SPECIFICATION
FOR
LCD MODULE

MODULE NO: YB-TG320320C01A-N-A0
Doc. Version:01

Customer Approval:

☐ Accept   ☐ Reject

YEEBO	NAME	SIGNATURE	DATE
Prepare	Electronic Engineer	温育竿	2020/5/8
Check	Mechanical Engineer	赵健强	2020/5/8
Verify		邓嘉刚	2020/5/8
Approval		阿呆盈	2020/5/8

☐ APPROVAL FOR SPECIFICATIONS ONLY

■APPROVAL FOR SPECIFICATIONS AND SAMPLE

WIMRD005-02-D

1. Revision History

Sample Version	DOC. Version	DATE	DESCRIPTION		CHANGED BY
A0	00	2020-02-12	Spec only	First issue	Couver/Wilson
A0	01	2020-05-08	Full Spec	First Sample Modify Drawing…P5	Couver/Z.J.Q

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2. Table of Contents:

Module P/N: YB-TG320320C01A-N-A0
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3.Module Numbering System:

(Example)

YB- T G 240320 S 01 D -T – A0

	Sample Version: A0~Z0

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

Version: A~Z

Serial No: 01~99

S: STD Product
C: Customer Made

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

LCM Display Type
C: Character Type；
G: Graphic Type；
GB: Graphic Black/White Type；(For E-paper)
GC: Graphic Color Type；(For E-paper)
S: Segment Type

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

YEEBO

4. General Specification:

ITEM	CONTENTS
Module Size	36.07 (W) * 39.16 (H) * 1.46 (T) mm
Module Size(With FPC)	36.07 (W) * 57.47 (H) * 1.46 (T) mm
Display Size(Diagonal)	1.3 inch
Display Format	320(RGB)* 320 Pixels
Active Area	33.12 (W) * 33.12 (H) mm
Pixel Pitch	0.1035 * 0.1035 mm
LCD Type	TFT (16.7M)/ Transmissive / Normally Black
View Angle	Free
Controller IC	ST7796DW
Weight	3.01g

5. LCM drawing:

Specification:
1. Display mode: 1.28" TFT (16.7M)/ Normally Black/ Transmissive
2. Viewing direction: Full View
3. Operating temperature: -20°C to +70°C
   Storage temperature: -20°C to +80°C
4. Drive IC is: ST7796DW or compatible
5. Backlight: 2 CHIPS WHITE LED
6. Unspecified tolerance: ±0.30mm.
7. ROHS compliant

6. Electrical Characteristics

6-1 Absolute Maximum Ratings   (Ta=25℃ VSS=0V)

Item	Symbol	Min.	Type	Max.	Unit	Remark
Input Voltage	VCC	-0.3	-	+4.6	Volt	Note1
Supply Voltage	IOVCC	-0.3	-	+4.6	Volt	Note1
Operating Temperature	Topr	-20	-	+70	℃	-
Storage Temperature	Tstg	-20	-	+80	℃	-

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℃)

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Operating voltage	VCC	-	2.4	2.8	3.3	Volt
I/O Supply Voltage	IOVCC	-	1.65	1.8	3.3	Volt
Input Voltage	V_{IH}	-	0.7*IOVCC	-	IOVCC	V
	V_{IL}	-	GND	-	0.3*IOVCC	V
Power Supply Current for LCM	IDD	VCC=2.8V	-	10.9	16.3	mA

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6-3 DC Characteristics

Parameter	Symbol	Specification			Unit
		MIN	**TYP**	**MAX**	
Operation Voltage for MIPI Receiver					
Low power mode operating voltage	VLPH	1.1	1.2	1.3	V
MIPI Characteristics for High Speed Receiver					
Single-ended input low voltage	V ILHS	-40	-	-	mV
Single-ended input high voltage	V IHHS	-	-	460	mV
Common-mode voltage	VCMRXDC	70	-	330	mV
Differential input impedance	Z ID	80	100	125	ohm
MIPI Characteristics for Low Power Mode					
Pad signal voltage range	VI	-50	-	1350	mV
Logic 0 input threshold	VIL	0	-	550	mV
Logic 1 input threshold	VIH	88 0	-	-	mV
Output low level	VOL	-50	-	50	mV
Output high level	VOH	1.1	1.2	1.3	V

