

AMOLED SPECIFICATION

Part Number	USMP-A015-027034CDO-B1
Size	1.45"
Resolution	272 x 340
Brightness	350 cd/m²
Contrast	10000:1
Viewing Angle	80/80/80/80 (min)
Operating Temp.	-20 ~ 60°C

FOR ADDITIONAL INFORMATION
PLEASE CONTACT:
engineering@usmicroproducts.com

Issue Date	Approved by (customer use)	Checked by	Prepared by

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Record of Revision

Rev	Issue Date	Description	Editor
A0	2017-01-22	Draft	Xu Lixiong
A1	2017-03-08	Update Mechanical Drawing	Xu Lixiong
A2	2017-04-12	Update R/G/B chromaticity	Xu Lixiong
A3	2017-05-02	Update TP IC type	Xu Lixiong
A4	2018-02-23	Updated Driver IC	Xu Lixiong

1 General Specifications

Feature		Spec	Remark
Display Spec	Screen Size (inch)	1.45	
	Display Mode	AMOLED	
	Resolution(dot)	272 (W) x RGB x 340(H)	
	Active Area(mm)	23.01 (W)×28.77 (H)	
	Pixel Pitch (um)	84.60 (W) x 84.60 (H)	
	Pixel Configuration	V-Style3	
	Technology Type	LTPS	
	Color Depth	16.7M	
	Interface	MIPI 1LANE	
	Surface Treatment	Hard Coating	
Mechanical Characteristics	With TP/Without TP	With TP(on Cell)	
	Module Outline Dimension(W x H x D) (mm)	26.01(W)x33.77(H)x0.79 (D)	Without metal frame
	Weight (g)	TBD	
Electronic	Driver IC(Type)	RM67162	
	TP IC(Type)	FT3267	

Note 1: Requirements on Environmental Protection: RoHS.

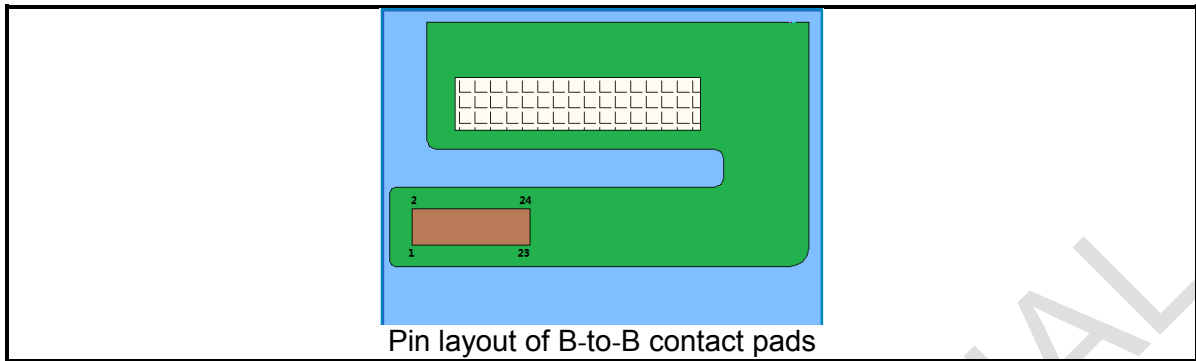
2 Input/output Terminals

2.1 Main FPC Pin Assignment-AMOLED Panel Input / Output Signal Interface

FPC connector: BM20B(0.8)-24DP-0.4V(51)

Main board recommended connector: BM20B(0.8)-24DS-0.4V(51)

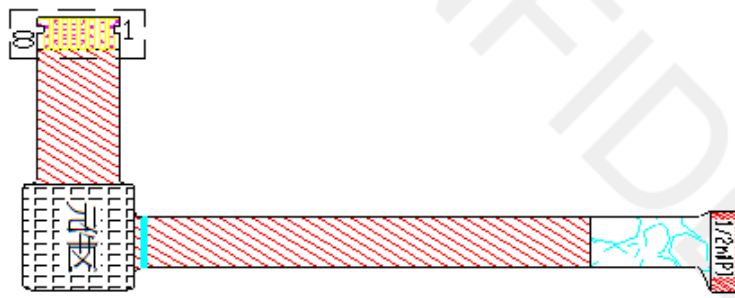
No	Symbol	I/O	Description
1	GND	GND	Ground
2	XRES	I	Device reset signal(0:Enable;1:Disable)
3	DSI_D0N	I/O	MIPI negative data signal
4	SWIRE	O	SWIRE signal for PWR IC control
5	DSI_D0P	I/O	MIPI positive data signal
6	OTP	power	7.5 V, OTP function Pin. Leave this pin OPEN if it is not used.
7	GND	GND	Ground
8	TE	O	Vsync(vertical sync)signal output from panel to avoid tearing effect
9	DSI_CLKN	I	MIPI negative clock signal
10	GND	GND	Ground
11	DSI_CLKP	I	MIPI positive clock signal
12	GND	GND	Ground
13	GND	GND	Ground
14	GND	GND	Ground
15	VDDIO	Power	Power supply for Interface system except MIPI interface
16	VCI	Power	Driver analog power supply
17	GND	GND	Ground
18	GND	GND	Ground
19	ELVSS	Power	AMOLED negative power supply
20	ELVDD	Power	AMOLED positive power supply
21	ELVSS	Power	AMOLED negative power supply
22	ELVDD	Power	AMOLED positive power supply
23	ELVSS	Power	AMOLED negative power supply
24	ELVDD	Power	AMOLED positive power supply



Note: I=Input; O=Output; P=Power; I/O=Input / Output

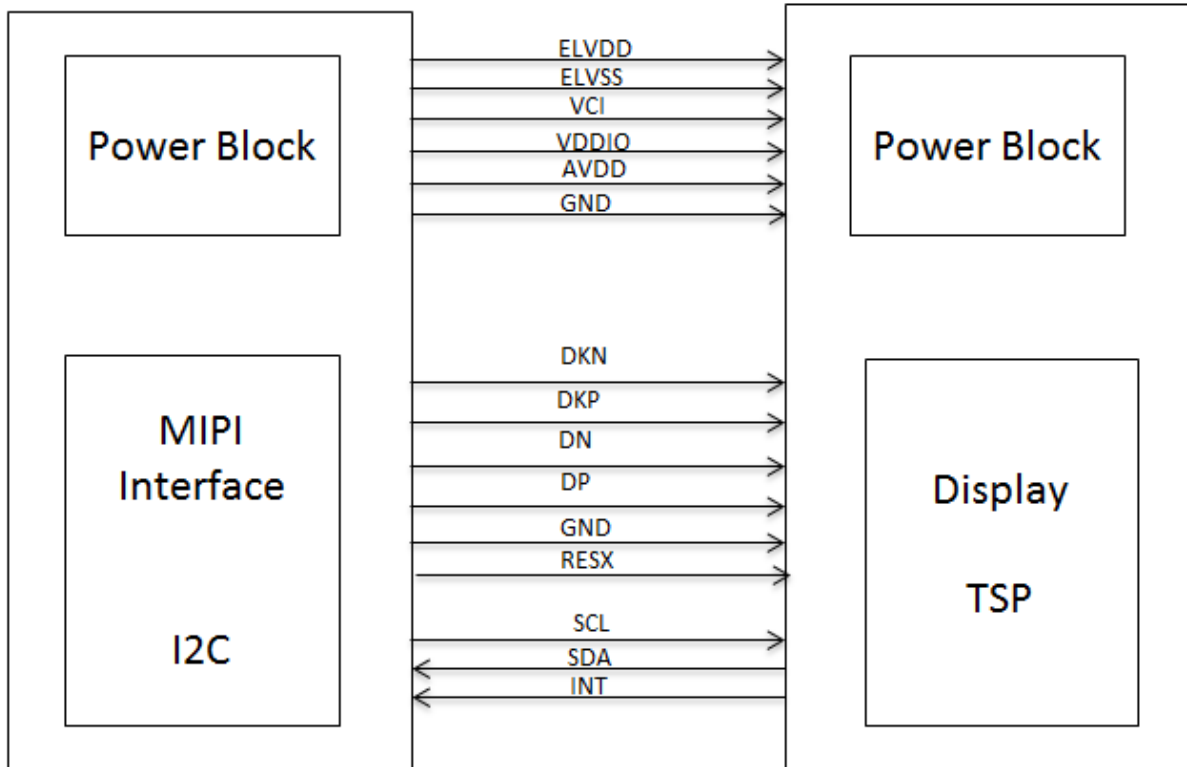
2.2 TP FPC Pin Assignment-On-cell TP Input / Output Signal Interface

No	Symbol	I/O	Description
1	GND	GND	Ground
2	INT	I/O	External interrupt to the host
3	RSTN	I	External Reset, Low is active
4	SCL	I/O	I2C clock input
5	SDA	I/O	I2C data input and output
6	GND	GND	Ground
7	NC	-	Not Connected
8	AVDD	Power	TP power supply input.



