

AGM-070A1-I1-C

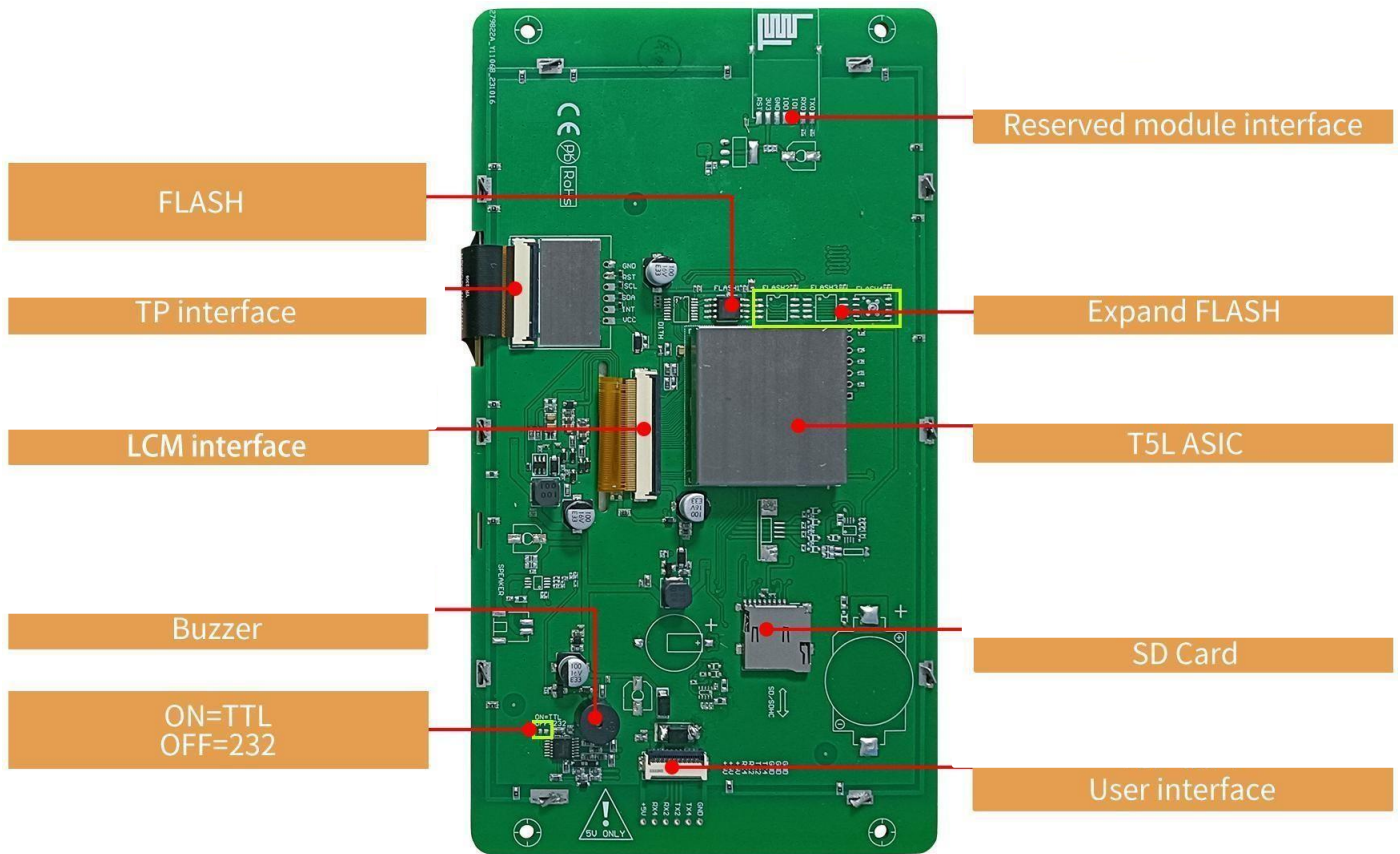
Features:

- Based on T5L2, running DGUS II system, commercial grade.
- 7.0-inch, 1024*600 pixels resolution, 16.7M colors, IPS-TFT-LCD, wide viewing angle.
- Capacitive touch screen.



