



SPECIFICATION FOR AMOLED MODULE

CUSTOMER : _____

CUSTOMER MODULE : _____

HG MODEL : HG112WQ002T01

☐ Preliminary Specification

☒ Final Specification

Customer Confirmation column:

Approved by : _____ Dept. : _____ Data : _____

Please return one of the copies of the specification with your signature to us within two weeks after you receive this document. If it is not returned, we will assume that you agree to the entire contents of this specification document.

Designed by	Checked by	Approved by



Contents

Contents	2
1 Scope	3
2 Features	3
2.1 Product Applications.....	3
2.2 Product Features	3
3 Maximum Rating	3
4 Mechanical Specifications	4
5 Electrical Specifications	4
5.1 Electrical Characteristics	4
5.1.1 Power Characteristic:.....	4
5.1.2 Driver IC	5
5.2 TP IC Recommended Operating Conditions for whole set	5
5.3 I/O Connection	6
5.4 Graphic memory writing direction	8
5.5 Recommended Operating Sequence.....	8
6 Electro-Optical Specification	11
7 Touch Specification	17
8 Reliability	19
8.1 Environmental Test	19
8.2 Electrical Test	20
8.3 Mechanical Test	21
9 Outline Dimension Drawing	23
10 Packing Specification(TBD)	23
11 The Control of Hazardous substances	23



1 Scope

This Specification defines AMOLED manufactured by EverDisplay Optonics(Shanghai) Co.,Ltd, from here on refer as EDO. In the case of any unspecified item, it may require both EDO and the party designs this module into its product to work out a solution.

2 Features

2.1 Product Applications

Tablet, notebook, portable GPS, handheld game console...

2.2 Product Features

2.2.1 Display color: 1.07B (RGB x 10 bits)

2.2.2 Display format: 11.2" (2560RGBx1536)

2.2.3 Pixel arrangement: Real RGB

2.2.4 Display Interface: MIPI 2-port D-PHY

TP Interface: SPI

2.2.5 Driver IC : RM692H0

2.2.6 Touch screen: On-cell; Touch IC: GT6975P

2.2.7 Module type: Full module

3 Maximum Rating

Parameter	Symbol	Spec			Unit	Note
		Min.	Typ.	Max.		
Analog/boost power voltage	VCI	-0.3	-	5.5	V	-
I/O voltage	VDDI	-0.3	-	5.5	V	-
Operating temperature	Top	-20	-	70	°C	-
Storage temperature	Tstg	-40	-	80	°C	-



4 Mechanical Specifications

Item	Specification	unit
Dimension outline	249.22*154.08	mm
Resolution	2560RGB*1536	dots
Active area	244.22*146.53	mm
Diagonal size	11.2	inch
Pixel pitch	95.4	μm
Panel thickness (Tape/LTPS/Encap/Pol/OCA/CG)	0.3/0.3/0.3/0.11/0.2/0.55	mm
Weight(Full Module)	136±1	g
Pixel Per inch	268	PPI

5 Electrical Specifications

5.1 Electrical Characteristics

5.1.1 Power Characteristic:

Item	Symbol	Min.	Typ.	Max.	Unit	Remark
AMOLED Power positive	ELVDD	4.55	4.6	4.65	V	-
AMOLED power Negative	ELVSS	-3.45	-3.5	-3.55	V	Ref
Digital Power supply	VDDI	1.75	1.8	1.85	V	Measurement from ZIF connector pin
Analog Power supply	VCI	2.6	3.3	3.6	V	Ref
Analog Power supply	AVDD	6.65	6.7	6.75	V	Ref
TP Power Supply voltage	TP_AVDD	2.7	3.3	3.4	V	
TP_AVDD 电源纹波				100	mV	
TP_IC 工作温度范围		-20	25	85	℃	

- 对于 TP_AVDD，主板的 LDO 的持续供电能力(额定电流)不小于 250mA，OCP（过流保护限值）不小于 350mA，且满足当电流值持续 1ms 以上的时间达到 OCP 值后才关断电源（不是电流值一到 OCP 值，就关断电源），即过流关断时间不低于 1ms。电源纹波≤100mV。
- 整机主板电源资源允许的情况下，建议单独给触控模组供电，整机对触控模组的供电电源，建议对上电/掉电可控
- 压差要求：整机在各种条件下，要满足整机电源 LDO 的最小压差要求。比如 TP 供电是 3.0V，整机电源 LDO 的最小压差要求为 0.2V，则整机电源 LDO 的输入不能低于 3.2V。尤其是整机低电量时，电



池电压可能会降，且带载能力变差，此时整机电源若不满足 LDO 的最小压差要求，可能会因压差不足，导致 AVDD 电压不稳定，影响触控模组性能

- d) TP_AVDD 上建议不要串磁珠或电感等，以防压降, TP_AVDD 如需要串电阻处理时，建议串接 0 欧姆。

1) Normal Mode

Power Supply: VDDI=1.8V VCI=3.3V

Frame Frequency: $F_{frame}=120\text{HZ}$ @ 25degC, Brightness 450 nits, Command Mode,

Display Condition	Symbol	Min.	Typ.	Max.	Unit	Remark
100% Pixel On 450nits VELVDD=4.6V VELVSS= -3.5V	IELVDD /ELVSS	-	650	800	mA	Ref
	IVCI	-	15	20	mA	Ref
	IVDDI	-	261	290	mA	Ref
	IAVDD	-	75	90	mA	Ref

2) HBM Mode

Power Supply: VDDI=1.8V VCI=3.3V

Frame Frequency: $F_{frame}=120\text{HZ}$ @ 25degC, Brightness 600 nits, Command Mode,

Display Condition	Symbol	Min.	Typ.	Max.	Unit	Remark
100% Pixel On 600 nits VELVDD=4.6V VELVSS= -3.5V	IELVDD /ELVSS	-	850	1000	mA	Ref
	IVCI	-	15	20	mA	Ref
	IVDDI	-	261	290	mA	Ref
	IAVDD	-	75	90	mA	Ref

5.1.2 Driver IC

RM692H0(refer to the datasheet).

