Shenzhen Leadtek Electronics Co.,Ltd

PRODUCT SPECIFICATION

TFT-LCD HDMI MODULE

Module No：LTK156FTVCT30-V0

☑ Preliminary Specification

☐ Approval Specification

Designed by	Checked by	Approved by
		

Final Approval by Customer

Approved by	Comment
	Distributed by: TEXIM EUROPE www.texim-europe.com

※The specification of “TBD” should refer to the measured value of sample . If there is difference between the design specification and measured value, we naturally shall negotiate and agree to solution with customer.

1. Document Revision History

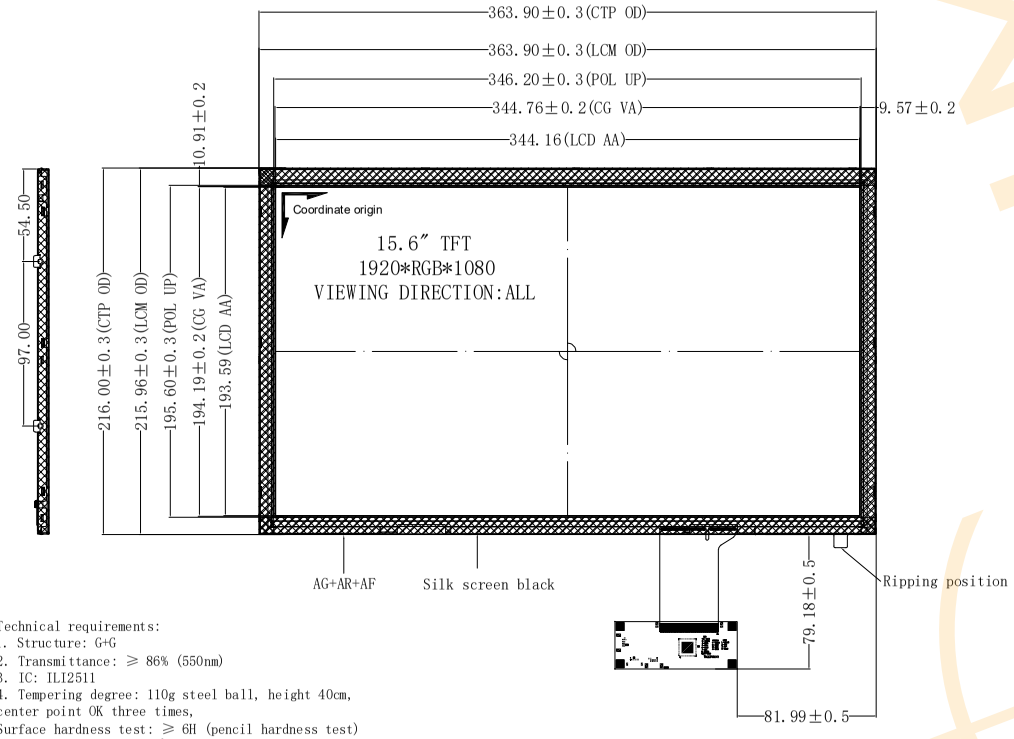
Version	Contents	Date	Note
V0	Initial version	2026.04.01	

2.GENERAL INFORMATION

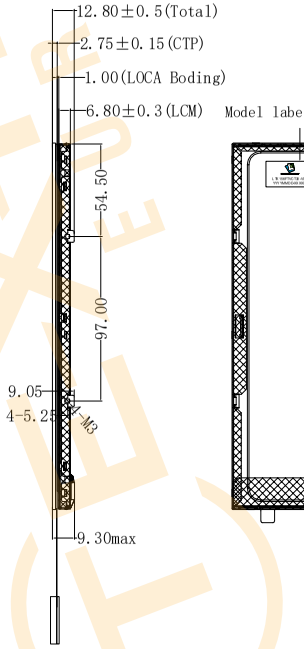
N0	Item	Specification	Unit	Remark
1	LCD Size	TFT"15.6	inch	-
2	Panel Type	IPS	-	-
3	Display Resolution	1920 (H) x1080(V)	pixel	-
4	Display mode	Normally Black	-	-
5	Display colors	16.7M	-	-
6	Viewing Direction	ALL	-	-
7	CTP+LCM Module Size	363.90(H) x215.96(V) x12.80(T)	mm	Note
8	Active Area	344.16 (H) x193.59 (V)	mm	Note
9	Pixel Pitch	179.25(H) x179.25(V)	mm	-
10	Weight	-	g	-
11	Driver IC	-	bit	-
12	Light Source	White LED	-	-
13	Interface	LVDS (2 ch, 8-bit)	-	-

3.Mechanical Drawing

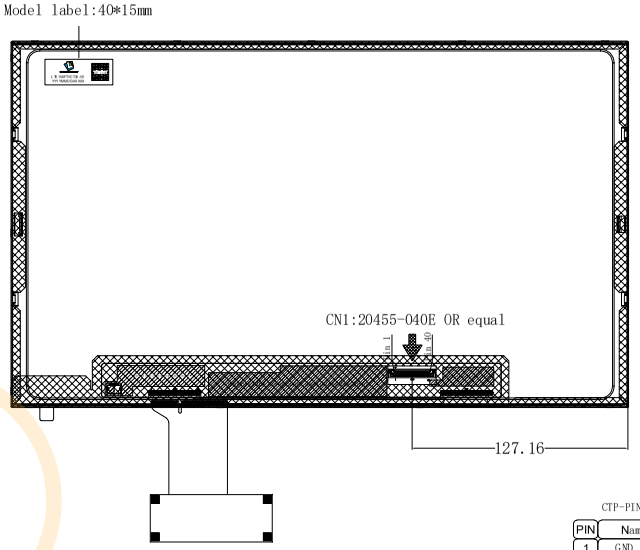
Front View



Side View



Back View



PIN DESCRIPTION

1	RE0P
2	RE0N
3	RECLKP
4	RECLKN
5	RE2P
6	RE2N
7	GND
8	RE1P
9	RE1N
10	RE0P
11	RE0N
12	RO3P
13	RO3N
14	GND
15	ROCLKP
16	ROCLKN
17	GND
18	RO2P
19	RO2N
20	RO1P
21	RO1N
22	RO0P
23	RO0N
24	GND
25	NC
26	NC
27	NC
28	LED_VCC
29	LED_VCC
30	LED_VCC
31	LED_PWM
32	LED_EN
33	GND
34	SDAYB
35	SCLYB
36	GND
37	VCC_POWER
38	VCC_POWER
39	BL_POWER
40	BL_POWER

CTP-PIN

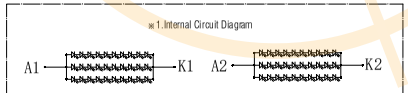
PIN	Name
1	GND
2	GND
3	VDDIN
4	SDA
5	SCL
6	GND
7	INT
8	RSTB
9	GND
10	GND

Technical requirements:
1. Structure: G+G
2. Transmittance: ⩾ 86% (550nm)
3. IC: ILI2511
4. Tempering degree: 110g steel ball, height 40cm, center point OK three times, Surface hardness test: ⩾ 6H (pencil hardness test)
5. OPERATING TEMP:-30℃~85℃
   STORAGE TEMP:-30℃~85℃

All materials comply with ROHS

Notes:
1. Display : 15.6″, TFT
2. Resolution: 1920xRGBx1080
3. LCD Viewing Direction: All
5. Display Mode: Normally Black
6. LCM+CTP Brightness: 700cd/㎡(TYP)
7. unmark Tolerance:±0.2
8. OPERATING TEMP: -30° C~+85° C
9. STORAGE TEMP: -30° C~+85° C
10. Requirements on Environmental Protection: ROHS
11. Critical Dimensions Under Strict Control: “*”
12. POL uses circular polarizing films

※1.Internal Circuit Diagram



REV	DESCRIPTION	DATE	NAME
3			
2			
1			
0	NEW	2026.04.01	Kevin

Shenzhen Leadtek Electronics Co.,Ltd

SCALE:1/1	UNIT:mm	PAGE:1/1	Approve	Check	Drawn
Part No:	LTK156FTVCT30	VER:V0	Jams	Joan	Kevin
Customer No:					

4.0 INTERFACE CONNECTION

4.0.1 Electrical Interface Connection.

CN1:Connector is used for the module electronics interface .
The electronics interface connector is LV03040-13100.
The connector interface pin assignments are listed in Table 2.