TP main board recommended connector: 04 6298 008 100 883+

2.3 System BD and Display Module Interface Conflagration



3 Absolute Maximum Ratings

3.1 Driving AMOLED Panel

Maximum Ratings (Voltage Referenced to VSS) Vss=0V, Ta=25°C

Item	Symbol	MIN	MAX	Unit	Remark
Input Voltage	VCI	-0.3	+5.5	V	
Digital Power supply	VDDIO	-0.3	+5.5	V	
Positive Power Input	ELVDD	-	+5.0	V	
Negative Power Input	ELVSS	-5.0	-	V	
TP power supply Input	AVDD	-0.3	+3.6	V	

Note: Functional operation should satisfy the limits in the Electrical Characteristics tables or Pin Description section. If the module exceeds the absolute maximum ratings, permanent damage may occur. Besides, if the module is operated with the absolute maximum ratings for a long time, the reliability may also drop.

4 Electrical Characteristics

4.1 Driving AMOLED Panel

Ta=25°C

Item		Symbol	MIN	TYP	MAX	Unit	Remark
Input Digital Supply Voltage		VDDIO	1.65	1.80	3.30	V	Note1、Note2
Analog Supply Voltage		VCI	2.70	2.80	3.60	V	
ELVDD Supply Voltage		ELVDD	4.55	4.60	4.65	V	
ELVSS Supply Voltage		ELVSS	-2.46	-2.4	-2.34	V	
TP power supply Input		AVDD	2.8	2.8	3.6	V	
Input Signal Voltage	High Level	VIH	0.80*VDDIO	-	VDDIO	V	
	Low Level	VIL	0.00	-	0.20*VDDIO	V	
Output Signal Voltage	High Level	VOH	0.80*VDDIO	-	VDDIO	V	
	Low Level	VOL	0.00	-	0.20*VDDIO	V	

Note1: The input digital voltage is the I/O reference voltage.

Note2: VDDIO usually ranges from 1.65V to 1.95 V. If VDDIO is changed, the remaining voltage needs to be changed to the same voltage as VDDIO.

4.2 Current Consumption

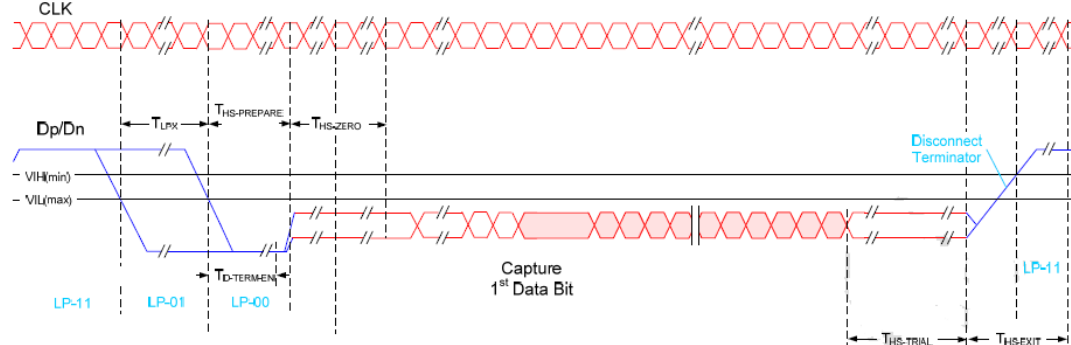
Item		Symbol	Condition	Min.	Typ.	Max.	Unit	Remark
Panel Power		P _{NL}	ELVDD=4.6V	-	129	143	mW	Note1
		I _{NL}	ELVSS=-2.4V	-	15	17	mA	Note1
IC	Normal	I _{VCI}	VCI=2.8V	-	TBD	-	mA	-
		I _{IOVCC}	VDDIO=1.8V	-	TBD	-	mA	-
	Stand-by	I _{VCI}	VCI=2.8V	-	TBD	-	uA	-
		I _{IOVCC}	VDDIO=1.8V	-	TBD	-	uA	-

Note1: Based on L255 (350nits) full white pattern.

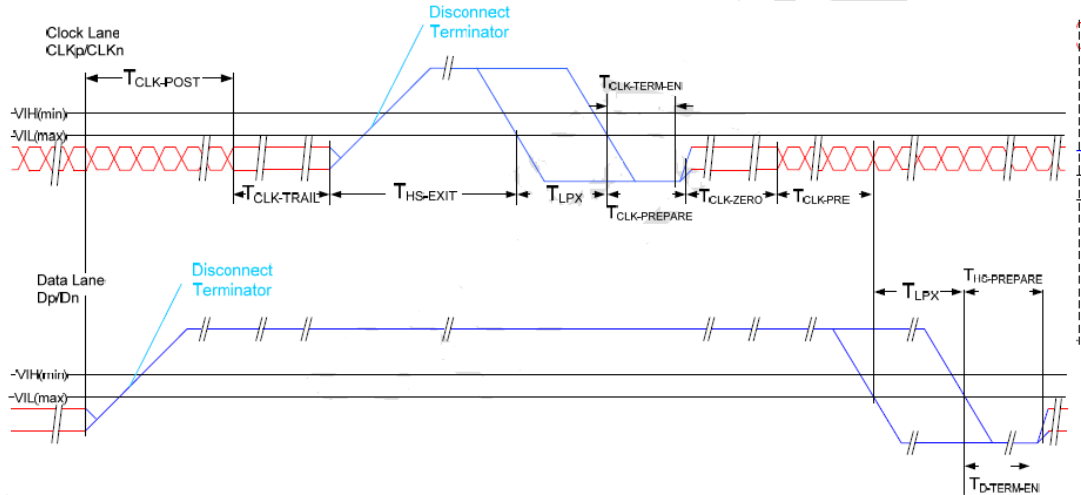
Note2: Based on white pattern. MIPI-DSI frame 60Hz.