5.2 TP IC Recommended Operating Conditions for whole set

Power Supply: TP_AVDD=3.3V, TP_VDDIO=TP_AVDD@ 25degC

Item(TP_AVDD)	Min.	Typ.	Max.	Unit
Power Consumption(W/Driver) Active	-	-	<264 @ 180Hz	mW
Power Consumption(W/Driver) Idel	-	10 @ 60Hz	-	mW



Power Consumption(W/Driver) Sleep	-	200	-	uW
---------------------------------------	---	-----	---	----

5.3 I/O Connection

CN1

Pin No.	Symbol	Description
1	GND	The power ground
2	MIPI_D3N_L	L-port MIPI DSI data3- for Master IC
3	MIPI_D3P_L	L-port MIPI DSI data3+ for Master IC
4	GND	The power ground
5	MIPI_D2N_L	L-port MIPI DSI data2- for Master IC
6	MIPI_D2P_L	L-port MIPI DSI data2+ for Master IC
7	GND	The power ground
8	MIPI_CLKN_L	L-port MIPI DSI Clock- for Master IC
9	MIPI_CLKP_L	L-port MIPI DSI Clock+ for Master IC
10	GND	The power ground
11	MIPI_D1N_L	L-port MIPI DSI data1- for Master IC
12	MIPI_D1P_L	L-port MIPI DSI data1- for Master IC
13	GND	The power ground
14	MIPI_D0N_L	L-port MIPI DSI data0- for Master IC
15	MIPI_D0P_L	L-port MIPI DSI data0- for Master IC
16	GND	The power ground
17	TP_AVDD	Analog Power Supply(TYP.3.3V)
18	TP_SCL	TP Slave clock for SPI (Serial Peripheral Interface)(1.8V)
19	TP_INT	TP INT for AP(1.8V)
20	TP_CS	TP Slave select for SPI (Serial Peripheral Interface)(1.8V)
21	TP_MISO	TP Master input, slave output for SPI (Serial Peripheral Interface)(1.8V)
22	TP_MOSI	TP Master output, slave input for SPI (Serial Peripheral Interface)(1.8V)
23	TP_RST	TP reset(1.8V)
24	SWIRE	Enable ELVDD and ELVSS output of DC/DC IC
25	AVDD_EN	Enable ELVDD and ELVSS output of DC/DC IC
26	VDDI	Digital power for Driver IC



27	VDDI	Digital power for Driver IC
28	AVDD	Charge pumping Power for Driver IC
29	AVDD	Charge pumping Power for Driver IC
30	MTP_PWR_L	Power supply for OTP. Float it for normal operation.
31	RST	Reset pin for DDIC, active low
32	ESD_INTR	MIPI_error detection pin
33	TE	Feed Back From Driver IC for synchronism
34	VCI	Analog power for Driver IC
35	DUMMY	No connection
36	GND	The power ground
37	MIPI_D3N_R	R-port MIPI DSI data3- for Slave IC
38	MIPI_D3P_R	R-port MIPI DSI data3- for Slave IC
39	GND	The power ground
40	MIPI_D2N_R	R-port MIPI DSI data2- for Slave IC
41	MIPI_D2P_R	R-port MIPI DSI data2- for Slave IC
42	GND	The power ground
43	MIPI_CLKN_R	R-port MIPI DSI Clock- for Slave IC
44	MIPI_CLKP_R	R-port MIPI DSI Clock- for Slave IC
45	GND	The power ground
46	MIPI_D1N_R	R-port MIPI DSI data1- for Slave IC
47	MIPI_D1P_R	R-port MIPI DSI data1- for Slave IC
48	GND	The power ground
49	MIPI_D0N_R	R-port MIPI DSI data0- for Slave IC
50	MIPI_D0P_R	R-port MIPI DSI data0- for Slave IC
51	GND	The power ground

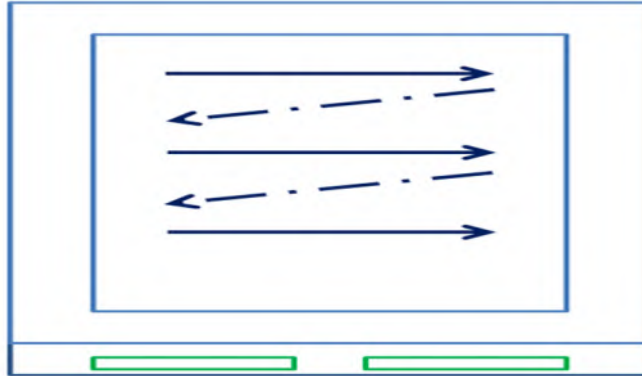
CN2

Pin No.	Symbol	Description
1	DUMMY	No connect
2	ELVSS	ELVSS for OLED
3	ELVSS	ELVSS for OLED
4	ELVSS	ELVSS for OLED
5	ELVSS	ELVSS for OLED
6	DUMMY	No connect
7	ELVDD	ELVDD for OLED
8	ELVDD	ELVDD for OLED
9	ELVDD	ELVDD for OLED
10	ELVDD	ELVDD for OLED
11	DUMMY	No connect



