上海冠显光电科技有限公司
Shanghai Top Display Optoelectronics Co., LTD

☐ Pre-specification

☑ Final-specification

MODEL	:	TY101WSM02CF
ISSUED DATE	:	2025-02-24
VERSION	:	1.5

Version record

Issued Date	Description	Version	Editor	Audit
2023-09-14	First version	1.0		
2023-09-26	Modify part of the description	1.1		
2023-10-20	Add picture	1.2		
2023-12-19	Add model definition chapter, and modify part of the description	1.3		
2024-05-09	Final version	1.4	Amber	GR
2025-02-24	Final release (Adding debugging tools)	1.5	Xenia	

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1. Hardware Introduction

This chapter mainly introduces the product appearance diagram, hardware configuration diagram and tools required for debugging.

1.1. Product Appearance

The following is the appearance of the product corresponding to this model (hardware interfaces, etc., vary according to the specific model of backplane components), as shown in Figure 1.1-1

Note: There is no key structural process modification or major layout adjustment, only changes in product process or reliability. The company will not initiate changes to the outside product appearance. The specific items are subject to the received goods.

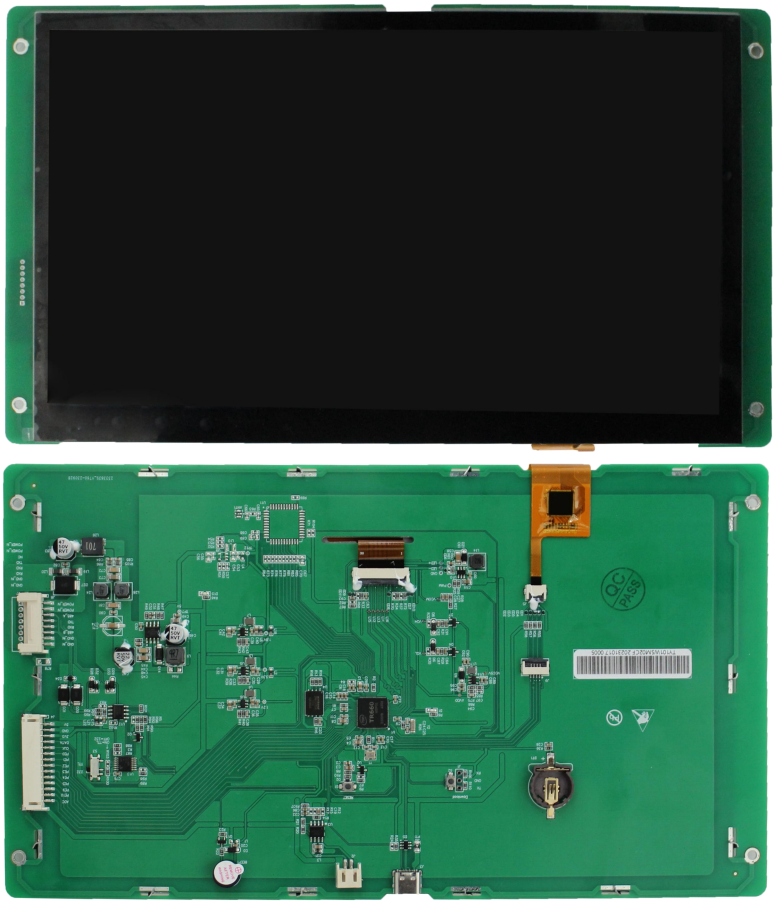


Figure 1.1-1 10.1. inch UART screen

1.2. Hardware Configuration

The following is the reference diagram of the hardware configuration of the product of this size, taking the capacitive screen as an example, as shown in Figure 1.2-1.

