SPECIFICATION

FOR

TFT LCD MODULE

CUSTOMER : _____

CUSTOMER MODULE : _____

HL MODEL : HG080WU009

■**Preliminary Specification**

■**Final Specification**

Customer Confirmation column:

Approved by :_____Dept. :_____Data :_____

Please return one of the copies of the specification with your signature to us within two weeks after you receive this document. If it is not returned, we will assume that you agree to the entire contents of this specification document.

Designed by	Checked by	Approved by

1. Revision Record

Date	Rev.No.	Page	Revision Items	Prepared
2022.09.12	**V00**		**The first release**	

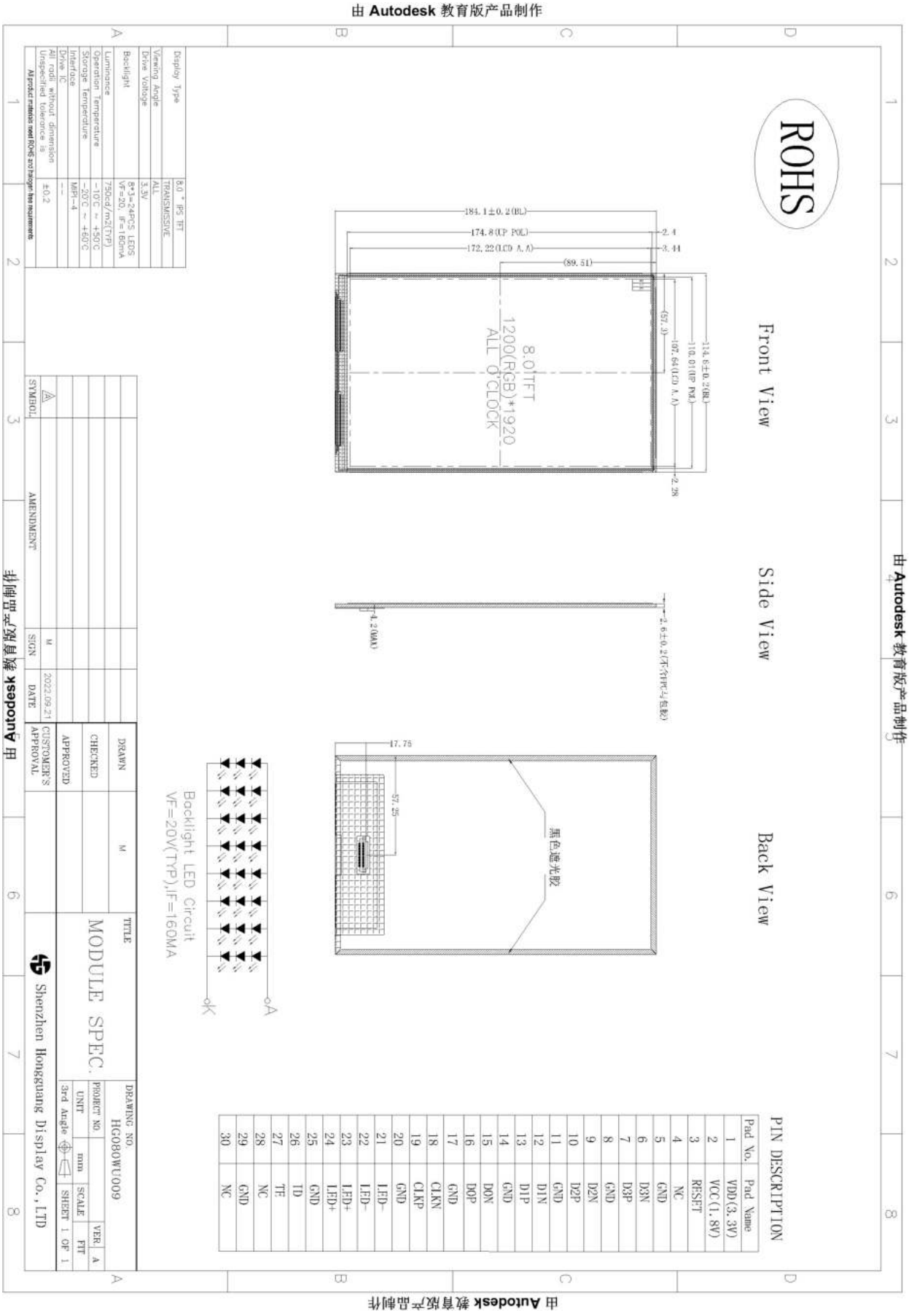
2. General Specifications

HG080WU009 is a TFT-LCD module. It is composed of a TFT-LCD panel, driver IC, FPC, a back light unit. The 8.0″ display area contains 1200 x 1920 pixels and can display up to 16.7M colors. This product accords with RoHS environmental criterion.

