14 inch TFT LCD
without Touch Panel
SPECIFICATION
MODEL NAME: LMIXA140ZXN1

Date: 2014 / 06 / 30

Customer Signature		
Customer		
Approved Date	**Approved By**	**Reviewed By**

Contents

RECORD OF REVISION

Version and Date	Page	Old description	New description	Remark
0.1 2014/06/12	All	First Edition for customer		
0.2 2014/06/30	All	Second Edition for customer		

1. HANDLING PRECAUTIONS

1) Since front polarizer is easily damaged, pay attention not to scratch it.
2) Be sure to turn off power supply when inserting or disconnecting from input connector.
3) Wipe off water drop immediately. Long contact with water may cause discoloration or spots.
4) When the panel surface is soiled, wipe it with absorbent cotton or other soft cloth.
5) Since the panel is made of glass, it may break or crack if dropped or bumped on hard surface.
6) Since CMOS LSI is used in this module, take care of static electricity and insure human earth when handling.
7) Do not open or modify the Module Assembly.
8) Do not press the reflector sheet at the back of the module to any directions.
9) At the insertion or removal of the Signal Interface Connector, be sure not to rotate nor tilt the Interface Connector of the TFT Module.
10) After installation of the TFT Module into an enclosure, do not twist nor bend the TFT Module even momentary. At designing the enclosure, it should be taken into consideration that no bending/twisting forces are applied to the TFT Module from outside. Otherwise the TFT Module may be damaged.

2 General Specifications

2.1 Over view

LMIXA140ZXN1 is a 14.0” (14.0” diagonal) TFT Liquid Crystal Display module with LED Backlight unit and 40 pins LVDS interface. This module supports 1366 x 768 HD mode and can display 262,144 colors. The optimum viewing angle is at 6 o’clock direction.

2.2 Features

- High brightness, 330nits.
- Long operation life, 50,000 hours
- LED backlight
- RoHS Compliance

2.3 Application

Industrial Application.

2.4 Display Specifications

Items	Unit	Specification
Screen Diagonal	inch	14 (345.95 mm)
Active Area	mm	309.4 (W) × 173.95 (H) mm
Pixels H x V	pixels	1366 × 3(RGB) × 768
Pixels Pitch	mm	0.2265 × 0.2265
Pixel Arrangement		RGB Vertical stripe
Display mode		TN mode, normally white
White luminance (center)	Cd/m^2	330 (Typ.), 300 (min)
Contrast ratio		650 (Typ.)
Optical Response Time	msec	10 ms (Typ. on/off)
Normal Input Voltage VDD	Volt	3.3
Power Consumption (Vcc Line + LED L Lines)	Watt	3.38 (Vcc line=0.74; LED line=2.64W)
Weight	Grams	335 typ.
Physical size	mm	323.5 (W) × 192(H) × 4.9(D, typ)
Electrical Interface		1 Channel LVDS
Support Colors		262 k colors (RGB 6-bits)
Surface Treatment		Anti-Glare, 3H
Temperature range Operating Storage (Shipping)	 ^0C ^0C	 0 ~ 50 -20 ~ 60
RoHS Compliance		RoHS Compliance

2.5 Optical Characteristics

The following optical characteristics are measured under stable condition at 25 ^{0}C

Items	Unit	Conditions	Min.	Typ.	Max.	Note
Viewing angle	Deg.	Horizontal (Right) CR=10 (Left)	80	90		2
		Vertical (Up) CR=10 (Down)	55	65		
Contrast Ratio		Normal Direction	500	650		3
Response Time	msec	Raising time (T_{rR})		3		4
		Falling time (T_{rF})		7		
		Raising + Falling		10		
Color / Chromaticity Coordinates (CIE)		Red x	-0.04	0.59	+0.04	5
		Red y		0.34		
		Green x		0.33		
		Green y		0.57		
		Blue x		0.16		
		Blue y		0.15		
Color coordinates (CIE) White		White x		0.32		
		White y		0.34		
Center Luminance	Cd/m^2		300	330		6
Luminance Uniformity	%		70			7

Note 1 : Definition of viewing angle range

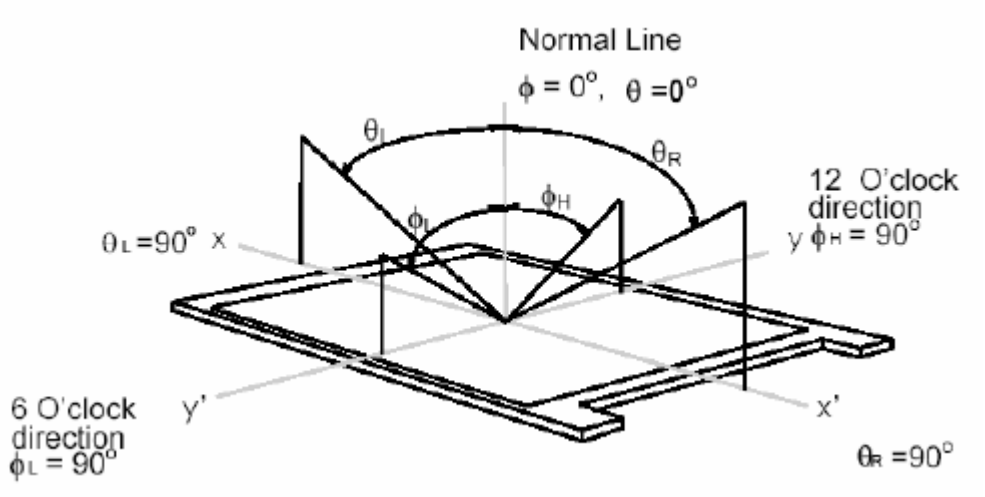


Fig. 2.1 Definition of viewing angle

Note 2: Definition of optical measurement system.

The optical characteristics should be measured in dark room. After 30 minutes operation, the optical properties are measured at the center point of the LCD screen. (Response time is measured by Photo detector TOPCON BM-7, other items are measured by BM-5A/Field of view: 1° /Height: 500mm.)

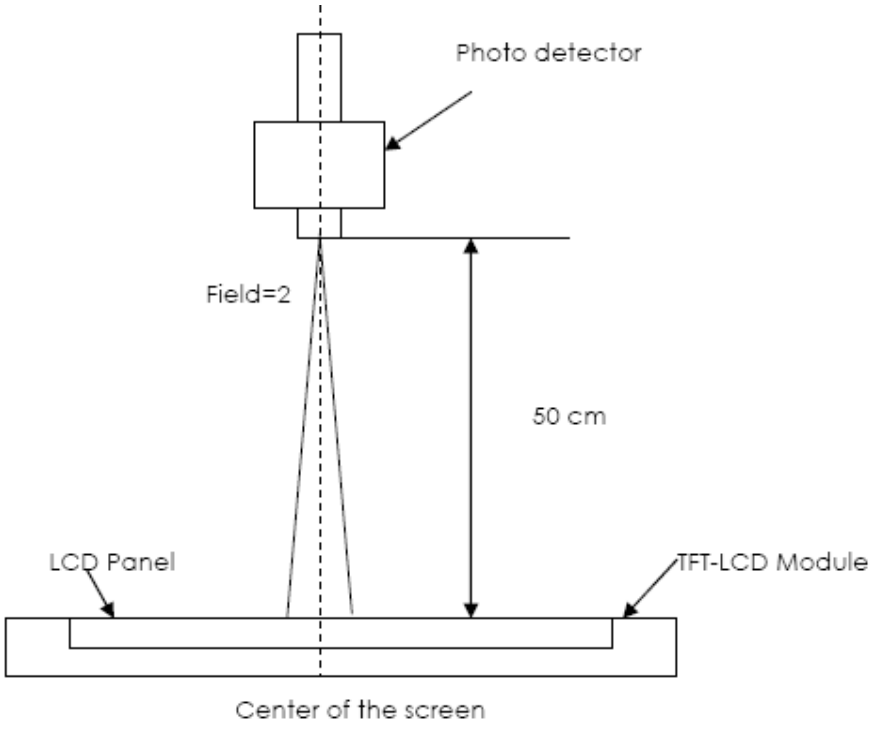
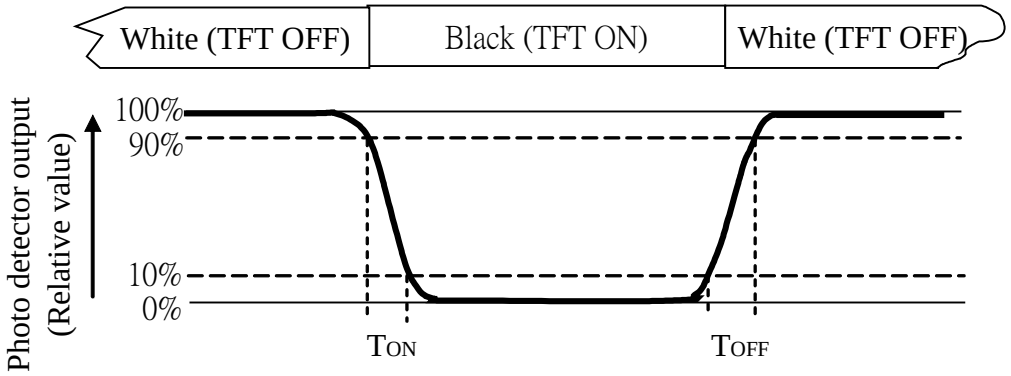


Fig. 2.2 Optical measurement system setup

Note 3: Definition of Response time

The response time is defined as the LCD optical switching time interval between “White” state and “Black” state. Rise time (TON) is the time between photo detector output intensity changed from 90% to 10%. And fall time (TOFF) is the time between photo detector output intensity changed from 10% to 90%.



