TO:

DATE: '05.1.26

Specification of 17.1" TFT/LCD
MODEL: LP171WP5(TL02)

Prepared	Checked	Approved	
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NOTICE of RECEIPT
We accepted this specification. **OME Operations, TOSHIBA Corp.**

	Eng.	Senr. Eng.	Senr. Mgr
Purchasing Dept.			
	Eng.	Senr. Eng.	Senr. Mgr
PC Hardware Dept.			

LG.Philips LCD.,Co.Ltd   Date: 2005.1.26

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Record of Revision

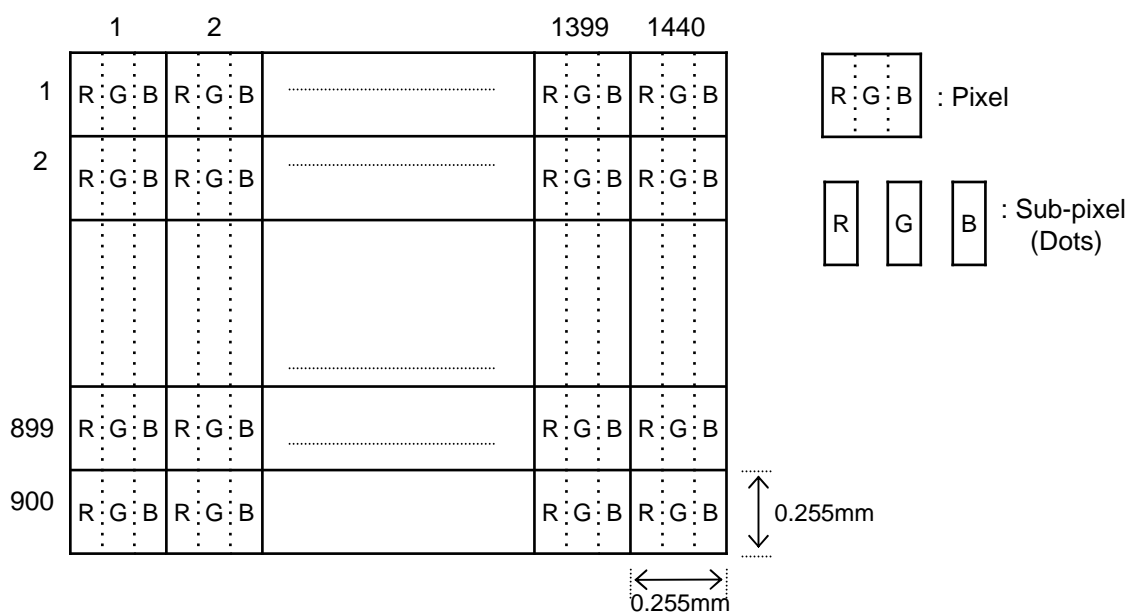| Date	Rev. No.	Sheet(New)	Item	Old	New	Reason
05'.1.26	1.0	All				

1. Scope

This specification is applicable to LCD manufacturer's 43.43cm (17.1") diagonal size TFT-LCD module "LP171WP5(TL02)" designed for Personal Computer.

2. General Specification

2.1. Features

Item	Specifications
Display area (Active area)	367.2 (W) × 229.5 (H) (mm) (17.1 " diagonal)
Driving Method	TFT active matrix
Number of Pixels	1440 (W) × 900 (H) × R,G,B (WXGA+) (pixels) [1]
Pixel pitch	0.255 (H) × 0.255 (V) (mm) [1]
Pixel Arrangement	RGB vertical stripes [1]
Display color	262,144 (colors)
Display Mode	Transmissive type, Normally white
Viewing Direction	6 o'clock (in direction of maximum contrast)
Surface Treatment	Hard coating(2H) Glare + Anti reflective treatment of the front polarizer
Interface	LVDS 2Port
Backlight	Double cold-cathode fluorescent lamp for side lighting
Dimensional Outline	382.2 (W) × 246.5 (H) × 9.7(Typ.)/ 10.0(Max.) (D) (mm)
Bezel Opening	370.6 (W) × 232.9 (H) (mm)
Weight	965g(Max.)

Note 1)

2.2. Dimensional Outline
(Front figure)

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(Back figure)

LP171WP5
(TL)(02)
Rev. 00

G3.5C000029410

171484K100001 D11

MADE IN KOREA

6091L-0273A
040101   A1

3550B-0105A 1

123.1±1

43.6±1
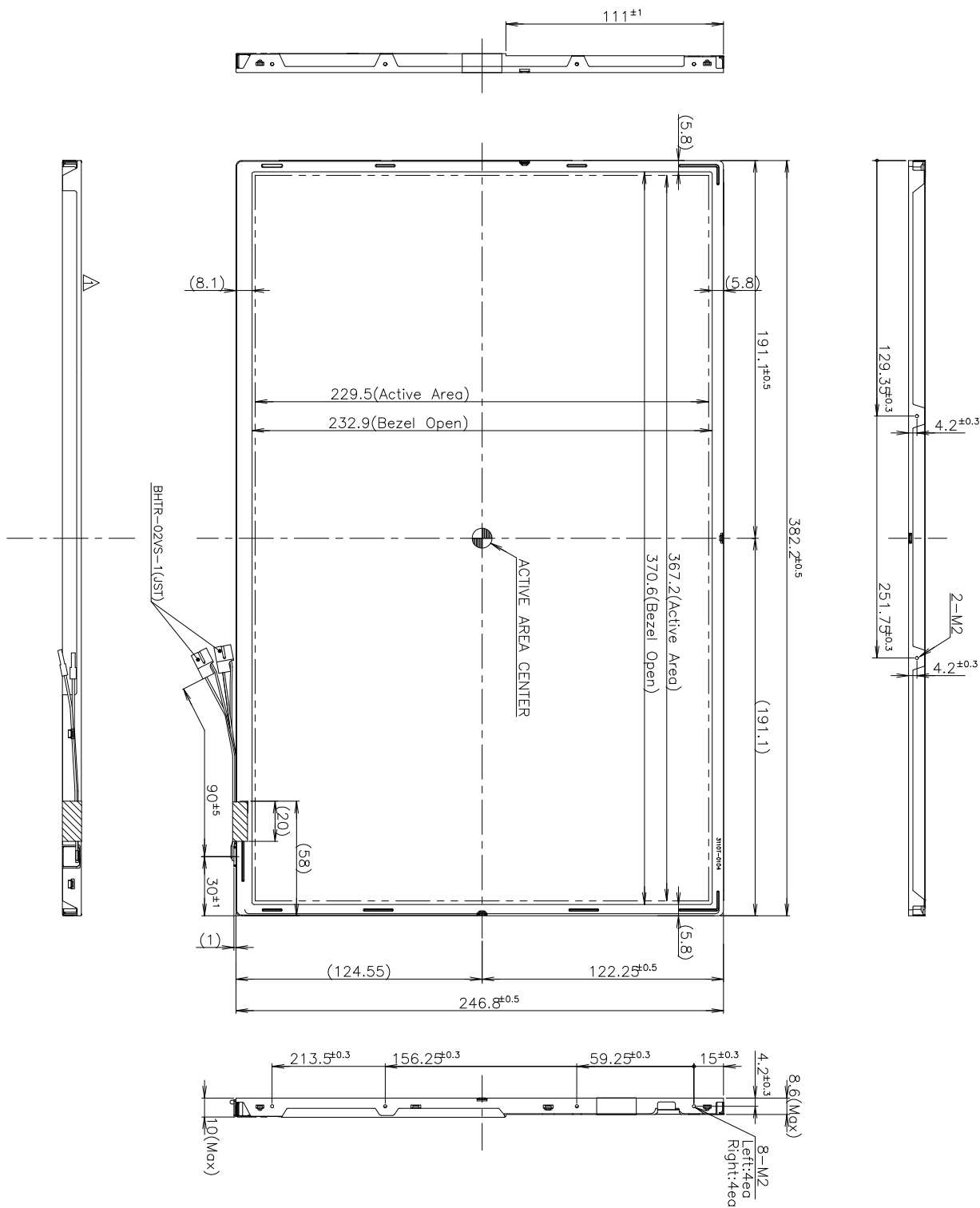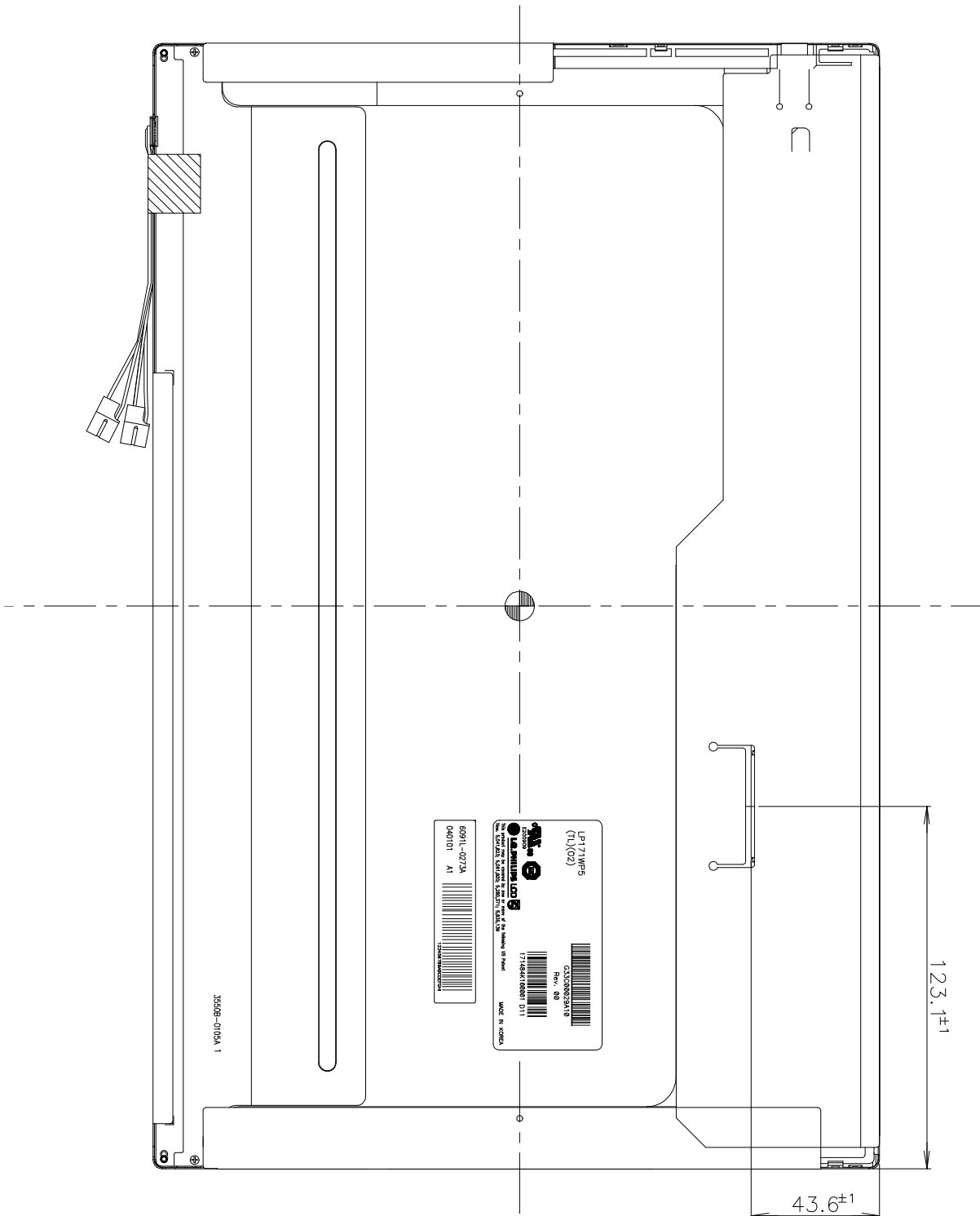
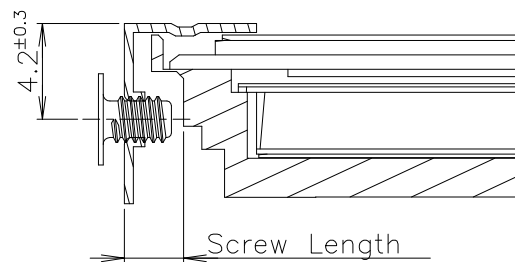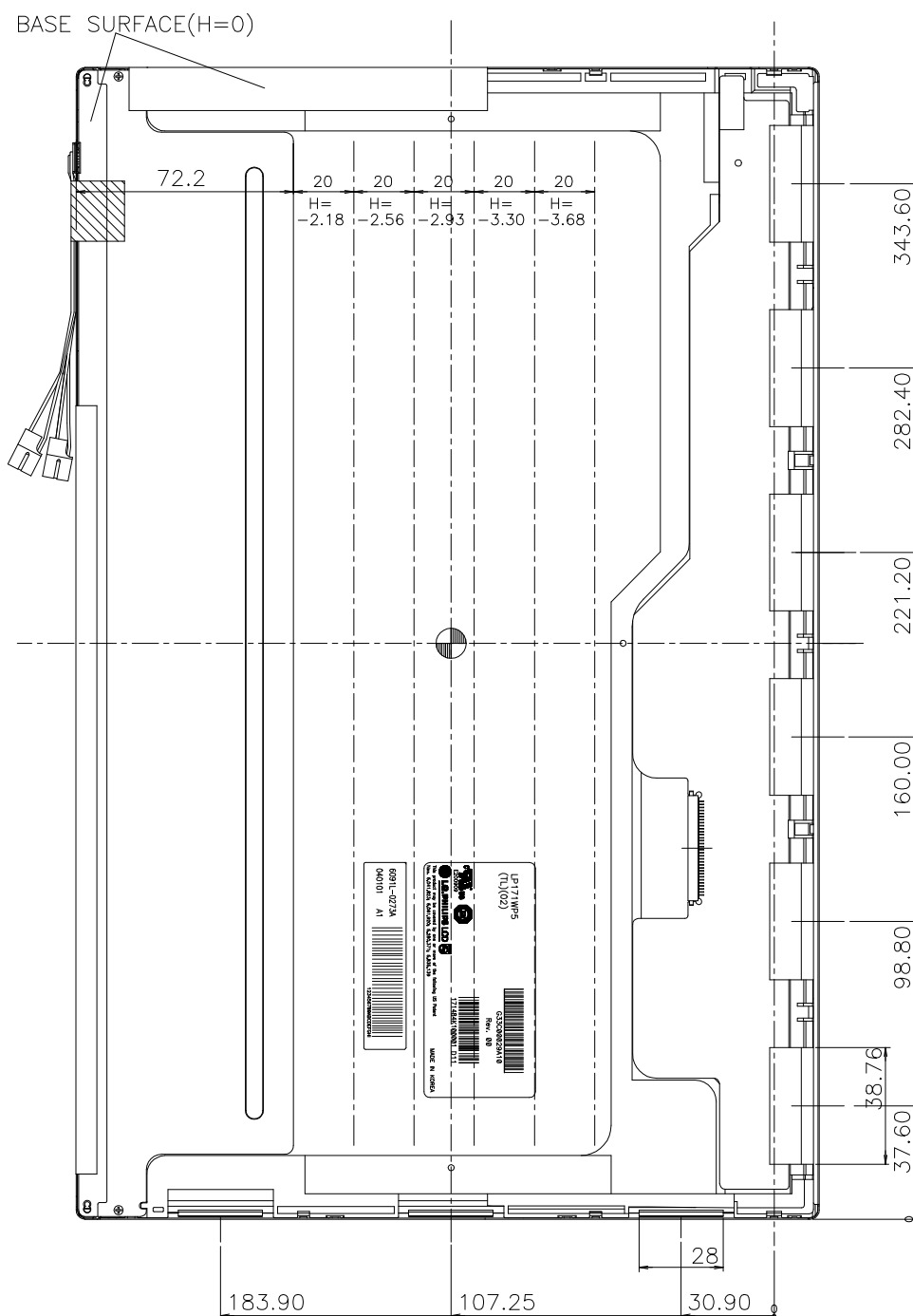(Detail description of side mounting screw)

* Screw Length : Max : 2.5, Min : 2.0
  (Left : 4ea & Right : 4ea & Top side : 2ea)
* Screw Torque : Max 2.0kgf cm

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(Detail description of height of LCM back side & TAB Zone)

3. Absolute Maximum Ratings

3.1. Absolute Ratings of Environment

Item	Symbol	Min	Max	Unit	Note
Operating Ambient Temperature	T_{OP}	0	+50	°C	(1)
Operating Temperature for Panel	-	0	+60	°C	(2)
Storage Temperature	T_{STG}	-20	+65	°C	(1)
Operating Ambient Humidity	H_{OP}	10	90	%RH	(1)
Storage Humidity	H_{STG}	10	90	%RH	(1)
Air Pressure	-	57	101.3	kPa	Operation
Air Pressure	-	12	101.3	kPa	Non-operation
Altitude	-	-	3	Km	Operation
Altitude	-	-	12	Km	Non-operation

Note 1) Temperature and relative humidity range are shown in the figure below.
Wet bulb temperature should be 39°C Max, and no condensation of water.

Dry Bulb Temperature [℃]
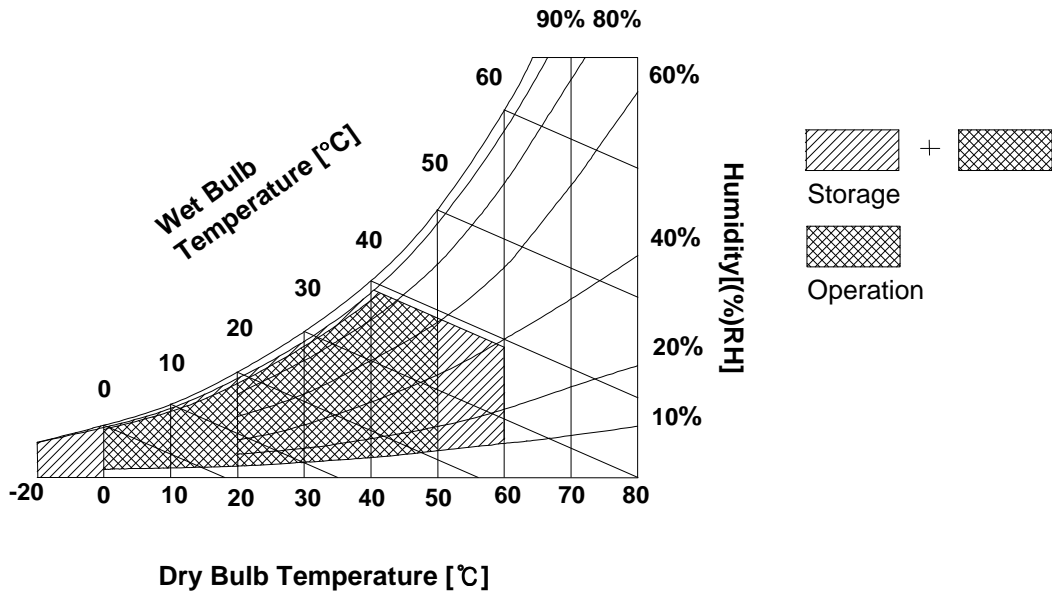
Note 2) The surface temperature caused by self heat radiation of cell itself is specified on this item.