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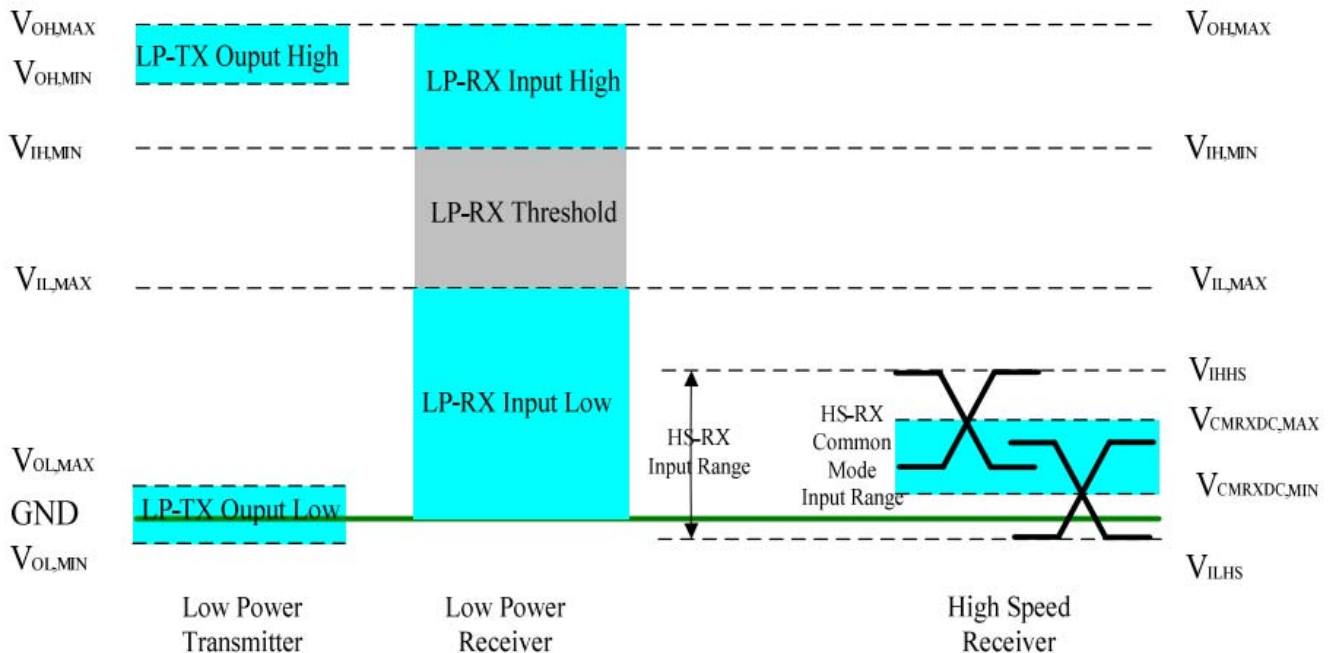
6-4 MIPI Interface Characteristics
6-4-1 High Speed Mode
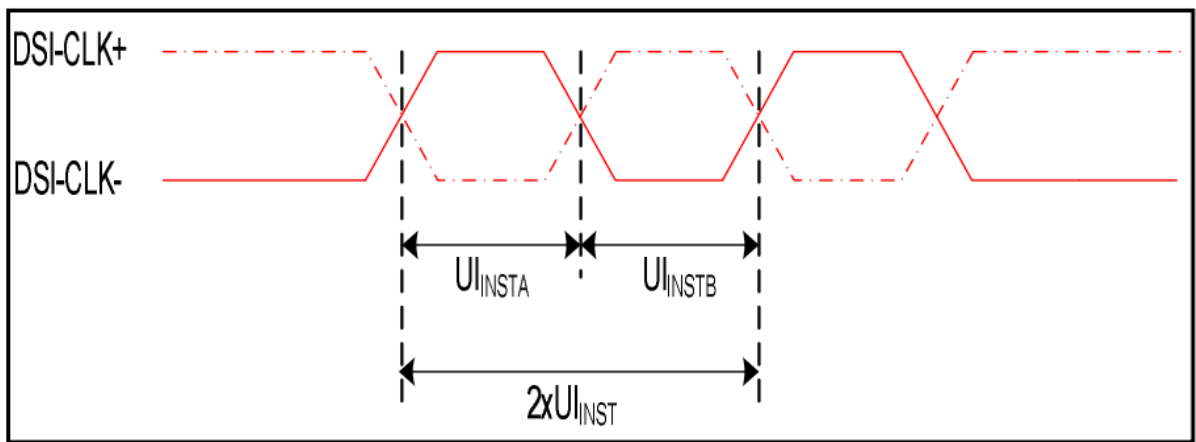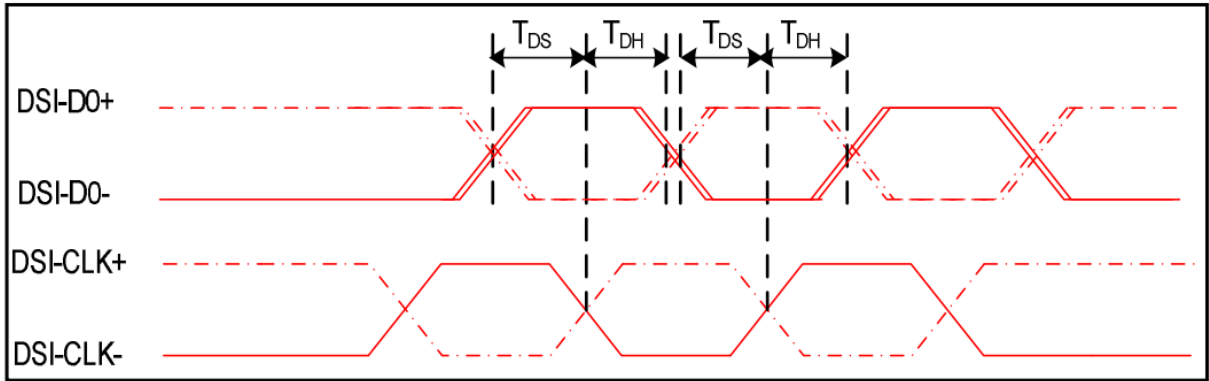
Clock Channel Timing

Signal	Symbol	Parameter	MIN	MAX	Unit	Description
DSI-CLK+/-	$2xUI_{INSTA}$	Double UI instantaneous	4	25	ns	-
DSI-CLK+/-	UI_{INSTA} UI_{INSTB}	UI instantaneous halfs	2	12.5	ns	$UI = UI_{INSTA} = UI_{INSTB}$
DSI-Dn+/-	tDS	Data to clock setup time	0.15	-	UI	-
DSI-Dn+/-	tDH	Data to clock hold time	0.15	-	UI	-

Timing Characteristics

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6-4-2 Bus Turnaround Procedure
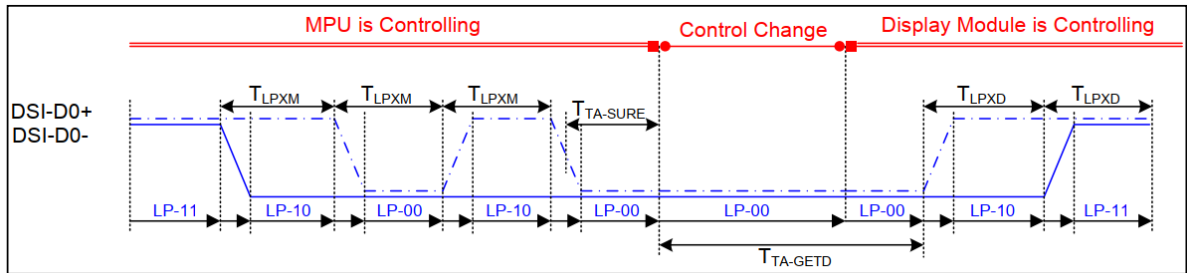
Bus Turnaround (BTA) from display module to MPU Timing
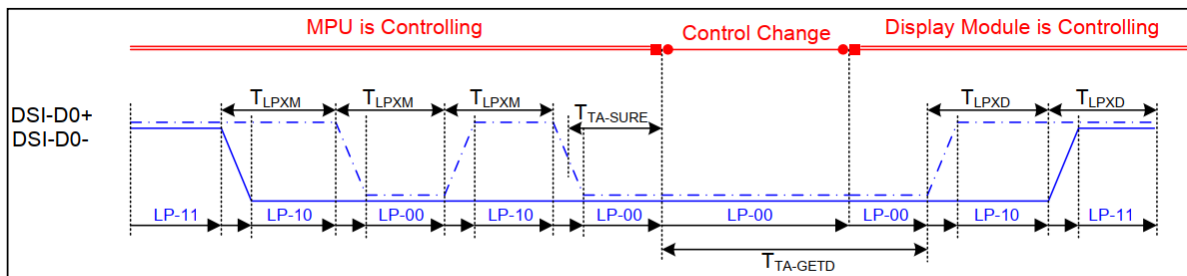
Bus Turnaround (BTA) from MPU to display module Timing

