



## RVT4.3A480272TNWN00

### LCD TFT Datasheet

Rev.2.0.0

2017-05-25

ITEM	CONTENTS	UNIT
LCD Type	TFT/Transmissive/Normally white	/
Size	4.3	Inch
Viewing Direction	12:00 (without image inversion)	O' Clock
Gray Scale Inversion Direction	6:00	O' Clock
LCM (W × H × D )	105.50 x 67.20 x 3.00	mm <sup>3</sup>
Active Area (W × H)	95.04 × 53.86	mm <sup>2</sup>
Dot Pitch (W × H)	0.066 × 0.198	mm <sup>2</sup>
Number Of Dots	480 (RGB) × 272	/
Driver IC	HX8257A	/
Backlight Type	10 LEDs	/
Surface Luminance	550	cd/m <sup>2</sup>
Interface Type	24bit RGB	/
Color Depth	16.7M	/
Pixel Arrangement	RGB Vertical Stripe	/
Surface Treatment	Anti-glare	
Input Voltage	3.3	V
With/Without TSP	Without TSP	/
Weight	44	g

**Note 1:** RoHS compliant

**Note 2:** LCM weight tolerance: ± 5%.

## REVISION RECORD

REVNO.	REVDATE	CONTENTS	REMARKS
1.0	2014-05-16	Initial Release	
1.1	2014-11-24		
1.2	2014-12-04	Add HVDSL pin information	
1.3	2015-01-19	Update module thickness, update backlight information, update LED lifetime	
1.4	2015-02-06	Update dimensions information on mechanical drawing	
1.5	2015-02-24	Update Color Depth	
1.6	2015-04-16	Update Interface Description	
1.7	2015-05-21	Update Mechanical drawing	
1.8	2016-08-12	Added Inspection Standards	
2.0.0	2017-05-25	Glass change, new TFT open dimension, FFC shape, new TFT IC controller	

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## 1 MODULE CLASSIFICATION INFORMATION

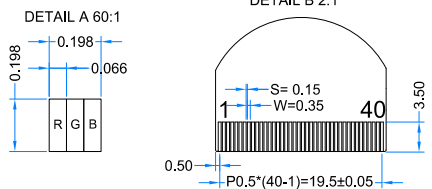
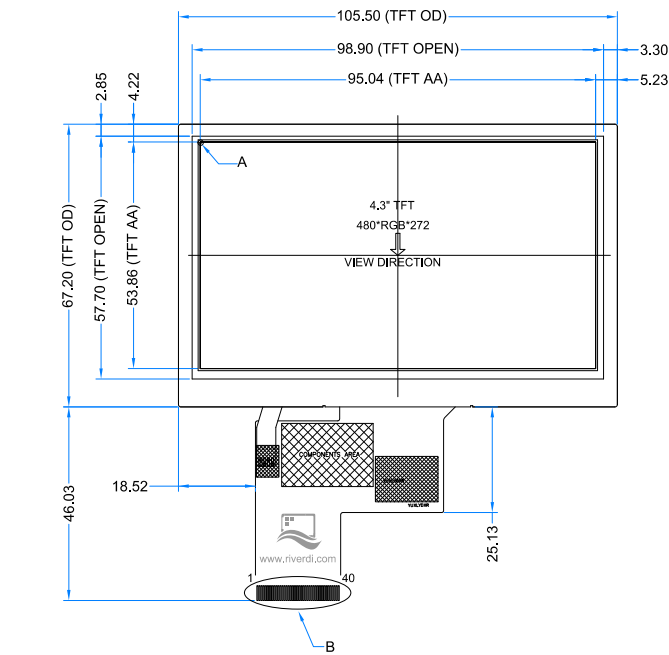
<b>RV</b>	<b>T</b>	<b>4.3</b>	<b>A</b>	<b>480272</b>	<b>T</b>	<b>N</b>	<b>W</b>	<b>N</b>	<b>00</b>
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.

