

SPECIFICATION FOR AMOLED Module

MODULE No:	ID-025EGOIN002-C000
CUSTOMER:	

I-DISPLAY	INITIAL	DATE
PREPARED BY		
CHECKED BY		
APPROVED BY		

CUSTOMER	INITIAL	DATE
APPROVED BY		

Revision History

[illegible]

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* **Description**

This is a color active matrix AMOLED module using Low Temperature Poly-silicon Thin Film Transistors as active switching devices. This module has a 2.5 inch LTPS OLED diagonally measured active area with 400 horizontal by 712 vertical pixel arrays. Each pixel is divided into RED and GREEN dots, or BLUE and GREEN dots, and two pixels share RED or BLUE dots which are arranged in vertical stripe and this module can display 16.7M colors.

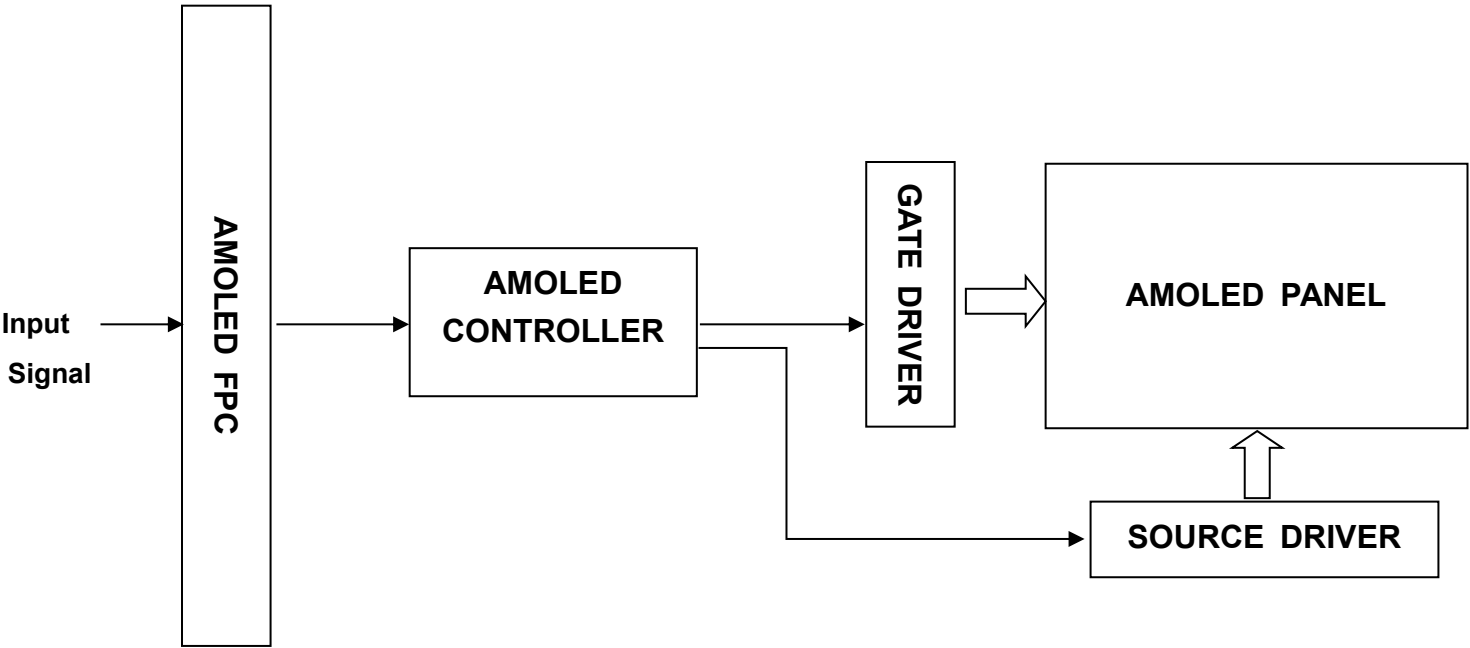
* **Features**

General Information Items	Specification	Unit	Note
	Main Panel		
Display area(AA)	31.10(H)*55.36(V) (2.5 inch)	mm	
Driver element	TFT active matrix/LTPS	-	
Display colors	16.7M	colors	
Pixel pitch	0.07775(H)*0.07775(V)		
Number of pixels	400(RGB)*712	dots	
Viewing angle	ALL	o'clock	
Controller IC	RM690C0	-	
Touch Controller IC	ZT2628 (ONCELL)	-	
CTP Interface	I2C	-	
Slace Adress	0x72	-	
LCM Interface	MIPI	-	
Display mode	LTPS-AMOLED	-	
Operating temperature	-20~+70	℃	
Storage temperature	-30~+80	℃	