3.2. Electrical Absolute Maximum
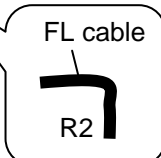
(1) TFT LCD Module

Item	Symbol	Min	Max	Unit	Note
Power Supply Voltage	V_{DD}	-0.3	+4.0	V	at $25 \pm 5°C$
Logic Input Voltage	V_{IN}	-0.3	VDD+0.3	V	LVDS interface

(2) Back Light Unit

Item	Symbol	Min	Max	Unit	Note
Lamp Voltage	V_L	-	5000	V_{RMS}	Broken lamp Max Voltage
Lamp Current	I_L	2.0	6.5	mA_{RMS}	
Lamp Frequency	F_L	45	80	KHz	

3.3. Mechanical Ratings

Test Item	Test Conditions		Note
Mechanical Vibration	Frequency Range 5 - 500 Hz, 14.7m/s^2 1.5G) constant, 0.5Hrs each axis (X, Y, Z direction).		Non Operation
	Frequency Range 5 - 500 Hz, 4.9m/s^2 (0.5G) constant, 0.5Hrs each axis (X, Y, Z direction).		Operation
Mechanical Shock LCD fix condition -> See Note (2)	* 240G, Pulse width 2 ms, Sine Wave, ±X, ±Y, ±Z direction. 70G, Pulse width 11ms, Sine Wave ±X, ±Y, ±Z direction. * Note) Normal function is only checking points.		Non Operation
	98 m/s^2 (10G), Pulse width 11 ms, Sine Wave, ±X, ±Y, ±Z direction.		Operation
Pressure Resistance -> See Note (1)	No Destruction with the force 196 N (20 kgf, 16 mm in diameter) to the display surface at the vertical direction.		Non Operation Fig 1-1 Fig 1-2 Fig 1-3
	No Destruction with the force 294.2 N (30 kgf, 30 mm in diameter) to the back of the display surface at the vertical direction. Only the breakage of below items will not happen after test. (Glass.Lamp & Circuit parts)		
Strength of FL Cable	Strength of Rotation force	Cable : No disconnection of cable to the 5 trial of 360 degree rotation. See a bended state of cable.	Non Operation
		Connector : No disconnection of cable to 10 trial of 180 degree rotation. See a bended state of cable.	FL cable R2
	Lead Pull Test	Soldering portion 29.4N(3.0kgf) 10mins *1.08mm Wire applied	
		Connector : 12.9N (1.32kgf) 1 sec *1.08mm Wire applied	
Connector tension test	Input connector : With 50 times of connector trial there must be no damage to the shape and functionally.		Non Operation
	Back light connector : With 50 times of connector trial there must be no damage to the shape and functionally.		
Assured torque value at side-mount part	M2 : Max 3.0 kgf		Non Operation
Re-screwed test	15 times under Max. torque		Non Operation
Tapping test	Tapping area : All bezel(Metal cover) side, LCD: Full-screen gray (L32). "Ripple (Pooling)" can not be seen in Active Area Tapping Force: Max 3kgf.cm		Operation

Definitions of failure for judgment shall be as follows:

(1) Function of the module should be maintained.

(2) Current consumption should be smaller than the specified value.

(3) Appearance and display quality should not have distinguished degradation.

(4) Luminance should be larger than the minimum value specified in optical specification.

Note 1)
      (1) The compression condition of front side
          (a) Compression point : 12 points (refer to Fig 1-1)
          (b) Compression condition: 20kgf, 3 sec, Tool diameter: 16 mm in diameter (refer to Fig 1-3)

● :COMPRESSION POINT

Flat plate   LCD
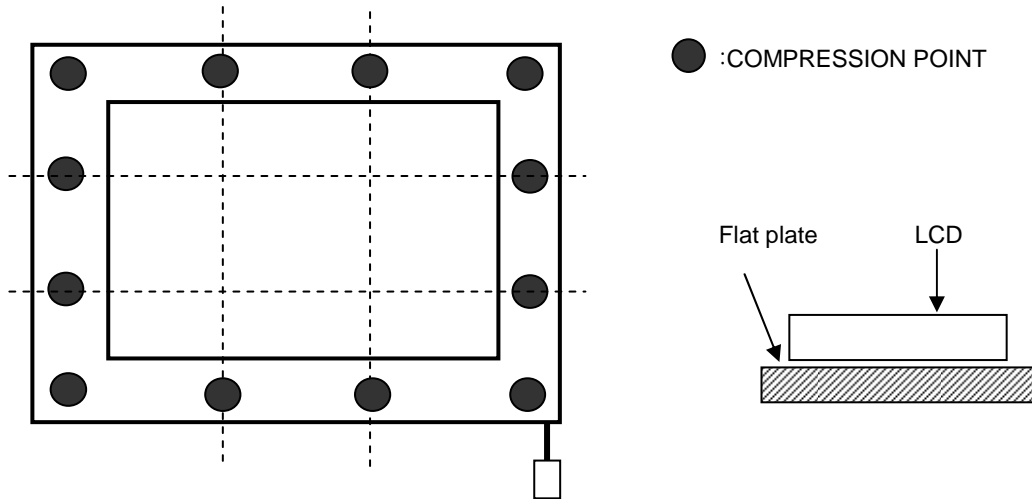
[Fig 1-1]

      (2) The compression condition of rear side
          (a) Compression point : 21 points (refer to Fig 1-2)
          (b) Compression condition : 30kgf, 3 sec, Tool radius: 30 mm in diameter (refer to Fig 1-3)

● :COMPRESSION POINT

ABS natural 2.0t
Flat plate   LCD

[Fig 1-2]

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10mm in diameter

10

16

1.5

B

A

Rubber sheet
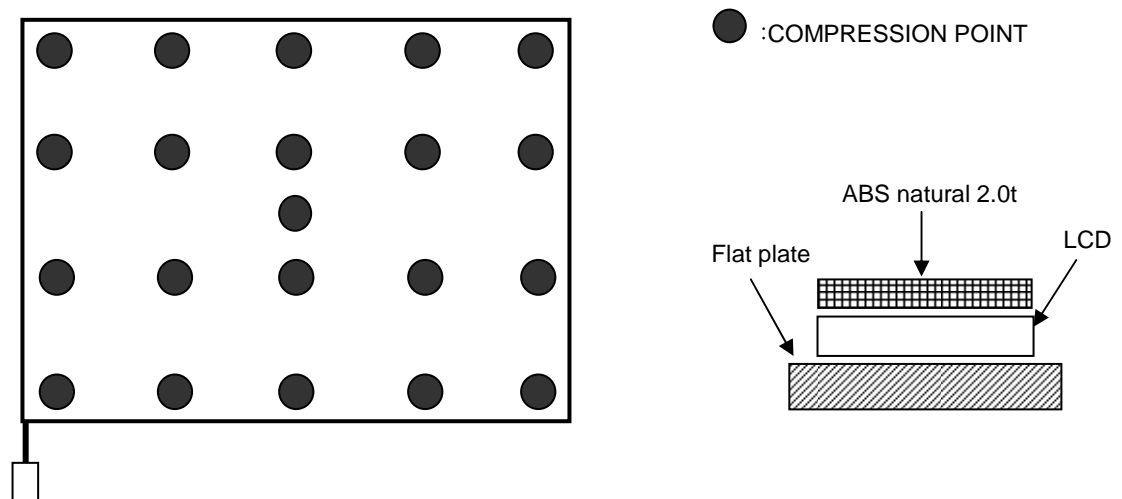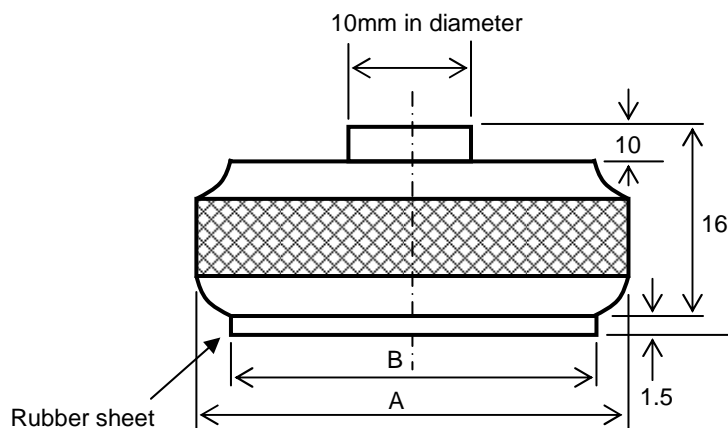
[Fig 1-3]

(3) Dimension of the compression jig
    (a) compression jig for front side A = 16 mm in diameter
                                                   B = 16 mm in diameter
    (b) compression jig for rear side A = 30 mm in diameter
                                                   B = 28 mm in diameter

Note 2) LCD fixing condition for z direction.

Side fixing jig

Acrylics plate (t=5)

Rubber(t=2)

LCD (Side fixing type)

Rubber(t=2)

Acrylics plate (T=5)

0.5

1

Side fixing screw

Gap 10mm

Steel Jig

Z

Y   X

Screw

Washer

Acrylics plate (t=5)

Rubber (t=2)

LCD (Side mount type)

Side fixing Jig

Rubber (t=2)

Acrylics plate (t=5)

Spacer (H=10)

Steel Jig
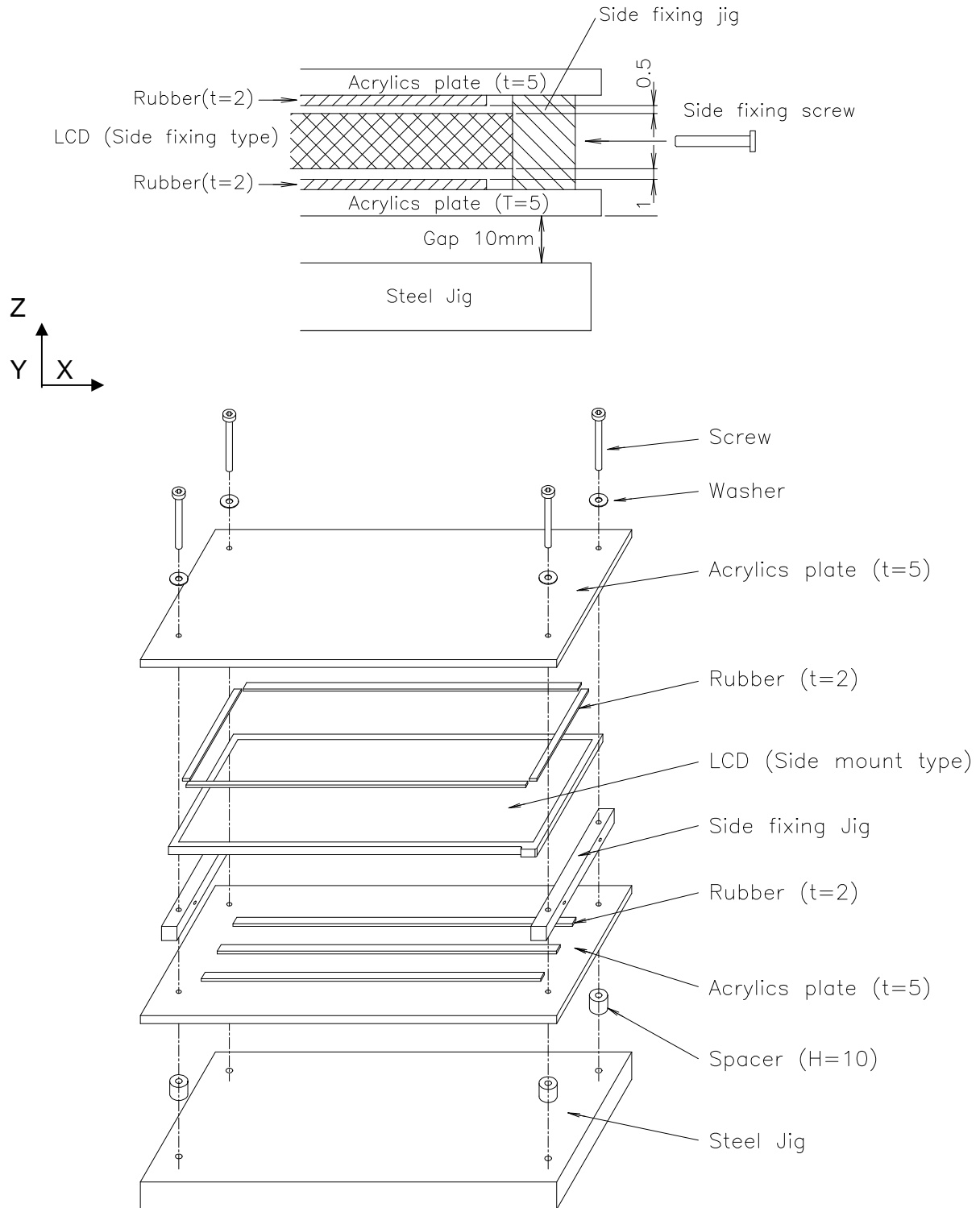
3.4. The Others

(1) Static electricity pressure resistance

Item	Testing conditions	Operation	Non Operation
Contact discharge	150pF, 330 ohm	±8KV	± 10 kV
Air discharge	150pF, 330 ohm	±15KV	±20 KV

(2) Sound noise
There should be no uncomfortable noise.
Being used under whatever surrounds, when power on/off, the panel should not generate
uncomfortable noise. And regarding specified values are negotiated if it is needed.

(3) Open / Short
No smoke, no fiery at any open/ short test

(4) MTBF : 50,000 Hr (except for backlight lamp)

4. Optical Characteristics

4.1. Test Conditions

Ambient Temperature : T_a 25±5°C
Ambient Humidity : H_a 65±20%RH
Supply Voltage : V_{DD} 3.3V
Input Signal : According to typical value in "Electrical Characteristics"
FL Input Current : I_L = 6.0mA$_{RMS}$
FL Driving Frequency : f_{LF} = (60±5 kHz)
FL Inverter : FIF1311-06A (PRONTEK Rev1.0)

The measuring method is shown in following 4.2. The items are measured under stable conditions. The optical characteristics should be measured in a dark room (Screen illuminance < 2 lx) or equivalent state with the methods shown in Note (6).

4.2. Optical Specifications

Item		Symbol	Conditions		Min.	Typ.	Max.	Unit	Note
Contrast Ratio (Center 1 Point)		CR			400	700	-	-	(2), (6)
Response Time		t_{ON}			-	6	10	ms	(3)
		t_{OFF}			-	19	25	ms	
Average luminance (Center 5 Point)		Y_L	θ=0°, ɸ=0° Viewing normal angle		425	500	-	cd/m²	*I_{FL}=6.0mA$_{RMS}$ F_L=60±5kHz Gray Scale Level = L63 (White)
Cross Modulation		D_{SHA}			-	-	2.0	%	(5)
Luminance Uniformity Chromaticity	Red	Rx			0.566	0.596	0.626	-	(1), (6) PR650 Only for Color Coordinate
		Ry			0.314	0.344	0.374		
	Green	Gx			0.291	0.321	0.351		
		Gy			0.521	0.551	0.581		
	Blue	Bx			0.131	0.161	0.191		
		By			0.116	0.146	0.176		
	White	Wx			0.283	0.313	0.343		
		Wy			0.299	0.329	0.359		
Viewing Angle	Hor.	$θ_L$	CR>=10	ɸ = 180	60	70	-	deg.	(Color Coordinate of the R,G,B is based on LPL's equipment, and Color Coordinate of the W is based on Toshiba's equipment)
		$θ_R$		ɸ = 0°	60	70	-		
	Ver.	$θ_{up}$		ɸ = 90°	50	60	-		
		$θ_{Low}$		ɸ = -90°	50	60	-		
	Hor.	$θ_L$	CR>=5	ɸ = 180	65	75	-		
		$θ_R$		ɸ = 0°	65	75	-		
	Ver.	$θ_{up}$		ɸ = 90°	55	65	-		
		$θ_{Low}$		ɸ = -90°	55	65	-		
13 Points White Variation		δ W	θ=0°, ɸ=0° Viewing normal angle		-	1.8	2.0		(7)
13 Points CR Variation		δ C_R			-	-	2.0		(7), A
White Variation		dL			-	-	2.0		(8)

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Attach the Lamp current – Luminance characteristics. The range of lamp current is shown in 3.2 (2)

A. Present CR Variation(13Points) Spec is based on PR-880 Equipment and can be changed by the measuring equipment.

Item	Gray level	Conditions	Min.	Typ.	Max.	Unit	Note
Normalized luminance at each gray level	63	θ=0°, φ=0° Viewing normal angle	100	100	100	%	(1), (6) (Center 1 Point)
	55		65.0	78.2	86.7		
	47		40.5	53.0	64.9		
	39		22.5	35.0	46.8		
	31		11.7	20.9	32.2		
	23		4.87	9.01	19.9		
	15		1.35	2.93	10.1		
	7		0.13	0.53	2.97		
	0		0.01	0.15	0.45		

At normal viewing direction, during displaying the L0-L63 gray scale bar, luminance intensity inversion can not be seen.

Note 1) Definition of viewing angle θ and φ
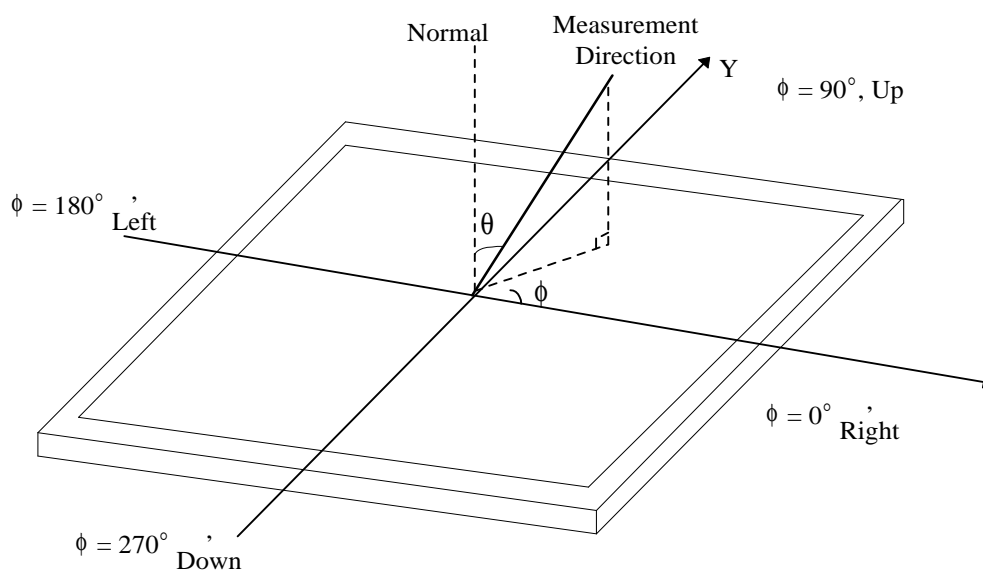
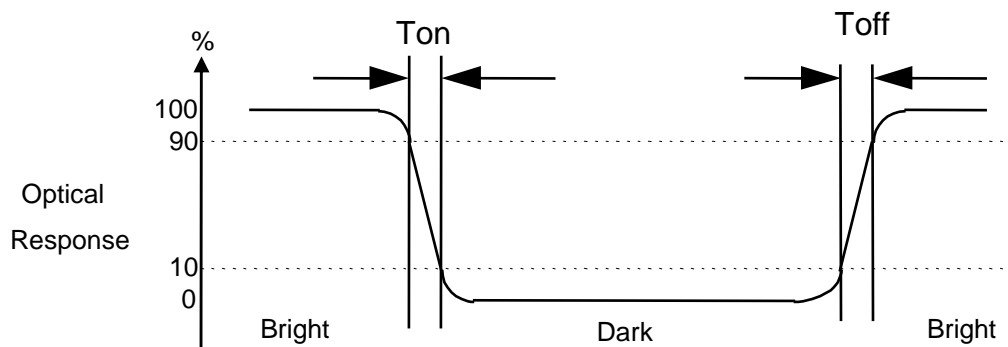Note 2) LCD fixing condition for z direction.

