

# Shenzhen Leadtek Electronics Co.,Ltd

## PRODUCT SPECIFICATION

### TFT-LCD UART MODULE

**Module No: LTK069MNBUT12-V0**

Preliminary Specification

Approval Specification

Designed by	Checked by	Approved by
<i>jona</i>	<i>Jerry</i>	<i>lan</i>

### Final Approval by Customer

Approved by	Comment

※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.

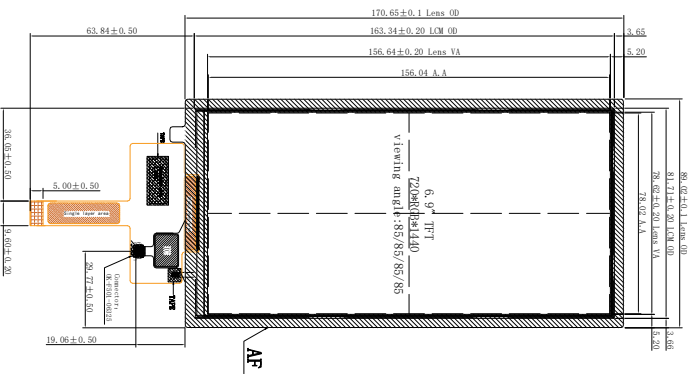


## 2. General Description

NO	Item	Specification	Unit
1	LCD Size	TFT"6.9	inch
2	Panel Type	IPS	mm
3	Resolution	720 x RGB x 1440	pixel
4	Display Mode	Normally Black	-
5	Number of Colors	16.7M	-
6	Viewing Direction	ALL	-
7	CTP+LCM Module size	89.02(W) x170.65(L) x4.38(T)	mm
8	Active Area	78.02 (W) x 156.04 (L)	mm
9	LCM Driver	-	
10	Light Source	White LED	
11	LCM Interface	MIPI	bit

## 3. Mechanical Drawing

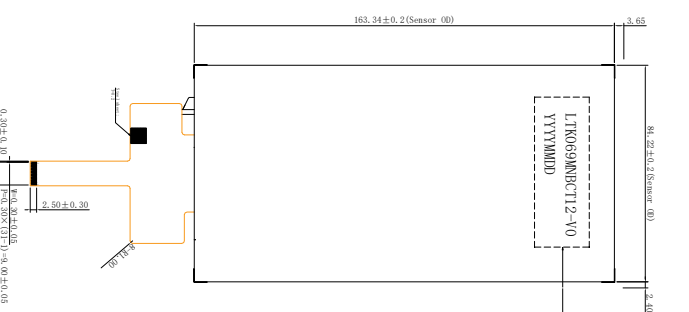
# Front View



# Side View



# Back View



## CTP Technical requirements:

1. Structure: G+6.
2. Transmittance:  $\geq 85\%$  (550nm).
3. All unmarked tolerances:  $\pm 0.10\text{mm}$ .
4. IC: GT911, 5-point touch
5. Temperature: 110g steel ball, height 30cm drop without breaking, surface hardness  
Test:  $\geq 6\text{H}$  (pencil hardness test).
6. CG unmarked key holes and edge safety inverted  $\leq 0.10\text{mm}$ .

## Notes:

1. Display : 6.9", TFT
2. Resolution: 720xRGBx1440
3. LCD Viewing Direction: 85/85/85/85
4. Display Mode: Normally Black
5. LCM birghtness : 320cd/m<sup>2</sup> (TYP);  
LCM+CTP birghtness : 270cd/m<sup>2</sup> (TYP), Uniformity  $\geq 80\%$

6. ummark Tolarence:  $\pm 0.2$
7. OPERATING TEMP:  $-20^{\circ}\text{C} \sim +70^{\circ}\text{C}$
8. STORAGE TEMP:  $-30^{\circ}\text{C} \sim +80^{\circ}\text{C}$
9. Requirements on Environmental Protection: ROHS



7 string 3 merge  
VF:18.9V-23.1V If:60mA

CTP-PIN	PIN	Name
1	VDD(3.3V)	25 GND
2	GND	26 D1P
3	INT(3.3V)	27 D1N
4	RST(3.3V)	28 GND
5	SDA(3.3V)	29 D0P
6	SCL 3.3V	30 DON
		31 GND