Note1:该接口为 MIPI D-PHY v1.1 带 VESA DSC 1.1 压缩

5.4 Graphic memory writing direction



5.5 Recommended Operating Sequence

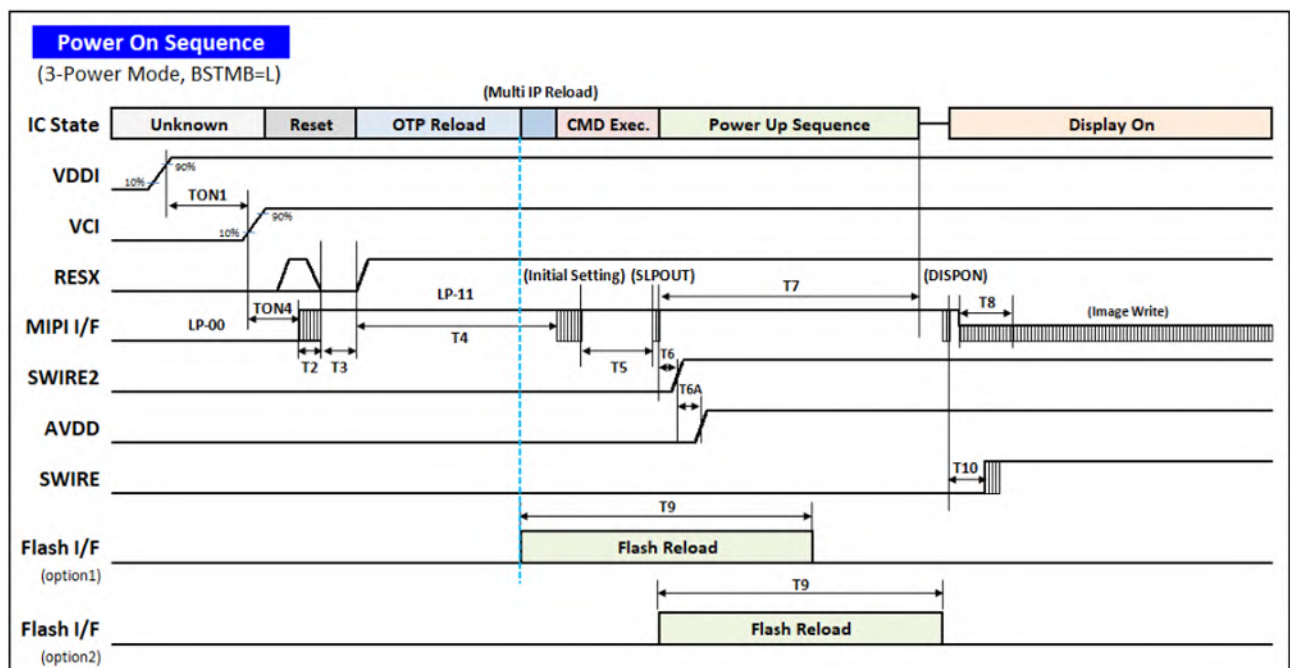
5.5.1 Timing Specification of Power On/Off Sequence



◆ Timing Specification of Power On/Off Sequence

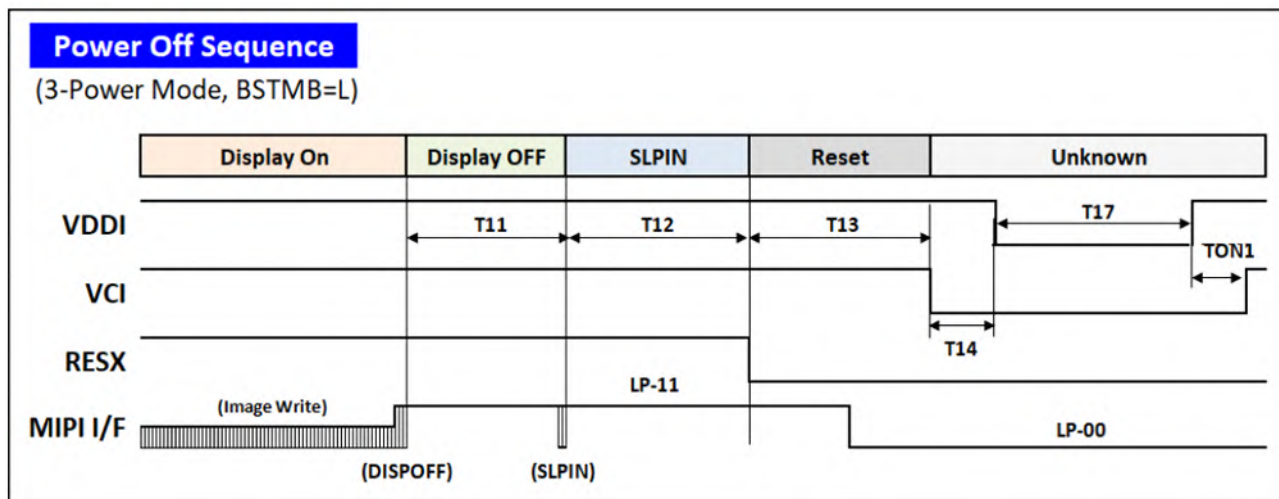
Symbol	Value			Unit	Remark
	Min.	Typ.	Max.		
TON1	2	-	-	ms	VDDI-to-VDDI Power Ready Timing (for 3-Power Mode)
TON2	0	-	-	ms	VDDI-to-DVDD Power Ready Timing (for 4-Power Mode)
TON3	2	-	-	ms	DVDD-to-VCI Power Ready Timing (for 4-Power Mode)
TON4	0	-	-	ms	VCI-to-MIPI LP11 timing
T2	1	-	-	ms	MIPI stabilization time
T3	1	-	-	ms	Effective hardware reset period
T4	32	-	-	ms	Initial code input starts to RESX goes H, Note (1)
T5	0	-	-	ms	Initial code input finish to SLPOUT command input
T6	0	-	16	ms	SWIRE2 goes H after SLPOUT cmd, Note (2)
T6A	0	-	16	ms	AVDD starts after SWIRE2 goes H
T7	6	6	6	VS	Normal power-up sequence, Note (3)
T8	2	-	14	VS	Display-On Blanking region, Note (4)
T9	0	80	-	ms	16Mb Quad-SPI Flash reload time, Note (5)
T10	1	-	7	VS	SWIRE enable after receiving DISPON cmd, Note (6)
T11	1	-	14	VS	Display Off Blanking region
T12	1	-	-	VS	Power Off Blanking region
T13	2	-	-	ms	Effective hardware reset period
T14	2	-	-	ms	Power off period (for 3-Power Mode)
T15	2	-	-	ms	Power off period (for 4-Power Mode)
T16	0	-	-	ms	Power off period (for 4-Power Mode)
T17	5	-	-	ms	Power down period, Note (7)