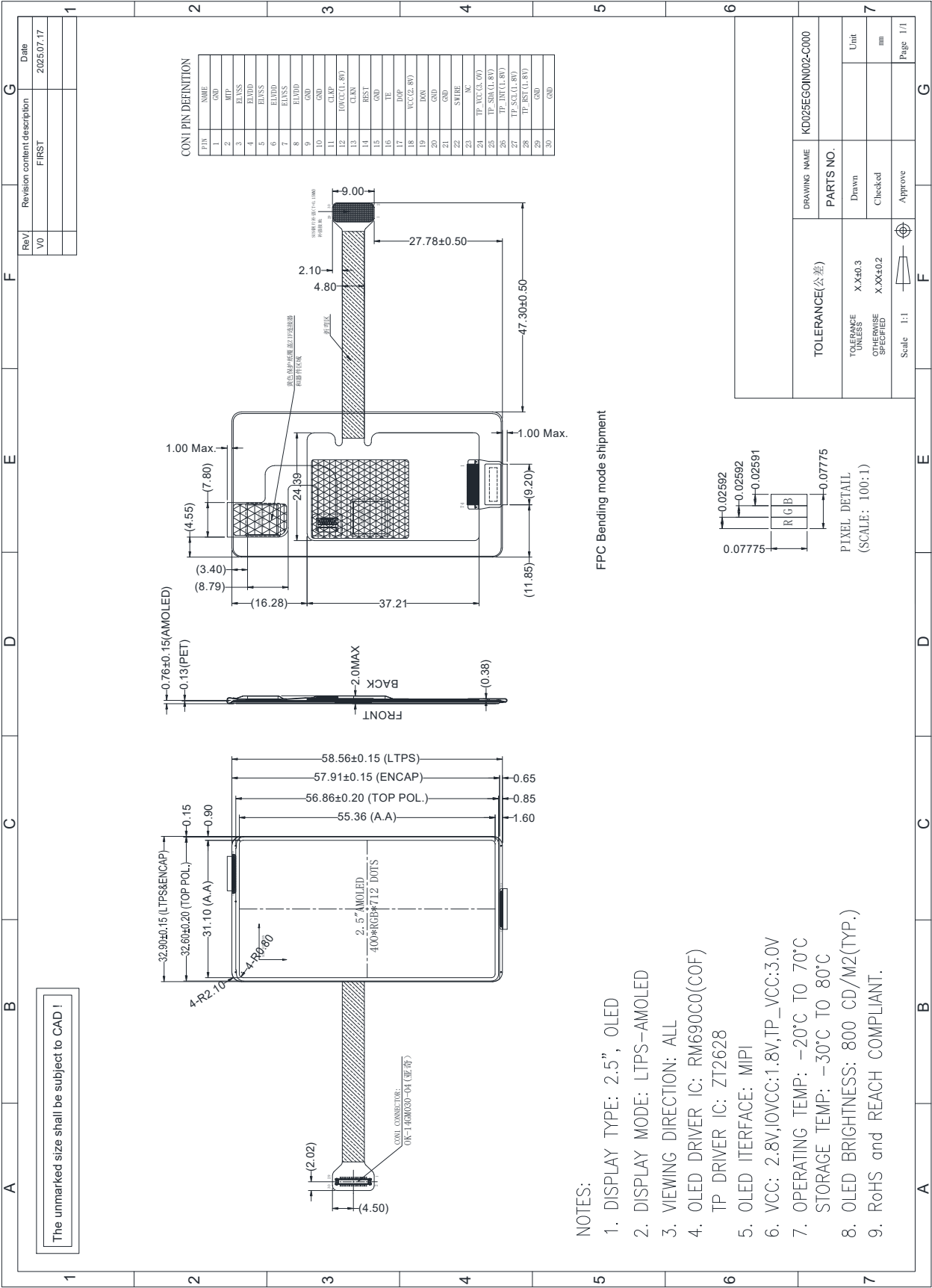
* **Mechanical Information**

Item		Min.	Typ.	Max.	Unit	Note
Module size	Horizontal(H)		32.90		mm	-
	Vertical(V)		58.56		mm	-
	Depth(D)		2.0		mm	-
Weight			4		g	-

1. Block Diagram



2. Outline dimension



3. Input terminal Pin Assignment

3.1 TFT

Connector:OK-14F030-014

NO.	SYMBOL	DISCRIPTION	I/O
1	GND	Ground	P
2	MTP	MTP Programming power supply pin	P
3	ELVSS	Power supply for pixel circuit	P
4	ELVDD	Power supply for pixel circuit	P
5	ELVSS	Power supply for pixel circuit	P
6	ELVDD	Power supply for pixel circuit	P
7	ELVSS	Power supply for pixel circuit	P
8	ELVDD	Power supply for pixel circuit	P
9	GND	Ground	P
10	GND	Ground	P
11	CLKP	These pins are DSI-CLK+/-Differential colck signal	I
12	IOVCC(1.8V)	Power supply for interface system except MIPI interface	P
13	CLKN	These pins are DSI-CLK+/- differential colck signal	I
14	REST	This signal will reset the device and must be applied to properly initialize the chip.Signal is active low.	I
15	GND	Ground	P
16	TE	Tearing effect output pin to synchronize MCU to frame writing,activated by S/W command	O
17	D0P	These pins are DSI-D0+/- differential data singals.	I/O
18	VCC(2.8V)	Power supply for analog system	P
19	D0N	These pins are DSI-D0+/- differential data singals.	I/O
20	GND	Ground	P
21	GND	Ground	P
22	SWIRE	Swire protocol setting pin of Power ic.	O
23	NC	--	--
24	TP_VCC(3.0V)	Analog power supply for CTP	P

25	TP_SDA(1.8V)	I2C serial data for CTP	I/O
26	TP_INT(1.8V)	Interrupt signal for CTP	I
27	TP_SCL(1.8V)	I2C serial clock for CTP	I
28	TP_RST(1.8V)	Reset Signal for CTP	I
29	GND	Ground	P
30	GND	Ground	P

3.2 CTP

NO.	SYMBOL	DISCRIPTION	I/O
1	GND	Ground	P
2	GND	Ground	P
3	TP_IOVCC	I/O Digital voltage for CTP	P
4	TP_VCC	Analog power supply for CTP	P
5	TP_SDA	I2C serial data for CTP	I/O
6	TP_INT	Interrupt signal for CTP	I
7	NC	--	--
8	TP_SCL	I2C serial clock for CTP	I
9	TP_RESET	Reset Signal for CTP	I
10	GND	Ground	P
11	GND	Ground	P

4. AMOLED Optical Characteristics

4.1 Optical specification

Item		Symbol	Condition	Min.	Typ.	Max.	Unit.	Note
Contrast Ratio		CR	Θ=0 Normal	100000	--	--		(1)(2)
Surface Luminance		LV	White Mode	720	800	880	cd/m2	
Luminace uniform		WHITE		90	99	--	%	(1)
Color Filter Chromaticity	White	W _X		-0.04	0.3084	+0.04		(1)(4)
		W _Y			0.3300			
	Red	R _X			0.6752			
		R _Y			0.3247			
	Green	G _X			0.2329			
		G _Y			0.6815			
	Blue	B _X			0.1390			
		B _Y			0.0479			
Viewing Angle		Θ	Up/Down/ Right/Left Cr≥8000	70	80	--	deg	
Gamma		-	Θ=0 Ta=25°C V(Gray)= 44,68,100 ,132,164, 196,228,2 52,255	2.0	2.2	2.4	--	
OLED Life Time		T0	25°C	--	20000	--	Hrs	
Option View		ALL						

*The data comes from the OLED specification.

