Wireless Module Datasheet

Model No.:TWM-CC8520

TCL Confidential

TONLY ELECTRONICS HOLDINGS LIMITED.通力电子控股有限公司

Address: Section 37, Zhongkai Hi-tech Development Zone, Huizhou Guangdong 516006, P.R.China

地址：中国广东省惠州市仲恺高新区惠风 6 路 37 号小区

网址 http://www.tonlyele.com

© 2015 TONLY ELECTRONICS HOLDINGS LIMITED. All rights reserved 保留所有版权

法律声明 Legal Notice, Disclaimer, Copyright

本手册是通力电子控股有限公司机密，未经能力电子控股有限公司的事先书面许可，任何人不得复制、传播本手册的内容。通力电子控股有限公司不对由于使用本手册或执行本手册内容带来的损害负责。

本手册所涉及的知识产权归通力电子控股有限公司所有（或经合作商授权许可使用），任何人不得侵犯。

本手册是按当前状态提供参考，本公司司保留随时更新本手册的权利,恕不另行通知。

本手册不对包括但不限于下列事项担保：适销性、特殊用途的适应性;实施该用途不会侵犯第三方的知识产权等权利。本文档在此未以禁止反言或其它方式授予任何知识产权使用许可，不管是明示许可还是暗示许可。

本手册中提到的所有商标名称、商标和注册商标均属其各自所有者的财产，特此声明.

本协议以中、英文两种语言制作，两种语言文本冲突时，任何时候均以中文为准。

This data sheet contains information that is confidential to TONLY ELECTRONICS HOLDINGS LIMITED. Unauthorized use or disclosure of the information contained herein is prohibited. You may be held responsible for any loss or damages suffered by TONLY ELECTRONICS HOLDINGS LIMITED .for your unauthorized disclosure hereof, in whole or in part.

Information herein is subject to change without noticed. TONLY ELECTRONICS HOLDINGS LIMITED does not assume any responsibility for any use of, or reliance on, the information contained herein

THIS DATA SHEET AND ALL INFORMATION CONTAINED HEREIN IS PROVIDED “AS IS” WITHOUT WARRANTY OF ANY KIND, WHETHER EXPRESS, IMPLIED, STATUTORY, OR OTHERWISE. **TONLY ELECTRONICS HOLDINGS LIMITED.** SPECIFICALLY DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY, NON-INFRINGEMENT, AND FITNESS FOR A PARTICULAR PURPOSE. NEITHER DOES **TONLY ELECTRONICS HOLDINGS LIMITED**. PROVIDE ANY WARRANTY WHATSOEVER WITH RESPECT TO THE SOFTWARE OF ANY THIRD PARTY WHICH MAY BE USED BY, INCORPORATED IN, OR SUPPLIED WITH THIS DATA SHEET, AND USER AGREES TO LOOK ONLY TO SUCH THIRD PARTY FOR ANY WARRANTY CLAIM RELATING THERETO. **TONLY ELECTRONICS HOLDINGS LIMITED**. SHALL ALSO NOT BE RESPONSIBLE FOR ANY **TONLY ELECTRONICS HOLDINGS LIMITED** DELIBERABLES MADE TO USER’S SPECIFICATION OR TO CONFORM TO A PARTICULAR STANDARD OR OPEN FORUM.

Tonly is a trademark of TONLY ELECTRONICS HOLDINGS LIMITED. other names mentioned in this document are trademarks/registered trademark of their respective owners.

This data shall be executed in two languages including one Chinese and one English. Any conflict exist between the two languages, the Chinese will prevail in any time.

TCL Confidential

版本变更说明 Document Revision History

Revision 版本	Date 日期	Author 作者	Description 描述
V1.0	2017-04-25	zzhjiang	First release.

TCL Confidential

目录 Table of Contents

TCL Confidential

1. 系统概览 System overview

1.1 通用说明 General Descriptions

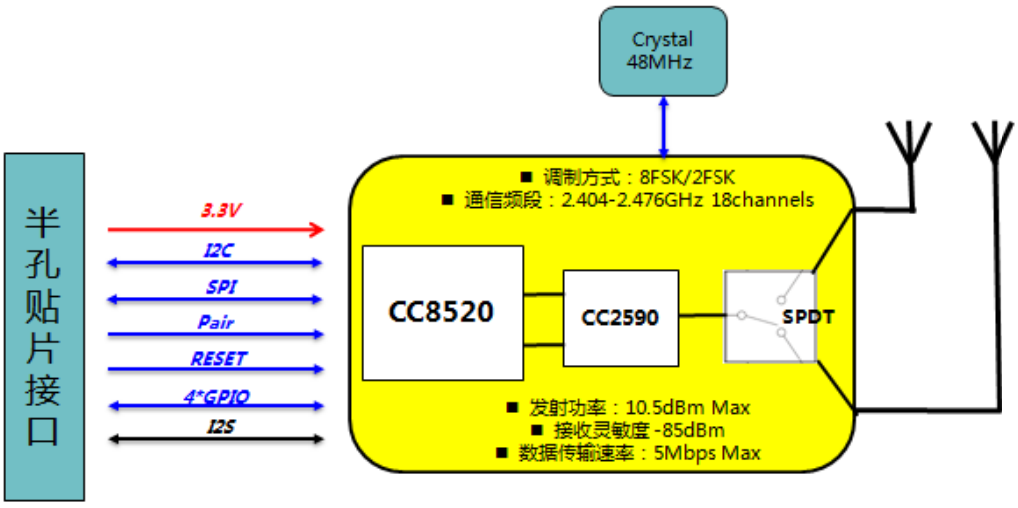
TWM-CC8520 is a 2.4GHz ISM band wireless module.

This document is to specify the specification for TWM-CC8520 wireless Module. It is based on CC8520 chipset incorporate TI proprietary wireless protocol. It can be integrated into your family Mono/Stereo wireless audio system, which enables the seamless and bi-directional transmission of high quality digital audio.

1.2 性能特点 Features

- Built-in audio protocol
- Worldwide 2.4G ISM band
- CD-quality uncompressed audio
- 5 or 2 Mbps over-the-air data rate
- Support I2S/I2C/SPI protocol
- Compact 18mm*12mm SMT package
- Compliance with worldwide radio frequency regulations