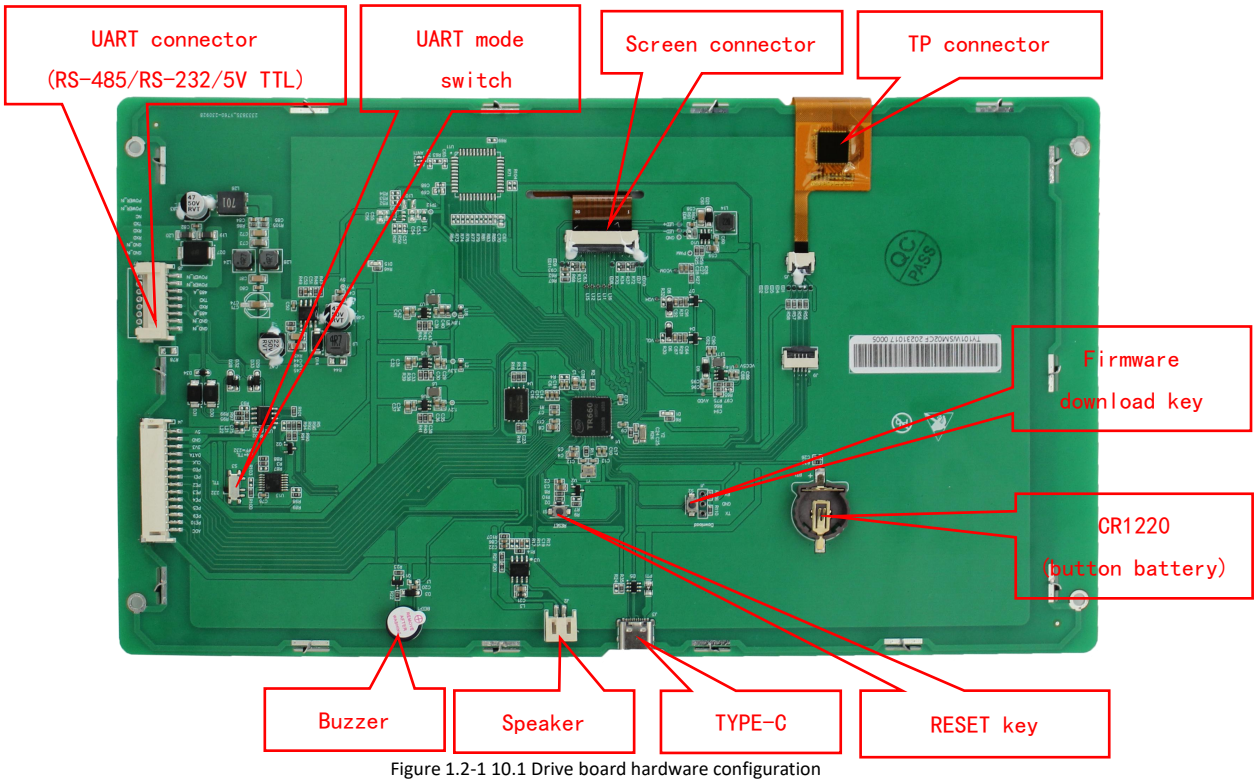


Figure 1.2-1 10.1 Drive board hardware configuration

1.3. UART Mode

The serial communication method can be switched via toggle switch (S3).

(1) The UART port supports 5V TTL communication when the switch is toggled to the “TTL” position.
(2) When the switch is toggled to the “232” position, the UART port supports RS-232 communication.
(3) The UART port supports RS-485 communication when the switch is set to the "TTL" or "232" position.

