Model Name: T546HW02 V3

Issue Date : 2010/07/09

(…)Preliminary Specifications
(＊)Final Specifications

Customer Signature	Date	AUO	Date
Approved By		Approval By PM Director YenTing Chiu 2010.6.28	
Note		Reviewed By RD Director Eugene CC Chen Reviewed By Project Leader Jeff Tien	
		Prepared By PM Alex Wang 2010.6.17	

Note1 : TST test fails to pass AUO internal qualification, so AUO can not guarantee sub materials
Note2 : The RA test related to P mura fails to pass AUO internal qualification, so AUO can not guarantee BLU related component

Contents

Record of Revision

Version	Date	Page	Description
0.0	2010/07/09		First release

1. General Description

This specification applies to the 54.6 inch Color TFT-LCD Module T546HW02 V3. This LCD module has a TFT active matrix type liquid crystal panel 1,920x1,080 pixels, and diagonal size of 54.6 inch. This module supports 1,920x1080 mode. 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.

The T546HW02 V3 has been designed to apply the 10-bit 4 channel LVDS interface method. It is intended to support displays where high brightness, wide viewing angle, high color saturation, and high color depth are very important.

*** General Information**

Items	Specification	Unit	Note
Active Screen Size	54.6	Inch	
Display Area	1209.6(H) x 680.4(V)	Mm	
Outline Dimension	1247.6(H) x 717.9(V) x 19.9(D)	Mm	D : F/B to S-PCB cover
Driver Element	a-Si TFT active matrix		
Display Colors	10 (8+FRC) bit, 1073.7M	Colors	
Number of Pixels	1,920x1080	Pixel	
Pixel Pitch	0.21 (H) x 0.63(W)	Mm	
Pixel Arrangement	RGB vertical stripe		
Display Operation Mode	Normally Black		
Surface Treatment	S/C		

2. Absolute Maximum Ratings

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

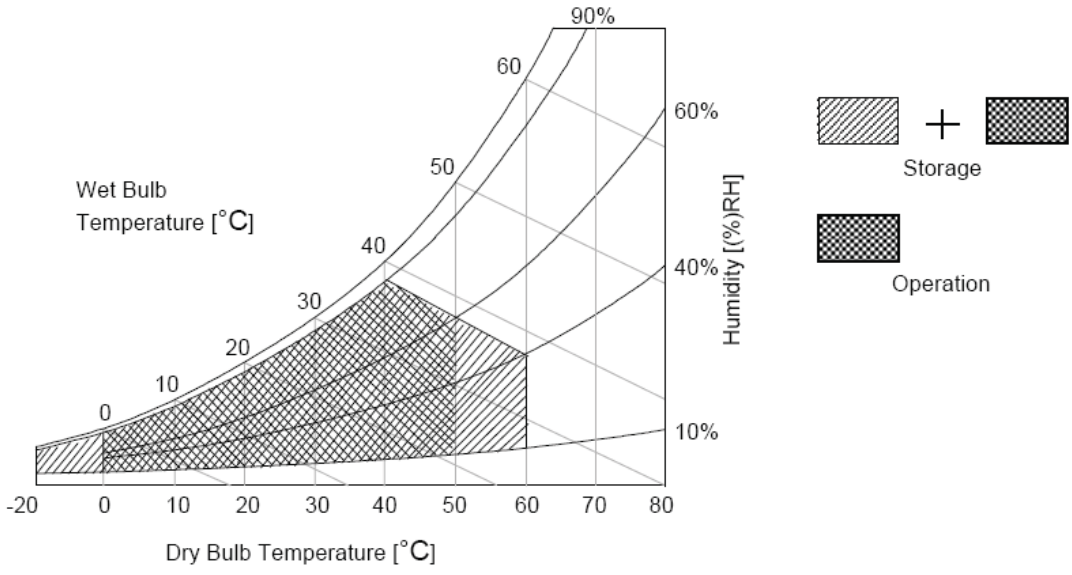
Item	Symbol	Min	Max	Unit	Conditions
Logic/LCD Drive Voltage	Vcc	-0.3	14	[Volt]	Note 1
Input Voltage of Signal	Vin	-0.3	4	[Volt]	Note 1
Operating Temperature	TOP	0	+50	[°C]	Note 2
Operating Humidity	HOP	10	90	[%RH]	Note 2
Storage Temperature	TST	-20	+60	[°C]	Note 2
Storage Humidity	HST	10	90	[%RH]	Note 2
Panel Surface Temperature	PST		65	[°C]	Note 3

Note 1: Duration:50 msec.

Note 2 : Maximum Wet-Bulb should be 39℃ and No condensation.

The relative humidity must not exceed 90% non-condensing at temperatures of 40℃ or less. At temperatures greater than 40℃, the wet bulb temperature must not exceed 39℃.

Note 3: Surface temperature is measured at 50℃ Dry condition



3. Electrical Specification

The T546HW02 V3 requires two power inputs. One is employed to power the LCD electronics and to drive the TFT array and liquid crystal. The second is employed for LED lightbar.

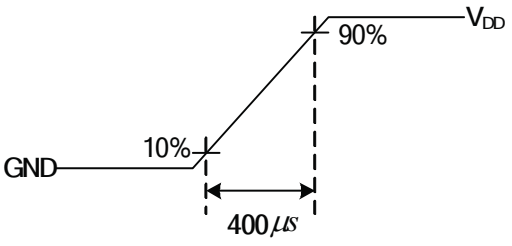
3.1 Electrical Characteristics

Parameter		Symbol	Value			Unit	Note
			Min.	Typ.	Max		
LCD							
Power Supply Input Voltage		V_{DD}	10.8	12	13.2	V_{DC}	1
Power Supply Input Current		I_{DD}	--	0.76	1.97	A	2
Power Consumption		P_C	--	9.12	23.6	Watt	2
Inrush Current		I_{RUSH}	-	-	4	A	3
LVDS Interface	Differential Input High Threshold Voltage	V_{TH}	--	--	+100	mV_{DC}	4
	Differential Input Low Threshold Voltage	V_{TL}	-100	--	--	mV_{DC}	4
	Input Common Mode Voltage	V_{ICM}	1.1	1.25	1.4	V_{DC}	4
LVDS Interface	Input Channel Pair Skew Margin	$t_{SKEW\ (CP)}$	-500	--	+500	ps	5
CMOS Interface	Input High Threshold Voltage	V_{IH} (High)	2.7	--	3.3	V_{DC}	
	Input Low Threshold Voltage	V_{IL} (Low)	0	--	0.6	V_{DC}	

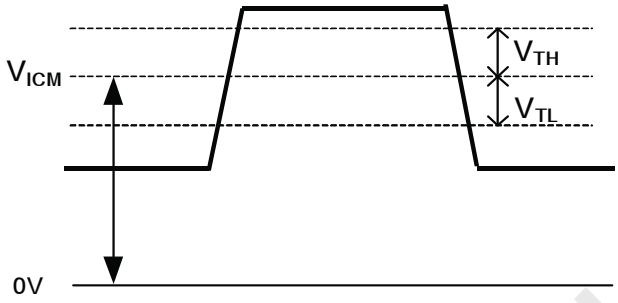
*** LED lightbar and LED Backlight structure is designed by customer, AUO could not guarantee life time and Backlight power consumption.**