1、 Hardware and interface

1.1 Hardware interface



Hardware interface

1.2 Hardware and interface description

No.	Name	Description
1	T5L2 ASIC	T5L2 ASIC Developed. Mass production in 2019, 1MBytes Nor Flash on the chip, 512KBytes used to store the user database. Rewrite cycle: over 100,000 times
2	LCM interface	FPC50_0.5mm, RGB interface
3	CTP interface	COB structure, IIC interface
4	User interface	10Pin_1.0mm, 12KByte/s 10Pin_1.0mm socket for power supply and serial communication. Download rate (typical value): 12KByte/s
5	Flash	16MBytes NOR Flash, for fonts, pictures and audio files. Rewrite cycle: over 100,000 times
6	Expand Flash	Expandable to 64Mbytes NOR Flash or 48Mbytes NOR Flash+512Mbytes NAND Flash. When expanding Flash, components such as decoders and capacitors need to be soldered. Please consult the corresponding salesperson for relevant customization.
7	Buzzer	3V passive buzzer. Power: <1W
8	SD interface	FAT32. Download files by SD interface can be displayed in statistics. Download rate: 4Mb/s
9	Reserved module interface	Wi-Fi module: connect to the cloud platform to update remotely USB module: download files by USB flash disk
10	PGT05 interface	When product crashes by accident, you can use PGT05 to update DGUS kernel and make the product return to normal

2 Specification parameters

2.1 Display parameters

LCD Type	IPS, TFT LCD
Viewing Angle	Wide viewing angle, 85°/85°/85°/85° (L/R/U/D)
Resolution	1024×600 pixels (support 0°/90°/180°/270°)
Color	24-bit 8R8G8B
Active Area (A.A.)	154.20mm (W)×85.90mm (H)
View Area (V.A.)	-
Backlight Mode	LED
Backlight Service Life	>20000 hours (Time of the brightness decaying to 50% on the condition of continuous working with the maximum brightness)
Brightness	250nit
Brightness Control	0~100 grade (When the brightness is adjusted to 1%~30% of the maximum brightness, flickering may occur and is not recommended to use in this range)
<p>Note: You can use dynamic screen saver wallpapers to avoid afterimages caused by fixed page display for a long time.</p>	

2.2 Touch parameters

Type	CTP (Capacitive touch panel)
Structure	G+G structure with surface cover of tempered glass
Touch Mode	Support point touch and drag
Surface Hardness	6H
Light Transmittance	Over 90%
Life	Over 1,000,000 times touch

2.3 Serial interface parameters

Mode	UART2: ON=TTL/CMOS; OFF=RS232 UART4: ON=TTL/CMOS; OFF=RS232(Only available after OS configuration)				
Voltage Level	Test Condition	Min	Typ	Max	Unit
	Output 1, Iout = 1mA	3.0	3.3	-	V
	Output 0, Iout = -1mA	-	0	0.3	V
	Input 1, Iin = 1mA	2.4	3.3	5.0	V
	Input 0, Iin = -1mA	0	-	0.5	V
Baud Rate	3150~3225600bps, typical value of 115200bps				
Data Format	UART2: N81 UART4: N81/E81/O81/N82 (OS) 4 modes (OS configuration)				
Interface Cable	10Pin_1.0mm				

2.4 Electrical specifications

Rated Power	<5W	
Operating Voltage	4.5~5.5V, typical value of 5V	
Operating Current	520mA	VCC = +5V, Backlight on
	120mA	VCC = +5V, Backlight off
Recommended power supply: 5V 1A DC		

2.5 Operating environment

Operating Temperature	-20°C~70°C (5V @ 60% RH)
Storage Temperature	-30°C~80°C
Conformal coating	None
Operating Humidity	10%~90%RH, typical value of 60% RH

3.1 Electrostatic discharge test

Test temperature: 25°C. Test humidity: 50%RH.

