

Version : Preliminary

液晶之友 电话: 020-33819057
Http://www.lcdfriends.com

TECHNICAL SPECIFICATION
MODEL NO. : PA079DS1T1

Customer's Confirmation

Date _____

By _____

PVI's Confirmation

Confirmed By _____

Prepared By _____

PRIME VIEW INTERNATIONAL CO.,LTD.
3,LI SHIN RD. 1,SCIENCE-BASED INDUSTRIAL
PARK,HSINCHU,TAIWAN,R.O.C.
<http://www.pvi.com.tw>

Date : FEB. 02,2000

This technical specification is subject to change without notice.
Please return 1 copy with your signature on this page for approval.

TECHNICAL SPECIFICATION

CONTENTS

<i>NO.</i>	<i>ITEM</i>	<i>PAGE</i>
-	Cover(P80AN1)	1
-	Contents	2
1	Application	3
2	Features	3
3	Mechanical Specifications	3
4	Mechanical Drawing of TFT-LCD module	4
5	Input / Output Terminals	5
6	Absolute Maximum Ratings	8
7	Electrical Characteristics	8
8	Optical Characteristics	17
9	Reliability Test	20
10	Block Diagram	21
11	Packing	22
-	Revision History	23

1. Application

This technical specification applies to 7.9" color TFT-LCD module. The applications of the panel are car TV, portable DVD, Video Display, multimedia applications and others AV system.

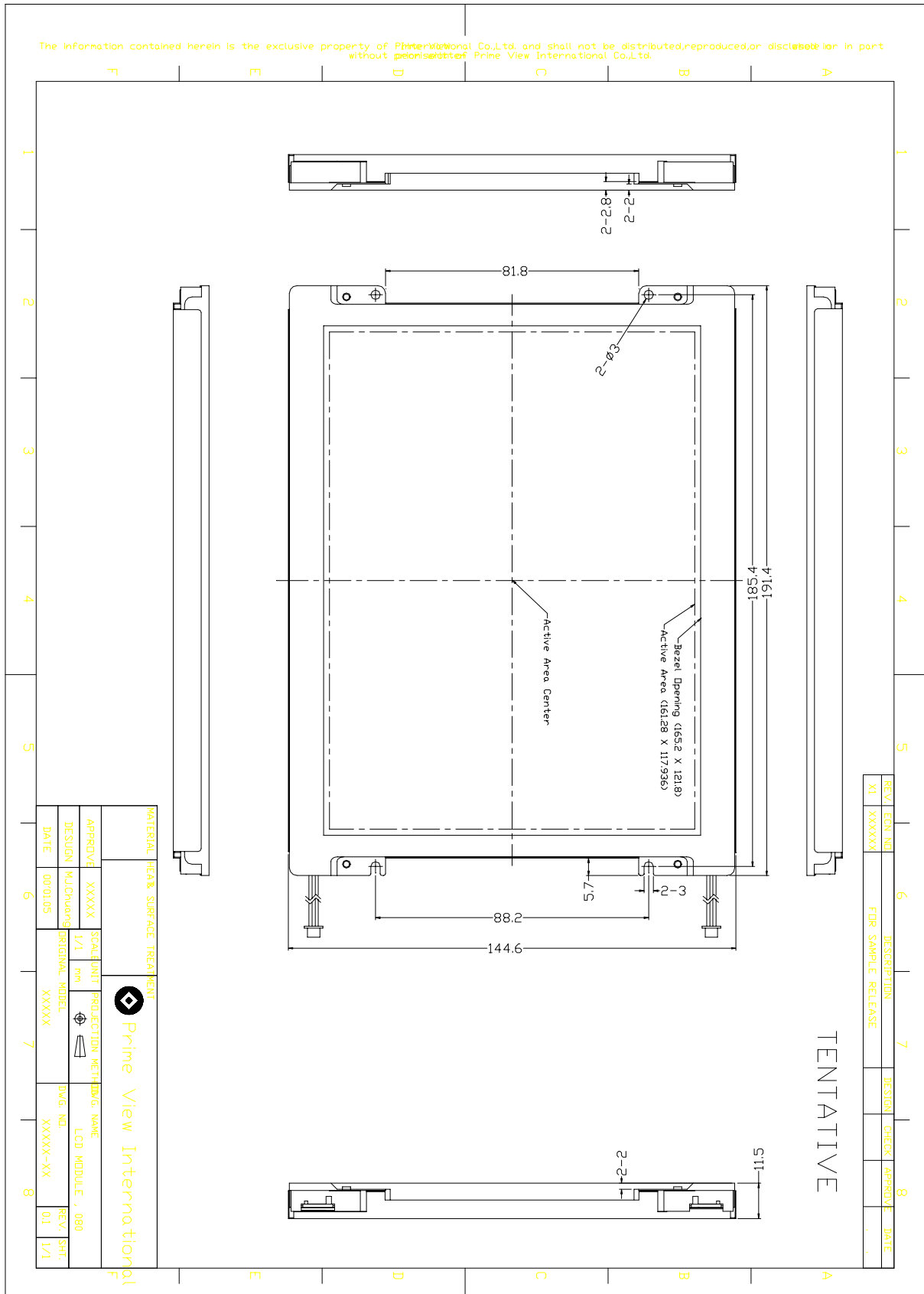
2. Features

- . Compatible with NTSC & PAL system
- . separate sync input(NTSC)
- . Pixel in stripe configuration
- . Slim and compact
- . High Brightness
- . Image Reversion : Up/Down and Left/Right

3. Mechanical Specifications

Parameter	Specifications	Unit
Screen Size	7.9 (diagonal)	inch
Display Format	1440(H)× 234(V)	dot
Active Area	161.28 (H)× 117.936 (V)	mm
Dot Pitch	0.112(H)× 0.504 (V)	mm
Pixel Configuration	Stripe	
Outline Dimension	191.4 (W)× 144.6 (H)× 11.5 (D)	mm
Weight	365	g

4. Mechanical Drawing of TFT-LCD Module



5. Input / Output Terminals
5-1) TFT-LCD Panel Driving

Pin No	Symbol	I/O	Description	Remark
1	$\overline{\text{HSY}}$	I/O	Horizontal Sync. Input / Output	Note 5-1
2	FRP	O	Video Polarity Alternating Signal	
3	CSY	I	Composite Sync. Signal	Note 5-1
4	V _{GH}	I	Supply Voltage for Gate Driver (Hi level)	Note 5-2
5	V _{GL}	I	Supply Voltage for Gate Driver (Low level)	Note 5-3
6	V _B	I	Video Signal (Blue)	
7	V _R	I	Video Signal (Red)	
8	V _G	I	Video Signal (Green)	
9	GND	I	Ground	
10	V _{DD}	I	Supply voltage for Controller	Note 5-4
11	V _{SH}	I	Supply voltage for source driver	Note 5-5
12	GND	I	Ground	
13	CKC	I	Control pin for select I/O signal	Note 5-1
14	$\overline{\text{VS}}\overline{\text{Y}}$	I/O	Vertical Sync. Input/ Output	Note 5-1
15	PSI	O	Synchronize Pulse for Decoder	
16	PSC	O	Synchronize Pulse for DC-DC Converter	
17	NC	-	No Connection	
18	UD	I	UP/DOWN Control	Note 5-7
19	RL	I	Right/Left Shift Control	Note 5-6
20	NP	I	NTSC/PAL Input	Note 5-8

Note 5-1 : Pin 13 (CKC) can select the function for Pin 1 ($\overline{\text{HSY}}$), Pin 3 (CSY), and Pin 14 ($\overline{\text{VS}}\overline{\text{Y}}$).

