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Optical Bonding

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Cover glass

System solutions

OEM Solutions

Custom Display

Production Custom designs Installation

Mechanical design



Project No. 项目编号	ET185FH01-T
Customer 客户名称	
Module No. 客户型号	
Product type 产品内容	Standard LCD Module TFT: 1920*RGBx1080Dots 18.5" TFT LCD+CTP

客户确认Customer Approval	
项目负责人Project Manager	
品质主管Director of Quality	
采购工程师Purchasing Engineer	



1. Introduction

1.1 Scope of application

This specification applies to the LCD module that is supplied by YOURITECH Technology CO., LTD.

LCD specification: Dots 1920xRGBx1080.

All material & processing of the LCD module should be Lead Free.

1.2 TFT features:

Structure: TFT PANNEL+IC +FPC+BL;

ALL O'CLOCK Type LCD

1920dot-segment and1080 dot-common outputs;

16.7M Color can be selected by software;

White LED back light;

LVDS interface with 2 pixel / clock

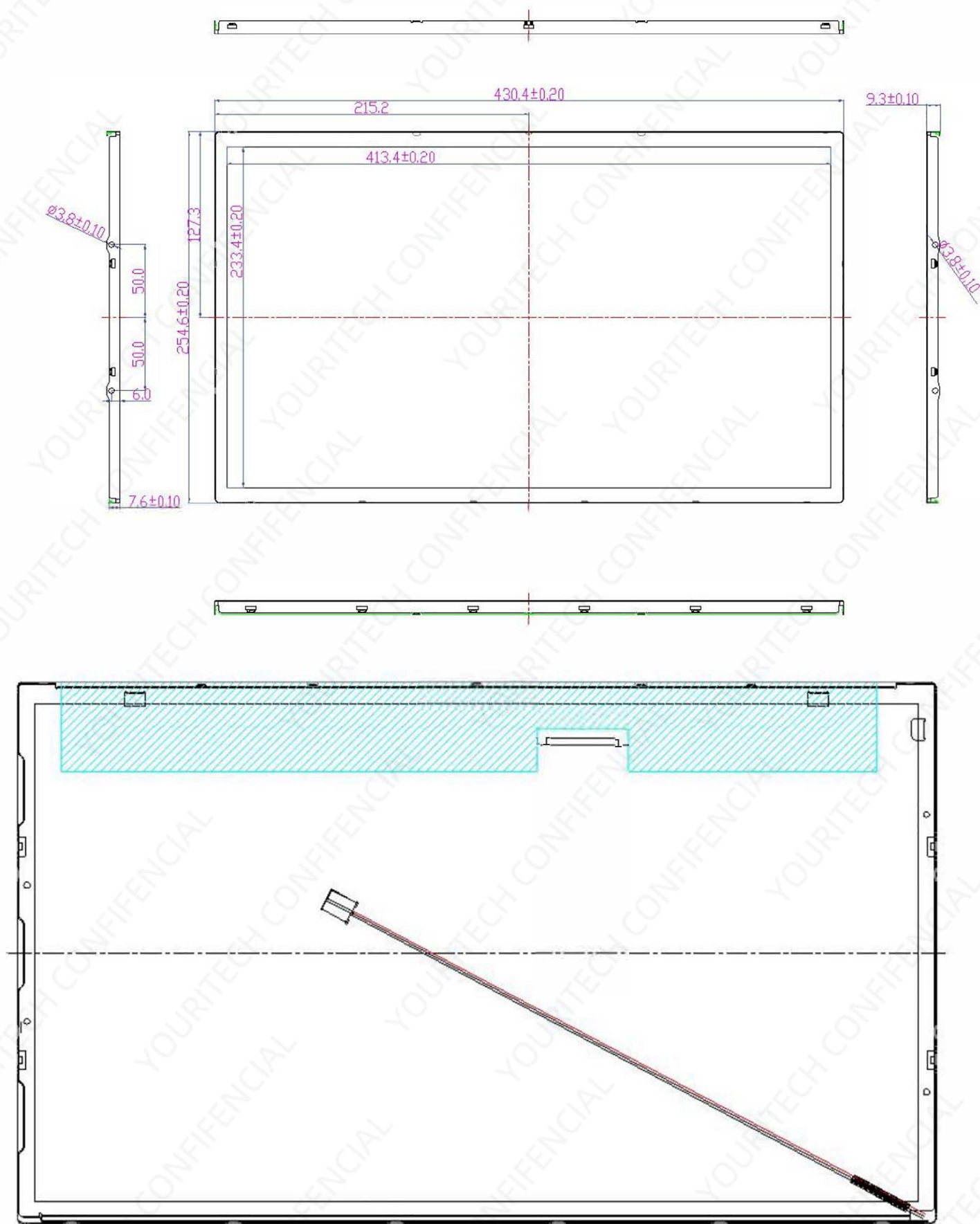
1.3 Applications:



2. LCM General specification

ITEM	Standard value	Unit
LCD Type	Normally Black	--
Drive element	TFT active matrix	--
Number of pixels	1920*3RGB(H)X1080(V)	Dots
Pixel arrangement	R,G,B vertical stripe	--
Pixel Pitch (W*H)	213(H) x213(V)	um
Active area	408.96 (H) × 230.04 (V)	mm
Viewing direction	ALL O'CLOCK	-
TFT Driver IC	TBD	
TFT interface	LVDS interface with 2 pixel / clock	-
Approx. Weight	TBD	g
LCM Size(W*H*T)	430.37(W)x254.6(H) x9.3(T)	mm
LCM+TP Size(W*H*T)	-	mm
Touch structure	-	
Touch Driver IC	-	-
Touch Interface	-	





3. Absolute Maximum Rating

Characteristics	Symbol	Min.	Max.	Unit
LCM Operating Temperature	T _{OPR}	0	+50	°C
LCM Storage Temperature	T _{STG}	-20	+60	°C
TP Operating Temperature & Humidity(20% ~ 90%RH)	T _{OPR}	-	-	°C
TP SStorage Temperature & Humidity(20% ~ 90%RH)	T _{STG}	-	-	°C
Humidity	RH	10	80	%

4. Electrical Characteristics

4.1 Electrical Specifications

Parameter		Symbol	Values			Unit	Remark
			Min	Typ	Max		
Power Supply Input Voltage		VDD	4.5	5.0	5.5	Vdc	
Power Supply Ripple Voltage		VRP	-	-	200	mV	
Power Supply Current		IDD	-	400	1000	mA	Note 1
Power Consumption		PDD	-	2	5	Watt	
Rush current		IRUSH	-		3.0	A	Note 2
LVDS Interface	Differential Input High Threshold Voltage	VLVTH	+100	-	+300	mV	
	Differential Input Low Threshold Voltage	VLVTL	-300	-	-100	mV	
	Input Differential Voltage	VID	200	-	600	mV	
	Differential input common mode voltage	VCM	1.0	1.2	1.5	V	

Note 1 : The supply voltage is measured and specified at the interface connector of LCM.

The current draw and power consumption specified is for VDD=5.0V,

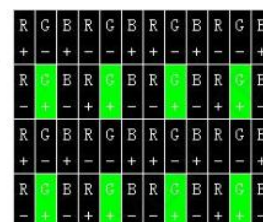
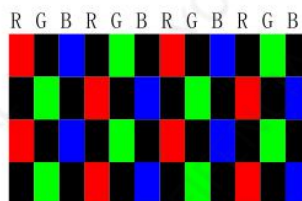
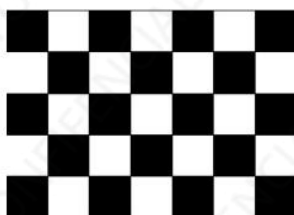
Frame rate f_v=60Hz and Clock frequency = 74.25MHz.

