

EXAMINED BY :	EMERGING DISPLAY TECHNOLOGIES CORPORATION	FILE NO . CAS-0007922
Yung Chang Hu		ISSUE : MAY.30, 2014
APPROVED BY:		TOTAL PAGE : 28
David Chang		VERSION : 1
<div>CUSTOMER ACCEPTANCE SPECIFICATIONS</div>		
<div style="text-align: center;"> <div> <div>MODEL NO. :</div> <div>ET101000DH6</div> <div>(RoHS)</div> <div>FOR MESSRS :</div> </div> </div>		
<div>CUSTOMER'S APPROVAL</div> <div>DATE :</div> <div>BY :</div>		

EMERGING DISPLAY
TECHNOLOGIES CORPORATION

MODEL NO.

ET101000DH6

VERSION

1

PAGE

0-1

RECORDS OF REVISION

DOC . FIRST ISSUE

MAY.30, 2014

DATE

REVISED
PAGE
NO.

SUMMARY

CONFIDENTIAL
Authorized for
Emerging Display Technologies Corporation Only.
Do not distribute without authorization.

TABLE OF CONTENTS

NO.	ITEM	PAGE
1.	GENERAL SPECIFICATIONS -----	1
2.	MECHANICAL SPECIFICATIONS -----	1
3.	ABSOLUTE MAXIMUM RATINGS -----	2
4.	ELECTRICAL CHARACTERISTICS -----	3
5.	TIMING CHART -----	4, 5
6.	OPTICAL CHARACTERISTICS -----	6, 7
7.	OUTLINE DIMENSIONS -----	8
8.	BLOCK DIAGRAM -----	9
9.	DETAIL DRAWING OF DOT MATRIX -----	10
10.	INTERFACE SIGNALS -----	11, 12
11.	POWER SUPPLY -----	12, 13
12.	TOUCH PANEL SPECIFICATION -----	14 ~ 19
13.	INSPECTION CRITERION -----	20 ~ 28

1. GENERAL SPECIFICATIONS

1.1 DATA SHEETS FOR CONTROLLER/DRIVER

PLEASE REFER TO :

NOVATEK NT51008
NOVATEK NT52003B

1.2 MATERIAL SAFETY DESCRIPTION

ASSEMBLIES SHALL COMPLY WITH EUROPEAN ROHS REQUIREMENTS, INCLUDING PROHIBITED MATERIALS/COMPONENTS CONTAINING LEAD, MERCURY, CADMIUM, HEXAVALENT CHROMIUM, POLYBROMINATED BIPHENYLS (PBB) AND POLYBROMINATED DIPHENYL ETHERS (PBDE)

2. MECHANICAL SPECIFICATIONS

(1) DISPLAY SIZE	-----	10.1 inch
(2) NUMBER OF DOTS	-----	1024W * (RGB) * 600H DOTS
(3) MODULE SIZE	-----	235W * 143H * 7.4D mm
(4) ACTIVE AREA	-----	222.72W * 125.28H mm (LCD) 223.72W * 126.28H mm (T/P)
(5) DOT SIZE	-----	0.0725W * 0.2088H mm
(6) PIXEL SIZE	-----	0.2175W * 0.2088H mm
(7) LCD TYPE	-----	TFT , TRANSMISSIVE , ANTI-GLARE
(8) COLOR	-----	16.7 M
(9) VIEWING DIRECTION	-----	6 O'CLOCK
(10) BACK LIGHT	-----	LED , COLOR : WHITE
(11) INTERFACE MODE	-----	LVDS

3. ABSOLUTE MAXIMUM RATINGS

3.1 ELECTRICAL ABSOLUTE MAXIMUM RATINGS

GND=0

PARAMETER	SYMBOL	MIN.	MAX.	UNIT	REMARK
POWER SUPPLY VOLTAGE	VDD	- 0.5	5.0	V	
LCD DRIVER POWER DISSIPATION	—	—	900	mW	—
LED DRIVER POWER DISSIPATION	—	—	3445	mW	—

3.2 ENVIRONMENTAL ABSOLUTE MAXIMUM RATINGS

ITEM	OPERATING		STORAGE		REMARK
	MIN.	MAX.	MIN.	MAX.	
AMBIENT TEMPERATURE	-20°C	70°C	-30°C	80°C	NOTE (1) , (2)
HUMIDITY	NOTE (3)		NOTE (3)		WITHOUT CONDENSATION
VIBRATION	—	2.45 m/s ² (0.25 G)	—	11.76m/s ² (1.2 G)	10~55 Hz XYZ DIRECTIONS 30min EACH
SHOCK	—	29.4 m/s ² (3 G)	—	490.0 m/s ² (50 G)	10 ms XYZ DIRECTIONS 1 TIME EACH
CORROSIVE GAS	NOT ACCEPTABLE		NOT ACCEPTABLE		

NOTE (1) : Ta AT -30°C : 48HRS MAX.

80°C : 48HRS MAX.

NOTE (2) : BACKGROUND COLOR CHANGES SLIGHTLY DEPENDING ON AMBIENT TEMPERATURE THIS PHENOMENON IS REVERSIBLE.

NOTE (3) : Ta ≤ 50°C : 90%RH MAX. (96HRS MAX).

Ta > 50°C : ABSOLUTE HUMIDITY MUST BE LOWER THAN THE HUMIDITY OF 90%RH AT 50°C (96HRS MAX).

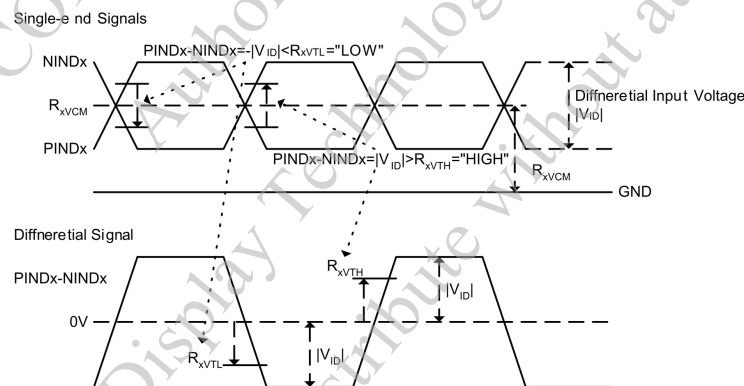
4. ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT	REMARK
LOGIC/LCD DRIVE VOLTAGE	VDD	—	3.0	3.3	3.6	V	
VDD CURRENT	IDD	—	—	200	250	mA	
POWER SUPPLY VOLTAGE FOR LED DRIVER	VLED	—	4.7	5	5.3	V	
POWER SUPPLY CURRENT FOR LED DRIVER	IVLED	VLED=5V	—	550	650	mA	
LVDS DIFFERENTIAL INPUT HIGH THRESHOLD VOLTAGE	R _{xvTH}	—			0.1	V	
LVDS DIFFERENTIAL INPUT LOW THRESHOLD VOLTAGE	R _{xvTL}	—	-0.1			V	
LVDS DIFFERENTIAL INPUT COMMON MODE VOLTAGE	R _{xvCM}	—	VID /2		2.4- VID /2	V	
LVDS DIFFERENTIAL INPUT VOLTAGE	VID	—	0.2		0.6	V	
LED LIFE TIME	—	I _{LED} =20mA (PER. LED)	30K	—	—	hrs	NOTE(4) NOTE(5)

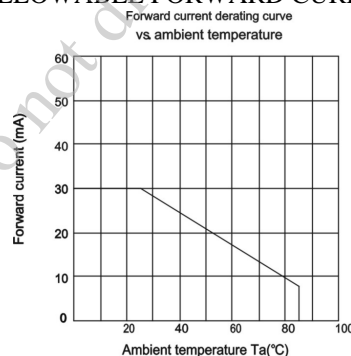
NOTE (1) : A. INPUT SIGNALS SHALL BE LOW OR HI-Z STATE WHEN VDD IS OFF.

B. ALL ELECTRICAL CHARACTERISTICS FOR LVDS SIGNAL ARE DEFINED AND SHALL BE MEASURED AT THE INTERFACE CONNECTOR OF LCD.

NOTE (2) : LVDS INPUT CHARACTERISTICS ARE AS FOLLOW



NOTE (3) : AMBIENT TEMP. VS. ALLOWABLE FORWARD CURRENT. (PER. LED)



