Specification for Approval

Customer:_____

Model Name:_____

Supplier Approval			Customer approval
R&D Designed	R&D Approved	QC Approved	
Peter	*Peng Jun*		

Revision Record

REV NO.	REV DATE	CONTENTS	Note
A	2019-04-10	NEW ISSUE	

CONTENTS:

1. BASIC SPECIFICATION

1.1 Mechanical specifications

Items	Nominal Dimension	Unit
Active screen size	5.7" diagonal	-
Dot Matrix	320 x RGB x 240	Pixel
Module Size (W x H x T)	144.0 x 104.6 x 13.55	mm.
Active Area (W x H)	115.2 x 86.4	mm.
Dot Pitch (W×H)	0.36 x 0.36	mm.
Color depth	262K	color
Interface	Parallel 16bit	-
Driving IC Package	COG	-
Module Weight	238 (Typ)	g

1.2 Display specification

Display	Descriptions	Note
LCD Type	a-Si TFT	-
LCD Mode	TN/Normal white	-
Polarizer Mode	Transmissive	-
Polarizer Surface	Normal	-
Pixel arrangement	RGB-stripe	-
Backlight Type	LED	-
Viewing Direction(Gray inversion)	6 O'clock Direction	-

＊ Color tone is slightly changed by temperature and driving voltage.

1.3 Outline dimension

Pixel SIZE

VIEWING DIRECTION
320×RGB×240 DOTS
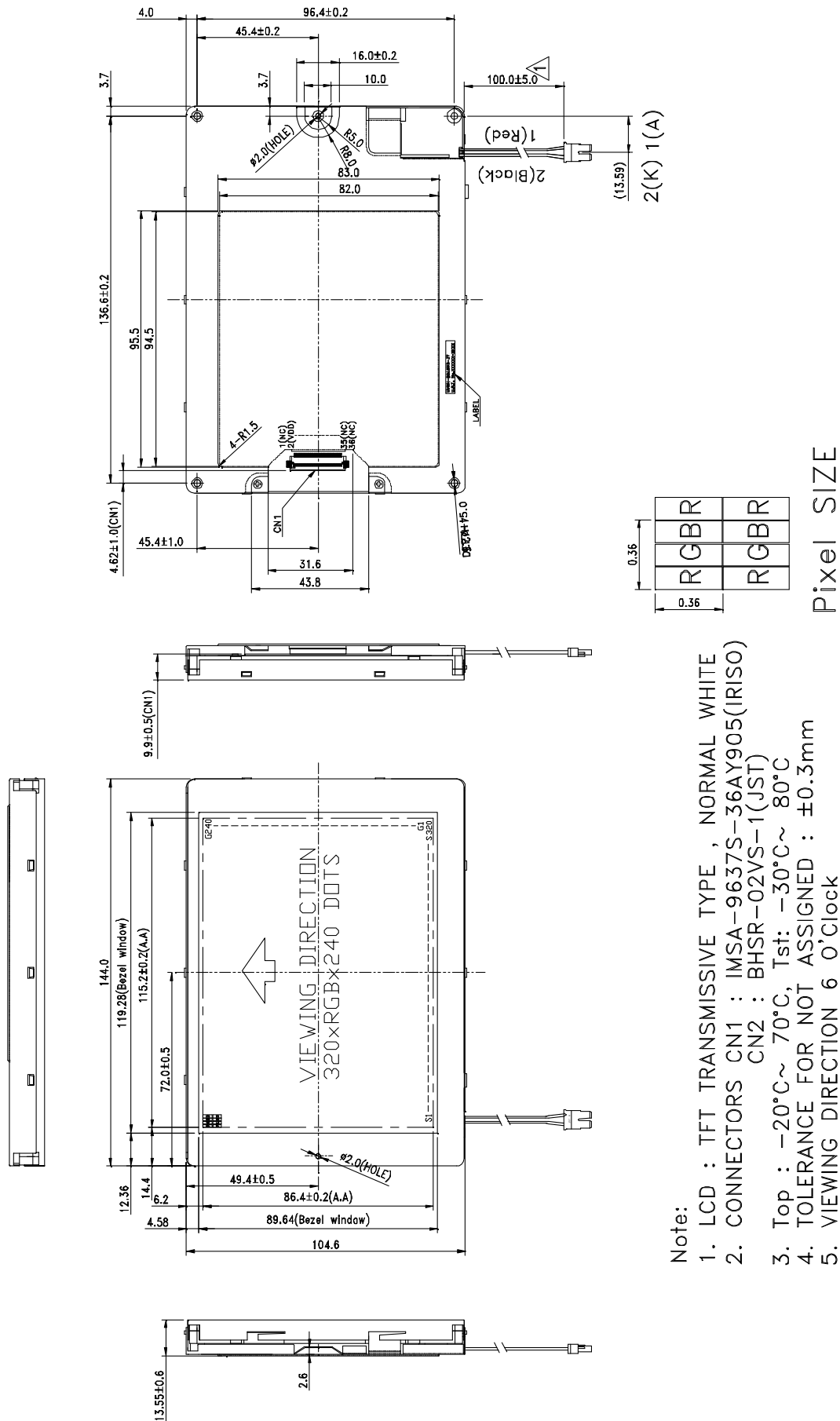
Note:
1. LCD : TFT TRANSMISSIVE TYPE , NORMAL WHITE
2. CONNECTORS CN1 : IMSA-9637S-36AY905(IRISO)
   CN2 : BHSR-02VS-1(JST)
3. Top : -20°C~ 70°C, Tst: -30°C~ 80°C
4. TOLERANCE FOR NOT ASSIGNED : ±0.3mm
5. VIEWING DIRECTION 6 O'Clock
6. RoHS-COMPLIANT
7. CONSTANT CURRENT IF=60mA; VF=23.1V(TYP)
8. BRIGHTNESS : 300 cd/m² (MIN), 330 cd/m² (TYP)

