

SPECIFICATION FOR APPROVAL

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() Preliminary Specification
 (♦) Final Specification

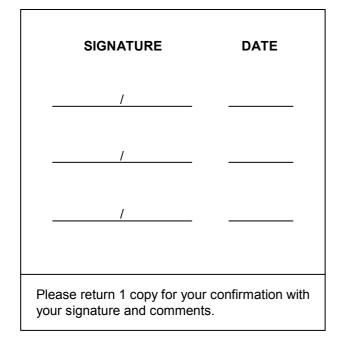
Title

15.4" WSXGA+ TFT LCD

BUYER	General
MODEL	

SUPPLIER	LG.Philips LCD CO., Ltd.			
*MODEL	LP154WE2			
SUFFIX	TLA1			

*When you obtain standard approval, please use the above model name without suffix



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RECORDS OF REVISIONS

Revision No	Revision Date	Page	Description	EDID ver
0.0	Jul, 25. 2006	-	First Draft	-
0.1	Sep,21. 2006	p.3, p.4	Electrical & Optical characteristics updated	0.0
		p.5	Mechanical characteristics updated	-
1.0	Dec, 01. 2006	-	Final	
		p.23	International Standards Description Updated.	0.0
		p.24	Packing Updated	0.0

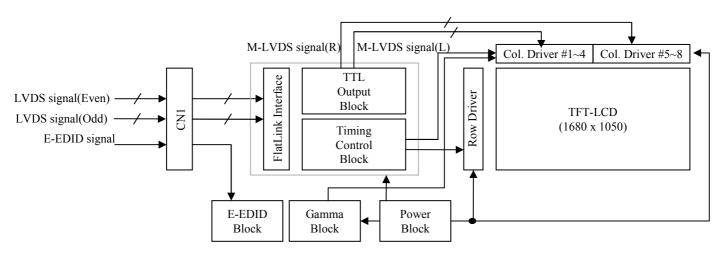


1. General Description

The LP154WE2(TLA1) is a Color Active Matrix Liquid Crystal Display with an integral Cold Cathode Fluorescent Lamp(CCFL) backlight 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 15.4 inches diagonally measured active display area with WSXGA+ resolution(1680 vertical by 1050 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 6-bit gray scale signal for each dot, thus, presenting a palette of more than 262,144 colors.

The LP154WE2(TLA1) has been designed to apply the interface method that enables low power, high speed, low EMI. Flat Link must be used as a LVDS(Low Voltage Differential Signaling) chip.

The LP154WE2(TLA1) is intended to support applications where thin thickness, low power are critical factors and graphic display are important. In combination with the vertical arrangement of the sub-pixels, the LP154WE2(TLA1) characteristics provide an excellent flat display for office automation products such as Notebook PC.



General Features

Active screen size	15.4 inches diagonal
Outline Dimension	344.0(H)[typ.] x 222.0(V)[typ.] x 6.5(D) mm[Max.]
Pixel Pitch	0.19725 mm x 0.19725mm
Pixel format	1680 horiz. By 1050 vert. Pixels RGB stripes arrangement
Color depth	6-bit, 262,144 colors
Luminance, white	200 cd/m ² (typ.), 5p average
Power Consumption	5.87W (Typ.)
Weight	590g (Max.)
Display operating mode	Transmissive mode, normally white
Surface treatments	Antiglare treatment of the front polarizer, HAZE 44%



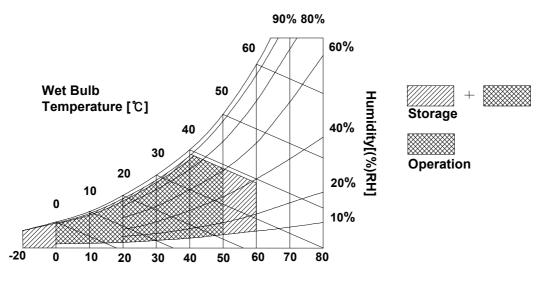
2. Absolute Maximum Ratings

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

Doromotor	oumbol	Values		Linita	Notos	
Parameter	symbol	Min.	Max.	Units	Notes	
Power Input Voltage Operating Temperature Storage Temperature Operating Ambient Humidity Storage Humidity	V _{CC} T _{OP} T _{ST} H _{OP} H _{ST}	-0.3 0 -20 10 10	4.0 50 60 90 90	Vdc °C °C %RH %RH	At 25 ± 5°C 1 1 1 1	

Table 1. ABSOLUTE MAXIMUM RATINGS

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 [°C]



3. Electrical Specifications

3-1. Electrical Characteristics

The LP154WE2(TLA1) requires two power inputs. One is employed to power the LCD electronics and to drive the TFT array and liquid crystal. The second input which powers the CCFL, is typically generated by an inverter. The inverter is an external unit to the LCD.

Parameter	Symbol	Values			Units	Notes
Falameter	Symbol	Min.	Тур.	Max.	Units	NOLES
MODULE Power Supply Input Voltage Power Supply Input Current Differential Impedance Power Consumption	V _{cc} I _{cc} Zm P _c	3.0 - 90	3.3 525 100 1.73	3.6 605 110 2.18	Vdc mA ohm Watts	1 2 1
LAMP Operating Voltage Operating Current Established Starting Voltage at 25 °C at 0 °C Operating Frequency Discharge Stabilization Time Power Consumption Life Time	V _{BL} I _{BL} V _S f _{BL} T _S P _{BL}	660 3.0 - 45 - 12,000	690 6.0 - - 60 4.14 -	820 7.0 1200 1380 80 3 4.55 -	V _{RMS} mA V _{RMS} V _{RMS} kHz Minutes Watts Hrs	3 4 5 6 7 8

Table 2. ELECTRICAL CHARACTERISTICS

Note : The design of the inverter must have specification for the lamp in LCD Assembly.

The performance of the Lamp in LCM, for example life time or brightness, is extremely influenced by the characteristics of the DC-AC inverter. So all the parameters of an inverter should be carefully designed so as not to produce too much leakage current from high-voltage output of the inverter. When you design or order the inverter, please make sure unwanted lighting caused by the mismatch of the lamp and the inverter (no lighting, flicker, etc) power occurs. When you confirm it the LCD Accombly

the lamp and the inverter(no lighting, flicker, etc) never occurs. When you confirm it, the LCD Assembly should be operated in the same condition as installed in you instrument.

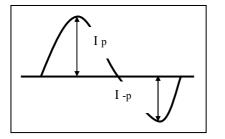
- 1. The specified current and power consumption are under the V_{CC}=3.3V, 25°C,fv=60Hz condition whereas Mosaic pattern is displayed and fv is the frame frequency.
- 2. This impedance value is needed to proper display and measured from LVDS T_x to the mating connector.
- 3. The variance of the voltage is $\pm 10\%$.
- 4. The voltage above V_S should be applied to the lamps for more than 1 second for start-up. Otherwise, the lamps may not be turned on.



- 5. The output of the inverter must have symmetrical (negative and positive) voltage waveform and symmetrical current waveform.(Asymmetrical ratio is less than 10%) Please do not use the inverter which has asymmetrical voltage and asymmetrical current and spike wave. Lamp frequency may produce interface with horizontal synchronous frequency and as a result this may cause beat on the display. Therefore lamp frequency shall be as away possible from the horizontal synchronous frequency and from its harmonics in order to prevent interference.
- 6. It is defined the brightness of the lamp after being lighted for 5 minutes as 100%. T_s is the time required for the brightness of the center of the lamp to be not less than 95%.
- 7. The lamp power consumption shown above does not include loss of external inverter. The used lamp current is the lamp typical current.
- 8. The life is determined as the time at which brightness of the lamp is 50% compared to that of initial value at the typical lamp current on condition of continuous operating at $25 \pm 2^{\circ}$ C.
- Do not attach a conducting tape to lamp connecting wire.
 If the lamp wire attach to a conducting tape, TFT-LCD Module has a low luminance and the inverter has abnormal action. Because leakage current is occurred between lamp wire and conducting tape.
- 10. 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 $\sqrt{2}$ $\pm10\%.$
- * Inverter output waveform had better be more similar to ideal sine wave.