NOTE (4) : CONDITIONS; TA=25 °C, CONTINUOUS LIGHTING

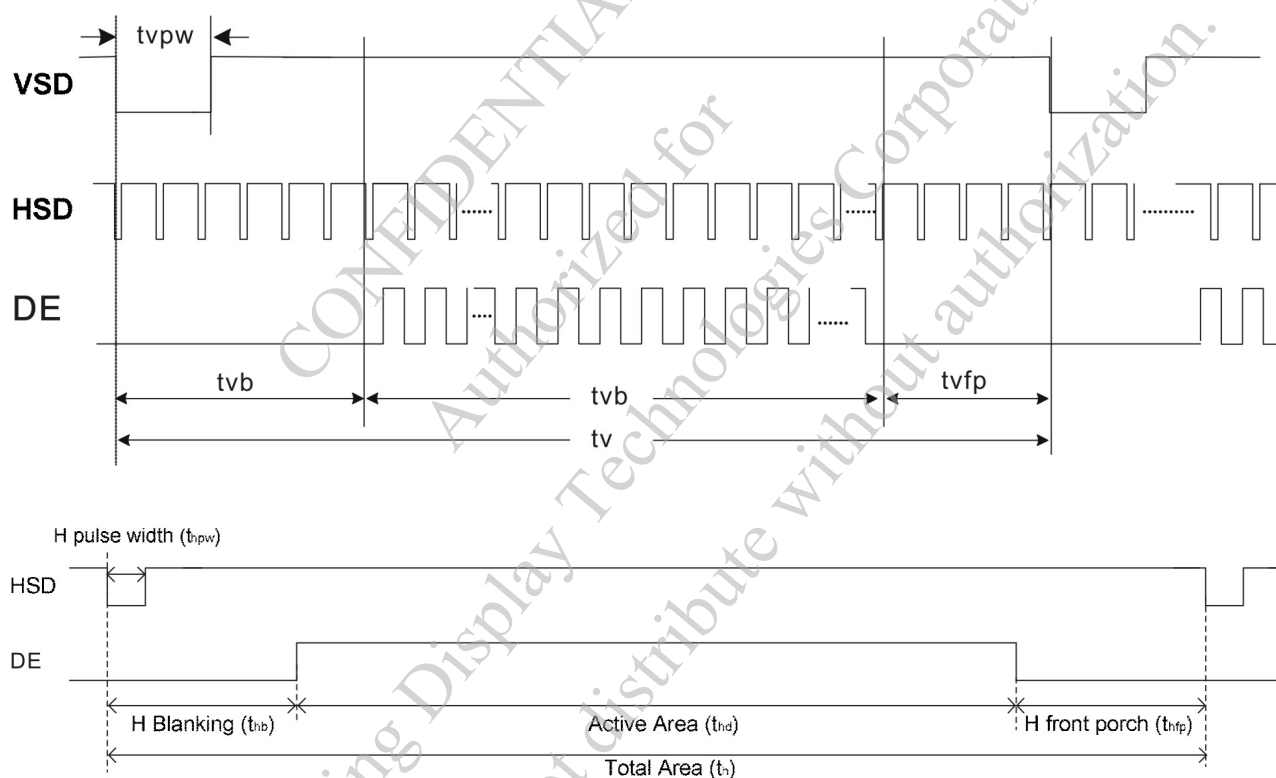
NOTE (5) : DEFINITIONS OF FAILURE

- LCD LUMINANCE BECOMES HALF OF THE MINIMUM VALUE.
- LED DOESN'T LIGHT NORMALLY

5. TIMING CHARACTERISTICS

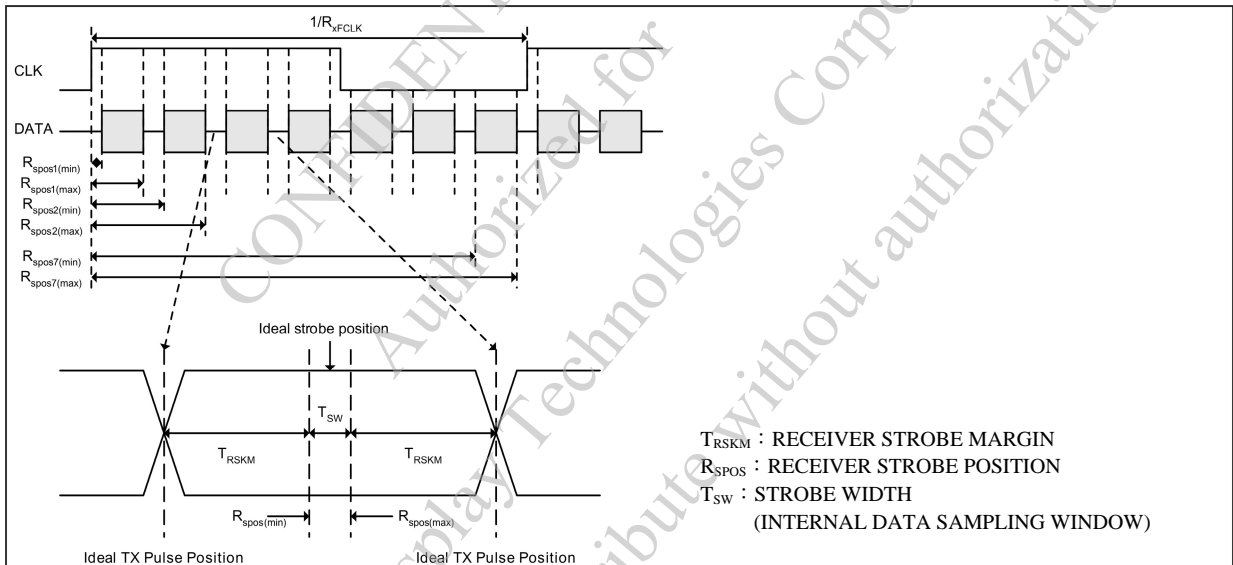
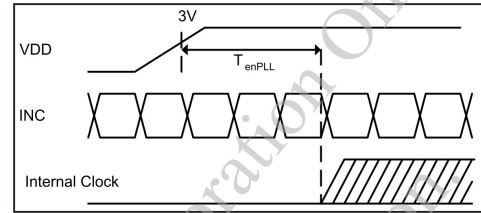
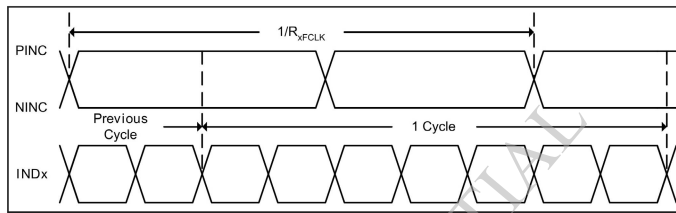
5.1 TIMING TABLE

PARAMETER	SYMBOL	VALUE			UNIT
		MIN.	TYP.	MAX.	
DCLK FREQUENCY @ FRAME RATE = 60Hz	fclk	40.8	51.2	67.2	MHz
HORIZONTAL DISPLAY AREA	thd	1024			DCLK
HSYNC PERIOD TIME	th	1114	1344	1400	DCLK
HSYNC BLANKING	thb+thfp	90	320	376	DCLK
VERTICAL DISPLAY AREA	tvb	600			H
VSYNC PERIOD TIME	tv	610	635	800	H
VSYNC BLANKING	tvb+tvfp	10	35	200	H

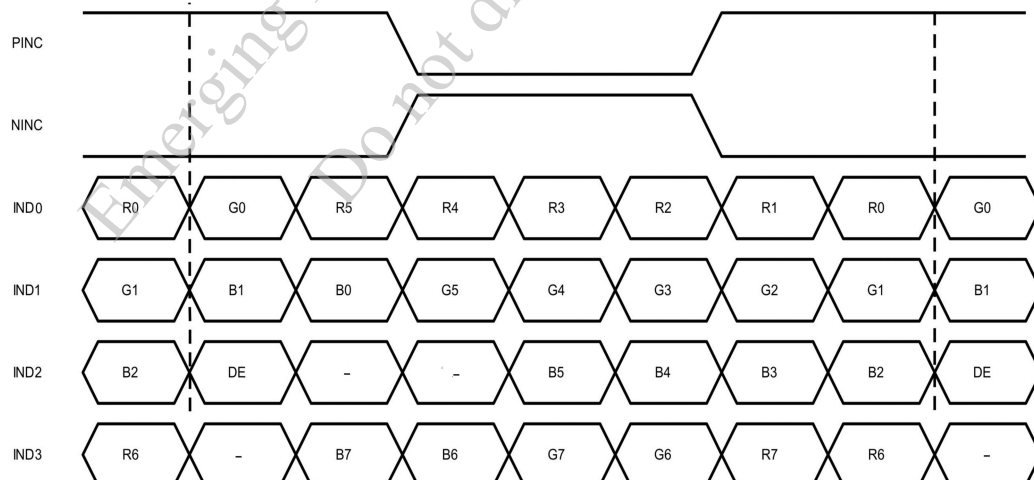


5.2 AC ELECTRICAL CHARACTERISTICS

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITION
CLOCK FREQUENCY	R_{xCLK}	20	—	71	MHz	
INPUT DATA SKEW MARGIN	T_{RSKM}	500	—	—	pS	$ V_{ID} = 400mV$ $R_{xVCM} = 1.2V$ $R_{xCLK} = 71 MHz$
CLOCK HIGH TIME	T_{LVCH}	—	$4/(7 * R_{xCLK})$	—	ns	
CLOCK LOW TIME	T_{LVCL}	—	$3/(7 * R_{xCLK})$	—	ns	
PLL WAKE-UP TIME	T_{enPLL}		—	150	us	



DATA INPUT FORMAT 8-BIT LVDS INPUT



6. OPTICAL CHARACTERISTICS (NOTE1)

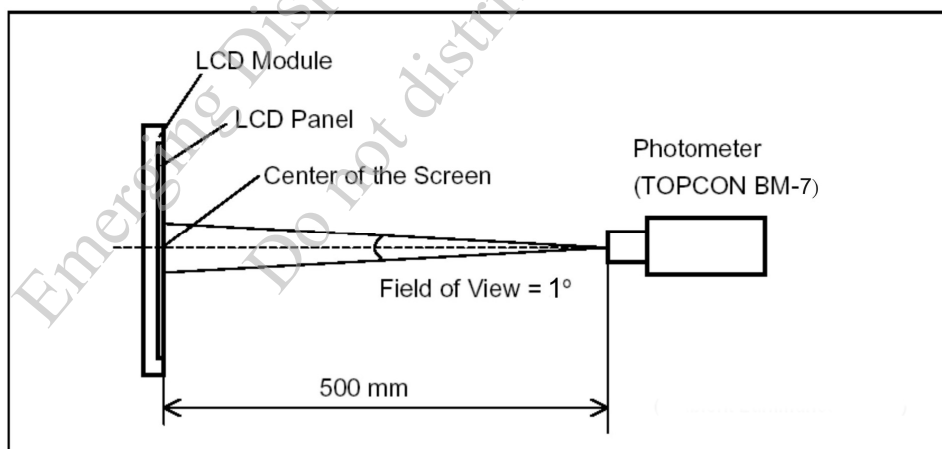
6.1 OPTICAL CHARACTERISTICS

Ta = 25 ± 2 °C

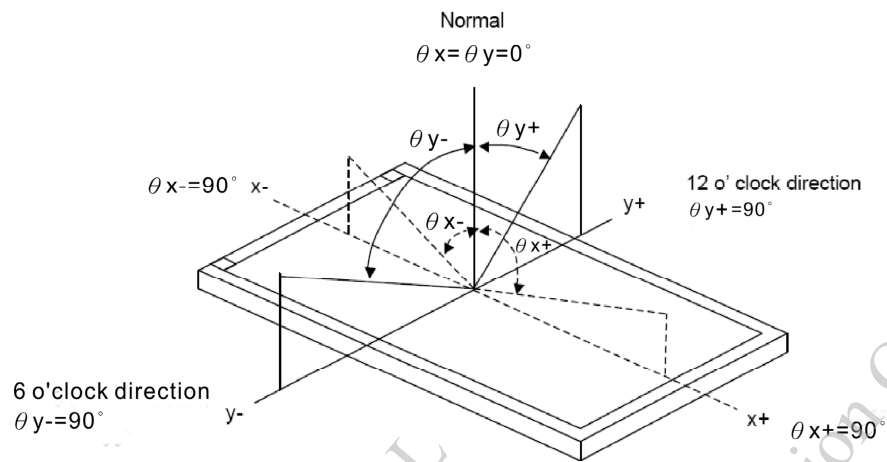
ITEM		SYMBOL	CONDITION		MIN.	TYP.	MAX.	UNIT	REMARK
VIEWING ANGLE		θ_{y+}	CR ≥ 10	$\theta_x=0^\circ$	60	65	—	deg.	(2) (3)
		θ_{y-}		70	75	—			
		θ_{x+}		70	75	—			
		θ_{x-}		70	75	—			
CONTRAST RATIO		CR	$\theta_x=0^\circ$, $\theta_y=0^\circ$		350	—	—		(3)
RESPONSE TIME		T _R (rise)+ T _F (fall)	$\theta_x=0^\circ$, $\theta_y=0^\circ$		—	16	20	msec	(4)
THE BRIGHTNESS OF MODULE		B	$\theta_x=0^\circ$, $\theta_y=0^\circ$ VLED=5V		260	300	—	cd/m ²	(5)
COLOR OF CIE COORDINATE	WHITE	W _x	$\theta_x=0^\circ$, $\theta_y=0^\circ$ NTSC : 45% VLED=5V	0.25	0.30	0.35	—	(6)	
		W _y		0.32	0.37	0.42			
	RED	R _x		0.52	0.57	0.62	—		
		R _y		0.30	0.35	0.40			
	GREEN	G _x		0.29	0.34	0.39	—		
		G _y		0.52	0.57	0.62			
	BLUE	B _x		0.10	0.15	0.20	—		
		B _y		0.11	0.16	0.21			
THE UNIFORMITY OF MODULE		—	$\theta_x=0^\circ$, $\theta_y=0^\circ$ VLED=5V		70	—	—	%	(5)

NOTE (1) : TEST EQUIPMENT SETUP :

AFTER STABILIZING AND LEAVING THE PANEL ALONE AT A GIVEN TEMPERATURE FOR 30 MINUTES, THE MEASUREMENT SHOULD BE EXECUTED. MEASUREMENT SHOULD BE EXECUTED IN A STABLE, WINDLESS, AND DARK ROOM. OPTICAL SPECIFICATIONS ARE MEASURED BY TOPCON BM-7 (FAST) WITH A VIEWING ANGLE OF 1° AT A DISTANCE OF 50cm AND NORMAL DIRECTION.



