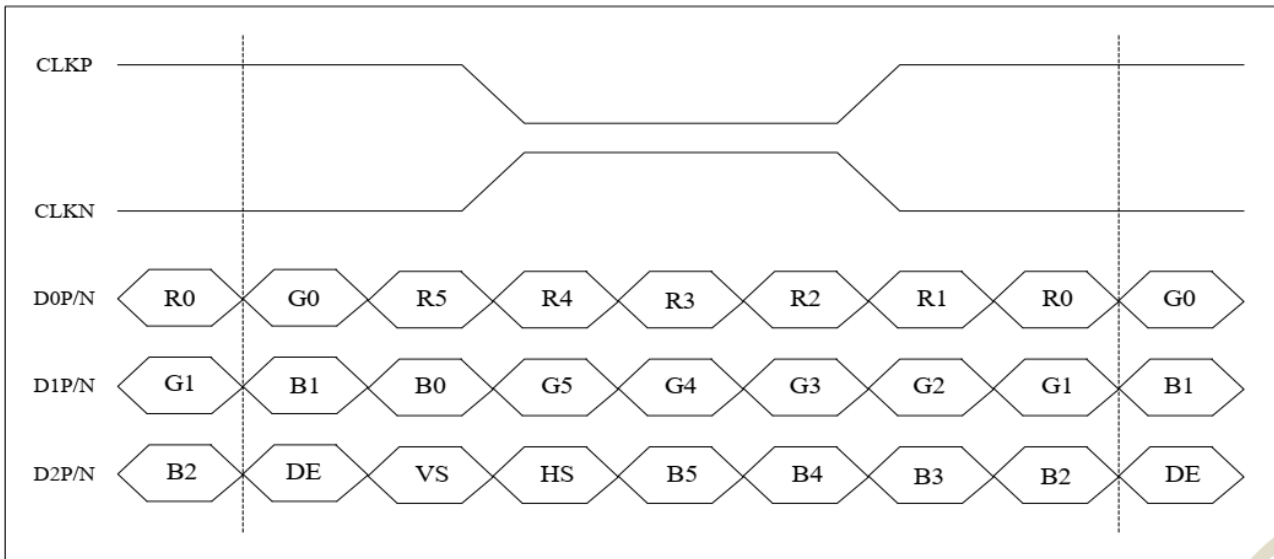


Figure 7.1: 6-bit RGB LVDS input timing

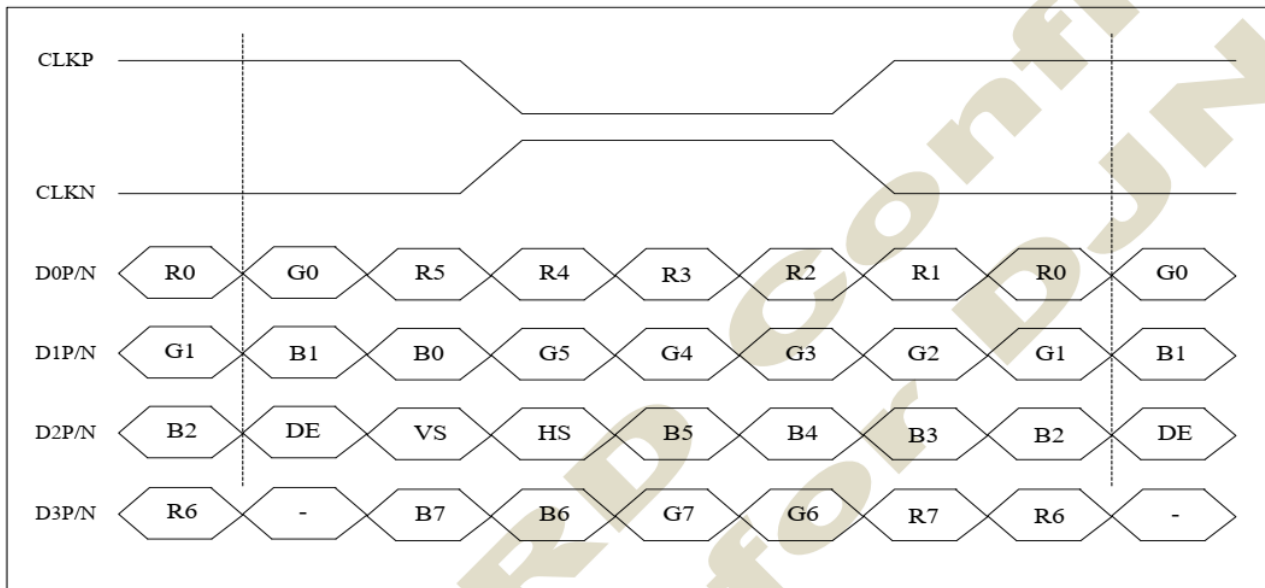


Figure 7.2: 8-bit RGB LVDS VESA input timing

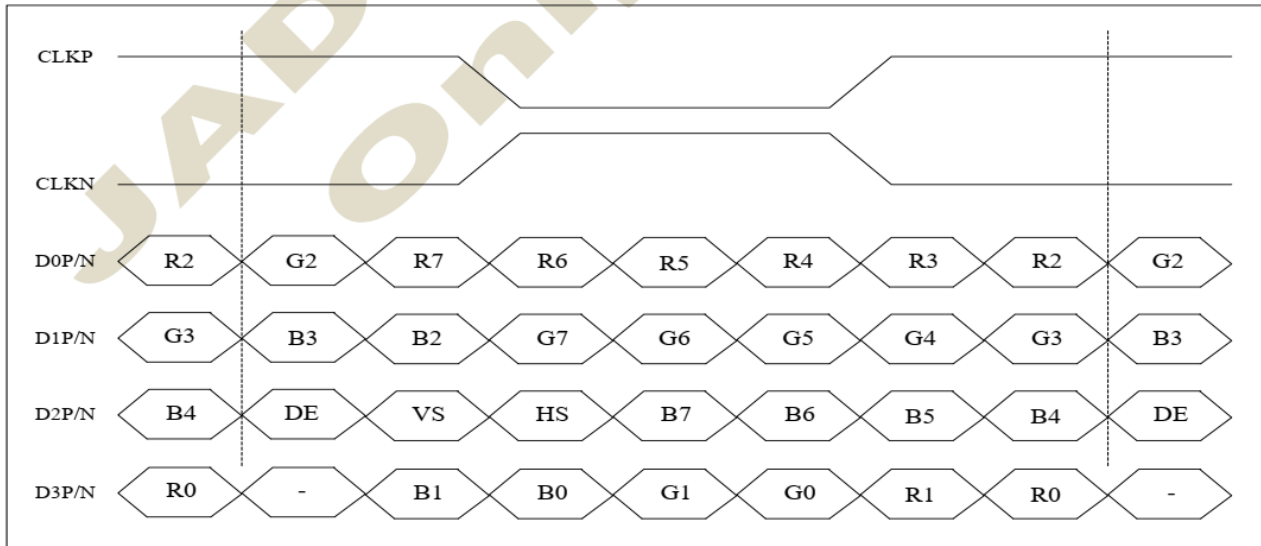


Figure 7.3: 8-bit RGB LVDS JEIDA input timing

### 6.4-2 LVDS timing characteristic

LVDS Input Timing	Symbol	1024RGBx768			1024RGBx600			800RGBx600			Unit
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
DCLK Frequency	-	52.7	65	71	41.4	51.2	67.2	33.1	39.6	62.4	MHZ
Horizontal Total	tht	1114	1344	1400	1114	1344	1400	890	1000	1300	DCLK
Hsync Pulse width	ths	1	24	HBP-1	1	24	HBP-1	1	24	HBP-1	DCLK
Horizontal Back Porch	thb	60	160	160	60	160	160	60	160	250	DCLK
Horizontal Valid Data	thd	1024			1024			800			DCLK
Horizontal Front Porch	thfp	30	160	216	30	160	216	30	40	250	DCLK
Vertical Total	tvf	788	806	845	620	635	800	620	660	800	THT
Vsync Pulse Width	tvf	1	2	VBP-1	1	2	VBP-1	1	2	VBP-1	THT