* Asymmetry rate:				
I _p – I _{–p} / I _{rms} * 100%				
* Distortion rate				
l _p (or l _{_p}) / l _{rms}				



3-2. Interface Connections

Interface chip must be used FlatLink, part No. THC63LVDF823A(Transmitter made by Thine Inc or equivalence.

This LCD employs two interface connections, a 30-pin-connector is used for the module electronics and the other connector is used for the integral backlight system.

The electronics interface connector is a model FI-XB30SR-HF11 manufactured by JAE or equivalent. The pin configuration for the connector is shown in the table below.

Pin	Symbol	Description	Notes
$ \begin{array}{c} 1\\ 2\\ 3\\ 4\\ 5\\ 6\\ 7\\ 8\\ 9\\ 10\\ 11\\ 12\\ 13\\ 14\\ 15\\ 16\\ 17\\ 18\\ 19\\ 20\\ 21\\ 22\\ 23\\ 24\\ 25\\ 26\\ 27\\ 28\\ 29\\ 30\\ \end{array} $	GND Vcc VEDID NC CLKEDID DATAEDID Odd_A1M Odd_A1P GND Odd_A2M Odd_A2P GND Odd_A2P GND Odd_A3M Odd_A3P GND Odd_CLKM Odd_CLKP GND Even_A1M Even_A1P GND Even_A2M Even_A2M Even_A2P GND Even_A3M Even_A3P GND Even_CLKM Even_CLKM	Ground Power(3.3V) Power(3.3V) DDC 3.3V Power No connect DDC clock DDC data Differential Signal Differential Signal Ground Differential Signal Ground Differential Signal Ground Differential Signal Ground Differential Signal Ground Differential Signal Differential Signal Ground Differential Signal Differential Signal	1. Interface chips 1.1 LCD : DTML012(LCD Controller) including LVDS Receiver 1.2 System : THC63LVD823 or equivalent *Pin to Pin compatible with TI LVDS 2. Connector 2.1 LCD : FI-XB30SR-HF11,JAE or equivalent 2.2 Mating : FI-X30M or equivalent. 2.3 Connector pin arrangement 1

Table 3. MODULE CONNECTOR PIN CONFIGURATION(LVDS)



The backlight interface connector is a model BHSR-02VS-1, manufactured by JST or Compatible . The mating connector part number is SM02B-BHSS-1 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	Power supply for lamp (High voltage side)	1
2	LV	Power supply for lamp (Low voltage side)	1

Notes : 1. The high voltage side terminal is colored Sky-blue, The low voltage side terminal is Black.



3-3. Signal Timing Specifications

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.

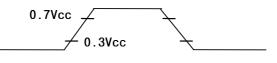
	ITEM	SYMBOL	MIN	TYP.	MAX.	UNIT	NOTES
	Frequency	f _{CLK}	55	61	69	MHz	
Dclk	Width-Low	t _{wcL}	3	-	-	ns	
DCIK	Width-High	t _{wCH}	3	-	-	ns	
	Duty	D	0.4	0.5	0.6		$D = t_{CLKH} / t_{CLK}$
	Period	t _{HP}	864	952	1288		
Hsync	Width	t _{wH}	8	-	-	t _{HP}	
	Period	t _{vP}	1057	1066	1082	t _{HP}	
Vsync	Width active	t _{wv}	1		-	t _{HP}	
	Set up Time	t _{sı}	3	-	-	ns	For Dclk
	Hold Time	t _{HI}	3	-	-		
DE	Horizontal Back Porch	t _{HBP}	8	-	-	t _{CLK}	
	Horizontal Front Porch	t _{HFP}	8	-	-		
	Vertical Back Porch	t _{VBP}	5	-	-	t _{HP}	
	Vertical Front Porch	t _{VFP}	1	-	-		
DATA	Set up Time	t _{sD}	3	-	-	200	For Dclk
DATA	Hold Time	t _{HD}	3	-	-	ns	
Input	High	t _{rH}	0.7Vcc				
Voltage	Low	t _{rL}			0.3Vcc		

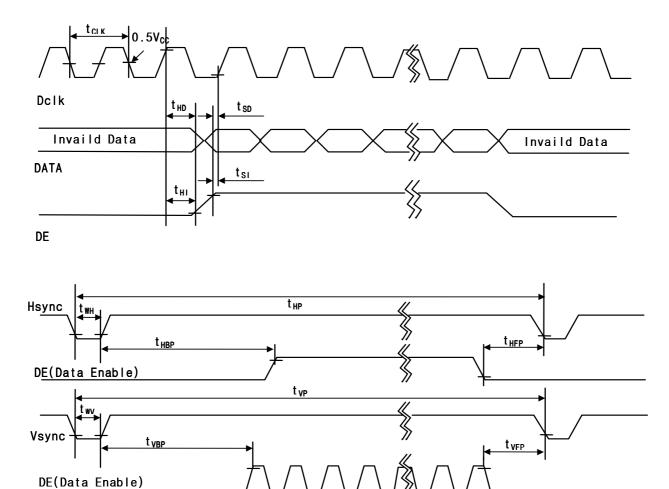
Table 6. Timing Table



3-4. Signal Timing Waveforms

Dclk, Hsync, Vsync, DE, DATA







3-5. Color Input Data Reference

The brightness of each primary color(red,green and blue) is based on the 6-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.

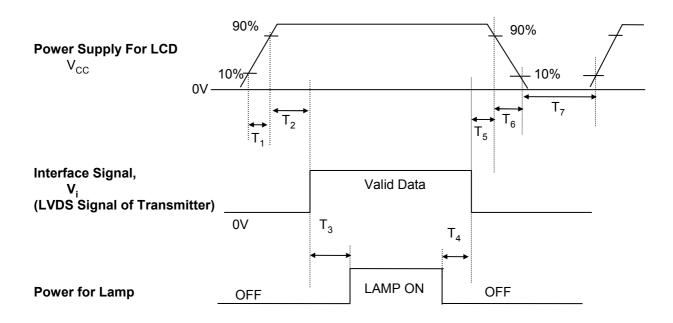
									Inp	ut Co	lor D	ata							
	Color	MSE	3	Re	ed		LSB	MSI	3	Gre	een		LSB	MSE	3	BI	ue		LSB
		R5	R4	R3	R2	R1	R0	G5	G4	G3	G2	G1	G0	B5	B4	B3	B2	B1	B0
Basic Colors	Black Red(63) Green(63) Blue(63) Cyan Magenta Yellow White	0 1 0 0 1 1	0 1 0 0 1 1	0 1 0 0 1 1	0 1 0 0 1 1	0 1 0 0 1 1	0 1 0 0 1 1	0 0 1 0 1 0 1	0 0 1 0 1 0 1	0 1 0 1 0 1	0 0 1 0 1 0 1	0 0 1 0 1 0 1	0 0 1 0 1 0 1	0 0 1 1 0 1	0 0 1 1 1 0	0 0 1 1 0	0 0 1 1 1 0	0 0 1 1 1 0	0 0 1 1 1 0 1
Red	Red(00) Dark Red(01) Red(02) : Red(61) Red(62) Red(63) Bright	0 0 : 1 1	0 0 : 1 1	0 0 : 1 1	0 0 : 1 1	0 0 1 : 0 1	0 1 0 : 1 0 1	0 0 : 0 0 0	0 0 : 0 0 0	0 0 : 0 0 0	0 0 : 0 0 0	0 0 : 0 0 0	0 0 : 0 0 0	0 0 : 0 0 0	0 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	Green(00)Dark Green(01) Green(02) : Green(61) Green(62) Green(63)Bright	0 0 : 0 0 0	0 0 : 0 0 0	0 0 : 0 0 0	0 0 0 : 0 0 0	0 0 0 : 0 0 0	0 0 0 : 0 0 0	0 0 : 1 1	0 0 1 1	0 0 : 1 1	0 0 1 1	0 0 1 : 0 1	0 1 0 : 1 0 1	0 0 : 0 0 0	0 0 0 : 0 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	Blue(00) Dark Blue(01) Blue(02) : Blue(61) Blue(62) Blue(63) Bright	0 0 : 0 0 0	0 0 : 0 0 0	0 0 : 0 0 0	0 0 : 0 0 0	0 0 : 0 0 0	0 0 : 0 0 0	0 0 : 0 0 0	0 0 : 0 0 0	0 0 : 0 0 0	0 0 : 0 0 0	0 0 : 0 0 0	0 0 : 0 0 0	0 0 : 1 1	0 0 : 1 1 1	0 0 : 1 1 1	0 0 : 1 1 1	0 0 1 : 0 1	0 1 0 : 1 0 1