Note :

1. The ripple voltage should be controlled under 10% of V_{CC}
2. Test Condition:
   (1) V_{DD} = 12.0V
   (2) Fv = Type Timing, 60Hz, 120Hz or Other
   (3) F_{CLK} = Max freq.
   (4) Temperature = 25 ℃
   (5) Test Pattern : White Pattern
3. Measurement condition : Rising time = 400us



4. V_{ICM} = 1.25V



3.2 Interface Connections

- **LCD connector : PF050-C82B-C35 (Manufactured by UJU)**

PIN	Symbol	Description	PIN	Symbol	Description
1	V_{DD}	Power Supply, +12V DC Regulated	26	CH3_0+	LVDS Channel 3, Signal 0+
2	V_{DD}	Power Supply, +12V DC Regulated	27	CH3_1-	LVDS Channel 3, Signal 1-
3	V_{DD}	Power Supply, +12V DC Regulated	28	CH3_1+	LVDS Channel 3, Signal 1+
4	V_{DD}	Power Supply, +12V DC Regulated	29	CH3_2-	LVDS Channel 3, Signal 2-
5	V_{DD}	Power Supply, +12V DC Regulated	30	CH3_2+	LVDS Channel 3, Signal 2+
6	NC	No connection	31	GND	Ground
7	GND	Ground	32	CH3_CLK-	LVDS Channel 3, Clock -
8	GND	Ground	33	CH3_CLK+	LVDS Channel 3, Clock +
9	GND	Ground	34	GND	Ground
10	CH1_0-	LVDS Channel 1, Signal 0-	35	CH3_3-	LVDS Channel 3, Signal 3-
11	CH1_0+	LVDS Channel 1, Signal 0+	36	CH3_3+	LVDS Channel 3, Signal 3+
12	CH1_1-	LVDS Channel 1, Signal 1-	37	CH3_4-	LVDS Channel 3, Signal 4-
13	CH1_1+	LVDS Channel 1, Signal 1+	38	CH3_4+	LVDS Channel 3, Signal 4+
14	CH1_2-	LVDS Channel 1, Signal 2-	39	GND	Ground
15	CH1_2+	LVDS Channel 1, Signal 2+	40	SCL	EEPROM Serial Clock
16	GND	Ground	41	NC	No connection
17	CH1_CLK-	LVDS Channel 1, Clock -	42	NC	No connection
18	CH1_CLK+	LVDS Channel 1, Clock +	43	WP	EEPROM Write Protection High(3.3V) for Writable, Low(GND) for Protection
19	GND	Ground	44	SDA	EEPROM Serial Data
20	CH1_3-	LVDS Channel 1, Signal 3-	45	LVDS_SEL	Open/High(3.3V) for NS, Low(GND) for JEIDA
21	CH1_3+	LVDS Channel 1, Signal 3+	46	NC	No connection
22	CH1_4-	LVDS Channel 1, Signal 4-	47	Reserved	AUO Internal Use Only
23	CH1_4+	LVDS Channel 1, Signal 4+	48	Reserved	AUO Internal Use Only
24	GND	Ground	49	Reserved	AUO Internal Use Only
25	CH3_0-	LVDS Channel 3, Signal 0-	50	Reserved	AUO Internal Use Only

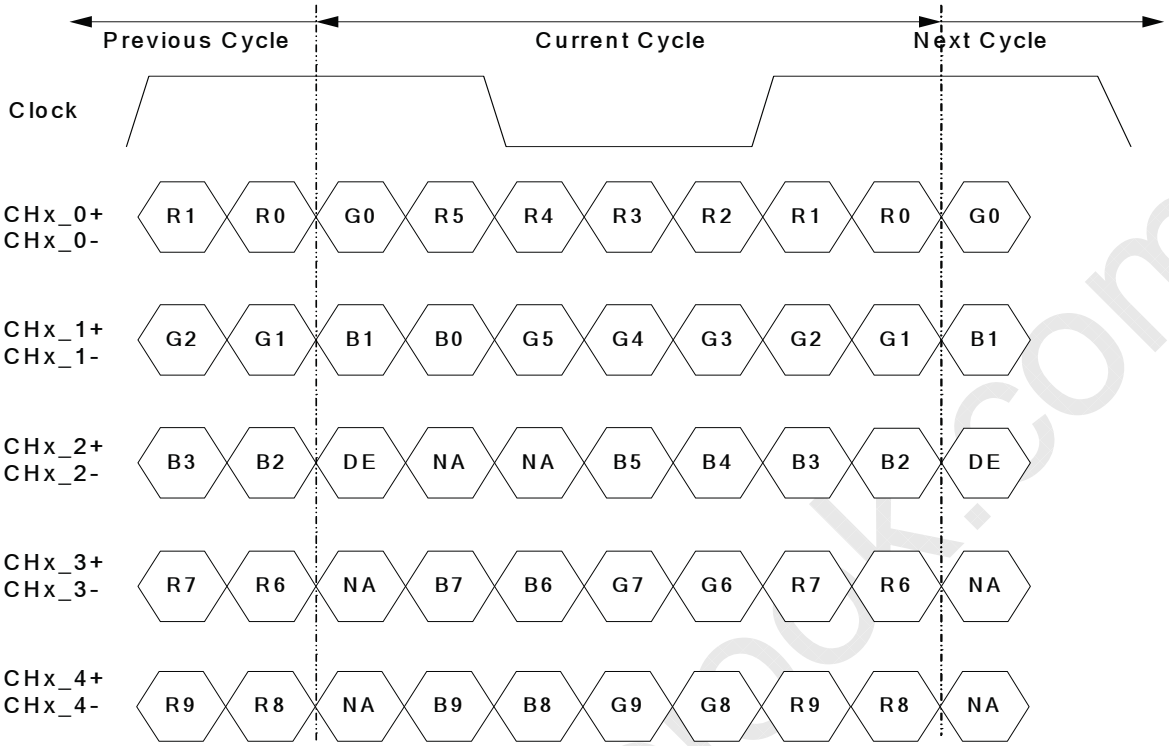
PIN	Symbol	Description	PIN	Symbol	Description
51	Reserved	AUO Internal Use Only	76	CH2_2+	LVDS Channel 2, Signal 2+
52	GND	Ground	77	CH2_2-	LVDS Channel 2, Signal 2-
53	CH4_4+	LVDS Channel 4, Signal 4+	78	CH2_1+	LVDS Channel 2, Signal 1+
54	CH4_4-	LVDS Channel 4, Signal 4-	79	CH2_1-	LVDS Channel 2, Signal 1-
55	CH4_3+	LVDS Channel 4, Signal 3+	80	CH2_0+	LVDS Channel 2, Signal 0+
56	CH4_3-	LVDS Channel 4, Signal 3-	81	CH2_0-	LVDS Channel 2, Signal 0-
57	GND	Ground	82	GND	Ground
58	CH4_CLK+	LVDS Channel 4, Clock +			
59	CH4_CLK-	LVDS Channel 4, Clock -			
60	GND	Ground			
61	CH4_2+	LVDS Channel 4, Signal 2+			
62	CH4_2-	LVDS Channel 4, Signal 2-			
63	CH4_1+	LVDS Channel 4, Signal 1+			
64	CH4_1-	LVDS Channel 4, Signal 1-			
65	CH4_0+	LVDS Channel 4, Signal 0+			
66	CH4_0-	LVDS Channel 4, Signal 0-			
67	GND	Ground			
68	CH2_4+	LVDS Channel 2, Signal 4+			
69	CH2_4-	LVDS Channel 2, Signal 4-			
70	CH2_3+	LVDS Channel 2, Signal 3+			
71	CH2_3-	LVDS Channel 2, Signal 3-			
72	GND	Ground			
73	CH2_CLK+	LVDS Channel 2, Clock +			
74	CH2_CLK-	LVDS Channel 2, Clock -			
75	GND	Ground			

Note 1: All GND (ground) pins should be connected together and should also be connected to the LCD's metal frame.