1.4 Block diagram:
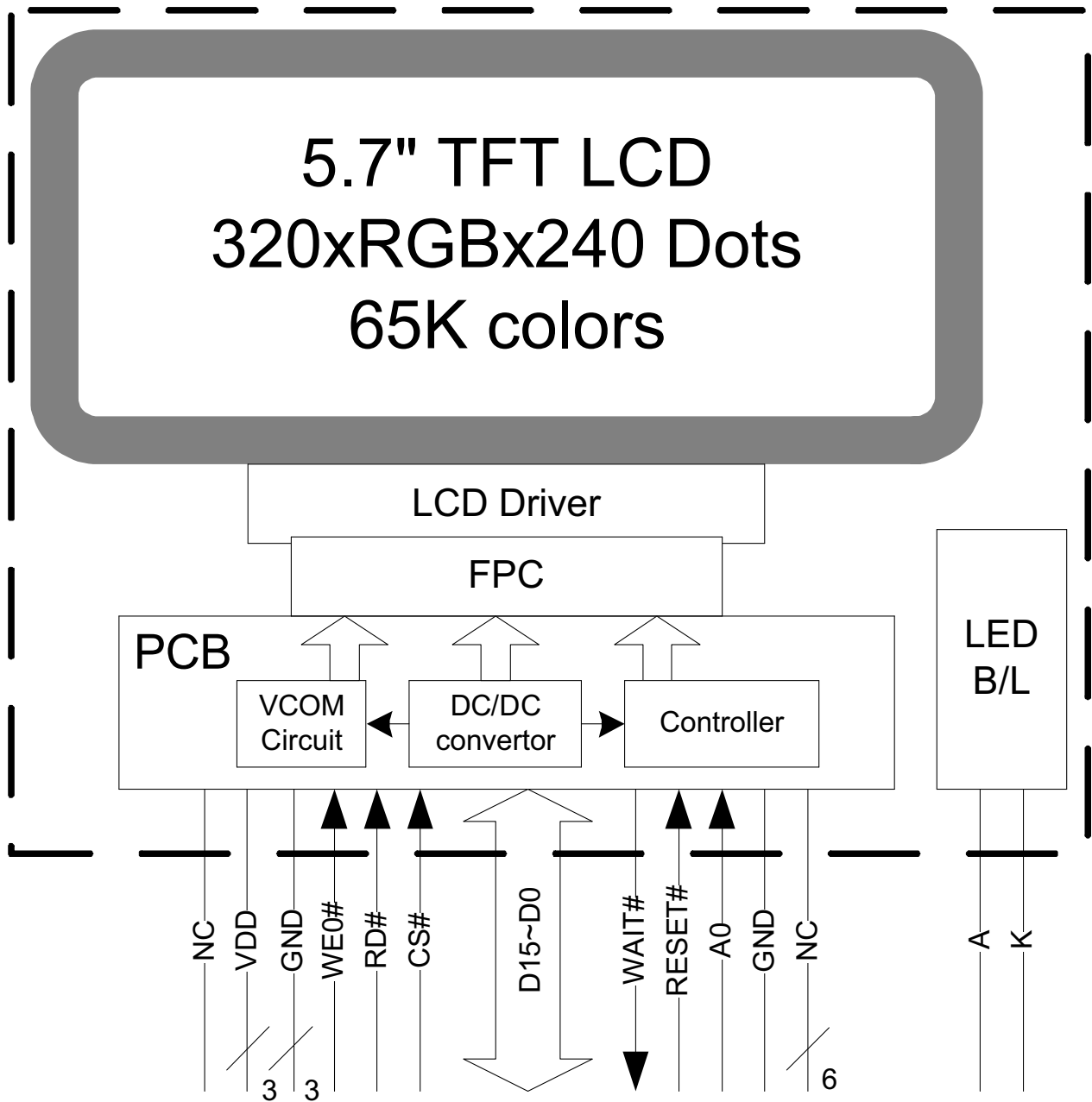
1.5 Interface pin

Pin No.	Pin Name	I/O	Description
1	NC	-	No connection.
2~4	VDD	P	Power supply. (+ 3.3V)
5~7	GND	P	Ground.
8	WE0#	I	This input pin has multiple functions. For 8080, this is an input of write enable signal, WR#
9	RD#	I	This input pin has multiple functions. For 8080, this is an input of read enable signal, RD#
10	CS#	I	Chip select input.
11~26	D15~D0	I/O	Bi-directional system data bus.
27	WAIT#	O	For 8080, this pin outputs the wait signal (WAIT#).
28	RESET#	I	When reset state is released (RESET# ="H"),normal operation can be started after 3 MCLK period.
29	A0	I	This input pin has multiple functions. For 8080, this pin is used as data/command elect.
30	GND	P	Ground.
31~36	NC	-	No connection.

BACKLIGHT PIN：

Pin No.	Pin Name	I/O	Description
1	A	P	Power supply input pin for backlight.
2	K	P	Ground pin for backlight.

2. ELECTRICAL CHARACTERISTICS

2.1 Absolute Maximum Ratings

Items	Symbol	Min.	Max.	Unit
Power supply voltage	VDD	VSS-0.3	4.0	V
Operate temperature range	T_{OP}	-20	70	℃
Storage temperature range	T_{ST}	-30	80	℃

2.2 DC Characteristics

Items	Symbol	Min.	Typ.	Max.	Unit	Condition
Power supply voltage	VDD	3.0	3.3	3.6	V	
Current for Module	IDD	-	60	180	mA	NOTE1

NOTE1 :

Measuring Condition :

Standard Value MAX.

Ta   = 25℃

VDD   = 3.3V

Display Patten   = Checkered pattern
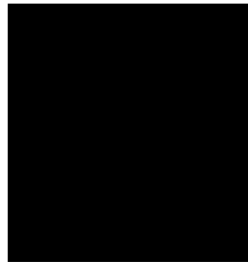
0 gray black pattern

2.2.1 Back-light Characteristics

PARAMETER	SYMBOL	MIN	TYP	MAX	Unit	Test Condition	NOTE
Supply Current	If	-	60	-	mA	Ta=25℃	-
Supply Voltage	VF	-	23.1	-	V	Ta=25℃	-
Half-Life Time	Lf	-	10000	-	hrs	Ta=25℃	1

Note 1：The " Half-Life Time "is defined as the module brightness decrease to 50% original brightness.

2.3 Command Sequence (Recommend by U.R.T.)

Initial_SSD1926:

Start Initial Sequence:

COMMAND	CODE	DESCRIPTION
Software Reset Register	REG[0x0A2h]=0x01 REG[0x0A2h]=0x00	
General Purpose I/O Pins Configuration Register 0	REG[0x0A8h]=0x08	
General Purpose I/O Pins Configuration Register 1	REG[0x0A9h]=0x00	
General Purpose IO Pins Status/Control Register	REG[0x0ACh]=0x08	
Power Saving Configuration Register	REG[0x0A0h]=0x00	
Power save frame count Register	REG[0x0A1h]=0x00	
PLL Clock Setting Register 0	REG[0x126h]=0x8A	
PLL Clock Setting Register 1	REG[0x127h]=0xC8	
PLL Clock Setting Register 2	REG[0x12Bh]=0xAE	
Memory Clock Configuration Register	REG[0x004h]=0x00	
PCLK Frequency Ratio Register 0	REG[0x158h]=0xFF	
PCLK Frequency Ratio Register 1	REG[0x159h]=0xFF	
PCLK Frequency Ratio Register 2	REG[0x15Ah]=0x03	
Read Dummy Register	REG[0x001h]=0x00	
Panel Type Register	REG[0x010h]=0x71	
MOD Rate Register	REG[0x011h]=0x00	
Dithering / FRC Control Register	REG[0x050h]=0x00	
Display Post-processing Saturation Control Register	REG[0x02Ch]=0x7F	
Display Post-processing Brightness Control Register	REG[0x02Dh]=0x80	
Display Post-processing Contrast Control Register	REG[0x02Eh]=0x40	
Display Post-processing Control Register	REG[0x02Fh]=0x00	
Horizontal Total Register 1	REG[0x012h]=0x3D	
Horizontal Total Register 0	REG[0x013h]=0x04	
Horizontal Display Period Register	REG[0x014h]=0x27	
Horizontal Display Period Start Position Register 0	REG[0x016h]=0x44	
Horizontal Display Period Start Position Register 1	REG[0x017h]=0x00	

