SPECIFICATION FOR APPROVAL

DESCRIPTION: 8.0 LCD Module

CUSTOMER:

Product No: BR080WSE3064-A4 V.1

Released Date:

Revision: 0.1

PLEASE RETURN TO US ONE COPY OF"SPECIFICATION
FOR APPROVAL"WITH YOUR APPROVED SIGNATURES.

APPROVED SIGNATURES			

Records of Revision

DATE	REF.PAGE PARAGRAPH DRAWING No.	REVISED No.	SUMMARY	REMARK
2017-05-25		V01	First Issue	

Contents

1. General Specification

Item	Contents	Unit
LCD TYPE	TFT/TRANSMISSIVE	
MODULE SIZE (W*H*T)	192.80*116.90*6.40	MM
ACTIVE SIZE (W*H)	176.64*99.36	MM
PIXEL PITCH (W*H)	0.2208*0.2070	MM
NUMBER OF DOTS	800*480	
DIVER IC	NT52001+NT39419B	
INTERFACE TYPE	24-BIT RGB	
TOP POLARIZER TYPE	ANTI-GLARE	
RECOMMEND VIEWING DIRECTION	12	O'CLOCK
GRAY SCALE INVERSION DIRECTION	6	O'CLOCK
COLORS	16.7M	
BACKLIGHT TYPE	30-LED WHITE	
TOUCH PANEL TYPE	WITHOUT	

2. Mechanical Drawing

PINS ASSIGNMENTS

NO.	SYMBOL	NO.	SYMBOL
1	LED+	32	R3
2	LED+	33	R2
3	LED-	34	R1
4	LED-	35	R0
5	GND	36	GND
6	VCOM	37	DCLK
7	DVDD	38	GND
8	MODE	39	L/R
9	DE	40	U/D
10	VS	41	VGH
11	HS	42	VGL
12	B7	43	AVDD
13	B6	44	RESET
14	DB5	45	NC
15	B4	46	VCOM
16	B3	47	DITHB
17	B2	48	GND
18	B1	49	NC
19	B0	50	NC
20	G7		
21	G6		
22	G5		
23	G4		
24	G3		
25	G2		
26	G1		
27	G0		
28	R7		
29	R6		
30	R5		
31	R4		

柔性PI,总厚度约0.3mm

5±0.3

25.5±0.1

DEALE A
SCALE 50:1

Backlight LED Circuit

oA
oK

-0.0736
0.207

DETAIL B
5:1

S=0.15
W=0.35
0.5
P0.5*(50-1)=24.5±0.05
25.5±0.1
3.8±0.2

6.4±0.3
-0.3±0.05

116.9±0.3(OUT LINE)
(4.81) 103.4±0.3(OPEN)
(5.34) 102.36(TOP POL)
(6.98) 99.36(LCD A.A)
56.66

6.4±0.3
-0.3±0.05

192.8±0.3(OUT LINE)
180.1±0.3(OPEN)
179.04(TOP POL)
176.64(LCD A.A)
94.87
(4.82)
(5.35)
(6.55)

800(H)X480(V)
WVGA Resolution

6.4±0.3
94.87±0.5

20.11
7.61
3.8
24.61
32.11
45.11±0.5
0.5
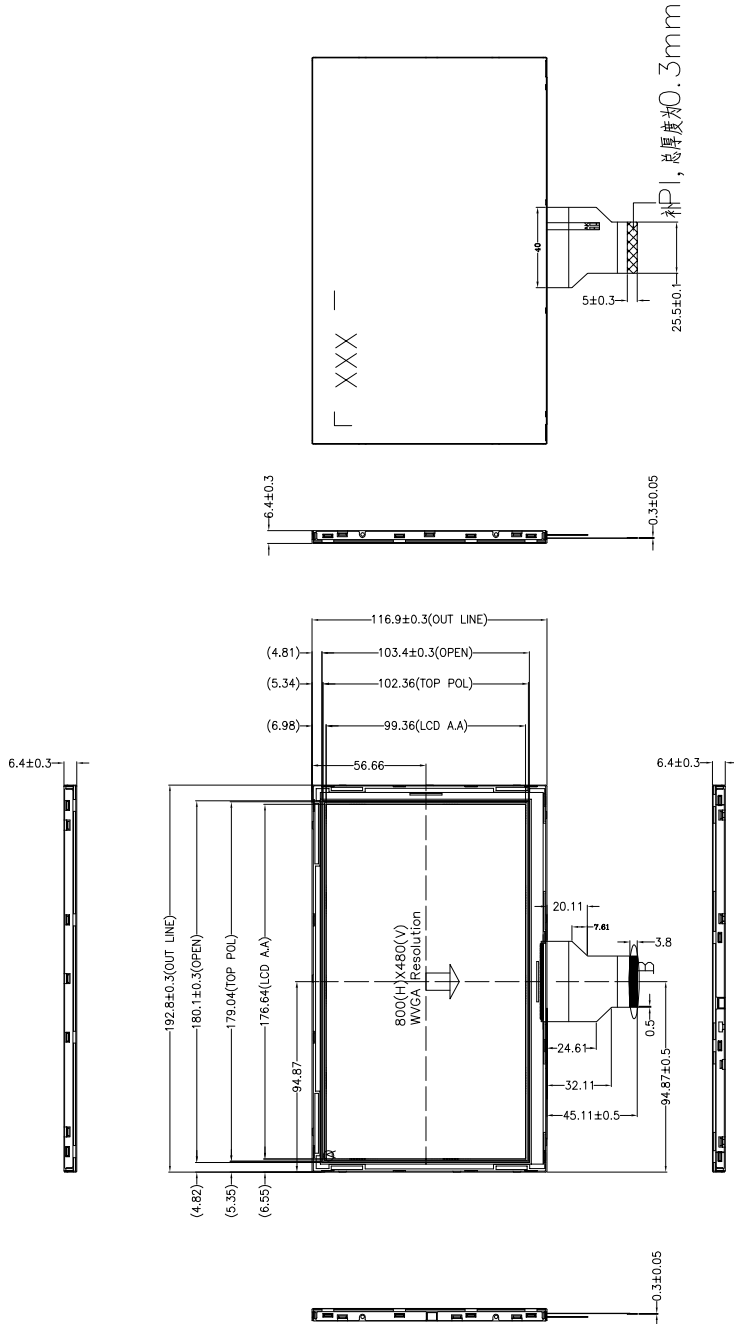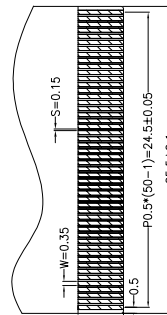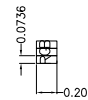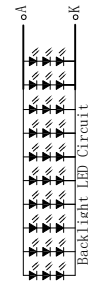
NOTES:
1. DISPLAY TYPE: 8.''TFT LCD, Normally White
2. VIEWING DIRECTION:12:00 CLOCK
3. Operating TEMP:-20°C~70°C
3. Storage TEMP:-30°C~80°C
4. Backlight :30 Chip-white LED
5. Undefined tolerances:±0.30
6. The product should measure up with RoHS standard

