Tailorpixels

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9001 CERT. No.: 282Q19070712006

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Product Specification

Model: TOH548XVT-02C

5.48″AMOLED Display Module(1080*1920)

This module uses RoHS material

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Record of Revision

Rev	Issue Date	Description	Editor
A0	2026-06-26	Initial Released	HWM

1 General Specifications

Feature		Spec	Remark
Display Spec	Screen Size (inch)	5.48	
	Display Mode	AMOLED	
	Resolution(dot)	1080(W)×1920(H)	
	Active Area(mm)	68.26(W)×121.34(H)	
	Pixel Pitch (um)	90 (W)×90(H)	
	Technology Type	LTPS	
	Color Depth	16.7M	
	Interface	MIPI 4 LANE	
Mechanical Characteristics	With TP/Without TP	With TP	
	Module Outline Dimension(W x H x D) (mm)	70.16*126.77*0.86	
	Weight (g)	TBD	
Electronic	Driver IC(Type)	VTDR6130	
	Touch IC(Type)	CST3548	

Note 1: Requirements on Environmental Protection: RoHS.

2 Module Interface

2.1 Main FPC Pin Assignment

NO	SYMBOL	FUNCTION
1	GND	Ground
2	GND	Ground
3	GND	Ground
4	VBAT(AVDD)	Power supply for analog circuits
5	VBAT(AVDD)	Power supply for analog circuits
6	VBAT(AVDD)	Power supply for analog circuits
7	VBAT(AVDD)	Power supply for analog circuits
8	VBAT(AVDD)	Power supply for analog circuits
9	GND	Ground
10	OTPV	Provide programming voltage to the internal OTP/NVM of the screen
11	TE	Tearing effect signal is used to synchronize MCU to frame memory writing
12	GND	Ground
13	D3P	MIPI-DSI data Lane 3 positive-end input pin
14	D3N	MIPI-DSI data Lane 3 negative-end input pin
15	GND	Ground
16	D0P	MIPI-DSI data Lane 0 positive-end input pin
17	D0N	MIPI-DSI data Lane 0 negative-end input pin
18	GND	Ground
19	DKP	MIPI-DSI data Lane CLOCK positive-end input pin
20	DKN	MIPI-DSI data Lane CLOCK negative-end input pin
21	GND	Ground
22	D1P	MIPI-DSI data Lane 1 positive-end input pin
23	D1N	MIPI-DSI data Lane 1 negative-end input pin
24	GND	Ground
25	D2P	MIPI-DSI data Lane 2 positive-end input pin
26	D2N	MIPI-DSI data Lane 2 negative-end input pin
27	GND	Ground
28	RESX	This signal will reset the device and it must be applied to properly initialize the chip. Signal is active low
29	VDDIO	Power Supply for Logic
30	VCI	Power supply for analog circuits
31	NC	Dummy
32	GND	Ground
33	TP_AVDD_3.3V	Power supply for analog circuits

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34	TP_IOVCC	Power Supply for Logic
35	TP_SDA	Touch panel.I2C data input and output..
37	TP-RESET	Reset pin, the TP is initial ized when RESX active Low.
38	TP_INT	Interrupt request to the host,or Wakeup request from the host
39	GND	Ground

3 Absolute Maximum Ratings

3.1 Driving AMOLED Panel

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

Item	Symbol	MIN	MAX	Unit
Analog Power supply	VCI	-0.3	+4.0	V
Logic Power supply	VDDIO	-0.3	+4.0	V
Analog Power for POWER IC	AVDD	2.9	4.5	V
Analog Power for TP	TP_AVDD_3.3V	-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

Item		Symbol	MIN	TYP	MAX	Unit
Logic Power supply		VDDIO	1.65	1.80	1.98	V
Analog Power supply		VCI	2.65	3.3	3.6	V
Analog Power for POWER IC		AVDD	3.7	4.2	4.5	V
Analog Power for TP		TP_AVDD_3.3V	2.8	3.3	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
Normal		I_{ELVDD} + I_{ELVSS}	-	TBD	TBD	mA
Stand-by		I_{ELVDD} + I_{ELVSS}	-	TBD	TBD	uA

Ta=25℃

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

Note2: VDDIO usually ranges from 1.65V to 3.3 V. If VDDIO is changed, the remaining voltage needs to be changed to the same voltage as VDDIO.

Note3: Under full white pattern, Video Mode 60Hz.

