SPECIFICATION FOR APPROVAL

DESCRIPTION: 1.43"OLED Module
CUSTOMER: BR143504-A1 V0
Product No:
Released Date: 2024.03.20
Revision: V0

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APPROVED SIGNATURES		

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Record of Revision

Rev	Issue Date	Description	Editor
A0	2023-03-20	Draft	CLM

1 General Specifications

Feature		Spec	Remark
Display Spec	Screen Size (inch)	1.43	
	Display Mode	AMOLED	
	Resolution(dot)	466(W)×466(H)	
	Active Area(mm)	36.348(W)×36.348 (H)	
	Pixel Pitch (um)	63.2 (W)×63.2(H)	
	Technology Type	LTPS	
	Color Depth	16.7M	
	Interface	MIPI 1LANE	
	Surface Treatment	Hard Coating	
Mechanical Characteristics	TP Outline	--	
	Module Outline Dimension(W x H x D) (mm)	39.15(W)x39.23(H)x0.8(D)	
	Weight (g)	TBD	
Electronic	Driver IC(Type)	CO5300	
	Touch IC(Type)	CST820	

Note 1: Requirements on Environmental Protection: RoHS.

2 Input/output Terminals

2.1 Main FPC Pin Assignment

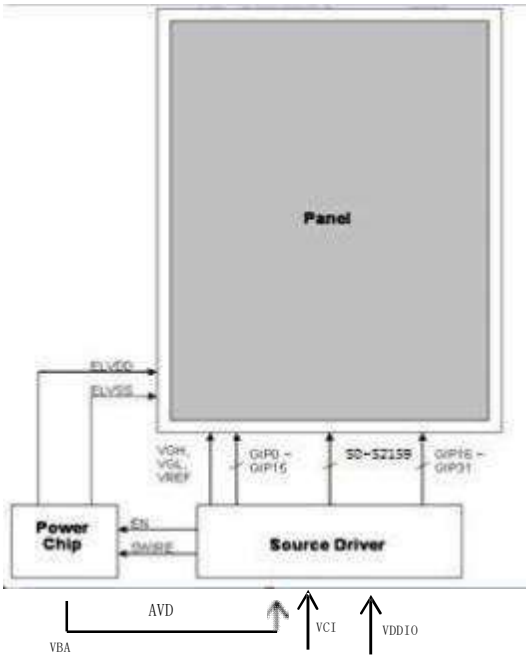
FPC connector: AXG230144.

No	Symbol	I/O	Description
1	GND	GND	GND
2	GND	GND	GND
3	SCL_CTP	I	SCL Pin for TP
4	INT_CTP	I	INT Pin for TP
5	GND	GND	GND
6	MIPI_CLKP_AM	I	MIPI clock lane
7	MIPI_CLKN_AM	I	MIPI clock lane
8	GND	GND	GND
9	MIPI_D0P_AM	I/O	MIPI data lane
10	MIPI_D0N_AM	I/O	MIPI data lane
11	GND	GND	GND
12	MTP	P	Power supply for MTP Programming or Erase.If it is not used,please let it open
13	GND	GND	GND
14	ELVSS	P	Negative Power supply for EL

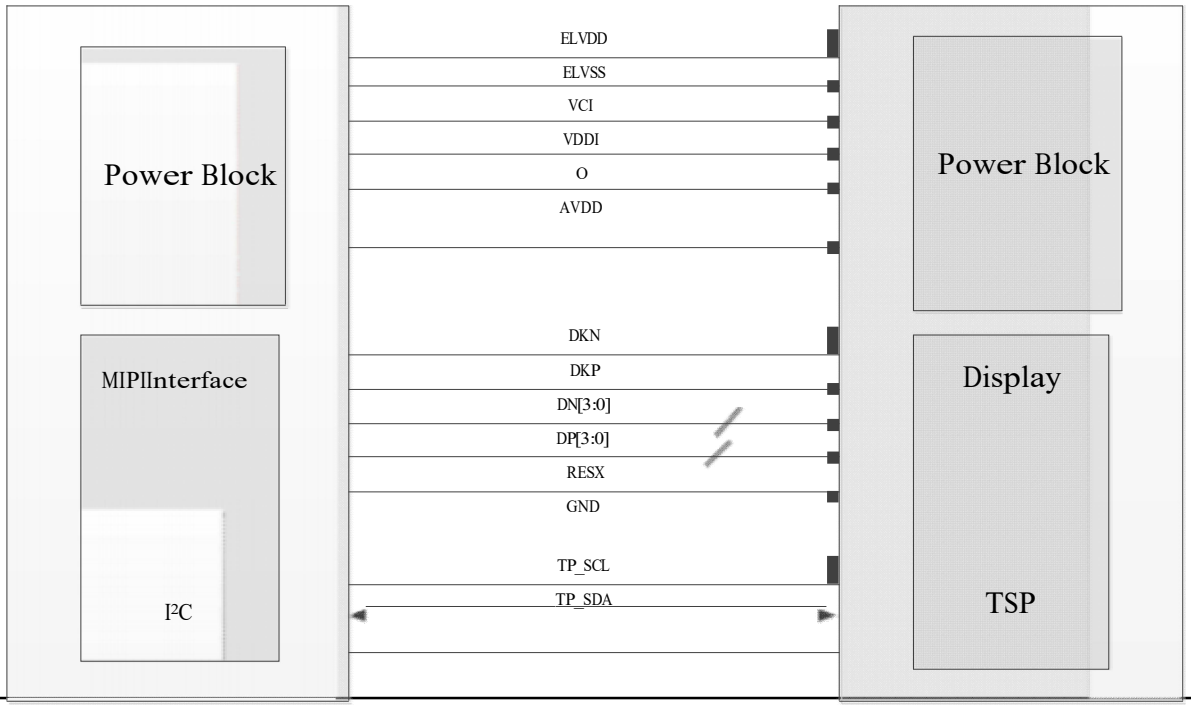
15	ELVSS	P	Negative Power supply for EL
16	ELVDD	P	Positive Power supply for EL
17	ELVDD	P	Positive Power supply for EL
18	VDD_AM	P	Power Supply for Analog circuit
19	VDDIO_AM	P	Power Supply for display logic circuit
20	RESET_AM	I	Display reset. Active low
21	TE_AM	I	Sync Signal for preventing Tearing Effect
22	SWIRE_AM	O	DC/DC Power IC S-Wire CTRL Pin
23	GND	GND	GND
24	VDDIO_CTP	P	I/0 Power for TP
25	VDD_CTP	P	Analog Power for TP
26	SWDIO_CTP	I/O	serial wire debug input/output GND
27	RESET_CTP	I	Reset Pin for TP, Active
28	SDA_CTP	I/O	SDA pin for TP
29	GND	GND	GND
30	GND	GND	GND

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

2.2 Circuit block diagram (Display)



2.3 MCU and Display Module Interface Configuration



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 Powersupply	VCI	-0.3	+5.5	V
Logic Power supply	VDDIO	-0.3	+5.5	V
Positive Power Input	ELVDD	-0.3	+5.5	V
Negative Power Input	ELVSS	-4.4	-0.3	V
Analog Powersupply	AVDD	-0.3	6.6	V
Analog Power for TP	VDD-CTP	-0.3	3.6	V