Note 4: Definition of Contrast ratio

$$\text{Contrast ratio (CR)} = \frac{\text{Luminance measured when LCD on the "White" state}}{\text{Luminance measured when LCD on the "Black" state}}$$

Note 5: Definition of color chromaticity (CIE1931)

Color coordinates measured at center point of LCD.

Note 6: All input terminals LCD panel must be ground while measuring the center area of the panel. The LED driving condition is IL=66mA .

Note 7: Definition of Luminance Uniformity

Active area is divided into measuring areas (Refer to Fig. 2.3). Every measuring point is placed at the center of each measuring area.

δW5p = {Minimum [L (1)~ L (5)] / Maximum [L (1)~ L (5)]}*100%

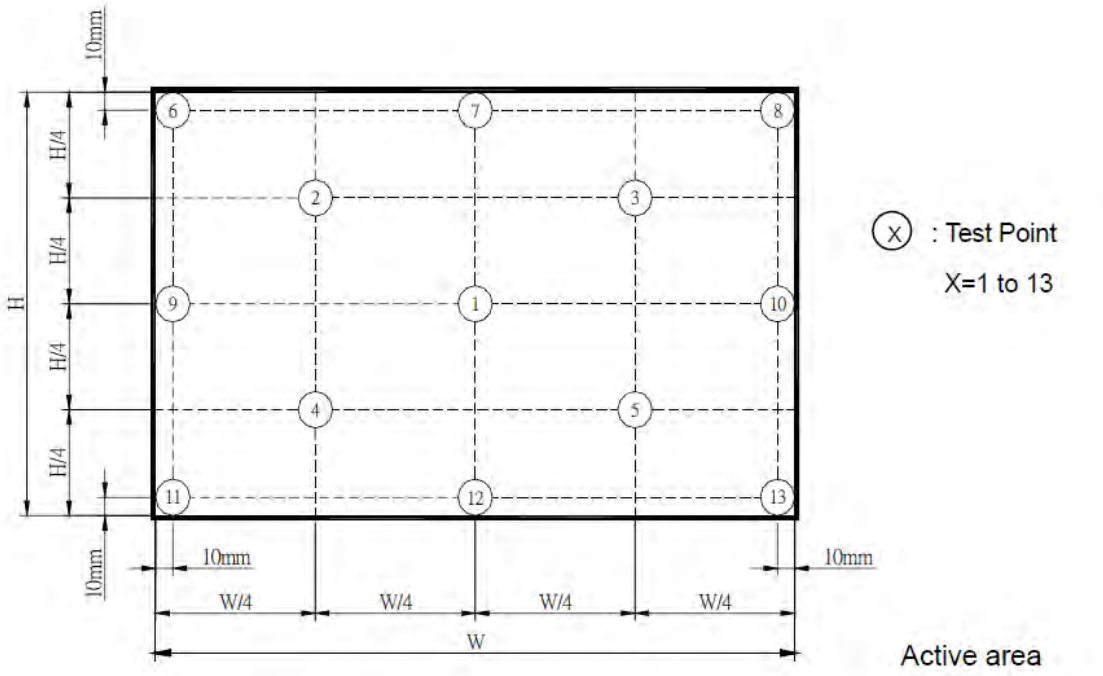


Fig. 2.3 Definition of measuring points

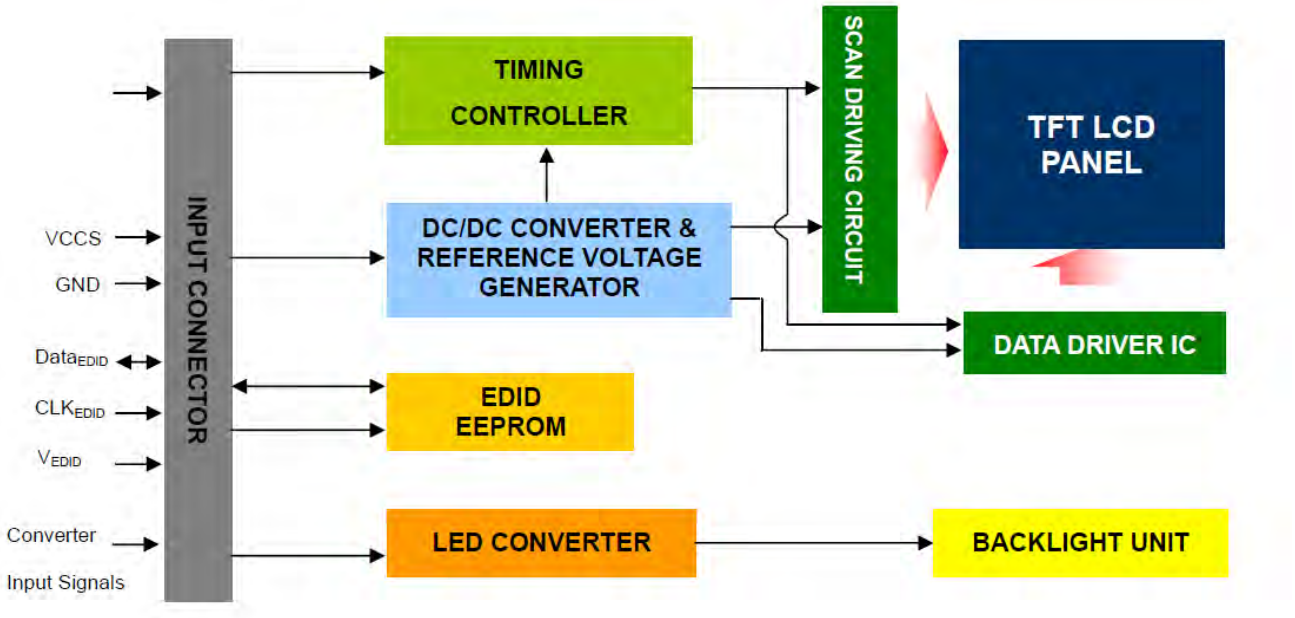
Bmax: The measured maximum luminance of all measurement position.

Bmin: The measured minimum luminance of all measurement position.

3 Functional Block Diagram

3.1 FUNCTION BLOCK DIAGRAM

The following diagram shows the functional block of the 14 inches wide Color TFT/LCD



Connector Part No.: IPEX-20455-040E-12 or TYCO 5-2069716-3.

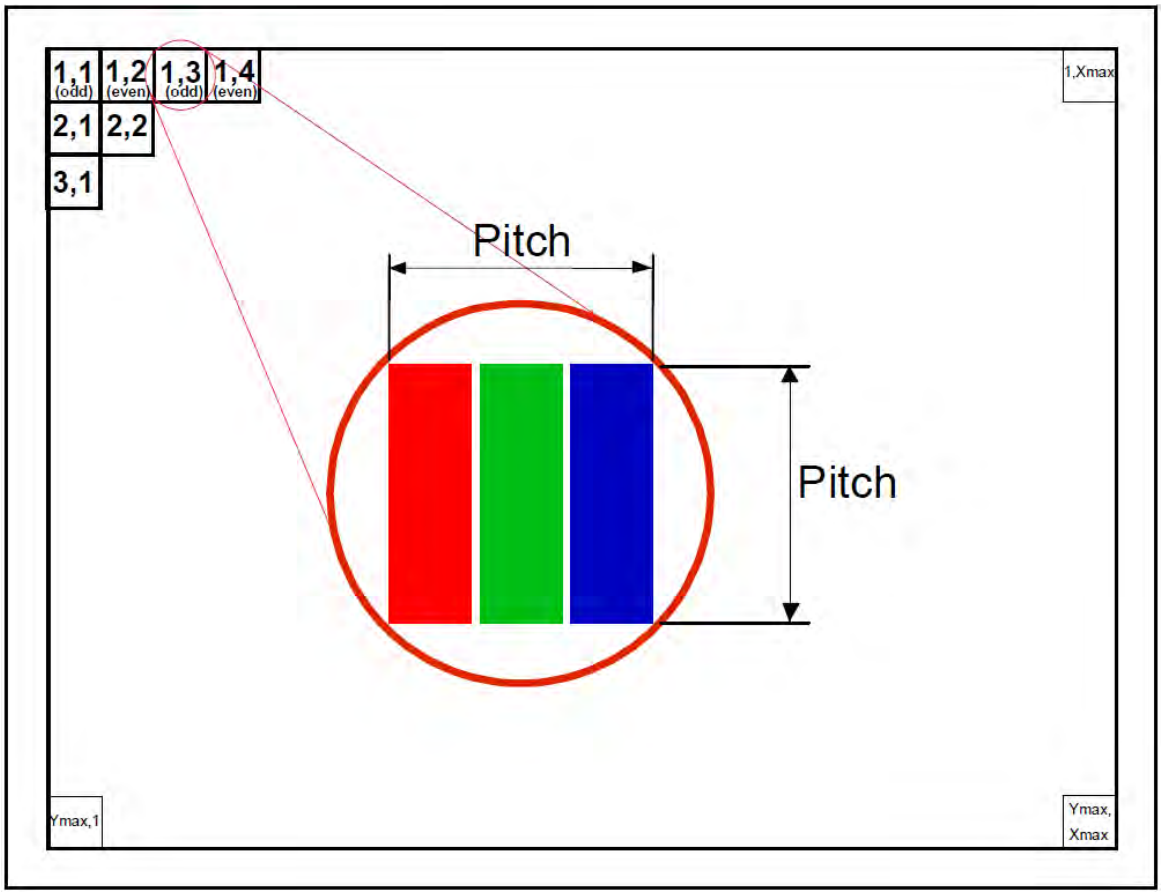
User's connector Part No: IPEX-20453-040T-01.