Pin Assignments for the Interface Connector>

No.	Symbol		No.	Symbol	
1	RE3P	Positive LVDS differential data input Channel E3(Even)	21	RO1N	Negative LVDS differential data inp ut Channel O1(Odd)
2	RE3N	Negative LVDS differential data input Channel E3(Even)	22	RO0P	Positive LVDS differential data inpu t Channel O0(Odd)
3	RECLKP	Positive LVDS differential clock input (Even)	23	RO0N	Negative LVDS differential data inp ut Channel O0(Odd)
4	RECLKN	Negative LVDS differential clock input (Even)	24	GND	LCD Ground
5	RE2P	Positive LVDS differential data input C hannel E2(Even)	25	NC	SDA for BOE use, this pin should be open
6	RE2N	Negative LVDS differential data input Channel E2(Even)	26	NC	SCL for BOE use, this pin should be open
7	GND	LCD Ground	27	NC	MTP for BOE use, this pin should be open
8	RE1P	Positive LVDS differential data input C hannel E1(Even)	28	LCD_VCC	LCD Power 3.3V
9	RE1N	Negative LVDS differential data input Channel E1(Even)	29	LCD_VCC	LCD Power 3.3V
10	RE0P	Positive LVDS differential data input C hannel E0(Even)	30	LCD_VCC	LCD Power 3.3V
11	RE0N	Negative LVDS differential data input Channel E0(Even)	31	LED_PW M	Backlight Adjust，3.3V(3V~3.6V)
12	RO3P	Positive LVDS differential data input C hannel O3(Odd)	32	LED_EN	Enable pin，3.3V(3V~3.6V)
13	RO3N	Negative LVDS differential data input Channel O3(Odd)	33	GND	Ground
14	GND	LCD Ground	34	STBYB	Deep standby mode setting pin.
15	ROCLKP	Positive LVDS differential clock input (Odd)	35	RSTB	Device Reset for LCD driver IC, Low active
16	ROCLKN	Negative LVDS differential clock input (Odd)	36	GND	Ground
17	GND	LCD Ground	37	BL_POWE R	+12V Vi power supply
18	RO2P	Positive LVDS differential data input C hannel O2(Odd)	38	BL_POWE R	+12V Vi power supply
19	RO2N	Negative LVDS differential data input Channel O2(Odd)	39	BL_POWE R	+12V Vi power supply
20	RO1P	Positive LVDS differential data input C hannel O1(Odd)	40	BL_POWE R	+12V Vi power supply

CN2:Connector is used for the module electronics interface .
The electronics interface connector is 40-6000091-06.
The connector interface pin assignments are listed in Table 3.

<Table 6. Pin Assignments for the Interface Connector>

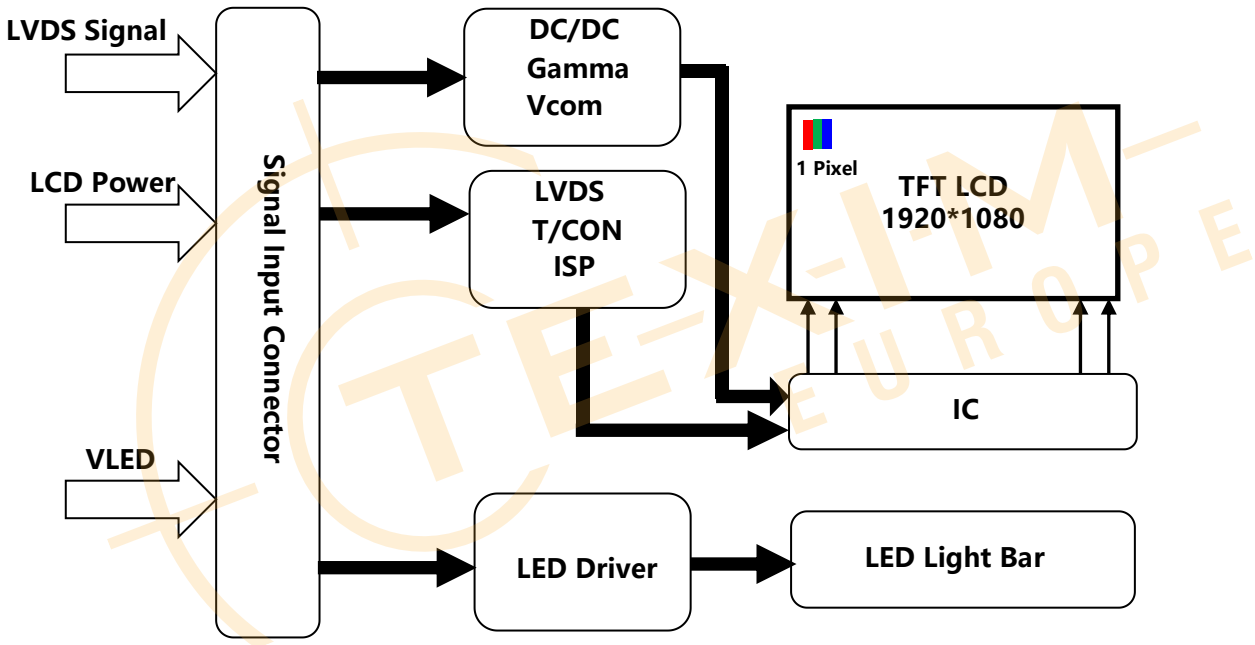
Pin	Symbol	Description	Remark
1	VOUT A	Convertor power output A	
2	VOUT A	Convertor power output A	
3	VOUT B	Convertor power output B	
4	VOUT B	Convertor power output B	
5	NC	No Connection	
6	NC	No Connection	
7	LED A	Convertor current output channel A	
8	LED A	Convertor current output channel A	
9	LED B	Convertor current output channel B	
10	LED B	Convertor current output channel B	

5. GENERAL DESCRIPTION

LTK156FTVCT30-V0 is a color active matrix TFT LCD module using amorphous silicon TFT's (Thin FilmTransistors) as an active switching devices. This module has a 15.6 inch diagonally measured active area with resolutions (1920 horizontal by 1080 vertical pixel array). Each pixel is divided into RED,GREEN,BLUE dots which are arranged in vertical stripe and this module can display TBD colors and color gamut 70%(NTSC).

The TFT-LCD panel used for this module is a low reflection and higher color type. Therefore, this module is suitable for Notebook PC.

All input signals are LVDS interface compatible.



6.0 ELECTRICAL SPECIFICATIONS

6.1 TFT LCD Module

LCD Module Electrical Specifications > [Ta =25±2 ℃]

Parameter			Min.	Typ.	Max.	Unit	Remarks
Power Supply Voltage		V_{DD}	3.0	3.3	3.4	V	Note 1
Power Supply Inrush Current		Inrush	-	-	3	A	Note2
Power Supply Current	RGB	I_{DD}	-	250	320	mA	Note 1
Power Consumption	RGB	P_{RGB}	-	0.825	1.088	W	

Notes :

1. The supply voltage is measured and specified at the interface connector of LCM.
   The current draw and power consumption specified is for 3.3V at 25 ℃.

Figure 1. Power Measure Patterns

2. Calculated value for reference (V_{LED} * I_{LED})
3. Measure condition (Figure 4)

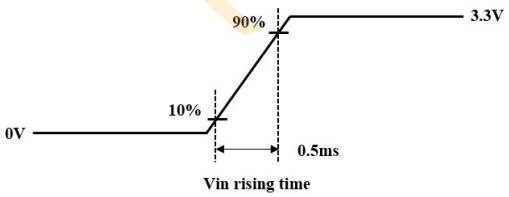


Figure 2. Inrush Measure Condition

4. Input voltage range:3.0~3.4V.Test condition: Oscilloscope bandwidth 20MHz, AC coupling

7.0 LED CONVERTER SPECIFICATION.

< Table 4. LED Driving Guideline Specifications > Ta=25+/- 2°C

Parameter			Min.	Typ.	Max.	Unit	Remarks
LED Power Input Voltage		VLED	7	12	12	V	
LED Power Input Current		I_{LED}	-	1058	-	mA	Note 1
LED Power Consumption		P_{LED}	-	12.7	-	W	
Power Supply Voltage for LED Driver Inrush		Iled inrush	-	-	3	A	
EN Control Level	Backlight On	VBL_EN	2.5	-	5.0	V	
	Backlight Off		0	-	0.5	V	
PWM Control Level	High Level	VBL_PWM	2.5	-	5.0	V	
	Low Level		0	-	0.5	V	
PWM Control Frequency		F_{PWM}	200	-	2,000	Hz	
Duty Ratio		-	5	-	100	%	
Life Time		-	-	30000	-	Hr.	

