



TM070RDHG25

MODEL NO : TM070RDHG25

MODEL VERSION: 00

SPEC VERSION : 1.0

ISSUED DATE: 2020-07-10

- ☐ Preliminary Specification
- ☒ Final Product Specification

Customer : _____

Approved by	Notes

TIANMA Confirmed :

Prepared by	Checked by	Approved by
Bin Wang	Longping.Deng	Minhong Kim

This technical specification is subjected to change without prior notice.

The information contained herein is the exclusive property of SHANGHAI TIANMA OPTOELECTRONICS Corporation, and shall not be distributed, reproduced, or disclosed in whole or in part without prior written permission of SHANGHAI TIANMA OPTOELECTRONICS Corporation.



TM070RDHG25

Table of Contents

Table of Contents	2
Record of Revision.....	3
1 General Specifications.....	4
2 Input/Output Terminals	5
3 Absolute Maximum Ratings.....	7
4 Electrical Characteristics	8
5 Timing Chart.....	11
6 Optical Characteristics	15
7 Environmental / Reliability Test.....	18
8 Mechanical Drawin	19
9 Packing drawing	20
10 Precautions for Use of LCD Modules.....	22

The information contained herein is the exclusive property of SHANGHAI TIANMA OPTOELECTRONICS Corporation, and shall not be distributed, reproduced, or disclosed in whole or in part without prior written permission of SHANGHAI TIANMA OPTOELECTRONICS Corporation.

Page 2 of 22





TM070RDHG25

1 General Specifications

Feature		Spec
Display Spec.	Size	7.0 inch
	Resolution	800(RGB) x 480
	Technology Type	a-Si TFT
	Pixel Configuration	R.G.B. Vertical Stripe
	Pixel pitch(mm)	0.1926 (H) x 0.179(V)
	Display Mode	TM,NW
	Surface Treatment	Anti Glare
	Viewing Direction	12 o'clock
	Gray Scale Inversion Direction	6 o'clock
Mechanical Characteristics	LCM (W x H x D) (mm)	164.9x 100 x 5.7
	Active Area(mm)	154.08 (W) x 85.92 (H)
	With /Without TSP	Without TSP
	Connection Type	CN1: DF19K-20P-1H CN2: 3808K-F04N-03R
	LED Numbers	24 LEDS
	Weight (g)	TBD
Electrical Characteristics	Interface	LVDS 6bit
	Color Depth	262K
	Driver IC	HX8264D*1+HX8664B*1

Note 1: Viewing direction for best image quality is different from TFT definition. There is a 180 degree shift.

Note 2: Requirements on Environmental Protection: Q/S0002+HF

Note 3: LCM weight tolerance: +/- 5%

The information contained herein is the exclusive property of SHANGHAI TIANMA OPTOELECTRONICS Corporation, and shall not be distributed, reproduced, or disclosed in whole or in part without prior written permission of SHANGHAI TIANMA OPTOELECTRONICS Corporation.



TM070RDHG25

2 Input/Output Terminals

2.1 CN1 pin assignment

Matching Connector: DF19-20S-1C(HRS)

Pin	Symbol	I/O	Description	Remark
1	VDD	P	Power supply	
2	VDD	P	Power supply	
3	UD	I	Vertical Reverse Scan Control	Note1
4	LR	I	Horizontal Reverse Scan Control	Note1
5	RxIN1-	I	Negative data 1 for LVDS signal input	
6	RxIN1+	I	Positive data 1 for LVDS signal input	
7	GND	P	Ground	
8	RxIN2-	I	Negative data 2 for LVDS signal input	
9	RxIN2+	I	Positive data 2 for LVDS signal input	
10	GND	P	Ground	
11	RxIN3-	I	Negative data 3 for LVDS signal input	
12	RxIN3+	I	Positive data 3 for LVDS signal input	
13	GND	P	Ground	
14	RxCLKIN-	I	negative clock for LVDS signal input	
15	RxCLKIN+	I	Positive clock for LVDS signal input	
16	GND	P	Ground	
17	NC	-	NC	
18	NC	-	NC	
19	NC	-	NC	
20	NC	-	NC	

I---Input, O---Output, P--- Power/Ground

Table 2.1 terminal pin assignments

The information contained herein is the exclusive property of SHANGHAI TIANMA OPTOELECTRONICS Corporation, and shall not be distributed, reproduced, or disclosed in whole or in part without prior written permission of SHANGHAI TIANMA OPTOELECTRONICS Corporation.



TM070RDHG25

Note1:Scanning direction description

(LR pull-up resistor:4.7K ; UD pull-down resistor:4.7K)

Scan control input		Scanning direction
UD	LR	
HIGH	HIGH	Down to up, left to right
LOW	LOW	Up to down, right to left
HIGH	LOW	Down to up, right to left
LOW	HIGH	Up to down, left to right

2.2 CN2 pin assignment (Backlight interface)

Matching Connector type: H208K-P04N-02B (Entery)

Pin	Symbol	I/O	Description	Remark
1	VBL	P	Backlight Power supply , 12V input	
2	PGND	P	Ground	
3	BL_EN	I	Enable : 3.3V for backlight on ; 0V for backlight off	
4	Dimming	I	Adjust the luminance of LED's	

The information contained herein is the exclusive property of SHANGHAI TIANMA OPTOELECTRONICS Corporation, and shall not be distributed, reproduced, or disclosed in whole or in part without prior written permission of SHANGHAI TIANMA OPTOELECTRONICS Corporation.



TM070RDHG25

3 Absolute Maximum Ratings

GND=0V, Ta = 25℃

Item	Symbol	MIN	TYP	MAX	Unit	Remark
Power Voltage	VDD	-0.5	3.3	5.0	V	
	VBL	-0.3	12	24	V	
Input voltage	V _{IN}	-0.5	3.3	5.0	V	Note1
Operating Temperature	Top	-20	25	70	℃	
Storage Temperature	Tst	-30	25	80	℃	
Relative Humidity (Note2)	RH	--	--	≤95	%	Ta≤40℃
		--	--	≤85	%	40℃<Ta≤50℃
		--	--	≤55	%	50℃<Ta≤60℃
		--	--	≤36	%	60℃<Ta≤70℃
		--	--	≤24	%	70℃<Ta≤80℃
Absolute Humidity	AH	--	--	≤70	g/m ³	Ta>70℃

Table 3 Absolute Maximum Ratings

Note1: Input voltage include RxIN, RxCLK , UD, LR.

Note2: Ta means the ambient temperature.

It is necessary to limit the relative humidity to the specified temperature range.
Condensation on the module is not allowed.

The information contained herein is the exclusive property of SHANGHAI TIANMA OPTOELECTRONICS Corporation, and shall not be distributed, reproduced, or disclosed in whole or in part without prior written permission of SHANGHAI TIANMA OPTOELECTRONICS Corporation.

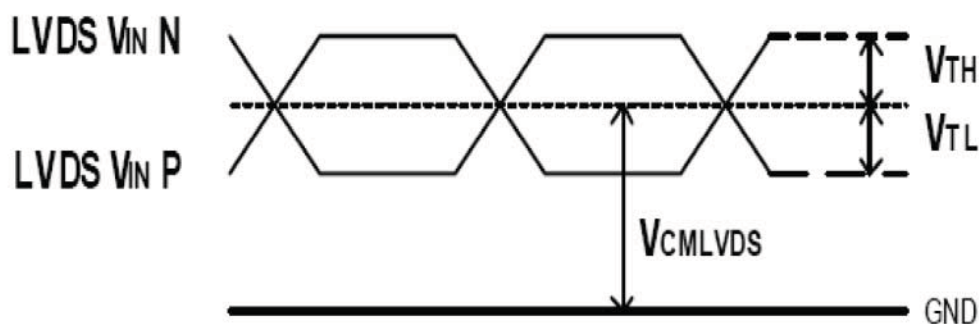
4 Electrical Characteristics

4.1 Recommended Operating Condition

GND=0V, Ta=25℃

Item		Symbol	MIN	TYP	MAX	Unit	Remark
Digital supply Voltage		VCC	3.00	3.30	3.60	V	
Input Signal Voltage	Low Level	VIL	0	-	0.3*VCC	V	Only for REV
	High Level	VIH	0.7*VCC	-	VCC	V	
Differential Input High Threshold		VTH	-	-	+100	mV	
Differential Input Low Threshold		VTL	-100	-	-	mV	
Input Current		IIN	-	-	±30	uA	
Resistance		R	-	100	-	Ω	

Table 4.1 LCD DC Characteristics



The information contained herein is the exclusive property of SHANGHAI TIANMA OPTOELECTRONICS Corporation, and shall not be distributed, reproduced, or disclosed in whole or in part without prior written permission of SHANGHAI TIANMA OPTOELECTRONICS Corporation.