Pin 13 (CKC)	Pin 1 ($\overline{\text{HSY}}$)	Pin 3 (CSY)	Pin 14 ($\overline{\text{VS}}\overline{\text{Y}}$)
Hi	$\overline{\text{HSY}}$ Output	CSY Input	$\overline{\text{VS}}\overline{\text{Y}}$ Output
Low	External Horizontal Sync Input	External Clock Input	External Vertical Sync Input

Note 5-1-1: CKC= High:

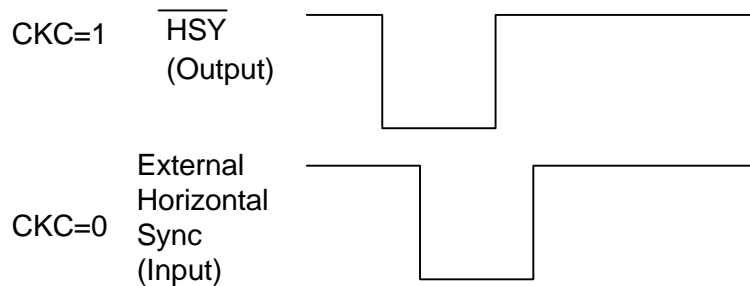
- If CKC=1, the phase lock loop (PLL) is adopted in the LCD module.
- Inputs CSY, the controller of LCD module will separate the Vertical Sync and Horizontal Sync from CSY.
- Output Horizontal Sync ($\overline{\text{HSY}}$, Pin 1) and Vertical Sync ($\overline{\text{VS}}\overline{\text{Y}}$, Pin 14)..

- d. The internal detect will detect Vertical Sync to reset the vertical counter.

Note 5-1-2: CKC= Low

- a. If CKC=0, the phase lock loop (PLL) is not adopted in the LCD module.
- b. If CKC=0, the external clock input frequency of Pin 3 is 28.77 MHz.
- c. Input external Horizontal Sync (Pin 1) to synchronize the LCD module. External Horizontal Sync and External Vertical Sync input pulse can be high going or low going.
- d. The pulse width of external Horizontal Sync input is $4.7\mu s \pm 2\mu s$. The pulse width of external Vertical Sync input is 2H~4H.
- e. The pulse length of external input Vertical Sync of NTSC system is $262H \pm 4H$ and PAL system is $312H \pm 4H$.

Note 5-1-3: The timing chart of $\overline{\text{HSY}}$ and external Horizontal input:



Note 5-1-4: If there is any question about CKC=0, please contact PVI.

Note 5-2 : V_{GH} TYP. = +17V

Note 5-3 : V_{GL} TYP. = -12V

Note 5-4 : V_{DD} TYP. = +3.3V(Ver. ASIC +5V)

Note 5-5 : V_{SH} TYP. = +5V

Note 5-6 : Default Low (0V) for shift Right; Input Hi (+3.3V) for inverse (shift Left).

Note 5-7 : Default Hi (+3.3V) for DOWN; Low (0V) for UP.

Note 5-8 : NTSC= LOW(0V),PAL=Hi(+3.3V)

5-2) Backlight driving

Pin No	Symbol	Description	Remark
1	VL1	Input terminal (Hi voltage side)	
2	NC	NO Connection	
3	VL2	Input terminal (Low voltage side)	Note 5-9

Note 5-9 : Low voltage side of backlight inverter connects with Ground of inverter circuits.

5-3) Input / Output Connector

A) LCD Module Connector

FFC Down Connector

20 Pins

Pitch : 1.0 mm

B) Backlight Connector

JST BHR-03VS-1

Pin No. : 3

Pitch : 4 mm

Red: High Voltage

White: Low Voltage

6. Absolute Maximum Ratings:

GND = 0 V , Ta = 25 °C

Parameter	Symbol	MIN.	MAX.	Unit	Remark
Supply Voltage for Source Driver	V _{SH}	-0.3	+7.0	V	
Supply Voltage for Gate Driver	H Level	V _{GH}	-0.3	+40	V
	L Level	V _{GL}	-20	+0.3	V
Supply voltage for controller	V _{DD}	TBD	TBD	V	
Analog input signals	V _B , V _R , V _G	+0.2	+5.05	V	
Digital input signals		-0.5	0.3+V _{DD}	V	Note 6-1
Digital output signals		-0.5	0.3+V _{DD}	V	Note 6-2
Storage Temperature		-30	+80	°C	
Operation Temperature		-20	+70	°C	

 Note 6-1 : $\overline{\text{HSY}}$, $\overline{\text{CSY}}$, $\overline{\text{VSY}}$, $\overline{\text{CKC}}$,

 Note 6-2 : $\overline{\text{HSY}}$, $\overline{\text{VSY}}$, $\overline{\text{PSI}}$, $\overline{\text{PSC}}$

7. Electrical Characteristics

7-1) Recommended Operating Conditions:

A) Driving for TFT-LCD Panel

GND = 0V , Ta = 25 °C

Parameter	Symbol	MIN.	TYP	MAX.	Unit	Remark
Supply voltage for source driver	V _{SH}	4.5	5.0	5.5	V	
Supply voltage for gate driver	H Level	V _{GH}	15	17	19	V
	L level	V _{GL}	-14	12	-10	V
Supply voltage for controller	V _{DD}	+3.0	+3.3	+3.6	V	
Analog input Voltage	Amplitude	V _B , V _R , V _G	TBD	TBD	TBD	V
	DC component		TBD	TBD	TBD	V
Digital input Voltage	H level	V _{IN}	2.4	-	5	V
	L level	V _{IL}	-0.3	-	0.5	V
Digital output Voltage	H level	V _{OH}	2.4	-	5	V
	L level	V _{OL}	0	-	0.5	V

B) Driving for backlight

Ta = 25 °C

Parameter	Symbol	Min.	Typ.	Max.	Unit	Remark
Lamp voltage	V _L		400		V _{rms}	I _L = 6 mA
Lamp current	I _L		6		mA	
Lamp frequency	P _L		60		KHz	Note 7-1
Kick-off voltage	V _s			750	V _{rms}	
Kick-off voltage(0°C)	V _s			950	V _{rms}	

Note 7-1 : The wave form of lamp driving voltage should be as closed to a perfect SIN wave as possible.