Table 7. COLOR DATA REFERENCE

Ver. 1.0



3-6. Power Sequence



Parameter		Values		Units
Farameter	Min.	Тур.	Max.	Units
$\begin{bmatrix} T_1 \\ T_2 \\ T_3 \end{bmatrix}$	- 0 200		10 50	ms ms ms
T ₄	200	-	-	ms
T ₅ T ₆	0-	-	50 10	ms ms
T ₇	400	-	-	ms

- Notes : 1. Please avoid floating state of interface signal at invalid period.
 - 2. When the interface signal is invalid, be sure to pull down the power supply for LCD V_{cc} to 0V.
 - 3. Lamp power must be turn on after power supply for LCD and interface signal are valid.



LP154WE2 Liquid Crystal Display

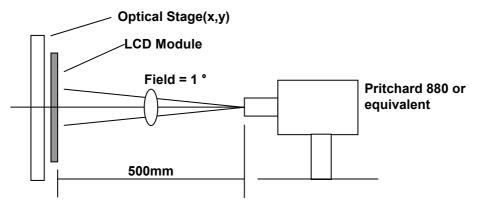
Product Specification

4. Optical Specification

Optical characteristics are determined after the unit has been 'ON' and stable for approximately 30 minutes in a dark environment at 25 °C. The values specified are at an approximate distance 50cm from the LCD surface at a viewing angle of Φ and θ equal to 0 °.

FIG. 1 presents additional information concerning the measurement equipment and method.

FIG. 1 Optical Characteristic Measurement Equipment and Method



Ta=25 °C, V _{CC} =3.3V, f _V =60Hz	
Dclk=60.9MHz, I _{BI} =6.0mA)	

(

	Table 8. OF		ARACTERIS		k=60.9MHz	, I _{BL} =6.0mA)
Parameter	Symbol		Values		Units	Notes
	Cymbol	Min.	Тур.	Max.	01113	Notes
Contrast Ratio	CR	-	500	-		1
Surface Luminance, white	L _{WH}	170	200		cd/m ²	2
Luminance % uniformity	δ_{WHITE}	-	-	1.6		3
Response Time	Tr					4
Rise Time + Decay Time	Tr _{R+} Tr _D	-	16	30	ms	
CIE Color Coordinates Red Green Blue	XR YR XG YG XB	0.560 0.315 0.296 0.514 0.127	0.590 0.345 0.326 0.544 0.157	0.620 0.375 0.356 0.574 0.187		±0.03
White	YB XW YW	0.111 0.283 0.299	0.141 0.313 0.329	0.171 0.343 0.359		
Viewing Angle x axis, right(φ=0°) x axis, left (φ=180°) y axis, up (φ=90°) y axis, down (φ=270°)	θr θl θu θd	60 60 50 50	65 65 55 55		degree	5
Gray Scale	-	-	2.2	-		6

Ver. 1.0



LP154WE2 Liquid Crystal Display

Product Specification

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

Surface Luminance with all white pixels

Contrast Ratio =

Surface Luminance with all black pixels

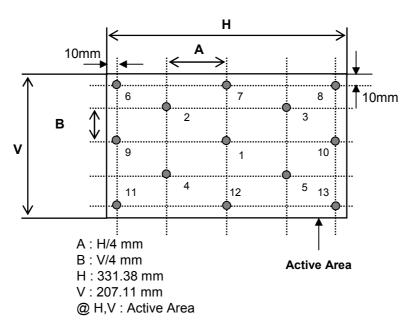
- Surface luminance is the 5point (1~5)average across the LCD surface 50cm from the surface with all pixels displaying white. For more information see FIG 2. When I_{BL}= 6.0mA, L_{WH=}200cd/m²(typ.)
- 3. Luminance % uniformity is measured for 13 point For more information see FIG 2. δ WHITE = Maximum(LN1,LN2,, LN13) \div Minimum(LN1,LN2,, LN13)
- 4. Response time is the time required for the display to transition from white to black(Rise Time, Tr_R) and from black to white(Decay Time, Tr_D). For additional information see FIG 3.
- 5. Viewing angle is the angle at which the contrast ratio is greater than 10. The angles are determined for the horizontal or x axis and the vertical or y axis with respect to the z axis which is normal to the LCD surface. For more information see FIG 4.
- 6. Gray scale specification

*	fv=60Hz
---	---------

Gray Level	Luminance(%) (Typ.)
LO	0.12
L7	0.98
L15	3.78
L23	9.95
L31	19.6
L39	32.8
L47	50.1
L55	71.8
L63	100



FIG. 2 Luminance



<measuring point for luminance variation/surface luminance>

FIG. 3 Response Time

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

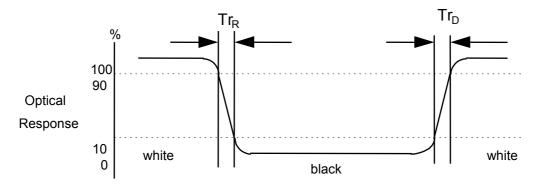
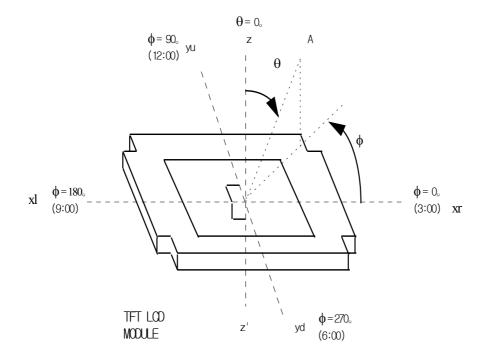




FIG. 4 Viewing angle

<dimension of viewing angle range>



A : Eye of Observer



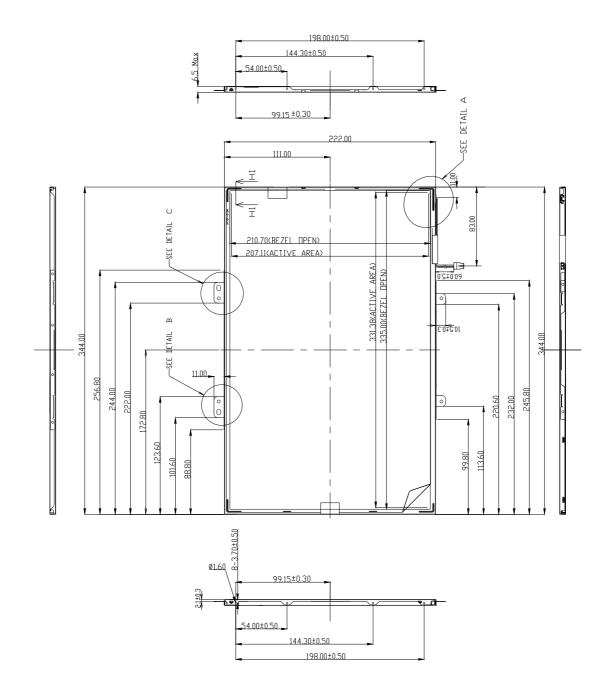
5. Mechanical Characteristics

The contents provide general mechanical characteristics for the model LP154WE2(TLA1). In addition the figures in the next page are detailed mechanical drawing of the LCD.