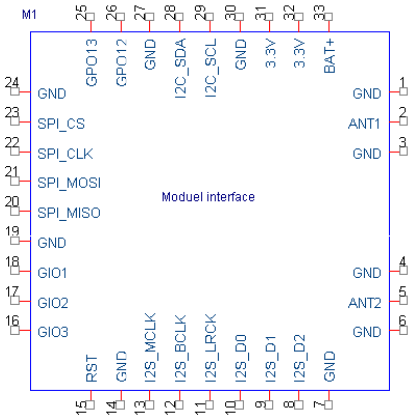
1.3 系统方框图 Block Diagram



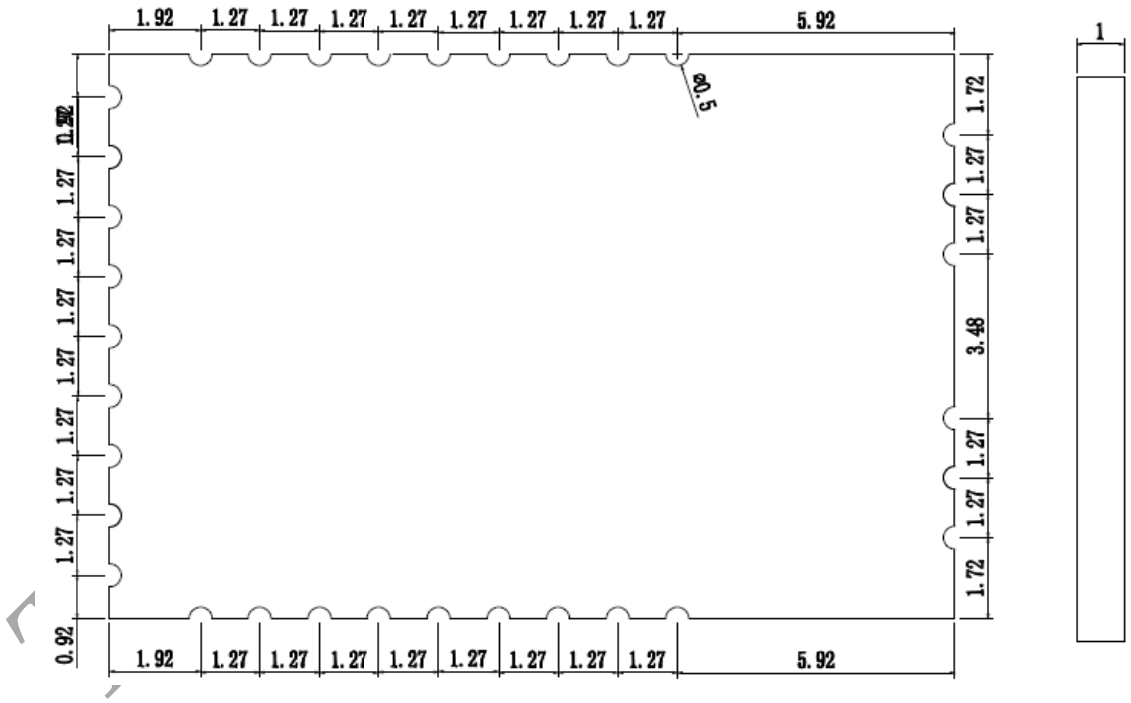
TONLY Confidential

2.产品描述 Production Description

2.1 引脚与功能说明 Pin Description & Appearance



2.2 外形尺寸 Physical Dimensions



Tolerances are ±0.5 mm Unless otherwise specified (Unit : mm) .

2.3 引脚定义Pin descriptions

Pin.	Symbol	Description	Remark
1	GND	Ground	GND
2	ANT1	RF port1	RF
3	GND	Ground	GND
4	GND	Ground	GND
5	ANT2	RF port2	RF
6	GND	Ground	GND
7	GND	Ground	GND
8	I2S_D2	I2S data line 2	I2S
9	I2S_D1	I2S data line 1	I2S
10	I2S_D0	I2S data line 0	I2S
11	I2S_LRCK	I2S LRCK	I2S
12	I2S_BCLK	I2S BCLK	I2S
13	I2S_MCLK	I2S MCLK	I2S
14	GND	Ground	GND
15	RST	Device reset	Active low
16	GIO3	GPIO3	IO
17	GIO2	GPIO2	IO
18	GIO1	GPIO1	IO
19	GND	Ground	GND
20	SPI_MISO	Master input , slave output	SPI
21	SPI_MOSI	Master output , slave input	SPI
22	SPI_CLK	SPI clock	SPI
23	SPI_CS	SPI enable	SPI , Active low
24	GND	Ground	GND
25	GPO13	GPIO13	IO
26	GPO12	GPIO12	IO
27	GND	Ground	GND
28	I2C_SDA	I2C SDA	I2C
29	I2C_SCL	I2C SCL	I2C
30	GND	Ground	GND
31	3.3V	Power supply	POWER
32	3.3V	Power supply	POWER
33	BAT+	Voltage supervisor ,4.5V max	Analog input

3.应用说明 Application Explanations

- Soundbar
- Wireless Headphone
- Wireless HTiB

TCL Confidential

4.电气特性 Electrical Characteristics

4.1 DC Electrical Characteristics

Supply Voltage	DC 3.0~3.6V
Current consumption	Max : 60mA@RX Max:100mA@TX
Size (L x W x H)	18mm * 12mm *2mm
Weight	0.8g

4.2Thermal characteristic

- Storage Temperature -40 +80 ℃
- Ambient Operating Temperature 0~60 ℃
- Junction Temperature 0 ~125 ℃

5.射频性能 RF Characteristics(to be update)

Specification	Description
Frequency Band	2400~2483.5MHz
Channel number	18chan nels
Modulation Method	Shaped 2FSK / Shaped 8FSK
Data Rate	2 Mbps / 5Mbps
TX Power	Max35.727mW
RX Sensitivity	-85dBm

6.包装与订货说明 Package& Ordering information

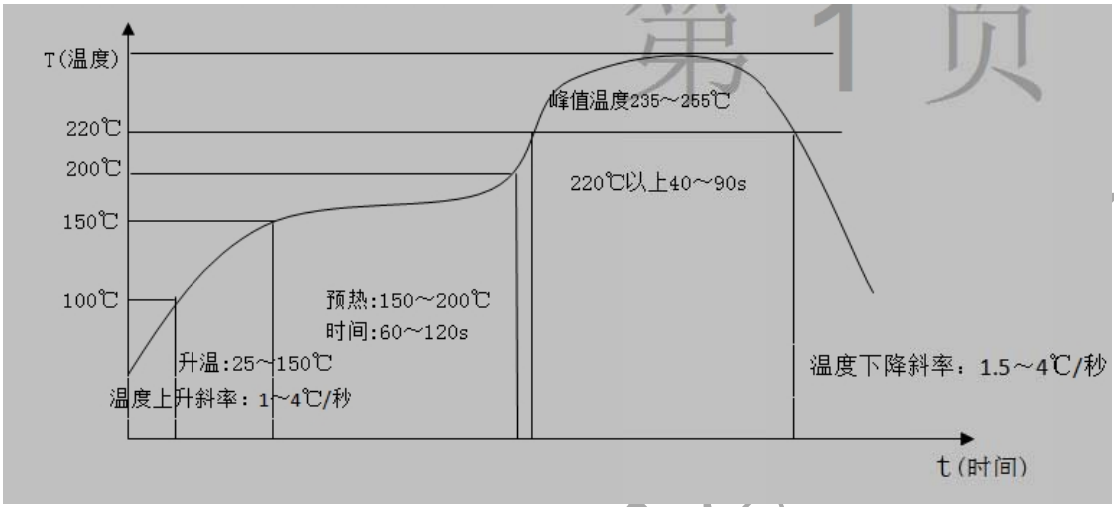
- **60 pcs per every Blister tray**
- **480 pcs per every Vacuum packing**

TCL Confidential

7.环保声明 Green Policy

This module can meet ROHS & REACH compliance.

8.推荐过炉温度 Recommended Temperature Reflow Profile



9.抗静电保护 ESD Protection

ESD CAUTION

TWM-CC8520 is ESD(electrostatic discharge) sensitive device and may be damaged with ESD or spike voltage. Although TWM-CC8520 is with built-in ESD protection circuits, please handle with care to avoid the permanent malfunction or the performance degradation.