7-2) Power Consumption

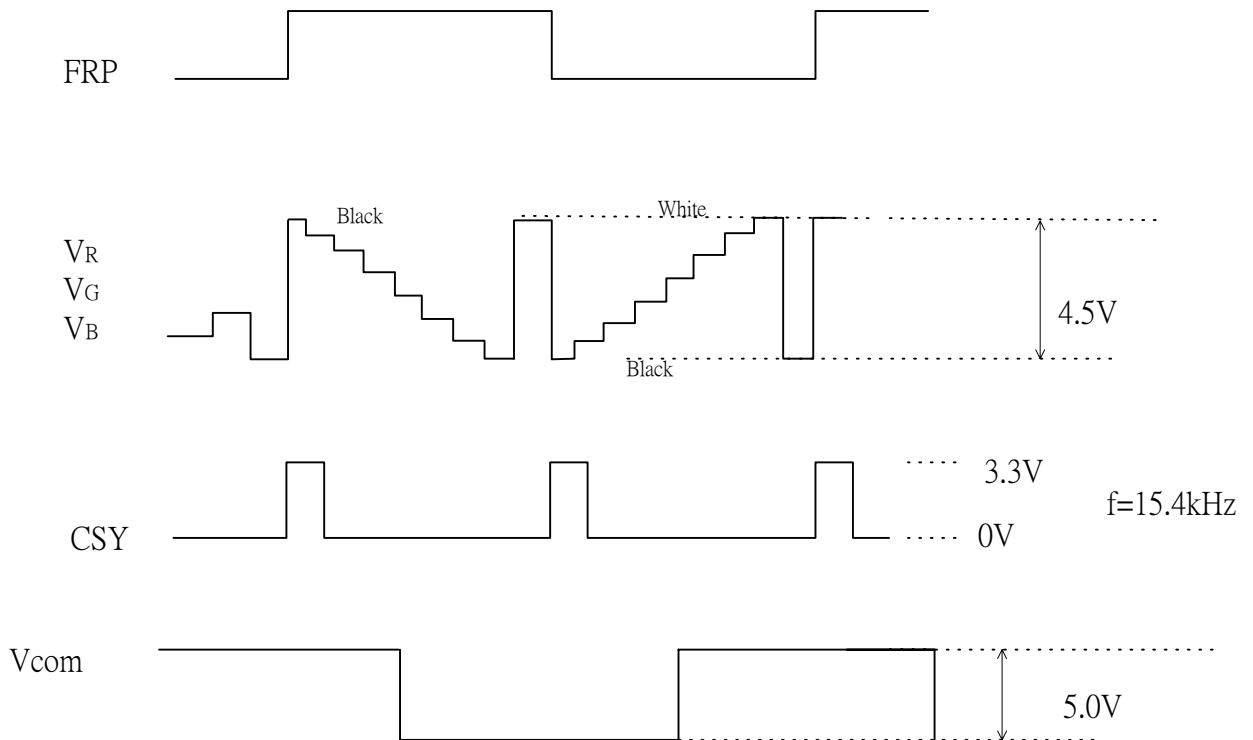
Ta= 25 °C

Parameter	Symbol	Conditions	TYP.	MAX	Unit	Remark
Supply current for Gate Driver (Hi level)	I _{GH}	V _{GH} = +17V	0.15	0.2	mA	
Supply current for Gate Driver (Low level)	I _{GL}	V _{GL} = -12V	20	30	mA	
Supply current for Source Driver	I _{SH}	V _{SH} = +5V	20	30	mA	
Supply current for controller	I _{DD}	V _{DD} = +3.3V	20	30	mA	
LCD Panel Power Consumption			0.41		W	Note 7-2
Backlight Lamp Power Consumption			4.8		W	Note 7-3

Note 7-2 : The power consumption for backlight is not included.

Note 7-3 : Backlight lamp power consumption is calculated by I_L × V_L.

7-3) Input / Output signal timing chart



Parameter		Symbol	MIN.	TYP.	MAX.	Unit	Remarks
Horizontal Sync. Output Pulse	Width	T_{HO}	4.2	4.7	5.2	μs	
	Phase Difference	T_{HP}	0	2		μs	
	Rising Time	T_{HR}	-	-	0.5	μs	
	Falling Time	T_{HF}	-	-	0.5	μs	
Vertical Sync. Output Pulse	Width	T_{VO}	-	4H	-	μs	H=1/15.4KHZ
	Phase Difference	T_{VPO}	-	1H	-	μs	odd field
	Phase Difference	T_{VPE}	-	1.5H	-	μs	even field
	Rising Time	T_{VR}	-	-	2	μs	
	Frequency	f_{FRP}	7.67	7.87	8.07	KHZ	
Polarity Alternating Signal	Delay time	T_{FD}	-	-	4	μs	
	Falling Time	T_{VF}	-	-	2	μs	

7-4) Display Time Range

A) When sync. signal of NTSC system is applied.

a) Horizontally

11.35 ~ 63.4 μs .

b) Vertical

19 ~ 253 H

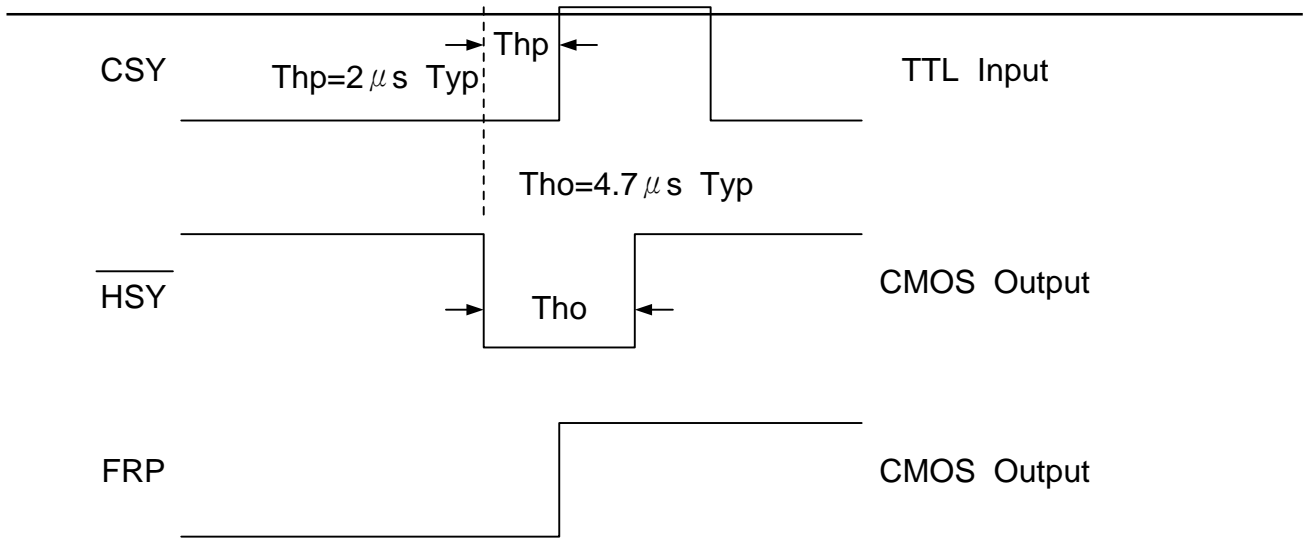
B) When sync. signal of PAL system is applied.

