Xingyue technology co., ltd

Customer Approved Specification

To:

Product Name: ZY121XGXI60-01A0

Document Issue Date: 2024/11/11

	InfoVision Optoelectronics
SIGNATURE _____ _____ _____ Please return 1 copy for your confirmation with your signature and comments.	**SIGNATURE** **QA** _____ **PREPARED BY** **FAE** _____

Note: 1. Please contact IiforVision Company. before designing your product based on this product.
2. The information contained herein is presented merely to indicate the characteristics and performance of our products. No responsibility is assumed by ZY for any intellectual property claims or other problems that may result from application based on the module described herein.

FQ-7-30-0-009-03D

Revised Record				
Ver.	Date	Revised Content/Summary	Page	Revised By
00		Tentative	All	

CONTENTS

1 General Descriptions

1.1 Introduction

The ZY121XGXI60-01A0 is a color active matrix thin film transistor (TFT) liquid crystal display (LCD) Sub Sheet that uses amorphous silicon TFT as a switching device. This TFT LCD panel (Single Chip) has a 12.1 inch diagonally measured active display area with WXGA resolution (1,280 horizontal by 800 vertical pixels array).

1.2 Features

- 12.1 Inch TFT-LCD Panel
- Supported WXGA Resolution
- Compatible with RoHS Standard

1.3 General Characteristics

Table 1 General Characteristics

Item	Specification		Unit	Note
Outline Dimension (H x V x D)	277.7x180.6x8.7		mm	Single Chip
Active Area (H x V)	260.35x162.72		mm	Single Chip
Number of Pixels (H x V)	1280x 800		-	Single Chip
Pixel Size (H x V)	0.2034x0.2034		mm	Single Chip
Pixel Arrangement	RGB Stripe			-
Display Type	Transmissive		-	-
Display Mode	Normally Black		-	-
Cell Thickness	CF: 0.40±0.04		mm	Single Chip
	TFT: 0.40±0.04			
Driver IC(Recommendation)			-	-
Weight	(86.66)(Typ.)	TBD (Max.)	g	Single Chip
	(1487.36)(Typ.)	TBD(Max.)		Sub A
	(1116.5)(Typ.)	TBD(Max.)		Sub B

2 Absolute Maximum Ratings

Table 2 Absolute Maximum Ratings

Item	Symbol	Min.	Max.	Unit	Conditions
LC Operating Voltage	V_{op}	(0.2)	(5.7)	V	(1),(2),(3),(4)
Operating Temperature	T_{gs}	(-30)	(80)	℃	
Storage Temperature	T_a	(-30)	(80)	℃	
Operating Humidity	H_{op}	(10)	(90)	%RH	
Storage Humidity	H_{st}	(10)	(95)	%RH	

Note(1) All the parameters specified in the table are absolute maximum rating values that may cause faulty operation or unrecoverable damage, if exceeded. It is recommended to follow the typical value.

Note(2) All the contents of electro-optical specifications and display fineness are guaranteed under Normal Conditions. Normal conditions are defined as: Temperature: 25℃, Humidity: 55± 10%RH.

Note(3) Unpredictable results may occur when it was used in extreme conditions. T_a= Ambient Temperature, T_{gs}= Glass Surface Temperature. All the display fineness should be inspected under normal conditions.

Note(4) Wet bulb temperature should be lower than 57.8℃, and no condensation of water. Besides, protect the module from static electricity.

3 Electrical Specifications

Table 3 Electrical Specifications

No.	Item	Min.	Typ.	Max.	Unit
1	Vcom voltage	(-1.4)	(-0.9)	(-0.4)	V
2	Frame Rate	-	(60)	-	Hz
3	VGH voltage	(19)	(20)	(21)	V
4	VGL voltage	(-12)	(-11)	(-10)	V

Note(1) Both VGH and VGL are TFT gate operation voltage.

Note(2) The setting of electrical parameters should follow the initial code specified by ZY. Vcom must be adjusted to optimize display quality.

Note(3) All the contents of electrical specifications and display fineness are guaranteed under Normal Conditions. Normal conditions are defined as follow: Temperature: 25℃, Humidity: 55± 10%RH.

4 Optical Characteristics

The optical characteristics are measured under stable conditions as following notes.