| COMMAND	CODE	DESCRIPTION
Vertical Total Register 0	REG[0x018h]=0x05	
Vertical Total Register 1	REG[0x019h]=0x01	
Vertical Display Period Register 0	REG[0x01Ch]=0xEF	
Vertical Display Period Register 1	REG[0x01Dh]=0x00	
Vertical Display Period Start Position Register 0	REG[0x01Eh]=0x16	
Vertical Display Period Start Position Register 1	REG[0x01Fh]=0x00	
LLINE Pulse Width Register	REG[0x020h]=0x54	
LLINE Pulse Start Position Register 0	REG[0x022h]=0x00	
LLINE Pulse Start Position Register 1	REG[0x023h]=0x00	
LFRAME Pulse Width Register	REG[0x024h]=0x07	
LFRAME Pulse Start Position Register 0	REG[0x026h]=0x03	
LFRAME Pulse Start Position register 1	REG[0x027h]=0x00	
LFRAME Pulse Start Offset Register 0	REG[0x030h]=0x00	
LFRAME Pulse Start Offset Register 1	REG[0x031h]=0x00	
LFRAME Pulse Stop Offset Register 0	REG[0x034h]=0x00	
LFRAME Pulse Stop Offset Register 1	REG[0x035h]=0x00	
LSHIFT Polarity Register	REG[0x038h]=0x01	
RGB sequence Register	REG[0x042h]=0x00	
Display Mode Register	REG[0x070h]=0x44	
Special Effects Register	REG[0x071h]=0x40	
Main Window Display Start Address Register 0	REG[0x074h]=0x00	
Main Window Display Start Address Register 1	REG[0x075h]=0x00	
Main Window Display Start Address Register 2	REG[0x076h]=0x00	
Main Window Line Address Offset Register 0	REG[0x078h]=0xA0	
Main Window Line Address Offset Register 1	REG[0x079h]=0x00	
RGB/YUV SETTING REGISTER	REG[0x1A4h]=0xC0	SET RGB.

2.4 AC Characteristics

8080 Indirect Interface Timing
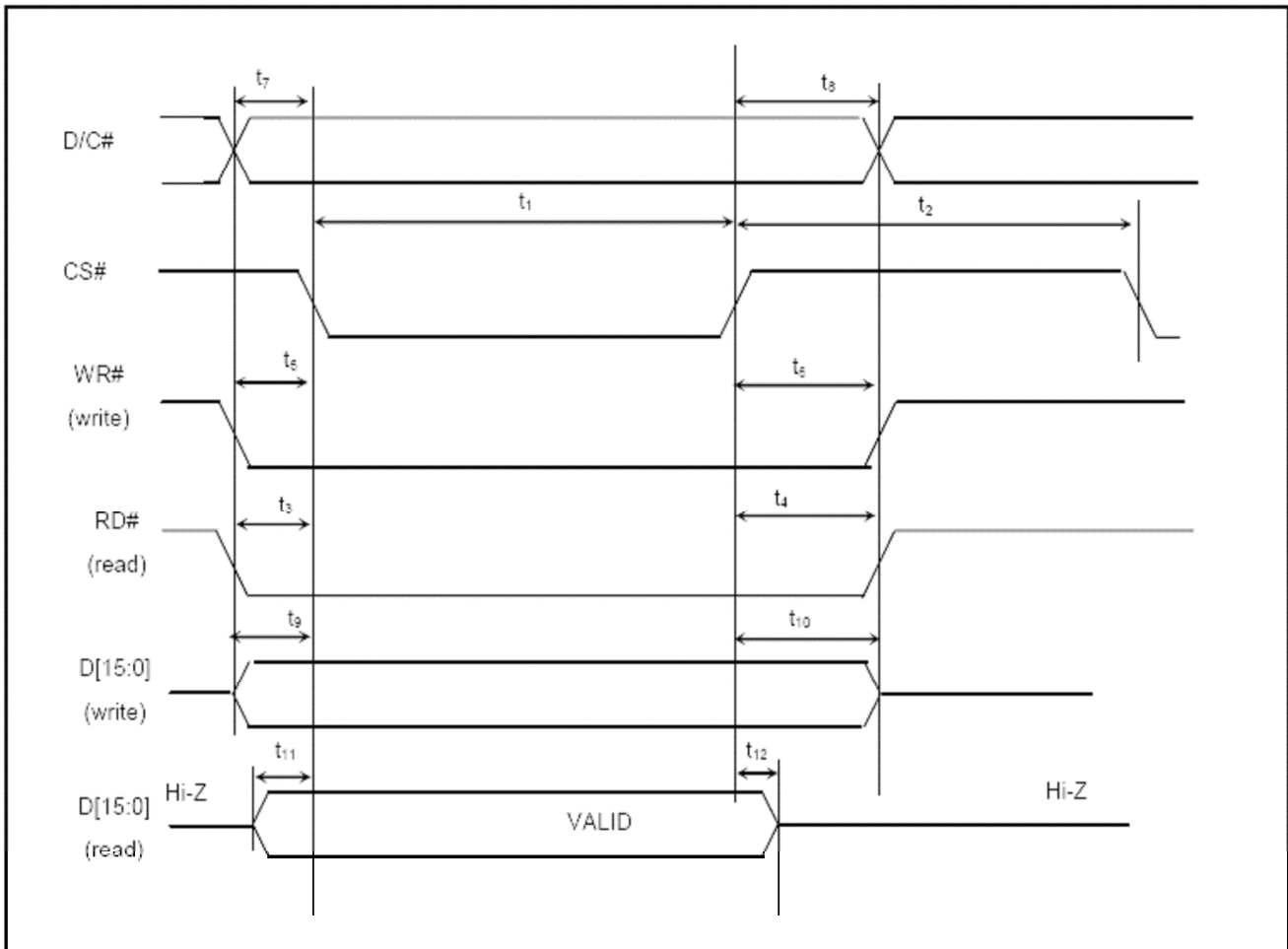
Figure 10-3 : 8080 Interface Timing

Table 10-5 : 8080 Interface Timing

Symbol	Parameter	Min	Max	Units
t_1	CS# pulse width low	82		ns
t_2	CS# pulse width high	82		ns
t_3	RD# setup	18		ns
t_4	RD# hold	0		ns
t_5	WR# setup	18		ns
t_6	WR# hold	0		ns
t_7	D/C# setup	18		ns
t_8	D/C# hold	0		ns
t_9	D[15:0] setup for write	18		ns
t_{10}	D[15:0] hold for write	0		ns
t_{11}	D[15:0] delay for read	55		ns
t_{12}	D[15:0] hold for read	0		ns

