SPECIFICATION

For

APPROVAL

(¨) Preliminary Specification

( ) Final Specification

Title	15.1” XGA TFT LCD

BUYER NAME	
MODEL NAME	

SUPPLIER	LG Electronics Inc.
MODEL NAME	LM151X1-G

SIGNATURE	DATE
/	
/	
/	

Please return 1 copy for our confirmation
with your signature and comments.

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CONTENTS

Record of Revision

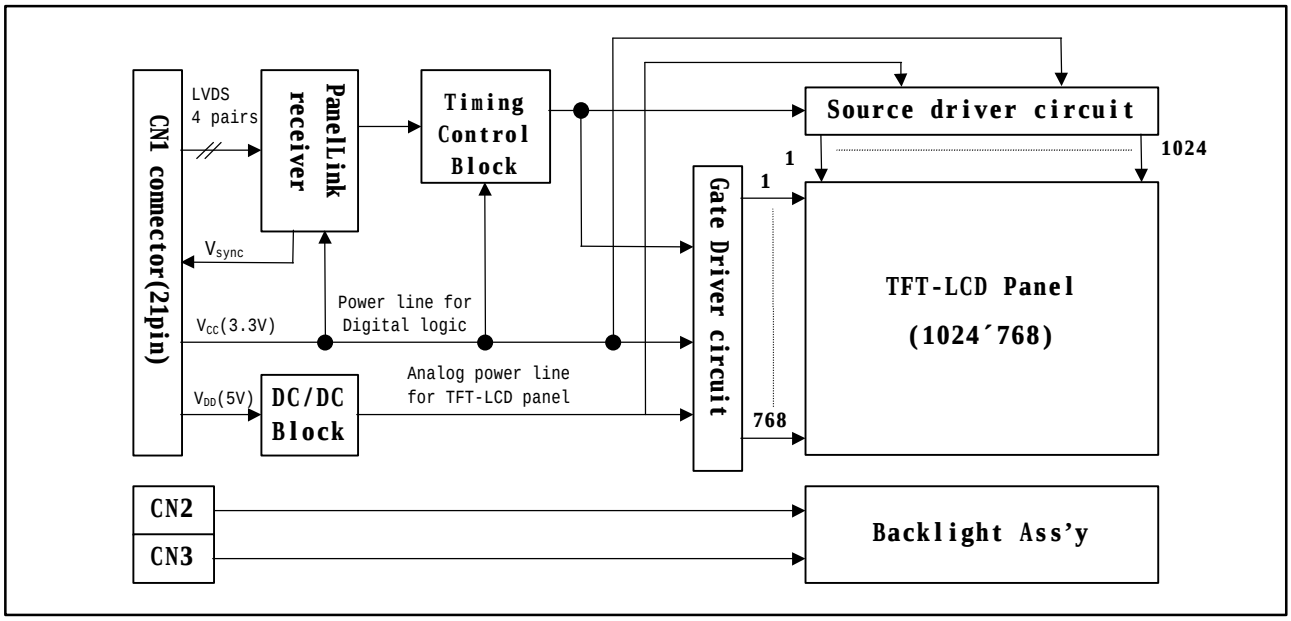
Revision Version	Date	DESCRIPTION
0.10	Aug. 3, 1998	Preliminary
1.00	Aug. 24, 1998	Final (Updated Packing Assembly Drawing)
1.1	October 19, 1998	Final Updated (Updated Electrical Specifications- Balck Light Input Voltage, Kick-Off Voltage Life Time Deleted Incoming Inspection Standard)

1. General Description

The LG Electronics model LM151X1-G LCD is a Color Active Matrix Liquid Crystal Display with an integral Cold Cathode Fluorescent Tube(CCFT) back light system. The matrix employs a-Si Thin Film Transistor as the active element. It is a transmissive type display operating in the normally white mode. This TFT-LCD has a 15.1 inch diagonally measured active display area with XGA resolution(768 vertical by 1024 horizontal pixel array). Each pixel is divided into Red, Green and Blue sub-pixels or dots which are arranged in vertical stripes. Gray scale or the brightness of the sub-pixel color is determined with a 8-bit gray scale signal for each dot, thus, presenting a palette of more than 16,581,375 colors.

LM151X1-G has been designed to apply the interface method that enables low power, high speed low EMI. Panellink must be used as a LVDS(Low Voltage Differential Signaling) chip.

The LM151X1-G LCD is intended to support applications where high brightness, wide viewing angle, high color saturation, and high color depth are very important. In combination with the vertical arrangement of the sub-pixels, the LM151X1-G characteristics provide an excellent flat panel display for office automation products such as monitors.



General Display Characteristics

The following are general features of the model LM151X1-G LCD;

Active display area	15.1 inches(38cm) diagonal
Outsize dimensions	352.6w * 264.6h * 16.0t(typ)mm(Without Inverter)
Pixel pitch	0.30 mm X 0.30 mm
Pixel format	1024 horiz. By 768 vert. pixels RGB vertical stripe arrangement
Color depth	8-bit, 16,581,375 colors
Display operating mode	transmissive mode, normally white
Surface treatments	hard coating(3H), anti-glare treatment of the front polarizer

2. Maximum Ratings

The following are maximum values which, if exceeded, may cause faulty operation or damage to the unit.

Table 1 ABSOLUTE MAXIMUM RATINGS

Parameter	symbol	Values		Units	Notes
		Min.	Max.		
Power Input Voltage	V_{DD}	0	+5.5	V_{DC}	at 25 C
	V_{CC}	-0.3	+3.6	V_{DC}	at 25 C
Operating Temperature	T_{OP}	0	+50	deg.	
Storage Temperature	T_{ST}	-20	+60	deg.	1

Note: 1. The Relative Humidity must not exceed 95% non-condensing at temperatures of 40¡ Éor less. At temperatures greater than 40¡ Éthe wet bulb temperature must not exceed 39¡ É

3. Electrical Specifications

The LM151X1-G requires three power inputs. Two inputs are employed to power the LCD electronics and to drive the voltages to drive the TFT array and liquid crystal. And the third input which powers the backlight CCFL, is typically generated by an inverter. The inverter is an external unit to the LCD.