a) Horizontally

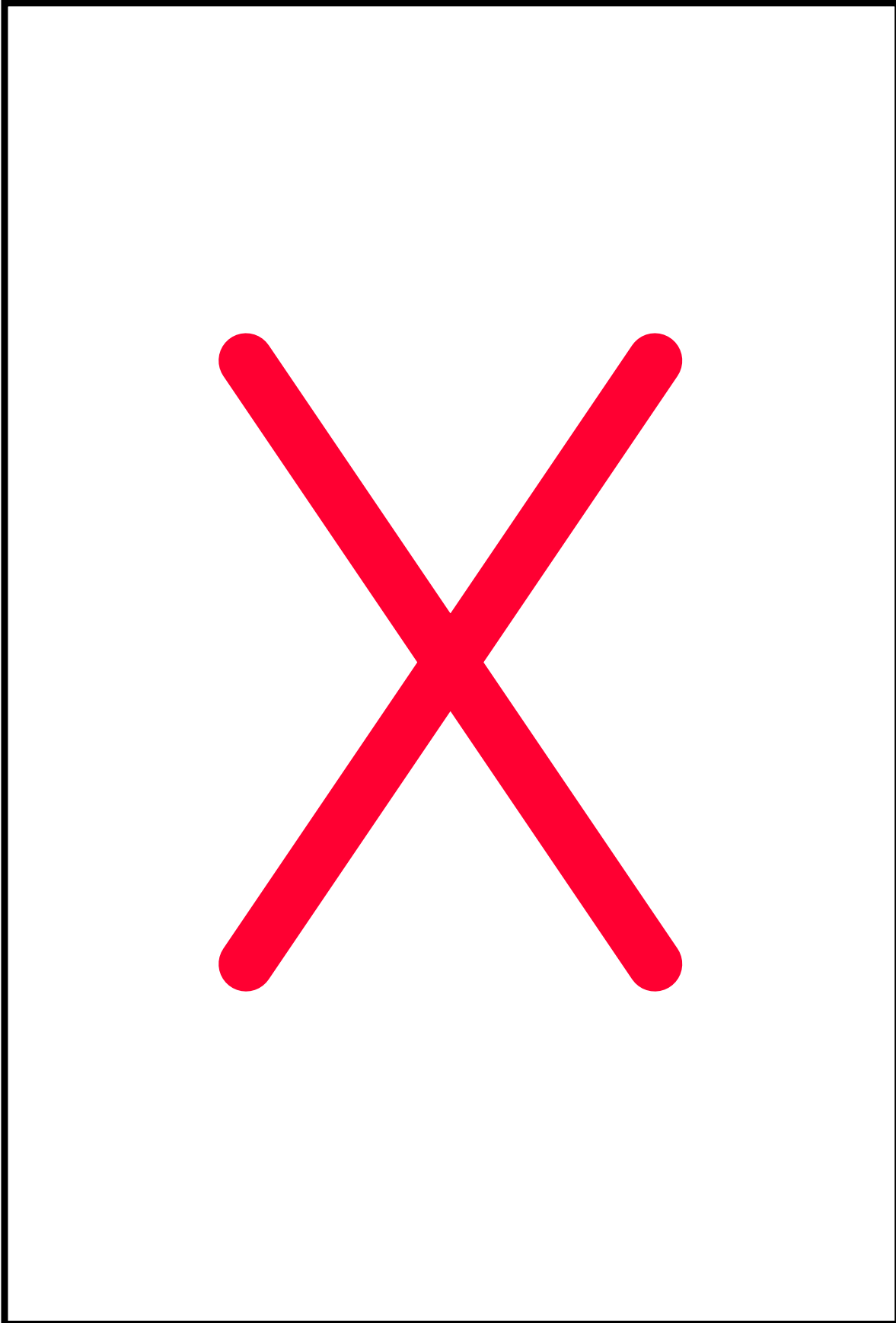
11.54 ~ 64 μs .