Item	Contents	Unit	Note
LCD Type	TFT	-	
Display color	16.7M		1
Viewing Direction	ALL	O'Clock	
Operating temperature	-10~+50	℃	
Storage temperature	-20~+60	℃	
Module size	114.60 x 184.10 x 2.6	mm	2
Active Area(W×H)	107.64 x 172.22	mm	
Number of Dots	1200×RGB×1920	dots	
Outline Dimensions	Refer to outline drawing	-	
Backlight	24-LEDs (white)	pcs	
Weight	---	g	
Data Transfer	MIPI	-	

Note 1: Color tune is slightly changed by temperature and driving voltage.
Note 2: Without FPC and Solder.

3.Outline.Drawing



4.Pin Assignment

Pin No.	Symbol	Description	I/O
1	VDDP	Power supply (3.3V)	
2	VDDL	Logic Supply (1.8V)	
3	RESET	Global reset pin	
4	NC	No connection	
5	GND	Ground	
6	XIN3-	MIPI data negative signal	
7	RXIN3+	MIPI data positive signal	
8	GND	Ground	
9	RXIN2-	MIPI data negative signal	
10	RXIN2+	MIPI data positive signal	
11	GND	Ground	
12	RXIN1-	MIPI data negative signal	
13	RXIN1+	MIPI data positive signal	
14	GND	Ground	
15	RXIN0-	MIPI data negative signal	
16	RXIN0+	MIPI data positive signal	
17	GND	Ground	
18	RXCLKIN-	MIPI CLK negative signal	
19	RXCLKIN+	MIPI CLK positive signal	
20	GND	Ground	
21	LED-	LED Cathode	
22	LED-	LED Cathode	
23	LED+	LED Anode	
24	LED+	LED Anode	
25	GND	Ground	
26	ID	ID PIN	
27	TE	Tearing Effect	
28	NC	No connection	
29	GND	Ground	
30	NC	No connection	

5. Absolute Maximum Ratings(Ta=25℃)

5.1 Electrical Absolute Maximum Ratings.(Vss=0V ,Ta=25℃)

Item	Symbol	Min.	Typ.	Max	Unit	Note
Power Supply Voltage	V_{DD}	-0.3	1.8	3.6	V	1，2
	AVDD					
	VGH					
	VGL					
	VCOM					
Logic Signal Input	$V_{IO/Reset}$	--	1.8	--	V	

Notes:

1. If the module is above these absolute maximum ratings. It may become permanently damaged. Using the module within the following electrical characteristic conditions are also exceeded, the module will malfunction and cause poor reliability.
2. V_{CC} >V_{SS} must be maintained.

5.2 Environmental Absolute Maximum Ratings.

Item	Storage		Operating		Note
	MIN.	MAX.	MIN.	MAX.	
Ambient Temperature	-20℃	60℃	-10℃	50℃	1,2
Humidity	-	-	-	-	3

1. The response time will become lower when operated at low temperature.
2. Background color changes slightly depending on ambient temperature.
   The phenomenon is reversible.
3. Ta<=40℃:85%RH MAX.
   Ta>=40℃:Absolute humidity must be lower than the humidity of 85%RH at 40℃.

6.LED backlight specification(VSS=0V ,Ta=25 ℃)

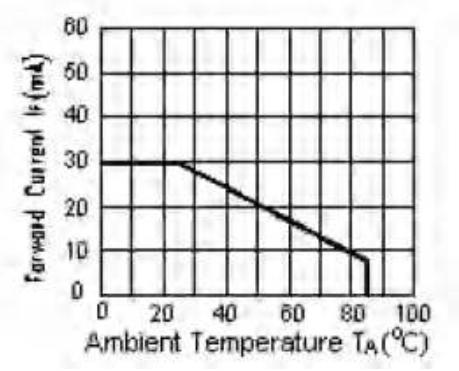
Item		Symbol	Condition	Min	Typ	Max	Unit	Note
Supply voltage		-	-	-	20	-	V	1
Supply current		I_f	-	-	160	-	mA	2
Forward current	Normal	I_{pn}	8-chip series x 3	-	-	-	mA	
	Dimming	I_{pd}		-	-	-		

Note:

1: $V_{LED}=V_{LED}(+)-V_{LED}(-)$.