1.	<b>BRAND</b>	<b>RV – Riverdi</b>
2.	<b>PRODUCT TYPE</b>	<b>T – TFT Standard</b> <b>F – TFT Custom</b>
3.	<b>DISPLAY SIZE</b>	<b>3.5 – 3.5”</b> <b>4.3 – 4.3”</b> <b>5.7 – 5.7”</b> <b>7.0 – 7.0”</b>
4.	<b>MODEL SERIAL NO.</b>	<b>A (A-Z)</b>
5.	<b>RESOLUTION</b>	<b>320240 – 320x240 px</b> <b>480272 – 480x272 px</b> <b>800480 – 800x480 px</b>
6.	<b>INTERFACE</b>	<b>T – TFT LCD, RGB</b> <b>L – TFT LCD, LVDS</b> <b>C – TFT + Controller</b>
7.	<b>FRAME</b>	<b>N – No Frame</b> <b>F – Mounting Frame</b>
8.	<b>BACKLIGHT TYPE</b>	<b>W – LED White</b>
9.	<b>TOUCH PANEL</b>	<b>N – No Touch Panel</b> <b>R – Resistive Touch Panel</b> <b>C – Capacitive Touch Panel</b>
10.	<b>VERSION</b>	<b>00 (00-99)</b>

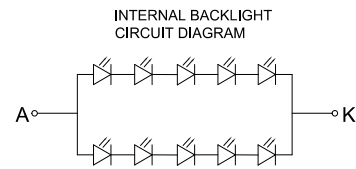
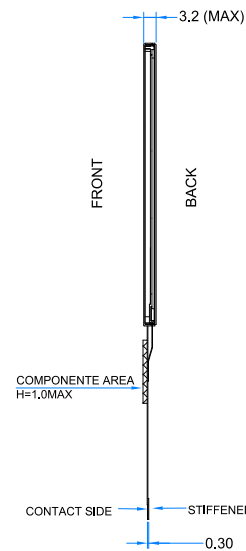
# LCD TFT Datasheet Rev.2.0.0

## RVT4.3A480272TNWN00

TFT PINOUT	
PIN	DESC
1	VLED-
2	VLED+
3	GND
4	VDD
5	R0
6	R1
7	R2
8	R3
9	R4
10	R5
11	R6
12	R7
13	G0
14	G1
15	G2
16	G3
17	G4
18	G5
19	G6
20	G7
21	B0
22	B1
23	B2
24	B3
25	B4
26	B5
27	B6
28	B7
29	GND
30	DCLK
31	DISP
32	HSYNC
33	VSYNC
34	DE
35	NC
36	GND
37	NC
38	NC
39	NC
40	NC



- NOTES:
1. DISPLAY TYPE: TFT, TRANSMISSIVE, NORMALLY WHITE
  2. OPERATION VOLTAGE: VDD=3.3V
  3. VIEWING DIRECTION: 12 O'CLOCK
  4. IC CONTROLLER: HX8257A
  5. OPERATING TEMP.: -20°C ~ 70°C
  6. STORAGE TEMP.: -30°C ~ 80°C
  7. LED BACKLIGHT: 10-LED WHITE
  8. SURFACE LUMINANCE: 550 cd/m<sup>2</sup>
  9. GENERAL TOLERANCE: ±0.2
  10. RoHS COMPLIANT



2.0.0	Glass change, New TFT open dimension, FFC shape. New IC controller and updated pinout.	2017.05.24
Ver.	DESCRIPTION	DATE

CUSTOMER APVL
DRAWN
DFTG CHK
ENGR CHK
APPROVAL
<b>RIVERDI SP. Z</b>

### 3 ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	MIN	MAX	UNIT
Supply Voltage For LCD Logic	VDD	-0.3	4.5	V
Supply Voltage For CTP Logic	VDD-VSS	-0.3	3.6	V
Input Voltage For Logic	VIN	VSS-0.5	VDD	V
LED forward current (each LED)	IF	-	25	mA
Operating Temperature	T <sub>OP</sub>	-20	70	°C
Storage Temperature	T <sub>ST</sub>	-30	80	°C
Humidity	RH	-	90% (Max 60°C)	RH

### 4 ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT	NOTES
Supply Voltage For Module	VDD	3.0	3.3	3.6	V	
Input Current	IDD	-	19.5	TBD	mA	VDD = 3.3V
Input Voltage 'H' level	V <sub>IH</sub>	0.7VDD	-	VDD	V	
Input Voltage 'L' level	V <sub>IL</sub>	VSS	-	0.3VDD	V	

