PRODUCT SPECIFICATION

9.0" TFT LCD MODULE
MODEL: T090128720-A0WMN-001   Ver:1.1

< ◇ >   Preliminary Specification

< ◆ >   Finally Specification

CUSTOMER'S APPROVAL	
CUSTOMER :	
SIGNATURE:	DATE:

APPROVED BY	PM REVIEWED	PD REVIEWED	PREPARED BY

Revision History

Revision	Date	Originator	Detail	Remarks
Ver 1.0	2016.09.01	ZFY	Initial Release	
1.1	2018.04.23	ZFY	Add LED working life Modify many details	P5 P21/P22

Table of Contents

1. General Description

The specification is a transmissive type color active matrix liquid crystal display (LCD) which uses amorphous thin film transistor (TFT) as switching devices. This product is composed of a TFT-LCD panel, driver ICs and a backlight unit.

2. Module Parameter

Features	Details	Unit
Display Size(Diagonal)	9.0"	
Display Mode	Transmissive /Normally black	
Resolution	1280 RGB x 720	Pixels
View Direction	FULL View	Best Image
Module Outline	214.7(H) x 122.8(V) x 6.4(T) (Note1)	mm
Active Area	201.6(H) x108(V)	mm
Pixel Pitch	157.5(H) x 150(V)	um
Pixel Arrangement	RGB 2domain stripe	
Display Colors	16.7M	
Interface	LVDS Interface	
With or without the touch panel	Without	
Operating Temperature	**-20～70**	℃
Storage Temperature	**-40～85**	℃
Weight	(277)	g

Note 1: Inclusive hooks, posts, FFC/FPC tail etc.

3. Absolute Maximum Ratings

V_{SS}=0V, Ta=25℃

Item	Symbol	Min.	Max.	Unit
Digital Supply Voltage	VCC	-0.3	4.0	V
Storage temperature	T_{STG}	-40	85	℃
Operating temperature	T_{OP}	-20	70	℃

Note 1: If Ta below 50℃, the maximal humidity is 90%RH, if Ta over 50℃, absolute humidity should be less than 60%RH.

Note 2: The response time will be extremely slow when the operating temperature is around -10℃, and the back ground will become darker at high temperature operating.

4. DC Characteristics

Item		Symbol	Min.	Typ.	Max.	Unit
Supply Voltage		VDD	3	3.3	3.6	V
Differential input high threshold voltage		VLVTH	(100)	-	(300)	mV
Differential input low threshold voltage		VLVTL	(-300)	-	(-100)	mV
urrent Consumption All White	Logic	$I_{CC+} I_{IN}$	-	-	200	mA
	Analog					

5. Backlight Characteristic

5.1. Backlight Characteristic

Item	Symbol	Condition	Min.	Typ.	Max.	Unit
Forward Voltage	V_F	Ta=25 ºC, I_F=52mA/LED	22.4	25.6	27.2	V
Forward Current	I_F	Ta=25 ºC, V_F=3.2V/LED		156		mA
Power dissipation	P_D	-	3.5	4.0	4.25	W
Uniformity	Avg	-	70	-	-	%
LED working life(25℃)	-		-	30000	-	Hrs
Drive method	Constant current					
LED Configuration	24 White LEDs (8 LEDs in one string and 3 groups in parallel)					

Note1：LED life time defined as follows: The final brightness is at 50% of original brightness.

The environmental conducted under ambient air flow, at Ta=25±2 ºC,60%RH±5%, I_F=20mA

### 5.2. Backlighting circuit
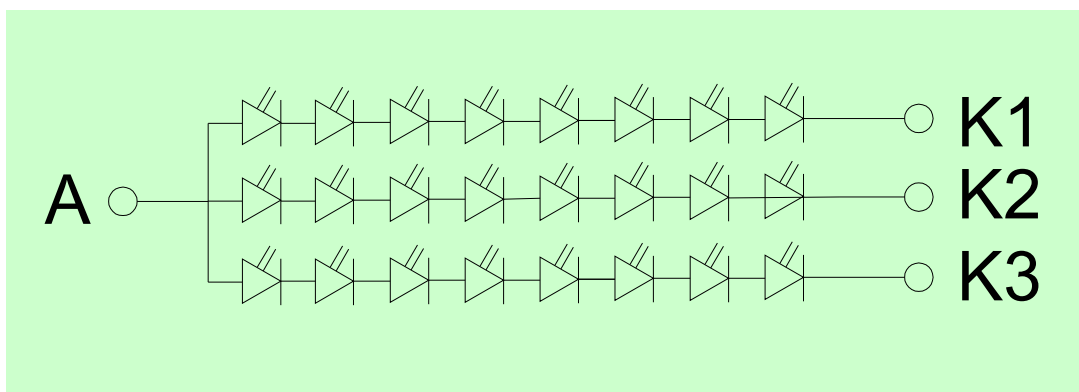
6. Optical Characteristics

6.1. Optical Characteristics

Ta=25ºC, V_{DD}=3.3V

	Item		Symbol	Condition	Specification			Unit
					Min.	Typ.	Max.	
Backlight On (Transmissive Mode)	Luminance on TFT(I_f=52mA/LED)		Lv		**450**	**550**	-	cd/m²
	Contrast ratio(See 6.3)		CR		700	900	-	
	Response time (See 6.2)		TR+TF		-	30	40	ms
	Chromaticity Transmissive (See 6.5)	Red	XR		**0.596**	**0.646**	**0.696**	
			YR		**0.287**	**0.337**	**0.387**	
		Green	XG		**0.266**	**0.316**	**0.366**	
			YG		**0.564**	**0.614**	**0.664**	
		Blue	XB		**0.095**	**0.145**	**0.195**	
			YB		**0.029**	**0.079**	**0.129**	
		White	XW		**0.263**	**0.313**	**0.363**	
			YW		**0.279**	**0.329**	**0.379**	
	Viewing Angle (See 6.4)	Horizontal	θX+	Center CR≥10	-	80	-	Deg.
			θX-		-	80	-	
		Vertical	φY+		-	80	-	
			φY-		-	80	-	
	NTSC ratio（Color gamut）				65	70	-	%