Vertical Back Porch	tvb	8	23	33	8	23	100	8	23	100	THT
Vertical Valid Data	tvf	768			600			600			THT
Vertical Front Porch	tvfp	12	15	44	12	12	100	12	37	100	THT

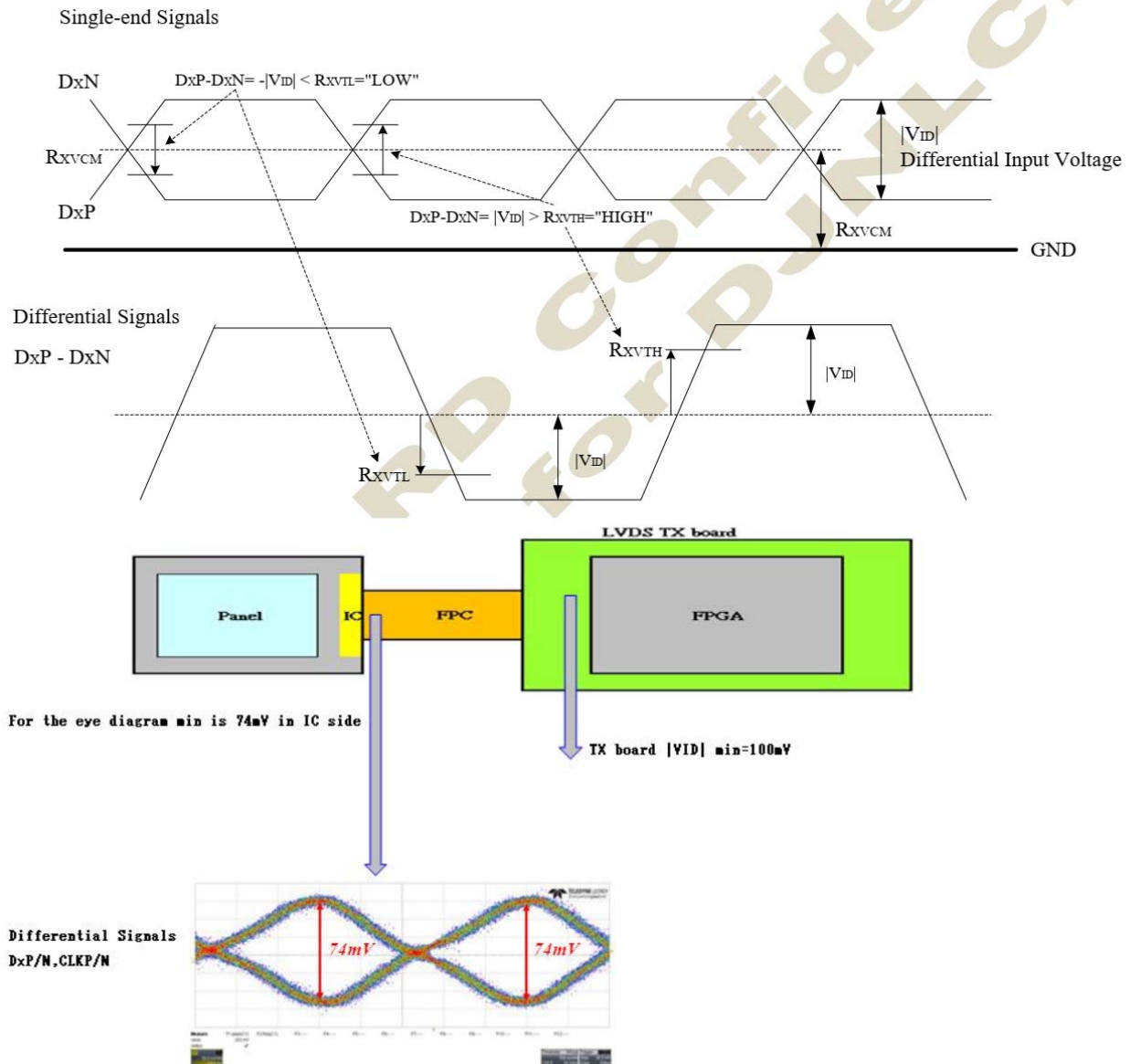
LVDS Input Timing	Symbol	800RGBx480			640RGBx480			480RGBx272			Unit
		Min	Typ	Max	Min	Typ	Max	Min	Typ	Max	
DCLK Frequency	-	29	32.4	62	32.6	39.6	53.4	24.8	32.6	37.6	MHZ
Horizontal Total	tht	900	1000	1300	890	1000	1114	830	890	950	DCLK
Hsync Pulse width	ths	4	24	HBP-1	1	24	HBP-1	1	24	HBP-1	DCLK
Horizontal Back Porch	thb	62	160	250	140	88	220	180	210	240	DCLK
Horizontal Valid Data	thd	800			640			480			DCLK
Horizontal Front Porch	thfp	38	40	250	110	272	254	170	200	230	DCLK
Vertical Total	tvf	500	540	680	610	660	800	498	610	660	THT
Vsync Pulse Width	tvf	1	2	VBP-1	1	2	VBP-1	1	2	VBP-1	THT
Vertical Back Porch	tvb	8	23	100	28	39	160	126	180	210	THT
Vertical Valid Data	tvf	480			480			272			THT
Vertical Front Porch	tvfp	12	37	100	102	141	160	100	158	178	THT