Table 2 ELECTRICAL CHARACTERISTICS:

Parameter	Symbol	Values			Units	Notes
		Min.	Typ.	Max.		
MODULE:						
Power Supply Input Voltage	V_{DD}	4.75	5.0	5.25	V_{DC}	1
	V_{CC}	3.15	3.3	3.45	V_{DC}	
Power Supply Input Current	I_{VDD}	-	800	1,200	mA	2
	I_{Vcc}	-	350	700	mA	
Power Supply Kick-Off Current	I_{VDD}	-	-	2.0	A	3
	I_{Vcc}	-	-	1.0	A	
BACK LIGHT						
Back light Input voltage	V_{BL}	685	585	570	V_{RMS}	
Backlight Input Current	I_{BL}	3.0	8.0	9.0	mA	4
Lamp Kick-Off Voltage		-	-	880	V_{RMS}	At 25 C
		-	-	1145	V_{RMS}	At 0 C 5
		1290	-	-	V_{RMS}	At 25 C
		1660	-	-	V_{RMS}	At 0 C 6
Operating Frequency	F_{BL}	30	50	80	KHz	
Life time		25,000	40,000	-	hours	7

Notes: 1. V_{DD} input is the analog power supply for the TFT array and liquid crystal, and V_{CC} input is the digital logic power supply for the LCD electronics.
2. The input current shall be measured at V_{DD} of 5.0Vdc at 25¡ Érefresh rate of 60Hz, and clock frequency of 65MHz under 9 gray pattern.
3. Power supply kick off current means power supply input current at the moment of LCM power on. This current is higher then the current at the normal operating condition and it lasts for 50~100ms.
4. The backlight input current shall be measured at the ground cable and does not include loss of external inverter.
5. Voltages at both ends of the lamp.
6. Voltages at secondary side of transformer using the balancing capacitor, 22pF in inverter. These voltages can be changed with customer's own design of inverter.
7. The life time is defined as the time at which brightness of lamp is 50% compare to that of initial value at the typical lamp current.

4. Optical Specifications

Optical characteristics are determined after the unit has been 'ON' and stable for approximately 30 minutes in a dark environment at 25C. The values specified are at an approximate distance 50cm from the LCD surface at a viewing angle of Φ and θ equal to 0° and aperture 1 degree. The test equipment is PhotoResearch Prichard SpectroRadiometer Model 1980B-SC or equivalent. The input signal voltage and timing specification are V_{DD} of 5.0Vdc, AV_{DD} of 3.3Vdc and VESA XGA @60Hz respectively. The input current of backlight is 8mA(F_{BL} = 50KHz) at the ground terminals.

Table 2 OPTICAL CHARACTERISTICS

Parameter	Symbol	Values			Units	Notes
		Min.	Typ.	Max.		
Contrast Ratio	CR	150	200	-		1
Average Brightness, white	SB_{WH}	170	200	-	cd/m^2	2
Brightness Variation	SB_V	-	-	30	%	3
Response Time	Tr		45	60	msec	4
Rise Time	Tr_R	-	10	15		
Decay Time	Tr_D	-	35	45		
CIE Color Coordinates						
Red	x_R	0.600	0.630	0.660		
	y_R	0.310	0.340	0.370		
Green	x_G	0.270	0.300	0.330		
	y_G	0.570	0.600	0.630		
Blue	x_B	0.110	0.140	0.170		
	y_B	0.070	0.100	0.130		
White	x_W	0.300	0.320	0.340		
	y_W	0.320	0.340	0.360		
Viewing Angle by CR ≥ 10					degree, ¡ Æ	5
x axis, right (¥ è=0°)	¥ è	55	60	-		
x axis, left(¥ è=180°)	¥ è	55	60	-		
y axis, up(¥ è=90°)	¥ è	40	45	-		
y axis, down (¥ è=270°)	¥ è	40	45	-		
Half Luminance Angle					degree, ¡ Æ	6
x axis, right (¥ è=0°)	¥ è	50	-	-		
x axis, left(¥ è=180°)	¥ è	50	-	-		
y axis, up(¥ è=90°)	¥ è	40	-	-		
y axis, down (¥ è=270°)	¥ è	30	-	-		
Cross talk		-	-	4	%	7
Flicker		-	-	-30	dB	8
Gamma value		-	-	-		9

Notes 1. Contrast Ratio (CR) is defined mathematically as:

$$\frac{\text{(Surface Brightness with all white pixels)}}{\text{(Surface Brightness with all black pixels)}}$$

Contrast ratio shall be measured at the center of the display (Location 1).

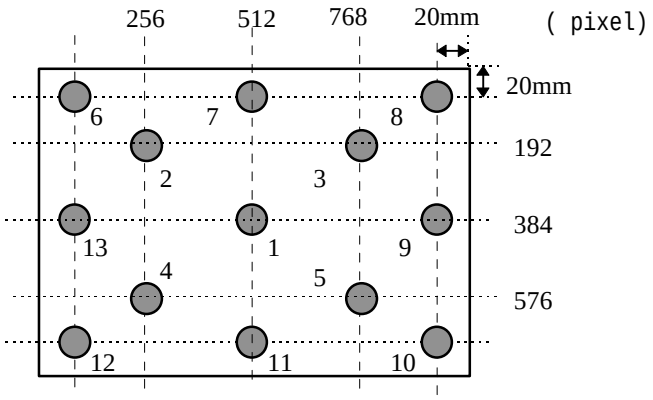
2. Average Brightness is the average of brightness value at location 1 to 5 with all pixels displaying white.

$$B(AVE) = \frac{B1 + B2 + B3 + B4 + B5}{5}$$

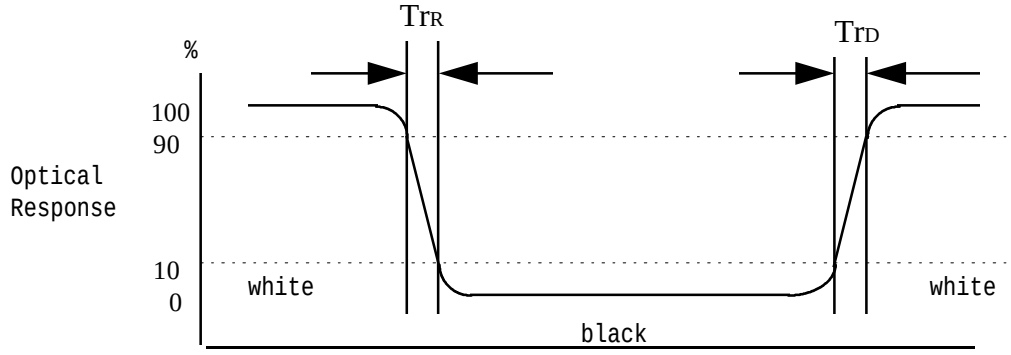
3. The variation in surface brightness, SB_V is defined as :

$$\frac{\text{Maximum } (B_1, B_2, \ldots B_{13}) - \text{Minimum } (B_1, B_2, \ldots B_{13})}{\text{Average } (B_1, B_2, \ldots B_5)} \times 100(\%)$$