TM070RDHG25

4.2 Backlight Unit Driving Condition

LEDGND=GND=0V, Ta = 25°C

Item		Symbol	Min	Typ	Max	Unit	Remark
Voltage of LED driver circuit		VBL	11.5	12	12.5	V	
Current of LED driver circuit		IBL	--	60	75	mA	
Power Consumption		W _{BL}	--	1536	2160	mW	
EN,PWM		VIH	1.6	--	6.0	V	
		VIL	--	--	0.8	V	
Dimming Signal frequency		Fdimming	0.1		8	KHz	
Minimum PWM dimming duty cycle	100Hz~8KHz	--	1	--	--	%	
LED Life time		--	20000	--	--	H	

Table 4.2 LED backlight characteristics

Note 1: If LED is driven by high current, high ambient temperature & humidity condition. The life time of LED will be reduced. Operating life means brightness goes down to 50% initial brightness. Typical operating life time is estimated data



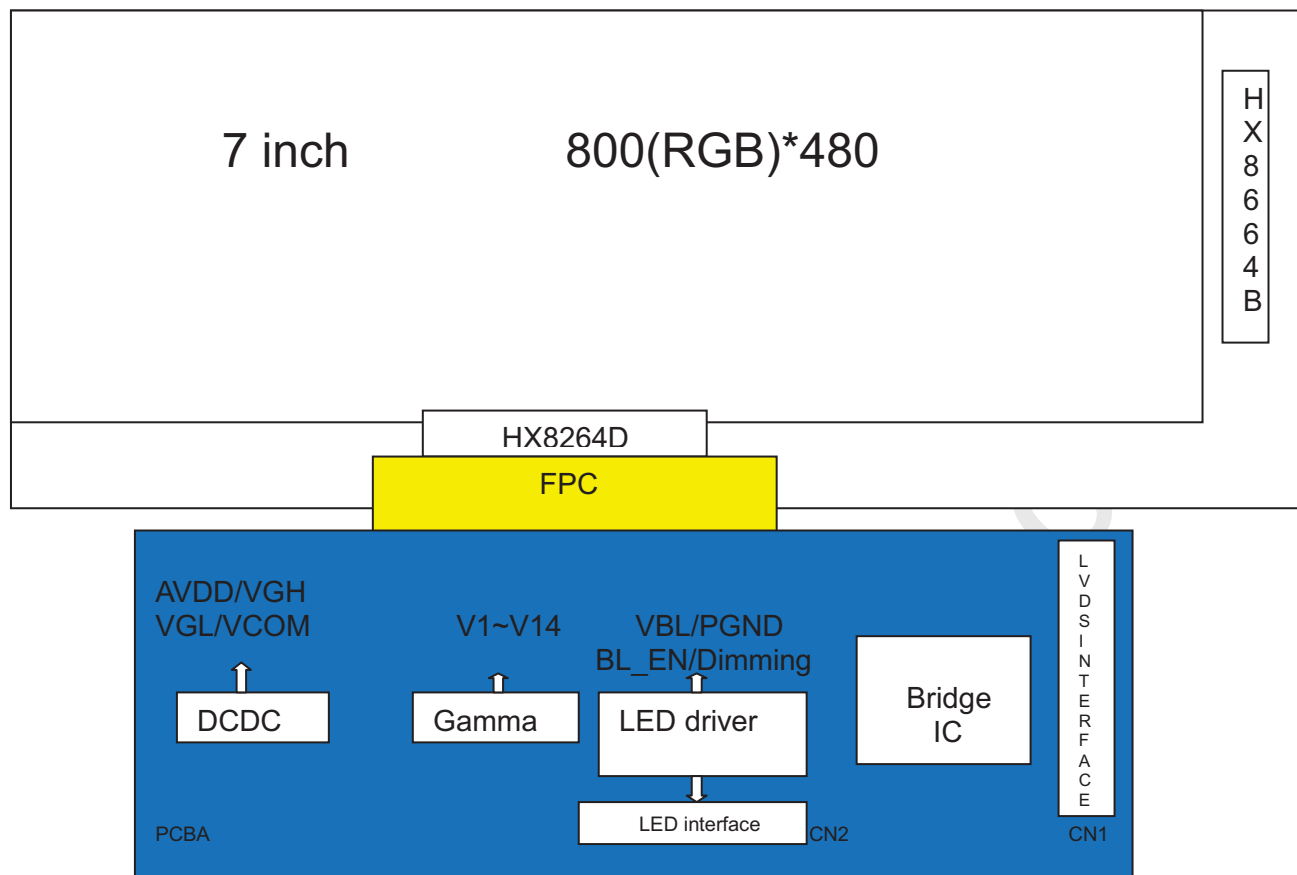
Figure4.1 LED connection of backlight

The information contained herein is the exclusive property of SHANGHAI TIANMA OPTOELECTRONICS Corporation, and shall not be distributed, reproduced, or disclosed in whole or in part without prior written permission of SHANGHAI TIANMA OPTOELECTRONICS Corporation.



TM070RDHG25

4.3 BLOCK DIAGRAM



The information contained herein is the exclusive property of SHANGHAI TIANMA OPTOELECTRONICS Corporation, and shall not be distributed, reproduced, or disclosed in whole or in part without prior written permission of SHANGHAI TIANMA OPTOELECTRONICS Corporation.



TM070RDHG25

5 Timing Chart

5.1 TFT-LCD Input Timing

VCC=3.3V, GND=0V, Ta=25℃

Parameter	Symbol	Min	Typ	Max	Unit	Remark
DCLK frequency	F _{clk}	28	30.0	40.0	MHz	
DCLK cycle time	T _{cph}	25	33.3	36	ns	
DCLK pulse width	T _{cw}	40%	50%	60%	T _{cph}	
VS setup time	T _{vst}	8			ns	
VS hold time	T _{vhd}	8	-	-	ns	
HS setup time	T _{hst}	8			ns	
HS hold time	T _{hhd}	8	-	-	ns	
Data setup time	T _{dsu}	8			ns	Data to DCLK
Data hold time	T _{dhd}	8	-	-	ns	Data to DCLK
DE setup time	T _{esu}	8	-	-	ns	
DE hold time	T _{ehd}	8	-	-	ns	

The information contained herein is the exclusive property of SHANGHAI TIANMA OPTOELECTRONICS Corporation, and shall not be distributed, reproduced, or disclosed in whole or in part without prior written permission of SHANGHAI TIANMA OPTOELECTRONICS Corporation.



TM070RDHG25

5.2 Recommended Timing Setting Of TCON

TCON (Embedded In Source IC) Input timing

VCC=3.3V, GND=0V, Ta=25°C

● Horizontal timing

Parameter	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
Horizontal Display Area	thd	800			DCLK
DCLK frequency	fclk	-	30	50	MHz
One Horizontal Line	th	862	1056	1200	DCLK
HS pulse width	thpw	1	-	40	DCLK
HS Back Porch (Blanking)	thb	46			DCLK
HS Front Porch	thfp	16	210	354	DCLK
DE mode Blanking	th-thd	85	256	400	DCLK

● Vertical timing

Parameter	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
Vertical Display Area	tvd	480			T _H
VS period time	tv	513	525	650	T _H
VS pulse width	tvpw	3	-	20	T _H
VS Back Porch (Blanking)	tvb	23			T _H
VS Front Porch	tvfp	7	22	147	T _H
DE mode Blanking	tv-tvd	30	45	170	T _H

● Horizontal timing

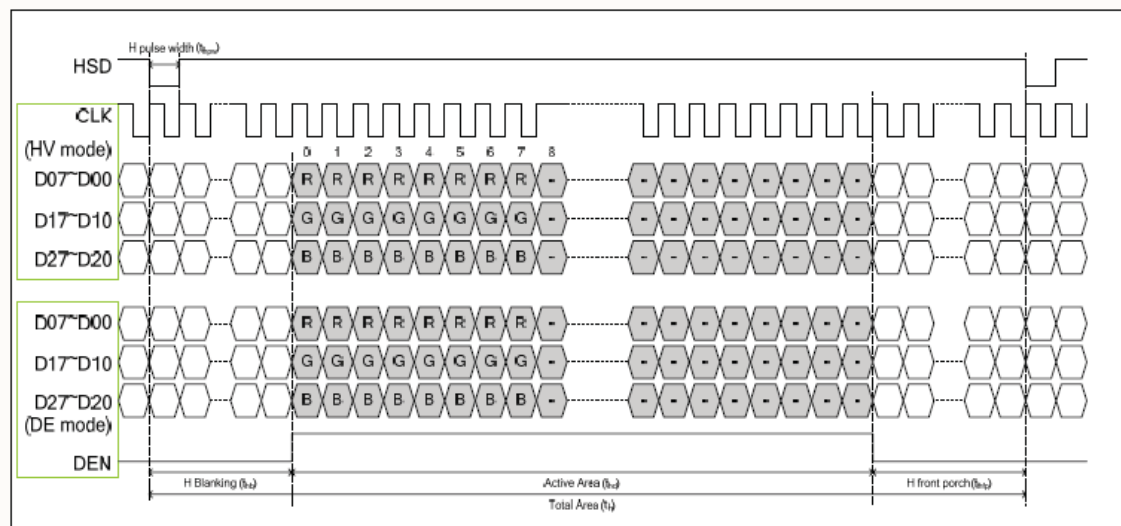


Figure 11. 1: Horizontal Input Timing Diagram

The information contained herein is the exclusive property of SHANGHAI TIANMA OPTOELECTRONICS Corporation, and shall not be distributed, reproduced, or disclosed in whole or in part without prior written permission of SHANGHAI TIANMA OPTOELECTRONICS Corporation.