Note : Above timing is based on MCLK = 85MHz
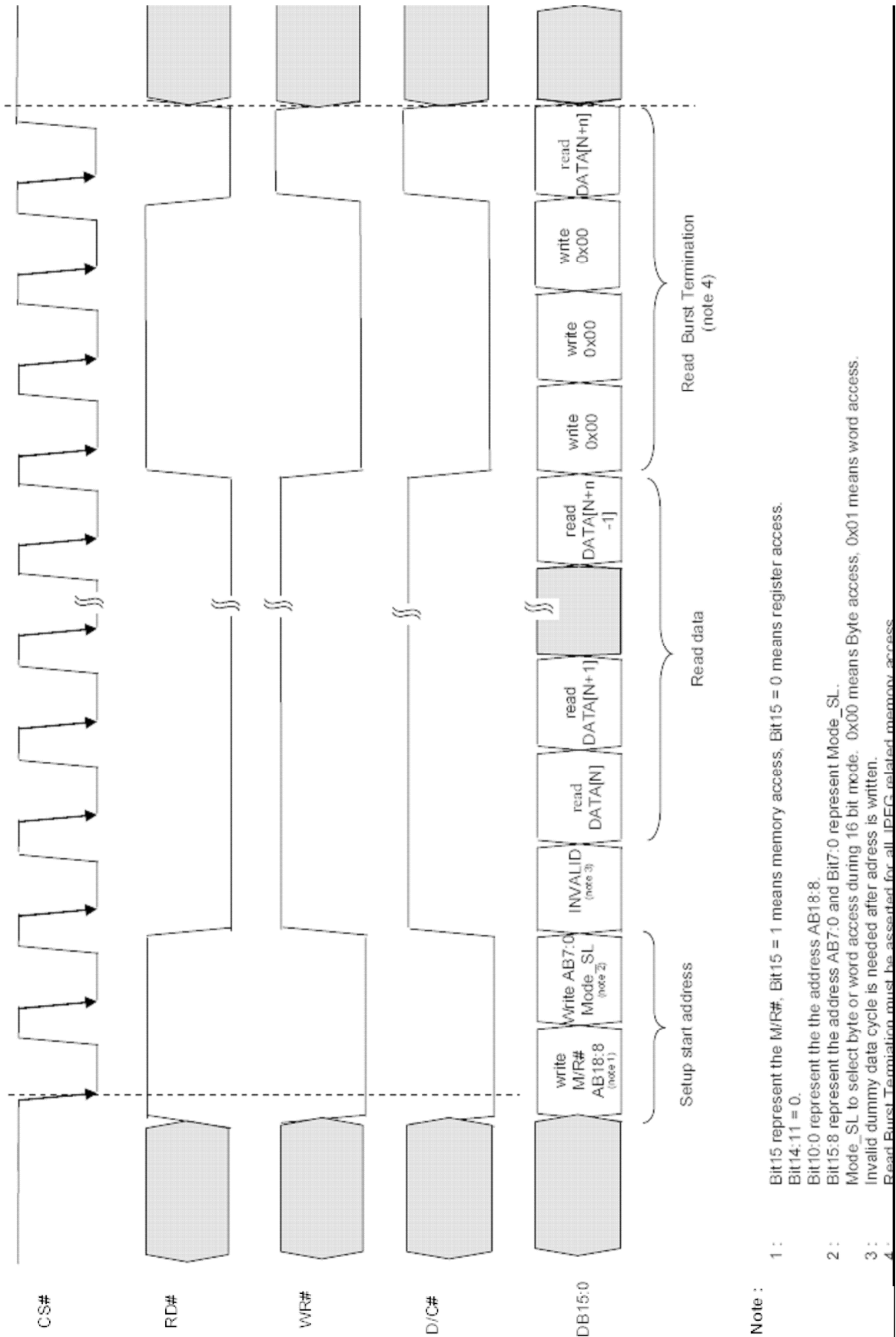
Figure 7-5 : 8080 16 bit Interface Timing (read cycle)
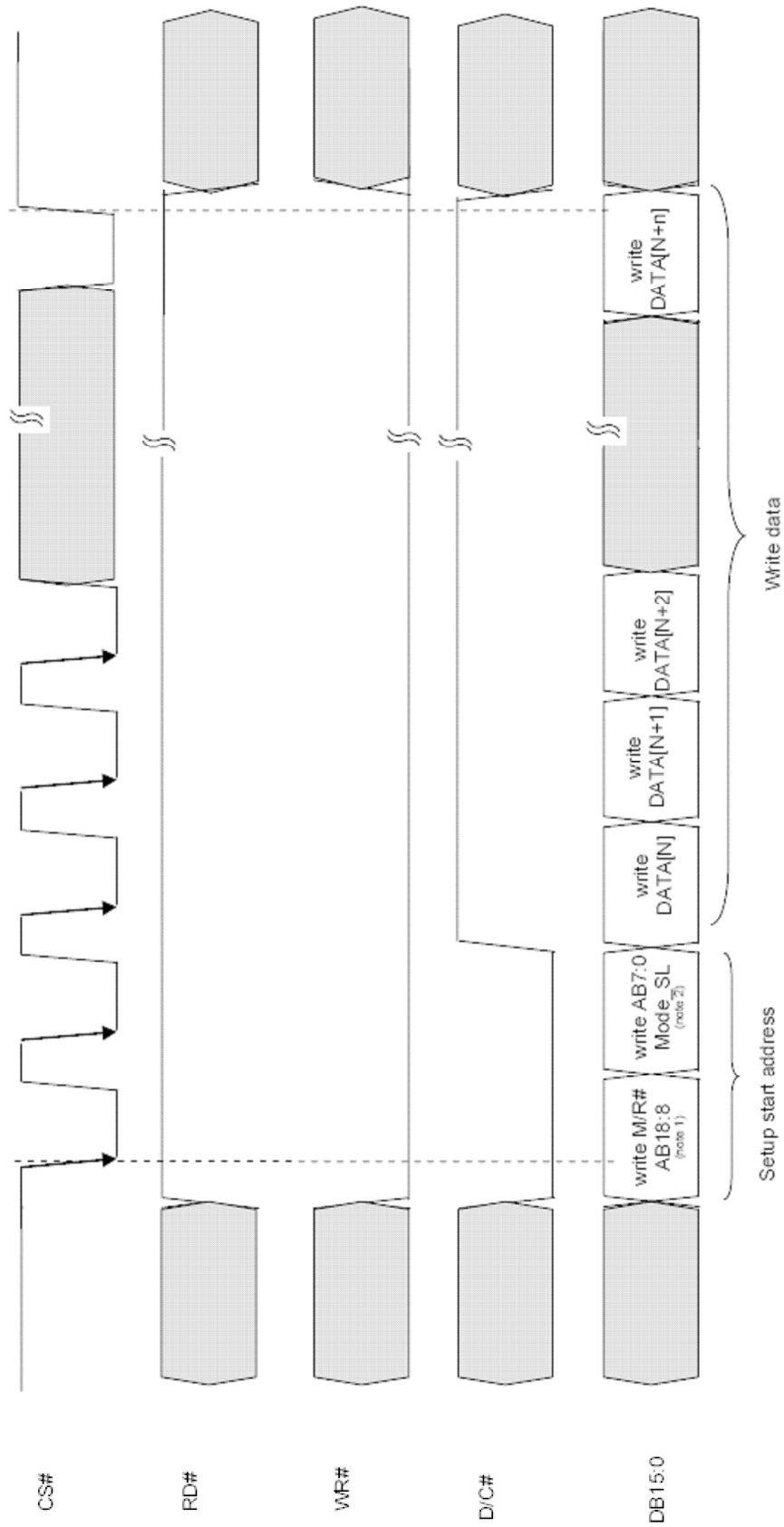
Note :

1 : Bit15 represent the M/R#, Bit15 = 1 means memory access, Bit15 = 0 means register access.
     Bit14:11 = 0.
     Bit10:0 represent the the address AB18:8.
2 : Bit15:8 represent the address AB7:0 and Bit7:0 represent Mode_SL.
     Mode_SL to select byte or word access during 16 bit mode. 0x00 means Byte access, 0x01 means word access.
3 : Invalid dummy data cycle is needed after adress is written.
4 : Read Burst Termiation must be asserted for all JPEG related memory access.