Note: Functional operation should satisfy the limit sin the Electrical Characteristic stables or Pin Description section. If the module exceeds the absolute maximum ratings, permanent damage may occur. Be sides, if the module is operated with the absolute maximum ratings for along time, there liability 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	3.3	V
Analog Powersupply		VCI	2.75	2.8	3.60	V
ELVDD Supply Voltage		ELVDD	2.0	-	5.0	V
ELVSS Supply Voltage		ELVSS	-5.0		-0.5	V
Interface operating voltage		AVDD	-	-	-	V
Analog Supply Voltage		VDD-CTP	2.8	3.0	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}	-	-	160	mA
		I_{ELVSS}	-	-	130	mA
		I_{VCI}	-	-	7	mA
		I_{VDDIO}	-	-	3.5	mA
		I_{avdd}	-	-	-	mA
Stand-by		I_{VCI}	-	-	2	uA
		I_{VDDIO}	-	-	4	uA

Ta=25℃

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

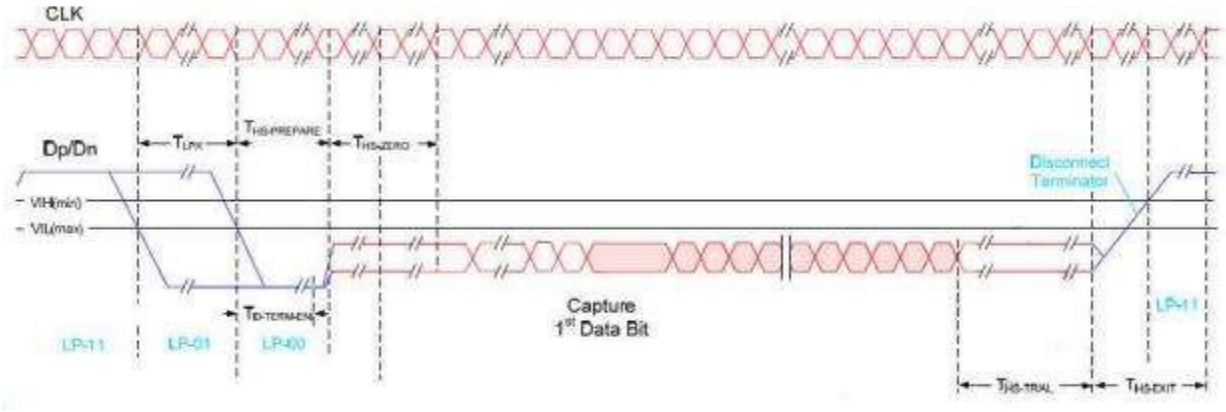
Note2: VDDIO usually ranges from 1.65V to 3.3 V. If VDDIO is changed, the remaining voltage Needs to be changed to the same voltage as VDDIO.

Note3: Under full white pattern, Video Mode 60.5Hz. Note4:
60Hz command mode at 896 Mbp