Surface Treatment	590g(Max) Antiglare treatment of the front polarizer,HAZE(44%)					
Weight(approximate)	590a	(Max)				
Active display area	Vertical	207.11mm				
Active display area	Horizontal	331.38mm				
Bezel area	Vertical	210.7 \pm 0.5mm				
Derelaree	Horizontal	335.0 ± 0.5 mm				
	Depth	6.2 ^{mm} (Typ), 6.5 ^{mm} (Max)				
Outside dimensions	Vertical	$222.0\pm0.5 \text{mm}$				
	Horizontal	$344.0\pm0.5\text{mm}$				



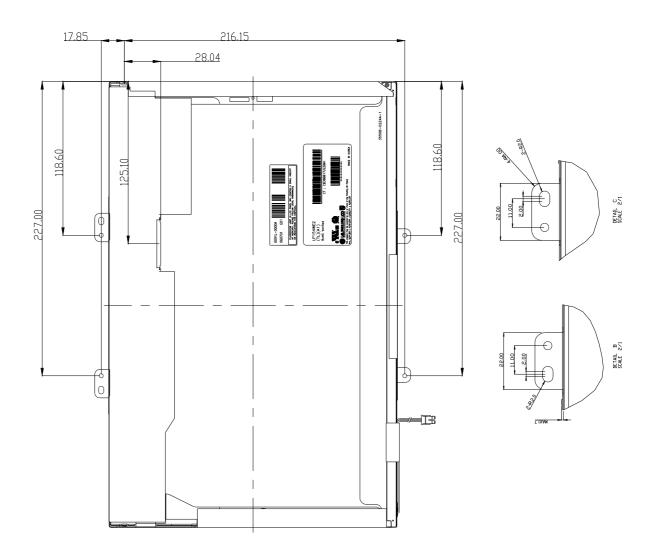
<FRONT VIEW>



Note. unspecified dimensional tolerance are +/-0.5mm



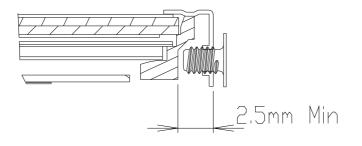
<REAR VIEW>



Note. unspecified dimensional tolerance are +/-0.5mm



<DETAIL DESCRIPTION OF SIDE MOUNTING SCREW>



*SCREW(8EA) TORQUE : 2.0kgf.cm max *Screw Hole Depth : 2.5mm min *Screw Length : max 2.5, min2.0

Note. unspecified dimensional tolerance are +/-0.5mm



6. Reliability

Environment test condition

No.	Test Item	Conditions
1	High temperature storage test	Ta= 60°C 240h
2	Low temperature storage test	Ta= -20°C 240h
3	High temperature operation test	Ta= 50°C 50%RH 240h
4	Low temperature operation test	Ta= 0°C 240h
5	Vibration test (non-operating)	Sine wave, 10 ~ 500 ~ 10Hz, 1.5G, 0.37oct/min 3 axis, 1hour/axis
6	Shock test (non-operating)	Half sine wave, 180G, 2ms one shock of each face (i.e. run 180G 2ms for all six faces)
7	Altitude operating storage / shipment	0 - 10,000 feet(3,048m) 0 - 40,000 feet(12,192m)

{ Result Evaluation Criteria }

There should be no change which might affect the practical display function when the display quality test is conducted under normal operating condition.



7. International Standards

7-1. Safety

- a) UL 60950-1:2003, First Edition, Underwriters Laboratories, Inc., Standard for Safety of Information Technology Equipment.
- b) CAN/CSA C22.2, No. 60950-1-03 1st Ed. April 1, 2003, Canadian Standards Association, Standard for Safety of Information Technology Equipment.
- c) EN 60950-1:2001, First Edition, European Committee for Electrotechnical Standardization(CENELEC) European Standard for Safety of Information Technology Equipment.

7-2. EMC

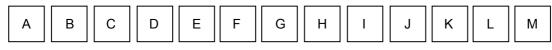
- a) ANSI C63.4 "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electrical Equipment in the Range of 9kHZ to 40GHz. "American National Standards Institute(ANSI), 1992
- b) C.I.S.P.R "Limits and Methods of Measurement of Radio Interface Characteristics of Information Technology Equipment." International Special Committee on Radio Interference.
- c) EN 55022 "Limits and Methods of Measurement of Radio Interface Characteristics of Information Technology Equipment." European Committee for Electrotechnical Standardization.(CENELEC), 1998 (Including A1: 2000)



8. Packing

8-1. Designation of Lot Mark

a) Lot Mark



A,B,C : SIZE(INCH)
E : MONTH

D : YEAR F ~ 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	Мау	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mark	1	2	3	4	5	6	7	8	9	А	В	С

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.

8-2. Packing Form

- a) Package quantity in one box : 20 pcs
- b) Box Size : 437mm × 369mm × 339mm

9. PRECAUTIONS

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

9-1. 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 the 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 are not describe 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 polarizers 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 determined to the polarizer.)
- (7) When the surface becomes dusty, please wipe gently with absorbent cotton or other soft materials like chamois soaks 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.

9-2. OPERATING PRECAUTIONS

- (1) The spike noise causes the mis-operation of circuits. It should be lower than following voltage : $V=\pm 200 \text{mV}(\text{Over and under shoot voltage})$
- (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) Module has high frequency circuits. Sufficient suppression to the electromagnetic interference shall be done by system manufacturers. Grounding and shielding methods may be important to minimized the interference.



9-3. 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.

9-4. PRECAUTIONS FOR STRONG LIGHT EXPOSURE

Strong light exposure causes degradation of polarizer and color filter.

9-5. 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°C and 35°C 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.

9-6. 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[™]) 1/3

	LP154WE2-TLA1 EDID Ver0.0(35)_06082	1			2006.08.21
Byte#	Field Name and Comments		lue	Value	
(HEX)			EX)	(binary)	
00	Header	0	0	0000 0000	
01	Header	F	F	1111 1111	
02	Header	F	F	1111 1111	
03	Header	F	F	1111 1111	Header
04	Header	F	F	1111 1111	
05	Header	F	F	1111 1111	
06	Header	F	F	1111 1111	
07		0 3	0	0000 0000	
08 09	EISA manufacturer code(3 Character ID) = LPL Compressed ASCII		2	0011 0010	
		0	C	0000 1100	
0A	Panel Supplier Reserved - Product code	0	0	0000 0000	
0B	(Hex, LSB first)	С	D	1100 1101	
00	LCD Module Serial No. = 0 (If not used)	0	0	0000 0000	Vender/
0D	LCD Module Serial No. = 0 (If not used)	0	0	0000 0000	Product ID
0E	LCD Module Serial No. = 0 (If not used)	0	0	0000 0000	
0F	LCD Module Serial No. = 0 (If not used)	0	0	0000 0000	
10	Week of Manufacture = 00	0	0	0000 0000	
11	Year of Manufacture = 2006	1	0	0001 0000	
12	EDID Structure version # = 1	0	1	0000 0001	EDID Version
13	EDID Revision # = 3	0	3	0000 0011	Revision
14	Video Input Definition = Digital I/P,non TMDS CRGB	8	0	1000 0000	
15	Max H image size(cm)=33.138cm(33)	2	1	0010 0001	Display
16	Max V image size(cm)=20.711cm(21)	1	5	0001 0101	Parameter
17	Display gamma =2.2	7	8	0111 1000	
18	Feature support(DPMS) = Active off, RGB Color	0	Α	0000 1010	
19	Red/Green low Bits	1	9	0001 1001	
1A	Blue/White Low Bits	4	5	0100 0101	
1B	Red X = 0.590	9	7	1001 0111	
1C	Red Y = 0.345	5	8	0101 1000	
1D	Green X = 0.326	5	3	0101 0011	Color
1E	Green Y = 0.544	8	B	1000 1011	Characterist
1F	Blue X = 0.157	2	8	0010 1000	
20	Blue Y = 0.141	2	4	0010 0100 0101 0000	
21 22	White X = 0.313 White Y = 0.329	5	0		
		5	4	0101 0100	Ectablish -
23 24	Established Timing I = 00h(If not used)	0	0	0000 0000	Established
	Established Timing II = 00h(If not used)	0	0	0000 0000	Timings
25	Manufacturer's Timings = 00h(If not used)	0			
26	Standard Timing Identification 1 was not used	0	1	0000 0001	
27	Standard Timing Identification 1 was not used	0	1	0000 0001	
28	Standard Timing Identification 2 was not used	0	1	0000 0001	
29	Standard Timing Identification 2 was not used	0	1	0000 0001	
2A	Standard Timing Identification 3 was not used	0	1	0000 0001	
2B	Standard Timing Identification 3 was not used	0	1	0000 0001	
2C	Standard Timing Identification 4 was not used	0	1	0000 0001	Standard
2D	Standard Timing Identification 4 was not used	0	1	0000 0001	Timing ID
2E	Standard Timing Identification 5 was not used	0	1	0000 0001	
2F	Standard Timing Identification 5 was not used	0	1	0000 0001	
30	Standard Timing Identification 6 was not used	0	1	0000 0001	
31	Standard Timing Identification 6 was not used	0	1	0000 0001	
32	Standard Timing Identification 7 was not used	0	1	0000 0001	
33	Standard Timing Identification 7 was not used	0	1	0000 0001	
34	Standard Timing Identification 8 was not used	0	1	0000 0001	
35	Standard Timing Identification 8 was not used	0	1	0000 0001	