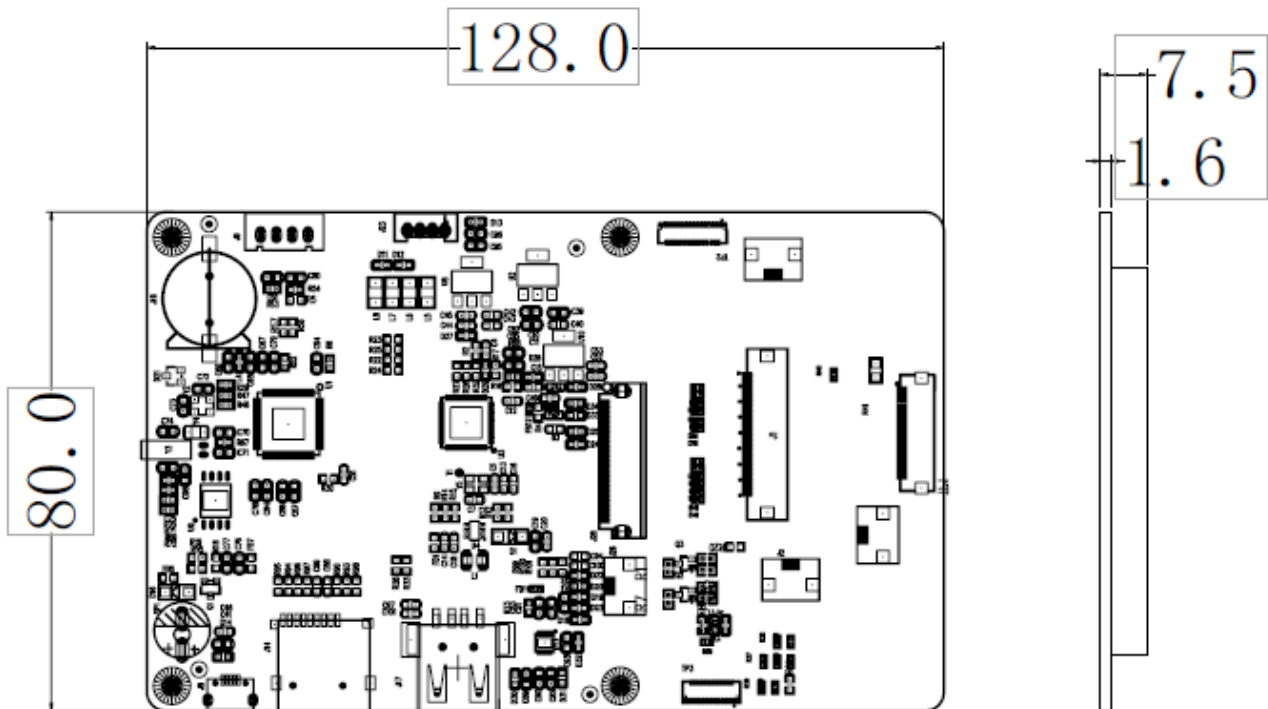
**LEADTEK COMPANY LIMITED**

SCALE: 1/1	UNIT: mm	PAGE: 1/1	APPROVE: 	CHECK: 	DRAWN: 
Part No:	LTK069MNBCT12	VER: V0			
Customer No:			Tan	Jack	Jerry

3				
2				
1				
0		NEW		
REV		DESCRIPTION	DATE	NAME

## 4.0 Serial board frame:

**4.1 Mechanism Drawing: (Drawings are for reference only, the actual assembly confirmation results of the customer shall prevail.)**



## 5. Working environment and Reliability Test

Item	Conditions	Min	Type	Max	Unit
Working Temperature	160%RH at 12V voltage	-20	20	+70	°C
Storage Temperature	-	-30	30	+80	°C
Working Humidity	25°C	10%	60%	90%	RH
Protective Paint	-	-	Yes	-	-
Aging Test	-	-	72	-	H

## 6. Interface performance parameter

Item	Conditions	Min	Type	Max	Unit
Baudrate	User set	7841	115200	921600	bps
Output Voltage (TXD)	输出 1, Iout = 1mA Output 1, Iout = 1mA	3.0	3.3	-	V
	输出 0, Iout = -1mA Output 0, Iout = -1mA	-	0	0.3	V
Input Voltage (RXD)	输入 1, Iin = 1mA Input 1, Iin = 1mA	2.4	3.3	5.0	V
	输入 0, Iin = -1mA Input 0, Iin = -1mA	0	-	0.5	V
Interface	Mode is determined by jumper: ON=8N1 3.3V TTL*2; OFF=8N1, RS232*2				
Socket	8Pin_2.0mm socket with buckles				
UART Data format	1 start bit - 8 data bits- 1 stop bit				
USB	No				
SD Slot	Yes				