Table 4 Optical Characteristics

Item	Conditions		Min.	Typ.	Max.	Unit	Note
Transmittance	Center		TBD	(4.2)		%	Under C-light (1),(5),(7),(8),(10) θx=θy=0°
Contrast Ratio	Center		TBD	(1200)	-	-	(1),(3),(6),(7),(8) θx=θy=0°
Response Time	Rising + Falling		-	TBD	(30)	ms	(1),(4),(6),(7),(8) θx=θy=0°
CF Color Chromaticity (CIE1931)	Red x		Typ. -(0.02)	(0.666)	Typ. +(0.02)	-	Under C-light (1),(5),(8),(10) θx=θy=0°
	Red y			(0.321)		-	
	Green x			(0.278)		-	
	Green y			(0.594)		-	
	Blue x			(0.136)		-	
	Blue y			(0.119)		-	
	White x			(0.297)		-	
	White y			(0.333)		-	
NTSC	CIE1931		TBD	(70)	-	%	
Viewing Angle (CR≥10)	Horizontal	θ_{x+}	TBD	(85)	-	degree	(1),(2),(6)(7),(8)
		θ_{x-}	TBD	(85)	-		
	Vertical	θ_{y+}	TBD	(85)	-		
		θ_{y-}	TBD	(85)	-		

Note(1) Measurement Setup:

The LCD module should be stabilized at given ambient temperature (25°C) for 30 minutes to avoid abrupt temperature changing during measuring. In order to stabilize the luminance, the measurement should be executed after lighting backlight for 30 minutes in the windless room.

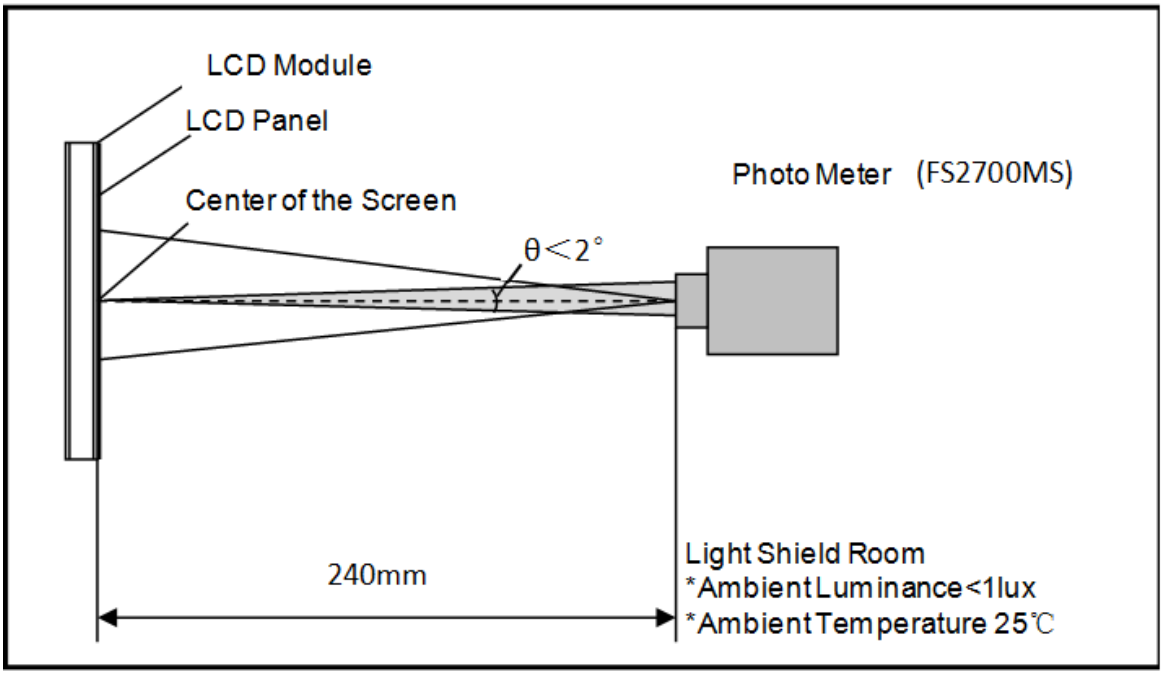


Figure 1 Optical Characteristic Measurement Equipment and Method

Note(2) Definition of Viewing Angle.

