

SPECIFICATION FOR TFT MODULE

MODULE NO: YB-TG1280800S13B-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	梁瑞华	2023-01-10
Check	Mechanical Engineer	邵嘉刚	2023-01-11
Verify		任强琛	2023-01-11
Approval		梁瑞华	2023-01-11

■ APPROVAL FOR SPECIFICATIONS ONLY

☐ APPROVAL FOR SPECIFICATIONS AND SAMPLE

WIMRD005-02-D

1. Revision History

[illegible]

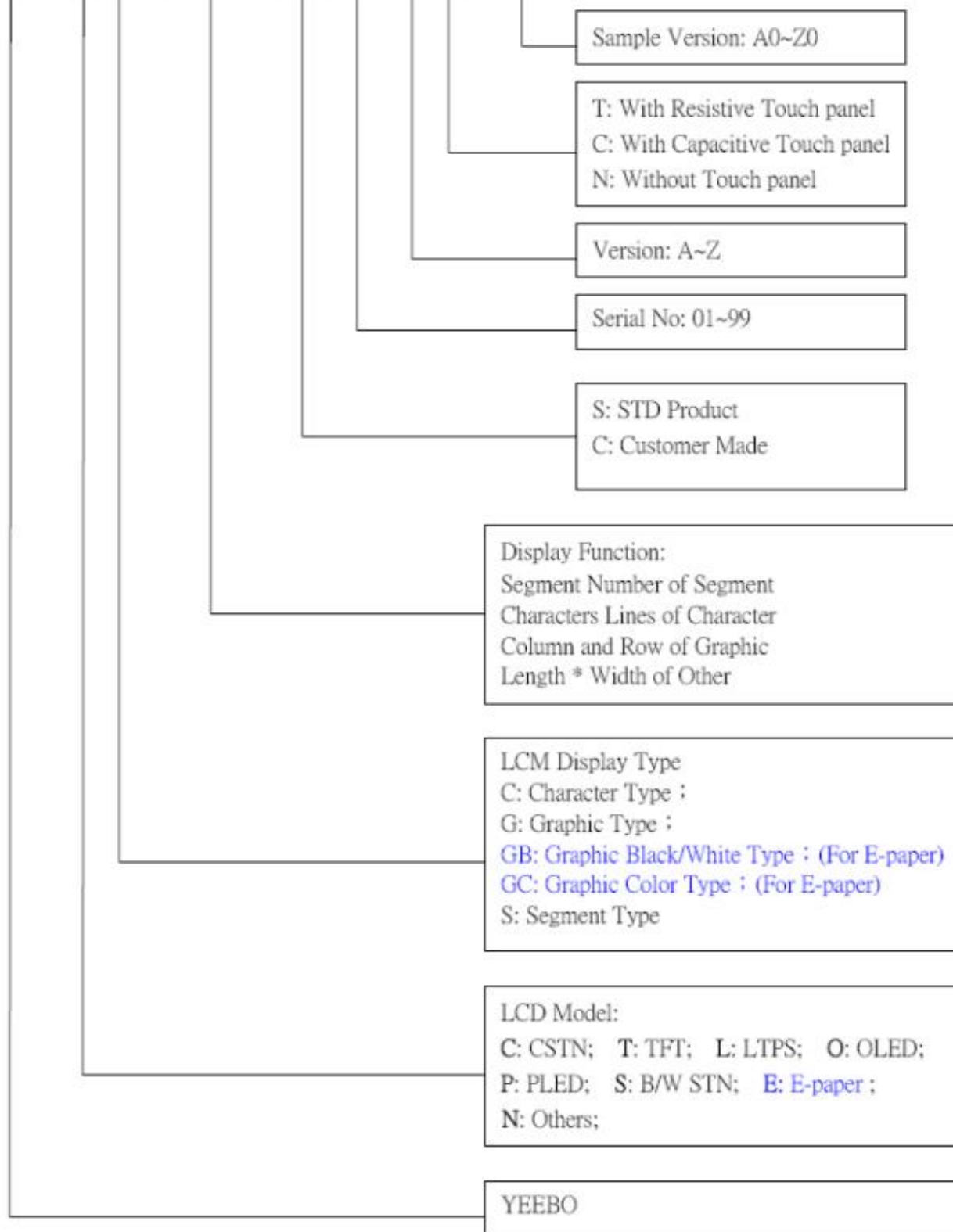
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3. Module Numbering System

(Example)