**Note 1:** The LED life time is defined as the module brightness decrease to 50% original brightness at Ta=25°C.

### 5 BACKLIGHT CHARACTERISTICS

ITEM	SYMBOL	MIN	TYP	MAX	UNIT
Voltage for LED backlight	V <sub>I</sub>	15.0	16.0	17.0	V
Current for LED backlight	I <sub>I</sub>	-	40	60	mA
LED Life Time	-	30000	50000	-	Hrs

**Note:** The LED life time is defined as the module brightness decrease to 50% original brightness at Ta=25°C.

### 6 ELECTRO-OPTICAL CHARACTERISTICS

ITEM	SYMBOL	CONDITION	MIN	TYP	MAX	UNIT	REMARK	NOTE
Response Time	Tr+Tf	θ=0° φ=0° Ta=25	-	20	30	ms	Figure 1	4
Contrast Ratio	Cr		320	400	-	---	Figure 2	1
Luminance Uniformity	δ WHITE		80	-	-	%	Figure 2	3
Surface Luminance	Lv		440	550	-	cd/m <sup>2</sup>	Figure 2	2
Viewing Angle Range	θ	φ = 90°	35	50	-	deg	Figure 3	6
		φ = 270°	55	70	-	deg	Figure 3	
		φ = 0°	55	70	-	Deg	Figure 3	
		φ = 180°	55	70	-	Deg	Figure 3	
CIE (x, y) Chromaticity	Red	θ=0° φ=0° Ta=25	x	0.570	0.620	0.670	Figure 2	5
			y	0.294	0.344	0.394		
	Green		x	0.256	0.306	0.356		
			y	0.513	0.563	0.613		
	Blue		x	0.083	0.133	0.183		
			y	0.099	0.149	0.199		
	White		x	0.250	0.300	0.350		
			y	0.280	0.330	0.380		

**Note 1.** Contrast Ratio(CR) is defined mathematically as below, for more information see Figure 1.

$$\text{Contrast Ratio} = \frac{\text{Average Surface Luminance with all white pixels (P1, P2, P3, P4, P5)}}{\text{Average Surface Luminance with all black pixels (P1, P2, P3, P4, P5)}}$$

**Note 2.** Surface luminance is the LCD surface from the surface with all pixels displaying white. For more information see Figure 2.

$L_v$  = Average Surface Luminance with all white pixels (P1, P2, P3, P4, P5)

**Note 3.** The uniformity in surface luminance  $\delta$  WHITE is determined by measuring luminance at each test position 1 through 5, and then dividing the maximum luminance of 5 points luminance by minimum luminance of 5 points luminance. For more information see Figure 2.

$$\delta \text{ WHITE} = \frac{\text{Minimum Surface Luminance with all white pixels (P1, P2, P3, P4, P5)}}{\text{Maximum Surface Luminance with all white pixels (P1, P2, P3, P4, P5)}}$$

**Note 4.** Response time is the time required for the display to transition from white to black (Rise Time,  $T_r$ ) and from black to white (Decay Time,  $T_f$ ). For additional information see FIG 1. The test equipment is Autronic-Melchers's ConoScope series.

**Note 5.** CIE (x, y) chromaticity, the x, y value is determined by measuring luminance at each test position 1 through 5, and then make average value.

**Note 6.** Viewing angle is the angle at which the contrast ratio is greater than 2. For TFT module the contrast ratio is greater than 10. The angles are determined for the horizontal or x axis and the vertical or y axis with respect to the z axis which is normal to the LCD surface. For more information see Figure 3.

**Note 7.** For viewing angle and response time testing, the testing data is based on Autronic-Melchers's ConoScope series. Instruments for Contrast Ratio, Surface Luminance, Luminance Uniformity, CIE the test data is based on TOPCON's BM-5 photo detector.

Figure 1. The definition of response time

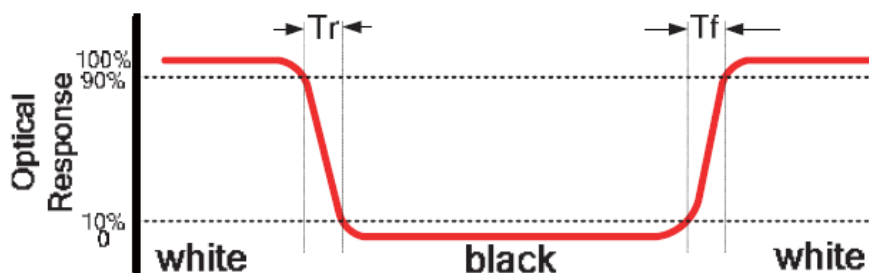


Figure 2. Measuring method for Contrast ratio, surface luminance, Luminance uniformity, CIE (x, y) chromaticity