Figure 7-4 : 8080 16 bit Interface Timing (write cycle)

Note :

1 : Bit15 represent the the M/R#, Bit15 = 1 means memory access, Bit15 = 0 means register access.
Bit14:11 = 0.
Bit10:0 represent the the address AB18:8.

2 : Bit15:8 represent the address AB7:0 and Bit7:0 represent Mode_SL.
Mode_SL to select byte or word access during 16 bit mode. 0x00 means Byte access. 0x01 means word access.

* 7 MCLK is needed for each cycle if WAIT# is not used for interface.

3. OPTICAL CHARACTERISTICS

3.1 Characteristics

Electrical and Optical Characteristics

No.	Item			symbol / temp.		Min.	Typ.	Max.	Unit	Note
1	Response Time			Tr	25 ℃	-	15	30	ms	2
				Tf	25 ℃	-	35	50		
2	Viewing Angle	Hor.	Cr>=10	Θ_{2+}	0°	45	60	-	degree	3
				Θ_{2-}	180°	45	60	-		
		Ver.		Θ_{1+}	270°	15	45	-		
				Θ_{1-}	90°	45	60	-		
3	Contrast Ratio			Cr	25 ℃	150	250	-	-	4
4	Red x-code			Rx	25 ℃	0.58	0.63	0.68	-	5
	Red y-code			Ry		0.31	0.36	0.41		
	Green x-code			Gx		0.28	0.33	0.38		
	Green y-code			Gy		0.55	0.60	0.65		
	Blue x-code			Bx		0.09	0.14	0.19		
	Blue y-code			By		0.06	0.11	0.16		
	White x-code			Wx		0.27	0.32	0.37		
	White y-code			Wy		0.30	0.35	0.40		
	Brightness			Y		350	450	-	cd/m^2	
5	Brightness Uniformity				25 ℃	80	-	-	%	6

3.2 Definition of optical characteristics

Measurement condition :

Transmissive and Transflective type

Receiver
Θ
12H
9H
Φ
3H
6H
Light Source
TEMPERATURE CONTROL CHAMBER
PHOTAL LCD-5000
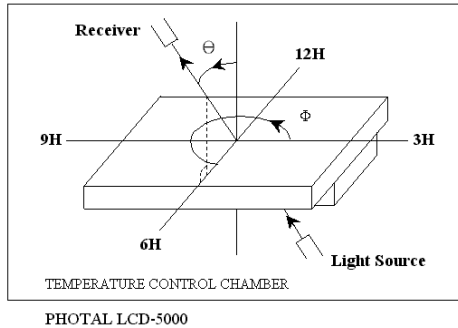
[Note 1] Definition of LCD Driving Vop and Waveform :

Vop Definition

Contrast Ratio

Voltage

Vop= Driving Voltage at Max. Contrast Ratio

Selected Waveform

Non-Selected Waveform

Vop
Duty: 1/d
Bias: 1/b
fF : Frame Freq.
1/b
0
-1/b
(1/fF)*(1/d)
-Vop
1/fF

Vop
Duty: 1/d
Bias: 1/b
fF : Frame Freq.
1- 2/b
1/b
0
-1/b
-(1- 2/b)
(1/fF)*(1/d)
-Vop
1/fF
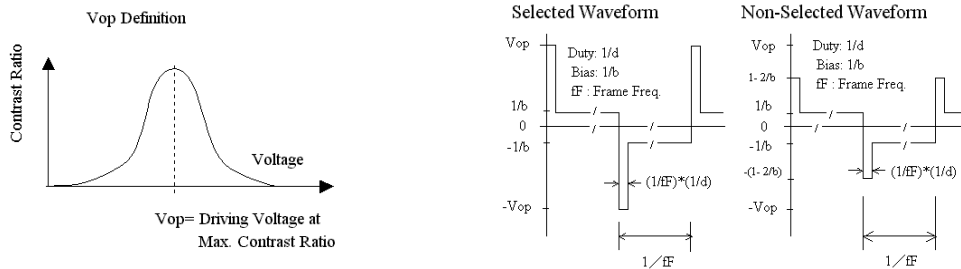
[Note 2] Definition of Response Time

for Positive type :

Selected State   Non-Selected State   Selected State

Transmittance

90%   90%

10%   10%

Tf   Tr   time
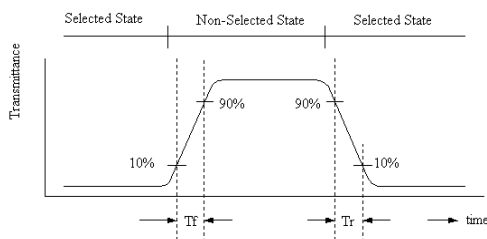
[Note 3] Definition of Viewing Angle :   [Note 4] Definition of Contrast Ratio :

0°
Θ1-   Θ1+
Viewing Direction

0°
Θ2-   Θ2+
Left   Right
Viewing Direction

for Positive type

Transmittance

Θ1=0 , Θ2=0   TH
Non-Selected Segment
Selected Segment
TL
Vop   Voltage
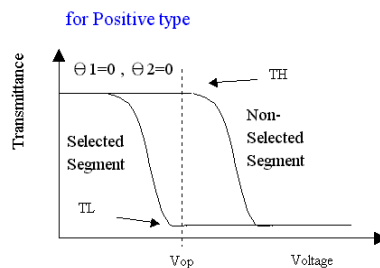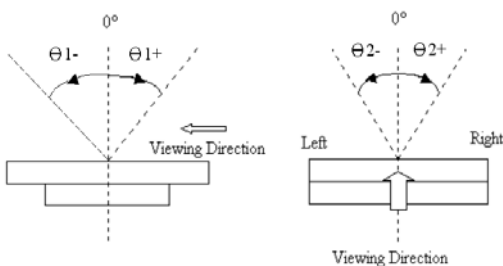
$$\text{Contrast Ratio} = \frac{TH}{TL}$$

[Note 5] Definition of measurement of Color Chromaticity and Brightness

BM-7

480mm

LCD Module
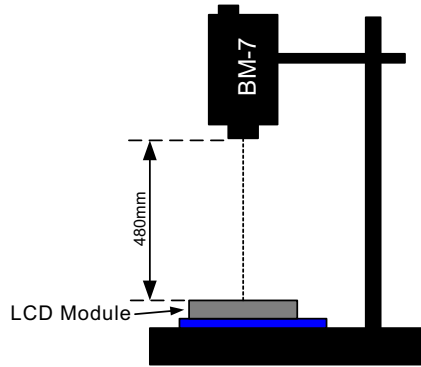
[Note 6] Definition of Brightness Uniformity

W / 4

H / 4

Active Area Height : H

1	2	3
4	5	6
7	8	9

Active Area Width : W
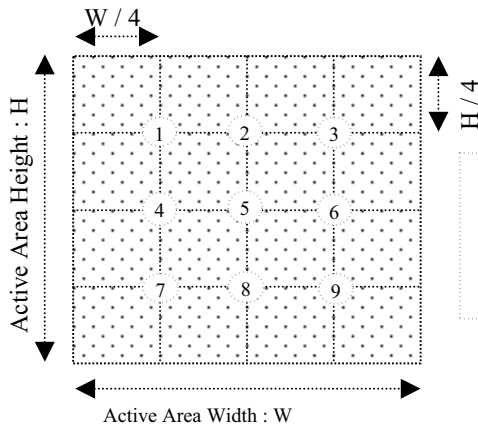
$$\text{Brightness Uniformity} = \frac{\text{Minimum Brightness of Point 1~9}}{\text{Maximum Brightness of Point 1~9}}$$

[Note 7] Definition of Measurement of Reflectance

BM-7

White Light Source
(Ring)

480mm

15 deg.