The contrast ratio can be calculated by the following expression.

Contrast Ratio (CR) = L63 / L0

L63 : Luminance on the white raster (gray scale level L63)

L 0 : Luminance on the black raster (gray scale level L0)

Note 3) Definition of response time

Note 4) Definition of surface luminance of white

Measure the luminance of white at Center point. Surface luminance of white Y_L
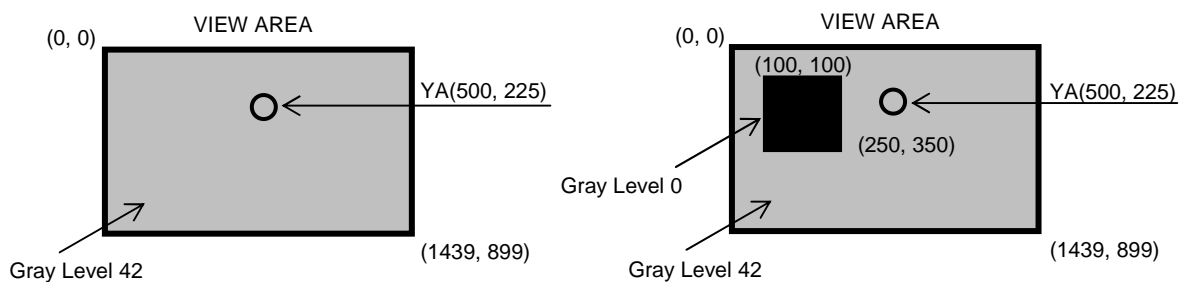
Note 5) Definition of Cross Modulation (D_{SHA})

$$D_{SHA} = | Y_B - Y_A | / Y_A \times 100 \ (\%)$$
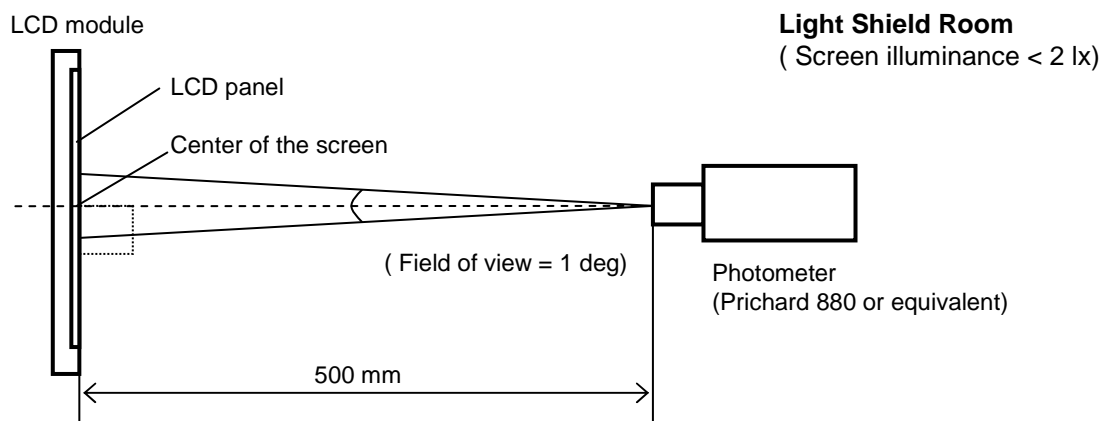
Where:

Y_A = Luminance of measured location without darkest gray pattern (cd/m^2)
Y_B = Luminance of measured location with darkest gray pattern (cd/m^2)

Note 6) Measuring setup

The measurement suppose to be executed after stabilized the panel at given temperature during 30 Min. The measurement shall be executed 30 minutes after lighting at rating. The luminance of white should be typical luminance (Typical Condition IL=6.0mA). In order to stable the luminance, LCD s hall not be got winds.

LCD module

LCD panel

Center of the screen

(Field of view = 1 deg)

Light Shield Room
(Screen illuminance < 2 lx)

Photometer
(Prichard 880 or equivalent)

500 mm

Note 7) Definition of 13 points white variation δW, CR variation δC_R

δW = Maximum luminance of 13 points / Minimum luminance of 13 points
δC_R = Maximum CR 13 points / Minimum CR of 13 points

Horizontal Line number [pixel]

Vertical Line number [pixel]

Active area

◯ : test point
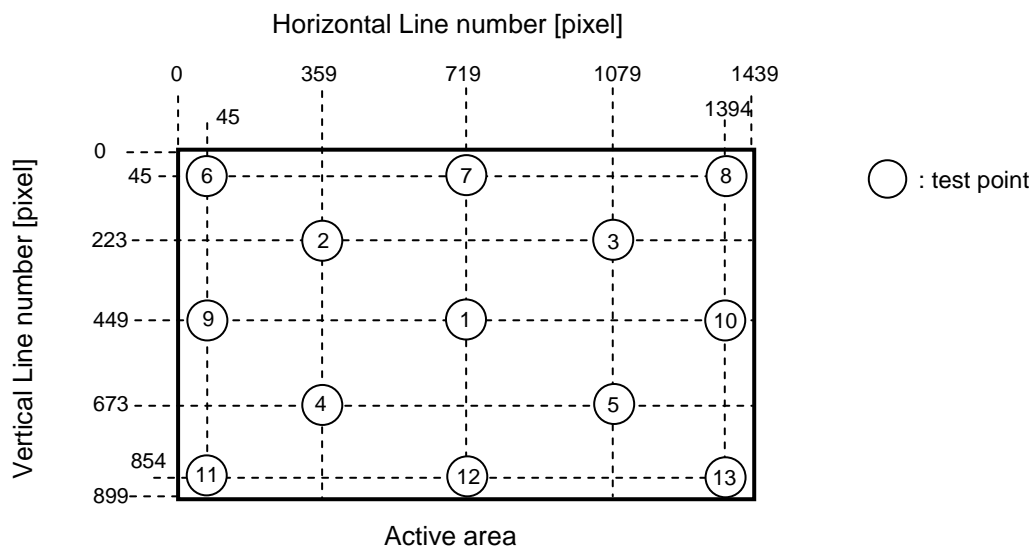
Note 8) Definition of White Variation dL : measure the luminance of white at 13 ×11 points.

$$dL = [\, | L(x,y) - L(x+I, y+j) | / (L(x,y) \times D(x+I, y+j)) \,] \times 100 \quad (\%/mm)$$

where $2 \le x \le 15$, $2 \le y \le 11$, $I = \pm 1$, $j = \pm 1$

11.6mm   17.5mm

D(x+1,y-1)

2.14mm

10.9mm

L(x-1,y-1)   L(x+1,y-1)

L(x,y)

12

L(x+1,y+1)

17.5mm

Active area
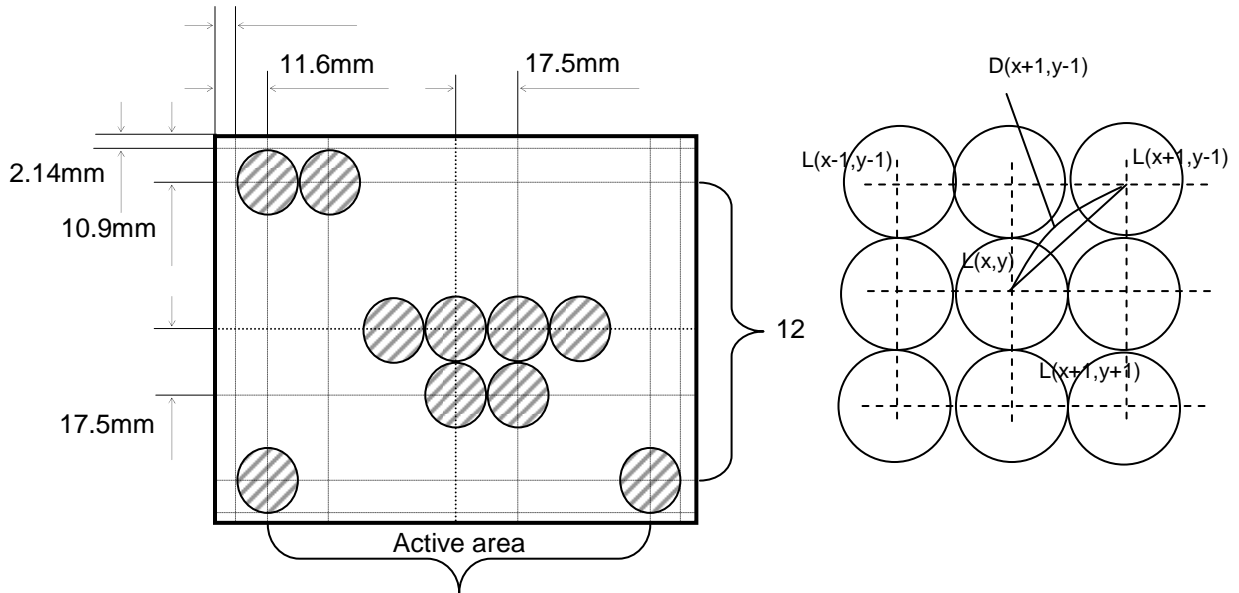
Measuring Spot   16
(Field of View : 2deg. Measuring Distance : 500 mm)

φ17.5
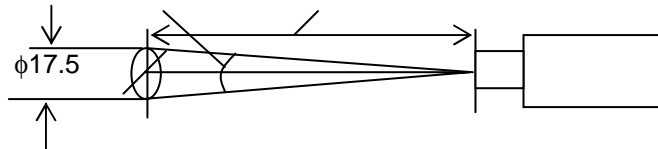
5. Electrical Characteristics

5.1. TFT LCD module

Item		Symbol	Min.	Typ.	Max.	Unit	Note
Power Supply Voltage		V_{DD}	3.0	3.3	3.6	V	
Differential Input Threshold Voltage	High	Vth	-	-	+100	mV	
	Low	Vtl	-100	-	-	mV	
Rush Current		I_{RUSH}	-	-	1.8	A	(5)
Power Supply Current	White(L63)	I_{DD}	260	305	350	mA	(3), (4) (a)
	Mosaic		320	377	435		(3), (4) (b)
	Max. Pattern		375	445	510		(3), (4) (c)

Note 1) The module should be always operated within these ranges. The "Typ." shows the recommendable value.

Note 2) Recommended LVDS transmitter : SN75LVDS84 made by TI.
LVDS receiver included in this module is SN75LVDS86.(1 chip)

Note 3) Typical condition as follows. : fV= 60Hz, fDCLK = 96.2 MHz, V_{DD}= 3.3V, DC current.

Note 4) Power dissipation check pattern.

(a) White pattern

Active Area
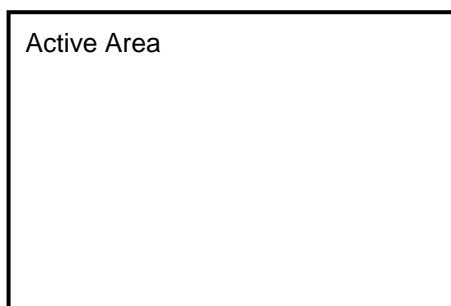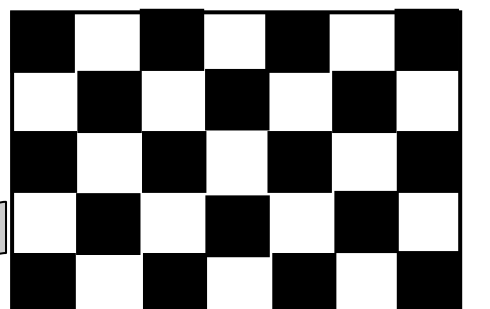
(b) Mosaic pattern

Display Brightest Gray scale

Display Darkest Gray scale

(C) Max. pattern

R	G	B

	G		R		B
R		B		G	
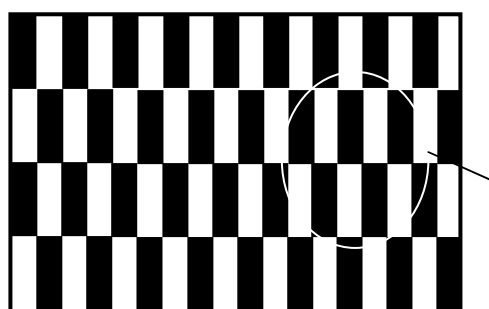
Display Brightest Gray scale

Display Darkest Gray scale

Note 5) Measuring condition of rush current.

<u>V_{DD} rising time is 470us</u>
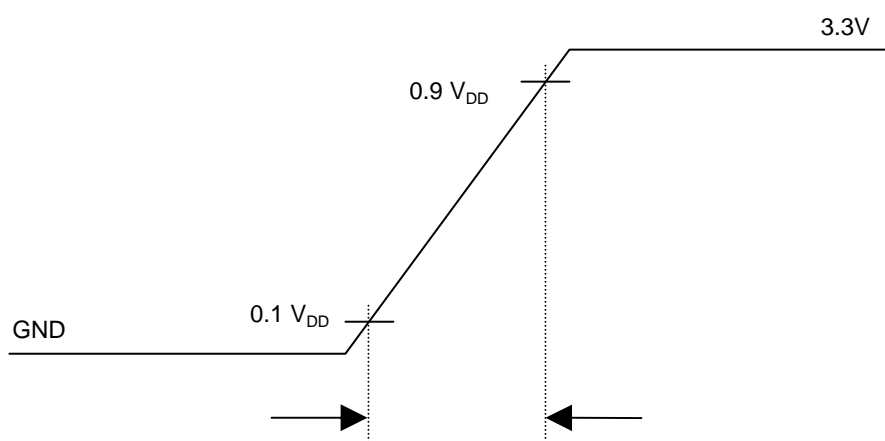
5.2. Backlignt Unit

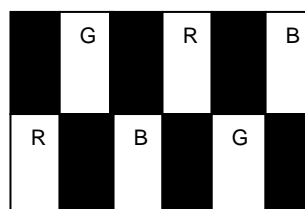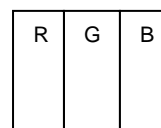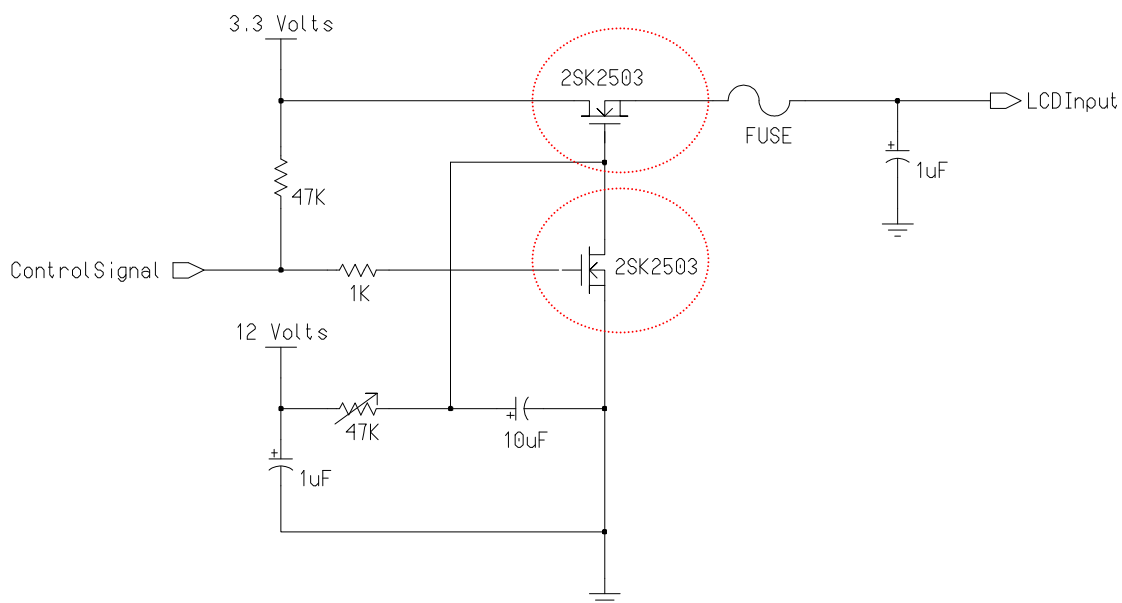| Item	Symbol	Min.	Typ.	Max.	Unit	Note
Lamp Current	I_L	3.0	6.0	6.5	mA_{RMS}	(1)
Lamp Voltage	V_L	745	760	930	V_{RMS}	
Power Consumption	P_L	-	4.56	4.84	W	(2)
Frequency	f_{FL}	40	60	70	kHz	
Operating Life Time	Hr	10,000	-	-	Hour	(3)
Ignition Voltage at 0°C	V_{IV}	-	-	1500	V_{RMS}	(5)
		-	-	-		(4)
Ignition Voltage at 25°C	V_{IV}	-	-	1300		(5)
		-	-	-		(4)
Creepage Distance	-	5.15	5.25	5.35	mm	
Mercury Qt'y of CCFL	-	1.5	-	2.5	mg	

Note 1) Lamp current is measured with a high frequency current as shown below.
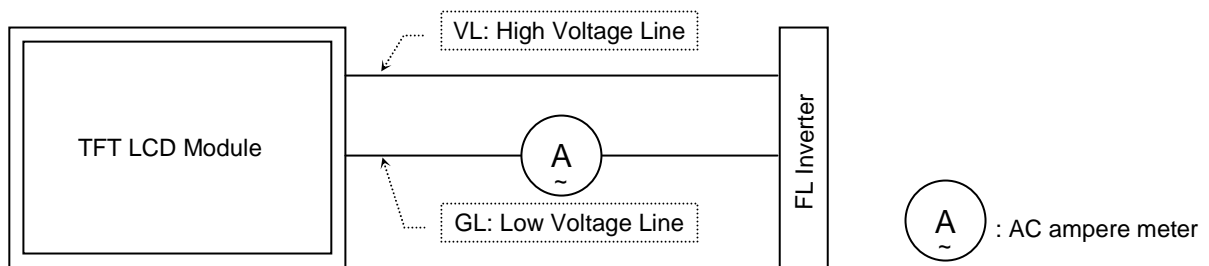
Note 2) Refer to I_L X V_L to calculate.
Note 3) Life time of Lamp can be defined as the time in which it continues to operate under the condition
T = 25°C ± 2°C and IL= 6.0 ᵐᴬ until one of the following events occurs.
1. When the brightness becomes 50% or lower than it's original.
2. When the Effective ignition length becomes 80% or lower than it's original value.
(Effective ignition length is defined as an area that has less than 70% brightness compared to the brightness in the center point.)
Note 4) The discharge shall be connected uniformly. Slide up method shall be used for voltage application.
Above voltage is applied voltage to both ends of the lamp as the starting voltage.
(Above value is not out put voltage of inverter.)
Note 5) The lamp shall be lighted stably. Slide up method shall be used for voltage application.
Above voltage is applied voltage to both ends of the lamp as the established starting voltage.
(Above value is not out put voltage of inverter)

*** Requirements for a system inverter design, which is intended to have a better display performance, a better power efficiency and a more reliable lamp, are following.
It shall help increase the lamp lifetime and reduce leakage current.

    a. The asymmetry rate of the inverter waveform should be less than 10%.

    b. The distortion rate of the waveform should be within $\sqrt{2} \pm 10\%$.