Test Pattern of power supply current

a) Typ : Mosaic 7X5 (L0/L255)

b) Max : Skip 1 dot Pattern

c) Flicker Pattern



Note 2 : The duration of rush current is about 2ms and rising time of Power Input is 1ms(min)



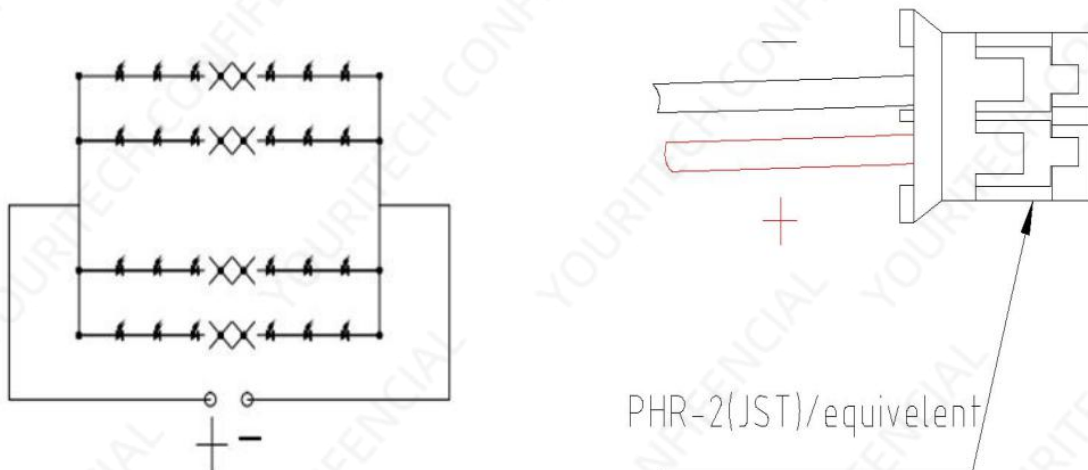
4.2 Back-Light Unit Characeristics

The back-light system is an edge-lighting type with white LEDs. The characteristics of the back-light are shown in the following tables.

Characteristics	Symbol	Min.	Type	Max.	Unit	Notes
Forward Voltage	V_F	--	38	41.6	V	Note 1/2
Forward current	I_F	--	240	--	mA	-
Luminance(With LCD)	L_v	--	250	270	cd/m ²	-
LED life time	N/A	30000	----	--	Hr	-

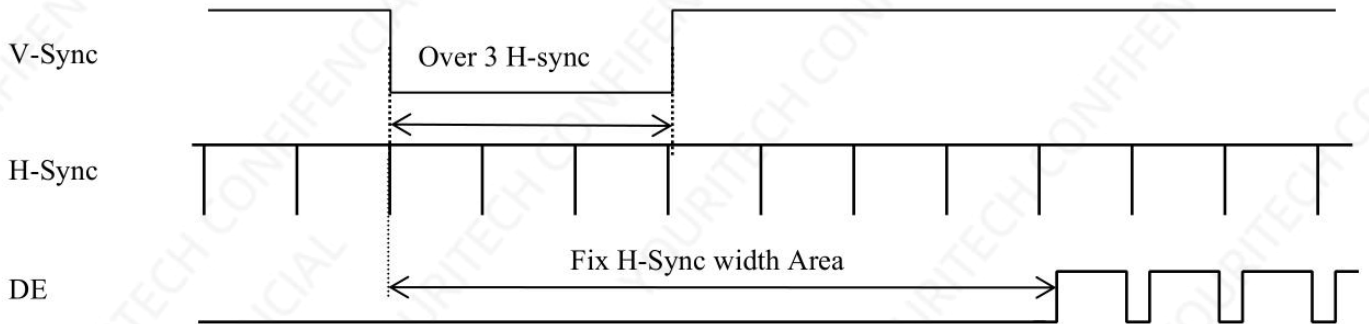
Note 1:

Light bar Series and Parallel condition,interface type condition: 13 series 4 Parallel



