

6221B-UUC

**Wi-Fi Dual-band 1x1 11ac + Bluetooth 4.2
Combo Module Datasheet**



6221B-UUC Module Datasheet

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| | | |
|---------------------|-------|-----------|
| Customer Approval : | _____ | Company |
| | _____ | Title |
| | _____ | Signature |
| | _____ | Date |
| | _____ | Fn-Link |

Revision History

| Version | Date | Revision Content | Draft | Approved |
|---------|------------|------------------------------------------------------------|--------|----------|
| 1.0 | 2019/10/29 | Initial Release | Wesley | Stone |
| 1.1 | 2019/11/08 | Update section 4, 5 and 7 for CHIP_EN pin and thermal pad. | Wesley | Stone |
| 1.2 | 2019/12/06 | Update RF spec, add consumption data. | Wesley | Stone |
| 1.3 | 2020/03/10 | Refine section 2. | Wesley | Stone |
| 1.4 | 2020/03/11 | Modify freq. tolerance spec. | Wesley | Stone |

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1 Overview

1.1 Introduction

The 6221B-UUC is a low-cost and low-power consumption module which has all of the Wi-Fi functionalities. It is based on Realtek RTL8821CU chipset, a highly-integrated IEEE 802.11a/b/g/n/ac MAC/Baseband/RF WLAN and Bluetooth Baseband/RF single chip. For Wireless LAN (WLAN) operation, this module supports 1-stream 802.11ac solution with Multi-user MIMO STA mode with USB2.0 network interface controller. For Bluetooth operation, it supports Bluetooth 2.1/4.2.

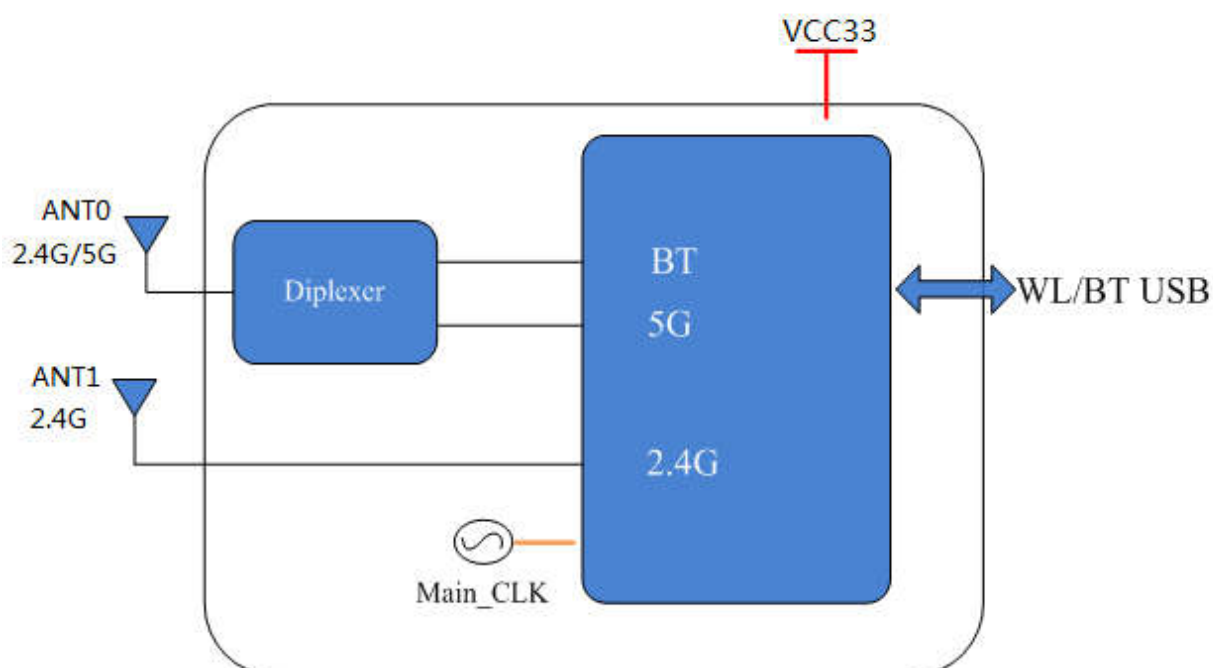
6221B-UUC complies with IEEE 802.11a/b/g/n/ac standard and it can achieve up to a speed of 433.3Mbps with single stream in 802.11ac to connect to the WLAN.