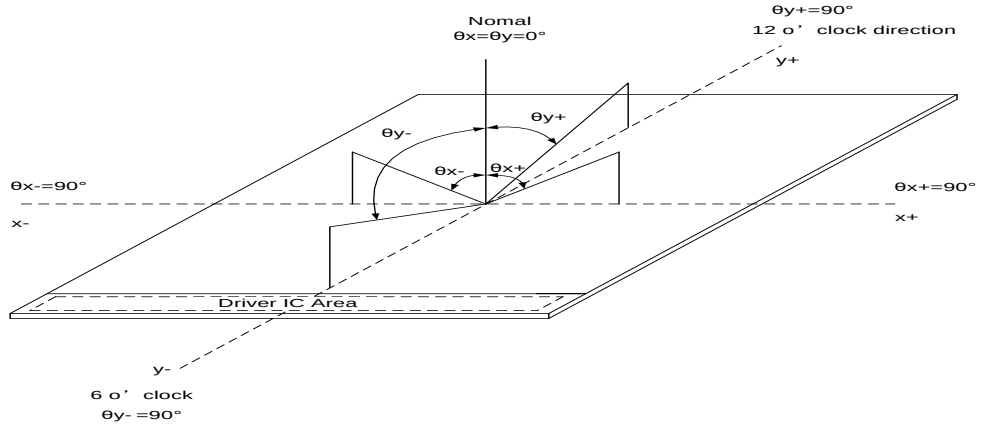


Figure 2 Definition of Viewing Angle

Note(3) Definition of Contrast Ratio (CR)

The contrast ratio can be calculated by the following expression:

Contrast Ratio (CR) = the luminance of White pattern/ the luminance of Black pattern

Note(4) Definition of Response Time

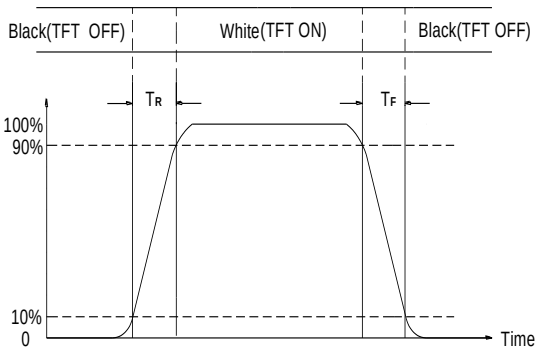


Figure 3 Definition of Response Time

Note(5) C-light Spectrum

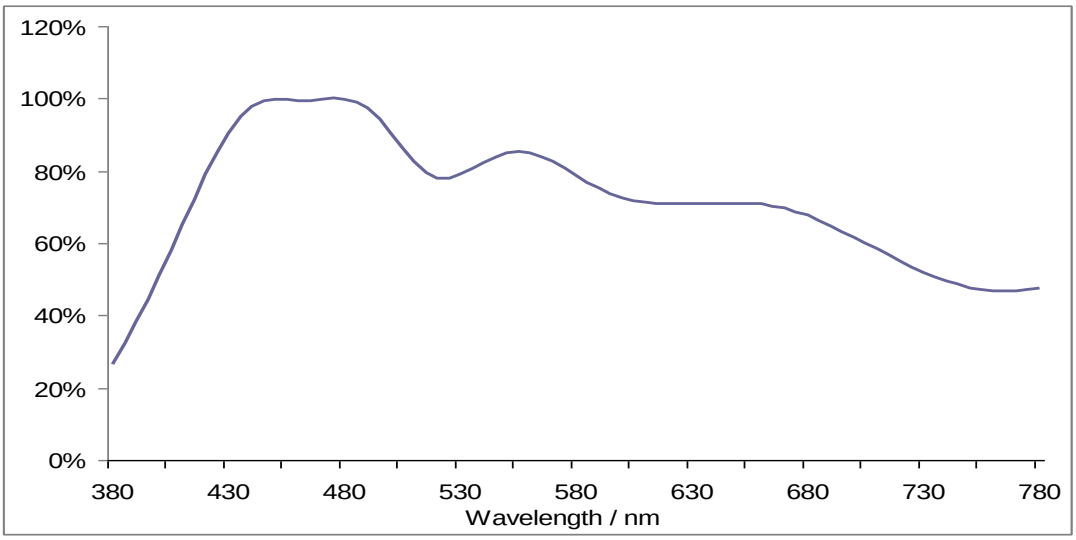


Figure 4 C-Light Spectrum

5 Pixel Format

The figure shows the relation of the input signals and LCD panel pixel format.