5 MIPI AC Characteristics

5.1 HS Date Transmission Burst

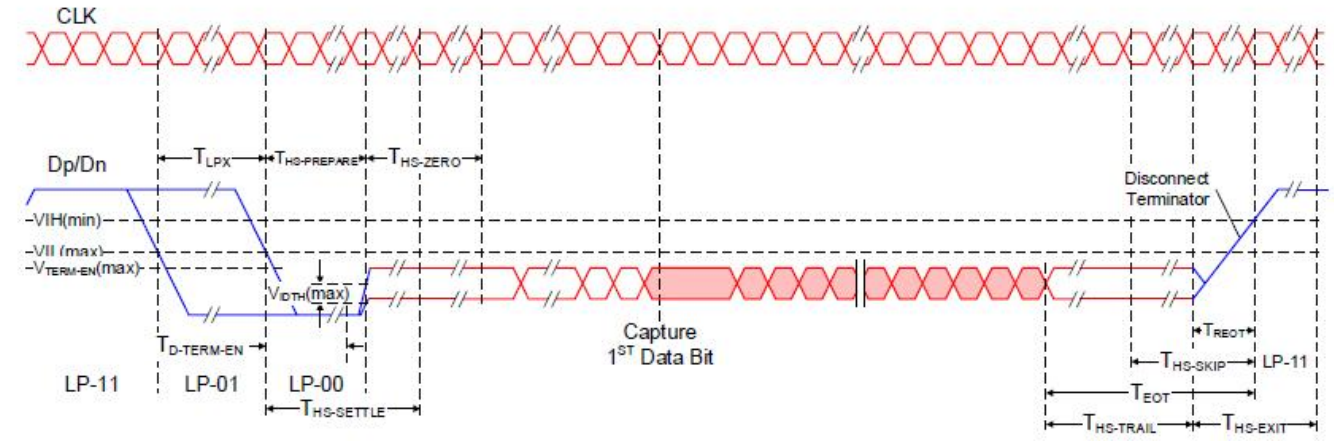


Figure: HS Date Transmission

5.2 HS clock transmission

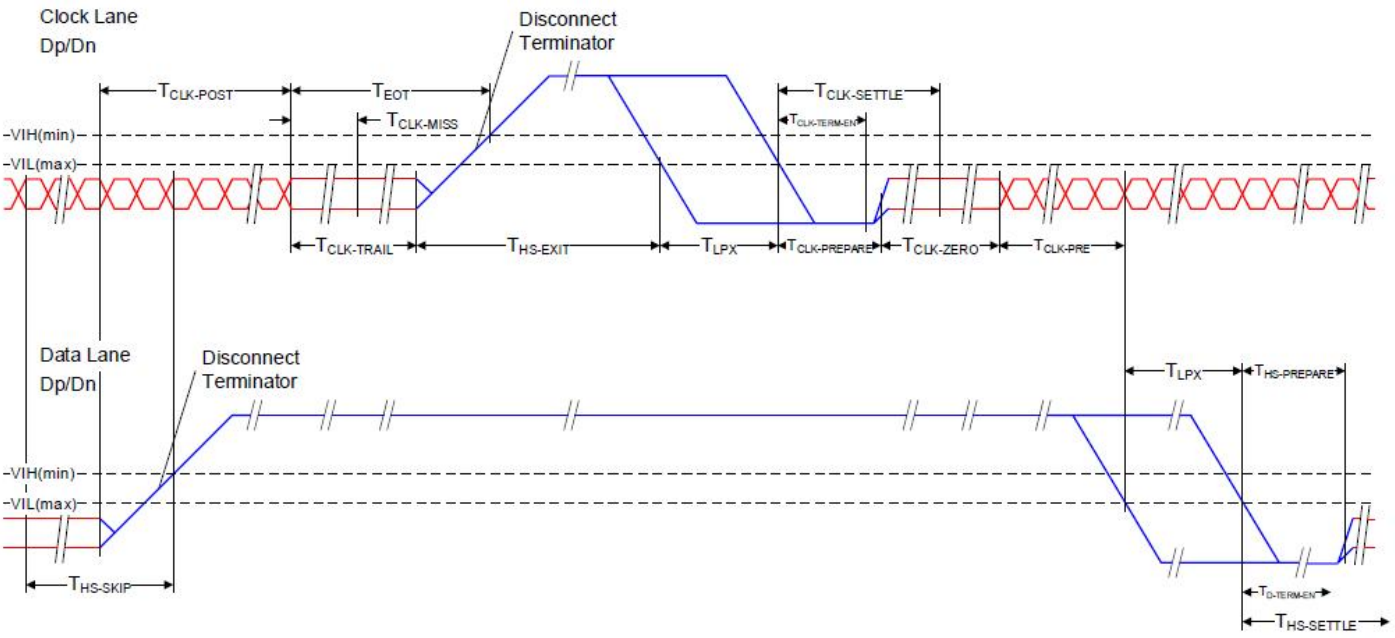


Figure: HS Clock Transmission

5.3 Turnaround Procedure

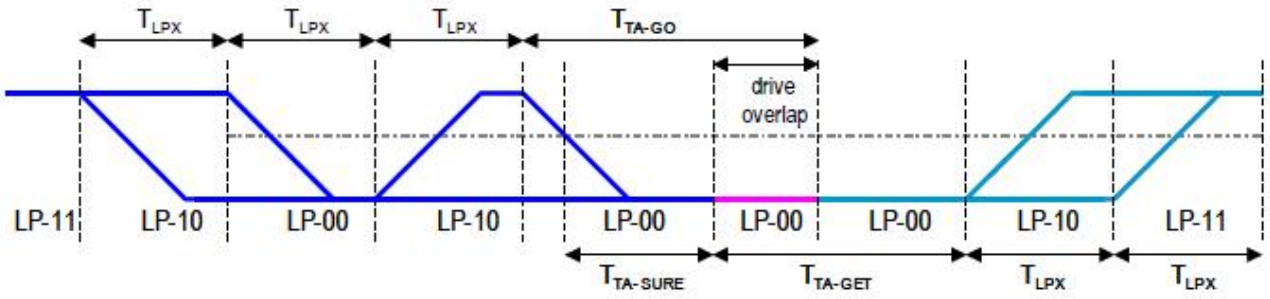
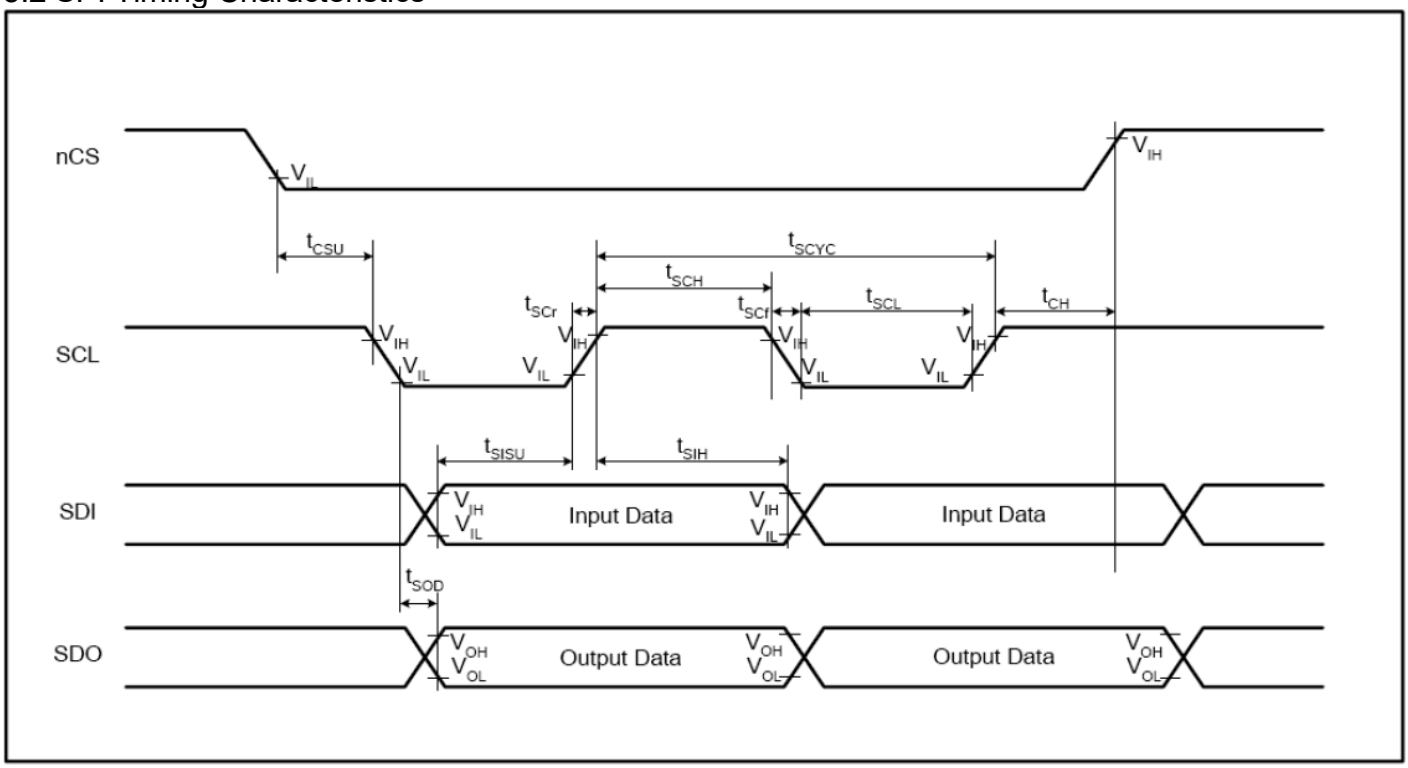