### 6.4-3 LVDS DC electrical characteristic

(Test condition: VDD=2.8V~3.6V, VSS=0V)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Differential input high threshold voltage	$R_{XVTH}$			+37	mV	
Differential input low threshold voltage	$R_{XVTL}$	-37			mV	
Input voltage range (singled-end)	$R_{XVIN}$	400	-	1650	mV	1. $R_{XVCM} + 1/2 V_{ID}  \leq 1650mV$ . 2. $R_{XVCM} - 1/2 V_{ID}  \geq 400mV$ .
Differential input common mode voltage	$R_{XVCM}$	600	1200	1375	mV	
Differential input voltage	$ V_{ID} $	100	-	400	mV	
Differential input impedance	$Z_{ID}$	80	100	120	ohm	
Differential input leakage current	$I_{LCLVDS}$	-10	-	+10	uA	

Table 7.1: LVDS mode DC electrical characteristics



### 6.4-4 LVDS AC electrical characteristic

Parameter	Symbol	Spec.			Unit	Condition
		Min.	Typ.	Max.		
Clock frequency	$R_{xFCLK}$	20	-	71	MHz	Refer to input timing table for each display resolution
Input data skew margin	$T_{RSKM}$	-0.2	-	0.2	UI	$ VID  = 200mV$ $RxVCM = 1.2V$ $1UI = 1/(R_{xFCLK} \times 7)$
Clock high time	$T_{LVCH}$	-	$4/(7 * R_{xFCLK})$	-	ns	
Clock low time	$T_{LVCL}$	-	$3/(7 * R_{xFCLK})$	-	ns	
PLL wake-up time	$T_{enPLL}$	-	-	150	us	