5 AC Characteristics

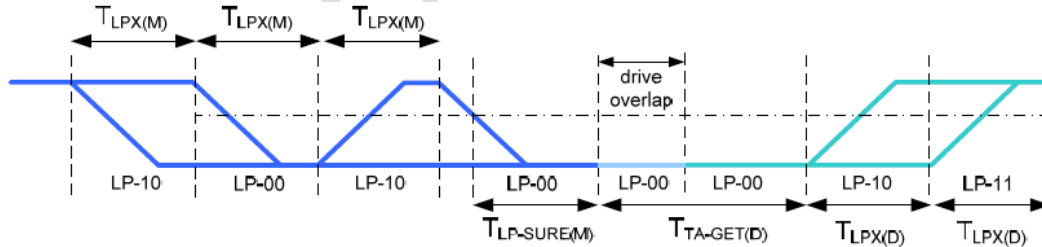
5.1 MIPI Interface Characteristics HS Data Transmission Burst



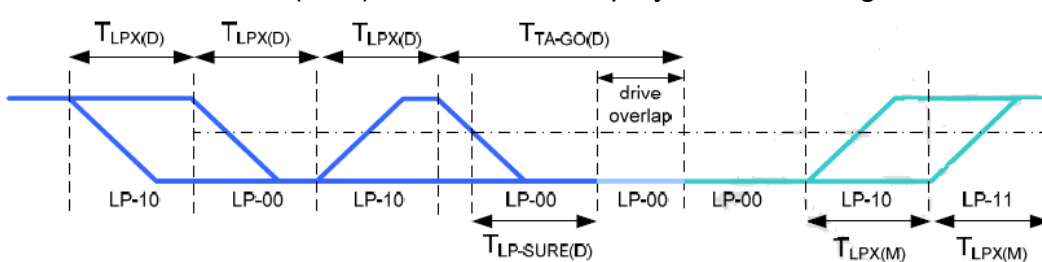
HS clock transmission



Turnaround Procedure



Bus turnaround (BAT) from MPU to display module timing



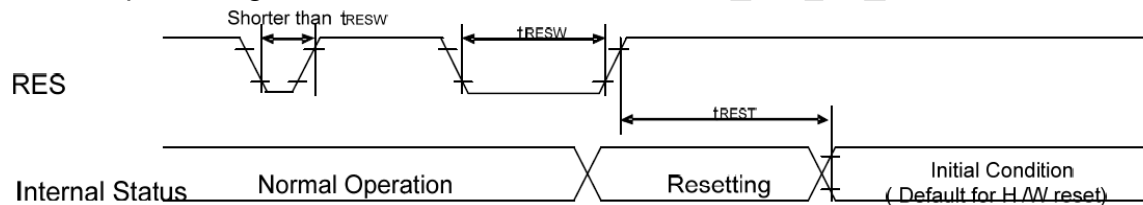
Timing Parameters:

Parameter	Description	Min	Typ	Max	Unit
$T_{CLK-POST}$	Time that the transmitter continues to send HS clock after the last associated Data Lane has transitioned to LP Mode. Interval is defined as the period from the end of $T_{HS-TRAIL}$ to the beginning of $T_{CLK-TRAIL}$.	$60ns + 52*UI$			ns
$T_{CLK-TRAIL}$	Time that the transmitter drives the HS-0 state after the last payload clock bit of a HS transmission burst.	60			ns
$T_{HS-EXIT}$	Time that the transmitter drives LP-11 following a HS burst.	300			ns
$T_{CLK-TERM-EN}$	Time for the Clock Lane receiver to enable the HS line termination, starting from the time point when Dn crosses $V_{IL,MAX}$.	Time for Dn to reach $V_{TERM-EN}$		38	ns
$T_{CLK-PREPARE}$	Time that the transmitter drives the Clock Lane LP-00 Line state immediately before the HS-0 Line state starting the HS transmission.	38		95	ns
$T_{CLK-PRE}$	Time that the HS clock shall be driven by the transmitter prior to any associated Data Lane beginning the transition from LP to HS mode.	8			UI
$T_{CLK-PREPARE} + T_{CLK-ZERO}$	$T_{CLK-PREPARE}$ + time that the transmitter drives the HS-0 state prior to starting the Clock.	300			ns
$T_{D-TERM-EN}$	Time for the Data Lane receiver to enable the HS line termination, starting from the time point when Dn crosses $V_{IL,MAX}$.	Time for Dn to reach $V_{TERM-EN}$		$35 ns + 4*UI$	
$T_{HS-PREPARE}$	Time that the transmitter drives the Data Lane LP-00 Line state immediately before the HS-0 Line state starting the HS transmission	$40ns + 4*UI$		$85 ns + 6*UI$	ns
$T_{HS-PREPARE} + T_{HS-ZERO}$	$T_{HS-PREPARE}$ + time that the transmitter drives the HS-0 state prior to transmitting the Sync sequence.	$145ns + 10*UI$			ns
$T_{HS-TRAIL}$	Time that the transmitter drives the flipped differential state after last payload data bit of a HS transmission burst	$60ns + 4*UI$			ns

Parameter	Description	Min	Typ	Max	Unit	Notes
$T_{LPX(M)}$	Transmitted length of any Low-Power state period of MCU to display module	50		150	ns	1,2
$T_{TA-SURE(M)}$	Time that the display module waits after the LP-10 state before transmitting the Bridge state (LP-00) during a Link Turnaround.	$T_{LPX(M)}$		$2 \cdot T_{LPX(M)}$	ns	2
$T_{LPX(D)}$	Transmitted length of any Low-Power state period of display module to MCU	50		150	ns	1,2
$T_{TA-GET(D)}$	Time that the display module drives the Bridge state (LP-00) after accepting control during a Link Turnaround.		$5 \cdot T_{LPX(D)}$		ns	2
$T_{TA-GO(D)}$	Time that the display module drives the Bridge state (LP-00) before releasing control during a Link Turnaround.		$4 \cdot T_{LPX(D)}$		ns	2
$T_{TA-SURE(D)}$	Time that the MPU waits after the LP-10 state before transmitting the Bridge state (LP-00) during a Link Turnaround.	$T_{LPX(D)}$		$2 \cdot T_{LPX(D)}$	ns	2

5.2 Display RESET Timing Characteristics

Reset input timing:



VDDIO=1.65 to 3.3V, VDD=2.7 to 3.6V, AGND=DGND=0V, Ta=-40 to 85°C

Timing Parameters:

Symbol	Parameter	Related Pins	MIN	TYP	MAX	Note	Unit
t_{RESW}	*1) Reset low pulse width	RESX	10	-	-	-	μs
t_{REST}	*2) Reset complete time	-	-	-	5	When reset applied during Sleep in mode	ms
		-	-	-	120	When reset applied during Sleep out mode	ms

Note 1. Spike caused by an electrostatic discharge on RESX line does not cause irregular system reset according to the table below.

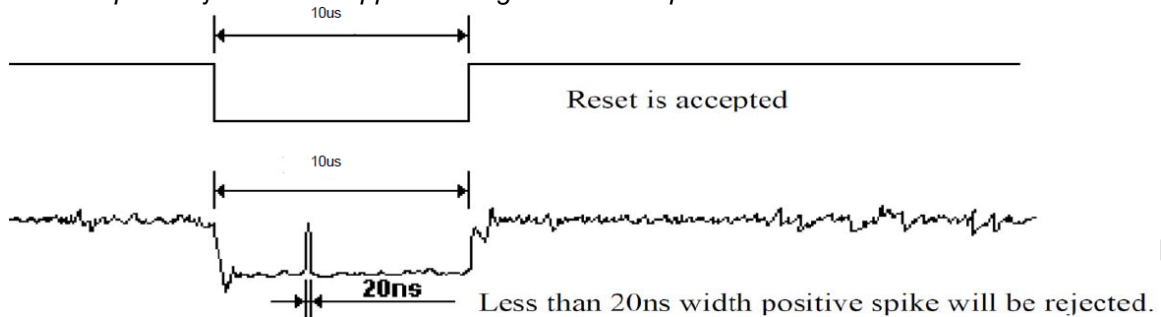
RESX Pulse	Action
Shorter than 5 μs	Reset Rejected
Longer than 10 μs	Reset
Between 5 μs and 10 μs	Reset starts (It depends on voltage and temperature condition.)

Note 2. During the resetting period, the display will be blank (The display is entering blanking sequence, whose maximum time is 120 ms, when Reset Starts in Sleep Out –mode. The display remains blank in Sleep In –mode) and then return to Default condition for H/W reset.

Note 3. During Reset Complete Time, data in OTP will be latched to internal register during this period. This loading is done every time when there is H/W reset complete time (t_{REST}) within 5ms after a rising edge

of RESX.