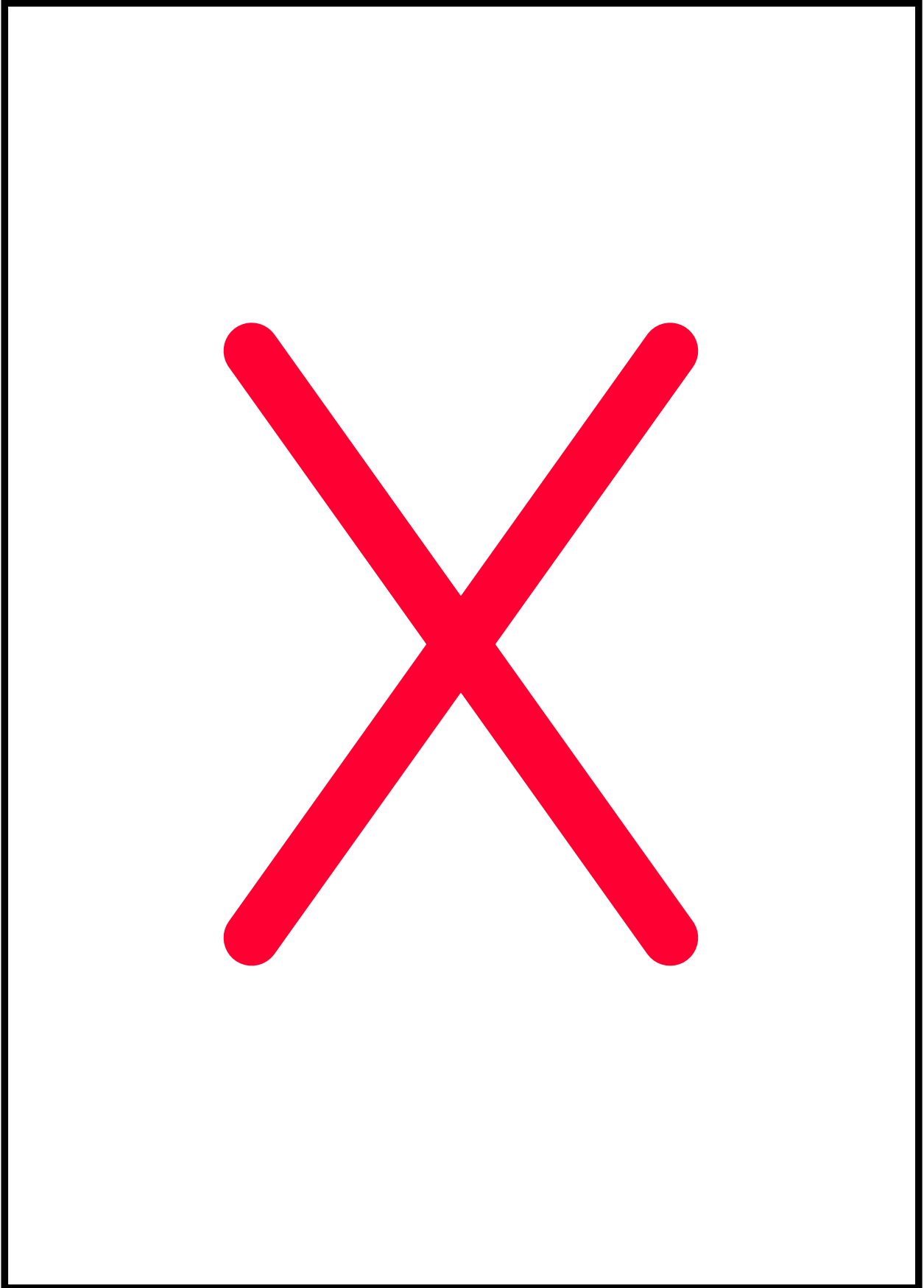
b) Vertical

26 ~ 298 H

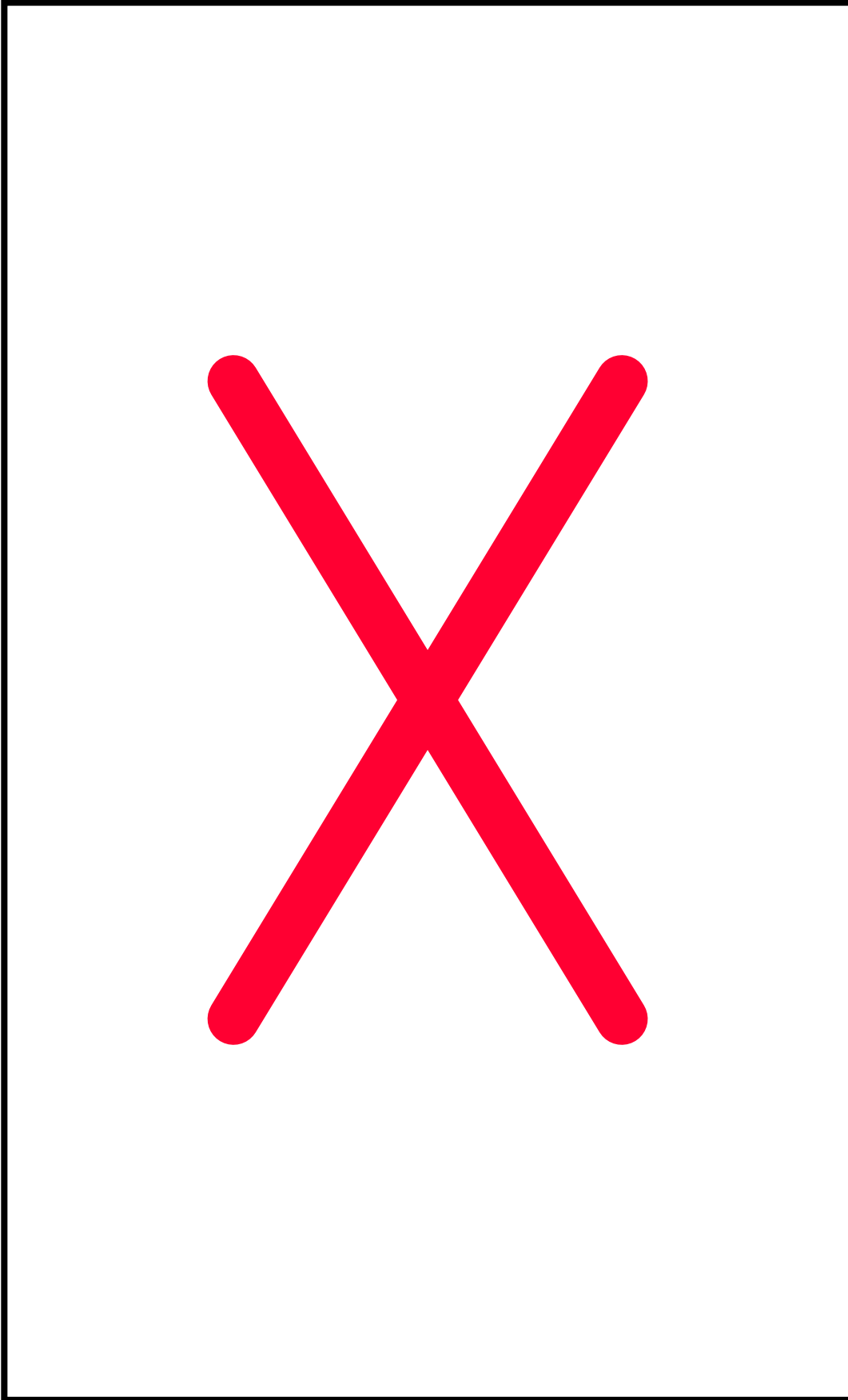


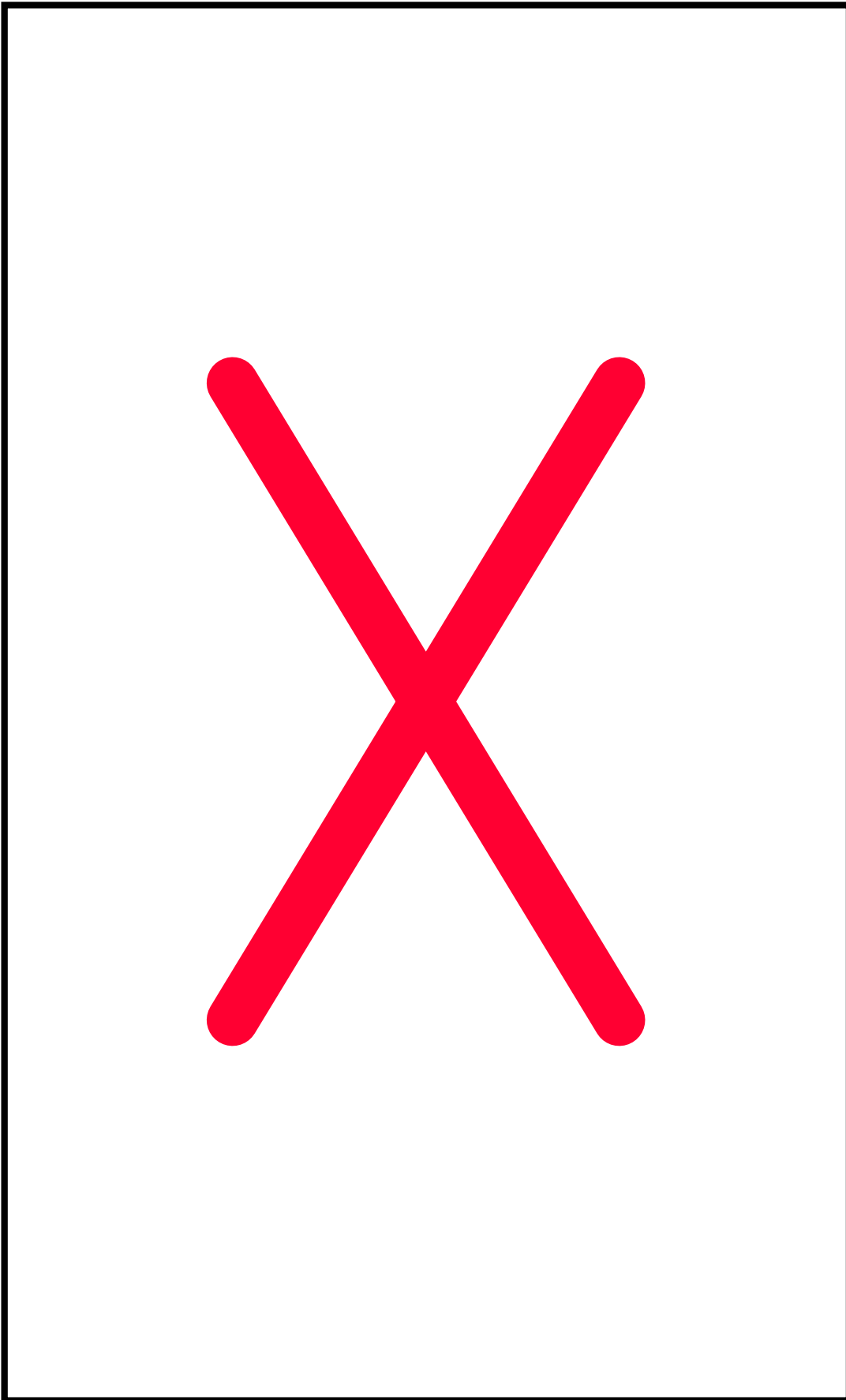
C) NTSC System



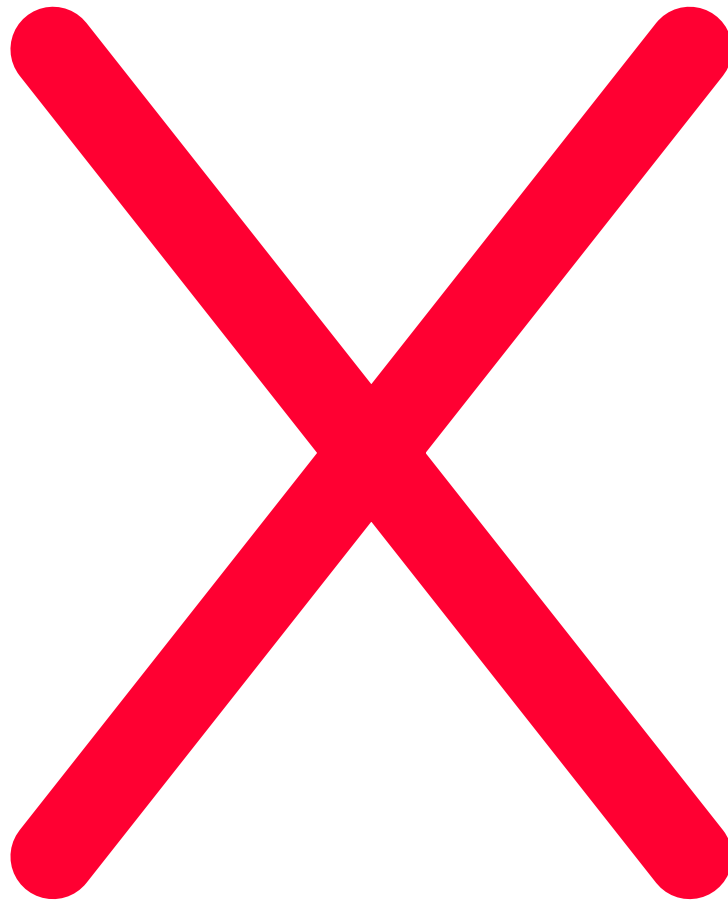


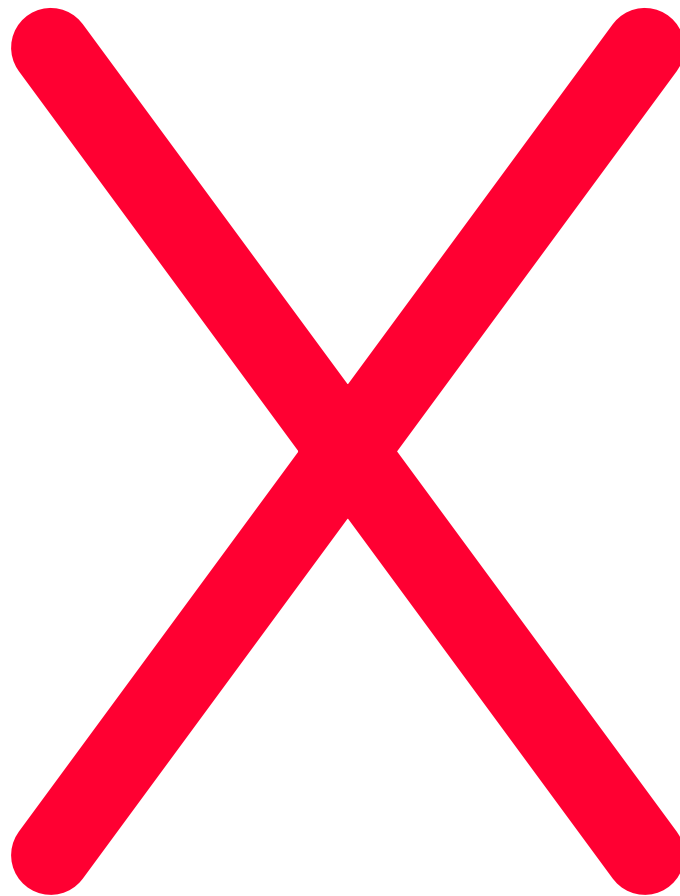
D) PAL System





E) Display Timing





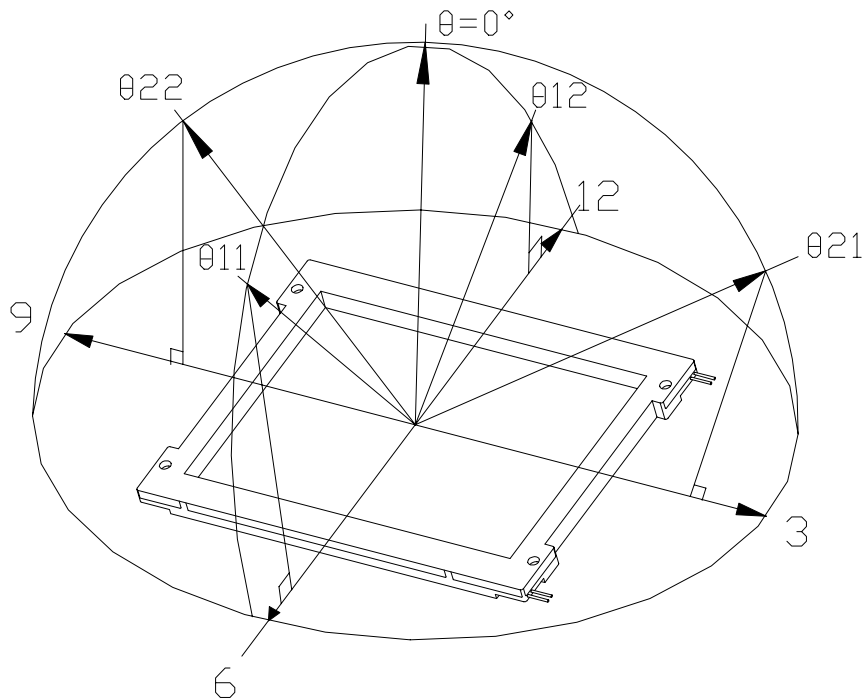
8. Optical Characteristics

8-1) Specification:

Ta = 25°C

Parameter		Symbol	Condition	MIN.	TYP.	MAX.	Unit	Remarks
Viewing Angle	Horizontal	$\theta 21, \theta 22$	$CR \geq 10$	45	55		deg	Note 8-1
	Vertical	$\theta 12$		10	15		deg	Note 8-1