----------END----------

For FCC:

Warning: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.
However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- **Reorient or relocate the receiving antenna.**
- **Increase the separation between the equipment and receiver.**
- **Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.**
- **Consult the dealer or an experienced radio/TV technician for help.**
-

"The device must not be co-located or operating in conjunction with any other antenna or transmitter."

FCC RF Radiation Exposure Statement Caution: To maintain compliance with the FCC's RF exposure guidelines, place the product at least 20cm from nearby persons. The Module can be installed in Mobile device only, and it can not be installed in any portable Device.

FCC Conditions

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1.This device may not cause harmful interference.

2.This device must accept any interference received, including interference that may cause undesired operation.

This device complies with Part 15, Part 15.247 of the FCC Rules. The FCC ID for this device is ZVA15.

If the FCC ID is not visible with the module is installed inside another device, then it must be still responsible for the FCC compliance requirement of the end product which referring to the enclosed module and it also must display a label, such as the following:
Contains Transmitter module FCC ID: ZVA15 or contains FCC ID: ZVA15
The host product manufacturer is responsible for compliance to any other FCC rules that apply to the host not covered by the modular transmitter grant of certification. The final host product still requires Part 15 Subpart B compliance testing with the modular transmitter installed.
The end user manual shall include all required regulatory information / warning as shown in this manual, include: This product must be installed and operated with a minimum distance of 20 cm between the radiator and user body.

IC Statement

This device complies with Industry Canada's licence-exempt RSSs. Operation is subject to the following two conditions:

(1) This device may not cause interference; and

(2) This device must accept any interference, including interference that may cause undesired operation of the device.

2. Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

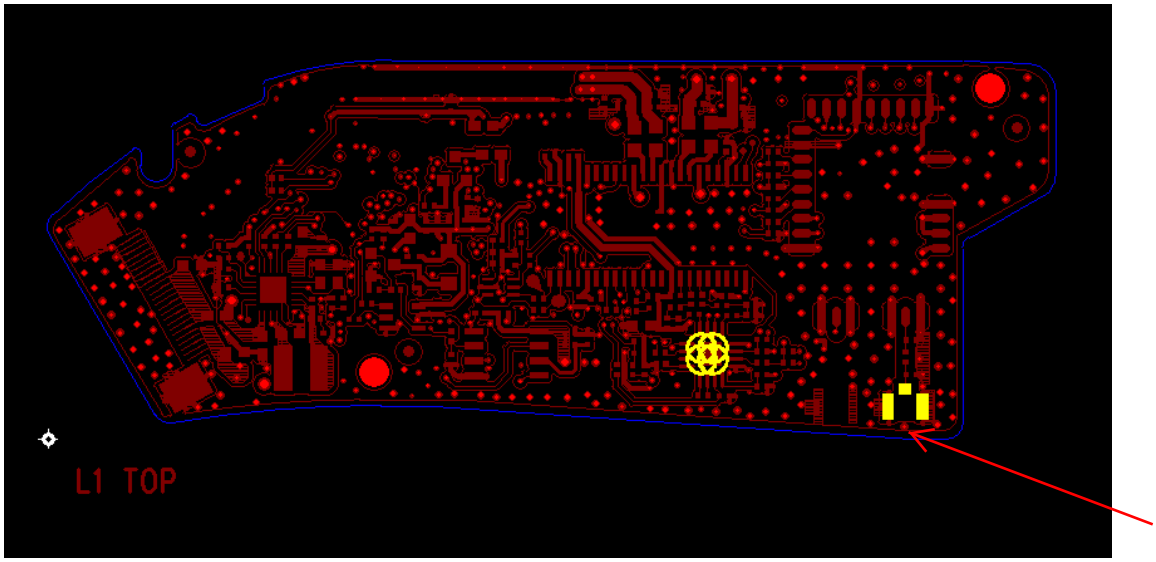
(1) l'appareil ne doit pas produire de brouillage, et

(2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement."

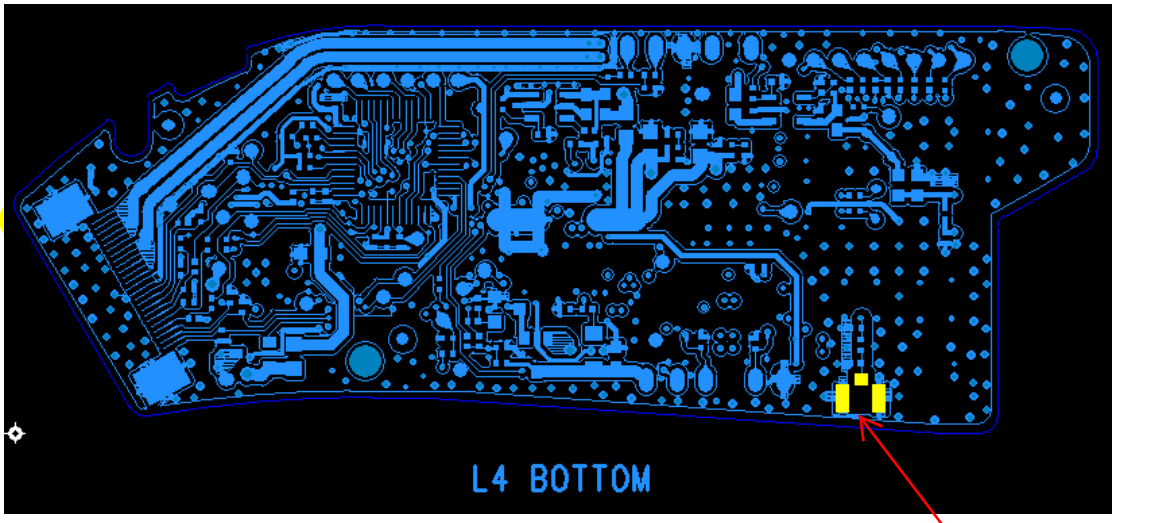
The device should be installed and operated with a minimum distance of 20cm between the radiator and your body.

L'appareil doit être installé et utilisé avec une distance minimale de 20 cm entre le radiateu et votre corps.