BROWNLH
伯朗瀚科技
深圳市伯朗瀚科技有限公司
Shenzhen Brownopto Technology Co.,

INTERFACE	RGB Interface	PART NO. 080WSE3064-A4 v.1
	FPC Connector (FH12-50S-0.5SH)	REV. 1.0 SHEET OF 1/1
VIEWING DIRECTION	12 O'clock	File NO
Gray DIRECTION	6 O'clock	DWN Rich Liang
		CHKD Rich Liang
		PROJECTION 3RD
		TOLERANCE UNLESS SPECIFIED ±0.3
		UNIT mm SCALE 1:1

REV:1.0

3. Block Diagram

REV:1.0
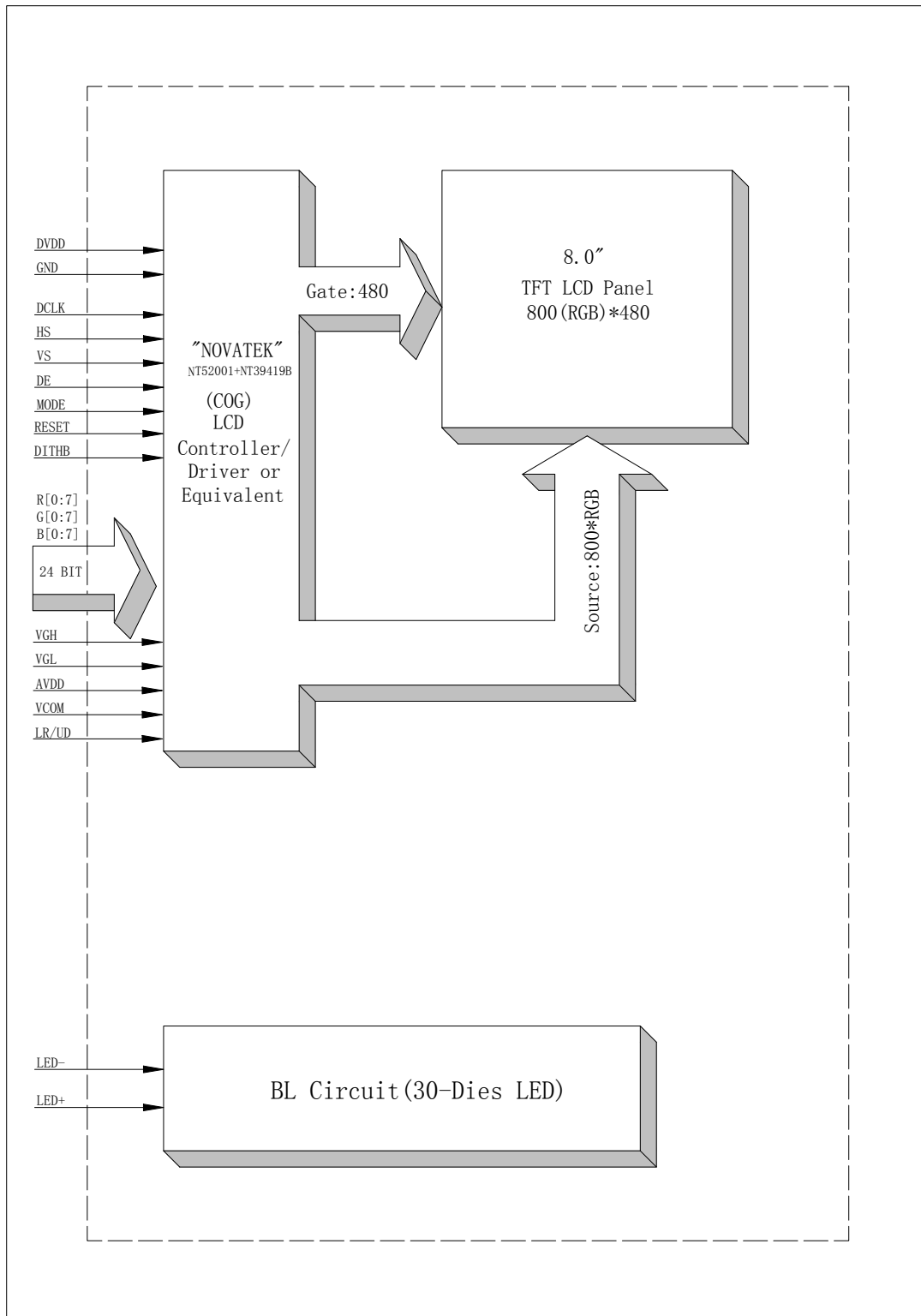
4. Interface Pin Function

Pin No.	Symbol	Description
1	LED+	Anode of LED backlight
2	LED+	Anode of LED backlight
3	LED-	Cathode of LED backlight
4	LED-	Cathode of LED backlight
5	GND	Power ground
6	V$_{COM}$	Common voltage
7	DV$_{DD}$	Power for digital circuit
8	MODE	DE/SYNC mode select
9	DE	Data input enable
10	VS	Vertical sync input
11	HS	Horizontal sync input
12	B7	Blue data(MSB)
13	B6	Blue data
14	B5	Blue data
15	B4	Blue data
16	B3	Blue data
17	B2	Blue data
18	B1	Blue data
19	B0	Blue data(LSB)
20	G7	Blue data(LSB)
21	G6	Green data
22	G5	Green data
23	G4	Green data
24	G3	Green data
25	G2	Green data
26	G1	Green data
27	G0	Green data(LSB)
28	R7	Red data(MSB)
29	R6	Red data
30	R5	Red data
31	R4	Red data
32	R3	Red data
33	R2	Red data
34	R1	Red data
35	R0	Red data(LSB)
36	GND	Power Ground
37	DCLK	Sample clock
38	GND	Power Ground
39	L/R	Left / right selection
40	U/D	Up/down selection

41	VGH	Gate ON Voltage
42	VGL	Gate OFF Voltage
43	AVDD	Power for Analog Circuit
44	RESET	Global reset pin.
45	NC	No connection
46	VCOM	Common Voltage
47	DITHB	Dithering function
48	GND	Power Ground
49	NC	No connection
50	NC	No connection

NOTE:

Note1: DE/SYNC mode select. Normally pull high.

