

SPECIFICATION FOR LCD MODULE



MODULE NO: YB-TG4001280S01A-N-A0

Doc.Version:01

Customer Approval:

☐ Accept

☐ Reject

YEEBO	NAME	SIGNATURE	DATE
Prepare	Electronic Engineer	伍珏琛	2020-09-17
Check	Mechanical Engineer		2020-09-18
Verify		邵嘉剛	2020-09-18
Approval			2020-09-18

■ APPROVAL FOR SPECIFICATIONS ONLY

☐ APPROVAL FOR SPECIFICATIONS AND SAMPLE

WIMRD005-02-D

1. Revision History

[illegible]

2. Table of Contents:

NO	CONTENTS	PAGE
1	Revision History	1
2	Table of Contents	2
3	Module Numbering System	3
4	General Specification	4
5	LCM drawing	5
6	Electrical Characteristics	7
7	Optical Characteristics	13
8	Interface Pin Assignment	15
9	Block Diagram	17
10	Backlight	18
11	Standard Specification for Reliability	19
12	Specification of Quality Assurance	21
13	Handling Precaution	29
14	Warranty	30
15	Guarantee	30

3. Module Numbering System:

(Example)

YB-TG240320S01D-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 MadeDisplay Function:
Segment Number of Segment
Characters Lines of Character
Column and Row of Graphic
Length * Width of OtherLCM 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 TypeLCD Model:
C: CSTN; T: TFT; L: LTPS; O: OLED;
P: PLED; S: B/W STN; E: E-paper ;
Y: Yeetek; N: Others;

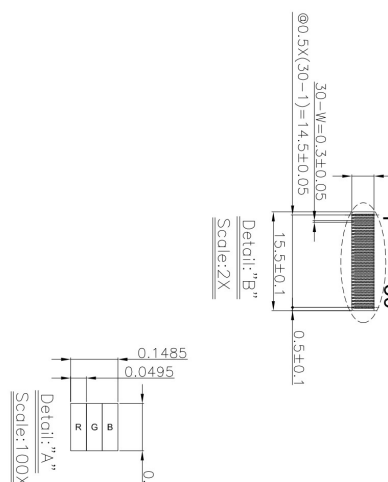
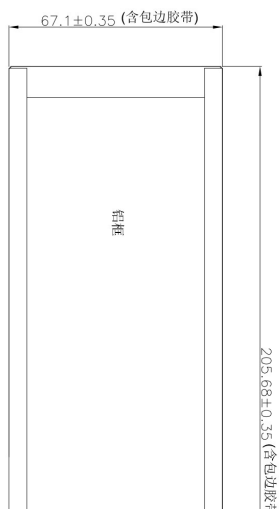
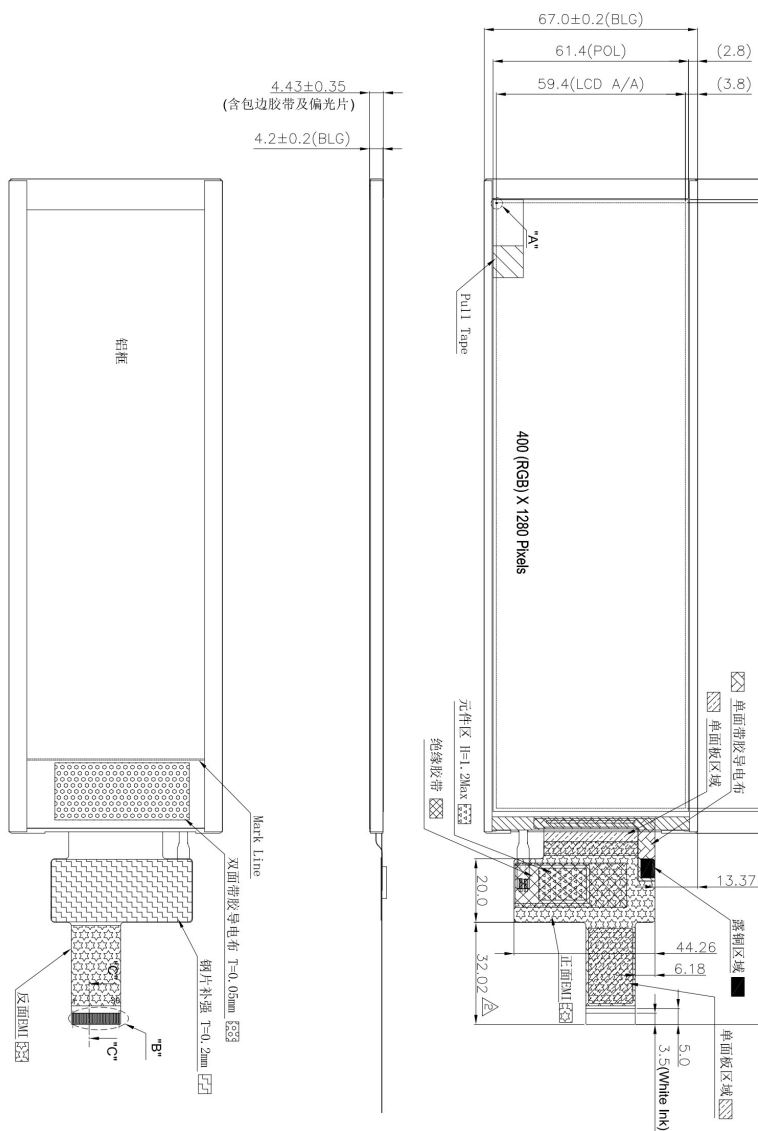
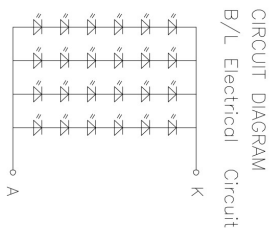
YEEBO

4. General Specification:

ITEM	CONTENTS
Module Size	205.68(W) * 67.1(H) * 4.43(T) mm
Module Size(With FPC)	205.68(W) * 67.1(H) * 4.43(T) mm
Display Size (Diagonal)	7.84 inch
Display Format	400(RGB)* 1280 Pixels
Active Area	59.40 (W) * 190.08 (H) mm
Dots Pitch	0.1485 * 0.1485 mm
LCD Type	TFT (16.7M)/ Transmissive / Normal Black
View Angle	Free
Controller IC	ST7703
Weight	TBD

5. LCM drawing:

- Specification:
- 1. Display mode: 7.84" TFT/ Transmissive/Normal Black
 - 2. Viewing Direction: Free
 - 3. Operating temperature: -20°C to +70°C
Storage temperature: -30°C to +80°C
 - 4. Backlight: LED White (x24)
 - 5. Drive IC : ST7703 or Compatible
 - 6. Unspecified tolerance: ±0.30mm.
 - 7. ROHS compliant