This compact module is a total solution for a combination of Wi-Fi and BT technologies.

1.2 Features

- Highly-integrated module for 5G 802.11ac, or 2.4G/5G 802.11n WLAN applications.
- Maximum PHY data rate up to 86.7MHz using 20MHz bandwidth, 200Mbps using 40Mhz bandwidth and 433.3Mbps using 80Mhz bandwidth.
- Backward compatible with 802.11a/b/g device.
- Support IEEE 802.11e QoS Enhancement and 802.11i (WPA, WPA2).
- Support IEEE 802.11h DFS.
- Wi-Fi Direct supports wireless peer to peer applications.
- Supports Bluetooth 4.2 and backward compatible with Bluetooth 2.1 + EDR.
- Bluetooth 4.0 Dual Mode support: Simultaneous LE and BR/EDR.
- Supports Bluetooth Low Energy.
- Integrated internal Class 1, Class 2 and Class 3 PA for Bluetooth.
- Enhanced BT/Wi-Fi Coexistence Control to improve transmission quality in different profiles.
- USB Multi-Function for both BT and WLAN.
- Single external power source 3.3V only.

1.3 Block Diagram



1.4 General Specification

| | |
|-----------------------|--------------------------------------------------------------------|
| Model Name | 6221B-UUC |
| Product Description | Support Wi-Fi/Bluetooth functionalities |
| Dimension | L x W x H: 15 x 13 x 2.35 mm |
| Wi-Fi Interface | USB 2.0 |
| BT Interface | USB 2.0 |
| Operating temperature | 0°C to 70°C |
| Storage temperature | -40°C to 125°C |
| RoHS | All hardware components are fully compliant with EU RoHS directive |

1.5 Recommended Operating Rating

| | Min. | Typ. | Max. | Unit |
|-----------------------|-------|------|-------|------|
| Operating Temperature | 0 | 25 | 70 | °C |
| Power Supply (VCC) | 3.135 | 3.3 | 3.465 | V |

| Typical Power Consumption (VCC=3.3V; BT on if no other statement) | Condition | Current Consumption(mA) |
|----------------------------------------------------------------------|-----------------------------------|-------------------------|
| | WLAN/BT Disabled | 2 |
| | Wi-Fi 5G associated | 93 |
| | TX throughput (5G 11ac VHT80) | 264 |
| | RX throughput (5G 11ac VHT80) | 136 |
| | TX throughput (5G 11n HT20) | 320 |
| | RX throughput (5G 11n HT20) | 107 |
| | TX throughput (5G 11a OFDM54) | 266 |
| | RX throughput (5G 11a OFDM54) | 130 |
| | TX throughput (2.4G 11n HT40) | 291 |
| | RX throughput (2.4G 11n HT40) | 115 |
| | TX throughput (2.4G 11b CCK11) | 283 |
| | RX throughput (2.4G 11b CCK11) | 141 |

※1.6 EEPROM Information

Wi-Fi

| | |
|------------|--|
| Vendor ID | |
| Product ID | |

2 Wi-Fi RF Specification

2.1 Wi-Fi 2.4GHz RF Specification

| Feature | Description |
|---------------------------------------------|-------------------------------------------------------------------------------------------------|
| WLAN Standard | IEEE 802.11b/g/n, Wi-Fi compliant |
| Frequency Range | 2.400 GHz ~ 2.497 GHz (2.4 GHz ISM Band) |
| Channels | 2.4GHz : Ch1 ~ Ch14 |
| Output Power | 802.11b /11M : 16 ± 1.5 dBm @ EVM \leq -9dB 1M : 17 ± 1.5 dBm @ MASK compliant |
| | 802.11g /54M : 15 ± 1.5 dBm @ EVM \leq -26dB 6M : 17 ± 1.5 dBm @ MASK compliant |
| | 802.11n /MCS7 : 14 ± 1.5 dBm @ EVM \leq -29dB MCS0 : 17 ± 1.5 dBm @ MASK compliant |
| | Other data rate TX power control by 'power by rate' |
| Spectrum Mask | IEEE compliant |
| Freq. Tolerance | ± 15 ppm |
| Receive Sensitivity (11b) @8% PER | - 1Mbps: \leq -92 dBm |
| | - 11Mbps: \leq -85 dBm |
| Receive Sensitivity (11g) @10% PER | - 6Mbps: \leq -89 dBm |
| | - 54Mbps: \leq -71 dBm |
| Receive Sensitivity (11n,20MHz) @10% PER | - MCS=0: \leq -89 dBm |
| | - MCS=7: \leq -69 dBm |
| Receive Sensitivity (11n,40MHz) @10% PER | - MCS=0: \leq -87 dBm |
| | - MCS=7: \leq -67 dBm |