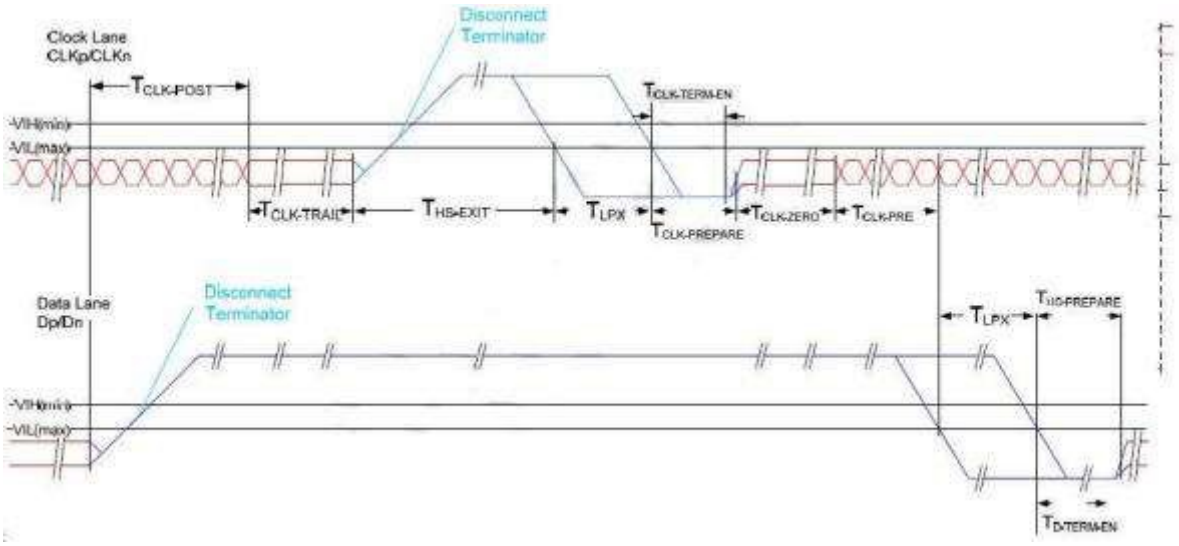
5AC Characteristics

5.1 MIPI Interface Characteristics

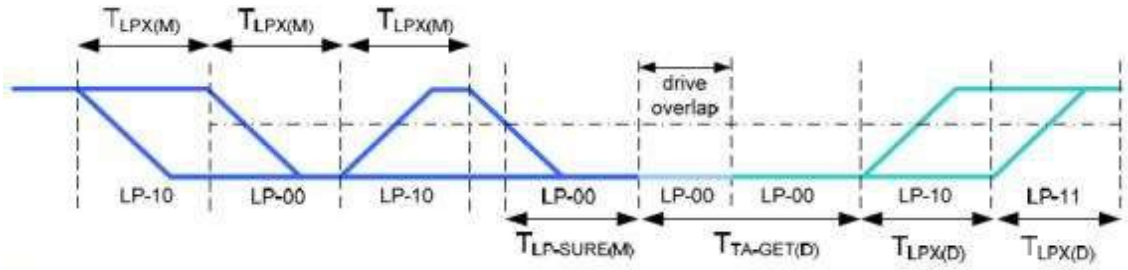
HS Data Transmission Burst



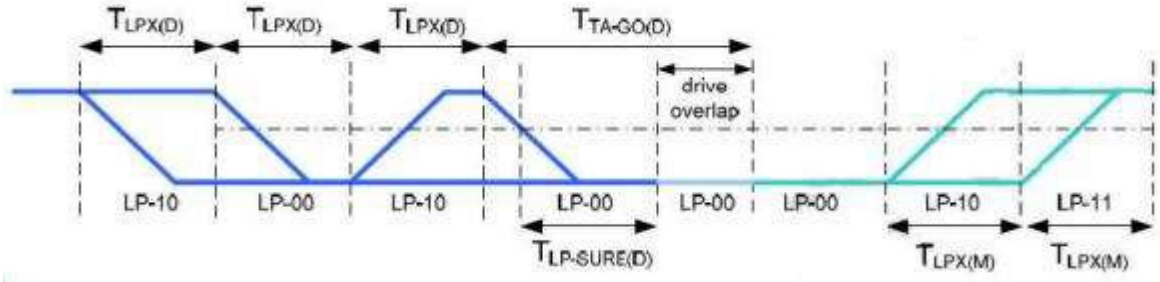
HSclocktransmission



Turnaround Procedure



Bus turnaround (BAT) from MPU to display module timing



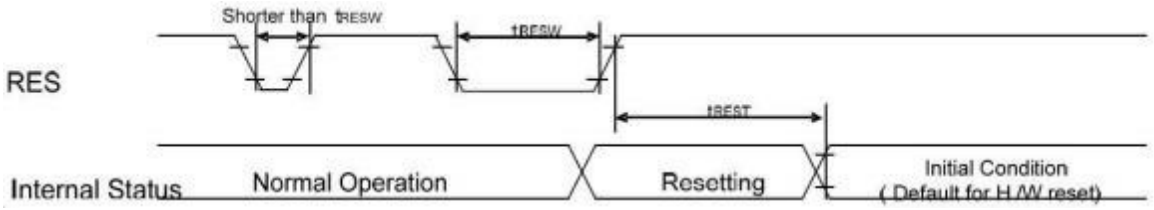
Timing Parameters：

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.	$T_{LPX(M)}$		$2*T_{LPX(M)}$	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.		$5*T_{LPX(D)}$		ns	2
$T_{TA-GO(D)}$	Time that the display module drives the Bridge state (LP-00) before releasing control during a Link Turnaround.		$4*T_{LPX(D)}$		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.	$T_{LPX(D)}$		$2*T_{LPX(D)}$	ns	2

5.2 Display RESET Timing Characteristics

Reset n put timing:



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

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

Note1. Spikecausedbyanelectrostaticdischargeon RESXlinedoesnotcauseirregularsystemresetaccordingtot hetablebelow.

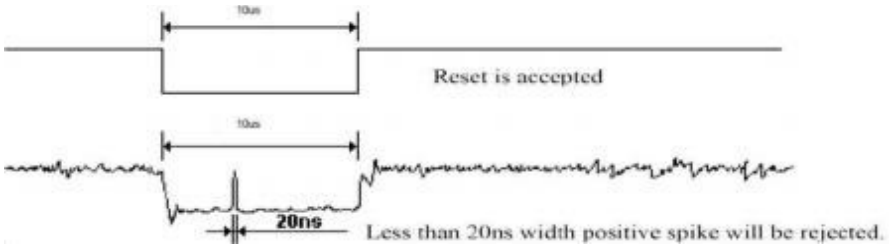
RESX Pulse	Action
Shorter than 5μs	Reset Rejected
Longer than 10μs	Reset
Between 5μs and 10μs	Reset starts (It depends on voltage and temperature condition.)

Note2. During the resetting period, the display will be blank(The display is entering blanking sequence,

whosemaximumtimeis120ms,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.

Note3.During Reset Complete Time,data in OTP will be latched to internal register during this period.This loading is do nee very time when there is H/W reset complete time(t REST)with in 5m safterarisngedge of RESX.

Note4 . Spike Rejectionalsoappliesduringavalidresetpulseasshownbelow:



Note5.Itisnecessarytowait5msecafterreleasingRESXbeforesendingcommands.AlsoSleepOutcommandcan notbesentfor120 msec.

5 . 3 TETimingCharacteristics

Mode1 , TheTearingEffectOutputlineconsistsofV- Blankinginformationonly.

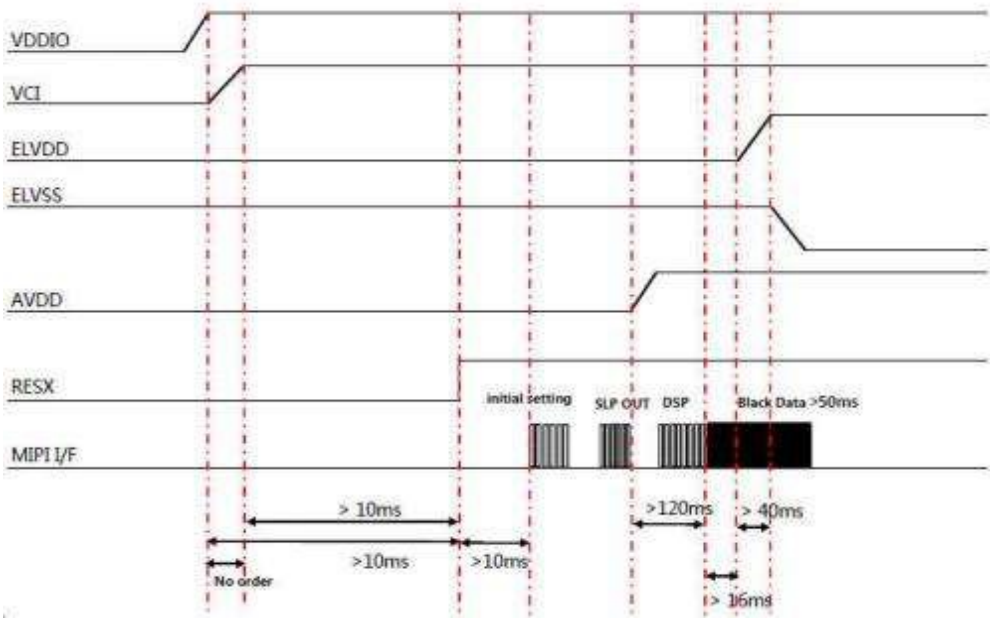
Tvdh = Thedisplayisnotupdatedfromtheframememory.

Tvdl= Thedisplayisupdatedfromtheframememory.