Table 7.2: LVDS mode AC electrical characteristics

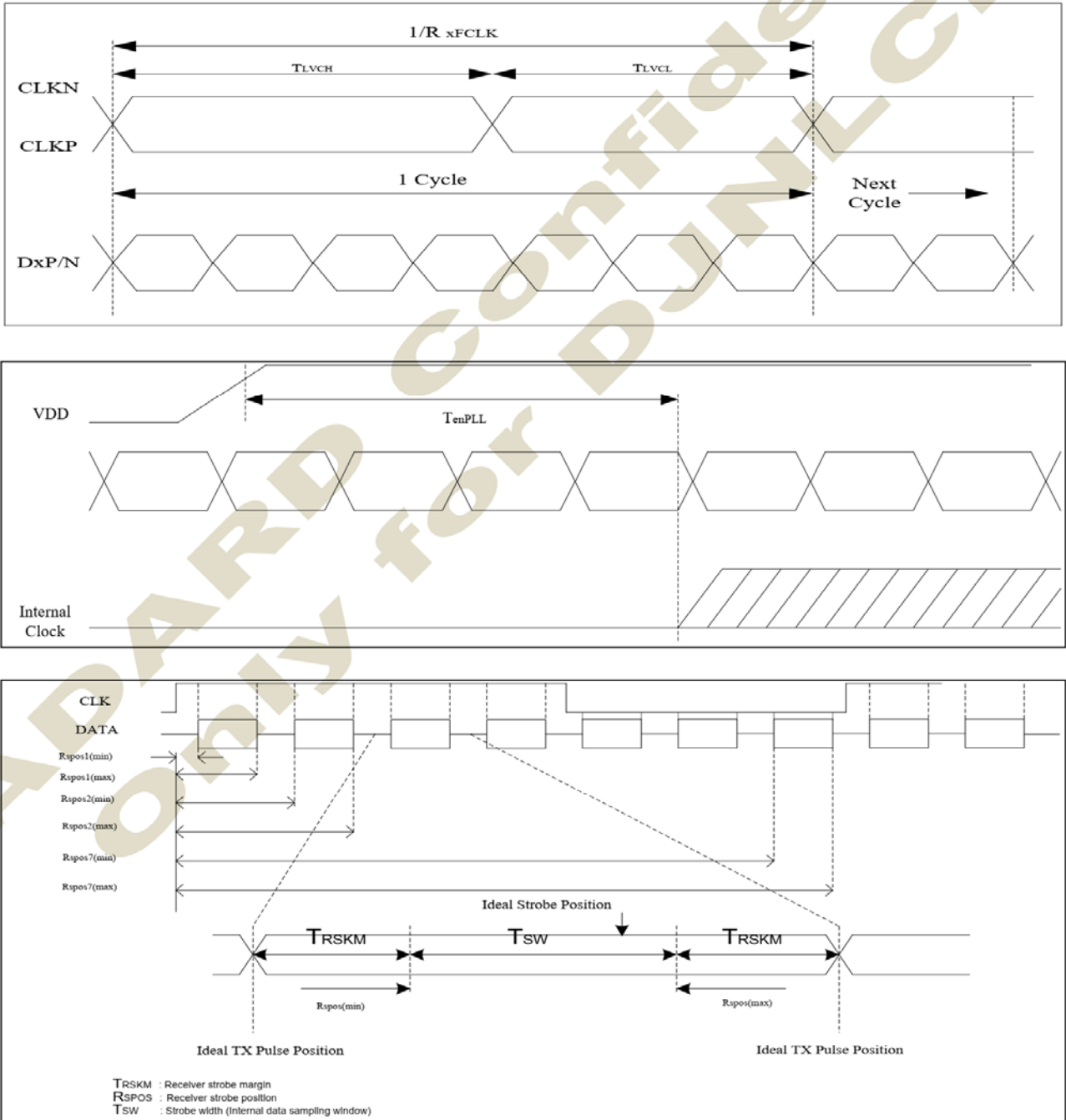


Figure 7.4: LVDS figure

## Power ON/OFF Sequence

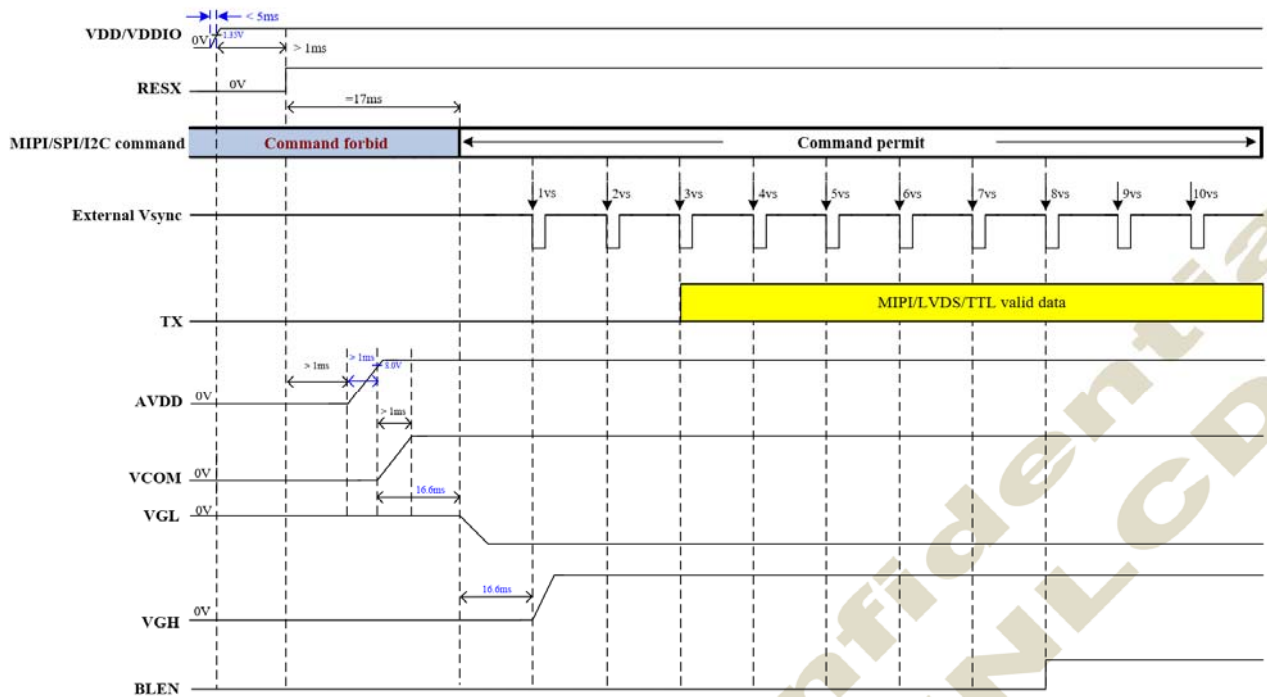


Figure 5.1: Power On timing chart

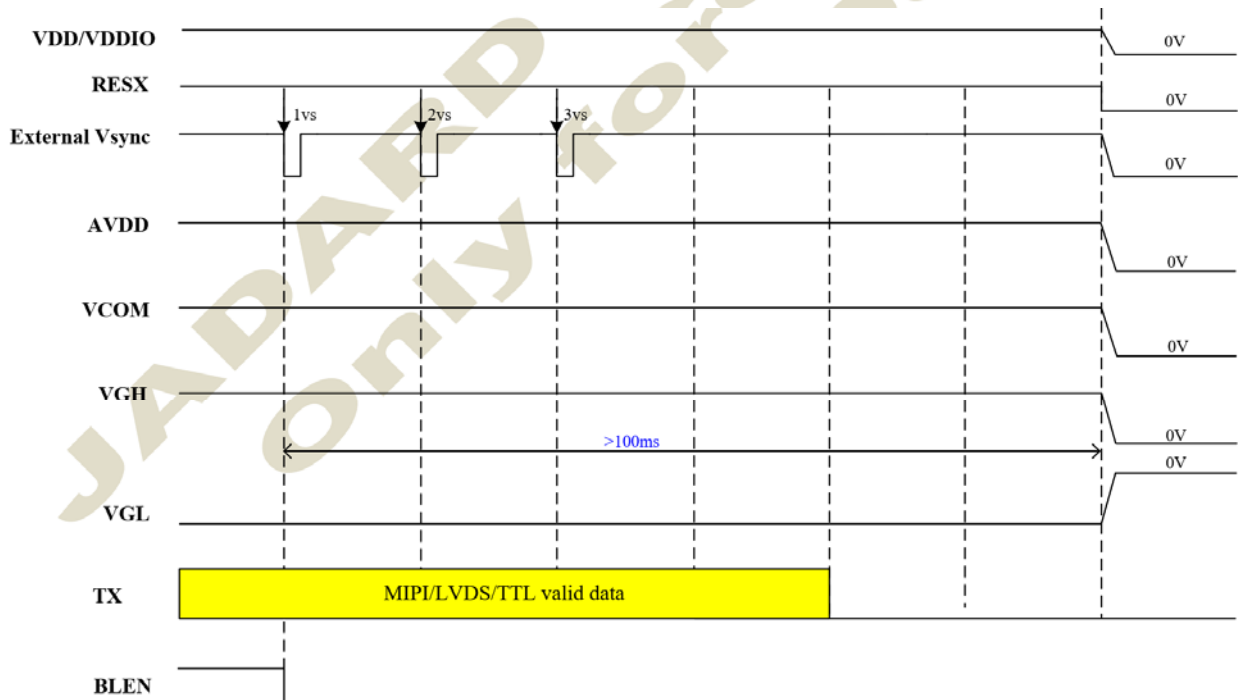


Figure 5.2: Power Off timing chart

## 7. Optical Characteristics:

Item	Symbol	Conditions	Specifications			Unit	Note	
			Min	Typ	Max			
Transmittance	T(%)	-	5.03	5.57	-	-	-	
Contrast Ratio	CR	$\theta=0^\circ$ Normal Viewing Angle	700	1000	-		(1) (2)	
NTSC	-	-	40	50	-	%	Note 1	
Viewing Angle	Hor.	$\theta_{x+}$	$CR \geq 10$	70	80	-	deg.	(1)
		$\theta_{x-}$		70	80	-		
	Ver.	$\theta_{y+}$		70	80	-		
		$\theta_{y-}$		70	80	-		