Figure :Turnaround Procedure

Parameter	Description	Min	Typ	Max	Unit	Notes
$T_{CLK-MISS}$	Timeout for receiver to detect absence of Clock transitions and disable the Clock Lane HS-RX.			60	ns	1, 6
$T_{CLK-POST}$	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 $T_{CLK-TRAIL}$.	60 ns + 52*UI			ns	5
$T_{CLK-PRE}$	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	5
$T_{CLK-PREPARE}$	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	5
$T_{CLK-SETTLE}$	Time interval during which the HS receiver should ignore any Clock Lane HS transitions, starting from the beginning of $T_{CLK-PREPARE}$.	95		300	ns	6, 7
$T_{CLK-TERM-EN}$	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	6
$T_{CLK-TRAIL}$	Time that the transmitter drives the HS-0 state after the last payload clock bit of a HS transmission burst.	60			ns	5
$T_{CLK-PREPARE}$ + $T_{CLK-ZERO}$	$T_{CLK-PREPARE}$ + time that the transmitter drives the HS-0 state prior to starting the Clock.	300			ns	5
$T_{D-TERM-EN}$	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		6
T_{EOT}	Transmitted time interval from the start of $T_{HS-TRAIL}$ or $T_{CLK-TRAIL}$, to the start of the LP-11 state following a HS burst.			105 ns + n*12*UI		3, 5
$T_{HS-EXIT}$	Time that the transmitter drives LP-11 following a HS burst.	100			ns	5

Parameter	Description	Min	Typ	Max	Unit	Notes
$T_{HS-PREPARE}$	Time that the transmitter drives the Data Lane LP-00 Line state immediately before the HS-0 Line state starting the HS transmission	40 ns + 4*UI		85 ns + 6*UI	ns	5
$T_{HS-PREPARE}$ + $T_{HS-ZERO}$	$T_{HS-PREPARE}$ + time that the transmitter drives the HS-0 state prior to transmitting the Sync sequence.	145 ns + 10*UI			ns	5
$T_{HS-SETTLE}$	Time interval during which the HS receiver shall ignore any Data Lane HS transitions, starting from the beginning of $T_{HS-PREPARE}$. The HS receiver shall ignore any Data Lane transitions before the minimum value, and the HS receiver shall respond to any Data Lane transitions after the maximum value.	85 ns + 6*UI		145 ns + 10*UI	ns	6
$T_{HS-SKIP}$	Time interval during which the HS-RX should ignore any transitions on the Data Lane, following a HS burst. The end point of the interval is defined as the beginning of the LP-11 state following the HS burst.	40		55 ns + 4*UI	ns	6
$T_{HS-TRAIL}$	Time that the transmitter drives the flipped differential state after last payload data bit of a HS transmission burst	max(n*8*UI, 60 ns + n*4*UI)			ns	2, 3, 5
T_{INIT}	See Section 6.11.	100			µs	5
T_{LPX}	Transmitted length of any Low-Power state period	50			ns	4, 5
Ratio T_{LPX}	Ratio of $T_{LPX(MASTER)}$/$T_{LPX(SLAVE)}$ between Master and Slave side	2/3		3/2		
T_{TA-GET}	Time that the new transmitter drives the Bridge state (LP-00) after accepting control during a Link Turnaround.	5*T_{LPX}			ns	5
T_{TA-GO}	Time that the transmitter drives the Bridge state (LP-00) before releasing control during a Link Turnaround.	4*T_{LPX}			ns	5
$T_{TA-SURE}$	Time that the new transmitter waits after the LP-10 state before transmitting the Bridge state (LP-00) during a Link Turnaround.	T_{LPX}		2*T_{LPX}	ns	5
T_{WAKEUP}	Time that a transmitter drives a Mark-1 state prior to a Stop state in order to initiate an exit from ULPS.	1			ms	5

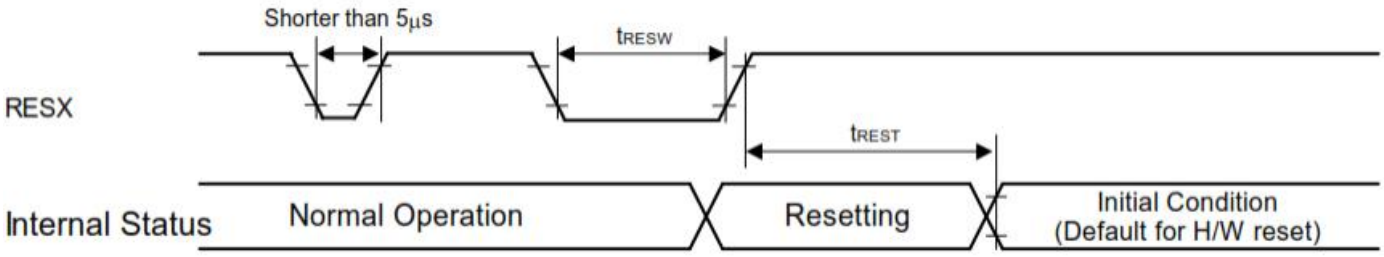
5.2 SPI Timing Characteristics



Signal	Symbol	Parameter	MIN	MAX	Unit	Description
SCL	Tscyc	Clock cycle (Write)	100		ns	
	Tscyc	Clock cycle (Read)	300		ns	
	Tsch	Clock H pulse width (Write)	40		ns	
	Tsch	Clock H pulse width (Read)	140		ns	
	Tscl	Clock L pulse width (Write)	40		ns	
	Tscl	Clock L pulse width (Read)	140		ns	
	Tscr	Clock rise time		5	ns	
	Tscf	Clock fall time		5	ns	
nCS	Tcsu	Chip select setup time	20		ns	
	Tch	Chip select hold time	50		ns	
SDI	Tsisu	Data input setup time	20		ns	
	Tsih	Data input hold time	20		ns	
SDO	Tsod	Data out setup time		120	ns	
	Tsoh	Data out hold time	5		ns	