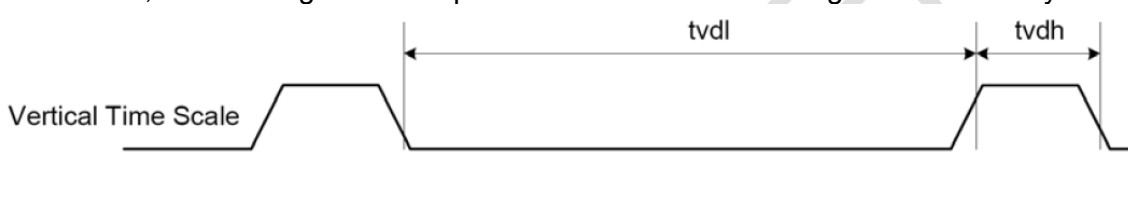
Note 4. Spike Rejection also applies during a valid reset pulse as shown below:



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

5.3 TE Timing Characteristics

Mode1, The Tearing Effect Output line consists of V-Blanking information only.



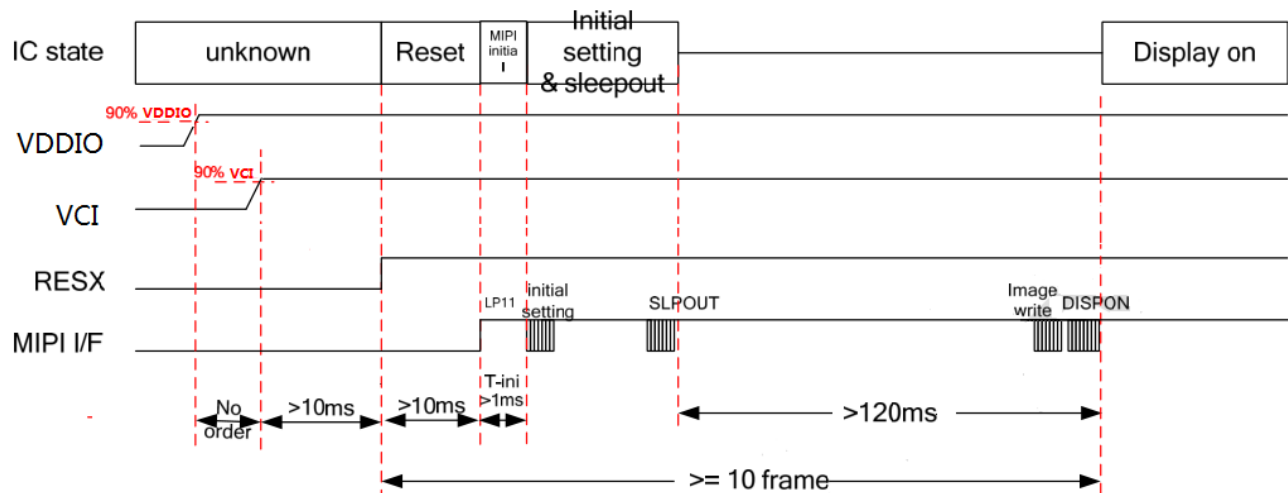
Tvdh = The LCD display is not updated from the frame memory.

Tvdl = The LCD display is updated from the frame memory.

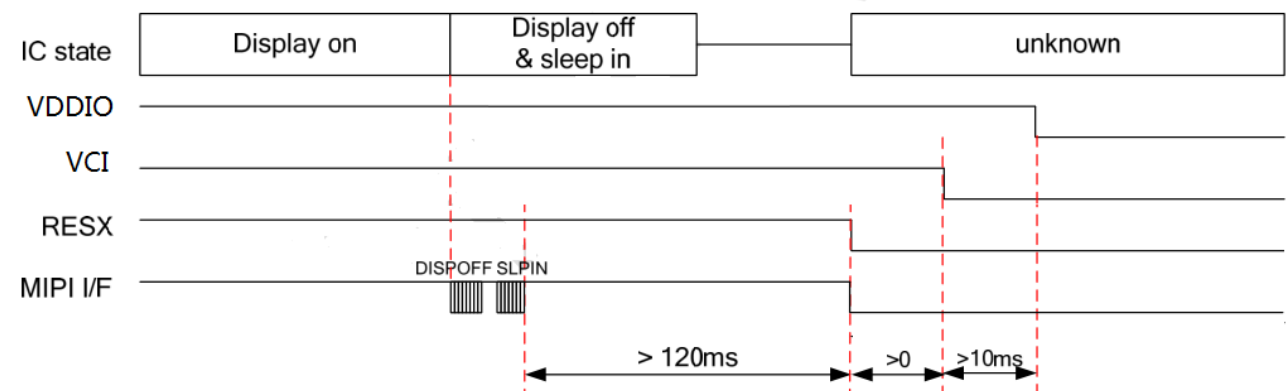
6 Recommended Operating Sequence

6.1 Display Power on / off Sequence

6.1.1 Power On Sequence



6.1.2 Power Off Sequence



6.2 Brightness control

Inst/Para	R/W	Address		Data Type	Description
		MIPI	Other		
BRTCTRL	W	51h	5100h	Hex	Value form 0~255(FF)

Note: 00h value means the lowest brightness and FFh value means the highest brightness

7 Optical Characteristics Optical Specification

Item		Symbol	Condition	Min	Typ	Max	Unit	Remark
View Angle		θT	CR≥10	80			Degree	Note 2 Test Equipment: CS2000A
		θB		80				
		θL		80				
		θR		80				
Contrast Ratio		CR	θ=0°	10000				Note1 Note3 Test Equipment: CS2000A
Response Time		T _{ON}	25℃			4	ms	Note1 Note4 Test Equipment: Admesy MSE
		T _{OFF}						
Chromaticity	White	x		0.292	0.312	0.332		Test Equipment: CS2000A Note: Chromaticity can be modified according to customer demand
		y		0.309	0.329	0.349		
	Red	x		0.625	0.655	0.685		
		y		0.315	0.345	0.375		
	Green	x		0.210	0.250	0.290		
		y		0.670	0.710	0.750		
	Blue	x		0.105	0.135	0.165		
		y		0.030	0.060	0.090		
Uniformity		U		75			%	Note1 Note6 luminance of center point is 350±35nits Test Equipment: CS2000A
NTSC				85	100		%	Note5
Luminance		L		315	350	385	Cd/m ²	Note1 Note7 Test Equipment: CS2000A

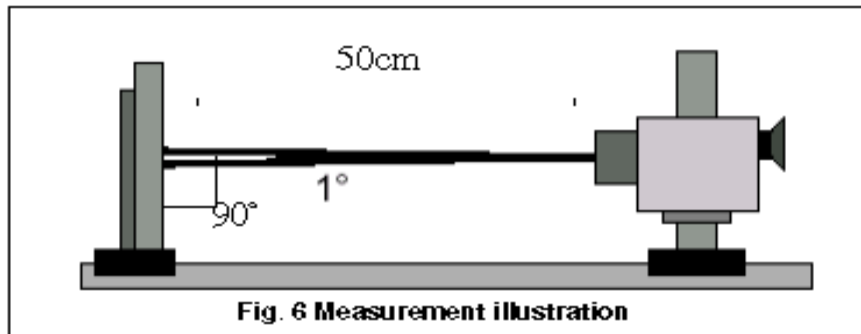
Cross-talk					3	%	Note8 $L \leq 350\text{nits}$ Test Equipment: CS2000A
Gamma			1.9	2.2	2.5		Gamma= 2.2 ± 0.3 ($L \leq 350\text{nits}$) ; Gamma Self-adjustment ($L > 350\text{nits}$) Test Equipment: CS2000A

Test Conditions:

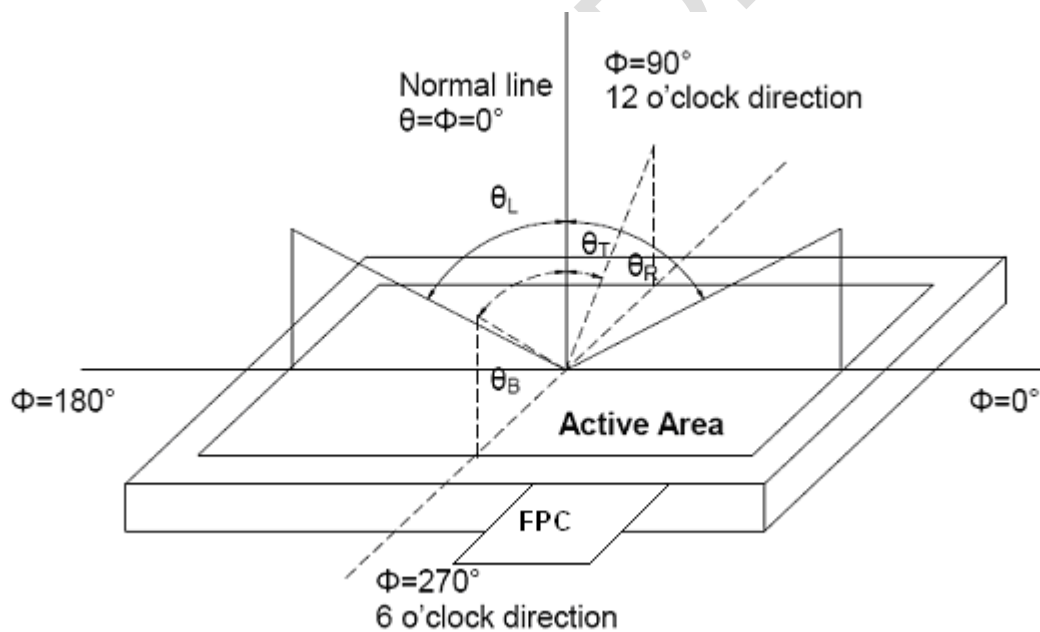
1. the ambient temperature is 25°C.
2. The test systems refer to Note1 and Note2.

Note 1: Definition of optical measurement system.

The optical characteristics should be measured in dark room. The optical properties are measured at the center point of the AMOLED screen. All input terminals AMOLED panel must be ground when measuring the center area of the panel.



Note 2: Definition of viewing angle range and measurement system.



Note 3: Definition of contrast ratio

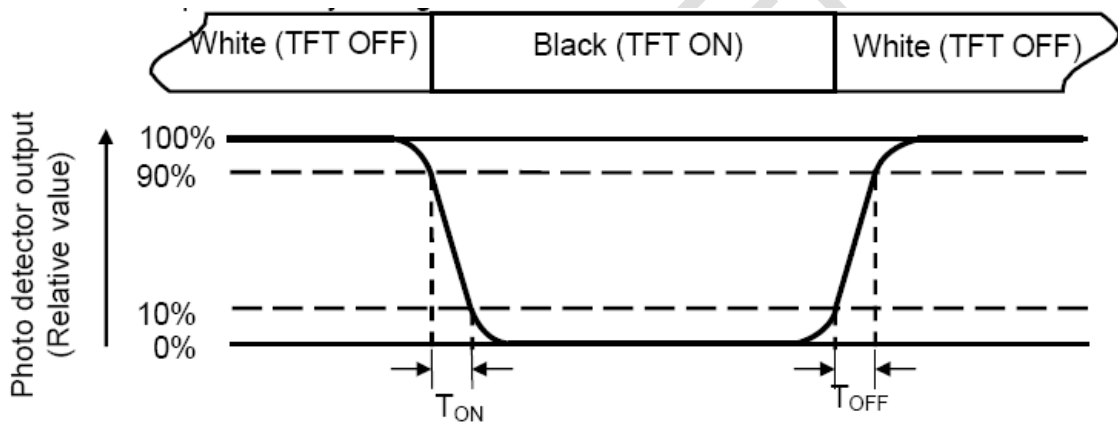
$$\text{Contrast ratio (CR)} = \frac{\text{Luminance measured when LCD is on the "white" state}}{\text{Luminance measured when LCD is on the "Black" state}}$$

"White state ": A state where the AMOLED should be driven by V_{white}.

"Black state": A state where the AMOLED should be driven by V_{black}.

Note 4: Definition of response time

The response time is defined as the AMOLED optical switching time interval between "White" state and "Black" state. Rise time (T_{ON}) is the time between photo detector output intensity changed from 90% to 10%. And fall time (T_{OFF}) is the time between photo detector output intensity changed from 10% to 90%.



Note 5: Definition of color chromaticity (CIE1931)

Color coordinates measured at center point of AMOLED.

Note 6: Definition of luminance uniformity

Active area is divided into 5 measuring areas (Refer Fig. 2). Every measuring point is placed at the center of each measuring area.

$$\text{Luminance Uniformity}(U) = L_{\min} / L_{\max}$$

L-----Active area length W----- Active area width

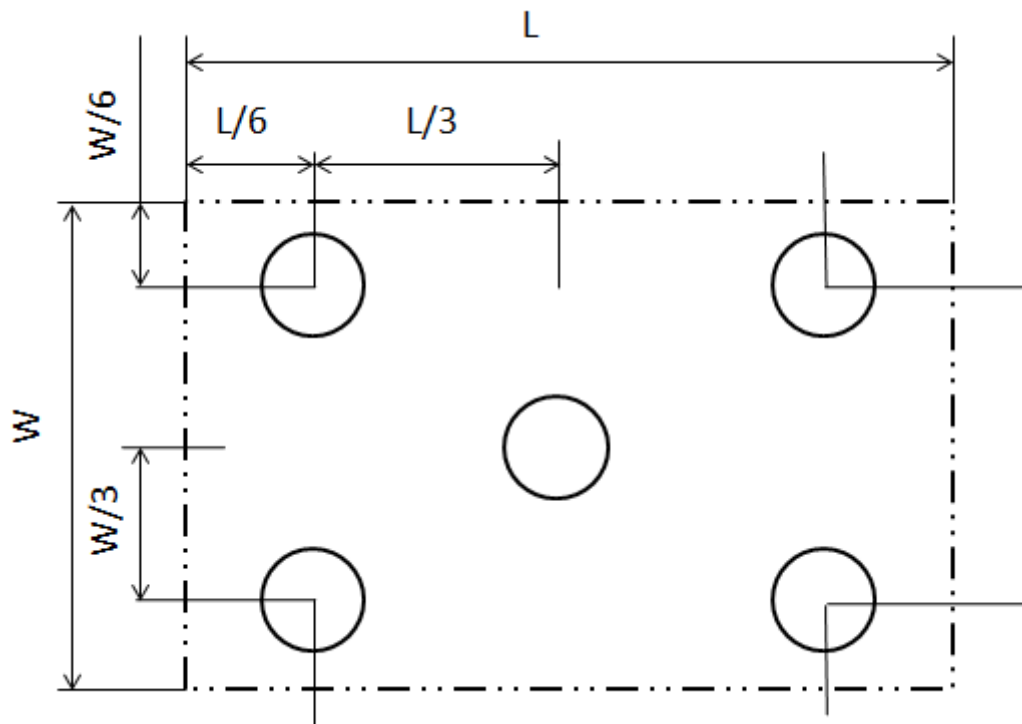


Fig. 2 Definition of uniformity

L_{\max} : The measured maximum luminance of all measurement position.

L_{\min} : The measured minimum luminance of all measurement position.

Note 7: Definition of luminance:

Measure the luminance of white state at center point.