6.2. Definition of Response Time

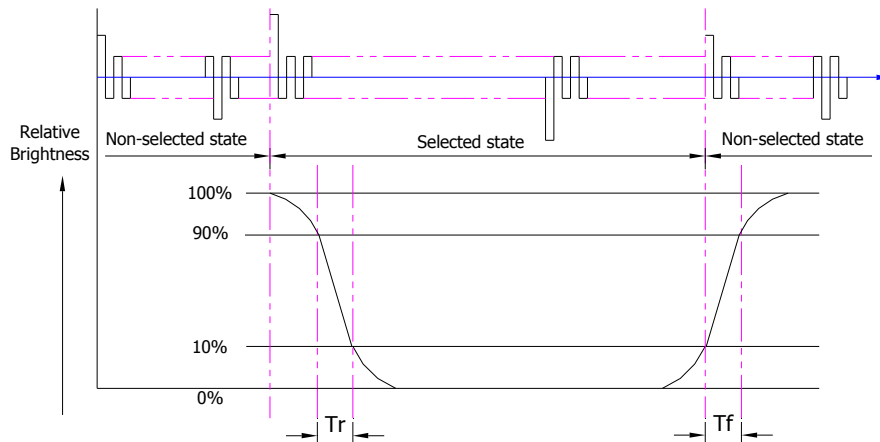### 6.2.1. Normally Black Type (Negative)
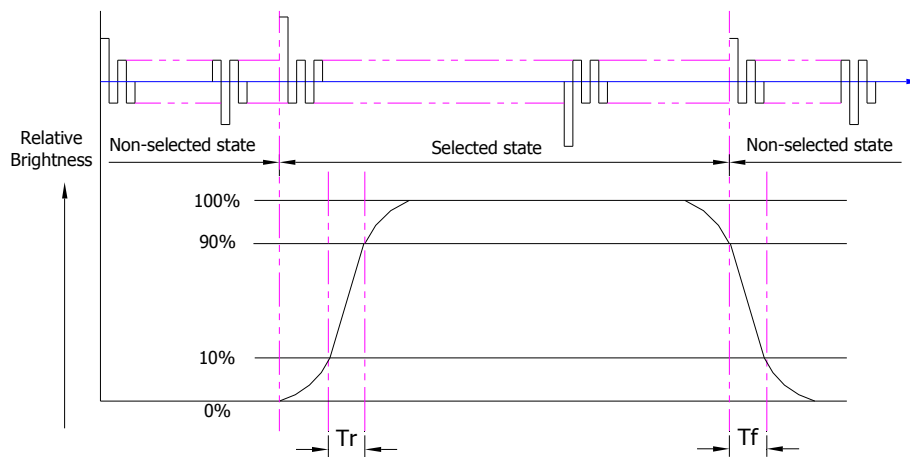
Tr is the time it takes to change form non-selected stage with relative luminance 10% to selected state with relative luminance 90%;

Tf is the time it takes to change from selected state with relative luminance 90% to

non-selected state with relative luminance 10%.

Note: Measuring machine: LCD-5100

6.2.2.   Normally White Type (Positive)

Tr is the time it takes to change form non-selected stage with relative luminance 90% to selected state with relative luminance 10%;

Tf is the time it takes to change from selected state with relative luminance 10% to non-selected state with relative luminance 90%;

Note: Measuring machine: LCD-5100 or EQUI

6.3.   Definition of Contrast Ratio

Contrast is measured perpendicular to display surface in reflective and transmissive mode.

The measurement condition is:

Measuring Equipment	Eldim or Equivalent
Measuring Point Diameter	3mm//1mm
Measuring Point Location	Active Area centre point
Test pattern	A: All Pixels white
	B: All Pixel black
Contrast setting	Maximum

Definitions: CR (Contrast) = Luminance of White Pixel / Luminance of Black Pixel
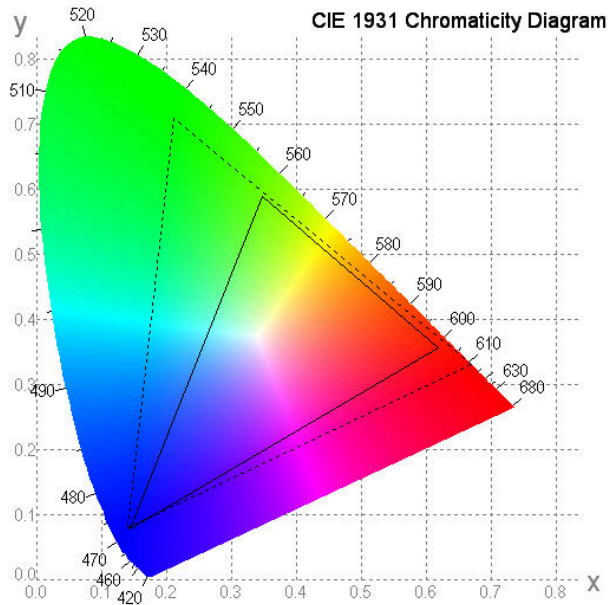
6.4. Definition of Viewing Angles
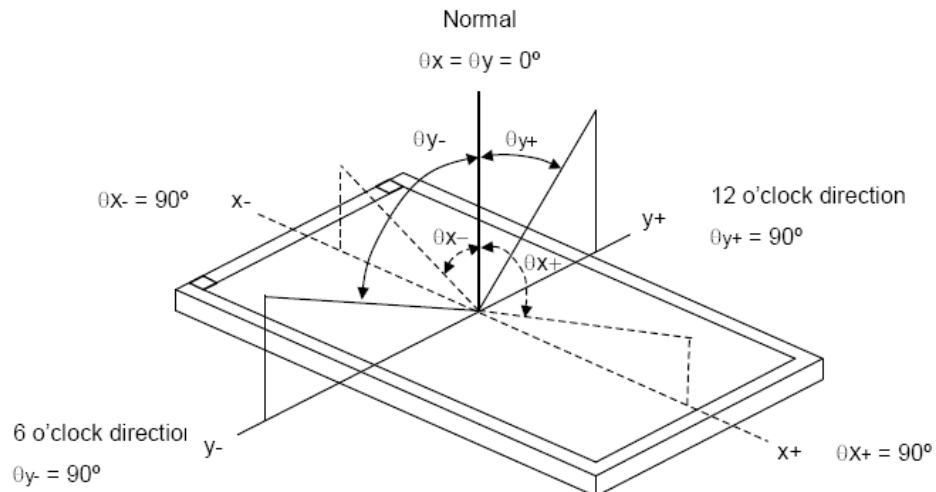
Measuring machine: LCD-5100 or EQUI

6.5. Definition of Color Appearance

R,G,B and W are defined by (x, y) on the IE chromaticity diagram

NTSC=area of RGB triangle/area of NTSC triangleX100%

Measuring picture: Red, Green, Blue and White (Measuring machine: BM-7)