2.2 Wi-Fi 5GHz RF Specification

| Feature | Description |
|--------------------|----------------------------------------------------------------------------------------|
| WLAN Standard | IEEE 802.11a/n/ac, Wi-Fi compliant |
| Frequency Range | 4.900 GHz ~ 5.845 GHz (5.0 GHz ISM Band) |
| Number of Channels | 5.0GHz: Please refer to the table ¹ |
| Modulation | 802.11a/n: 64-QAM, 16-QAM, QPSK, BPSK 802.11ac: 256-QAM, 64-QAM, 16-QAM, QPSK, BPSK |
| Output Power | 802.11a /54M: 14 dBm ± 1.5 dB @ EVM \leq -27dB |
| | 6M: 16 dBm ± 1.5 dB @ MASK compliant |

| | |
|----------------------------------------------|-----------------------------------------------------------------------------------------------------|
| | 802.11n /MCS7: 13 dBm \pm 1.5 dB @ EVM \leq -29dB MCS0: 16 dBm \pm 1.5 dB @ MASK compliant |
| | 802.11ac/MCS7: 13 dBm \pm 1.5 dB @ EVM \leq -29dB MCS0: 16 dBm \pm 1.5 dB @ MASK compliant |
| | 802.11ac/MCS9: 10 dBm \pm 1.5 dB @ EVM \leq -33dB |
| | For other rate, Tx power is controlled by 'power by rate' |
| Receive Sensitivity (11a) @10% PER | - 6Mbps: \leq -86 dBm |
| | - 54Mbps: \leq -70 dBm |
| Receive Sensitivity (11n,20MHz) @10% PER | - MCS=0: \leq -85 dBm |
| | - MCS=7: \leq -67 dBm |
| Receive Sensitivity (11n,40MHz) @10% PER | - MCS=0: \leq -83 dBm |
| | - MCS=7: \leq -64 dBm |
| Receive Sensitivity (11ac,20MHz) @10% PER | - MCS=0: \leq -86 dBm |
| | - MCS=8: \leq -63 dBm |
| Receive Sensitivity (11ac,40MHz) @10% PER | - MCS=0: \leq -83 dBm |
| | - MCS=9: \leq -59 dBm |
| Receive Sensitivity (11ac,80MHz) @10% PER | - MCS=0: \leq -80 dBm |
| | - MCS=9: \leq -56 dBm |

¹5GHz Channel table

| Band (GHz) | Operating Channel Number | Channel Center Frequency(MHz) |
|-----------------|--------------------------|-------------------------------|
| 5.15GHz~5.25GHz | 36 | 5180 |
| | 40 | 5200 |
| | 44 | 5220 |
| | 48 | 5240 |
| 5.25GHz~5.35GHz | 52 | 5260 |
| | 56 | 5280 |
| | 60 | 5300 |
| | 64 | 5320 |
| 5.5GHz~5.7GHz | 100 | 5500 |
| | 104 | 5520 |
| | 108 | 5540 |
| | 112 | 5560 |
| | 116 | 5580 |
| | 120 | 5600 |
| | 124 | 5620 |
| | 128 | 5640 |
| | 132 | 5660 |

| | | |
|-------------------|-----|------|
| 5.725GHz~5.825GHz | 136 | 5680 |
| | 140 | 5700 |
| | 149 | 5745 |
| | 153 | 5765 |
| | 157 | 5785 |
| | 161 | 5805 |
| | 165 | 5825 |