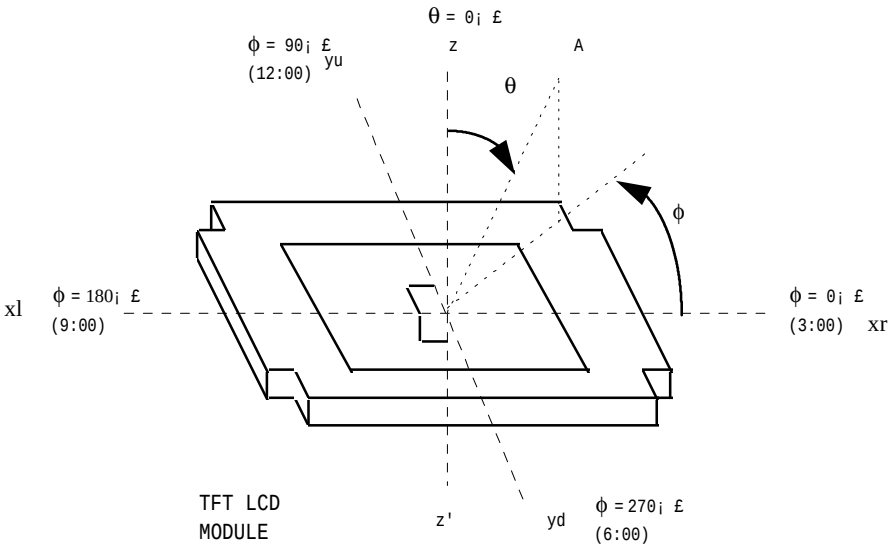
Where B1 to B13 are the brightness with all pixels displaying white at 13 locations.



4. The response time is defined as the following figure and shall be measured by switching the input signal for “black” and “white”.



5. Viewing angle is the angle at which the contrast ratio is greater than 10.



6. Half Luminance Angles

Half Luminance angles are defined as the up, down, left, and right angular boundaries at which the luminance value is 50% of the luminance value measured on-axis.

Measurements shall be done at the center of the display area (Location 1) with an all white image.

7. Cross talk shall be measured at center location.

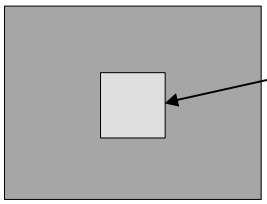
$$\text{Crosstalk Ratio} = \frac{\text{Brightness at pattern A - Brightness at pattern B}}{\text{Brightness at pattern A}}$$

Pattern A

(Mid-gray : Gs(S)=127)

Pattern B

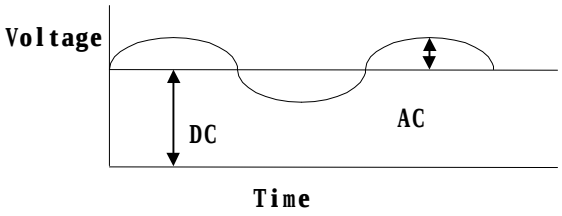
(Background:Gs(S)=0, Rectangular:Gs(S)=127)



8. Flicker shall be measured at the center location.

Test pattern : Pixel pattern
Background RGB gray (0, 0, 0)
Foreground RGB gray (127,127,127)

Test equation : $20 \log \frac{AC(at\ 30Hz)}{DC\ level}$



9. Gamma value

n	Gs(S)	Relative Brightness(%)		Remark
		min	max	
0	0	-	0.67	
1	31	-	1.5	
2	63	1.6	4.3	
3	95	4.4	10.0	
4	127	10.5	18.7	
5	159	21.8	32.5	
6	191	38.5	52.1	
7	223	62.0	76.6	
8	255	100	100	

5. Interface Connections

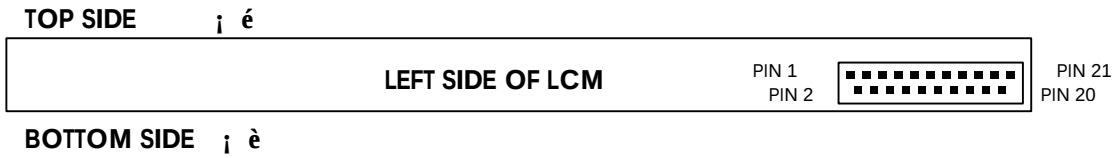
Interface chip as a transmitter, must be used Panellink ,part No. Sil100, designed by Silicon Image Inc. or equivalent.

This LCD employs three interface connections, a 21 pin connector is used for the module electronics and two connectors, a three pin connector, are used for the integral backlight system.
The electronics interface connector is a model FI-WE21P-HF manufactured by JAE. The pin configuration for the connector is shown in the table below.

Table 3 MODULE CONNECTOR PIN CONFIGURATION

Pin	Symbol	Description	Notes
1	GND	System ground	Connect to Vss, see Note 1
2	V_{DD}	Analog power supply for TFT array and liquid	+5.0V
3	V_{DD}	crystal	+5.0V
4	V_{DD}	-	+5.0V
5	GND	-	Connect to Vss, see Note 1
6	GND	System ground	Connect to Vss, see Note 1
7	AGND	System ground	
8	V_{CC}	Analog ground reference for PanelLink	+3.3V
9	R2+	Digital logic power supply for LCD electronics	Red data R0 ~ R7, CLT2, DE
10	R2-	Plus signal of channel 2 (PanelLink)	See Note 3
11	V_{CC}	Minus signal of channel 2 (PanelLink)	+3.3V
12	R1+	Digital logic power supply for LCD electronics	Green data G0 ~ G7, CLT0, CLT1
13	R1-	Plus signal of channel 1 (PanelLink)	See Note 3
14	V_{CC}	Minus signal of channel 1 (PanelLink)	+3.3V
15	R0+	Digital logic power supply for LCD electronics	Blue data B0 ~ B7, H_{sync}, V_{sync}
16	R0-	Plus signal of channel 0 (PanelLink)	See Note 3
17	V_{CC}	Minus signal of channel 0 (PanelLink)	+3.3V
18	RCL+	Digital logic power supply for LCD electronics	Clock
19	RCL-	Plus signal of clock channel (Panel link)	
20	V_{sync}	Minus signal of clock channel (Panel link)	see Note 4
21	NC	Output pin of V_{sync} signal for the customer's usage	
		No connection	

Notes: 1. All GND(ground) pins should be connected together and to Vss which should also be connected to the LCD's metal frame.
2. All V_{DD} and V_{CC}(power input) pins should be connected together respectively.
3. Refer to appendix 1 regarding signal mapping.
4. When V_{CC} is on and H_{sync} is reside, V_{sync} can be detected. Customers can control analog power of LCM(V_{DD}) using this signal(V_{sync}). Customer can connect with GND or V_{CC}.