2:The current of LED is 20mA.
A LED drive in constant current mode is recommended.

3: LED power consumption is around1.26 W.



ILED VS TEMP

CIRCUIT

7.External system porch setting

params->dsi.LANE_NUM = LCM_FOUR_LANE;

params->dsi.vertical_sync_active = 1;

params->dsi.vertical_backporch = 25;

params->dsi.vertical_frontporch = 35;

params->dsi.vertical_ active_line = FRAME_HEIGHT;

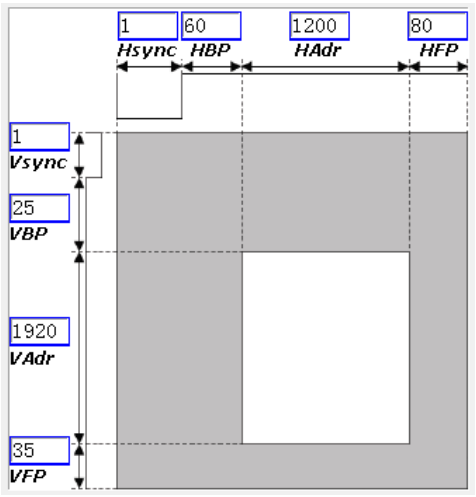
params->dsi.horizontal_syc_act n ive = 1;

params->dsi.horizontal_backporch = 60;

params->dsi.horizontal_frontporch = 80;

params->dsi.horizontal_active _pixel = FRAME_WIDTH;

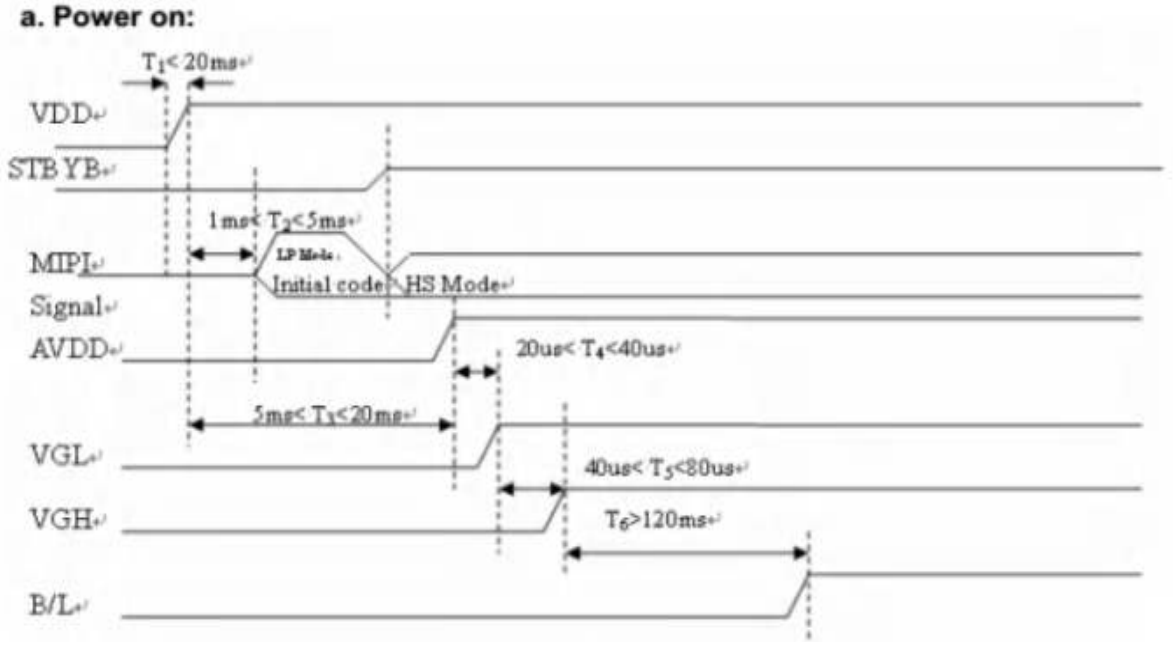
params->dsi.PLL_CLOCK = 415; //423;