NOTE (2) : DEFINITION OF VIEWING ANGLE :

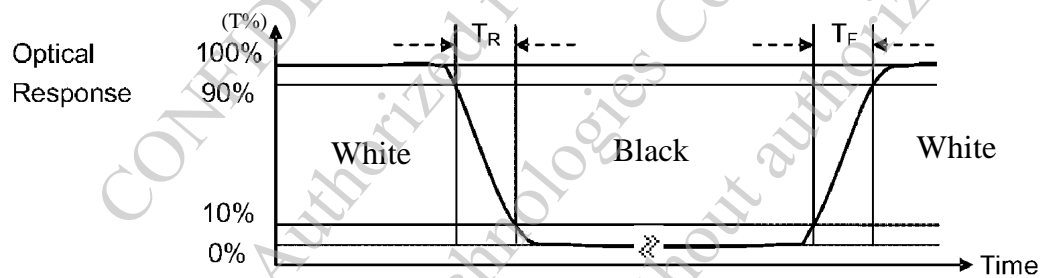


NOTE (3) : DEFINITION OF CONTRAST RATIO :

$$\text{CONTRAST RATIO (CR)} = \frac{\text{BRIGHTNESS MEASURED WHEN LCD IS AT "WHITE STATE"}}{\text{BRIGHTNESS MEASURED WHEN LCD IS AT "BLACK STATE"}}$$

NOTE (4) : DEFINITION OF RESPONSE TIME : TR AND TF

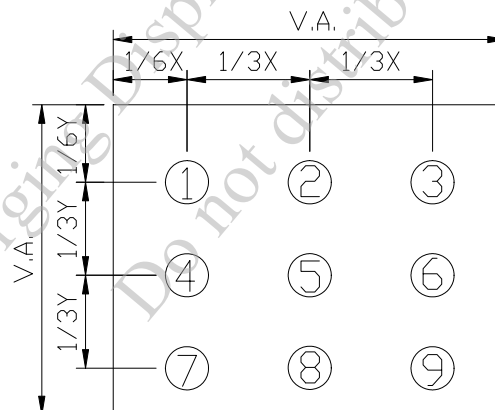
THE FIGURE BELOW IS THE OUTPUT SIGNAL OF THE PHOTO DETECTOR



NOTE (5) : BRIGHTNESS MEASURED WHEN LCD IS AT "WHITE STATE"

NOTE (6) : THE 100% TRANSMISSION IS DEFINED AS THE TRANSMISSION OF LCD PANEL WHEN ALL THE INPUT TERMINALS OF MODULE ARE ELECTRICALLY OPENED.

6.2 THE TEST METHOD OF BRIGHTNESS AND UNIFORMITY

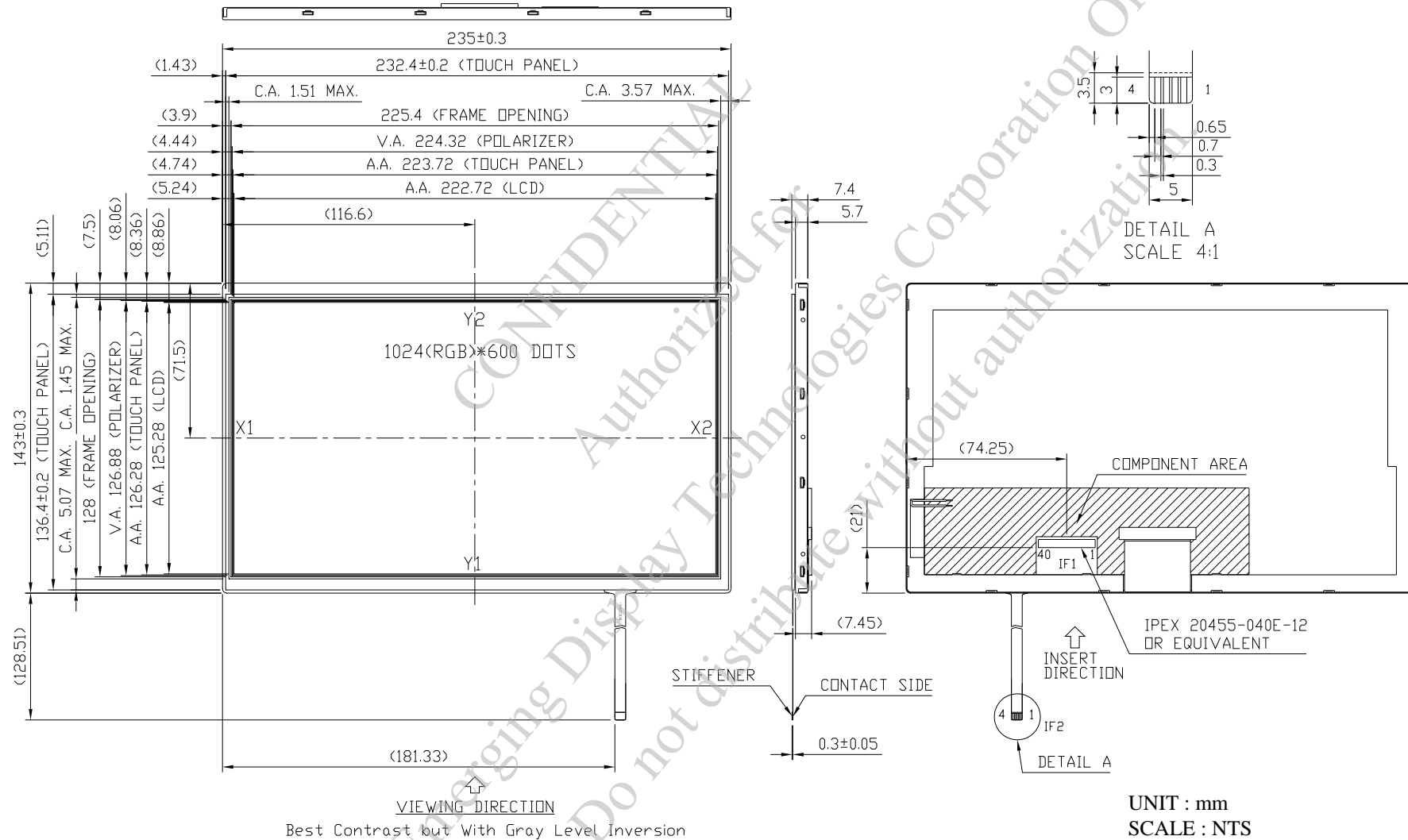


UNIT : mm

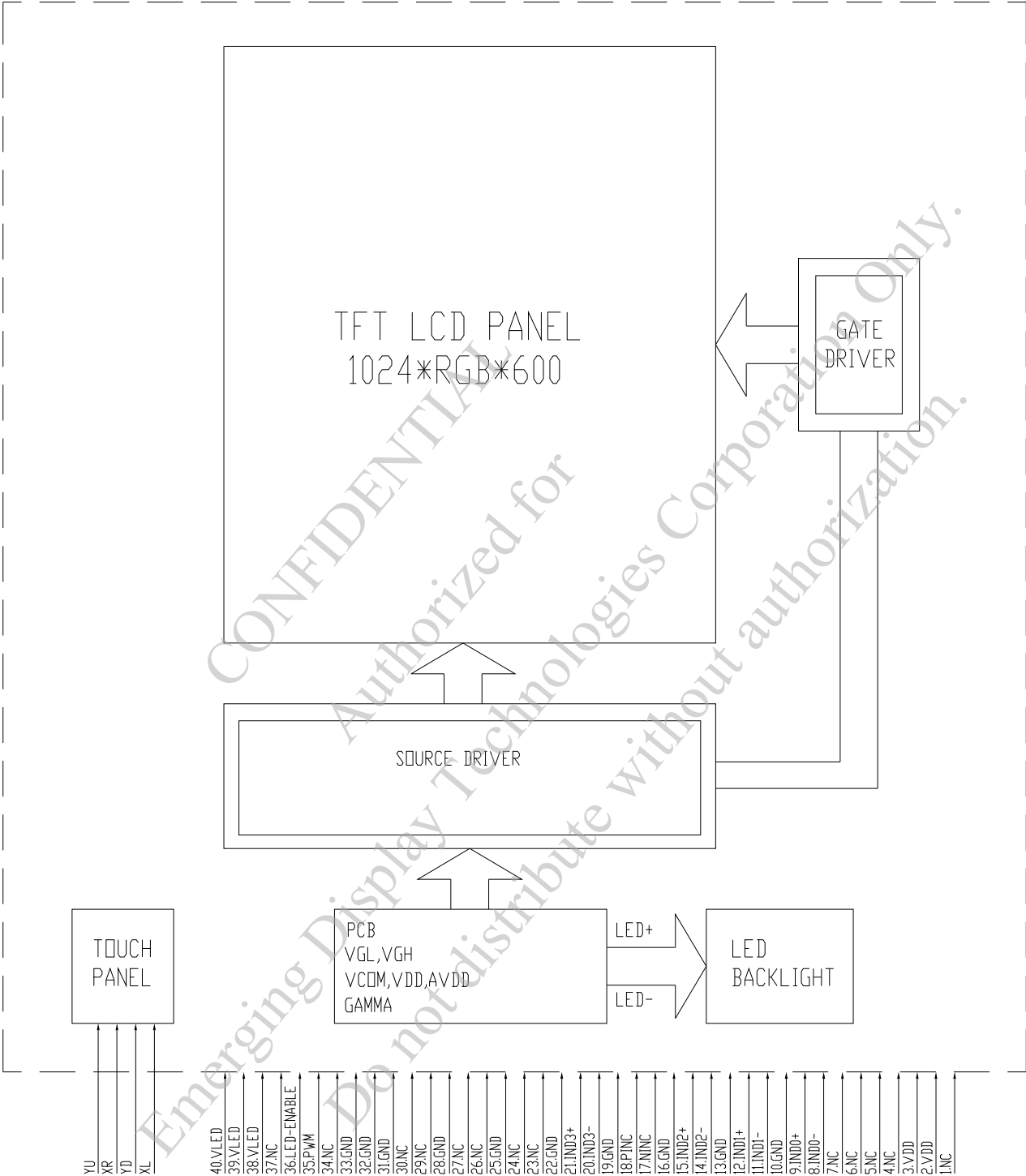
6.3 THE CALCULATING METHOD OF UNIFORMITY

$$\text{UNIFORMITY} = \left[1 - \frac{\text{MAXIMUM BRIGHTNESS} - \text{MINIMUM BRIGHTNESS}}{\text{AVERAGE BRIGHTNESS}} \right] \times 100\%$$