Measuring Condition

Measuring surrounding : dark room

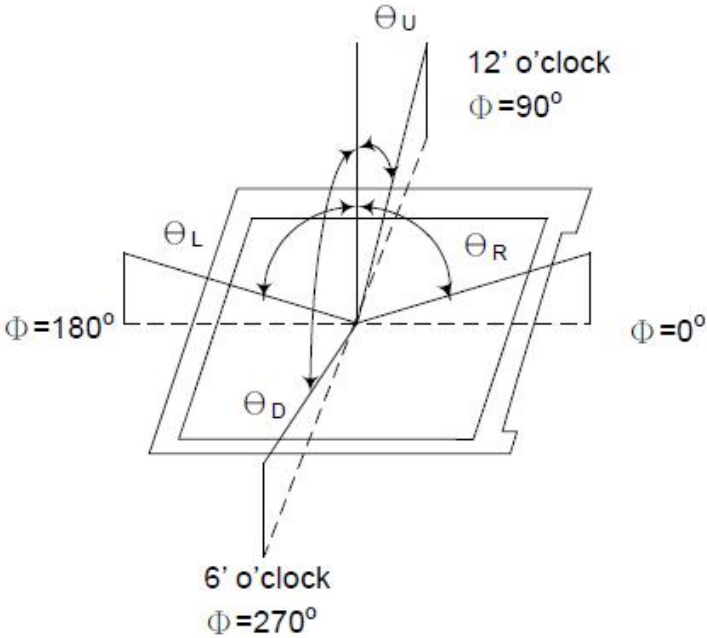
Ambient temperature : 25±2℃

15min. warm-up time.

Measuring Equipment

FPM520 of Westar Display technologies, INC., which utilized SR-3 for Chromaticity and BM-5A for other optical characteristics.

Note (1): Definition of Viewing Angle :



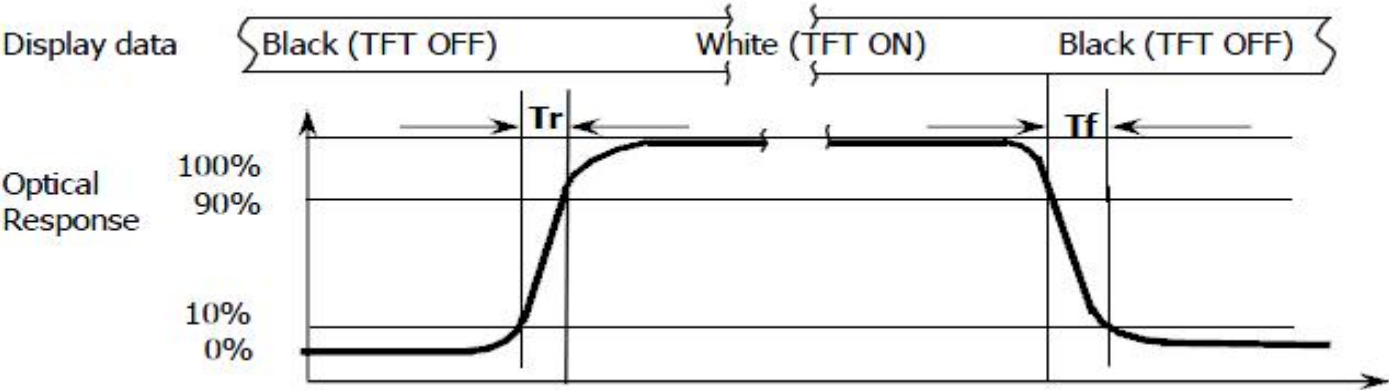
Note (2): Definition of Contrast Ratio(CR) :measured at the center point of panel