     * Inverter output waveform had better be more similar to ideal sine wave.
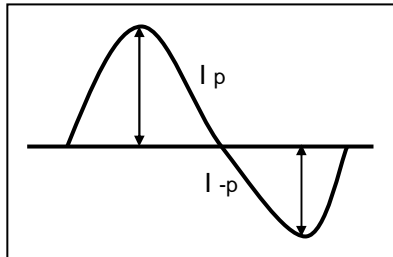
* Asymmetry rate:

$$| I_p - I_{-p} | / I_{rms} * 100\%$$

* Distortion rate

$$I_p \text{ (or } I_{-p}) / I_{rms}$$

Note 6) Detail description of creepage distance

[Section 'A']

(3)

Lamp
Holder

Blue & Green are
same at here

Lamp

Expansion
Tube

(2)

Nearest
metal

(1)

Wire
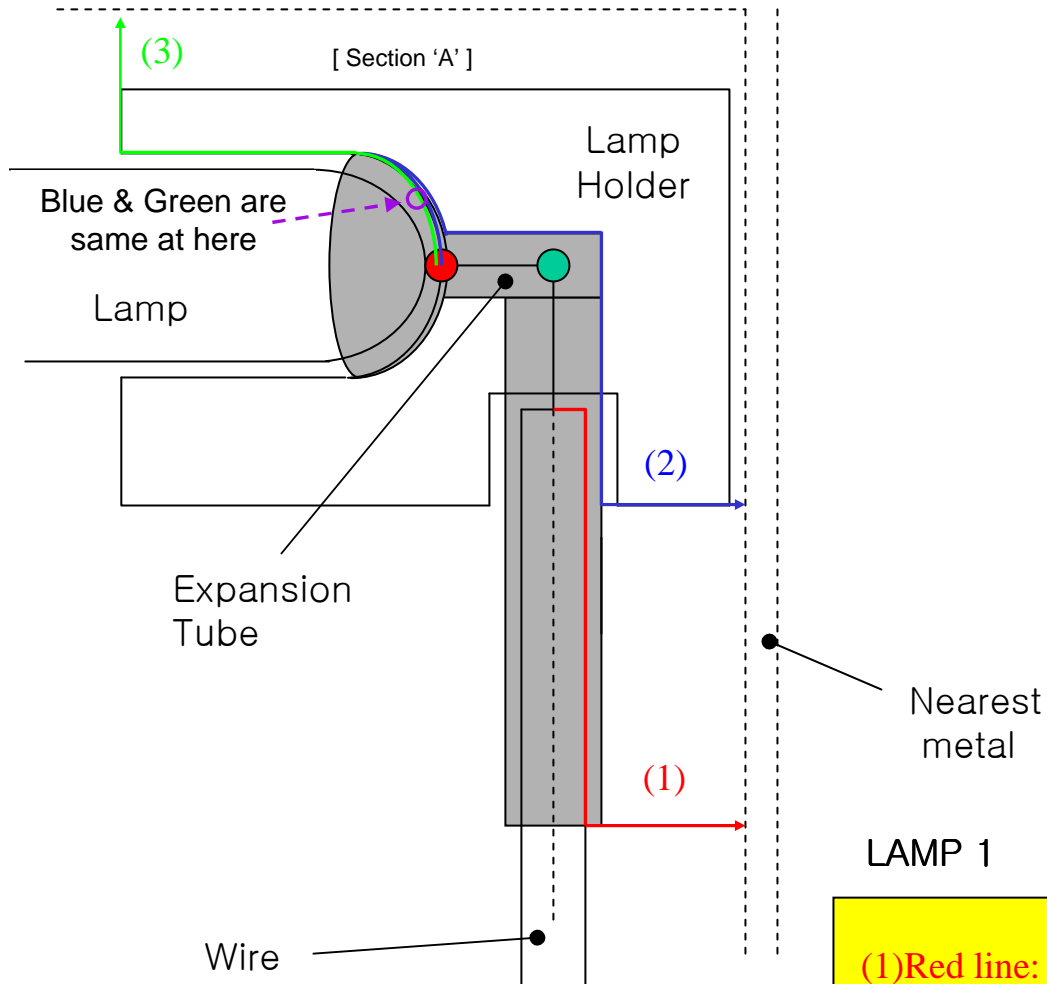
LAMP 1

(1)Red line: 0.54+6+0.2=6.74
(2) Blue line:1.9+2+1.6+3=8.5
(3) Green line:1.9+4.2+0.65=6.75

There are 3 routes of Creeping Distance

(1) Red line

(2) Blue line

(3) Green line

Please let me know each of creeping distance.

LAMP 2

(1)Red line: 0.54+9.5+0.2=10.24
(2) Blue line:1.9+2+4.6+0.7=9.2
(3) Green line:1.9+4.2+0.65=6.75

5.3. Regulation

The set (which LCD module is assembled into) should conform to the regulations below.

(1) EMI Regulations.
    CISPR : Pub.22 CLASS B
    FCC   : PART15 CLASS B
    VCCI   : CLASS B
(2) Safety Regulations (Only LCD)
    IEC 950
    UL 1950
(3) Material list concerning

Item		Silk	Product	Rating	Maker
EMI Filter	ASIC (Data Output)	AR1,2,3,4,5,6,7,8,9, 10,11,12,13,14,15, 16,17,18	Array Resistor	47Ω 1/16W 5% 3216 R/TP	
	ASIC (Clock Output)	R6 R9	Resistor	47Ω 1/16W 1% 1608 R/TP	
	Power V_{DD}(3.3V)	-	-	-	
DC/DC	Control IC for Power supply	U50	MAX1543	Frequency oscillator min 0.6 ~ max 2.0 (MHz) typ 1.2MHz	Maxim
	Switching Diode	D50,D51,D52	BAV99	SOT-23(3pin)	DIODES
	Zener Diode	ZD50	BZT52C6V8S	SOD323(2pin)	DIODES
	Schottky Barrier Diode	D53	BAT750	SOT-23(3pin)	DIODES
	Inductor	L50	CVOB5411-R90100	10 uH±20% (Inductance) 0.24Ω ±20%(DC Resistance) 0.9A Max(Rated DC Current)	TDK

6. Block Diagram
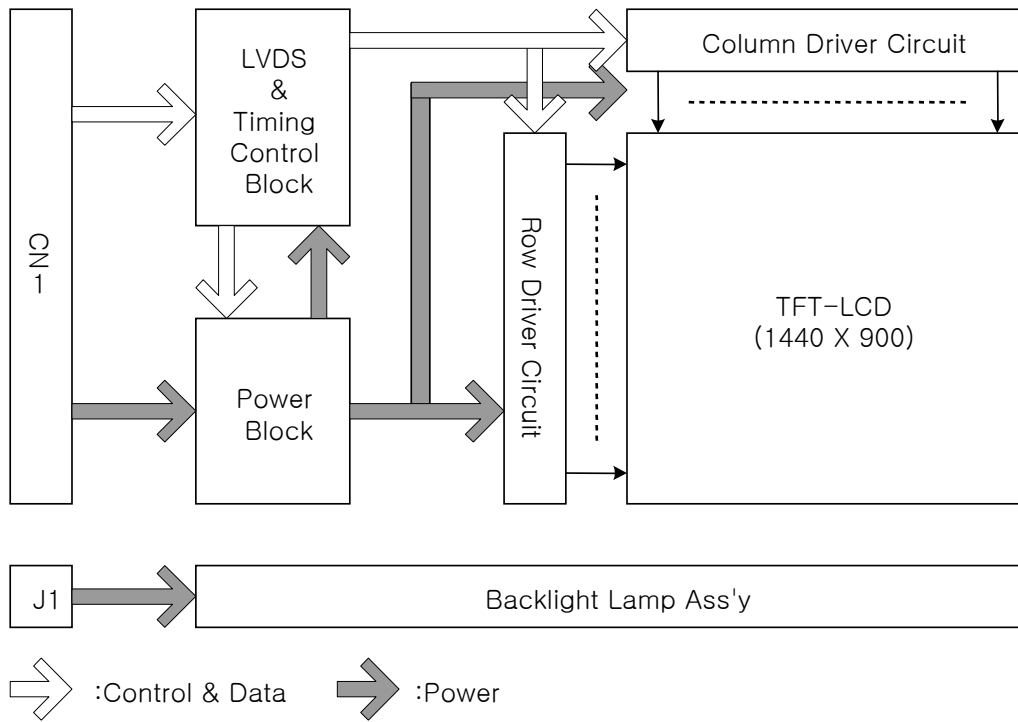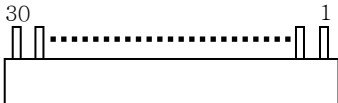
Lamp: SS20D3065N6580C2882600S(SKN)
    1. Hot (Pink/White)
    2. Cold (Green/Blue)

7. Input Terminal Pin Assignment

7.1. TFT LCD module

Pin	Symbol	Description	Notes
1	GND	Ground	
2	VCC	Power Supply, 3.3V Typ.	**[LVDS Receiver]** Thine, KZ4E053G23CFP
3	VCC	Power Supply, 3.3V Typ.	
4	V EEDID	DDC 3.3V power	**[Connector]** IS100-C30R-C15 or Compatible
5	NC	Reserved for supplier test point	
6	Clk EEDID	DDC Clock	**[Connector pin arrangement]** LCD rear view
7	DATA EEDID	DDC Data	
8	Odd_R_{IN} 0-	Negative LVDS differential data input	
9	Odd_R_{IN} 0+	Positive LVDS differential data input	
10	GND	Ground	
11	Odd_R_{IN} 1-	Negative LVDS differential data input	
12	Odd_R_{IN} 1+	Positive LVDS differential data input	
13	GND	Ground	
14	Odd_R_{IN} 2-	Negative LVDS differential data input	
15	Odd_R_{IN} 2+	Positive LVDS differential data input	
16	GND	Ground	
17	Odd_CLKIN-	Negative LVDS differential clock input	
18	Odd_CLKIN+	Positive LVDS differential clock input	
19	GND	Ground	
20	Even_R_{IN} 0-	Negative LVDS differential data input	
21	Even_R_{IN} 0+	Positive LVDS differential data input	
22	GND	Ground	
23	Even_R_{IN} 1-	Negative LVDS differential data input	
24	Even_R_{IN} 1+	Positive LVDS differential data input	
25	GND	Ground	
26	Even_R_{IN} 2-	Negative LVDS differential data input	
27	Even_R_{IN} 2+	Positive LVDS differential data input	
28	GND	Ground	
29	Even_CLKIN-	Negative LVDS differential clock input	
30	Even_CLKIN+	Positive LVDS differential clock input	

7.2. Backlight Unit

Using Connector : BHTR-02VS (Maker : JST)
(Contact Pin of VL : SBHT-002T-P0.5 (Maker :JST))
(Contact Pin of GL : SBHT-002T-P0.5 (Maker :JST))

Pin	Symbol	Cable Color	Function
1	VL	White/Pink	High Voltage
2	GL	Blue/Green	Low Voltage

7.3. LVDS Transmitter

LVDS Transmitter : SN75LVDS84 (made by TI) or compatible.

Pin #	Pin Name	Require Signals	Pin #	Pin Name	Require Signals
1	D4	R4	48	D3	R3
2	Vcc	Vcc	47	D2	R2
3	D5	R5	46	GND	GND
4	D6	G0	45	D1	R1
5	DND	GND	44	D0	R0
6	D7	G1	43	NC	NC
7	D8	G2	42	LVDS GND	LVDS GND
8	Vcc	Vcc	41	Y0M	A0M
9	D9	G3	40	Y0P	A0P
10	D10	G4	39	Y1M	A1M
11	GND	GND	38	Y1P	A1P
12	D11	G5	37	LVDS Vcc	LVDS Vcc
13	D12	B0	36	LVDS GND	LVDS GND
14	NC	NC	35	Y2M	A2M
15	D13	B1	34	Y2P	A2P
16	D14	B2	33	CLKOUTM	CLKM
17	GND	GND	32	CLKOUTP	CLKP
18	D15	B3	31	LVDS GND	LVDS GND
19	D16	B4	30	PLL GND	PLL GND
20	D17	B5	29	PLL Vcc	PLL Vcc
21	Vcc	Vcc	28	PLL GND	PLL GND
22	D18	HSYNC	27	SHDN	SHDN
23	D19	VSYNC	26	CLKIN	Dclk
24	GND	GND	25	D20	DE(Data Enable)

LG.Philips LCD.,Co.Ltd   Date: 2005.1.26

7.4. Timing Diagrams of LVDS Transmission

Switching Characteristic
    VCC = 3.0 ~ 3.6V, Ta = -10 ~ +70℃

Transmitter

Symbol	Parameter	Min.	Typ.	Max.	Unit
tTCIT	CLK IN Transition Time	-	-	5	ns
tTCP	CLK IN Period	14.7	T	32.4	ns
tTCH	CLK IN High Time	0.4T	0.5T	0.6T	ns
tTCL	CLK IN Low Time	0.4T	0.5T	0.6T	ns
tTCD	CLK IN to TCLK +/- Delay	-	14.2	-	ns
tTS	TTL Data Setup to CLK IN	3.0	-	-	ns
tTH	TTL Data Hold from CLK IN	1.5	-	-	ns
tLVT	LVDS Transition Time	0.26	0.7	1.5	ns
tTOP1	Output Data Position 0 (T= 15.38ns)	-0.2	0	0.2	ns
tTOP0	Output Data Position 1 (T= 15.38ns)	T/7 - 0.2	T/7	T/7 + 0.2	ns
tTOP2	Output Data Position 2 (T= 15.38ns)	2T/7 - 0.2	2T/7	2T/7 + 0.2	ns
tTOP3	Output Data Position 3 (T= 15.38ns)	3T/7 - 0.2	3T/7	3T/7 + 0.2	ns
tTOP4	Output Data Position 4 (T= 15.38ns)	4T/7 - 0.2	4T/7	4T/7 + 0.2	ns
tTOP5	Output Data Position 5 (T= 15.38ns)	5T/7 - 0.2	5T/7	5T/7 + 0.2	ns
tTOP6	Output Data Position 6 (T= 15.38ns)	6T/7 - 0.2	6T/7	6T/7 + 0.2	ns
tTPLL	Phase Lock Loop Set	-	-	10	ns

AC Timing Diagrams
Transmitter Device
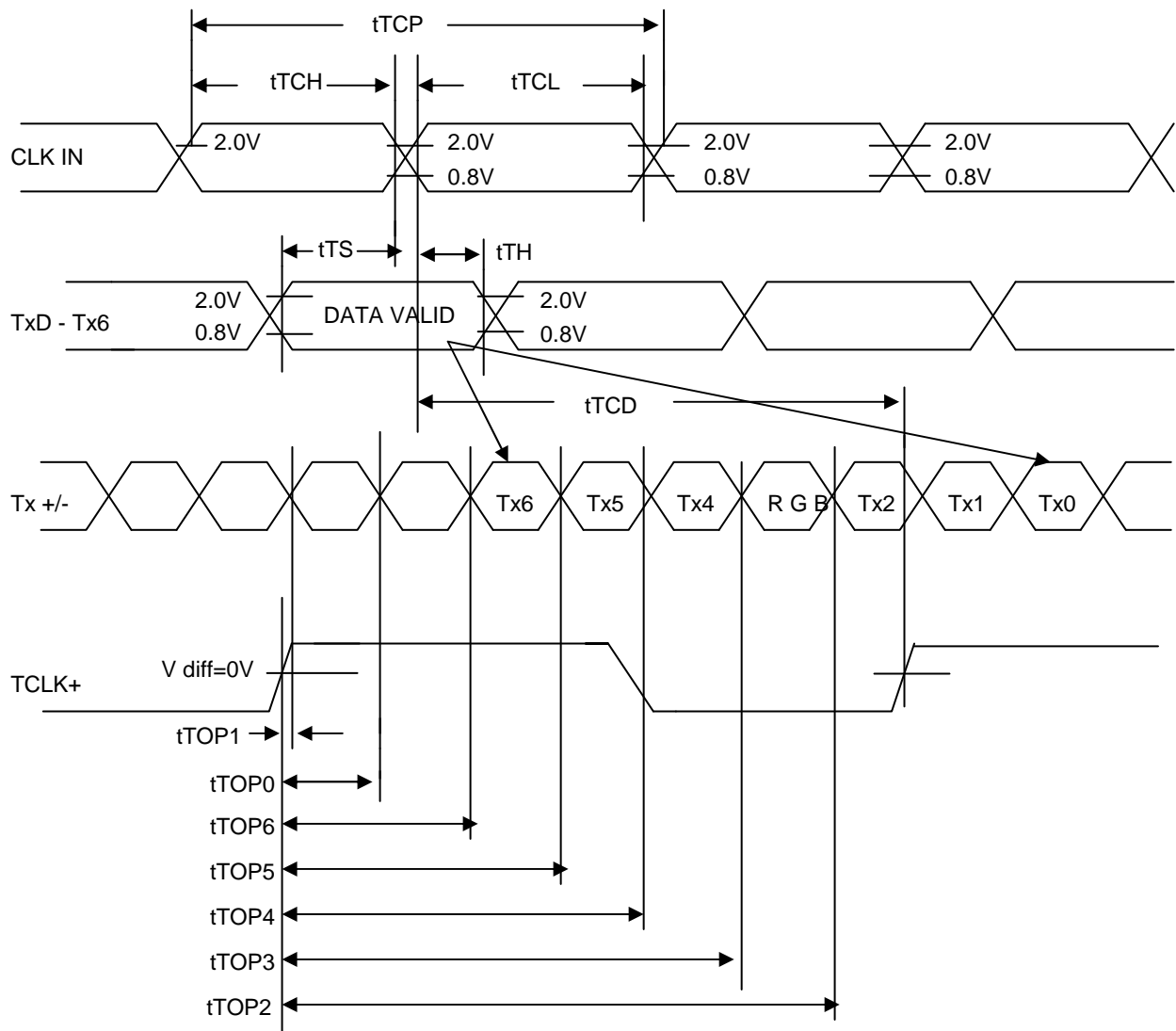
7.5. Input Signal, Basic Display Colors and Gray Scale of each Color