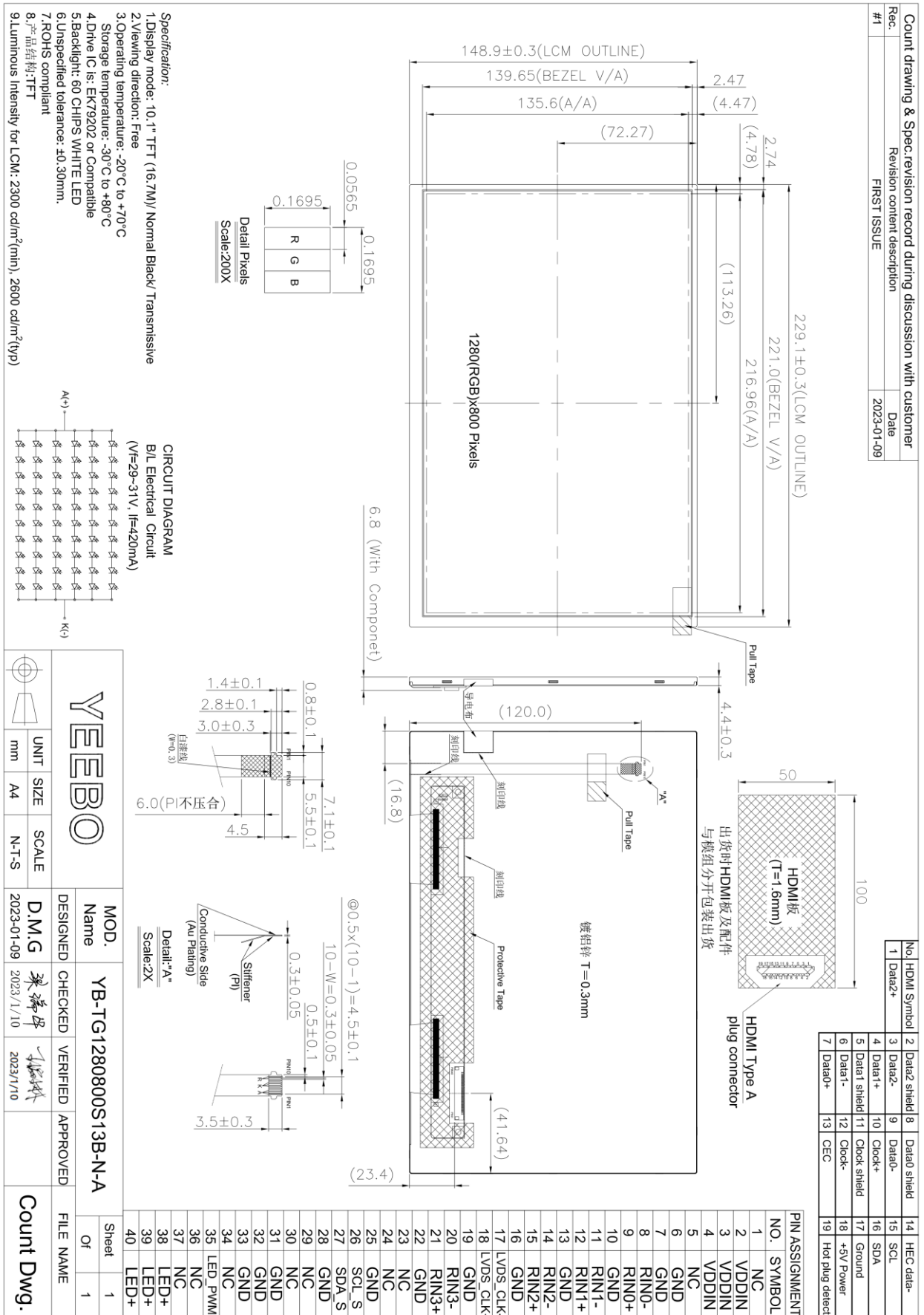
YB-TG240320S01D-T-A0



4. General Specification

ITEM	CONTENTS
Module Size	229.1(W) * 148.9(H) * 6.8(T) mm
Module Size(With FPC)	229.1(W) * 148.9(H) * 6.8(T) mm
Display Size(Diagonal)	10.1 inch
Display Format	1280(RGB)* 800 Pixels
Active Area	216.96(W) * 135.6 (H) mm
Pixel Pitch	0.1695* 0.1695 mm
LCD Type	TFT/ Transmissive / Normal Black
View Angle	Free
Driver IC	EK79202
Weight	TBD

5. LCM drawing



6. Electrical Characteristics

6-1 Absolute Maximum Ratings

(Ta=25°C VSS=0V)

Item	Symbol	Min.	Type	Max.	Unit	Remark
Supply Voltage	VDD	2.3	-	+3.6	Volt	Note1
I/O Voltage	VDDIO	2.3	-	+3.6	Volt	
VSP Voltage	VSP	4.6	-	6	Volt	
VSN Voltage	VSN	-6	-	-4.6	Volt	
Operating Temperature	Topr	-20	-	+70	°C	-
Storage Temperature	Tstg	-30	-	+80	°C	-

Note1: Absolute maximum rating is the limit value beyond which the IC maybe broken.
They do not assure operations.

6-2 Operating Conditions

(Ta=25°C)

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Power Supply voltage	VDD	-	-	3.3	-	V
VDDIO voltage	VDDIO	-	-	3.3	-	V
VSP voltage	VSP	-	4.5	5.0	6	V
VSN voltage	VSN	-	-6	-5.0	-4.5	V
VGH voltage	VGH	-	11	18	24	V
VGL voltage	VGL	-	-17	-12	-6	V
VGL_REG voltage	VGL_REG	-	-15	-10	-4.5	
Input Voltage	V _{IH}	-	0.7 VDD	-	VDD	V
	V _{IL}	-	VSS	-	0.3 VDD	V
Output Voltage	V _{OH}	-	0.8 VDD		VDD	
	V _{OL}	-	VSS		0.2 VDD	
Power Supply Current for LCM	I _{DD}	VDD=3.3V	-	TBD	-	mA

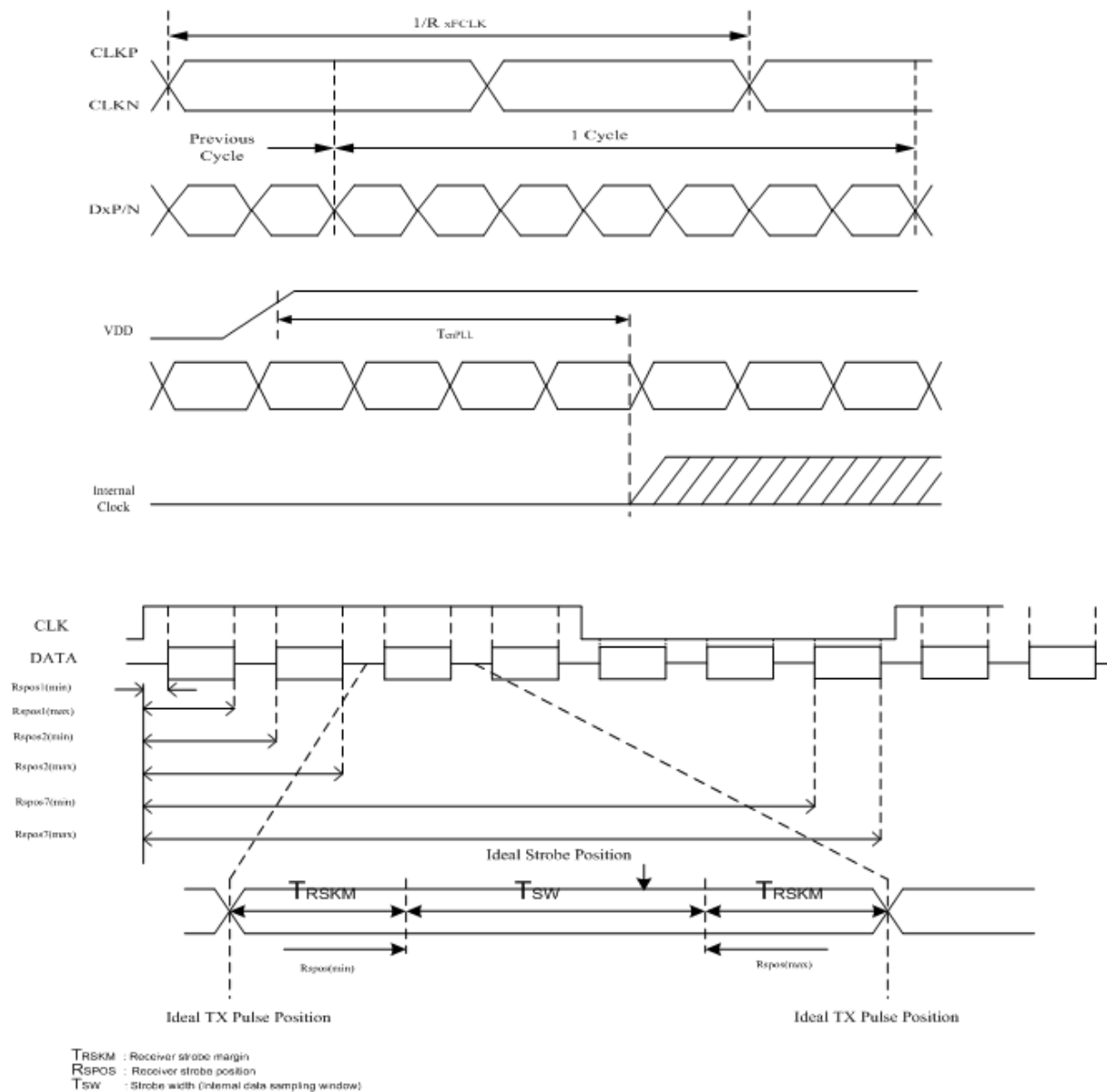
6-3 Timing Characteristics of input signals