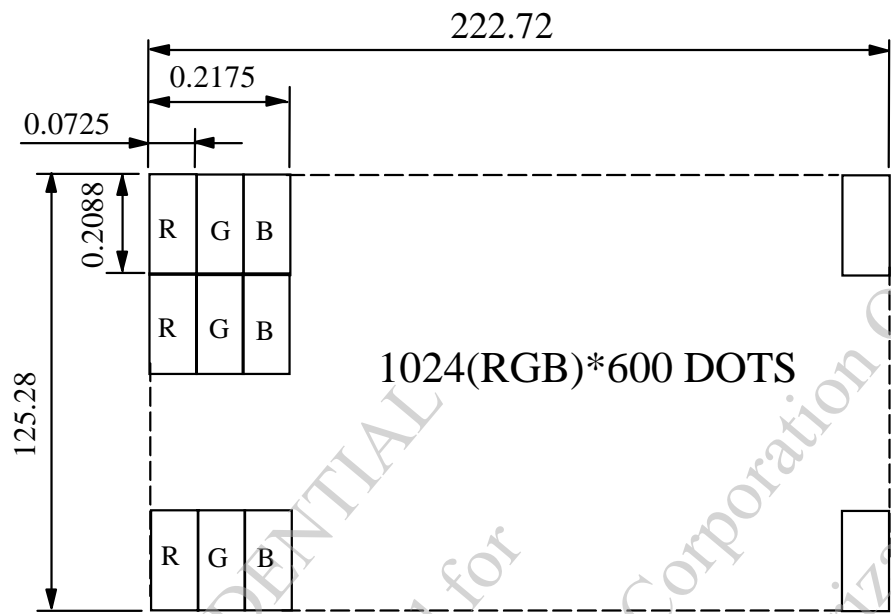
7. OUTLINE DIMENSIONS



8. BLOCK DIAGRAM



9. DETAIL DRAWING OF DOT MATRIX



UNIT : mm
SCALE : NTS
NOT SPECIFIED TOLERANCE IS ± 0.1
DOTS MATRIX TOLERANCE IS ± 0.01

10. INTERFACE SIGNALS

10.1 IF1 INTERFACE

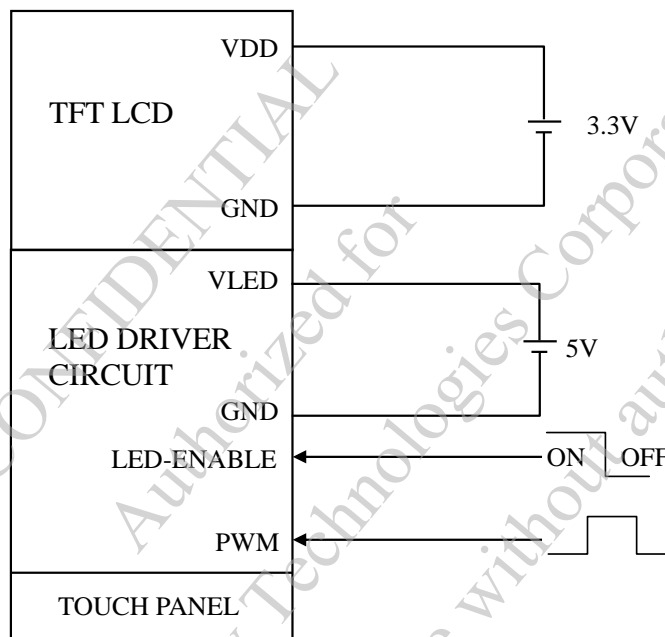
PIN NO.	SYMBOL	FUNCTION
1	NC	NC
2	VDD	+3.3V POWER FOR LCM
3	VDD	+3.3V POWER FOR LCM
4	NC	NC
5	NC	NC
6	NC	NC
7	NC	NC
8	IND0-	LVDS SIGNAL (-) — CHANNEL 0 (R0~R5,G0)
9	IND0+	LVDS SIGNAL (+) — CHANNEL 0 (R0~R5,G0)
10	GND	GROUND
11	IND1-	LVDS SIGNAL (-) — CHANNEL 1 (G1~G5,B0~B1)
12	IND1+	LVDS SIGNAL (+) — CHANNEL 1 (G1~G5,B0~B1)
13	GND	GROUND
14	IND2-	LVDS SIGNAL (-) — CHANNEL 2 (B2~B5,VS,HS,DE)
15	IND2+	LVDS SIGNAL (+) — CHANNEL 2 (B2~B5,VS,HS,DE)
16	GND	GROUND
17	NINC	LVDS CLOCK SIGNAL (-)
18	PINC	LVDS CLOCK SIGNAL (+)
19	GND	GROUND
20	IND3-	LVDS SIGNAL (-) — CHANNEL 3 (R6,R7,G6,G7,B6,B7)
21	IND3+	LVDS SIGNAL (+) — CHANNEL 3 (R6,R7,G6,G7,B6,B7)
22	GND	GROUND
23	NC	NC
24	NC	NC
25	GND	GROUND
26	NC	NC
27	NC	NC
28	GND	GROUND
29	NC	NC
30	NC	NC
31	GND	GROUND
32	GND	GROUND
33	GND	GROUND
34	NC	NC
35	PWM	ADJUST FOR LED BRIGHTNESS
36	LED-ENABLE	INTERNAL PULL UP TO +3.3V
37	NC	NC
38	VLED	+5V POWER SUPPLY FOR LED
39	VLED	+5V POWER SUPPLY FOR LED
40	VLED	+5V POWER SUPPLY FOR LED

10.2 IF2 T/P INTERFACE

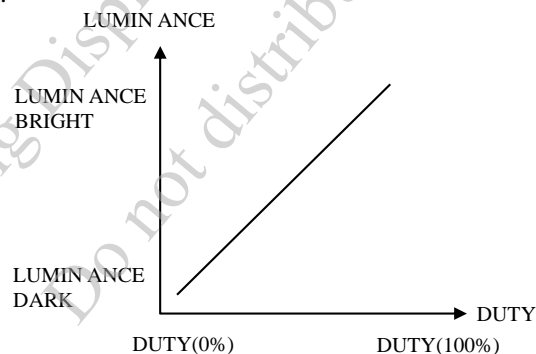
PIN NO.	SYMBOL	FUNCTION
1	XL	LEFT PANEL
2	YD	BOTTOM PANEL
3	XR	RIGHT PANEL
4	YU	TOP PANEL

11. POWER SUPPLY

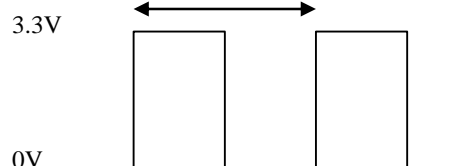
11.1 POWER SUPPLY FOR LCM



NOTE (1) : PWM ADJUST BRIGHTNESS TO CONTROL PIN, PULSE DUTY THE BIGGER THE BRIGHTER.

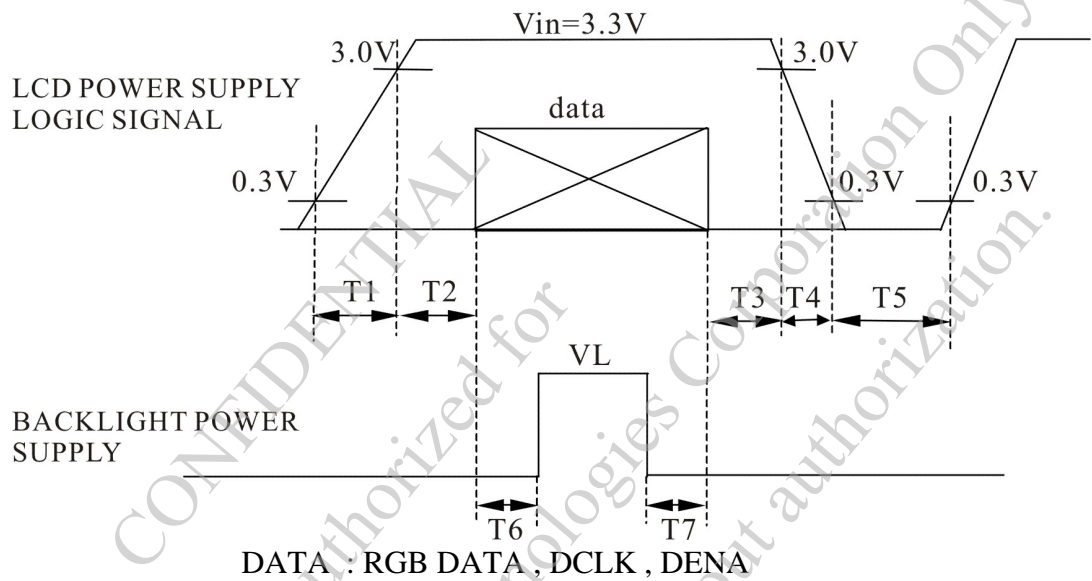


NOTE (2) : PWM SIGNAL=0~3.3V , OPERATION FREQUENCY : 20KHZ±5KHZ
F=20KHZ±5 KHZ



11.2 POWER · SIGNAL SEQUENCE

$0.5 < t_1 \leq 10\text{ms}$ $200\text{ms} \leq t_5$
 $0 < t_2 \leq 50\text{ms}$ $200\text{ms} \leq t_6$
 $0 < t_3 \leq 50\text{ms}$ $200\text{ms} \leq t_7$
 $0 < t_4 \leq 10\text{ms}$



12. TOUCH PANEL SPECIFICATION

12.1 ELECTRICAL CHARACTERISTICS

Ta = 25°C

ITEM	CONDITION	SPEC.	UNIT
LINEARITY	—	< 1.5	%
ACTIVATION FORCE	SILICON “ FINGER”	80	gf
TERMINAL RESISTANCE	X AXIS	150 ~ 1050	Ω
	Y AXIS	150 ~ 1000	
INSULATION RESISTANCE	DC25V	≥ 20	M Ω
INPUT VOLTAGE	—	5(TYP.)	V

12.2 PRECAUTIONS IN USE OF TOUCH PANEL

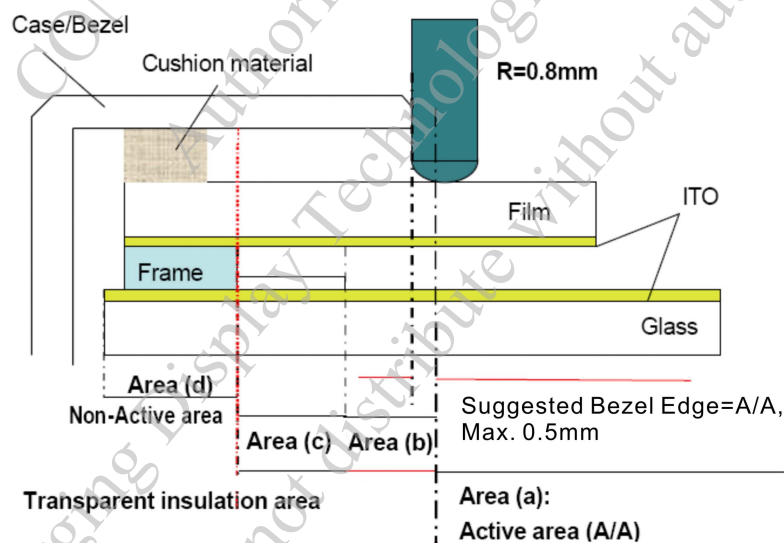
12.2.1 PURPOSE :

IN ORDER TO PREVENT ACCIDENTAL USE AND PERFORMANCE DETERIORATION, PLEASE KEEP THE FOLLOWING PRECAUTIONS AND INHIBITED POINTS.