Note 2: All V_{DD} (power input) pins should be connected together.

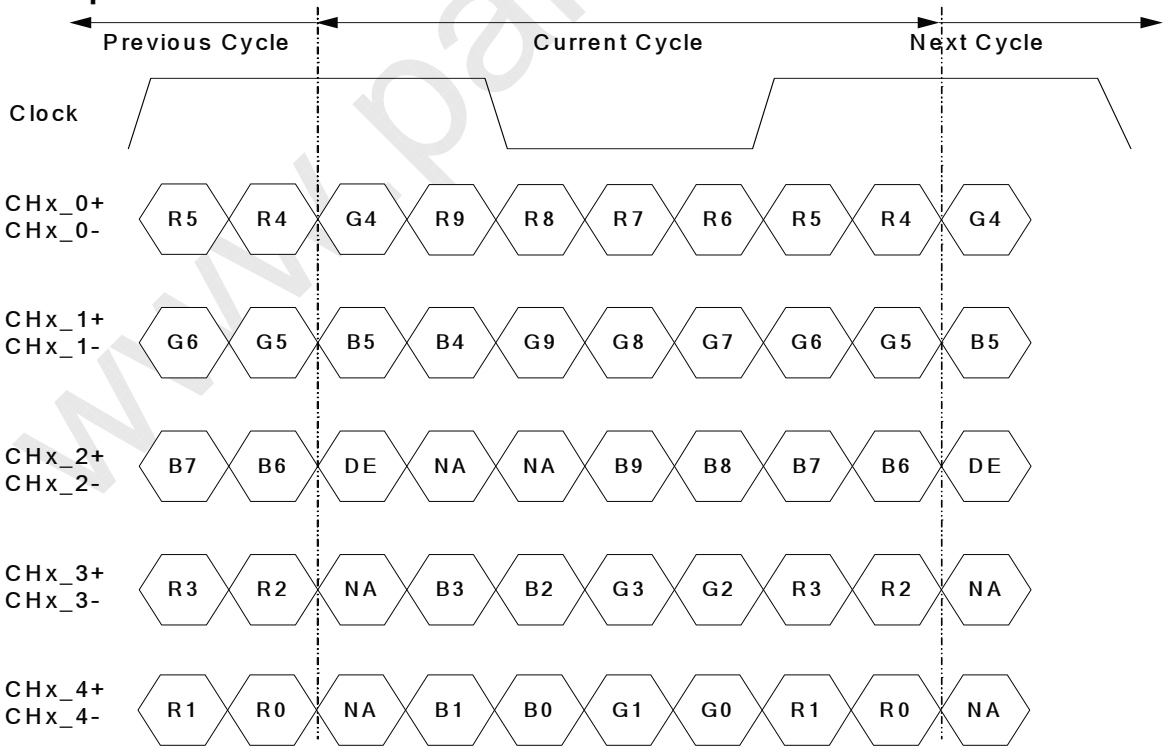
Note 3: All NC (no connection) pins should be open without voltage input.

LVDS Option = High/Open➔NS



Note: x = 1, 2, 3, 4…

LVDS Option = Low➔JEIDA



Note: x = 1, 2, 3, 4…

3.3 Signal Timing Specification

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

Timing Table (DE only Mode)

Vertical Frequency Range (120Hz)

Signal	Item	Symbol	Min.	Typ.	Max	Unit
Vertical Section	Period	Tv	1090	1130	1160	Th
	Active	Tdisp (v)		1080		Th
	Blanking	Tblk (v)	10	50	80	Th
Horizontal Section	Period	Th	550	570	580	Tclk
	Active	Tdisp (h)		480		Tclk
	Blanking	Tblk (h)	70	90	100	Tclk
Clock	Frequency	Fclk=1/Tclk	71.94	77.29	80.74	MHz
Vertical Frequency	Frequency	Fv	118	120	122	Hz
Horizontal Frequency	Frequency	Fh	130.8	135.6	139.2	KHz

Notes:

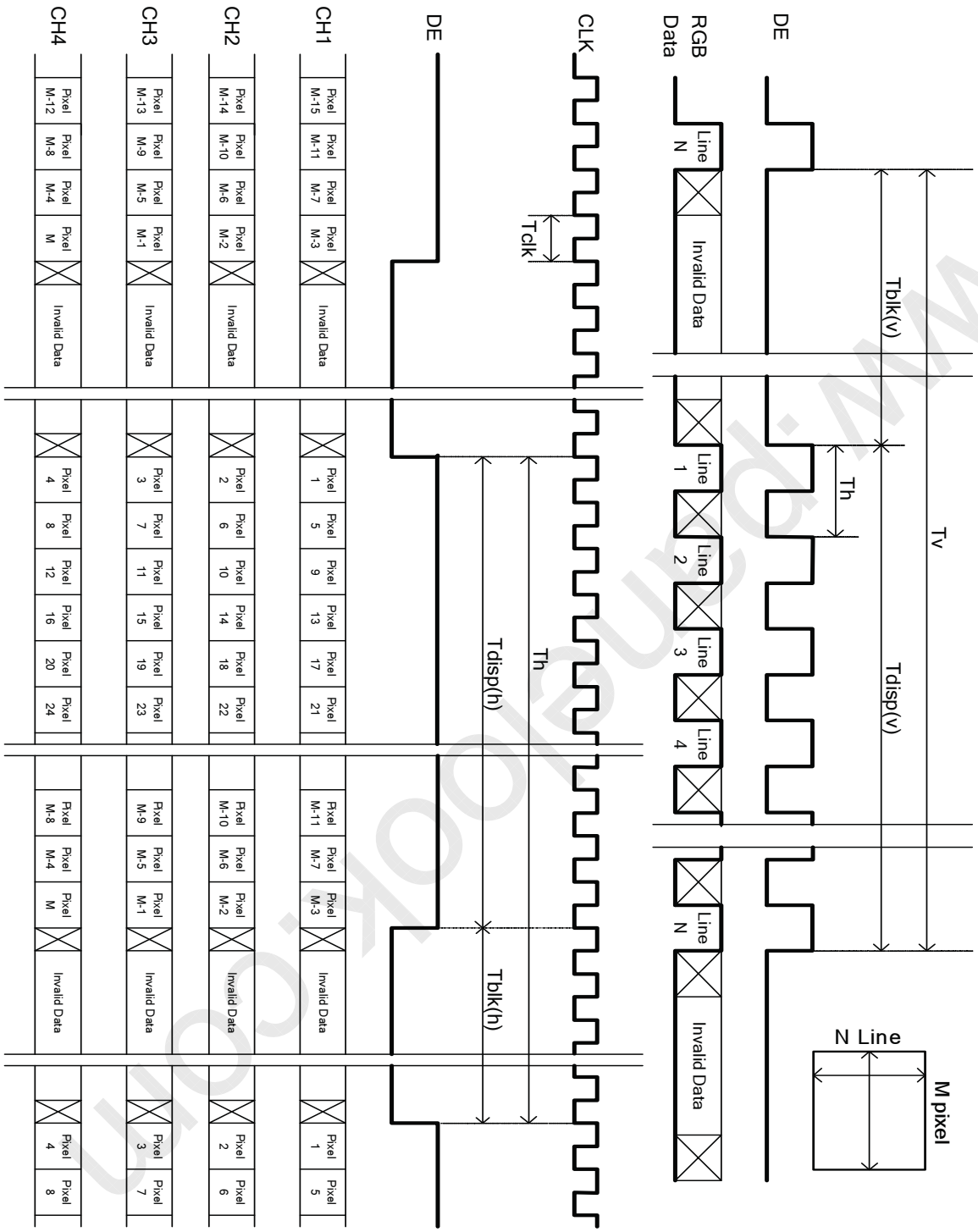
(1) Display position is specific by the rise of DE signal only.
Horizontal display position is specified by the rising edge of 1st DCLK after the rise of 1st DE, is displayed on the left edge of the screen.