LCD Module
or referance
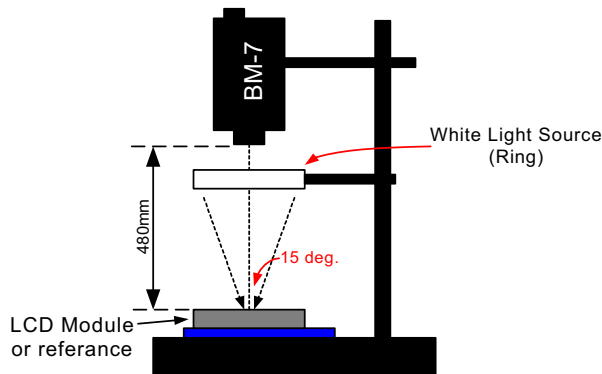
4. RELIABILITY :

Item No	Items	Condition
1	High temperature operating	70 ℃ ， 200 hours
2	Low temperature operating	-20 ℃ ， 200 hours
3	High temperature storage	80 ℃ ， 200 hours
4	Low temperature storage	-30 ℃ ， 200 hours
5	High temperature & humidity storage	60℃， 90%RH， 100 hours
6	Thermal Shock storage	-30℃, 30min.<=> 80℃, 30min. 10 Cycles
7	Vibration test	10 => 55 =>10 => 55 => 10 Hz , within 1 minute Amplitude : 1.5mm. 15 minutes for each Direction (X,Y,Z)
8	Drop test	Packed, 100CM free fall, 6 sides, 1 corner, 3edges
9	Life time	50,000 hours 25℃ , 60%RH , specification condition driving

* One single product test for only one item.
* Judgment after test : keep in room temperature for more than 2 hours.
 - Current consumption < 2 times of initial value
 - Contrast > 1/2 initial value
 - Function : work normally

5. PRODUCT HANDLING AND APPLICATION

☐ PRECAUTION FOR HANDLING LCM

● The LCD module contains a C-MOS LSI. People who operate the LCM should wear ESD protection eguipement to prevent ESD hurt on products.

● Do not input any signal before power is turned on.

● Do not take LCM from its packaging bag until it is assembled.

● Peel off the LCM protective film slowly since static electricity may be generated.

● Pay attention to the humidity of the work shop, 50~60%RH is satisfactory.

● Use a non-leak iron for soldering LCM.

● Do not touch the display surface or connection terminals area with bare hands.Smudges on the display surface reduce the insulation between terminals.

● Cautions for soldering to LCM:

Condition for soldering I/O terminals:

Temperature at iron tip :350℃±15℃.

Soldering time : 3~4sec./ terminals.

Type of solder : Eutectic solder(rosin flux filled).

☐ **PRECAUTION IN USE OF LCM**

● Do not contact or scratch the front surface and the contact pads of a LCM with hard materials such as metal or glass or with one's nail.

● To clean the surface , wipe it gently with soft cloth dampened by alcohol.

● Do not attempt to wiped off the contact pads.

● Keep LCM panels away from direct sunlight , also avoid them in high-temperature & high humidity environment for a long period.

● Do not drive LCM by DC voltage.

● Do not expose LCM to organic solvent.

● Liquid in LCM is hazardous substance. In case a contact with liquid crystal material is occured, be sure to immediately wash such material away by soap and water.

● The polarizer is easily damaged and should be handle with special care. Don't press or rub it with hard objects.

☐ PRECAUTION FOR STORING AND USE OF LCM

● To avoid degradation of the device , do not store the module under the conditions of direct sunlight , high temperature or high humidity . Keep the module in bags designed to prevent static electricity charging under low temperature / normal humidity conditions(avoid high temperature / high humidity and low temperature below 0℃)

● Never use the LCD , LCM under 45 Hz , the liquid crystal will decomposition and cause permently damage on display !!

☐ USING ON MEDICAL CARE , SAFETY OR HAZARDOUS APPLICATION OR SYSTEM

● For the application in medical care, safety and hazardous prodcuts or systems, an authorization from AMSON is required. AMSON will not responsible for any damage or loss which caused by the products without any authorization given by AMSON.

● This product is not allowed to be designed and used for military application and/or purpose.

● The delivery of this product to the countries and/or regions where the embargoes are imposed by U.N. is prohibited.

● The application and delivery of this product must comply with Startegic High-Tech Commodities (SHTC) export control and the sales to the embargoed and/or sanctioned countries or regions are strictly prohibited.

6. DATE CODE OF PRODUCTS

● Date code will be shown on each product :

● <u>YY</u> <u>MM</u> <u>DD</u> - <u>XXXX</u>

Year Month Day - Production lots

● Example: 090508 - 0 0 0 3 ==>Year 2009, May.,08rd , Batch no.03

7. PACKING

Instruction of lot number:

LOT NO. : 0 0 0 8 3 5 2 5 (EX)

Date	01—1 st 02—2 ed │ │ 31—31 th
Week	1 ——— 6
Week of Month	1 ——— 5
Month	01—January 02—February │ │ 12—December
Year	00—2000 01—2001

Lable of carton:

Carton Box

```
MODEL:XXXX—XXXXXX—XX
Q'TY:        PCS
LOT    NO.
N.W.      KGS.           ↑
G.W.      KGS.           UP
```

Packing tray must be stacked with alternated direction to each others.
To tacks packing trays in same direction will cause product damaged.

Not Allowed

Not Allowed

OK

OK
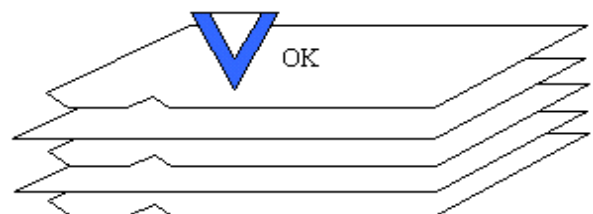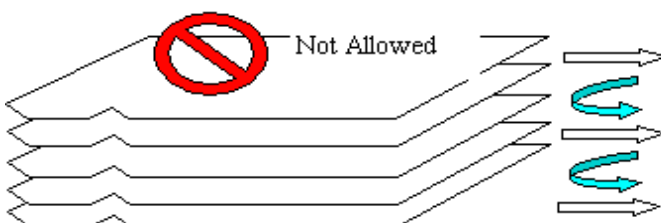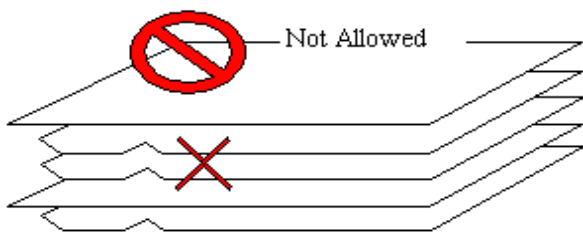
MODEL NO: UM*