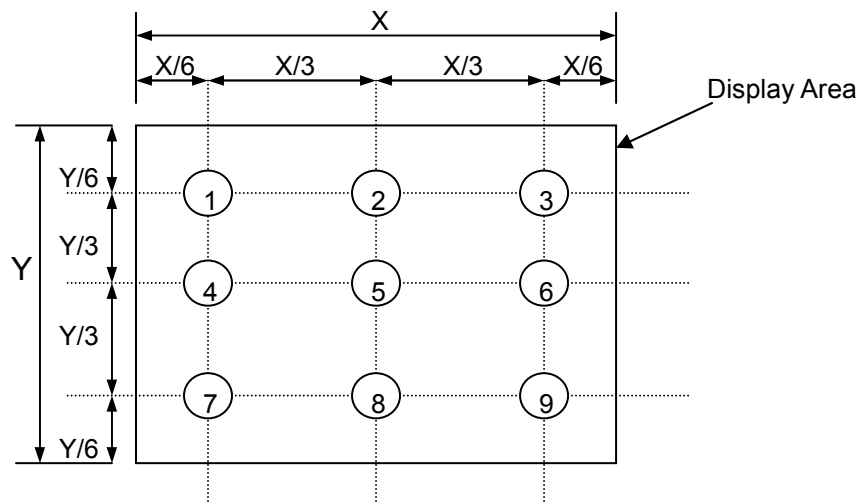## 6.6. Definition of Surface Luminance, Uniformity and Transmittance

Using the transmissive mode measurement approach, measure the white screen luminance of the display panel and backlight.

6.6.1. Surface Luminance: L_V = average (L_{P1}:L_{P9})

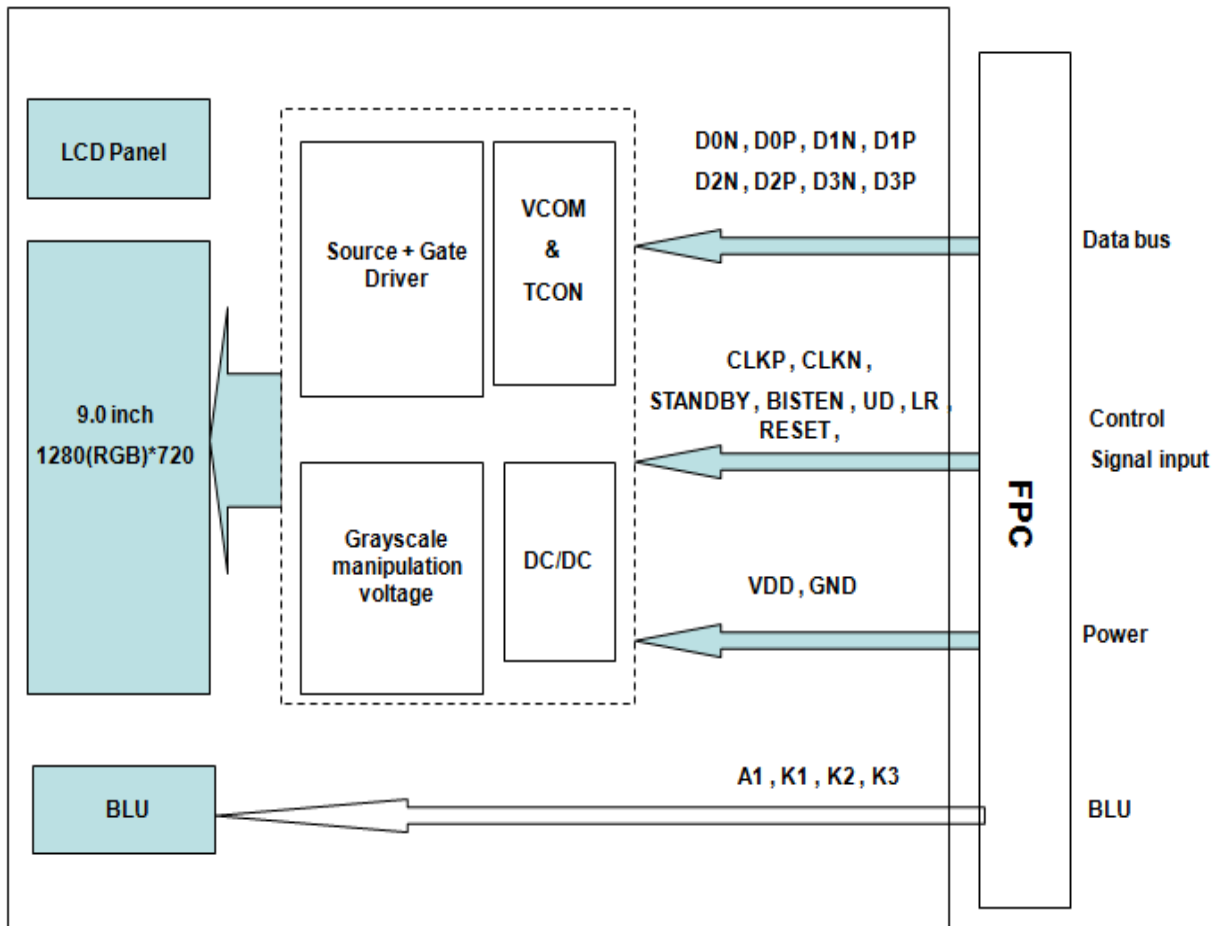6.6.2. Uniformity = Minimal (L_{P1}:L_{P9}) / Maximal (L_{P1}:L_{P9}) * 100%

6.6.3. Transmittance = L_V on LCD / L_V on Backlight * 100%

Note: Measuring machine: BM-7

7. Block Diagram and Power Supply

8. Interface Pins Definition

1) The LCD Module Electrical Interface Connection

MODULE CONNBCTOR: P/N:FH28-50S-0.5SH

No.	Symbol	Function	Remark
1	GND	System Ground	
2	GND	System Ground	
3	GND	System Ground	
4	GND	System Ground	
5	GND	System Ground	
6	GND	System Ground	
7	GND	System Ground	
8	VDD	System Power(3.3V)	
9	VDD	System Power(3.3V)	
10	VDD	System Power(3.3V)	
11	GND	System Ground	
12	STANDBY	Standby mode setting pin, active low	
13	RESET	H : normal operation L : reset state, suggest to connecting with an RC circuit for stability	
14	GND	System Ground	
15	CS	Not connected	
16	SDA	Not connected	
17	SCL	Not connected	
18	GND	System Ground	
19	BISTEN	Built-In Self Test function: H ,enable; L : disable	
20	GND	System Ground	
21	NC	Not connected	
22	GND	System Ground	
23	D3N	LVDS Differential Data Pair	
24	D3P	LVDS Differential Data Pair	
25	GND	System Ground	
26	D2N	LVDS Differential Data Pair	
27	D2P	LVDS Differential Data Pair	
28	GND	System Ground	
29	D1N	LVDS Differential Data Pair	
30	D1P	LVDS Differential Data Pair	
31	GND	System Ground	
32	D0N	LVDS Differential Data Pair	
33	D0P	LVDS Differential Data Pair	
34	GND	System Ground	
35	CLKN	LVDS Differential CLK Pair	
36	CLKP	LVDS Differential CLK Pair	
37	GND	System Ground	