### Measuring Condition

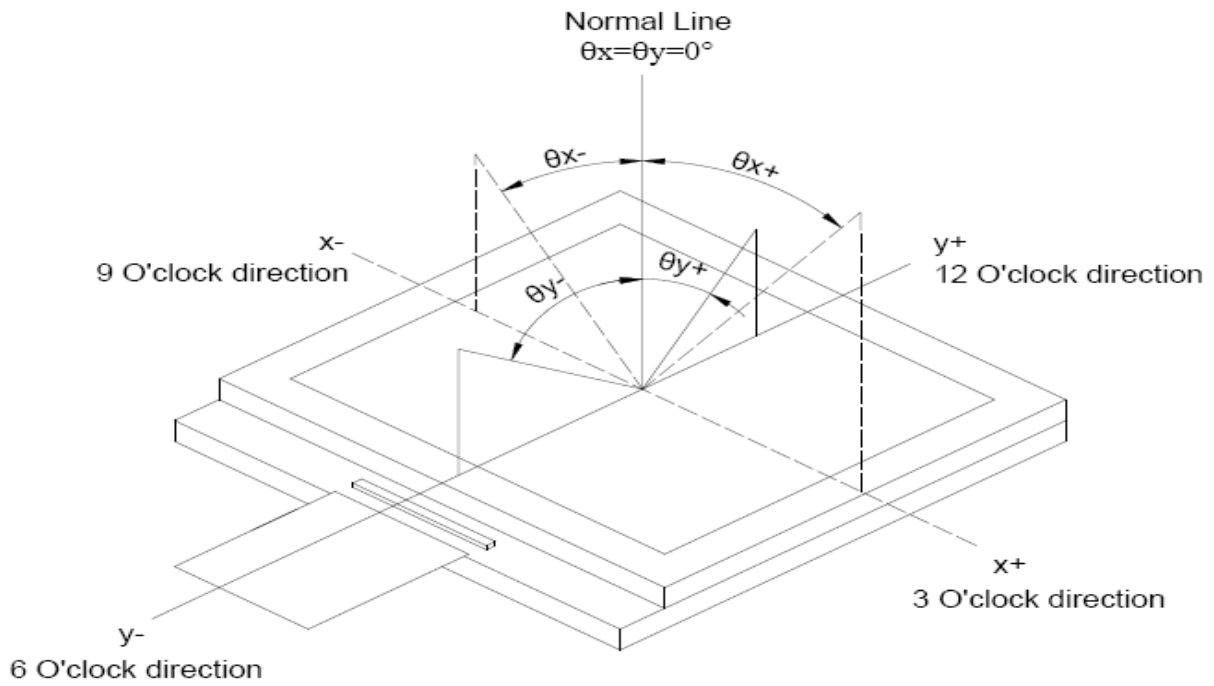
1. Measuring surrounding: dark room
2. Ambient temperature:  $25 \pm 2^\circ\text{C}$
3. 30 min. Warm-up time.

### Color of CIE Coordinate:

( $T_a=25^\circ\text{C}$ )

Item	Symbol	Condition	Min.	Typ.	Max.	
Chromaticity Coordinates (Transmissive)	Red	x	TBD	TBD	TBD	
		y	TBD	TBD	TBD	
	Green	x	$\theta = \varphi = 0^\circ$ LED Backlight	TBD	TBD	TBD
		y		TBD	TBD	TBD
	Blue	x		TBD	TBD	TBD
		y		TBD	TBD	TBD
	White	x		TBD	TBD	TBD
		y		TBD	TBD	TBD

Note (1) Definition of Viewing Angle :



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

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

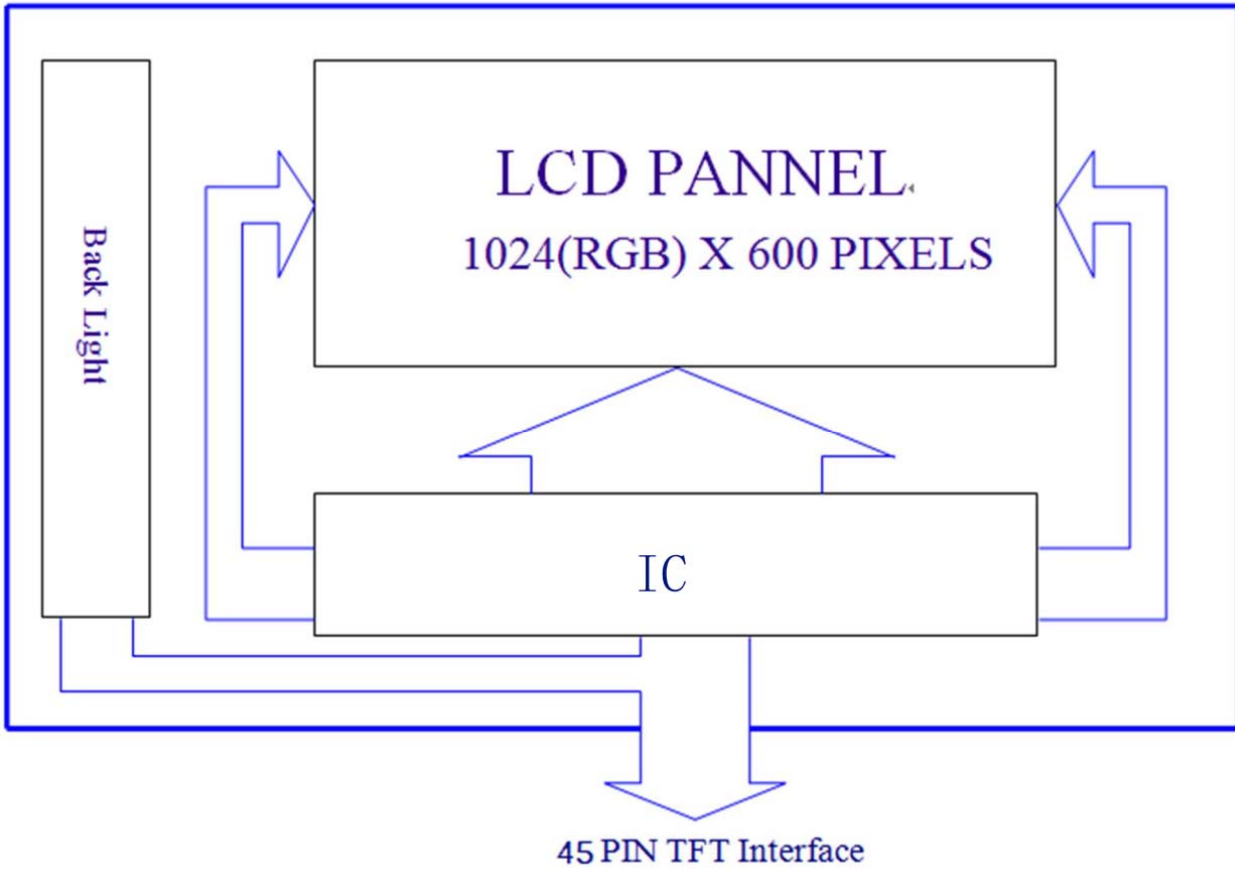
## 8. Interface Pin Assignment:

No.	Symbol	Function
1	VCOM	Common Voltage
2	VDD	Power Voltage
3	VDD	Power Voltage
4	BIST	Normal Operation/BIST pattern select. Normally pull low BIST = H : BIST(DCLK input is not needed) BIST = L : Normal Operation
5	RESET	Global reset pin. Active Low to enter Reset State. Normally pull high.
6	STBYB	Standby mode & Normally pulled high. STBYB = "1", normal operation STBYB = "0", timing controller, source driver will turn off, all output are High-Z
7	GND	Power Ground
8	RXIN0-	-LVDS differential data input
9	RXIN0+	+LVDS differential data input
10	GND	Power Ground
11	RXIN1-	-LVDS differential data input
12	RXIN1+	+LVDS differential data input
13	GND	Power Ground
14	RXIN2-	-LVDS differential data input
15	RXIN2+	+LVDS differential data input
16	GND	Power Ground
17	RXCLKIN-	-LVDS differential clock input
18	RXCLKIN+	+LVDS differential clock input
19	GND	Power Ground
20	RXIN3-	-LVDS differential data input
21	RXIN3+	+LVDS differential data input
22	GND	Power Ground
23	NC	No Connect
24	NC	No Connect
25	GND	Power Ground
26	NC	No Connect
27	NC	NC
28	NC	NC
29	AVDD	Power for Analog Circuit
30	GND	Power Ground
31	LED_K	LED Cathode

32	LED_K	LED Cathode	
33	L/R	Horizontal inversion	Note1
34	U/D	Vertical inversion	Note1
35	VGL	Gate OFF Voltage	
36	VGH	Gate on Voltage	
37	LED_A	LED Anode	
38	LED_A	LED Anode	
39	GND	Power Ground	
40	NC	No Connect	
41	NC	No Connect	
42	NC	No Connect	
43	NC	No Connect	
44	NC	No Connect	
45	NC	No Connect	

Note1: When L/R="0", set left to right scan direction.  
 When L/R="1", set right to left scan direction.  
 When U/D="0", set top to bottom scan direction.  
 When U/D="1", set bottom to top scan direction.

## **9. Block Diagram:**



## 10. 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°C)

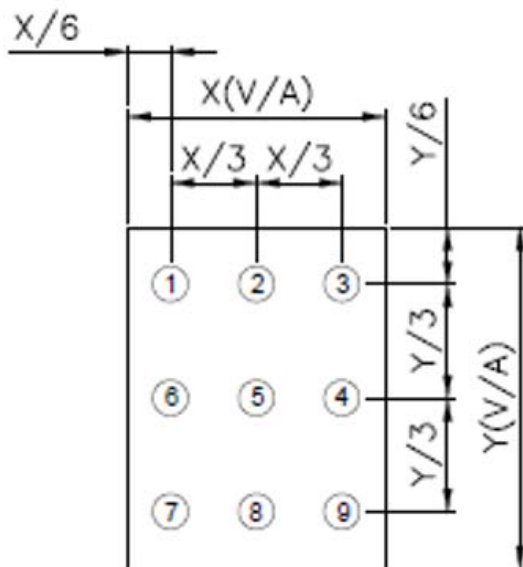
PARAMETER	Sym.	Min.	Typ.	Max.	Unit	Test Condition	Note
Supply Current	I	-	140	-	mA		
Supply Voltage	V	8.1	9.3	10.5	V	If=140mA	
Luminous Intensity for LCM	IV	650	720	-	cd/m <sup>2</sup>		2
Uniformity for LCM	-	70	-	-	%		3
Life Time	-	20000	-	-	Hr.		4
Color	White						

#### NOTE:

1. Backlight Only
2. Average Luminous Intensity of P1-P9
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)

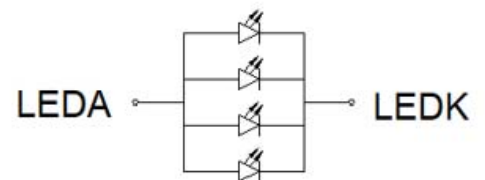
#### Internal Circuit Diagram



#### (Effective spatial Distribution)

Using aperture of 1°, distance 50cm

#### CIRCUIT DIAGRAM B/L Electrical Circuit



## 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°C 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°C 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°C 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°C 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°C,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°C for 30 minutes → normal temperature for 5 minutes → +60°C 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.
09	Electrical Static Discharge	Air: ±4KV 150pF/330Ω 5 times
		Contact: ±2KV 150pF/330Ω 5 time

\*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 11.2, 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 ( $25\pm 5^{\circ}\text{C}$ ), normal humidity ( $50\pm 10\%$ RH), and in area not exposed to direct sun light.
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## 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) Illumination: External Appearance Inspection :  $1000 \pm 200$  Lux ; Light on inspection :  $200 \pm 50$  Lux.

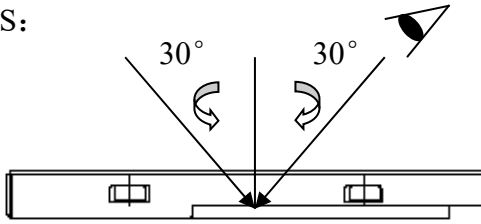
(ii) To be a distance about  $30 \pm 5$  cm in front of LCD unit, viewing line should be perpendicular to the surface of the module judge the visual appearance with human's eyes.

(iii) Scope of inspection perspective:

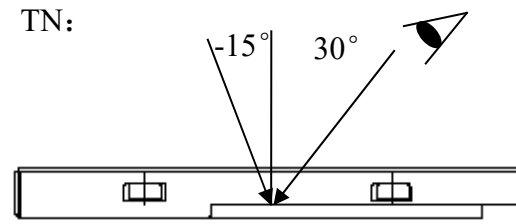
The inspection angle of IPS screen is within  $\pm 30^\circ$  of the vertical line on the product surface; The TN screen inspection angle is  $-15^\circ$  from the vertical line of the product surface in the 12 o'clock direction to  $30^\circ$  from the vertical line of the product surface in the 6 o'clock direction.