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5.3 Reset Timing Characteristics



Symbol	Parameter	Related Pins	Min.	Typ.	Max.	Note	Unit
tRESW	*1) Reset low pulse width	RESX	10	-	-	-	us
tREST	*2) Reset complete time				5	When reset applied during sleep in mode	ms
					120	When reset applied during Sleep out mode	ms

6 Recommended Operating Sequence

6.1 Display Power on / off Sequence

6.1.1 MIPI Power On Sequence

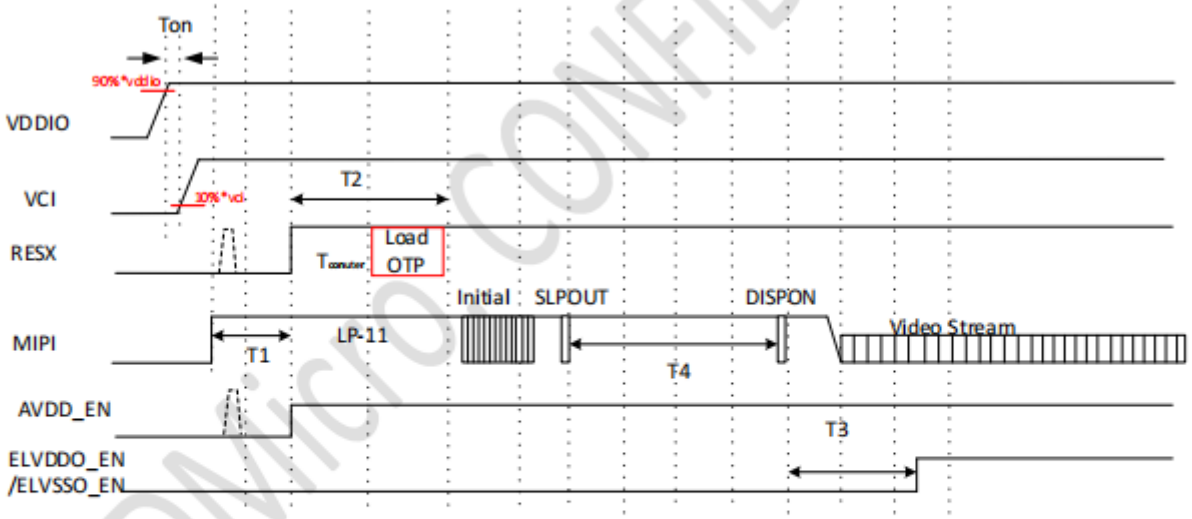


Figure 8-3-1-1 Power on sequence

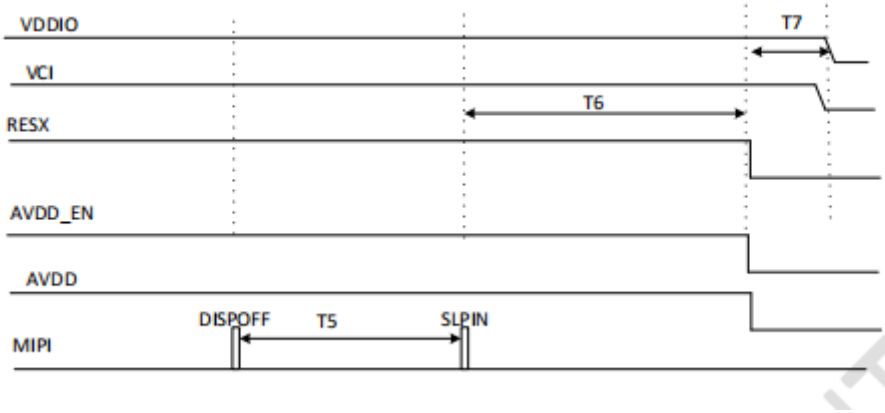
Note: 1.Ton: The time between the VDDIO and the VCI power on, Ton≥0 ms

2.Dotted line is optional.

3. All the power supplies should be stable during display on status.

4. Current of VDDIO, VCI, AVDD should be less than 150mA respectively.

6.1.2 MIPI Power Off Sequence



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6.2 Brightness control

Use "command 5100h, data xxh" to adjust the Manual Brightness value of the display:

In principle relationship is that 00h value means the lowest brightness and FFh value means the highest brightness.

Inst/Para	R/W	Address		Date Type	Description
		MIPI	Other		
BRTCTRL	W	51h	5100h	Hex	Value form 0~1023(3FF)

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°	100000				Note1 Note3 Test Equipment: CS2000A
Response Time		T_{ON}	25℃			2	ms	Note1 Note4 Test Equipment: Admesy MSE
		T_{OFF}						
Chromaticity	White	x		0.290	0.310	0.330		Test Equipment: CS2000A Note: Chromaticity can be modified according to customer demand
		y		0.296	0.316	0.336		
	Red	x		0.649	0.679	0.709		
		y		0.290	0.320	0.350		
	Green	x		0.201	0.241	0.281		
		y		0.679	0.719	0.759		
	Blue	x		0.110	0.140	0.170		
		y		0.013	0.043	0.073		
Uniformity		U		75	85		%	Note1 Note6 Test Equipment: CS2000A
NTSC				100			%	Note5
Luminance		L	Normal		650		Cd/m^2	Note1 Note7 Test Equipment: CS2000A
Cross-talk						2	%	Note8 Test Equipment: CS2000A
Gamma				2.0	2.2	2.4		Gamma=2.2±0.2 Test Equipment:

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.