Color		Input Color Data																		
		RED						GREEN						BLUE						
		MSB					LSB	MSB					LSB	MSB					LSB	
		R5	R4	R3	R2	R1	R0	G5	G4	G3	G2	G1	G0	B5	B4	B3	B2	B1	B0
Basic Color	Black	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
	Green	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0
	Blue	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1
	Cyan	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
	Magenta	1	1	1	1	1	1	0	0	0	0	0	0	1	1	1	1	1	1
	Yellow	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0
	White	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
RED	Black	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	RED(Dark)	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	…			…						…						…			
	RED(Bright)	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	RED	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
GREEN	Black	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	GREEN(Dark)	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
	...			…						…						…			
	GREEN (Bright)	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0	0
	GREEN	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0
BLUE	Black	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	BLUE(Dark)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	…			…						…						…			
	BLUE(Bright)	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0
	BLUE	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1

Note 1) 0: Low level voltage, 1: High level voltage

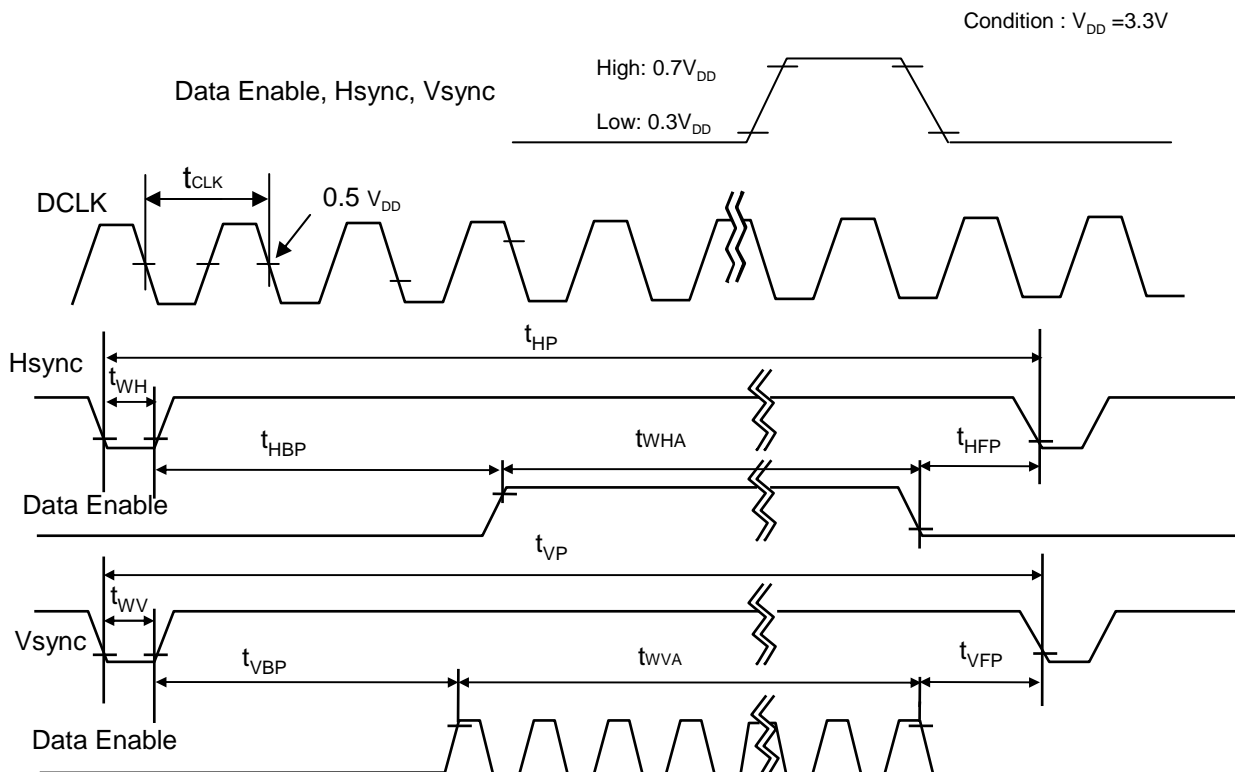| LG.Philips LCD.,Co.Ltd	Date: 2005.1.26

8. Interface Timing
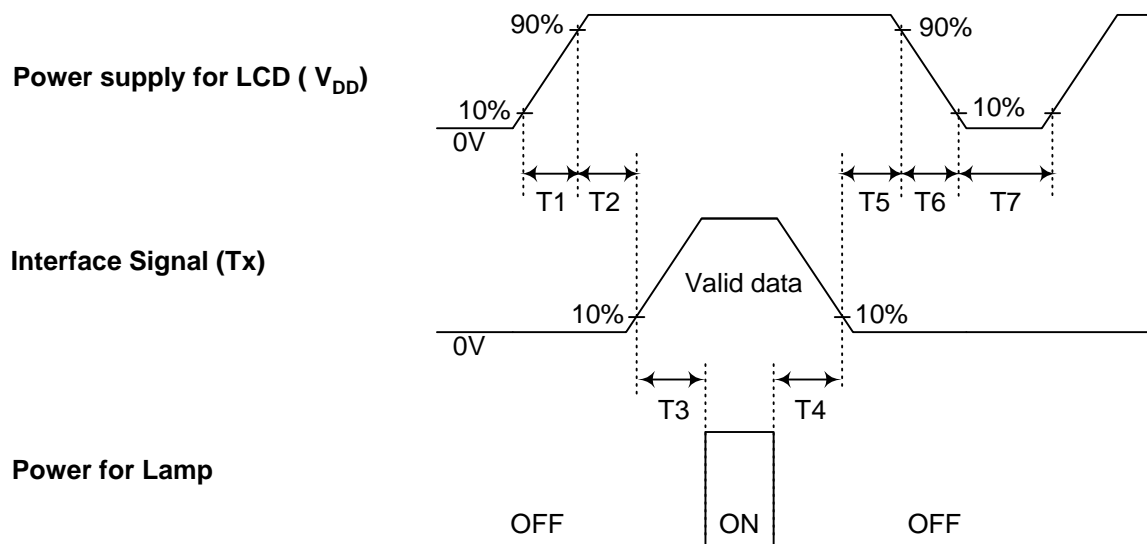
8.1. Timing Parameters

This is the signal timing required at the input of the LVDS Transmitter. All of the interface signal timing should be satisfied with the following specifications for its proper operation.

Item	Symbol		Min.	Typ.	Max.	Unit	Note
DCLK	Frequency	fCLK	86	96.2	104	MHz	
Hsync	Period	tHP	1586	1760	1876	tCLK	
	Width	tWH	16	32	-		
Vsync	Period	tVP	908	912	924	tHP	
	Width	tWV	2	3	-		
Data Enable	Horizontal back porch	tHBP	98	224	-	tCLK	
	Horizontal front porch	tHFP	32	64	-		
	Vertical back porch	tVBP	4	6	-	tHP	
	Vertical front porch	tVFP	2	3	-		

8.2. Timing Diagrams of LVDS Transmission

8.3. Power On/Off Sequence

Power supply for LCD (V$_{DD}$)

90%   90%

10%   10%
0V

T1 T2   T5 T6   T7

Interface Signal (Tx)

Valid data

10%   10%
0V

T3   T4

Power for Lamp

OFF   ON   OFF

Parameter	Min.	Typ.	Max.	Unit
T$_1$	0	-	10	(ms)
T$_2$	0	-	50	(ms)
T$_3$	200	-	-	(ms)
T$_4$	200	-	-	(ms)
T$_5$	0	-	50	(ms)
T$_6$	0	-	10	(ms)
T$_7$	200	-	-	(ms)

Note 1) Please avoid floating state of interface signal at invalid period.
Note 2) When the interface signal is invalid, be sure to pull down the power supply for LCD V$_{CC}$ to 0V.
Note 3) Lamp power must be turn on after power supply for LCD and interface signal are valid.

9. Cosmetic Specification

9.1. Sampling

A.Q.L (Acceptable Quality Level): MIL-STD, 105E Level II,

Major: 0.65 , Minor: 1.5

9.2. Conditions of Inspections

(1) Ambient Temperature : 25±5°C

(2) Ambient Humidity : 65±20%RH

(3) Illumination : 200 – 500 Lux (nominal 350 Lux) under the fluorescent lamp

(4) Viewing Distance: Approximately 30cm by the eyes of the inspector from the module

(5) Viewing angle : The surface of the module and the inspector's line shall be at 90 ± 45 degrees.

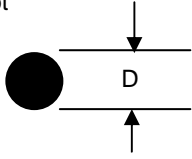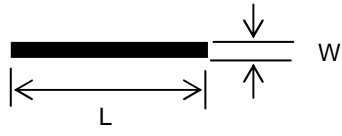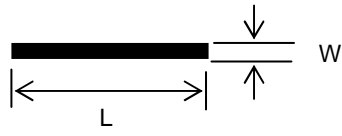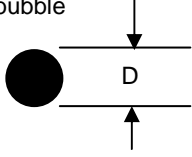(6) Display pattern: Pure Red, Green, Blue, Black, White, Gray level 0 - 63

9.3. Defect modes

Defect Mode	Description
Dark / Bright spots	Points on the display which appear dark / bright and remain unchanged in size
Dark / Bright lines	Lines on the display which appear dark / bright and remain unchanged in size
Polarizer scratch	When the unit is lit a light , line is seen across a darker background; line does not vary in size
Polarizer dent	When the unit is lit a light, light (white) spots appear against a darker background, and do not vary in size
Bright / dark dot	A sub-pixel (R,G,B dot) stuck off / on
Rubbing line	Diagonal lines that appear gray with the display patterns dark and vary in size
Dim line	When the unit lights, lines in the minor (Vertical) or major (Horizontal) axis appear dim
Cross line	When the unit lights, lines in the both minor and major axis do not appear
Interference	Interference can not be seen with any bright plane display at any viewing angle
Flicker	When displaying sub-pixel checker (gray level and darkest gray), flicker can not be seen
Ripple (Pooling)	Tapping Test, Tapping area : All bezel(Metal cover) side, LCD: Full-screen gray (L32) "Ripple (Pooling)" can not be seen in Active Area

9.4. Mechanical Inspection

(1) Light leakage: No light leakage between metal chassis (bezel) and glass

(2) No sharp edge

(3) The mounting holes: No Changed (Side fixed type)

(4) PCB Appearance: No pattern peeling snapping / No electrically short

        If there are repair portions, the repair portions on PCB is covered by epoxy resign

(5) Soldering: No cold solder joint, lead move when pulled

(6) Bezel, Frame, Connectors: No distinct stain, rust or scratch, no pin bending

9.5. Visual Inspection

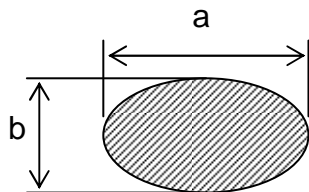| Defect type	Count (mm)	Reject (mm)
Dark / bright spot 	$0.2 < D \le 0.5$ $N \le 3$	$D > 0.5$
Dark / Bright lines 	$0.05 < W \le 0.07$ $0.3 < L \le 3.0$ $N \le 3$	$W > 0.07$ $L > 3.0$
Polarizer scratch 	$0.01 < W \le 0.1$ $0.3 < L \le 0.5$ $N \le 3$	$W > 0.1$ $L > 0.5$
Polarizer dent / bubble 	$0.2 \le D \le 0.5$ $N \le 3$	$D > 0.5$
Maximum allowable number of defects	$N \le 7$	$N > 7$
Rubbing defect	Not allowed	
Dim line	Not allowed	

[D : diameter, W : width, L : length, N : count]

Note 1) Inspection area should be within bezel opening.
Note 2) Dusts which are bigger not less than 0.10mm ($0.1 \le W$) shall be judged by "Average Diameter".
Note 3) Scratches which are bigger not less than 0.05mm ($0.05 \le W$) shall be judged by "Average Diameter".

Average Diameter D = (a+b)/2 (mm)

9.6. Electrical Inspection

(1) Dot defect

Defect type		Count	Reject
Bright dots	Random	$N \leq 5$ (Green ≤ 3)	$N > 5$ (Green > 3)
	Two adjacent	$N = 0$	$N > 0$
	Three or more adjacent	Not allowed	
Dark dots	Random	$N \leq 5$	$N > 5$
	Two adjacent	$N = 1$	$N > 1$
	Three or more adjacent	Not allowed	
Maximum allowable number of dot defect		$N \leq 8$	$N > 8$
Maximum distance between defects	Bright - to - bright dot		L<15mm
	Dark - to - dark dot		L<10mm

1) Inspection patterns for dot defect are Pure Red, Green, Blue, Black, and White.
2) Adjacent two dots will be counted as two dots.
3) The distribution of dot defects should be below. Average value of dot defect s should be less than 1.
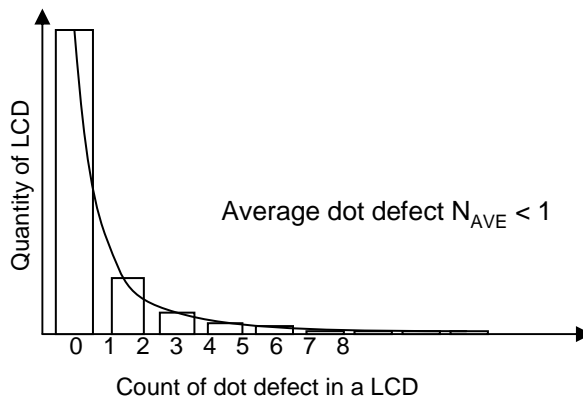
Required distribution of dot defect

4) The definition of 2 adjacent dots.
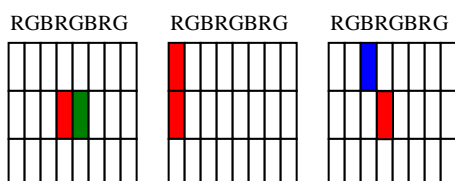
(2) Light leakage

Light leakage can not be seen between metal chassis (bezel) and glass when displaying black plane.

(3) Image sticking

Image sticking pattern shall not be to persist longer than 1second after displaying following pattern 8 hours in the room temperature condition.

(4) Glue/stain/dirt

Glue, non-removable stain and dirt which are visible in the inspection area are not acceptable.

10. Packing

10.1. Carton

   (1) Packing Form

     Corrugated cardboard box and corrugated paper as shock absorber.
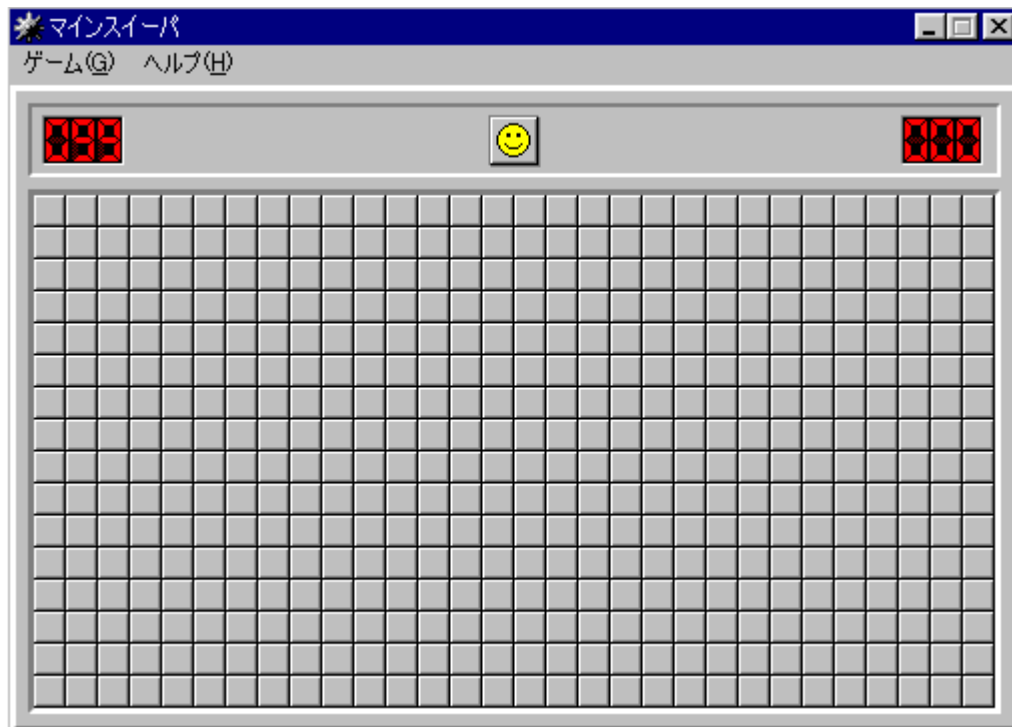
   (2) Packing Method

     Packing Material

     Packing Weight: 1100g

     (1BOX/10Module)

NO	DESCRIPTION	MATERIAL
8	LABEL	YUPO PAPER 100X100
7	TAPE	OPP 70mmX300m
6	BOX	SW3 423X323X287
5	PACKING	PE, TOP
4	PACKING	PE, BOTTOM
3	BAG	PE
2	TAPE	MASKING 20MMX50M
1	LCD MODULE	