(2)Vertical display position is specified by the rise of DE after a “Low” level period equivalent to eight times of horizontal period. The 1st data corresponding to one horizontal line after the rise of 1st DE is displayed at the top line of screen.

(3)If a period of DE “High” is less than 1920 DCLK or less than 1080 lines, the rest of the screen displays black.

(4)The display position does not fit to the screen if a period of DE “High” and the effective data period do not synchronize with each other.

3.4 Signal Timing Waveforms



3.5 Color Input Data Reference

The brightness of each primary color (red, green and blue) is based on the 10 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.

COLOR DATA REFERENCE

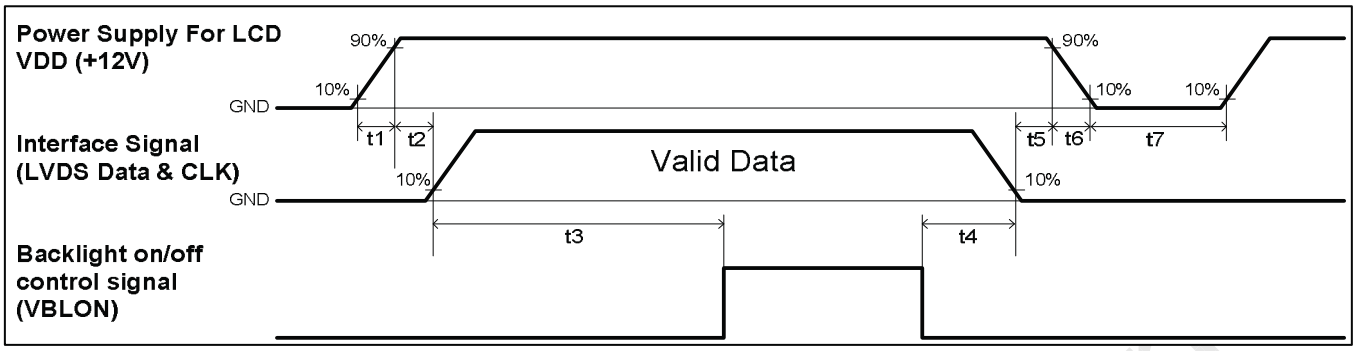
Color		Input Color Data																													
		RED										GREEN										BLUE									
		MSB									LSB	MSB									LSB	MSB									LSB
		R9	R8	R7	R6	R5	R4	R3	R2	R1	R0	G9	G8	G7	G6	G5	G4	G3	G2	G1	G0	B9	B8	B7	B6	B5	B4	B3	B2	B1	B0
Basic Color	Black	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red(1023)	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Green(1023)	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0
	Blue(1023)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1
	Cyan	0	0	0	0	0	0	0	0	0	0	1	1	1	1	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	1	1	0	0	0	0	0	0	0	0	0	0	1	1	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	1	1	1	1	0	0	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	1	1	1	1	1	1
R	RED(000)	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
	RED(001)	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	RED(1022)	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	RED(1023)	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
G	GREEN(000)	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(001)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0

	GREEN(1022)	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0
	GREEN(1023)	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0
B	BLUE(000)	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(001)	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

	BLUE(1022)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	0
	BLUE(1023)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1

3.6 Power Sequence for LCD



Parameter	Values			Unit
	Min.	Type.	Max.	
t1	0.4	---	30	ms
t2	0.1	---	50	ms
t3	500	---	---	ms
t4	0 *1	---	---	ms
t5	0	---	---	ms
t6	---	---	--- *2	ms
t7	500	---	---	ms

Note:

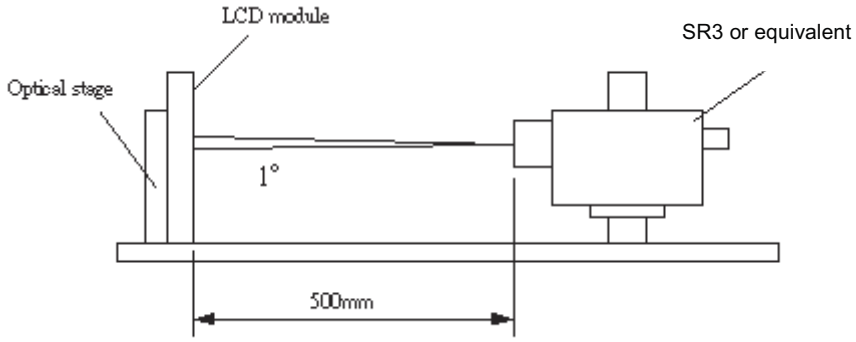
(1) T4=0 : concern for residual pattern before BLU turn off.

(2) T6 : voltage of VDD must decay smoothly after power-off. (customer system decide this value)

4. Optical Specification

Optical characteristics are determined after the unit has been 'ON' and stable for approximately 45 minutes in a dark environment at 25℃. 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.