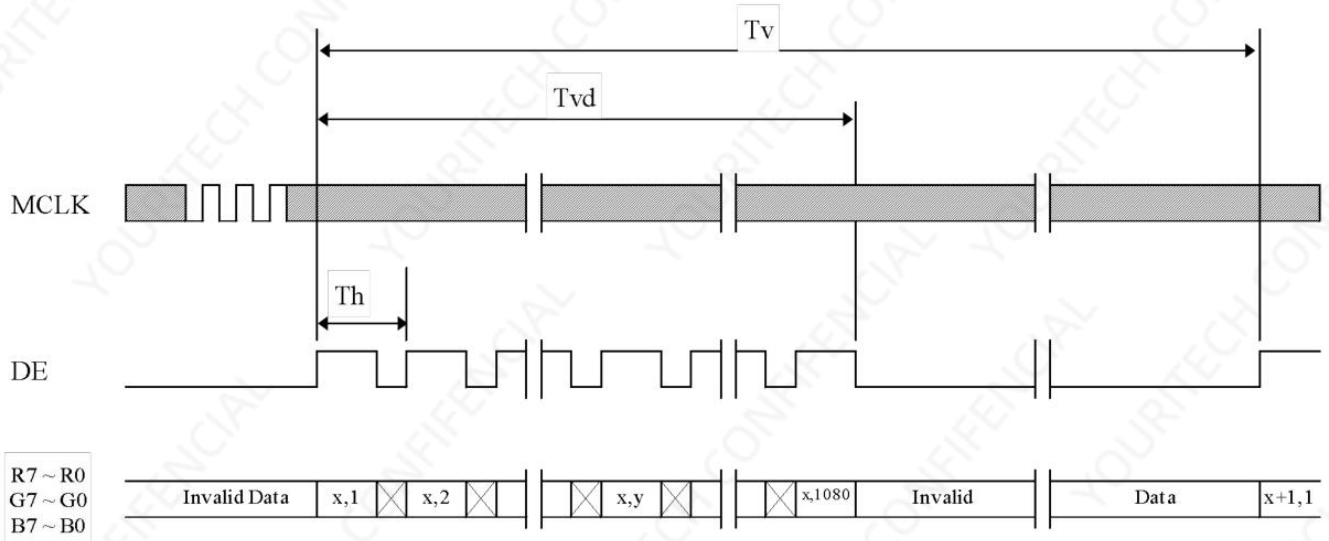
6. Timing Characteristics

6.1 Sync Timing Waveforms

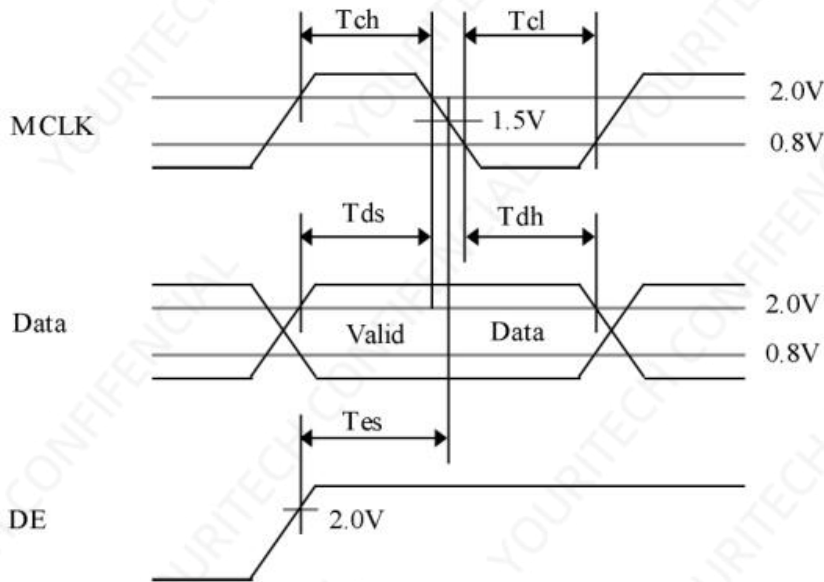
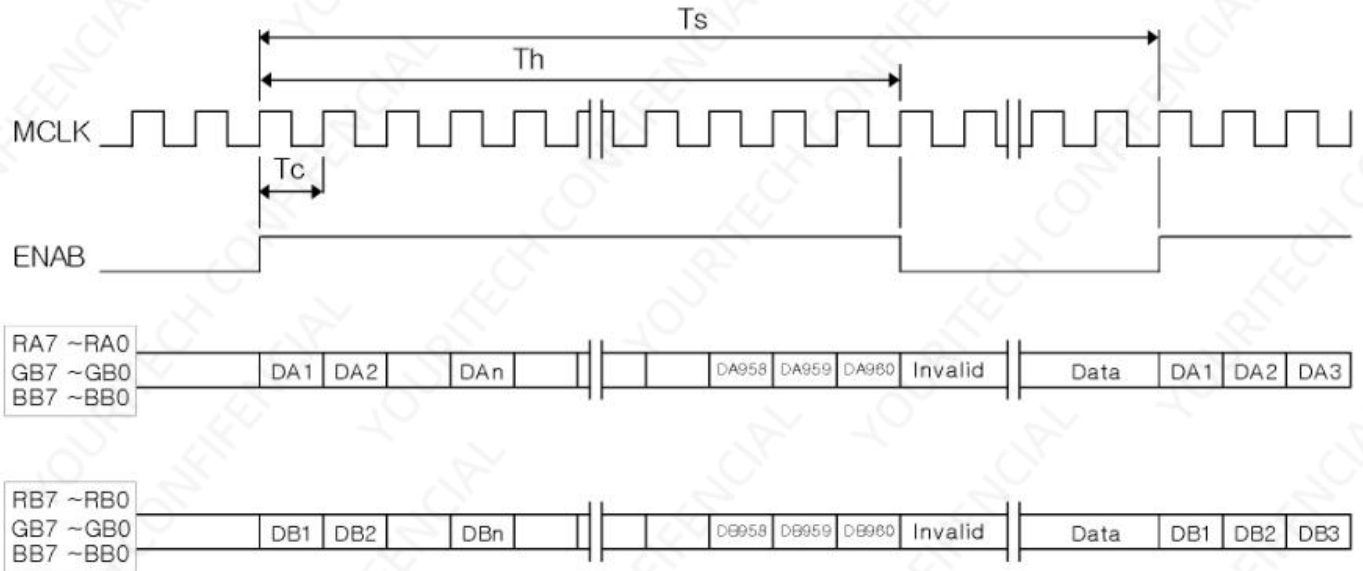


- 1) Need over 3 H-sync during V-Sync Low
- 2) Fix H-Sync width from V-Sync falling edge to first rising edge