A : 5 mm  
 B : 5 mm  
 H, V : Active Area  
 Light spot size  $\varnothing=5\text{mm}$ , 500mm distance from the LCD surface to detector lens  
 measurement instrument is TOPCON's luminance meter BM-5

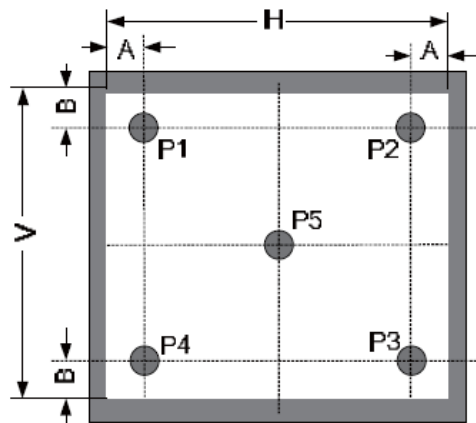
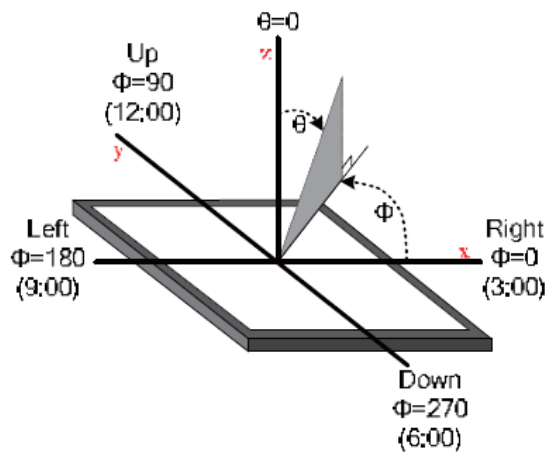


Figure 3. The definition of viewing angle



## 7 INTERFACE DESCRIPTION

PIN NO.	SYMBOL	DESCRIPTION	NOTE
1	VLED-	Cathode Of LED Backlight	
2	VLED+	Anode Of LED Backlight	
3	GND	Power Ground	
4	VDD	Power Voltage	
5-12	R0-R7	Red Data (R0-LSB, R7-MSB)	
13-20	G0-G7	Green Data (G0-LSB, G7-MSB)	
21-28	B0-B7	Blue Data (B0-LSB, B7-MSB)	
29	GND	Power Ground	
30	DCLK	Pixel Clock	
31	DISP	Display On/Off	
32	HSYNC	Horizontal Sync Signal	
33	VSYNC	Vertical Sync Signal	
34	DE	Data Enable	
35	NC	No Connect	
36	GND	Power Ground	
37	NC	No Connect	
38	NC	No Connect	
39	NC	No Connect	
40	NC	No Connect	

**Note 1:** Displays marked with „rev.2.0” printing, have the ability to select the operating mode: HV mode or DE mode.

HVDSL=“H”: Set under HV mode, VSD and HSD signal have to provide by system.