Parameter		Symbol	Value			Unit
			Min.	Typ.	Max.	
DCLK frequency @Frame rate=60Hz (LVDS)		FDCLK	66.3	72.4	78.9	MHz
HSYNC period time		TH	1380	1440	1500	DCLK
Horizontal display area		THD	1280			DCLK
HSYNC pulse width	Min.	THPW	2			
	Typ.		-			
	Max.		40			
HSYNC back porch(with pulse width)		THBP	88	88	88	DCLK
HSYNC front porch		THFP	12	72	132	DCLK
VSYNC period time		TV	824	838	872	H
Vertical display area		TVD	800			H
VSYNC pulse width	Min.	TVPW	2			H
	Typ.		-			
	Max.		20			
VSYNC back porch(with pulse width)		TVBP	23	23	23	H
VSYNC front porch		TVFP	1	15	49	H

LVDS AC Timing Specification:

Parameter	Symbol	Spec.			Unit	Condition
		Min.	Typ.	Max.		
Clock frequency	RxFCLK	30	-	TBD	MHz	Refer to input timing table for each display resolution
Input data skew margin	TRSKM	500	-	-	ps	VID = 200mV RxVCM = 1.2V RxFCLK = 81MHz
Clock high time	TLVCH	-	$4/(7 \times \text{RxFCLK})$	-	ns	
Clock low time	TLVCL	-	$3/(7 \times \text{RxFCLK})$	-	ns	
PLL wake-up time	TenPLL	-	-	150	us	

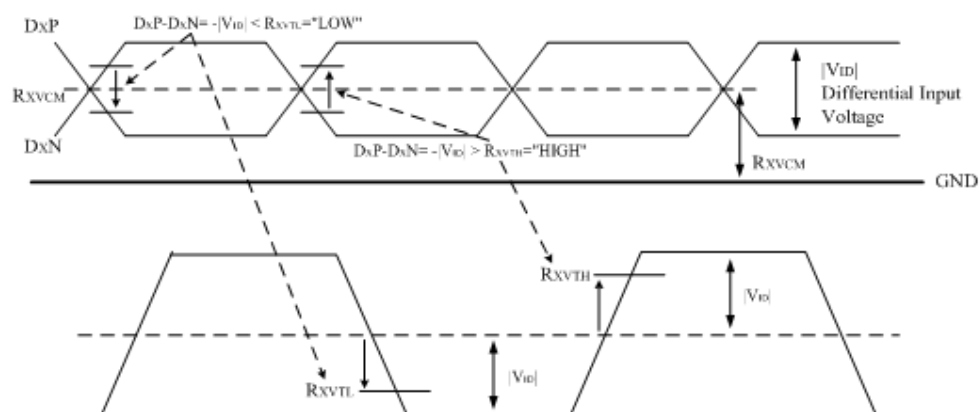
Interface timing Parameter:



LVDS DC Timing Specification:

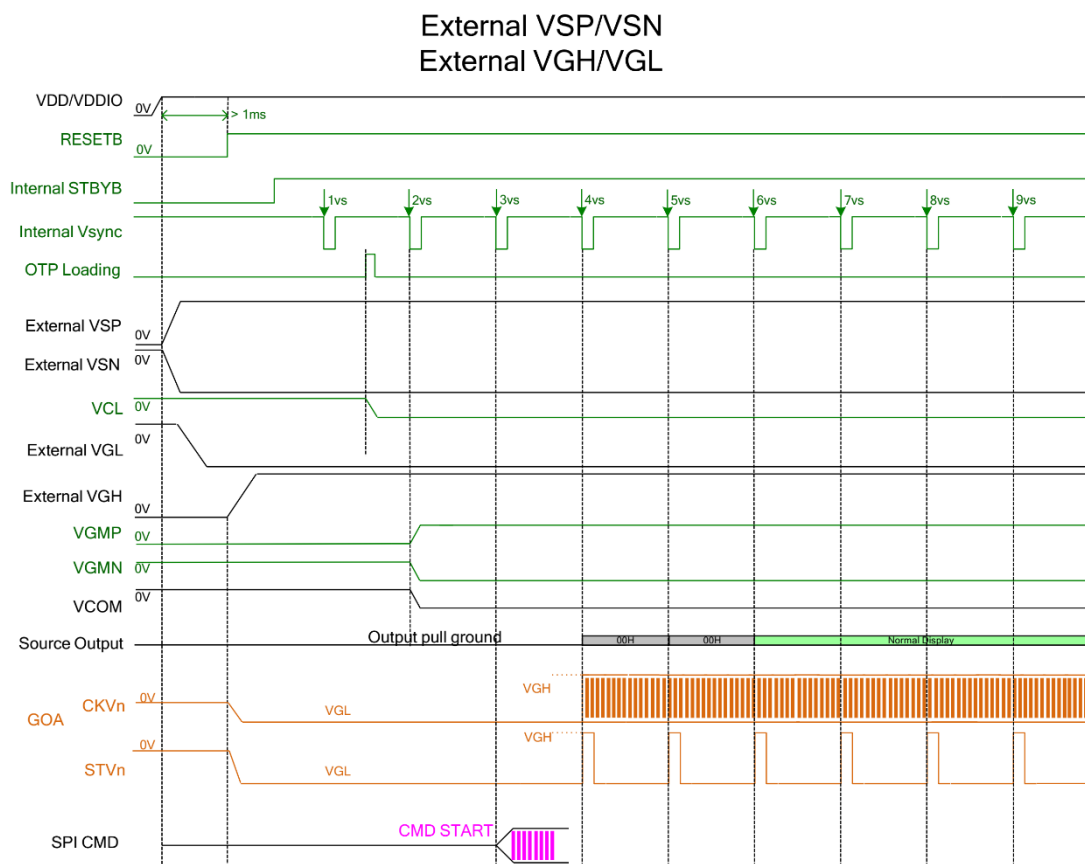
Parameter	Symbol	Min.	Typ.	Max.	Unit	Condition
Differential input high threshold voltage	RXVTH	+0.1	0.2	0.3	V	RXVCM=1.2V
Differential input low threshold voltage	RXVTL	-0.3	-0.2	-0.1	V	
Input voltage range (single-ended)	RXVIN	0.7	-	1.7	V	
Differential input common mode voltage	RXVCM	1	1.2	1.4	V	VID =0.2
Differential input impedance	ZID	80	100	125	ohm	
Differential input voltage	VID	0.2	-	0.6	V	
Differential input leakage current	ILCLVDS	-10	-	+10	uA	
LVDS Digital Operating Current	IVDDMIP I	-	15	20	mA	FDCLK=80MHz, VDD=3.3V, Input pattern: 55h->Aah->55h->Aah
LVDS Digital Stand-by Current	ISTMIPI	-	-	250	uA	Clock & all Functions are stopped