YEEBO				MOD. Name	YB-TG
DESIGNED				CHECKED	
李华照				任路琛	
2020-09-16				2020/9/16	
UNIT	SIZE	SCALE			
mm	A4	N-T-S			

6. Electrical Characteristics**6-1 Absolute Maximum Ratings****(Ta=25°C)**

Item	Symbol	Min.	Type	Max.	Unit	Remark
Supply Voltage(logic)	IOVDD	-0.3	-	5.5	V	
Supply Voltage(Analog)	VDD	-0.3	-	6.6	V	
Driver supply voltage	VGH-VGL	-0.3	-	+35.0	V	
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.	Type	Max.	Unit	Remark
Power Supply for logic Voltage	IOVDD	-	1.65	1.8	2.0	V	
Power supply for analog voltage	VDD	-	2.5	2.8	3.3	V	
Supply Voltage	V _{IH}	-	0.7IOVDD	-	IOVDD	V	
	V _{IL}	-	GND	-	0.3IOVDD	V	
	V _{OH}	-	0.8IOVDD	-	IOVDD	mA	
	V _{OL}	-	GND	-	0.2IOVDD	V	
Power Supply Current	IDD	VDD=2.8V	-	TBD	-	mA	

6-3 DSI DC Characteristics

LP Mode

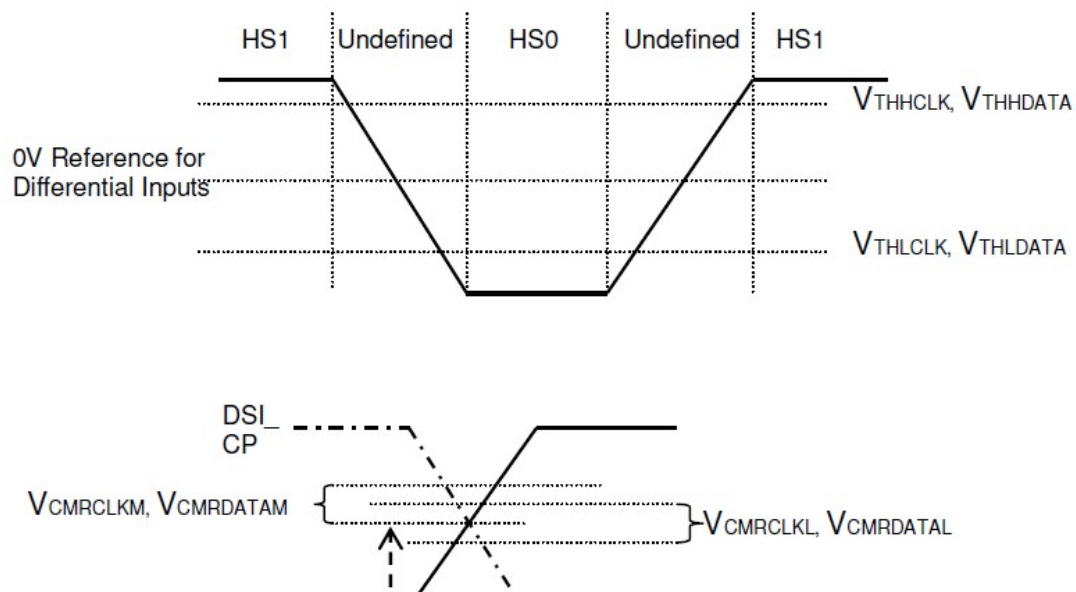
LP Mode

Parameter	Symbol	Conditions	Spec.	
			Min.	Ty
Logic high level input voltage	V_{IHLPCD}	LP-CD	450	-
Logic low level input voltage	V_{ILLPCD}	LP-CD	0	-
Logic high level input voltage	V_{IHLPRX}	LP-RX(CLK, D0)	880	-
Logic low level input voltage	V_{ILLPRX}	LP-RX(CLK, D0)	0	-
Logic low level input voltage	$V_{ILLPRXULP}$	LP-RX(CLK ULP mode)	0	-
Logic high level output voltage	V_{OHLPTX}	LP-TX(D0)	1.1	-
Logic low level output voltage	V_{OLLPTX}	LP-TX(D0)	-50	-
Logic high level input current	V_{IH}	LP-CD, LP-RX	-	-
Logic low level input current	V_{IL}	LP-CD, LP-RX	-10	-
Input pulse rejection	SGD	DSI-CLK+/-, DSI-D0+/-1	-	-

SGD Input glitch rejections of low-power receivers SGD

High speed mode

Parameter	Symbol	Conditions	Spec.	
			Min.	Ty
Input common mode	V_{CMCLK} V_{CMDATA}	DSI_CP/DSI_CN DSI_D0P/DSI_D0P	70	-
Input common mode variation <450 MHz	$V_{CMRCLKL}$ $V_{CMRDATA}$	DSI_CP/DSI_CN DSI_D0P/DSI_D0P	-50	-
Input common mode variation >450 MHz	$V_{CMRCLKM}$ $V_{CMRDATA}$	DSI_CP/DSI_CN DSI_D0P/DSI_D0P	-	-
Low-level differential Input threshold	V_{THLCLK} $V_{THLDATA}$	DSI_CP/DSI_CN DSI_D0P/DSI_D0P	-70	-
High-level differential Input threshold	V_{THHCLK} $V_{THHDATA}$	DSI_CP/DSI_CN DSI_D0P/DSI_D0P	-	-
Single ended input low voltage	V_{ILHS}	DSI_CP/DSI_CN DSI_D0P/DSI_D0P	-40	-
Single ended input high voltage	V_{IHHS}	DSI_CP/DSI_CN DSI_D0P/DSI_D0P	-	-
Differential input termination resistor	R_{TERM}	DSI_CP/DSI_CN DSI_D0P/DSI_D0P	80	10



Differential voltage range and command mode voltage

6-4 DSI Interface Timing Characteristics

6-4-1 High Speed Mode

7.3.2 DSI Interface Timing Characteristics

High Speed Mode

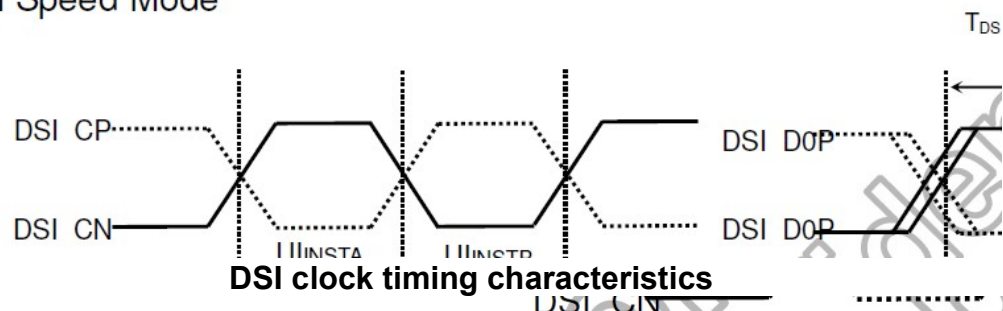
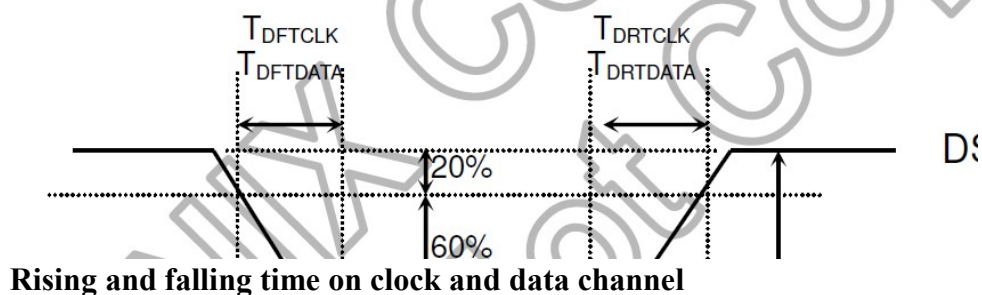