1.4. Pinout IO Definitions

Pin Name	Type	Reset state	Internal Configurable Pull-up and Pull-down Resistors	Default drive capability (mA)	Voltage	Function
5V	OUTPUT	5V	-	1500	5V	5V
GND	POWER	GND	-	-	GND	GND
3.3V	INPUT	3.3V	-	500	3.3V	3.3V
PF14	I/O	Z	√	20	3.3V	GPIO-PF14
PF15	I/O	Z	√	20	3.3V	GPIO-PF15
PE0	I/O	Z	√	20	3.3V	I2C0_SCL
PE1	I/O	Z	√	20	3.3V	I2C0_SDA
PE2	I/O	Z	√	20	3.3V	PWM1
PE3	I/O	Z	√	20	3.3V	GPIO-PE3
PE4	I/O	Z	√	20	3.3V	UART5_TX (can be customized as CAN-TX)
PE5	I/O	Z	√	20	3.3V	UART5_RX (can be customized as CAN-RX)
PE9	I/O	Z	√	20	3.3V	GPIO-PE9
PE10	I/O	Z	√	20	3.3V	GPIO-PE10
PA7	ADC	Z	√	20	3.3V	ADC/BlueTooth signal

1.5. Connector Pin Definitions

Pin Name	Type	Reset state	Internal Configurable Pull-up and Pull-down Resistors	Default drive capability (mA)	Voltage	Function
GND_IN	POWER	0V	-	-	0V	POWER-GND
GND_IN	POWER	0V	-	-	0V	POWER-GND
485_B	-	-	-	-	-	485-/485_B
RXD	-	-	-	-	5V	UART6-RX (to user's TX)
TXD	-	-	-	-	5V	UART6-TX (to user's RX)
485_A	-	-	-	-	-	485+/485_A
POWER_IN	POWER	-	-	-	-	POWER-INPUT, DC 5-24V
POWER_IN	POWER	-	-	-	-	POWER-INPUT, DC 5-24V

2. Product Specifications

● Product parameter	
Model	TY101WSM02CF
Product serial	Medical Grade
Core processor	TR660
Size	10.1 inch
Resolution	1024RGB×600
Active area(mm)	222.72(W) ×125.28(H)
Product size(mm)	257.8(W)×148(H)×18.1(T)
Color	16.7M,24 bit RGB
Storage	Customer available 60M Bytes
Pictures format	JPG/PNG
Video playback	H.264 format video only
Audio playback	MP3 and WAV format audio support
Download pictures	TYPE-C /U DISK
Firmware update	TYPE-C
Feature	Reserved GPIO port (see section 1.4 for details)
● LCD screen	
Display type	TFT LCD IPS
Back light	LED
Brightness(cd/m²)	480
Contrast	800
Life time(hour)	30000
Perspective(T/B/L/R)	(85/85/85/85)
● Touch panel	
Touch mode	Capacitive touch screen
Input mode	Finger

● Environmental electrical parameters	
Voltage	5~24V DC
Power consumption	12V/345mA (Maximum starting current) 12V/106mA (Turn off the backlight)
Working temperature	-20℃～70℃
Storage temperature	-30℃～80℃
Working humidity	10%~90%RH
Storage humidity	10%~90%RH
● Communication interface parameters	
Communication mode	RS-485/RS-232/5V TTL(switchable on board)
Baud	1200~115200,typical value is 115200
Data frame format	8N1
Communication plug-in specification	HY2.0-8P
● Other hardware specifications	
Buzzer	Support
TYPE-C	Support
RTC	Support
Speaker	Support 4Ω2W speakers
WiFi	Reserved

3. Reliability Test

3.1. ESD Test

3.1.1. Implementation Standards

Implementation standards	GB/T 17626.2
Performance criteria	B

3.1.2. Test Environment



Figure3.1.2-1 ESD test environment

Test ambient temperature: 25℃

Test environment humidity: 50%

Test process: place the product on the test bench, conduct contact and air discharge in turn around the iron frame of the serial port screen and the display area, and observe whether there is any abnormal reset and restart display.