5.5.2 Power on sequence





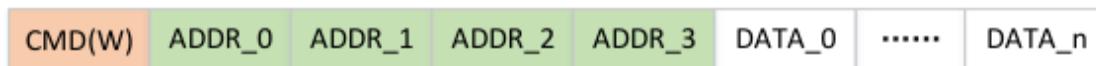
5.5.3 Power off sequence



5.5.4 SPI 通讯

GT6975P 提供 SPI 接口, 仅支持 CPOL=0、CPHA=0 模式。由 SPI_MOSI(从机数据输入), SPI_MISO(从机数据输出), SPI_CLK(时钟), SPI_CS(片选)与主控进行通信。GT6975P 始终作为从设备, 所有通信都是由主控发起。

SPI 写操作协议



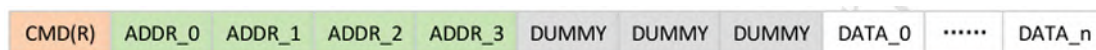
CMD(W): 写操作命令, 固定为 0xF0

ADDR_0~ADDR_3: 待写入的寄存器 32 位地址 (大端模式: 高字节在前, 低字节在后)

DATA_0~DATA_n: 待写入的字数据

SPI 读操作协议

1.One Byte 模式



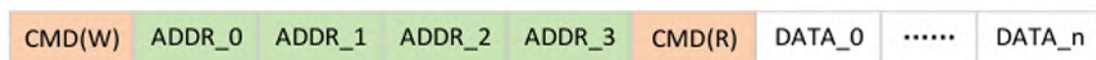
CMD(R): 读操作命令, 固定为 0xF1

ADDR_0~ADDR_3: 待读取的寄存器 32 位首地址 (大端模式: 高字节在前, 低字节在后)

DATA_0~DATA_n: 待读取的字数据

每次通信的数据必须为字对齐的数据, 自动递增寄存器地址, 将后续数据顺序发送。

2.Two-Byte 模式



CMD(W): 写操作命令, 固定为 0xF0

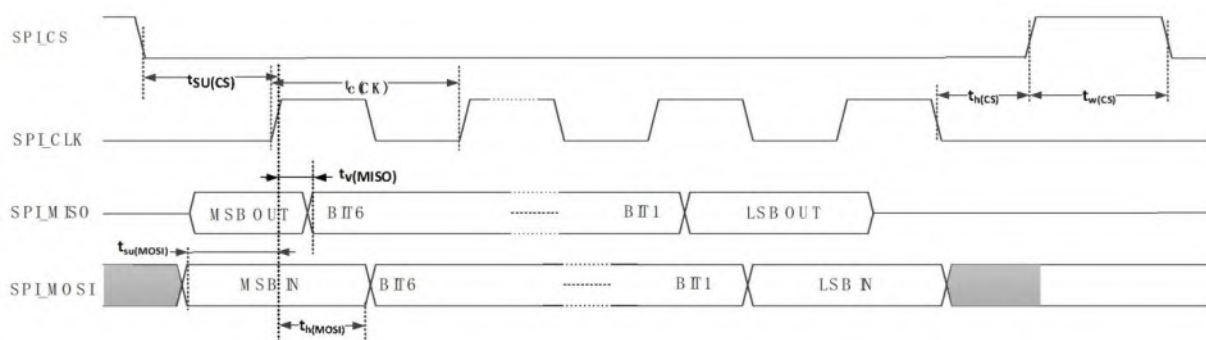
ADDR_0~ADDR_3: 待读取的寄存器 32 位首地址 (大端模式: 高字节在前, 低字节在后)

CMD(R): 读操作命令, 固定为 0xF1

DATA_0~DATA_n: 待读取的字数据

每次通信的数据必须为字对齐的数据，自动递增寄存器地址，将后续数据顺序发送。

符号	描述	最小值	典型值	最大值	单位	条件
1/tc(CK)	SPI 时钟频率	-	20	25	MHz	
DuCy(SPI_CLK)	SPI 时钟占空比	-	50	-	%	
tsu(CS)	SPI_CS 建立时间	25	-	-	ns	
th(CS)	SPI_CS 保持时间	6.25	-	-	ns	
tw(CS)	SPI_CS 空闲时间	6.25	-	-	ns	
tsu(MOSI)	数据输入建立时间	10	-	-	ns	
th(MOSI)	数据输入保持时间	1	-	-	ns	
tv(MISO)	数据输出有效时间	TBD	-	TBD	ns	C=20pF



6 Electro-Optical Specification (Frame Rate:120Hz)

Item	Symbol	Conditions	Min.	Typ.	Max.	Unit	Remark
Brightness		Full White,Center	405	450	495	cd/m ²	
HBM			540	600	660	cd/m ²	
Minimum Brightness		no flicker	-	4	5	cd/m ²	
Brightness Uniformity		Full White	80	-	-	%	Note 2
Contrast Ratio		CR	10 万	100 万	-	-	Note 3
CIE Chromaticity	White	x	0.275	0.295	0.315	-	
		y	0.295	0.315	0.335	-	
	Red	x	0.662	0.682	0.702	-	
		y	0.2948	0.3148	0.3348	-	
	Green	x	0.190	0.230	0.270	-	
		y				-	



		y		0.692	0.732	0.772	-		
	Blue	x		0.118	0.138	0.158	-		
		y		0.023	0.043	0.063	-		
Color Gamut(CIE 1931)			vs. NTSC	98	108	-	%		
			vs. DCI-P3	99	100		%		
CCT				7000	7800	8600	K		
CCT Range				-	-	900	K		
Viewing angle			U/D/L/R CR≥10	80	-	-	°		
Color shift			@ 45 degree	-	-	4.5	JNCD	Note 4	
Cross-talk			4% black or white window, 127 gray scale	-	-	2	%	Note 5	
Gamma (120Hz)			9 Gray~ 15Gray	1.9	2.2	2.5			
			16 Gray~240 Gray	2.0	2.2	2.4			
Gamma (60Hz)			Normal ~HBM	16~240 Gray	2	2.2	2.4		
				9~15 Gray	1.9	2.2	2.5		
			30~100nit	64~240 Gray	2	2.2	2.4		
				32~63 Gray	1.9	2.2	2.5		
			4~20nit	80~240 Gray	1.9	2.2	2.5		
Response time				-	-	2	ms	Note 6	
Flicker			Normal Θ=Φ=0°	-	-	-40	dB	Note 7	
Lifetime			T50	10000	-	-	h		
			T95	500	-	-	h		
Short-burn in				Case 1 : @240hr ≥ B10 93%@25℃ Case 2 : @72hr ≥ B10 93%@50℃				Note 8	
Image retention				-	-	TBD (依据 DVT2-2实际	sec	Note 9	