12.2.2 ITEM AND ILLUSTRATION :

(1)STRUCTURE, AREA DEFINITION

THE STRUCTURE AND THE PERFORMANCE GUARANTEED AREA OF THIS TOUCH PANEL ARE DEFINED BELOW :



THE ABOVE FIGURE IS OUR DESIGN RULE OF TOUCH PANEL.
IF IT CANNOT MEET YOUR REQUIREMENT, PLEASE CONTACT WITH OUR ENGINEERS FOR FURTHER DISCUSSION.

ABOVE FIGURE ILLUSTRATES THE RECOMMENDED BEZEL AND CUSHION DESIGN. IN ORDER TO PREVENT UNUSUAL PERFORMANCE DEGRADATION AND MALFUNCTION OF A TOUCH PANEL, PLEASE CARRY OUT THE SET CASE DESIGNING AND A TOUCH PANEL ASSEMBLING METHOD AFTER SURELY CONSIDERING THE DEFINITION OF EACH AREA ILLUSTRATED IN ABOVE FIGURE.

AREA(a) : ACTIVE AREA

THE ACTIVE AREA IS GUARANTEED THE POSITION DATA DETECTABLE PRECISION, OPERATION FORCE AND OTHER OPERATIONS. IT IS STRONGLY RECOMMENDED TO PLACE THE OPERATION BUTTON OR MENU KEYS WITHIN THE ACTIVE AREA. DUE TO STRUCTURE, THE ACTIVE AREA IS LESS DURABLE AT THE EDGE OR CLOSE TO THE EDGE.

AREA(b) : OPERATION NON-GUARANTEED AREA

THIS AREA DOES NOT GUARANTEE A TOUCH PANEL OPERATION AND ITS FUNCTION. WHEN THIS AREA IS PRESSED, TOUCH PANEL SHOWS DEGRADATION OF ITS PERFORMANCE AND DURABILITY SUCH AS A PEN SLIDING DURABILITY BECOMES ABOUT ONE-TENTH COMPARED WITH THE ACTIVE AREA (AREA-(A) AS GUARANTEED AREA) AND ITS OPERATION FORCE REQUIRES ABOUT DOUBLE. ABOUT 0.5 MM OUTSIDE FROM A BOUNDARY OF THE ACTIVE AREA CORRESPONDS TO THIS AREA.

AREA(c) : PRESSING PROHIBITION AREA

THE AREA WHICH FORBIDS PRESSING, BECAUSE AN EXCESSIVE LOAD IS APPLIED TO A TRANSPARENT ELECTRODE (ITO) AND A SERIOUS DAMAGE IS GIVEN TO A TOUCH PANEL FUNCTION BY PRESSING.

AREA(d) : NON-ACTIVE AREA

THE AREA DOES NOT ACTIVATE EVEN IF PRESSED.

(2) CAUTIONS FOR INSTALLING AND ASSEMBLING

(i) DO NOT GIVE EXCESSIVE STRAIN TO THE PRODUCT.

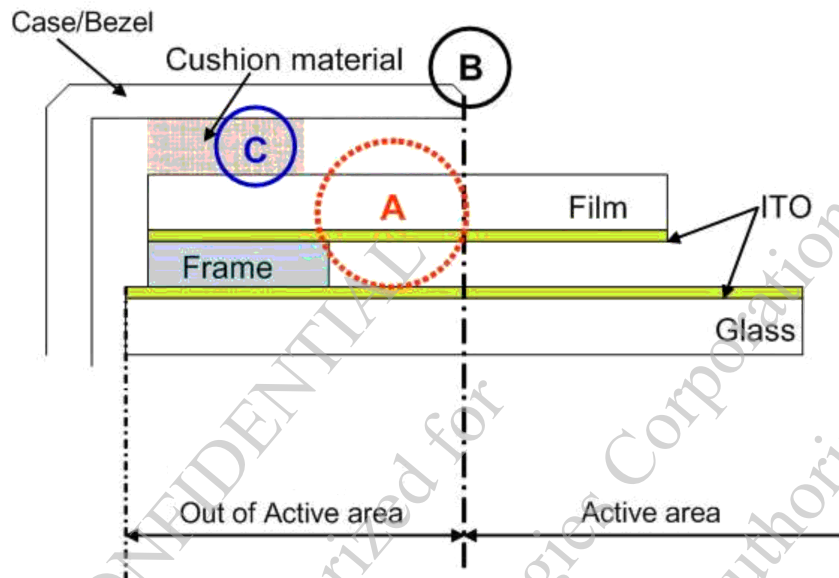
(ii) FLEXIBLE PATTERN CABLE IS CONNECTED TO THE BODY BY THERMAL PRESSURE METHOD. SO, DO NOT APPLY EXCESSIVE FORCES TO THE FLEXIBLE PATTERN. DO NOT ADD AN EXCESSIVE FORCE TO A FPC(FLEX TAIL) THAT MAKES PEELING OFF OF THE FPC FROM THE PRODUCT. DO NOT FIX, ADHERE OR MOUNT ANY ADDITIONAL GOODS ON THE FPC SUCH AS ADDITIONAL FILM/PLATE ON THE FPC, BECAUSE SUCH ADDITIONAL GOODS WILL APPLY A STRESS AT THE FPC BONDING AREA. IT MAY AFFECT THE CONDUCTIVITY OF FPC WITH TOUCH PANEL.

(iii) IN ORDER NOT TO APPLY LOAD ON THE DISPLAY, PROVIDE A CLEARANCE OF AT LEAST 0.3MM BETWEEN THE PRODUCT AND DISPLAY.

(iv) WE RECOMMEND THE DESIGN OF A CASE OR BEZEL SHOULD COVERS THE BOUNDARY OF THE ACTIVE AREA INSIDE IN ORDER TO PREVENT AN OPERATION AT OUTSIDE OF THE ACTIVE AREA WHICH CAN NOT GUARANTEE THE FUNCTION OR DURABILITY (REFER TO ITEM 5.1.2. STRUCTURE, AREA DEFINITION).

BEZEL'S EDGE PART MAY GUIDE THE PEN SLIDING ON THE SAME POSITION REPEATEDLY. IF THE BEZEL IS PLACED OUTSIDE OF THE ACTIVE AREA, IT MAY CAUSE THE DAMAGE OF THE ITO FILM.

- (v) PRESSING INSIDE OF BOUNDARY OF THE FRAME(PART (A) AS SHOWN IN BELOW) MAY CAUSES FAULT OPERATION, SO PLEASE DESIGN TO AVOID PRESSING OF TOUCH PANEL AT PART (A) SUCH AS HAVING GASKET/CUSHION AT PART (C). PARTICULARLY THE AREA (B) SHALL BE FREE FROM BURR. THE GASKET/CUSHION MATERIAL AT THE PART (C) SHOULD NOT BE EXCEEDED TO INSIDE OF THE BOUNDARY OF THE FRAME.



- (vi) TO PREVENT GIVING DISTORTION TO THE FILM OF THE PRODUCT AND PEELING OFF OF THE FILM FROM THE PRODUCT, DO NOT FIX THE FILM AND A SET CASE OR A SHOCK ABSORBING MATERIAL ADHERED TO A SET CASE BY ADHESION.
- (vii) WIPE OFF THE STAIN ON THE PRODUCT BY USING SOFT CLOTH MOISTENED WITH ETHANOL. TAKE CARE NOT TO ALLOW ETHANOL TO SOAK INTO THE JOINT OF UPPER FILM AND BOTTOM GLASS. IT MAY OTHERWISE CAUSE PEELING OR DEFECTIVE OPERATION. DO NOT USE ANY ORGANIC SOLVENT OR DETERGENT OTHER THAN ETHANOL.
- (viii) THE CORNERS OF THE PRODUCT ARE NOT CHAMFERED AND ARE SHARP. WHEN POSITIONING AND FIXING THE PRODUCT ON THE CASE, PROVIDE A ROUND PART ON THE CORNER OF THE CASE SO AS NOT TO APPLY LOAD ON THE CORNER OF THE TRANSPARENT TOUCH PANEL.
- (ix) DO NOT PRESS THE FILM OF THE PRODUCT WHEN THIS PRODUCT IS BUILT INTO A SET.
- (3) CAUTIONS FOR OPERATION
- (i) OPERATE IT WITH A POLYACETAL PEN (TIP R0.8 OR OVER) OR A BELLY OF A FINGER WITHOUT APPLYING EXCESSIVE LOAD. NEVER USE ANY MECHANICAL PENCILS, BALL POINT PENS AND HARD FINGERTIPS WHO'S TIP IS HARD FOR INPUT, OTHERWISE MALFUNCTIONS MAY RESULT.

- (ii) THE INPUT POSITION MAY BE FLUCTUATED A LITTLE THROUGH LONG-TIME USE. IT IS DESIRABLE TO PROVIDE A ZERO-ADJUSTMENT FUNCTION BY USING A CIRCUIT AND SOFTWARE.
- (iii) OPERATION AT THE OUT OF ACTIVE AREA IS OUT OF OUR GUARANTEE. IT CAUSES A SERIOUS DAMAGE OF A TRANSPARENT ELECTRODE. DO NOT OPERATE AT THE OUT OF ACTIVE AREA.
- (iv) IN CASE OF CLEANING THE PART OF THE CASE BOUNDARY OF ACCOMPLISHED SET, USE A SOFT CLOTH WITH A FINGER BERRY OR A COTTON BUD. DO NOT CLEAN WITH A THING OTHER THAN THE FINGER SUCH AS HARD OR SHARP EDGES LIKE A FINGER NAIL ETC. ON THE CLOTH, BECAUSE IT CAUSE TRANSPARENT CONDUCTIVE FILM CRACKS. PLEASE ADVISE THIS PROHIBITION TO YOUR LAST CUSTOMERS.

12.3 DURABILITY

12.3.1 STYLUS HITTING :

ONE MILLION TIMES

NO DAMAGE ON FILM SURFACE, LINEARITY LESS THEN 3%

PEN : R8 mm SILICON RUBBER

LOAD : 100g (MAX.)

FREQUENCY : 2 times/sec

MEASUREMENT POSITION:

1 POINT OF TOUCH PANEL ACTIVE AREA

REPEATED : 1,000,000 TIMES

12.3.2 PEN TOUCH SLIDING DURABILITY :

100,000 TIMES

WRITING WITH R0.8mm PLASTIC STYLUS PEN; WRITING FORCE 100g (MAX.)

TEST AREA IS 30mm INSIDE OF CENTER POINT OF ACTIVE AREA, BUT NOT ON DOT-SPACER.