3.1.3. Test Data Results:

Discharge type	Discharge value	Test Results	Performance criteria
Contact	±8KV	Pass	B
Air Discharge	±15KV	Pass	B

3.2. Electrical Fast Transient Group Pulse Test （EFT）

3.2.1. Implementation Standards

Implementation standards	GB/T 17626.4

3.2.2. Test Environment

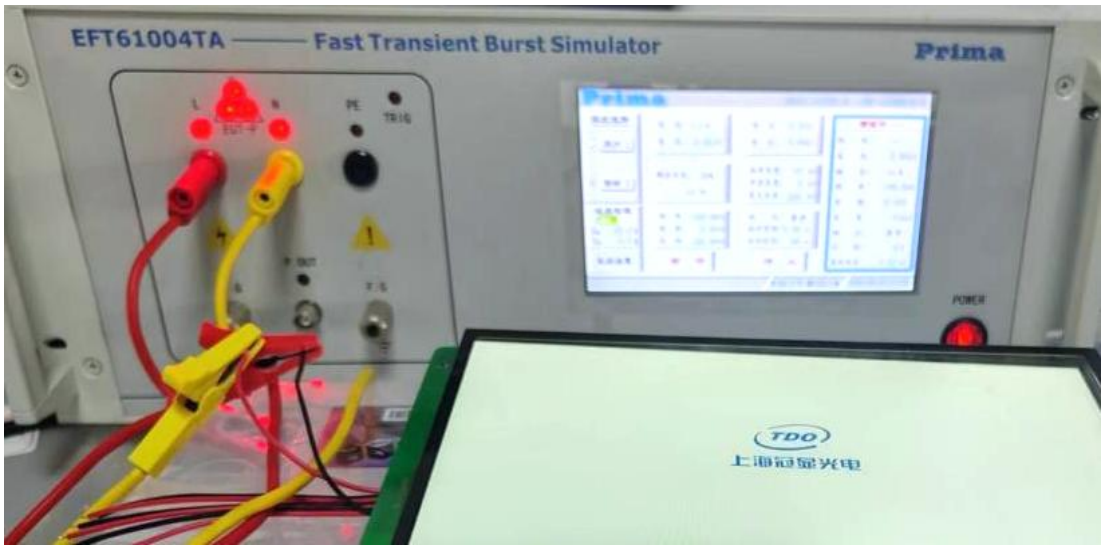


Figure3.2.2-1 EFT test environment

Test ambient temperature: 25℃

Test environment humidity: 50%

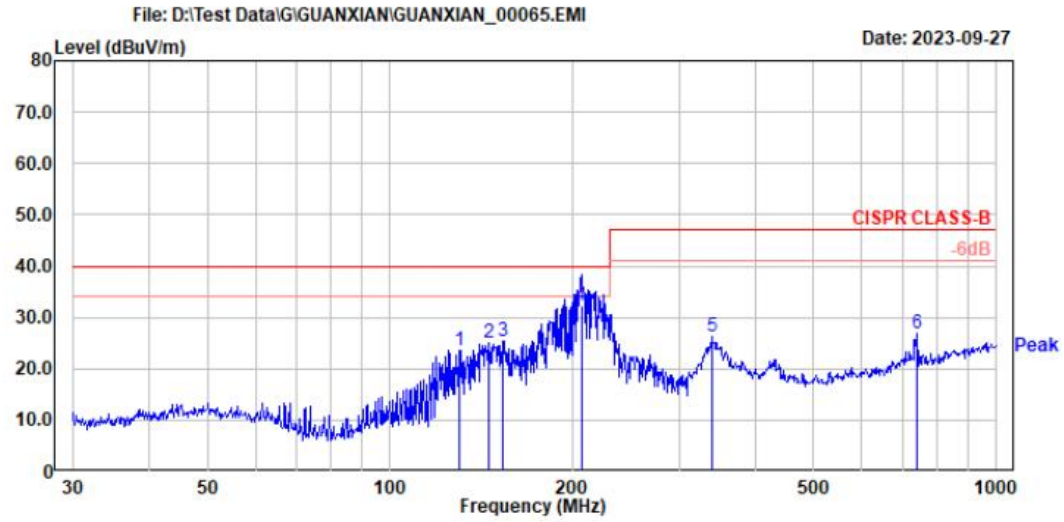
Test process: Place the product flat on the test bench, 10cm high, and supply power to the smart screen through the power supply after coupling the pulse group by the pulse group generator. Observe the screen during the experiment to see if there are phenomena such as reset and restart, abnormal display, touch abnormality, and so on.