Luminance with all pixels white

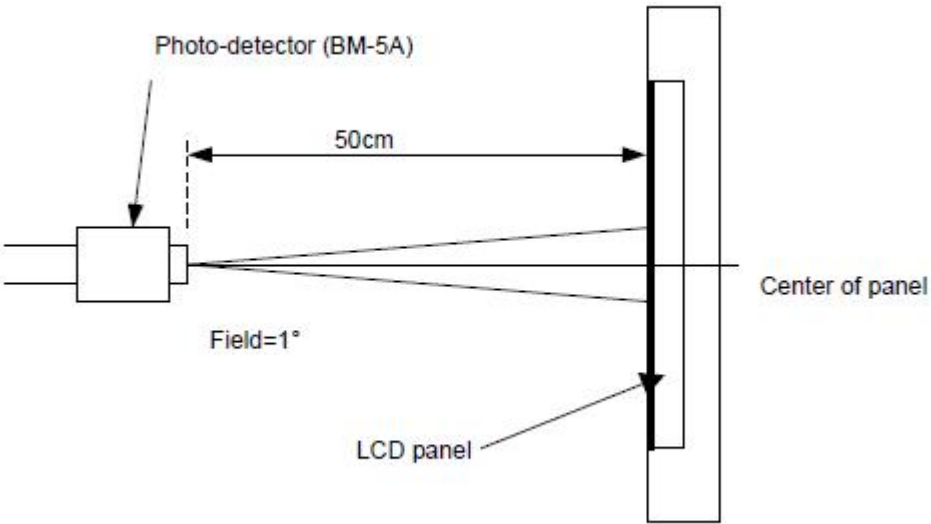
CR =

Luminance with all pixels black

Note (3): Response Time



Note (4): Definition of optical measurement setup



5. AMOLED Electrical Characteristics

5.1 Absolute Maximum Rating (Ta=25 VSS=0V)

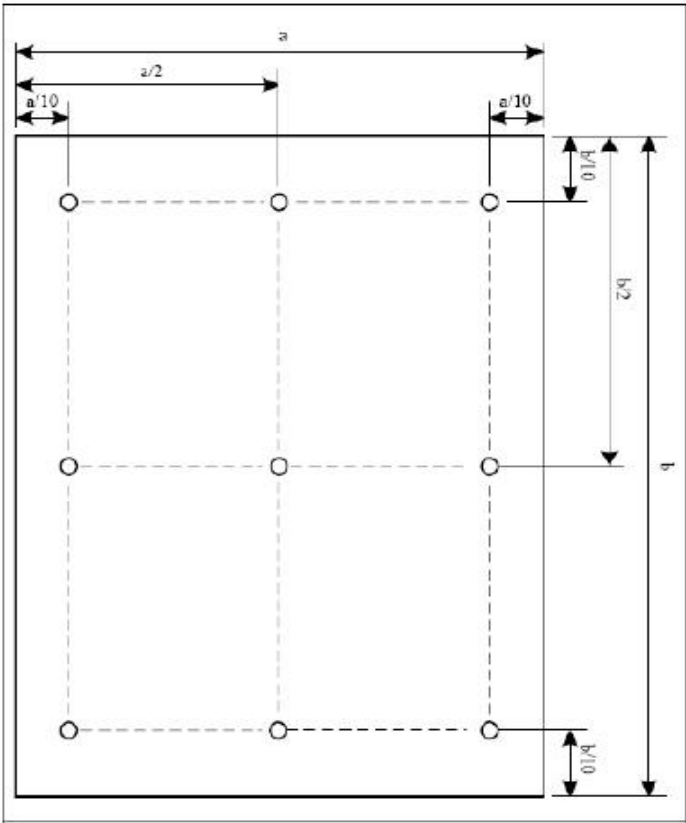
Characteristics	Symbol	Min.	Max.	Unit
Supply voltage(Display)	VCC	-0.3	5.5	V
	IOVCC	-0.3	5.5	V
	ELVDD	2	4.9	V
	ELVSS	-0.4	-4.0	V
Supply Voltage(TP)	TP_VCC	-0.3	5	V
Operating temperature	T _{OP}	-20	+70	°C
Storage temperature	T _{ST}	-30	+80	°C
Humidity	RH	-	90	%RH

NOTE: If the absolute maximum rating of even is one of the above parameters is exceeded even momentarily, the quality of the product may be degraded. Absolute maximum ratings, therefore, specify the values exceeding which the product may be physically damaged. Be sure to use the product within the range of the absolute maximum ratings.

5.2 DC Electrical Characteristics

Characteristics		Symbol	Condition	Min.	Typ.	Max.	Unit	Note
Supply Voltage(Display)		VCC		2.7	2.8	2.9	V	--
		IOVCC		1.7	1.8	1.9	V	
		ELVDD		4.55	4.6	4.65	V	
		ELVSS		-2.6	-2.2	-2.15	V	
Supply Voltage(TP)		TP_VDD		2.8	3.0	3.2	V	
		TP_IOVCC		1.7	1.8	1.9		
Input Voltage	‘L’ Level	VIL	IOVCC=1.65	GND	--	0.3*IOVCC	V	
	‘H’ Level	VIH	V~2.8V	0.7*IOVCC	--	IOVCC	V	
Output Voltage	‘L’ Level	VOL	I(OH)=1mA	GND	--	0.2*IOVCC	V	
	‘H’ Level	VOH	I(OL)=+1mA	0.8*IOVCC	--	IOVCC	V	
Current (Display)	Sleep out mode	I _{VCC}	Full white display	--	4	20	mA	
		I _{IOVCC}			2	6	mA	
		I _{ELVDD}			66	120	mA	
		I _{ELVSS}			-57	-86	mA	
	Deep Standby Mode	I _{VCC}		--	1	--	uA	
		I _{IOVCC}		--	2	--	uA	
		I _{ELVDD}			1		uA	
		I _{ELVSS}			1		uA	
Frame Frequency		f _{FRM}		--	60	--	Hz	

NOTE 3: Luminance Uniformity of these 9 points is defined as below:



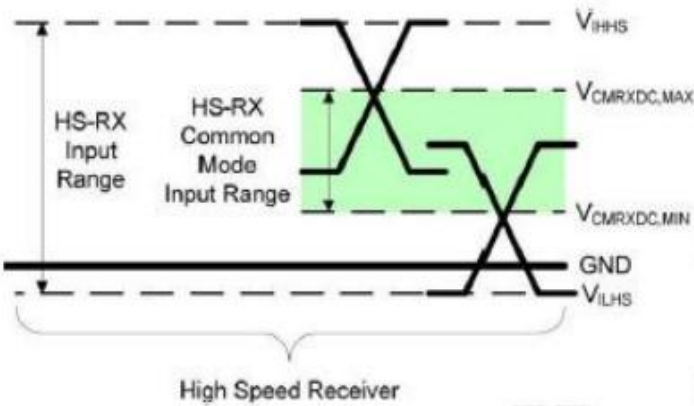
Uniformity = $\frac{\text{minimum luminance in 9 points (1-9)}}{\text{maximum luminance in 9 points (1-9)}}$