## 7. Memory peculiarity

Item	Typical value	Features	Description
FLASH	1Mbytes	Space of Font	Store font, icon libraries, and other binary files
		Picture Storage	Store picture(Picture quantity relate to picture size, size of a single image file should not exceed 262Kbytes)
RAM	256Kbytes	Program Variable Storage Space	Data is not saved when power down

## 8. UI & Peripheral

UI & Peripheral	
UI Version	Customer customized UI
Peripheral	Resistive touch screen, buzzer (optional), RTC (optional)

## 9. Packing Capacity & Dimension

尺寸 Dimension	
Dimension	128.00 (W) × 80.00 (H) × 7.5 (T) mm
Net Weight	TBD

## 10. UART Pin Description

TTL /CMOS			
Pin number	Name	Type	Description
1	GND	POWER	Negative
2	PGMCK	Upgrade/Clock	UART OUT
3	PGMIO	OUT	Upgrade data interface
4	TX	OUT	UART OUT
5	RX	IN	UART IN
6	+5V	POWER	Positive

Note: 1. The software uses serial port 2 (TX2, RX2) for communication by default. If the customer needs to use TX4, the software needs to be modified when RX4 is used as the serial screen for communication.

2.info: the new design changes of the product will be added as time goes by, do not affect performance parameters or use without prior notice.



1.Scope of application /适用范围.

This document shall be applied to 5.5~10.0 inch touch display screen.

本文件适用于5.5~10.0 寸触摸显示屏.

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

2.1 Inspection Conditions /检验条件:

(1) Inspection Distance /检测距离: 35cm ±5cm.

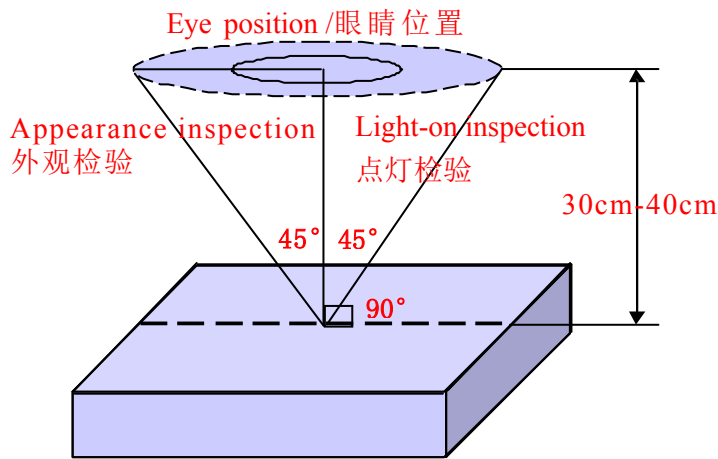
(2) Check time /检验时间:

Displays performance test /功能测试: 2~3S /Image, Cosmetic Inspection /外观检验:10~12S.

(3) Check the viewing angle /检验视角:

Light-on Inspection Angle /点灯检验角度: ±45°.

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



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

2.2 Inspection environment /检验环境:

Ambient Temperature 温度		25°C±5°C
Ambient Humidity 湿度		55±5%RH
Ambient Illumination 亮度	Cosmetic Inspection 外观检验	800-1000 Lux
	Functional Inspection 点灯检验	200~300Lux

2.3 Sampling Conditions /抽样条件:

(1) Quantity to be inspected /批量: Quantity of shipment lot per model /单次运送单一型号数量.

(2) Sampling method /抽样方法:

Sampling Plan /抽样计划		GB/T 2828.1- 2003
		Normal Inspection , Single Sampling 正常检验、单次抽样
		General inspection level: II 一般检验水平: 二级
AQL	Major Defect /主要缺陷	0.65
	Minor Defect /次要缺陷	1.0

(3) The classification of Major(MA) and Minor(MI) defects is shown as “3.1 Classification of defects” .  
主缺(MA)及次缺(MI)定义于”3.1缺陷分类”.

### 3.Terms And Definitions /术语和定义

#### 3.1 Classification of defects / 缺陷分类 :

(1) Major defects /主要缺陷:

A major defect is a defect that is likely to result in failure, or to reduce materially the usability of the product for its intended purpose .

可导致产品功能失效或减少产品可用性的缺陷.

(2) Minor defects /次要缺陷:

It will not cause the product to fail and reduce the defects in the effective use and operation of the product.

不会导致产品功能失效和减少产品的有效使用与操作的缺陷.