3.2 INTERFACE CONNECTIONS

PIN ASSIGNMENT

Pin	Symbol	Description	Remark
1	NC	No Connection (Reserve)	
2	VCCS	Power Supply (3.3V typ.)	
3	VCCS	Power Supply (3.3V typ.)	
4	VEDID	DDC 3.3V power	
5	NC	No Connection (Reserved for CMI test)	
6	CLKEDID	DDC clock	
7	DATAEDID	DDC data	
8	Rxin0-	LVDS differential data input	R0-R5, G0
9	Rxin0+	LVDS differential data input	
10	VSS	Ground	
11	Rxin1-	LVDS differential data input	G1~G5, B0, B1
12	Rxin1+	LVDS differential data input	
13	VSS	Ground	
14	Rxin2-	LVDS Differential Data Input	B2-B5,HS,VS, DE
15	Rxin2+	LVDS Differential Data Input	
16	VSS	Ground	
17	RxCLK-	LVDS differential clock input	LVDS CLK
18	RxCLK+	LVDS differential clock input	
19	VSS	Ground	
20	NC	No Connection (Reserve)	
21	NC	No Connection (Reserve)	
22	VSS	Ground	
23	NC	No Connection (Reserve)	
24	NC	No Connection (Reserve)	
25	VSS	Ground	
26	NC	No Connection (Reserve)	
27	NC	No Connection (Reserve)	
28	VSS	Ground	
29	NC	No Connection (Reserve)	
30	NC	No Connection (Reserve)	
31	LED_GND	LED Ground	
32	LED_GND	LED Ground	
33	LED_GND	LED Ground	
34	NC	No Connection (Reserve)	
35	LED_PWM	PWM Control Signal of LED Converter	
36	LED_EN	Enable Control Signal of LED Converter	
37	NC	No Connection (Reserve)	
38	LED_VCCS	LED Power Supply	
39	LED_VCCS	LED Power Supply	
40	LED_VCCS	LED Power Supply	

Note (1) The first pixel is odd as shown in the following figure.



4 Absolute Maximum Ratings

4.1 Absolute Ratings of TFT LCD Module

Item	Symbol	Values			Unit	Remark
		Min.	Typ	Max.		
Power Supply Voltage	V_{CCS}	-0.3	-	4.0	V	Note 1, 2
Logic Input Voltage	Vin	-0.3		VCCS+0.3		
Converter Input Voltage	LED_VCCS	-0.3		26.0		
Converter Control Signal Voltage	LED_PWM	-0.3		5.0		
Converter Control Signal Voltage	LED_EN	-0.3		5.0		

Note (1) Stresses beyond those listed in above “ELECTRICAL ABSOLUTE RATINGS” may cause permanent damage to the device. Normal operation should be restricted to the conditions described in “ELECTRICAL CHARACTERISTICS”.

4.2 Absolute Ratings of Environment

Item	**Symbol**	**Values**			**Unit**	**Remark**
		Min.	**Typ.**	**Max.**		
Operating	TOP	0	-	50	℃	Note 3
Storage Temperature	TST	-20	-	60	℃	Note 3

Note 1 : At Ta (25℃)

Note 2 : Permanent damage to the device may occur if exceed maximum values.

Note 3 : For quality performance, please refer to IIS

5 Electrical characteristics

5.1. Power Specification

The power specification are measured under 25℃ and frame frequency under 60Hz

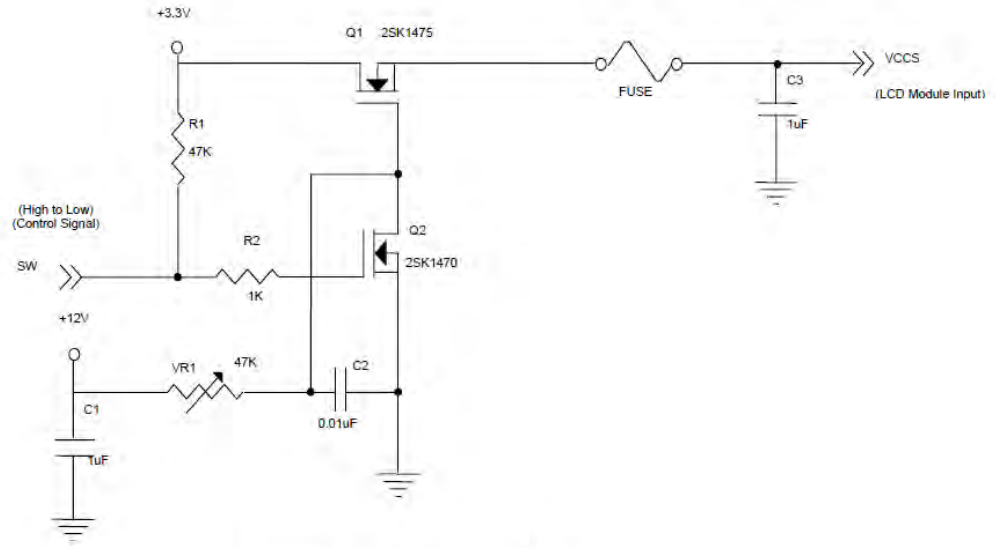
Symble	Parameter	Min	Typ	Max	Units	Note
VCCS	Logic/LCD Drive voltage	3.0	3.3	3.6	V	
Icc	Icc current		206	224	mA	Note1,2
IRush	Inrush current			1500	mA	
VRP	Ripple voltage			50	mVp-p	

Note (1) The ambient temperature is Ta = 25 ± 2 ºC.

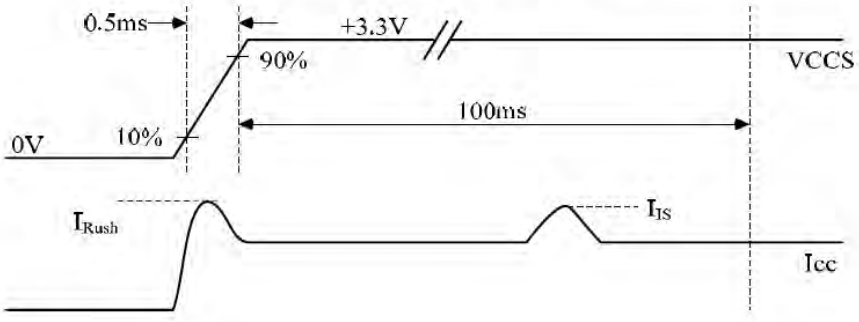
Note (2) IRUSH: the maximum current when VCCS is rising