Front side, Antenna 1 Connect via Pad L1

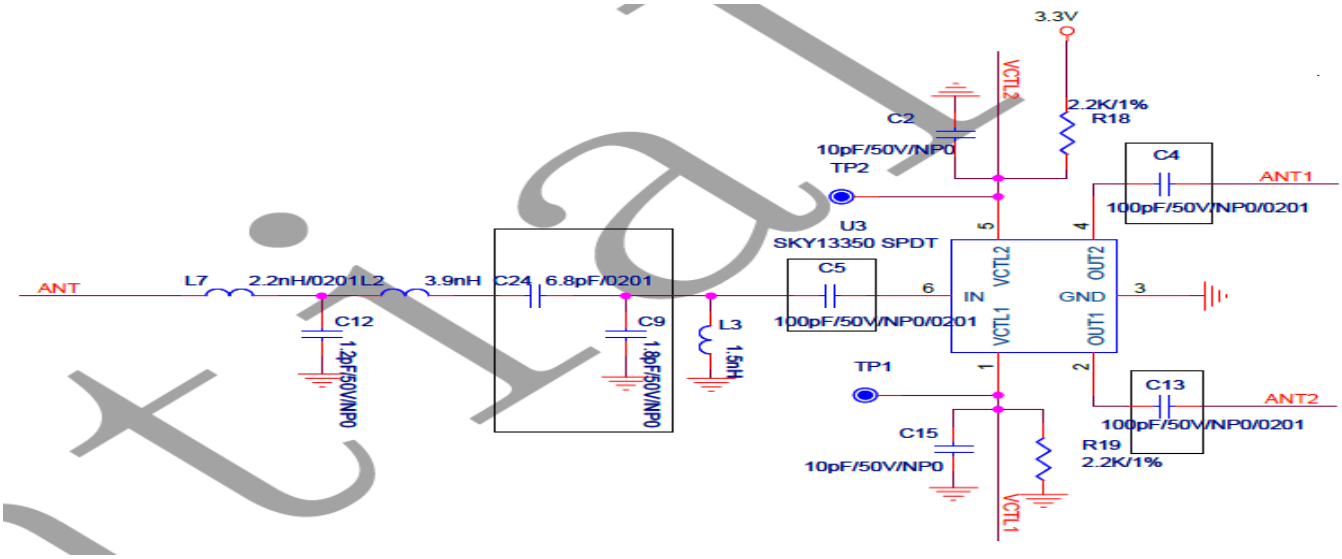


Botton side Antenna 2 Connect via Pad L2

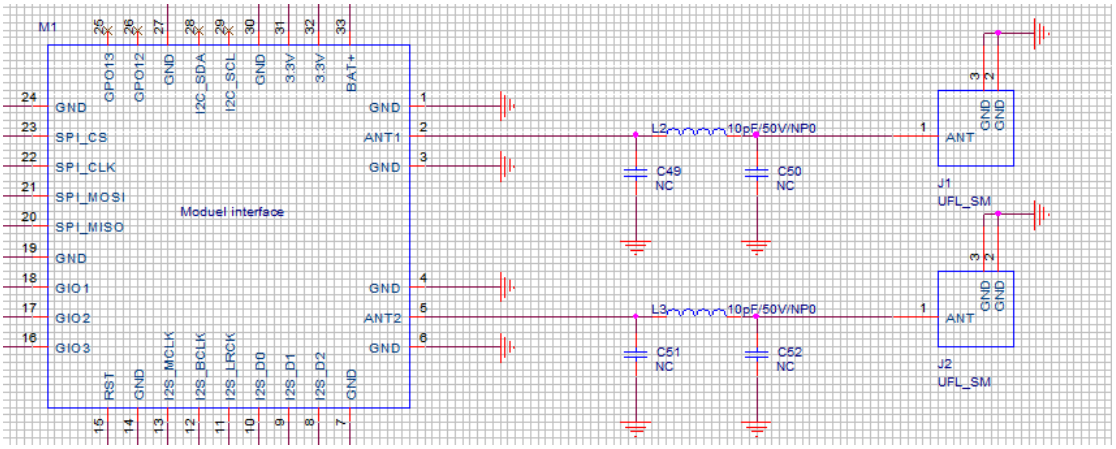


The module is attached to the motherboard, and the antenna button is also on the motherboard, between which only one capacitor is matched to the antenna function

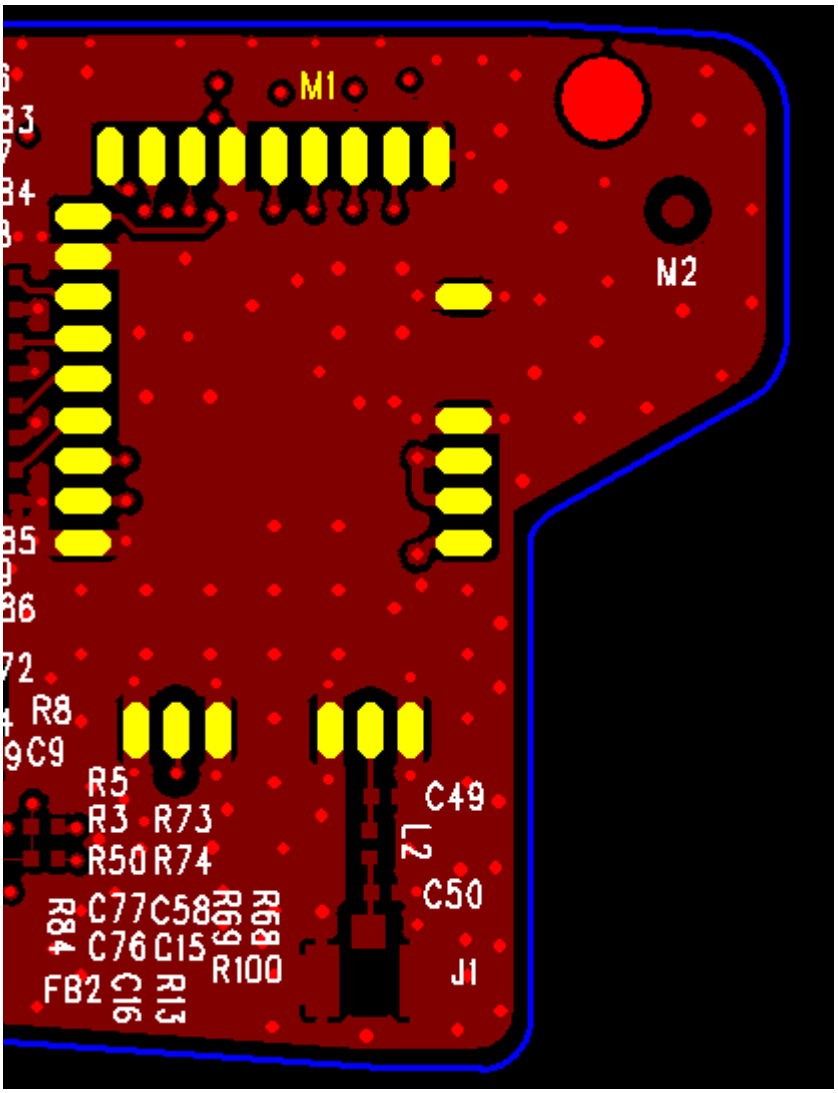
ANT1 & ANT2 connector connect to RF module through U3 and others components, the circuit as below showed.