Notes :
1. Power supply voltage12V for LED driver.

7.0.1 Data Input Format

Figure 3. Pixel Format

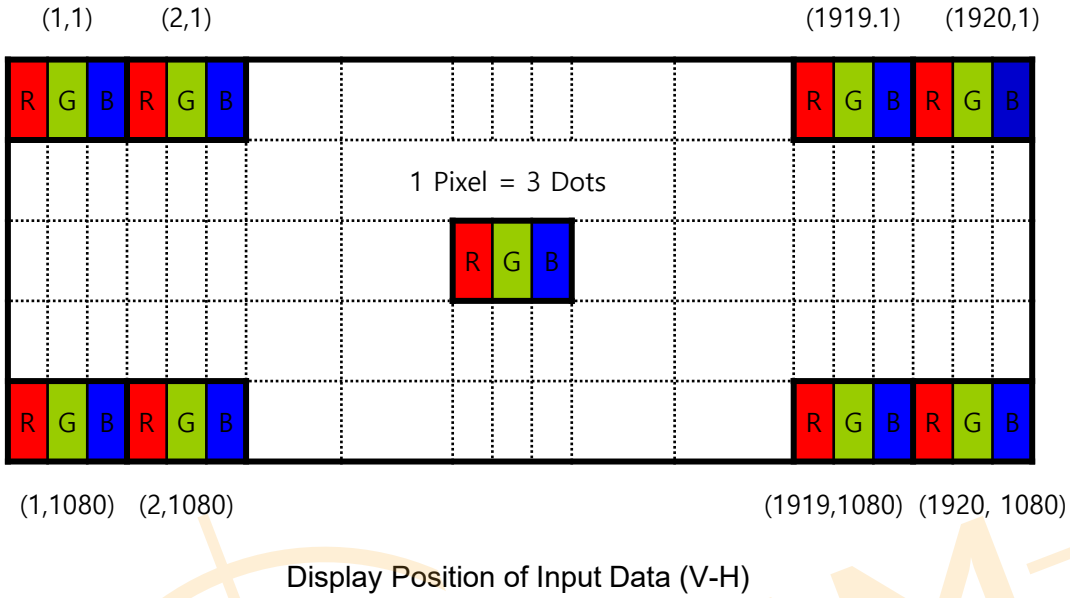
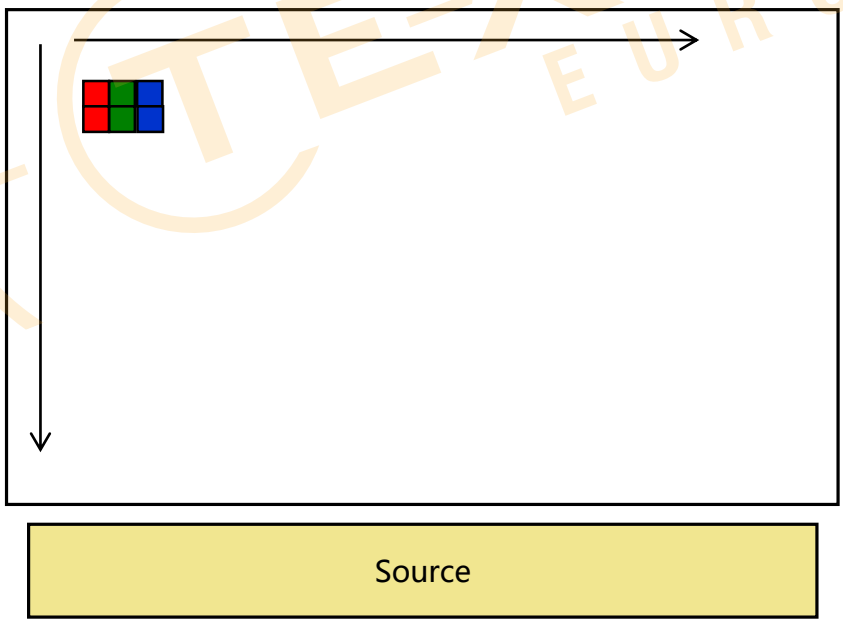


Figure 4. Scan direction



8.0 SIGNAL TIMING SPECIFICATION

8.1 LVDS DATA MAPPING TABLE

LVDS Channel O0	LVDS output	D7	D6	D4	D3	D2	D1	D0
	Data order	OG0	OR5	OR4	OR3	OR2	OR1	OR0
LVDS Channel O1	LVDS output	D18	D15	D14	D13	D12	D9	D8
	Data order	OB1	OB0	OG5	OG4	OG3	OG2	OG1
LVDS Channel O2	LVDS output	D26	D25	D24	D22	D21	D20	D19
	Data order	DE	NA	NA	OB5	OB4	OB3	OB2
LVDS Channel O3	LVDS output	D23	D17	D16	D11	D10	D5	D27
	Data order	NA	OB7	OB6	OG7	OG6	OR7	OR6
LVDS Channel E0	LVDS output	D7	D6	D4	D3	D2	D1	D0
	Data order	EG0	ER5	ER4	ER3	ER2	ER1	ER0
LVDS Channel E1	LVDS output	D18	D15	D14	D13	D12	D9	D8
	Data order	EB1	EB0	EG5	EG4	EG3	EG2	EG1
LVDS Channel E2	LVDS output	D26	D25	D24	D22	D21	D20	D19
	Data order	DE	NA	NA	EB5	EB4	EB3	EB2
LVDS Channel E3	LVDS output	D23	D17	D16	D11	D10	D5	D27
	Data order	NA	EB7	EB6	EG7	EG6	ER7	ER6

8.2 COLOR DATA INPUT ASSIGNMENT

The brightness of each primary color (red, green and blue) is based on the 8-bit gray scale data input for the color. The higher the binary input, the brighter the color. The table below provides the assignment of color versus data input.

Color		Data Signal																							
		Red								Green								Blue							
		R7	R6	R5	R4	R3	R2	R1	R0	G7	G6	G5	G4	G3	G2	G1	G0	B7	B6	B5	B4	B3	B2	B1	B0
Basic Colors	Black	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Green	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
	Blue	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
	Cyan	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Magenta	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
	Yellow	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
	White	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Gray Scale Of Red	Red(0) / Dark	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red(1)	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red(2)	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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	Red(253)	1	1	1	1	1	1	0	1	0	0	0	:0	0	0	0	0	0	0	0	0	0	0	0	:0
	Red(254)	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red(255)	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gray Scale Of Green	Green(0) / Dark	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Green(1)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
	Green(2)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
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	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	Green(253)	0	0	0	0	0	0	0	0	1	1	1	1	1	1	0	1	0	0	0	0	0	0	0	0
	Green(254)	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0
	Green(255)	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
Gray Scale Of Blue	Blue(0) / Dark	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Blue(1)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	Blue(2)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
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	Blue(253)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	0	1
	Blue(254)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0
	Blue(255)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1

Note (1) 0: Low Level Voltage, 1: High Level Voltage

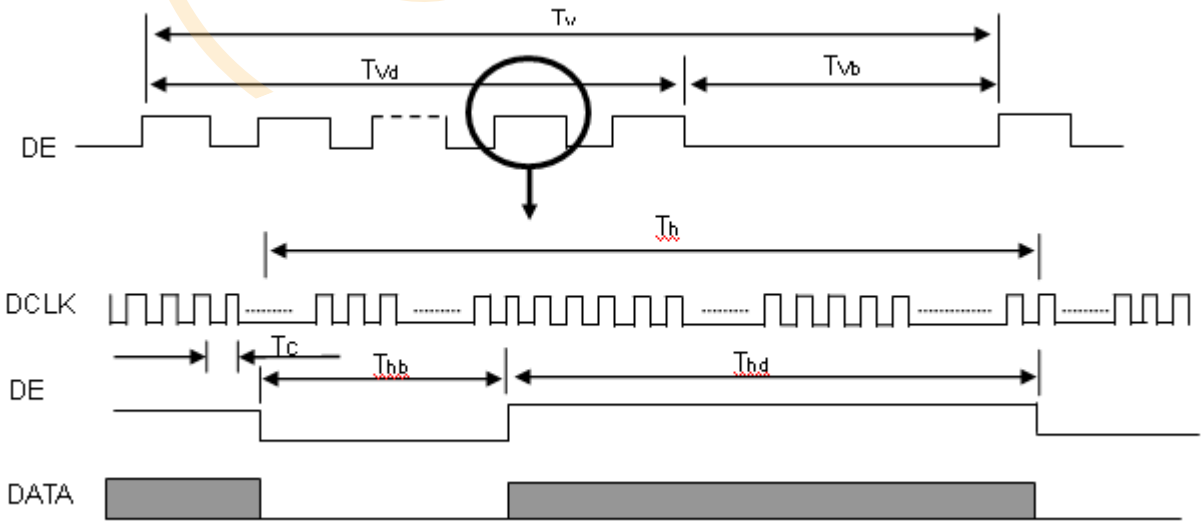
9.DISPLAY TIMING SPECIFICATIONS

The input signal timing specifications are shown as the following table and timing diagram.

