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Customer : _____

CustomerP/N _____

Model No. : ET076SQ02-GXT-1200

Version : V00

Date : 2023-12-25

Final Approval by Customer

LCM Machinery OK ☐	Checked By	
LCM Display OK ☐	Checked By	
LCM NG ☐ LCM OK ☐	Approved By	

ShenZhen GX Confirmed :

DESIGN	CHECK	APPROVAL

Contents

1. Record of Revision

Version	Revise Date	Content	Editor
1.0	2025/06/10	First Release.	Rich Liang

2 General Specifications

Feature		Spec
Characteristics	LCD Size	7.6 inch
	Display Format	1200 (RGB) ×1200
	Interface	MIPI
	Color Depth	16.7M
	Technology type	a-Si
	Display Spec.	-
	Display Mode	Normally White
	Driver IC	HX8279
	Surface Treatment	HC
	Viewing Direction	ALL
	Gray Viewing Direction	FREE
Mechanical	LCM (W x H x D) (mm)	142.56X148.14X5.1
	Active Area(mm)	135.36x 135.36
	With /Without TSP	Without TSP
	Weight (g)	TBD
	LED Numbers	25LEDs

Note 1: Viewing direction is following the data which measured by optics equipment.
Note 2: Requirements on Environmental Protection: RoHS
Note 3: LCM weight tolerance: +/- 5%

3 Input/Output Terminals

NO.	Symbol	Description
1	LEDA	BACKLIGHT ANODE
2	LEDK1	BACKLIGHT CATHODE
3	LEDK2	BACKLIGHT CATHODE
4	VCI	POWER SUPPLY
5	IOVCC	I/O POWER SUPPLY
6	RESET	Reset pin
7	TE	Frame mark
8	PWM	PWM lnput Signal for LED Driver
9	GND	Ground
10	D0P	MIPI DSI differential clock pair
11	D0N	MIPI DSI differential clock pair
12	GND	Ground
13	D1P	MIPI DSI differential clock pair
14	D1N	MIPI DSI differential clock pair
15	GND	Ground
16	CLKP	MIPI DSI differential clock pair
17	CLKN	MIPI DSI differential clock pair
18	GND	Ground
19	D2P	MIPI DSI differential clock pair
20	D2N	MIPI DSI differential clock pair
21	GND	Ground
22	D3P	MIPI DSI differential clock pair
23	D3N	MIPI DSI differential clock pair
24	GND	Ground
25	TP-INT	TPCommunication interrupt for
26	TP-SDA	TP SPI data input
27	TP-SCL	TP SPI clock
28	TP-RESET	TP Reset pin for
29	TP-VCI	TP POWER SUPPLY
30	TP-IOVCC	TP I/O POWER SUPPLY

4 Absolute Maximum Ratings

Item	Symbol	Min.	Typ.	Max.	Unit
Analog Supply Voltage	VCI	2.5	3.3	6.6	V
Digital Supply Voltage	VDD	1.65	3.3	3.6	V
I/O Supply Voltage	IOVCC	1.65	1.8/2.8	3.6	V
Input High Voltage	VIH	0.7*IOVCC	-	VDD	V
Input Low Voltage	VIL	0	-	0.3*IOVCC	V
Output High Voltage	VOH	0.8*IOVCC	-	-	V
Output Low Voltage	VOL	-	-	0.3*IOVCC	V

5 Electrical Characteristics

5.1 Operating conditions:

Parameter	Symbol	MIN	TYP	MAX	Unit	Remark
Power Voltage	V_{cc}	3.0	3.3	3.6	V	
Digital Operation Current	Icc		5		mA	
Gate On Power	V_{COMH}	9	15	16	V	
Gate Off Power	V_{GH}	-13	-11	-7	V	
Vcom High Voltage	VcomH	3.26	-	5.8	V	Note1
Vcom low Voltage	VcomL	-2	-	-0.2	V	Note1

5.2 Driving Backlight

Item	Symbol	MIN	TYP	MAX	Unit	Remark
LED current	I_F	-	225	250	mA	
Power Consumption					mW	
LED Voltage	V_F	-	15	17	V	Note 1
LED Life Time	W_{BL}	35000	-	-	Hr	Note 2,3