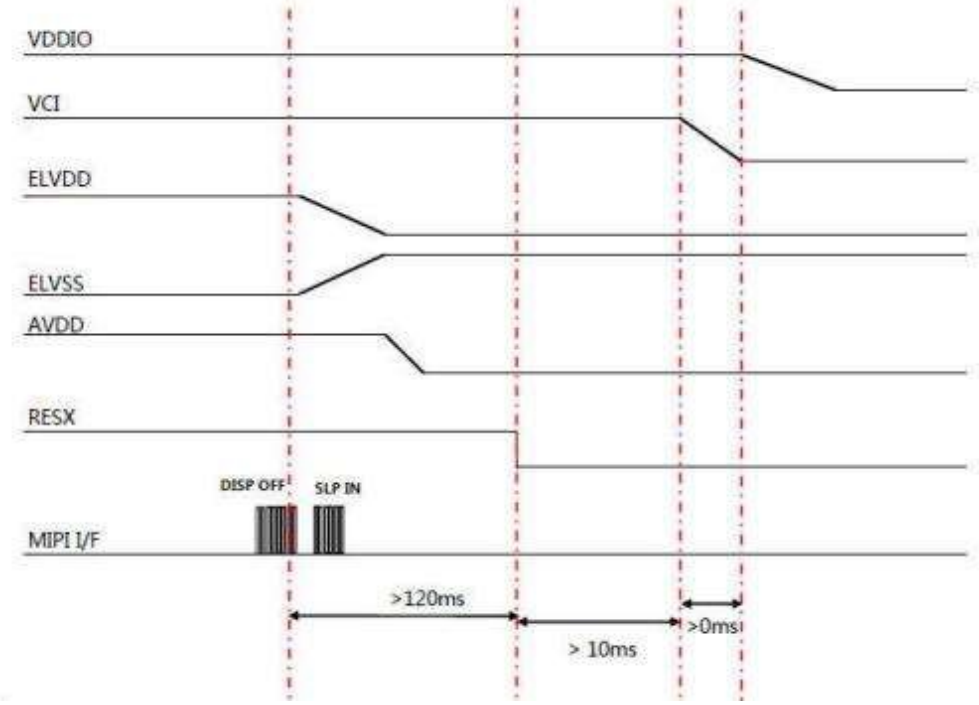
6RecommendedOperatingSequence

6.1Display Power on / off Sequence

6.1.1 PowerOnSequence



6.1.2 Power OffSequence



6.2 2 Brightnesscontrol

Use“ command5 1 0 0 h, dataxxh” toadjusttheManualBrightnessvalueofthedisplay:

Inprinciplerelationshipisthat 0 0 hvaluemeansthelowestbrightnessandFFhvalue meansthehighestbrightness.

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

7OpticalCharacteristicsOpticalSpecification

Item		Symbol	Condition	Min	Typ	Max	Unit	Remark
ViewAngle		θT	CR≥10	-	-	80	Degree	Note2 TestEquipment： CS2000A
		θB		-	-	80		
		θL		-	-	80		
		θR		-	-	80		
Contrast Ratio		CR	θ=0°	100000				Note1 Note3 Test Equipment： CS2000A
ResponseTime		T_{ON}	25℃			1	ms	Note1 Note4 TestEquipment： AdmesyMSE
		T_{OFF}						
Chromaticity	White	x		(0.280)	(0.300)	(0.320)		Test Equipment： CS2000A Note: Chromaticitycan be modified accordingtocustomer demand
		y		(0.290)	(0.310)	(0.330)		
	Red	x		(0.650)	(0.680)	(0.710)		
		y		(0.285)	(0.315)	(0.345)		
	Green	x		(0.210)	(0.250)	(0.290)		
		y		(0.670)	(0.710)	(0.750)		
	Blue	x		(0.110)	(0.140)	(0.170)		
		y		(0.017)	(0.047)	(0.077)		
Uniformity		U		80	85		%	Note1 Note6 Test Equipment： CS2000A
NTSC				97	105		%	Note5
Luminance		L	Normal	305	450	495	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 TestEquipment： CS2000A

TestConditions:
theambienttemperatureis 2 5 C.

1. ThetestsystemsrefertoNote1 andNote2.

Note1: Definition of optical measurement system.

Theopticalcharacteristicsshouldbemeasuredindarkroom. The optical properties are measured atthecenterpointoftheAMOLEDscreen. All input terminals AMOLED panel must be ground when measuringthecenterareaofthepanel.

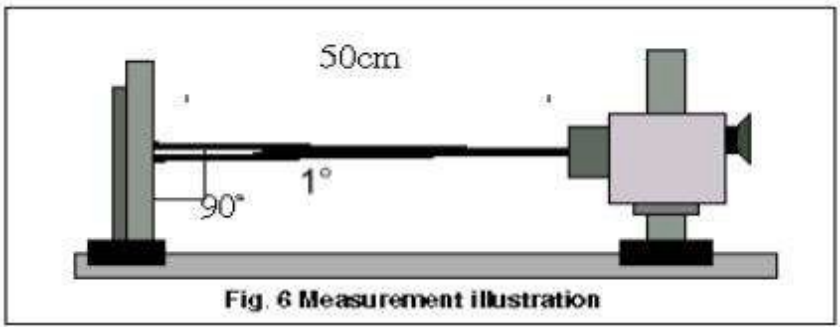


Fig. 6 Measurement illustration

Note 2: Definition of viewing angle range and measurementsystem.

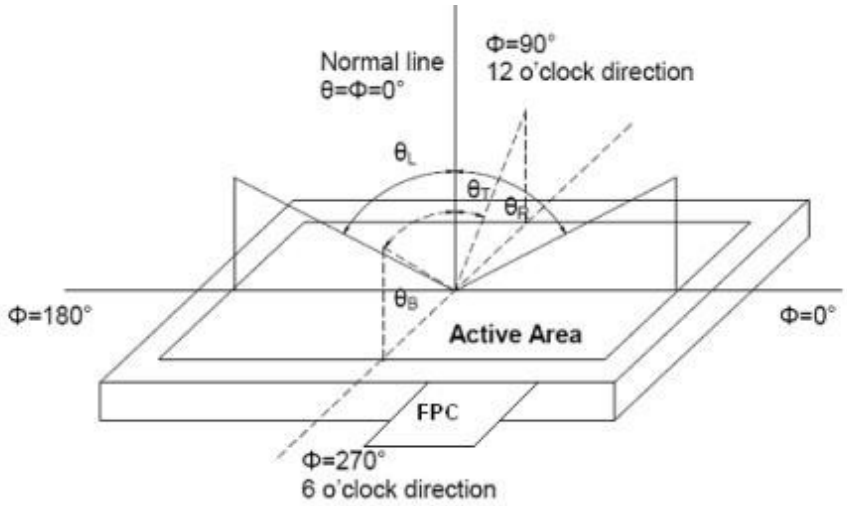


Fig. 1 Definitionofviewingangle

Note 3: Definitionofcontrastratio

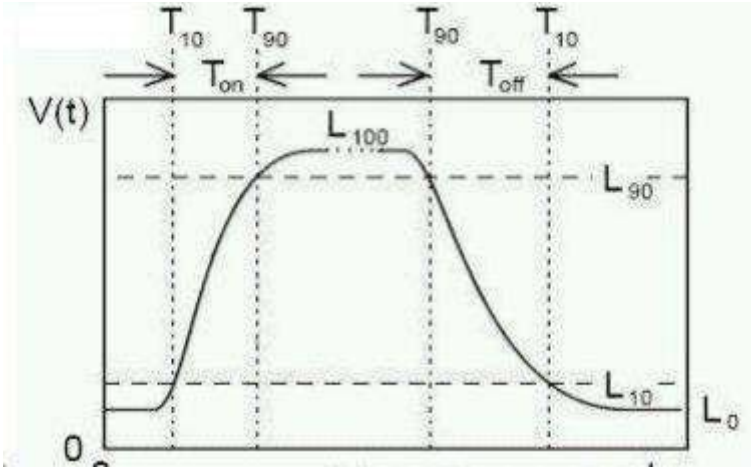
$$\text{Contrastratio(CR)} \quad \frac{\text{Luminance measured when LCD is on the "white" state}}{\text{Luminance measured when LCD is on the "Black" state}}$$

“Whitestate “:AstatewheretheAMOLEDshouldbedrivenbyVwhite.

“Blackstate”: AstatewheretheAMOLEDshouldbedrivenbyVblack.