				测试数据决定)		
Upper Pol compensation film	明基110um	HC/3H				

Note1: Temp.25℃, (Angle、 distance)

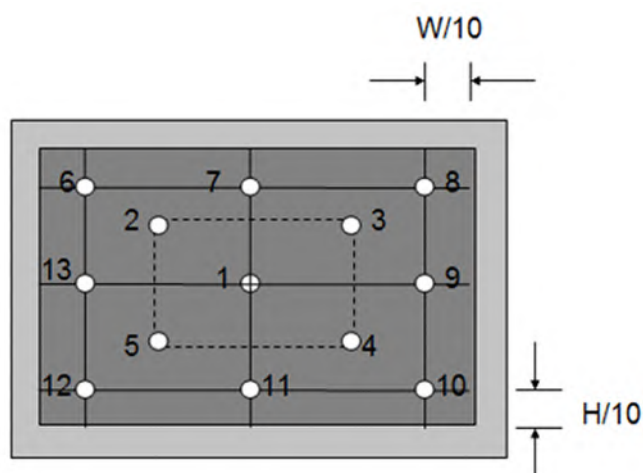
Environmental conditions: Temp.25℃±3℃, 65±20%RH, Dark Room.

Distance of OLED display center to measuring machine is 50cm.

Note2: Brightness Uniformity definition

Measure 13 points of Display Brightness,

Brightness Uniformity= $L_{min}/L_{Max} \times 100\%$

**Note3: Contrast Ratio**

Dark Room C.R= LW/LB

LW: full white brightness of display center P0;

LB : full black brightness of display center P0.

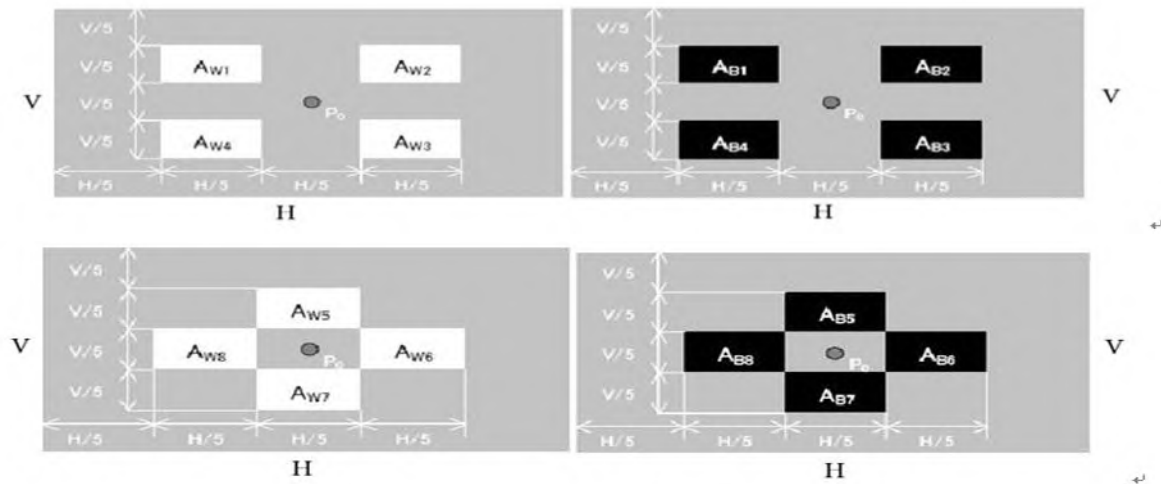
Note4: Color Shift

Out-spec panel(4.5~5.5JNCD) should be less than 5%



Note5: Cross-talk

4% black or white window , 127 gray background.



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

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

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

For white windows AW_i ($i = 5$ to 8), and

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

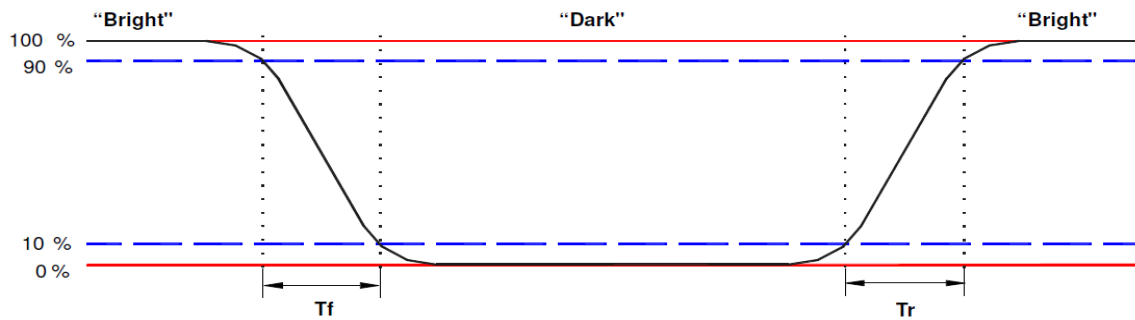
For black windows AB_i ($i = 5$ to 8).

The maximum cross-talk value shall be noted in the measurement report.