VDDI=1.8V,VCI=2.8V, AGND=DGND=AGNDR=0V, Ta=25℃

Signal	Symbol	Parameter	MIN	MAX	Unit	Description
DSI-D0+/-	TLPXM	Length of LP-00,LP-01, LP-10 or LP-11 periods MPU→Display Module	50	75	ns	Input
DSI-D0+/-	TLPXD	Length of LP-00,LP-01, LP-10 or LP-11 periods MPU→Display Module	50	75	ns	Output
DSI-D0+/-	TTA-SURED	Time-out before the MPU start driving	T_{LPXD}	$2xT_{LPXD}$	ns	Output
DSI-D0+/-	TTA-GETD	Time to drive LP-00 by display module	$5xT_{LPXD}$		ns	Input
DSI-D0+/-	TTA-GOD	Time to drive LP-00 after turnaround request-MPU	$4xT_{LPXD}$		ns	Output

MIPI Interface BTA ModeTiming Characteristics

6-4-3 Data Transmission
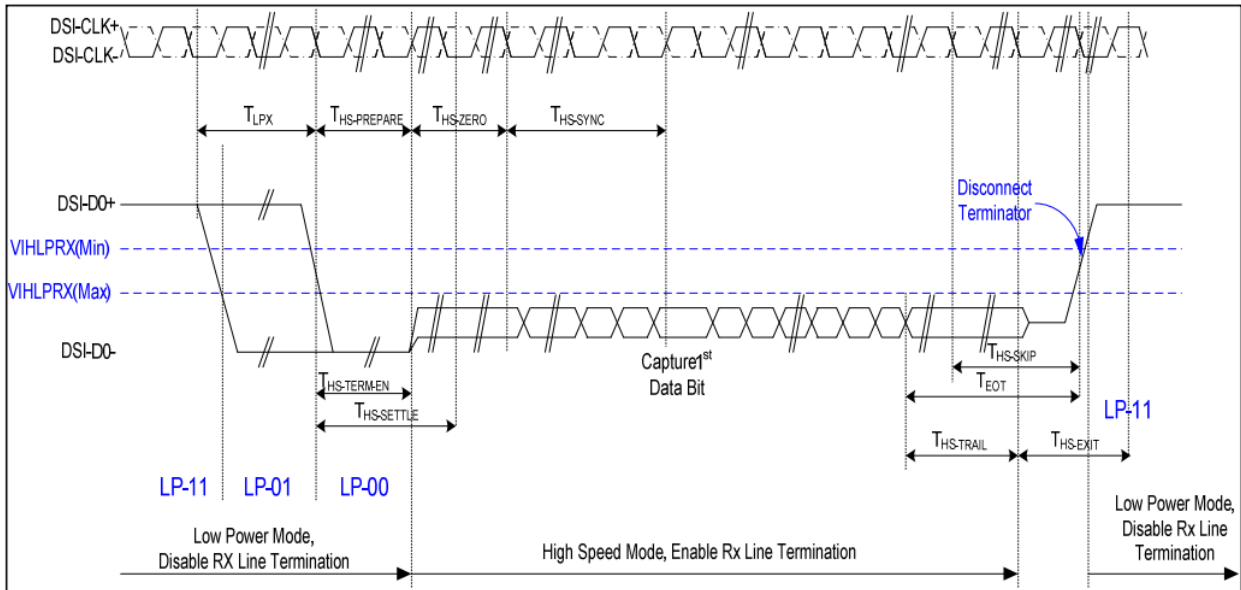
Data lanes-Low Power Mode to/from High Speed Mode Timing
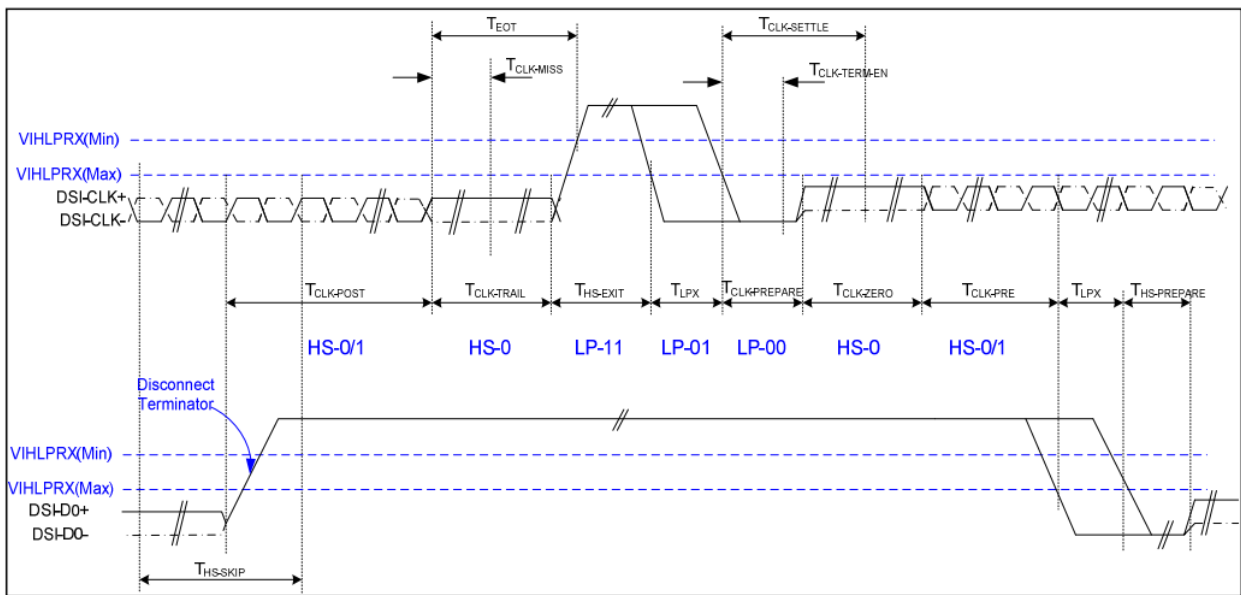
Clock lanes- High Speed Mode to/from Low Power Mode Timing

Signal	Symbol	Parameter	MIN	MAX	Unit	Description
Low Power Mode to High Speed Mode Timing						
DSI-Dn+/-	TLPX	Length of any low power state period	50	-	ns	Input
DSI-Dn+/-	THS-PREPARE	Time to drive LP-00 to prepare for HS transmission	40+4UI	85+6UI	ns	Input
DSI-Dn+/-	THS-TERM-EN	Time to enable data receiver line termination measured from when Dn crosses VILMAX	-	35+4UI	ns	Input
DSI-Dn+/-	THS-PREPARE + THS-ZERO	THS-PREPARE + time to drive HS-0 before the sync sequence	140+10UI	-	ns	Input
High Speed Mode to Low Power Mode Timing						
DSI-Dn+/-	THS-SKIP	Time-out at display module to ignore transition period of EoT	40	55+4UI	ns	Input
DSI-Dn+/-	THS-EXIT	Time to drive LP-11 after HS burst	100	-	ns	Input
DSI-Dn+/-	THS-TRAIL	Time to drive flipped differential state after last payload data bit of a HS transmission burst	60+4UI	-	ns	Input
High Speed Mode to/from Low Power Mode Timing						
DSI-CLK+/-	TCLK-POS	Time that the MPU shall continue sending HS clock after the last associated data lane has transition to LP mode	60+52 UI	-	ns	Input
DSI-CLK+/-	TCLK-TRAIL	Time to drive HS differential state after last payload clock bit of a HS transmission burst	60	-	ns	Input
DSI-CLK+/-	THS-EXIT	Time to drive LP-11 after HS burst	100	-	ns	Input
DSI-CLK+/-	TCLK-PREPARE	Time to drive LP-00 to prepare for HS transmission	38	95	ns	Input
DSI-CLK+/-	TCLK-TERM-EN	Time-out at clock lan display module to enable HS transmission	--	38	ns	Input
DSI-CLK+/-	TCLK-PREPARE + TCLK-ZERO	Minimum lead HS-0 drive period before starting clock	300	-	ns	Input
DSI-CLK+/-	TCLK-PRE	Time that the HS clock shall be driven prior to any associated data lane beginning the transition from LP to HS mode	8UI	-	ns	Input
DSI-CLK+/-	TEOT	Time form start of TCLK-TRAIL period to start of LP-11 state	-	105ns+ 12UI	ns	Input