(iii) Temperature:  $25 \pm 5^\circ\text{C}$  Humidity:  $60 \pm 10\% \text{RH}$

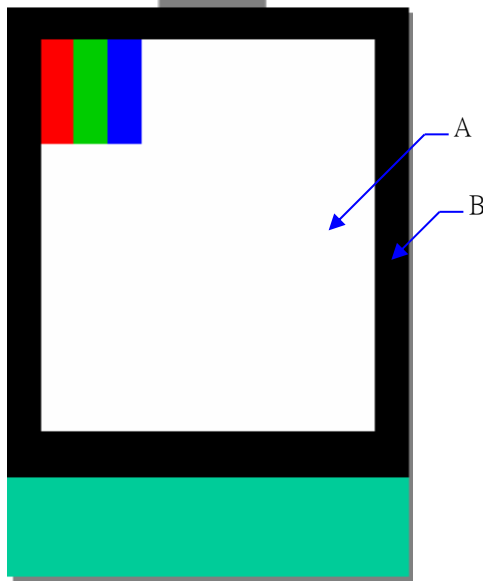
IPS:



TN:



(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 cannot be described.

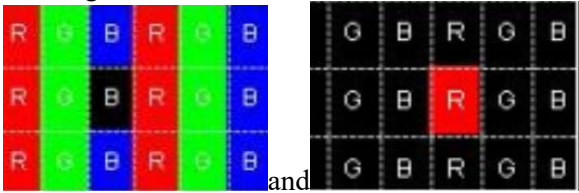
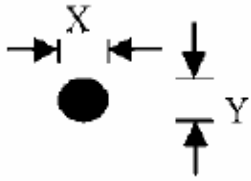
(ii) The sample of the lowest acceptable quality level must be discussed by both supplier and customer when any dispute happened.

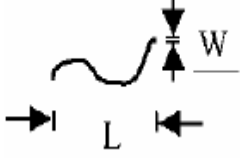
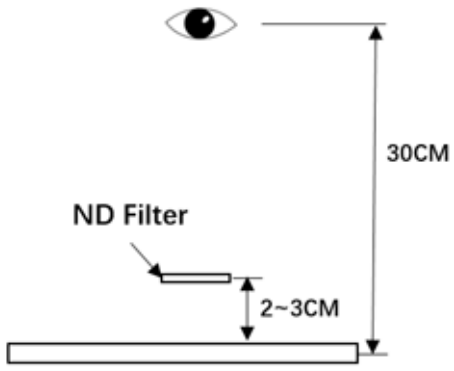
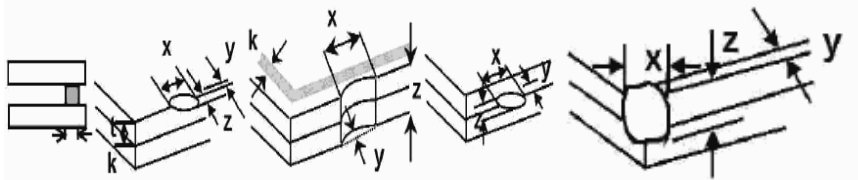
(iii) Must add new item on time when it is necessary.

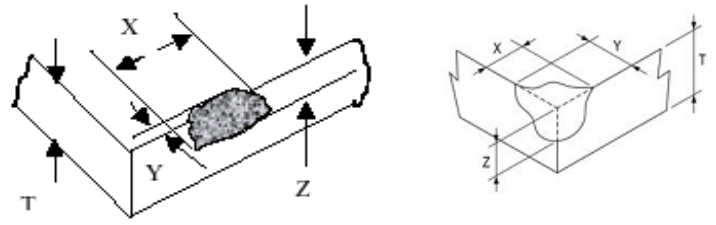
c. Standard of inspection: (Unit: mm)

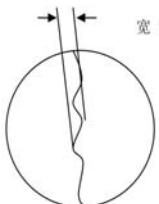
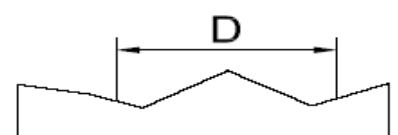
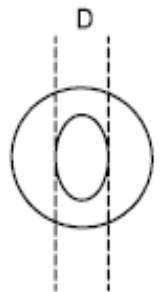
12-6. Inspection specification

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.	0.65														
02	Pixel Defect	2.1 Bright and Black dot define:  Pixel Defect as below drawing: <table border="1"> <thead> <tr> <th>Type</th> <th>Acceptable Q'ty</th> </tr> </thead> <tbody> <tr> <td>Bright Dot</td> <td><math>N \leq 2</math></td> </tr> <tr> <td>Two bright dots</td> <td><math>N \leq 0</math></td> </tr> <tr> <td>Dark Dot</td> <td><math>N \leq 4</math></td> </tr> <tr> <td>Two Dark dots</td> <td><math>N \leq 1</math></td> </tr> <tr> <td>Three Dark dots</td> <td><math>N \leq 0</math></td> </tr> <tr> <td>Total(Bright+Dark dot)</td> <td><math>N \leq 4</math></td> </tr> </tbody> </table> *Densely spaced: No more than two spots within 10mm.	Type	Acceptable Q'ty	Bright Dot	$N \leq 2$	Two bright dots	$N \leq 0$	Dark Dot	$N \leq 4$	Two Dark dots	$N \leq 1$	Three Dark dots	$N \leq 0$	Total(Bright+Dark dot)	$N \leq 4$	2.5
Type	Acceptable Q'ty																
Bright Dot	$N \leq 2$																
Two bright dots	$N \leq 0$																
Dark Dot	$N \leq 4$																
Two Dark dots	$N \leq 1$																
Three Dark dots	$N \leq 0$																
Total(Bright+Dark dot)	$N \leq 4$																
03	LCD , Touch Panel and Backlight  Black and white spots/lines contamination  (Foreign Material)	3.1 Dot type: As following drawing $\Phi = (X+Y) / 2$  <table border="1"> <thead> <tr> <th>Size(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 0.40</math></td> <td>3</td> </tr> <tr> <td><math>0.40 &lt; \Phi</math></td> <td>0</td> </tr> </tbody> </table> 3.1.1 Not visible through 5% ND filter 3.1.2 Densely spaced: No more than two spots within 5mm. 3.1.3 This is acceptable when surface dirt can be removed by wiping.	Size(mm)	Acceptable Q'ty	$\Phi \leq 0.20$	Accept no dense	$0.20 < \Phi \leq 0.40$	3	$0.40 < \Phi$	0	2.5						
Size(mm)	Acceptable Q'ty																
$\Phi \leq 0.20$	Accept no dense																
$0.20 < \Phi \leq 0.40$	3																
$0.40 < \Phi$	0																
		3.2 Tiny bright dot、Dense tiny highlights: Definition of Tiny bright dot: $\Phi < 0.20\text{mm}$ ; Ignore, clustered is not allowed( $N \leq 5, D \leq 5$ )  *Not visible through 5% ND filter	2.5														

