深圳市阿美林电子科技有限公司
Shenzhen Amelin Electronic Technology Co.Ltd

APPROVAL SHEET
承 认 书

客户名称 Customer	
产品型号 Part NO.	**AML-FRD32037A**
产品内容 Product type	Mode: Transmissive type .Normally white. TFT LCD Module LCD Module: Graphic 240RGB*320Dot-matrix
备注栏 Remarks	□APPROVAL FOR SEPCIFICATIONS ONLY ■APPROVAL FOR SEPCIFICATIONS AND SAMPLE
客户确认签章 Signature by Customer:	

PREPARED BY	CHECKED BY	APPROVED BY

TABLE OF Contents

1. General Description

LCD is a 240*320 dots matrix TFT LCD module. It has a TFT panel composed of 720 sources and 320gates. The LCM can be easily accessed by micro-controller.

2. Features

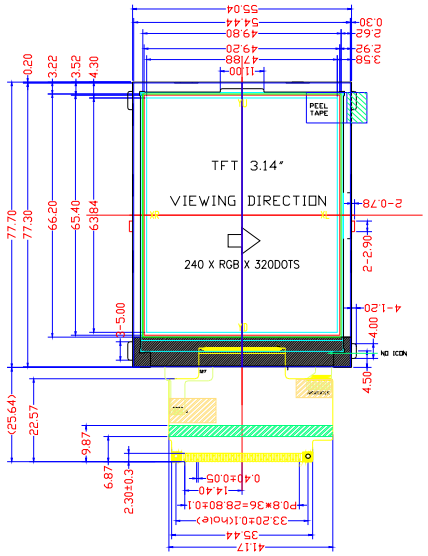
Display Mode	Transmissive
Display Format	Graphic 240RGB*320 Dot-matrix
Input Data	8080 8/16bit interface
Viewing Direction	6 o'clock
Drive	ILI9341

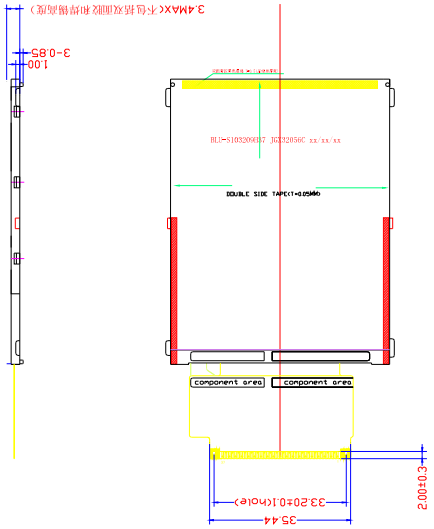
3. Mechanical Specification

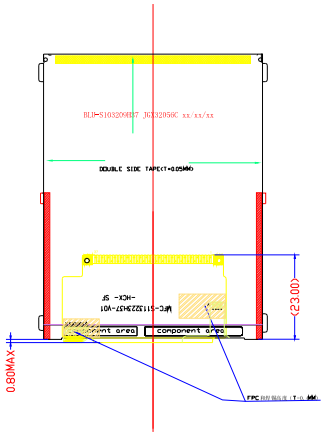
Item	Specifications	Unit
Dimensional outline	55.04(W)*77.7(H)*3.4MAX(-0.1~+0.1)(T) (FPC not include)	mm
Resolution	240RGB*320	dots
LCD Active area	47.88(W)*63.84 (H)	mm
Pixel size	0.1995(W)*0.1995 (H)	mm

4.echanicalDimens

REV.	DESCRIPTION OF MODIFY	MODIFY BY	DATE
A0	Change FPC	LIUXH	2011.06.03

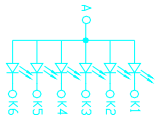






NO.	SYMBOL
01	DB8
02	DB9
03	DB10
04	DB11
05	GND
06	VCC
07	CS
08	RS
09	WR
10	RD
11	YD
12	XR
13	YU
14	XL
15	LED-A
16	LED-K1
17	LED-K2
18	LED-K3
19	LED-K4
20	LED-K5
21	LED-K6
22	DB12
23	DB0
24	DB1
25	DB2
26	DB3
27	DB4
28	DB5
29	DB6
30	DB7
31	RESET
32	VCI
33	VCC
34	GND
35	DB13
36	DB14
37	DB15