- Vertical timing

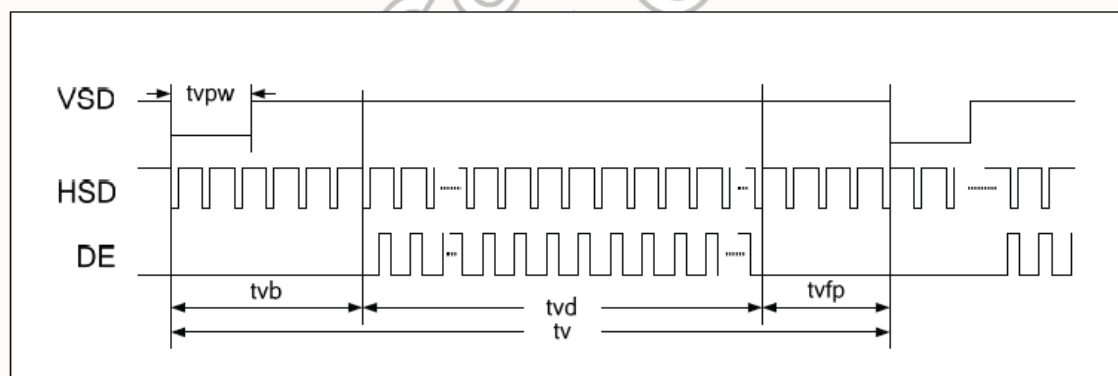


Figure 11. 2: Vertical Input Timing Diagram

5.3 LVDS Input Data Format

6bit LVDS input

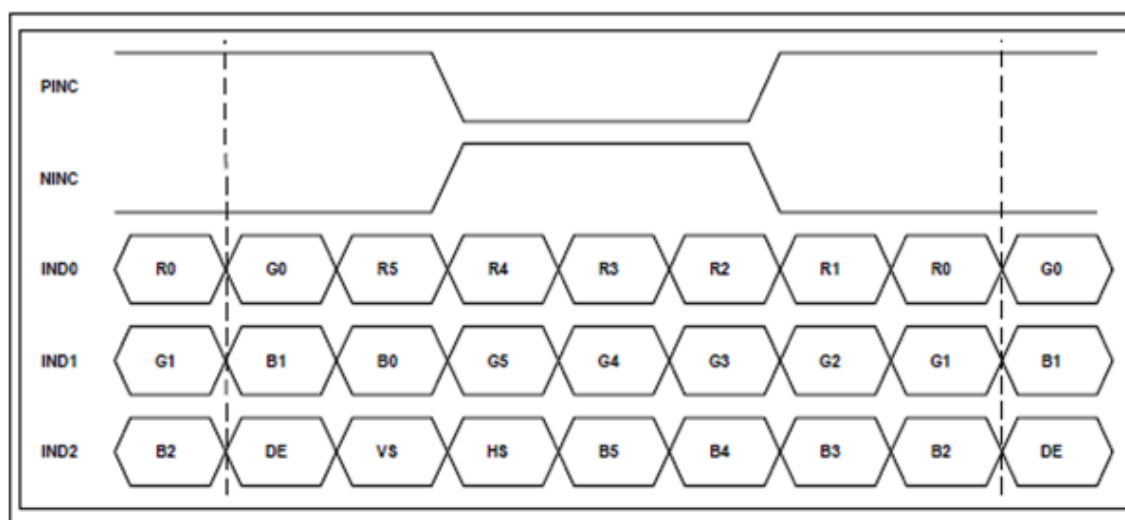
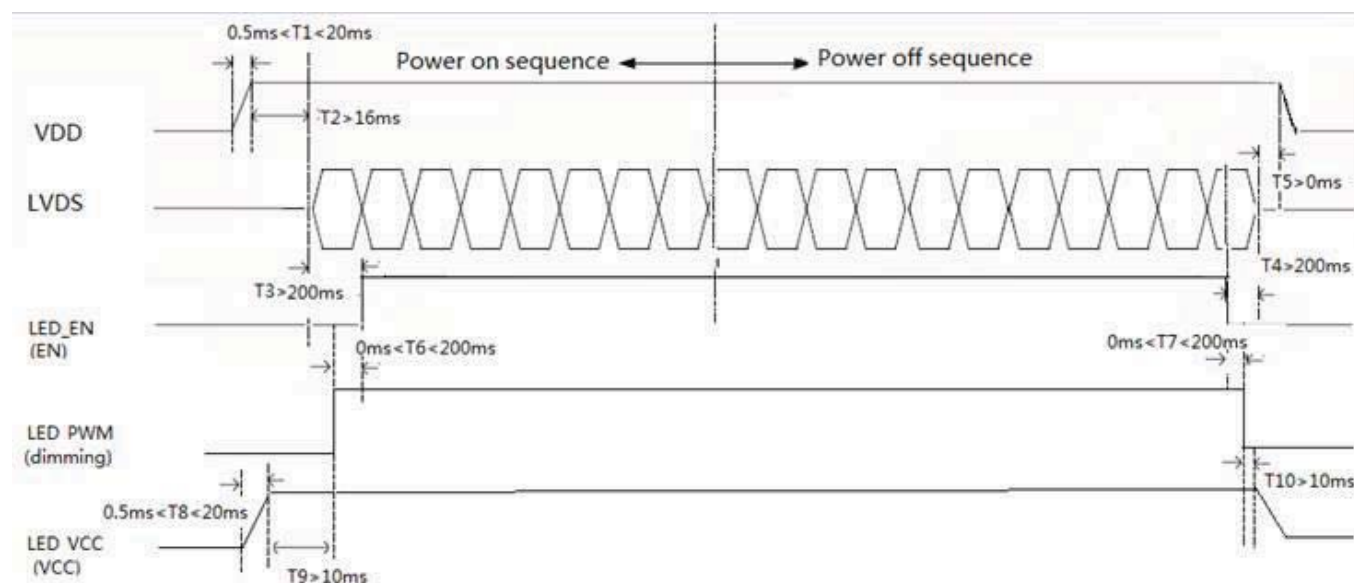


Figure5.1 LVDS input data mapping



TM070RDHG25

5.4 POWER ON/OFF SEQUENCE



Item	Symbol	Min	Typ	Max	Unit	Remark
VDD on to VDD stable	T1	0.5		20	ms	
VDD stable to signal on	T2	16			ms	
Signal on to LED_EN on	T3	200			ms	
LED_PWM on to LED_EN on	T6	0		200	ms	
LED_VCC on to LED_VCC stable	T8	0.5		20	ms	
LED_VCC stable to LED_PWM on	T9	10			ms	
Signal off before VDD off	T5	0			ms	
LED_EN off before Signal off	T4	200			ms	
LED_EN off before LED_PWM off	T7	0		200	ms	
LED PWM off before LED_VCC off	T10	10			ms	

The information contained herein is the exclusive property of SHANGHAI TIANMA OPTOELECTRONICS Corporation, and shall not be distributed, reproduced, or disclosed in whole or in part without prior written permission of SHANGHAI TIANMA OPTOELECTRONICS Corporation.