Note 1 : There are 1 Groups LED

Note 2 : Ta = 25℃

Note 3 : Brightess to be decreased to 50% of the initial value

6 Interface Timing

6.1 MIPI video input timing

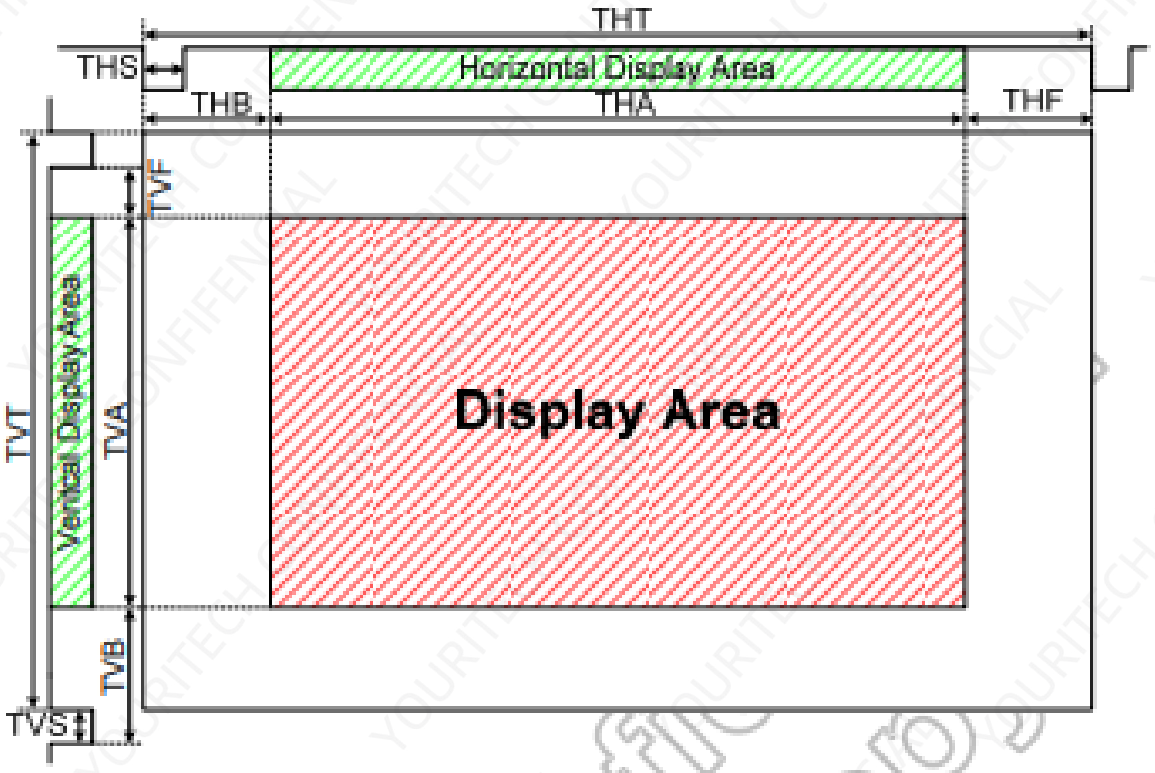
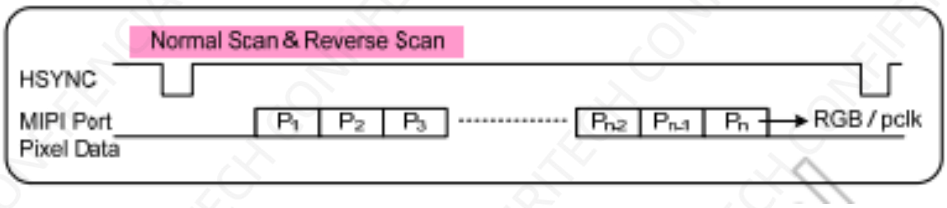