Note 4: Definitionofresponsetime

TheresponsetimeisdefinedastheAMOLEDoptical switching time interval between “White” state and “Black” state. Risetime (T_{ON}) isthetimebetweenphotodetectoroutputintensitychangingfrom 10% to 90%. Andfalltime (T_{OFF}) isthetimebetweenphotodetectoroutputintensity changing from 90%to 10%.



Note 5: Definitionofcolorchromaticity (CIE1931)

Colorcoordinatesaremeasuredatthecenter point of AMOLED.

Note 6:Definitionofluminanceuniformity

Activearea is divided into 9 measuring areas (Refer Fig. 2). Every measuring point is placed atthe centerofeachmeasuringarea.

LuminanceUniformity(U)=Lmin/Lmax

L-------ActivearealengthW----- Activeareawidth

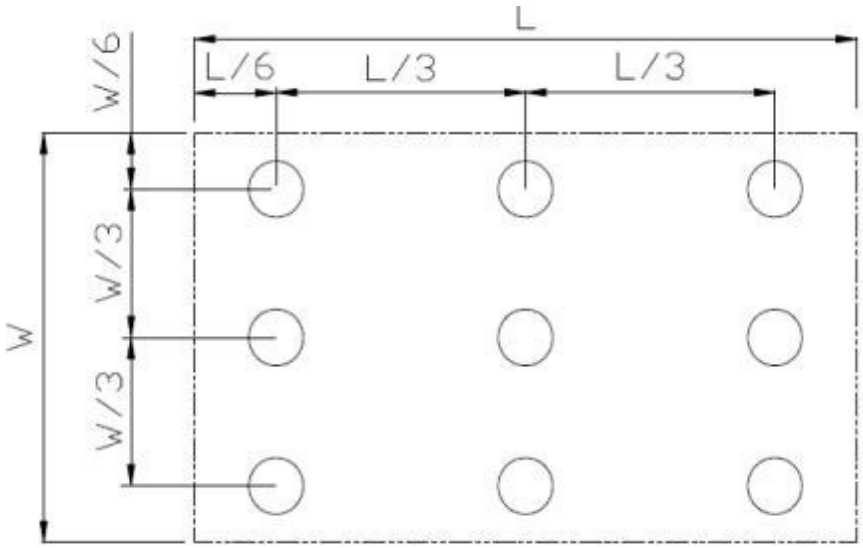


Fig. 2 Definitionofuniformity

Lmax: The measured maximum luminance of all measurement position.

Lmin: The measured minimum luminance of all measurement position.

Note 7: Definitionofluminance:

Measurethe luminance of white state at the center point.

Note 8: Cross Talk

A. Measureluminanceattheposition, P0.

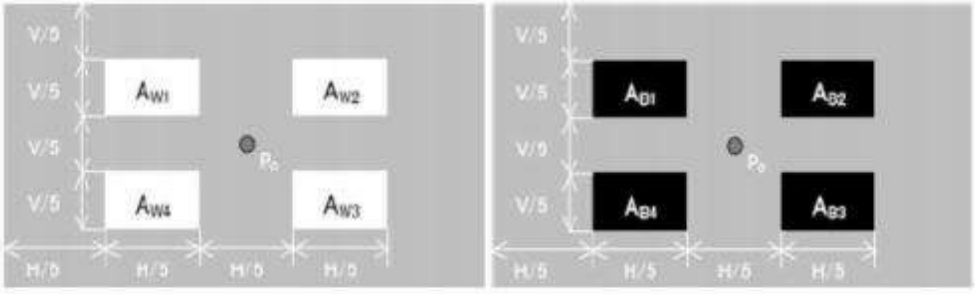
B. Calculatecrosstalkasbelowequation.

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

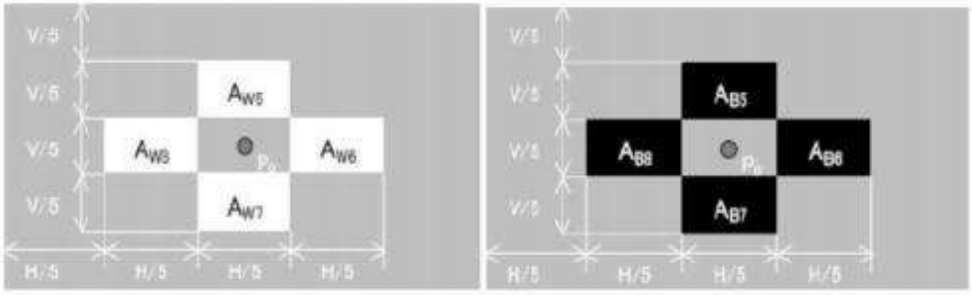
$$L_{B\_OFF} = \frac{L_{B1} + L_{B2} + L_{B3} + L_{B4}}{4}$$

$$\text{crosstalk} = \frac{|L_{Wi\_ON} - L_{W\_OFF}|}{L_{W\_OFF}} \times 100\% \quad (i = 5 \text{ to } 8)$$

$$\text{crosstalk} = \frac{|L_{Bi\_ON} - L_{B\_OFF}|}{L_{B\_OFF}} \times 100\% \quad (i = 5 \text{ to } 8)$$

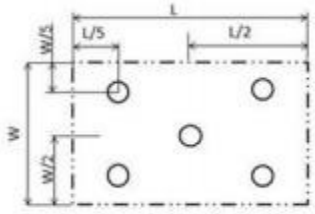


(a) L_{W_OFF}, L_{B_OFF} measuring pattern



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

8Environmental/ReliabilityTest

No	TestItem	Condition	Remark
1	HighTemperature Operation	+70C, 240hrs	Accordingto the customer request
2	Low TemperatureOperation	-20C, 240hrs	Accordingto the customer request
3	HighTemperature Storage	+80C, 240hrs	Accordingto the customer request
4	Low TemperatureStorage	-30C, 240hrs	Accordingto the customer request
5	High Temperature &High Humidity Operation	60C, 90% RH,240hrs	Accordingto the customer request
6	High Temperature &High Humidity Storage	60C, 90% RH,240hrs	Accordingto the customer request
7	ThermalShock (Non- operation)	-30C(30 min)~+70C(30 min),Change time:10min, 30Cycles	Accordingto the customer request
8	ElectroStatic Discharge (Operation)	C=150pF, R=330Ω， 5points/panel Air:±8KV, 5times; Contact: ± 4 KV, 5 times; (Environment: 15C~35 C, 30%~60%, 86Kpa~106Kpa) . 	IEC61000-4-2 GB/T17626.2

9QualityLevel

9.1 AMOLED Module of Characteristic Inspection

Theenvironmentalconditionandvisualinspectionshallbeconductedasbelow:

(1) Ambienttemperature: 23 ± 3℃

(2)Humidity: 55 ± 10%RH

(3) Ambientlightintensityofvisualinspection: 800 ~ 1200 lux

(4) Ambientlightintensityoffunctioninspection: ≤200 lux

(5) ViewingDistance: 30 ± 5cm

(6) Viewingangle (tolerance): thefront side 45° (Z) ±15°

(7) Inspectiontime: 10 ±5 sec

9.2 2 SamplingProceduresforeachitemacceptancetable

Defecttype	Sampling Procedures	AQL
Major defect	GB/T2828.1-2003 Inspectionlevel II normalinspection singlesampleinspection	0.65
Minor defect	GB/T2828.1-2003 Inspectionlevel II normalinspection singlesampleinspection	1.0

Majordefect:

Anydefectmayresultinfunctionalfailure, orreducetheusabilityofproductforitspurpose. Forexample, electricalfailure, deformationandetc.