Parameter		Symbol	Values			Unit	Notes
			Min.	Typ.	Max		
Contrast Ratio		CR	--	5000	--		1
Surface Luminance (White)		L_{WH}	--	*	--	cd/m^2	2
Luminance Variation		$\delta_{WHITE(9P)}$	--	--	1.35		3
Response Time (G to G)		Tγ	--	6.5	--	Ms	4
Color Gamut		NTSC		*		%	
Color Coordinates							
	Red	R_X	*	*	*		
		R_Y		*			
	Green	G_X		*			
		G_Y		*			
	Blue	B_X		*			
		B_Y		*			
	White	W_X		*			
		W_Y		*			
Viewing Angle							5
	x axis, right(φ=0°)	θ_r	--	89	--	degree	
	x axis, left(φ=180°)	θ_l	--	89	--	degree	
	y axis, up(φ=90°)	θ_u	--	89	--	degree	
	y axis, down (φ=270°)	θ_d	--	89	--	degree	

*** LED lightbar and LED Backlight structure is designed by customer, AUO could not guarantee the typical value of NTSC, R/G/B/W.**

**** OPT spec should refer to the ORT data gathered in the first 3 months after mass production**

Note:

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

$$\text{Contrast Ratio} = \frac{\text{Surface Luminance of } L_{on5}}{\text{Surface Luminance of } L_{off5}}$$

2. Surface luminance is luminance value at point 5 across the LCD surface 50cm from the surface with all pixels displaying white. From more information see FIG 2. When lamp current I_H = 11mA. L_{WH}=Lon5 where Lon5 is the luminance with all pixels displaying white at center 5 location.
3. The variation in surface luminance, δWHITE is defined (center of Screen) as:

   $\delta_{WHITE(9P)}$= Maximum(L_{on1}, L_{on2},…,L_{on9})/ Minimum(L_{on1}, L_{on2},…L_{on9})
4. Response time T_γ is the average time required for display transition by switching the input signal for five luminance ratio (0%,25%,50%,75%,100% brightness matrix) and is based on F_v=120Hz to optimize.

Measured Response Time		Target				
		0%	25%	50%	75%	100%
Start	0%		0% to 25%	0% to 50%	0% to 75%	0% to 100%
	25%	25% to 0%		25% to 50%	25% to 75%	25% to 100%
	50%	50% to 0%	50% to 25%		50% to 75%	50% to 100%
	75%	75% to 0%	75% to 25%	75% to 50%		75% to 100%
	100%	100% to 0%	100% to 25%	100% to 50%	100% to 75%	

4. 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 FIG4.

FIG. 2 Luminance

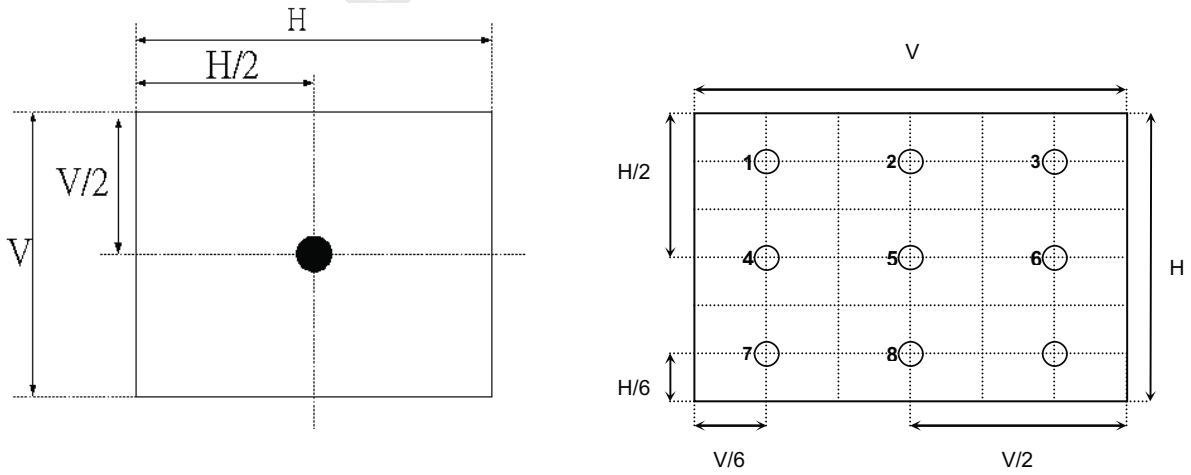


FIG.3 Response Time

The response time is defined as the following figure and shall be measured by switching the input signal for “any level of gray(bright) “ and “any level of gray(dark)”.

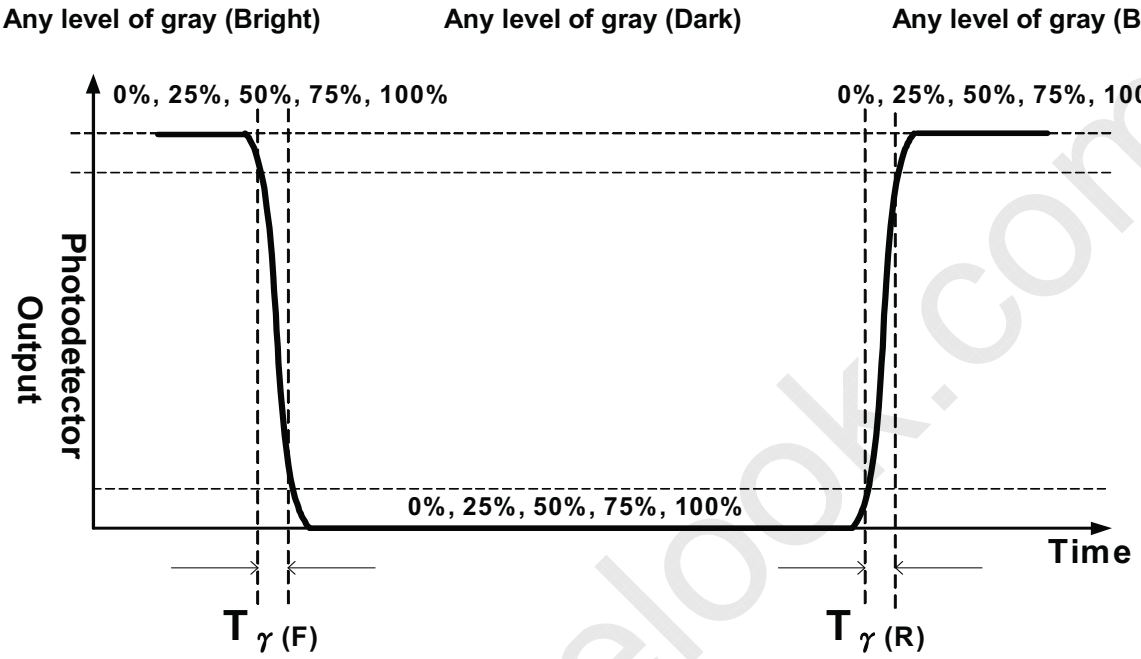
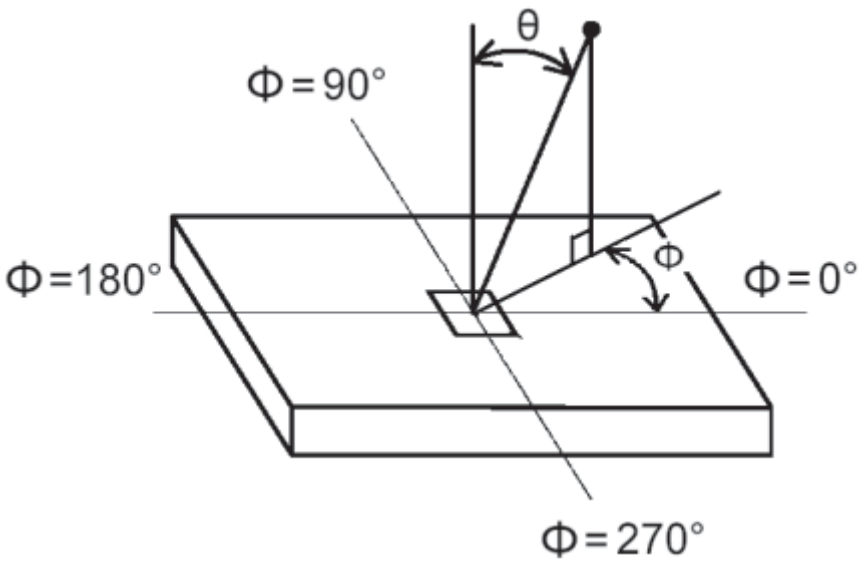