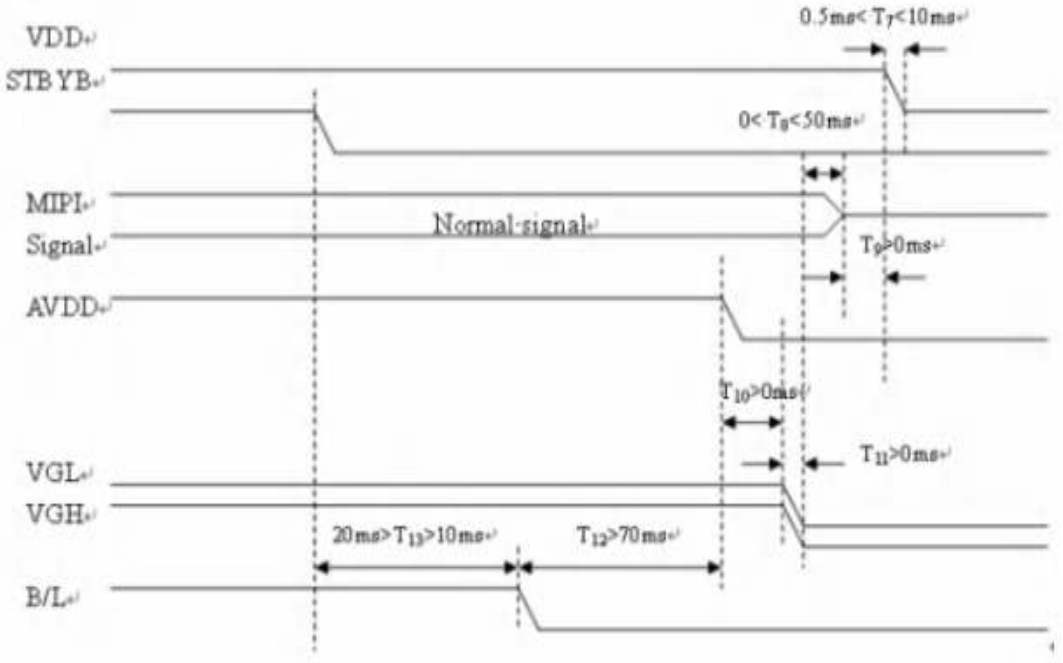
8. Power on/off Sequence

In order to power on/off correnctly , please follow the following recommended power on/off sequence.

a. Power on:



b. Power off:



9. Optical Characteristics

Item	Symbol		Condition	Min.	Typ.	Max.	Unit	Note
Brightness	Bp		θ=0° Φ=0°	270	300	-	Cd/m^2	1
Uniformity	⊿Bp			75	80	-	%	1,2
Viewing Angle	Horizontal	L	Cr≥10		85		Deg	3
		R			85			
	Vertical	U			85			
		D			85			
Contrast Ratio	Cr		θ=0° Φ=0°	800	1000		-	4
Response Time	$T_r + T_f$			-	20	-	ms	5
Color of CIE Coordinate	W	x	θ=0° Φ=0°	0.27	0.30	0.33	-	1,6
		y		0.29	0.32	0.35	-	
	R	x		-	-	-	-	
		y		-	-	-	-	
	G	x		-	-	-	-	
		y		-	-	-	-	
	B	x		-	-	-	-	
		y		-	-	-	-	
NTSC Ratio	S			-	58	-	%	

Note：The parameter is slightly changed by temperature, driving voltage and materiel

Note 1: The data are measured after LEDs are turned on for 5 minutes. LCM displays full white. The brightness is the average value of 9 measured spots. Measurement equipment PR-705 (Φ8mm)

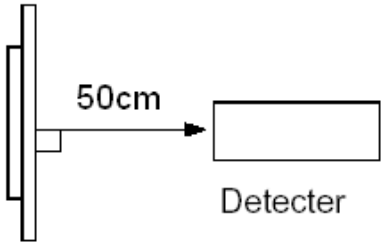
Measuring condition:

① Measuring surroundings: Dark room.

② Measuring temperature: Ta=25℃.

③ Adjust operating voltage to get optimum contrast at the center of the display.

Measured value at the center point of LCD panel after more than 5 minutes while backlight turning on.