Note6: Response Time

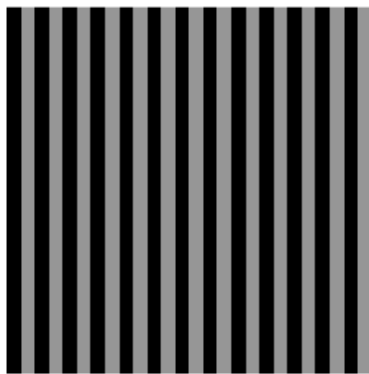
Response time=Pixel turn on and turn off time (White $\rightleftharpoons$ Black).

It is measuring transition time from 10% to 90% of luminance.



Note 7: Flicker

Suggested Instruments: **Konica Minolta CA-310** or **Klein Instruments K-8**



Odd row : L0 Black
Even row : L186 gray level

Flicker Test Pattern

The flicker level is defined by **Fast Fourier Transformation (FFT)** as follows:

$$Flicker = 20 \log_{10} \left(2 \frac{f_{FFT}(n)}{f_{FFT}(0)} \right) + FS(Hz) \quad (dB)$$

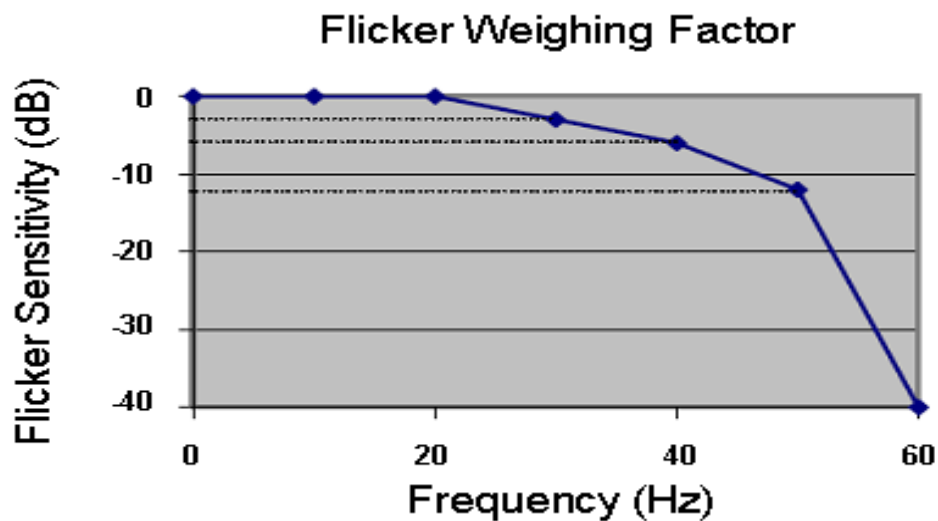
Where

$f_{FFT}(n)$ is the n-th FFT coefficient.

$f_{FFT}(0)$ is the 0-th FFT coefficient which is DC component.

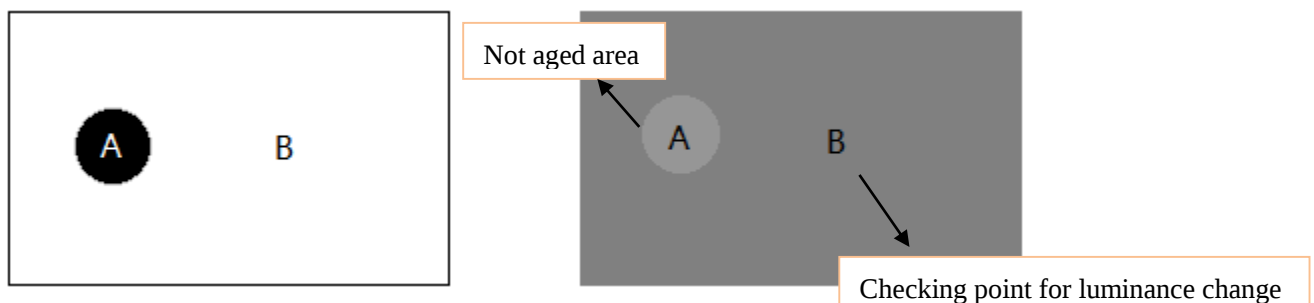
$FS(Hz)$ is the flicker sensitivity as a function of frequency.

The peak flicker level shall be reported based on the calculation using above formula in which $FS(Hz)$ is determined by the flicker weighing factor shown below.



Note8 Short-burn in

To measure the burn-in effect, a test pattern with full white background (area B) and a black circle (area A) is applied to the AMOLED display at 420 nits setting with ACL off. The area of the black circle should not exceed the 20% of the whole displayed area and is big enough for brightness measurement.



After the minimum time specified below (e.g. 200 hours), a full white image is applied on the display, and the luminance in area A and B are measured at 25°C and compared according to the change rate defined as:

$$1 - \{A_{200\text{hrs}} / A_{0\text{hr}} - B_{200\text{hr}} / B_{0\text{hr}}\}$$

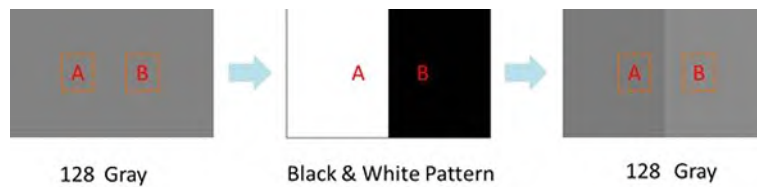
5 display samples should be measured (all of samples have better luminance than this value)

Note9 Image retention

Light on a 128 gray pattern, capture the luminance of A and B (L_A / L_B), Change to a Black & White pattern, and light on this pattern for 30 minutes; Then change the pattern back to 128 gray,



at same time start to use CA310 (or similar optical device) measures the luminance of A and B(L_A' / L_B'), measure 60 times and each interval step is 1 sec;



Calculate the JND as below method: $JND = |(L_B' - L_A') / (L_B' + L_A') - (L_B - L_A) / (L_B + L_A)| / 0.004$, Record the time which satisfy the JND value less than 1;