6.2 Vertical Timing Waveforms

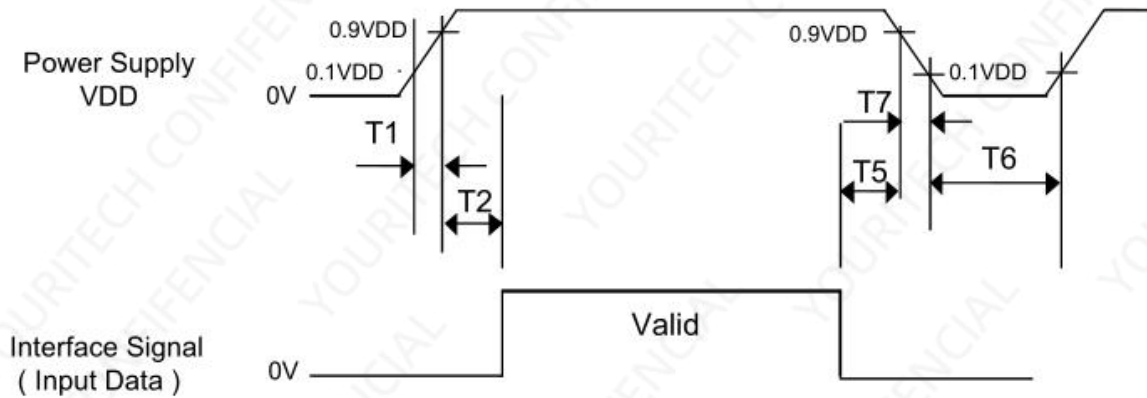


6.3 Horizontal Timing Waveforms



6.4 Power Sequence

To prevent a latch-up or DC operation of the Open Cell, the power on/off sequence shall be as shown in below