Minordefect

Adefectdoesnotreducetheusabilityofproductforitsintendedpurposeandun- uniformity, suchasdotdefectandetc.

Thecriteriaon major and/or minor judgment will be according with the classification ofdefects.

9.3 InspectionItem

No.	Item	Area	Criterion ofDefect			Defecttype
			Type	DS	Acceptablenumber	
1	Dot Defect	AA	BrightDot	≥10 mm	0	Minor
			DarkDot	≥10 mm	4	
			DarkDot (≥two	≥10mm	2	

			connections)			
2	No Display	AA	/		Not allowed	Fatal
3	AbnormalDisplay	AA	/		Not allowed	Fatal
4	Normallywhite	AA	/		Not allowed	Fatal
5	LineDefect	AA	single line	Brightline	Not allowed	Fatal
				Dark line	Not allowed	
			Multiplelines	Brightline	Not allowed	
				Dark line	Not allowed	
			Half-Line	Brightline	Not allowed	
				Dark line	Not allowed	
6	Image sticking	AA	Switchtothenextscreenanddisplaytheimageofthe previous picture			Major
7	Color&Edge Mura	AA	Seelimitsample(under full white screen)			Major
8	Colorcrast	AA	Seelimitsample(underfullwhitescreen)			Major
9	WaterRipple	AA	Notallowed			Major
10	Othermura(Low gray- scalewhite spot、 S- Line Mura)	AA	Notallowed(underfullwhitescreen) orSeelimit sample(underlowgray- scalewhitescreen)			Major
11	TP	AA	TPfunctionNG		Not allowed	Fatal
12	Glass crack	AA、OA	/		Not allowed	Fatal
13	Screen bump	AA、OA	EncapsurfaceisnotallowedandLTPSdoesnotaffect assembly			Major
14	Linesefects (light visible)	AA	W (mm)	L (mm)	DS (mm)	Acceptabl enumber	Minor
			W≤0.03	-	-	Ignore	
			0.03＜W≤0.05	L≤5.0	≥10	2	
			0.05＜W	-	-	0	
			-	L>5.0	-	0	
15	Pointsefects (lightvisible)	AA	D (mm)	DS (mm)		Acceptabl enumber	Minor
			D≤0. 1	/		Ignore	

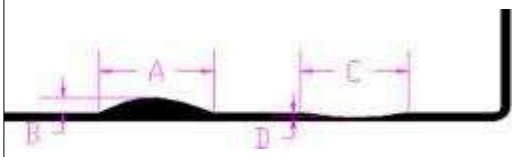
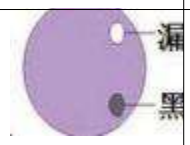
			0.1＜D≤0.25	≥10		2	
			0.25＜D			0	
16	Glass scratch	AA	W (mm)	L(mm)	DS (mm)	Acceptabl enumber	Minor
			W≤0.03	L＜5.0	≥10	Ignore	
			0.03＜W≤0.05	L≤2.0	≥10	Ignore	
				2.0＜L≤5.0	≥10	2	
			0.05＜W	-	0	0	
				L>5.0	0	0	
17	FritEncapsulation	FA	Fritwidthuniformity. Itshouldnothavebubbleor breakage.				Major
18	Polarizercrease / indentation	AA	See limitsample				Minor
19	Protectivefilm starved/ overflow glue/ burr	Except AA	No control underW≤0.3mm				Minor
20	Polarizerbump point	Whole area	Bump:D≤0.25mm，dent ≤1mm orSeelimitsample		Allow 3		Minor
21	Polarizerbubble line	Outof AA, ≤0.25 mm	Encap surface		Not allowed		Minor
22	Scratchesonthe surfaceof polarizer	Whole area	No harm subject regardlessofcontrol				Minor
23	Concavedot、Blackandwhite dot、Polarizer Dent/ Bubble	AA	Front (Encap surface)	D (mm)	DS (mm)	Acceptabl enumber	Minor
				D≤0.1	≥10	Ignore	
				0.1＜D≤0.2	≥10	3	
				0.2＜D	≥10	0	
		AA	Metalmaterial foreignmaterial	/	≥10	Not allowed	
24	PolarizerScratch/ Fiber(Linear)	AA	W (mm)	L(mm)	DS (mm)	Acceptabl enumber	Minor
			W≤0.03	L≤5.0	≥10	Ignore	
			0.03＜W≤0.05	L≤2.0	≥10	Ignore	
				2.0＜	≥10	3	

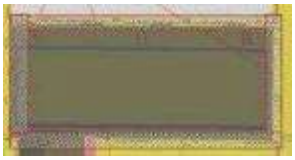
			0.05＜W	-	≥10	0	
				L>5.0	≥10	0	
25	Edge/Side breakage	OA	ThefollowingCriterionisapplicabletoanyside（ unit：mm）				Minor
			Z	X	Y	Acceptable number	
			≤ T	≤2.0	not extendedto circuitArea orFrit	＜5	
26	UVglue	NotIC side	Over coating			Not allowed	Minor
		IC side	ThecoatingofICsideisnothigherthan POL.			Not allowed	
		IC side	ThecoatingofICsideisnothigherthan POL.			Not allowed	
27	Tuffy glue	ICand FPC bondin garea	Thecoatingshouldnothavebreakageor Bubble.				Minor
			ThecoatingisnothigherthanPOL.				
		Other area	Tuffyglueisnotallowedtointerruptandthediameter ofBubbleisnotmorethan 0.5mm.				
			ThecoatingisnothigherthanPOL.				
		IC	Notallowed				
		FPC	Ribbonglue: thewidthisnotmorethan 1 mm. Dotglue: thediameterisnotmorethan 2mm.				
28	Rear reinforcement glueofFPC	FPC	Thewidthisnotmorethan 1mm. TheheightislowerthanLTPS.				Minor
29	ACF	Bondin gArea	Thelengthofattachmentismorethanbothendsof FPC,whichshouldberangefrom 0.2 to 1mm. Don’ tgobeyondtheedgeofpanel. EffectivelapwidthofwiringACFismorethan 2/3, whichiscomparedwiththewidthofthegoldfingerof FPC. Don’t have bubble or wrinkle.				Minor
30	FPCA	FPC	Thecomponentcannotreversepolarity				Minor
			Nowronginsertion				
			FPCshouldnothaveseriouscreasewhichdestroythe line, prickandspotsdamage. Scratchisnotallowedif Culayerisexposed.				
			Thegoldfingersshouldnotbeoxidized, scraped, folded, impressed, broken, spottedordissymmetry.				
			MakesureFPCisnotscalded, withitslocationholes nothavingdeficiencyorobviouslyshift.				
			ThecomponentofFPCshouldbethesameasBOM				

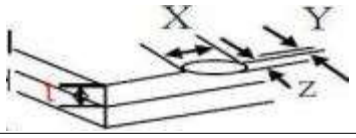
			list.	
			NoremainingsolderingSn	
			Novisualparticleonthepadline	
31	FPC bonding	Bondin garea	Bubble: Visiblebubbleisnotallowed	Minor
			Overhang： Thesizeabove 1 / 2 ofsolderingelectrode ofthepartsoverhangtotheLANDisprohibited. Thetilt heightlessthan 0 . 5 mmbetweenFPCandfoam.	
	FPCSkew		Notallowed	
32	Package	Other	Productsshouldputintotheanti- statictrays, with non-overlapping, andthetraysshouldbestaggered placed	Minor
			Differentproductscannotbemixedintothesameinner package.	
			Thepackageshouldnothaveobviousdeformationor breakage . Theprintinglabelstypeandquantityare correct.	
			ThepackageshouldhaveQCsignature. ROHSlabelis needediftheproductisunderROHScontrol.	