　T.B.D pcs / Tray
　T.B.D.Tray / Box
　T.B.D. Box / Carton
　T.B.D pcs / Carton

NOTE:

(1)Be warned ,the direction of
　 the tray has to turn it by 180 degree
　 before stack it up.Otherwise,
　 it will be packager's responsibility!!
(2)Safe Stack : 5 cartons only

1 foamed plastic in each box

TAPE

T.B.D. TRAY
(1 empty tray)

Corrugated board
protection

Model		No.	
Q'ty			pcs
*			
Lot	No.		
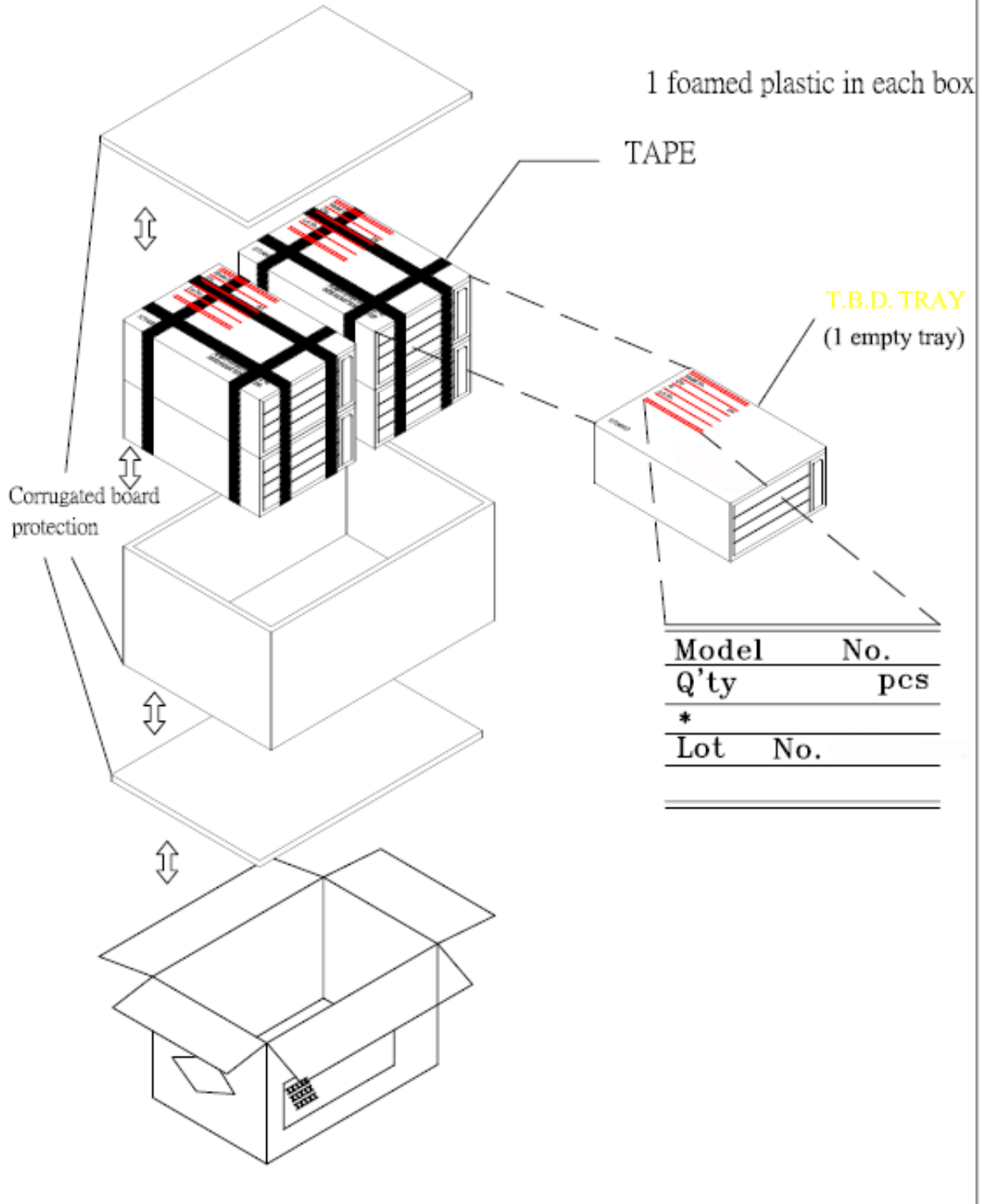
8. INSPECTION STANDARD

8.1. QUALITY :

THE QUALITY OF GOODS SUPPLIED TO PURCHASER SHALL COME UP TO THE FOLLOWING STANDARD.

8.1.1. THE METHOD OF PRESERVING GOODS

AFTER DELIVERY OF GOODS FROM U.R.T. TO PURCHASER. PURCHASER SHALL CONTROL THE LCM AT -10 ℃ ～ 40 ℃ ,AND IT MIGHT BE DESIRABLE TO KEEP AT THE NORMAL ROOM TEMPERATURE AND HUMIDITY UNTIL INCOMING INSPECTION OR THROWING INTO PROCESS LINE.

8.1.2. INCOMING INSPECTION

(A) THE METHOD OF INSPECTION

IF PURCHASER MAKE AN INCOMING INSPECTION , A SAMPLING PLAN SHALL BE APPLIED ON THE CONDITION THAT QUALITY OF ONE DELIVERY SHALL BE REGARDED AS ONE LOT.

(B) THE STANDARD OF QUALITY

ISO-2859-1 (or MIL-STD-105E) , LEVEL Ⅱ SINGLE PLAN.

CLASS	AQL(%)
CRITICAL	0.4 %
MAJOR	0.65 %
MINOR	1.5 %
TOTAL	1.5 %

EVERY ITEM SHALL BE INSPECTED ACCORDING TO THE CLASS.

(C) MEASURE

IF AS THE RESULT OF ABOVE RECEIVING INSPECTION , A LOT OUT IS DISCOVERED. PURCHASER SHALL BE INFORM SELLER OF IT WITHIN SEVEN DAYS. BUT FIRST SHIPMENT WITHIN FOURTEEN DAYS.

8.1.3. WARRANTY POLICY

U.R.T. WILL PROVIDE ONE-YEAR WARRANTY FOR THE PRODUCTS ONLY IF UNDER SPECIFICATION OPERATING CONDITIONS. U.R.T. WILL REPLACE NEW PRODUCTS FOR THESE DEFECT PRODUCTS WHICH UNDER WARRANTY PERIOD AND BELONG TO THE RESPONSIBILITY OF U.R.T.