The backlight interface connector is a model BHR-03VS-1, manufactured by JST. The mating connector part number is SM02(8.0)B-BHS-1-TB or equivalent. The pin configuration for the connector is shown in the table below.

Table 4 BACKLIGHT CONNECTOR PIN CONFIGURATION

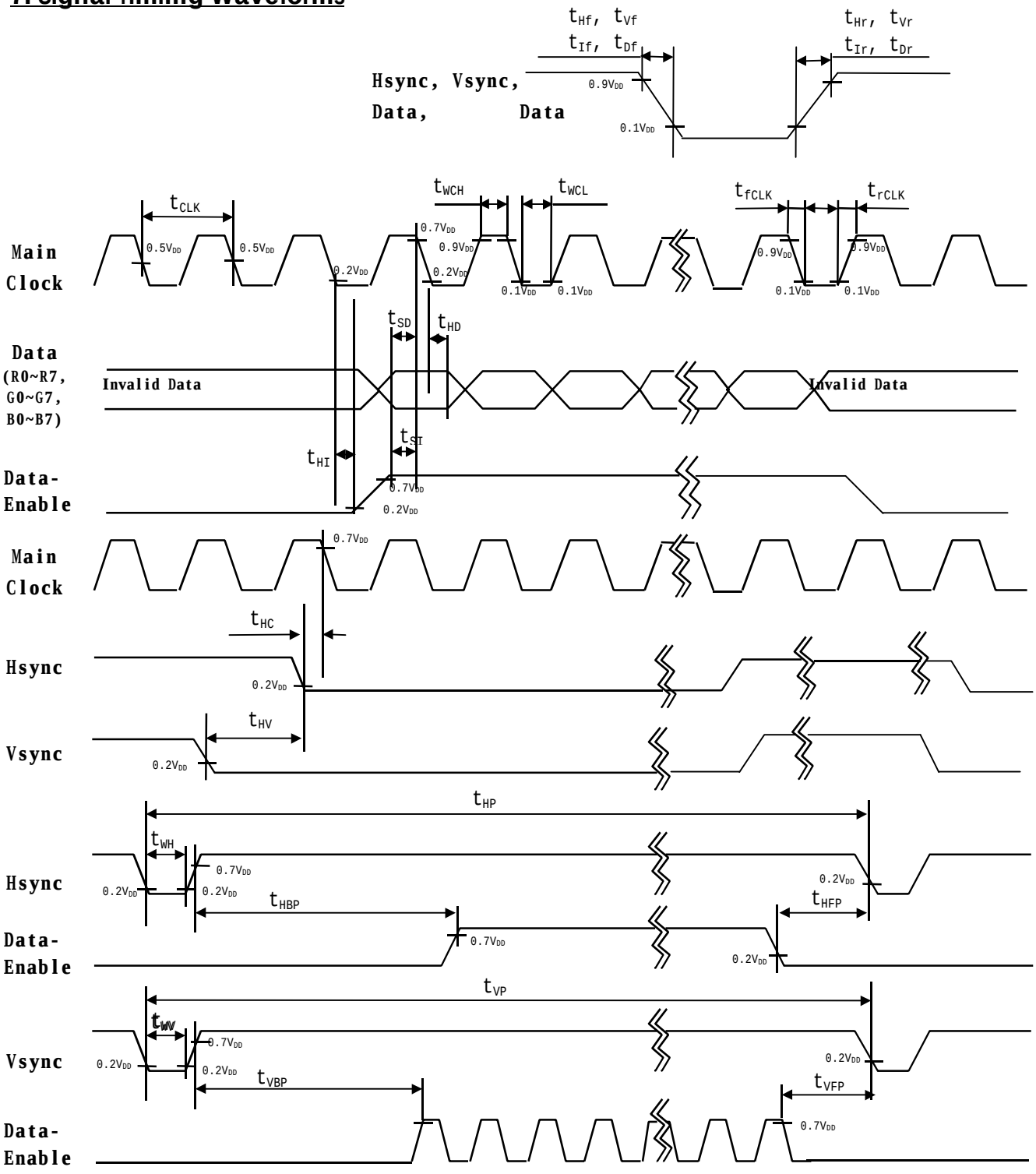
Pin	Symbol	Description	Notes
1	HV	Lamp power input	1
2	NC	No connect	
3	LV	Ground	2

Notes: 1. The input power terminal is colored pink. Ground pin color is light pink.
2. The backlight ground should be common with Vss.

6. Signal Timing Specification(Between PanelLink & Timing Controller)

Parameter		Symbol	Value			Units	Notes
			Min.	Typ.	Max.		
Main Clock	Frequency	$f_{CLK}(=1/t_{CLK})$	64.35	65.0	65.65	MHz	65MHz ± 1%
	High duration	t_{wcH}	0.4 t_{CLK}	0.5 t_{CLK}	0.6 t_{CLK}	ns	
	Low duration	t_{wcL}	0.4 t_{CLK}	0.5 t_{CLK}	0.6 t_{CLK}	ns	
	Rise Time	t_{rCLK}	-	-	2.3	ns	
	Fall Time	t_{fCLK}	-	-	1.4	ns	
Data	Set-up duration	t_{SD}	5.0	-	-	ns	for f_{CLK}
	Hold duration	t_{HD}	5.0	-	-	ns	for f_{CLK}
	Rise Time	t_{Dr}	-	-	4.5	ns	C_L =15pF
	Fall Time	t_{Df}	-	-	2.1	ns	C_L =15pF
Hsync	Period	t_{HP}	16.25	20.7	-	§ Á	
			1056	1344	-	clock	
	Pulse Width	t_{WH}	8	136	-	clock	
	Rise/Fall Time	t_{Hr}, t_{Hf}	-	-	5	ns	
Vsync	Period	t_{VP}		16.7	-	msec	
			777	806	-	lines	
	Pulse Width	t_{WV}	1	6	-	lines	
	Rise/Fall Time	t_{Vr}, t_{Vr}	-	-	10	ns	
Data Enable	Set-up duration	t_{SI}	5	-	-	ns	for f_{CLK}
	Hold duration	t_{HI}	5	-	-	ns	for f_{CLK}
	Horizontal Back Porch	t_{HBP}	8	160	-	clock	
	Horizontal Period		1056	1344	-	clock	
	Horizontal Front porch	t_{HFP}	8	24	-	clock	
	Vertical Back Porch	t_{VBP}	1	29	-	lines	
	Vertical Period		777	806	-	lines	
	Vertical Front porch	t_{VFP}	1	3	-	lines	
	Rise/Fall Time	t_{Ir}, t_{If}	-	-	5	ns	
Hsync- Clock phase difference		t_{HC}	t_{CLK}-10	-	t_{wcL}	ns	
Hsync-Vsync phase difference		t_{HV}	-	-	t_{HP}-t_{WH}	ns	