#### 3.2 Point defects /点状缺陷:

The size of the point defect is defined by the diameter D, and the average diameter of the defect is

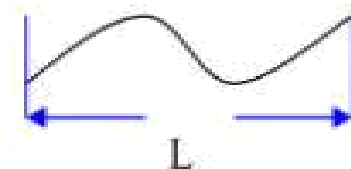
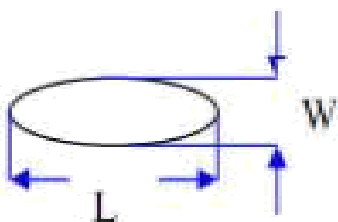
$$D=1/2 (W+L) .$$

点状缺陷的大小是由直径 D 定义的, 缺陷的平均直径  $D=1/2(W+L)$ .

#### 3.3 Linear defects /线状缺陷:

When defect size  $L \geq 2W$ , 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  $L \geq 2W$  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-pixel dot /LCD子像素点

(1) Definition /定义 : The point defect area is greater than 50% of the LCD sub-pixel area, and is visible through ND5% filter 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.

(2) The drawing of 1/2 area sub-pixel definition / 1/2 面积的子像素定义绘图:

The 1/2 area sub-pixel can be defined as below one or more of specific shapes

1/2 面积的子像素可以定义为如下一个或多个特定形状图:



### 3.5 Small bright dot /细碎亮点 :

Point defects smaller than "LCD sub-pixels" /小于“LCD子像素点”的点缺陷.

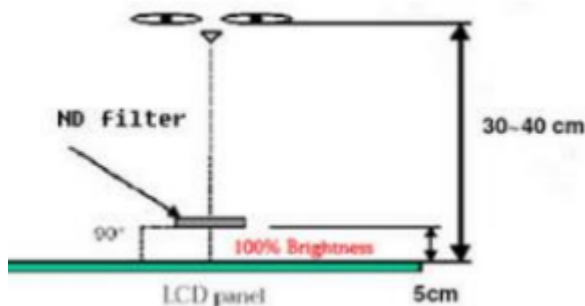
(Ratio of Zone I to Zone O /I 区与 O 区比例: 1: 2: 1)



### 3.6 ND filter inspection method /ND卡的检验方法:

Hold the ND filter 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.



3.7 Any FPC surface problems that do not leak copper on the surface and do not cause functional failure are acceptable.

任何 FPC 表面问题, 表面未露铜和不造成功能失效是可以接受.

3.8 Extraneous substances that can be wiped out , like Finger point,Particles are not considered as a defect .

可以被擦拭干净的表面物质不视为缺陷 (如手指印, 尘粒) .

3.9 Defects that can be covered by the material and are not visible in appearance are not considered defects.

能被物料覆盖，外观不可见的缺陷不视为缺陷。

3.10 Panel damage /面板损伤:

Glass damage outside the AA display area that does not affect the effective wiring is acceptable.

AA 显示区域以外的玻璃损伤，不影响有效线路是可以接受的。

3.11 Issues not specified or defined in this acceptance standard shall be handled through friendly negotiation between the two parties.

本允收标准中未规定或定义的问题，双方友好协商处理。

## 4. Inspection standards /检验标准

### 4.1 Structural Dimensions /结构尺寸规格

Serial Number 序号	Measurement items /测量项目		Specification /规格	Remark /备注
	名称 /Name	Unit /单位	Tolerance /公差	
1	Outside dimension: Length 尺寸: 长	mm /毫米	0.15mm~0.30mm	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
2	Outside dimension: Width 尺寸: 宽	mm /毫米	0.15mm~0.30mm	
3	Outside dimension: Thickness 尺寸: 高	mm /毫米	0.20mm~0.50mm	

### 4.2 Appearance Inspection Specification /外观检验规格

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

Inspection area 检验区域	Inspection items 检验项目	Inspection specifications 检验规格	Defect category 缺陷类别	
Glass 玻璃	Wire(on Array) 线路	Can't be damaged 不能损伤	MA	
	Chipping/corner breaking 崩边/破角	Can't affect the effective lines and functions 不能影响有效线路和功能	MA	
	Edge 边缘	There must be no extensional cracks 不可有延伸性裂纹	MA	
Silicone 硅胶	Silicone coating 硅胶涂布	The height must not exceed the LCD CF surface 高度不能超过LCD CF面		MI
	Glue overflow 溢胶	Can't cover FPC, POL, etc 不能覆盖到FPC、POL等		MI