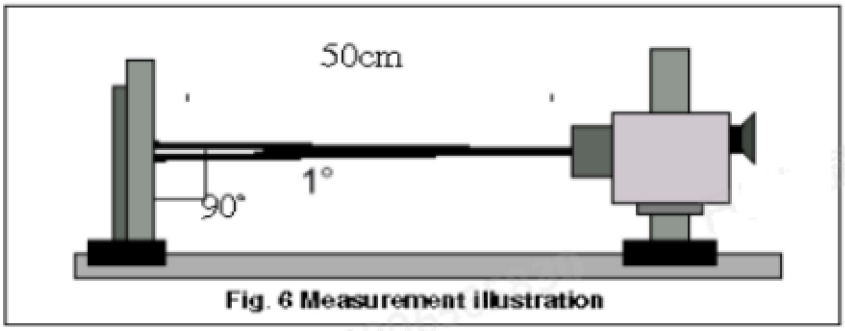


Fig. 6 Measurement illustration

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

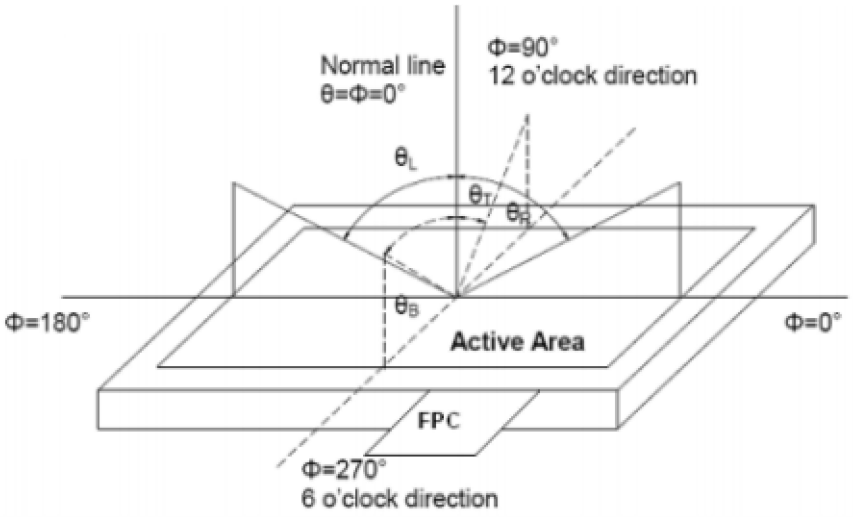


Fig. 1 Definition of viewing angle

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Note 3: Definition of contrast ratio

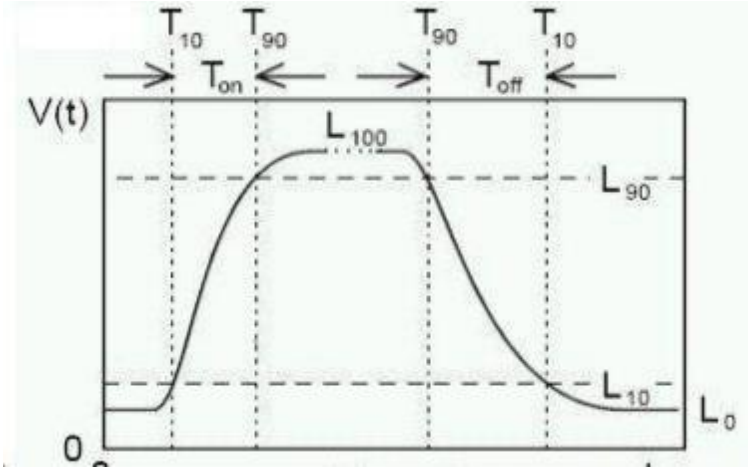
$$\text{Contrast ratio(CR)} = \frac{\text{Luminance measured when LCD is on the "white" state}}{\text{Luminance measured when LCD is on the "Black" state}}$$

“White state “: A state where the AMOLED should be driven by Vwhite.

“Black state”: A state where the AMOLED should be driven by Vblack.

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 changing from 10% to 90%. And fall time (T_{OFF}) is the time between photo detector output intensity changing from 90% to 10%.



Note 5: Definition of color chromaticity (CIE1931)

Color coordinates are measured at the center point of AMOLED.

Note 6: Definition of luminance uniformity

Active area is divided into 9 measuring areas (Refer Fig. 2). Every measuring point is placed at the center of each measuring area.

Luminance Uniformity(U) = Lmin/ Lmax

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

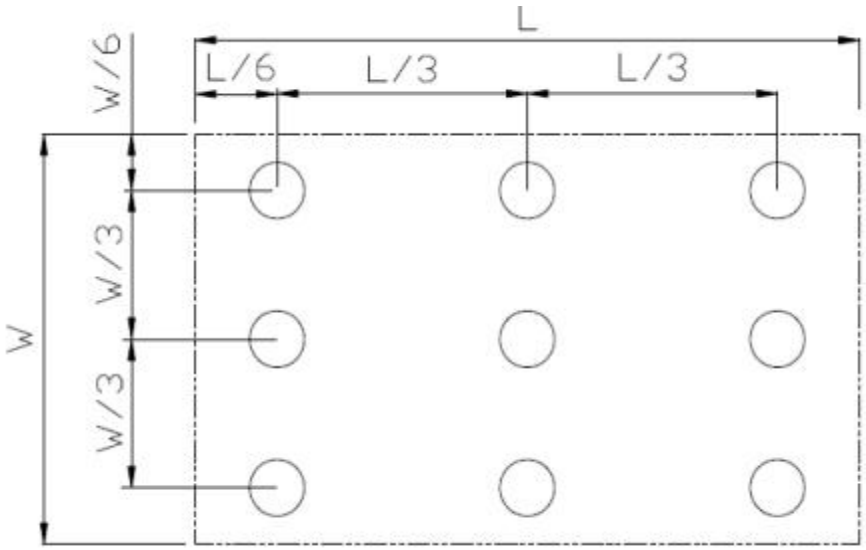


Fig. 2 Definition of uniformity

Lmax: The measured maximum luminance of all measurement position.

Lmin: The measured minimum luminance of all measurement position.

Note 7: Definition of luminance:

Measure the luminance of white state at the center point.

Note 8: Cross Talk

A. Measure luminance at the position, P0.

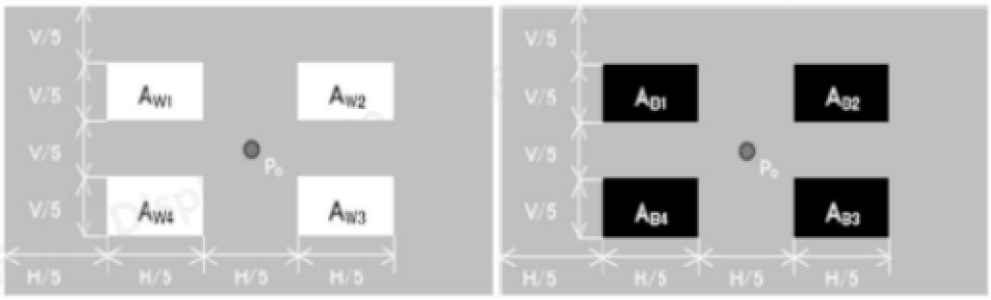
B. Calculate cross talk as below equation.