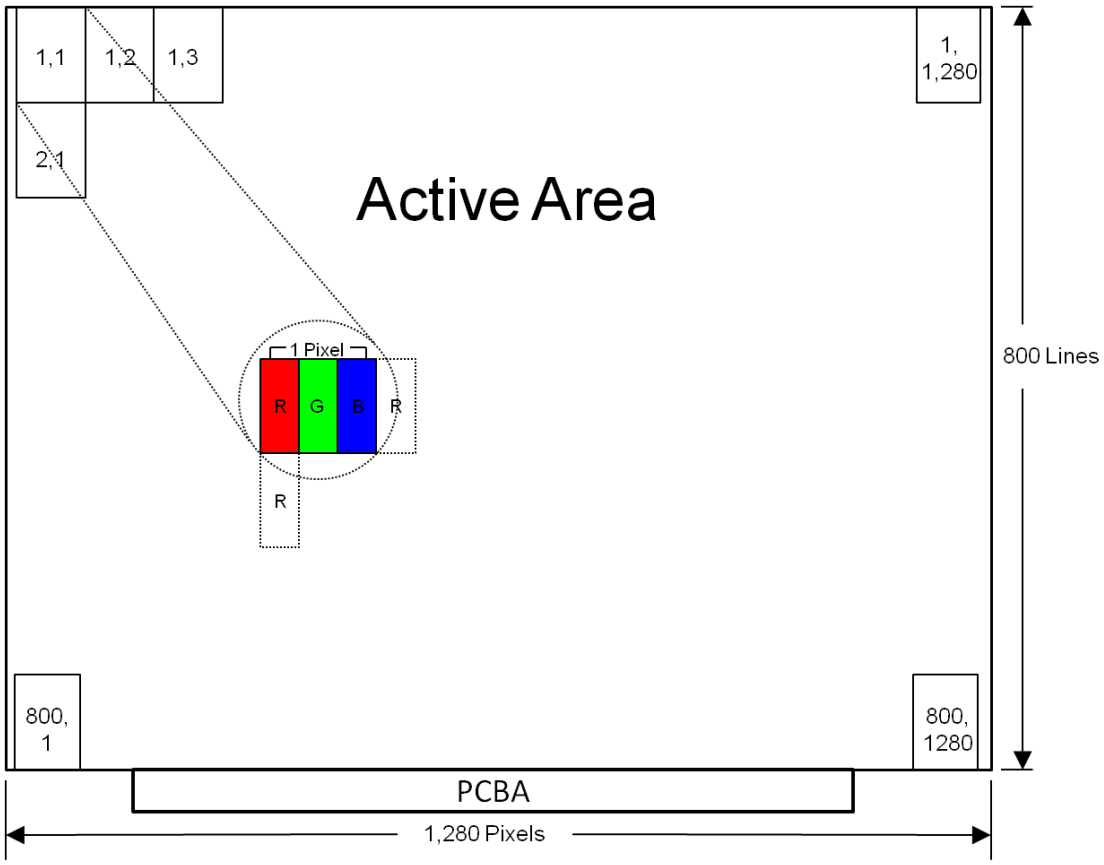
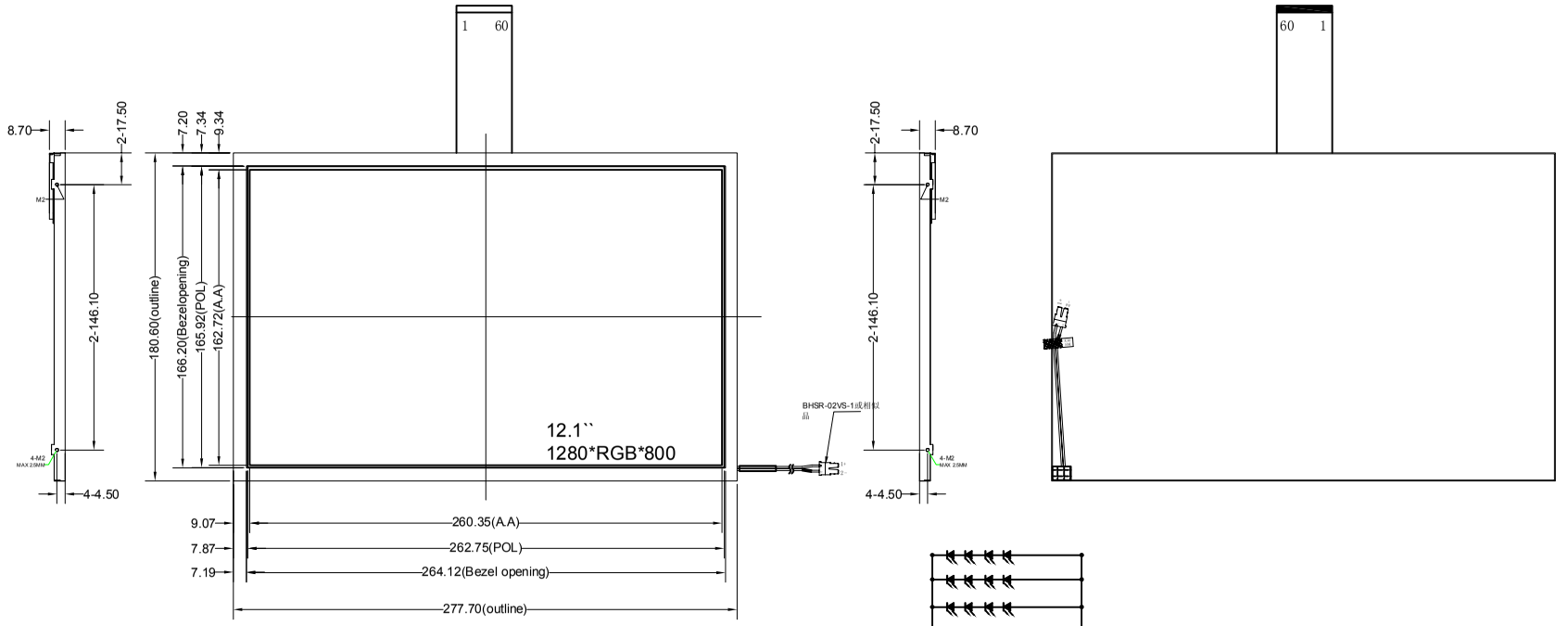