TM070RDHG25

6 Optical Characteristics

Ta=25℃

Item		Symbol	Condition	Min	Typ	Max	Unit	Remark
View Angles		θT	CR≧10	50	60	-	Degree	Note 2
		θB		60	80	-		
		θL		60	80	-		
		θR		60	80	-		
Contrast Ratio		CR	θ=0°	800	1000	-		Note1 Note3
Response Time		T _{ON}	25℃	-	15	-	ms	Note1 Note4
		T _{OFF}						
Chromaticity	White	x	Backlight is on	0.269	0.319	0.369		Note1 Note5
		y		0.295	0.345	0.395		
	Red	x		0.539	0.589	0.639		
		y		0.303	0.353	0.403		
	Green	x		0.295	0.345	0.395		
		y		0.545	0.595	0.645		
	Blue	x		0.100	0.150	0.200		
		y		0.047	0.097	0.147		
Uniformity		U		75	85	-	%	Note1 Note6
NTSC				45	50	-	%	Note 5
Luminance (Without TP)		L		400	450	-	cd/m ²	Note1 Note7

Test Conditions:

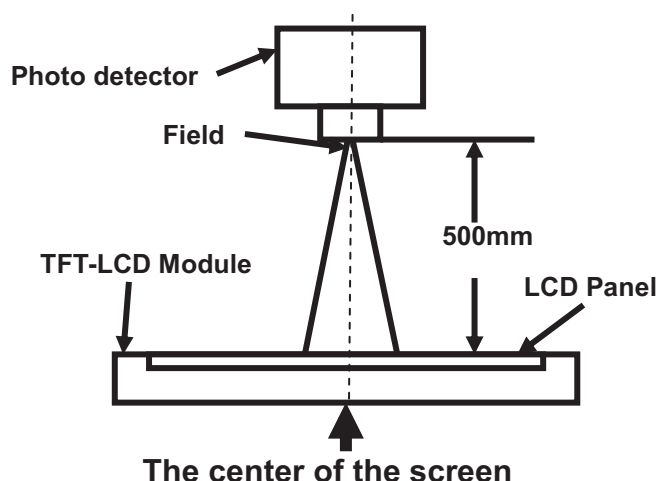
1. $I_F=60\text{ mA}$, $V_F=25.6\text{ V}$ and the ambient temperature is $25\pm 2^\circ\text{C}$. humidity is $65\pm 7\%$
2. The test systems refer to Note 1 and Note 2.

The information contained herein is the exclusive property of SHANGHAI TIANMA OPTOELECTRONICS Corporation, and shall not be distributed, reproduced, or disclosed in whole or in part without prior written permission of SHANGHAI TIANMA OPTOELECTRONICS Corporation.

Page 15 of 22

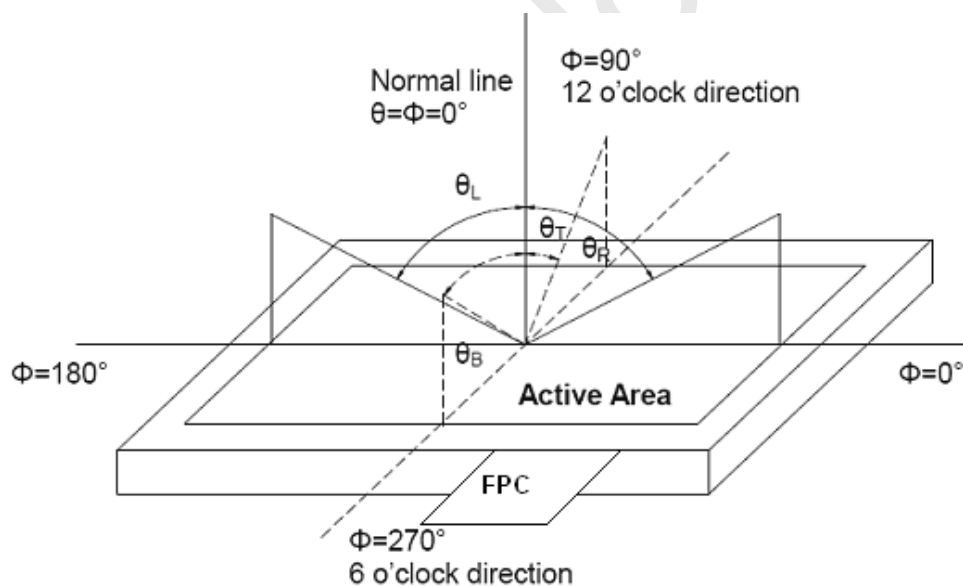
Note 1: Definition of optical measurement system.

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.



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

viewing angle is measured at the center point of the LCD.



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": The state is that the LCD should drive by V_{white} .

"Black state": The state is that the LCD should drive by V_{black} .

The information contained herein is the exclusive property of SHANGHAI TIANMA OPTOELECTRONICS Corporation, and shall not be distributed, reproduced, or disclosed in whole or in part without prior written permission of SHANGHAI TIANMA OPTOELECTRONICS Corporation.

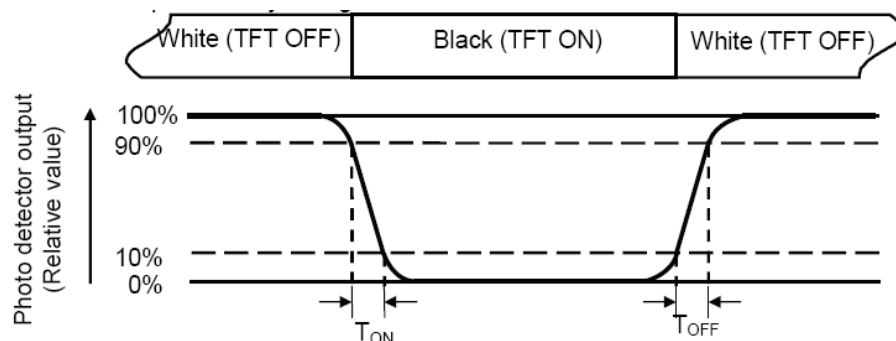


TM070RDHG25

V_{white}: To be determined V_{black}: To be determined.

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



Note 5: Definition of color chromaticity (CIE1931)

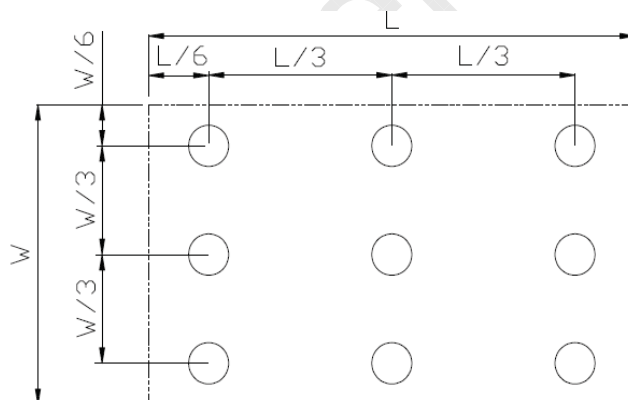
Color coordinates measured at center point of LCD.

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.

$$\text{Luminance Uniformity (U)} = L_{\min} / L_{\max}$$

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



$L_{\max}$: The measured Maximum luminance of all measurement position.

$L_{\min}$: The measured Minimum luminance of all measurement position.

Note 7: Definition of Luminance:

Measure the luminance of white state at center point.

The information contained herein is the exclusive property of SHANGHAI TIANMA OPTOELECTRONICS Corporation, and shall not be distributed, reproduced, or disclosed in whole or in part without prior written permission of SHANGHAI TIANMA OPTOELECTRONICS Corporation.



TM070RDHG25

7 Environmental / Reliability Test

No	Test Item	Condition	Remarks
1	High Temperature Operation	Ts = +70℃, 240 hours	IEC60068-2-1 GB2423.2
2	Low Temperature Operation	Ta = -20℃, 240 hours	IEC60068-2-1 GB2423.1
3	High Temperature Storage	Ta = +80℃, 240 hours	IEC60068-2-1 GB2423.2
4	Low Temperature Storage	Ta = -30℃, 240 hours	IEC60068-2-1 GB2423.1
5	Storage at High Temperature and Humidity	Ta = +60℃, 90% RH max,240hours	IEC60068-2-78 GB/T2423.3
6	Thermal Shock (non-operation)	-30℃ 30 min~+80℃ 30 min, Change time:5min, 100 Cycle	Start with cold temperature, End with high temperature, IEC60068-2-14,GB2423.22
7	ESD	C=150pF,R=330Ω,5point/panel Air:±8Kv,5times; Contact:±4Kv,5times (Environment:15℃~35℃, 30%~60%.86Kpa~106Kpa)	IEC61000-4-2 GB/T17626.2
8	Vibration Test	Frequency range:10~55Hz Stroke:1.5mm Sweep:10Hz~55Hz~10Hz 2 hours for each direction of X.Y.Z. (6 hours for total)	IEC60068-2-6 GB/T2423.10
9	Mechanical Shock (Non Op)	Half Sine Wave 100G 6ms, ±X,±Y,±Z 3times for each direction	IEC60068-2-27 GB/T2423.5
10	Package Drop Test	Height:60cm, 1corner,3edges,6surfaces	IEC60068-2-32 GB/T2423.8

Note1: Ts is the temperature of panel's surface.