< Table 11. Sequence Table >

Parameter	Values			Units
	Min	Typ	Max	
T1	0.5	-	20	ms
T2	10	-	100	ms
T3	200	-	-	ms
T4	200	-	-	ms
T5	0	-	-	ms
T6	1	-	-	s

- Notes:
1. Back Light must be turn on after power for logic and interface signal are valid.
 2. Even though T1 is out of SPEC, it is still ok if the inrush current of VDD is below the limit.
 3. When $VDD < 0.9VDD(Typ.)$, Power off.
 4. T7 decreases smoothly, if there were rebounding voltage, it must smaller than 5 volts.



7. Optical Characteristics

The test of optical specifications shall be measured in a dark room (ambient luminance 1 lx and temperature=25 ±2°C) with the equipment of Luminance meter system (Goniometer system and PR730) and test unit shall be located at an approximate distance 180cm from the LCD surface at a viewing angle of θ and Φ equal to 0°. We refer to $\theta_{\Phi=0}$ ($=\theta_3$) as the 3 o'clock direction (the "right"), $\theta_{\Phi=90}$ ($=\theta_{12}$) as the 12 o'clock direction ("upward"), $\theta_{\Phi=180}$ ($=\theta_9$) as the 9 o'clock direction ("left") and $\theta_{\Phi=270}$ ($=\theta_6$) as the 6 o'clock direction ("bottom"). While scanning θ and/or Φ , the center of the measuring spot on the Display surface shall stay fixed. The measurement shall be executed after 30 minutes warm-up period. VDD shall be 12.0V at 25 °C. Optimum viewing angle direction is 6 o'clock.

< Table 12. Optical Table >

[VDD = 12.0V, Frame rate = 60Hz, Ta =25±2 °C]

Parameter			Symbol	Condition	Min	Typ	Max	Unit	Remark
Viewing Angle	Horizontal		Θ_3	CR > 10	80	89	-	Deg.	Note 1
			Θ_9		80	89	-	Deg.	
	Vertical		Θ_{12}		80	89	-	Deg.	
			Θ_6		80	89	-	Deg.	
Brightness			Lv	$\Theta = 0$ (Center) Normal Viewing Angle	200	250	-	nit	
Contrast ratio			CR		700:1	1000:1	-		Note 2
White luminance uniformity			ΔY		75	80	-	%	Note 3
Reproduction of color	White		W_x		TYP. - 0.03	TBD	TYP. + 0.03		Note 4
			W_y			TBD			
	Red		R_x			TBD			
			R_y			TBD			
	Green		G_x			TBD			
			G_y			TBD			
	Blue		B_x			TBD			
			B_y			TBD			
Color Gamut					68	72	-	%	
Cell Transmittance					TBD	TBD			
Response Time	G to G		T_g		-	14	20	ms	Note 5



8. Reliability Test Item

No.	Test Item	Test Condition	Notes
1	High Temp. Storage	+60°C / 96H	1. Functional test is OK. Missing Segment, short, unclear segment non-display, display abnormally and liquid crystal leakage un-allowed. 2. No low temperature bubbles, end seal loose and fall, frame rainbow.
2	Low Temp. Storage	-20°C / 96H	
3	High Temp. Operating	+50°C / 96H	
4	Low Temp. Operating	0°C / 96H	
5	High Temperature / Humidity storage	45°C x 85%RH / 96H	
6	Thermal and cold shock	Static state, 0°C (30min) ~50°C (30min), 50 cycles	

9. Packing Method---TBD

- END -