Test process: the product was placed on the test bench to perform contact and air discharge in turn of the serial screen iron frame and display area. During the experimental process, it was observed whether the screen is dead, black, white, splash, or reboot. According to the experiment results, the performance is in line with the criteria GB/T 17626.2 B level and above.

Test standard : EN 61000-4-2:2009 IEC 61000-4-2:2008 GB/T 17626.2-2018
 Other:

Table 1: Electrostatic Discharge Immunity (Air Discharge)

Test Points Locations	Test Levels							
	-2kV	+2kV	-4kV	+4kV	-8kV	+8kV	-15kV	+15kV
					A	A		
/	/	/	/	/	/	/	/	/
/	/	/	/	/	/	/	/	/

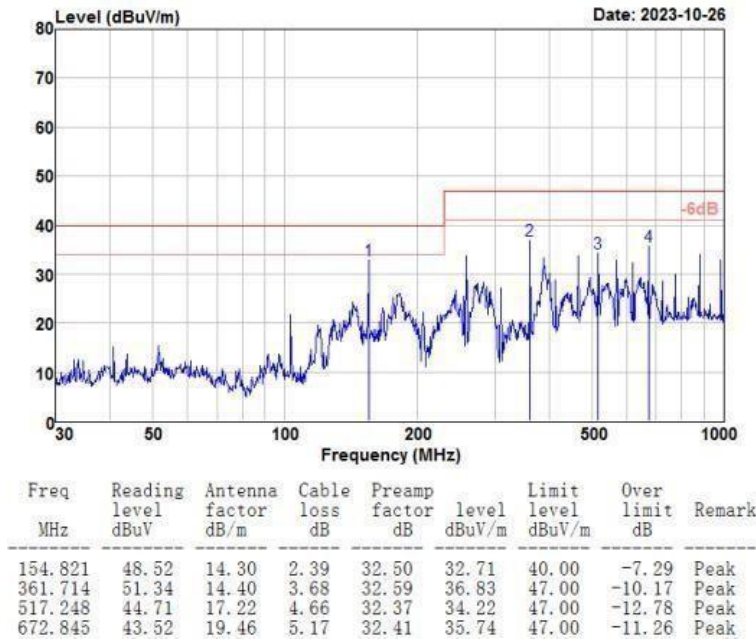
Table 2: Electrostatic Discharge Immunity (Direct Contact)

Test Points Locations	Test Levels							
	-2kV	+2kV	-4kV	+4kV	-6kV	+6kV	-8kV	+8kV
					A	A		
/	/	/	/	/	/	/	/	/
/	/	/	/	/	/	/	/	/