IIS: the maximum current of the first 100ms after power-on

Measurement Conditions: Shown as the following figure. Test pattern: mosaic



VCCS rising time is 0.5ms



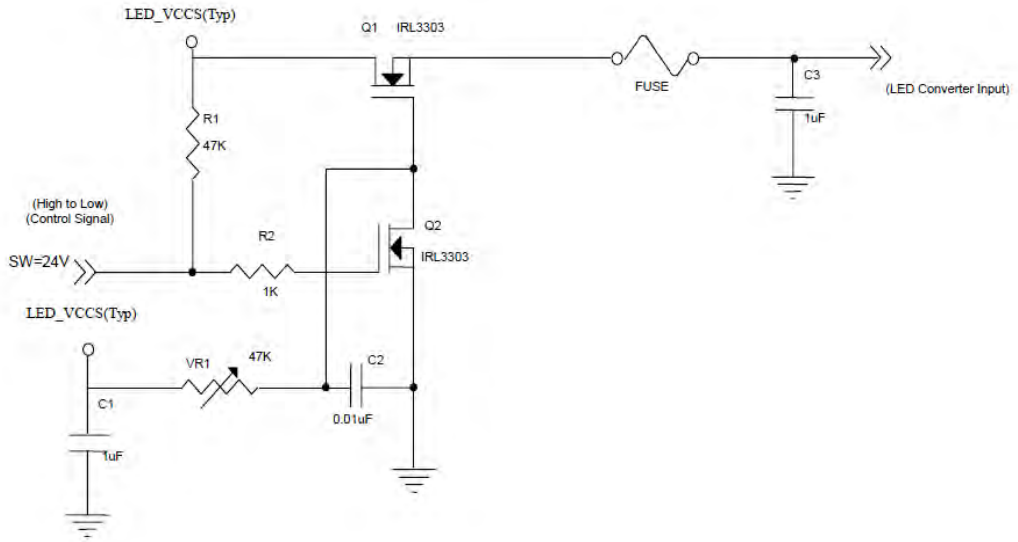
5.2. LED CONVERTER SPECIFICATION

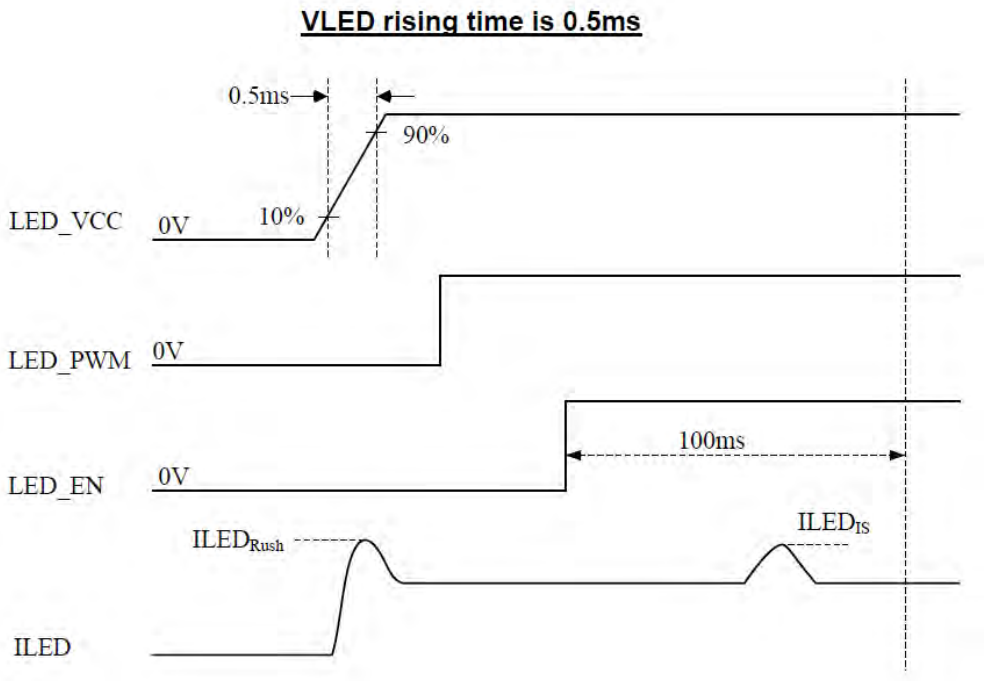
Parameter		Symbol	Value			Unit	Note
			Min.	Typ.	Max.		
Converter Input power supply voltage		LED_Vccs	5.0	12.0	21.0	V	
Converter Inrush Current		$ILED_{RUSH}$	-	-	1.5	A	(1)
EN Control Level	Backlight On		2.2	-	3.6	V	
	Backlight Off		0	-	0.6	V	
PWM Control Level	PWM High Level		2.2	-	3.6	V	
	PWM Low Level		0	-	0.6	V	
PWM Control Duty Ratio			5-	-	100	%	
PWM Control Permissive Ripple Voltage		VPWM_pp	-	-	100	mV	
PWM Control Frequency		f_{PWM}	190	-	2K	Hz	(2)
LED Power Current	LED_VCCS =Typ.	ILED	-	220	260	mA	(3)

Note (1) $ILED_{RUSH}$: the maximum current when LED_VCCS is rising,

ILEDIS: the maximum current of the first 100ms after power-on,

Measurement Conditions: Shown as the following figure. LED_VCCS = Typ, Ta = 25 ± 2 ºC, f_{PWM} = 200 Hz, Duty=100%.





Note (2) If PWM control frequency is applied in the range less than 1KHz, the “waterfall” phenomenon on the screen may be found. To avoid the issue, it’s a suggestion that PWM control frequency should follow the criterion as below.

PWM control frequency f_{PWM} should be in the range

$$(N + 0.33) * f \leq f_{PWM} \leq (N + 0.66) * f$$

N : Integer ($N \geq 3$)

f : Frame rate

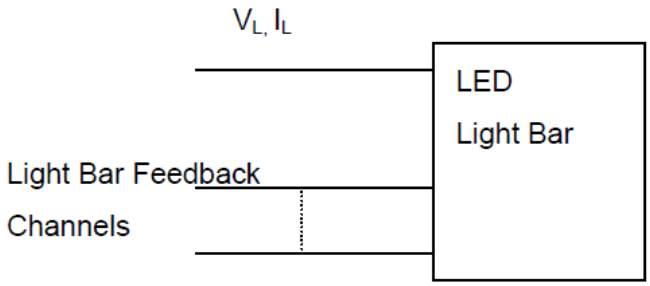
Note (3) The specified LED power supply current is under the conditions at “LED_VCCS = Typ.”, Ta = 25 ± 2 ºC, f_{PWM} = 200 Hz, Duty=100%.

5.3. Backlight Unit

Ta = 25 ± 2 ºC

Parameter	Symbol	Value			Unit	Note
		Min.	Typ.	Max.		
LED Light Bar Power Supply Voltage	V_L			37.2	V	(1)(2)(Duty100%)
LED Light Bar Power Supply Current	I_L		66		mA	
Power Consumption	P_L			2.46	W	(3)
LED Life Time	L_{BL}	50000	-	-	Hrs	(4)

Note (1) LED current is measured by utilizing a high frequency current meter as shown below:



The LED bar consists of 12 LED in series and 3 parallel. Each LED die current is 22 mA. The total current of 3 channel is 66 mA.

Note (2) For better LED light bar driving quality, it is recommended to utilize the adaptive boost converter with current balancing function to drive LED light-bar.

Note (3) PL = IL ×VL (Without LED converter transfer efficiency)

Note (4) The lifetime of LED is defined as the time when it continues to operate under the conditions at Ta = 25 ±2 °C and IL = 22 mA (Per EA) until the brightness becomes ≦ 50% of its original value.

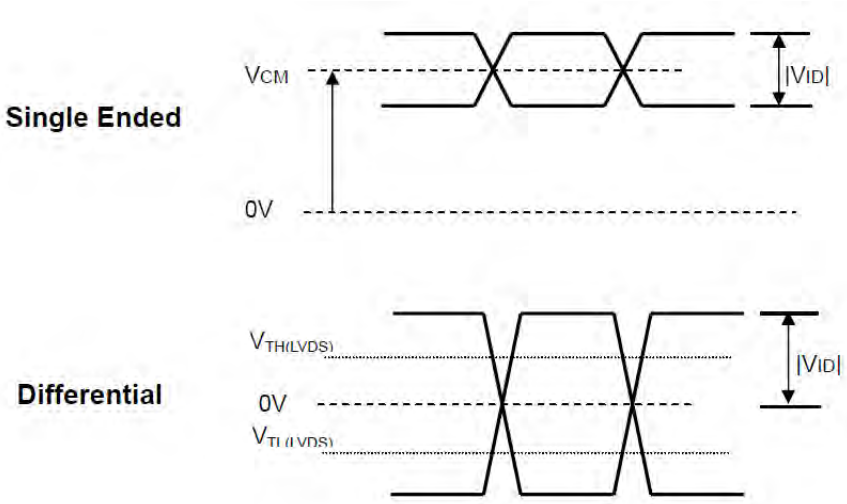
At Ta = 40 °C, the typical LED life time is 50,000 hours.

5.4 LVDS INPUT SIGNAL TIMING SPECIFICATIONS

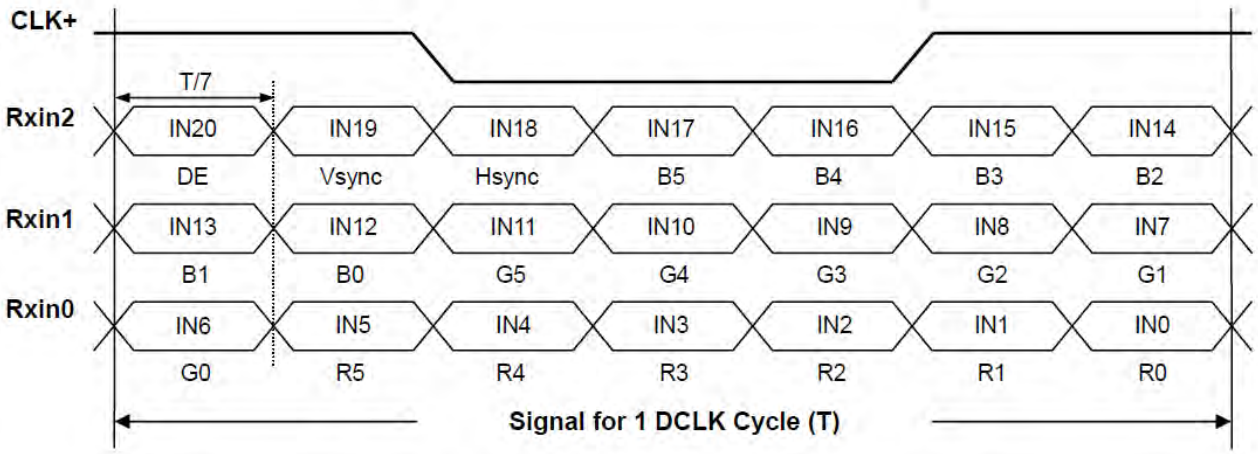
5.4.1 LVDS DC SPECIFICATIONS

Parameter	Condition	Min	Typ	Max	Unit
V_{TH}	Differential input high threshold (Vcm=1.2V)			100	mV
V_{TL}	Differential input low threshold (Vcm=1.2V)	-100			mV
$\lvert V_{ID} \rvert$	Differential input voltage	100		600	mV
V_{CM}	Differential input common mode voltage	1.125		1.375	V
R_T	LVDS Terminating Resistor		100		Ohm

Note: LVDS signal waveform



5.4.2 LVDS DATA FORMAT



5.4.3 COLOR DATA INPUT ASSIGNMENT

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 the assignment of color versus data input.