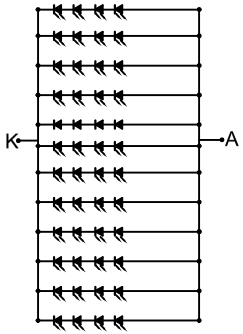
Figure 7 Pixel Format

6 Outline Size

6.1 Outline Size of Single Chip

RoHS





LED 电路图

Notes:

1.Unit:mm
2.Do not scale drawing.
3. ⚠ Modification rev.number.
4.Genral Tolerance:±0.2
5. "*" For important dimension;( ) for reference dimention
6. RoHs must be complied.(Use Lead-free process)

ITEM	SYMBOL	MIN	TYP	MAX	UNIT	
Luminous (Without PET)	IV		350		cd/m²	
Chromaticity Coordinatses Without PET	X	(0.260)		(0.320)		T=25°C 测试误差 :5%
	Y	(0.265)		(0.328)		
Uniformity		70			%	
Backlight voltage	VF		12		V	
Backlight current	IF				mA	

REV.: △

REV 修改	DATE 日期	DESCRIPTION 修改内容	REVISER 修改者

TYPE 类型	背光成品图	MATERIAL 材料		PAGE 页次	1/1	APPROVED 承认	
MODEL NO. 模组号		EDITION 版本号	01	第三视角		CHECK 核对	
PART NO. 料号		DATE 日期				DESIGNED 设计者	

1 2 3 4 5 6 7 8

6.2.Pin Assignment

Pin No.	Symbol	Function	Remark
1	GND	Ground	
2	NC	NC	
3	VDD	Power Supply	
4	GND	Ground	
5	VCOM	Common Voltage	
6	VDD	Power Supply	
7	GND	Ground	
8~14	NC	NC	
15	GND	Ground	
16	VDD	Power Supply	
17	GND	Ground	
18	RXIN3+	Data lane3 input	
19	RXIN3-		
20	GND	Ground	
21	RXCLKIN+	CLK input	
22	RXCLKIN-		
23	GND	Ground	
24	RXIN2+	Data lane2 input	
25	RXIN2-		
26	GND	Ground	
27	RXIN1+	Data lane1 input	
28	RXIN1-		
29	GND	Ground	
30	RXIN0+	Data lane0 input	
31	RXIN0-		
32~33	GND	Ground	
34	RESET	Global reset pin	
35	STBYB	Standby mode control	
36	SHLR	Source Right or Left sequence	
37	VDD	Power Supply	
38	UPDN	Gate Up or Down scan control	
39	GND	Ground	
40	NC	NC	
41	VCOM	Common Voltage	
42	DITH	Dithering function enable control	
43	GND	Ground	
44	VDD	Power Supply	
45	GND	Ground	
46~52	NC	NC	