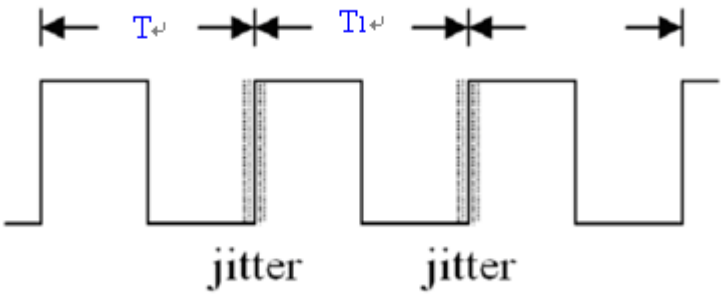
Signal	Item	Symbol	Min.	Typ.	Max.	Unit	Note
LVDS Clock	Frequency	Fc	60	72	87.5	MHz	-
	Period	Tc	-	13.89	-	ns	
	Input cycle to cycle jitter	T_{rcl}	-	-	200	ns	(1)
	Spread spectrum modulation range	Fclkin_mod	Fc*98%	-	Fc*102%	MHz	(2)
	Spread spectrum modulation frequency	F_{SSM}	-	-	200	KHz	
Vertical Display Term	Frame Rate	Fr	50	60	75	Hz	-
	Total	Tv	1090	1100	1160	T_{H_TOTAL}	Tv=Tvd+Tvb
	Active Display	Tvd	-	1080	-	T_{H_TOTAL}	-
	Blank	Tvb	10	20	80	T_{H_TOTAL}	-
Horizontal Display Term	Total	Th	1000	1088	1120	DClk	Th=Thd+Thb
	Active Display	Thd	-	960	-	DClk	-
	Blank	Thb	40	128	160	DClk	-

Note: Because this module is operated by DE only mode, Hsync and Vsync input signals are ignored.

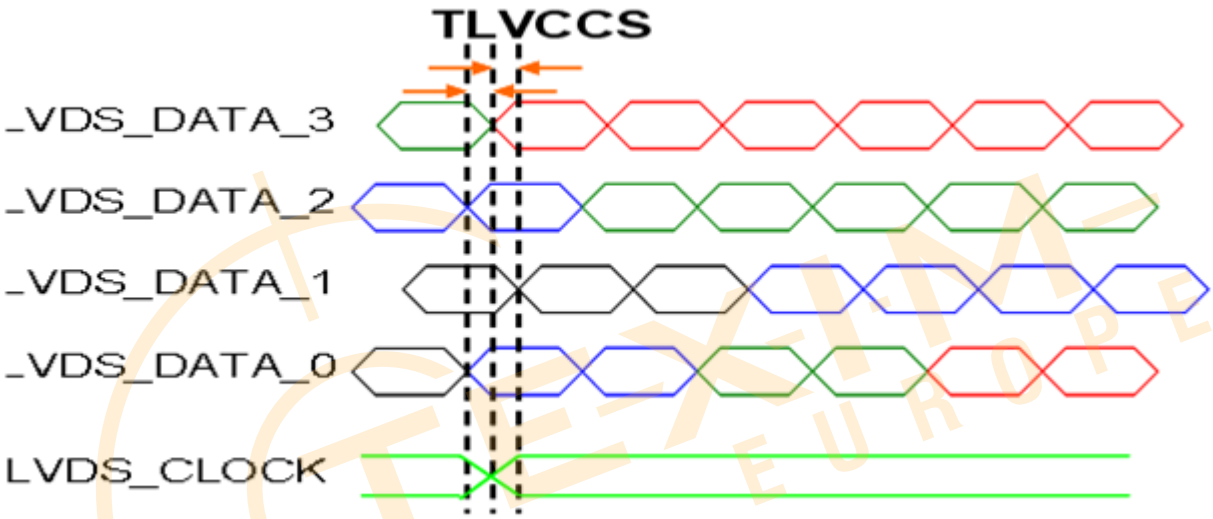
INPUT SIGNAL TIMING DIAGRAM



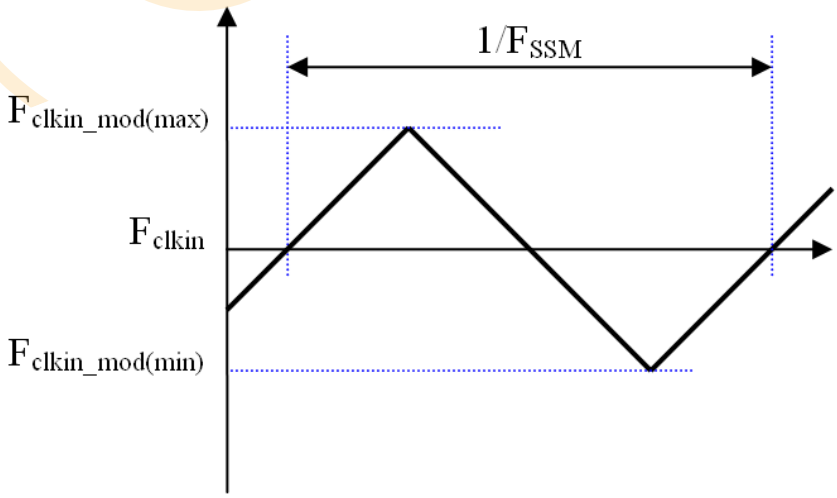
Note (1) The input clock cycle-to-cycle jitter is defined as below figures. Trcl = I T_1 – TI



Note (2) Input Clock to data skew is defined as below figures.

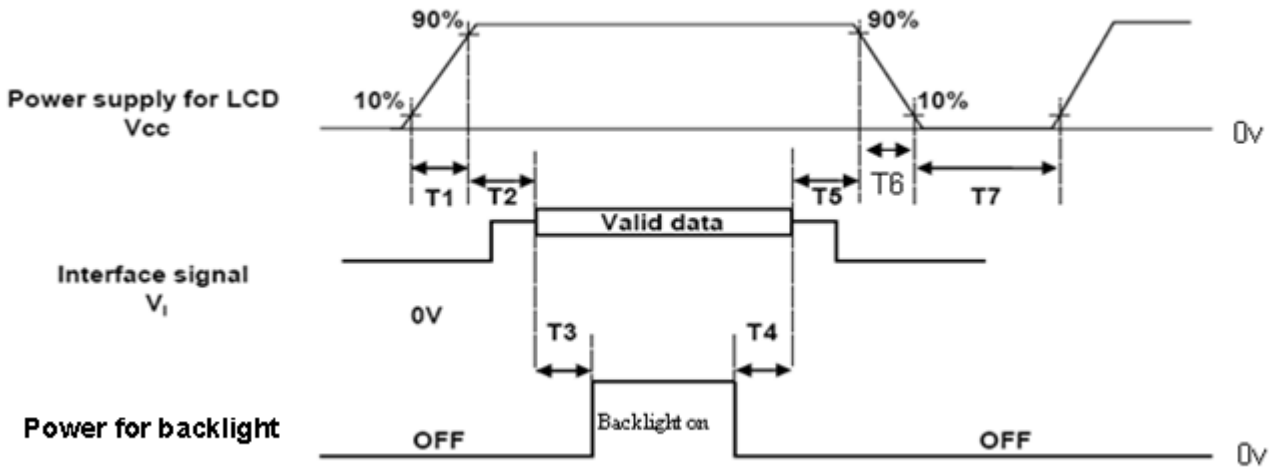


Note (3) The SSCG (Spread spectrum clock generator) is defined as below figures.



10. POWER SEQUENCE

The power sequence specifications are shown as the following table and diagram.



Timing Specifications:

Parameters	Values			Units
	Min	Typ.	Max	
T1	0.1	-	10	ms
T2	0	30	50	ms
T3	200	250	-	ms
T4	100	250	-	ms
T5	0	20	50	ms
T6	0.1	-	10	ms
T7	1000	-	-	ms

Note (1) The supply voltage of the external system for the module input should be the same as the definition of Vcc.