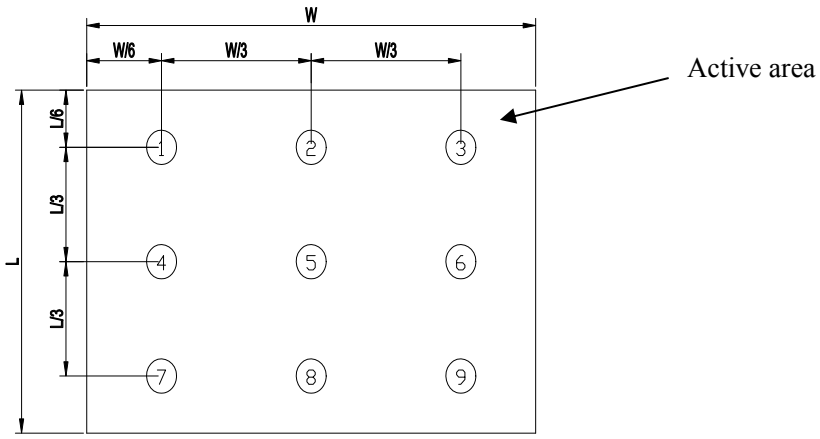


Note 2: The luminance uniformity is calculated by using following formula.

⊿Bp = Bp (Min.) / Bp (Max.)×100 (%)

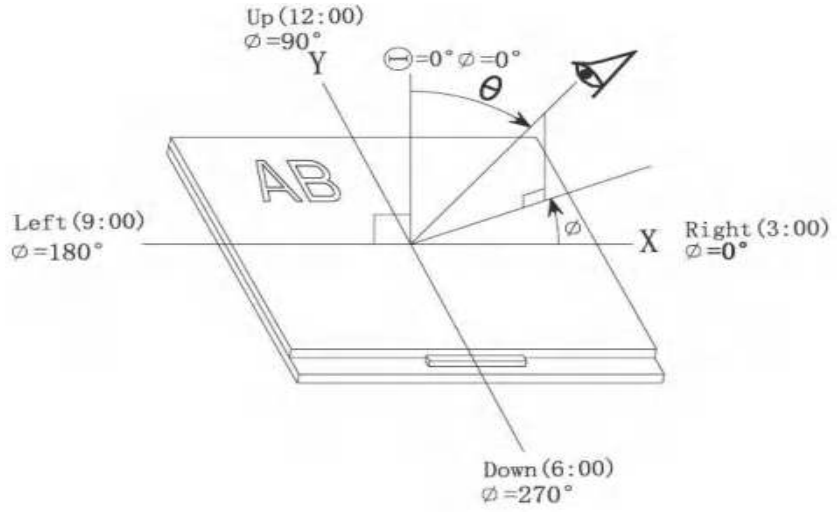
Bp (Max.) = Maximum brightness in 9 measured spots

Bp (Min.) = Minimum brightness in 9 measured spots.

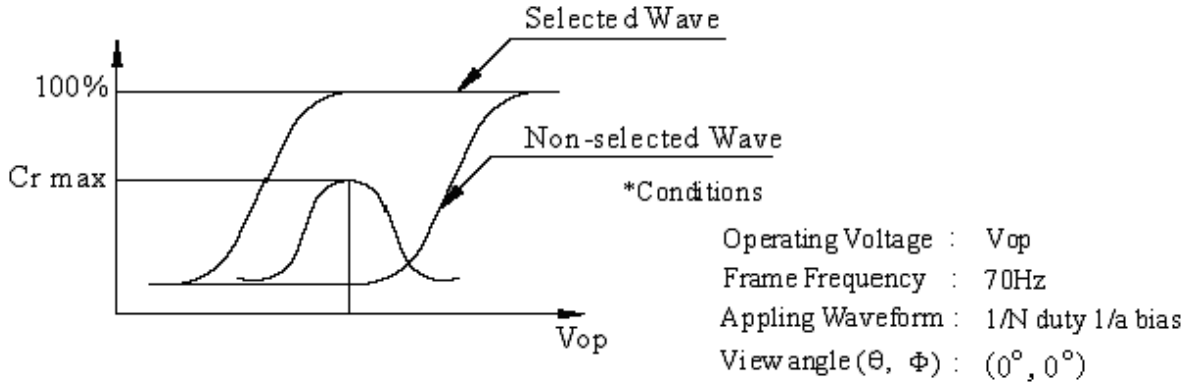


Note 3: The definition of viewing angle:

Refer to the graph below marked by θ and Φ



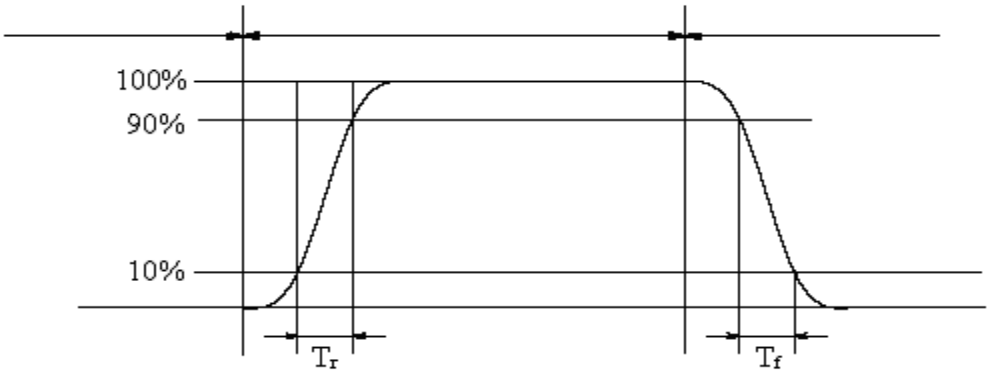
Note 4: Definition of contrast ratio.(Test LCD using DMS501)



$$Contrast\ ratio(Cr) = \frac{Brightness\ of\ selected\ dots}{Brightness\ of\ non-selected\ dots}$$

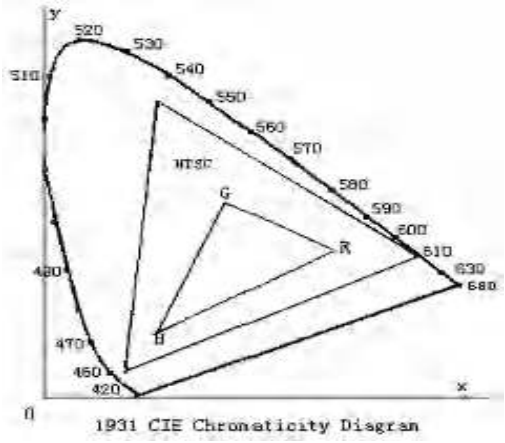
Note 5: Definition of Response time. (Test LCD using DMS501):

The output signals of photo detector are measured when the input signals are changed from “black” to “white”(falling time) and from “white” to “black”(rising time), respectively. The response time is defined as the time interval between the 10% and 90% of amplitudes.Refer to figure as below.



The definition of response time

Note 6: Definition of Color of CIE Coordinate and NTSC Ratio.

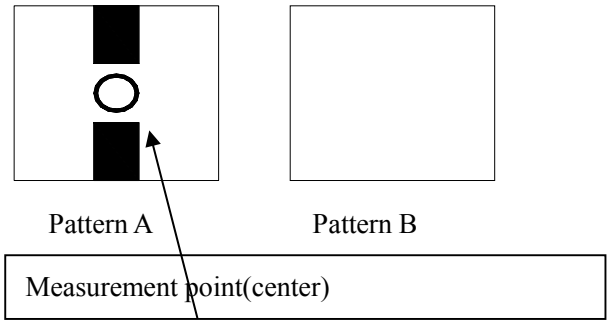


Color gamut:

$$S = \frac{\text{area of RGB triangle}}{\text{area of NTSC triangle}} \times 100\%$$

Note 7: Definition of cross talk.

Cross talk ratio(%)= | pattern A Brightness-pattern B Brightness | /pattern A Brightness*100



Electric volume value=3F+/-3Hex

10. Reliability Test Items and Criteria

No	Test Item	Test condition	Criterion
1	High Temperature Storage	60℃±2℃ 96H Restore 2H at 25℃ Power off	1. After testing, cosmetic and electrical defects should not happen. 2. Total current consumption should not be more than twice of initial value.
2	Low Temperature Storage	-20℃±2℃ 96H Restore 2H at 25℃ Power off	
3	High Temperature Operation	50℃±2℃ 96H Restore 2H at 25℃ Power on	
4	Low Temperature Operation	-10℃±2℃ 96H Restore 4H at 25℃ Power on	
5	High Temperature/Humidity Operation	50℃±2℃ 90%RH 96H Power on	
6	Temperature Cycle	-20℃←→60℃ 30min 5min 30min after 5 cycle, Restore 2H at 25℃ Power off	
7	Vibration Test	10Hz~150Hz, 100m/s^2, 120min	Not allowed cosmetic and electrical defects.
8	Shock Test	Half- sine wave,300m/s^2,11ms	
9	ESD Test	Air discharge:+/-8KV, Contact discharge:4KV	

Note: Operation: Supply 3.3V for logic system.

The inspection terms after reliability test, as below

ITEM	Inspection
Contrast	CR>50%
IDD	IDD<200%
Brightness	Brightness>60%
Color Tone	Color Tone+/-0,05

11.Packing Description