Single-end Signals

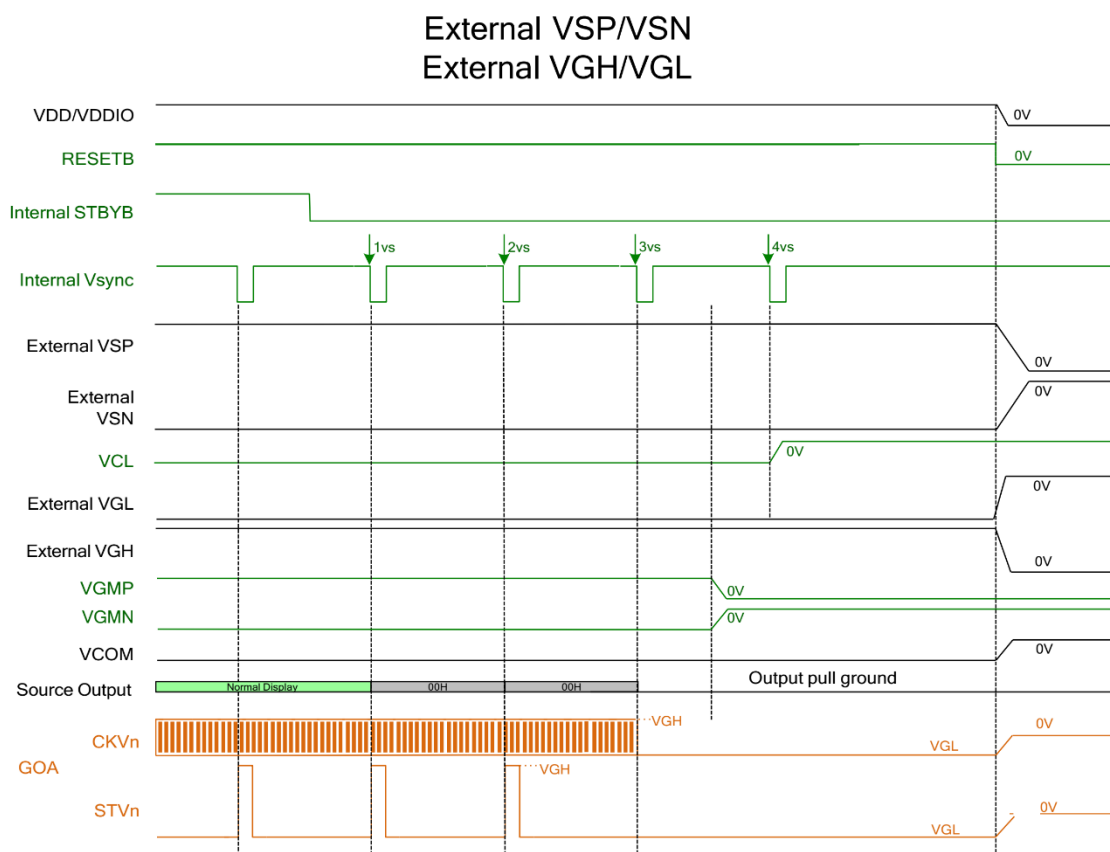


6-4 Power Sequence

Power on sequence



Power off sequence



7. Optical Characteristics

Item		Symbol	Conditions	Specifications			Unit	Note
				Min	Typ	Max		
Contrast Ratio		CR	$\Theta=0$ Normal Viewing angle	-	1000	-	-	(1) (2)
Response time		TR+TF	-	-	30	35	ms	(1) (3)
Color Gamut		NTSC	CIE1931	-	50	-	%	
Viewing angle	Hor.	Θ_{x+}	$CR \geq 10$	70	80	-	deg.	-
		Θ_{x-}		70	80	-		
	Ver.	Θ_{y+}		70	80	-		
		Θ_{y-}		70	80	-		