When select DE mode, MODE="1", VS and HS must pull high.

When select SYNC mode, MODE="0", DE must be grounded.

Note 2: When input 18 bits RGB data, the two low bits of R, G and B data must be grounded.
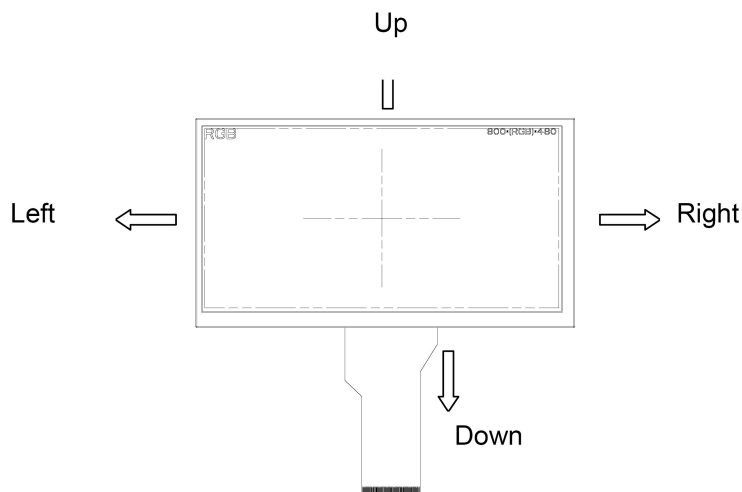
Note 3: Data shall be latched at the falling edge of DCLK.

Note 4: Selection of scanning mode.

Set of scan control input		Scanning direction
U/D	L/R	
GND	DVDD	Up to down, left to right
DVDD	GND	Down to up, right to left
GND	GND	Up to down, right to left
DVDD	DVDD	Down to up, left to right

Note 5: Definition of scanning direction.

Refer to the figure as below:

Note 6: Global reset pin. Active low to enter reset state. Suggest connecting with an RC reset circuit for stability. Normally pull high.

Note 7: Dithering function enable control, normally pull high.

When DITHB="1", Disable internal dithering function,

When DITHB="0", Enable internal dithering function.

5. Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit
Supply voltage for logic	DVDD	-0.3	5	V
Supply voltage for analog	AVDD	-0.5	13.5	V
Power supply	VGH	-0.3	40	V
Power supply	VGL	-20	0.3	V
Power supply	VGH-VGL	-	40	V
Supply current (One LED)	I_{LED}		30	mA
Operating temperature	T_{OP}	-20	+70	°C
Storage temperature	T_{ST}	-30	+80	°C

Note: The absolute maximum rating values of this product are not allowed to be exceeded at any times. Should a module be used with any of the absolute maximum ratings exceeded, the characteristics of the module may not be recovered, or in an extreme case, the module may be permanently destroyed.