Color		Data Signal																	
		Red						Green						Blue					
		R5	R4	R3	R2	R1	R0	G5	G4	G3	G2	G1	G0	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
	Red	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
	Green	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0
	Blue	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1
	Cyan	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
	Magenta	1	1	1	1	1	1	0	0	0	0	0	0	1	1	1	1	1	1
	Yellow	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0
	White	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Gray Scale Of Red	Red(0)/Dark	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red(1)	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	Red(2)	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	Red(61)	1	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	Red(62)	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red(63)	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
Gray Scale Of Green	Green(0)/Dark	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Green(1)	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
	Green(2)	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	Green(61)	0	0	0	0	0	0	1	1	1	1	0	1	0	0	0	0	0	0
	Green(62)	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0	0
	Green(63)	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0
Gray Scale Of Blue	Blue(0)/Dark	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Blue(1)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	Blue(2)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:	:
	Blue(61)	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	1
	Blue(62)	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0
	Blue(63)	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1

Note (1) 0: Low Level Voltage, 1: High Level Voltage

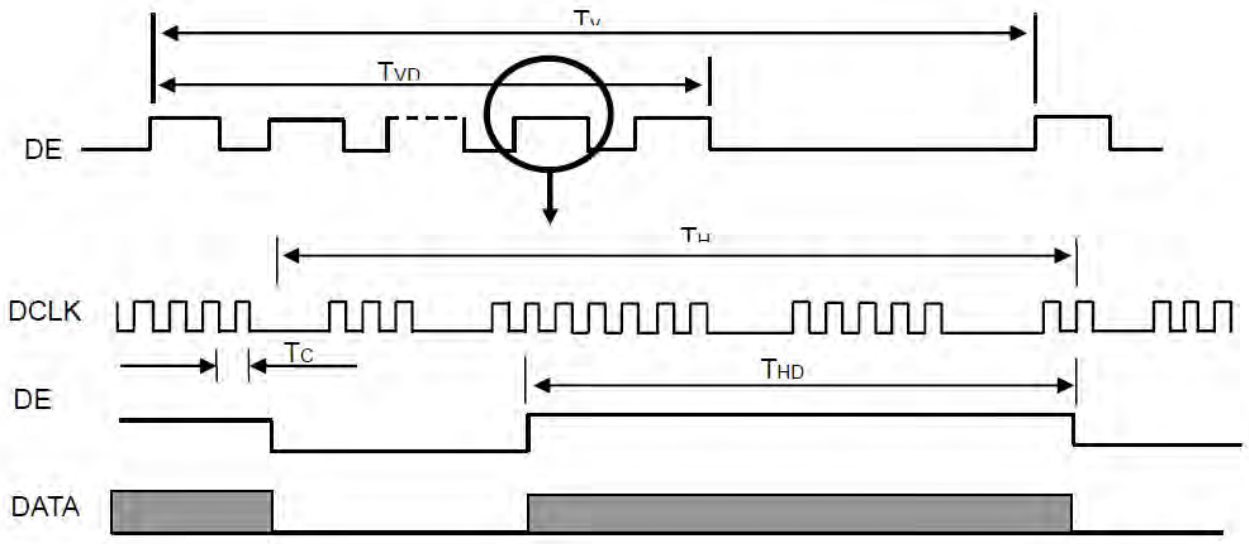
5.5 DISPLAY TIMING SPECIFICATIONS

The input signal timing specifications are shown as the following table and timing diagram.

Signal	Item	Symbol	Min.	Typ.	Max.	Unit	Note
DCLK	Frequency	1/Tc	72.6	76.42	80.24	MHz	-
DE	Vertical Total Time	TV	775	800	808	TH	-
	Vertical Active Display Period	TVD	768	768	768	TH	-
	Vertical Active Blanking Period	TVB	7	32	40	TH	-
	Horizontal Total Time	TH	1466	1592	1648	Tc	-
	Horizontal Active Display Period	THD	1366	1366	1366	Tc	-
	Horizontal Active Blanking Period	THB	100	226	282	Tc	-

Note (1) Because this module is operated by DE only mode, Hsync and Vsync are ignored.

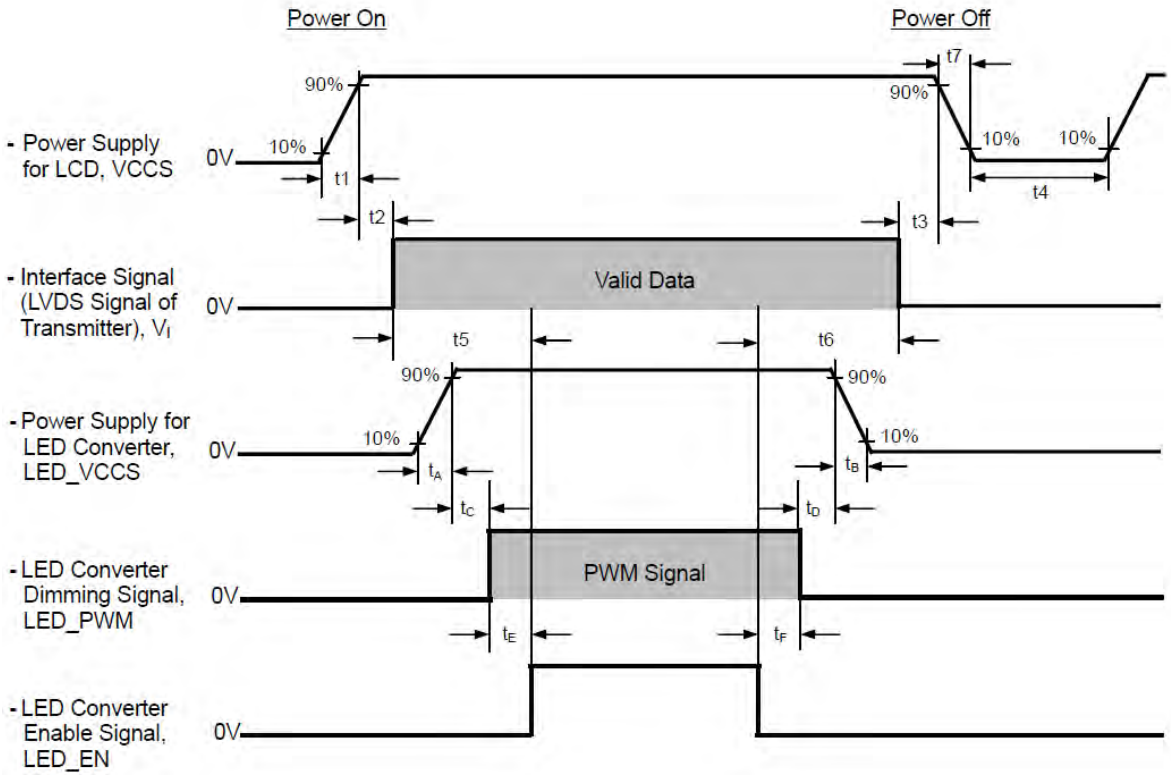
INPUT SIGNAL TIMING DIAGRAM



5.6 POWER ON/OFF SEQUENCE

The power sequence specifications are shown as the following table and diagram.

Symbol	Value			Unit	Note
	Min.	Typ.	Max.		
t1	0.5	-	10	ms	
t2	0	-	50	ms	
t3	0	-	50	ms	
t4	500	-	-	ms	
t5	200	-	-	ms	
t6	200	-	-	ms	
t7	0.5	-	10	ms	
t_A	0.5	-	10	ms	
t_B	0		10	ms	
t_C	1	-	-	ms	
t_D	1	-	-	ms	
t_E	1	-	-	ms	
t_F	1	-	-	ms	



Note (1) Please don't plug or unplug the interface cable when system is turned on.

Note (2) Please avoid floating state of the interface signal during signal invalid period.

Note (3) It is recommended that the backlight power must be turned on after the power supply for LCD and the interface signal is valid.