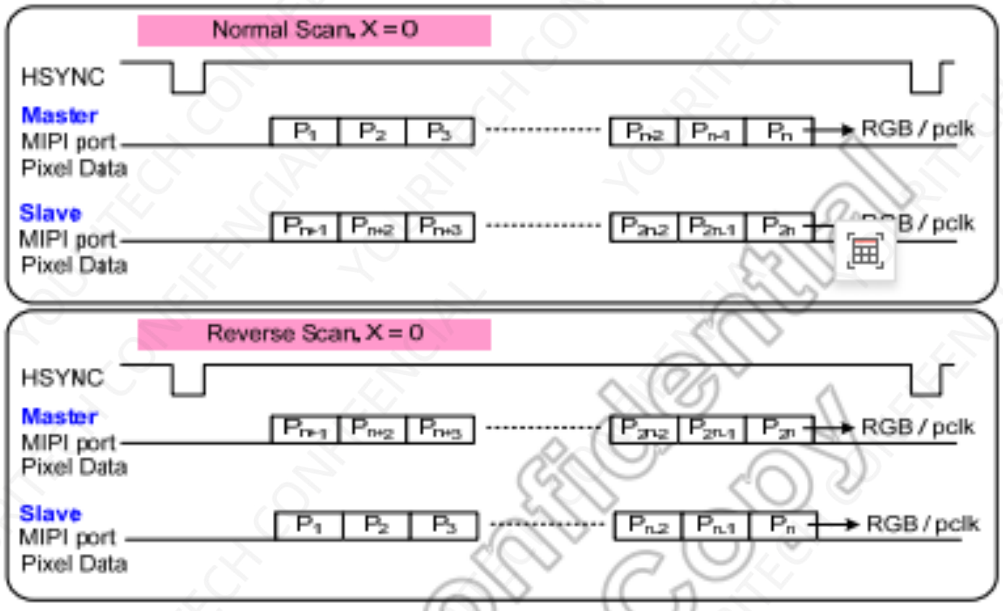
Figure 7.6: MIPI video input timing

MIPI Multi-Drop type when normal or reverse scan.

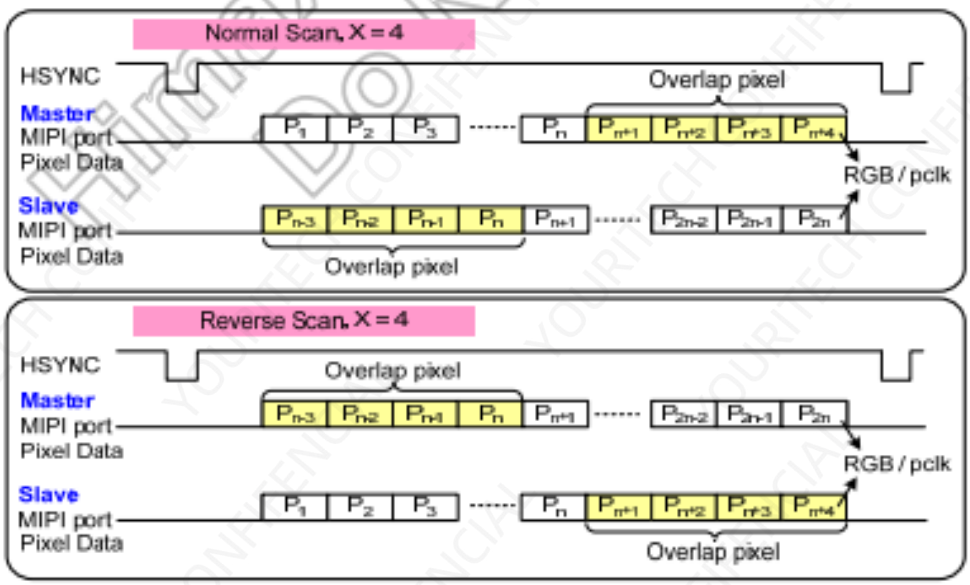


6.2 Video input timing for RL type

MIPI R/L type timing when normal and reverse scan. Below figure is no overlap X=0 between left and right display data. The value of X can be setting by page0 0xB7[2:1].



At MIPI R/L type, it supports overlap X= 2,4 between left and right display data. Below figure is example for overlap X=4. The value of X can be setting by REG OVERLAP (page0 0xB7[2:1]). **The overlap pixel must be sent in the zigzag panel application.**



Input Timing	Symbol	1200RGBx1920			1200RGBx1600			Unit
		Min.	Typ.	Max.	Min.	Typ.	Max.	
PCLK Frequency	-	-	86	-	-	72	-	MHz
Horizontal Total	THT	670	740	1200	670	740	1200	DCLK
Horizontal Synchronization	THS	1	24	-	1	24	-	DCLK
Horizontal Back Porch	THB	50	80	-	50	80	-	DCLK
Horizontal Address	THA	-	600	-	-	600	-	DCLK
Horizontal Front Porch	THF	20	60	-	20	60	-	DCLK
Vertical Frequency	-	-	60	-	-	60	-	Hz
Vertical Total	TVT	(2)	1944	2047	(2)	1624	2047	THT
Vertical Synchronization	TVS	(2)	2	-	(2)	2	-	THT
Vertical Back Porch	TVB	(2)	10	-	(2)	10	-	THT
Vertical Address	TVA	(2)	1920	-	(2)	1600	-	THT
Vertical Front Porch	TVF	(2)	14	-	(2)	14	-	THT