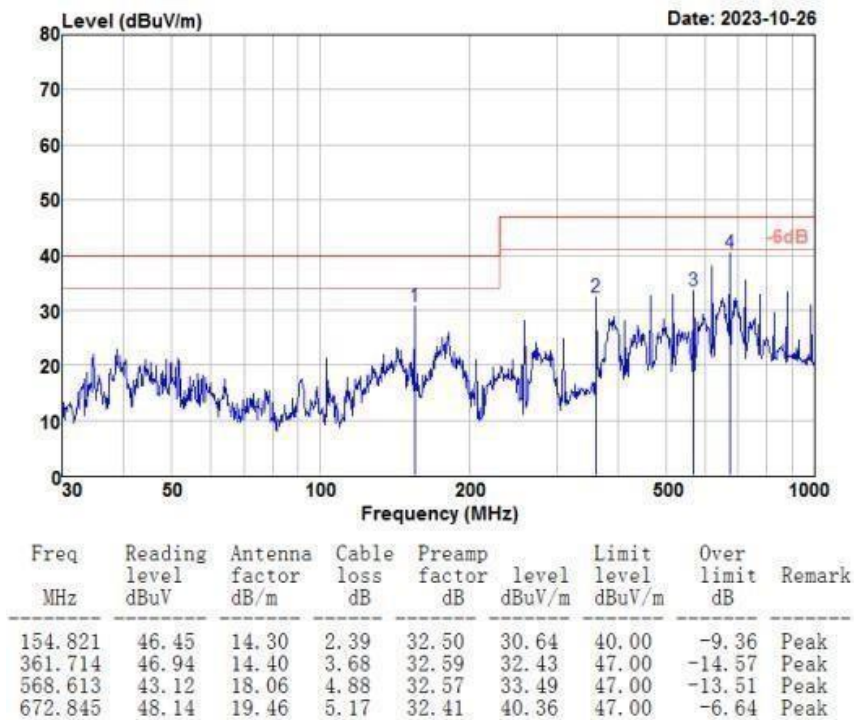
3.2 RE test

Test Item	Test Standard	Result
RE	Class B	Normal operation

HORIZONTAL



VERTICAL



Performance Criterion:

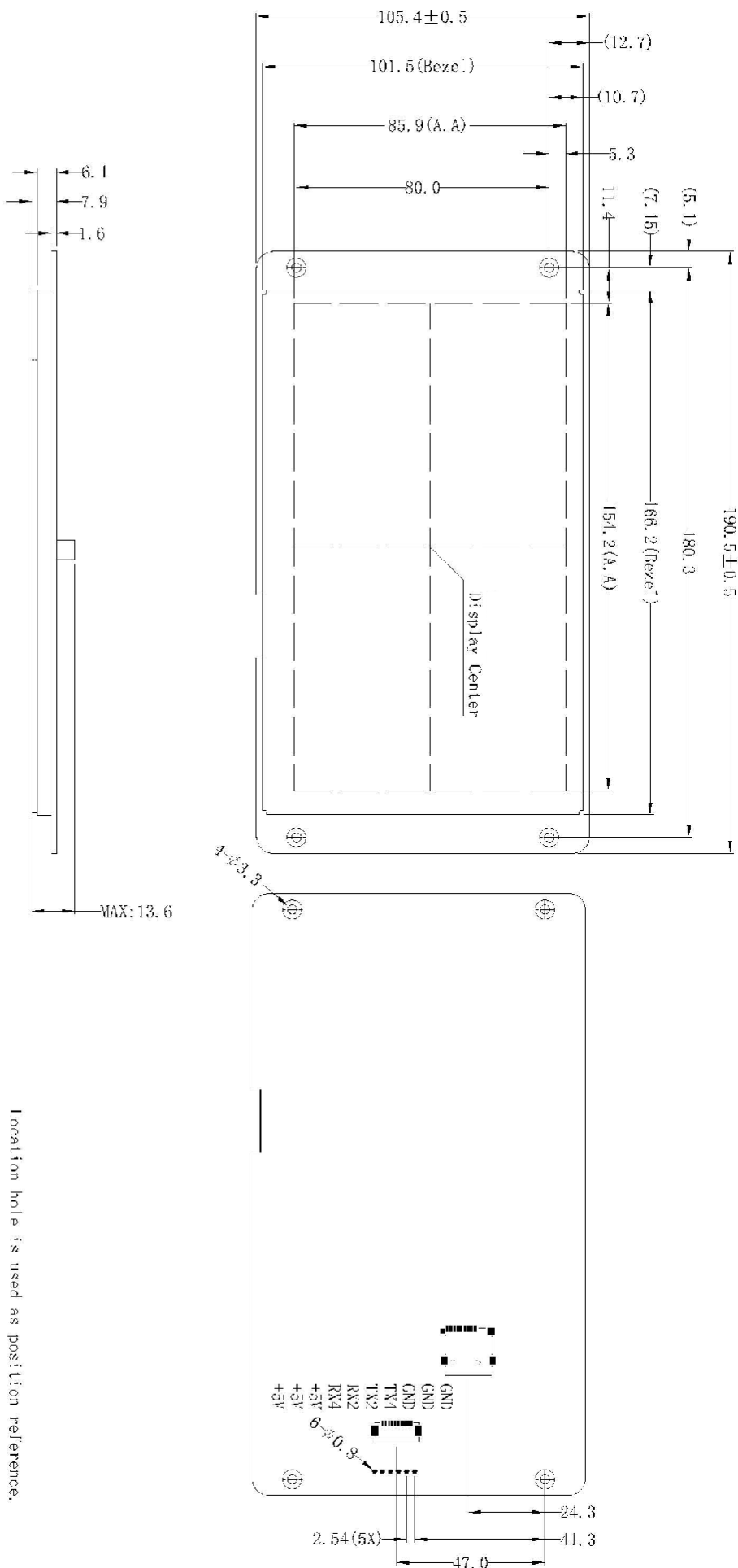
- A. Normal performance within limits specified by the manufacturer, requestor or purchaser;
- B. Temporary loss of function or degradation of performance which ceases after the disturbance ceases, and from which the equipment under test recovers its normal performance, without operator intervention;
- C. Temporary loss of function or degradation of performance, the correction of which requires operator intervention;
- D. Loss of function or degradation of performance which is not recoverable, due to damage to hardware or software, or loss of data.