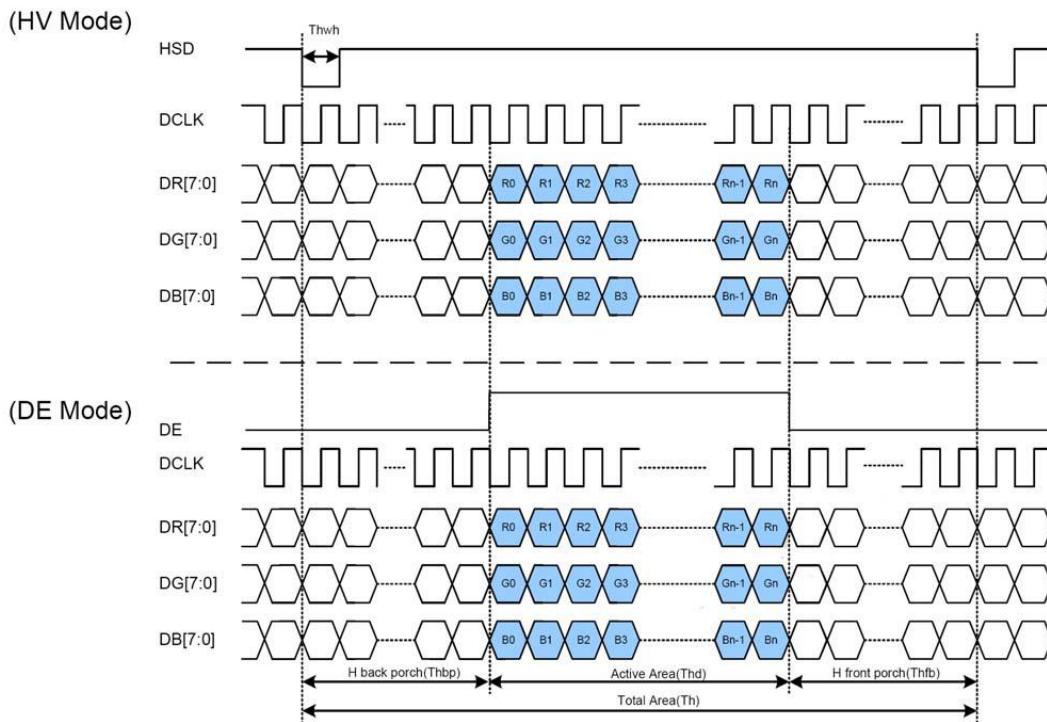
HVDSL=“L”: Set under DE mode, DE signal have to provide by system.

By default: Internal pulled weak low.

## 8 LCD TIMING CHARACTERISTICS

### 8.1 Clock and data input time diagram

Figure 4. Clock and data input time diagram



### 8.2 Parallel RGB input timing table

PARAMETER	SYMBOL	MIN	TYP	MAX	UNIT
DCLK Frequency	Fclk	5	9	12	MHz
VSD Period Time	Tv	277	288	400	H
VSD Display Area	Tvd		272		H
VSD Back Porch	Tvb	3	8	31	H
VSD Front Porch	Tvfp	2	8	97	H
HSD Period Time	Th	520	525	800	DCLK
HSD Display Area	Thd		480		DCLK
HSD Back Porch	Thbp	36	40	255	DCLK
HSD Front Porch	Thfp	4	5	65	DCLK



## 9 INSPECTION

Standard acceptance/rejection criteria for TFT module.

### 9.1 Inspection condition

#### *Ambient conditions:*

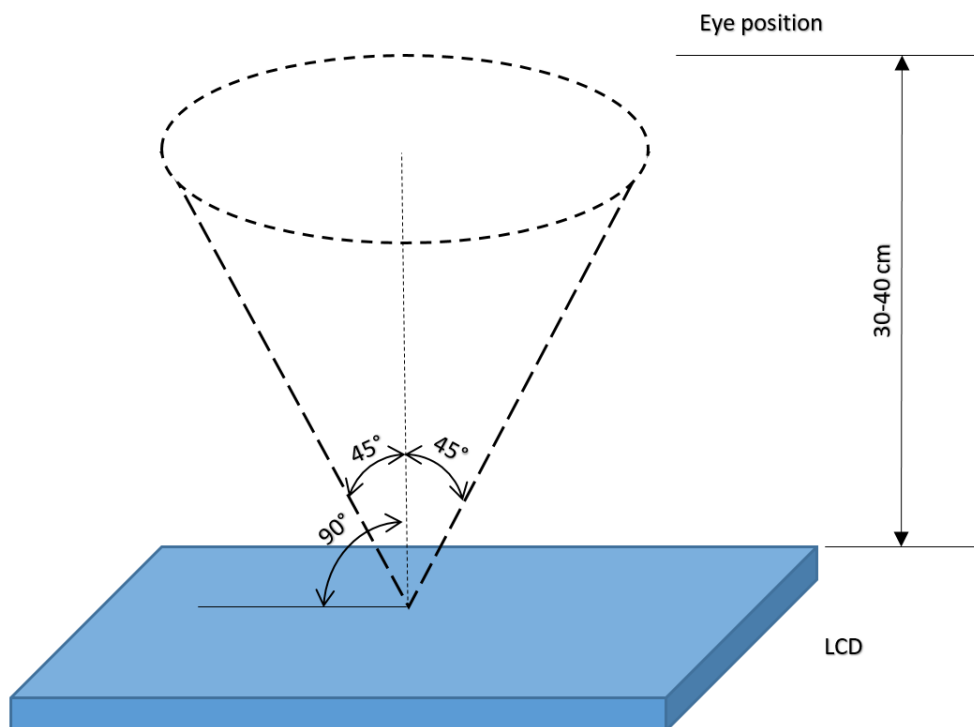
- Temperature:  $25\pm^{\circ}\text{C}$
- Humidity:  $(60\pm 10)\%RH$
- Illumination: Single fluorescent lamp non-directive (300 to 700 lux)