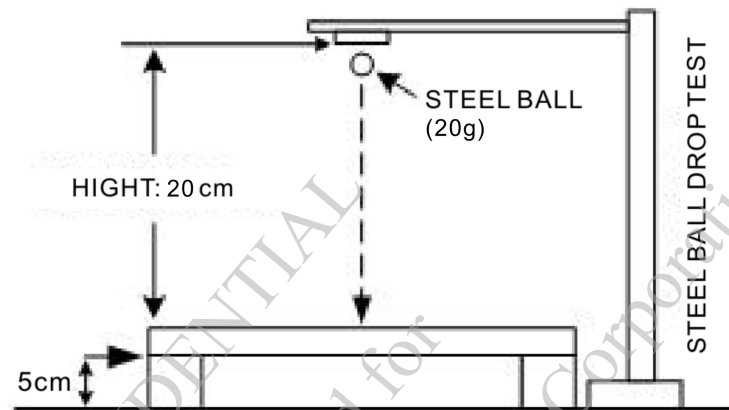
LINEARITY LESS THEN 3%

SPEED IS 30mm/sec.

12.4 STEEL BALL DROP TEST

BY USING Ø5mm STEEL BALL (20g) FROM THE HEIGHT OF 20cm AND FALLING ON TOUCH PANEL CENTER AREA, 1 TIME , MUST PASS BELOW CONDITIONS :

APPEARANCE : THE APPEARANCE WITHOUT ANY CHANGE, INCLUDING THE PANEL BROKEN.



12.5 APPEARANCE INSPECTION

PURPOSE :

TO ESTABLISH APPEARANCE STANDARD AND MAINTAIN PRODUCT QUALITY .

SCOPE :

TOUCH PANEL VIEW AREA WITHIN TOUCH PANEL .

12.5.1 RULE :

INSPECTION CONDITION

(A) ENVIRONMENTAL LUMINANCE : 500 LUX .

(B) DISTANCE BETWEEN HUMAN EYES AND PANEL : 30 CM

(PANEL MUST BE TESTED UNDER LIGHT TRANSPARENT) .

(C) VISUAL ANGEL : $> 60^\circ$.

(D) LIGHT SOURCE : FLUORESCENT LIGHT SOURCE .

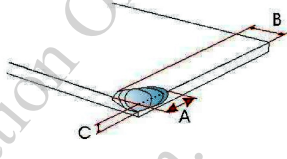
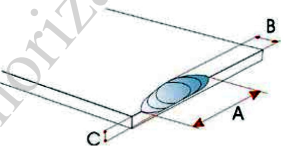
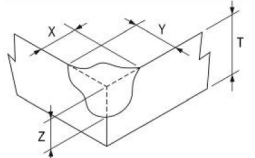
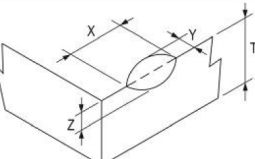
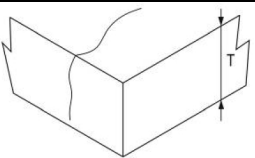
12.5.2 JUDGE CRITERION :

JUDGEMENT UNDER ABOVE MENTIONED CRITERION (PANEL MUST BE TESTED UNDER LIGHT TRANSPARENT),

TESTING GOODS DEFECT CAN BE VISIBLE WITHIN 10 SECONDS, WHICH WILL BE JUDGED AS MAJOR DEFECTS .

SAMPLING STANDARD :

THE SAMPLING STANDARD WILL BE CONFIRMED BY BOTH OF EDT AND CUSTOMER.

DEFECT ITEM	SPECIFICATIONS		ALLOWED /REJECT	REMARK
SCRATCH / LINEAR OBJECT	$W \leq 0.07 \text{ mm}$		IGNORE	
	$0.07 < W \leq 0.1 \text{ mm AND } L \leq 15 \text{ mm}$		ALLOW 6 ARE QUALIFIED	
	$W > 0.1 \text{ mm OR } L > 15 \text{ mm}$		REJECT	
FOREIGN OBJECTIVE	$D \leq 0.25 \text{ mm}$		IGNORE	
	$0.25 < D \leq 0.4 \text{ mm}$		ALLOW 6 POINTS ARE QUALIFIED	
	$0.4 < D \leq 0.5 \text{ mm}$		ALLOWED 3	
	$D > 0.5 \text{ mm}$		REJECT	
COVER GLASS FRAGMENT	CORNER FRAGMENT		$A \leq 4.0 \text{ mm}$ $B \leq 3.0 \text{ AND } C \leq T \text{ mm,}$ (T: GLASS THICKNESS) NO MORE THAN 2 IS QUALIFIED $A \leq 4.0 \text{ mm, } B \leq 3.0 \text{ mm,}$ $C \leq T \text{ mm,}$	
	SIDE FRAGMENT		$A \leq 4.0 \text{ mm, } B \leq 3.0 \text{ mm}$ AND $C \leq T \text{ mm, (T: GLASS THICKNESS)}$ ALLOW 3 FRAGMENTS INTERVAL DISTANCE ABOVE 20 mm EVERY SIDE IS QUALIFIED (PASS) $A \leq 4 \text{ mm, } B \leq 3.0 \text{ mm,}$ $C \leq T \text{ mm,}$	
CHIP ON GLASS	CORNER FLAW	$X \leq 4.0 \text{ mm, } Y \leq 3.0 \text{ mm, } Z \leq T$		
	EDGE FLAW	$X \leq 4.0 \text{ mm, } Y \leq 3.0 \text{ mm, } Z \leq T$		
	PROGRESSIVE FLAW	NOT ALLOWED		

D: DIAMETER; W: WIDTH; L: LENGTH ; $(W+L)/2=D$

UNIT: mm

REMARK :

INSPECTION AREA : ACCORDING TO ENGINEERING DRAWING, VIEWABLE AREA IS THE INSPECTION AREA.

ANY DEFECT OUTSIDE OF THE VIEWABLE AREA MAY BE DISREGARDED.

EACH AREA : ONE OF THE AREAS OF T/P VIEWABLE AREA DIVIDED INTO 9(3 BY 3) EQUAL AREAS

STAIN : NO CLEAR OUTLINE, NOT EASY TO IDENTIFY WITH EYES, BUT ABLE TO CLEAN OUT BY WIPING.

CONDITION 1 : DISTANCE BETWEEN DEFECTS SHOULD NOT BE LESS THAN 5MM.

NOTE 1 : PARTICLE, STAIN OR LINEAR OBJECT THAT CAN BE CLEAN OUT EASILY WITHIN 3 TIMES IS DISREGARDED.

13. INSPECTION CRITERION

13.1 APPLICATION

THIS INSPECTION STANDARD IS TO BE APPLIED TO THE LCD MODULE DELIVERED FROM EMERGING DISPLAY TECHNOLOGIES CORP.(E.D.T) TO CUSTOMERS

13.2.1 (1)OBSERVATION DISTANCE : 35cm±5cm

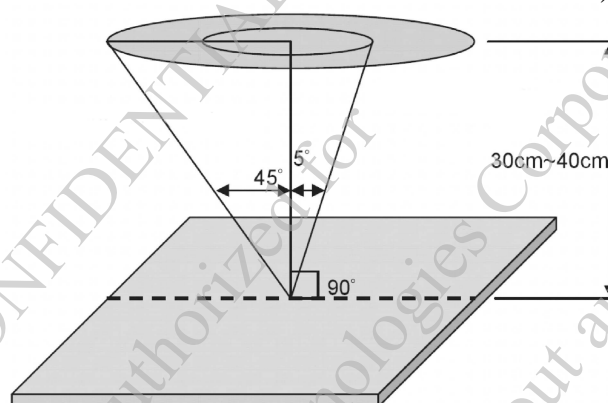
(2)VIEW ANGLE :

NON-OPERATION CONDITION : ±5°

(PERPENDICULAR TO LCD PANEL SURFACE)

OPERATION CONDITION : ±45°

(PERPENDICULAR TO LCD PANEL SURFACE)



13.2.2 ENVIRONMENT CONDITIONS :

AMBIENT TEMPERATURE		15°C ~ 25°C
AMBIENT HUMIDITY		25 ~ 75 % RH
AMBIENT ILLUMINATION	EXTERNAL APPEARANCE INSPECTION	400 ~ 600 Lux
	LIGHT ON INSPECTION	100 ~ 200 Lux

13.2.3 INSPECTION LOT

QUANTITY PER DELIVERY LOT FOR EACH MODEL

13.2.4 INSPECTION METHOD

A SAMPLING INSPECTION SHALL BE MADE ACCORDING TO THE FOLLOWING PROVISIONS TO JUDGE THE ACCEPTABILITY

(a)APPLICABLE STANDARD :

MIL-STD-105E

NORMAL INSPECTION, SINGLE SAMPLING

LEVEL II

(b)AQL : MAJOR DEFECT : AQL 0.4





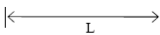

MINOR DEFECT : AQL 1.0

13.3 INSPECTION STANDARDS

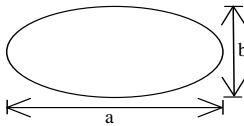
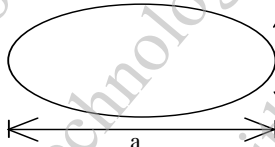
13.3.1 VISUAL DEFECTS CLASSIFICATION

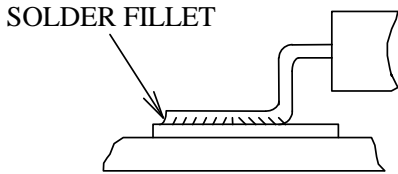
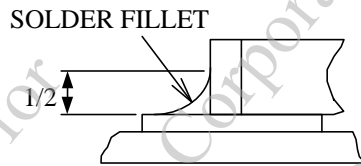
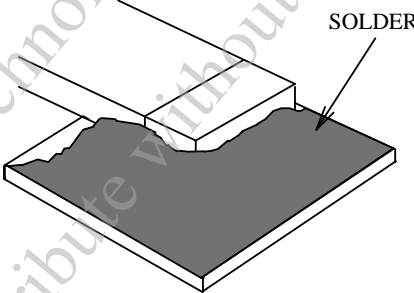
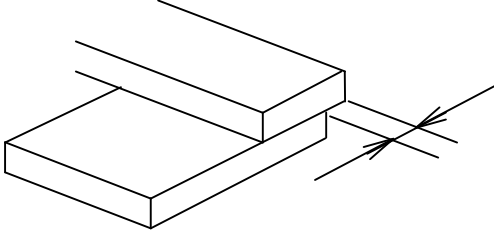
TYPE OF DEFECT	INSPECTION ITEM	DEFECT FEATURE	AQL
MAJOR DEFECT	1.DISPLAY ON	<ul style="list-style-type: none"> • DEFECT TO MISS SPECIFIED DISPLAY FUNCTION, FOR ALL AND SPECIFIED DOTS EX: DISCONNECTION, SHORT CIRCUIT ETC 	0.4
	2.BACKLIGHT	<ul style="list-style-type: none"> • NO LIGHT • FLICKERING AND OTHER ABNORMAL ILLUMINATION 	
	3.DIMENSIONS	<ul style="list-style-type: none"> • SUBJECT TO INDIVIDUAL ACCEPTANCE SPECIFICATIONS 	
MINOR DEFECT	1.DISPLAY ZONE	<ul style="list-style-type: none"> • BLACK/WHITE SPOT • BUBBLES ON POLARIZER • NEWTON RING • BLACK/WHITE LINE • SCRATCH • CONTAMINATION • LEVER COLOR SPREAD 	1.0
	2.BEZEL ZONE	<ul style="list-style-type: none"> • STAINS • SCRATCHES • FOREIGN MATTER 	
	3.SOLDERING	<ul style="list-style-type: none"> • INSUFFICIENT SOLDER • SOLDERED IN INCORRECT POSITION • CONVEX SOLDERING SPOT • SOLDER BALLS • SOLDER SCRAPS 	
	4.DISPLAY ON (ALL ON)	<ul style="list-style-type: none"> • LIGHT LINE 	