Luminance= $\frac{\text{Total Luminance of 9 points}}{9}$

6. AC Characteristic

6.1 MIPI Characteristics
High-Speed Receiver Specification

DC Specifications

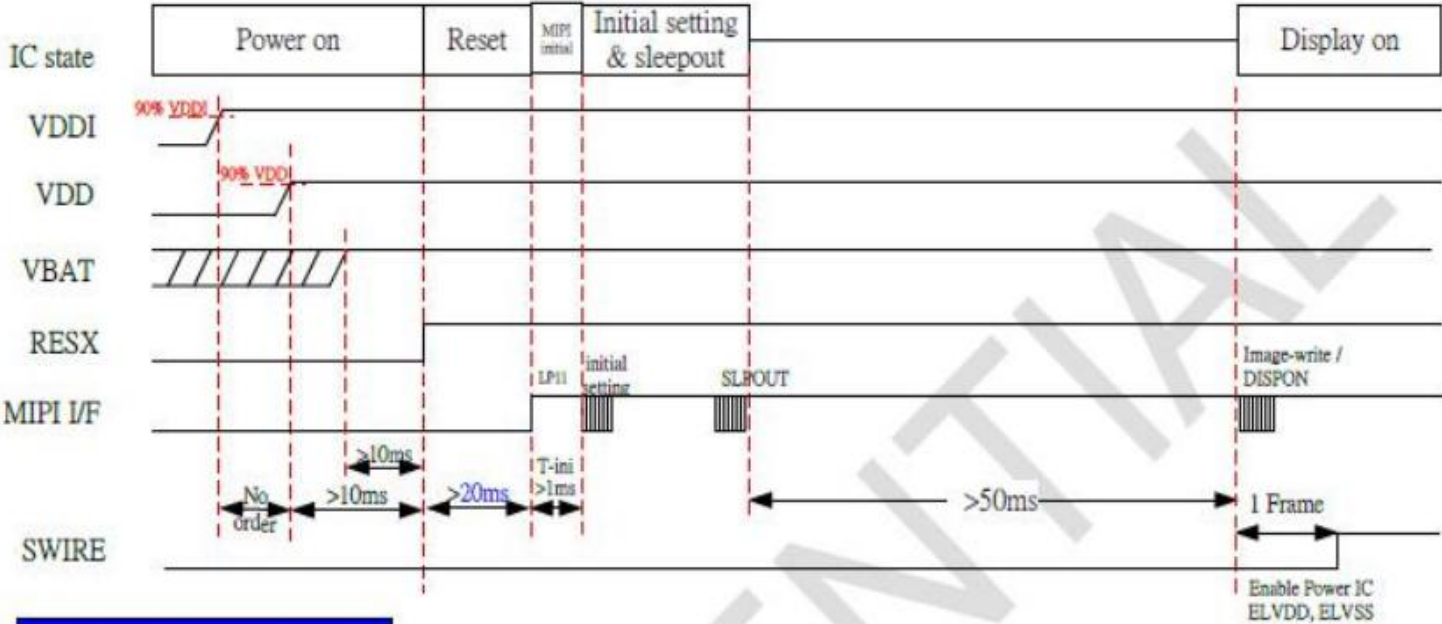


Parameter	Description	Min	Nom	Max	Units	Note
VCMRX(DC)	Common-mode voltage HS receive mode	70		330	mV	1,2
WIDTH	Differential input high threshold			70	mV	
VIDTL	Differential input low threshold	-70			mV	
VIHHS	Single-ended input high voltage			460	mV	1
VILHS	Single-ended input low voltage	-40			mV	1
ZID	Differential input impedance	80	100	125	Ω	

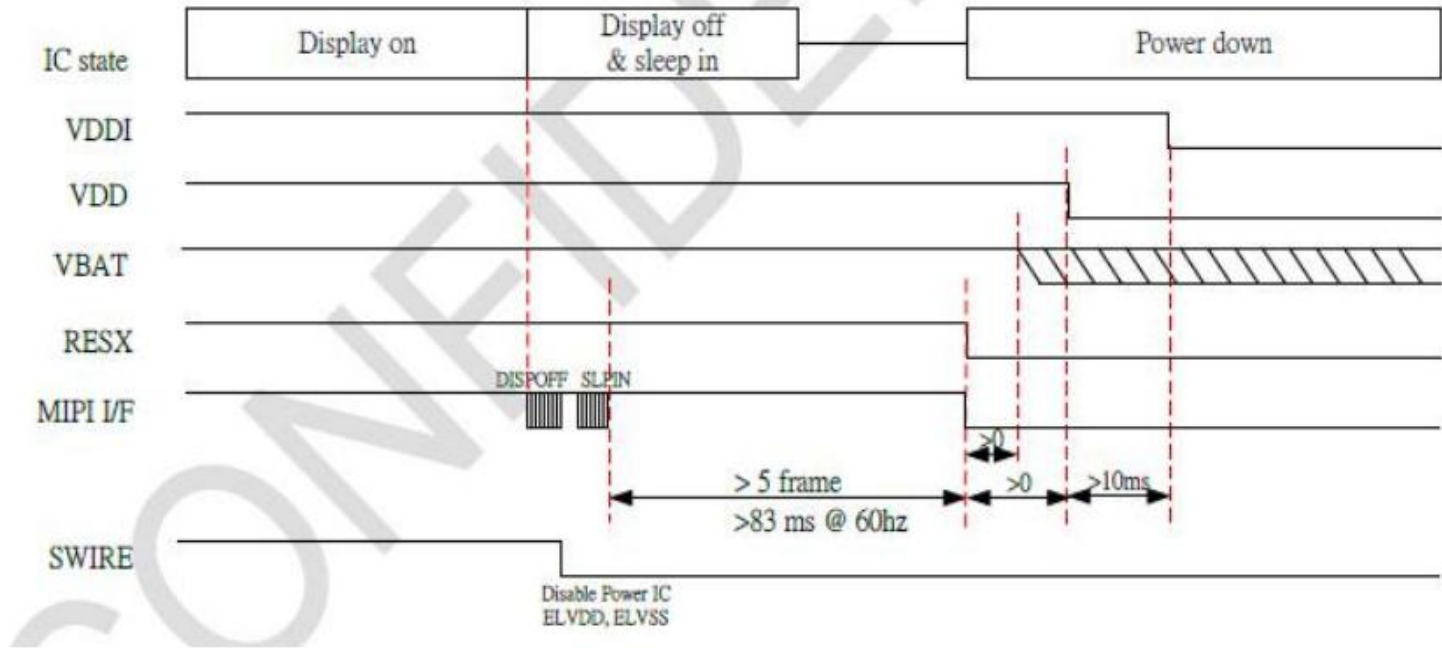
- Notes:
- 1. Excluding possible additional RF interference of 100mV peak sine wave beyond 450MHz.
 - 2. This table value includes a ground difference of 50mV between the transmitter and the receiver, the static common-mode level tolerance and variations below 450MHz