Note 8: Cross Talk

A. Measure luminance at the position, P0.

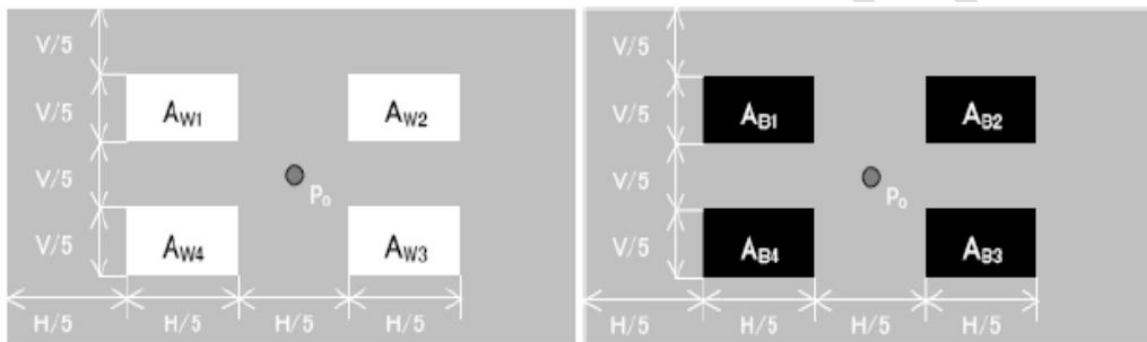
B. Calculate cross talk as below equation.

$$L_{W_OFF} = \frac{L_{W1} + L_{W2} + L_{W3} + L_{W4}}{4}$$

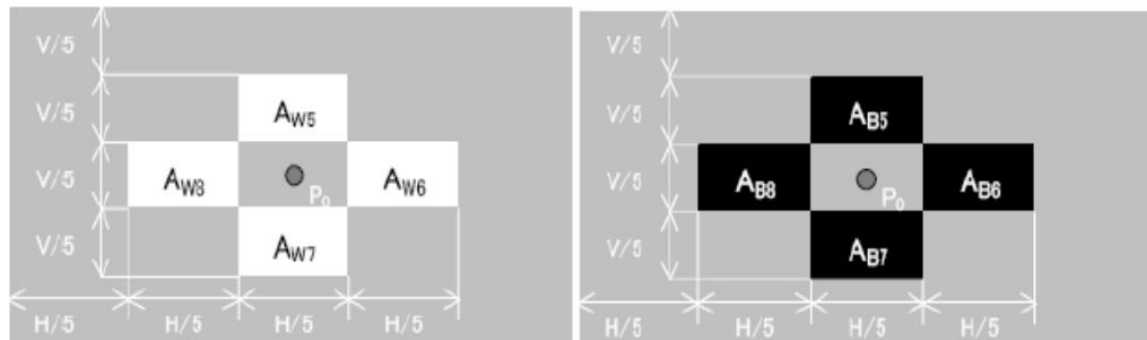
$$L_{B_OFF} = \frac{L_{B1} + L_{B2} + L_{B3} + L_{B4}}{4}$$

$$\text{crosstalk} = \frac{|L_{Wi_ON} - L_{W_OFF}|}{L_{W_OFF}} \times 100\% \quad (i = 5 \text{ to } 8)$$

$$\text{crosstalk} = \frac{|L_{Bi_ON} - L_{B_OFF}|}{L_{B_OFF}} \times 100\% \quad (i = 5 \text{ to } 8)$$

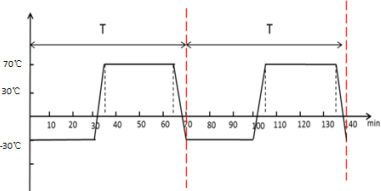
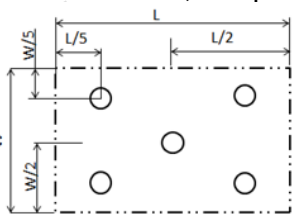


(a) L_{W_OFF} , L_{B_OFF} measuring pattern



(b) L_{W_ON} , L_{B_ON} measuring pattern

8 Environmental / Reliability Test

No	Test Item	Condition	Remark
1	High Temperature Operation	+60℃, 240hrs	IEC60068-2-2, GB2423.2
2	Low Temperature Operation	-20℃, 240hrs	IEC60068-2-1 GB2423.1
3	High Temperature Storage	+70℃, 240hrs	IEC60068-2-2 GB2423.2
4	Low Temperature Storage	-30℃, 240hrs	IEC60068-2-1 GB2423.1
5	High Temperature & High Humidity Operation	60℃, 90% RH, 240hrs	IEC60068-2-78 GB/T2423.3
6	Thermal Shock (Non-operation)	-30℃ (30 min) ~ +70℃ (30 min), Change time: 5min, 100 Cycles 	Start with cold temperature, End with high temperature, IEC60068-2-14, GB2423.22
7	Electro Static Discharge (Operation)	C=150pF, R=330Ω, 5points/panel Air: ±8KV, 5times; Contact: ±4KV, 5 times; (Environment: 15℃~35℃, 30%RH~60%RH, 86Kpa~106Kpa). 	IEC61000-4-2 GB/T17626.2
8	Package Drop Test	1 corner, 3 edges, 6 surfaces Drop height: 760mm	IEC60068-2-32 GB/T2423.8
9	Package Vibration Test	Random Vibration: 1.15Grms, 1~200Hz, Random, 30mins/ (X, Y, Z) axis	IEC60068-2-34 GB/T2423.11

9 Quality Level

9.1 AMOLED Module of Characteristic Inspection

The environmental condition and visual inspection shall be conducted as below:

- (1) Ambient temperature: $22 \pm 3^{\circ}\text{C}$
- (2) Humidity: $65 \pm 20\%\text{RH}$
- (3) Ambient light intensity: 800 ~ 1200 lux
- (4) Viewing Distance: $35 \pm 5\text{cm}$
- (5) Viewing angle (tolerance): the front side 90° (Z) $\pm 30^{\circ}$
- (6) Inspection time: $10 \pm 2\text{ sec}$

9.2 Sampling Procedures for each item acceptance table

Defect type	Sampling Procedures	AQL
Major defect	GB/T2828.1-2003 Inspection level II normal inspection single sample inspection	0.65
Minor defect	GB/T2828.1-2003 Inspection level II normal inspection single sample inspection	1.50

Major defect

Any defect may result in functional failure, or reduce the usability of product for its purpose, such as electrical failure, deformation and etc.

Minor defect

A defect does not reduce the usability of product for its intended purpose and un-uniformity, such as dot defect and etc.

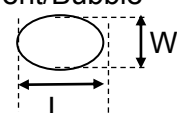
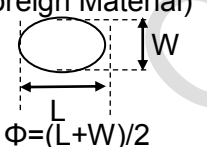
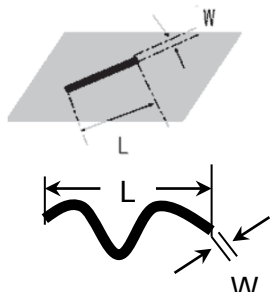
The criteria on major and/or minor judgment will be according with the classification of defects. AQL means that the quality level of product is acceptable for shipment, and the AQL shall satisfy with customer's quality request.

9.3 Inspection Item

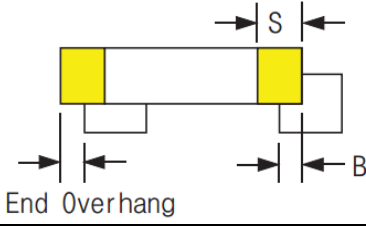
10.3.1 Function tests

No.	Item	Criterion of Defect	Type													
1	Dot Defect	<table><tr><td colspan="2">Defect</td><td>Acceptable number</td></tr><tr><td colspan="2">Bright Dot</td><td>0</td></tr><tr><td rowspan="3">Dark Dot</td><td>Red</td><td>2</td></tr><tr><td>Green</td><td>2</td></tr><tr><td>Blue</td><td>2</td></tr></table>	Defect		Acceptable number	Bright Dot		0	Dark Dot	Red	2	Green	2	Blue	2	Minor
		Defect		Acceptable number												
		Bright Dot		0												
		Dark Dot	Red	2												
			Green	2												
			Blue	2												
Dark Dot Distance $\geq 5\text{mm}$ (Acceptable)																
2	No Display	Not allowed	Major													
3	Abnormal Display	Not allowed	Major													
4	Normally white	Not allowed	Major													
5	Flicker	Not allowed	Major													
6	Missed Line	Not allowed	Major													