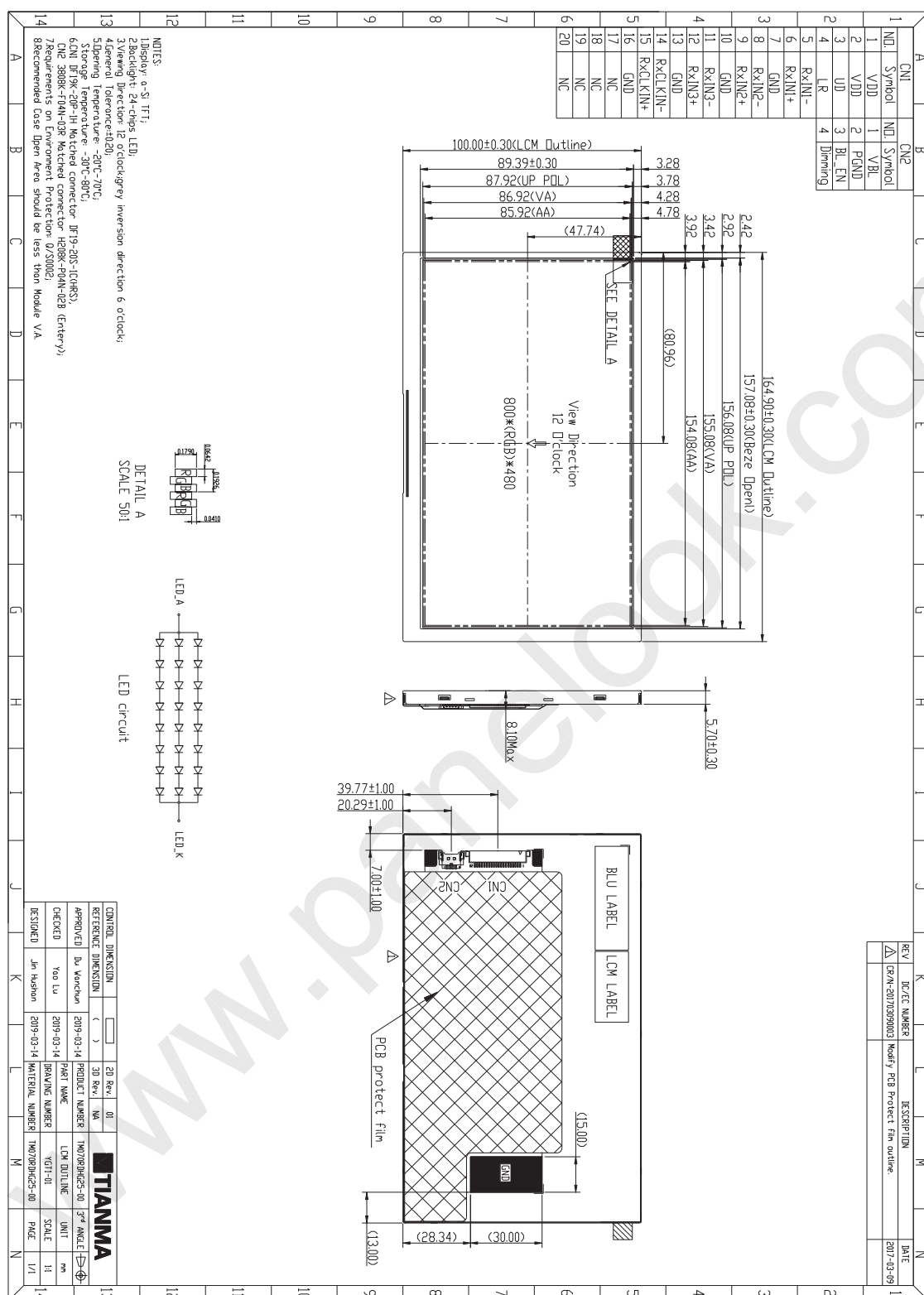
Note2: Ta is the ambient temperature of samples.

The information contained herein is the exclusive property of SHANGHAI TIANMA OPTOELECTRONICS Corporation, and shall not be distributed, reproduced, or disclosed in whole or in part without prior written permission of SHANGHAI TIANMA OPTOELECTRONICS Corporation.



TM070RDHG25

8 Mechanical Drawin



Note: PCB supplier change , The product name unchanged . The Mechanical Drawing follows
TM070RDHG25-00.

The information contained herein is the exclusive property of SHANGHAI TIANMA OPTOELECTRONICS Corporation, and shall not be distributed, reproduced, or disclosed in whole or in part without prior written permission of SHANGHAI TIANMA OPTOELECTRONICS Corporation.

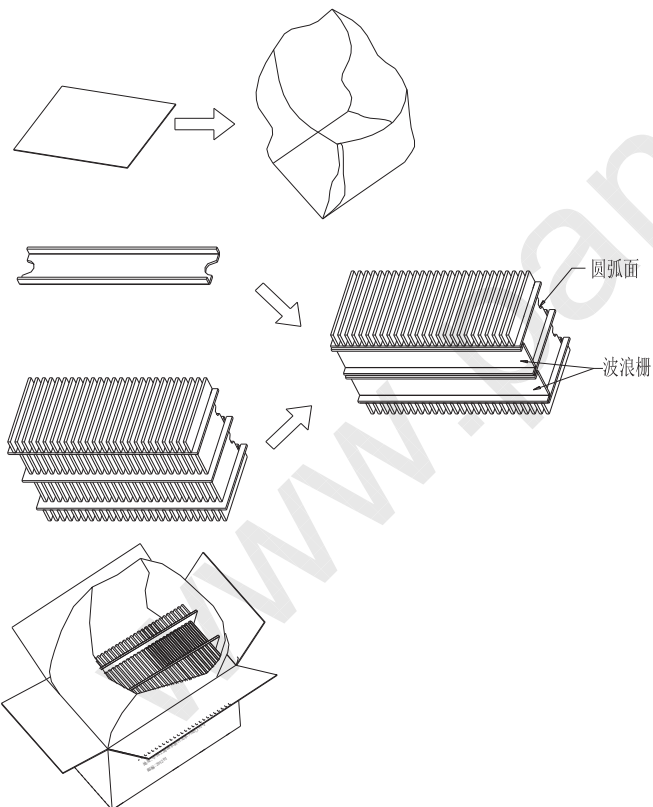


TM070RDHG25

9 Packing drawing

Per Carton

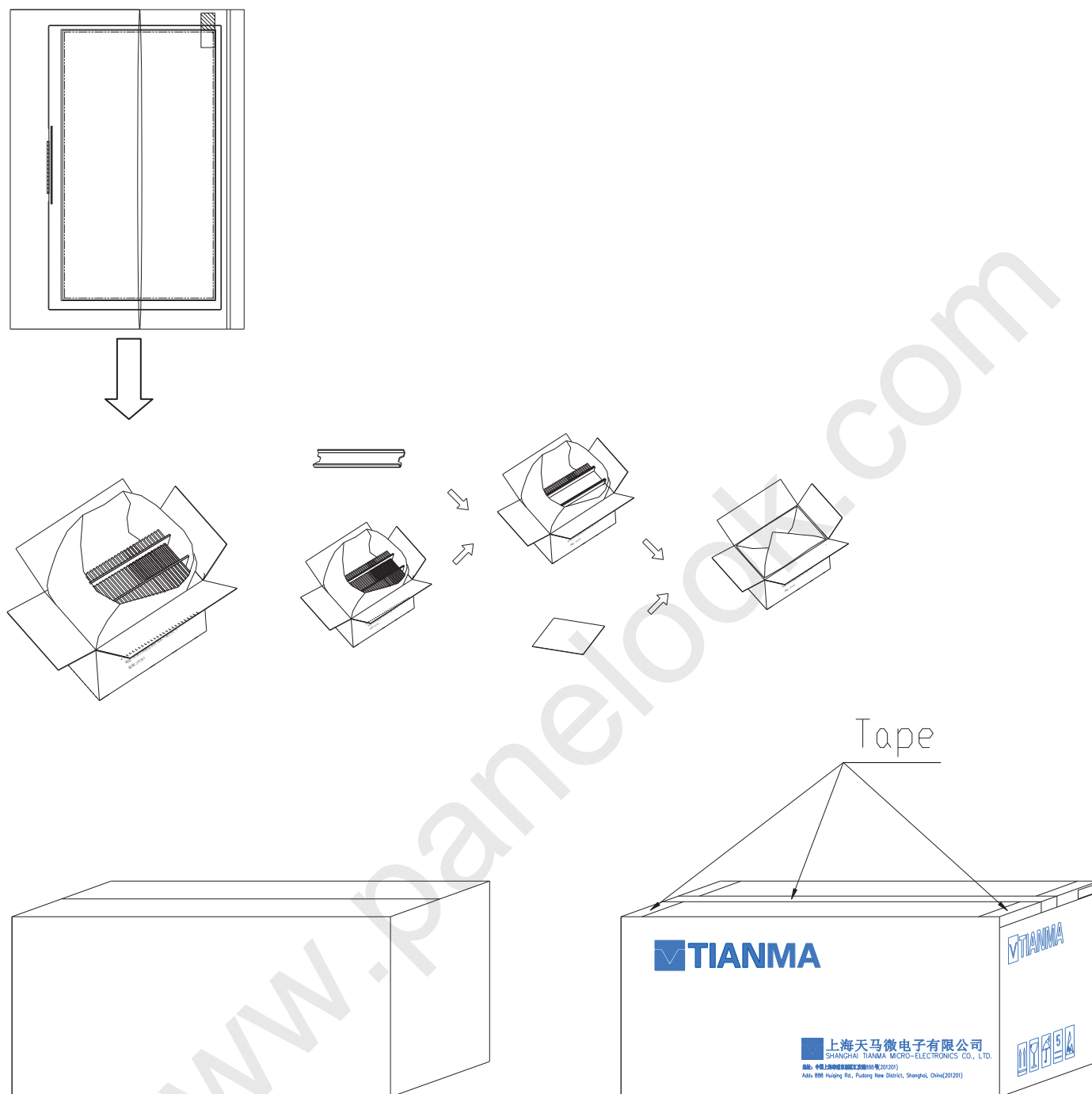
No	Item	Model (Materiel)	Dimensions(mm)	Unit Weight(Kg)	Quantity	Remark
1	LCM Module	TM070RDHG25-00	164.90*100.00*7.80	0.1658	36	
2	Partition_1	Corrugated Paper	513*333*247	1.58	1	
3	Anti-static Bubble Bag	PE	190×185	0.01	36	Anti-static
4	Dust-Proof Bag	PE	700*545	0.06	1	
5	Partition_2	Corrugated Paper	505*332	0.1	4	
6	Corrugated Bar	Corrugated Paper	513*115*35	0.08	4	
7	Beauty-grain	Tape	30*10	TBD	36	
8	Carton	Corrugated Paper	530*350*288	0.8	1	
9	Total Weight	TBD				