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

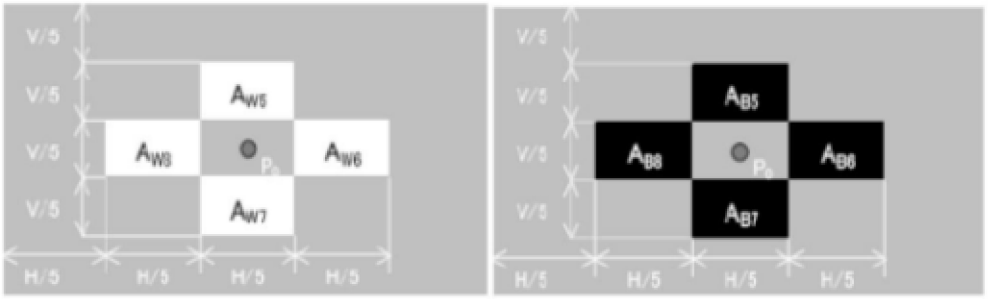
$$L_{B_OFF} = \frac{L_{B1} + L_{B2} + L_{B3} + L_{B4}}{4}$$

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

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

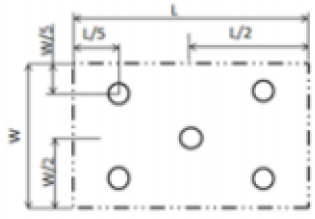


(a) L_{W_OFF}, L_{B_OFF} measuring pattern



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

8 Environmental / Reliability Test

No	Test Item	Condition	Remark
1	High Temperature Operation	+70℃, 120hrs	According to the customer request
2	Low Temperature Operation	-20℃, 120hrs	According to the customer request
3	High Temperature Storage	+80℃, 120hrs	According to the customer request
4	Low Temperature Storage	-30℃, 120hrs	According to the customer request
5	High Temperature & High Humidity Operation	60℃, 90% RH,120hrs	According to the customer request
6	High Temperature & High Humidity Storage	60℃, 90% RH,120hrs	According to the customer request
7	Thermal Shock (Non-operation)	-30℃(30 min)~+70℃(30 min), Change time:10min, 30Cycles	According to the customer request
8	Electro Static Discharge (Operation)	C=150pF, R=330Ω , 5points/panel Air:±6KV, 5times; Contact:±2KV, 5 times; (Environment: 15℃~35℃, 30%~60%, 86Kpa~106Kpa). 	IEC61000-4-2 GB/T17626.2

9 Quality Level

9.1 AMOLED Module of Characteristic Inspection

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

(1) Ambient temperature: 23±3℃

(2) Humidity: 55 ±10%RH

(3) Ambient light intensity of visual inspection: 800 ~ 1200 lux

(4) Ambient light intensity of function inspection: ≤200lux

(5) Viewing Distance: 30 ±5cm

(6) Viewing angle (tolerance): the front side 45°(Z) ±15°

(7) Inspection time: 10 ±5 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	1.0

Major defect :

Any defect may result in functional failure, or reduce the usability of product for its purpose. For example, 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.

9.3 Inspection Item

No.	Item	Area	Criterion of Defect			Defect type
			Type	DS	Acceptable number	
1	Dot Defect	AA	Bright Dot	≥10mm	0	Minor
			Dark Dot	≥10mm	4	
			Dark Dot (≥two	≥10mm	2	

			connections）				
2	No Display	AA	/			Not allowed	Fatal
3	Abnormal Display	AA	/			Not allowed	Fatal
4	Normally white	AA	/			Not allowed	Fatal
5	Line Defect	AA	single line	Bright line		Not allowed	Fatal
				Dark line		Not allowed	
			Multiple lines	Bright line		Not allowed	
				Dark line		Not allowed	
			Half-Line	Bright line		Not allowed	
				Dark line		Not allowed	
6	Image sticking	AA	Switch to the next screen and display the image of the previous picture				Major
7	Color & Edge Mura	AA	See limit sample(under full white screen)				Major
8	Color crast	AA	See limit sample(under full white screen)				Major
9	Water Ripple	AA	Not allowed				Major
10	Other mura(Low gray-scale white spot、S-Line Mura)	AA	Not allowed(under full white screen) or See limit sample(under low gray-scale white screen)				Major
11	TP	AA	TP function NG			Not allowed	Fatal
12	Glass crack	AA、OA	/			Not allowed	Fatal
13	Screen bump	AA、OA	Encap surface is not allowed and LTPS does not affect assembly				Major
14	Line sefects (light visible)	AA	W（mm）	L（mm）	DS（mm）	Acceptable number	Minor
			W≤0.03	-	-	Ignore	
			0.03＜W≤0.05	L≤5.0	≥10	2	
			0.05＜W	-	-	0	
			-	L>5.0	-	0	
15	Point sefects (light visible)	AA	D（mm）	DS（mm）		Acceptable number	Minor
			D≤0.1	/		Ignore	

			0.1＜D≤0.25	≥10		2	
			0.25＜D	–		0	
16	Glass scratch	AA	W（mm）	L（mm）	DS（mm）	Acceptable number	Minor
			W≤0.03	L＜5.0	≥10	Ignore	
			0.03＜W≤0.05	L≤2.0	≥10	Ignore	
				2.0＜L≤5.0	≥10	2	
			0.05＜W	-	0	0	
				L>5.0	0	0	
17	Frit Encapsulation	FA	Frit width uniformity. It should not have bubble or breakage.				Major
18	Polarizer crease / indentation	AA	See limit sample				Minor
19	Protective film starved/overflow glue/burr	Except AA	No control under W≤0.3mm				Minor
20	Polarizer bump point	Whole area	Bump:D≤0.25mm，dent ≤1mm or See limit sample		Allow 3		Minor
21	Polarizer bubble line	Out of AA，≤0.25mm	Encap surface		Not allowed		Minor
22	Scratches on the surface of polarizer	Whole area	No harm subject regardless of control				Minor
23	Concave dot、Black and white dot、Polarizer Dent/Bubble	AA	Front（Encap surface）	D（mm）	DS（mm）	Acceptable number	Minor
				D≤0.1	≥10	Ignore	
				0.1＜D≤0.2	≥10	3	
				0.2＜D	≥10	0	
			Metal material foreign material	/	≥10	Not allowed	
24	Polarizer Scratch/ Fiber(Linear)	AA	W（mm）	L（mm）	DS（mm）	Acceptable number	Minor
			W≤0.03	L≤5.0	≥10	Ignore	
			0.03＜W≤0.05	L≤2.0	≥10	Ignore	
				2.0＜	≥10	3	