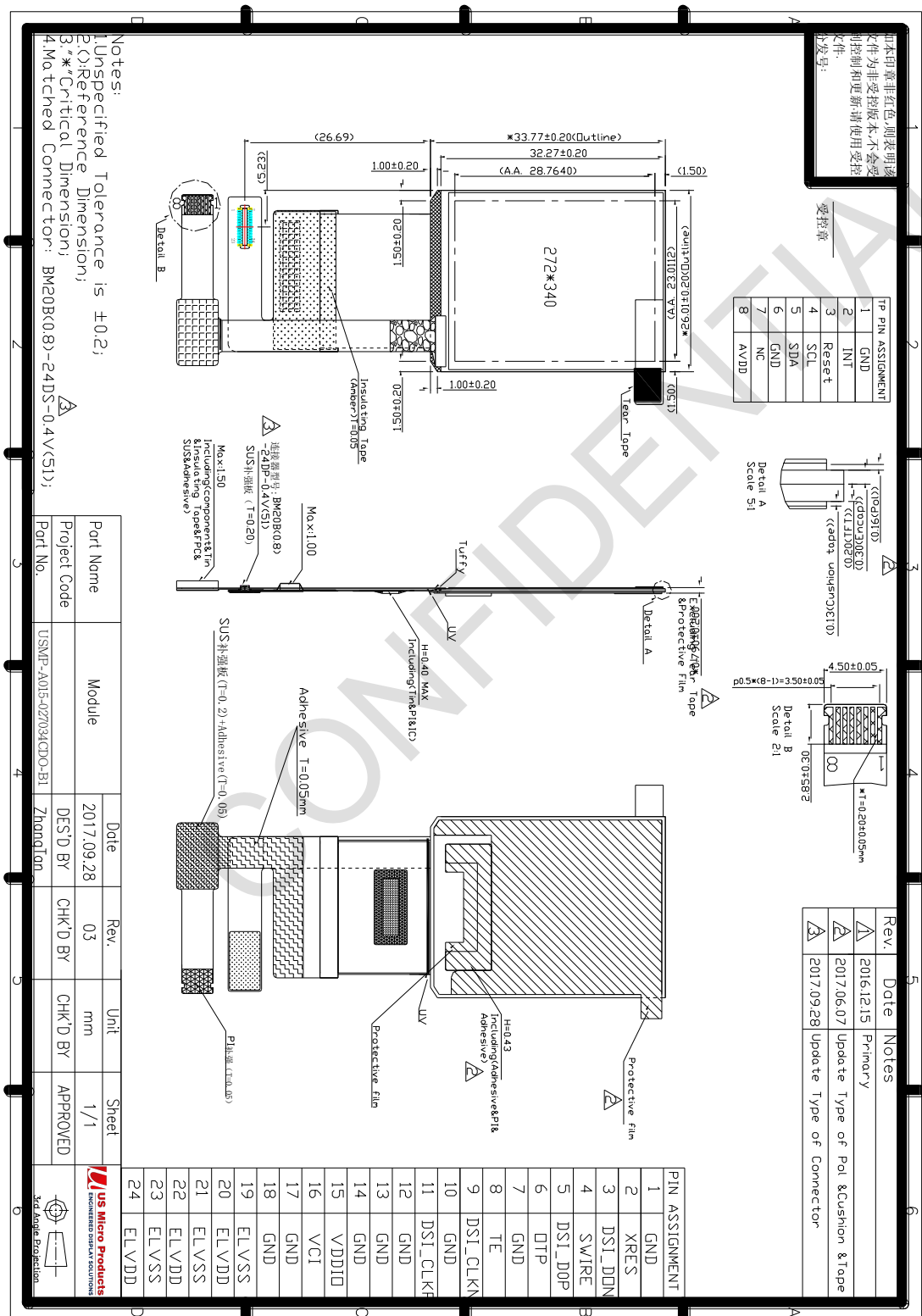
10.3.2 Visual inspection

1	<p>Polarizer Dent/Bubble</p> 	<table><tr><th>Size Φ (mm)</th><th>Acceptable number</th></tr><tr><td>$\Phi \leq 0.15$</td><td>Ignore</td></tr><tr><td>$0.15 < \Phi \leq 0.30$</td><td>1</td></tr><tr><td>$0.30 < \Phi$</td><td>0</td></tr></table>	Size Φ (mm)	Acceptable number	$\Phi \leq 0.15$	Ignore	$0.15 < \Phi \leq 0.30$	1	$0.30 < \Phi$	0	Major							
	Size Φ (mm)	Acceptable number																
$\Phi \leq 0.15$	Ignore																	
$0.15 < \Phi \leq 0.30$	1																	
$0.30 < \Phi$	0																	
	<p>Polarizer Dark/Bright Spots (Foreign Material)</p>  $\Phi=(L+W)/2$	<table><tr><th>Size Φ (mm)</th><th>Acceptable number</th></tr><tr><td>$\Phi \leq 0.10$</td><td>Ignore</td></tr><tr><td>$0.10 < \Phi \leq 0.20$</td><td>1</td></tr><tr><td>$0.20 < \Phi$</td><td>0</td></tr></table>	Size Φ (mm)	Acceptable number	$\Phi \leq 0.10$	Ignore	$0.10 < \Phi \leq 0.20$	1	$0.20 < \Phi$	0	Minor							
Size Φ (mm)	Acceptable number																	
$\Phi \leq 0.10$	Ignore																	
$0.10 < \Phi \leq 0.20$	1																	
$0.20 < \Phi$	0																	
2	<p>Polarizer Scratch/Fiber(Linear)</p> 	<table><tr><th>Width(mm)</th><th>Length(mm)</th><th>Acceptable number</th></tr><tr><td>$W \leq 0.02$</td><td>Ignore</td><td>Ignore</td></tr><tr><td>$0.02 < W \leq 0.03$</td><td>$L \leq 1.00$</td><td>1</td></tr><tr><td>$0.03 < W$</td><td>-</td><td>0</td></tr><tr><td></td><td>$L > 1.00$</td><td>0</td></tr></table>	Width(mm)	Length(mm)	Acceptable number	$W \leq 0.02$	Ignore	Ignore	$0.02 < W \leq 0.03$	$L \leq 1.00$	1	$0.03 < W$	-	0		$L > 1.00$	0	Minor
Width(mm)	Length(mm)	Acceptable number																
$W \leq 0.02$	Ignore	Ignore																
$0.02 < W \leq 0.03$	$L \leq 1.00$	1																
$0.03 < W$	-	0																
	$L > 1.00$	0																

3	Discoloration	If its limit sample is needed, it can be fixed mutually with a customer			Minor																		
4	Encap glass chipping \ chipping	The following standards apply to any side of the panel. (unit: mm)			Minor																		
	<table><tr><td>Z</td><td>X</td><td>Y</td></tr><tr><td><t</td><td>≤1.0</td><td>≤0.5</td></tr></table>			Z		X	Y	<t	≤1.0	≤0.5													
	Z	X	Y																				
	<t	≤1.0	≤0.5																				
Substrate glass chipping \ chipping	The following standards just apply to the side of the pad.(unit: mm)			Minor																			
	<table><tr><td colspan="2"></td><td>Z</td><td>X</td><td>Y</td></tr><tr><td rowspan="2">Front of the pad</td><td>Near the screen</td><td><t</td><td>≤1.0</td><td>≤0.3</td></tr><tr><td>Away from the pattern</td><td><t</td><td>≤1.2</td><td>≤0.4</td></tr><tr><td colspan="2">Rear of the pad</td><td><t</td><td>≤1.2</td><td>≤0.4</td></tr></table>						Z	X	Y	Front of the pad	Near the screen	<t	≤1.0	≤0.3	Away from the pattern	<t	≤1.2	≤0.4	Rear of the pad		<t	≤1.2	≤0.4
			Z		X	Y																	
Front of the pad	Near the screen	<t	≤1.0	≤0.3																			
	Away from the pattern	<t	≤1.2	≤0.4																			
Rear of the pad		<t	≤1.2	≤0.4																			
Front																							
Rear																							
			The following standards apply to any side of the panel (except pad side). (unit: mm)		Minor																		
			<table><tr><td>Z</td><td>X</td><td>Y</td></tr><tr><td><t</td><td>≤1.0</td><td>≤0.5</td></tr></table>			Z	X	Y	<t	≤1.0	≤0.5												
Z	X	Y																					
<t	≤1.0	≤0.5																					
5	Glass crack	Not allowance			Major																		
6	Panel Scratch	Width(mm)		Length(mm)	Acceptable number	Minor																	
		W≤0.03		Ignore	Ignore																		
		0.03<W≤0.05	L≤2.0		Ignore																		
			2.0<L≤5.0		2																		
		0.05<W		-			0																
		L>5.0		0																			
7	Encapsulation	Frit width can't be less than the design width of 9/10.			Minor																		
8	Over Coating	The coating of non-IC side must not exceed glass section. The coating of IC side is not allowed higher than POL.			Minor																		
9	FPCA	(1) The component should not be polarity opposition			Major																		
		(2) No wrong insertion			Major																		
		(3)FPC should not have serious crease which causes the line, prick and spots damage. Scratch is not allowed if Cu layer is exposed.			Minor																		
		(4) The gold fingers should not be oxidized, scraped, folded, impressed, broken, spotted or			Major																		