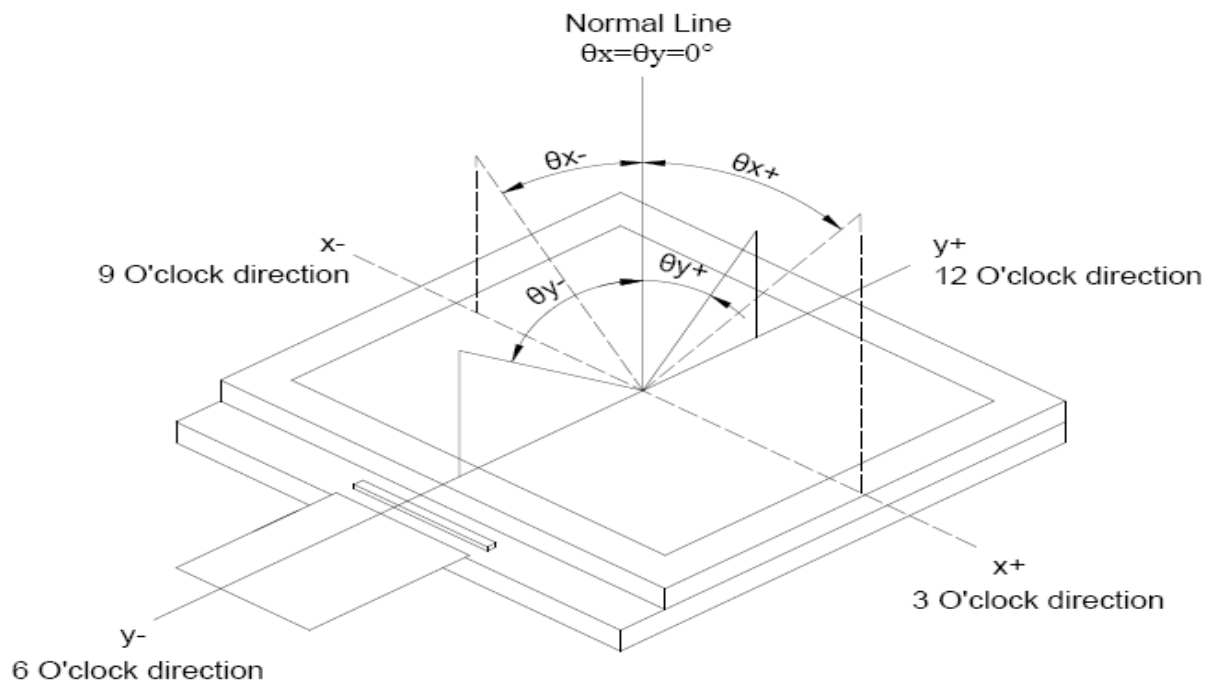
Measuring Condition

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

Color of CIE Coordinate:

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

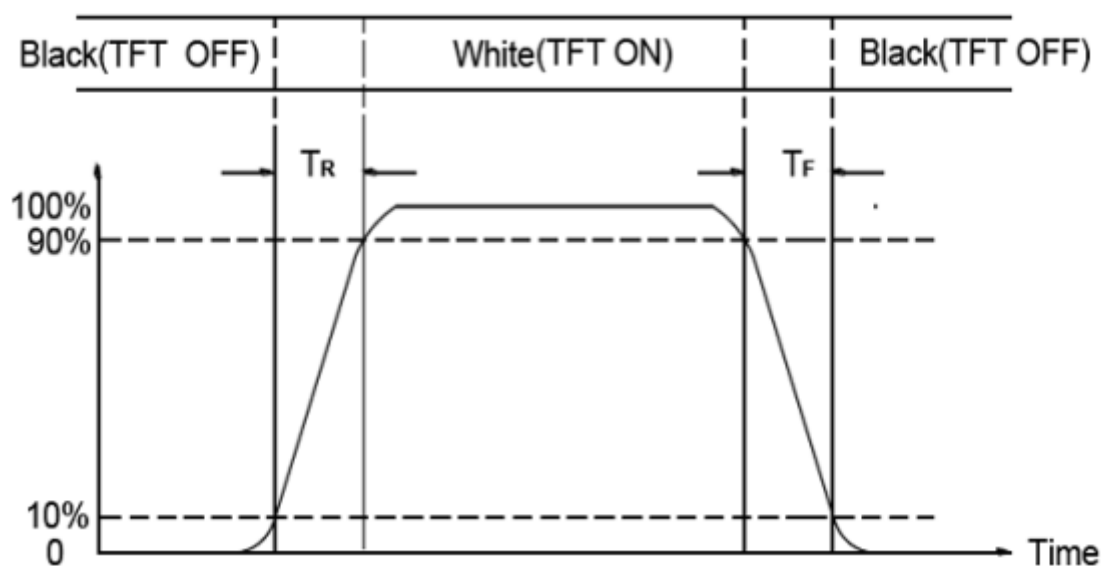
Note (1) Definition of Viewing Angle:



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

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

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



8. Interface Pin Assignment

Module Pin Out:

Pin No	Symbol	Function	Remark
1	NC	No Connection	
2	VDDIN	Power supply	
3	VDDIN	Power supply	
4	VDDIN	Power supply	
5	NC	No Connection	
6	GND	Ground	
7	GND	Ground	
8	RIN0-	-LVDS Differential Data Input	
9	RIN0+	+LVDS Differential Data Input	
10	GND	Ground	
11	RIN1-	-LVDS Differential Data Input	
12	RIN1+	+LVDS Differential Data Input	
13	GND	Ground	
14	RIN2-	-LVDS Differential Data Input	
15	RIN2+	+LVDS Differential Data Input	
16	GND	Ground	
17	LVDS_CLK-	-LVDS Differential Clock Input	
18	LVDS_CLK+	+LVDS Differential Clock Input	
19	GND	Ground	
20	RIN3-	-LVDS Differential Data Input	
21	RIN3+	+LVDS Differential Data Input	
22	GND	Ground	
23	NC	No Connection	
24	NC	No Connection	
25	GND	Ground	
26	SCL_S	Reserved for LCD manufacturer's use, not connection	
27	SDA_S	Reserved for LCD manufacturer's use, not connection	
28	GND	Ground	
29	NC	No Connection	
30	NC	No Connection	
31	GND	Ground	
32	GND	Ground	
33	GND	Ground	

34	NC	No Connection	
35	LED_PWM	LED PWM signal	
36	NC	No Connection	
37	NC	No Connection	
38	LED+	LED Power supply Input voltage	
39	LED+	LED Power supply Input voltage	
40	LED+	LED Power supply Input voltage	

Note I: input; O: output; P: Power or Ground (0V).