#### *Viewing distance:*

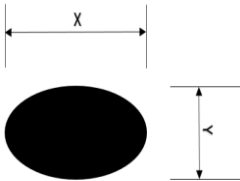
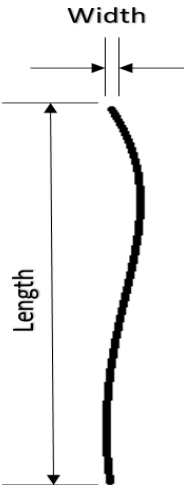
$35\pm 5\text{cm}$  between inspector bare eye and LCD.

#### *Viewing Angle:*

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



9.2 Inspection standard

Item	Criterion																																		
<p><b>Black spots, white spots, light leakage, Foreign Particle (round Type)</b></p>	<div style="display: flex; align-items: center; justify-content: center;">  <table border="1" style="margin-left: 20px;"> <thead> <tr> <th colspan="2">Size &lt; 5"</th> </tr> <tr> <th>Average Diameter</th> <th>Qualified Qty</th> </tr> </thead> <tbody> <tr> <td>D &lt; 0.2 mm</td> <td>Ignored</td> </tr> <tr> <td>0.2 mm &lt; D &lt; 0.3 mm</td> <td>3</td> </tr> <tr> <td>0.3 mm &lt; D &lt; 0.5 mm</td> <td>2</td> </tr> <tr> <td>0.5 mm &lt; D</td> <td>0</td> </tr> </tbody> </table> </div> <div style="text-align: center; margin: 10px 0;"> <math display="block">D = \frac{(x + y)}{2}</math> </div> <p>*Spots density: 10 mm<sup>2</sup></p>	Size < 5"		Average Diameter	Qualified Qty	D < 0.2 mm	Ignored	0.2 mm < D < 0.3 mm	3	0.3 mm < D < 0.5 mm	2	0.5 mm < D	0																						
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<p><b>LCD black spots, white spots, light leakage (line Type)</b></p>	<div style="display: flex; align-items: center; justify-content: center;">  <table border="1" style="margin-left: 20px;"> <thead> <tr> <th colspan="3">Size &lt; 5"</th> </tr> <tr> <th>Length</th> <th>Width</th> <th>Qualified Qty</th> </tr> </thead> <tbody> <tr> <td>-</td> <td>W &lt; 0.02</td> <td>Ignored</td> </tr> <tr> <td>L &lt; 3.0</td> <td>0.02 &lt; W &lt; 0.05</td> <td rowspan="2">2</td> </tr> <tr> <td>L &lt; 2.5</td> <td>0.05 &lt; W &lt; 0.08</td> </tr> <tr> <td>-</td> <td>0.08 &lt; W</td> <td>0</td> </tr> </tbody> </table> </div> <div style="text-align: center; margin: 10px 0;"> <table border="1"> <thead> <tr> <th colspan="3">Size &gt;= 5"</th> </tr> <tr> <th>Length</th> <th>Width</th> <th>Qualified Qty</th> </tr> </thead> <tbody> <tr> <td>-</td> <td>W &lt; 0.02</td> <td>Ignored</td> </tr> <tr> <td>L &lt; 3.0</td> <td>0.02 &lt; W &lt; 0.05</td> <td rowspan="2">4</td> </tr> <tr> <td>L &lt; 2.5</td> <td>0.05 &lt; W &lt; 0.08</td> </tr> <tr> <td>-</td> <td>0.08 &lt; W</td> <td>0</td> </tr> </tbody> </table> </div> <p>*Spots density: 10 mm<sup>2</sup></p>	Size < 5"			Length	Width	Qualified Qty	-	W < 0.02	Ignored	L < 3.0	0.02 < W < 0.05	2	L < 2.5	0.05 < W < 0.08	-	0.08 < W	0	Size >= 5"			Length	Width	Qualified Qty	-	W < 0.02	Ignored	L < 3.0	0.02 < W < 0.05	4	L < 2.5	0.05 < W < 0.08	-	0.08 < W	0
Size < 5"																																			
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-	0.08 < W	0																																	