3 Bluetooth Specification

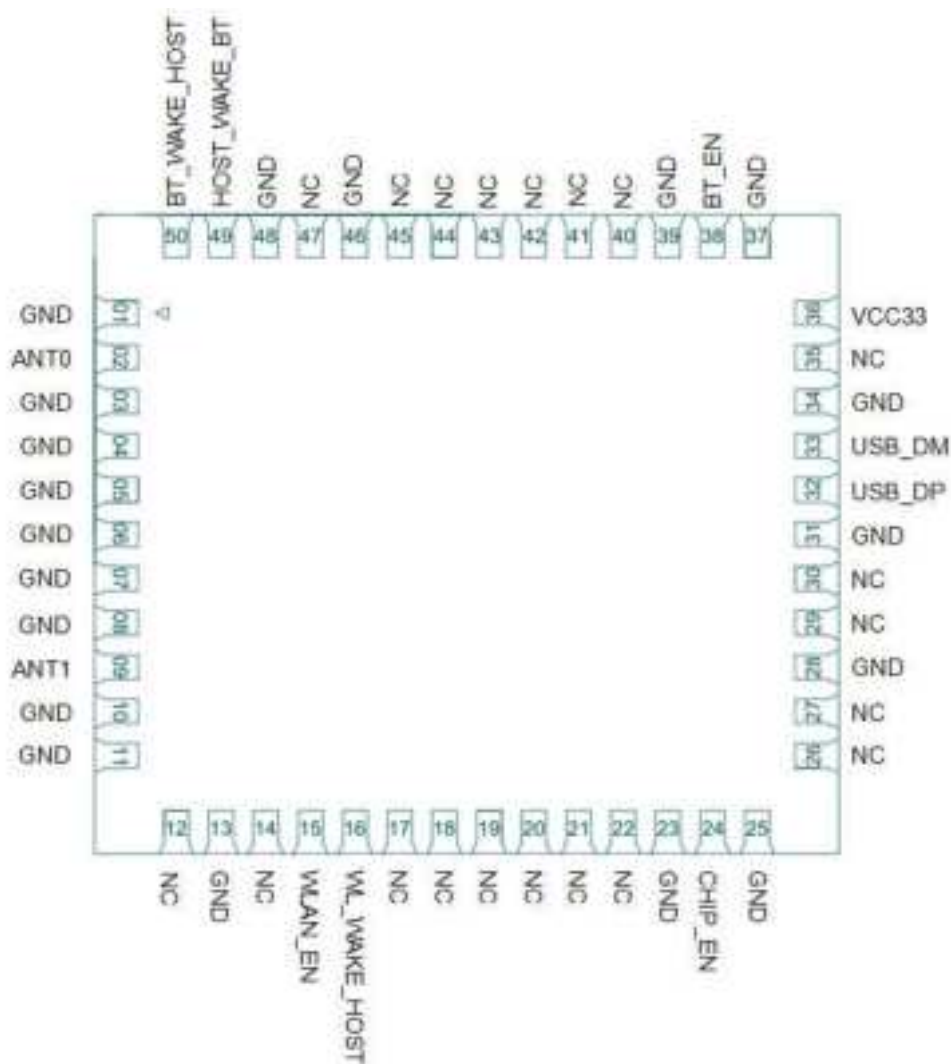
3.1 Bluetooth Specification

| Feature | Description | | |
|-------------------------------------------------------|--------------------------------------|----------|--------|
| General Specification | | | |
| Bluetooth Standard | Bluetooth V4.2 of 1, 2 and 3 Mbps. | | |
| Antenna Reference | Small antenna with 0~2 dBi peak gain | | |
| Frequency Band | 2402 MHz ~ 2480 MHz | | |
| Number of Channels | 79 channels | | |
| Modulation | GFSK, $\pi/4$ -DQPSK, 8DPSK | | |
| RF Specification | | | |
| | Min. | Typical. | Max. |
| Output Power (Class 1.5) | 4 dBm | 8 dBm | 12 dBm |
| Sensitivity @ BER=0.1% for GFSK (1Mbps) | | -88 dBm | |
| Sensitivity @ BER=0.01% for $\pi/4$ -DQPSK (2Mbps) | | -85 dBm | |
| Sensitivity @ BER=0.01% for 8DPSK (3Mbps) | | -81 dBm | |
| Maximum Input Level | GFSK (1Mbps):-20dBm | | |
| | $\pi/4$ -DQPSK (2Mbps) :-20dBm | | |
| | 8DPSK (3Mbps) :-20dBm | | |

4 Pin Assignments

4.1 Pin Outline

< TOP VIEW >



4.2 Pin Definition

| PIN | Name | Type | Description | Voltage |
|-------|------|------|----------------------------------|---------|
| 1 | GND | — | Ground connections | |
| 2 | ANT0 | I/O | RF I/O chain0, Wi-Fi 5GHz and BT | |
| 3~8 | GND | — | Ground connections | |
| 9 | ANT1 | I/O | RF I/O chain1, Wi-Fi 2.4GHz | |
| 10~11 | GND | — | Ground connections | |
| 12 | NC | — | Not connected | |
| 13 | GND | — | Ground connections | |