Figure 7.4: DSI clock timing Characteristics

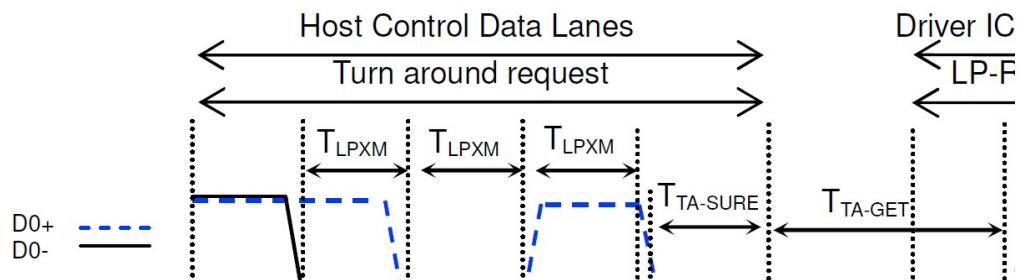


(VSSA=0V, IOVCC=1.65V to 3.3V, VCI=2.5V to

Signal	Item	Symbol	Spec.	
			Min.	Typ.
DSI_CP/ DSI_CN	Double UI instantaneous	$2 \times UI_{INST}$	TBD	-
	UI instantaneous	UI_{INSTA} UI_{INSTB}	TBD	-
DP/DN	Data to clock setup time	T_{DS}	$0.15 \times UI$	-
	Data to clock hold time	T_{DH}	$0.15 \times UI$	-

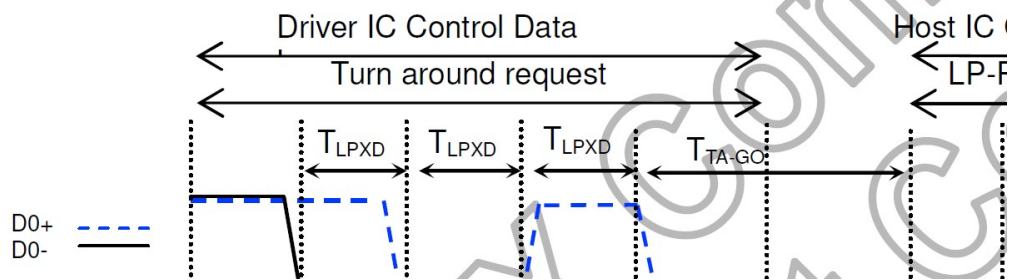
DSI High speed mode Characteristics

6-4-2 Low Speed Mode wer Mode



BTA from HOST to display module timing

Figure 7.9. BTA from HOST to Display module



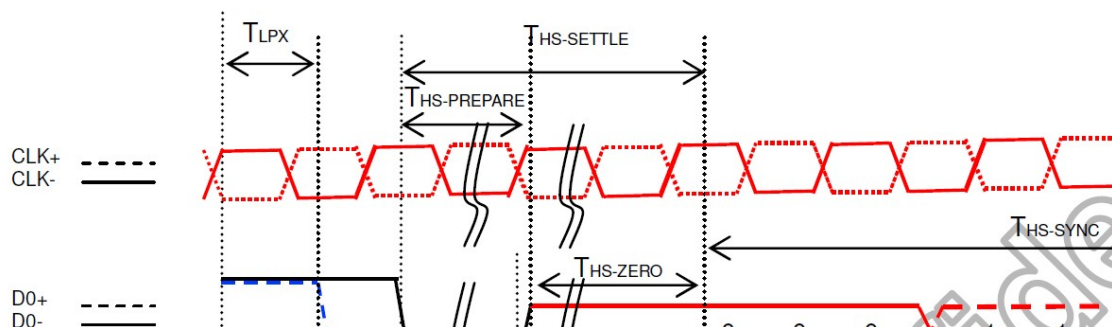
BTA from display module timing to HOST

(VSSA=0V, IOVCC=1.65V to 3.3V, VCI=2.3V to 3.3V)

Signal	Item	Symbol	Spec.	
			Min.	Typ.
DSI_D0P/ DSI_D0N	Length of LP-00/LP01/LP10/LP11 Host → Display module	T_{LPXM}	50	-
	Length of LP-00/LP01/LP10/LP11 Display module → Host	T_{LPXD}	50	-
	Time out before the MDI start driver	T_{TA-GET}	100	-

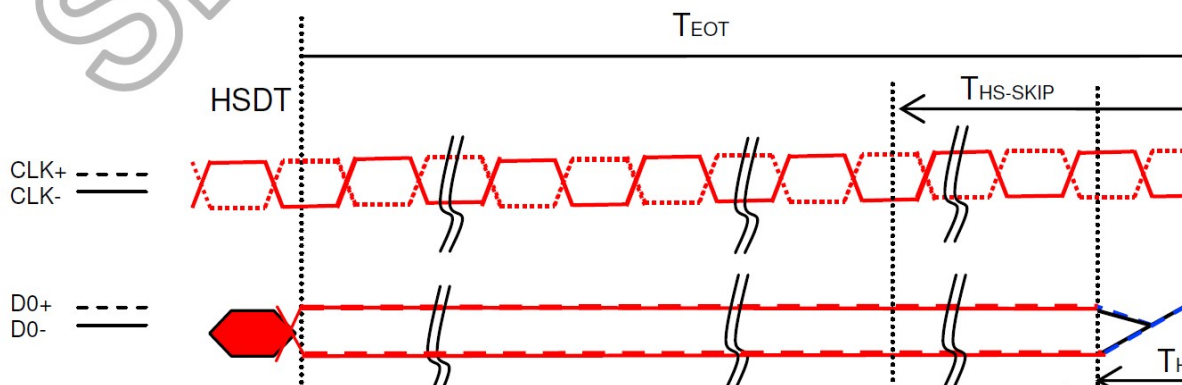
DSI low power mode characteristics

6-4-3 DSI bursts Mode DSI BURSTS



Signal	Item	Symbol	Spec.	
			Min.	Typ.
DSI_D0P/ DSI_D0P	Length of LP-00/LP01/LP10/LP11	T _{LPX}	50	-
	Time to Driver LP-00 to prepare for HS transmission	T _{HS-PREPARE}	40+4UI	-
	Time to enable data receiver line termination	T _{HS-TERM-EN}	-	-
	Time to drive LP-00 by display module	T _{TA-GET}	5xT _{LPXD}	-

DSI low power mode to high speed mode timing



NOTE:

If the last bit is HS-0, the transmitter changes from HS-0 to HS-1

If the last bit is HS-0, the transmitter changes from HS-1 to HS-0

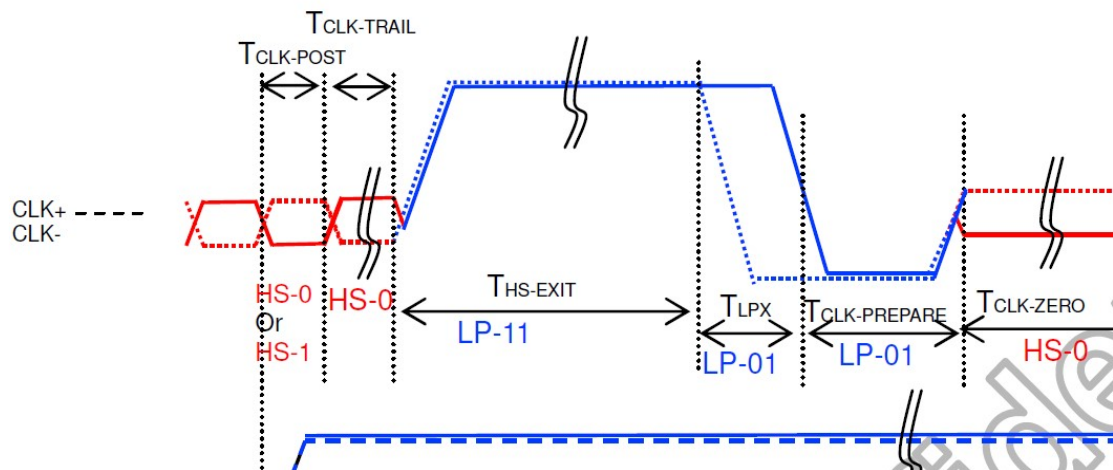
NOTE:

If the last bit is HS-0, the transmitter changes from HS-0 to HS-1

If the last bit is HS-0, the transmitter changes from HS-1 to HS-0

Signal	Item	Symbol	Spec.	
			Min.	Typ.

DSI low power mode to high speed mode timing

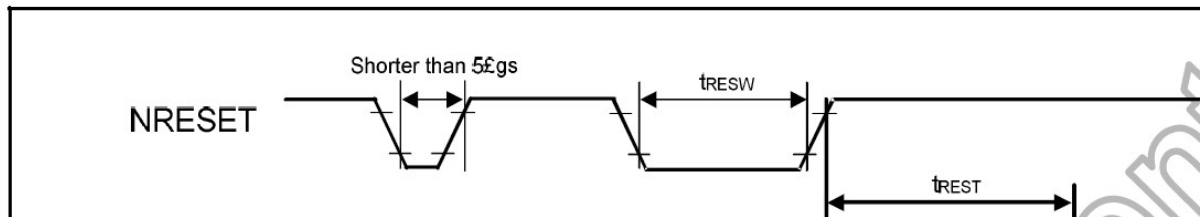


Signal	Item	Symbol	Min.
DSI_CP/ DSI_CN	Time that the MCU shall continue sending HS clock after the last associated Data Lane has transitioned to LP mode	T _{CLK-POST}	60+52xUI
	Time to drive HS differential state after last payload clock bit of a HS transmission burst	T _{CLK-TRAIL}	60
	Time to drive LP-11 after HS burst	T _{HS-EXIT}	100
	Time to drive LP-00 to prepare for HS transmission	T _{CLK-PREPARE}	38
	Time-out at Clock Lane Display Module to enable HS Termination	T _{CLK-TERM-EN}	-

Clock lanes high speed mode to low power mode timing

6-5 Reset input Timing

7.3.3 Reset input timing



Reset input timing

Figure 7.8: Reset input timing

Symbol	Parameter	Related Pins	Spec.			
			Min.	Typ.	Max.	
tRESW	Reset low pulse width ⁽¹⁾	NRESET	10	-	-	When rese

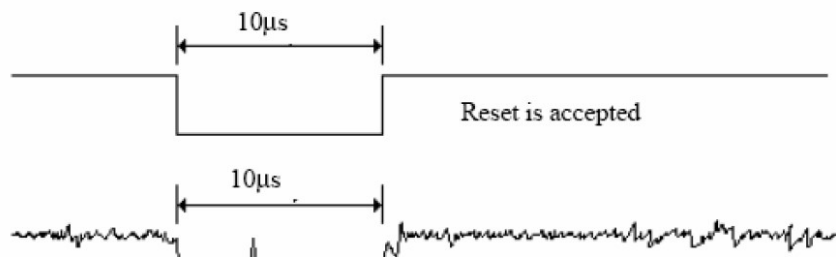
Reset input timing

Note:(1) Spike due to an electrostatic discharge on NRESET line does not cause irregular system reset according to the following table

Note: (1) Spike due to an electrostatic discharge on NRESET line does not cause irregular system reset according to the following table.

NRESET Pulse	Action
Shorter than 5 μ s	Reset Rejected
Longer than 10 μ s	Reset
Between 5 μ s and 10 μ s	Reset Start

- (2) During the resetting period, the display will be blanked (The display is entering blank mode. Maximum time is 120 ms, when Reset Starts in Sleep Out –mode. The display returns to Sleep Out –mode and then return to Default condition for H/W reset)
- (4) Spike Rejection also applies during a valid reset pulse as shown as below:

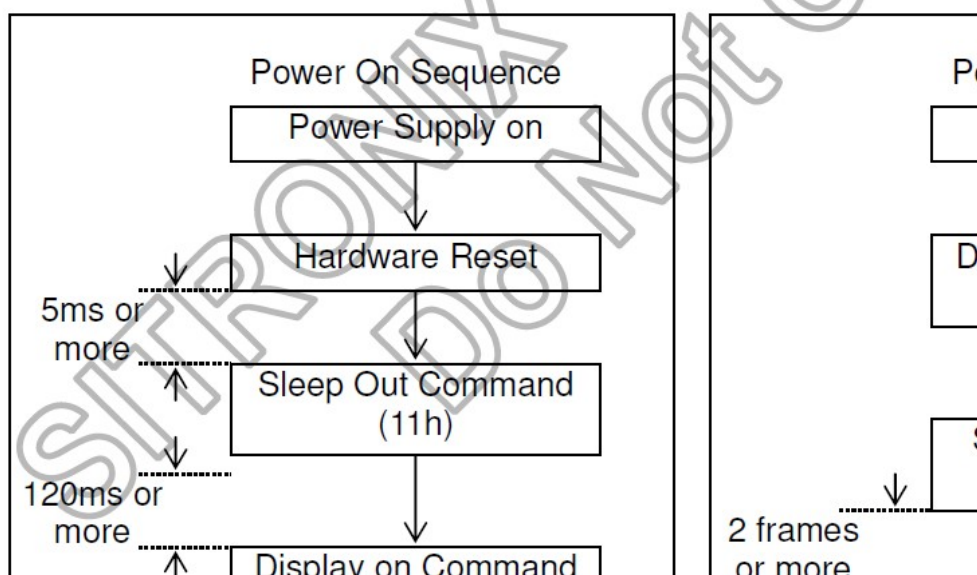


6-6 Power ON/OFF Sequence

Power source IOVCC, VCI can be applied and powered down in any order.
be powered down in any order.