LED CIRCUIT DIAGRAM



PIN OUT	
PIN1	YD
PIN2	XR
PIN3	YU
PIN4	XL

SPECIFICATION:

1. Display Mode : TFT/Negative/Transflective
2. Drive Condition : 262K/Vdd:2.8V
3. Viewing angle: 6 O'clock
4. Operating temp. : -20° C~+70° C
   Storage temp. : -30° C~+80° C
5. Using IC : ILI9341
6. Back Light：Amber 3.0V 90mA
7. Dimensions with mark"()"are referenced.
8. Unspecified tolerance is ± 0.20mm
9. Rohs Request

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UNLESS OTHERWISE NOTED:		DRAWING TYPE: CD	REV: A0
UNITS	DECIMAL OVER INCLUDING	DRAWING No.:	
MM	0 TO 6 ±0.1 6 TO 30 ±0.2 30 TO 100 ±0.3	CHECKED BY:	DATE:
ANGLES	PLATED THRU HOLES +0.08 −0.03	THIRD ANGLE PROJECTION	
±0.5°	NON-PLATED THRU HOLES +0.08 −0.03	SCALE 1 : 1	SHEET: 1 OF 1

5. Maximum Ratings

Item	Symbol	Min	Max	Unit	Note
Supply voltage	V	-0.3	4.6	V	
Operating temperature	V_T	-0.3	Vcc+0.3	V	
Storage temperature	T_{OPR}	-10	60	℃	
Storage temperature	T_{STR}	-20	70	℃	

6. Electrical Characteristics

Item		Symbol	Condition	Min.	Typ.	Max.	Unit
Supply voltage	Logic	V_{CC}		2.7	2.8	3.3	V
Input Voltage	H level	T_{IH}		0.8*IOVCC		IOVCC	V
	L level	T_{IL}		-0.3		0.2* IOVCC	
Storage temperature		I_{DD}	With internal voltage generation V_{CC}=2.8V; T_{emp}=25℃			TBD	mA

7. Backlight Characteristic

Item	Symbol	Min	Typical	Max	Unit
LED module Forward voltage	V_{LED}	3.0	3.2	3.4	V
LED module current	V_{LED}		90		mA
L/G Surface Luminance ★1	L_S	3500	3800	4200	Cd/m^3
LCM Surface brightness uniform ★2	L_D	80			%

★ 1Test condition is:

(a) Center point on active area.

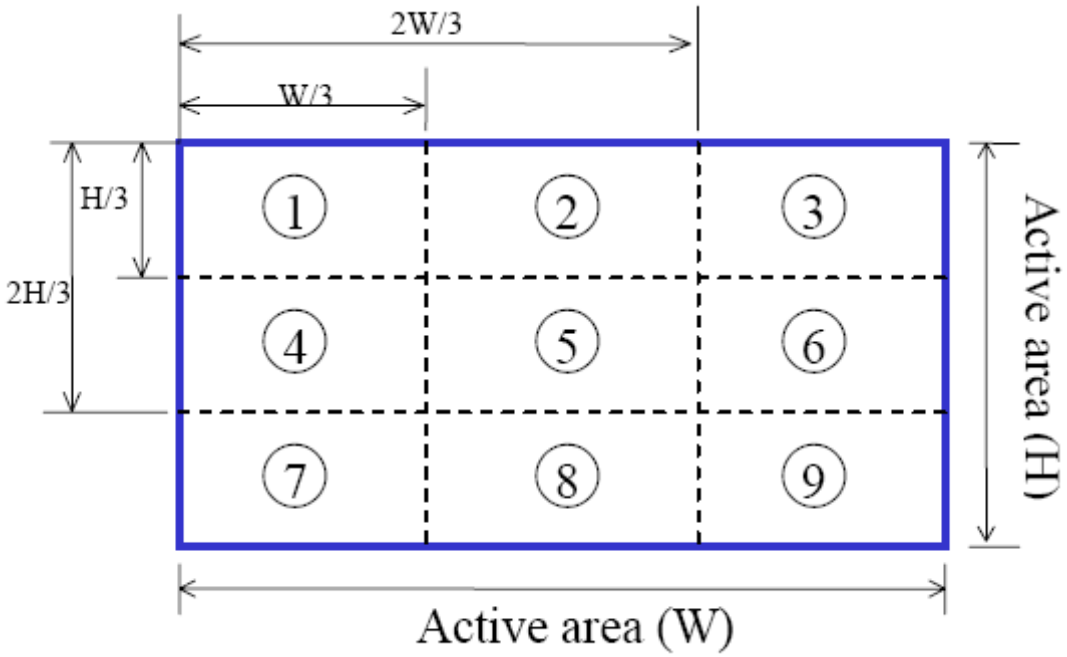
(b)Best Contrast.