3.2.3. Test Data Results:

Implementation standards	GB/T 17626.4
Performance criteria	B
Test environment	4.0KV; 100KHZ; 120s

3.3. Radiation Test

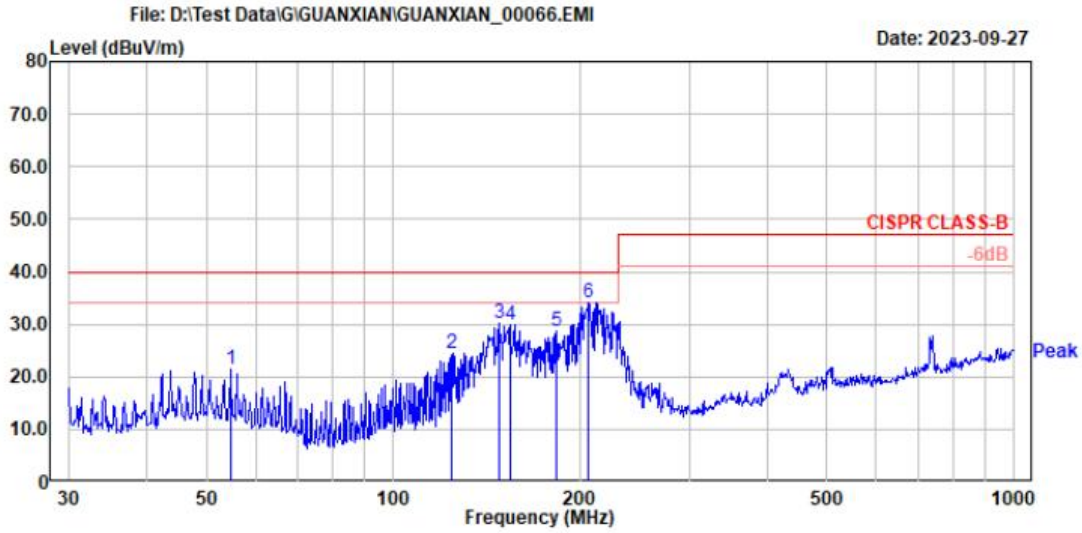
3.3.1. Horizontal Test Data



Site :
Condition : CISPR CLASS-B 3m VULB9162 Horizontal
: DET:Peak
Applicant : 上海冠显光电科技有限公司
EUT : 10.1寸
M/N : 5B101R002
S/N :
Power Supply : DC 24V
Test Mode :
Test Engineer: LYQ
Memo :

	Freq	Level	Read Level	Limit Line	Over Limit	Ant Factor	Cable Loss	Remark
	MHz	dBuV/m	dBuV	dBuV/m	dB	dB/m	dB	
1	129.822	23.53	15.43	40.00	-16.47	7.92	0.18	Peak
2	145.580	24.95	17.20	40.00	-15.05	7.55	0.20	Peak
3	153.362	25.41	17.42	40.00	-14.59	7.79	0.20	Peak
4	206.716	32.21	21.04	40.00	-7.79	10.93	0.24	QP
5	339.601	26.15	11.35	47.00	-20.85	14.47	0.33	Peak
6	739.064	26.77	5.51	47.00	-20.23	20.64	0.62	Peak