Input Timing	Symbol	1080RGBx1920			Unit
		Min.	Typ.	Max.	
PCLK Frequency	-	-	77	-	MHz
Horizontal Total	THT	610	660	1080	DCLK
Horizontal Synchronization	THS	1	24	-	DCLK
Horizontal Back Porch	THB	50	80	-	DCLK
Horizontal Address	THA	-	540	-	DCLK
Horizontal Front Porch	THF	20	60	-	DCLK
Vertical Frequency	-	-	60	-	Hz
Vertical Total	TVT	(2)	1944	2047	THT
Vertical Synchronization	TVS	(2)	2	-	THT
Vertical Back Porch	TVB	(2)	10	-	THT
Vertical Address	TVA	(2)	1920	-	THT
Vertical Front Porch	TVF	(2)	14	-	THT

Note: (1) (Vertical frequency) x THTxTVTx24bits →total operation bandwidth.
(2) The min. value of Vertical porch is depending on GOA timing.Please refers to the AP. Note for the min value.
(3) THB includes THS.

Timing requirements for reset

When RESETB of the reset pin equals to Low, it will be in the condition of reset. When it is in the condition of reset, it will make the device recover the initial set.

However, in order to avoid the reset noise cause reset, there is a mechanism to judge about whether the reset is needed or not.

The closed interval of low can be shown as the following.

(VDD=1.7V~2.0V, VSS=0V, T_A=-20℃~+85℃)

Parameter	Symbol	Conditions	Spec.			Unit
			Min.	Typ.	Max.	
Reset low pulse width	Trst	-	20	-	-	μs

Table 13.5: Reset timing

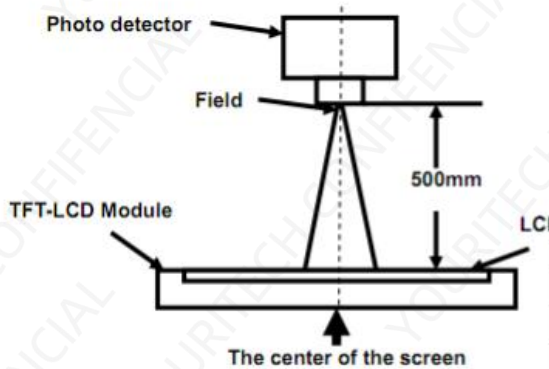
Figure 13.6: Reset timing

7 Optical Characteristics

Items		Symbol	Condition	Min.	Typ.	Max.	Unit	Remark
Viewing angles		θ_T	Center CR≥10	-	85	-	Degree.	Note2
		θ_B		-	85	-		
		θ_L		-	85	-		
		θ_R		-	85	-		
Contrast Ratio		CR	Θ =0		1000		-	Note1, Note3
Response Time		T_{ON}	25° C	-	30	45	ms	Note1, Note4
		T_{OFF}		-	30	45		
Chromaticity	White	X_W	Backlight is on	0.282	0.312	0.342	-	Note1, Note5
		Y_W		0.319	0.349	0.379	-	
	Red	X_R		0.609	0.639	0.669	-	
		Y_R		0.314	0.344	0.374	-	
	Green	X_G		0.264	0.294	0.324	-	
		Y_G		0.557	0.587	0.617	-	
	Blue	X_B		0.102	0.132	0.162	-	
		Y_B		0.106	0.136	0.166	-	
Uniformity		U		75	80	-	%	Note1, Note6
NTSC					50		%	Note5
Luminance		L		-	1000			Note1, Note7

Test Conditions:
1. IF= 20mA(one channel),the ambient temperature is 25°C.
2. The test systems refer to Note 1 and Note 2.

Note 1: Definition of optical measurement system.
The optical characteristics should be measured in dark room. After 5 minutes operation, the optical Properties are measured at the center point of the LCD screen. All input terminals LCD panel must be ground when measuring the center area of the panel.



Item	Photo detector	Field
Contrast Ratio	BM-7A	1°
Luminance		
Chromaticity		
Lum Uniformity		
Response Time	SR-3A	2°

Note 2: Definition of viewing angle range and measurement system.
Viewing angle is measured at the center point of the LCD by CONOSCOPE (ergo-80).