7 CG & Touch Sensor Specification

7.1 CG Specification

No	Item	Conditions		Remark
1	Cover Lens Material	Corning Gorilla GG3;	-	
2	Thickness	0.55	[mm]	
3	Cover Lens Surface Treatment	AF coating	-	
4	Surface Hardness	>8H	[H]	
5	Lens DOL	40um	[um]	
6	Lens CS	650Mpa	[MPa]	
7	4 Point Bending	>600Mpa	[MPa]	
8	shape	-	-	Ref. drawing
9	transmittance	>90%	[%]	
10	Haze	<1%	[%]	
11	Reflection	<17%	[%]	
12	Cover Lens Drill Through Hole or Not	yes	-	
13	BM Ink (Black)	Black C		



7.2 Touch Sensor Specification

No	Item	Conditions		Remark
1	TP Structure	On-cell		
2	Touch D-IC	Goodix(GT6975P)		支持主动电容笔(支持 MPP 协议)
3	Lamination Between CG And Display	OCA Full Lamination		On cell
4	Gap Between CG / Display	OCA 0.2	mm	
5	Sensor Substrate	Glass		
6	Sensor Sheet Resistance	≤ 33 ohm/square		
7	Number of touch	10 Finger		
8	Sensing Method	Mutual + Self Capacitance or Mutual		
9	ITO Pitch	4.14616 x 4.19812	mm	
10	Accuracy	center 1.0/Border 1.5	mm	ϕ 6mm
11	Precision	center 1.0/Border 1.5	mm	ϕ 6mm
12	Linearity	center 1.0/Border 1.5	mm	ϕ 6mm
13	Jitter	<0.5	mm	ϕ 6mm
14	Response Time	<30	ms	
15	Finger Separation	<12	mm	
16	Sensitivity	$\phi 4$	mm	
16	Report Rate	180Hz@10finger		
17	Signal-to-Noise Ratio	>30:1		
18	No Ghost input	YES		
19	Anti Water	YES		Note 10
20	Temperature Shock Self-adaption	YES		Note 11
21	Hover	YES		Note 12
22	Palm Rejection	YES		Note 13
23	Function Reset	YES		Note 14



24	Gesture Support	YES		
25	Active Pen	Support MPP		

Note 10: Anti Water

TP works well under below condition:

1. Water-drop(Size $\phi 1\text{mm}$) on the top of TP.
2. Spray on the top of TP.

Note 11: Temperature Shock Self-adaption

-20C to 50/10min. Check TP performance at -10C/25C/50C. TP should work well.

Note 12: Hover

$\phi 7\text{mm}$ slug ,1mm distance to TP surface. No touch report .

Note 13: Palm Rejection

When 20cm palm on TP surface, no touch report and the reset area of TP still work well

Note 14: Function Reset

Execute Function Reset after power on and rouse the Pad.

8 Reliability

8.1 Environmental Test

No	Item	Conditions	Quantity	Remark
1	High Temperature Operation	$70 \pm 2^\circ\text{C}$ / 240 hours	5 pcs	After testing - No clearly visible defects or remarkable deterioration of display quality. However, any polarizer's
2	Low Temperature Operation	$-20 \pm 2^\circ\text{C}$ / 240 hours	5 pcs	
3	High Temperature Storage	$80 \pm 2^\circ\text{C}$ / 240 hrs	5 pcs	
4	Low Temperature Storage	$-40 \pm 2^\circ\text{C}$ / 240 hours	5 pcs	



5	High Temperature Humidity Storage	60°C/90% RH 240 hrs	10 pcs	deteriorations by the high temperature/ High humidity test are permitted. - No function-related abnormalities.
6	High Temperature Humidity Operation	60°C/90% RH 240 hrs	10 pcs	
7	Thermal Shock	-40°C~85°C , 0.5hr, 100 cycles.	10 pcs	

8.2 Electrical Test

	Item	Main spec	Note
	Mipi Resistance	90±10Ω	
	Inrush Current	<1.3A (<20us)	Figure.1
Non-operation	AMOLED Signal and power pin to elicit and GND lead to JIG GND (8 point, 5 times)	±2 kV , 150pF/330Ω (Module level; with CG)	After testing - Hard defect should not happen. - If it would be recovered to normal state after resetting, it would be judged as a good state. (Class C)
	Air Discharge (7 point, 5 times)	±4 kV, 150pF/330Ω (Module level; with CG)	
Operation	Air Discharge (7 point, 5 times)	±8 kV , 150pF/330Ω (Module level; with CG)	
	Contact Discharge (7 point, 5 times)	±4 kV, 150pF/330Ω (Module level; with CG)	