LG.Philips LCD.,Co.Ltd	Date: 2005.1.26
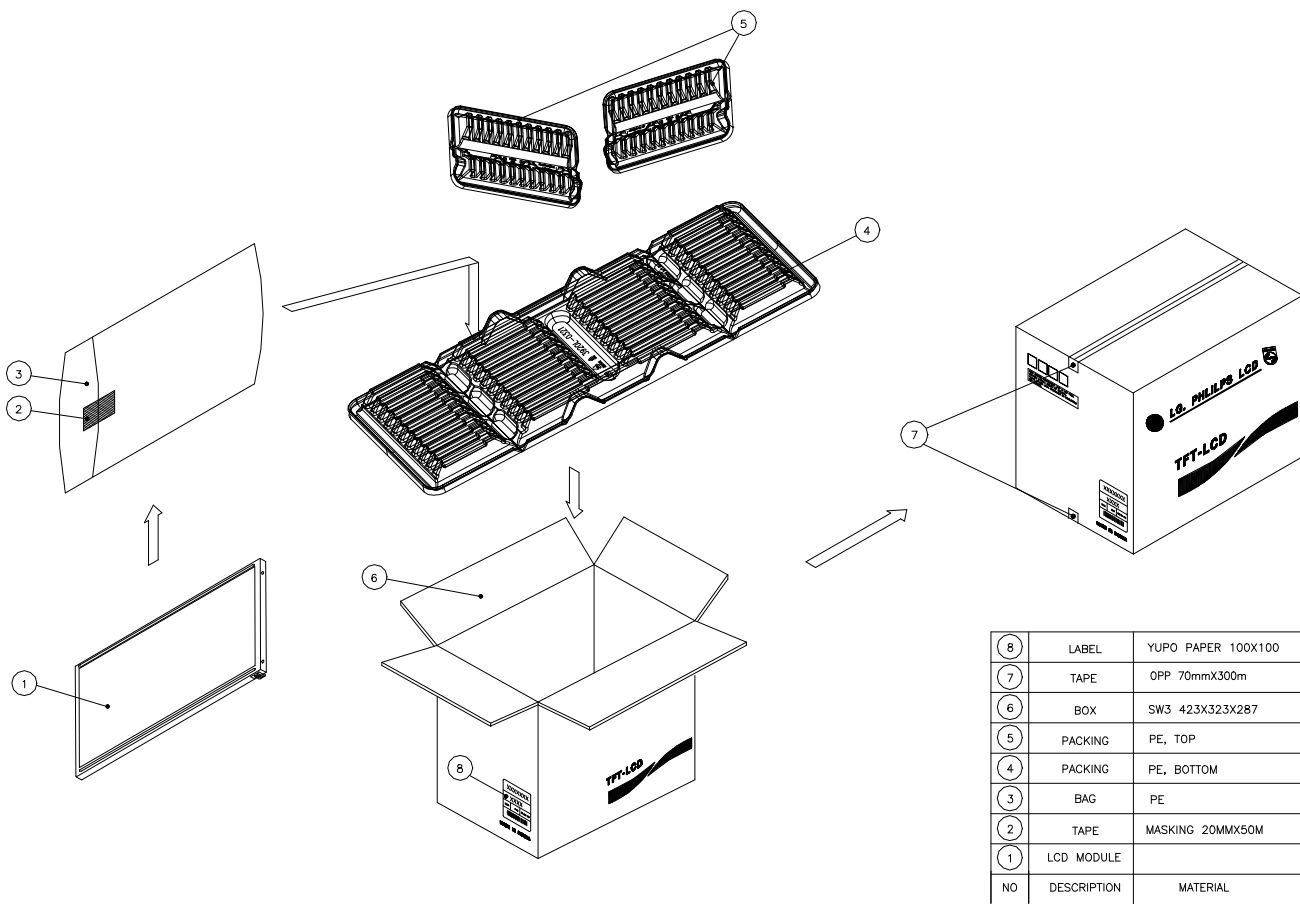
(3) Packing Specification

Item	Conditions
Packing Vibration	Frequency Range : 5 - 50 Hz, Degree of acceleration 1G(9.8m/s^2). Sweep rate 3 minutes Top & Bottom 60 minutes, Right & Left 15 minutes, Back & Forth 15 minutes
Packing Drop Test	1 Angle, 3 Edge, 6 Face, 76 cm

(4) Package Label
   Package label should be at least shown the following information.
      a) TOSHIBA code name(G33C0002K110) which will be numbered by Toshiba
      b) Revision number which be numbered by LCD maker
      c) Quantity
      d) LCD maker
      e) Model number which be numbered by LCD maker
      f) Production Year / Month

(5) Location of Package label : 2 points (Side)

2 sides(LABEL Position)

LP171WP5
[G33C0002K110]
TLO2
10 PCS | LOT/MM−DD
MADE IN KOREA

Right

Left
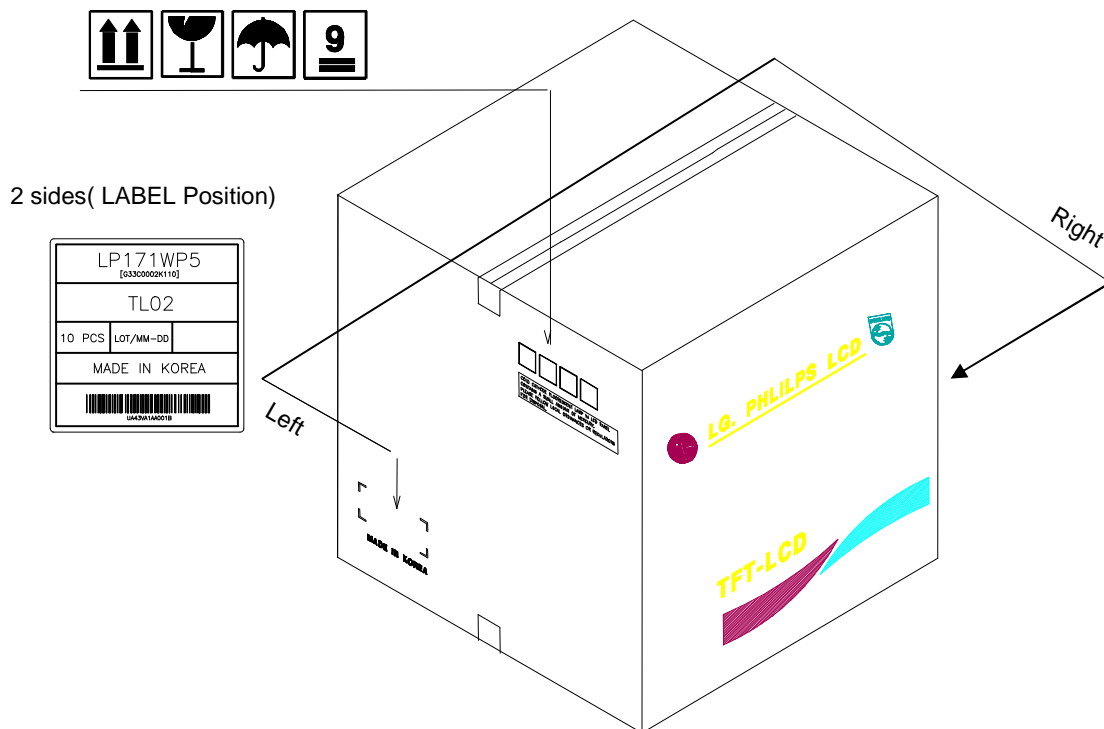
11. Labels and Lamp Ass'y Exchange

11.1. LCD code Label on LCD

LCD code label should be at least shown the following information.
(1) TOSHIBA code name (G33C0002K110) which will be numbered by Toshiba & Bar code
(Bar code : CODE-39 High-density)
(2) LGPL Serial number CODE (numbered by LCD maker , less than equal 13 digits)

A	B	C	D	E	F	G	H	I	J	K	L	M

A,B,C : SIZE(INCH)   D : YEAR
E : MONTH   F : FACTORY CODE
G : ASSEMBLY CODE   H ~ M : SERIAL NO.

Note
1. YEAR

Year	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Mark	1	2	3	4	5	6	7	8	9	0

2. MONTH

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mark	1	2	3	4	5	6	7	8	9	A	B	C

3. FACTORY CODE

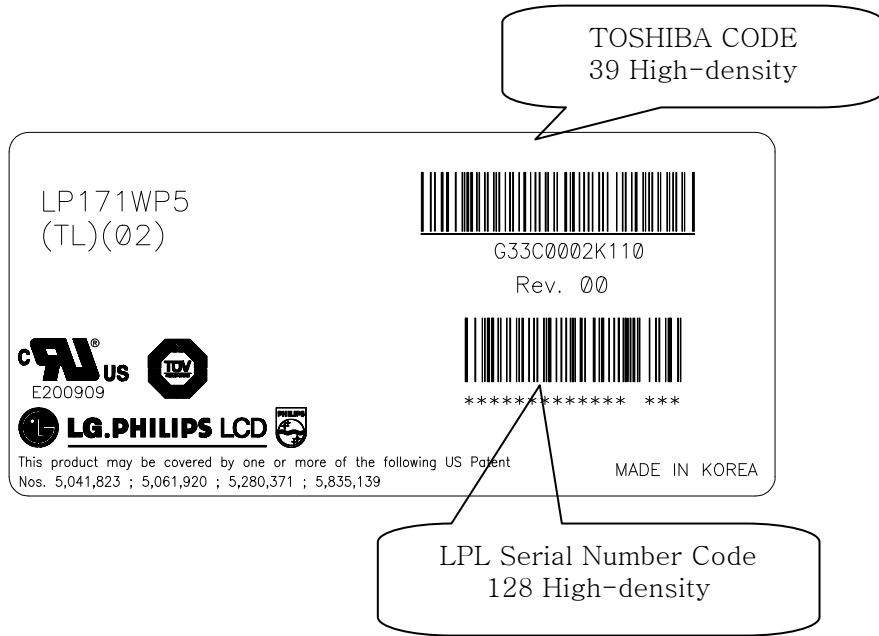| Factory Code	LPL Gumi	LPL Nanjing	HEESUNG
Mark	K	C	D

4. SERIAL NO.

Mark	100001~199999, 200001~299999, 300001~399999, …., A00001~A99999, ….., Z00001~Z99999

Serial NO. Is printed on the label. The label is attached to the backside of the LCD module.
This is subject to change without prior notice.

LG.Philips LCD.,Co.Ltd	Date: 2005.1.26

Example >
> LABEL : 78mm X 37mm

TOSHIBA CODE
39 High-density

LP171WP5
(TL)(02)

G33C0002K110
Rev. 00

************ ***

E200909

LG.PHILIPS LCD

This product may be covered by one or more of the following US Patent
Nos. 5,041,823 ; 5,061,920 ; 5,280,371 ; 5,835,139

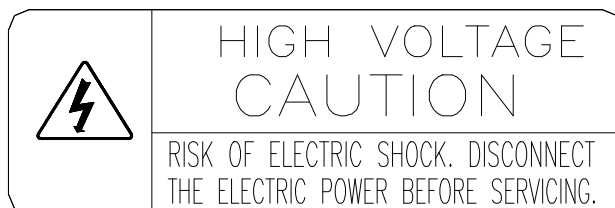MADE IN KOREA

LPL Serial Number Code
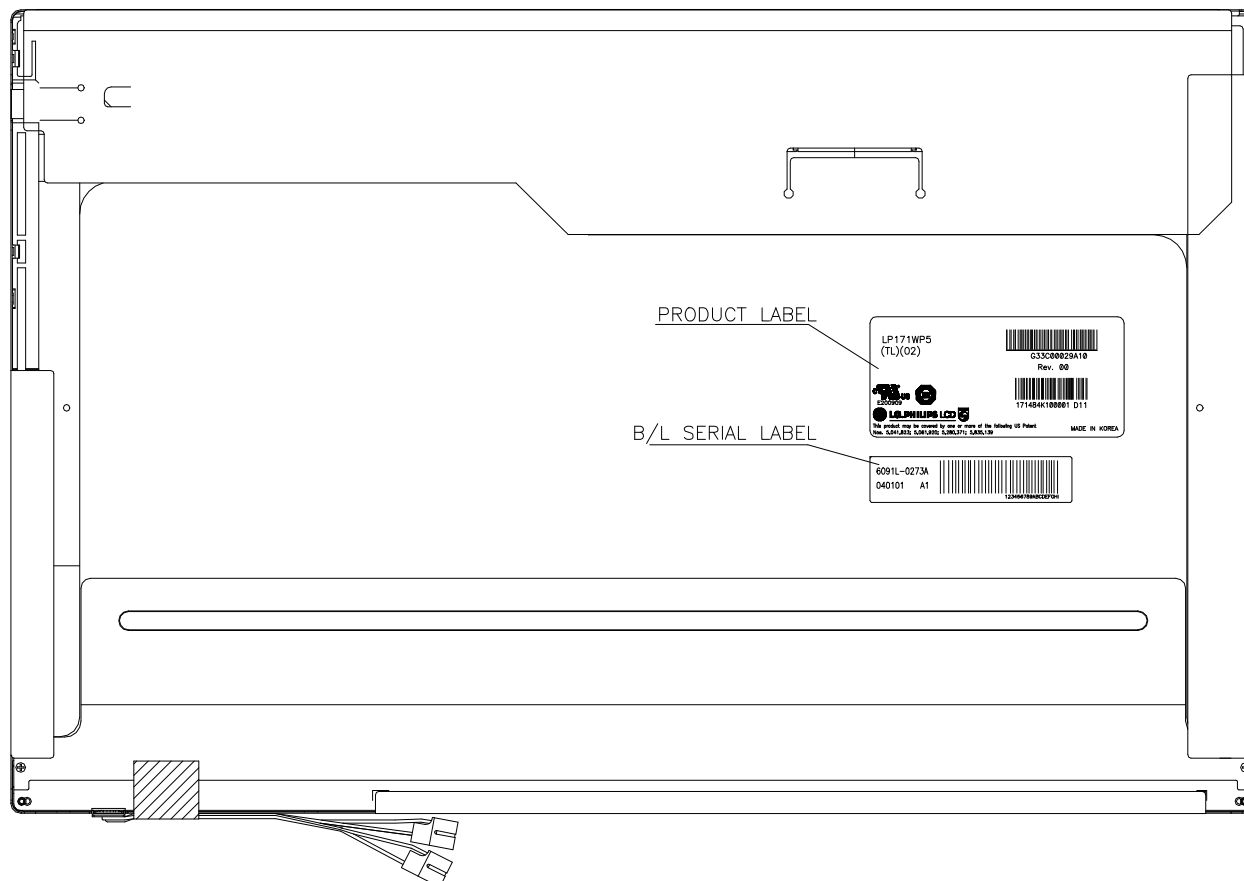128 High-density

11.2. Caution Texture and Labels on LCD

[Disposal of CCFL]

COLD CATHODE FLUORESCENT LAMP IN LCD PANEL CONTAINS A SMALL AMOUNT OF MERCURY.
PLEASE FOLLOW LOCAL ORDINANCES OR REGULATIONS FOR DISPOSAL.

[High Voltage]

HIGH VOLTAGE
CAUTION
RISK OF ELECTRIC SHOCK. DISCONNECT
THE ELECTRIC POWER BEFORE SERVICING.

11.3. Label Locations on LCD

11.4. Others

(1) Backlight repair parts kit : 6913L-0270A

No.	Part	Product Code	Maker	Qt'y	Note
1	Cover Ass'y Bottom(L)	3551L-0110A	Hee Sung	1	
2	Cover Shield(S)	3550S-0182A	Jae Hyun	1	
3	Cover Shield(G)	3550S-0183A	Jae Hyun	1	
4	Tape Adhesive	7250L-0050P	Jae Hyun	1	
5	Tape Adhesive	7250L-0080B	Jae Hyun	1	
6	Tape Adhesive	7250L-0077A	Jae Hyun	1	
7	Tape Adhesive	7250L-0087A	Hee Sung	4	
8	Tape Adhesive	7250L-0087B	Hee Sung	2	

(2) Package specification of Backlight repair parts kit
   a) Individual packing
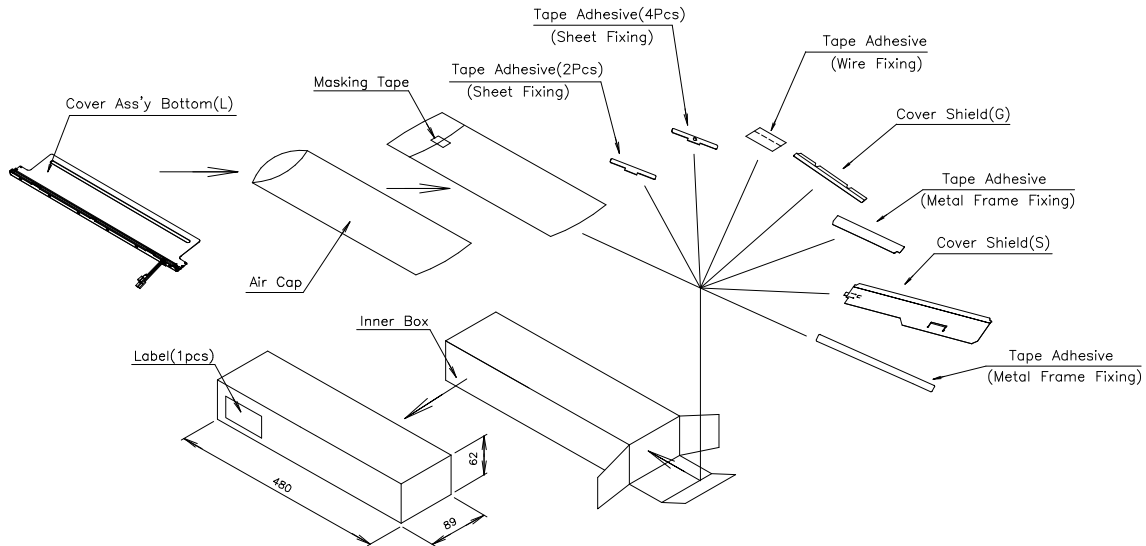
b) Master carton Packing method
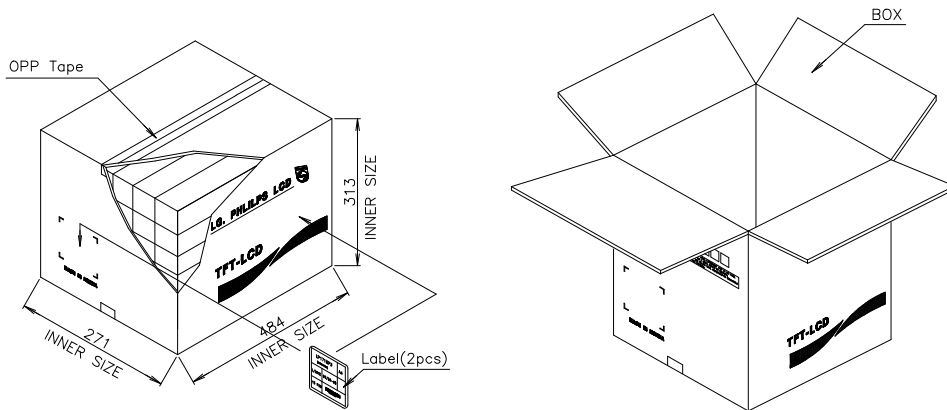
[5(V) X3(H) = 15 Boxes Inner]

c) Label

11.5. Instruction of changing the Lamp parts - Lamp Ass'y Exchange process
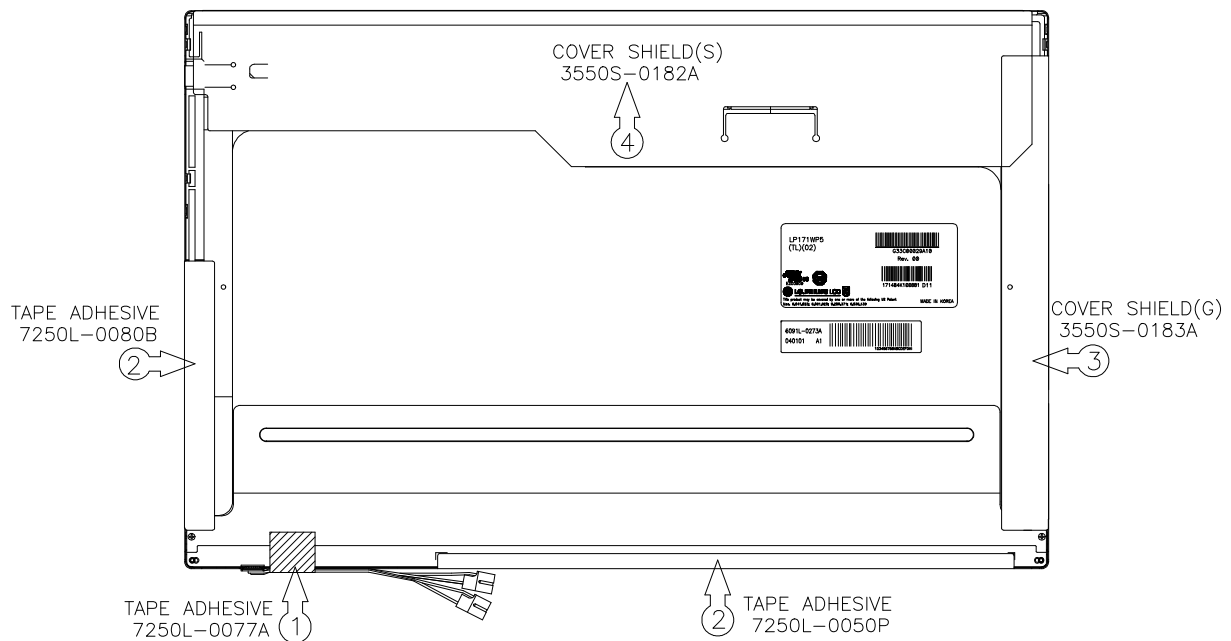
11.5.1. Disassembly of outside tape / Cover shield
   (1) ① Disassembly of Tape adhesive used for B/L Wire fixing
      Caution: Pressure or stress should not be given on B/L Wire.
   (2) ② Disassembly of Tape Adhesive used for Top case fixing
      Caution: Pressure or stress should not be given on Top case during this process
   (3) ③ Disassembly of Cover shield(G)
      Caution: Pressure or stress should not be given on Gate COF.
   (4) ④ Disassembly of Cover shield(S)
      Caution: Pressure or stress should not be given on Source PCB.
               Usage of gloves with anti-electric discharge coating is recommended.
               To eliminate possible damage on circuits occurred by ESD.