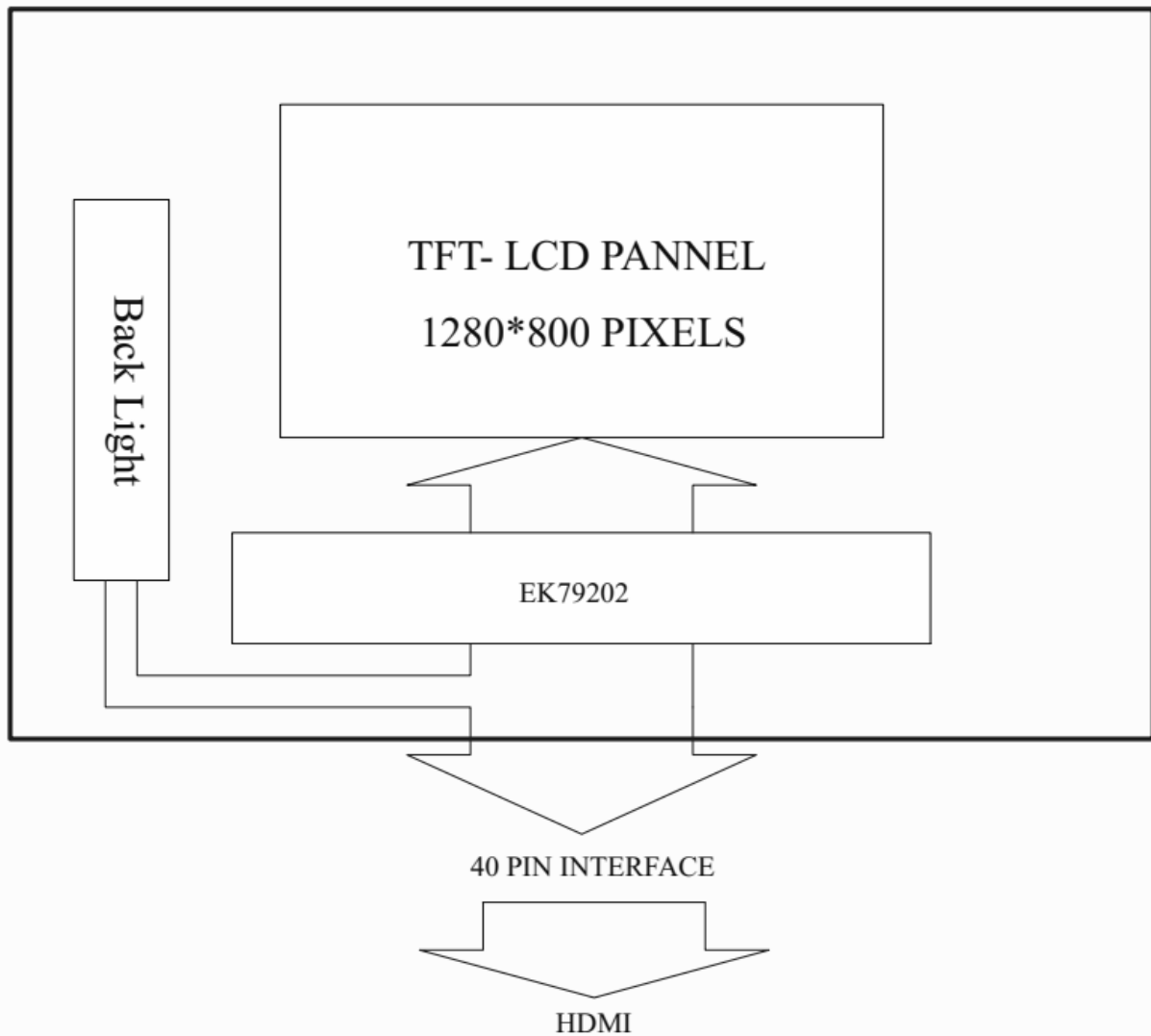
BL-FPC Connector is used for the module electronics interface. The recommended model is F31L-1A7H1-11010 manufactured by AORORA.

BL PIN	1	2	3	4	5	6	7	8	9	10
	A	A	A	NC	K	K	K	NC	R (NTC+)	R (NTC-)

HDMI Pin Out:

PIN No.	SYMBOL
1	TMDS Data 2+
2	TMDS Data2 Sh
3	TMDS Data 2-
4	TMDS Data 1+
5	TMDS Data1 Sh
6	TMDS Data 1-
7	TMDS Data 0+
8	TMDS Data 0 Sh
9	TMDS Data 0-
10	TMDS Clock+
11	TMDS Clock Sh
12	TMDS Clock-
13	CEC
14	NC
15	SCL
16	SDA
17	DDC/CEC GND
18	+5V
19	Hot Plug Detect

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	-	420	-	mA	-	
Supply Voltage	V	29	30	31	V	If=420mA	
Luminous Intensity for LCM	IV	2300	2600	-	cd/m ²		2
Uniformity for LCM	-	75	-	-	%		3
Life Time	-	20000	-	-	Hr.		4
Color	White						

NOTE:

1. Backlight Only

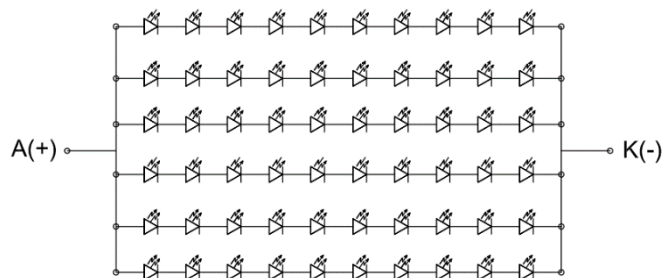
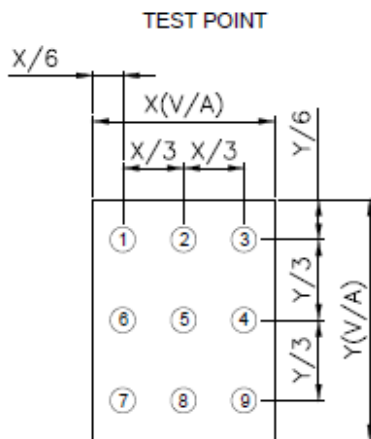
2. Average Luminous Intensity of P1-P9

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



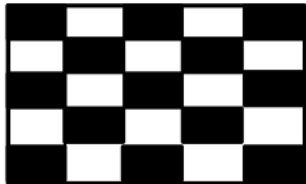
6*10=60 LEDs

(Effective spatial Distribution)

Using aperture of 1°, distance 50cm.