		$\theta 11$		30	35		deg	Note 8-1
Contrast Ratio		CR		80	150			Note 8-2
Response time	Rise	Tr	$\theta = 0^\circ$			30	ms	Note 8-4
	Fall	Tf				50	ms	
Brightness				250	300		cd/m ²	Note 8-3
White Chromaticity	x				TBD			Note 8-3
	y				TBD			
Lamp Life Time +25°C				TBD			hr	

Note 8-1: The definitions of viewing angles



Note 8-2 : CR = $\frac{\text{Luminance when Testing point is White}}{\text{Luminance when Testing point is Black}}$

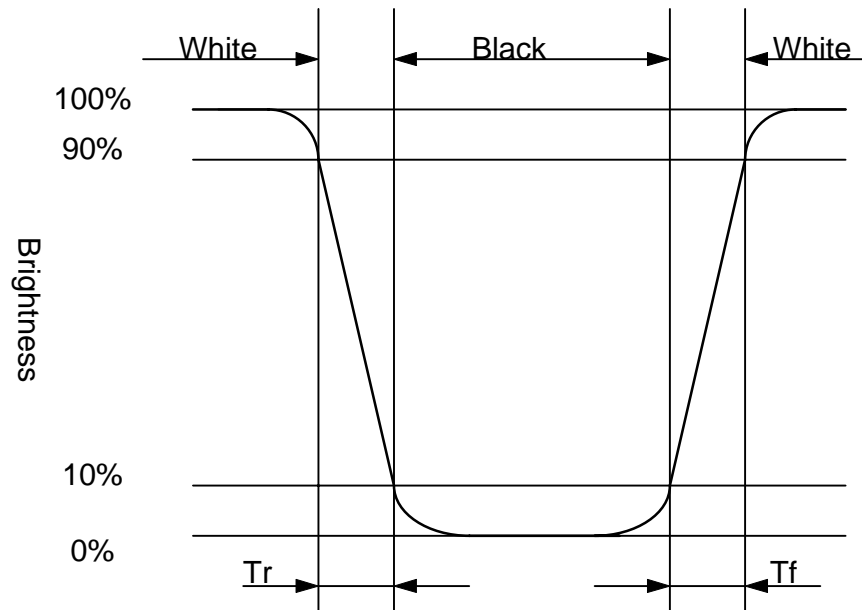
(Testing configuration see 8-2)

Contrast Ratio is measured in optimum common electrode voltage.