★2Uniform measure condition:

(1)Measure 9 point. Measure location show below;

(2)Uniform=(Min. brightness /Max. brightness)*100%

(3)Best Contrast.


2W/3
W/3
H/3
2H/3
1
2
3
4
5
6
7
8
9
Active area (H)
Active area (W)

8. Module Function Description

8.1Pin Descriptions

Pin No.	Symbol	Functional	Notes
1~4	DB8~DB11	Data interface	
5	GND	Power Ground	
6	VCC	Power supply	
7	/CS	chip select signal.	
8	RS	serial data interface.	
9	/WR	write data when the signal is low.	
10	/RD	read strobe signal and enables	
11	YD	Touch screen output pin Y+	
12	XR	Touch screen output pin X-	
13	YU	Touch screen output pin Y-	
14	XL	Touch screen output pin X+	
15	LEDA	Power supply for backlight anode input terminal.	
16~21	LED-K	Power supply for backlight cathode input terminal.	
22	DB12	Data interface	
23~30	DB0~DB7	Data interface	
31	RESET	Reset signal input terminal. terminal	
32	VCI	Power suppl	
33	VCC	Power supply	
34	GND	Power Ground	
35~37	DB13~DB15	Data interface	

8.2Timing characteristics.

I80-System Interface Timing Characteristics

Normal Wrote Mode(IOVCC=1.65~3.3V,Vcc=2.4~3.3V)

Item		Symbol	Unit	Min.	Typ.	Max.	Test Condition
Bus cycle time	Write	t_{CYCW}	ns	100			
	Read	t_{CYCR}	ns	300			
Write low-level pulse width		PW_{LM}	ns	50		500	
Write high-level pulse width		PW_{HW}	ns	50			
Read low-level pulse width		PW_{LR}	ns	150			
Read high -level pulse width		PW_{HR}	ns	150			
Write/ Read rise/fall time		t_{WRr} /t_{WRt}	ns			25	
Setup time	Write(RS to nCS,E/nWR)	ns	ns	10			
	Read (RS to nCS,E/nWR)	ns	ns	5			
Address hold time		T_{AH}	ns	5			
Write data set up time		t_{osw}	ns	10			
Write data hold time		t_H	ns	15			
Read data set up time		t_{DDR}	ns			100	
Read data hold time		t_{OHR}	ns	5			

Read Timing Characteristics

Reset Timing Characteristics(VCC=1.8~3.3V.IOVCC=1.65~3.3V)

Item	Symbol	Unit	Min.	Typ..	Max
Reset low-level width	t_{RES}	ms	1		
Reset rise time	t_{RES}	μ s			10