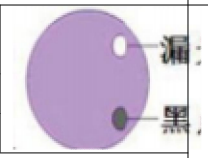
			0.05＜W	-	≥10	0	
				L>5.0	≥10	0	
25	Edge/Side breakage	OA	The following Criterion is applicable to any side（unit：mm）				Minor
			Z	X	Y	Acceptable number	
			≤ T	≤2.0	not extended to circuit Area or Frit	＜5	
26	UV glue	Not IC side	Over coating			Not allowed	Minor
		IC side	The coating of IC side is not higher than POL.			Not allowed	
		IC side	The coating of IC side is not higher than POL.			Not allowed	
27	Tuffy glue	IC and FPC bonding area	The coating should not have breakage or Bubble.				Minor
			The coating is not higher than POL.				
		Other area	Tuffy glue is not allowed to interrupt and the diameter of Bubble is not more than 0.5mm.				
			The coating is not higher than POL.				
		IC	Not allowed				
		FPC	Ribbon glue: the width is not more than 1mm. Dot glue: the diameter is not more than 2mm.				
28	Rear reinforcement glue of FPC	FPC	The width is not more than 1mm . The height is lower than LTPS.				Minor
29	ACF	Bonding Area	The length of attachment is more than both ends of FPC, which should be range from 0.2 to 1mm. Don't go beyond the edge of panel. Effective lap width of wiring ACF is more than 2/3, which is compared with the width of the goldfinger of FPC. Don't have bubble or wrinkle.				Minor
30	FPCA	FPC	The component can not reverse polarity				Minor
			No wrong insertion				
			FPC should not have serious crease which destroy the line, prick and spots damage. Scratch is not allowed if Cu layer is exposed.				
			The goldfingers should not be oxidized, scraped, folded, impressed, broken, spotted or dissymmetry.				
			Make sure FPC is not scalded, with its location holes not having deficiency or obviously shift.				
			The component of FPC should be the same as BOM				

			list.	
			No remaining soldering Sn	
			No visual particle on the pad line	
31	FPC bonding	Bonding area	Bubble: Visible bubble is not allowed	Minor
			Overhang ： The size above 1/2 of soldering electrode of the parts overhang to the LAND is prohibited. The tilt height less than 0.5mm between FPC and foam.	
	FPC Skew		Not allowed	
32	Package	Other	Products should put into the anti-static trays, with non-overlapping, and the trays should be staggered placed.	Minor
			Different products cannot be mixed into the same inner package.	
			The package should not have obvious deformation or breakage .The printing labels type and quantity are correct.	
			The package should have QC signature. ROHS label is needed if the product is under ROHS control.	

Inspection standard for cover

No.	Item	Area	Criterion of Defect				Defect type
33	Cover dot、Black and white dot、Polarizer Dent/Bubble	Whole area	D（mm）		DS（mm）	Acceptable number	Minor
			D≤0.15mm		/	Ignore (specks is not allowed)	
			0.15mm < D < 0.25mm		DS≥10mm	2	
			D > 0.25mm		/	Not allowed	
			Specks: D＜0.15mm，N＞5 in 10mm*10mm area				
34	Cover Scratch/ Fiber(Linear)	AA	W(mm)	L(mm)	DS(mm)	Acceptable number	Minor
			W≤0.03mm	L≤10mm	≥10	Ignore	
			0.03mm < W ≤0.05mm	L≤5.0mm	≥10	2	
			W > 0.05	/	/	Not allowed	
			/	L > 5.0mm	/	Not allowed	
			Not allowed to scratch				
35	Edge pinhole	Edge of cover	D (mm)	DS（mm）	Acceptable number		Minor
			D< 0.1mm	DS≥ 10mm	one is allowed on each side		

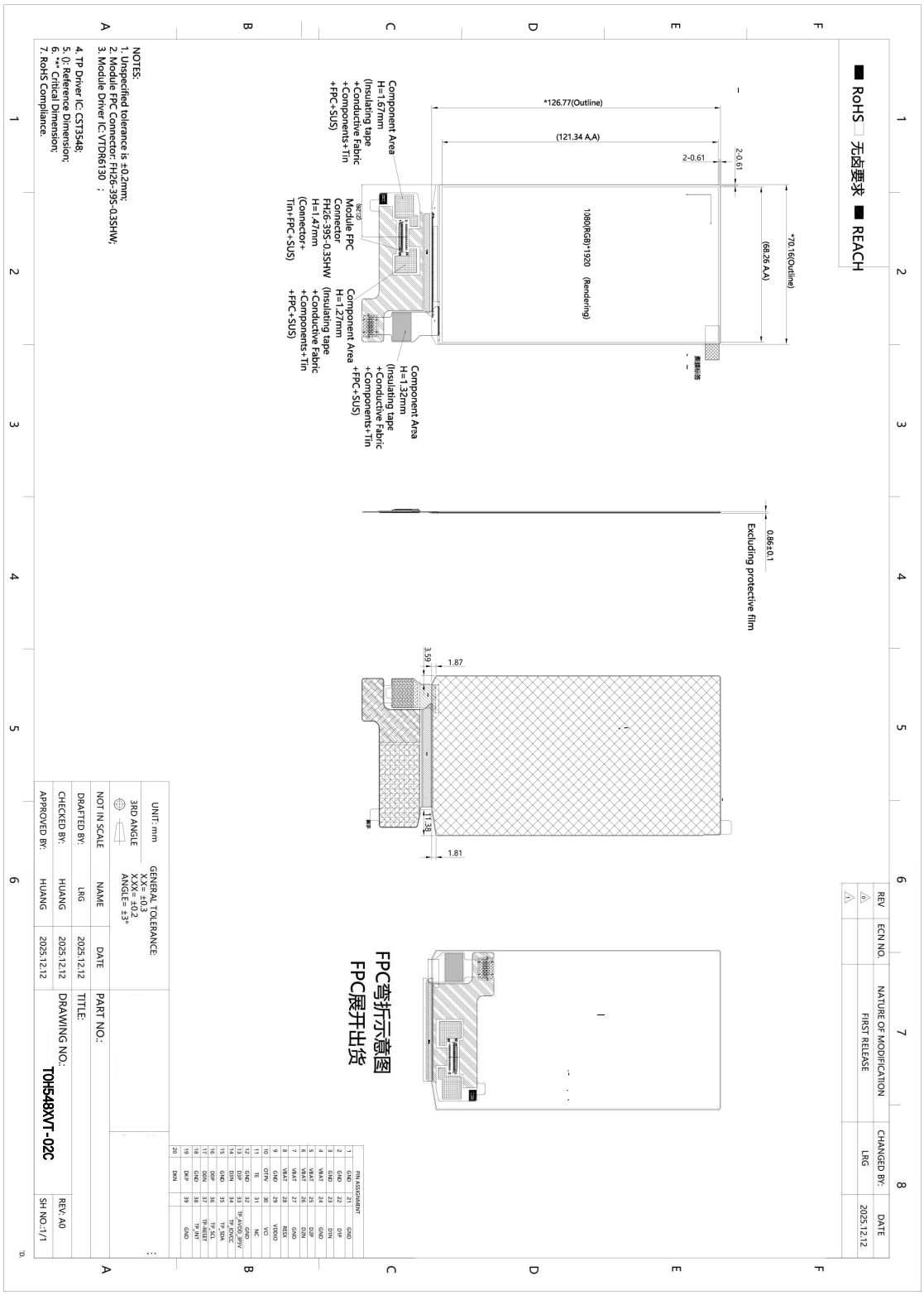
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<table>
<tr><td rowspan="3">36</td><td rowspan="3">Uneven edge of the ink</td><td rowspan="3">Edge of cover</td><td>W （B or D）</td><td>L(Aor C)</td><td>Acceptable number</td><td rowspan="3">Minor</td></tr>
<tr><td>W≤0.15mm</td><td>L≤3mm</td><td>≤2</td></tr>
<tr><td colspan="3"></td></tr>
<tr><td rowspan="2">37</td><td rowspan="2">ink silk screen serrated</td><td rowspan="2">OA area</td><td>D （mm）</td><td>DS （mm）</td><td>Acceptable number</td><td rowspan="2">Minor</td></tr>
<tr><td>D≤0.2</td><td>DS≥10mm</td><td>2</td></tr>
<tr><td rowspan="4">38</td><td rowspan="4">Camera Hole</td><td rowspan="4">OA area</td><td colspan="3">breakage or crack: D≤ 0.1mm</td><td rowspan="4">Minor</td></tr>
<tr><td colspan="3">Hole is not round: Refer to the limit sample</td></tr>
<tr><td colspan="3">Dot Defect：D≤0.1mm，and N≤1, heterochrosis and line defect are not allowed；</td></tr>
<tr><td colspan="3">Camera hole smudge:not allowed</td></tr>
<tr><td rowspan="3">39</td><td rowspan="3">Printing defect</td><td rowspan="3">OA area</td><td colspan="4">Wrongly、Missing、Ghosting and incomplete printing : not allowed</td><td rowspan="3">Minor</td></tr>
<tr><td colspan="4">Fonts consistent with the standard characters, no significant difference in visualization</td></tr>
<tr><td colspan="4">Penetrating scratch is not allowed</td></tr>
<tr><td rowspan="5">40</td><td rowspan="5">IR Hole/ Black spots/ Line scratch foreign matter/ Residue</td><td rowspan="5">OA area</td><td>DS(mm)</td><td>Acceptable number</td><td rowspan="3"></td><td rowspan="5">Minor</td></tr>
<tr><td>DS < 0.1</td><td>Ignore</td></tr>
<tr><td>0.1≤DS≤0.15</td><td>1</td></tr>
<tr><td colspan="4">Note: Not visible on black background, don’t affect the transmission rate</td></tr>
<tr><td colspan="4">Foreign body, dirty in IR hole: not allowed</td></tr>
<tr><td colspan="5">Scratched\Line defects in IR hole: W≤0.03mm，L≤ 1mm，N≤1, Not visible on black background, don’t affect the transmission rate.</td><td>Residual glue in IR hole: not allowed</td></tr>
<tr><td rowspan="2">41</td><td rowspan="2">Cover lens deformation</td><td>OA area</td><td colspan="4">Raised height<0.15mm, and the area is less than 25% of the entire non-display area in the cover lens</td><td rowspan="2">Minor</td></tr>
<tr><td>AA area</td><td colspan="4">Deformation is not allowed in AA area</td></tr>
</table>