6. RELIABILITY TEST ITEM

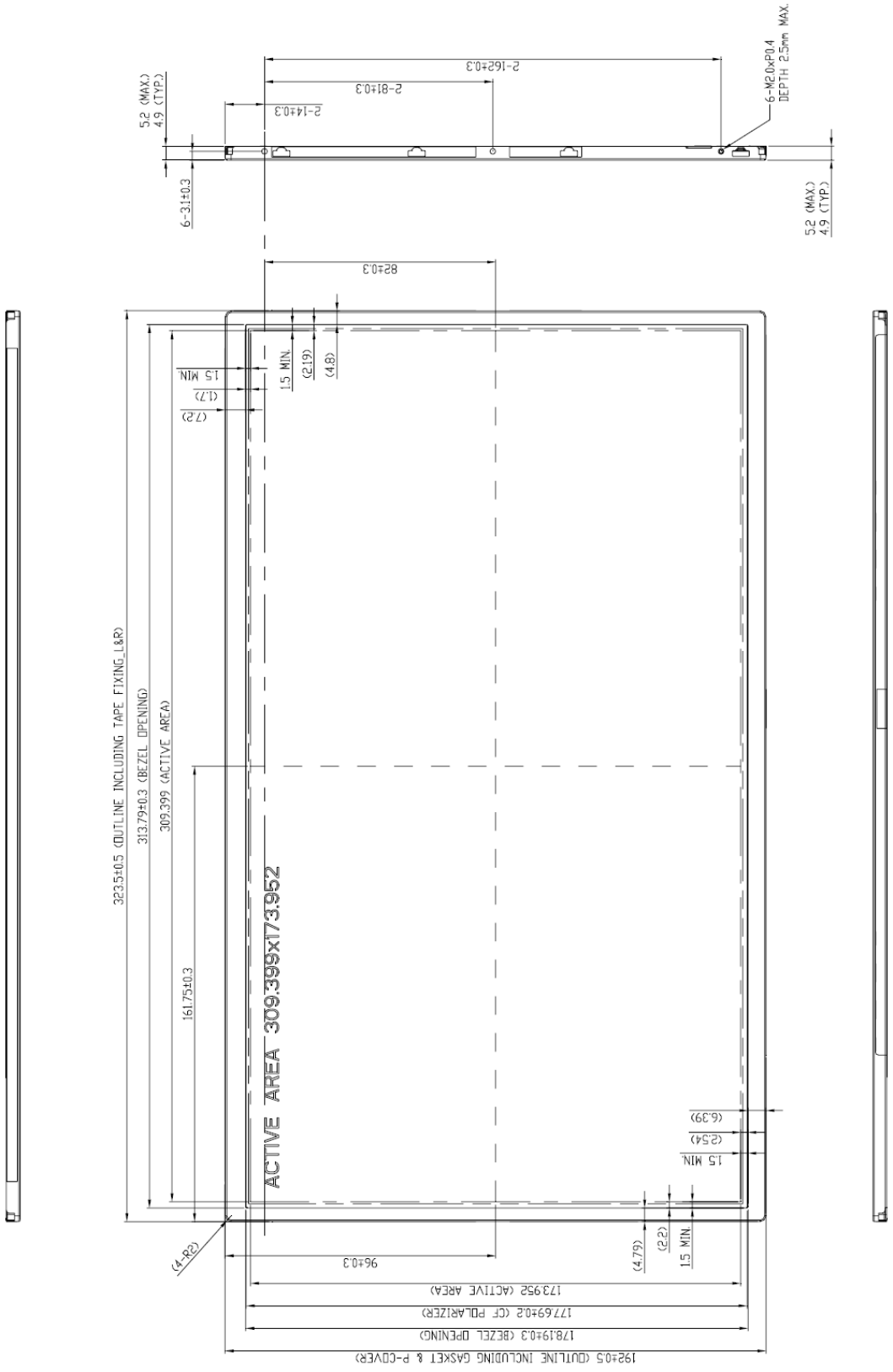
Test Item	Test Condition	Note
High Temperature Storage Test	60ºC, 240 hours	(1) (2)
Low Temperature Storage Test	-20ºC, 240 hours	
Thermal Shock Storage Test	-20ºC, 0.5hour←→60℃, 0.5hour; 100cycles, 1hour/cycle	
High Temperature Operation Test	50ºC, 240 hours	
Low Temperature Operation Test	0ºC, 240 hours	
High Temperature & High Humidity Operation Test	50°C, 80% RH, 240 hours	
ESD Test (Operation)	150pF, 330Ω, 1sec/cycle Condition 1 : Contact Discharge, ±8KV Condition 2 : Air Discharge, ±15KV	(1)
Shock (Non-Operating)	220G, 2ms, half sine wave,1 time for each direction of ±X,±Y,±Z	(1)(3)
Vibration (Non-Operating)	1.5G / 10-500 Hz, Sine wave, 30 min/cycle, 1cycle for each X, Y, Z	(1)(3)

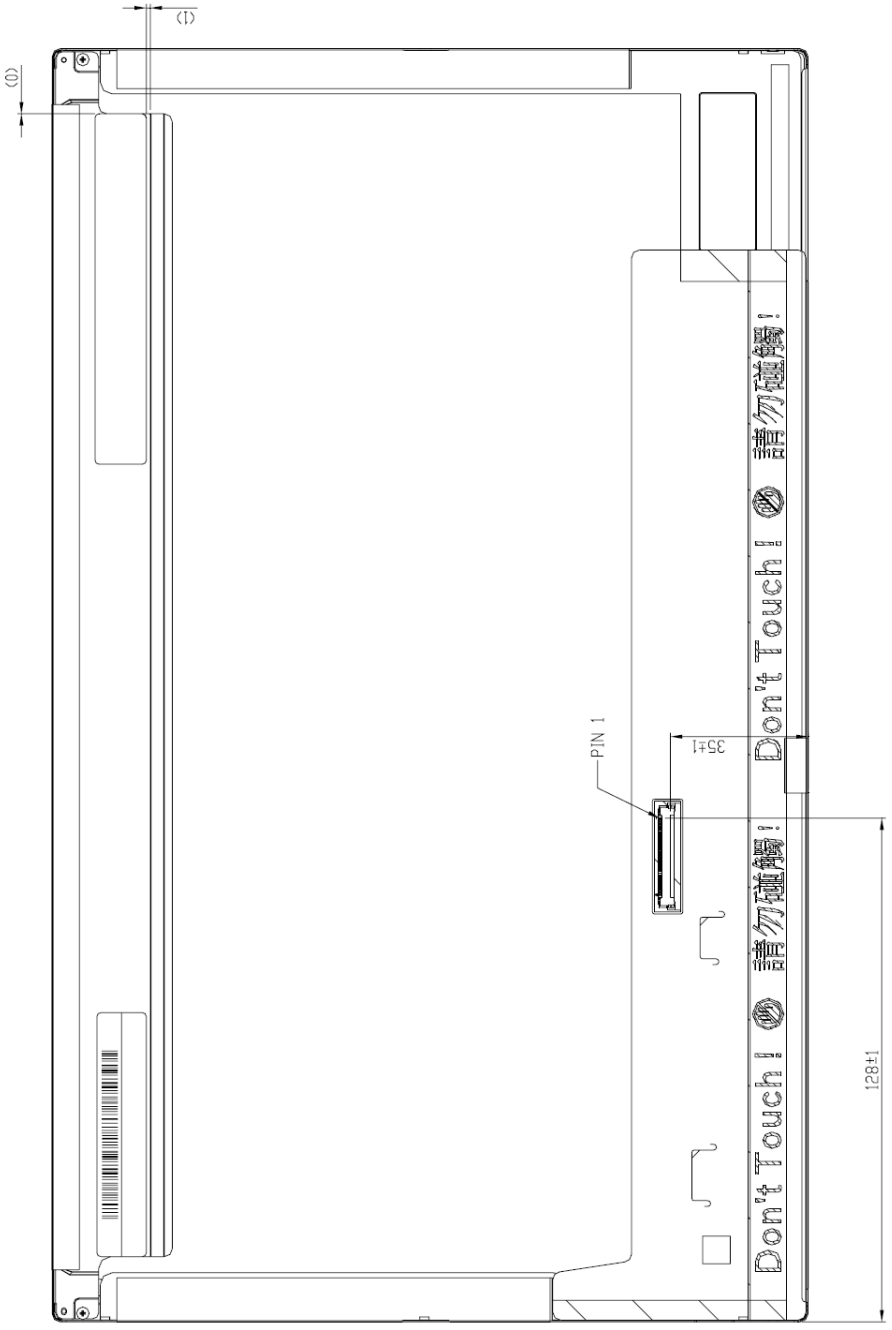
Note (1) criteria : Normal display image with no obvious non-uniformity and no line defect.