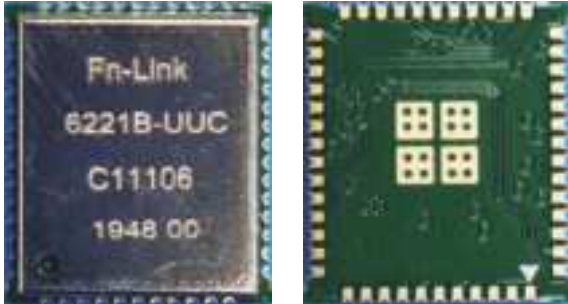
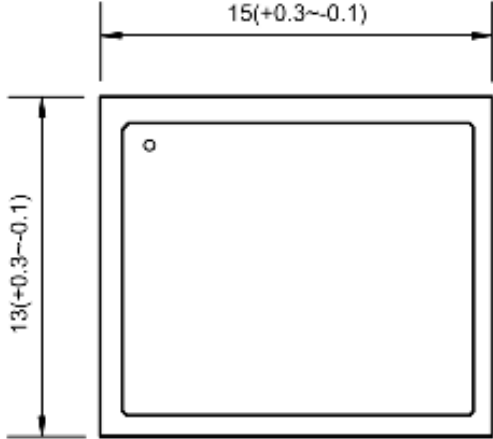
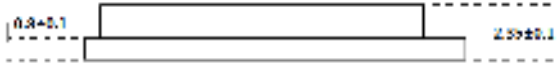
| | | | | |
|-------|--------------|-----|----------------------------------------------------------------------------------------------------|------|
| 14 | NC | — | Not connected | |
| 15 | WLAN_EN | I | Enable pin for WLAN device ON: pull high ; OFF: pull low | 3.3V |
| 16 | WL_WAKE_HOST | O | WLAN to wake-up HOST | 3.3V |
| 17~22 | NC | — | Not connected | |
| 23 | GND | — | Ground connections | |
| 24 | CHIP_EN | I/O | Enable pin for chipset. Pull low to shut down RTL8821CU. (Internal 47Kohm pull-high to 3.3V) | 3.3V |
| 25 | GND | — | Ground connections | |
| 26~27 | NC | — | Not connected | |
| 28 | GND | — | Ground connections | |
| 29~30 | NC | — | Not connected | |
| 31 | GND | — | Ground connections | |
| 32 | USB_DP | I/O | USB2.0 differential pair D+ for WLAN and Bluetooth | |
| 33 | USB_DM | I/O | USB2.0 differential pair D- for WLAN and Bluetooth | |
| 34 | GND | — | Ground connections | |
| 35 | NC | — | Not connected | |
| 36 | VCC33 | P | Main power input 3.3V | 3.3V |
| 37 | GND | — | Ground connections | |
| 38 | BT_EN | I | Enable pin for Bluetooth device ON: pull high ; OFF: pull low | 3.3V |
| 39 | GND | — | Ground connections | |
| 40~45 | NC | — | Not connected | |
| 46 | GND | — | Ground connections | |
| 47 | NC | I | Not connected | |
| 48 | GND | — | Ground connections | |
| 49 | HOST_WAKE_BT | I | HOST to wake-up Bluetooth device | 3.3V |
| 50 | BT_WAKE_HOST | O | Bluetooth device to wake-up HOST | 3.3V |

P: POWER I: INPUT O: OUTPUT

5 Dimensions

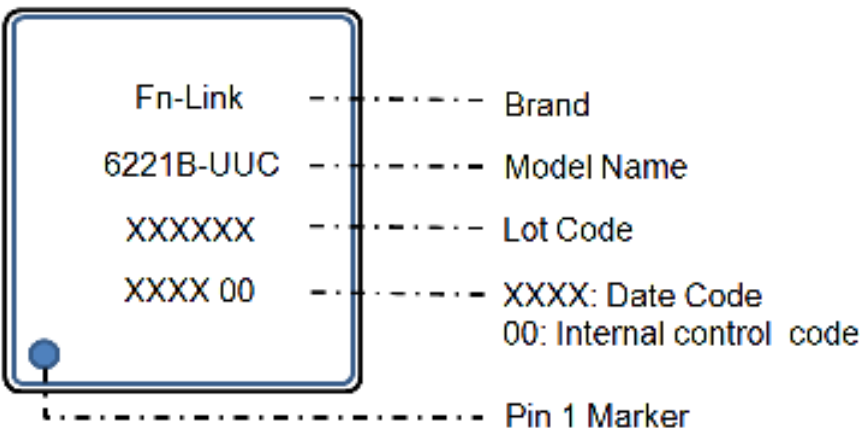
5.1 Physical Dimensions and Module Photo