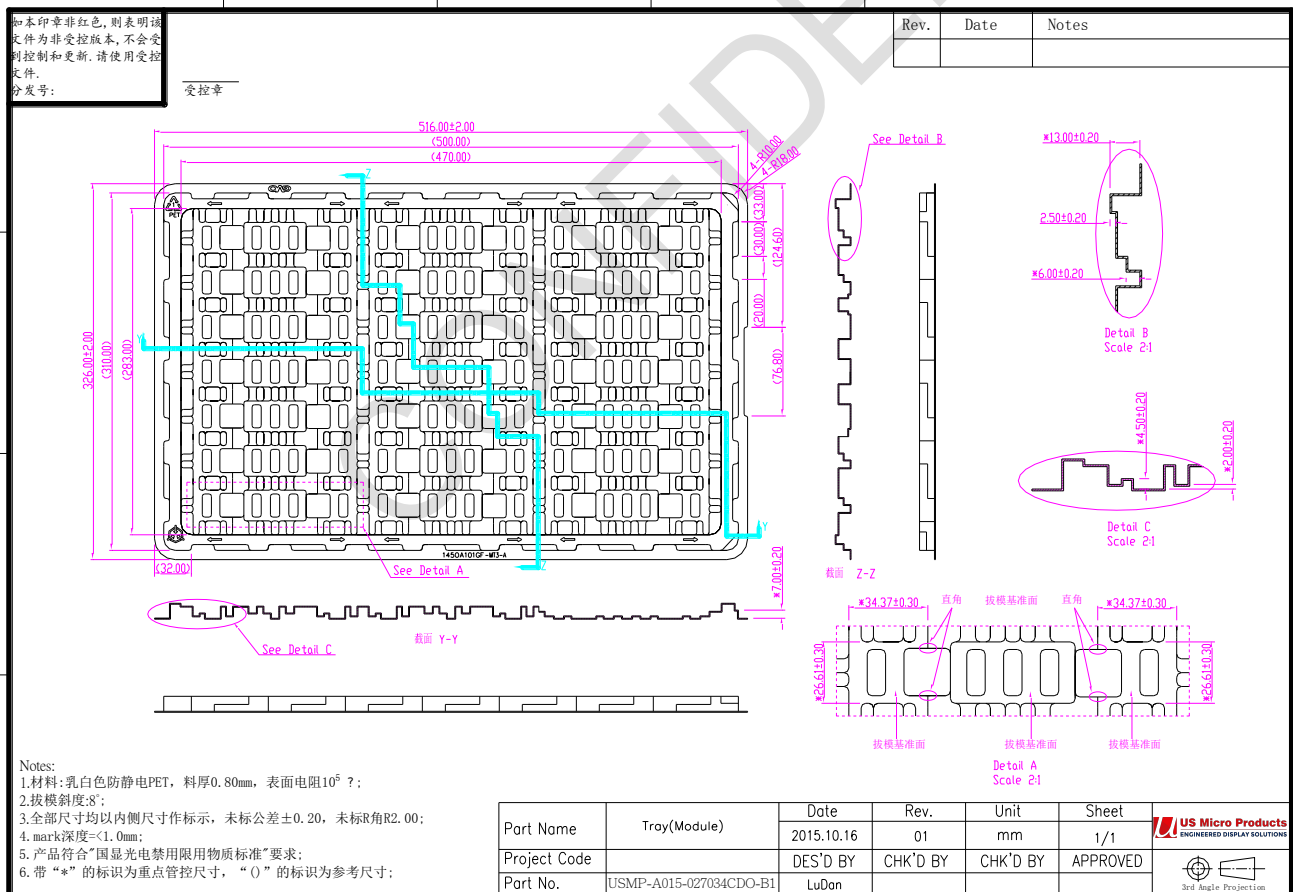
		dissymmetry.	
		(5) Make sure FPC is not scalded, with its location holes not having deficiency or obviously shift.	Major
		(6)The component of FPC should be the same as BOM list.	Major
		(7)No remaining soldering Sn.	Major
		(8)No visual particle on the pad line.	Minor
10	FPCA End Overhang	<p>The size above 1/2 of soldering electrode of the parts overhang to the LAND is prohibited. (but contacting near other components is prohibited)</p> 	Major
11	FPC Tilt Defect	Not allowed	Major
12	Package	<p>(1) Products should put into the anti-static trays, with non-overlapping, and the trays should be staggered placed.</p> <p>(2) Different products cannot be mixed into the same inner package.</p> <p>(3) The package should not have obvious deformation or breakage .The printing labels type and quantity are correct.</p> <p>(4) The package should have QC signature. ROHS label is needed if the product is under ROHS control.</p>	Minor

10 Mechanical Drawing



Packing Drawing

Packing Condition	Contents
Packing Type	TRAY + Carton packing type
TRAY material model	tray ($10^5 \sim 10^9 \Omega$)
Tray packing type	See the picture 1
Number of panels per tray	42 pieces
Number of Tray per carton	19units ((18 units + 1 empty)PET tray)
Number of panels per carton	756 pieces



11 Precautions for Use of AMOLED Modules

11.1 Handling Precautions:

- 11.1.1 The display panel is made of glass. Do not subject it to a mechanical shock by dropping it from height.
- 11.1.2 Do not press down the screen or the adjoining areas too hard because the color tone may be shifted.
- 11.1.3 The polarizer covering the display surface of the AMOLED module is soft and easily scratched. Handle this polarizer carefully.
- 11.1.4 If the display surface is contaminated, blow on the surface and gently wipe it with a soft dry cloth. If it is still not completely clear, moisten the cloth with ethyl alcohol.
- 11.1.5 Solvents may damage the polarizer. Do not use water, ketone or aromatic solvents except ethyl alcohol.
Do not attempt to disassemble the AMOLED Module.
- 11.1.6 If the logic circuit power is off, do not apply the input signals.
- 11.1.7 To prevent destruction from static electricity, be careful to maintain an optimum working environment.
- 11.1.8 Be sure to make yourself in contact with the ground when handling with the AMOLED Modules.
- 11.1.9 Tools required for assembly, such as soldering irons, must be properly ground.
- 11.1.10 To reduce the generation of static electricity, do not conduct assembly or other work under dry conditions.
- 11.1.11 To protect the display surface, the AMOLED Module is coated with a film. Be careful when peeling off this protective film, because static electricity may generate.

11.2 Storage Precautions:

- 11.2.1 When storing the AMOLED modules, be sure that they are not directly exposed to the sunlight or the light of fluorescent lamps.
- 11.2.2 The AMOLED modules should be stored under the storage temperature range. If the AMOLED modules will be stored for a long time, the recommended condition is:
Temperature: 0°C~40°C Relatively humidity: ≤80%
- 11.2.3 The AMOLED modules should be stored in the room without acid, alkali or harmful gas.

11.3 Transportation Precautions:

- 11.3.1 The AMOLED modules should not be suffered from falling and violent shocking during transportation. Besides, excessive press, water, damp and sunshine, should be avoided.