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

During power off, if LCD is in the Sleep In mode, IOVCC, VCI can be powered down minimum 0msec after NRESET has been released.
over NCS.



The power supply ON/OFF setting for display ON/OFF and sleep in/out



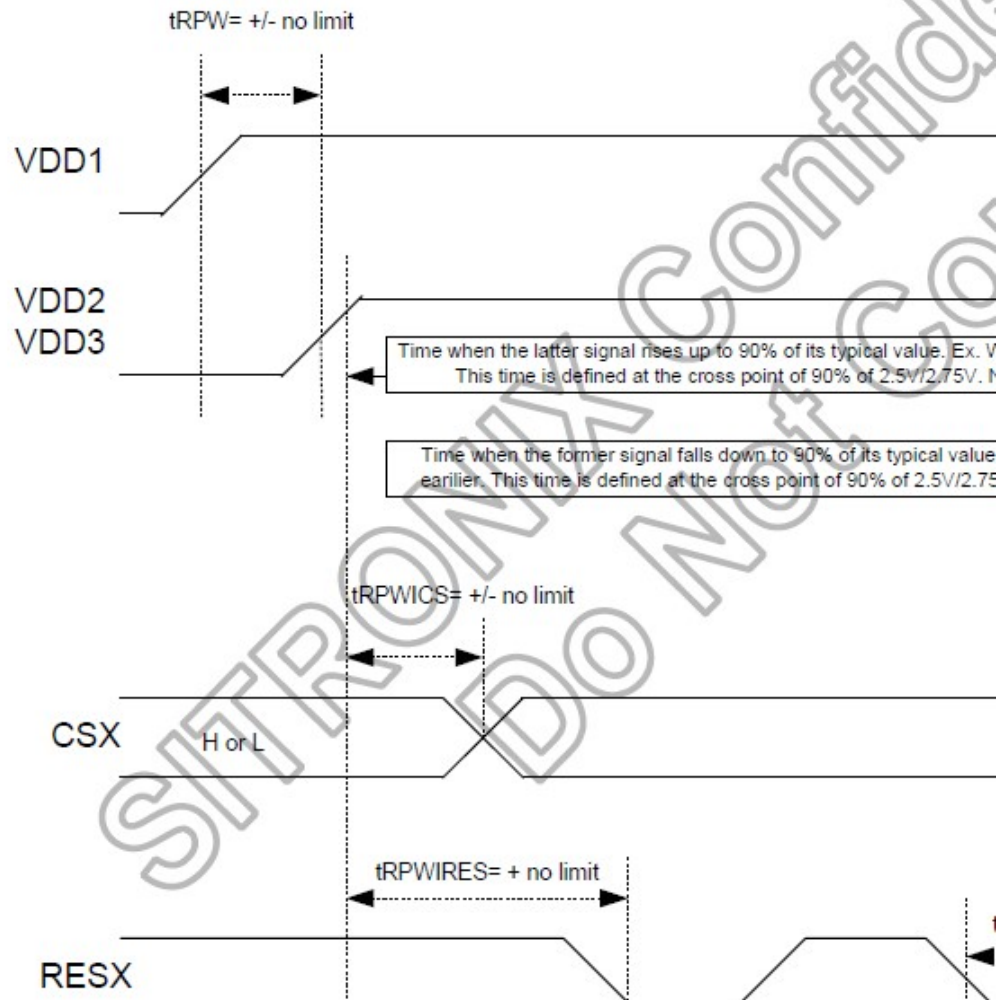
9.1 Uncontrolled Power Off

The uncontrolled power-off means a situation which removed a battery without t

RESX line is held high or unstable by host power on

5.6.1 Case 1: RESX line is held high or unstable by host at power on

If RESX line is held high or unstable by the host during power on
(避免遭到修改。)



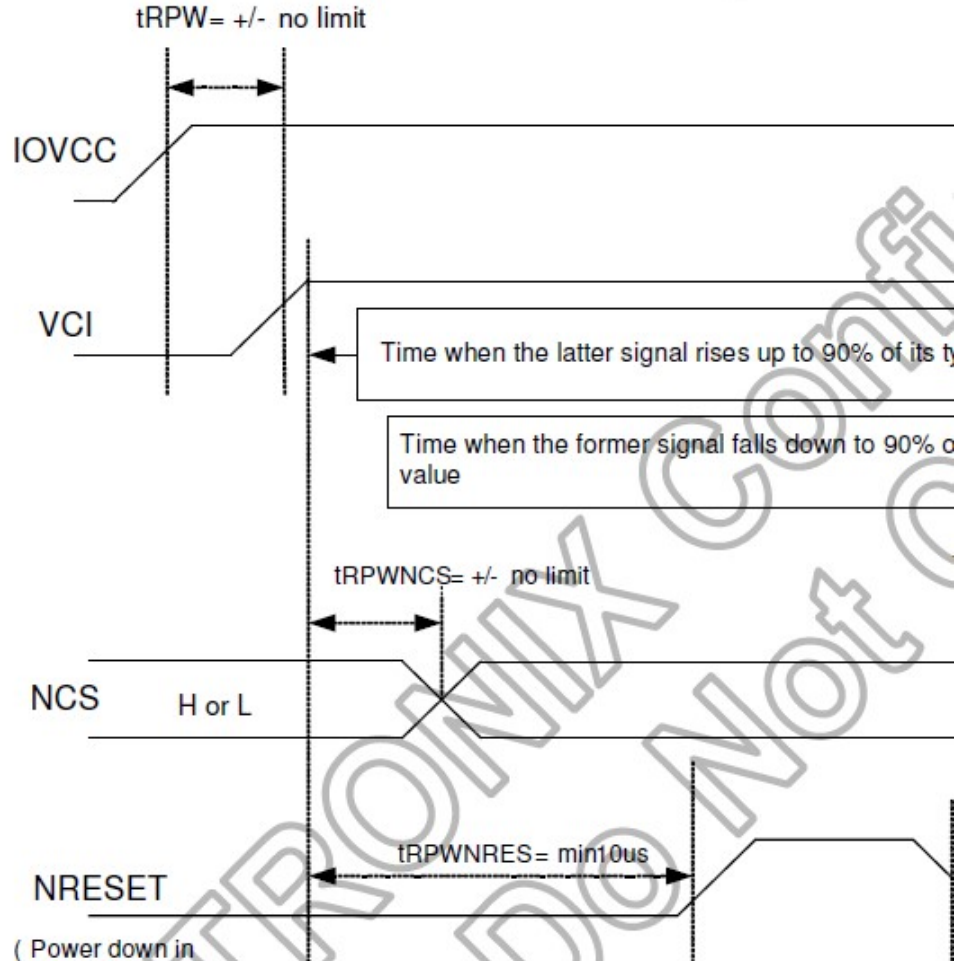
RESX line is held high or unstable by host at power on