4、 Packaging & dimensions

Form Factor	190.50mm (W)×105.40mm (H)×13.60mm (T)
Installation Dimensions	Positioning hole: 166.20 (+0.3mm) × 101.50 (+0.3mm)
Net Weight	260g

Packaging Standards

Model	Dimensions	Layer	Quantity/Layer	Quantity(Pcs)
Carton1:	220mm(L)×160mm(W)×47mm (H)	1	1	1
Carton2:	250mm(L)×200mm(W)×80mm (H)	2	1	2
Carton3:	320mm(L)×270mm(W)×80mm (H)	2	2	4
Carton4:	435mm(L)×335mm(W)×290mm(H)	None	None	None
Carton5:	600mm(L)×430mm(W)×290mm(H)	1	40	40



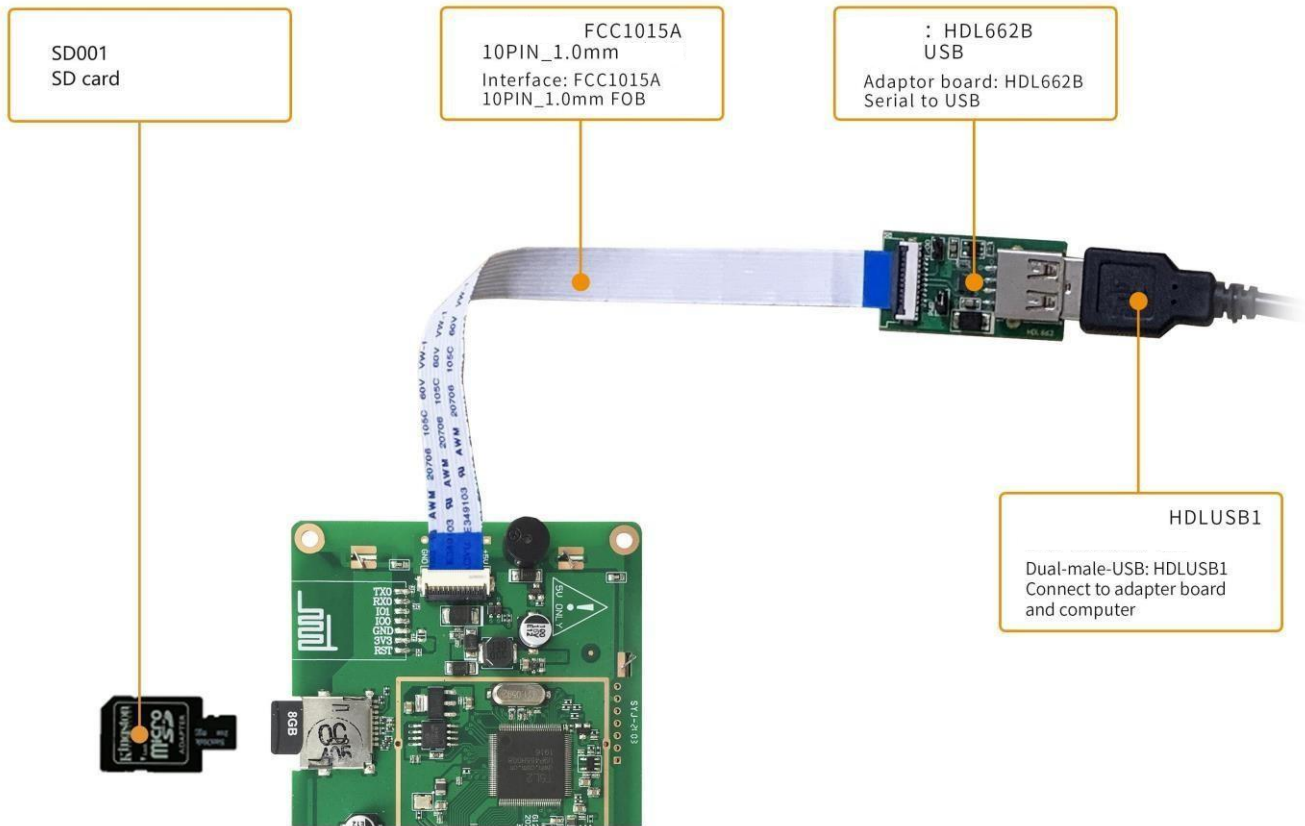
Location hole is used as position reference.
Unmarked Tolerance is +/-0.3mm