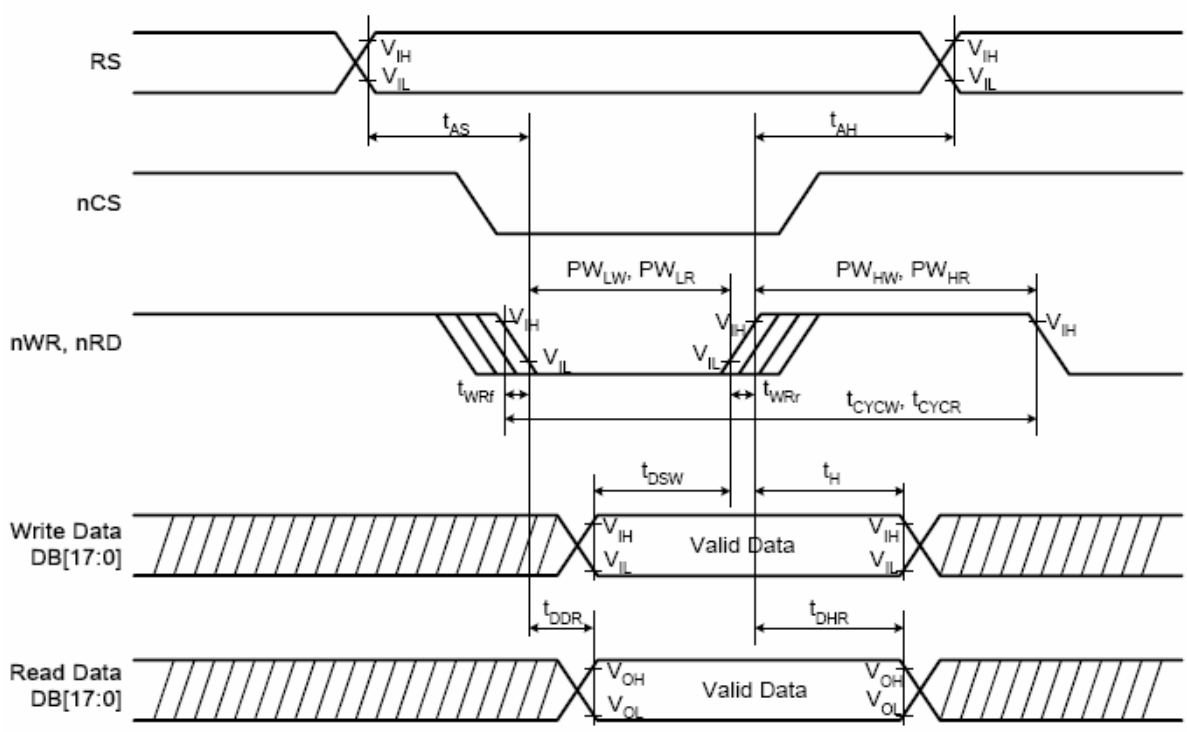
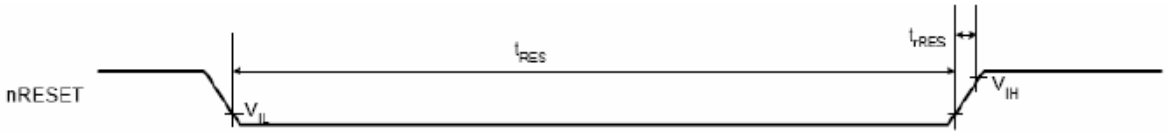