6. Electrical Characteristics

6.1 Input Power

Item	Symbol	Min	Typ.	Max	Unit	Applicable terminal
Supply Voltage for Analog	DVDD	3.0	3.3	3.6	V	
Supply Voltage for Logic	AVDD	10.2	10.4	10.6	V	
Power supply	VGH	15.3	16.0	16.7		
Power supply	VGL	-7.7	-7.0	-6.3		
Power supply	VCOM	4.2	4.4	4.6		
Input Voltage	V_{IL}	0	-	0.3DVDD	V	
	V_{IH}	0.7 DVDD	-	DVDD		
Input leakage Current	I_{LKG}	-		-	μA	

6.2 Backlight Driving Conditions

Item	Symbol	Value			Unit	Remark
		Min.	Typ.	Max.		
Voltage for LED Backlight	V_F	8.4	8.7	9.6	V	I_L =180mA
Current for LED Backlight	I_L		300		mA	
Power Consumption	P		1.68		W	
LED Life Time		30,000			Hr	Note

Note: Brightness to be decreased to 50% of the initial value at ambient temperature TA=25℃

7. Optical Characteristics

| ITEM		SYMBOL	CONDITIONS	SPECIFICATIONS			UNIT	NOTE
				MIN	TYP.	MAX		
Luminance		L	I_L =200mA	360	400	-	Cd/m^2	
Contrast Ratio		CR	θ=0°	400	500			
Response Time		T_{ON}	25℃		10	20	ms	
		T_{OFF}			15	30		
CIE Color Coordinate	Red	X_R	Viewing normal angle					
		Y_R						
	Green	X_G						
		Y_G						
	Blue	X_B						
		Y_B						
	White	X_W			0.290			
		Y_W			0.310			
Viewing Angle	Hor.	θ_{X+}	CR≥10	60	70		Degree	
		θ_{X-}		60	70			
	Ver.	θ_{Y+}		40	50			
		θ_{Y-}		60	70			
Uniformity		Un		70	75		%	

Note 1: Definition of Viewing Angle **θx** and **θ**y:
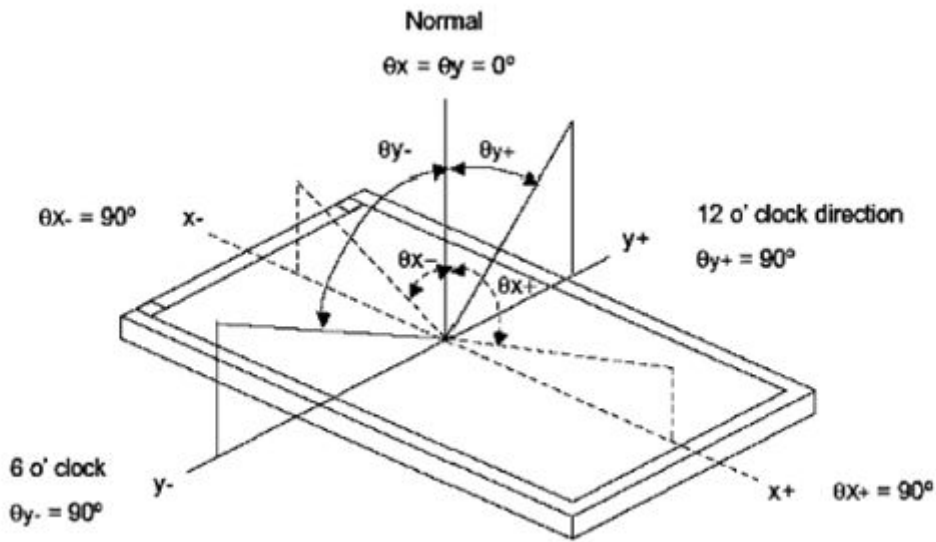
Note 2: Definition of contrast ratio CR:

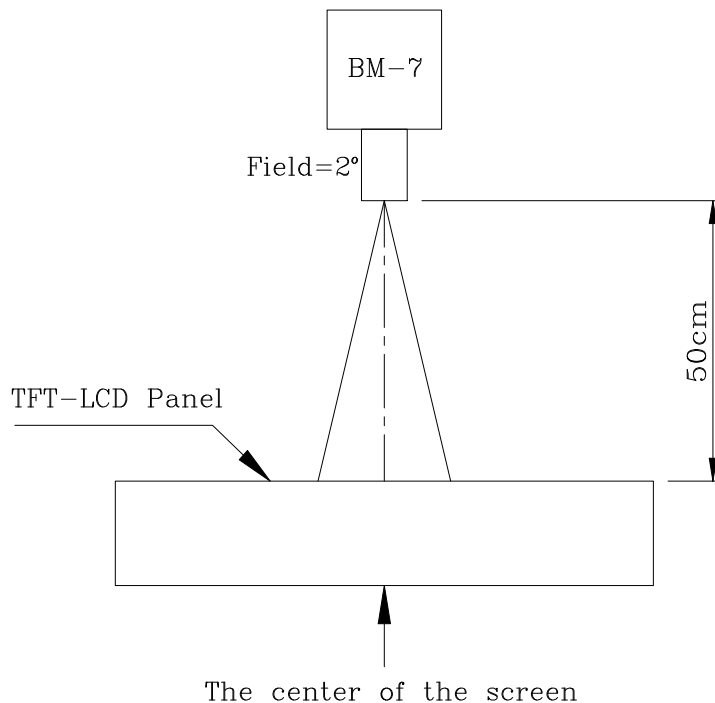$$CR = \frac{\text{Luminance of white state}}{\text{Luminance of black state}}$$
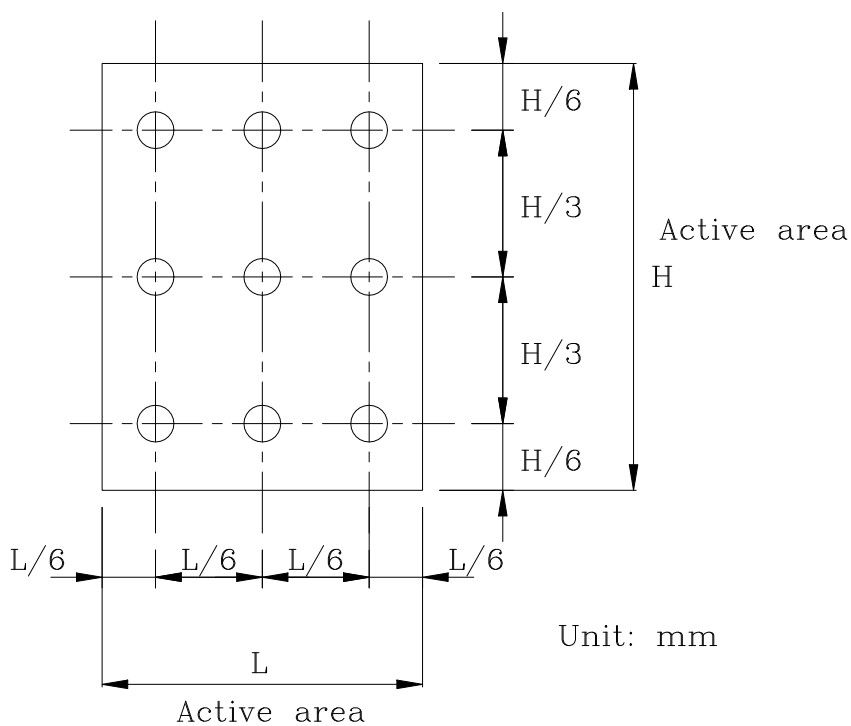
Note 3: Definition of Response Time(Tr,Tf)
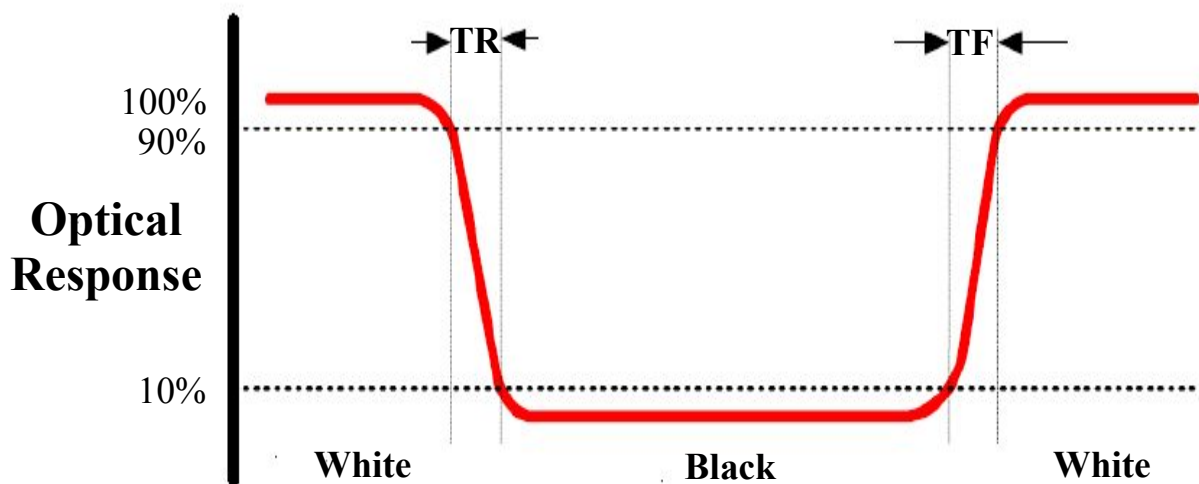
Note 4: Definition of Luminance
①The Brightness Test Equipment Setup

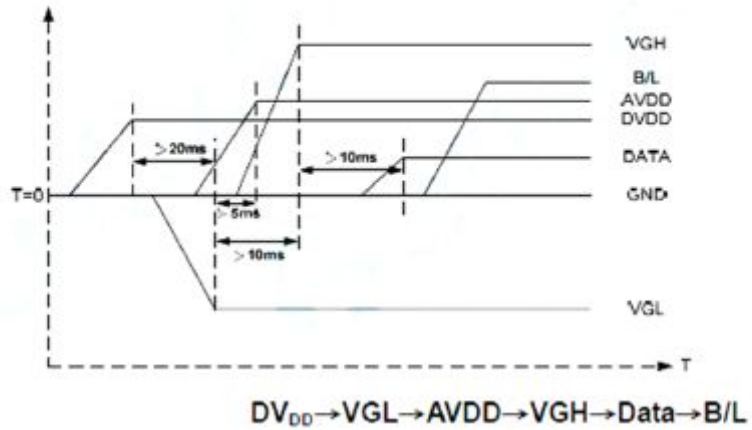Field=2° (As measuring "black" image, field=2° is the best testing condition)
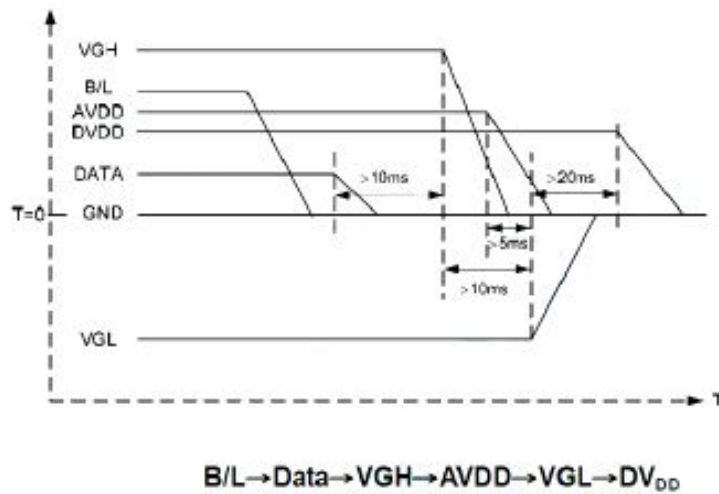