APPENDIX A. Enhanced Extended Display Identification Data (EEDID[™]) 2/3

(HEX) Pried Name and Comments (HEX) (phracy) 36 Pixel Clock/10,000 (LSB) => main clock = 122MHz A B 1010 1000 37 Pixel Clock/10,000 (MSB) / 1600 X 1050 @ 60h; pixel clock = 60.9M; 2 F 001 1111 38 Horizontal Active = 1680 pixels 9 0 1010 1000 34 Horizontal Active = 1050 pixels E 0 1100 0000 36 Vertical Blanking = 24 pixels E 0 1010 0000 36 Vertical Ative = 1050 lines 1 0 0001 0000 37 Pixel Clock/10, 0000 test = 32 pixels 2 0 0100 0000 38 Vertical Ative = 1050 lines 1 0 0000 0000 39 Vertical Sync Offset = 1lines : Sync With = 3 lines 1 0 0000 0000 41 Horizontal Sync Offset = 1lines : Sync With = 3 lines 1 0 0 0000 0000 42 Horizontal Sync Offset = 1lines : Sync With = 3 lines 1 0 0000 0000 43 Vertical Border = 0 0 0 </th <th>Byte#</th> <th></th> <th>Va</th> <th>lue</th> <th>Value</th> <th></th>	Byte#		Va	lue	Value	
B Pixel Clock/10 000 (LSB) = > main clock = 122MHz A B 1010 1000 37 Pixel Clock/10 000 (MSB)/ 1680 x 1050 @ 601;; pixel clock = 60.9µ; 2 F 001 01111 38 Horizontal Active = 1680 pixels E 0 1001 0000 39 Horizontal Active = 1680 pixels E 0 1001 0000 38 Vertical Active = 1050 lines 1 A 0001 0000 30 Vertical Active = 1050 lines 1 A 0001 0000 31 Horizontal Syne, Urerical Blanking 4 0 0100 0000 32 Vertical Active : Vertical Blanking 4 0 0100 0000 33 Uvertical Syne, Offset = 3 pixels 2 0 0100 0000 40 Vertical Syne, Offset = 3 pixels 0 0 0 0 41 Horizontal Syne, Offset = 33,138cm(331) 4 B 0100 0000 42 Horizontal & Vertical Image Size = 30,713mg/s 0 0 0 0 44 Horizontal & Vertical Image Size = 30,714mg/s 0 <th></th> <th>Field Name and Comments</th> <th></th> <th></th> <th></th> <th></th>		Field Name and Comments				
37 Pixel Clock/10.000 (MSB) / 1880 x 1050 @ 601_ pixel clock = 60.94t 2 F 01 001 0101 38 Horizontal Active = 1680 pixels 9 0 0 100 0000 39 Horizontal Active = 1600 lines 1 A 0001 1010 30 Vertical Blanking = 224 pixels E 0 1110 0000 30 Vertical Blanking = 224 pixels E 0 0100 0000 310 Vertical Altive = 1000 lines 1 A 0 0010 0000 32 Vertical Blanking = 16 lines 1 0 0 0100 0000 34 Horizontal Active : Vertical Blanking 4 0 0 0100 0000 35 Horizontal Active : Vertical Blanking 4 0 0 0 0000 0000 36 Vertical Brocher = 1 lines : Sync Width = 24 pixels 4 0 0 0 0000 0000 41 Horizontal & Vertical Brocher = 0 0 0 0000 0000 0 0 42 Horizontal & Vertical Brocher = 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	<u> </u>	Pixel Clock/10.000 (LSB) => main clock = 122MHz	<u>`</u>	<i>,</i>	,	
38 Horizontal Active = 1680 pixels 9 0 1001 0000 39 Horizontal Banking = 224 pixels E 0 1111 0000 38 Vertical Active = 1050 lines 1 A 0001 0000 30 Vertical Active = 1050 lines 1 A 0001 0000 30 Vertical Active = 1050 lines 1 A 0001 0000 30 Vertical Active = 1050 lines 1 A 0001 0000 30 Vertical Active = 1050 lines 1 A 0001 0000 31 Vertical Active = 1050 lines 1 A 0001 0000 32 Vertical Starker 533 pixels 2 0 0000 0000 40 Vertical Styne Chied + 1 lines : Syne Width = 3 lines 1 3 0001 0000 41 Horizontal Marcial Syne Syne Obstew 533 pixels 4 B 0100 0000 42 Horizontal Active = 20.711cm(207) C F 110 0000 0000 43 Detailed Timing Descriptor #2 0 0 0 0000 0000	37		2	F		
By Horizontal Active : Horizontal Blanking = 224 pixels E 0 1110 0000 3A Horizontal Active : Horizontal Blanking 6 0 0110 0000 3B Vertical Ative : Horizontal Blanking 1 A 00001 1000 3C Vertical Blanking = 16 lines 1 A 0001 1000 3C Vertical Ative : Forizontal Signe CuBes 2 0 0100 0000 3F Horizontal Syne CuBes Width = 64 pixels 4 0 0 0 0 0 00000000 #1 40 Vertical Syne CuBes Vidth = 90 pixels 1 0			000000000	000020000		
3A Horizontal Active : Horizontal Blanking 6 0 0 0 0000 000 0001 010 0001 0001 0001 0001 0001 0001 0001 0001 0001 0000 0000 0000 0000 0001 0011 11 4 B 0 <td></td> <td></td> <td>E</td> <td>0</td> <td></td> <td></td>			E	0		
B Vertical Auhe = 1050 lines 1 A 0001 1010 3C Vertical Blanking = 16 lines 1 0 0010 0000 3E Horizontal Syne. Offset = 32 pixels 2 0 0100 0000 3E Horizontal Syne. Offset = 4 pixels 4 0 0100 0000 gft 3F Horizontal Syne. Offset = 4 pixels 4 0 0100 0000 gft 41 Horizontal Syne. Offset = 1 lines : Sync Width = 3 lines 1 3 0001 0001 gft 41 Horizontal Wertical Brage Size = 33.138cm(331) 4 B 0 0 0000 0000 42 Horizontal & Vertical Brage Size 1 0 0 0000 0000 0 43 Detailed Timing Descriptor #2 0 0 00000 0000 0 0 44 Detailed Timing Descriptor #2 0 0 0 0000 0000 0 45 Horizontal Structure Brance sync.HV pol negatives 1 0 0 0 0 0 0 0	3A		6	0	0110 0000	
3C Vertical Blanking = 16 lines 1 0 0001 0000 3D Vertical Alzino, With = 34 pixels 2 0 0100 0000 3F Horizontal Sync. Offset = 32 pixels 2 0 0001 0000 0001 0001 40 Vertical Sync Offset = 42 pixels 4 0 0 0 00000 0000 0000 <td< td=""><td>3B</td><td>°</td><td>1</td><td>А</td><td>0001 1010</td><td></td></td<>	3B	°	1	А	0001 1010	