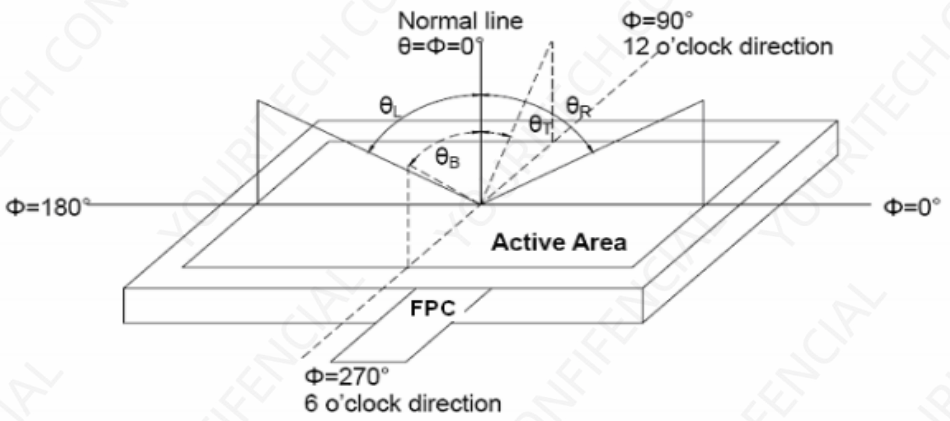


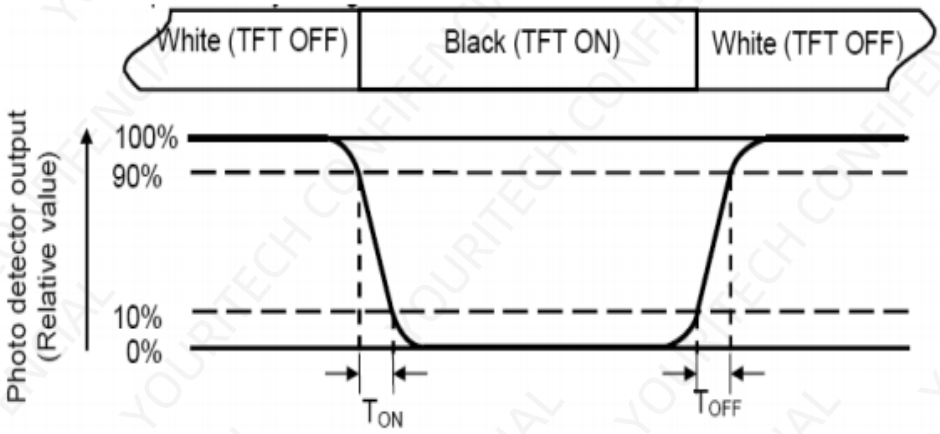
Fig. 1 Definition of viewing angle

Note 3: Definition of contrast ratio

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

Note 4: Definition of Response time

The response time is defined as the LCD optical switching time interval Between “White” state and “Black” state. Rise time (TON) is the time between Photo detector output intensity changed from 90% to 10%. And fall time (TOFF) is The time between photo detector output intensity changed from 10% to 90%



Note 5: Definition of color chromaticity (CIE1931)
Color coordinates measured at center point of LCD.
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 X100%
L-------Active area length W----- Active area width