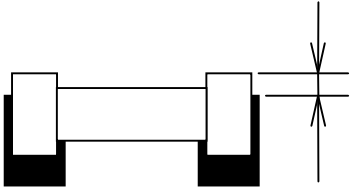
13.3.2 MODULE DEFECTS CLASSIFICATION

NO.	ITEM	CRITERIA																															
1	DISPLAY ON INSPECTION	(1)INCORRECT PATTERN (2)MISSING SEGMENT (3)DIM SEGMENT (4)OPERATING VOLTAGE BEYOND SPEC																															
2	OVERALL DIMENSIONS	(1)OVERALL DIMENSION BEYOND SPEC																															
3	DOT DEFECT	<p>(1)INSPECTION PATTERN: FULL WHITE, FULL BLACK, RED, GREEN AND BLUE SCREENS.</p> <p>(2)</p> <table border="1"> <thead> <tr> <th>ITEMS</th><th></th><th>ACCEPTABLE COUNT</th></tr> </thead> <tbody> <tr> <td rowspan="3">BRIGHT DOT</td><td>RANDOM</td><td>$N \leq 3$</td></tr> <tr> <td>2 DOTS ADJACENT (PAIR)</td><td>$N \leq 1$</td></tr> <tr> <td>3 DOTS ADJACENT OR MORE</td><td>$N = 0$</td></tr> <tr> <td rowspan="3">DARK DOT</td><td>RANDOM</td><td>$N \leq 4$</td></tr> <tr> <td>2 DOTS ADJACENT (PAIR)</td><td>$N \leq 1$</td></tr> <tr> <td>3 DOTS ADJACENT OR MORE</td><td>$N = 0$</td></tr> <tr> <td rowspan="2">DISTANCE</td><td>MINIMUM DISTANCE BETWEEN BRIGHT DOTS</td><td>$L \geq 15\text{mm}$</td></tr> <tr> <td>MINIMUM DISTANCE BETWEEN DARK DOTS</td><td>$L \geq 5\text{mm}$</td></tr> <tr> <td colspan="2">TOAL BRIGHT AND DARK DOTS</td><td>$N \leq 5$</td></tr> <tr> <td colspan="2">DISPLAY FAILURE (V-LINE/H-LINE/ CROSS LINE ETC.)</td><td>NOT ALLOWABLE</td></tr> <tr> <td>MURA</td><td>JUDGE BY LIMIT SAMPLE OR NOT VISIBLE THROUGH ND FILTER</td><td>5%</td></tr> </tbody> </table> <p>NOTE :</p> <p>(1)THE DEFINITION OF DOT: THE SIZE OF A DEFECTIVE DOT OVER 1/2 OF WHOLE DOT IS REGARDED AS ONE DEFECTIVE DOT</p> <p>(2)BRIGHT DOT: DOTS APPEAR BRIGHT AND UNCHANGED IN SIZE IN WHICH LCD CELL IS DISPLAYING UNDER BLACK PATTERN.</p> <p>(3)DARK DOT: DOTS APPEAR DARK AND UNCHANGED IN SIZE IN WHICH LCD CELL IS DISPLAYING UNDER PURE RED, GREEN, BLUE PICTURE.</p> <p>(4)2 DOT ADJACENT=1PAIR=2DOTS</p> <p>(5)SMALL DOT : DOTS WHICH SIZE IS LESS THAN 1/2 OF WHOLE DOT CAN SEE THROUGH BY ND 6% FILTER.</p> <div style="display: flex; justify-content: space-around; align-items: center;">     </div> <p>2 dot adjacent 2 dot adjacent 2 dot adjacent(vertical) 2 dot adjacent(slant)</p>	ITEMS		ACCEPTABLE COUNT	BRIGHT DOT	RANDOM	$N \leq 3$	2 DOTS ADJACENT (PAIR)	$N \leq 1$	3 DOTS ADJACENT OR MORE	$N = 0$	DARK DOT	RANDOM	$N \leq 4$	2 DOTS ADJACENT (PAIR)	$N \leq 1$	3 DOTS ADJACENT OR MORE	$N = 0$	DISTANCE	MINIMUM DISTANCE BETWEEN BRIGHT DOTS	$L \geq 15\text{mm}$	MINIMUM DISTANCE BETWEEN DARK DOTS	$L \geq 5\text{mm}$	TOAL BRIGHT AND DARK DOTS		$N \leq 5$	DISPLAY FAILURE (V-LINE/H-LINE/ CROSS LINE ETC.)		NOT ALLOWABLE	MURA	JUDGE BY LIMIT SAMPLE OR NOT VISIBLE THROUGH ND FILTER	5%
ITEMS		ACCEPTABLE COUNT																															
BRIGHT DOT	RANDOM	$N \leq 3$																															
	2 DOTS ADJACENT (PAIR)	$N \leq 1$																															
	3 DOTS ADJACENT OR MORE	$N = 0$																															
DARK DOT	RANDOM	$N \leq 4$																															
	2 DOTS ADJACENT (PAIR)	$N \leq 1$																															
	3 DOTS ADJACENT OR MORE	$N = 0$																															
DISTANCE	MINIMUM DISTANCE BETWEEN BRIGHT DOTS	$L \geq 15\text{mm}$																															
	MINIMUM DISTANCE BETWEEN DARK DOTS	$L \geq 5\text{mm}$																															
TOAL BRIGHT AND DARK DOTS		$N \leq 5$																															
DISPLAY FAILURE (V-LINE/H-LINE/ CROSS LINE ETC.)		NOT ALLOWABLE																															
MURA	JUDGE BY LIMIT SAMPLE OR NOT VISIBLE THROUGH ND FILTER	5%																															
4	FOREIGN BLACK/WHITE/ BRIGHT LINE/ SCRATCH OF VIEWING AREA	<p>BLACK/WHITE LINE :</p> <table border="1"> <thead> <tr> <th>LENGTH : L</th><th>WIDTH : W</th><th>PERMISSIBLE NO.</th></tr> </thead> <tbody> <tr> <td>$L \leq 1.0$</td><td>$W \leq 0.05$</td><td>IGNORE</td></tr> <tr> <td>$1.0 < L \leq 10$</td><td>$0.05 < W \leq 0.1$</td><td>4</td></tr> <tr> <td>$10 < L$</td><td>$0.1 < W$</td><td>NONE</td></tr> </tbody> </table> <p>FOREIGN LINT :</p> <table border="1"> <thead> <tr> <th>LENGTH : L</th><th>WIDTH : W</th><th>PERMISSIBLE NO.</th></tr> </thead> <tbody> <tr> <td>$L \leq 3.0$</td><td>$W \leq 0.05$</td><td>IGNORE</td></tr> <tr> <td>$3.0 < L \leq 5$</td><td>$0.05 < W \leq 0.1$</td><td>4</td></tr> <tr> <td>$5 < L$</td><td>$0.1 < W$</td><td>NONE</td></tr> </tbody> </table> <div style="text-align: center;">  <p>L</p>  <p>W</p> </div> <p>WIDTH : W mm, LENGH : L mm</p>	LENGTH : L	WIDTH : W	PERMISSIBLE NO.	$L \leq 1.0$	$W \leq 0.05$	IGNORE	$1.0 < L \leq 10$	$0.05 < W \leq 0.1$	4	$10 < L$	$0.1 < W$	NONE	LENGTH : L	WIDTH : W	PERMISSIBLE NO.	$L \leq 3.0$	$W \leq 0.05$	IGNORE	$3.0 < L \leq 5$	$0.05 < W \leq 0.1$	4	$5 < L$	$0.1 < W$	NONE							
LENGTH : L	WIDTH : W	PERMISSIBLE NO.																															
$L \leq 1.0$	$W \leq 0.05$	IGNORE																															
$1.0 < L \leq 10$	$0.05 < W \leq 0.1$	4																															
$10 < L$	$0.1 < W$	NONE																															
LENGTH : L	WIDTH : W	PERMISSIBLE NO.																															
$L \leq 3.0$	$W \leq 0.05$	IGNORE																															
$3.0 < L \leq 5$	$0.05 < W \leq 0.1$	4																															
$5 < L$	$0.1 < W$	NONE																															

NOTE : CAN BE BLOWN OUT BY AIR AND REMOVED BY WET CLEANING ARE NOT REGARDED AS DEFECTS.

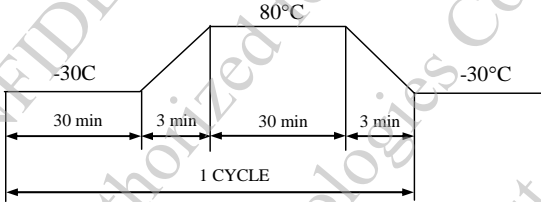
NO.	ITEM	CRITERIA	
5	FOREIGN MATTER \ BLACK SPOTS \ WHITE SPOTS \ DENT (INCLUDING LIGHT LEAKAGE DUE TO POLARIZING PLATES PINHOLES, ETC.)	AVERAGE DIAMETER (mm): D	NUMBER OF PIECES PERMITTED
		$D \leq 0.15$	IGNORE
		$0.15 < D \leq 0.5$	4
		$0.5 < D$	NONE
		NOTE : DIAMETER $D=(a+b)/2$	
			
6	BUBBLES OF POLARIZER		AVERAGE DIAMETER (mm) : D
		BUBBLE ON THE POLARIZER	NUMBER OF PIECES PERMITTED
			$D \leq 0.15$
			$0.15 < D \leq 0.5$
			$0.5 < D$
		NOTE : (1)POLARIZER BUBBLE IS DEFINED AS THE BUBBLE APPEARS ON ACTIVE DISPLAY AREA. THE DEFECT OF POLARIZER BUBBLE SHALL BE IGNORED IF THE POLARIZER BUBBLE APPEARS ON THE OUTSIDE OF ACTIVE DISPLAY AREA. (2)THE EXTRANEIOUS SUBSTANCE IS DEFINED AS IT CAN BE OBSERVED WHEN THE MODULE IS POWER ON. (3)THE DEFINITION OF AVERAGE DIAMETER, D IS DEFINED AS FOLLOWING. AVERAGE DIAMETER $(D)=(a+b)/2$	
			
7	LINE DEFECT ON DISPLAY	OBVIOUS VERTICAL OR HORIZONTAL LINE DEFECT IS NOT ALLOW	
8	MURA ON DISPLAY	IT'S OK IF MURA IS SLIGHT VISIBLE THROUG 5% ND FILTER	
9	UNEVEN COLOR SPREAD, COLORATION	(1)TO BE DETERMINED BASED UPON THE STANDARD SAMPLE.	
10	BEZEL APPEARANCE	(1)BEZEL MAY NOT HAVE RUST, BE DEFORMED OR HAVE FINGER PRINTS STAINS OF OTHER CONTAMINATION. (2)BEZEL MUST COMPLY WITH JOB SPECIFICATIONS.	