Mipi Interface- High Speed Mode Timing Characteristics

6-5 Reset Timing
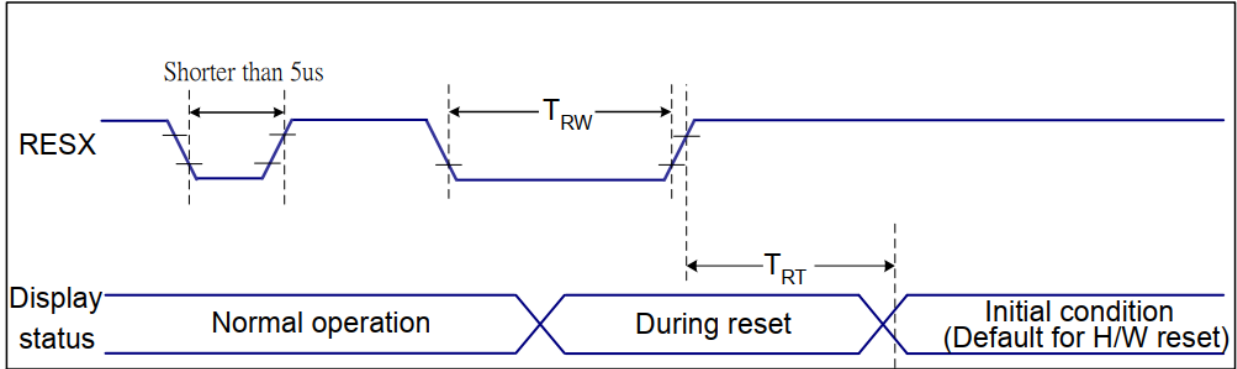
VDDI=1.8V,VCI=2.8V, AGND=DGND=AGNDR=0V, Ta=25℃

| Related Pins	Symbol	Parameter	MIN	MAX	Unit
RESX	TRW	Reset pulse duration	10	-	us
	TRT	Reset cancel	-	5 (Note 1, 5)	ms
			-	120 (Note 1, 6, 7)	ms

Notes:

1. The reset cancel includes also required time for loading ID bytes, VCOM setting and other settings from NVM (or similar device) to registers. This loading is done every time when there is HW reset cancel time (tRT) within 5 ms after a rising edge of RESX.

2. Spike due to an electrostatic discharge on RESX line does not cause irregular system reset according to the table below:

RESX Pulse	Action
Shorter than 5us	Reset Rejected
Longer than 9us	Reset
Between 5us and 9us	Reset starts

3. During the Resetting period, the display will be blanked (The display is entering blanking sequence, which maximum time is 120 ms, when Reset Starts in Sleep Out –mode. The display remains the blank state in Sleep In –mode.) and then return to Default condition for Hardware Reset.

4. Spike Rejection also applies during a valid reset pulse as shown below:
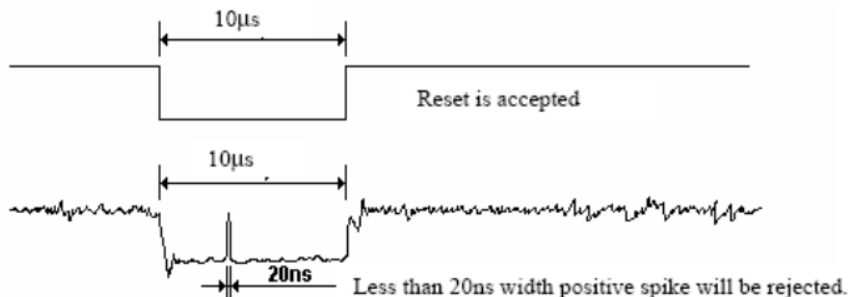
5. When Reset applied during Sleep In Mode.

6. When Reset applied during Sleep Out Mode.

7. It is necessary to wait 5msec after releasing RESX before sending commands. Also Sleep Out command cannot be sent for 120msec.

6-6 Power ON/OFF Sequence

VDDI and VCI can be applied in any order.

VCI and VDDI can be power down in any order.

During power off, if LCD is in the Sleep Out mode, VCI and VDDI must be powered down minimum 120msec after RESX has been released.

During power off, if LCD is in the Sleep In mode, VDDI or VCI can be powered down minimum 0msec after RESX has been released.

Note 1: There will be no damage to the display module if the power sequences are not met.
Note 2: There will be no abnormal visible effects on the display panel during the Power On/Off Sequences.
Note 3: There will be no abnormal visible effects on the display between end of Power On Sequence and before receiving Sleep Out command. Also between receiving Sleep In command and Power Off Sequence.
Note 4: If RESX line is not held stable by host during Power On Sequence as defined in the sequence below, then it will be necessary to apply a Hardware Reset (RESX) after Host Power On Sequence is complete to ensure correct operation. Otherwise function is not guaranteed.