11.5.2. Disassembly of Top Case

(1) ① Disassembly of Top Case
Caution: Pressure or stress should not be given on PCB and COF.
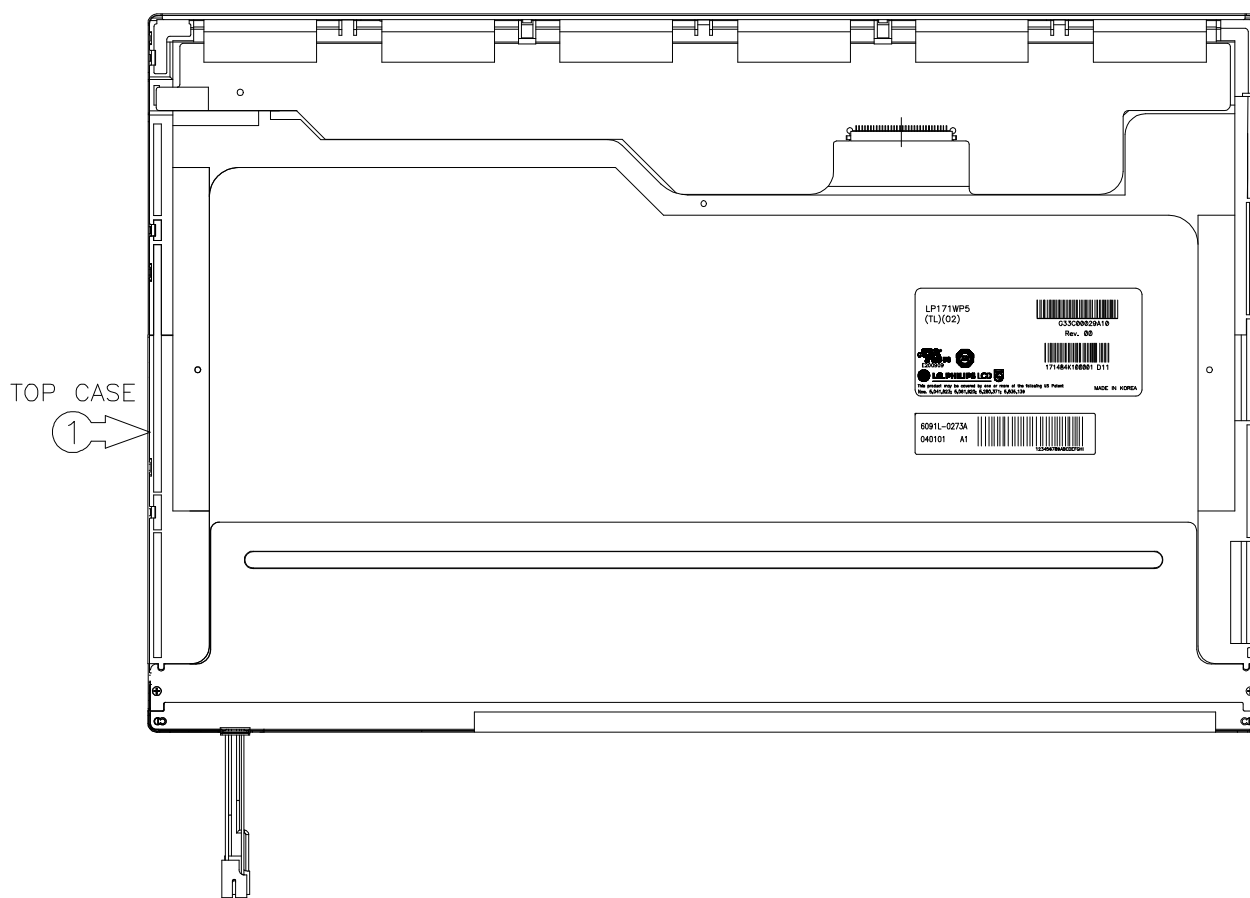
11.5.3. Disassembly of Source PCB
   (1) ① Disassembly of Source PCB.
        Caution: Pressure or stress should not be given on PCB and COF

.

11.5.4. Disassembly of Board Ass'y, Tape Adhesive, Sheets, Light guide,Cover Ass'y Bottom(L)

(1) ① Disassembly of Board Ass'y.
    Caution: This process should be made in Clean room with no scratch nor particle on Polarizer and
            B/L Ass'y.
(2) ② Disassembly of Tape Adhesive used for Sheets fixing (6Point).
(3) ③ Disassembly of Sheets, Light guide.
    Caution: No penetration of foreign body is indispensable with no scratch on the surface of each
            Sheets.
(4) ④ Disassembly of Screw(2Point) and Cover Ass'y Bottom(L)
    Caution: Maximum value of torque with Screw should be below 1.5kg.
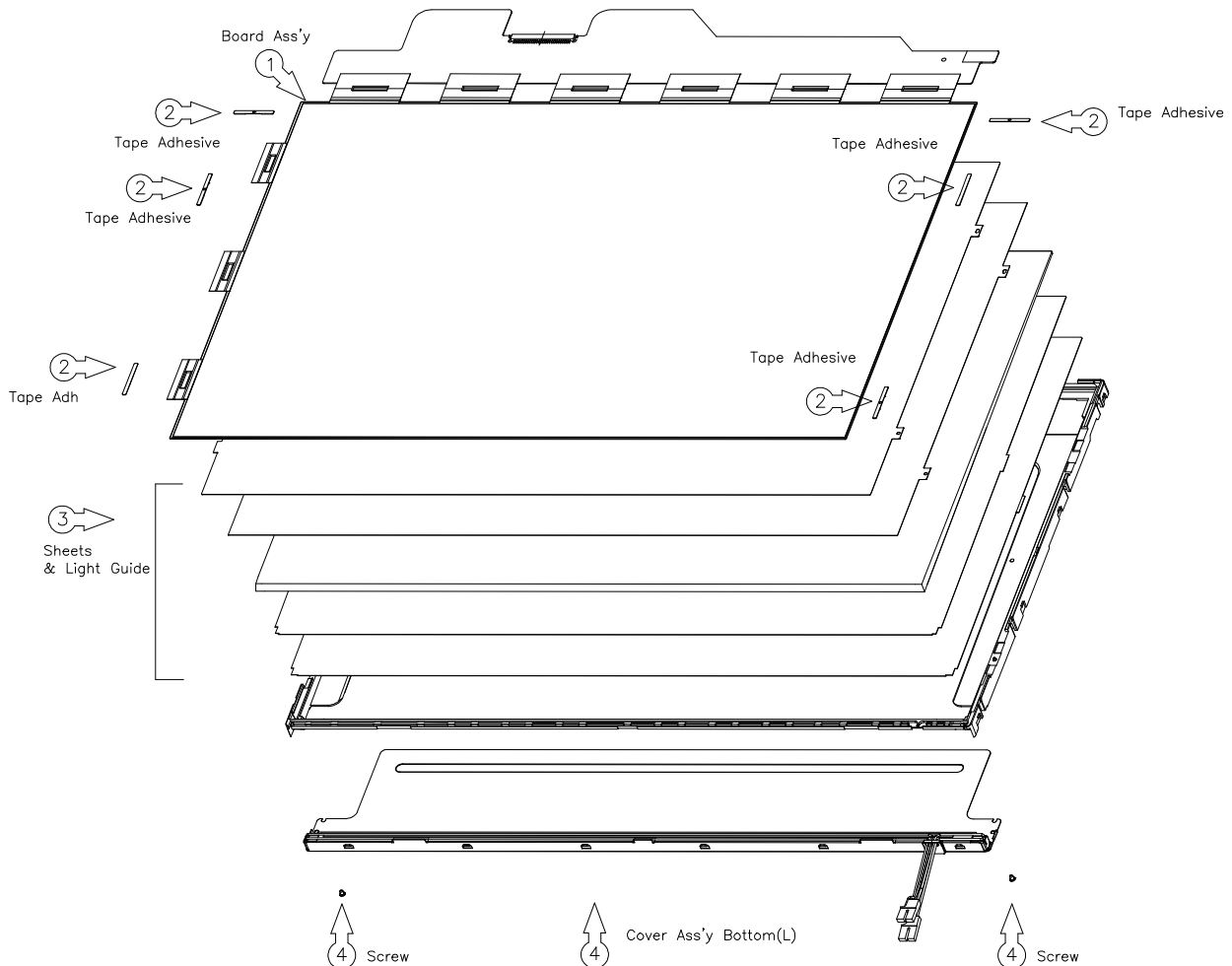
11.5.5. Assembly of Cover Ass'y Bottom(L), Sheets, Light guide, Tape Adhesive and Board Ass'y.

(1) ① Detach a release paper from Double Tape at the Cover Ass'y Bottom(L)
(2) ② Assembly of Cover Ass'y Bottom(L) and Screw(2Point).
　　Caution: Maximum value of torque with Screw should be below 2.0kgf.cm
(3) ③ Assembly of Light Guide and Sheets
　　Caution: No penetration of foreign body is indispensable with no scratch on the surface of each
　　　　　　　Sheet and Light guide.
(4) ④ Assembly of Tape adhesive used for Sheets fixing(6Point)
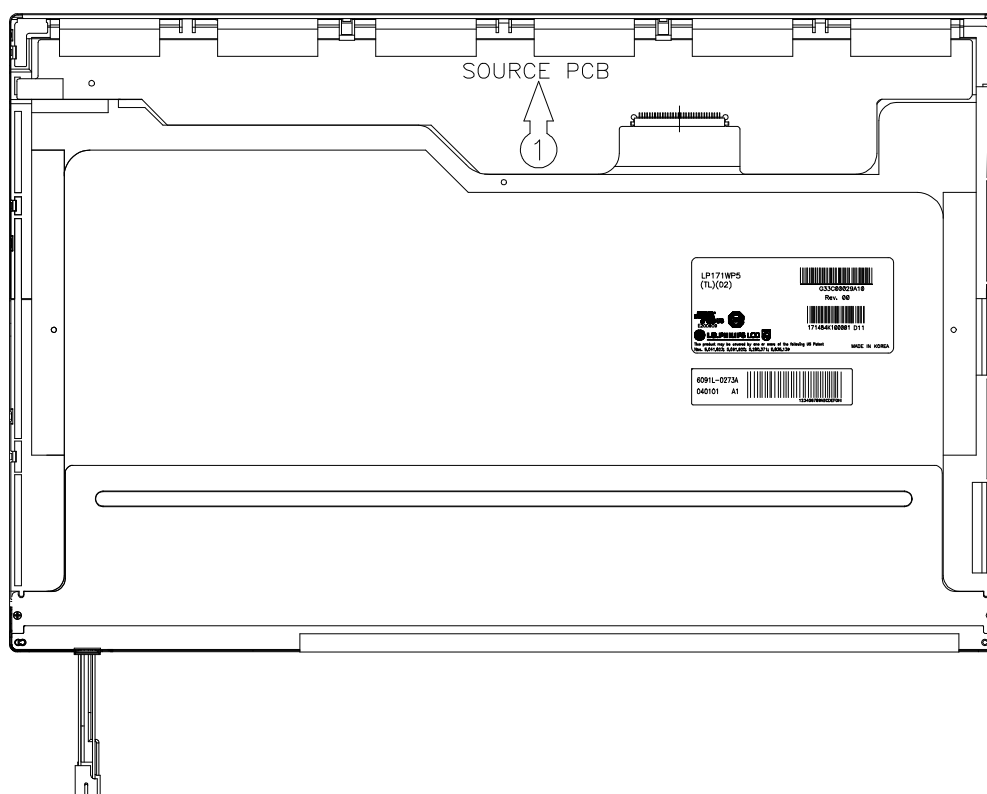(5) ⑤ Assembly of Board Ass'y.
　　Caution: Pressure or stress should not be given on PCB and TCP.
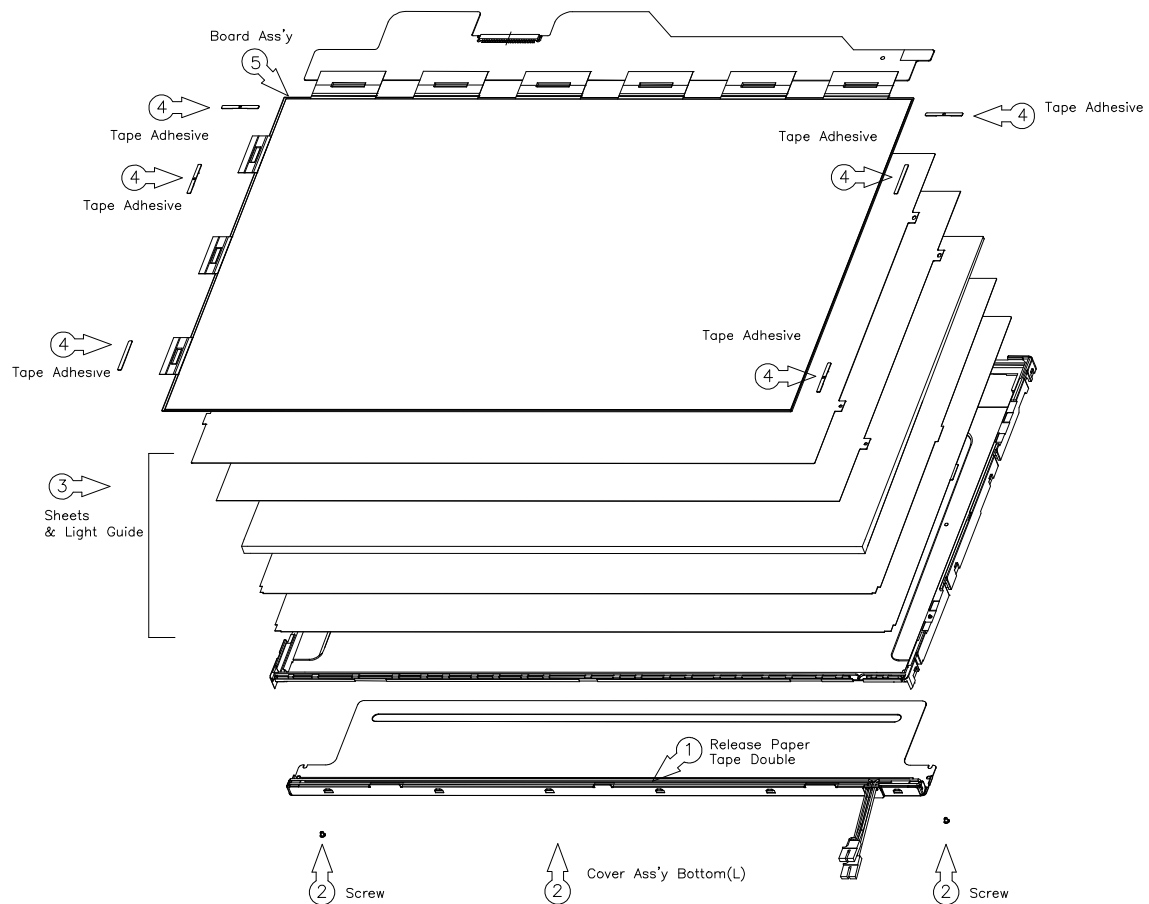
11.5.6. Assembly of Source PCB
   (1) ① Assembly of Source PCB.
       Caution: Stress should not be given on COF
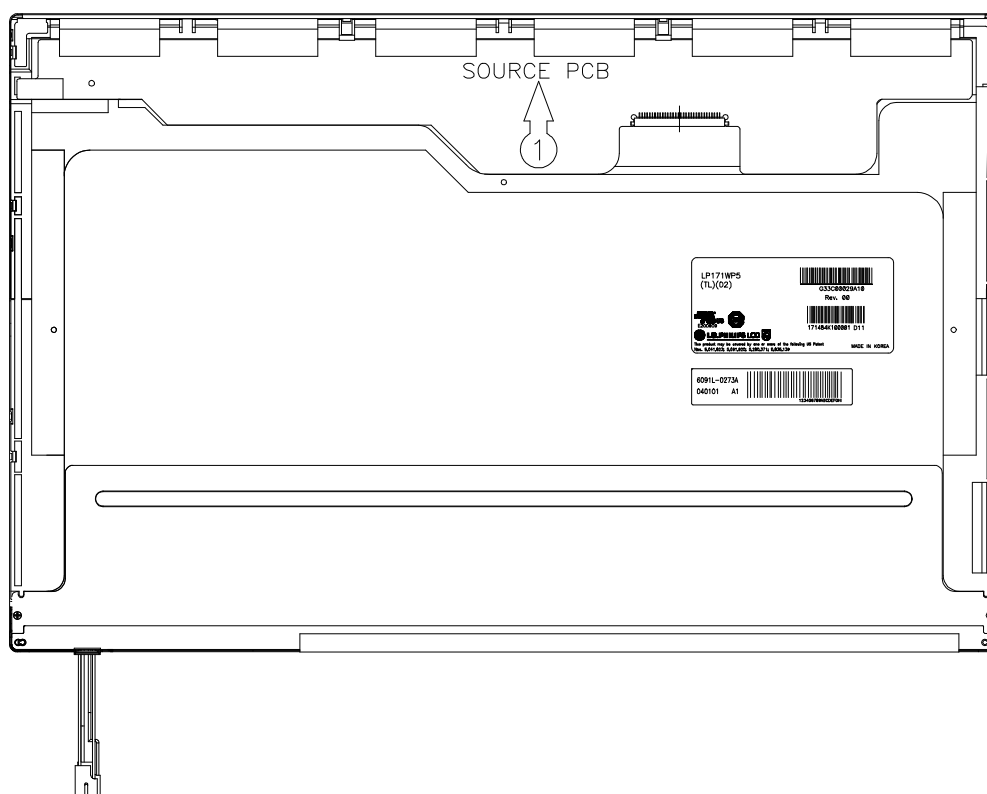
11.5.7. Assembly of Top Case