Figure 51 i80-System Bus Timing



Reset Timing

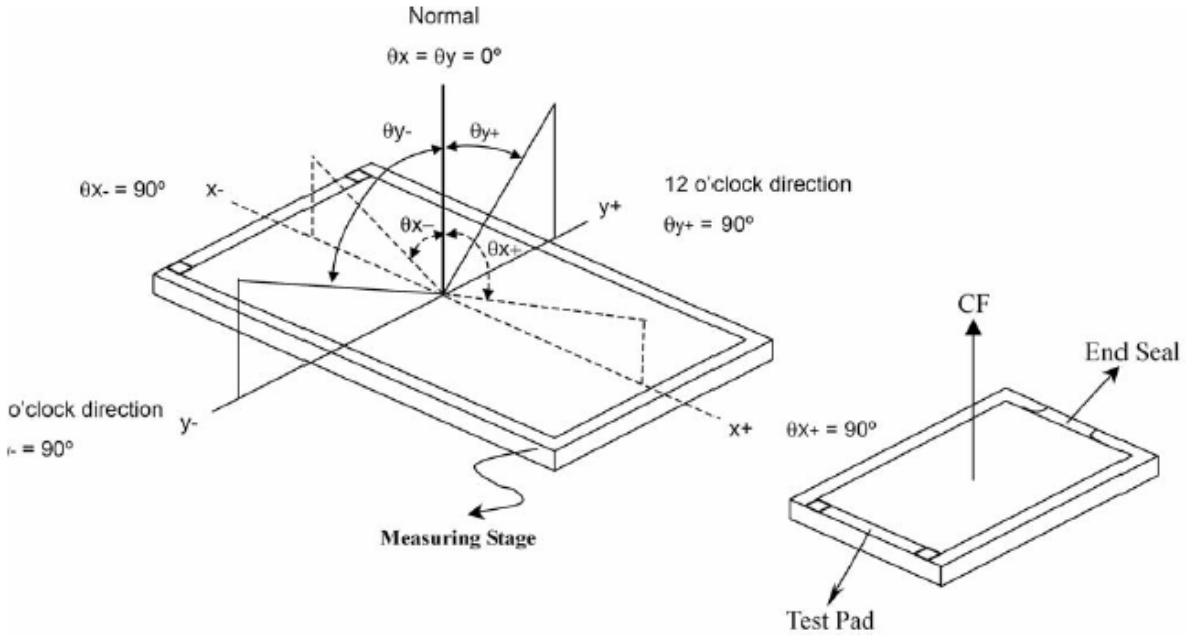
9.Electro-optical Characteristics

Item	Symbol	Conditions	Temp	Min.	Typ.	Max.	Unit	Note
Response Time	T_R	θ = ϕ =0	25℃		TBD	TBD	msec	NOTE2
	T_F				TBD	TBD		
Viewing Angle Range	ϕ=0⁰(6”)	ϕ=90⁰(3”)	ϕ=180⁰(12”)			ϕ=270⁰(9”)		NOTE3
θ（25℃） CR≥10	TBD	TBD	TBD			TBD		NOTE3

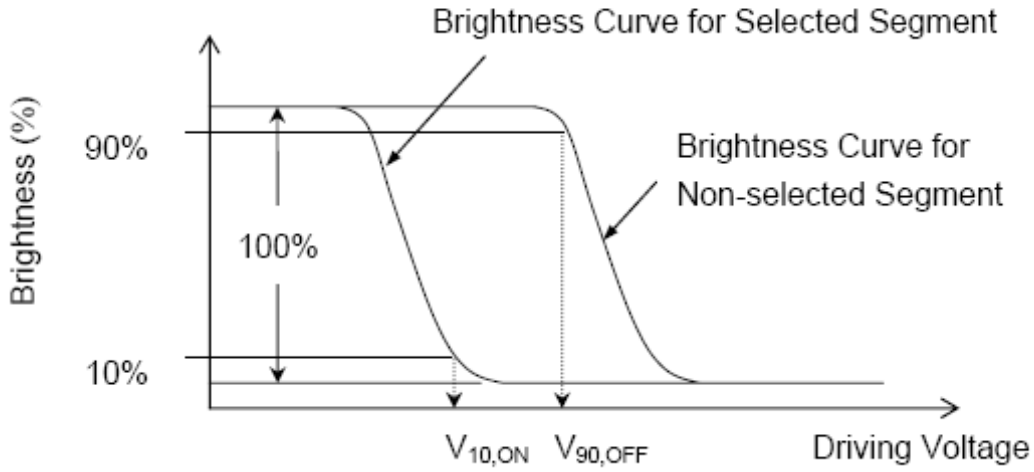
The above “viewing angle” is the measuring position with the largest contrast ratio. Not for good image quality. Viewing direction for good image quality is 12 O’clock.

●For panel only

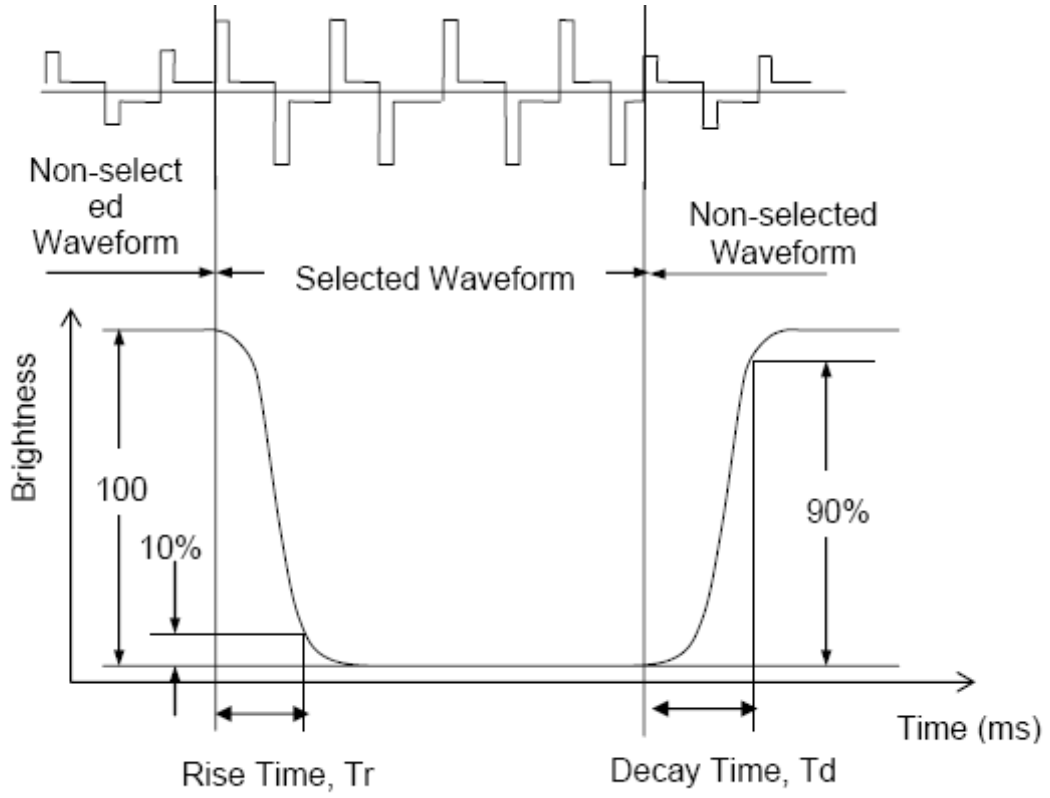
●Electro-Optical Characteristics Test Method