The information contained herein is the exclusive property of SHANGHAI TIANMA OPTOELECTRONICS Corporation, and shall not be distributed, reproduced, or disclosed in whole or in part without prior written permission of SHANGHAI TIANMA OPTOELECTRONICS Corporation.



TM070RDHG25



The information contained herein is the exclusive property of SHANGHAI TIANMA OPTOELECTRONICS Corporation, and shall not be distributed, reproduced, or disclosed in whole or in part without prior written permission of SHANGHAI TIANMA OPTOELECTRONICS Corporation.



TM070RDHG25

10 Precautions for Use of LCD Modules

10.1 Handling Precautions

10.1.1 The display panel is made of glass. Do not subject it to a mechanical shock by dropping it from a high place, etc.

10.1.2 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.

10.1.3 Do not apply excessive force to the display surface or the adjoining areas since this may cause the color tone to vary.

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

10.1.5 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
- Ketone
- Aromatic solvents

10.1.6 Do not attempt to disassemble the LCD Module.

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

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

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

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

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

10.1.8.4 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.

10.2 Storage precautions

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

10.2.2 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°C ~ 40°C Relatively humidity: ≤80%

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

10.3 Transportation Precautions

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

The information contained herein is the exclusive property of SHANGHAI TIANMA OPTOELECTRONICS Corporation, and shall not be distributed, reproduced, or disclosed in whole or in part without prior written permission of SHANGHAI TIANMA OPTOELECTRONICS Corporation.



上海天马微电子有限公司
SHANGHAI TIANMA MICROELECTRONICS CO., LTD.

Shanghai Tianma Micro-Electronics CO.,LTD

TFT-LCD Module Incoming Inspection Standard

Customer	
Description	
Model Name	TM070RDHG25
Date	2016.7.28
Version	1.1

Customer Approval	
Title	
Name	
Date	

	Prepared By	Checked by	Approved By
Title:			
Name:			
Date:			

HISTORY OF REVISION

REV NO.	REV DATE	CONTENTS	REMARKS

Shanghai Tianma Micro-Electronics CO.,LTD

Shanghai Tianma Micro-Electronics Corporation Standard LCM Incoming Inspection Standard

文件编号: SH-G-WI01007 附件 1 版号:1.1

第2页 共7页

1. Scope:

The incoming inspection standards shall be applied to TFT-LCD Modules (hereinafter called "Modules") that supplied by Shanghai Tianma Micro-Electronics Corporation.

2. Incoming Inspection

The customer shall inspect the modules within twenty calendar days of the delivery date (the "inspection period") at its own cost. The result of the inspection (acceptance or rejection) shall be recorded in writing, and a copy of this writing will be promptly sent to the seller. If the results of the inspecting from buyer does not send to the seller within twenty calendar days of the delivery date. The modules shall be regards as acceptance.

Should the customer fail to notify the seller within the inspection period, the buyers right to reject the modules. Shall be lapsed and the modules shall be deemed to have been accepted by the buyer.

3. Inspection Sampling Method

- 3.1. Lot size: Quantity per shipment lot per model
- 3.2. Sampling type: Normal inspection, Single sampling
- 3.3. Inspection level: II
- 3.4. Sampling table: GB/T 2828.1, test level II
- 3.5. Acceptable quality level (AQL)
 - Major defect: AQL=0.65
 - Minor defect: AQL=1.00

4. Inspection Conditions

4.1 Ambient conditions:

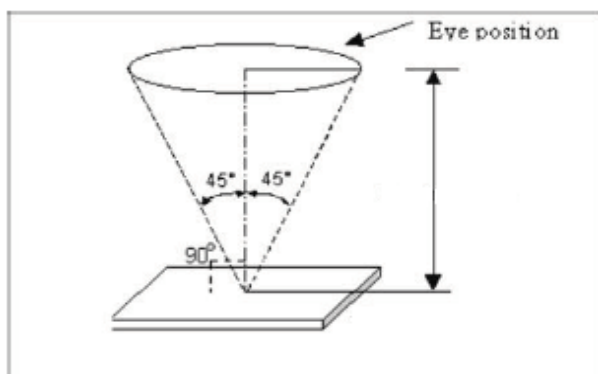
- a. Temperature: Room temperature $25\pm 5^{\circ}\text{C}$
- b. Humidity: $(55\pm 10)\%$ RH
- c. Illumination: Appearance 700 ± 100 Lux, Display 100 ± 50 Lux (The luminance at an inspection desk surface with single non-directive fluorescent lamp)

4.2 Viewing distance

The distance between the LCD and the inspector's eyes shall be at least 30 ± 5 cm.

4.3 Viewing Angle

U/D: $45^{\circ}/45^{\circ}$, L/R: $45^{\circ}/45^{\circ}$





Shanghai Tianma Micro-Electronics Corporation Standard
LCM Incoming Inspection Standard

文件编号: SH-G-WI01007 附件 1 版本号:1.1

第3页 共7页

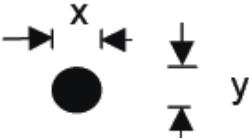
5. Inspection Criteria

Defects are classified as major defects and minor defects according to the degree of defectiveness defined herein.

5.1 Major defect

Item No	Items to be inspected	Inspection Standard
5.1.1	All functional defects	1) No display 2) Display abnormally 3) Short circuit 4) line defect
5.1.2	missing	Missing function component
5.1.3	Crack	Glass Crack

5.2 Minor defect

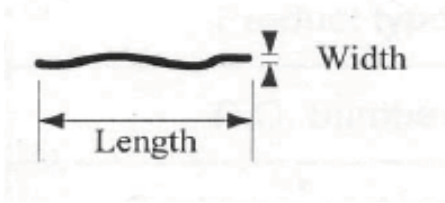
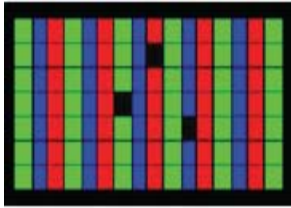
Item No	Items to be inspected	Inspection standard	
5.2.1	Spot Defect Including Black spot White spot Pinhole Foreign particle Polarizer dirt	For dark/white spot is defined $\varphi = (x + y) / 2$  <u>$\varphi > 0.25\text{mm}$ dots distance $\geq 5\text{mm}$</u>	
		Size $\varphi(\text{mm})$	Acceptable Quantity
		<u>$\varphi \leq 0.25$</u>	Ignore
		<u>$0.25 < \varphi \leq 0.50$</u>	3
		$0.50 < \varphi$	Not allowed



Shanghai Tianma Micro-Electronics Corporation Standard
LCM Incoming Inspection Standard