Note (2) When the backlight turns on before the LCD operation of the LCD turns off, the display may momentarily become abnormal screen.

Note (3) In case of VCC = off level, please keep the level of input signals on the low or keep a high impedance.

Note (4) T4 should be measured after the module has been fully discharged between power off and on period.

Note (5) Interface signal shall not be kept at high impedance when the power is on.

Note (6) **CMI** won't take any responsibility for the products which are damaged by the customers not following the Power Sequence.

Note (7) There might be slight electronic noise when LCD is turned off (even backlight unit is also off). To avoid this symptom, we suggest "Vcc falling timing" to follow "t6 spec".

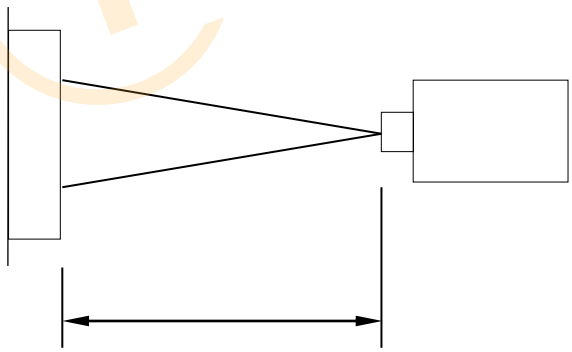
11. OPTICAL SPECIFICATION

(Transmittance, contrast ratio, response time, viewing angle results are using MDT LC + Zero tac Polarizer + Corresponding Backlight, reference only) Ambient condition：25 ± 2°C，60 ±10% RH，under 10 Lunx in the darkroom.

The backlight should be operating for 30 minutes before measurement

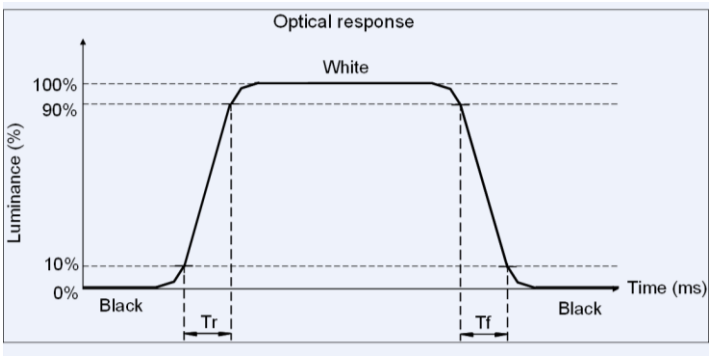
ITEM		SYMBOL		CONDITION	MIN.	TYP.	MAX.	UNIT	REMARK
Contrast Ratio		CR			1000	1500	---	--	Note 2
CTP+LCM Luminance of white		Y_L			700			cd/m^2	
Response Time		Tr+Tf		$\theta = \phi = 0°$	---	25	35	ms	Note 3
Viewing Angle	Vertical	U	---	CR≧10	80	85	---	degree	Note 4
		D	---		80	85	---	degree	
	Horizontal	L	---		80	85	---	degree	
		R	---		80	85	---	degree	
Color Filter Chromacicity (CIE 1931)	W	x		$\theta = \phi = 0°$	- 0.03	(0.291)	+ 0.03	--	Note 5 Based on CF C-light
		y				(0.337)		--	
	R	x				(0.638)		--	
		y				(0.348)		--	
	G	x				(0.278)		--	
		y				(0.634)		--	
	B	x				(0.149)		--	
		y				(0.082)		--	
	NTSC				65	70	---	%	Note 6 Based on MDT BLU
Flicker						-30	-25	dB	Note 7
Crosstalk						2	3	%	

Note 1. Measure device：BM-7A



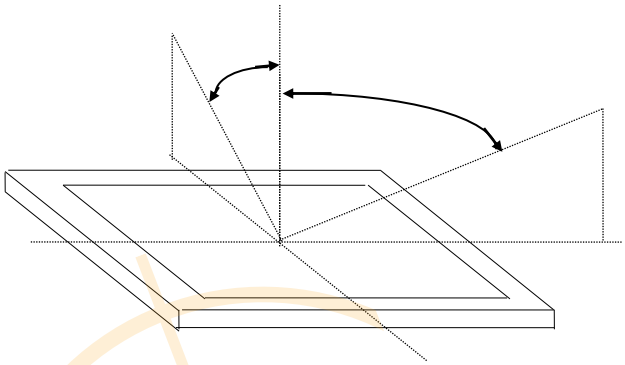
Note 2. Definition of Contrast Ratio：
CR = White Luminance (ON) / Black Luminance (OFF)

Note 3. Definition of response time：The response time is defined as the time interval between the 10% and 90% amplitudes.



Flicker

Note 4. Definition of view angle(θ，ϕ)：



Note 5. (a) CF Glass light source: C light.
(b) Chromaticity & NTSC spec is for reference. (Different polarizer & backlight will both affect the MODULE chromaticity.)

Note 6. (a) MDT BLU : Silicate LED
(b) NTSC spec were measurement on MDT BLU, reference only. (MODULE chromaticity will change by polarizer & backlight which material or vendor selected.)

Note 7. Base on HX8187 under column inversion and apply OTP process with below pattern.[Measure device: DMS (FPM-505R)

Flicker　　1/2 Crosstalk　　1/3 Crosstalk

12. Reliability test items

No.	Test Item	Test Condition	Notes
1	High Temp. Storage	+85°C / 48H	1. Functional test isOK. Missing Segment,short, unclear segment non-display,display abnormally and liquid crystal leakare un-allowed. 2. No low temperature bubbles,end seal loose andfall, frame rainbow.
2	Low Temp. Storage	-30°C / 48H	
3	High Tempe. Operating	+85°C / 48H	
4	Low Tempe. Operating	-30°C / 48H	
5	High Temperature /Humidity storage	50°C x 90%RH /48H	
6	Thermal and cold shock	Static state，-20℃（30min）~60℃（30min），50 cycles	
7	Electro-static discharge test (non-operating)	Air : 150 pF, 330Ω, 8 KV Contact : 150 pF, 330Ω, 4 KV	

13.0 General Precaution

13.1 Use Restriction

This product is not authorized for use in life supporting systems, aircraft navigation control systems, military systems and any other application where performance failure could be life-threatening or otherwise catastrophic.

13.2 Asembly Precaytton

1、Please use the mounting hole on the module side in installing and do not bending or wrenching LCD in assembling. And please do not drop, bend or twist LCD module in handling.

2、Please design display housing in accordance with the following guide lines.

3、Housing case must be destined carefully so as not to put stresses on LCD all sides and not to wrench module. The stresses may cause non-uniformity even if there is no non-uniformity statically.

4、Keep sufficient clearance between LCD module back surface and housing when the LCD module is mounted. The clearance in the design is recommended taking into account the tolerance of LCD module thickness and mounting structure height on the housing.

5、 Please do not push or scratch LCD panel surface with any-thing hard. And do not soil LCD panel surface by touching with bare hands. (Polarizer film, surface of LCD panel is easy to be flawed.)

6、Please do not press any parts on the rear side such as source IC, gate IC, and FPC during handling LCD module. If pressing rear part is unavoidable, handle the LCD module with care not to damage them.

7、Please wipe out LCD panel surface with absorbent cotton or soft cloth in case of it being soiled.

8、 Please wipe out drops of adhesives like saliva and water on LCD panel surface immediately. They might damage to cause panel surface variation and color change.

9、Please do not take a LCD module to pieces and reconstruct it. Resolving and reconstructing modules may cause them not to work well.

13.3 Disassembling or Modification

Do not disassemble or modify the module. It may damage sensitive parts inside LCD module, and may cause scratches or dust on the display. Leadtek does not warrant the module, if customers disassemble or modify the module.

13.4 Breakage of LCD Panel

1 、If LCD panel is broken and liquid crystal spills out, do not ingest or inhale liquid crystal, and do not contact liquid crystal with skin.

2、 If liquid crystal contacts mouth or eyes, rinse out with water immediately.

3、 If liquid crystal contacts skin or cloths, wash it off immediately with alcohol and rinse thoroughly with water.

4、 Handle carefully with chips of glass that may cause injury, when the glass is broken.

13.5 Absolute Maximum Ratings and Power Protection Circuit

1、Do not exceed the absolute maximum rating values, such as the supply voltage variation, input voltage variation, variation in parts' parameters, environmental temperature, etc., otherwise LCD module may be damaged.