6.2 Power ON/OFF Sequence And Timing

Power On sequence



Power Off sequence



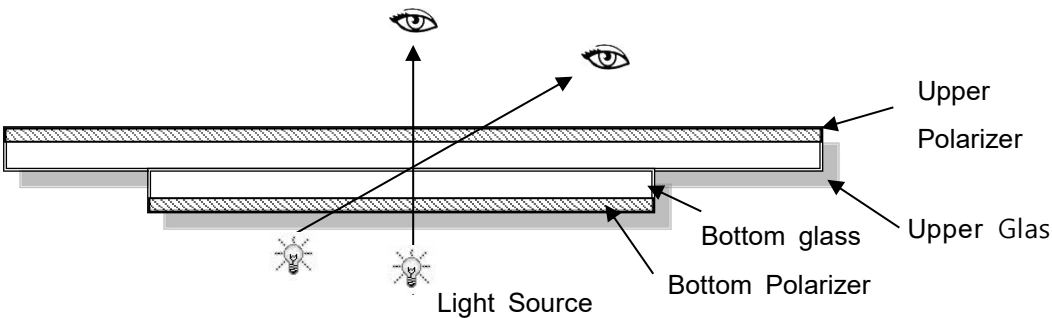
7. OLED Module Out-Going Quality Level

7.1 VISUAL & FUNCTION INSPECTION STANDARD

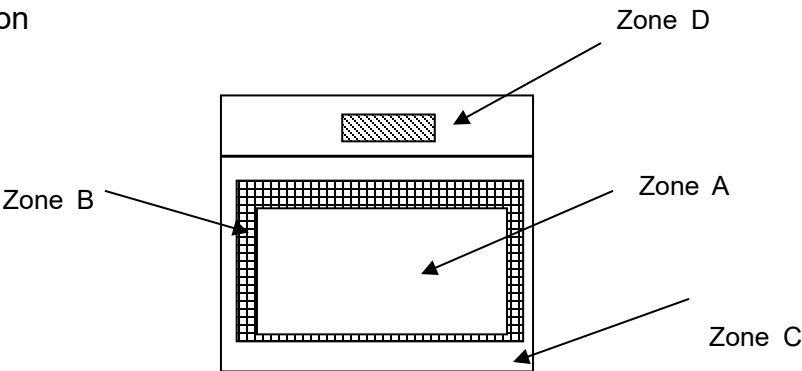
7.1.1 Inspection conditions

Inspection performed under the following conditions is recommended.

- Temperature : 25±5℃
- Humidity : 65%±10%RH
- Viewing Angle : Normal viewing Angle.
- Illumination: Single fluorescent lamp (300 to 700Lux)
- Viewing distance:30-50cm



7.1.2 Definition



- Zone A : Effective Viewing Area(Character or Digit can be seen)
- Zone B : Viewing Area except Zone A
- Zone C : Outside (Zone A+Zone B) which can not be seen after assembly by customer .)
- Zone D : IC Bonding Area

Note:

As a general rule ,visual defects in Zone C can be ignored when it doesn't effect product function or appearance after assembly by customer

7.1.3 Sampling Plan

According to GB/T 2828-2003 ; , normal inspection, Class II

AQL:

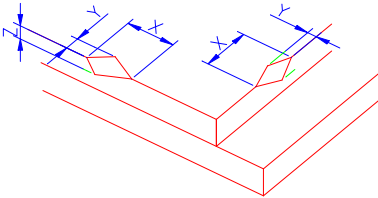
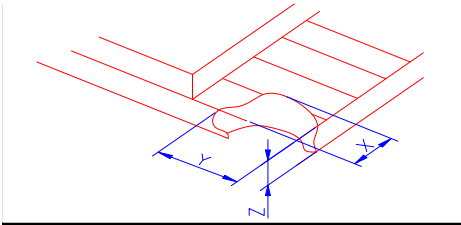
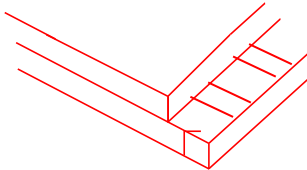
Major defect	Minor defect
0.65	1.5

OLED: Organic Light Emitting Diode , LCM: Liquid Crystal Module,

No	Items to be inspected	Criteria	Classification of defects
1	Functional defects	1) No display, Open or miss line 2) Display abnormally, Short 3) Backlight no lighting, abnormal lighting. etc...	Major
2	Missing	Missing components and etc...	
3	Outline dimension	Overall outline dimension beyond the drawing is not allowed, deformation and etc...	
4	Color tone	Color unevenness, refer to limited sample	Minor
5	Spot/Line defect	Light dot, Dim spot, (Note1) Polarizer Air Bubble, Polarizer accidented spot and etc.	
6	Soldering appearance	Good soldering , Peeling off is not allowed and etc.	
7	OLED/Polarizer	Black/White spot/line, scratch, crack, etc.	

Note1: a) Light dot: Dots appear bright and unchanged in size in which OLED panel is displaying under black pattern.
b) Dim dot: Dots appear dark and unchanged in size in which OLED panel is displaying under pure red, green, blue picture.

7.1.4 Criteria (Visual)

Number	Items	Criteria(mm)						
1.0 OLED Crack/Broken NOTE: X: Length Y: Width Z: Height L: Length of IT O, T: Height of OLE D	(1) The edge of OLE D broken	 <table><tr><td>X</td><td>Y</td><td>Z</td></tr><tr><td>≤3.0mm</td><td><Inner border line of the seal</td><td>≤T</td></tr></table>	X	Y	Z	≤3.0mm	<Inner border line of the seal	≤T
	X	Y	Z					
	≤3.0mm	<Inner border line of the seal	≤T					
(2)OLED corner broken	 <table><tr><td>X</td><td>Y</td><td>Z</td></tr><tr><td>≤3.0mm</td><td>≤L</td><td>≤T</td></tr></table>	X	Y	Z	≤3.0mm	≤L	≤T	
X	Y	Z						
≤3.0mm	≤L	≤T						
(3) OLED crack	 Crack Not allowed							

Spot defect

2.0

Φ=(X+Y)/2

① light dot (black/white spot , pinhole, stain, etc.)

Zone Size (mm)	Acceptable Qty		
	A	B	C
Φ≤0.15	Ignore	Ignore	
0.15<Φ≤0.25	3(distance ≥ 6mm)		
0.25<Φ≤0.4	2(distance ≥ 6mm)		
Φ>0.4	0		

② Dim spot (light leakage、dent、dark spot, etc)

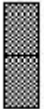
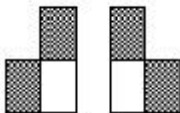
Zone Size (mm)	Acceptable Qty		
	A	B	C
Φ≤0.15	Ignore	Ignore	
0.15<Φ≤0.25	3(distance ≥ 6mm)		
0.25<Φ≤0.4	2(distance ≥ 6mm)		
Φ>0.4	0		

③ Polarizer accidented spot

Zone Size (mm)	Acceptable Qty		
	A	B	C
Φ≤0.2	Ignore		Ignore
0.2<Φ≤0.5	2(distance ≥ 6mm)		
Φ>0.5	0		