文件编号: SH-G-WI01007 附件 1 版本号:1.1

第4页 共7页

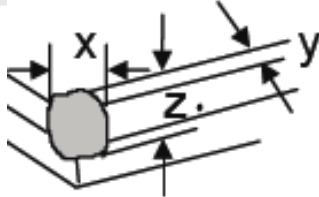
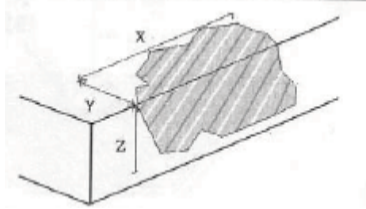
5.2.2	Line Defect Including Black line White line Scratch	Define: 	
		Line defect distance $\geq 5\text{mm}$	
		Width(mm) Length(mm)	Acceptable Quantity
		$W \leq 0.04$	Ignore
		$0.04 < W \leq 0.05$ $L \leq 5.0$	4
5.2.3	Polarizer Dent/Bubble	Size $\phi(\text{mm})$	Acceptable Quantity
		$\phi \leq 0.25$	Ignore
		$0.25 < \phi \leq 0.5$	3
		$0.5 < \phi$	0
5.2.4	Electrical Dot Defect	Bright and Black dot define:  and 	
		Item	Acceptable Quantity
		Black dot defect	5
		Bright dot defect	2
		Total Dot	5
		Distance between black dot	$> 5\text{mm}$
		Distance between black dot and bright dot	$> 5\text{mm}$
		Distance between bright dot	$> 15\text{mm}$



Shanghai Tianma Micro-Electronics Corporation Standard
LCM Incoming Inspection Standard

文件编号: SH-G-WI01007 附件 1 版号:1.1

第5页 共7页

5.2.5	Pol foreign particle	Size φ (mm)		Acceptable Quantity
	Cell foreign particle (发亮)	$\varphi \leq 0.20$		Ignore
		$0.20 < \varphi \leq 0.50$		3
		$0.50 < \varphi$		Not allowed
		$\Phi > 0.20\text{mm}$ dots distance $\geq 5\text{mm}$		
5.2.6	密集微小亮点	Definition of tiny bright dot: $\Phi < 0.1\text{mm}$		
		ND 2% judgment		
5.2.7	Mura	ND 2% judgment or limited sample control		
5.2.8	FPC	Broken	Not allowed	
		FPC kink、indentation、 顶伤	naked wire、hole is not allowed	
			Bend to acute angle is not allowed	
5.2.9	Glass defect	1. Corner Fragment: 		
		Size(mm)	Acceptable Quantity	
		$X \leq 3\text{mm}$ $Y \leq 3\text{mm}$ $Z \leq T$	Ignore T: Glass thickness X: Length Y: Width Z: thickness	
		2. Side Fragment: 		
		Size(mm)	Acceptable Quantity	



Shanghai Tianma Micro-Electronics Corporation Standard
LCM Incoming Inspection Standard

文件编号: SH-G-WI01007 附件 1 版号:1.1

第6页 共7页

		<u>$X \leq 6.0\text{mm}$</u> <u>$Y \leq 1.0\text{mm}$</u> <u>$Z \leq T$</u>	Ignore T: Glass thickness X: Length Y: Width Z: thickness
5.2.10	<u>Bezel</u>	<u>Dirt</u>	<u>No harm</u>
		<u>Wrap</u>	
		<u>Broken</u>	
		<u>凹陷</u>	<u>No dangerous</u>
5.2.11	<u>Inspection image</u>	<u>red、green、blue、black、white、color scale、PIC</u>	

Note: 1. Dot defect is defined as the defective area of the dot area is larger than 50% of the dot area.

2. Polarizer bubble is defined as the bubble appears on active display area. The defect of polarizer bubble shall be ignored if the polarizer bubble appears on the outside of active display area.

3. ND application method: the parallel vertical distance between ND and panel is 3~5cm, the distance of eyes look squarely to the panel is 30±5cm

4. Foreign particle on the surface of the LCM should be ignored.

6. Mechanics specification:

As for the outside dimension, weight of the modules, please refer to product specification for more details

7. Precaution

Please pay attention to the following items when you use the LCD Modules:

- 7-1 Do not twist or bend the module and prevent the unsuitable external force for display module during assembly.
- 7-2 Adopt measures for good heat radiation. Be sure to use the module with in the specified temperature.
- 7-3 Avoid dust or oil mist during assembly.
- 7-4 Following the correct power sequence while operating. Do not apply the invalid signal, otherwise, it will cause improper shut down and damage the module.
- 7-5 Less EMI: it will be more safety and less noise.
- 7-6 Please operate module in suitable temperature. The response time &



Shanghai Tianma Micro-Electronics Corporation Standard
LCM Incoming Inspection Standard

文件编号: SH-G-WI01007 附件 1 版本号:1.1

第7页 共7页

- brightness will drift by different temperature.
- 7-7 Avoid to display the fixed pattern (exclude the white pattern) in a long period, otherwise, it will cause image stains.
 - 7-8 Be sure to turn off the power when connection of disconnecting the circuit.
 - 7-9 Polarizer scratches easily, please handle it carefully.
 - 7-10 Display surface never likes dirt of stains.
 - 7-11 A dew drop may lead to destruction. Please wipe off and moisture before using module.
 - 7-12 Sudden temperature changes cause condensation, and it will cause polarizer damaged.
 - 7-13 High temperature and humidity may degrade performance. Please do not expose the module to the direct sunlight and so on.
 - 7-14 Acetic acid or chlorine compounds are not friends with TFT display module.
 - 7-15 Static electricity will damage the module; please do not touch the module without any grounded device.
 - 7-16 Do not disassemble and reassemble the module by self.
 - 7-17 Be careful do not touch the rear side directly.
 - 7-18 Not strong vibration or shock. It will cause module broken.
 - 7-19 Storage the modules in suitable environment with regular packing.
 - 7-20 Be careful or injury from a broken display module.
 - 7-21 Please avoid the pressure adding to the surface (front or rear side) of modules, because it will cause the display non-uniformity of other function issue.



环境管理物质成品展开表

The Ingredients List of Enviromental Management Substances

内部使用
Internal Used

保存部门	QS
保存期限	生产日期+15年
保存方式	电子档

天马产品型号 Tianma Part No.	TM070RDXG25-00	填写日期 Fill in Date:	2016-5-30
报告制作者 Report Maker:	卢婷	报告确认者 Report Approver:	崔苗苗
部门/职称 Dept./Title:	QS	部门/职称 Dept./Title:	QS
Tel:	021-61651888	Tel:	021-61651888
E-mail:	ting_lu@tianma.cn	E-mail:	miaomiao_cui@tianma.cn

序号 No.	原材料信息 Raw Material Information			子材料信息 Sub-Material Information			测试报告编号 Test Report No.	测试日期 Test Date (YY-MM-DD)	均质材料中有害物质含量—For RoHS 材料 (PPM) Hazardous Substances Concentration in Homogeneous Material						备注 Remark
	原材料料号 Raw Material Part No.	原材料名称 Raw Material Name	原材料供应商 Raw Material Supplier	子材料名称 Sub-Material Name	子材料供应商 Sub-Material Supplier	子材料型号/规格 Sub-Material Spec.			镉 (Cd)	铅 (Pb)	汞 (Hg)	六价铬 (Cr+6)	多溴联苯 (PBBs)	多溴联苯醚 (PBDEs)	
	1010001860	INDS-玻璃基板-XFGDX-34-1300x1100x0.7	郑州旭飞光电科技有限公司	DX-34G	旭飞	DX-34G	BZCF6J0A71790704a	2015-6-25	ND	ND	ND	ND	ND	ND	
	1057000800	CON-液晶-MJ131357	Merck	NA	Merck	NA	JP/2015/120541R1-1	2015-12-22	ND	ND	ND	ND	ND	ND	
	F1700E030	彩色滤光膜-F070RSG02C01-L1	上海仪电显示材料有限公司	Color Filter	INESA Display Materials Co.,LTD.	T07WVVRG01T6A	BZC3A5ZF44992704a	2015-11-6	ND	ND	ND	ND	ND	ND	
				AG TAC	DNP	DSAG25D	CE/2016/42450	2016-4-20	ND	ND	ND	ND	ND	ND	
				EWV-TAC	Fujifilm	WVEA318	KA/2016/11232	2016-1-26	ND	ND	ND	ND	ND	ND	
	1040009390	INDS-偏光片TOP-ET22AG25T5-TM070RDXH11-00-156.08x87.92x0.215mm	BENQ MATERIALS CORPORATION	PF	Fujimori	LBO-307	KA/2015/A0530A-01	2015-10-29	ND	ND	ND	ND	ND	ND	
				PSA	Saiden	PL-3643	KA/2015/A0007	2015-10-16	ND	ND	ND	ND	ND	ND	
				PVA	Kuraray	VF-PS	JP/2015/091552	2015-10-14	ND	ND	ND	ND	ND	ND	
				RF	MITSUBISHI	MRF	CE/2015/75234	2015-7-30	ND	ND	ND	ND	ND	ND	
				EWV-TAC	Fujifilm	WVEA318	KA/2016/11232	2016-1-26	ND	ND	ND	ND	ND	ND	