3D Vertical Acthe : Vertical Blanking 4 0 0100 0000 3E Horizontal Sync. Offset = 32 pixels 2 0 0010 0000 40 Vertical Sync. Offset = 1 lines : Sync. Width = 3 lines 1 3 0001 0000 40 Vertical Sync. Offset = 1 lines : Sync. Width = 3 lines 1 3 0001 0000 42 Horizontal Vertical Sync. Offset = 10::::Sync. Width = 3 lines 1 3 0001 0000 43 Vertical lange Size = 33.138cm(331) 4 8 0100 0000 44 Horizontal Vertical lange Size 1 0 0000 0000 45 Horizontal & Vertical lange Size 0 0 00000 0000 46 Vertical Border = 0 0 0 00000 0000 0000 47 No-interfaced Normal display.or stereo.Digital separate anc.HV pol negatives 1 9 000000000 48 0 0 0 0 0 000000000 #2 49 0 0 0 0 0 000000000 #2	3C		1	0	0001 0000	
3E Horizontal Sync. Offset = 32 pixels 2 0 00100 00000 Descriptor 3F Horizontal Sync. Offset = 1 lines: Sync Width = 3 lines 1 3 0001001001 #1 40 Vertical Sync. Offset/Width upper 2bits = 0 0 0 00000000 #1 41 Horizontal Image Size = 33.138(m(31)) 4 B 00000000 0000 0000 0000 42 Horizontal Barder = 0 0 0 00000 0000 0000 44 Horizontal Barder = 0 0 0 00000 0000 0000 45 Horizontal Barder = 0 0 0 0 00000 0000 46 Detailed Timing Descriptor #2 0 0 0 00000 0000 47 Detailed Timing Descriptor #2 0	3D		4	0	0100 0000	Timing
3F Horizontal Sync Pulse Width = 64 pixels 4 0 0 100 0000 40 Vertical Sync Offset = 1 lines : Sync Width = 3 lines 1 3 0 0000 0000 42 Horizontal Width = 3 sync Offset/Width upper 2bits = 0 0 0 0 0000 0000 42 Horizontal Manage Size = 33.13&cm(331) 4 B 0 1000 1011 43 Vertical Image Size = 33.13&cm(331) 4 B 0 1000 1000 44 Horizontal Border = 0 0 0 0 0000 0000 45 Horizontal Border = 0 0 0 0 0000 0000 46 Vertical Border = 0 0 0 0 0000 0000 47 Non-interfaced.Momai display.no stereo.Digital separate sync.HV pol negatives 1 9 0001 1001 48 0 0 0 0000 0000 0 0 0 0000 0000 47 Non-interfaced.Momai display.no stereo.Digital separate sync.HV pol negatives 1 9 0000 0000 48 0 0 0 0000 0000 0 0 0 00000 0000 44	3E		2	0	0010 0000	-
41 Horizontal Vertical Sync Offset/With upper 2bits = 0 0 0 0 00000000 42 Horizontal Image Size = 33.138cm(331) 4 B 0100 1011 43 Vertical Image Size = 20.711cm(207) C F 1100 10111 44 Horizontal Border = 0 0 0 0000 0000 45 Horizontal Border = 0 0 0 00000000 46 Vertical Border = 0 0 0 00000000 47 Non-interfaced.Nomal diplay.no stereo.Digital separate sync.HV pol negatives 1 9 0000 0000 48 Detailed Tirring Descriptor #2 0 0 00000 0000 44 40 0 0 00000 0000 44 0 0 00000 0000 48 0 0 0 00000 0000 45 0 0 00000 0000 44 0 0 00000 0000 42 0 0 00000 0000 52 0 0 0 00000 0000 55 0	3F		4	0	0100 0000	#1
42 Horizontal Image Size = 33.138cm(331) 4 B Ditol 1011 43 Vertical Image Size = 20.711cm(207) C F 1100 1011 44 Horizontal & Vertical Image Size 1 0 0000 0000 45 Horizontal & Derder = 0 0 0 0000 0000 46 Vertical Border = 0 0 0 0000 0000 47 Non-Interfaced.Nomal dipley.no dereo.Digital separate sync.HV pol negatives 1 0 0000 0000 48 Detailed Timing Descriptor #2 0 0 00000 0000 48 0 0 00000 0000 44 47 Non-Interfaced.Nomal dipley.no dereo.Digital separate sync.HV pol negatives 1 0 00000000 48 Detailed Timing Descriptor #2 0 0 00000000 44 50 0 0 000000000 45 1	40	Vertical Sync Offset = 1 lines : Sync Width = 3 lines	1	3	0001 0011	
42 Horizontal Image Size = 33.138cm(331) 4 B Ditol 1011 43 Vertical Image Size = 20.711cm(207) C F 1100 1011 44 Horizontal & Vertical Image Size 1 0 0000 0000 45 Horizontal & Derder = 0 0 0 0000 0000 46 Vertical Border = 0 0 0 0000 0000 47 Non-Interfaced.Nomal dipley.no dereo.Digital separate sync.HV pol negatives 1 0 0000 0000 48 Detailed Timing Descriptor #2 0 0 00000 0000 48 0 0 00000 0000 44 47 Non-Interfaced.Nomal dipley.no dereo.Digital separate sync.HV pol negatives 1 0 00000000 48 Detailed Timing Descriptor #2 0 0 00000000 44 50 0 0 000000000 45 1	41		0	0	0000 0000	
43 Vertical Image Size = 20.711cm(207) C F 110 0001 0001 44 Horizontal & Vertical Image Size 1 0 0000 0000 45 Horizontal Border = 0 0 0 0000 0000 46 Vertical Border = 0 0 0 0000 0000 0000 47 Non-interfaced.Normal display.no dereo.Digital separate sync.HV pol negatives 1 9 001 0000 0000 48 Detailed Timing Descriptor #2 0 0 00000 0000 0000 40 0 0 00000 0 00000000 0 00000000 42 0 0 00000000 0 00000000 #2 50 0 0 000000000 #2 #2 #2 52 0 0 00000000 #2 #2 #2 53 0 0 00000000 #2 #2 #2 54 0 0 00000000 #2 #2 #2 0 0 00000000 <	42		4	В	0100 1011	
44 Horizontal & Vertical Image Size 1 0 0000 0000 45 Horizontal Border = 0 0 0 0000 0000 46 Vertical Border = 0 0 0 0000 0000 47 Non-interfaced.Nomal display.no stereo.Digital separate sync.HV pol negatives 1 9 0001 1001 48 Detailed Timing Descriptor #2 0 0 0000 0000 4A 0 0 00000 0000 0 0000 0000 44 0 0 00000 0000 0 0 00000 0000 4A 0 0 00000 0000 0 00000 0000 0 4B 0 0 00000 0000 0 00000 0000 0 00000 0000 0 4E 0 0 0 00000 0000 #2 #2 0 0 00000 0000 #2 55 0 0 0 00000 0000 #2 #2 #2 56 0 0 00000 0000 0 <td>43</td> <td></td> <td>С</td> <td>F</td> <td>1100 1111</td> <td></td>	43		С	F	1100 1111	