(1) ① Assembly of Top Case.
Caution: Pressure should not be given on PCB and COF.
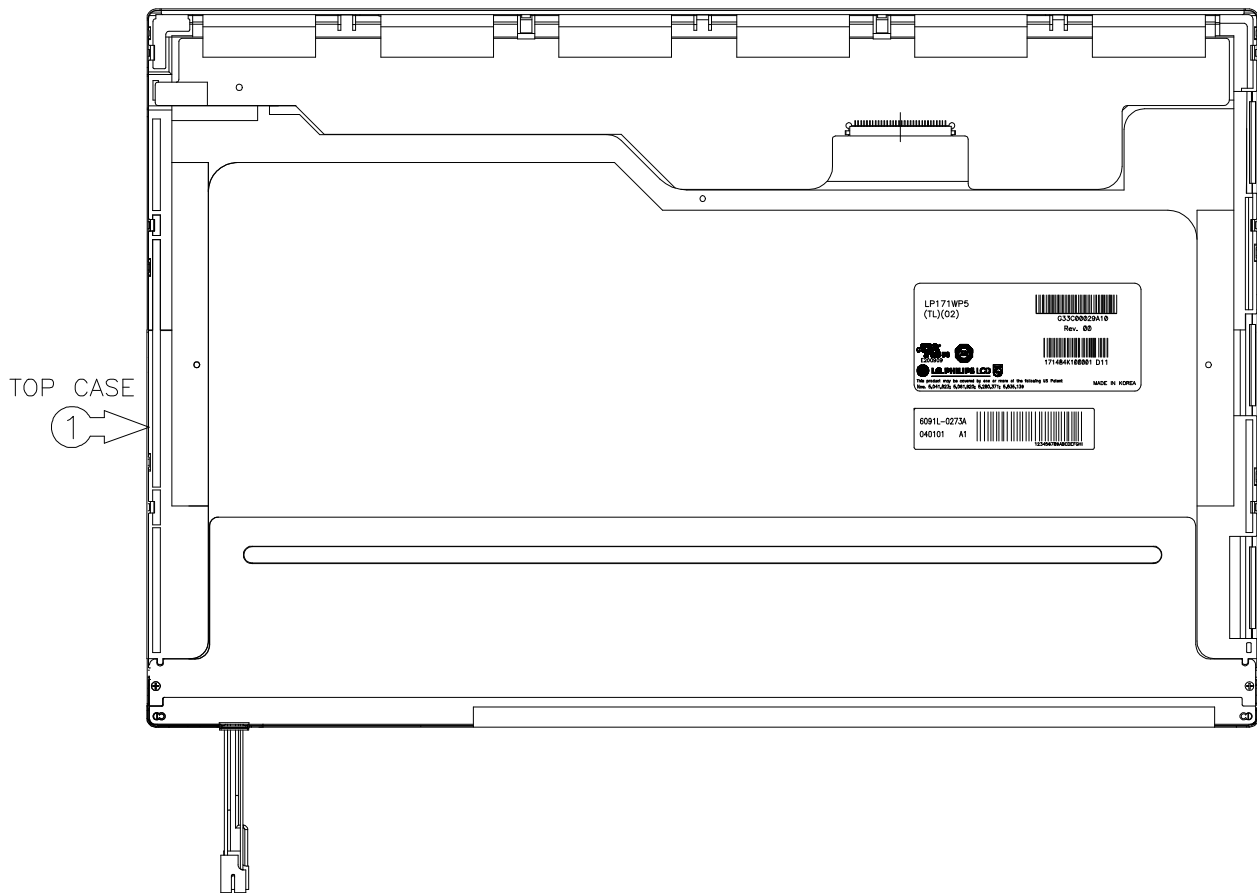
11.5.8. Assembly of outside Tape and Cover shield

(1) ① Assembly of Cover shield(S)

Caution: Pressure or stress should not be given on Source PCB.

Usage of gloves with anti-electric discharge coating is recommended

To eliminate possible damage on circuits occurred by ESD.

(2) ② Assembly of Cover shield(G)

Caution: Pressure or stress should not be given on Gate COF.

(3) ③ Assembly of Tape Adhesive used for Top case fixing

Caution: Pressure or stress should not be given on Top case during this process

(4) ④ Assembly of Tape adhesive used for B/L Wire fixing

Caution: Pressure or stress should not be given on B/L Wire.
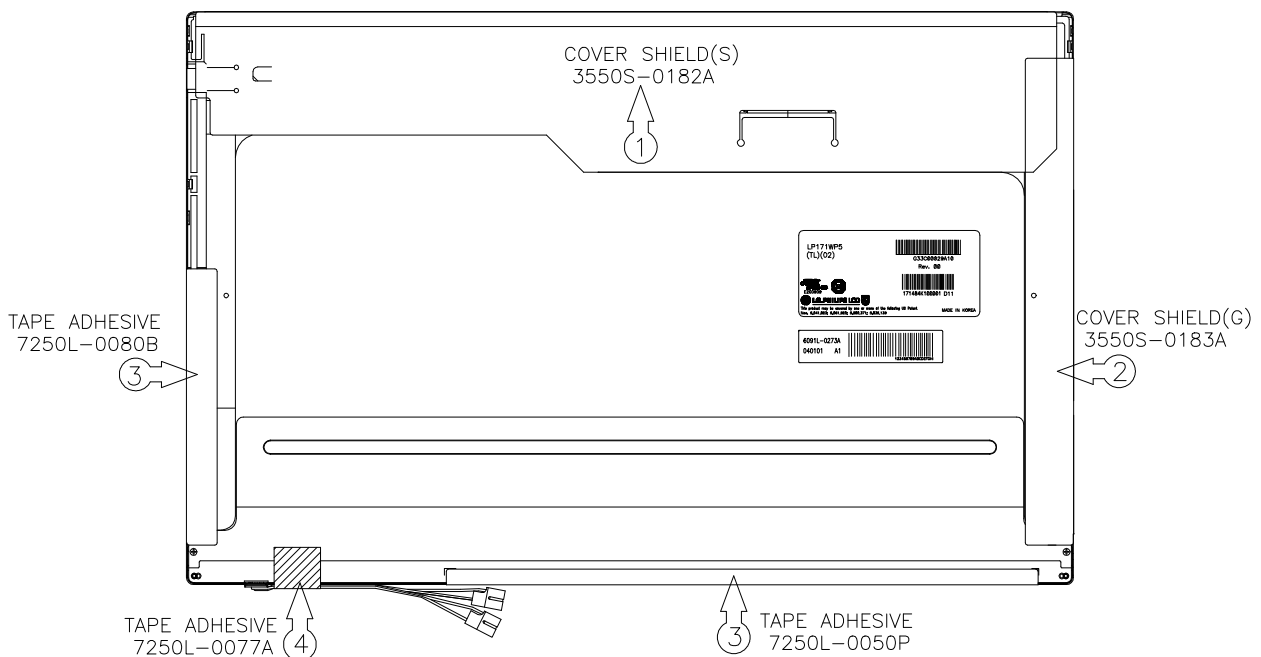
12. General Precaution

Please pay attention to the followings when you use this TFT LCD module.

12.1. Mounting Precautions

(1) You must mount a module using holes arranged in four corners or four sides.

(2) You should consider the mounting structure so that uneven force (ex. twisted stress) is not applied to the module. And the case on which a module is mounted should have sufficient strength so that external force is not transmitted directly to the module.

(3) Please attach a transparent protective plate to the surface in order to protect the polarizer. Transparent protective plate should have sufficient strength in order to resist external force.

(4) You should adopt radiation structure to satisfy the temperature specification.

(5) Acetic acid type and chlorine type materials for the cover case aren't desirable because the former generates corrosive gas of attacking the polarizer at high temperature and the latter causes circuit break by electro-chemical reaction.

(6) Do not touch, push or rub the exposed polarizer with glass, tweezers or anything harder than HB pencil lead. And please do not rub with dust clothes with chemical treatment. Do not touch the surface of polarizer for bare hand or greasy cloth. (Some cosmetics are detrimental to the polarizer.)

(7) When the surface becomes dusty, please wipe gently with absorbent cotton or other soft materials like chamois soaked with petroleum benzene. Normal-hexane is recommended for cleaning the adhesives used to attach front / rear polarizers. Do not use acetone, toluene and alcohol because they cause chemical damage to the polarizer.

(8) Wipe off saliva or water drops as soon as possible. Their long time contact with polarizer causes deformations and color fading.

(9) Do not open the case because inside circuits do not have sufficient strength.

12.2. Operating Precautions

(1) The spike noise causes the mis-operation of circuits. It should be lower than following voltage
: $V = \pm 200mV$ (Over and under shoot voltage).

(2) Response time depends on the temperature. (In lower temperature, it becomes longer.)

(3) Brightness depends on the temperature. (In lower temperature, it becomes lower.) And in lower temperature, response time (required time that brightness is stable after turned on) becomes longer.

(4) Be careful for condensation at sudden temperature change. Condensation makes damage to polarizer or electrical contacted parts. And after fading condensation, smear or spot will occur.

(5) When fixed patterns are displayed for a long time, remnant image is likely to occur.

(6) A module has high frequency circuit. If you need to shield the electromagnetic noise, please co-work. When a Back-light unit is operating, it sounds. If you need to shield the noise, please co-work**.**

12.3. Electrostatic Discharge Control

Since a module is composed of electronic circuits, it is not strong to electrostatic discharge. Make certain that treatment persons are connected to ground through wrist band etc . And don't touch interface pin directly.

12.4. Precautions for Strong Light Exposure

Strong light exposure causes degradation of polarizer and color filter.

12.5. Storage

When storing modules as spares for a long time, the following precautions are necessary.

(1) Store them in a dark place. Do not expose the module to sunlight or fluorescent light. Keep the
temperature between 5℃ and 35℃ at normal humidity.

(2) The polarizer surface should not come in contact with any other object. It is recommended that they
be stored in the container in which they were shipped.

12.6. Handling Precautions for Protection Film

(1) When the protection film is peeled off, static electricity is generated between the film and polarizer.
This should be peeled off slowly and carefully by people who are electrically grounded and with well
ion- blown equipment or in such a condition, etc.

(2) The protection film is attached to the polarizer with a small amount of glue. If some stress is applied
to rub the protection film against the polarizer during the time you peel off the film, the glue is apt to
remain on the polarizer. Please carefully peel off the protection film without rubbing it against the
polarizer.

(3) When the module with protection film attached is stored for a long time, sometimes there remains a
very small amount of glue still on the polarizer after the protection film is peeled off.

(4) You can remove the glue easily. When the glue remains on the polarizer surface or its vestige is
recognized, please wipe them off with absorbent cotton waste or other soft material like chamois
soaked with normal-hexane.

APPENDIX A. Enhanced Extended Display Identification Data (EEDID^{TM})   1/3

Byte# (decimal)	Byte# (HEX)	Field Name and Comments	Value (HEX)		Value (binary)	
0	00	Header	0	0	0000	0000
1	01		F	F	1111	1111
2	02		F	F	1111	1111
3	03		F	F	1111	1111
4	04		F	F	1111	1111
5	05		F	F	1111	1111
6	06		F	F	1111	1111
7	07		0	0	0000	0000
8	08	EISA manufacturer code(3 Character ID) = LPL	3	2	0011	0010
9	09		0	C	0000	1100
10	0A	Product code =	0	5	0000	0101
11	0B	(Hex, LSB first)	0	0	0000	0000
12	0C	32–bit serial number	0	0	0000	0000
13	0D		0	0	0000	0000
14	0E		0	0	0000	0000
15	0F		0	0	0000	0000
16	10	Week of manufacture	0	0	0000	0000
17	11	Year of manufacture = 2005	0	F	0000	1111
18	12	EDID Structure version # = 1	0	1	0000	0001
19	13	EDID Revision # = 2	0	2	0000	0010
20	14	Video input definition = Digital I/p,non TMDS CRGB	8	0	1000	0000
21	15	Max H image size(cm) = 36.72cm(37)	2	5	0010	0101
22	16	Max V image size(cm) = 22.95cm(23)	1	7	0001	0111
23	17	Display gamma = 2.20	7	8	0111	1000
24	18	Feature support(DPMS) = Active off, RGB Color	0	A	0000	1010
25	19	Red/Green low Bits	8	0	1000	0000
26	1A	Blue/White Low Bits	1	0	0001	0000
27	1B	Red X Rx = 0.596	9	8	1001	1000
28	1C	Red Y Ry = 0.344	5	8	0101	1000
29	1D	Green X Gx = 0.321	5	2	0101	0010
30	1E	Green Y Gy = 0.551	8	D	1000	1101
31	1F	Blue X Bx = 0.161	2	9	0010	1001
32	20	Blue Y By = 0.146	2	5	0010	0101
33	21	White X Wx = 0.313	5	0	0101	0000
34	22	White Y Wy = 0.329	5	4	0101	0100
35	23	Established Timing I	0	0	0000	0000
36	24	Established Timing II	0	0	0000	0000
37	25	Manufacturer's Timings	0	0	0000	0000
38	26	Standard Timing Identification 1 was not used	0	1	0000	0001
39	27	Standard Timing Identification 1 was not used	0	1	0000	0001
40	28	Standard Timing Identification 2 was not used	0	1	0000	0001
41	29	Standard Timing Identification 2 was not used	0	1	0000	0001
42	2A	Standard Timing Identification 3 was not used	0	1	0000	0001
43	2B	Standard Timing Identification 3 was not used	0	1	0000	0001
44	2C	Standard Timing Identification 4 was not used	0	1	0000	0001
45	2D	Standard Timing Identification 4 was not used	0	1	0000	0001
46	2E	Standard Timing Identification 5 was not used	0	1	0000	0001
47	2F	Standard Timing Identification 5 was not used	0	1	0000	0001
48	30	Standard Timing Identification 6 was not used	0	1	0000	0001
49	31	Standard Timing Identification 6 was not used	0	1	0000	0001
50	32	Standard Timing Identification 7 was not used	0	1	0000	0001
51	33	Standard Timing Identification 7 was not used	0	1	0000	0001
52	34	Standard Timing Identification 8 was not used	0	1	0000	0001
53	35	Standard Timing Identification 8 was not used	0	1	0000	0001

Grouping (rightmost column):
- Bytes 0–7: Header
- Bytes 8–17: Vender/ Product ID
- Bytes 18–19: EDID Version/ Revision
- Bytes 20–24: Display Parameter
- Bytes 25–34: Color Characteristic
- Bytes 35–37: Established Timings
- Bytes 38–53: Standard Timing ID

APPENDIX A. Enhanced Extended Display Identification Data (EEDID^{TM})   2/3

Byte# (decimal)	Byte# (HEX)	Field Name and Comments	Value (HEX)		Value (binary)	
54	36	1440 X 900 @ 60Hz mode : pixel clock = 96.21MHz	9	5	1001 0101	Detailed Timing Description #1
55	37	(Stored LSB first)	2	5	0010 0101	
56	38	Horizontal Active = 1440 pixels	A	0	1010 0000	
57	39	Horizontal Blanking = 320 pixels	4	0	0100 0000	
58	3A	Horizontal Active : Horizontal Blanking = 1440 : 320	5	1	0101 0001	
59	3B	Vertical Avtive = 900 lines	8	4	1000 0100	
60	3C	Vertical Blanking = 12 lines	0	C	0000 1100	
61	3D	Vertical Active : Vertical Blanking = 900 : 12	3	0	0011 0000	
62	3E	Horizontal Sync. Offset = 64 pixels	4	0	0100 0000	
63	3F	Horizontal Sync Pulse Width = 32 pixels	2	0	0010 0000	
64	40	Vertical Sync Offset = 3 lines , Sync Width = 3 lines	3	3	0011 0011	
65	41	Horizontal Vertical Sync Offset/Width upper 2bits = 0	0	0	0000 0000	
66	42	Horizontal Image Size = 367.2㎜(367)	6	F	0110 1111	
67	43	Vertical Image Size = 229.5㎜(230)	E	6	1110 0110	
68	44	Horizontal & Vertical Image Size	1	0	0001 0000	
69	45	Horizontal Border = 0	0	0	0000 0000	
70	46	Vertical Border = 0	0	0	0000 0000	
71	47	Non-interlaced,Normal display,no stereo,Digital separate sync,H/V pol negatives	1	8	0001 1000	
72	48	Detailed Timing Descriptor #2	0	0	0000 0000	Detailed Timing Description #2
73	49		0	0	0000 0000	
74	4A		0	0	0000 0000	
75	4B		0	0	0000 0000	
76	4C		0	0	0000 0000	
77	4D		0	0	0000 0000	
78	4E		0	0	0000 0000	
79	4F		0	0	0000 0000	
80	50		0	0	0000 0000	
81	51		0	0	0000 0000	
82	52		0	0	0000 0000	
83	53		0	0	0000 0000	
84	55		0	0	0000 0000	
85	55		0	0	0000 0000	
86	56		0	0	0000 0000	
87	57		0	0	0000 0000	
88	58		0	0	0000 0000	
89	59		0	0	0000 0000	
90	5A	Detailed Timing Descriptor #3	0	0	0000 0000	Detailed Timing Description #3
91	5B		0	0	0000 0000	
92	5C		0	0	0000 0000	
93	5D		F	E	1111 1110	
94	5E		0	0	0000 0000	
95	5F	L	4	C	0100 1100	
96	60	G	4	7	0100 0111	
97	61	P	5	0	0101 0000	
98	62	h	6	8	0110 1000	
99	63	i	6	9	0110 1001	
100	64	l	6	C	0110 1100	
101	65	i	6	9	0110 1001	
102	66	p	7	0	0111 0000	
103	67	s	7	3	0111 0011	
104	68	L	4	C	0100 1100	
105	69	C	4	3	0100 0011	
106	6A	D	4	4	0100 0100	
107	6B	LF	0	A	0000 1010	

APPENDIX A. Enhanced Extended Display Identification Data (EEDID^{TM})   3/3

Byte# (decimal)	Byte# (HEX)	Field Name and Comments	Value (HEX)		Value (binary)	
108	6C	Detailed Timing Descriptor #4	0	0	0000 0000	
109	6D		0	0	0000 0000	
110	6E		0	0	0000 0000	
111	6F		F	E	1111 1110	
112	70		0	0	0000 0000	
113	71	L	4	C	0100 1100	
114	72	P	5	0	0101 0000	Detailed
115	73	1	3	1	0011 0001	Timing
116	74	7	3	7	0011 0111	Description
117	75	1	3	1	0011 0001	#4
118	76	W	5	7	0101 0111	
119	77	P	5	0	0101 0000	
120	78	5	3	5	0011 0101	
121	79	–	2	D	0010 1101	
122	7A	T	5	4	0101 0100	
123	7B	L	4	C	0100 1100	
124	7C	0	3	0	0011 0000	
125	7D	2	3	2	0011 0010	
126	7E	Extension flag = 00	0	0	0000 0000	Extension Flag
127	7F	Checksum	D	2	1101 0010	Checksum