One step solution for LCD / PDP / OLED panel application: Datasheet, inventory and accessory! www.panelook.com

[illegible]

[illegible]

1560325860

1560325860

1560325860



上海天马微电子有限公司检测实验室
地址: 上海市浦东新区汇庆路 889 号
邮编: 201201 电话: 021-38661888

报告编号: ZL-QC-WT202005060034
文件编号: SH-R-P17 附件 1 Rev1.0

检测报告

客户名称: 工控 DQ 张永超

客户地址: 上海市浦东新区汇庆路 889 号

以下测试之样品及样品信息由申请者提供并确认:

产品类别 : LCM

样品型号 : TM070RDHG25-00

样品数量 : 24 Pcs

接收日期 : 2020/5/10

检测日期 : 2020/5/13-2020/5/29

检测要求 : 见 Page 3 检测项目一览

其他特殊要求: 无

测试判定依据: PDTM-QS6006 通用工控可靠性不良现象判定标准

检测结果 : PASS, 详见后续页面。

批准:

方军, 授权签字人

日期: 2020/6/2

声明:

1. 检测报告无批准人签字、“检测专用章”无效;
2. 样品及样品信息由申请人提供, 申请者应对其真实性负责, 本实验室未核实其真实性;
3. 本报告检测结果仅对申请方的送测样品负责;
4. 当客户提供的信息影响检测结果的, 实验室概不负责;
5. 未经本实验室确认, 不得部分复制本报告。



上海天马微电子有限公司检测实验室
地址: 上海市浦东新区汇庆路 889 号
邮编: 201201 电话: 021-38661888

报告编号: ZL-QC-WT202005060034
文件编号: SH-R-P17 附件 1 Rev1.0

1 样品信息:

样品编号和 ID 编码

客户方不做要求

样品检测前照片

样品整体照片





上海天马微电子有限公司检测实验室
地址: 上海市浦东新区汇庆路 889 号
邮编: 201201 电话: 021-38661888

报告编号: ZL-QC-WT202005060034
文件编号: SH-R-P17 附件 1 Rev1.0

2 检测项目一览:

可靠性检测项目

分组	序号	检测项目	检测样品	检测结果
/	1	低温工作	1~6	PASS
/	2	高温工作	7~12	PASS
/	3	恒定湿热储存	13~18	PASS
/	4	冷热冲击储存	19~24	PASS



上海天马微电子有限公司检测实验室
地址: 上海市浦东新区汇庆路 889 号
邮编: 201201 电话: 021-38661888

报告编号: ZL-QC-WT202005060034
文件编号: SH-R-P17 附件 1 Rev1.0

3 检测项目:

低温工作试验

分组: /

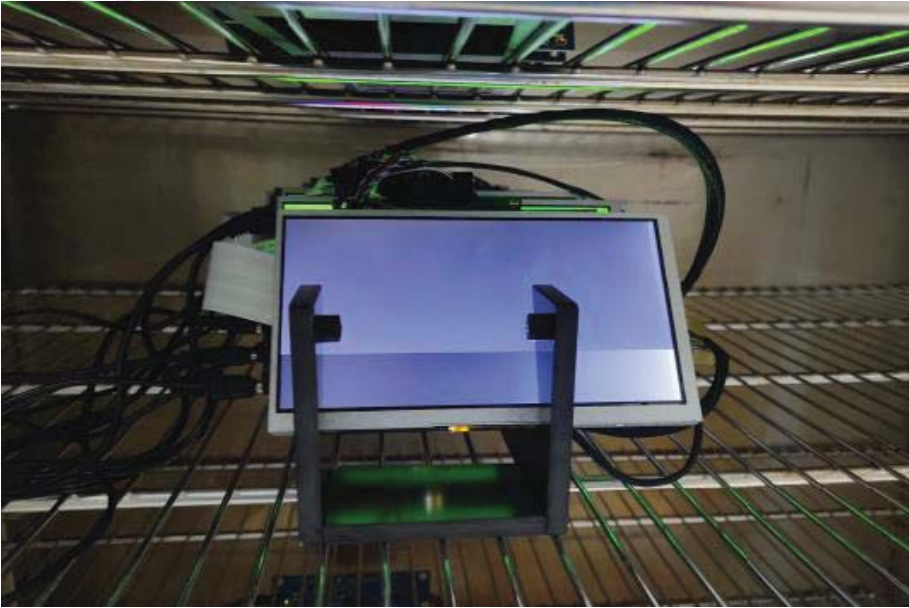
实验室检测环境

环境温度	环境湿度
23.8℃	42.1%RH

检测标准

测试标准
GB/T 2423.1-2008 试验 Ab

检测条件

检测条件	-20℃ 240H
架设图	



上海天马微电子有限公司检测实验室
地址: 上海市浦东新区汇庆路 889 号
邮编: 201201 电话: 021-38661888

报告编号: ZL-QC-WT202005060034
文件编号: SH-R-P17 附件 1 Rev1.0

检测结果

样品编号	检测结果
1	OK
2	OK
3	OK
4	OK
5	OK
6 Ref	OK

样品检测后照片

测试后不良照片
NA



上海天马微电子有限公司检测实验室
地址: 上海市浦东新区汇庆路 889 号
邮编: 201201 电话: 021-38661888

报告编号: ZL-QC-WT202005060034
文件编号: SH-R-P17 附件 1 Rev1.0

高温工作试验

分组: /

实验室检测环境

环境温度	环境湿度
23.8℃	42.1%RH

检测标准

测试标准
GB/T 2423.2-2008 试验 Bb

检测条件

检测条件	70℃ 240H
架设图	



上海天马微电子有限公司检测实验室
地址: 上海市浦东新区汇庆路 889 号
邮编: 201201 电话: 021-38661888

报告编号: ZL-QC-WT202005060034
文件编号: SH-R-P17 附件 1 Rev1.0

检测结果

样品编号	检测结果
7	OK
8	OK
9	OK
10	OK
11	OK
12 Ref	OK

样品检测后照片

测试后不良照片
NA



上海天马微电子有限公司检测实验室
地址: 上海市浦东新区汇庆路 889 号
邮编: 201201 电话: 021-38661888

报告编号: ZL-QC-WT202005060034
文件编号: SH-R-P17 附件 1 Rev1.0

恒定湿热储存试验

分组: /

实验室检测环境

环境温度	环境湿度
23.8℃	42.1%RH

检测标准

测试标准
GB/T 2423.3-2016

检测条件

检测条件	60℃ 90%RH 240H
架设图	



上海天马微电子有限公司检测实验室
地址: 上海市浦东新区汇庆路 889 号
邮编: 201201 电话: 021-38661888

报告编号: ZL-QC-WT202005060034
文件编号: SH-R-P17 附件 1 Rev1.0

检测结果

样品编号	检测结果
13	OK
14	OK
15	OK
16	OK
17	OK
18 Ref	OK

样品检测后照片

测试后不良照片
NA

冷热冲击储存试验

分组: /

实验室检测环境

环境温度	环境湿度
------	------



上海天马微电子有限公司检测实验室
地址: 上海市浦东新区汇庆路 889 号
邮编: 201201 电话: 021-38661888

报告编号: ZL-QC-WT202005060034
文件编号: SH-R-P17 附件 1 Rev1.0

23.8℃	42.1%RH
-------	---------

检测标准

测试标准
GB/T 2423.22-2012 试验 Na

检测条件

检测条件	-30℃/30min~80℃/30min.100cycle
架设图	

检测结果

样品编号	检测结果
19	OK
20	OK
21	OK



上海天马微电子有限公司检测实验室
地址: 上海市浦东新区汇庆路 889 号
邮编: 201201 电话: 021-38661888

报告编号: ZL-QC-WT202005060034
文件编号: SH-R-P17 附件 1 Rev1.0

22	OK
23	OK
24 Ref	OK

样品检测后照片

测试后不良照片
NA

4 检测设备信息:

测试项目	设备名称	编号	校准有效期
低温工作	高低温湿热交变试验箱	THB-19	2020/8/18
高温工作	高低温湿热交变试验箱	THB-12/08	2020/8/20



上海天马微电子有限公司检测实验室
地址: 上海市浦东新区汇庆路 889 号
邮编: 201201 电话: 021-38661888

报告编号: ZL-QC-WT202005060034
文件编号: SH-R-P17 附件 1 Rev1.0

			2020/8/15
恒定湿热储存	高低温湿热交变试验箱	THB-11	2020/8/18
冷热冲击储存	冷热冲击试验箱	TST-03	2020/8/20

以下空白