Item	Criterion	
Clear spots	Size < 5"	
	<b>Average Diameter</b>	Qualified Qty
	<b>D &lt; 0.2 mm</b>	Ignored
	<b>0.2 mm &lt; D &lt; 0.3 mm</b>	3
	<b>0.3 mm &lt; D &lt; 0.5 mm</b>	2
	<b>0.5 mm &lt; D</b>	0
	Size >= 5"	
	<b>Average Diameter</b>	Qualified Qty
	<b>D&lt;0.2 mm</b>	Ignored
	<b>0.2 mm &lt; D &lt; 0.3 mm</b>	4
	<b>0.3 mm &lt; D &lt; 0.5 mm</b>	2
	<b>0.5 mm &lt; D</b>	0
	*Spots density: 10 mm	
	Polarizer bubbles	Size < 5"
<b>Average Diameter</b>		Qualified Qty
<b>D &lt; 0.2 mm</b>		Ignored
<b>0.2 mm &lt; D &lt; 0.5 mm</b>		3
<b>0.5 mm &lt; D &lt; 1 mm</b>		2
<b>1 mm &lt; D</b>		0
<b>Total Q'ty</b>		3
Size >= 5"		
<b>Average Diameter</b>		Qualified Qty
<b>D&lt;0.25 mm</b>		Ignored
<b>0.25 mm &lt; D &lt; 0.5 mm</b>		3
<b>0.5 mm &lt; D</b>		0
Electrical Dot Defect		Size < 5"
		<b>item</b>
	<b>Black do defect</b>	4
	<b>Bright dot defect</b>	2
	<b>Total Dot</b>	5
	Size >= 5"	
	<b>item</b>	Qualified Qty
	<b>Black do defect</b>	5
	<b>Bright dot defect</b>	2
	<b>Total Dot</b>	5