38	GND	System Ground	
39	NC	Not connected	
40	UD	Vertical shift direction selection	
41	LR	Horizontal shift direction selection	
42	NC	Not connected	
43	GND	System Ground	
44	GND	System Ground	
45	GND	System Ground	
46	GND	System Ground	
47	GND	System Ground	
48	GND	System Ground	
49	GND	System Ground	
50	GND	System Ground	

2) The LED Electrical Interface Connection

The Recommended connector : JST-GHR-05V-S

Pin No.	Symbol Pin	Description
1	A1	VLED+Anode1
2	NC	NC
3	K1	VLED-Cathode1
4	K2	VLED-Cathode2
5	K3	VLED-Cathode3

The Dimension of Connector :
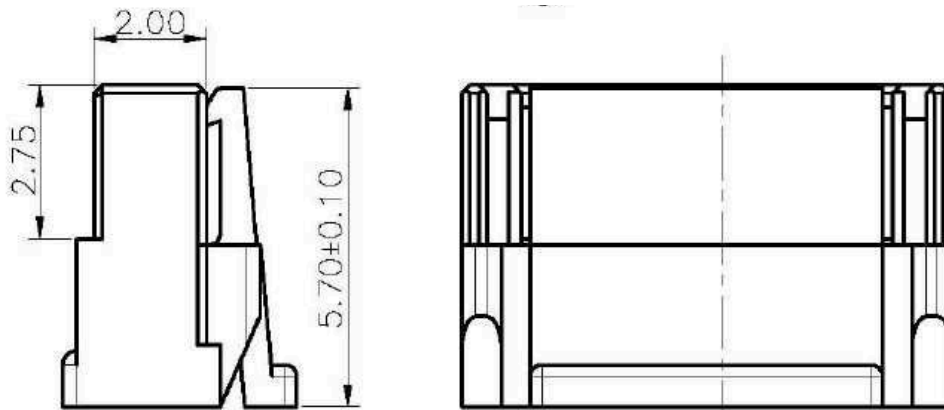
9. LVDS SIGNAL SPECIFICATION

1） LVDS Signal Electrical Characteristics

Parameter	Symbol	Spec.			Unit
		Min.	Typ.	Max.	
Clock frequency	F_{LVCYC}	20		85	MHz
Clock period	T_{LVCYC}	11.76			Nsec
1 data bit time	UI		1/7		T_{LVCYC}
Clock high time	T_{LVCH}		4		UI
Clock low time	T_{LVCL}		3		UI
Position 1	T_{POS1}	-0.2	0	0.2	UI
Position 0	T_{POS0}	0.8	1	1.2	UI
Position 6	T_{POS6}	1.8	2	2.2	UI
Position 5	T_{POS5}	2.8	3	3.2	UI
Position 4	T_{POS4}	3.8	4	4.2	UI
Position 3	T_{POS3}	4.8	5	5.2	UI
Position 2	T_{POS2}	5.8	6	6.2	UI
Input eye width	T_{EYEW}	0.6	-	-	UI
Input eye border	T_{EX}	-	-	0.2	UI
LVDS wake up time	T_{ENLVDS}	-	-	150	Ms
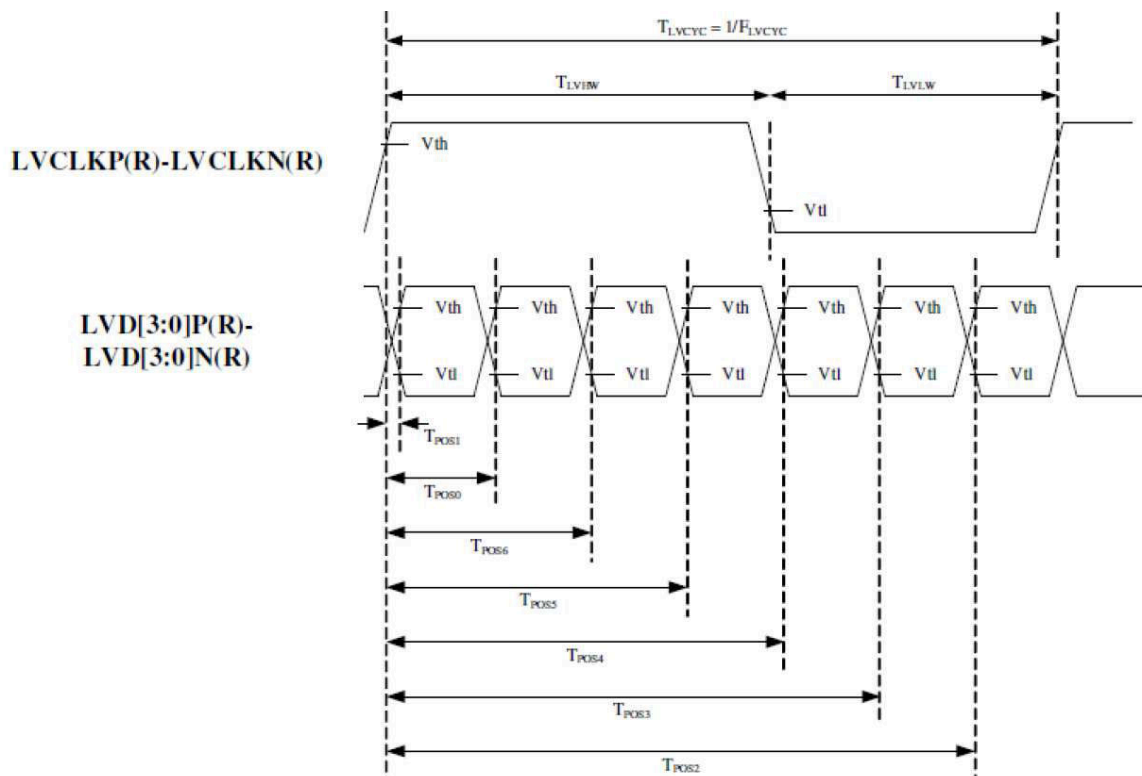
2）LVDS Signal Timing