NO	Item	Criterion	AQ L												
03	LCD , Touch Panel and Backlight  Black and white spots/lines contamination (Foreign Material)	<p>3.3 Line type: (As following drawing)</p>  <table border="1" data-bbox="758 257 1332 481"> <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 0.03</math></td> <td>Accept no dense</td> </tr> <tr> <td><math>L \leq 5.0</math></td> <td><math>0.03 &lt; W \leq 0.10</math></td> <td>3</td> </tr> <tr> <td>---</td> <td><math>0.10 &lt; W</math></td> <td>Rejection</td> </tr> </tbody> </table> <p>* Densely spaced: No more than two spots within 5mm.</p>	Length(mm)	Width(mm)	Acceptable Q'ty	---	$W \leq 0.03$	Accept no dense	$L \leq 5.0$	$0.03 < W \leq 0.10$	3	---	$0.10 < W$	Rejection	2.5
Length(mm)	Width(mm)	Acceptable Q'ty													
---	$W \leq 0.03$	Accept no dense													
$L \leq 5.0$	$0.03 < W \leq 0.10$	3													
---	$0.10 < W$	Rejection													
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" data-bbox="742 694 1332 873"> <thead> <tr> <th>Size <math>\Phi</math>(mm)</th> <th>Acceptable Q'ty</th> <th>Area</th> </tr> </thead> <tbody> <tr> <td><math>\Phi \leq 0.25</math></td> <td>Accept no dense</td> <td>V.A</td> </tr> <tr> <td><math>0.25 &lt; \Phi \leq 1.00</math></td> <td>3</td> <td>V.A</td> </tr> <tr> <td><math>1.00 &lt; \Phi</math></td> <td>0</td> <td>V.A</td> </tr> </tbody> </table> <p>* Densely spaced: No more than two spots within 5mm. * Outside of the V.A. is disregard.</p>	Size $\Phi$ (mm)	Acceptable Q'ty	Area	$\Phi \leq 0.25$	Accept no dense	V.A	$0.25 < \Phi \leq 1.00$	3	V.A	$1.00 < \Phi$	0	V.A	2.5
Size $\Phi$ (mm)	Acceptable Q'ty	Area													
$\Phi \leq 0.25$	Accept no dense	V.A													
$0.25 < \Phi \leq 1.00$	3	V.A													
$1.00 < \Phi$	0	V.A													
05	Mura	<p>Not visible through 5% ND filter.</p> <p>*ND card is 2~3cm from the panel, human eye is 30±5cm from the panel; The line of sight is moved to the ND card for judgment: if it is not visible for 2-3 seconds - OK, visible – NG</p> 	2.5												
06	Chipped glass	<p>Symbols: x: Chip length      y: Chip width      z: Chip thickness k: Seal width                  t: Single-layer glass thickness a: LCD side length      L: Electrode pad length</p> <p>8.1 Chip on panel surface and crack between panels and Corner crack:</p>  <table border="1" data-bbox="391 1736 1212 1836"> <tbody> <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>Not over BM glue area</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. ⊙ If there chipped area touches the ITO terminal, over 2/3 of the ITO must remain and do not affect the function.</p>	z: Chip thickness	y: Chip width	x: Chip length	$z \leq t$	Not over BM glue area	$x \leq 1/8a$	2.5						
z: Chip thickness	y: Chip width	x: Chip length													
$z \leq t$	Not over BM glue area	$x \leq 1/8a$													

NO	Item	Criterion	AQL								
07	Scratches	Follow NO.3 -3 Line Type.	2.5								
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. 11.7 PCBA cosmetic control base on latest IPC standard, IPC-A-610, acceptable limit of grade 2.	2.5 2.5 2.5 2.5 0.65 0.65 2.5								
12	FPC	Affect function rejection, do not affect function acceptance.	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								
14	Touch Panel Chipped glass	Edge breakage can't affect visual effect (edge breakage can't cause damage to circuit); over lens have no visual damage   <table border="1" data-bbox="351 1803 1268 1960"> <thead> <tr> <th>x: Chip length</th> <th>y: Chip width</th> <th>z: Chip thickness</th> <th>Acceptable numbers</th> </tr> </thead> <tbody> <tr> <td><math>x \leq 3\text{mm}</math></td> <td><math>Y \leq 2\text{mm}</math></td> <td><math>z \leq t</math></td> <td>2</td> </tr> </tbody> </table>	x: Chip length	y: Chip width	z: Chip thickness	Acceptable numbers	$x \leq 3\text{mm}$	$Y \leq 2\text{mm}$	$z \leq t$	2	2.5
x: Chip length	y: Chip width	z: Chip thickness	Acceptable numbers								
$x \leq 3\text{mm}$	$Y \leq 2\text{mm}$	$z \leq t$	2								

NO	Item	Criterion	AQL								
15	V/A printed edges sawtooth inspected according to this standard  LOGO's sawtooth	<p>Some contentious defect judged according to samples.</p> <table border="1"> <thead> <tr> <th>Product type</th> <th>Conditions</th> </tr> </thead> <tbody> <tr> <td>Same size</td> <td>1、width below 0.2mm (included) ignored, above 0.2mm NG 2、 Length not accounted</td> </tr> </tbody> </table> 	Product type	Conditions	Same size	1、width below 0.2mm (included) ignored, above 0.2mm NG 2、 Length not accounted	2.5				
Product type	Conditions										
Same size	1、width below 0.2mm (included) ignored, above 0.2mm NG 2、 Length not accounted										
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 0.70</math></td> <td>4</td> </tr> <tr> <td><math>0.70 &lt; D</math></td> <td>0</td> </tr> </tbody> </table>  	SIZE(mm)	Acceptable Q'ty	$\Phi \leq 0.2$	Accept no dense	$0.2 < D \leq 0.70$	4	$0.70 < D$	0	2.5
SIZE(mm)	Acceptable Q'ty										
$\Phi \leq 0.2$	Accept no dense										
$0.2 < D \leq 0.70$	4										
$0.70 < D$	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, cannot see the LCD ripple. Pen: R 1.0mm silicon rubber. Operation Force: 80g	2.5								
20	General appearance	20.1 Product packaging must the same as specified on packaging specification sheet. 20.2 Product dimension and structure must conform to product Specification sheet.	0.65 0.65								

## 13. Handling Precaution:

### 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 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.

### 13-2 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.

### 13-3 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 cannot 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.

## 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.