7. Signal Timimg Waveforms



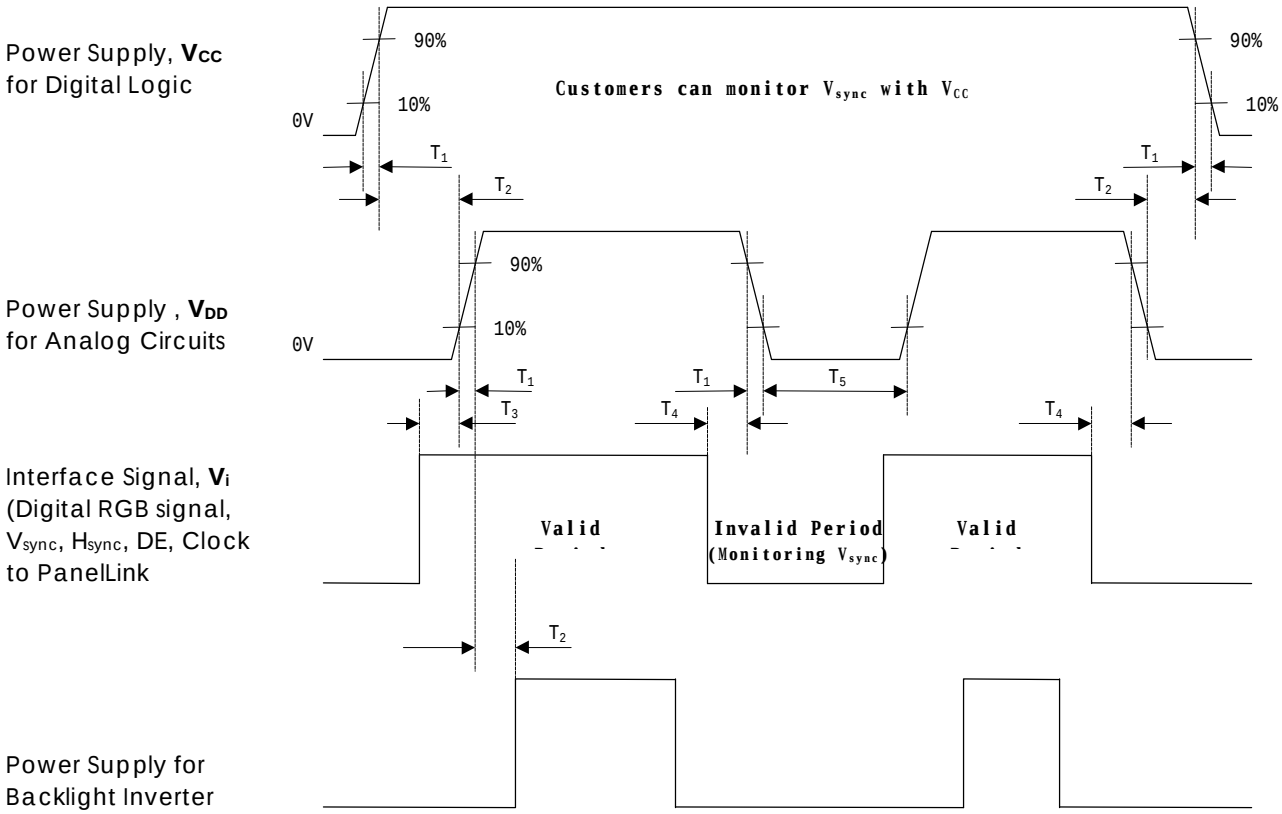
8. Color Input Data Reference

The brightness of each primary color(red, green and blue) is based on the 8-bit gray scale data input for the color; the higher the binary input, the brighter the color. The table below provides a reference for color versus data input.

Table 5 COLOR DATA REFERENCE

Color		Input Color Data																							
		Red								Green								Blue							
		MSB							LSB	MSB							LSB	MSB							LSB
		R7	R6	R5	R4	R3	R2	R1	R0	G7	G6	G5	G4	G3	G2	G1	G0	B7	B6	B5	B4	B3	B2	B1	B0
Basic Colors	Black	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red(255)	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Green(255)	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
	Blue(255)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
	Cyan	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
	Magenta	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1
	Yellow	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	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	1	1	1	1	1	1
Red	Red(000) Dark	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red(001)	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red(002)	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	Red(253)	1	1	1	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red(254)	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red(255) Bright	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Green	Green(000)Dark	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Green(001)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0
	Green(002)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
		:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	Green(253)	0	0	0	0	0	0	0	0	1	1	1	1	1	1	0	1	0	0	0	0	0	0	0	0
	Green(254)	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0
	Green(255)Bright	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
Blue	Blue(000) Dark	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Blue(001)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	Blue(002)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
		:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	Blue(253)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	0	1
	Blue(254)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	0
	Blue(255) Bright	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1

9. Power Sequences



- T_1 : 10 ns ~ 20 ms (Rise time, Fall time of power supplies)
- T_2 : 100 ms (min.)
- T_3 : ~100 ms
- T_4 : 100 ms (max.)
- T_5 : 500 ms (min.)

Notes: 1. Please avoid floating state of interface signal at invalid period.

2. When the interface signal is invalid or no signal, be sure to pull down the analog power supply for LCD panel, **V_{DD}** to 0V. Invalid signal with V_{DD} for a long period of time, cause permanent damage to LCD panel.

3. BackLight inverter power must be turn on after power supply for LCD and interface signal are valid.

10. Mechanical Characteristics

The chart below provides general mechanical characteristics for the model LM151X1-G LCD. Please refer to appendix 2 regarding the detailed mechanical drawing of the LCD module.

Parameter	Value	Symbol	Notes
Outside dimension Width Height Thickness	 352.6 (typ) 264.6 (typ) 16.0 (typ)	mm	
Bezel area Width Height	 311.2 234.4	mm	
Active area Width Height	 307.2 230.4	mm	
Weight	1500(typ) 1600 (max)	gram	
Front surface of LCD	Hard coating 3H. Anti-glare treatment of the front polarizer	-	

11. Environmental Specification

No	Test ITEM		Conditions
1	Temperature	Operating Non-operating	0 C ~ 50 C -20 C ~ 60 C
2	Humidity	Operating Non-operating	20% ~ 80% RH (non-condensing) 5% ~ 95% RH (38.7¡ Émaximum wet bulb temperature)
3	Altitude		Operating : 12,000ft Storage : 40,000ft
4	Vibration test (non-operating)		Waveform : Random Vibration level : 1.5G RMS Bandwidth : 10~200Hz Duration : X, Y, Z 20 min one time each direction
5	Shock test (non-operating)		Shock level : 100G Waveform: half sine wave, 2ms Direction : X, Y, Z one time each direction

12. Designation of Lot Mark

a) Lot Mark

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

A, B : DIVISION CODE
C, D, E : MODEL CODE
F : YEAR
G : MONTH
H, I, J, K, L : SERIAL NO.