46 Vertical Border = 0 0	44		1	0	0001 0000	
47 Non-interfaced, Normal display, no stereo, Digital separate sync, H/V pol negatives 1 9 0001 1001 48 Detailed Timing Descriptor #2 0 0 0 0000 0000 49 0 0 0 0000 0000 4A 0 0 0 0000 0000 4B 0 0 0 0000 0000 4C 0 0 0 0000 0000 4E 0 0 0 0000 0000 4F 0 0 0 0000 0000 50 0 0 0 0000 0000 51 0 0 0 0000 0000 52 0 0 0 0000 0000 54 0 0 0 0000 0000 55 0 0 0 0 0000 0000 58 0 0 0 0 0 0 50 0 0 0 0 0	45	-	0	0		
48 Detailed Timing Descriptor #2 0 0 0 0 0000 0000 49 0 0 0 0 0 0000 0000 4A 0 0 0 0 0 0000 0000 4B 0 0 0 0 0 0 0 0000 0000 4C 0	46	Vertical Border = 0	0	0	0000 0000	
49 Control mining Decomposition 44 0 0 0 0000 0000 4A 0 0 0 0000 0000 4B 0 0 0 0000 0000 4C 0 0 0 0000 0000 4D 0 0 0 0000 0000 4E 0 0 0 0000 0000 50 0 0 0 0000 0000 51 0 0 0 0000 0000 52 0 0 0 0000 0000 54 0 0 0 0000 0000 55 0 0 0 0000 0000 58 0 0 0 0 0 58 0 0 0 0 0 0 58 0 0 0 0 0 0 0 58 0 0 0 0 0 0	47	Non-interlaced,Normal display,no stereo,Digital separate sync,H/V pol negatives	1	9	0001 1001	
49 0 0 0 0000 0000 4A 0 0 0 0000 0000 4B 0 0 0 0000 0000 4C 0 0 0 0000 0000 4D 0 0 0000 0000 0 4E 0 0 0000 0000 0 50 0 0 0000 0000 bscription 51 0 0 0000 0000 bscription 52 0 0 0000 0000 bscription 54 0 0 0000 0000 bscription 55 0 0 0000 0000 bscription 58 0 0 0000 0000 bscription 58 0 0 0 0000 0000 58 0 0 0 0000 0000 58 0 0 0 0000 0000 58 0 0 0 0000 0000 58 0 0 0 0000 0000 58 0 0 <td>48</td> <td>Detailed Timing Descriptor #2</td> <td>0</td> <td>0</td> <td>0000 0000</td> <td></td>	48	Detailed Timing Descriptor #2	0	0	0000 0000	
4B 0 0 0 0000 0000 4C 0 0 0000 0000 4D 0 0 0000 0000 4E 0 0 0000 0000 50 0 0 0000 0000 51 0 0 0000 0000 52 0 0 0000 0000 53 0 0 0000 0000 54 0 0 0000 0000 56 0 0 0000 0000 57 0 0 0000 0000 58 0 0 0000 0000 57 0 0 0000 0000 58 0 0 0000 0000 58 0 0 0000 0000 58 0 0 0000 0000 58 0 0 0000 0000 58 0 0 0000 0000 58 0 0 0000 0000 58 0 0 0000 0000 56 1 6 0 0	49		0	0	0000 0000	
4C 0 0 0000 0000 4D 0 0 0000 0000 4E 0 0 0000 0000 4F 0 0 0000 0000 50 0 0 0000 0000 51 0 0 0000 0000 52 0 0 0000 0000 53 0 0 00000 0000 54 0 0 00000 0000 55 0 0 00000 0000 56 0 0 00000 0000 57 0 0 00000 0000 58 0 0 00000 0000 59 0 0 00000 0000 58 0 0 0 00000 0000 59 0 0 0 00000 0000 50 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	4A		0	0	0000 0000	
4D 0 0 0000 0000 4E 0 0 0000 0000 4F 0 0 0000 0000 50 0 0 0000 0000 51 0 0 0000 0000 52 0 0 0000 0000 53 0 0 0000 0000 54 0 0 0000 0000 55 0 0 0000 0000 56 0 0 0000 0000 57 0 0 0000 0000 58 0 0 0000 0000 58 0 0 0000 0000 58 0 0 0000 0000 58 0 0 0000 0000 58 0 0 0000 0000 58 0 0 00000 0000 58 0 0 00000 0000 59 0 0 00000 0000 56 11111 1110 0 0 62 h 6 0 0101 0000 <td>4B</td> <td></td> <td>0</td> <td>0</td> <td>0000 0000</td> <td></td>	4B		0	0	0000 0000	
4E 0 0 0000 0000 4F 0 0 0000 0000 Timing 50 0 0 0 0000 0000 #2 51 0 0 0000 0000 #2 52 0 0 0000 0000 #2 53 0 0 0000 0000 #2 54 0 0 00000 0000 #2 55 0 0 0 00000 0000 56 0 0 00000 0000 #2 57 0 0 0 00000 0000 58 0 0 0 00000 0000 58 0 0 0 00000 0000 58 0 0 0 00000 0000 59 L L 4 C 0100 1000 58 0 0 0 00000 0000 50 50 0 0 0 00000 0000 50 <td>4C</td> <td></td> <td>0</td> <td>0</td> <td>0000 0000</td> <td></td>	4C		0	0	0000 0000	
4F 0 0 0000 0000 Timing 50 0 0 0000 0000 #2 51 0 0 0000 0000 #2 52 0 0 0000 0000 #2 53 0 0 0000 0000 #2 54 0 0 0000 0000 #2 55 0 0 0000 0000 55 56 0 0 0000 0000 58 0 0 0000 0000 58 0 0 0000 0000 58 0 0 0000 0000 58 0 0 0000 0000 58 0 0 0000 0000 58 0 0 0000 0000 59 0 0 0000 0000 56 0 0 0000 0000 58 0 0 0000 0000 59 0 0 0000 0000 56 1 0 0 0000 0000 62 h 6	4D		0	0	0000 0000	
50 0 0 0 0000 0000 Description 51 0 0 0000 0000 #2 52 0 0 0 0000 0000 #2 53 0 0 0 0000 0000 #2 54 0 0 0000 0000 #2 55 0 0 0 0000 0000 #2 56 0 0 0 0000 0000 #2 58 0 0 0 0000 0000 #2 58 0 0 0 0000 0000 #3 58 0 0 0 0000 0000 #3 58 0 0 0 0000 0000 #3 50 0 0 0 0000 0000 #3 55 L 0 0 0000 0000 #3 62 h 6 9 0110 #3 64 1 6 <	4E		0	0	0000 0000	
50 0 0 0 0000 0000 Description 51 0 0 0000 0000 #2 52 0 0 0000 0000 #2 53 0 0 0000 0000 #2 54 0 0 0000 0000 #2 55 0 0 0000 0000 #2 56 0 0 00000 0000 #3 57 0 0 00000 0000 55 59 0 0 00000 0000 58 0 0 00000 0000 58 0 0 00000 0000 58 0 0 00000 0000 58 0 0 00000 0000 58 0 0 0 00000 0000 58 0 0 0 00000 0000 58 0 0 0 00000 0000 59 1 0 0 00000 0000	4F		0	0	0000 0000	Timing
51 0 0 0000 0000 #2 52 0 0 0000 0000 #3 53 0 0 0000 0000 0000 0000 54 0 0 0 0000 0000 55 0 0 0000 0000 0 56 0 0 0000 0000 0 57 0 0 0000 0000 0 58 0 0 0000 0000 0 58 0 0 0000 0000 0 58 0 0 0000 0000 0 58 0 0 0000 0000 0 58 0 0 0000 0000 0 58 0 0 0000 0000 0 58 0 0 00000 0000 0 50 55 0 0 00000 0000 56 1 4 C 0100 0000 62 h 6 9 0101 0001 63 i 6 9 0101 0001 <td>50</td> <td></td> <td>0</td> <td>0</td> <td>0000 0000</td> <td>•</td>	50		0	0	0000 0000	•