Parameter	Symbol	Value			Unit
		Min.	Typ.	Max.	
CLK frequency	tCLK	57.6	58.1	70	Mhz
Horizontal back porch	tHBP	5	16	255	tCLK
Horizontal display area	tHD	1280	1280	1280	tCLK
Horizontal front porch	tHFP	24	26	260	tCLK
Horizontal pulse width	tHPW	10	12	16	tCLK
Horizontal period	tH	1320	1322	1536	tCLK
Vertical back porch	tVBP	2	5	255	tH
Vertical display area	tVD	720	720	720	tH
Vertical front porch	tVFP	5	8	260	tH
Vertical pulse width	tVPW	1	3	20	tH
Vertical period	tV	727	733	760	tH
Frame Rate	Fr	-	60	-	Hz

3）LVDS Input Signal Format
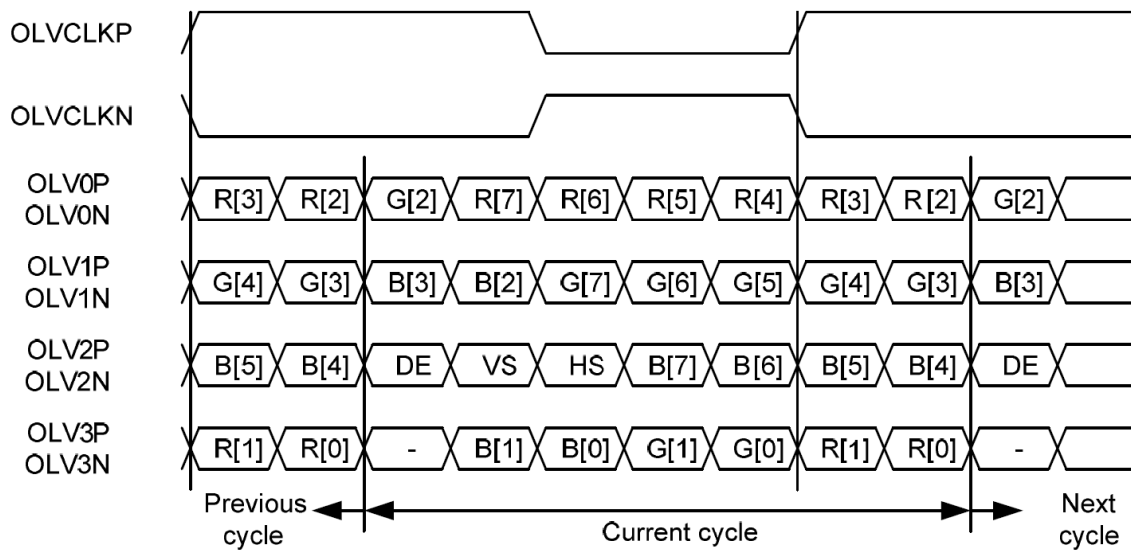
10. Quality Assurance

10.1 Purpose

This standard for Quality Assurance assures the quality of LCD module products supplied to customer.

10.2 Standard for Quality Test

10.2.1 Sampling Plan:

GB2828.1-2012

Single sampling, general inspection level II

10.2.2 Sampling Criteria:

Visual inspection: AQL 1.5%

Electrical functional: AQL 0.65%.

10.2.3 Reliability Test:

Detailed requirement refer to Reliability Test Specification.

10.3 Nonconforming Analysis & Disposition

10.3.1 Nonconforming analysis:

10.3.1.1 Customer should provide overall information of non-conforming sample for their complaints.

10.3.1.2 After receipt of detailed information from customer, the analysis of nonconforming parts usually should be finished in one week.

10.3.1.3 If cannot finish the analysis on time, customer will be notified with the progress status.

10.3.2 Disposition of nonconforming:

10.3.2.1 Non-conforming product over PPM level will be replaced.

10.3.2.2 The cause of non-conformance will be analyzed. Corrective action will be discussed and implemented.

10.4 Agreement Items

Shall negotiate with customer if the following situation occurs:

10.4.1 There is any discrepancy in standard of quality assurance.

10.4.2 Additional requirement to be added in product specification.

10.4.3 Any other special problem.

10.5 Standard of the Product Visual Inspection

10.5.1 Appearance inspection:

10.5.1.1 The inspection must be under illumination about 1000 – 1500 lx, and the distance of view must be at 30cm ± 2cm.

10.5.1.2 The viewing angle should be 45° from the vertical line without reflection light or follows customer's viewing angle specifications.

10.5.1.3 Definition of area: A Zone: Active Area, B Zone: Viewing Area,
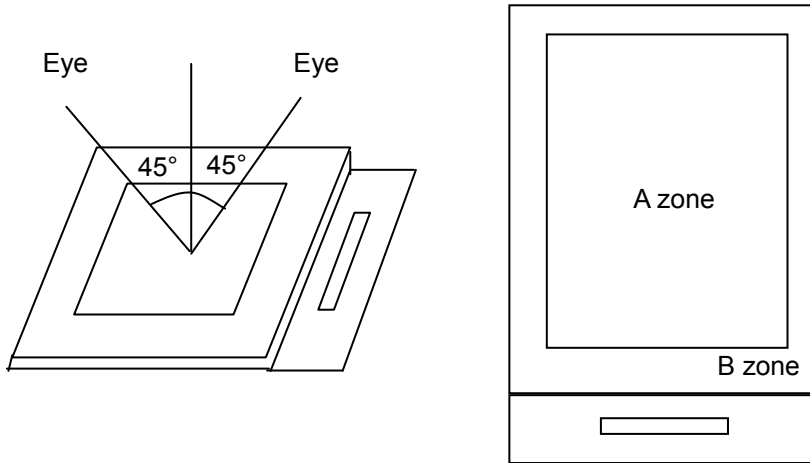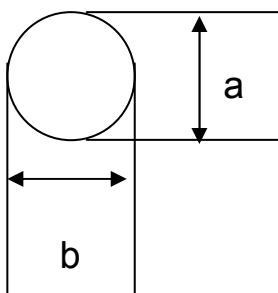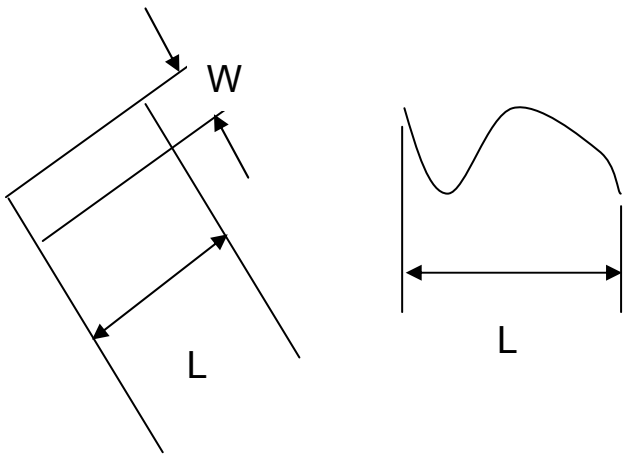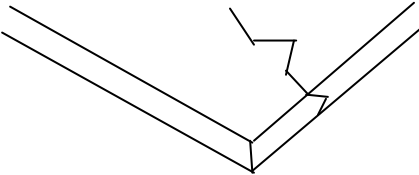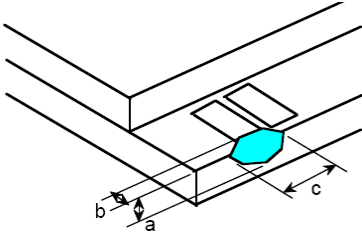
10.5.2 Basic principle:

    10.5.2.1 A set of sample to indicate the limit of acceptable quality level must be discussed by both us and customer when there is any dispute happened.
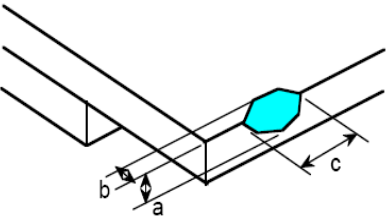
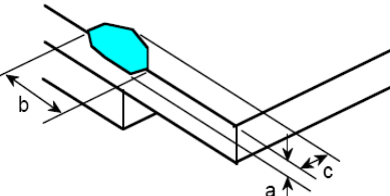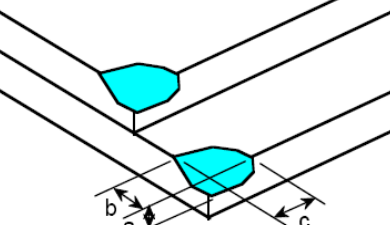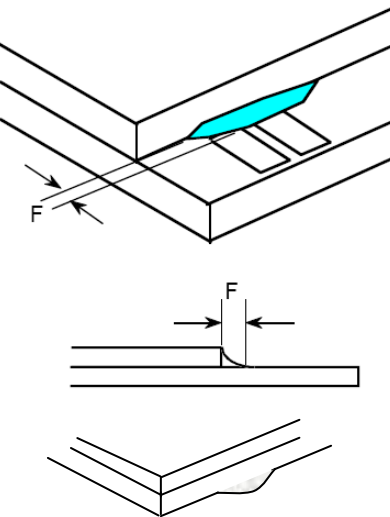   10.5.2.2 New item must be added on time when it is necessary.

10.6   Inspection Specification
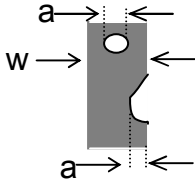
No.	Item	Criteria (Unit: mm)			
01	Black / White spot Foreign material (Round type) Pinholes Stain Particles inside cell. (Minor defect)	 $\varphi = (a + b)/2$ Distance between 2 defects should more than 5mm apart.			

Size \ Area	Acc. Qty
$\varphi \leqslant 0.20$	Ignore
$0.20 < \varphi \leqslant 0.50$	$N \leqslant 3$
$0.50 < \varphi$	0

No.	Item				
02	Electrical Defect (Minor defect)	Bright dot	Display Area $N \leqslant 2$	Total $N \leqslant 2$	Note1
		Dark dot	$N \leqslant 4$	$N \leqslant 4$	
		Total dot	$N \leqslant 4$	$N \leqslant 4$	
		Mura	Not visible through 5% ND filters.		Note 2

Remark:
1. Bright dot caused by scratch and foreign object accords to item 1.

| 03 | Black and White line Scratch Foreign material (Line type) (Minor defect) | |

Length	Width	Acc. Qty
/	$W \leqq 0.1$	Ignore
$L \leqq 2.5$	$0.1 < W \leqq 0.2$	3
$L > 2.5$	$0.2 < W$	0
Total		3

Distance between 2 defects should more than 3mm apart. Scratches not viewable through the back of the display are acceptable.

| 04 | Glass Crack (Minor defect) | |

Crack is potential to enlarge, any type is not allowed.

| 05 | Glass Chipping Pad Area: (Minor defect) | |

Length and Width	Acc. Qty
c > 3.0, b< 1.0	1
c< 3.0, b< 1.0	3
a<Glass Thickness	

06	Glass Chipping Rear of Pad Area: (Minor defect) 	<table><tr><th>Length and Width</th><th>Acc. Qty</th></tr><tr><td>c > 3.0, b< 1.0</td><td>1</td></tr><tr><td>c< 3.0, b< 1.0</td><td>2</td></tr><tr><td>c< 3.0, b< 0.5</td><td>4</td></tr><tr><td colspan="2">a<Glass Thickness</td></tr></table>
07	Glass Chipping Except Pad Area: (Minor defect) 	<table><tr><th>Length and Width</th><th>Acc. Qty</th></tr><tr><td>c > 3.0, b< 1.0</td><td>1</td></tr><tr><td>c< 3.0, b< 1.0</td><td>2</td></tr><tr><td>c< 3.0, b< 0.5</td><td>4</td></tr><tr><td colspan="2">a<Glass Thickness</td></tr></table>
08	Glass Corner Chipping: (Minor defect) 	<table><tr><th>Length and Width</th><th>Acc. Qty</th></tr><tr><td>c < 3.0, b< 3.0</td><td>Ignore</td></tr><tr><td colspan="2">a<Glass Thickness</td></tr></table>
09	Glass Burr: (Minor defect) 	<table><tr><th>Length</th><th>Acc. Qty</th></tr><tr><td>F < 1.0</td><td>Ignore</td></tr></table> Glass burr don't affect assemble and module dimension.