FIG.4 Viewing Angle

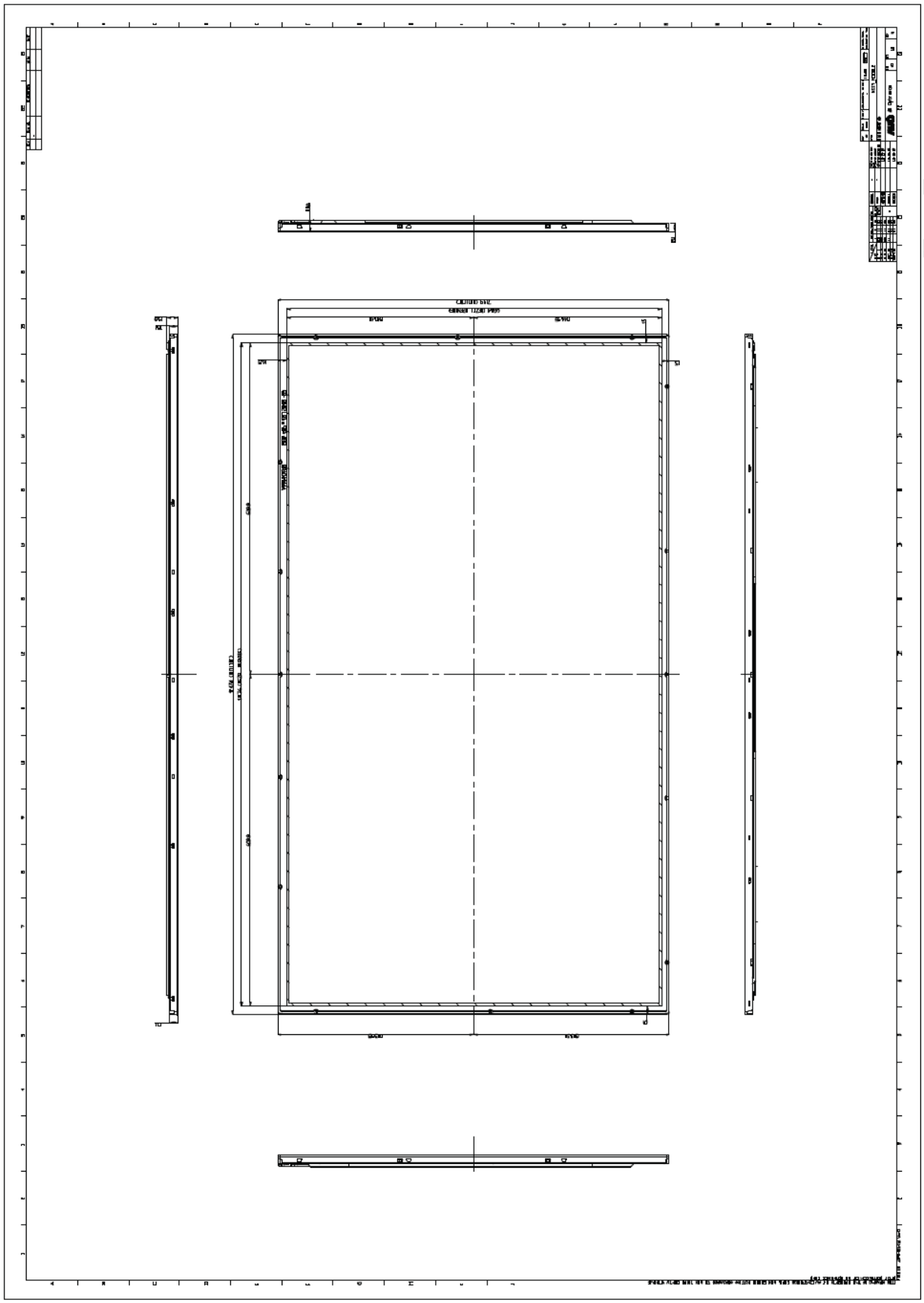


5. Mechanical Characteristics

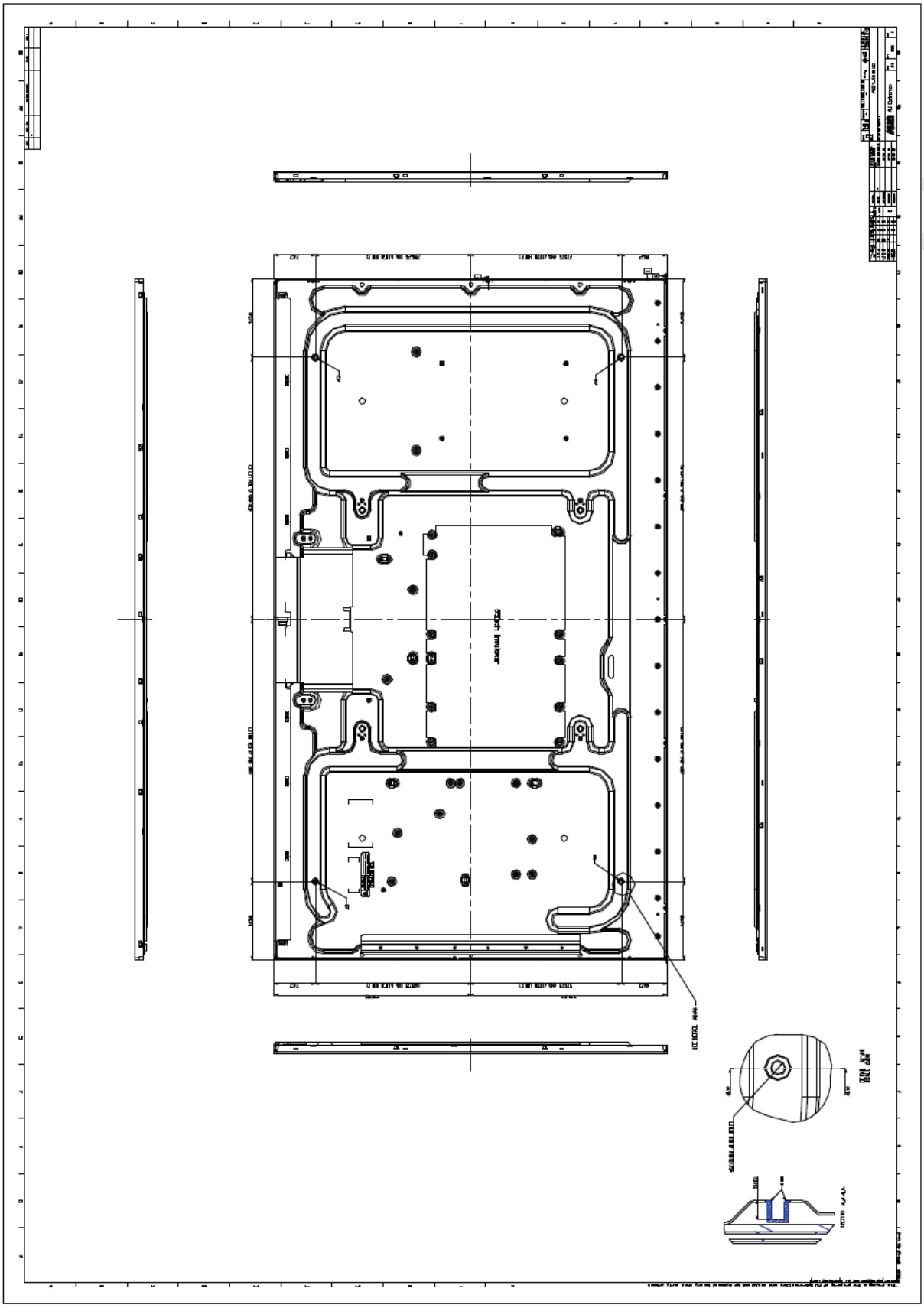
The contents provide general mechanical characteristics for the model T546HW02 V3. In addition the figures in the next page are detailed mechanical drawing of the LCD.