42	Poor penetration of icons	OA area	DS≤0.15 and N≤1		Minor
43	Cover dirt	Whole area	Not allowed		Minor
44	Cover crack				Fatal flaw
45	Cover paint chips				
46	Burr	Edge of cover	L≤0.05mm，W＜0.2mm accept (The premise does not affect the assembly and function and user operation)		Minor
47	colour difference	OA area	No significant difference in visualization (refer to the limit sample if necessary)		
48	Overfill	Whole area	Not allowed in AA area The visible part of the periphery can not be seen after assembly, and can not affect the assembly		Minor
49	Protective film	Whole area	Film position deviation≤0.15mm Scratch: no control when don't damage the body Overfill/ lack of plastic/ Burr: no control Not control the bubble inside the cover protection film		Minor
50	Easy to tear	Cover surface	Function failure\ damaged\ Missing label: not allowed Wrinkle\ Convex-concave point\dirty\ punching\burr\ squeeze out: not control		
51	Composite tape	LTPS	Don't go beyond the edge of panel. Folds\ Light leakage\ Impact assembly or thickness: not allowed Damaged: not allowed Bump does not affect the assembly: not control Punching the bad size meet the drawings requirements: not control Non-wipe dirty\foreign body: not allowed Foreign objects in accordance with the standard line/point Burr does not exceed the screen edge: not control Do not have obvious bubbles Gumflower\Overfill: no control		
52	Film warpage	Whole area	Warpage ≤0.2mm		Minor
53	ICON hole	OA area	chromatic aberration、double image、dot defect 、line defect：not allowed（or refer to limited sample）		Minor
54	Earpiece hole	OA area	left-right asymmetry， Hole Rather large/small or off normal(Out of specification)No chamfer, Uneven polishing: not allowed		
55	Ink bumps	OA area	Positive side reference point defects; The back side does not affect the assembly; Ink overflow or		

			accumulation: not allowed					
56	Cover concave convex point	Whole area	Front：Height & depth ≤ 0.15mm, size ≤ 0.4mm, if necessary reference limit sample					
			Back：Don't affect the fit process is not controlled					
57	Insulation Tape	Bonding area	Obvious wrinkles and bubbles: not allowed					Minor
		Component area	Scratch/ Gumflower: not control					
			Non-wipe dirty: not allowed					
			Offset can not exceed the edge of the product, Others are required to the drawings					
			Burr\ Overfill: not control					
			Damaged/incomplete/missing paste: not allowed					
58	Cover edge/side breakage	Edge of cover	X	Y	Z	DS	Acceptable number	Minor
			X<0.2mm	Y<0.2mm	Z≤1/2t	DS>5mm	Unilateral ≤2	
			X>0.2mm	/	/	not allowed		
			/	Y>0.2mm	/	not allowed		
			/	/	Z>1/2T	not allowed		
			Cracks are not allowed					
59	Blunt	Whole area	Not allowed					Fatal flaw
60	Fit bubble	AA	According to the punctate specifications					Minor
61	Vision area edge defect	OA	D≤0.2mm，DS＞10,N≤2（hole saw tusk less than 2），if necessary reference limit sample.					Minor
62	Cover heterochrosis	OA	Heterochrosis side execute according to point defect size, bulk/stick refer to Limited sample					Minor

10 Mechanical Drawing



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 on 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℃~40℃ 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.