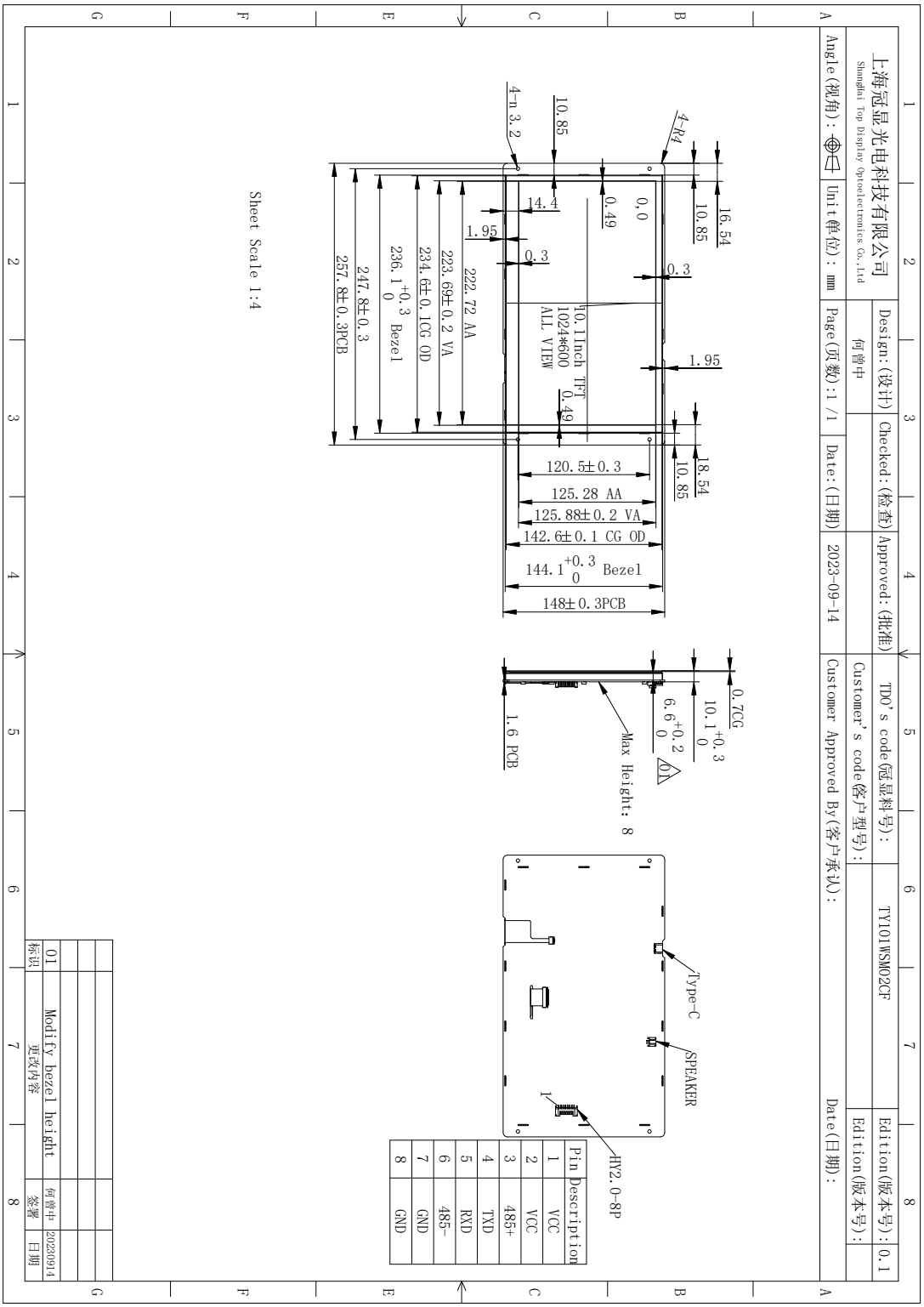
3.3.2. Vertical Test Data



Site :
Condition : CISPR CLASS-B 3m VULB9162 Vertical
: DET:Peak
Applicant : 上海冠显光电科技有限公司
EUT : 10.1寸
M/N : 5B101R002
S/N :
Power Supply : DC 24V
Test Mode :
Test Engineer: LYQ
Memo :