10	FPC Defect: (Minor defect) a→ w → ◯ a→	10.1 Dent, pinhole width a<w/3. (w: circuitry width.) 10.2 Open circuit is unacceptable. 10.3 No oxidation, contamination and distortion.
11	Bubble on Polarizer (Minor defect)	<table><tr><td>Diameter</td><td>Acc. Qty</td></tr><tr><td>φ≤0.30</td><td>Ignore</td></tr><tr><td>0.30 <φ≤0.50</td><td>N≤2</td></tr><tr><td>0.50 < φ</td><td>N=0</td></tr></table>
12	Dent on Polarizer (Minor defect)	<table><tr><td>Diameter</td><td>Acc. Qty</td></tr><tr><td>φ≤0.25</td><td>Ignore</td></tr><tr><td>0.25 <φ≤0.50</td><td>N≤4</td></tr><tr><td>0.50 < φ</td><td>None</td></tr></table>
13	Bezel	13.1 No rust, distortion on the Bezel. 13.2 No visible fingerprints, stains or other contamination.
14	Touch Panel	D: Diameter W: width L: length 14.1 Spot: D<0.25 is acceptable 　　　　0.25≤D≤0.4 2dots are acceptable and the distance between defects should more than 10 mm. 　　　　D>0.4 is unacceptable 14.2 Dent: D>0.40 is unacceptable 14.3 Scratch: W≤0.03, L≤10 is acceptable, 　　　　0.03<W≤0.10, L≤10 is acceptable Distance between 2 defects should more than 10 mm. 　　　　W>0.10 is unacceptable.
15	PCB	15.1 No distortion or contamination on PCB terminals. 15.2 All components on PCB must same as documented on the BOM/component layout. 15.3 Follow IPC-A-600F.
16	Soldering	Follow IPC-A-610C standard

17	Electrical Defect (Major defect)	The below defects must be rejected. 17.1 Missing vertical / horizontal segment, 17.2 Abnormal Display. 17.3 No function or no display. 17.4 Current exceeds product specifications. 17.5 LCD viewing angle defect. 17.6 No Backlight. 17.7 Dark Backlight. 17.8 Touch Panel no function.

Remark: LCD Panel Broken shall be rejected. Defect out of LCD viewing area is acceptable.

10.7 Classification of Defects

10.7.1 Visual defects (Except no / wrong label) are treated as minor defect and electrical defect is major.

10.7.2 Two minor defects are equal to one major in lot sampling inspection.

10.8 Identification/marking criteria

Any unit with illegible / wrong /double or no marking/ label shall be rejected.

10.9 Packaging

10.9.1 There should be no damage of the outside carton box, each packaging box should have one identical label.

10.9.2 Modules inside package box should have compliant mark.

10.9.3 All direct package materials shall offer ESD protection

Note1: Bright dot is defined as the defective area of the dot is larger than 50% of one sub-pixel area.
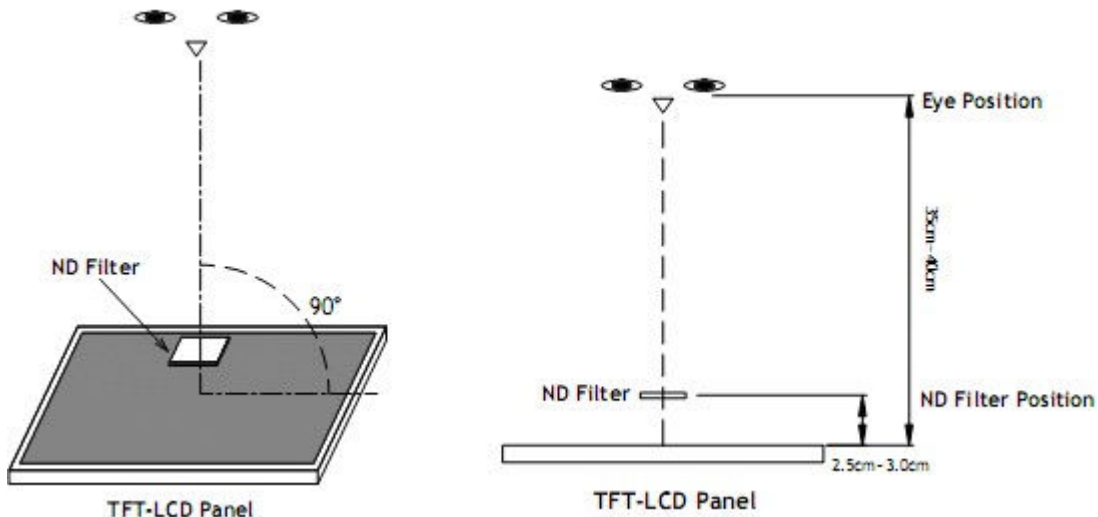
Bright dot: The bright dot size defect at black display pattern. It can be recognized by 2% transparency of filter when the distance between eyes and panel is 350mm±50mm.

Dark dot: Cyan, Magenta or Yellow dot size defect at white display pattern. It can be recognized by 5% transparency of filter when the distance between eyes and panel is 350mm±50mm.

Note2: Mura on display which appears darker / brighter against background brightness on parts of display area.

11. Reliability Specification

No	Item	Condition	Quantity	Criteria
1	High Temperature Operating	**70℃, 96Hrs**	2	GB/T2423.2 -2008
2	Low Temperature Operating	**-20℃, 96Hrs**	2	GB/T2423.1 -2008
3	High Humidity	**50℃, 90%RH, 96Hrs**	2	GB/T2423.3 -2006
4	High Temperature Storage	**85℃, 96Hrs**	2	GB/T2423.2 -2008
5	Low Temperature Storage	**-40℃, 96Hrs**	2	GB/T2423.1 -2008
6	Thermal Cycling Test	-20℃, 60min~70℃, 60min, 20 cycles.	2	GB/T2423.22 -2012
7	Packing vibration	Frequency range:10Hz~50Hz Acceleration of gravity:5G X,Y,Z 30 min for each direction.	2	GB/T5170.14 -2009
8	Electrical Static Discharge	Air:±8KV 150pF/330Ω 5 times	2	GB/T17626.2 -2006
		Contact:±4KV 150pF/330Ω 5 times		
9	Drop Test (Packaged)	Height:80 cm,1 corner, 3 edges, 6 surfaces.	2	GB/T2423.8 -1995

Note1. No defection cosmetic and operational function allowable.

Note2. Total current Consumption should be below double of initial value

12. Precautions and Warranty

12.1.Safety

12.1.1 The liquid crystal in the LCD is poisonous. Do not put it in your mouth. If the liquid crystal touches your skin or clothes, wash it off immediately using soap and water.
12.1.2 Since the liquid crystal cells are made of glass, do not apply strong impact on them. Handle with care.