Note (2) Evaluation should be tested after storage at room temperature for more than two hour

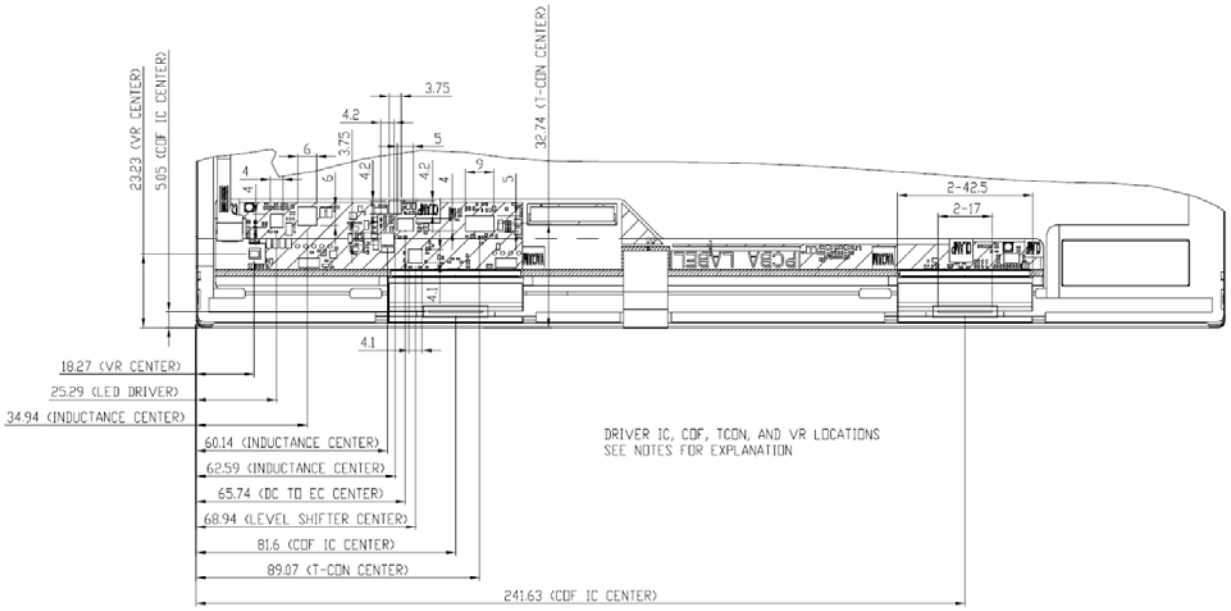
Note (3) At testing Vibration and Shock, the fixture in holding the module has to be hard and rigid enough so that the module would not be twisted or bent by the fixture..

7. Mechanical Drawing

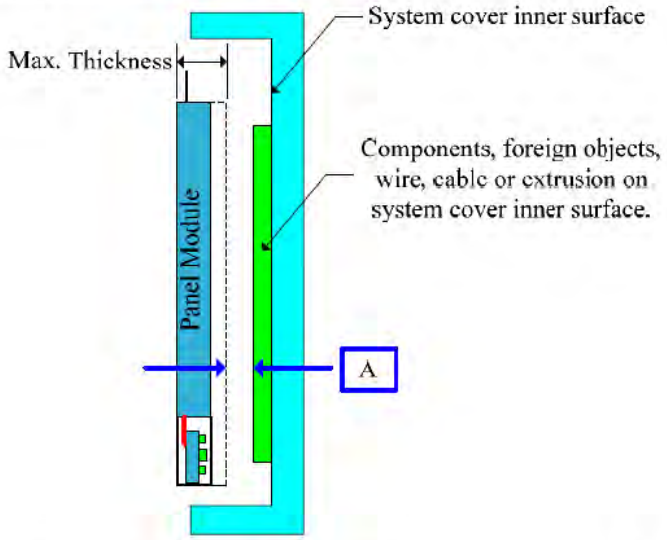
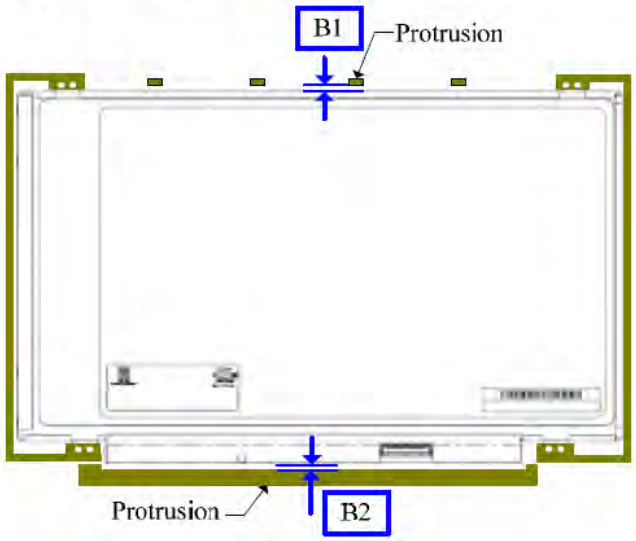


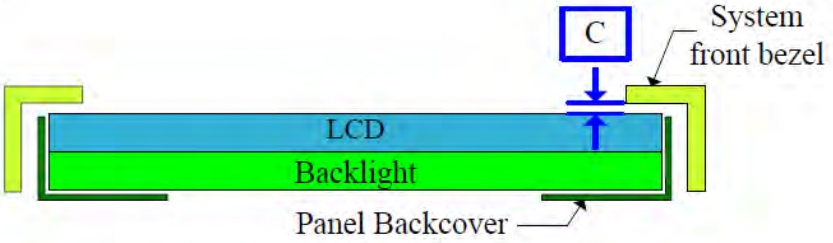


NOTES :
1. MAX SCREW LENGTH : 2.5 mm.
2. MAX SCREW TORQUE : 2.0 kgf-cm.
3. LCD MODULE INPUT CONNECTOR : I-PEX 20455-040E-12 OR Tyco 5-2069716-3.
4. GAP BETWEEN BEZEL AND PANEL : 0.5mm MAX.
5. IN ORDER TO AVOID ABNORMAL DISPLAY, POOLING AND WHITE SPOT,
   NO OVERLAPPING IS SUGGESTED AT CABLES, ANTENNAS, CAMERA, WLAN, WAN OR
   FOREIGN OBJECTS OVER FPC, T-CON AND VR LOCATIONS.
6. LVDS CONNECTOR IS MEASURED AT PIN1 AND ITS MATING LINE.
7. MODULE FLATNESS SPEC 0.5mm MAX.
8. "( )" MARKS THE REFERENCE DIMENSIONS.

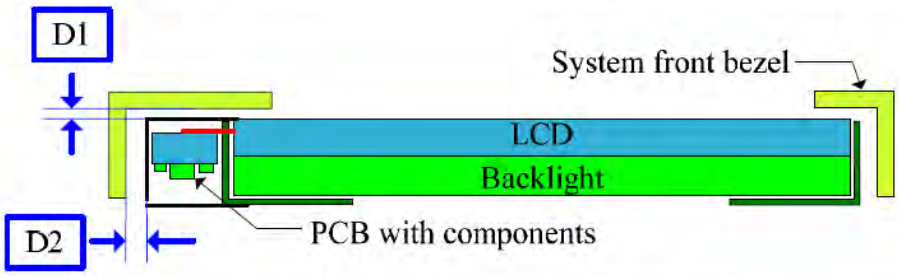

2323 (VR CENTER)
5.05 (CDF IC CENTER)
32.74 (T-CON CENTER)
3.75
4.2
6
3.75
5
4
4
6
4.2
4.2
4
9
5
2-42.5
2-17
PCBA LABEL
4.1
4.1
18.27 (VR CENTER)
25.29 (LED DRIVER)
34.94 (INDUCTANCE CENTER)
60.14 (INDUCTANCE CENTER)
62.59 (INDUCTANCE CENTER)
65.74 (DC TO EC CENTER)
68.94 (LEVEL SHIFTER CENTER)
81.6 (CDF IC CENTER)
89.07 (T-CON CENTER)
241.63 (CDF IC CENTER)
DRIVER IC, CDF, TCON, AND VR LOCATIONS
SEE NOTES FOR EXPLANATION

Appendix A: SYSTEM COVER DESIGN NOTICE

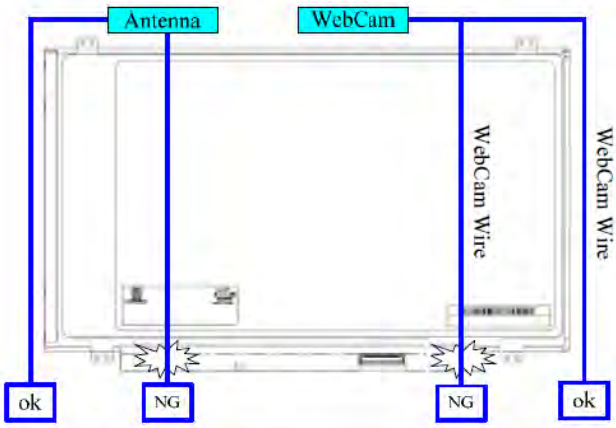
1.	**Design gap A between panel & any components on system cover**
	
Definition	a). Sufficient gap between panel & system is a must for preventing from backpack or pogo test fail. b). Zero gap from panel's maximum thickness boundary to any components, foreign objects, wire, cable or extrusion on system cover inner surface is forbidden.
2	**Design gap B1 & B2 between panel & protrusions**
	