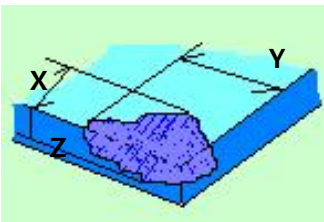
④Polarizer Bubble

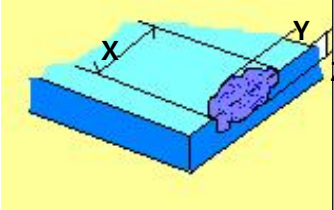
Zone Size (mm)	Acceptable Qty		
	A	B	C
Φ≤0.2	Ignore		Ignore
0.2<Φ≤0.4	3(distance ≥ 6mm)		
Φ>0.4	0		

3.0	OLED Pixel defect	Pixel bad points <table border="1"> <thead> <tr> <th>Item</th><th>Zone A</th><th>Acceptable Qt</th></tr> </thead> <tbody> <tr> <td rowspan="3">Bright dot</td><td>Random</td><td>$N \leq 2$</td></tr> <tr> <td>2 dots adjacent</td><td>$N \leq 0$</td></tr> <tr> <td>3 dots adjacent</td><td>$N \leq 0$</td></tr> <tr> <td rowspan="3">Dark dot</td><td>Random</td><td>$N \leq 2$</td></tr> <tr> <td>2 dots adjacent</td><td>$N \leq 0$</td></tr> <tr> <td>3 dots adjacent</td><td>$N \leq 0$</td></tr> <tr> <td>Distance</td><td> 1. Minimum Distance Between Bright dots. 2. Minimum Distance Between dark dots 3. Minimum Distance Between dark and bright dot. </td><td>5mm</td></tr> <tr> <td colspan="2">Total bright and dark dot</td><td>$N \leq 4$</td></tr> </tbody> </table> Note: A) Bright dot: Dots appear bright and unchanged in size in which OLED panel is displaying under black pattern. B) Dark dot: Dots appear dark and unchanged in size in which OLED panel is displaying under pure red, green, blue picture. C) 2 dot adjacent = 1 pair = 2 dots Picture:  2 dot adjacent  2 dot adjacent (vertical)  2 dot adjacent  2 dot adjacent (slant)	Item	Zone A	Acceptable Qt	Bright dot	Random	$N \leq 2$	2 dots adjacent	$N \leq 0$	3 dots adjacent	$N \leq 0$	Dark dot	Random	$N \leq 2$	2 dots adjacent	$N \leq 0$	3 dots adjacent	$N \leq 0$	Distance	1. Minimum Distance Between Bright dots. 2. Minimum Distance Between dark dots 3. Minimum Distance Between dark and bright dot.	5mm	Total bright and dark dot		$N \leq 4$
Item	Zone A	Acceptable Qt																							
Bright dot	Random	$N \leq 2$																							
	2 dots adjacent	$N \leq 0$																							
	3 dots adjacent	$N \leq 0$																							
Dark dot	Random	$N \leq 2$																							
	2 dots adjacent	$N \leq 0$																							
	3 dots adjacent	$N \leq 0$																							
Distance	1. Minimum Distance Between Bright dots. 2. Minimum Distance Between dark dots 3. Minimum Distance Between dark and bright dot.	5mm																							
Total bright and dark dot		$N \leq 4$																							

4.0	Line defect (OLED /Polarizer backlight black/white line, scratch, stain)  W: width, L : length N : Count	Width(mm)	Length(m)	Acceptable Qty		
				A	B	C
		$\Phi \leq 0.03$	Ignore	Ignore		Ignore
		$0.03 < W \leq 0.04$	$L \leq 3.0$	$N \leq 2$		
		$0.04 < W \leq 0.05$	$L \leq 2.0$	$N \leq 1$		
		$W > 0.05$	Define as spot defect			
5.0	Electronic Components SMT.	Not allow missing parts, solderless connection, cold solder joint, mismatch, The positive and negative polarity opposite				
6.0	Display color& Brightness.	1. Color: Measuring the color coordinates, The measurement standard according to the datasheet or samples. 2. Brightness: Measuring the brightness of White screen, The measurement standard according to the datasheet or Samples.				
7.0	OLED Mura/Waving/Hot spot	Not visible through 5% ND filter in 50% gray or judge by limit sample if necessary.				

8.0	CTP Related	CTP Cover sensor acc identified black/white spot				
			Size Φ (mm)	Acceptable Qty		
				A	B	C
			$\Phi \leq 0.1$	Ignore		Ignore
			$0.1 < \Phi \leq 0.2$	3 (distance $\geq 6\text{mm}$)		
			$0.20 < \Phi \leq 0.25$	2 (distance $\geq 6\text{mm}$)		
$\Phi > 0.25$	0					