2、 Please do not leave LCD module in the environment of high humidity and high temperature for a long time.

3、 It's recommended employing protection circuit for power supply.

11.6 Operation

1、Do not touch, push or rub the polarizer with anything harder than HB pencil lead.Use fingerstalls of soft gloves in order to keep clean display quality, when persons handle the LCD module for incoming inspection or assembly.

2、 When the surface is dusty, please wipe gently with absorbent cotton or other soft material.

3、Wipe off saliva or water drops as soon as possible. If saliva or water drops contact with polarizer for a long time, they may causes deformation or color fading.

4、When cleaning the adhesives, please use absorbent cotton wetted with a little petroleum benzine or other adequate solvent.

13.6 Static Electricity

1、Protection film must remove very slowly from the surface of LCD module to prevent from electrostatic occurrence.

2、 Because LCD module uses CMOS-IC on TFT-LCD panel, it is very weak to electrostatic discharge. Please be careful with electrostatic discharge.

3、Persons who handle the module should be grounded through adequate methods.

13.7 Disposal

When disposing LCD module, obey the local environmental regulations.

13.8 OTHERS

1、A strong incident light into LCD panel might cause display characteristics' changing inferior because of polarizer film, color filter, and other materials becoming inferior. Please do not expose LCD module direct sunlight land strong UV rays.

2、 Please pay attention to a panel side of LCD module not to contact with other materials in preserving it alone.

3、 For the packaging box, please pay attention to the followings:

4、Packaging box and inner case for LCD are designed to protect the LCDs from the damage or scratching during transportation. Please do not open except picking LCDs up from the box.

5、 Please handle packaging box with care not to give them sudden shock and vibrations. And also please do not throw them up.

6、Packing box and inner case for LCDs are made of cardboard. So please pay attention not to get them wet. (Such like keeping them in high humidity or wet place can occur getting them wet.)

14. Packing form-TBD

LEADTEK DISPLAY

深圳市丽台电子有限公司

Shenzhen Leadtek Electronics Co.,Ltd

Incoming Inspection Standard

品质允收标准

Model N0. /产品型号: Applicable to Leadtek Touch Display Screen

Updated Date /生效日期: 2025.04.01

Version / 版 本 号: V0

Record of Revision /修订履历.

Version /版本号	Revision Record /修订内容	Reviser /修订人	Revision Date /修订日期
V0	首发 / Initial release	Green	2025.04.01

1、Scope of application /适用范围.

适用于丽台电子触摸显示屏/ Applicable to Leadtek Touch Display Screen.

2、Inspection conditions and environment / 检验条件与环境.

2.1、Inspection Conditions / 检验条件:

2.1.1、Inspection Distance / 检测距离: 35cm ±5cm.

2.1.2、Inspection time /检验时间：Displays performance test /功能测试：2~3S /Image，

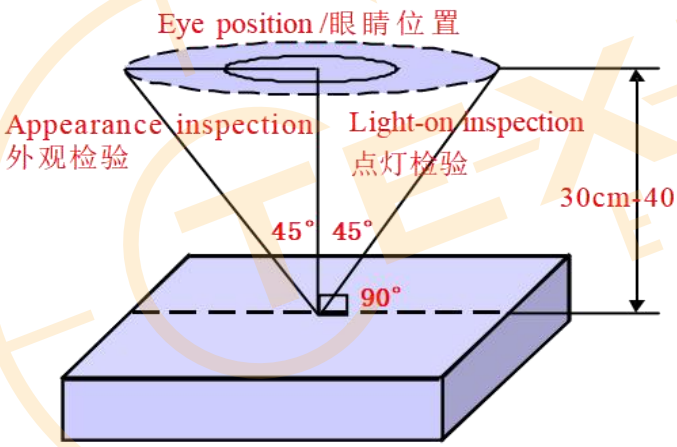
Appearance Inspection / 外观检验：8~10S.

2.1.3、Inspection the viewing angle /检验视角:

Display Inspection Angle /显示检验角度： ±45°.

Appearance Inspection Angle /外观检验角度：±45°.

Eye position /眼睛位置：



(Perpendicular to LCD panel surface /垂直于LCD表面)

2.2、 Inspection environment /检验环境：

Temperature / 温度		25±5℃
Humidity / 湿度		55±5%RH
Brightness 亮度	Appearance Inspection / 外观检验	800~1000 Lux
	Display Inspection / 功能检验	200~300 Lux

2.3、Sampling conditions / 抽样方式.

Sampling Plan /抽样计划		GB/T 2828.1- 2003
		Batch single sampling/批量单次抽样
		General inspection level：Ⅱ/一般检验水平：二级
AQL	Major Defect /主要缺陷	0.25
	Minor Defect /次要缺陷	0.65

3、Terms and definitions /术语和定义.

3.1、Defect classification / 缺陷分类:

3.1.1、Major defects /主要缺陷: Defects that cause the product to fail or reduce the usability of the product / 引起产品功能失效和减少产品的有效使用与操作的缺陷.

3.1.2、Minor defects / 次要缺陷: Defects that do not affect the functionality and effective use and operation of the product / 不影响产品功能和有效使用与操作的缺陷.

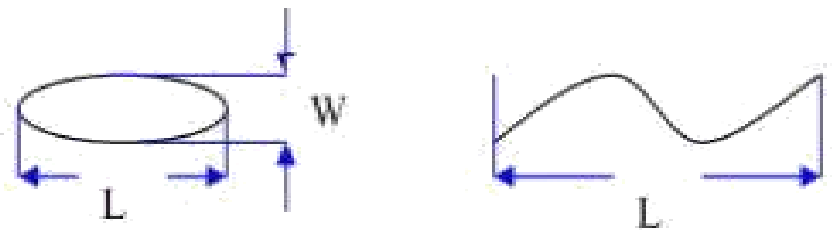
3.2、Point defects / 点状缺陷:

The size of a punctate defect is defined by the diameter D, and the average diameter of the defect is D=1/2(W+L) / 点状缺陷由直径 D 定义大小，缺陷的平均直径 D=1/2(W+L).

3.3、line defects / 线状缺陷:

When defect size L ≥ 2W,the defect count as liner type defect.Size of linear defect is defined by length (L) and the maximum width (W)

当缺陷尺寸 L≥2W 时，被视为线状缺陷，线状缺陷是由长度（L）和最大宽度（W）定义的.



3.4、LCD sub-pixels / LCD 子像素点:

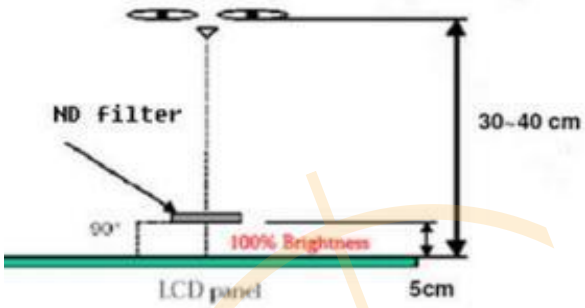
The sub-pixel defect area is greater than 50% of the LCD sub-pixel area, and is visible through ND5% masking

子像素点缺陷面积大于 50% LCD 子像素面积，且透过 ND5%遮盖是可见的.

3.5、ND card test method / ND 卡检验方法:

Hold the ND card about 5cm above the display area, with your eyes 30-40cm away from the panel, and observe for 2~3 seconds

在显示区域上方大约 5cm 处握住 ND 卡，眼睛距离面板 30-40cm，观察 2~3 秒.



3.6、Surface substances that can be cleaned are not considered defects (e.g. finger prints on the protective film, dust particles)

可以被清洁干净的表面物质不视为缺陷 (如保护膜上的手指印，尘粒) .

3.7、Defects that can be covered by the material and are not visible to the eye, and do not affect the function and use are not considered defects

能被物料覆盖目视不可见，且不影响功能与使用的缺陷不视为缺陷.

3.8、AA shows that damage to the glass outside the area does not affect the effective line and does not expand the loss is acceptable

AA 显示区域以外的玻璃损伤，不影响有效线路和不会在扩大损失的是可以接受的.

3.9、Issues not specified or defined in this document shall be dealt with through friendly negotiation between the parties / 本文件中未规定或定义的问题，双方友好协商处理.