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 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°C 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°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 : -30°C for 30 minutes → normal temperature for 5 minutes → +80°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: ±6KV 150pF/330Ω 5 times
		Contact: ±4KV 150pF/330Ω 5 time
10	Imaging sticking	<p>Burn in:5*5 Chess,1h@25C. Inspection Pattern:50% grey, Perpendicular view, after 5 Min,the mura must disappear</p> 

*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 12.2, 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

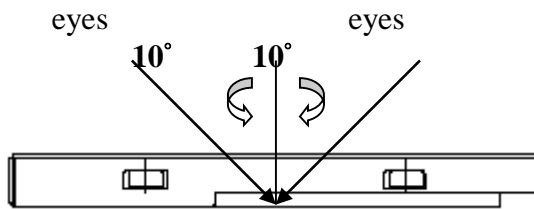
a. Manner of appearance test:

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

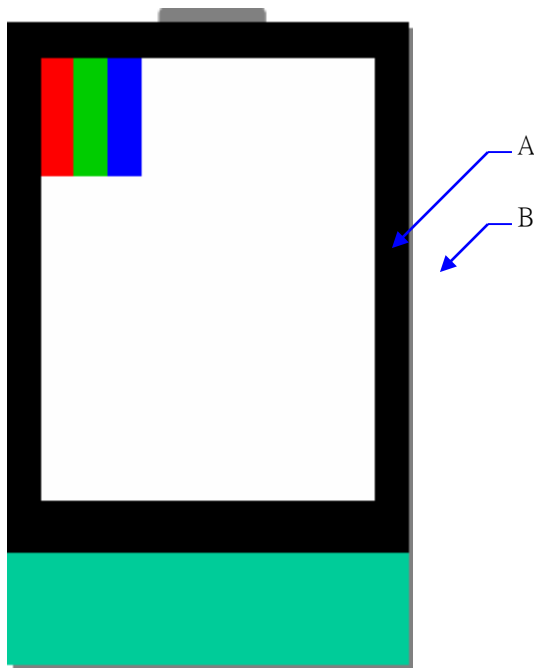
(ii) When test the model of transmissive product must add the reflective plate.

(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.

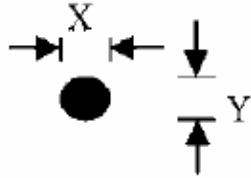
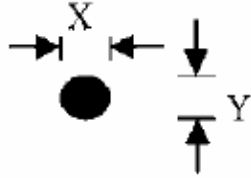
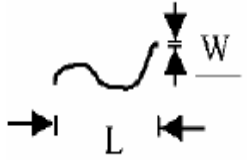
(ii) The sample of the lowest acceptable quality level must be discussed by both supplier and customer when any dispute happened.

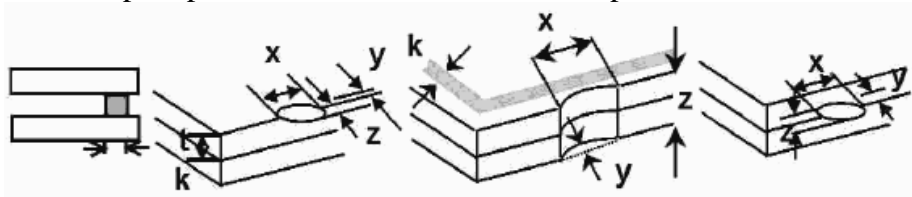
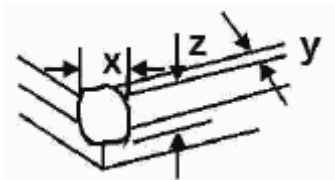
(iii) Must add new item on time when it is necessary.

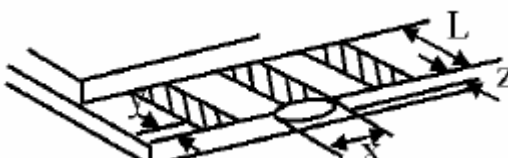
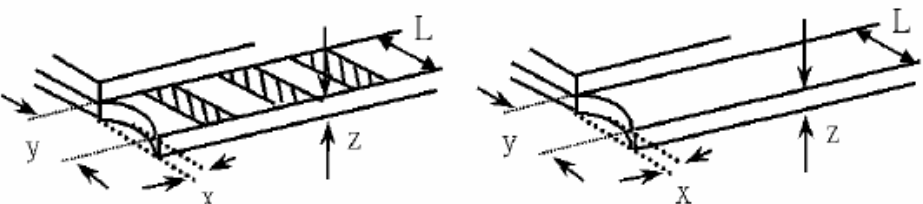
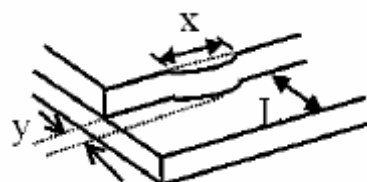
c. Standard of inspection: (Unit: mm)

12-6. Inspection specification

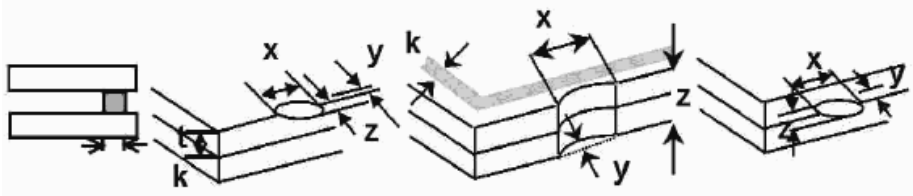
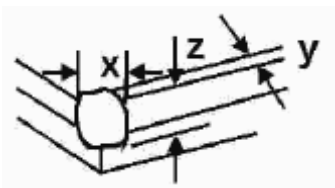
Defect out of viewing area can be neglected.