Inspectionstandardforcover

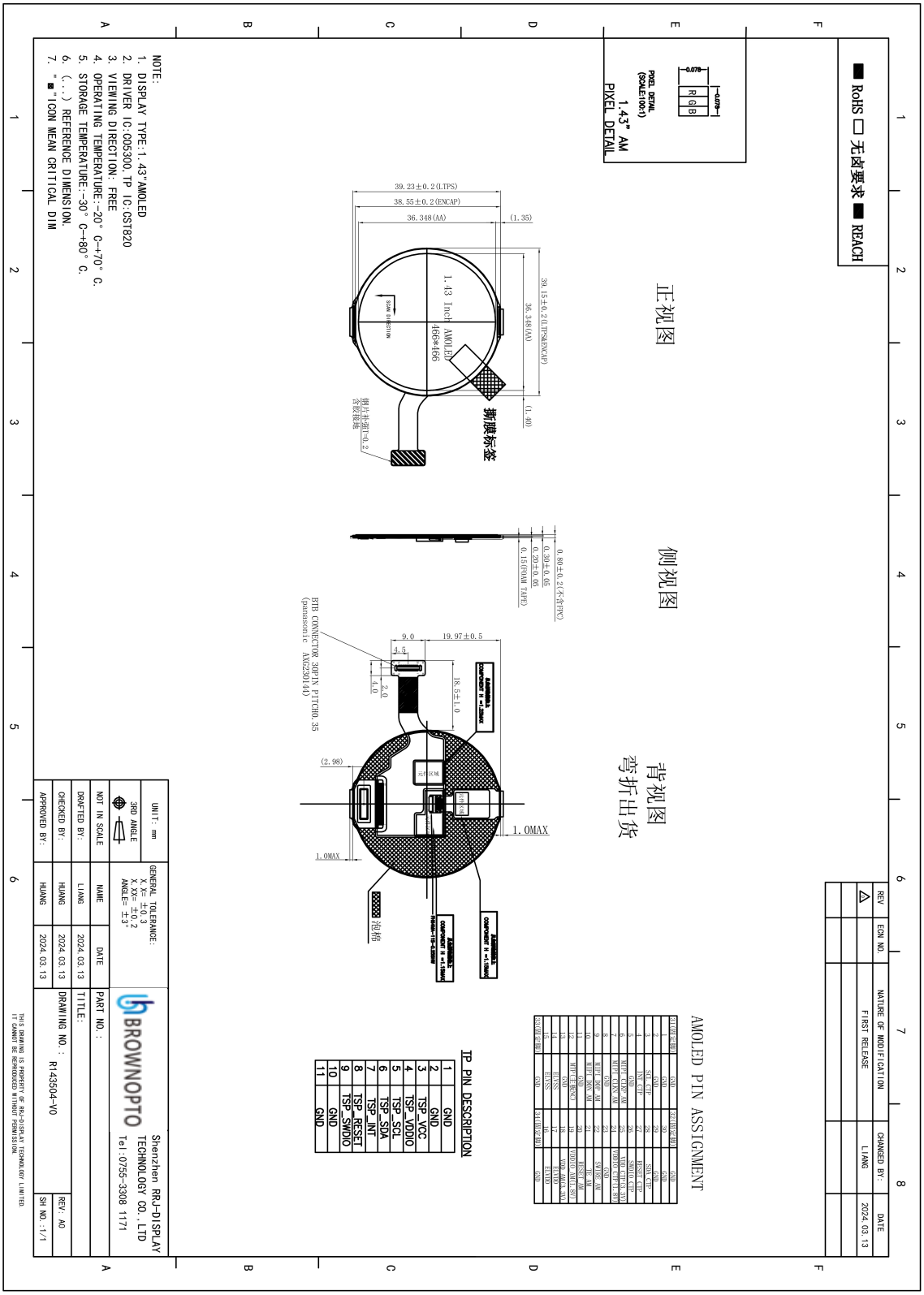
No.	Item	Area	Criterion ofDefect				Defec ttype
33	Cover dot、Black and white dot、PolarizerD ent/Bubble	Whole area	D (mm)		DS (mm)	Acceptable number	Minor
			D≤0.15mm		/	Ignore (specksis notallowed)	
			0. 15mm＜D＜0.25mm		DS≥10mm	2	
			D＞0.25 mm		/	Notallowed	
			Specks: D＜0. 15 mm， N＞5 in 10 mm*10 mmarea				
34	Cover Scratch/Fiber (Linear)	AA	W(mm)	L(mm)	DS(mm)	Acceptable number	Minor
			W≤0.03 mm	L≤10mm	≥10	Ignore	
			0.03mm＜W ≤0.05mm	L≤5.0mm	≥10	2	
			W＞0.05	/	/	Not allowed	
			/	L＞5.0mm	/	Not allowed	
			Notallowedtoscratch				
35	Edge pinhole	Edgeof cover	D (mm)	DS (mm)	Acceptable number		Minor
			D＜ 0.1mm	DS≥ 10mm	oneis allowedon eachside		

<table>
<tr><td rowspan="3">36</td><td rowspan="3">Uneven edgeof theink</td><td rowspan="3">Edgeof cover</td><td>W (BorD)</td><td>L(AorC)</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">inksilk screenserr ated</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>38</td><td>Camera Hole</td><td>OA area</td><td colspan="3">breakageorcrack: D≤0. 1mm
Holeisnotround: Refer tothelimitsample
DotDefect: D≤ 0 . 1 mm, and N≤1, heterochrosis andlinedefectarenot allowed;
Camera holesmudge:not allowed
  </td><td>Minor</td></tr>
<tr><td>39</td><td>Printingdefect</td><td>OA area</td><td colspan="3">Wrongly、 Missing、 Ghostingandincompleteprinting : notallowed
Fontsconsistentwiththestandardcharacters, no significantdifferenceinvisualization
Penetratingscratchisnotallowed</td><td>Minor</td></tr>
<tr><td>40</td><td>IRHole/ Black spots/ Line scratchforeign matter/ Residue</td><td>OA area</td><td colspan="3">DS(mm) | Acceptable number
DS＜0.1 | Ignore
0.1≤DS≤0.15 | 1
 