The power on/off sequence is illustrated below

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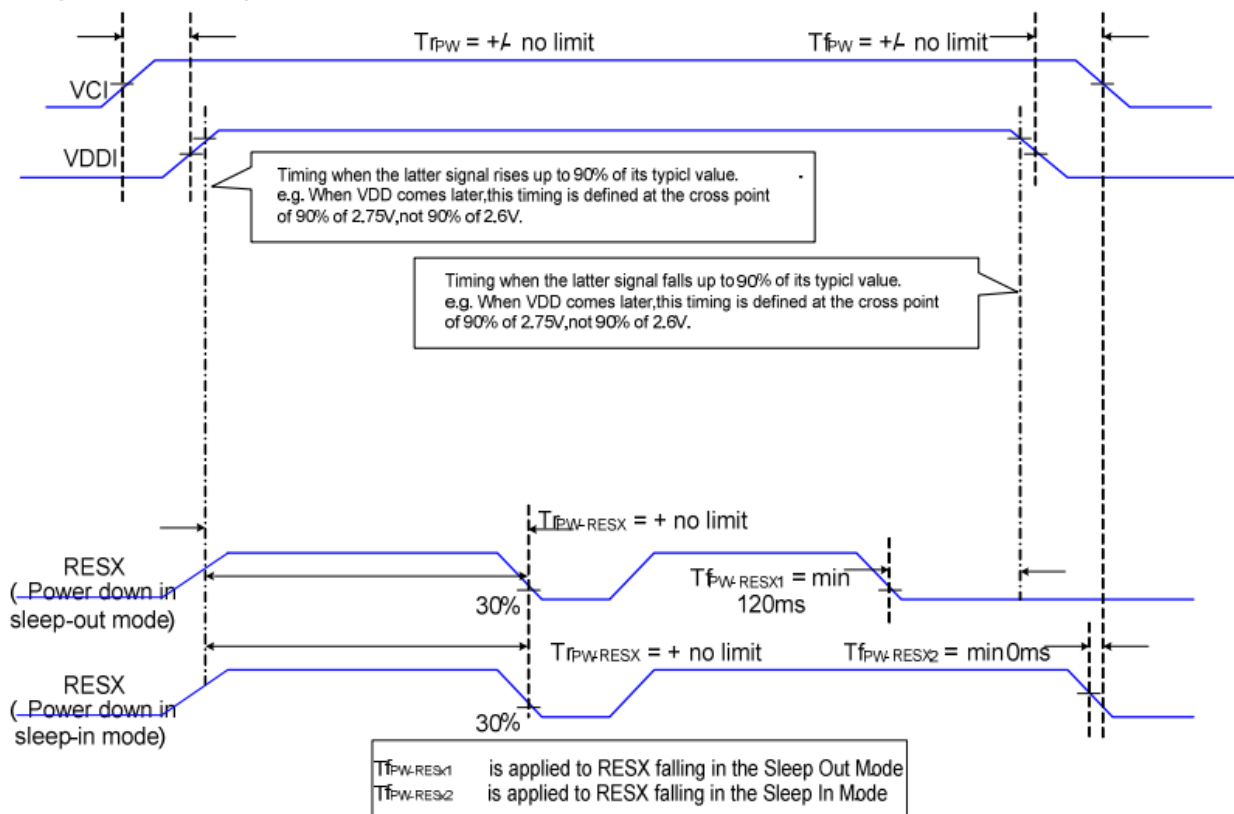
7. Optical Characteristics:

Item	Symbol	Conditions	Specifications			Unit	Note
			Min	Typ	Max		
Transmittance (With PL)	T(%)	-	4.0	4.6	-	-	-
Contrast Ratio	CR	Θ=0 Normal Viewing angle	900	1100	-	-	(1) (2)
Response time	TR+TF	-	-	35	40	ms	(1) (3)
NSTC	%	-	65	69.1	-	-	
Viewing angle	Hor. Θx+	CR≧10	-	80	-	deg.	-
	Θx-		-	80	-		
	Ver. Θy+		-	80	-		
	Θy-		-	80	-		

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

Color of CIE Coordinate:

Item		Symbol	Condition	Min.	Typ.	Max.
Chromaticity Coordinates (Transmissive)	Red	x	θ = φ = 0° LED Backlight Color Degree	0.6013	0.6513	0.7013
		y		0.2808	0.3308	0.3808
	Green	x		0.3107	0.3607	0.4107
		y		0.5471	0.5971	0.6471
	Blue	x		0.0936	0.1436	0.1936
		y		0.0294	0.0794	0.1294
	White	x		0.2657	0.3157	0.3657
		y		0.2665	0.3165	0.3665

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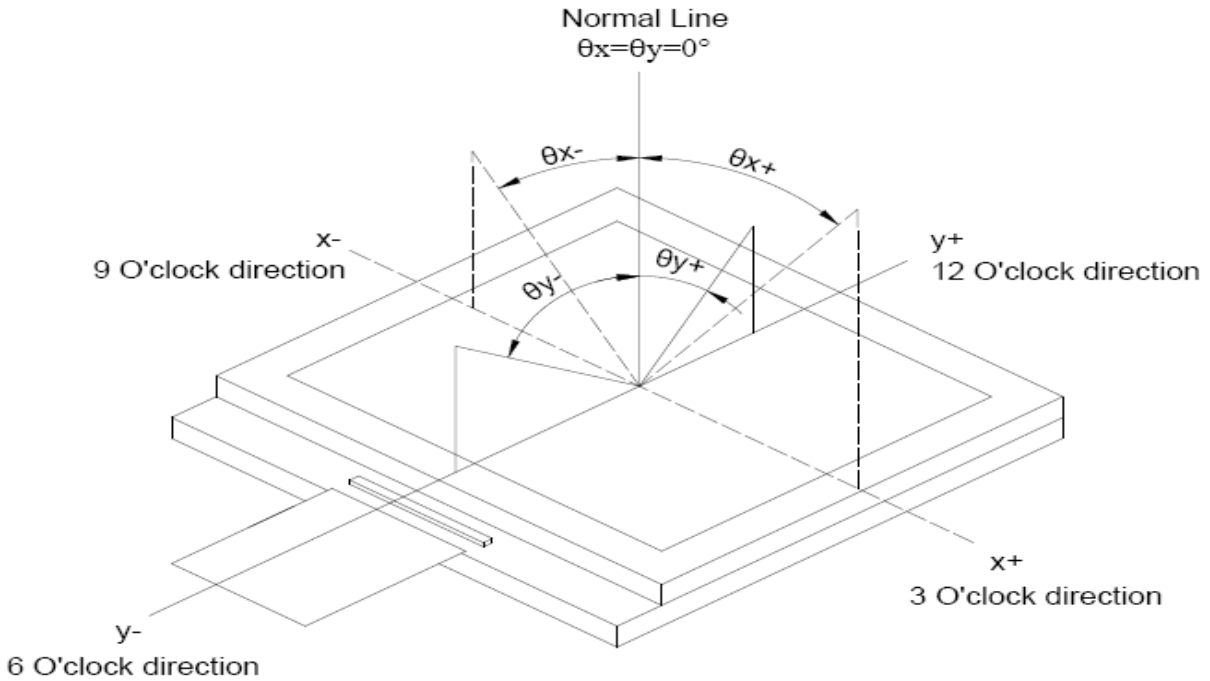
Note (2) Definition of Contrast Ratio(CR) :
measured at the center point of panel