Outline Dimension	Horizontal	1247.6 mm
	Vertical	717.9 mm
	Depth	19.9 mm
Bezel Opening	Horizontal	1217.6 mm
	Vertical	688.4 mm
Active Display Area	Horizontal	1209.6 mm
	Vertical	680.4 mm
Weight	13500 g (Typ)	
Surface Treatment	S/C	

Front View



Back View



6. Reliability Test Items

	Test Item	Q'ty	Condition
1	High temperature storage test	3	60℃, 300hrs
2	Low temperature storage test	3	-20℃, 300hrs
3	High temperature operation test	3	50℃, 300hrs
4	Low temperature operation test	3	-5℃, 300hrs
5	Vibration test (non-operation)	3	Wave form: random Vibration level: 1.0G RMS Bandwidth: 10-300Hz, Duration: X, Y, Z 30min Each direction per 10mins
6	Shock test (non-operation)	3	Shock level: ±XY 30G, ±Z 30G Waveform: half since wave, 11ms Direction: ±XYZ, One time each direction
7	Vibration test (With carton)	1 (PKG)	Random wave (1.1G RMS, 10-200Hz) 30mins/ Per each X,Y,Z axes
8	Drop test (With carton)	1 (PKG)	Height: 25.4 cm 6 surfaces

7. International Standard

7.1 Safety

AUO don't have overall safety document, thus, AUO could not guarantee safety.

7.2 EMC

(1) 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

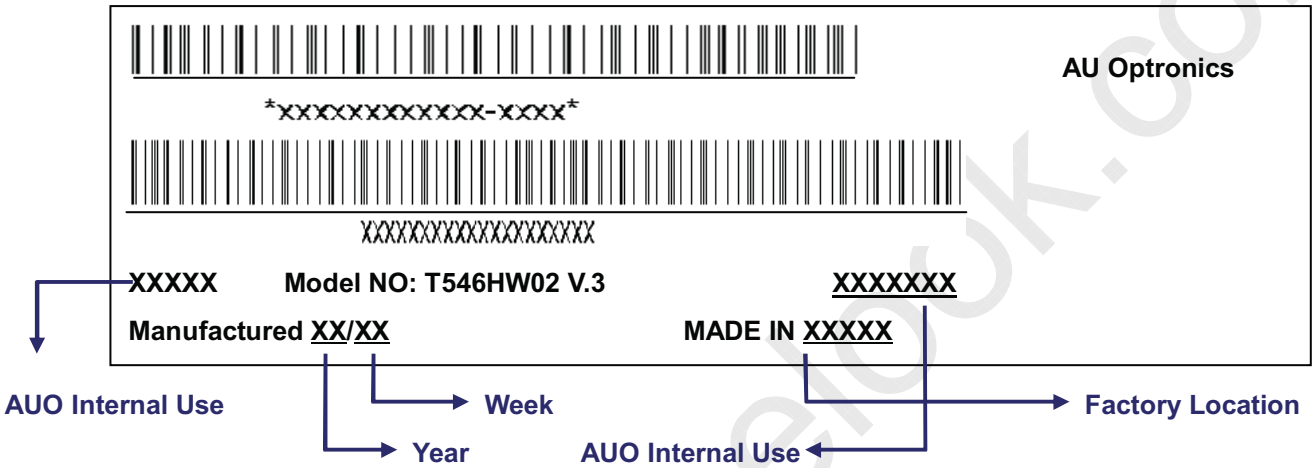
(2) C.I.S.P.R "Limits and Methods of Measurement of Radio Interface Characteristics of Information Technology Equipment." International Special committee on Radio Interference.

(3) EN 55022 "Limits and Methods of Measurement of Radio Interface Characteristics of Information Technology Equipment." European Committee for Electrotechnical Standardization. (CENELEC), 1998

8. Packing

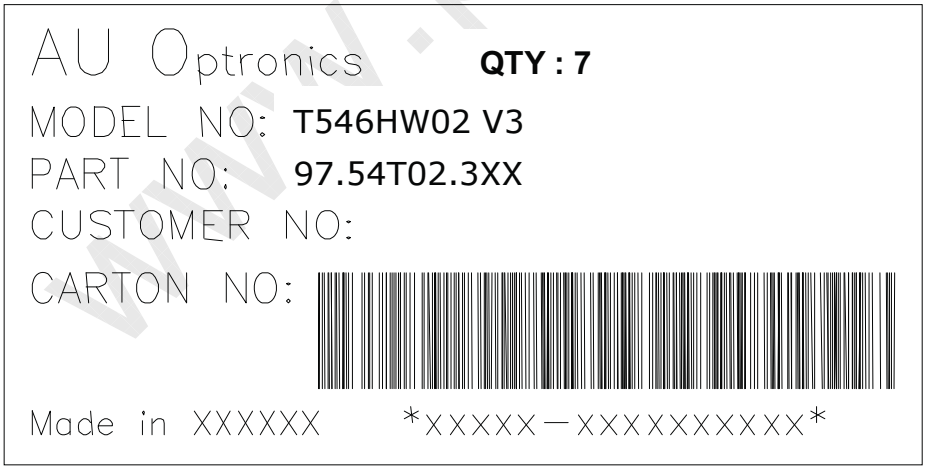
8-1 DEFINITION OF LABEL:

A. Panel Label:

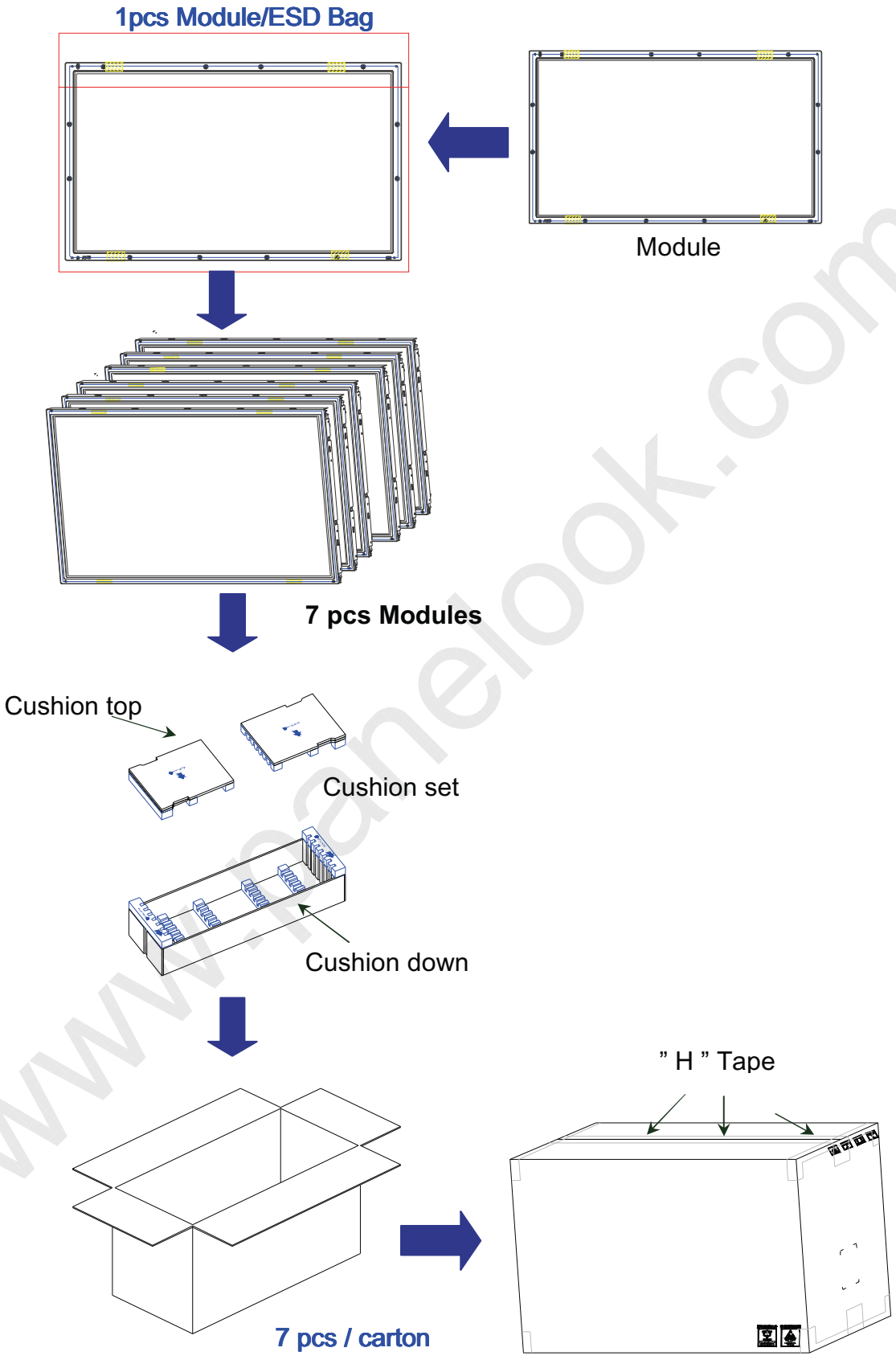


Green mark description

B. Carton Label:

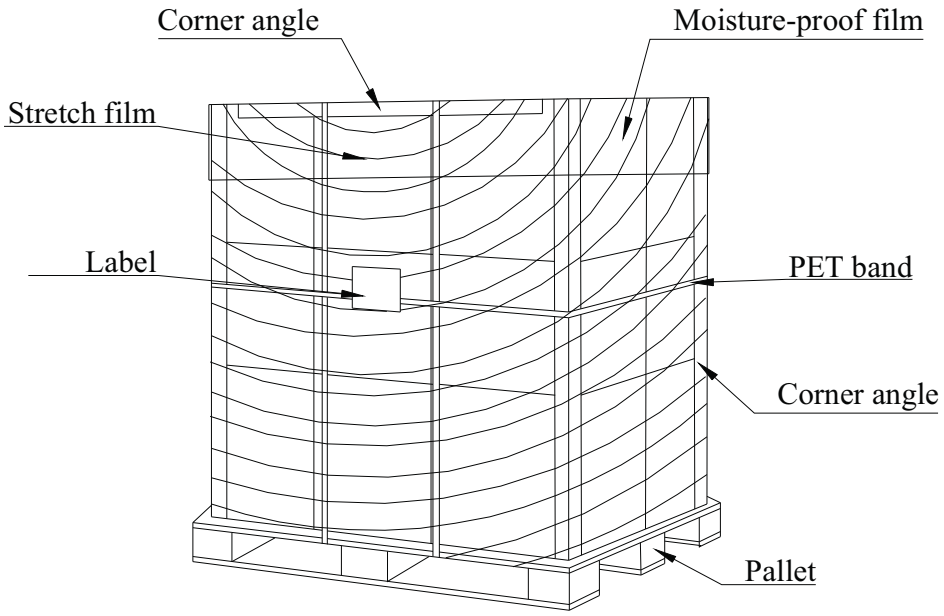


8-2 PACKING METHODS:



8-3 Pallet and Shipment Information

	Item	Specification			Packing Remark
		Qty.	Dimension	Weight (kg)	
1	Packing BOX	**7 pcs/box**	**1355(L)* 375(W)*800(H)**	**102**	
2	Pallet	**1**	**1390(L)* 1150(W)*132(H)**	**20**	
3	Boxes per Pallet	**3 boxes/pallet**			
4	Panels per Pallet	**21 pcs/pallet**			
	Pallet after packing	**N/A**	**1390(L)*1150(W)*1864(H)**	**652**	



5. PRECAUTIONS

Please pay attention to the followings 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 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 the surface 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 desirable because the former generates corrosive gas of attacking the polarizer at high temperature and the latter cause circuit broken 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 soaks with petroleum benzene. Normal-hexane is recommended for cleaning the adhesives used to attach front/ rear polarizer. 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 device listed in the product specification sheets was designed and manufactured for TV application

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

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

(4) Brightness of CCFL 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.

(5) 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.

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

(7) 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 minimize the interface.

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 wristband 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℃ 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.

9-6 HANDLING PRECAUTIONS FOR PROTECTION FILM

(1) The protection film is attached to the bezel with a small masking tape. 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) 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 bezel after the protection film is peeled off.

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