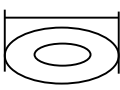
NO	Item	Criterion	AQL																							
01	Electrical Testing	1.1 Missing vertical, horizontal segment, segment contrast defect. 1.2 Missing character, dot or icon. 1.3 Display malfunction. 1.4 No function or no display. 1.5 Current consumption exceeds product specifications. 1.6 LCD viewing angle 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 Dot dimension as below drawing: $\Phi = (X+Y) / 2$ <div></div> <table><tr><th>Size(mm)</th><th>Acceptable Q'ty</th></tr><tr><td>$\Phi \leq 0.20$</td><td>Accept no dense</td></tr><tr><td>$0.20 < \Phi \leq 0.50$</td><td>5</td></tr><tr><td>$0.50 < \Phi$</td><td>0</td></tr></table> 2.2 Not visible through 5% ND filter * Densely spaced: No more than two spots within 3mm.	Size(mm)	Acceptable Q'ty	$\Phi \leq 0.20$	Accept no dense	$0.20 < \Phi \leq 0.50$	5	$0.50 < \Phi$	0	2.5															
Size(mm)	Acceptable Q'ty																									
$\Phi \leq 0.20$	Accept no dense																									
$0.20 < \Phi \leq 0.50$	5																									
$0.50 < \Phi$	0																									
03	LCD and Touch Panel black spots, white spots, contamination (non – display)	3.1 Round type: As following drawing $\Phi = (X+Y) / 2$ <div></div> <table><tr><th>Size(mm)</th><th>Acceptable Q'ty</th></tr><tr><td>$\Phi \leq 0.20$</td><td>Accept no dense</td></tr><tr><td>$0.20 < \Phi \leq 0.50$</td><td>5</td></tr><tr><td>$0.50 < \Phi$</td><td>0</td></tr></table> * Densely spaced: No more than two spots within 3mm. 3.2 Line type: (As following drawing) <div></div> <table><tr><th>Length(mm)</th><th>Width(mm)</th><th>Acceptable Q'ty</th></tr><tr><td>$L \leq 10$</td><td>$W \leq 0.1$</td><td>Accept no dense</td></tr><tr><td>$L \leq 10.0$</td><td>$0.1 < W \leq 0.25$</td><td>4</td></tr><tr><td>$L > 10$</td><td>----</td><td>Rejection</td></tr><tr><td>----</td><td>$0.25 < W$</td><td>Rejection</td></tr></table> * Densely spaced: No more than two lines within 3mm.	Size(mm)	Acceptable Q'ty	$\Phi \leq 0.20$	Accept no dense	$0.20 < \Phi \leq 0.50$	5	$0.50 < \Phi$	0	Length(mm)	Width(mm)	Acceptable Q'ty	$L \leq 10$	$W \leq 0.1$	Accept no dense	$L \leq 10.0$	$0.1 < W \leq 0.25$	4	$L > 10$	----	Rejection	----	$0.25 < W$	Rejection	2.5
Size(mm)	Acceptable Q'ty																									
$\Phi \leq 0.20$	Accept no dense																									
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$L \leq 10$	$W \leq 0.1$	Accept no dense																								
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$L > 10$	----	Rejection																								
----	$0.25 < W$	Rejection																								

NO	Item	Criterion	AQL																		
04	Polarizer bubbles	<div><div>If bubbles are visible, judge using black spot specifications, not easy to find, must check in specify direction</div><table><tr><th>Size Φ(mm)</th><th>Acceptable Q'ty</th></tr><tr><td>$\Phi \leq 0.20$</td><td>Accept no dense</td></tr><tr><td>$0.20 < \Phi \leq 0.50$</td><td>4</td></tr><tr><td>$0.50 < \Phi \leq 1.00$</td><td>3</td></tr><tr><td>$1.00 < \Phi$</td><td>0</td></tr><tr><td>Total Q'ty</td><td>4</td></tr></table></div>	Size Φ (mm)	Acceptable Q'ty	$\Phi \leq 0.20$	Accept no dense	$0.20 < \Phi \leq 0.50$	4	$0.50 < \Phi \leq 1.00$	3	$1.00 < \Phi$	0	Total Q'ty	4	2.5						
Size Φ (mm)	Acceptable Q'ty																				
$\Phi \leq 0.20$	Accept no dense																				
$0.20 < \Phi \leq 0.50$	4																				
$0.50 < \Phi \leq 1.00$	3																				
$1.00 < \Phi$	0																				
Total Q'ty	4																				
05	Scratches	Follow NO.3 -2 Line Type.																			
06	Mura	Not visible through 5% ND filter in 50% gray.	2.5																		
07	Chipped glass	<div><div>Symbols: x: Chip length y: Chip width z: Chip thickness k: Seal width t: Glass thickness a: LCD side length L: Electrode pad length</div><div>7.1 General glass chip: 7.1.1 Chip on panel surface and crack between panels:</div><div></div><div><table><tr><th>z: Chip thickness</th><th>y: Chip width</th><th>x: Chip length</th></tr><tr><td>$Z \leq 1/2t$</td><td>Not over viewing area</td><td>$x \leq 1/8a$</td></tr><tr><td>$1/2t < z \leq 2t$</td><td>Not exceed 1/3k</td><td>$x \leq 1/8a$</td></tr></table></div><div>⊙ Unit: mm ⊙ If there are 2 or more chips, x is the total length of each chip</div><div>7.1.2 Corner crack:</div><div></div><div><table><tr><th>z: Chip thickness</th><th>y: Chip width</th><th>x: Chip length</th></tr><tr><td>$Z \leq 1/2t$</td><td>Not over viewing area</td><td>$x \leq 1/8a$</td></tr><tr><td>$1/2t < z \leq 2t$</td><td>Not exceed 1/3k</td><td>$x \leq 1/8a$</td></tr></table></div><div>⊙ Unit: mm ⊙ If there are 2 or more chips, x is the total length of each chip</div></div>	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
z: Chip thickness	y: Chip width	x: Chip length																			
$Z \leq 1/2t$	Not over viewing area	$x \leq 1/8a$																			
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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="553 642 1238 799"><tr><td>y: Chip width</td><td>x: Chip length</td><td>z: Chip thickness</td></tr><tr><td>$y \leq 0.5\text{mm}$</td><td>$x \leq 1/8a$</td><td>$0 < z \leq t$</td></tr></table> <p>8.1.2 Non-conductive portion:</p>  <table border="1" data-bbox="553 1158 1238 1314"><tr><td>y: Chip width</td><td>x: Chip length</td><td>z: Chip thickness</td></tr><tr><td>$y \leq L$</td><td>$x \leq 1/8a$</td><td>$0 < z \leq t$</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="871 1628 1315 1785"><tr><td>y: width</td><td>x: length</td></tr><tr><td>$y \leq 1/3L$</td><td>$X \leq a$</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
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																		
$y \leq 1/3L$	$X \leq a$																		

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><tr><td>z: Chip thickness</td><td>y: Chip width</td><td>x: Chip length</td></tr><tr><td>$Z \leq t$</td><td>$\leq 1/2 k$ and not over viewing area</td><td>$x \leq 1/8a$</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><tr><td>z: Chip thickness</td><td>y: Chip width</td><td>x: Chip length</td></tr><tr><td>$z \leq t$</td><td>$\leq 1/2 k$ and not over viewing area</td><td>$x \leq 1/8a$</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
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	$x \leq 1/8a$													

NO	Item	Criterion	AQL
16	Touch Panel(Fish eye)	SIZE(mm)	2.5
		$L \leq 1.0$	
		$L > 1.0\text{mm}$	
		Acceptable Q'ty Accept no dense 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: 10~100g	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

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 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.

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.