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

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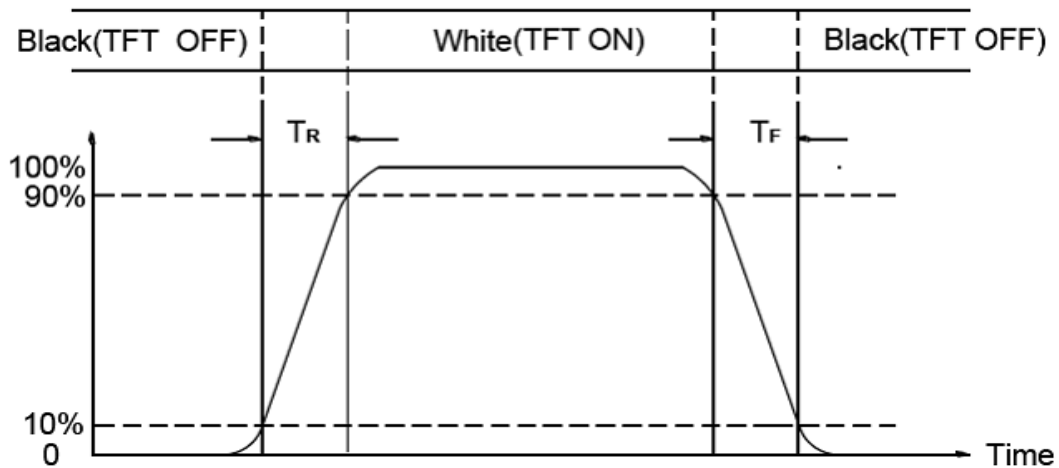
8. Interface Pin Assignment:

8-1 LCM FPC Interface

No.	Symbol	Function
1	GND	Ground
2	LEDA	LED power anode
3	LEDK	LED power cathode
4	VCC	Analog power supply
5	GND	Ground
6	D0N	MIPI Negative data signal (-)
7	D0P	MIPI Positive data signal (+)
8	GND	Ground
9	CLKN	MIPI Negative clock signal (-)
10	CLKP	MIPI Positive clock signal (+)
11	GND	Ground
12	RESET	Reset signal
13	TE	Tearing effect signal is used to synchronize MCU to frame memory
14	IOVCC	Power Supply for logic Voltage
15	GND	Ground

9. Block Diagram:
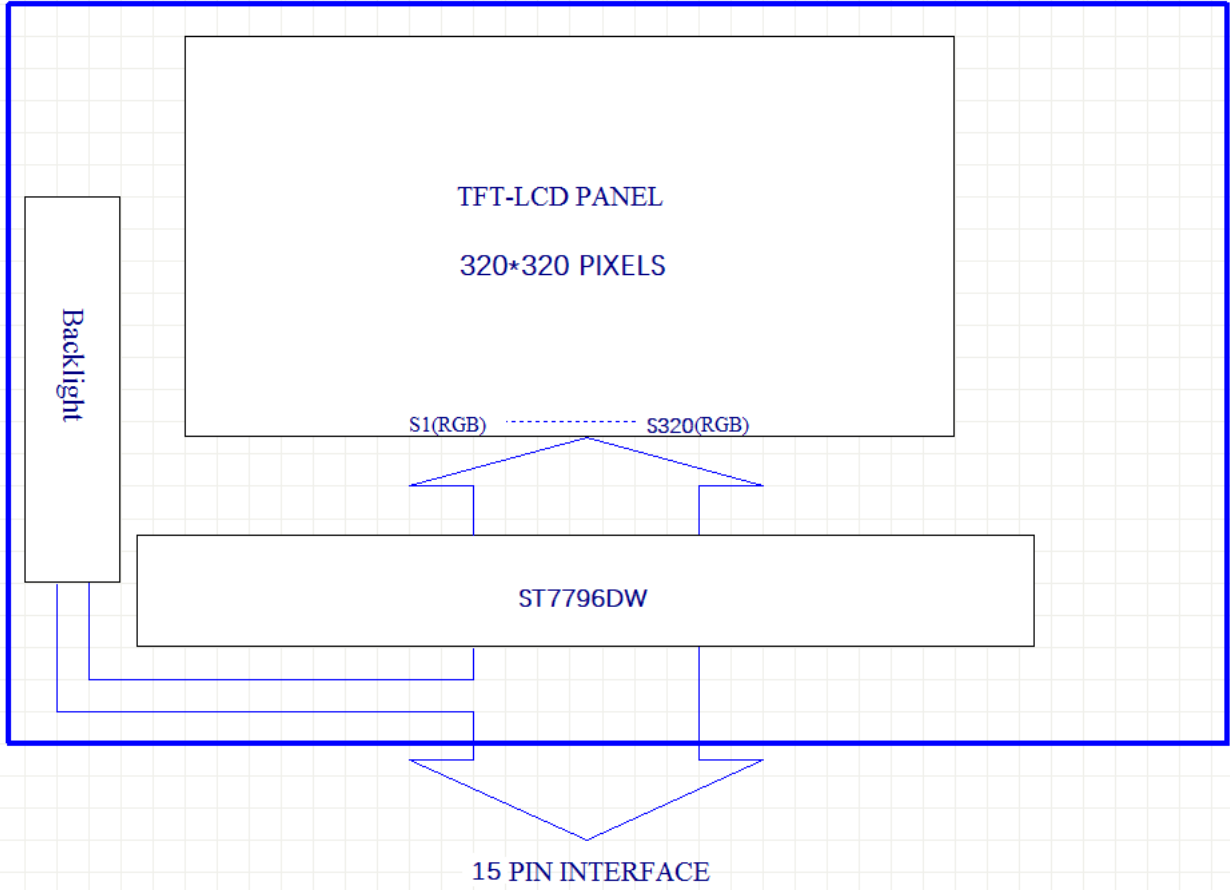
10. Backlight:

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℃)**

PARAMETER	Sym.	Min.	Typ.	Max.	Unit	Test Condition	Note
Supply Current	I	-	40	-	mA	V=3.0V	
Supply Voltage	V	2.7	3.0	3.2	V	If=40mA	
Luminous Intensity for LCM	IV	300	350	-	Cd/m^2	If=40mA	2
Uniformity for LCM	-	70	-	-	%		3
Life Time	-	20000	-	-	Hr.		4
Color	White						

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

Measured Method: (X*Y: Light Area)　　　　**Internal Circuit Diagram**
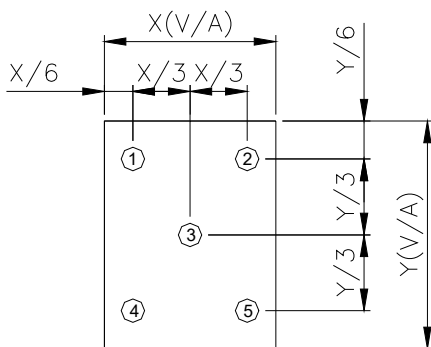
CIRCUIT DIAGRAM
B/L Electrical Circuit
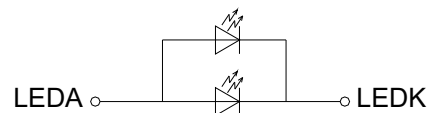
(Effective spatial Distribution)
Using aperture of 1°, distance 50cm.