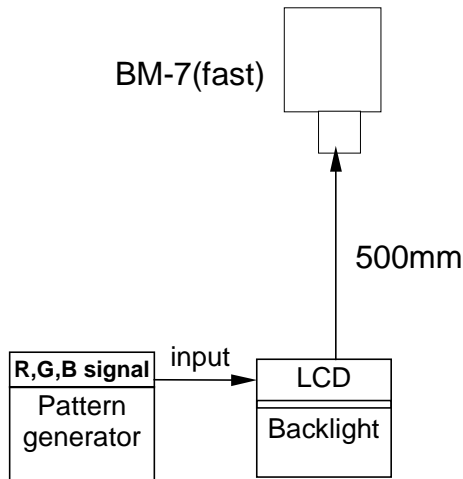
Note 8-3 : Topcon BM-7(fast) luminance meter 2° field of view is used in the testing (after 20~30 minutes operation).

Lamp Current 6mA

Note 8-4: The definition of response time:

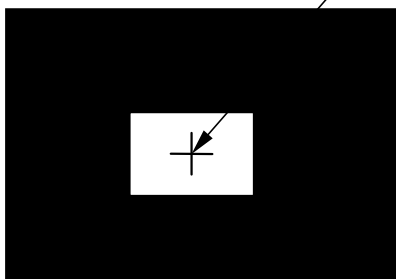


8-2) Testing configuration

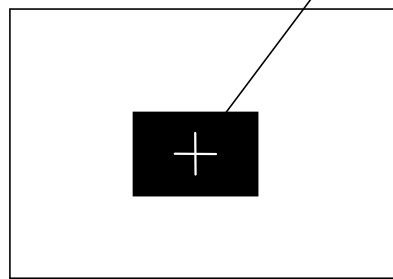


Caution: 1. Environmental illumination ≤ 1 lux
 2. Before test CR, Vcom voltage must be adjusted carefully to get the best CR.