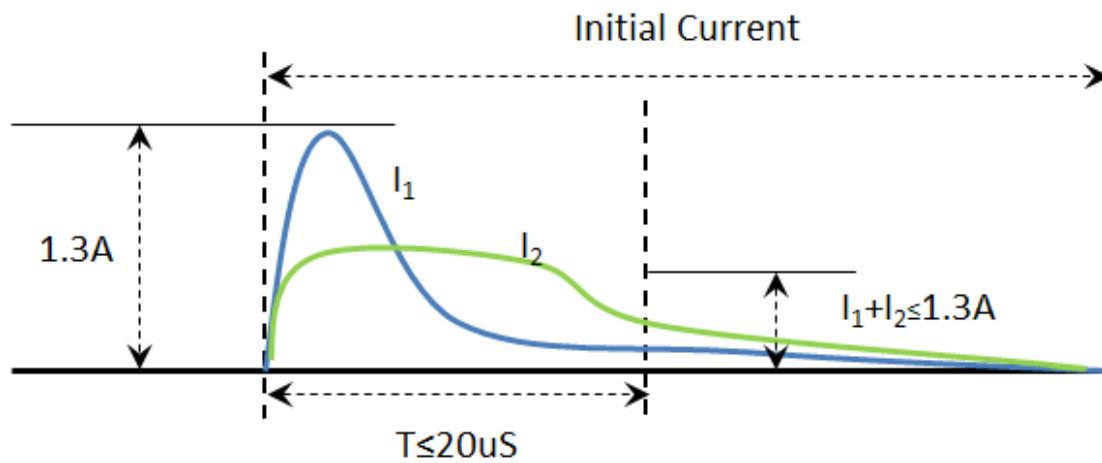


Figure.1



Figure.2

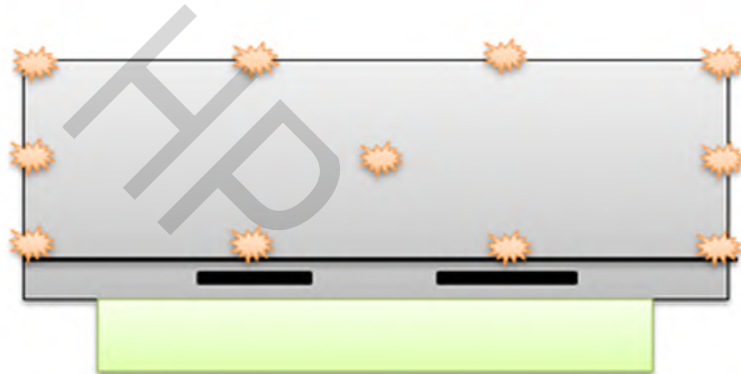


figure.3

8.3 Mechanical Test

No	Item	Conditions	Note
1	Drop Test	GB/T4857.18-19 Test Description For Packages (1 corner, 3 edges, 6 surfaces)	Package
2	Sinusoidal Vibration Test	Frequency range: 10~55Hz, Stroke:1.5mm, Sweep:10Hz~55Hz~10Hz 2hours for each direction of X.Y.Z.(6 hours for total, Package condition)	Package



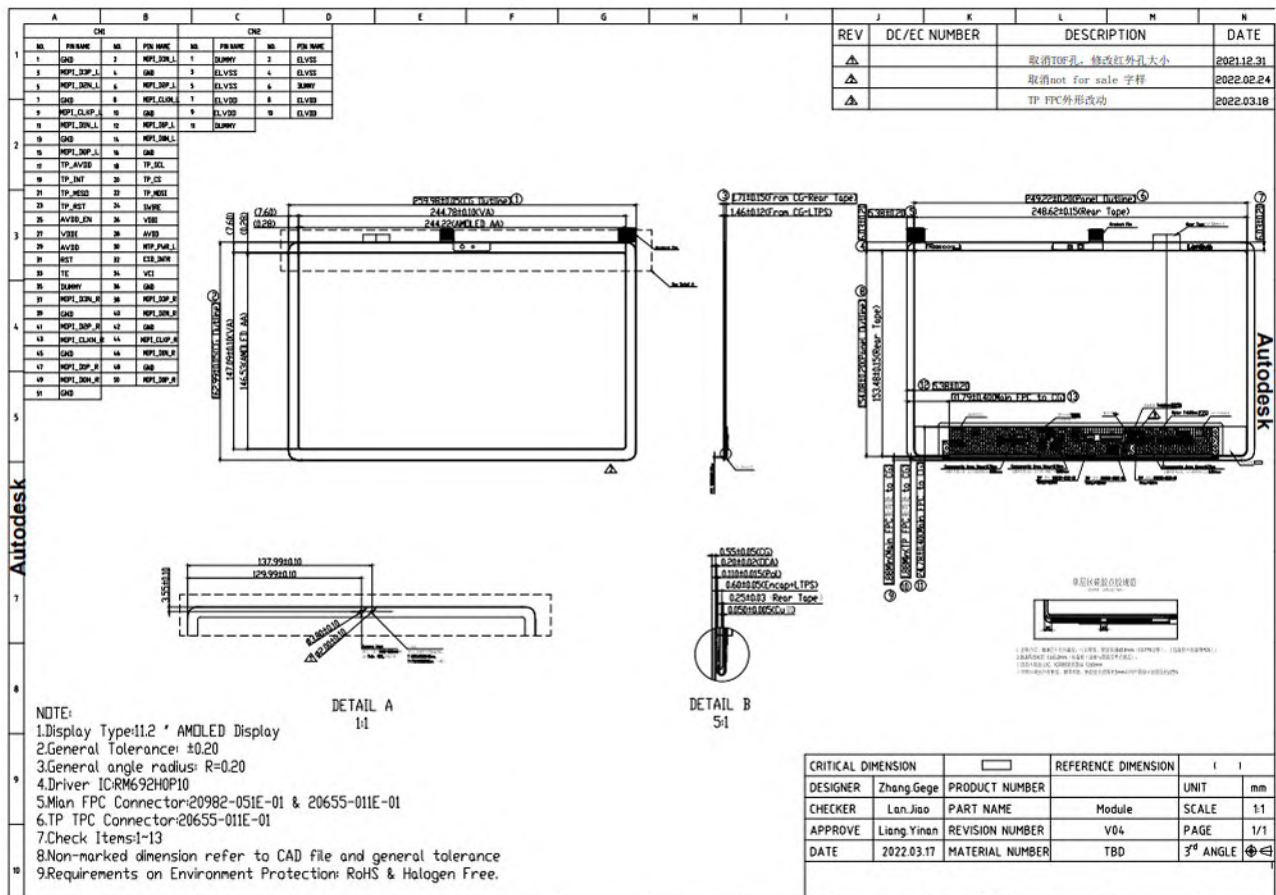
3	Ball Drop Test	Weight:130g,Height:10cm,9 point,3pcs.The following figure shows test points and test mode(use EDO RA lab equipment)	Note 15
4	4PB	$\epsilon \geq 1200\mu$	
5	Cell Gap strength	30kgf (2 seconds hold), 5mm/min, Keep pressure 2s on centre of AA with 5mm/min loading rate. Check in white pattern, no abnormal.	
6	FOG Peel Strength	50mm/min, $\geq 7\text{N/cm}$	
7	IC 3 Point Bending	$B10 \geq 350\text{Mpa}$	

Note 15





9 Outline Dimension Drawing



10 Packing Specification

TBD

11 The Control of Hazardous substances

The control of hazardous substances meet RoHS and REACH requirements.