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℃ for 120 hours under driving condition and then returning it to normal temperature condition, and allowing it stand for 2 hours.
02	Low temperature operation	The sample should be allowed to stand at -20℃ for 120 hours under driving condition and then returning it to normal temperature condition, and allowing it stand for 2 hours.
03	High temperature storage	The sample should be allowed to stand at 80℃ for 240 hours under no-load condition, and then returning it to normal temperature condition, and allowing it stand for 2 hours.
04	Low temperature storage	The sample should be allowed to stand at -20℃ for 240 hours under no-load condition, then returning it to normal temperature condition, and allowing it stand for 2 hours.
05	Moisture storage	The sample should be allowed to stand at 60℃,90%RH MAX for 240 hours under no-load condition, then taking it out and drying it at normal temperature for 2 hours.
06	Thermal shock storage	The sample should be allowed to stand the following 10 cycles : -20℃ for 30 minutes → normal temperature for 5 minutes → +80℃ for 30 minutes → normal temperature for 5 minutes, as one cycle.
07	Packing vibration	Frequency range : 10Hz ~ 55Hz Amplitude of vibration : 1.5mm Sweep time: 12 min X,Y,Z 2 hours for each direction.
08	Packing drop test	According to ISTA 1A 2001.
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 12.1, Standard   specifications for Reliability have been executed in order to ensure stability.

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

11- 3. MTBF

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

12. Specification of Quality Assurance:

12-1. Purpose

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

12-2. Standard for Quality Test

a. Inspection:

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

b. Electro-Optical Characteristics:

According to the individual specification to test the product.

c. Test of Appearance Characteristics:

According to the individual specification to test the product.

d. Test of Reliability Characteristics:

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

e. Delivery Test:

Before delivering, the supplier should take the delivery test.

(i) Test method: According to **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℃   Humidity: 60±10%RH
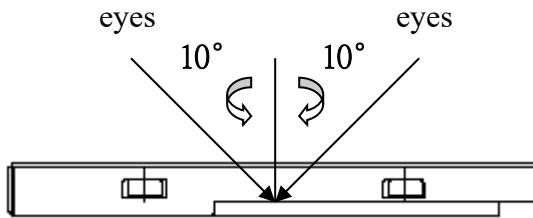
        (iv) Definition of area:
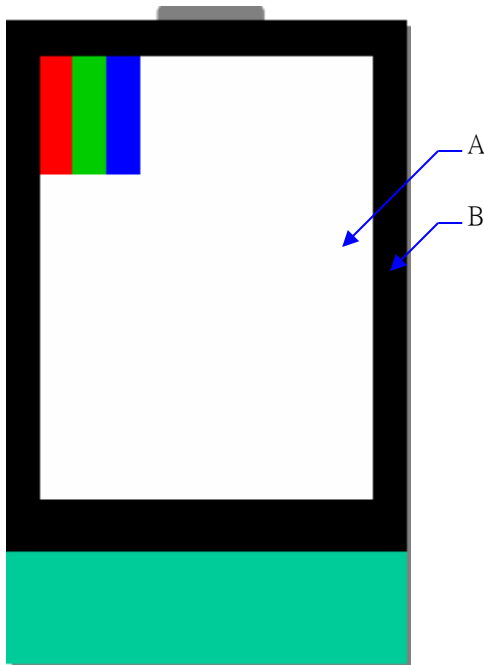
A. Area: Viewing area.

B. Area: Out of viewing area.

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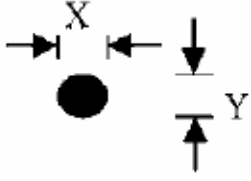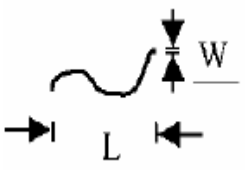
b. Basic principle:
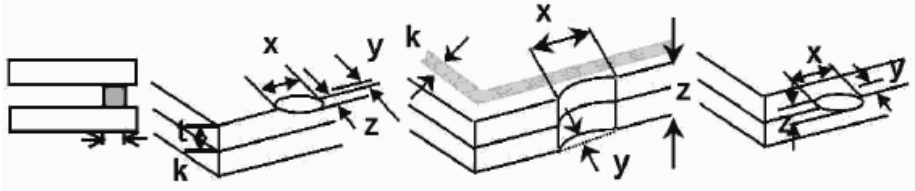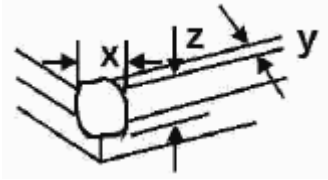
 (i) It will accord to the AQL when the standard can not be described.

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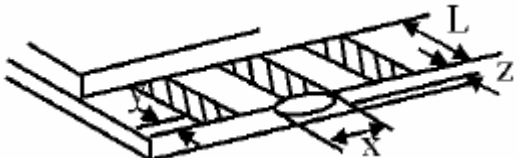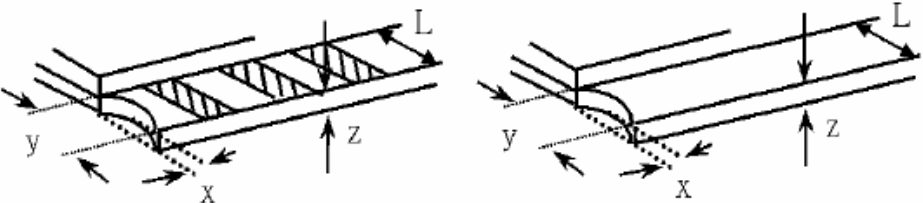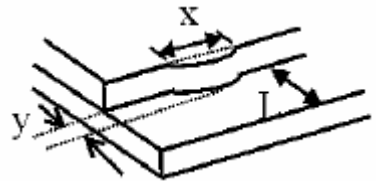
c. Standard of inspection: (Unit: mm)

億 都 集 團
YEEBO GROUP

12-6. Inspection specification
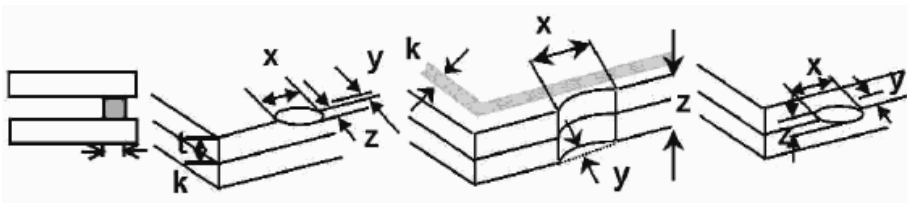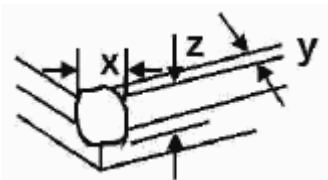
Defect out of viewing area can be neglected.
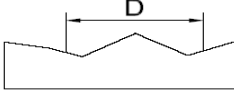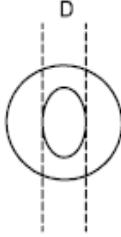
NO	Item	Criterion	AQL
01	Electrical Testing	1.1 Missing vertical, horizontal segment, segment contrast defect. 1.2 Missing character, dot or icon. 1.3 Display malfunction. 1.4 No function or no display. 1.5 Current consumption exceeds product specifications. 1.6 LCD viewing angle defect. 1.7 Mixed product 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 $\leqq$ 0.25mm, no more than Five spots. 2.2 Densely spaced: No more than three spots within 3mm. 2.3 Not visible through 5% ND filter	**2.5**
03	LCD and Touch Panel black spots, white spots, contamination (non – display)	3.1 Round type: As following drawing $\Phi = (X+Y) / 2$	**2.5**