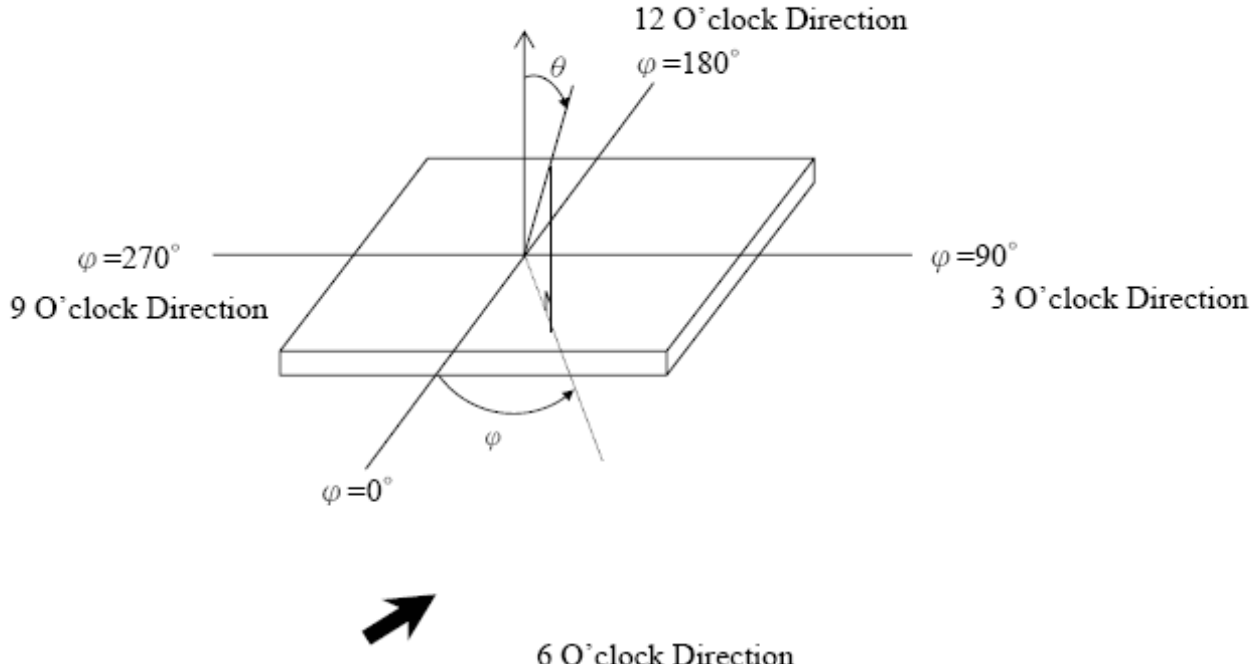
$$Vop = (V_{10,\,ON} + V_{90,\,OFF})/2$$



.Note2.Definition of Optical Response Time:

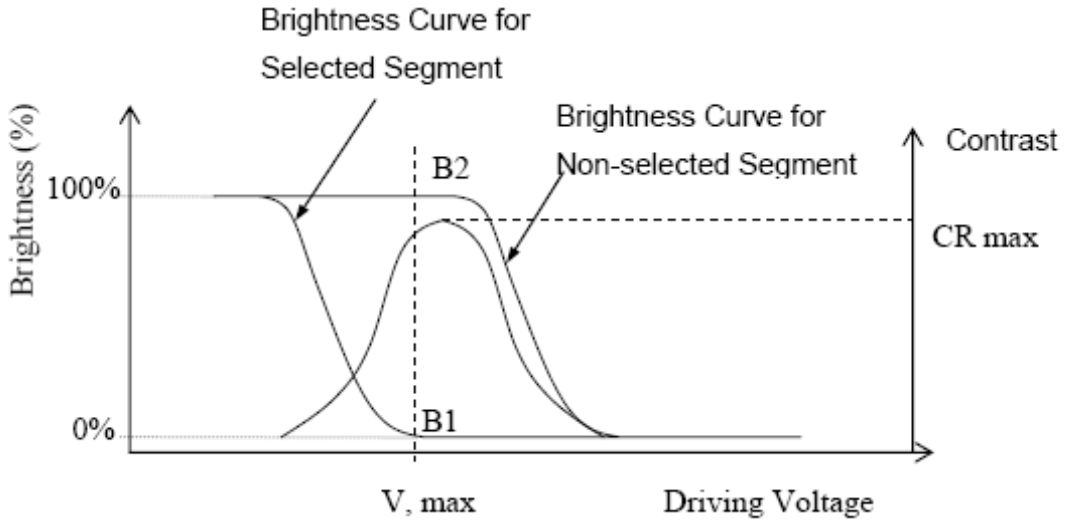


.Note3.Definition of Viewing Angle θ and Φ **:**



Note4.Definition of Contrast ratio (CR):

$$CR = \frac{\text{Brightness of Non-selected Segment (B2)}}{\text{Brightness of Selected Segment (B1)}}$$



10. Reliability

10.1Mtbf

The LCD module shall be designed to meet a minimum MTBF value of 50000 hours with normal

10.2Test condition

NO.	ITEM	CONDITION	CRITERION
1	High Temperature Non-Operating Test	80℃*240Hrs	。No Defect Of Operational Function In Room Temperature Are Allowable 。IDD of LCM in Pre-and Post-Test Should Follow Specification
2	Low Temperature Non-Operating Test	-30℃*240Hrs	
3	High Temperature/Humidity Non Operating Test	60℃*90%RH*240Hrs	
4	High Temperature Operating Test	70℃*240Hrs	
5	Low Temperature Operating Test	-20℃*240Hrs	
6	Thermal Shock Test	-20℃(30Min) ↔70℃(30Min) *10CYCLES	

Notes:

1. Judgments should be made after exposure in room temperature for two hours.
2. The distill water is used for the high temperature/humidity test.
3. The sample above is individually for every reliability tests condition.

11.Inspection standards

1.AQL(Acceptable Quality Level

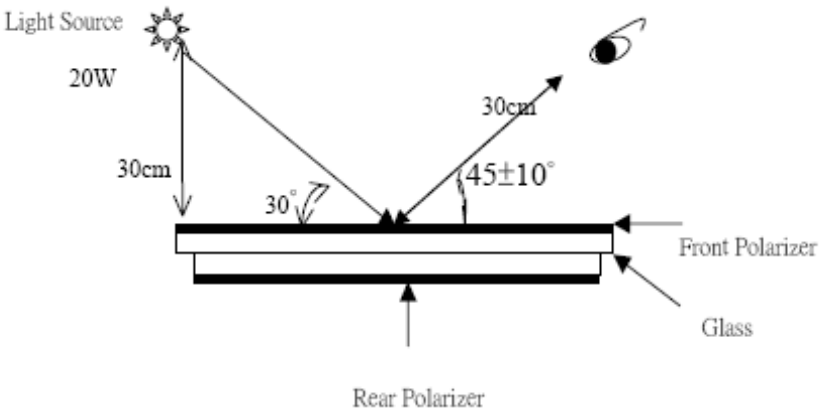
AQL of major and minor defect.

	MAJOR DEFECT	MINOR DEFECT
AQL	0.65	1.5

2. Basic conditions for inspection

The LCM face to us, in normal environment, the lux is 1000±200.(Darkroom's lux: 100±50),About an angle of incidence 30,a distance of 30 cm with an angle of 45 degree to check the products without uncovering the film!

(As shown below)



3.Inspection item and criteria

3.1 Visual inspection criterion in immobility

3.1.1Glass defect

3.1.2LCD appearance defect(View area)

12.Revision history

Version	Revise record	Date
A	**Original version**	**2011/08/04**