Note : 1. YEAR

YEAR	89	90	91	92	93	94	95	96	97	98	99
Mark	9	0	1	2	3	4	5	6	7	8	9

2. MONTH

MONTH	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jun.	Aug.	Sep.	Oct.	Nov.	Dec.
Mark	1	2	3	4	5	6	7	8	9	0	N	D

b) Location of Lot Mark

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.

13. Packing Form

a) Package quantity in one box : 8 pcs

b) Box Size : 587mm¡ 408mm¡ 278mm

Note : 1. Please, refer to appendix 3 regarding the detailed packing assembly drawing.

14. PRECAUTIONS

Please pay attention to the followings when you use this TFT-LCD module with Back-light unit.

1)You must mount Module using mounting holes arranged in 4 corners.

2) Be sure to turn off the power when connecting or disconnecting the circuit.

3) Note that the polarizers are easily damaged. Pay attention not to scratch or press this surface with any hard object.

4) When the LCD surface become dirty, please wipe it off with a soft material. (ie. cotton ball)

5) Protect the module from the ESD as it may damage the electronic circuit (C-MOS). Make certain that treatment person's body are grounded through wrist bend.

6) Do not disassemble the module and be careful not to incur a mechanical shock that might occur during installation. It may cause permanent damage.

7) Do not leave the module in high temperatures, particularly in areas of high humidity for a long time.

8) The module not be expose to the direct sunlight.

9) Avoid contact with water as it may a short circuit within the module.

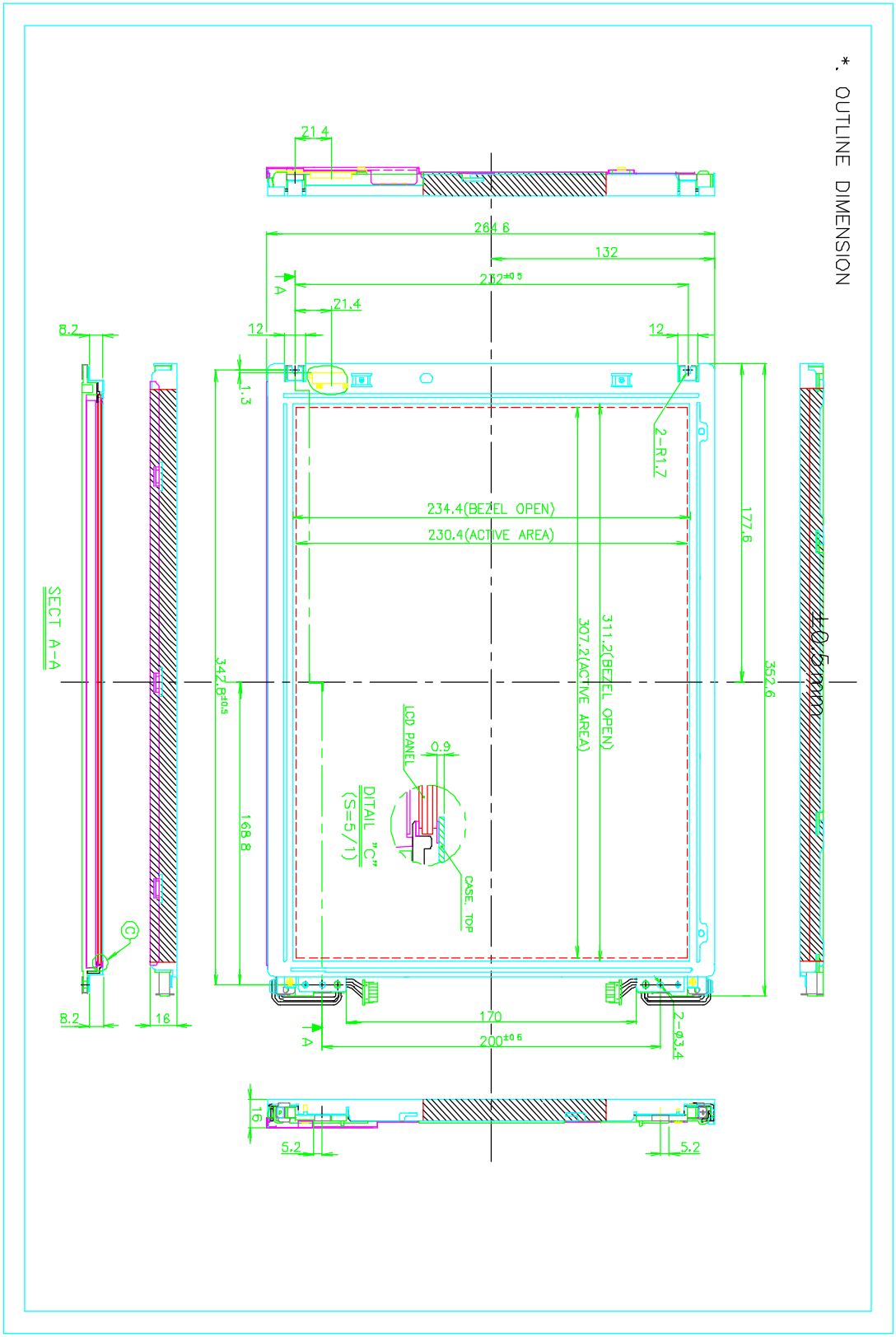
10) Do not apply invalid signal, especially very high frequency data clock and Hsync. Invalid signal causes improper shutdown of DC/DC converter in LCM or permanent damage to LCD module.(If DC/DC converter in LCM is in shutdown state, LCM shows only white screen. Then please turn off and on once LCM power.)