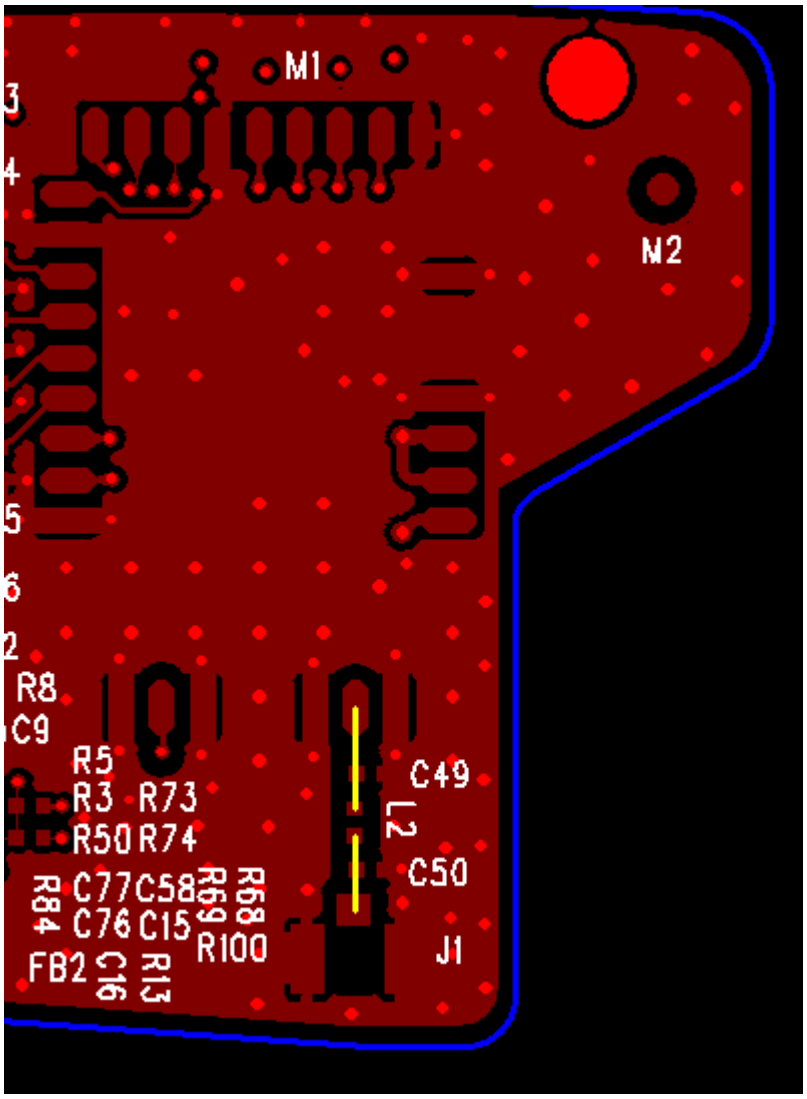
1. schematic for module and antenna



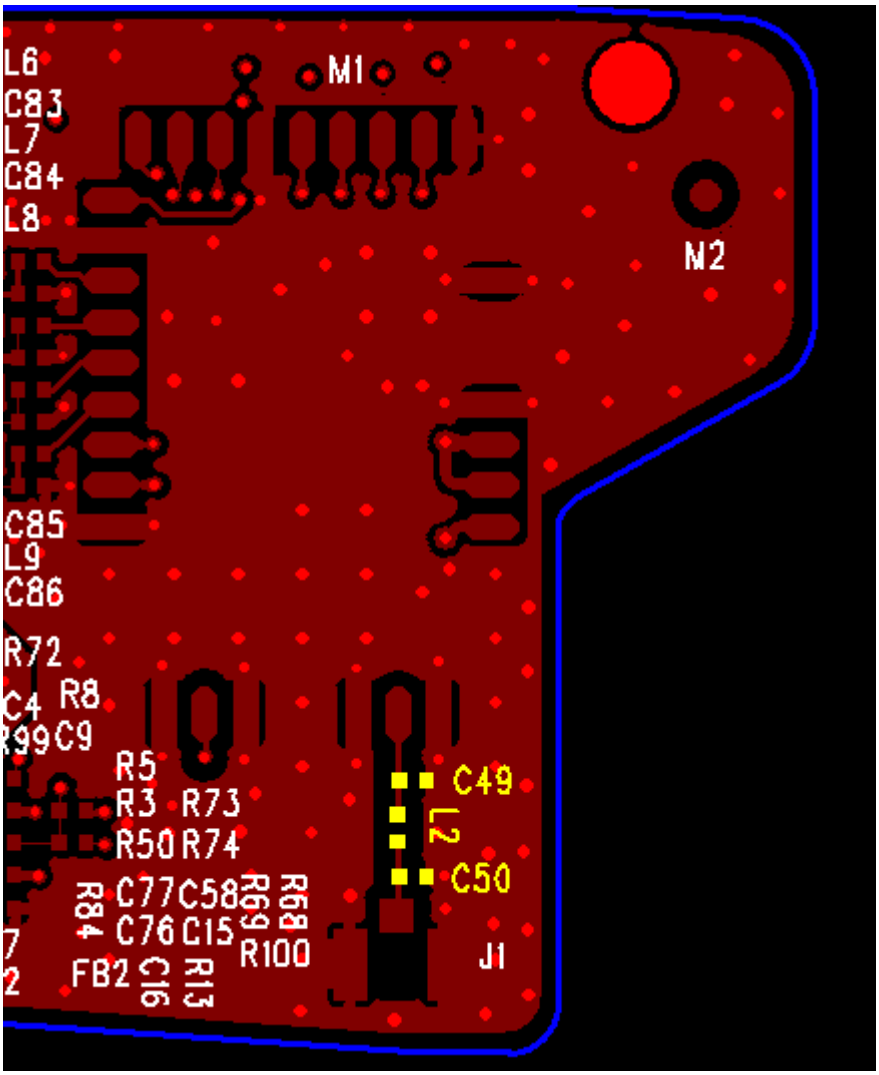
2. Module:on the top layer of main board



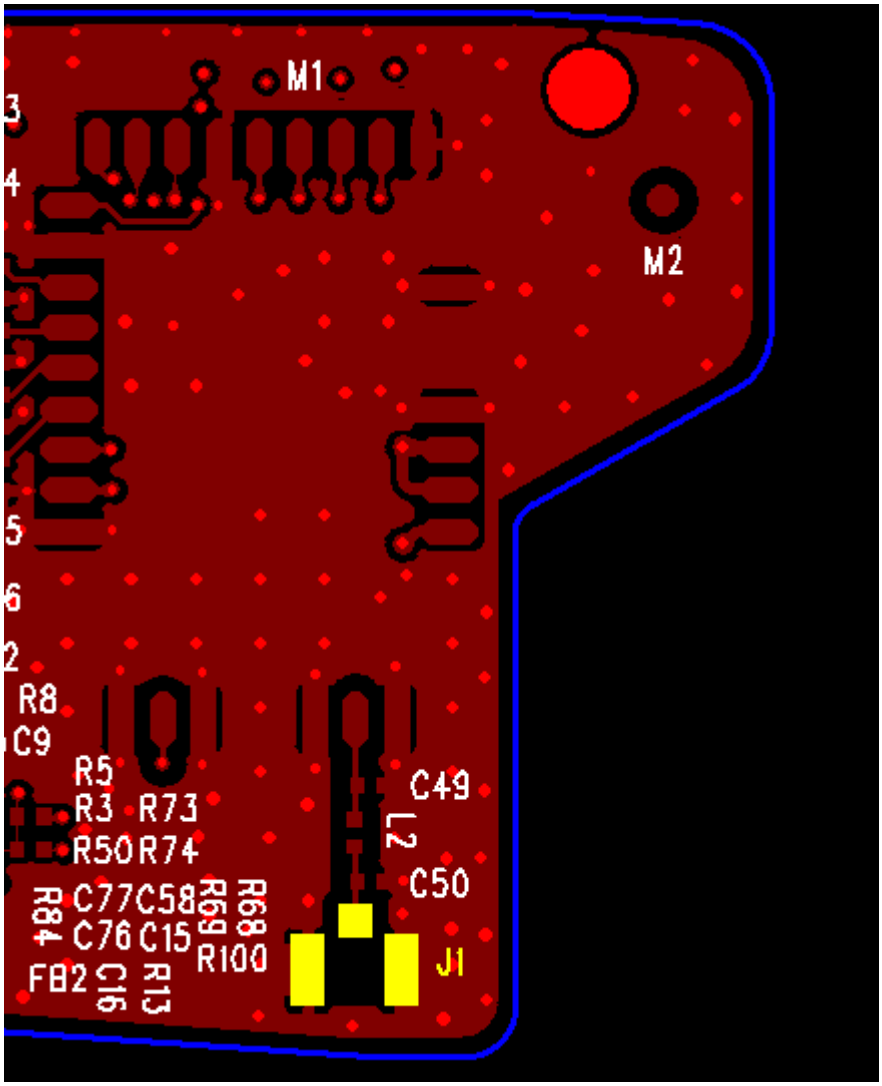
3. ANT1: 50Ω Trace on the top layer of main board