定义	Definition	序号	Pin#	类型	Type
GND		8, 9, 10		P	
TX1		7		0	
TX2		6		0	
RX2		5		T	
RX1		4		T	
+5V		1, 2, 3		P	

型号	Model	图例	比例	Scale	单位	Unit	绘制	审核	日期	Date	2021.11
		A 4	1:1		MM		DWTN	批准	日期	Date	
							[Approval]				

5、 Debugging tools

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



6、 T5L series IC features

Mature and stable 8051 core which is the most widely used with the maximum operating frequency of T5L is up to 250MHz, 1T (single instruction cycle) high speed operation.

Separate GUI CPU Core running DGUS II System:

- High-speed display memory, 2.4GB/S bandwidth.
- 2D hardware acceleration, the decompression speed of JPEG is up to 200fps@1280*800 and the UI with animation and icons as its main feature is extremely cool and smooth.
- Images and icons stored in JPEG format. Adopt Low-cost 16Mbytes SPI Flash.
- Support CTP or RTP with adjustable sensitivity and maximum 400 Hz touch frequency.
- 1-way 15bit 32Ksps PWM digital power amplifier driver loudspeaker, save power amplifier cost and achieve high signal-to-noise ratio and sound quality restoration.
- 128Kbytes variable storage space for exchanging data with OS CPU Core and memory.
- Support DGUS development and simulation on PC. Support background remote upgrade.

Separate CPU (OS CPU) core runs user 8051 code or OS system and user CPU is omitted in practical application:

- Standard 8051 architecture and instruction set, 64Kbytes code space, 32Kbytes on-chip RAM.
- 64 bit integer mathematical operation unit (MDU), including 64 bit MAC and 64 bit divider.
- 28 IOs, 4-channel UARTs, 1-channel CAN, up to 8-channel 12-bit A/Ds and 2-channel 16-bit PWM of adjustable resolution.
- Support IAP on-line simulation and debugging with unlimited number of breakpoints.

Upgrade code online through DGUS system.

1Mbytes on-chip Flash with patent encryption technology ensure code and data security.

Operating temperature ranges from -40°C to $+85^{\circ}\text{C}$ (IC operating temperature customizable from -55°C to 105°C).

7、 Revision records

Rev	Revise Date	Content	Editor
00	2019-03-26	First Edition	
01	2019-08-22	Modify Interface	
02	2019-11-26	Modify Interface Description	
03	2020-03-07	Change bezel	
04	2020-09-18	Update pictures	
05	2020-11-24	Update CAD drawing	
06	2021-08-02	Update pictures Add flash pad and RTC line、 COB structure	
07	2021-11-04	Upgrade version	
08	2022-11-14	Modify dimension description	
09	2023-05-25	FLASH route optimization, updating physical images	
10	2023-11-22	EMC hardware upgrade, natural consumption of old inventory boards	

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