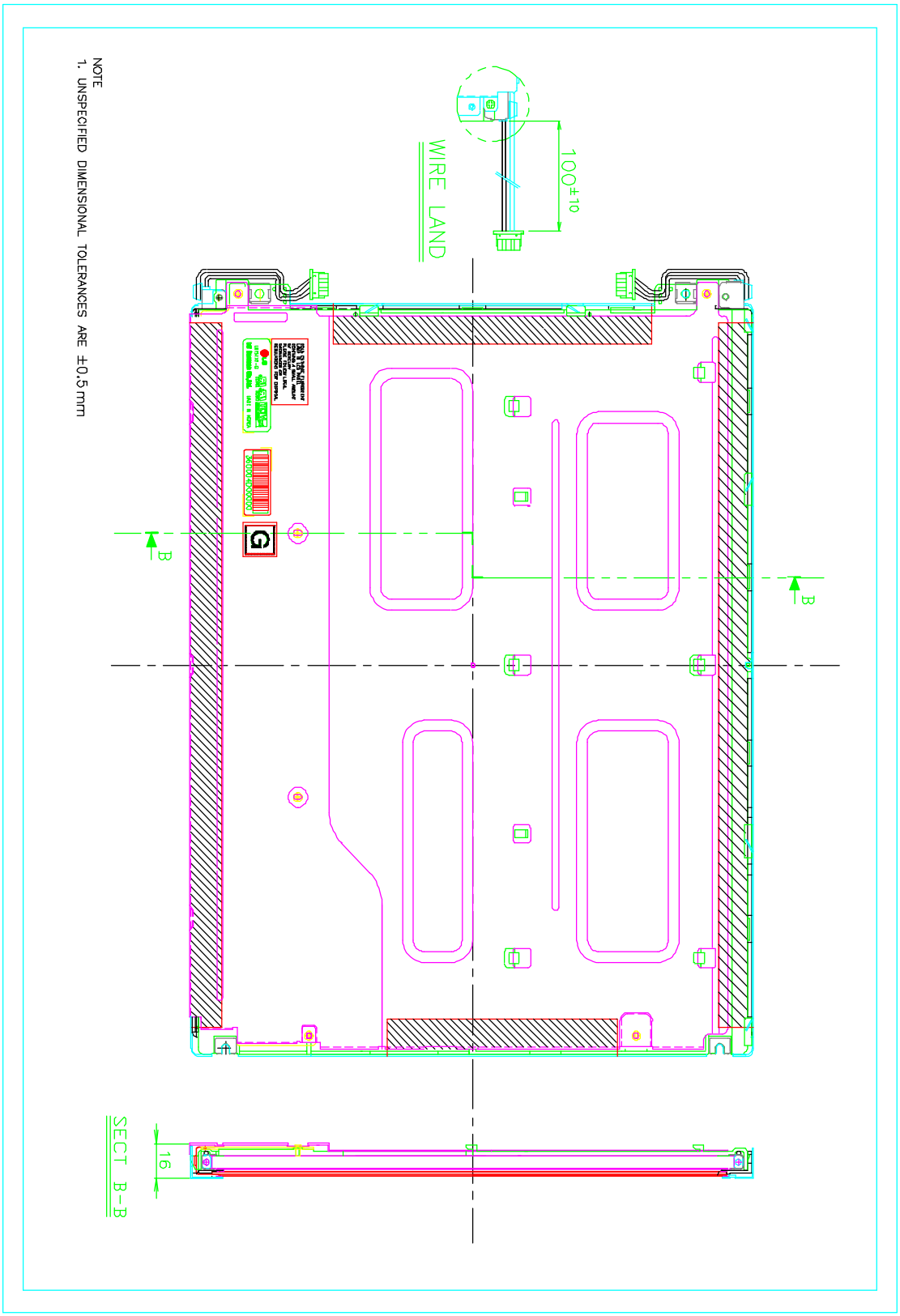
15. APPENDIX 1 : Required Signal Assignment for PanelLink Tx, Sil100

Pin #	Pin Name	Require Signals	Pin #	Pin Name	Require Signals
1	DE	Data Enable	33	EXT_RES	Voltage Swing Adjust
2	LP	Horizontal Sync (Hsync)	34	SUPV	Input threshold voltage control
3	FLM	Vertical Sync (Vsync)	35	PD	Power Down Mode (Active Low)
4	GND	Digital Ground	36	SYNCOUT	PLL Synchronization Signal
5	CLT0	Should be connected to pin 36 (SYNCOUT)	37	P23	R7 (MSB)
6	CLT1	-	38	P22	R6
7	CLT2	-	39	VCC	Core Digital V_{CC}
8	CLT3	-	40	P21	R5
9	DEDGE	Clock latching edge for data	41	P20	R4
10	VCC	Core Digital V_{CC}	42	P19	R3
11	CEDGE	Clock latching edge for DE, Hsync, Vsync, CLT	43	P18	R2
12	DCLK	Pixel Clock	44	P17	R1
13	HALFCK	-	45	GND	Digital Ground
14	SYNC_CONT	-	46	P16	R0 (LSB)
15	PLLCK	Test Pin	47	P15	G7 (MSB)
16	GND	Digital Ground	48	P14	G6
17	PGND	PLL Analog Ground	49	P13	G5
18	PVCC	PLL Analog V_{CC}	50	P12	G4
19	AGND	Transmitter Analog Ground	51	P11	G3
20	TXC-	Low Voltage swing differential output clock pair	52	P10	G2
21	TXC+	Low Voltage swing differential output clock pair	53	IVCC	Power Supply for Input Signal (3.3V or 5V)
22	AVCC	Transmitter Analog V_{CC}	54	P9	G1
23	TX0-	Low Voltage swing differential output data pairs	55	P8	G0 (LSB)
24	TX0+	Low Voltage swing differential output data pairs	56	P7	B7 (MSB)
25	AGND	Transmitter Analog Ground	57	P6	B6
26	TX1-	Low Voltage swing differential output data pairs	58	P5	B5
27	TX1+	Low Voltage swing differential output data pairs	59	P4	B4
28	AVCC	Transmitter Analog V_{CC}	60	P3	B3
29	TX2-	Low Voltage swing differential output data pairs	61	P2	B2
30	TX2+	Low Voltage swing differential output data pairs	62	P1	B1
31	AGND	Transmitter Analog Ground	63	P0	B0 (LSB)
32	VCC	Core Digital V_{CC}	64	GND	Digital Ground