②The Brightness Test Point Setup

8. Timing Characteristics

8.1 Power Sequence

Power on

$$DV_{DD} \rightarrow VGL \rightarrow AVDD \rightarrow VGH \rightarrow Data \rightarrow B/L$$

Power off

$$B/L \rightarrow Data \rightarrow VGH \rightarrow AVDD \rightarrow VGL \rightarrow DV_{DD}$$

8.2 AC electrical characteristics

Item	Symbol	Values Min.	Values Typ.	Values Max.	Unit	Remark
HS setup time	Thst	8			ns	
HS hold time	Thhd	8			ns	
VS setup time	Tvst	8			ns	
VS hold time	Tvhd	8			ns	
Data setup time	Tdsu	8			ns	
Data hole time	Tdhd	8			ns	
DE setup time	Tesu	8			ns	
DE hole time	Tehd	8			ns	
DVDD Power On Slew rate	TPOR	-		20	ms	From 0 to 90% DVDD
RESET pulse width	TRst	1			ms	
DCLK cycle time	Tcoh	20			ns	
DCLK pulse duty	Tcwh	40	50	60	%	

8.3 RGB Mode Timing Diagram
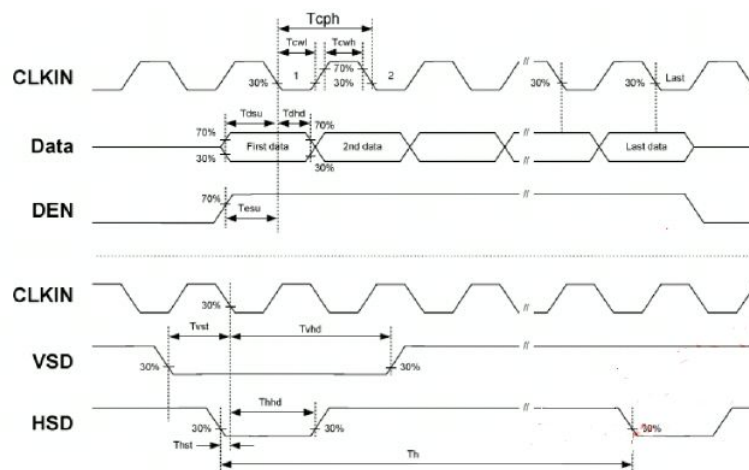
8.4 RGB Timing Table

Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Horizontal Display Area	thd		800		DCLK	
DCLK Frequency	fclk	26.3	33.3	46.8	MHz	
One Horizontal Line	th	862	1056	1200	DCLK	
HS pulse width	thpw	1	-	40	DCLK	
HS Blanking	thb	46	46	46	DCLK	
HS Front Porch	thfp	16	210	354	DCLK	

Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Vertical Display Area	tvd		480		TH	
VS period time	tv	510	525	650	TH	
VS pulse width	tvpw	1		20	TH	
VS Blanking	tvb	23	23	23	TH	
VS Front Porch	tvfp	7	22	147	TH	

8.5 Data input format

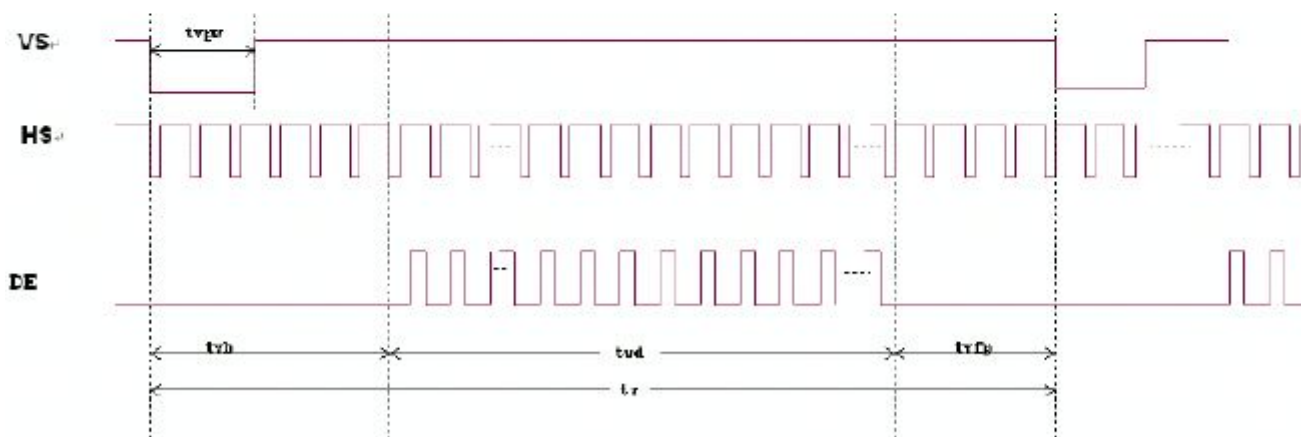Figure 3. 1 Horizontal input timing diagram.