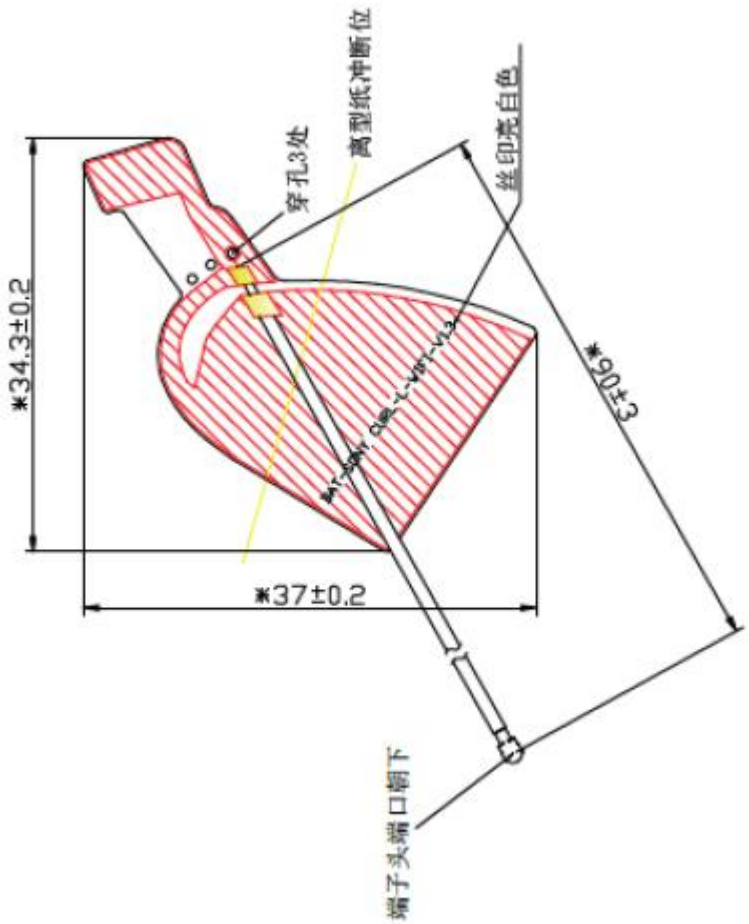
4. ANT 1: antenna match network on the top layer of main board



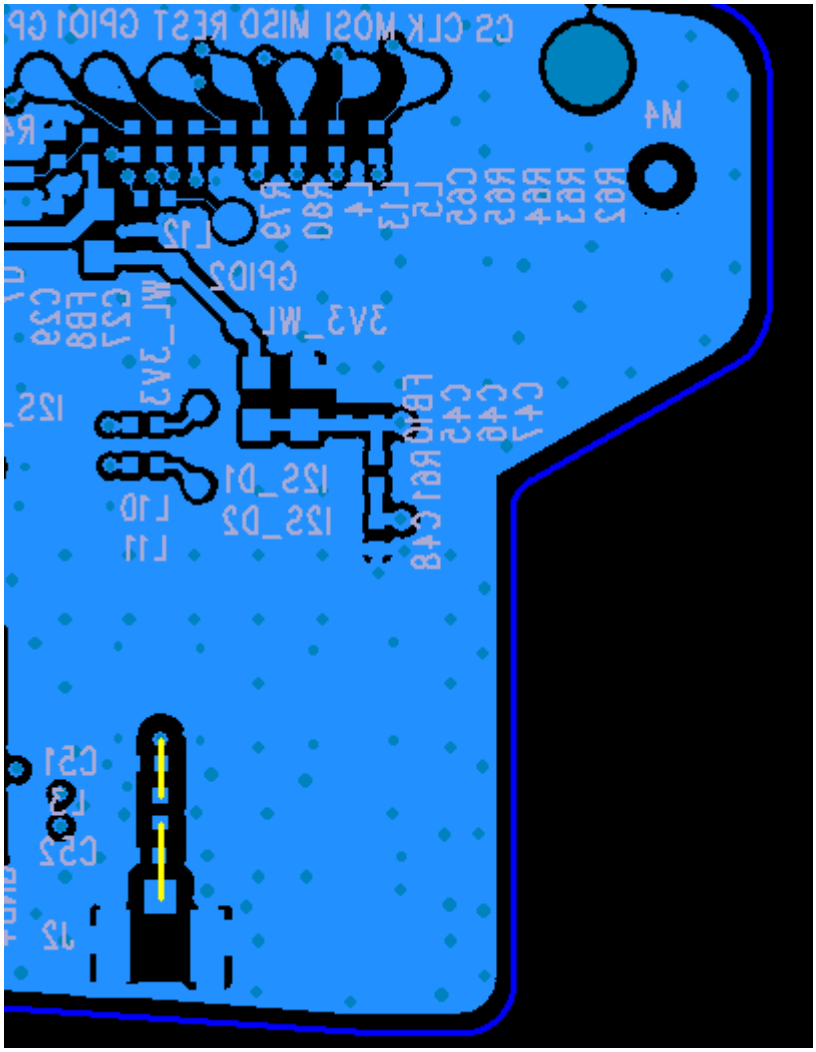
5. ANT1:antenna connector on the top layer of main board