53	GND	Ground	
54	VDD	Power Supply	
55	SELB	=H 8-bit/=L 6-bit	
56	VGH	Gate ON Voltage	
57	VDD	Power Supply	
58	VGL	Gate OFF Voltage	
59	GND	Ground	
60	NC	NC	

7.2 Cell Light-On Test Waveform

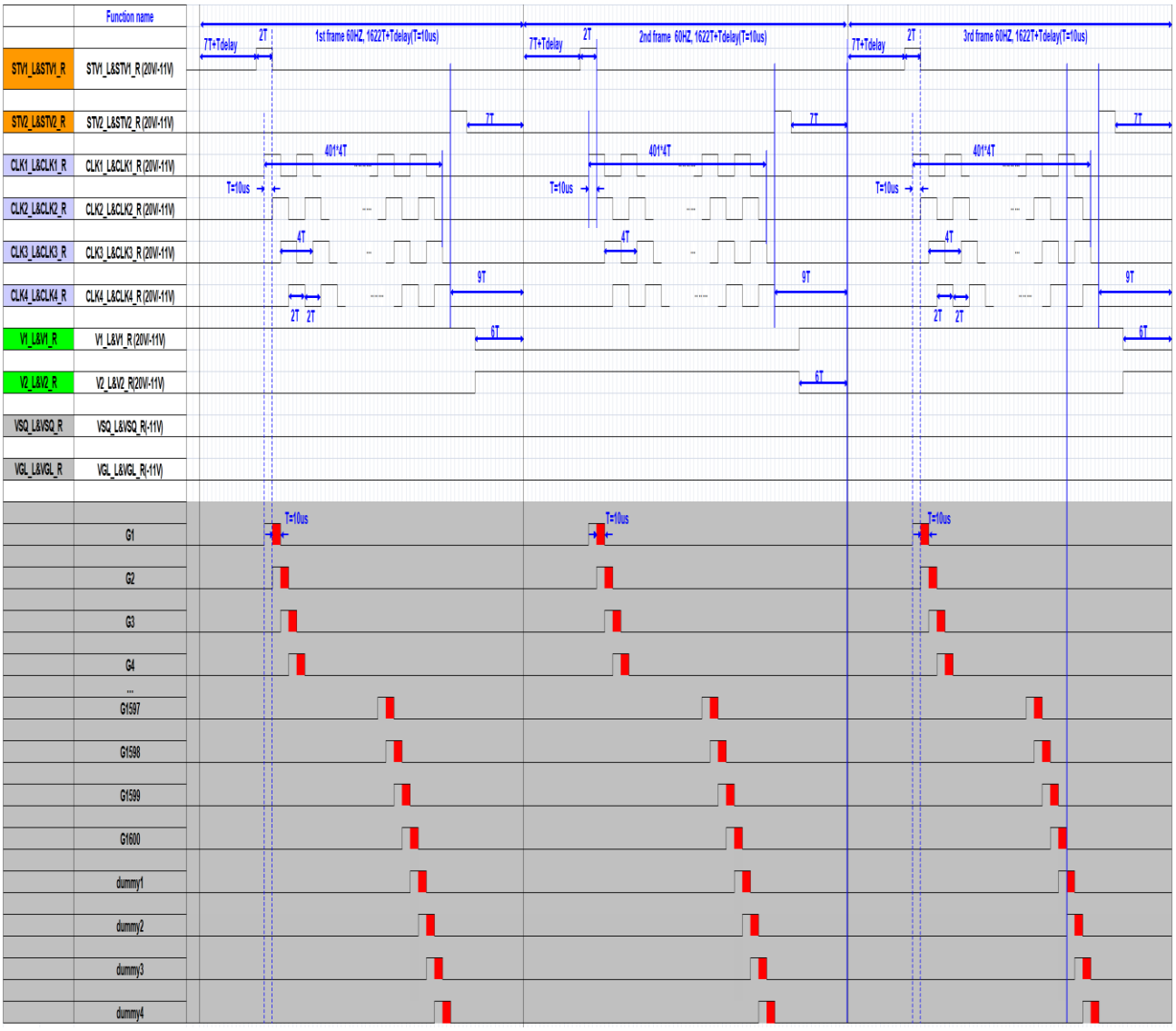


Figure 19 Cell Light-On Test Waveform

Note(1) The timing part consists of 4 high-frequency AC signals with a duty cycle of 50%, 2 STV signals and 2 low-frequency AC signals, a total of 8 AC signals.