RESX line is held low by host at power on

5.6.2 Case 2: RESX line is held low by host at power on

以避免遭到修改。

held low for minimum 10µsec after both VDD1, VDD2 and V



RESX line held low by host at power on

7. Optical Characteristics:

Item	Symbol	Conditions	Specifications			Unit	Note
			Min	Typ	Max		
Transmittance	T(%)	-	3.7	4.3	-	-	-
Contrast Ratio	CR	$\theta=0$ Normal Viewing angle	700	900	-		(1) (2)
Response time	TR+TF	-	-	30	35	ms	(1) (3)
NTSC		-	65	70	-	%	
Viewing angle	Hor.	Θ_{x+}	$CR \geq 10$	70	80	-	deg.
		Θ_{x-}		70	80	-	
	Ver.	Θ_{y+}		70	80	-	
		Θ_{y-}		70	80	-	

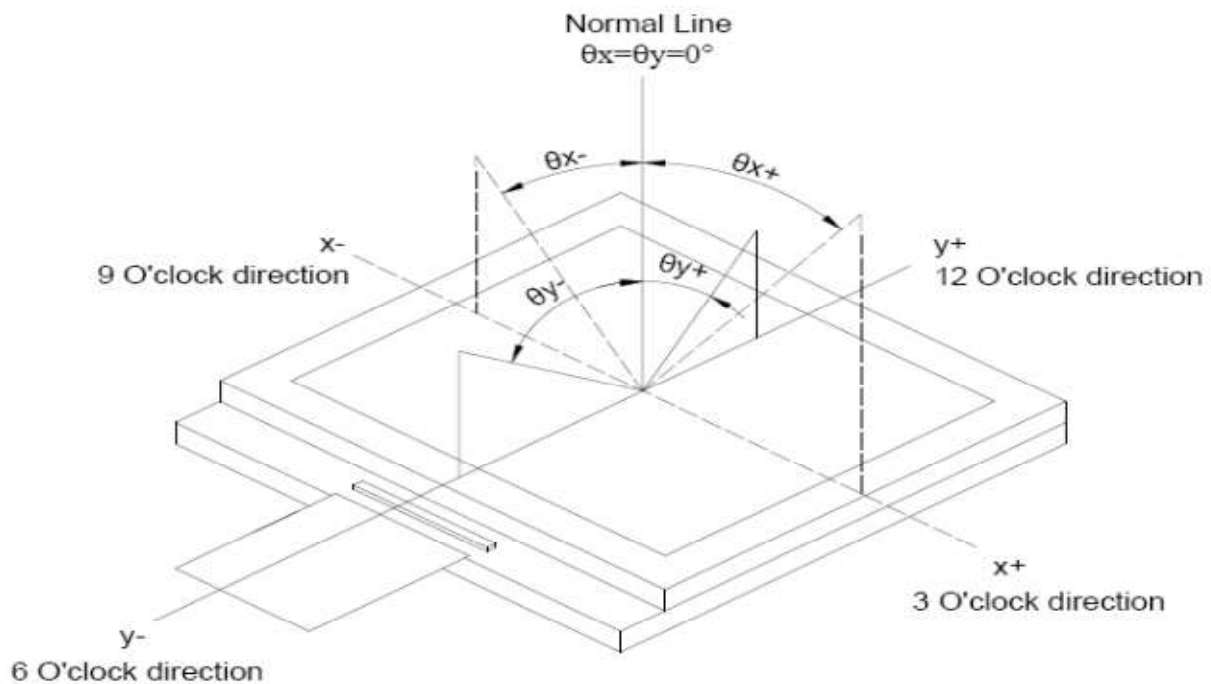
Measuring Condition

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	$\theta = \varphi = 0^{\circ}$ LED Backlight Color Degree	TBD	TBD	TBD
		y		TBD	TBD	TBD
	Green	x		TBD	TBD	TBD
		y		TBD	TBD	TBD
	Blue	x		TBD	TBD	TBD
		y		TBD	TBD	TBD
	White	x		TBD	0.300	TBD
		y		TBD	0.329	TBD

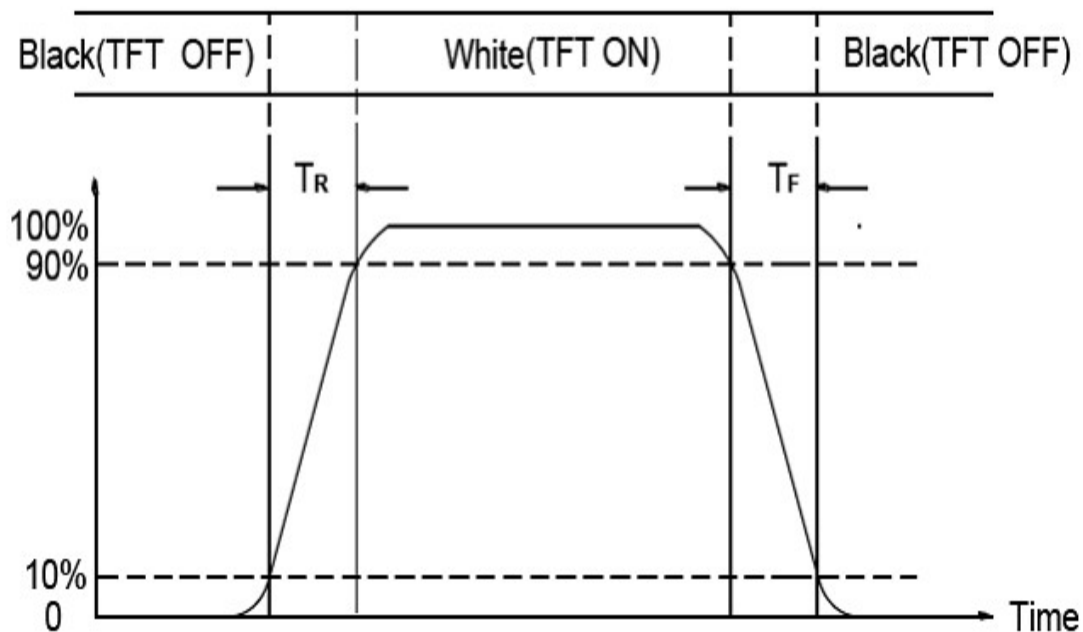
Note (1) Definition of Viewing Angle :