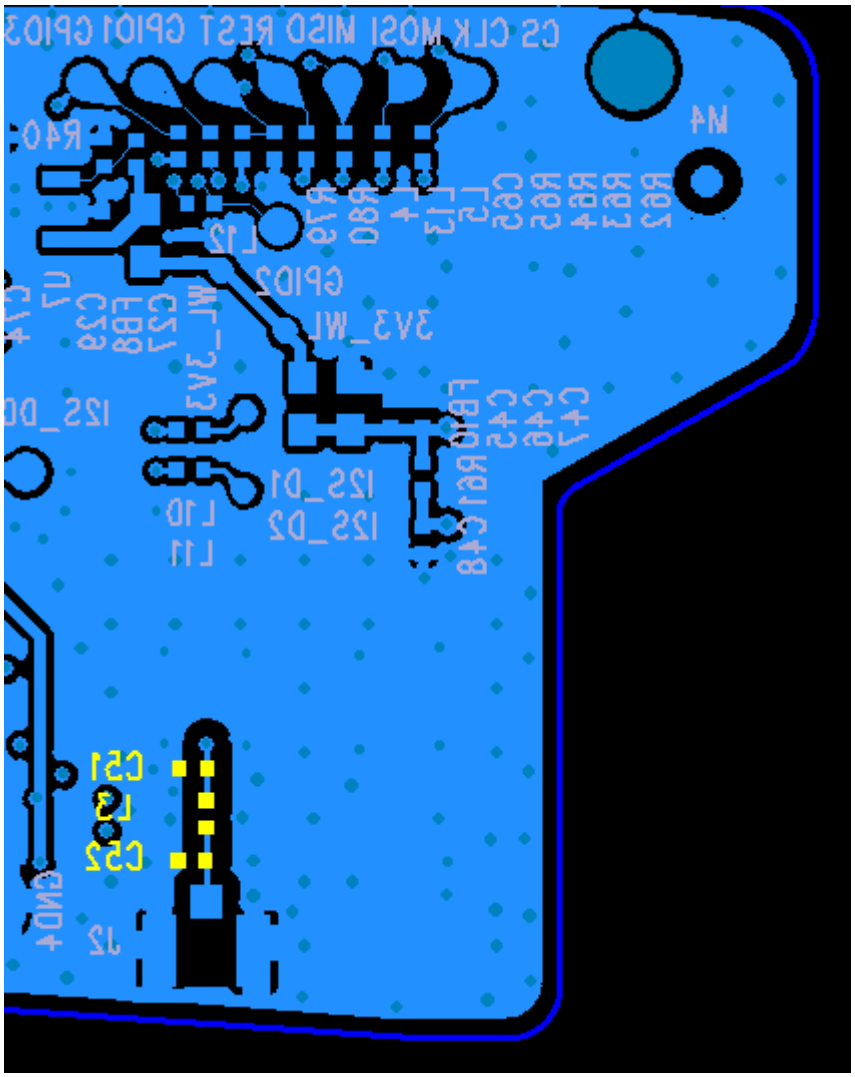
6. ANT1: FPC antenna on the left side of the unit



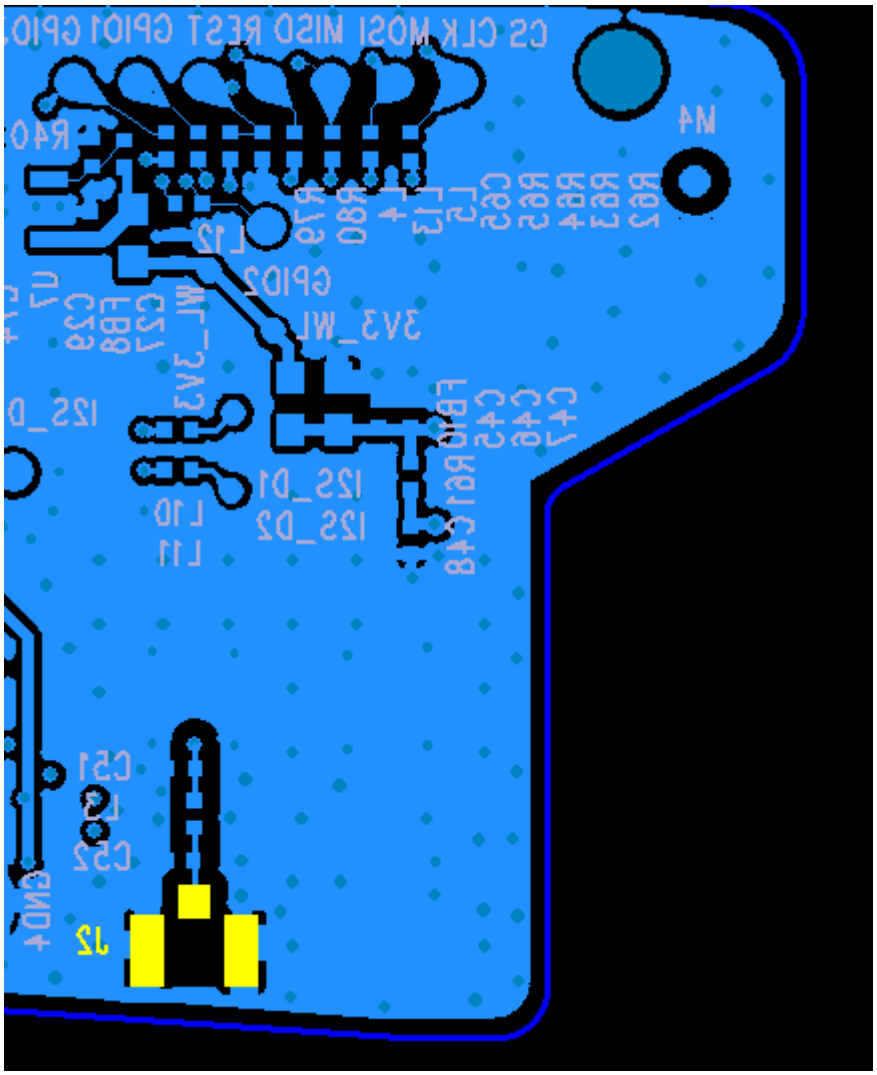
7. ANT2: 50Ω Trace on the bottom layer of main board



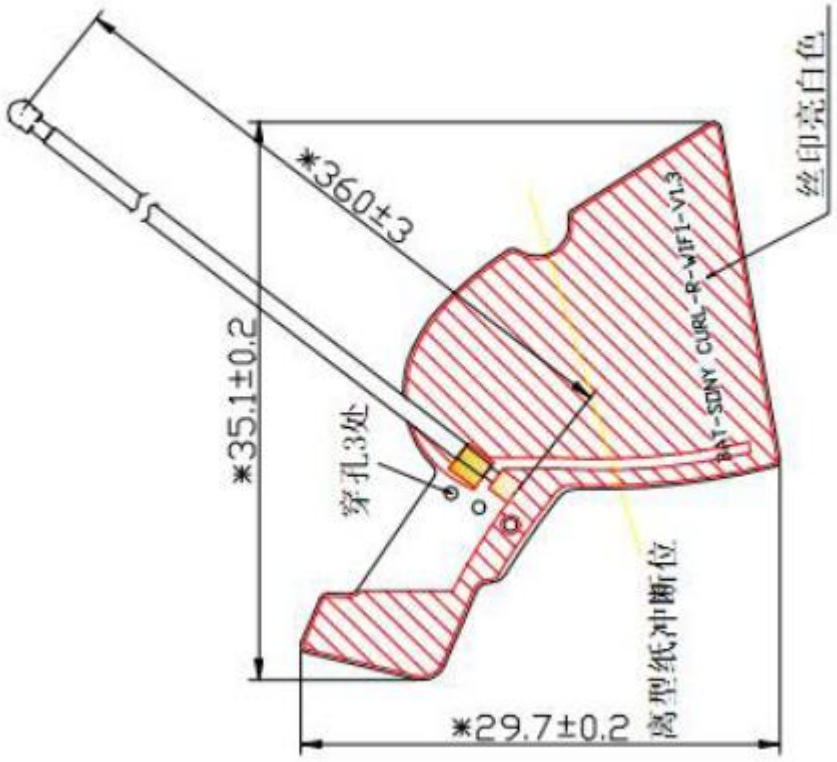
8. ANT 2: antenna match network on the bottom layer of main board



9. ANT 2:antenna connector on the bottom layer of main board

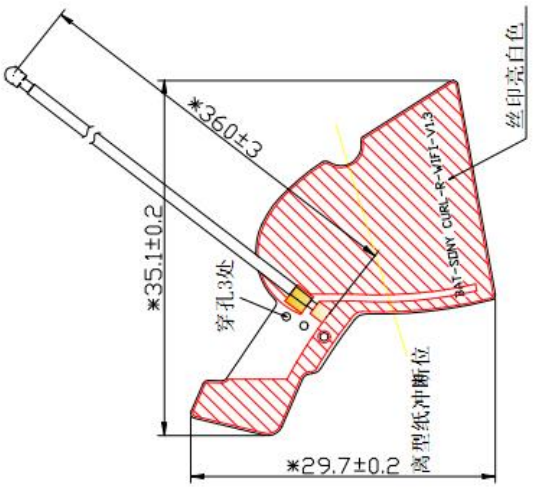


10. ANT 2:FPC antenna on the right side of the unit



11.