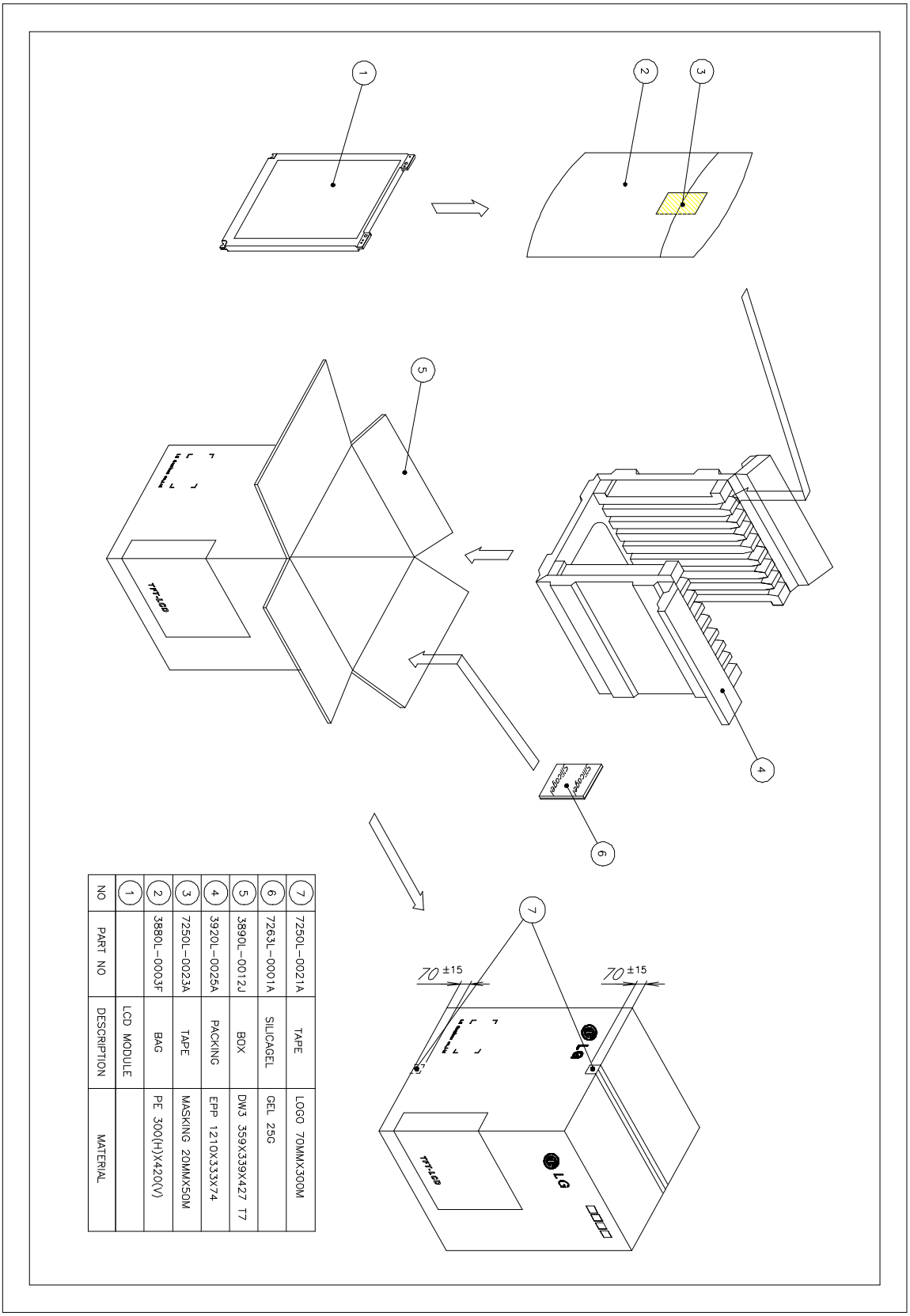
Notes : Refer to Sil100 Data Sheet for detail descriptions.

16. APPENDIX 2 : Outline Drawing



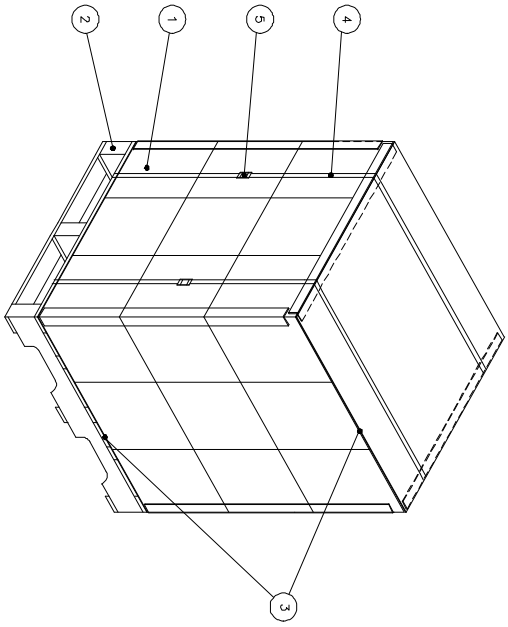

NOTE
1. UNSPECIFIED DIMENSIONAL TOLERANCES ARE ±0.5mm
WIRE LAND
100±10
B
B
SECT B-B
16

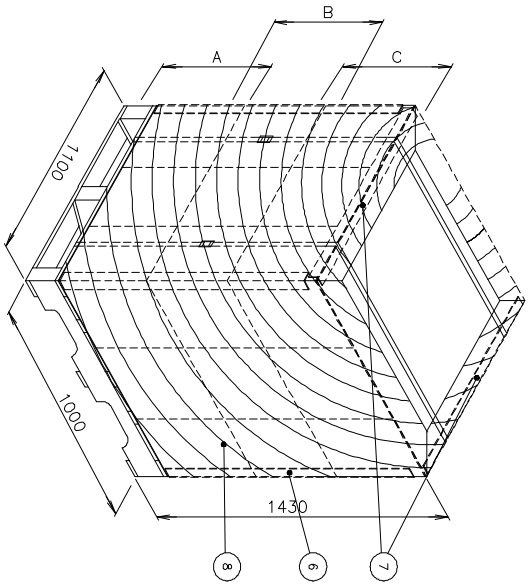
17. APPENDIX 3 : Packing Assembly Drawing



NO	PART NO	DESCRIPTION	MATERIAL
1		LCD MODULE	
2	3880L-0003F	BAG	PE 300(H)X420(V)
3	7250L-0023A	TAPE	MASKING 20MMX50M
4	3920L-0025A	PACKING	EPP 1210X333X74
5	3890L-0012J	BOX	DW3 359X339X427 T7
6	7263L-0001A	SILICAGEL	GEL 25G
7	7250L-0021A	TAPE	LOGO 70MMX300M

27 UNITS / 1 PALLET





NO	PART NO	DESCRIPTION	MATERIAL
①	3921L-0020A	PACKING ASSY	
②	3930L-0002A	PALLET	WOOD
③	3922L-0004A	PACKING SHEET	SW
④	4770L-P001A	BAND, PACKING	P.P
⑤	4770L-C002A	BAND, CLIP	STEEL
⑥	3858L-0001E	SHEET, ANGLE	PAPER
⑦	3858L-0001C	SHEET, ANGLE	PAPER
⑧	3980L-F001A	WRAP.FILM	P.E