8.2. CHECKING CONDITION

8.2.1. CHECKING DIRECTION SHALL BE IN THE 45 DEGREE AREA TO FACE THE SAMPLE.
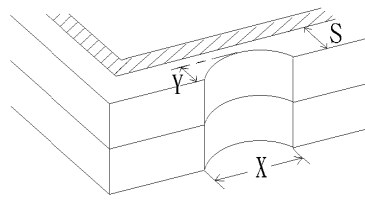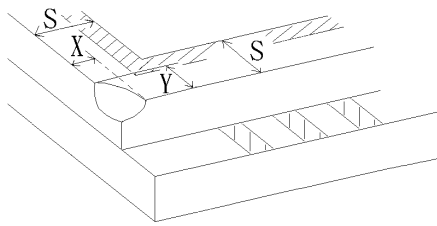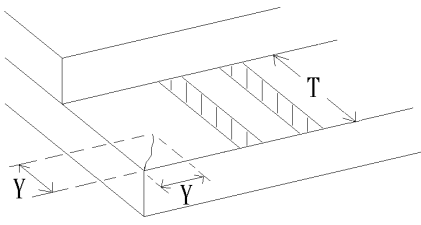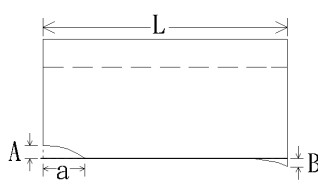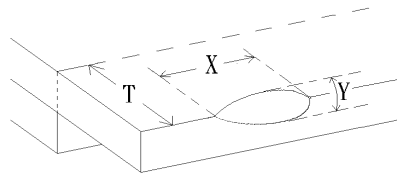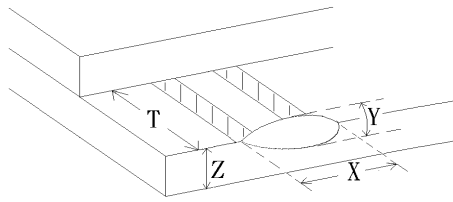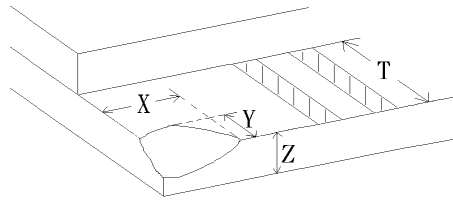
8.2.2. CHECKER SHALL SEE OVER 30 cm. WITH BARE EYES FAR FROM SAMPLE AND USING 2 PCS. OF 20W FLUORESCENT LAMP.

8.3. INSPECTION PLAN :

CLASS	ITEM	JUDGEMENT	CLASS
PACKING & INDICATE	1. OUTSIDE AND INSIDE PACKAGE	"MODEL NO." , "LOT NO." AND "QUANTITY" SHOULD INDICATE ON THE PACKAGE.	Minor
	2. MODEL MIXED AND QUANTITY	OTHER MODEL MIXED...............REJECTED QUANTITY SHORT OR OVER......REJECTED	Critical
	3. PRODUCT INDICATION	"MODEL NO." SHOULD INDICATE ON THE PRODUCT	Major
ASSEMBLY	4. DIMENSION, LCD GLASS SCRATCH AND SCRIBE DEFECT.	ACCORDING TO SPECIFICATION OR DRAWING.	Major
APPEARANCE	5. VIEWING AREA	POLARIZER EDGE OR LCD'S SEALING LINE IS VISABLE IN THE VIEWING AREA … …..REJECTED	Minor
	6. BLEMISH、BLACK SPOT、WHITE SPOT IN THE LCD AND LCD GLASS CRACKS	ACCORDING TO STANDARD OF VISUAL INSPECTION (INSIDE VIEWING AREA)	Minor
	7. BLEMISH、BLACK SPOT WHITE SPOT AND SCRATCH ON THE POLARIZER	ACCORDING TO STANDARD OF VISUAL INSPECTION (INSIDE VIEWING AREA)	Minor
	8. BUBBLE IN POLARIZER	ACCORDING TO STANDARD OF VISUAL INSPECTION (INSIDE VIEWING AREA)	Minor
	9. LCD'S RAINBOW COLOR	STRONG DEVIATION COLOR (OR NEWTON RING) OF LCD......REJECTED. OR ACCORDING TO LIMITED SAMPLE (IF NEEDED, AND INSIDE VIEWING AREA)	Minor
ELECTRICAL	10. ELECTRICAL AND OPTICAL CHARACTERISTICS (CONTRAST、VOP、CHROMATICITY … ETC)	ACCORDING TO SPECIFICATION OR DRAWING . (INSIDE VIEWING AREA)	Critical
	11.MISSING LINE	MISSING DOT、LINE、CHARACTER ....REJECTED	Critical
	12.SHORT CIRCUIT、WRONG PATTERN DISPLAY	NON DISPLAY、WRONG PATTERN DISPLAY、CURRENT CONSUMPTION OUT OF SPECIFICATION...... REJECTED	Critical
	13. PIN HOLE、PATTERN DEFORMITY	ACCORDING TO STANDARD OF VISUAL INSPECTION	Minor

8.4. STANDARD OF VISUAL INSPECTION

NO.	CLASS	ITEM	JUDGEMENT
8.4.1	MINOR	· BLEMISH、BLACK SPOT、WHITE SPOT IN THE LCD. · BLEMISH、BLACK SPOT、WHITE SPOT AND SCRATCH ON THE POLARIZER	(A) ROUND TYPE: unit : mm. (B) LINER TYPE: unit : mm.

(A) ROUND TYPE: unit : mm.

DIAMETER (mm.)	ACCEPTABLE Q'TY
Φ ≦ 0.1	DISREGARD
0.1 < Φ ≦ 0.2	2
0.2 < Φ ≦ 0.25	1
0.25 < Φ	0

NOTE: Φ=(LENGTH+WIDTH)/2

(B) LINER TYPE: unit : mm.

LENGTH	WIDTH	ACCEPTABLE Q'TY
------	W ≦0.03	DISREGARD
L ≦ 5.0	0.03 < W ≦0.05	3
L ≦ 5.0	0.05 < W ≦0.07	1
------	0.07 < W	FOLLOW ROUND TYPE

NO.	CLASS	ITEM	JUDGEMENT
8.4.2	MINOR	BUBBLE IN POLARIZER	unit : mm.

DIAMETER	ACCEPTABLE Q'TY
Φ ≦0.15	DISREGARD
0.15 < Φ ≦ 0.5	2
0.5 < Φ	0

NO.	CLASS	ITEM	JUDGEMENT
8.4.3	MINOR	Dot Defect	

Items	ACC. Q'TY
Bright dot	N≦ 4
Dark dot	N≦ 4

Pixel Define

R	G	B	R	G	B	R	G	B
R	G	B	R	G	B	R	G	B
R	G	B	R	G	B	R	G	B

Not 1: The definition of dot: The size of a defective dot over 1/2 of whole dot is regarded as one defective dot.

Not 2: Bright dot: Dots appear bright and unchanged in size in which LCD panel is displaying under black pattern.

Not 3: Dark dot: Dots appear dark and unchanged in size in which LCD panel is displaying under pure red, green ,blue pattern.

NO.	CLASS	ITEM	JUDGEMENT	
8.4.4	MINOR	CHIPPING		$Y > S$ REJ.
8.4.5	MINOR	CHIPPING		$X \text{ or } Y > S$ REJ.
8.4.6	MAJOR	GLASS CRACK		$Y > (1/2) T$ REJ.
8.4.7	MAJOR	SCRIBE DEFECT		1. $a > L/3$, $A > 1.5mm$. REJ. 2. B : ACCORDING TO DIMENSION
8.4.8	MINOR	CHIPPING (ON THE TERMINAL AREA)		$\Phi = (x+y)/2 > 2.5 \text{ mm}$ REJ.
8.4.9	MINOR	CHIPPING (ON THE TERMINAL SURFACE)		$Y > (1/3) T$ REJ.
8.4.10	MINOR	CHIPPING		$Y > T$ REJ.