Built-in antenna product surface (IPEX-FPC)

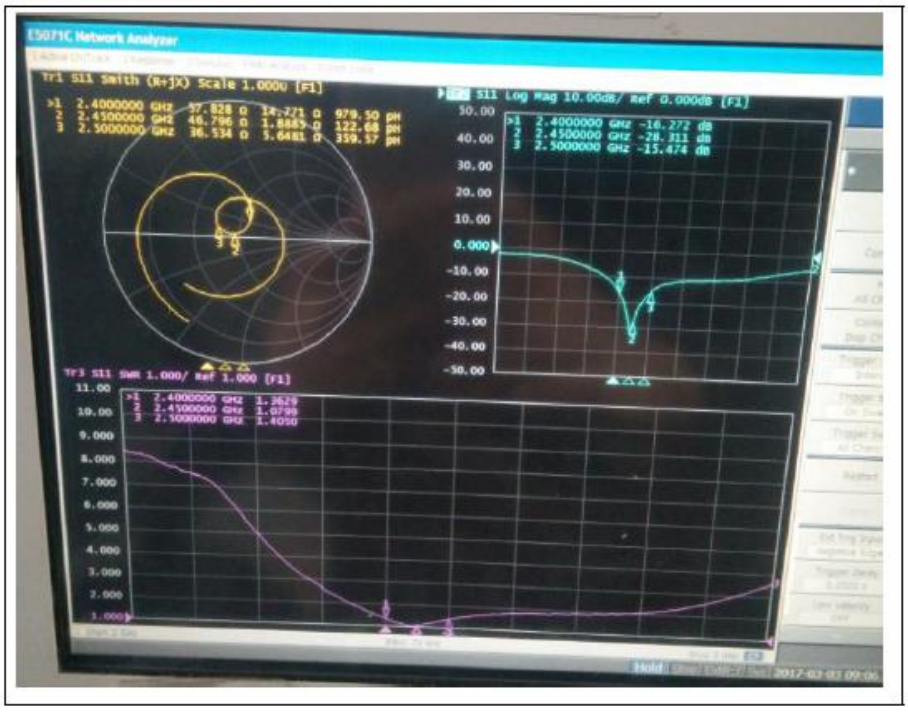


The performance parameters:

RF Frequency	2400-2500MHz	Input impedance	50Ω
Gain(dBi)	2.92	Line length	360±3mm
Working temperature	-20℃~40℃	Joint type	terminal

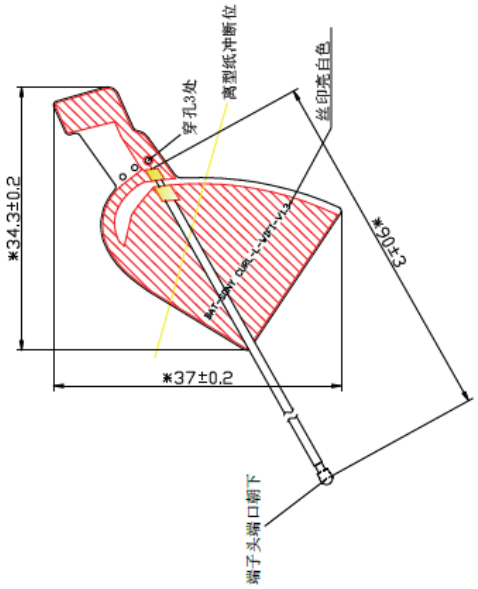
Electrical Specifications of the Antenna

S11 Parameter



Freq. (MHz)	Gain. (dBi)	Efficiency
2400	2.504056411	42%
2450	2.851501618	46%
2500	2.403065521	42%

Built-in antenna product surface (IPEX-FPC)

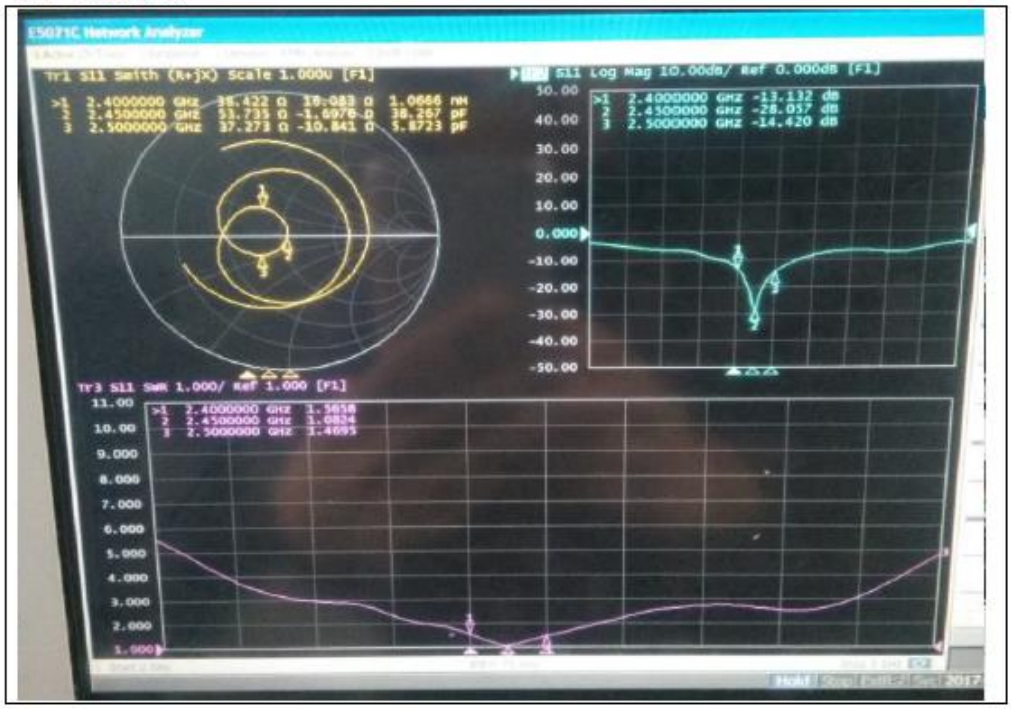


The performance parameters:

RF Frequency	2400-2500MHz	Input impedance	50Ω
Gain(dBi)	3.23	Line length	90±3mm
Working temperature	-20℃~40℃	Joint type	terminal

Electrical Specifications of the Antenna

S11 Parameter



Freq. (MHz)	Gain. (dBi)	Efficiency
2400	3.172982572	45%
2450	2.889097632	45%
2500	3.107264382	44%