Inspection area 检验区域	Inspection items 检验项目	Inspection specifications 检验规格	Defect category 缺陷类别	
PCBA FPC Connector 连接器	Appearance 外观	Scratches or injuries are not allowed to cause copper exposure 划伤或损伤不允许表面出现露铜		MI
	Component 元器件	Can't be damaged and lack 不能损伤和缺少	MA	
	Goldfinger oxidation 金手指氧化	Not allowed 不允许		MI
	Connection status 连接状况	The connection must be accurate and stable 必须准确稳定连接	MA	
	Break 破裂	Not allowed 不允许	MA	
	Soldering, : false soldering/tinning/tin beads 假焊/连锡/锡珠	Not allowed 不允许	MA	
POL 偏光片	Scratches 划伤	1. $W \leq 0.07\text{mm}$ ; $L \leq 5\text{mm}$ , Ignore (忽略) 2. $0.07\text{mm} < W \leq 0.12\text{mm}$ ; $L \leq 5\text{mm}$ ; $N \leq 4$ ; $DS \geq 10\text{mm}$ 3. $0.12\text{mm} < W$ ; $5\text{mm} < L$ , Not allowable (不允许)		MI
	Dent 凹凸印	1. $D \leq 0.20\text{mm}$ , Ignore (忽略) 2. $0.20\text{mm} < D \leq 0.40\text{mm}$ ; $N \leq 4$ ; $DS \geq 10\text{mm}$ 3. $0.40\text{mm} < D$ , Not allowable (不允许)		MI
	Bubbles 气泡	1. $D \leq 0.20\text{mm}$ , Ignore (忽略) 2. $0.20\text{mm} < D \leq 0.40\text{mm}$ ; $N \leq 4$ ; $DS \geq 10\text{mm}$ 3. $0.40\text{mm} < D$ , Not allowable (不允许)		MI
	Point defects 点状不良	1. $D \leq 0.20\text{mm}$ , Ignore (忽略) 2. $0.20\text{mm} < D \leq 0.40\text{mm}$ ; $N \leq 4$ ; $DS \geq 10\text{mm}$ 3. $0.40\text{mm} < D$ , Not allowable (不允许)		MI
	Edge bubbles 边缘气泡	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
	Dirty/watermarked 脏污/水印	No dirt/water lines/finger marks are allowed, and must be wiped clean 不允许有脏污/水纹/手指印, 须擦拭干净方可		MI
	Warping 起翘	Not allowed 不允许		MI
	Attaching offset 贴偏	It is necessary to completely cover the display area outward, within the 1/2BM area, or without leaking POL edges after TP is attached 需完整覆盖显示区往外、1/2BM 区以内或贴合 TP 后不会出现漏偏光片边缘		MI
Mixture 混料	Mixing different types of POL or not using POL as required by the BOM, not allowed 不允许混贴不同型号的 POL 或未按 BOM 要求使用 POL	MA		

Inspection area 检验区域	Inspection items 检验项目	Inspection specifications 检验规格	Defect category 缺陷类别	
TP&CG	Point defects 点状不良	1. $D \leq 0.20\text{mm}$ , Ignore (忽略) 2. $0.20\text{mm} < D \leq 0.40\text{mm}$ ; $N \leq 4$ ; $DS \geq 10\text{mm}$ 3. $0.40\text{mm} < D$ , Not allowable (不允许)		MI
	Scratches 划伤	1. $W \leq 0.07\text{mm}$ ; $L \leq 5\text{mm}$ , Ignore (忽略) 2. $0.07\text{mm} < W \leq 0.12\text{mm}$ ; $L \leq 5\text{mm}$ ; $N \leq 4$ ; $DS \geq 10\text{mm}$ 3. $0.12\text{mm} < W$ ; $5\text{mm} < L$ , Not allowable (不允许) 4. There is a feeling scratch, Not allowable 有感划伤, 不允许		MI
	Edges and corners cracked 崩角/崩边	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: $X \leq 0.5$ , $Y \leq 0.5$ , $Z \leq 1/2T$ ; $N \leq 4$ ; $DS \geq 10\text{mm}$		MI
	Silk screen 丝印	The silk screen is clear, complete and correct 丝印清晰、完整、内容正确		MI
	Dirty 脏污	Non-wipeable dirt, not allowed 不可擦拭的脏污, 不允许		MI
	Broken 破损	Not allowable 不允许	MA	
	Ink color aberration 油墨色差	$\Delta E > 1$ , Not allowable (不允许)		MI
	Cover pinholes 针孔	1. $D \leq 0.15\text{mm}$ , $N \leq 4$ , $DS \geq 10\text{mm}$ , allowable 2. $D > 0.15\text{mm}$ , intensive pinholes (密集型针孔), Not allowable (不允许)		MI
	IR holes IR孔	Dirt, deviation, color difference, etc. are not allowed 不允许脏污、偏位、色差等		MI
BL 背光	Backlight separation 背光分离	Not allowable 不允许		MI
	Deformation of rubber iron and rubber frame 胶铁、胶框变形	Use the plug gauge 0.3mm on the flat surface and can snap in and judge NG 在平面上使用塞规0.3mm卡翘曲位置, 能卡进判定NG		MI
	The iron frame is oxidized and not tightened 铁框氧化、卡不紧	Not allowable 不允许		MI
	Backlight sticky solder beads, glue, etc 背面粘锡珠、残胶等	Not allowable 不允许		MI
	Inkjet coding, Barcode, QR code 喷码/条码/二维码	The inkjet coding is clear and complete, the barcode and QR code can be scanned normally, and the content and format match 喷码清晰完整、条码和二维码可正常扫描, 内容和格式相符		MI
	Accessories(protective film, double-sided tape, insulating adhesive, etc.) 辅料(保护膜、双面胶、绝缘胶等)	Defects such as missing pastes, sticking deviations, defects, and fractures are not allowed 不允许有漏贴、贴偏、残缺、断裂等缺陷		MI