Figure 3. 2 Vertical input timing diagram.

9. Standard Specification for Reliability

9.1 Standard Specification for Reliability of LCD Module

Item	Test Conditions	Remark
High temperature storage	Ta=85℃ 96hrs	NOTE1，NOTE4
Low temperature storage	Ta=-30℃ 96hrs	NOTE1，NOTE4
High temperature operation	Ta=70℃ 96hrs	NOTE2，NOTE4
Low temperature operation	Ta=-20℃ 96hrs	NOTE2，NOTE4
Operate at high temperature and humidity	+60℃, 90%RH 96hrs	NOTE4
Thermal Shock	-30℃/30min~+80℃/30min for a total 100 cycles, start with cold temperature and end with high temperature.	NOTE4
Vibration Test	Frequency range:10~55HZ Stroke:1.5mm Swap:10HZ~55HZ~10HZ 2 hours of each direction of X.Y. Z (6 hours for total)	
Mechanical shock	100G 6ms, $\pm X$, $\pm Y$, $\pm Z$ 3 times for each direction	
Package vibration test	Random vibration :0.15G*G/HZ from 5-200 HZ,-6dB/Octave from 200-500HZ of each direction of X.Y. Z (6 hours for total)	
Low temperature storage	Height:60cm 1 corner ,3 edges ,6 surfaces	
Low temperature storage	$\pm 2KV$,Human Body Mode, 100pF/1500 Ω	

Note 1: Ta is the ambient temperature of samples.
Note 2: Ts is the temperature of panel's surface.
Note 3: In the standard condition, there shall be no practical problem that may affect the display function. After the reliability test, the product only guarantees operation, but don't guarantee all of the cosmetic specification.
Note 4: Before cosmetic and function test, the product must have enough recovery time, at least 2 hours at room temperature.

9.0 BOM LIST

（**TBD**）

10.0 LOT MARK

10.1 Location of Lot Mark

(1) Location: The label is attached to the backside of the LCD module.

(2) Detail of the Mark: as attached below.
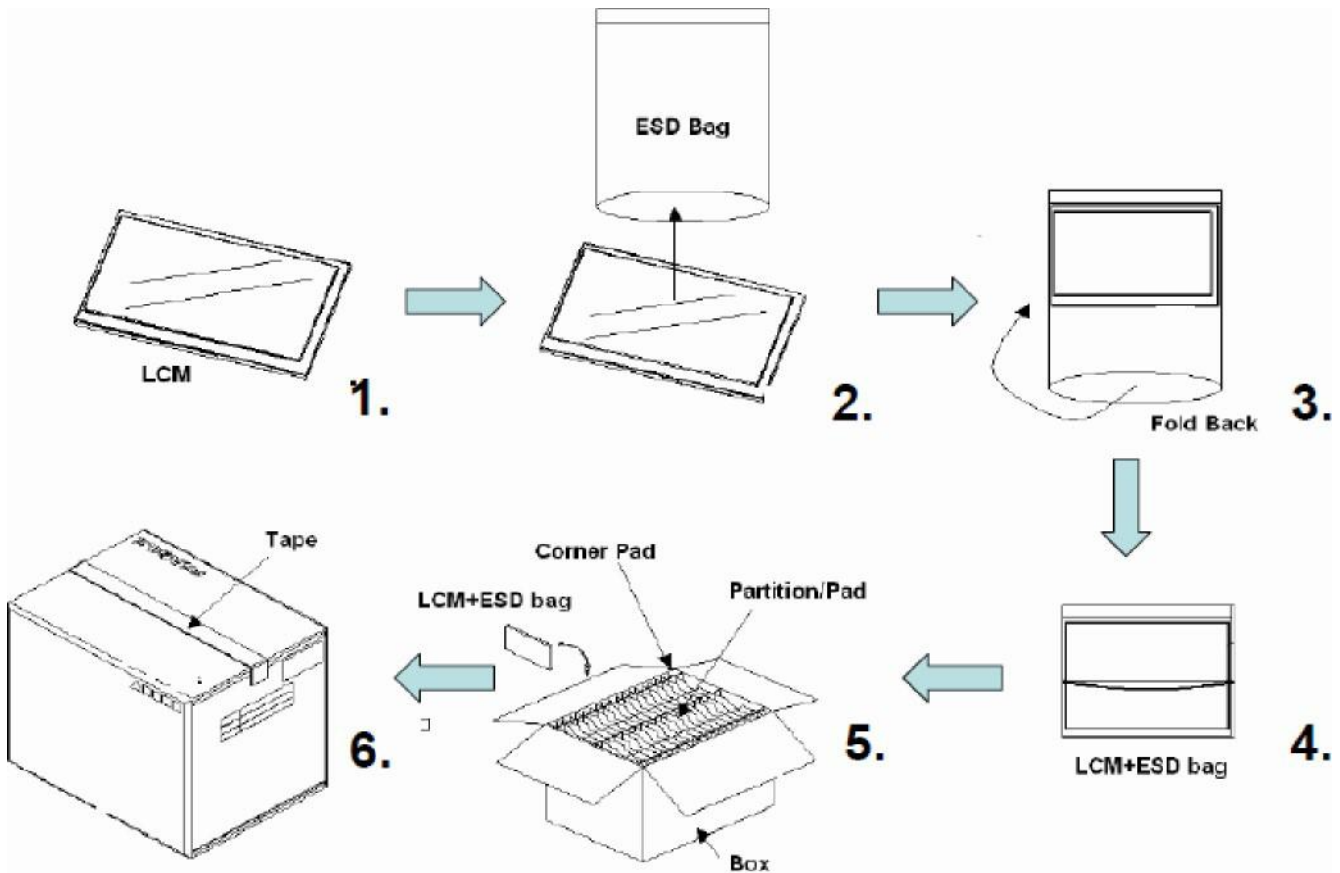
(3) This is subject to change without prior notice.