Item	Criterion																																	
Touch panel spot	<table border="1"> <thead> <tr> <th colspan="3" data-bbox="470 264 1375 300">Size &lt; 5"</th> </tr> <tr> <th data-bbox="470 300 1168 336">Average Diameter</th> <th colspan="2" data-bbox="1168 300 1375 336">Qualified Qty</th> </tr> </thead> <tbody> <tr> <td data-bbox="470 336 1168 371"><b>D &lt; 0.2 mm</b></td> <td colspan="2" data-bbox="1168 336 1375 371">Ignored</td> </tr> <tr> <td data-bbox="470 371 1168 407"><b>0.2 mm &lt; D &lt; 0.4 mm</b></td> <td colspan="2" data-bbox="1168 371 1375 407">5</td> </tr> <tr> <td data-bbox="470 407 1168 443"><b>0.4 mm &lt; D &lt; 0.5 mm</b></td> <td colspan="2" data-bbox="1168 407 1375 443">2</td> </tr> <tr> <td data-bbox="470 443 1168 479"><b>0.5 mm &lt; D</b></td> <td colspan="2" data-bbox="1168 443 1375 479">0</td> </tr> <tr> <th colspan="3" data-bbox="470 524 1375 560">Size &gt;= 5"</th> </tr> <tr> <th data-bbox="470 560 1168 595">Average Diameter</th> <td colspan="2" data-bbox="1168 560 1375 595">Qualified Qty</td> </tr> <tr> <td data-bbox="470 595 1168 631"><b>D &lt; 0.25 mm</b></td> <td colspan="2" data-bbox="1168 595 1375 631">Ignored</td> </tr> <tr> <td data-bbox="470 631 1168 667"><b>0.25 mm &lt; D &lt; 0.5 mm</b></td> <td colspan="2" data-bbox="1168 631 1375 667">4</td> </tr> <tr> <td data-bbox="470 667 1168 703"><b>0.5 mm &lt; D</b></td> <td colspan="2" data-bbox="1168 667 1375 703">0</td> </tr> </tbody> </table>	Size < 5"			Average Diameter	Qualified Qty		<b>D &lt; 0.2 mm</b>	Ignored		<b>0.2 mm &lt; D &lt; 0.4 mm</b>	5		<b>0.4 mm &lt; D &lt; 0.5 mm</b>	2		<b>0.5 mm &lt; D</b>	0		Size >= 5"			Average Diameter	Qualified Qty		<b>D &lt; 0.25 mm</b>	Ignored		<b>0.25 mm &lt; D &lt; 0.5 mm</b>	4		<b>0.5 mm &lt; D</b>	0	
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Touch panel White line Scratch	<table border="1"> <thead> <tr> <th colspan="3" data-bbox="470 817 1375 853">Size &lt; 5"</th> </tr> <tr> <th data-bbox="470 853 726 889">Length</th> <th data-bbox="726 853 1168 889">Width</th> <th data-bbox="1168 853 1375 889">Qualified Qty</th> </tr> </thead> <tbody> <tr> <td data-bbox="470 889 726 925">-</td> <td data-bbox="726 889 1168 925">W &lt; 0.02</td> <td data-bbox="1168 889 1375 925">Ignored</td> </tr> <tr> <td data-bbox="470 925 726 960"><b>L &lt; 3.0</b></td> <td data-bbox="726 925 1168 960">0.02 &lt; W &lt; 0.05</td> <td data-bbox="1168 925 1375 960">2</td> </tr> <tr> <td data-bbox="470 960 726 996"><b>L &lt; 2.5</b></td> <td data-bbox="726 960 1168 996">0.05 &lt; W &lt; 0.08</td> <td data-bbox="1168 960 1375 996"></td> </tr> <tr> <td data-bbox="470 996 726 1032">-</td> <td data-bbox="726 996 1168 1032">0.08 &lt; W</td> <td data-bbox="1168 996 1375 1032">0</td> </tr> <tr> <th colspan="3" data-bbox="470 1077 1375 1113">Size &gt;= 5"</th> </tr> <tr> <th data-bbox="470 1113 726 1149">Length</th> <th data-bbox="726 1113 1168 1149">Width</th> <th data-bbox="1168 1113 1375 1149">Qualified Qty</th> </tr> <tr> <td data-bbox="470 1149 726 1184">-</td> <td data-bbox="726 1149 1168 1184">W &lt; 0.03</td> <td data-bbox="1168 1149 1375 1184">Ignored</td> </tr> <tr> <td data-bbox="470 1184 726 1220"><b>L &lt; 5.0</b></td> <td data-bbox="726 1184 1168 1220">0.03 &lt; W &lt; 0.05</td> <td data-bbox="1168 1184 1375 1220">2</td> </tr> <tr> <td data-bbox="470 1220 726 1256">-</td> <td data-bbox="726 1220 1168 1256">0.05 &lt; W</td> <td data-bbox="1168 1220 1375 1256">0</td> </tr> </tbody> </table>	Size < 5"			Length	Width	Qualified Qty	-	W < 0.02	Ignored	<b>L &lt; 3.0</b>	0.02 < W < 0.05	2	<b>L &lt; 2.5</b>	0.05 < W < 0.08		-	0.08 < W	0	Size >= 5"			Length	Width	Qualified Qty	-	W < 0.03	Ignored	<b>L &lt; 5.0</b>	0.03 < W < 0.05	2	-	0.05 < W	0
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-	0.05 < W	0																																

## 10 RELIABILITY TEST

NO.	TEST ITEM	TEST CONDITION
1	High Temperature Storage	80±2°C/240hours
2	Low Temperature Storage	-30±2°C/240hours
3	High Temperature Operating	70±2°C/240hours
4	Low Temperature Operating	-20±2°C/240hours
5	Temperature Cycle	-30±2°C~25~80±2°C × 20 cycles (30min.) (5min.) (30min.)
6	Damp Proof Test	60°C ±5°C × 90%RH/240hours
7	Vibration Test	Frequency 10Hz~55Hz Amplitude of vibration : 1.5mm Sweep: 10Hz~55Hz~10Hz X, Y, Z 2 hours for each direction.
8	Package Drop Test	Height:60 cm 1 corner,3 edges,6 surfaces
9	ESD Test	Air: ±4KV 150pF/330Ω 5 times Contact: ±2KV 150pF/330Ω 5 time

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