NO.	ITEM	CRITERIA
11	SOLDERING	<p>(1)NO SOLDERING FOUND ON THE SPECIFIED PLACE (2)INSUFFICIENT SOLDER</p> <p>(a)LSI, IC A POOR WETTING OF SOLDER IS BETWEEN LOWER BEND OR "HEEL" OF LEAD AND PAD</p>  <p>(b)CHIP COMPONENT · SOLDER IS LESS THAN 50% OF SIDES AND FRONT FACE WETTING</p>  <p>· SOLDER WETS 3 SIDES OF TERMINAL, BUT LESS THAN 25% OF SIDES AND FRONT SURFACE AREA ARE COVERED</p>  <p>(3)PARTS ALIGNMENT (a)LSI, IC LEAD WIDTH IS MORE THAN 50% BEYOND PAD OUTLINE</p> 

NO.	ITEM	CRITERIA
11	SOLDERING	<p>(b)CHIP COMPONENT COMPONENT IS OFF CENTER, AND MORE THAN 50% OF THE LEADS IS OFF THE PAD OUTLINE</p>  <p>(4)NO UNMELTED SOLDER PASTE MAY BE PRESENT ON THE PCB. (5)NO COLD SOLDER JOINTS, MISSING SOLDER CONNECTIONS, OXIDATION OR ICICLE. (6)NO RESIDUE OR SOLDER BALLS ON PCB. (7)NO SHORT CIRCUITS IN COMPONENTS ON PCB.</p>
12	BACKLIGHT	<p>(1)NO LIGHT (2)FLICKERING AND OTHER ABNORMAL ILLUMINATION (3)SPOTS OR SCRATCHES THAT APPEAR WHEN LIT MUST BE JUDGED USING LCD SPOT, LINES AND CONTAMINATION STANDARDS. (4)BACKLIGHT DOESN'T LIGHT OR COLOR IS WRONG.</p>
13	GENERAL APPEARANCE	<p>(1)NO OXIDATION, CONTAMINATION, CURVES OR, BENDS ON INTERFACE PIN (OLB) OF TCP. (2)NO CRACKS ON INTERFACE PIN (OLB) OF TCP. (3)NO CONTAMINATION, SOLDER RESIDUE OR SOLDER BALLS ON PRODUCT. (4)THE IC ON THE TCP MAY NOT BE DAMAGED, CIRCUITS. (5)THE UPPERMOST EDGE OF THE PROTECTIVE STRIP ON THE INTERFACE PIN MUST BE PRESENT OR LOOK AS IF IT CAUSE THE INTERFACE PIN TO SEVER. (6)THE RESIDUAL ROSIN OR TIN OIL OF SOLDERING (COMPONENT OR CHIP COMPONENT) IS NOT BURNED INTO BROWN OR BLACK COLOR. (7)SEALANT ON TOP OF THE ITO CIRCUIT HAS NOT HARDENED. (8)PIN TYPE MUST MATCH TYPE IN SPECIFICATION SHEET. (9)LCD PIN LOOSE OR MISSING PINS. (10)PRODUCT PACKAGING MUST THE SAME AS SPECIFIED ON PACKAGING SPECIFICATION SHEET. (11)PRODUCT DIMENSION AND STRUCTURE MUST CONFORM TO PRODUCT SPECIFICATION SHEET. (12)THE APPEARANCE OF HEAT SEAL SHOULD NOT ADMIT ANY DIRT AND BREAK.</p>

13.4 RELIABILITY TEST

13.4.1 STANDARD SPECIFICATIONS FOR RELIABILITY OF LCD MODULE

NO.	ITEM	DESCRIPTION
1	HIGH TEMPERATURE OPERATION	THE SAMPLE SHOULD BE ALLOWED TO STAND AT +70°C FOR 120 hrs
2	LOW TEMPERATURE OPERATION	THE SAMPLE SHOULD BE ALLOWED TO STAND AT -20°C FOR 120 hrs
3	HIGH TEMPERATURE STORAGE	THE SAMPLE SHOULD BE ALLOWED TO STAND AT +80°C FOR 240 hrs
4	LOW TEMPERATURE STORAGE	THE SAMPLE SHOULD BE ALLOWED TO STAND AT -30°C FOR 240 hrs
5	HIGH TEMP / HUMIDITY TEST (STORAGE)	THE SAMPLE SHOULD BE ALLOWED TO STAND AT 50°C, 90% RH 120 hrs
6	THERMAL SHOCK (NOT OPERATED)	<p>THE SAMPLE SHOULD BE ALLOWED TO STAND THE FOLLOWING 10 CYCLES OF OPERATION :</p> 
7	ESD (ELECTROSTATIC DISCHARGE) (NOT OPERATED)	<p>AIR DISCHARGE $\pm 12KV$ CONTACT DISCHARGE $\pm 8KV$ ACCORDING TO IEC-61000-4-2</p>

NOTE (1) : THE TEST SAMPLES HAVE RECOVERY TIME FOR 24 HOURS AT ROOM TEMPERATURE BEFORE THE FUNCTION CHECK. IN THE STANDARD CONDITIONS, THERE IS NO DISPLAY FUNCTIONING ISSUE OCCURRED.

NOTE (2) : RELIABILITY TEST MAY CAUSE THE FILM PUFFED YET THE ELECTRIC CHARACTERISTIC STAYS INTACT.
LINEARITY LESS THEN 2.5%

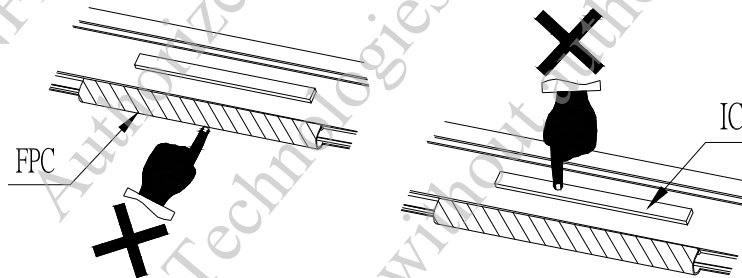
13.5 TESTING CONDITIONS AND INSPECTION CRITERIA

FOR THE FINAL TEST THE TESTING SAMPLE MUST BE STORED AT ROOM TEMPERATURE FOR 24 HOURS, AFTER THE TESTS LISTED IN TABLE 13.5, STANDARD SPECIFICATIONS FOR RELIABILITY HAVE BEEN EXECUTED IN ORDER TO ENSURE STABILITY.

NO.	ITEM	TEST MODEL	INSPECTION CRITERIA
1	CURRENT CONSUMPTION	REFER TO SPECIFICATION	THE CURRENT CONSUMPTION SHOULD CONFORM TO THE PRODUCT SPECIFICATION.
2	CONTRAST	REFER TO SPECIFICATION	AFTER THE TESTS HAVE BEEN EXECUTED, THE CONTRAST MUST BE LARGER THAN HALF OF ITS INITIAL VALUE PRIOR TO THE TESTS.
3	APPEARANCE	VISUAL INSPECTION	DEFECT FREE

13.6 OPERATION

- 13.6.1 DO NOT CONNECT OR DISCONNECT MODULES TO OR FROM THE MAIN SYSTEM WHILE POWER IS BEING SUPPLIED .
- 13.6.2 USE THE MODULE WITHIN SPECIFIED TEMPERATURE ; LOWER TEMPERATURE CAUSES THE RETARDATION OF BLINKING SPEED OF THE DISPLAY ; HIGHER TEMPERATURE MAKES OVERALL DISPLAY DISCOLOR. WHEN THE TEMPERATURE RETURNS TO NORMALITY, THE DISPLAY WILL OPERATE NORMALLY .
- 13.6.3 ADJUST THE LC DRIVING VOLTAGE TO OBTAIN THE OPTIMUM CONTRAST.
- 13.6.4 POWER ON SEQUENCE INPUT SIGNALS SHOULD NOT BE SUPPLIED TO LCD MODULE BEFORE POWER SUPPLY VOLTAGE IS APPLIED AND REACHES THE SPECIFIED VALUE .
IF ABOVE SEQUENCE IS NOT FOLLOWED , CMOS LSIS OF LCD MODULES MAY BE DAMAGED DUE TO LATCH - UP PROBLEM .
- 13.6.5 NOT ALLOWED TO INFLICT ANY EXTERNAL STRESS AND TO CAUSE ANY MECHANICAL INTERFERENCE ON THE BENDING AREA OF FPC DURING THE TAIL BENDING BACKWARDS!
DO NOT STRESS FPC AND IC ON THE MODULE!



13.7 NOTICE

- 13.7.1 USE A GROUNDED SOLDERING IRON WHEN SOLDERING CONNECTOR I/O TERMINALS . FOR SOLDERING OR REPAIRING, TAKE PRECAUTION AGAINST THE TEMPERATURE OF THE SOLDERING IRON AND THE SOLDERING TIME TO PREVENT PEELING OFF THE THROUGH-HOLE-PAD .
- 13.7.2 DO NOT DISASSEMBLE . EDT SHALL NOT BE HELD RESPONSIBLE IF THE MODULE IS DISASSEMBLED AND UPON THE REASSEMBLY THE MODULE FAILED .
- 13.7.3 DO NOT CHARGE STATIC ELECTRICITY , AS THE CIRCUIT OF THIS MODULE CONTAINS CMOS LSIS. A WORKMAN'S BODY SHOULD ALWAYS BE STATIC-PROTECTED BY USE OF AN ESD STRAP. WORKING CLOTHES FOR SUCH PERSONNEL SHOULD BE OF STATIC-PROTECTED MATERIAL.
- 13.7.4 ALWAYS GROUND THE ELECTRICALLY-POWERED DRIVER BEFORE USING IT TO INSTALL THE LCD MODULE. WHILE CLEANING THE WORK STATION BY VACUUM CLEANER, DO NOT BRING THE SUCKING MOUTH NEAR THE MODULE ; STATIC ELECTRICITY OF THE ELECTRICALLY-POWERED DRIVER OR THE VACUUM CLEANER MAY DESTROY THE MODULE .
- 13.7.5 DON'T GIVE EXTERNAL SHOCK.
- 13.7.6 DON'T APPLY EXCESSIVE FORCE ON THE SURFACE.
- 13.7.7 LIQUID IN LCD IS HAZARDOUS SUBSTANCE. MUST NOT LICK AND SWALLOW.
WHEN THE LIQUID IS ATTACH TO YOUR, SKIN, CLOTH ETC.
WASH IT OUT THOROUGHLY AND IMMEDIATELY.
- 13.7.8 DON'T OPERATE IT ABOVE THE ABSOLUTE MAXIMUM RATING.
- 13.7.9 STORAGE IN A CLEAN ENVIRONMENT, FREE FROM DUST, ACTIVE GAS AND SOLVENT.
- 13.7.10 STORE WITHOUT ANY PHYSICAL LOAD.
- 13.7.11 REWIRING: NO MORE THAN 3 TIMES.