52 0 0 0000 0000 53 0 0 0000 0000 54 0 0 0000 0000 55 0 0 0000 0000 56 0 0 0000 0000 57 0 0 0000 0000 58 0 0 0000 0000 59 0 0 0000 0000 58 0 0 0000 0000 58 0 0 0000 0000 58 0 0 0000 0000 58 0 0 0000 0000 58 0 0 0000 0000 58 0 0 0000 0000 58 0 0 0000 0000 55 1 0 0 0000 0000 55 1 4 C 0100 1110 61 P 5 0 0101 1000 62 h 6 8 0110 1001 63 i 6 9 0110 1001 65	51		0	0		-
54 0 0 0000 0000 55 0 0 0000 0000 56 0 0 0000 0000 57 0 0 0000 0000 58 0 0 0000 0000 59 0 0 0000 0000 58 0 0 0000 0000 58 0 0 0000 0000 58 0 0 0000 0000 58 0 0 0000 0000 58 0 0 0000 0000 58 0 0 0000 0000 58 0 0 0000 0000 58 0 0 0000 0000 55 11111110 0 0 60 G 4 7 61 P 5 0 0101 0000 62 h 6 8 0110 1000 63 i 6 9 0110 1001 64 1 6 9 0111 0001 65 i 6	52		0	0	0000 0000	
55 0 0 0000 0000 56 0 0 0000 0000 57 0 0 0000 0000 58 0 0 0000 0000 59 0 0 0000 0000 58 0 0 0000 0000 59 0 0 0000 0000 58 0 0 0000 0000 58 0 0 0000 0000 58 0 0 00000 0000 58 0 0 00000 0000 58 0 0 00000 0000 5C 0 0 00000 0000 5C 0 0 00000 0000 5F L 4 C 0100 1110 61 P 5 0 0101 0000 62 h 6 8 0110 1001 63 i 6 9 0110 1001 64 1 6 9 0111 0001 65 i 6 9 0111 0001 <tr< td=""><td>53</td><td></td><td>0</td><td>0</td><td>0000 0000</td><td></td></tr<>	53		0	0	0000 0000	
56 0 0 0000 0000 57 0 0 0000 0000 58 0 0 0000 0000 59 0 0 0000 0000 5A Detailed Timing Descriptor #3 0 0 0000 0000 5B 0 0 0000 0000 0 5C 0 0 0 0000 0000 5D F E 1111 1110 1110 5E 0 0 0000 0000 0000 0000 5F L 4 C 0100 01100 60 G 4 7 0100 0111 61 P 5 0 0101 0000 62 h 6 8 0110 1001 63 i 6 9 0110 1001 64 1 6 C 0110 1001 65 i 6 9 0111 0001 66 P 7 3 0111 0001 67 S 7 3 0111 0001 68	54		0	0	0000 0000	
57 0 0 00000000 58 0 0 00000000 59 0 0 00000000 5A Detailed Timing Descriptor #3 0 0 00000000 5B 0 0 00000000 00000000 5C 0 0 00000000 00000000 5D F E 1111 1110 110 5E 0 0 0000 0000 00000000 5F L 4 C 0100 1010 60 G 4 7 0100 0111 61 P 5 0 0101 0000 62 h 6 8 0110 1000 63 i 6 9 0110 1001 64 1 6 9 0110 1001 65 i 6 9 0111 0001 67 s 7 3 0111 0001 68 L 4 C 0100 1100 69 C 4 3 0100 0110 <t< td=""><td>55</td><td></td><td>0</td><td>0</td><td>0000 0000</td><td></td></t<>	55		0	0	0000 0000	
58 0 0 0000 0000 59 0 0 0000 0000 5A Detailed Timing Descriptor #3 0 0 0000 0000 5B 0 0 0000 0000 5C 0 0 0000 0000 5D F E 1111 1110 5E 0 0 0000 0000 5F L 4 C 0100 1010 60 G 4 7 0100 0111 61 P 5 0 0110 1000 62 h 6 8 0110 1000 63 i 6 9 0110 1001 64 1 6 C 0111 1000 65 i 6 9 0110 1001 66 p 7 3 0111 0001 67 s 7 3 0111 0011 68 L 4 C 0100 1001 69 C 4 3 0100 0011 69 C 4 3 </td <td>56</td> <td></td> <td>0</td> <td>0</td> <td></td> <td></td>	56		0	0		
59 0 0 0000 0000 5A Detailed Timing Descriptor #3 0 0 0000 0000 5B 0 0 0000 0000 5C 0 0 0000 0000 5D F E 1111 1110 5E 0 0 0000 0000 5F L 4 C 0100 0111 61 P 5 0 0110 1000 62 h 6 8 0110 1000 63 i 6 9 0110 1001 64 I 6 C 0111 1000 65 i 6 9 0110 1001 66 p 7 0 0111 1001 68 L 4 C 0100 1100 68 L 4 C 0100 1100 69 0110 1001 #3 #3 69 0101 1000 4 4 0100 0101	57		0	0		
59 0 0 0000 0000 5A Detailed Timing Descriptor #3 0 0 0000 0000 5B 0 0 0000 0000 5C 0 0 0000 0000 5D F E 1111 1110 5E 0 0 0000 0000 5F L 4 C 0100 0111 61 P 5 0 0110 1000 62 h 6 8 0110 1000 63 i 6 9 0110 1001 64 I 6 C 0111 1000 65 i 6 9 0110 1001 66 p 7 0 0111 1001 68 L 4 C 0100 1100 68 L 4 C 0100 1100 69 0110 1001 #3 #3 69 0101 1000 4 4 0100 0101	58		0	0	0000 0000	
5B 0 0 0000 0000 5C 0 0 0000 0000 5D F 1111 1110 5E 0 0 0000 0000 5F L 4 C 0100 0110 60 G 4 7 0100 0111 61 P 5 0 0110 1000 62 h 6 8 0110 1000 63 i 6 9 0110 1001 64 1 6 C 0101 1000 65 i 6 9 0110 1001 66 p 7 0 0111 1001 68 L 4 C 0100 1100 69 0110 1001 4 3 3 69 C 4 3 0100 0011 69 C 4 3 0100 0011 69 C 4 3 0100 010	59		0	0		
5B 0 0 0000 0000 5C 0 0 0000 0000 5D F E 1111 1110 5E 0 0 0000 0000 5F L 4 C 0100 1100 60 G 4 7 0100 0111 61 P 5 0 0110 1000 62 h 6 8 0110 1000 63 i 6 9 0110 1001 64 I 6 C 0110 1001 65 i 6 9 0110 1001 66 p 7 0 0111 0001 67 s 7 3 0111 0011 68 L 4 C 0100 1100 69 C 4 3 0100 0011 69 C 4 3 0100 0011 69 C 4 4 0100 0100	5A	Detailed Timing Descriptor #3	0	0	0000 0000	
5D F E 1111 1110 5E 0 0 0000 0000 5F L 4 C 0100 1100 60 G 4 7 0100 0111 61 P 5 0 0101 0000 62 h 6 8 0110 1000 63 i 6 9 0110 1001 64 I 6 C 0101 1000 65 i 6 9 0110 1001 66 P 7 0 0111 1000 67 s 7 3 0111 0001 68 L 4 C 0100 1100 69 C 4 3 0100 0011 68 D 4 4 0100 0100	5B		0	0		
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APPENDIX A. Enhanced Extended Display Identification Data (EEDID[™]) 3/3

Byte#	Field Name and Comments		lue	Value	
(HEX)		(HI	EX)	(binary)	
6C	Detailed Timing Descriptor #4	0	0	0000 0000	
6D		0	0	0000 0000	
6E		0	0	0000 0000	
6F		F	Е	1111 1110	
70		0	0	0000 0000	
71	Ĺ	4	С	0100 1100	
72	Р	5	0	0101 0000	
73	1	3	1	0011 0001	Timing
74	5	3	5	0011 0101	Description
75	4	3	4	0011 0100	#4
76	W	5	7	0101 0111	
77	E	4	5	0100 0101	
78	2	3	2	0011 0010	
79	-	2	D	0010 1101	
7A	Т	5	4	0101 0100	
7B	L	4	С	0100 1100	
7C	A	4	1	0100 0001	
7D	1	3	1	0011 0001	
7E	Extension flag = 00	0	0	0000 0000	Extension Flag
7F	Checksum	3	5	0011 0101	Checksum