4.0、Inspection standards /检验标准:

4.1、Structural size standards / 结构尺寸标准:

Measurement items /测量项目		Specification /规格	Remark /备注
Name/名称	Unit /单位	Tolerance /公差	
Outside dimension：Length 尺寸：长	mm /毫米	0.10mm~0.3mm	Please refer to the product specification for detailed dimensions and tolerances 详细的尺寸规格和公差请参考产品规格书
Outside dimension：Width 尺寸：宽	mm /毫米	0.10mm~0.3mm	
Outside dimension：Thickness 尺寸：厚	mm /毫米	0.20mm~0.50mm	

4.2、Appearance Inspection standards:

(D ： diameter, W ： width, L ： length, N ： quantity, DS ： spacing)

Material 检验区域	Inspection items 检验项目	Product size 适用尺寸	Inspection standards 检验规格	Category 缺陷类别	
LCD	ITO	Full size 全尺寸	ITO can't open circuit, short circuit, ITO notch cannot exceed 70% of width. ITO 不能有开路和短路，ITO 缺口不能超过宽度的 70%.	MA	
	Corners broken 崩边/崩角	Full size 全尺寸	1、It cannot affect the appearance of valid routes and functions; 不能影响有效线路和功能外观.	MA	
			2、There must be no extensible rips 不能有可延伸性裂纹.	MA	
Silicone 硅胶	Silicone coating 硅胶涂布	Full size 全尺寸	1、The height cannot exceed the LCD CF surface / 高度不能超过 LCD CF 面.		MI
			2、No overflow and lack of glue / 不能溢胶和缺胶.		MI
			3、Silicone cannot cover POL and FPC/ 硅胶不能覆盖到 POL 和 FPC.		MI

Material 检验区域	Inspection items 检验项目	Product size 适用尺寸	Inspection standards 检验规格	Category 缺陷类别	
PCBA FPC Connector 连接器	Appearance 表面外观	Full size 全尺寸	1.FPC is not allowed to have drape/bubble/fold / 不允许有披锋/气泡/褶皱.		MI
			2.Surface scratches do not allow copper leakage / 表面划伤不允许出现漏铜.	MA	
			3.Cracking is not allowed / 不允许破裂.	MA	
			4.Gold finger oxidation is not allowed 不允许金手指氧化.	MA	
			5.Chromatic aberration is not allowed 不允许出现色差.	MA	
	Components 元器件	Full size 全尺寸	1. Damage, missing parts, and incorrect models are not allowed 不允许损伤、缺件、型号错误.	MA	
			2.Components need to be insulated with high temperature adhesive (unless not required by the drawings) / 元器件需要有高温胶绝缘保护（除非图纸无要求）.		MI
	Weld 焊接	Full size 全尺寸	1. False soldering, virtual soldering, and tinning are not allowed 不允许假焊、虚焊、连锡.	MA	
			2. No solder bead residue is allowed 不允许有锡珠残留.		MI
			3.The pads need to be glued with high temperature (unless not required by the drawings) / 焊盘需贴高温胶（除非图纸无要求）.		MI
POL 偏光片	Scratches 划伤	Under 6 inches 6 寸以下	1.W≤0.05mm；L≤5mm，Ignore（忽略）. 2.0.05mm＜W≤0.10mm；L≤5mm；N≤2; DS≥10mm. 3.0.10mm＜W；5mm＜L，Not allowable（不允许）.		MI
		6~10.0 inches 6 寸~10.0 寸	1.W≤0.07mm；L≤5mm，Ignore（忽略）. 2.0.07mm＜W≤0.12mm；L≤10mm；N≤3；DS≥10mm. 3.0.12mm＜W；10mm＜L，Not allowable（不允许）.		MI
		More than 10 inches 10 寸以上	1.W≤0.10mm；L≤5mm，Ignore（忽略）. 2.0.10mm＜W≤0.15mm；L≤10mm；N≤4；DS≥10mm. 3.0.15mm＜W；10mm＜L，Not allowable（不允许）.		MI

Material 检验区域	Inspection items 检验项目	Product size 适用尺寸	Inspection standards 检验规格	Category 缺陷类别	
POL 偏光片	Bubbles	Under 6 inches 6 寸以下	1.D≤0.15mm，Ignore（忽略）. 2.0.15mm＜D≤0.30mm；N≤2；DS≥10mm. 3.D＞0.30mm，Not allowable（不允许）.		MI
		More than 6 inches 6 寸以上	1.D≤0.20mm，Ignore（忽略）. 2.0.20mm＜D≤0.40mm；N≤3；DS≥10mm. 3.D＞0.40mm，Not allowable（不允许）.		MI
	Bubbles around the edges 边缘气泡	Full size 全尺寸	1.Within 1/2BM of the display area, it is not allowed 显示区往外 1/2BM 区域内，不允许. 2.The display area is 1/2 outside the BM area, and it is not controlled 显示区往外 1/2BM 区域以外，不管控.		MI
	Point defects Embossing	Under 6 inches 6 寸以下	1.D≤0.15mm，Ignore（忽略）. 2.0.15mm＜D≤0.30mm；N≤2；DS≥10mm. 3.D＞0.30mm，Not allowable（不允许）.		MI
		6~10.0 inches 6 寸~10.0 寸	1.D≤0.20mm，Ignore（忽略）. 2.0.20mm＜D≤0.40mm；N≤3；DS≥10mm. 3.D＞0.40mm，Not allowable（不允许）.		MI
		More than 10 inches 10 寸以上	1.D≤0.25mm，Ignore（忽略）. 2.0.25mm＜D≤0.50mm；N≤4；DS≥10mm. 3.D＞0.50mm，Not allowable（不允许）.		MI
	Dirty 脏污	Full size 全尺寸	Dirt, finger prints, etc. are not allowed 不允许有脏污、手指印等.		MI
	Warping 起翘	Full size 全尺寸	Not allowed 不允许.		MI
	Paste offset 贴附偏位	Full size 全尺寸	It is not allowed to exceed the patch tolerance required by the drawing; After TP lamination, it is not allowed to leak the edges of the polarizer 不允许超出图纸要求的贴片公差；在 TP 贴合后不允许漏偏光片边缘.		MI
	Angle mistake 角度错误	Full size 全尺寸	Not allowed 不允许.	MA	
	Mixture 混料	Full size 全尺寸	Not allowed 不允许.	MA	

Material 检验区域	Inspection items 检验项目	Product size 适用尺寸	Inspection standards 检验规格	Category 缺陷类别	
TP	Scratches 划伤	Under 6 inches 6 寸以下	1.W≤0.05mm；L≤5mm，Ignore（忽略）. 2.0.05mm＜W≤0.10mm；L≤5mm；N≤2；DS≥10mm. 3.0.10mm＜W；5mm＜L，Not allowable（不允许）. 4.There is a feeling scratch，Not allowable 有感划伤，不允许.		MI
		6~10.0 inches 6 寸~10.0 寸	1.W≤0.07mm；L≤5mm，Ignore（忽略）. 2.0.07mm＜W≤0.12mm；L≤10mm；N≤3；DS≥10mm. 3.0.12mm＜W；10mm＜L，Not allowable（不允许）. 4.There is a feeling scratch，Not allowable 有感划伤，不允许.		MI
		More than 10 inches 10 寸以上	1.W≤0.10mm；L≤5mm，Ignore（忽略）. 2.0.10mm＜W≤0.15mm；L≤10mm；N≤4；DS≥10mm. 3.0.15mm＜W；10mm＜L，Not allowable（不允许）. 4.There is a feeling scratch，Not allowable 有感划伤，不允许.		MI
	Black dots white dots 黑点/白点	Under 6 inches 6 寸以下	1.D≤0.15mm，Ignore（忽略）. 2.0.15mm＜D≤0.30mm；N≤2；DS≥10mm. 3.D＞0.30mm，Not allowable（不允许）.		MI
		6~10.0 inches 6 寸~10.0 寸	1.D≤0.20mm，Ignore（忽略）. 2.0.20mm＜D≤0.40mm；N≤3；DS≥10mm. 3.D＞0.40mm，Not allowable（不允许）.		MI
		More than 10 inches 10 寸以上	1.D≤0.25mm，Ignore（忽略）. 2.0.25mm＜D≤0.50mm；N≤4；DS≥10mm. 3.D＞0.50mm，Not allowable（不允许）.		MI
	OCA Bubbles 气泡	Full size 全尺寸	Not allowed 不允许.		MI
	Corners broken 崩边/崩角	Full size 全尺寸	1.Product front /产品正面：Edge and corner chipping is not allowed / 崩角、崩边不允许 2.Product back /产品背面: X≤ 0.5，Y≤0.5，Z≤1/2T；N≤4；DS≥10mm.	MA	
	Silk screen 丝印	Full size 全尺寸	The silk screen is clear, complete and correct 丝印清晰、完整、内容正确.		MI