Note: Notvisibleonblackbackground, don’ taffectthe transmissionrate
Foreignbody, dirtyinIRhole: notallowed
Scratched\ LinedefectsinIRhole: W≤ 0 . 0 3 mm, L≤ 1mm，N≤1, Not visibleonblackbackground, don’t affectthetransmissionrate.
ResidualglueinIRhole: notallowed</td><td>Minor</td></tr>
<tr><td rowspan="2">41</td><td rowspan="2">Coverlens deformation</td><td>OA area</td><td colspan="3">Raisedheight<0. 15 mm, andtheareaislessthan 25 % oftheentirenon- displayareainthecoverlens</td><td rowspan="2">Minor</td></tr>
<tr><td>AA area</td><td colspan="3">DeformationisnotallowedinAAarea</td></tr>
</table>

42	Poorpenetration oficons	OA area	DS≤0.15 and N≤1		Minor
43	Coverdirt	Whole area	Not allowed		Minor
44	Covercrack				Fatal flaw
45	Coverpaintchips				
46	Burr	Edgeof cover	L≤0.05mm， W＜0.2mmaccept (Thepremisedoesnot affecttheassemblyandfunctionanduseroperation)		Minor
47	colour difference	OA area	Nosignificantdifferenceinvisualization (refertothe limitsampleifnecessary)		
48	Overfill	Whole area	NotallowedinAAarea Thevisiblepartofthe peripherycannotbe seenafterassembly, and cannotaffectthe assembly		Minor
49	Protectivefilm	Whole area	Filmpositiondeviation≤0. 15mm Scratch: nocontrolwhendon't damagethebody Overfill/ lackofplastic/ Burr: nocontrol Notcontrolthebubbleinsidethecoverprotectionfilm		Minor
50	Easytotear	Cover surface	Functionfailure\ damaged\ Missinglabel: notallowed Wrinkle\ Convex- concavepoint\ dirty\ punching\ burr\ squeezeout: notcontrol		
51	Compositetape	LTPS	Don' tgobeyondtheedgeofpanel. Folds\ Lightleakage\ Impactassemblyorthickness: notallowed Damaged: notallowed Bumpdoesnotaffecttheassembly: notcontrol Punchingthebadsizemeetthedrawings requirements: notcontrol Non- wipedirty\ foreignbody: notallowed Foreignobjectsinaccordancewiththestandard line/ point Burrdoesnotexceedthescreenedge: notcontrol Donothaveobviousbubbles Gumflower\ Overfill: nocontrol		
52	Filmwarpage	Whole area	Warpage≤0.2mm		Minor
53	ICONhole	OA area	chromaticaberration、 doubleimage、 dotdefect、 line defect： notallowed (orrefertolimitedsample)		Minor
54	Earpiecehole	OA area	left- rightasymmetry， HoleRatherlarge/smalloroff normal(Outofspecification) Nochamfer, Uneven polishing: notallowed		
55	Ink bumps	OA area	Positivesidereferencepointdefects; Thebackside doesnotaffecttheassembly; Inkoverflowor		

<table>
<tr><td></td><td></td><td></td><td colspan="5">accumulation: notallowed</td><td></td></tr>
<tr><td rowspan="2">56</td><td rowspan="2">Coverconcave convexpoint</td><td rowspan="2">Whole area</td><td colspan="5">Front:Height&depth ≤ 0. 15 mm, size ≤ 0.4 mm, if necessaryreferencelimitsample</td><td rowspan="2"></td></tr>
<tr><td colspan="5">Back： Don’ taffectthefitprocessisnotcontrolled</td></tr>
<tr><td rowspan="6">57</td><td rowspan="6">InsulationTape</td><td>Bondin garea</td><td colspan="5">Obvious wrinklesandbubbles: notallowed</td><td rowspan="6">Minor</td></tr>
<tr><td rowspan="5">Compo nenta rea</td><td colspan="5">Scratch/ Gumflower: notcontrol</td></tr>
<tr><td colspan="5">Non- wipedirty: notallowed</td></tr>
<tr><td colspan="5">Offsetcannotexceedtheedgeoftheproduct, Others arerequiredtothedrawings</td></tr>
<tr><td colspan="5">Burr\ Overfill: notcontrol</td></tr>
<tr><td colspan="5">Damaged/ incomplete/ missingpaste: notallowed</td></tr>
<tr><td rowspan="7">58</td><td rowspan="7">Cover edge/side breakage</td><td rowspan="7">Edgeof cover</td><td>X</td><td>Y</td><td>Z</td><td>DS</td><td>Acceptable number</td><td rowspan="7">Minor</td></tr>
<tr><td>X<0.2mm</td><td>Y<0.2mm</td><td>Z≤1/2t</td><td>DS＞5mm</td><td>Unilateral ≤2</td></tr>
<tr><td>X>0.2mm</td><td>/</td><td>/</td><td colspan="2">notallowed</td></tr>
<tr><td>/</td><td>Y>0.2mm</td><td>/</td><td colspan="2">notallowed</td></tr>
<tr><td>/</td><td>/</td><td>Z>1/2T</td><td colspan="2">notallowed</td></tr>
<tr><td>Cracksare notallowed</td><td colspan="4"> 
</td></tr>
<tr><td></td><td></td><td></td><td colspan="4"></td><td></td></tr>
<tr><td>59</td><td>Blunt</td><td>Whole area</td><td colspan="5">Not allowed</td><td>Fatal flaw</td></tr>
<tr><td>60</td><td>Fitbubble</td><td>AA</td><td colspan="5">Accordingtothepunctatespecifications</td><td>Minor</td></tr>
<tr><td>61</td><td>Visionareaedge defect</td><td>OA</td><td colspan="5">D≤0.2mm， DS＞10,N≤2 （hole saw tusk less than 2） ， ifnecessaryreferencelimitsample.</td><td>Minor</td></tr>
<tr><td>62</td><td>Cover heterochrosis</td><td>OA</td><td colspan="5">Heterochrosissideexecuteaccordingtopointdefect size,bulk/stickrefertoLimitedsample</td><td>Minor</td></tr>
<tr><td></td><td></td><td></td><td colspan="5"></td><td></td></tr>
</table>

10 Mechanical Drawing



11Precautions 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 drop ping 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 easilyscratched. 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 workingenvironment.

11.1.8 Be sure to make yourself in contact with the ground when handling with the AMOLED Modules.

Tools required for assembly, such as soldering irons, must be properly ground.

11.1.9 To reduce the generation of static electricity, do not conduct assembly or other work

11.1.10 under Dry conditions.

11.1.11 To protect the display surface, the AMOLED Module is coated with a film. Becareful 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 the yare not directly exposed to the sunlight or the light of fluorescent lamps.

1 1 . 2 .2 The AMOLED modules should be stored under the storage temperature range. If the AMOLED modules will be stored for along time, the recommended condition is:Temperature: 0 C~ 4 0 CRelativelyhumidity: ≤ 8 0 %

1 1 . 2 . 3 The AMOLED modules should be stored in the room without acid, alkali or harmful gas.

1 1 . 3 Transportation Precautions:

1 1.3. 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.