3.1 Round type: As following drawing
$\Phi = (X+Y) / 2$

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

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

3.2 Line type: (As following drawing)

Length(mm)	Width(mm)	Acceptable Q'ty
---	$W \leqq 0.02$	Accept no dense
$L \leqq 3.0$	$0.02 < W \leqq 0.05$	2
$L \leqq 2.5$	$0.03 < W \leqq 0.08$	
---	$0.08 < W$	Rejection

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

2.5

NO	Item	Criterion	AQL
04	Polarizer bubbles	If bubbles are visible, judge using black spot specifications, not easy to find, must check in specify direction <table><tr><td>Size Φ(mm)</td><td>Acceptable Q'ty</td></tr><tr><td>Φ≦0.20</td><td>Accept no dense</td></tr><tr><td>0.20< Φ≦0.50</td><td>3</td></tr><tr><td>0.50< Φ≦1.00</td><td>2</td></tr><tr><td>1.00< Φ</td><td>0</td></tr><tr><td>Total Q'ty</td><td>3</td></tr></table>	2.5
05	Scratches	Follow NO.3 -2 Line Type.	
06	Mura	Not visible through 5% ND filter in 50% gray.	**2.5**
07	Chipped glass	Symbols: x: Chip length y: Chip width z: Chip thickness k: Seal width t: Glass thickness a: LCD side length L: Electrode pad length 7.1 General glass chip: 7.1.1 Chip on panel surface and crack between panels: <table><tr><td>z: Chip thickness</td><td>y: Chip width</td><td>x: Chip length</td></tr><tr><td>Z≦1/2t</td><td>Not over viewing area</td><td>x≦1/8a</td></tr><tr><td>1/2t< z≦2t</td><td>Not exceed 1/3k</td><td>x≦1/8a</td></tr></table> ⊙ Unit: mm ⊙ If there are 2 or more chips, x is the total length of each chip 7.1.2 Corner crack: <table><tr><td>z: Chip thickness</td><td>y: Chip width</td><td>x: Chip length</td></tr><tr><td>Z≦1/2t</td><td>Not over viewing area</td><td>x≦1/8a</td></tr><tr><td>1/2t< z≦2t</td><td>Not exceed 1/3k</td><td>x≦1/8a</td></tr></table> ⊙ Unit: mm ⊙ If there are 2 or more chips, x is the total length of each chip	2.5

NO	Item	Criterion	AQL
08	Glass crack	Symbols: x: Chip length　　y: Chip width　　z: Chip thickness k: Seal width　　　　t: Glass thickness　 a: LCD side length L: Electrode pad length 8.1 Protrusion over terminal: 8.1.1 Chip on electrode pad: 8.1.2 Non-conductive portion: ⊙ If there chipped area touches the ITO terminal, over 2/3 of the ITO 　 must remain and be inspected according to electrode terminal 　 specifications. ⊙ If the product will be heat sealed by the customer, the alignment mark 　 must mot be damaged. 8.1.3 Substrate protuberance and internal crack 	2.5

Table for 8.1.1:

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

Table for 8.1.2:

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

Table for 8.1.3:

y: width	x: length
y≦1/3L	X≦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.	2.5 2.5 2.5 2.5 0.65 0.65
13	FPC	13.1 FPC terminal damage $\leqq$ 1/2 FPC terminal width and can not affect the function , we judge accept. 13.2 FPC alignment hole damage $\leqq$ 1/2 alignment area and can not affect the function , we judge accept.	2.5 2.5
14	Soldering	14.1 No cold solder joints, missing solder connections, oxidation or icicle. 14.2 No short circuits in components on PCB or FPC.	2.5 0.65

Module P/N: YB-TG320320C01A-N-A0
Doc.Version:01

NO	Item	Criterion	AQL
15	Touch Panel Chipped glass	Symbols: x: Chip length　　y: Chip width　　z: Chip thickness k: Seal width　　　t: Touch Panel Total thickness　a: LCD side length L: Electrode pad length 15.1 General glass chip: 15.1.1 Chip on panel surface and crack between panels: <table><tr><td>z: Chip thickness</td><td>y: Chip width</td><td>x: Chip length</td></tr><tr><td>Z≦t</td><td>≦1/2 k and not over viewing area</td><td>x≦1/8a</td></tr></table> ⊙ Unit: mm ⊙ If there are 2 or more chips, x is the total length of each chip 15.1.2 Corner crack: <table><tr><td>z: Chip thickness</td><td>y: Chip width</td><td>x: Chip length</td></tr><tr><td>z≦t</td><td>≦1/2 k and not over viewing area</td><td>x≦1/8a</td></tr></table> ⊙ Unit: mm ⊙ If there are 2 or more chips, x is the total length of each chip	2.5

NO	Item	Criterion	AQL
16	Touch Panel(Fish eye、dent and bubble on film)	<table><tr><td>SIZE(mm)</td><td>Acceptable Q'ty</td></tr><tr><td>Φ≦0.2</td><td>Accept no dense</td></tr><tr><td>0.2< D ≦0.4</td><td>5</td></tr><tr><td>0.4< D ≦0.5</td><td>2</td></tr><tr><td>0.5< D</td><td>0</td></tr></table>	2.5
17	Touch Panel Newton ring	Newton ring dimension ≦ 1/2 touch panel area and not affect font and line distortion(≦2.5%) , it is acceptable.	2.5
18	Touch Panel Linearity	Less than 2.5% is acceptable.	2.5
19	LCD Ripple	Touch the touch panel , can not see the LCD ripple. Pen: R 1.0mm silicon rubber. Operation Force: 80g	2.5
20	General appearance	20.1 Pin type must match type in specification sheet. 20.2 LCD pin loose or missing pins. 20.3 Product packaging must the same as specified on packaging specification sheet. 20.4 Product dimension and structure must conform to product specification sheet.	0.65 0.65 0.65 0.65

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±10℃, and in a relative humidity of 50±10%RH. Don't expose to sunlight or fluorescent light.
- Storage in a clean environment, free from dust, active gas, and solvent.
- Store in anti-static electricity container.
- Store without any physical load.

13-3 Soldering

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

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.