Material 检验区域	Inspection items 检验项目	Product size 适用尺寸	Inspection standards 检验规格	Category 缺陷类别	
TP	Dirty 脏污	Full size 全尺寸	Uncleanable dirt，Not allowable. 不可擦拭的脏污，不允许.		MI
	Broken 破损	Full size 全尺寸	Not allowable. 不允许.		MI
	Ink color aberration 油墨色差	Full size 全尺寸	ΔE>1，Not allowable（不允许）.		MI
	Cover pinholes 针孔	Full size 全尺寸	1.D≤0.20mm , N≤2 , DS≥10mm，allowable 2.D > 0.20mm，intensive pinholes（密集型针孔），Not allowable（不允许）.		MI
	Paint off 掉漆	Full size 全尺寸	Touch-up on the back of the cover is allowed, and the touch-up area cannot exceed 2.0mm in diameter / 允许在盖板背面补漆，补漆面积不能超过直径 2.0mm.		MI
BL 背光	Backlight separation 背光分离	Full size 全尺寸	Not allowable 不允许.		MI
	Deformed 变形	Full size 全尺寸	Measured using a plug gauge，If the deformation exceeds 0.3mm, NG is judged 使用塞规测量，形变超过 0.3mm，判定 NG.		MI
	Iron frame Oxidation /abscission 铁框氧化/脱落	Full size 全尺寸	Not allowable 不允许.		MI
	Dirt/adhesive residue/solder beads 脏污/残胶/锡珠	Full size 全尺寸	Not allowable 不允许.		MI
	Inkjet/barcode/ QR code 喷码/条码/二维码	Full size 全尺寸	The inkjet code is clear and complete, the barcode and QR code can be scanned normally, and the content and format meet the requirement / 喷码清晰完整、条码和二维码可正常扫描，内容和格式与要求相符.		MI
	Auxiliary materials 辅料	Full size 全尺寸	Accessories (vinyl, double-sided tape, insulating glue, etc.) are not allowed to be missed, misguided, defective, etc 辅料（黑胶、双面胶、绝缘胶等）不允许有漏贴、贴偏、残缺等.		MI

4.3、Functional inspection standards:

(D ： diameter,　W ： width,　L ： length,　N ： quantity,　DS ： spacing)

Material 检验区域	Inspection items 检验项目	Product size 适用尺寸	Inspection standards 检验规格	Category 缺陷类别	
Display Screen 模组	Light leakage / Mura 漏光/ Mura	Full size 全尺寸	1.Use ND5% filter masking, visual invisibility is OK 使用 ND5%遮盖，目视不可见即为 OK. 2.If necessary, sign off on the sample 必要时，签限定样.		MI
	Brightness uniformity 亮度均匀性	Full size 全尺寸	Brightness uniformity＜85.0%，Not allowable 亮度均匀性＜85.0%，不允许.	MA	
	LCD bright spots/dark spots 玻璃亮点/暗点	Under 6 inches 6 寸以下	1.D≤0.10mm，Ignore（忽略）. 2.0.10mm＜D≤0.20mm；N≤2；DS≥10mm. 3.D＞0.20mm，Not allowable（不允许）.		MI
		6~10.0 inches 6 寸~10.0 寸	1.D≤0.15mm，Ignore（忽略）. 2.0.15mm＜D≤0.30mm；N≤3；DS≥10mm. 3.D＞0.30mm，Not allowable（不允许）.		MI
		More than 10 inches 10 寸以上	1.D≤0.20mm，Ignore（忽略）. 2.0.20mm＜D≤0.40mm；N≤4；DS≥10mm. 3.D＞0.40mm，Not allowable（不允许）.		MI
	Backlight black dots/white dots 背光黑点/白点	Under 6 inches 6 寸以下	1.D≤0.15mm，Ignore（忽略）. 2.0.15mm＜D≤0.30mm；N≤2；DS≥10mm. 3.D＞0.30mm，Not allowable（不允许）.		MI
		6~10.0 inches 6 寸~10.0 寸	1.D≤0.20mm，Ignore（忽略）. 2.0.20mm＜D≤0.40mm；N≤3；DS≥10mm. 3.D＞0.40mm，Not allowable（不允许）.		MI
		More than 10 inches 10 寸以上	1.D≤0.25mm，Ignore（忽略）. 2.0.25mm＜D≤0.50mm；N≤4；DS≥10mm. 3.D＞0.50mm，Not allowable（不允许）.		MI
	Linear foreign bodies 线状异物	Under 6 inches 6 寸以下	1.W≤0.05mm；L≤5mm，Ignore（忽略）. 2.0.05mm＜W≤0.10mm；L≤5mm；N≤2; DS≥10mm. 3.0.10mm＜W；5mm＜L，Not allowable（不允许）.		MI
		6~10.0 inches 6 寸~10.0 寸	1.W≤0.07mm；L≤5mm，Ignore（忽略）. 2.0.07mm＜W≤0.12mm；L≤10mm；N≤3；DS≥10mm. 3.0.12mm＜W；10mm＜L，Not allowable（不允许）.		MI
		More than 10 inches 10 寸以上	1.W≤0.10mm；L≤5mm，Ignore（忽略）. 2.0.10mm＜W≤0.15mm；L≤10mm；N≤4；DS≥10mm. 3.0.15mm＜W；10mm＜L, Not allowable（不允许）.		MI

Material 检验区域	Inspection items 检验项目	Product size 适用尺寸	Inspection standards 检验规格	Category 缺陷类别	
Display Screen 模组	White/Black print 白印/黑印	Full size 全尺寸	Use ND5% filter masking, visual invisibility is OK 使用 ND5%遮盖，目视不可见即为 OK.		MI
	Interference pattern/Newtonian pattern 干涉纹/牛顿纹	Full size 全尺寸	Not allowable 不允许.		MI
	Membranes displacement 膜材移位	Full size 全尺寸	Not allowable 不允许.		MI
	Color blocks 色斑	Full size 全尺寸	Use ND5% filter masking, visual invisibility is OK /使用 ND5%遮盖，目视不可见即为 OK.		MI
	Display abnormal 画异	Full size 全尺寸	Not allowable 不允许.	MA	
	No display 无显示	Full size 全尺寸	Not allowable 不允许.	MA	
	Line/Missing Drawing 线条/缺画	Full size 全尺寸	Not allowable 不允许.	MA	
	Splash screen 闪屏	Full size 全尺寸	Not allowable 不允许.	MA	
	LCD grid LCD 网格	Full size 全尺寸	Not allowable 不允许.	MA	
	Afterimage 残影	Full size 全尺寸	Not allowable 不允许.	MA	
	Wrong viewing angle 可视角错误	Full size 全尺寸	Not allowable 不允许.	MA	
TP	No touch 无触摸	Full size 全尺寸	Not allowable 不允许.	MA	
	Touch the jump point 触摸跳点	Full size 全尺寸	Not allowable 不允许.	MA	
	Touch not sensitive 触摸不灵敏	Full size 全尺寸	Not allowable 不允许.	MA	

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Texim Europe - contact details

Headquarters & Warehouse

Elektrostraat 17
NL-7483 PG Haaksbergen
The Netherlands

T: +31 (0)53 573 33 33
E: info@texim-europe.com
Homepage: www.texim-europe.com

The Netherlands

Elektrostraat 17
NL-7483 PG Haaksbergen

T: +31 (0)53 573 33 33
E: nl@texim-europe.com

Belgium

Zuiderlaan 14, box 10
B-1731 Zellik

T: +32 (0)2 462 01 00
E: belgium@texim-europe.com

UK & Ireland

St Mary's House, Church Lane
Carlton Le Moorland
Lincoln LN5 9HS

T: +44 (0)1522 789 555
E: uk@texim-europe.com

Germany

Bahnhofstrasse 92
D-25451 Quickborn

T: +49 (0)4106 627 07-0
E: germany@texim-europe.com

Germany

Martin-Kollar-Strasse 9
D-81829 München

T: +49 (0)89 436 086-0
E: muenchen@texim-europe.com

Austria

Martin-Kollar-Strasse 9
D-81829 München

T: +49 (0)89 436 086-0
E: austria@texim-europe.com

Nordic

Stockholmsgade 45
2100 Copenhagen

T: +45 88 20 26 30
E: nordic@texim-europe.com

Italy

Martin-Kollar-Strasse 9
D-81829 München

T: +49 (0)89 436 086-0
E: italy@texim-europe.com