		CTP Cover scratch	<table><tr><th rowspan="2">Width(mm)</th><th rowspan="2">Ignore (mm)</th><th colspan="3">Acceptable Qty</th></tr><tr><th>A</th><th>B</th><th>C</th></tr><tr><td>$\Phi \leq 0.03$</td><td>Ignore</td><td colspan="3">Ignore</td></tr><tr><td>$0.03 < W \leq 0.04$</td><td>$L \leq 3.0$</td><td colspan="3">$N \leq 2$</td></tr><tr><td>$0.04 < W \leq 0.05$</td><td>$L \leq 2.0$</td><td colspan="3">$N \leq 1$</td></tr><tr><td>$0.05 < W$</td><td colspan="4">Define as spot defect</td></tr></table>	Width(mm)	Ignore (mm)	Acceptable Qty			A	B	C	$\Phi \leq 0.03$	Ignore	Ignore			$0.03 < W \leq 0.04$	$L \leq 3.0$	$N \leq 2$			$0.04 < W \leq 0.05$	$L \leq 2.0$	$N \leq 1$			$0.05 < W$	Define as spot defect			
Width(mm)	Ignore (mm)	Acceptable Qty																													
		A	B	C																											
$\Phi \leq 0.03$	Ignore	Ignore																													
$0.03 < W \leq 0.04$	$L \leq 3.0$	$N \leq 2$																													
$0.04 < W \leq 0.05$	$L \leq 2.0$	$N \leq 1$																													
$0.05 < W$	Define as spot defect																														
		CTP Cover Pinhole/ Lack of ink	<table><tr><th rowspan="2">Zone Size (mm)</th><th>Acceptable Qty</th></tr><tr><th>C</th></tr><tr><td>$\Phi \leq 0.1$</td><td>Ignore</td></tr><tr><td>$0.1 < \Phi \leq 0.25$</td><td>3(distance $\geq 6\text{mm}$)</td></tr><tr><td>$0.25 < \Phi \leq 0.3$</td><td>2(distance $\geq 6\text{mm}$)</td></tr><tr><td>$\Phi > 0.3$</td><td>0</td></tr></table>	Zone Size (mm)	Acceptable Qty	C	$\Phi \leq 0.1$	Ignore	$0.1 < \Phi \leq 0.25$	3(distance $\geq 6\text{mm}$)	$0.25 < \Phi \leq 0.3$	2(distance $\geq 6\text{mm}$)	$\Phi > 0.3$	0																	
Zone Size (mm)	Acceptable Qty																														
	C																														
$\Phi \leq 0.1$	Ignore																														
$0.1 < \Phi \leq 0.25$	3(distance $\geq 6\text{mm}$)																														
$0.25 < \Phi \leq 0.3$	2(distance $\geq 6\text{mm}$)																														
$\Phi > 0.3$	0																														
		CTP Bondi ng bubble/ accidented spot	<table><tr><th rowspan="2">Size $\Phi(\text{mm})$</th><th colspan="2">Acceptable Qty</th></tr><tr><th>A</th><th>B</th></tr><tr><td>$\Phi \leq 0.1$</td><td colspan="2">Ignore</td></tr><tr><td>$0.1 < \Phi \leq 0.2$</td><td colspan="2">3(distance $\geq 6\text{mm}$)</td></tr><tr><td>$0.2 < \Phi \leq 0.25$</td><td colspan="2">2(distance $\geq 6\text{mm}$)</td></tr><tr><td>$\Phi > 0.25$</td><td colspan="2">0</td></tr></table>	Size $\Phi(\text{mm})$	Acceptable Qty		A	B	$\Phi \leq 0.1$	Ignore		$0.1 < \Phi \leq 0.2$	3(distance $\geq 6\text{mm}$)		$0.2 < \Phi \leq 0.25$	2(distance $\geq 6\text{mm}$)		$\Phi > 0.25$	0												
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		Assembly deflection	beyond the edge of backlight $\leq 0.2\text{mm}$																												
		CTP cover broken X : length Y : width Z : height	<table><tr><td>X</td><td>Y</td><td>Z</td></tr><tr><td>$X \leq 0.5\text{mm}$</td><td>$Y \leq 0.5\text{mm}$</td><td>$Z < \text{cover t hickness}$</td></tr></table> * Circuitry broken is not allowed. 	X	Y	Z	$X \leq 0.5\text{mm}$	$Y \leq 0.5\text{mm}$	$Z < \text{cover t hickness}$																						
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		CTP cover broken X : length Y : width Z : height	<table><tr><td>X</td><td>Y</td><td>Z</td></tr><tr><td>$X \leq 0.3\text{mm}$</td><td>$Y \leq 0.3\text{mm}$</td><td>$Z < \text{cover thickness}$</td></tr></table> * Circuitry broken is not allowed.	X	Y	Z	$X \leq 0.3\text{mm}$	$Y \leq 0.3\text{mm}$	$Z < \text{cover thickness}$	
X	Y	Z								
$X \leq 0.3\text{mm}$	$Y \leq 0.3\text{mm}$	$Z < \text{cover thickness}$								

Criteria (functional items)

Number	Items	Criteria (mm)
1	No display	Not allowed
2	Missing segment	Not allowed
3	Short	Not allowed
4	Backlight no lighting	Not allowed
5	CTP no function	Not allowed

8. Reliability Test Result

Item	Condition	Inspection after test
High Temperature Operating	70℃,96HR	Inspection after 2~4hours storage at room temperature, the sample shall be free from defects: 1.Air bubble in the OLED; 2.Non-display; 3.Missing segments/line; 4.Glass crack; 5.Current IDD is twice higher than initial value.
Low Temperature Operating	-20℃, 96HR	
High Temperature Storage	80℃, 96HR	
Low Temperature Storage	-30℃, 96HR	
High Temperature & High Humidity Operating	+60℃, 90% RH ,96 hours.	
Thermal Shock (Non-operation)	-30℃,30 min ↔ 80℃,30 min, Change time:5min 20CYC.	
ESD test	C=150pF, R=330,5points/panel Air:±8KV, 5times; Contact:±6KV, 5 times; (Environment: 15℃~35℃, 30%~60%).	
Vibration (Non-operation)	Frequency range:10~55Hz, Stroke:1.5mm Sweep:10Hz~55Hz~10Hz 2 hours for each direction of X.Y.Z. (6 hours for total) (Package condition).	
Box Drop Test	1 Corner 3 Edges 6 faces,80cm(MEDIUM BOX)	

Remark:

1.The test samples should be applied to only one test item.

2.Sample size for each test item is 5~10pcs.

3.For Damp Proof Test, Pure water(Resistance > 10MΩ) should be used.

4.In case of malfunction defect caused by ESD damage, if it would be recovered to normal state after resetting, it would be judged as a good part.

5.Failure Judgment Criterion: Basic Specification, Electrical Characteristic, Mechanical Characteristic, Optical Characteristic.

6. The color fading mura of polarizing filter should not care.

9. Cautions and Handling Precautions

9.1 Handling Precautions:

- (1) The display panel is made of glass. Do not subject it to a mechanical shock by dropping it from height..
 - (2) Do not press down the screen or the adjoining areas too hard because the color tone may be shifted.
 - (3) The polarizer covering the display surface of the AMOLED module is soft and easily scratched. Handle this polarizer carefully.
 - (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.
 - (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.
- (6) If the logic circuit power is off, do not apply the input signals.
 - (7) To prevent destruction from static electricity, be careful to maintain an optimum working environment.
 - (8) Be sure to make yourself in contact with the ground when handling with the AMOLED Modules.
 - (9) Tools required for assembly, such as soldering irons, must be properly ground.
 - (10) To reduce the generation of static electricity, do not conduct assembly or other work under dry conditions.
 - (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.

9.2 Storage Precautions.

- (1) When storing the AMOLED modules, be sure that they are not directly exposed to the sunlight or the light of fluorescent lamps.
- (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℃~40℃ Relatively humidity: ≤80%
- (3) The AMOLED modules should be stored in the room without acid, alkali or harmful gas.

9.3 Transportation Precautions:

- (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.

10. Packing

----TBD-----