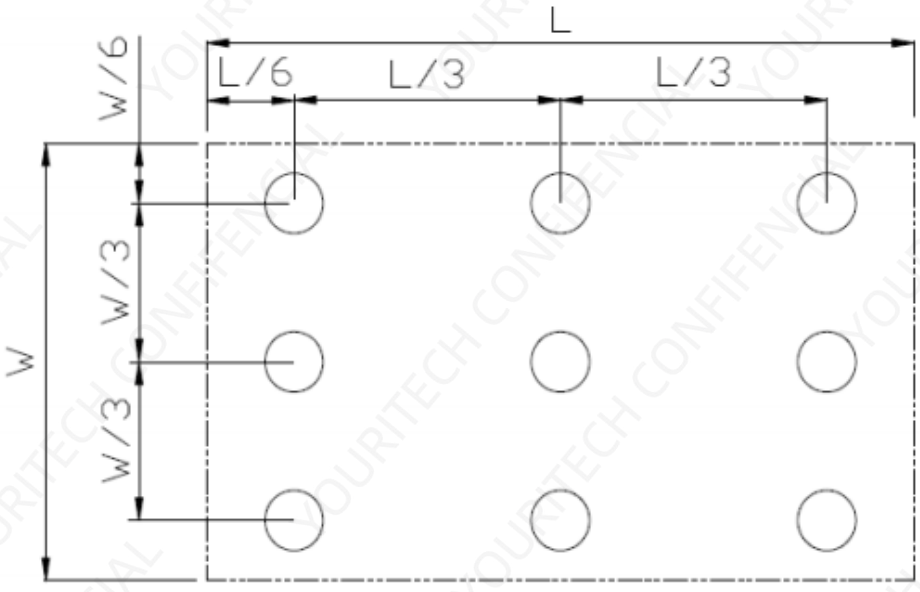


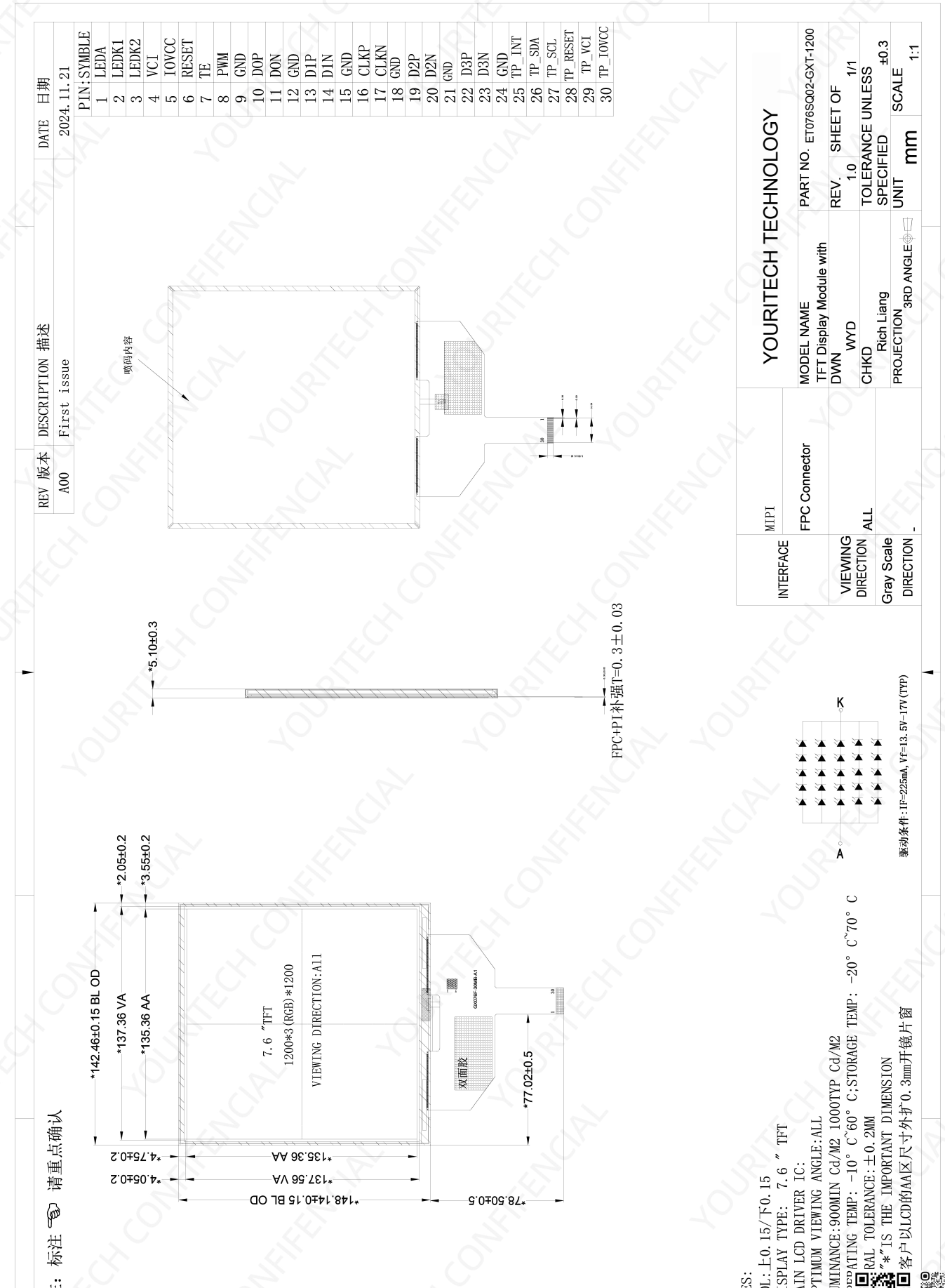
Fig. 2 Definition of uniformity
Lmax: The measured maximum luminance of all measurement position.
Lmin: The measured minimum luminance of all measurement position.
Note 7: Definition of Luminance:
Measure the luminance of white state at center point.