Definition	2.0mm min. gap is recommended between panel & protrusions for preventing from shock related failures.
3	**Design gap C between system front bezel & panel surface.**



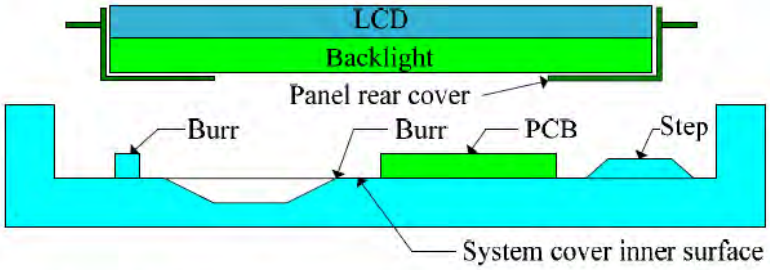
Definition	a). Sufficient gap between system front bezel & panel surface is a must for preventing from pooling or glass broken. b). Zero gap or interference is forbidden.
4	**Design gap D1 & D2 between system front bezel & PCB Assembly.**



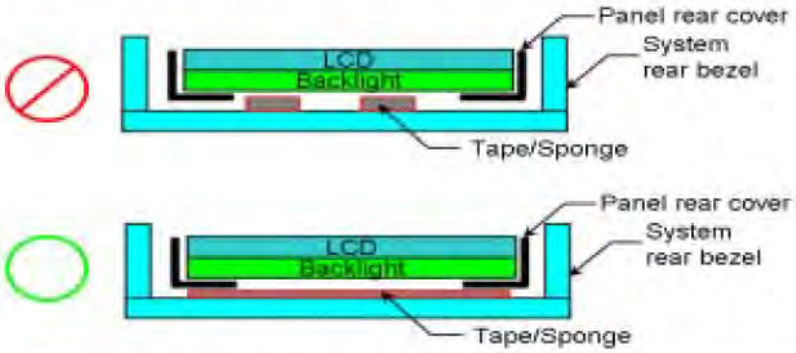
Definition	a). Sufficient gap between system front bezel & PCB assembly is a must for preventing from abnormal display after backpack test, hinge test, twist test or pogo test. b). Zero gap or interference is forbidden.
5	**Interference examination of antenna cable and WebCam wire**



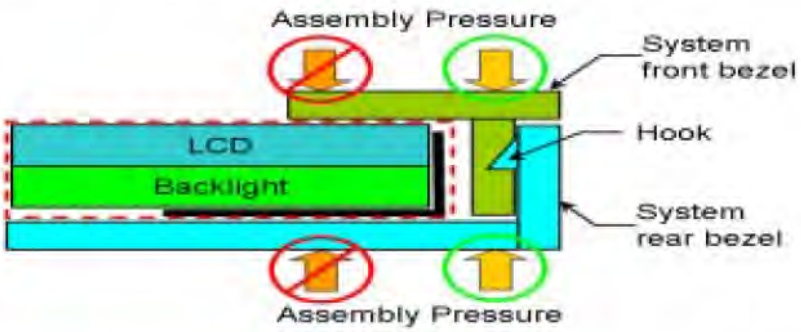
Definition	a). Antenna cable or WebCam wire overlap with panel outline is forbidden for preventing from abnormal display & white spot after backpack test, hinge test, twist test or pogo test. b). Antenna cable or WebCam wire bypass panel outline is recommended.
6	**System inner surface examination**



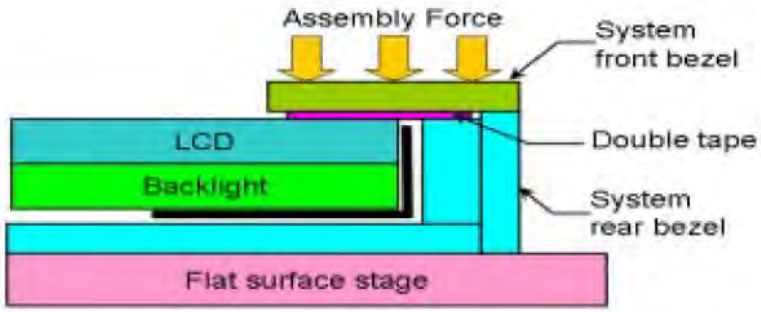
Definition	a). Burr at logo edge, step, protrusion or PCB board will easily cause white spot or glass broken. b). Keeping flat surface underneath backlight is recommended.
7	Tape/sponge design on system inner surface



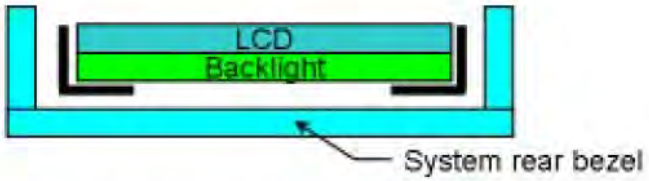
Definition	a) To prevent abnormal display & white spot after scuffing test, hinge test, pogo test, backpack test, it is not recommended to add tape/sponge in separate location. Since each tape/sponge may act as pressure concentration location. b) We suggest to design a tape/sponge that well covered under panel rear cover.
8	Assembly SOP examination



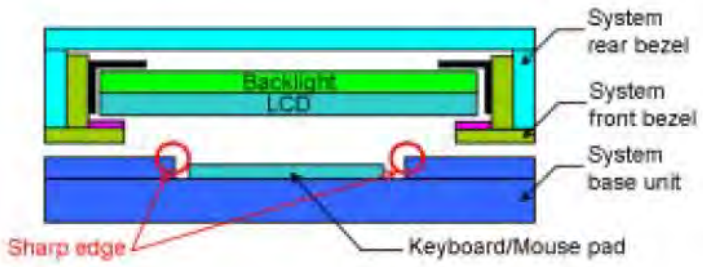
Definition	To prevent panel crack during system front bezel assembly process with hook design, it is prohibited to press panel or any location that related directly to the panel.
9	Material used for system rear bezel



Definition	To prevent panel crack during system front bezel assembly process without hook design, it is only allowed to give slight pressure with large contact area. This can help to distribute the stress to prevent point concentration, also it is suggest to put the system on a flat surface stage during the assembly.
10	Material used for system rear bezel



Definition	a) To prevent abnormal display & white spot after scuffing test, hinge test, pogo test, backpack test, as the poor rigidity result from deformation of system rear cover during the test. b) We suggest to use aluminum-magnesium alloy as the rear frame material with thickness min 1.5mm, instead of using PC/ABS.
11	System base unit design near keyboard and mouse pad



Definition	To prevent abnormal display & white spot after scuffing test, hinge test, pogo test, backpack test, no sharp edge design is allowed in any area that may damage the panel during the test. We suggest to remove all sharp edges, or to reduce the thickness difference of keyboard/mouse pad from the nearby surface.

8. Inspection Specifications

The buyer (customer) shall inspect the modules within twenty calendar days since the delivery date (the "inspection period") at its own cost. The results of the inspection (acceptance or rejection) shall be recorded in writing, and a copy of this writing will be promptly sent to the seller.

The buyer may, under commercially reasonable reject procedures, reject an entire lot in the delivery involved if, within the inspection period, such samples of modules within such lot show an unacceptable number of defects in accordance with this incoming inspection standards, provided however that the buyer must notify the seller in writing of any such rejection promptly, and not later than within three business days of the end of the inspection period.

Should the buyer fail to notify the seller within the inspection period, the buyer's right to reject the modules shall be lapsed and the modules shall be deemed to have been accepted by the buyer.

9. Warranty

Inteltronic Inc. warrants to you, the original purchaser, that each of its products will be free from defects in materials and workmanship for one year from the date of purchase.

Inteltronic Inc. will be limited to replace or repair any of its module which is found and confirmed defective electrically or visually when inspected in accordance with Inteltronic Inc. general module inspection standard.

This warranty does not apply to any products which have been on customer’s production line, repaired or altered by persons other than repair personnel authorized by Inteltronic Inc., or which have been subject to misuse, abuse, accident or improper installation. Inteltronic Inc. assumes no liability under the terms of this warranty as a consequence of such events.

If an Inteltronic Inc. product is defective, it will be repaired or replaced at no charge during the warranty period. For out-of-warranty repairs, you will be billed according to the cost of replacement materials, service time and freight. In returning the modules, they must be properly packaged with original package; there should be detailed description of the failures or defect.

10. RMA

Products purchased through Inteltronic Inc. and under warranty may be returned for replacement. Contact support@inteltronicinc.com for RMA number and procedures

Office Locations

INTELTRONIC

Inteltronic Inc.
www.inteltronicinc.com
Office: 510-471-9900
Fax: 510-471-9901
Address: 29470 Union City Blvd
Union City, CA 94587

www.wahlee.com
Wah Lee Industrial Corp.
HSINCHU OFFICE
18F, No.8, Zihciang S. Rd., Jhubei,
Hsinchu 302, Taiwan, R.O.C.
Tel : 886-3-6205880
FAX: 886-3-6205833