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

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

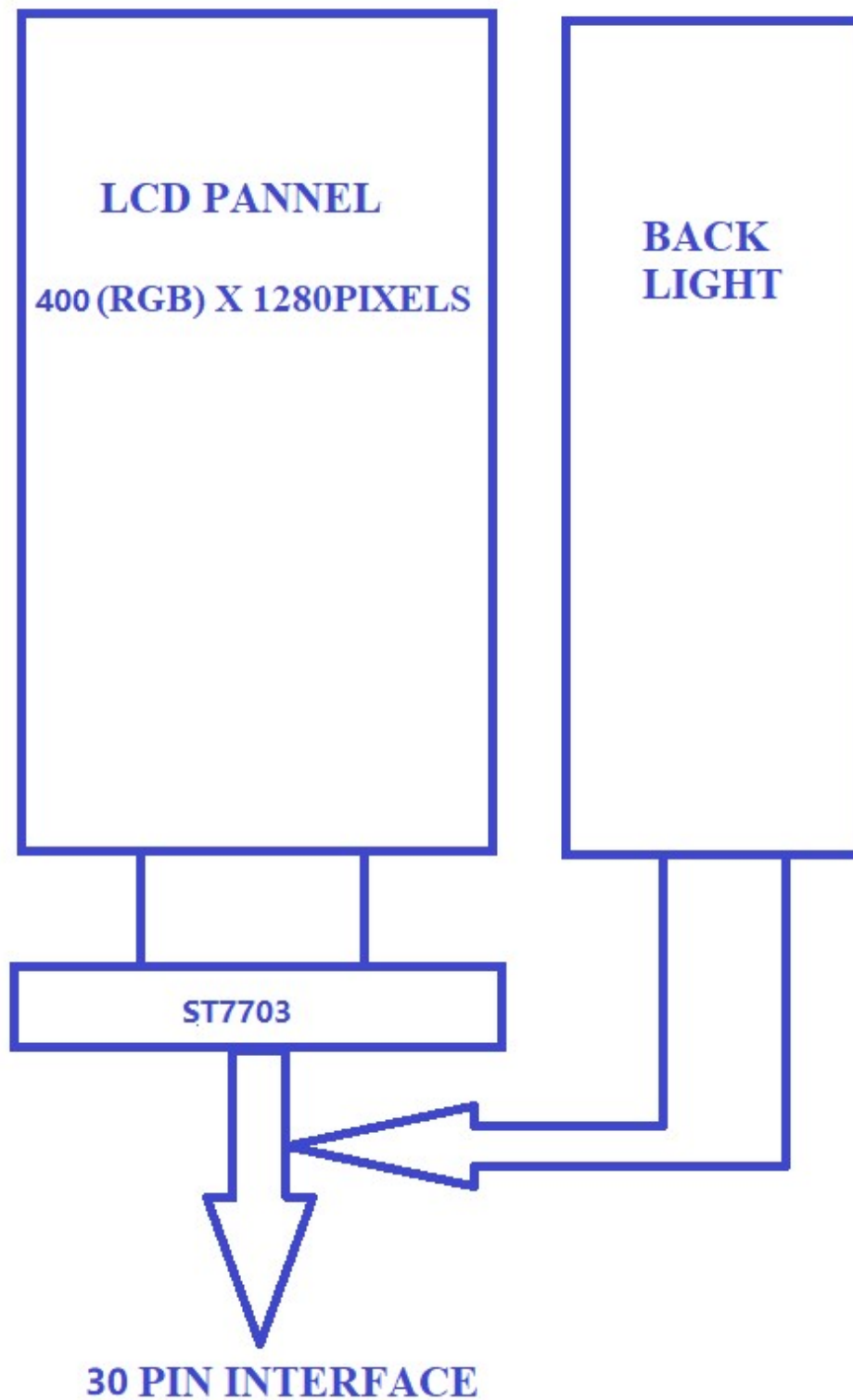
Note (3) Definition of Response Time : Sum of TR and TF



8. Interface Pin Assignment:

No.	Symbol	Function
1	GND	Ground
2	GND	Ground
3	GND	Ground
4	D0P	MIPI Data lane0 positive input
5	D0N	MIPI Data lane0 negative input
6	GND	Ground
7	D1P	MIPI Data lane1 positive input
8	D1N	MIPI Data lane1 negative input
9	GND	Ground
10	CLKP	MIPI clock positive input
11	CLKN	MIPI clock negative input
12	GND	Ground
13	D2P	MIPI Data lane2 positive input
14	D2N	MIPI Data lane2 negative input
15	GND	Ground
16	D3P	MIPI Data lane3 positive input
17	D3N	MIPI Data lane3 negative input
18	GND	Ground
19	GND	Ground
20	RESET	Global reset pin
21	GND	Ground
22	VDDI	Power supply to the internal logic
23	VDD	Power supply to the internal Analog
24	GND	Ground
25	GND	Ground
26	LEDA	Power supply Anode input for backlight
27	LEDK	Power supply Cathode input for backlight
28	GND	Ground
29	GND	Ground
30	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	-	160	-	mA	V=18.6V	
Supply Voltage	V	16.2	18.6	21.0	V	If=160mA	1
Luminous Intensity for LCM (Without TP)	IV	400	450	-	Cd/m2		2
Uniformity for LCM	-	70	-	-	%		3
Life Time	-	20000	-	-	Hr.		4
Color	White						

NOTE:

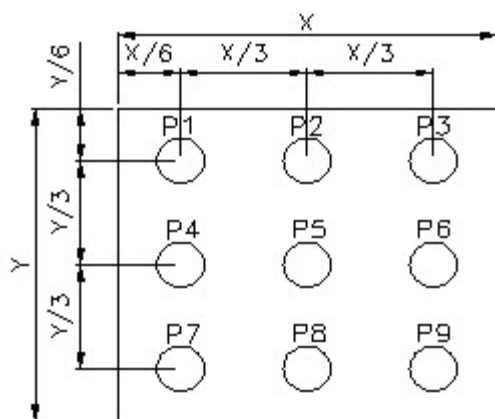
1. Backlight Only

2. Average Luminous Intensity of P1-P9

3. Uniformity = Min/Max * 100%

4. LED life time defined as follow: the final brightness is at 50% of original brightness

Measured Method: (X*Y: Light Area)

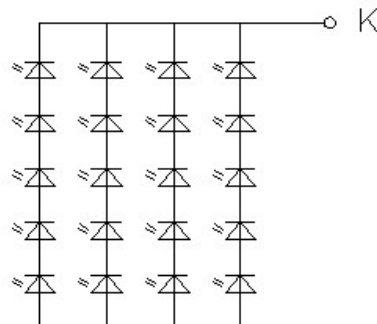


Using aperture of 1°, distance 50cm.

Internal Circuit Diagram

CIRCUIT DIAGRAM

B/L Electrical Circ



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

*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±5°C), 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

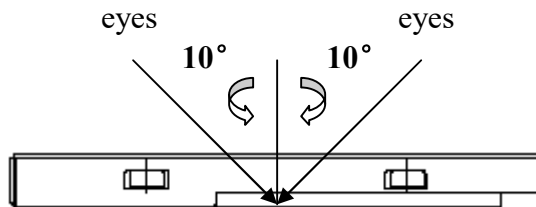
a. Manner of appearance test:

(i) The test must be under $20W \times 2$ or $40W$ fluorescent light, and the distance of view must be at $30 \pm 5\text{cm}$.