## 4.3 Electrical test specifications /电性检查规格

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

Inspection items 检验项目	Inspection specifications 检验规格	Defect category 缺陷类别	
Glass bright spots/dark spots 玻璃亮点/暗点	1. $D \leq 0.20\text{mm}$ , Ignore (忽略) 2. $0.20\text{mm} < D \leq 0.40\text{mm}$ ; $N \leq 4$ ; $DS \geq 10\text{mm}$ 3. $0.40\text{mm} < D$ , Not allowable (不允许)		MI
Mura	Use ND5% filter masking, visual invisibility is OK, 200~300Lux 使用ND5%遮盖, 目视不可见即为OK, 200~300Lux		MI
Small bright dot 细碎亮点	Use ND5% filter masking, visual invisibility is OK 使用ND5%遮盖, 目视不可见即为OK		MI
Light leakage 漏光	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
Backlight black/white dots 背光黑点/白点	1. $D \leq 0.20\text{mm}$ , Ignore (忽略) 2. $0.20\text{mm} < D \leq 0.40\text{mm}$ ; $N \leq 4$ ; $DS \geq 10\text{mm}$ 3. $0.40\text{mm} < D$ , Not allowable (不允许)		MI
Linear foreign bodies 线状异物 (异物毛丝等)	1. $W \leq 0.07\text{mm}$ ; $L \leq 5\text{mm}$ , Ignore (忽略) 2. $0.07\text{mm} < W \leq 0.12\text{mm}$ ; $L \leq 5\text{mm}$ ; $N \leq 4$ ; $DS \geq 10\text{mm}$ 3. $0.12\text{mm} < W$ ; $5\text{mm} < L$ , Not allowable (不允许)		MI
Black/White Print 黑印/白印	Use ND5% filter masking, visual invisibility is OK 使用ND5%遮盖, 目视不可见即为OK		MI
The display is uneven 显示不均匀	Use ND5% filter masking, visual invisibility is OK 使用ND5%遮盖, 目视不可见即为OK		MI
The brightness is uneven 亮度不均匀	Brightness uniformity $< 85.0\%$ , Not allowable 亮度均匀性 $< 85.0\%$ , 不允许		MI
Displacement of the membrane 膜材移位	Not allowable 不允许		MI
Interference pattern/Newtonian pattern 干涉纹/牛顿纹	Not allowable 不允许		MI
Display abnormal 显示异常	Not allowable 不允许	MA	
No display 无显示	Not allowable 不允许	MA	
Line/Missing Drawing 线条/缺画	Not allowable 不允许	MA	
Splash screen 闪屏	Not allowable 不允许	MA	
LCD grid LCD网格	Not allowable 不允许	MA	
Afterimage 残影	Not allowable 不允许	MA	
Wrong viewing angle 视角错误	Not allowable 不允许	MA	
No touch 无触摸	Not allowable 不允许	MA	
Touch the jump point 触摸跳点	Not allowable 不允许	MA	
Not sensitive 触摸不灵敏	Not allowable 不允许	MA	