Note(2) In one frame, CLK 1, CLK 2, CLK 3, and CLK 4 have 401 high levels. V1/V2 switches the blank area between two frames, 1 frame or the minimum number of frames that can be reached once

8 Reliability Condition

Table 8 Reliability Condition

NO	Item	Condition
1	High temperature Operation	T_{gs}=80℃,240hours
2	Low temperature Operation	T_a=-30℃,240hours
3	High temperature Storage	T_a=80℃,240hours
4	Low temperature Storage	T_a=-30℃,240hours
5	High temperature/High humidity Operation	T_{gs}=60℃, 90%RH,240hours

Note(1) A sample can only have one test. Outward appearance, image quality and optical data can only be checked at normal conditions according to the ZY document before reliable test. Only check the function of the panel after reliability test.

Note(2) The setting of electrical parameters should follow the initial code specified by ZY before reliability test. Besides, in OTP mode, Vcom must be adjusted to optimize display quality. It is recommended to use the backlight that specified by ZY.

Note(3) The sample must be released for 24 hours under normal conditions before judging. Furthermore, all the judgment must be made under normal conditions. Normal conditions are defined as follow: Temperature: 25℃, Humidity: 55± 10%RH. T_a= Ambient Temperature, T_{gs}= Glass Surface Temperature.

Note(4) During the test, it is unaccepted to have condensate water remains. Besides, protect the module from static electricity.

9 General Precaution

9.1 Use Restriction

This product is not authorized for using in life supporting systems, aircraft navigation control systems, military systems and any other appliance where performance failure could be life-threatening or lead to be catastrophic.

9.2 Operation Precaution

(1) The LCD product should be operated under normal conditions.
Normal conditions are defined as below:
Temperature: 25℃
Humidity: 55±10%
Display pattern: continually changing pattern (Not stationary)
(2) Brightness and response time depend on the temperature. (It needs more time to reach normal brightness in low temperature.)
(3) Image sticking may occur when the module displayed the same pattern for long time.
(4) Do not connect or disconnect the panel in the “power on” condition. Power supply should always be turned on/off by the “power on/off sequence”

9.3 Handling Precaution

(1) All the operators should be electrically grounded through adequate methods such as an anti-static wrist band, and with ionized air blowing to the panel surface when handling.
(2) Dressing finger-stalls out of the gloves is important for keeping the panel clean during the incoming inspection and the process of assembly.
(3) Do not apply strong mechanical impact or static load to the panel, so as to avoid breaking it.
(4) Clean the panel gently with absorbent cotton or soft cloth when it is dirty.
(5) Wipe off saliva or water drops on the polarizer, as soon as possible. Otherwise, it may cause deformation and fading of color.
(6) Desirable cleaners are IPA (Isopropyl Alcohol) or hexane. Do not use Ketone type materials (ex. Acetone), Ethyl alcohol, Toluene, Ethyl acid or Methyl chloride. It might permanent damage to the polarizer due to chemical reaction.
(7) When expose to drastic fluctuation of temperature (hot to cold or cold to hot), the LCD panel may be affected; It is necessary for you to pay attention to condensation when the ambient temperature drops suddenly. Condensate water would damage the polarizer and electrical contacted parts of the panel. Besides, smear or spot will remain after condensate water evaporating.
(8) The TFT-LCD Panel shall be installed flat, without twisting or bending
(9) If the liquid crystal material leaks from the panel, keep it away from the eyes and mouth. In case of contact with hands, legs or clothes, it must be clean with soap thoroughly.

9.4 Storage Precaution

When storing the product as spares for a long time, the following precautions are necessary.

(1) Store them in a dark place. Do not expose to sunlight or fluorescent light. The panel should be storage under this condition with package: Ambient temperature: 20℃±10℃; Humidity:60%RH±20%RH

(2) The product's glass 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.

9.5 Disposal

When disposing LCD panel, obey the local environmental regulations.

10. Packing form △1

a) Piling number of cartons ： MAX. 4

b) Package quantity in one carton： 20pcs

c) Carton size(TYP)： 590mm(W) × 340mm(D)×240mm(H)

d) Total mass of one carton filled with full modules(20pcs)： TBD