8 Environmental / Reliability Tests

No	Test Item	Condition	Remarks
1	High Temperature Operation	Ts= +60℃, 240hrs	Note 1 IEC60068-2-2, GB2423. 2-89
2	Low Temperature Operation	Ta= -10℃, 240hrs	Note 2 IEC60068-2-1 GB2423.1-89
3	High Temperature Storage	Ta= +70℃, 240hrs	IEC60068-2-2 GB2423. 2-89
4	Low Temperature Storage	Ta= -20℃, 240hrs	IEC60068-2-1 GB/T2423.1-89
5	High Temperature & Humidity Storage	Ta= +60℃, 90% RH max, 160 hours	IEC60068-2-3 GB/T2423.3-2006
6	Thermal Shock (Non-operation)	-30℃ 30 min ~ +80℃ 30 min Change time: 5min, 30 Cycle	Start with cold temperature, end with high temperature IEC60068-2-14, GB2423.22-87
7	Electro Static Discharge (Operation)	C=150pF, R=330 Ω, 5 points/panel Air:±8KV, 5 times; Contact: ±4KV, 5 times; (Environment: 15℃ ~ 35℃, 30% ~ 60%, 86Kpa ~ 106Kpa)	IEC61000-4-2 GB/T17626.2-1998
8	Vibration (Non-operation)	Frequency range: 10~55Hz, Stroke: 1.mm Sweep: 10Hz~55Hz~10Hz 2 hours for each direction of X .Y. Z. (package condition)	IEC60068-2-6 GB/T2423.5-1995
9	Shock (Non-operation)	60G 6ms, ± X, ±Y , ± Z 3 times for each direction	IEC60068-2-27 GB/T2423.5-1995
10	Package Drop Test	Height: 60 cm, 1 corner, 3 edges, 6 surfaces	IEC60068-2-32 GB/T2423.8-1995

Note: 1. Ts is the temperature of panel's surface.
2. Ta is the ambient temperature of sample.

3. 9 Mechanical Drawing



1 0.Packing

TBD

11. Precautions for Use of LCD 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 a high place, etc.

11.1.2. If the display panel is damaged and the liquid crystal substance inside it leaks out, be sure not to get any in your mouth, if the substance comes into contact with your skin or clothes, promptly wash it off using soap and water.

cause the color tone to vary.

11.1.4. The polarizer covering the display surface of the LCD module is soft and easily scratched. Handle this polarizer carefully.

11.1.5. If the display surface is contaminated, breathe on the surface and gently wipe it with a soft dry cloth. If still not completely clear, moisten cloth with one of the following solvents:

- Isopropyl alcohol
- Ethyl alcohol

Solvents other than those mentioned above may damage the polarizer. Especially, do not use the following:

Water ； Ketene ； Aromatic solvents

11.1.6. Do not attempt to disassemble the LCD Module.

11.1.7. If the logic circuit power is off, do not apply the input signals.

11.1.8. To prevent destruction of the elements by static electricity, be careful to maintain an optimum work environment.

11.1.8.1. Be sure to ground the body when handling the LCD Modules.

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

11.1.8.3. To reduce the amount of static electricity generated, do not conduct assembly and other work under dry conditions.

11.1.8.4. The LCD Module is coated with a film to protect the display surface. Be care when peeling off this protective film since static electricity may be generated.

11.2 Storage Precautions

11.2.1. When storing the LCD modules, avoid exposure to direct sunlight or to the light of fluorescent lamps.

11.2.2. The LCD modules should be stored under the storage temperature range If the LCD modules will be stored for a long time, the recommend condition is:

Temperature : 0℃ ～ 40℃ Relatively humidity: ≤80%

11.2.3. The LCD modules should be stored in the room without acid, alkali and harmful gas.

11.3 Transportation Precautions

The LCD modules should be no falling and violent shocking during transportation, and also should avoid excessive press, water, damp and sunshine.