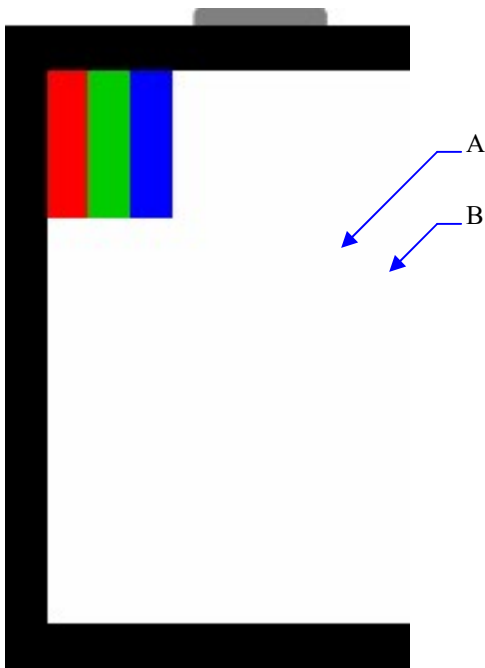
(ii) When test the model of transmissive product must add the reflective plate.

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

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



(iv) Definition of area:



A. Area: Viewing area.

B. Area: Out of viewing area.

(Outside viewing area)

b. Basic principle:

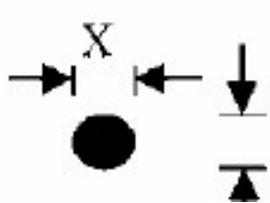
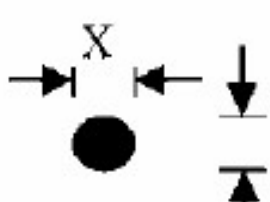

(i) It will accord to the AQL when the standard can not be described.

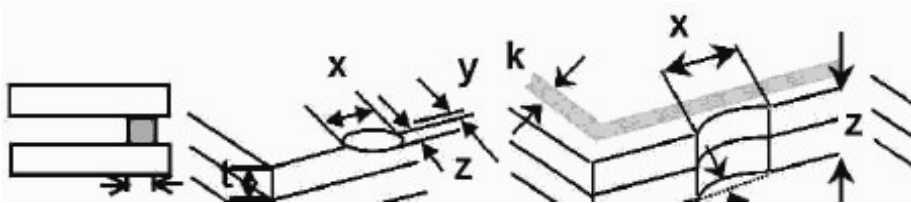

(ii) The sample of the lowest acceptable quality level must be discussed by both supplier and customer when any dispute happened.


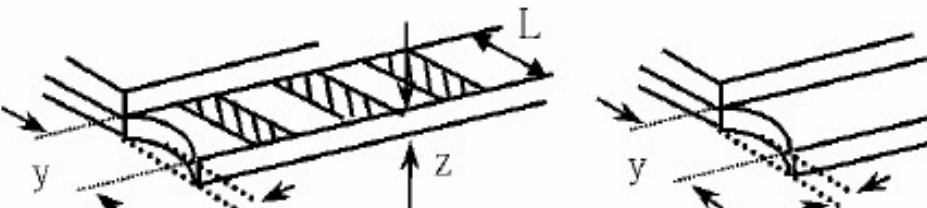

(iii) Must add new item on time when it is necessary.

c. Standard of inspection: (Unit: mm)

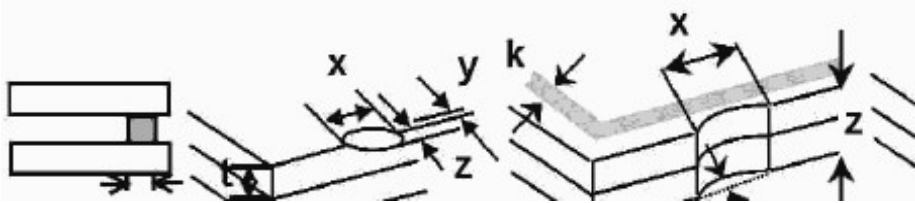

12-6. Inspection specification
Defect out of viewing area can be neglected.

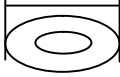
NO	Item	Criterion	AQL																							
01	Electrical Testing	1.1 Missing vertical, horizontal segment, segment contrast defect. 1.2 Missing character, dot or icon. 1.3 Display malfunction. 1.4 No function or no display. 1.5 Current consumption exceeds product specifications. 1.6 LCD viewing angle 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>$0.20 < \Phi \leq 0.40$</td><td>5</td></tr><tr><td>$0.40 < \Phi$</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	$0.20 < \Phi \leq 0.40$	5	$0.40 < \Phi$	0	2.5															
Size(mm)	Acceptable Q'ty																									
$\Phi \leq 0.20$	Accept no dense																									
$0.20 < \Phi \leq 0.40$	5																									
$0.40 < \Phi$	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>$0.20 < \Phi \leq 0.40$</td><td>5</td></tr><tr><td>$0.40 < \Phi$</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	$0.20 < \Phi \leq 0.40$	5	$0.40 < \Phi$	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																									
$0.20 < \Phi \leq 0.40$	5																									
$0.40 < \Phi$	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																								

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><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>	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	<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 7.1 General glass chip: 7.1.1 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>$Z \leq 1/2t$</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> <p>⊙ Unit: mm ⊙ If there are 2 or more chips, x is the total length of each chip</p> <p>7.1.2 Corner crack:</p>  <table><tr><td>z: Chip thickness</td><td>y: Chip width</td><td>x: Chip length</td></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> <p>⊙ Unit: mm ⊙ If there are 2 or more chips, x is the total length of each chip</p>		z: Chip thickness	y: Chip width	x: Chip length	$Z \leq 1/2t$	Not over viewing area	$x \leq 1/8a$	$1/2t < z \leq 2t$	Not exceed 1/3k	$x \leq 1/8a$	z: Chip thickness	y: Chip width	x: Chip length	$Z \leq 1/2t$	Not over viewing area	$x \leq 1/8a$	$1/2t < z \leq 2t$	Not exceed 1/3k	$x \leq 1/8a$	2.5
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	$x \leq 1/8a$																				

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"> <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"> <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"> <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.	2.5 2.5 2.5 2.5 0.65 0.65
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	<div> <div> <p>Symbols:</p> <p>x: Chip length y: Chip width z: Chip thickness</p> <p>k: Seal width t: Touch Panel Total thickness a: LCD side length</p> <p>L: Electrode pad length</p> <p>15.1 General glass chip:</p> <p>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</p> <p>⊙ 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</p> <p>⊙ If there are 2 or more chips, x is the total length of each chip</p> </div> </div>	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)	Acceptable Q'ty	2.5
		$L \leq 0.7$	Accept no dense	
		$L > 0.7\text{mm}$	0	
				
17	Touch Panel Newton ring	Newton ring dimension $\leq 1/2$ touch panel area and not affect font and line distortion($\leq 2.5\%$) , it is acceptable.		2.5
18	Touch Panel Linearity	Less than 2.5% is acceptable.		2.5
19	LCD Ripple	Touch the touch panel , can not see the LCD ripple. Pen: R 1.0mm silicon rubber. Operation Force: 80g		2.5
20	General appearance	20.1 Pin type must match type in specification sheet.		0.65
		20.2 LCD pin loose or missing pins.		0.65
		20.3 Product packaging must the same as specified on packaging specification sheet.		0.65
		20.4 Product dimension and structure must conform to product specification sheet.		0.65

13. Handling Precaution:

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.