- LCD Display Testing Point Testing Point

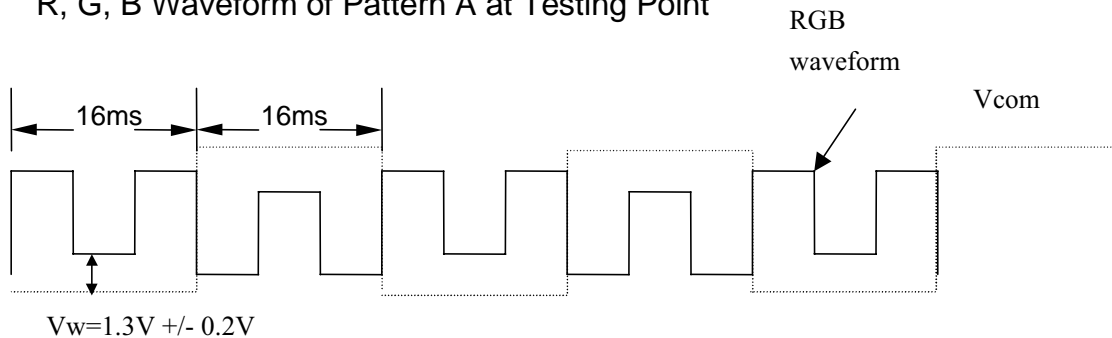


Pattern A

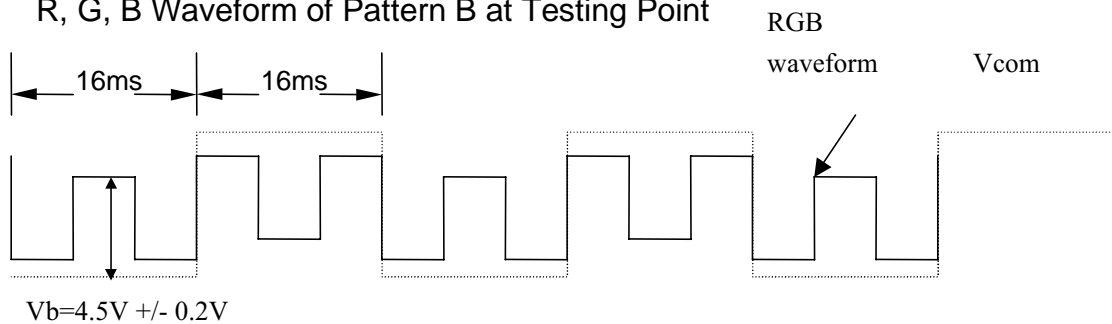


Pattern B

- R, G, B Waveform of Pattern A at Testing Point



- R, G, B Waveform of Pattern B at Testing Point



9. Reliability Test

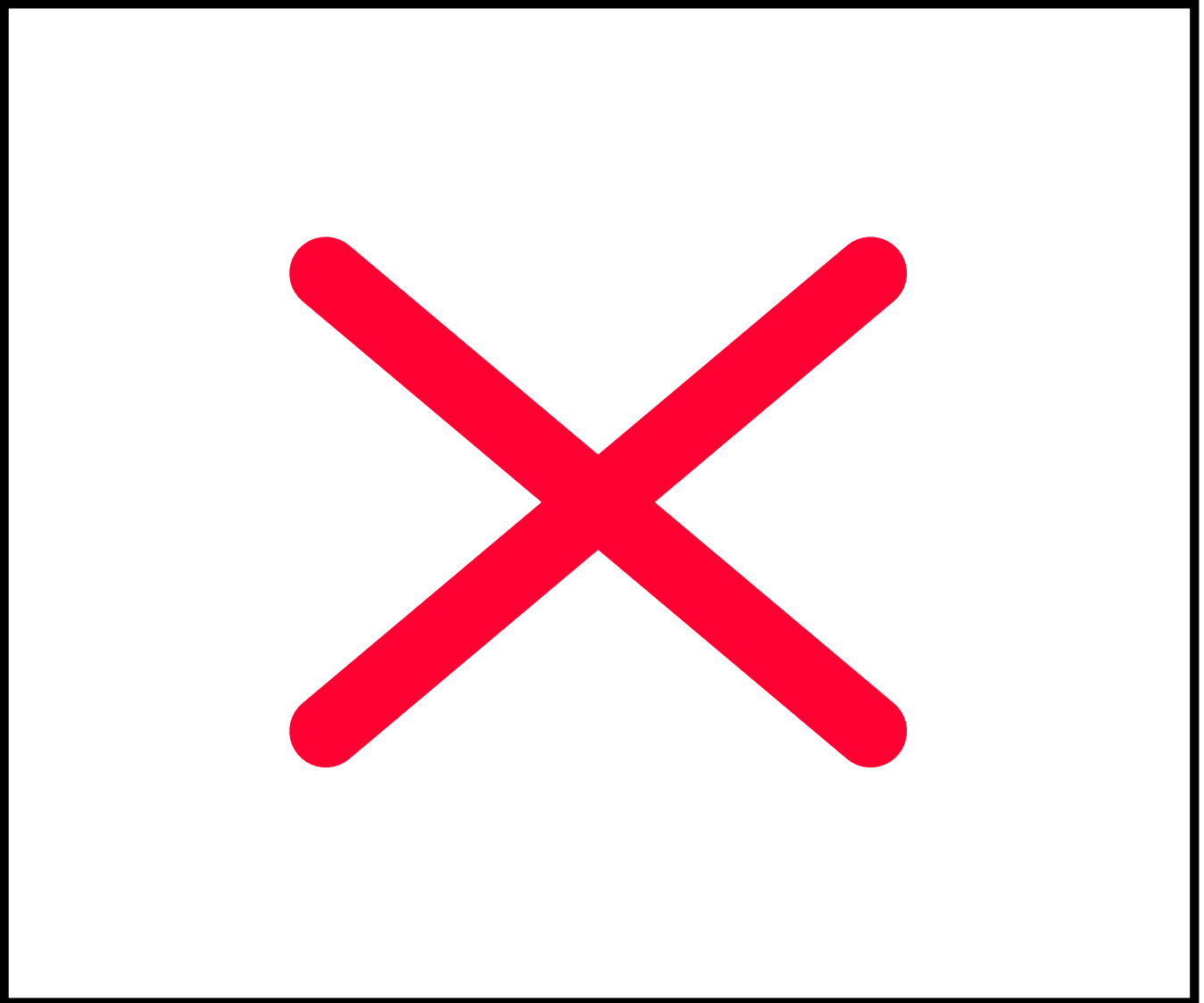
No	Test Item	Test Condition
1	High Temperature Storage Test	Ta = +80 °C, 240 hrs
2	Low Temperature Storage Test	Ta = -30°C, 240 hrs
3	High Temperature Operation Test	Ta = +70 °C, 240 hrs
4	Low Temperature Operation Test	Ta = -20 °C, 240 hrs
5	High Temperature & High Humidity Operation Test	Ta = +60°C, 95%RH, 240 hrs
6	Thermal Cycling Test (non-operating)	-25°C → +25°C → +70°C, 200 Cycles 30 min 5min 30 min
7	Vibration Test (non-operating)	Frequency : 10 ~ 55 Hz Amplitude : 1.0 mm Sweep time: 11 mins Test Period: 6 Cycles for each direction of X, Y, Z
8	Shock Test (non-operating)	100G, 6ms Direction: ± X, ± Y, ± Z Cycle: 3 times
9	Electrostatic Discharge Test	150pF, 330Ω Air: ±15KV; Contact: ±8KV 10 times/point, 9 points/panel face

Ta: ambient temperature

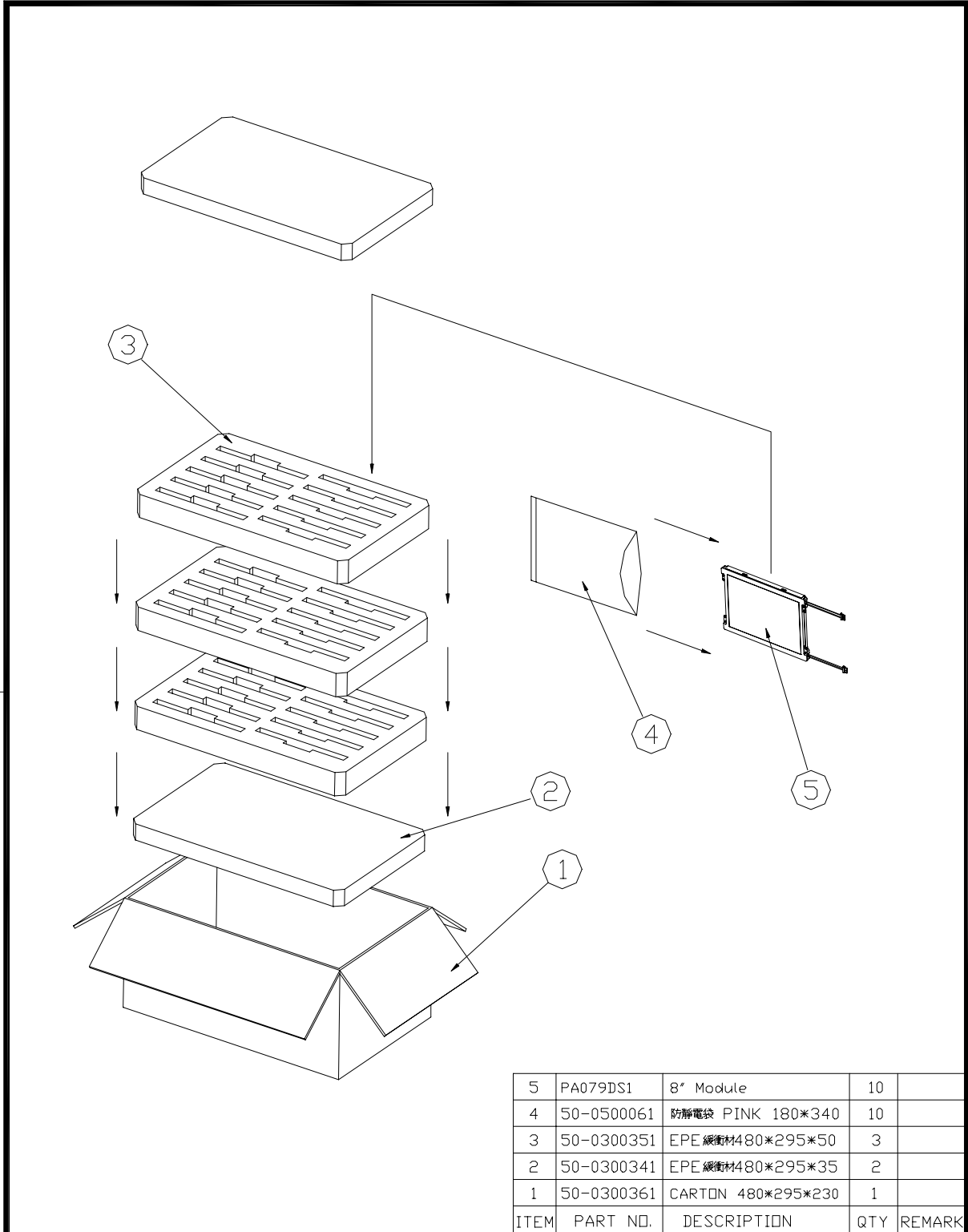
[Criteria]

Under the display quality test conditions with normal operation state, there should be no change which may affect practical display function.

10. Block Diagram



11. Packing



5	PA079DS1	8" Module	10	
4	50-0500061	防静电袋 PINK 180*340	10	
3	50-0300351	EPE 缓冲材480*295*50	3	
2	50-0300341	EPE 缓冲材480*295*35	2	
1	50-0300361	CARTON 480*295*230	1	
ITEM	PART NO.	DESCRIPTION	QTY	REMARK

MTL.SPEC.		UNSPECIFIED TOL'S		REMARK		元太科技工業股份有限公司 Prime View International Co.,Ltd.	
		ANGLE					
		ROUGHNESS				DWG.TITLE	
APPROVE		SCALE	UNIT	SHEET		7.9" PACKING	
CHECK				1 OF 1			
DESIGN	MJ.Chuang	00'07.13		MTL.NO.		DWG.NO.	
						REV.	A4 SIZE

Revision History

Rev.	Issued Date	Revised Contents
0	FEB. 02,2000	NEW