080WSE3064-A4 V.1

1705001131000001

11.0 PACKAGE SPECIFICATION

11.1 Packing form

LCM Model	LCM Qty. in the box	Inner Box Size (mm)	Note
080WSE3064-A4 V.1	80 pcs/box	490±5 x 340±5 x 250±5	

11.2 Packing assembly drawings

Items	Material	Notice
Box	Corrugated Paper Board	AB Flute
Partition/Pad	Corrugated Paper Board	B Flute
Corner Pad	Corrugated Paper Board	AB Flute
ESD bag	PE	

12.2.2.1 Housing case must be destined carefully so as not to put stresses on LCD all sides and not to wrench module. The stresses may cause non-uniformity even if there is no non-uniformity statically.

12.2.2.2 Keep sufficient clearance between LCD module back surface and housing when the LCD module is mounted. The clearance in the design is recommended taking into account the tolerance of LCD module thickness and mounting structure height on the housing.

12.2.3 Please do not push or scratch LCD panel surface with any-thing hard. And do not soil LCD panel surface by touching with bare hands.(Polarizer film, surface of LCD panel is easy to be flawed.)

12.2.4 Please do not press any parts on the rear side such as source IC, gate IC, and FPC during handling LCD module, If pressing rear part is unavoidable, handle the LCD module with care not to damage them.

12.2.5 Please wipe out LCD panel surface with absorbent cotton or soft cloth in case of it being soiled.

12.2.6 Please wipe out drops of adhesives like saliva and water on LCD panel surface immediately. They might damage to cause panel surface variation and color change.

12.2.7 Please do not take a LCD module to pieces and reconstruct it. Resolving and reconstructing modules may cause them not to work well.

12.3 **Disassembling or Modification**

Do not disassemble or modify the module. It may damage sensitive parts inside LCD module, and may cause scratches or dust on the display. Century does not warrant the module, if customers disassemble or modify the module.

12.4 Breakage of LCD Panel

12.4.1. If LCD panel is broken and liquid crystal spills out, do not ingest or inhale liquid crystal, and do not contact liquid crystal with skin.

12.4.2. If liquid crystal contacts mouth or eyes, rinse out with water immediately.

12.4.3. If liquid crystal contacts skin or cloths, wash it off immediately with alcohol and rinse thoroughly with water.

12.4.4. Handle carefully with chips of glass that may cause injury, when the glass is broken.

12.5 **Absolute Maximum Ratings and Power Protection Circuit**

12.5.1. Do not exceed the absolute maximum rating values, such as the supply voltage variation, input voltage variation, variation in parts' parameters, environmental temperature, etc., otherwise LCD module may be damaged.

12.5.2. Please do not leave LCD module in the environment of high humidity and high temperature for a long time.

12.5.3. It's recommended to employ protection circuit for power supply.

12.6 **Operation**

12.6.1 Do not touch, push or rub the polarizer with anything harder than HB pencil lead.

12.6.2 Use fingerstalls of soft gloves in order to keep clean display quality, when persons handle the LCD module for incoming inspection or assembly.

12.6.3 When the surface is dusty, please wipe gently with absorbent cotton or other soft material.

12.6.4 Wipe off saliva or water drops as soon as possible. If saliva or water drops contact with polarizer for a long time, they may causes deformation or color fading.

12.6.5 When cleaning the adhesives, please use absorbent cotton wetted with a little petroleum benzene or other adequate solvent.

12.7 Static Electricity

12.7.1 Protection film must remove very slowly from the surface of LCD module to prevent from electrostatic occurrence.

12.7.2. Because LCD module use CMOS-IC on circuit board and TFT-LCD panel, it is very weak to electrostatic discharge. Please be careful with electrostatic discharge.

12.7.3 Persons who handle the module should be grounded through adequate methods.

12.8 **Disposal**

When disposing LCD module, obey the local environmental regulations.

12.9 Others

12.9.1 A strong incident light into LCD panel might cause display characteristics' changing inferior because of Polarizer film, color filter, and other materials becoming inferior. Please do not expose LCD module direct sunlight Land Strong UV rays.

12.9.2 Please pay attention to a panel side of LCD module not to contact with other materials in pressing it alone.

12.9.3 For the packaging box, please pay attention to the followings:

12.9.3.1 Packaging box and inner case for LCD are designed to protect the LCDs from the damage or scratching during transportation. Please do not open except picking LCDs up from the box.

12.9.3.2 Please do not pile them up more than 6 boxes(They are not designed so) And please do not turn over.

12.9.3.3 Please handle packaging box with care not to give them sudden shock and vibrations. And also please do not throw them up.

12.9.3.4 Packing box and inner case for LCDs are made of cardboard, So please pay attention not to get them wet(Such like keeping them in high humidity or wet place can occur getting them wet.)