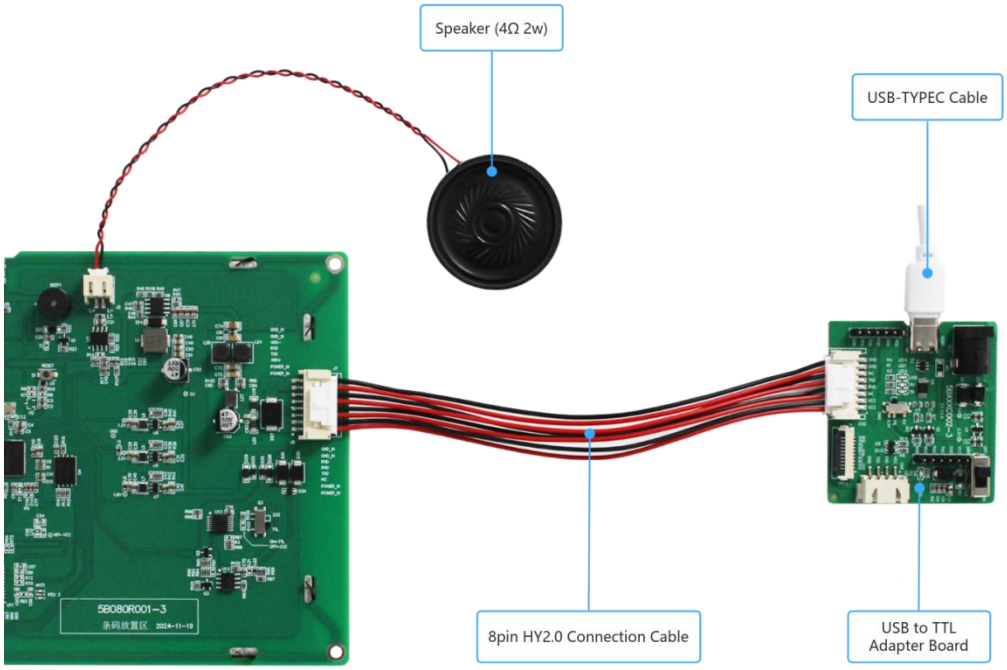
	Freq	Level	Read Level	Limit Line	Over Limit	Ant Factor	Cable Loss	Remark
	MHz	dBuV/m	dBuV	dBuV/m	dB	dB/m	dB	
1	54.736	21.55	8.50	40.00	-18.45	12.92	0.13	Peak
2	124.474	24.54	15.90	40.00	-15.46	8.46	0.18	Peak
3	148.250	30.05	22.24	40.00	-9.95	7.61	0.20	Peak
4	154.062	29.94	21.92	40.00	-10.06	7.82	0.20	Peak
5	183.489	28.53	18.65	40.00	-11.47	9.66	0.22	Peak
6	206.649	34.06	22.89	40.00	-5.94	10.93	0.24	Peak

4. Product Size



5. Debugging Tools

It is recommended for new users of TDO smart LCMs to purchase official accessories. For more details, please refer to customer service center.



(The above diagram shows the use of the debugging tools, not the product diagram. Please refer to document 1.1 for the physical drawing of this product.)

6. Model Definition

T	Y	101	WS	M	02	C	F
1	2	3	4	5	6	7	8

① ： 1 position--TDO abbreviation, fixed。

② ： 1 position--U(U series serial port)/P(parallel port)/Y(Y series serial port)/H(HDMI interface type)/S(adapter board)/L

③ ： 3 position--size,eg.101->10.1 inch

④ ： 2 position--resolution abbreviation

⑤ ： 1 position--C (Consumer Grade) / H (Commercial Grade) / T (Industrial Grade) / M (Medical Grade) / L (MINI Board) / P (With Case)

⑥ ： 2 position---serial number

⑦ ： 1 position---C (with capacitive touch panel)/R (with resistive touch panel)/N (without touch panel)

⑧ ： 1 position-----Platform: F-TR660 / G-TR540 / H-TR230M /J -TR240 / K-TR661 / D-TR670 / 0-Android / 1-Linux

7. Sale and Service



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8. Disclaimer

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