12.2.Handling

12.2.1 Reverse and use within ratings in order to keep performance and prevent damage.
12.2.2 Do not wipe the polarizer with dry cloth, as it might cause scratch. If the surface of the LCD needs to be cleaned, wipe it swiftly with cotton or other soft cloth soaked with petroleum IPA, do not use other chemicals.

12.3.Storage

12.3.1.   Do not store the LCD module beyond the specified temperature ranges.
12.3.2.   Strong light exposure causes degradation of polarizer and color filter

12.4.Metal Pin (Apply to Products with Metal Pins)

12.4.1 Pins of LCD and Backlight

12.4.1.1 Solder tip can touch and press on the tip of Pin LEAD during the soldering
12.4.1.2 Recommended Soldering Conditions

Solder Type: Sn96.3~94-Ag3.3~4.3-Cu0.4~1.1
Maximum Solder Temperature: 370℃
Maximum Solder Time: 3s at the maximum temperature
Recommended Soldering Temp: 350±20℃
Typical Soldering Time: ≤3s

12.4.1.3 Solder Wetting

| Solder | Pin Lead | Solder | Pin Lead |
| Recommended | | Not Recommended | |
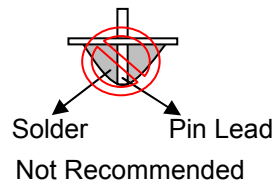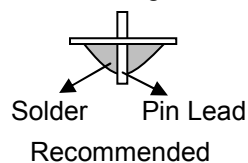
12.4.2Pins of EL

12.4.2.1 Solder tip can touch and press on the tip of EL leads during soldering.
12.4.2.2 No Solder Paste on the soldering pad on the motherboard is recommended.
12.4.2.3 Recommended Soldering Conditions

Solder type: Nippon Alimit Leadfree SR-34, size 0.5mm
Recommended Solder Temperature: 270～290℃
Typical Soldering Time: ≤2s
Minimum solder distance from EL lamp (body):2.0mm

12.4.2.4 No horizontal press on the EL leads during soldering.
12.4.2.5 180° bend EL leads three times is not allowed.

12.4.2.6 Solder Wetting
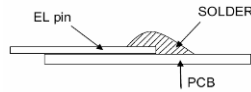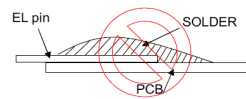
Recommended   Not Recommended

12.4.2.7 The type of the solder iron:
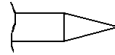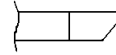
Recommended   Not Recommended

12.4.2.8 Solder Pad
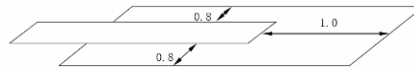
12.5. Operation

12.5.1. Do not drive LCD with DC voltage

12.5.2. Response time will increase below lower temperature

12.5.3. Display may change color with different temperature

12.5.4. Mechanical disturbance during operation, such as pressing on the display area, may cause the segments to appear "fractured".

12.5.5. Do not connect or disconnect the LCM to or from the system when power is on.

12.5.6. Never use the LCM under abnormal condition of high temperature and high humidity.

12.5.7. Module has high frequency circuits. Sufficient suppression to the electromagnetic interface shall be done by system manufacturers. Grounding and shielding methods may be important to minimize the interference.

12.5.8. Do not display the fixed pattern for long time（we suggest the time not longer than one hour）because it may develop image sticking due to the TFT structure.

12.6. Static Electricity

12.6.1. CMOS LSIs are equipped in this unit, so care must be taken to avoid the electro-static charge, by ground human body, etc.

12.6.2. The normal static prevention measures should be observed for work clothes and benches.

12.6.3. The module should be kept into anti-static bags or other containers resistant to static for storage.

12.7. Limited Warranty

12.7.1. Our warranty liability is limited to repair and/or replacement. We will not be responsible for any consequential loss.

12.7.2. If possible, we suggest customer to use up all modules in six months. If the module storage time over twelve months, we suggest that recheck it before the module be used.

12.7.3. After the product shipped, any product quality issues must be feedback within three months, otherwise, we will not be responsible for the subsequent or consequential events.

13. Packaging

TBD

T090128720-A0WMN-001
Rev:1.1

REV	REVISION RECORD	APPROVED
A	First Issue	

214.7±0.3(LCM)
204.6±0.3(BEZEL OPENING)
201.6(A.A)
3.21±0.3
(4.71)
2.95±0.3
(4.45)

122.8±0.3(LCM)
111±0.3(BEZEL OPENING)
108(A.A)

9.0"
1280*RGB*720

101 TYP
56 TYP
16 TYP

(M1.8 Depth 1.2typ)

135±5
6.4±0.1

SHIELD COVER

BACKLIGHT CONNBCTOR
P/N:A1257H90-5P-L-HF
PIN1   PIN5

TYPE

SHRINK TUBE

109.71±0.5

MODULE CONNBCTOR
P/N:FH28-50S-0.5SH
PIN1   PIN50

SHIELD COVER

NO.	Pin assignment	NO.	Pin assignment
1	GND	26	D2N
2	GND	27	D2P
3	GND	28	GND
4	GND	29	D1N
5	GND	30	D1P
6	GND	31	GND
7	GND	32	D0N
8	VDD	33	D0P
9	VDD	34	GND
10	VDD	35	CLKN
11	GND	36	CLKP
12	STANDBY	37	GND
13	RESET	38	GND
14	GND	39	NC
15	CS	40	UD
16	SDA	41	LR
17	SCL	42	NC
18	GND	43	GND
19	BISTEN(GND)	44	GND
20	GND	45	GND
21	NC	46	GND
22	GND	47	GND
23	D3N	48	GND
24	D3P	49	GND
25	GND	50	GND

NOTES:
1.Display size:9.0"TFT
2.Viewing direction:FULL VIEWING
3.Polarizer mode:Transmissive/Normal black
4.Operation temperature:-20°C~+70°C
5.Storage temperature:-40°C~+85°C
6.Power supply voltage:3.3V
7.Backlight :White(24LED)/156mA/25.6V(TYP)
   Brightness:550(TYP)cd/m2
8.ROHS must be complied
* Unspecification tolerance are ±0.2mm

Backlight Connector Pin Assignment

1	2	3	4	5
A1	NC	K1	K2	K3

A

K1
K2
K3

Backlight Circuit

	VERSION	DATE	MODEL NAME:
	A	2016.08.02	T090128720-A0WMN-001
SCALE	NO.	UNIT	TITLE:
	1/1	mm	Outline
APPROVED	CHECKED	DRAWN	FILE NAME:
			T090128720-A0WMN-001_A