(Unit: mm)

| | |
|-------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| <p>L x W : 15 x 13 mm</p>  | <p>< TOP VIEW ></p>  |
| <p>H: 2.35 mm</p> | <p>< Side View ></p>  |
| <p>Weight</p> | <p>0.92g</p> |

5.2 Marking Description

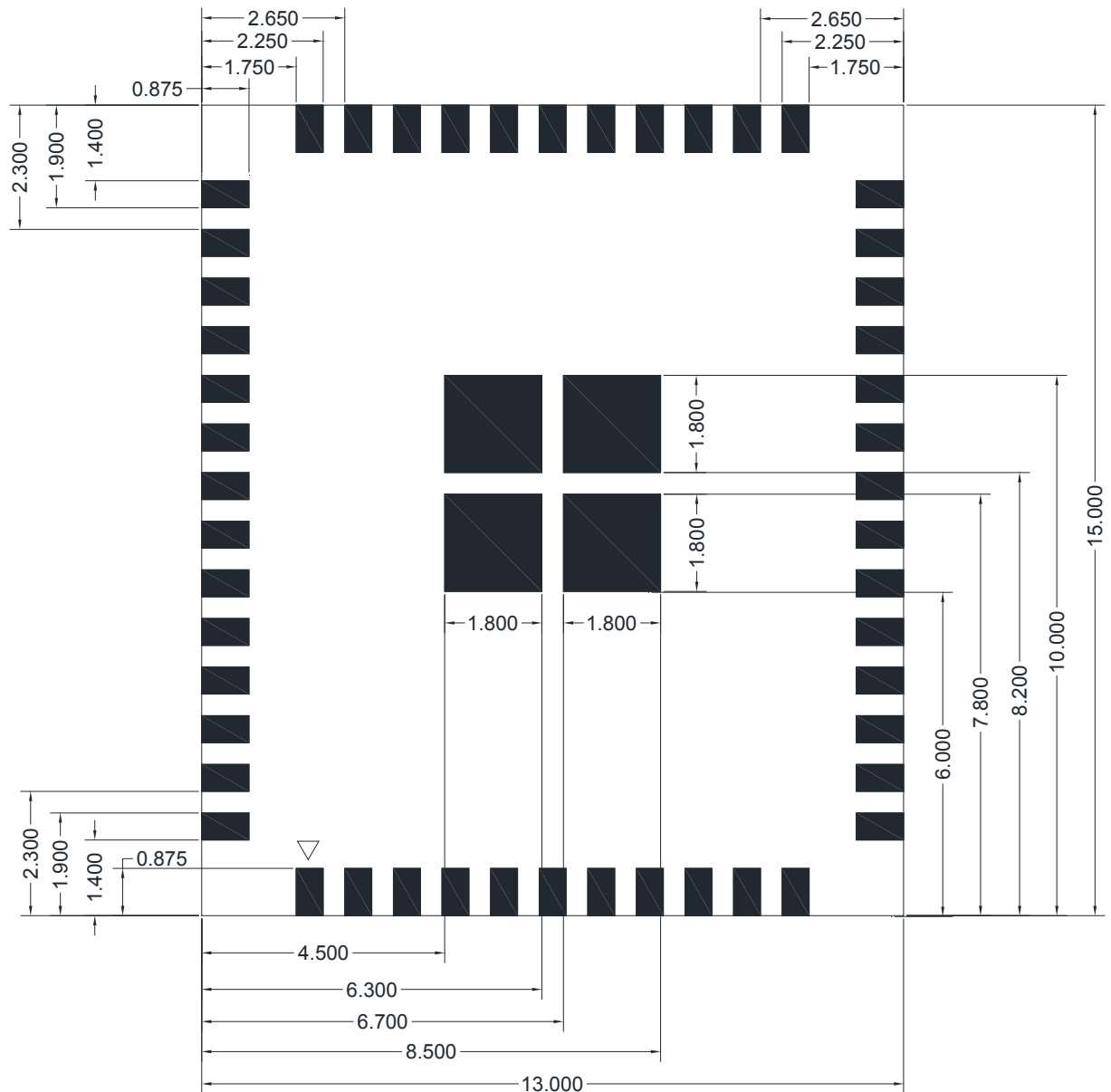
< TOP VIEW >



5.3 Module Physical Dimensions

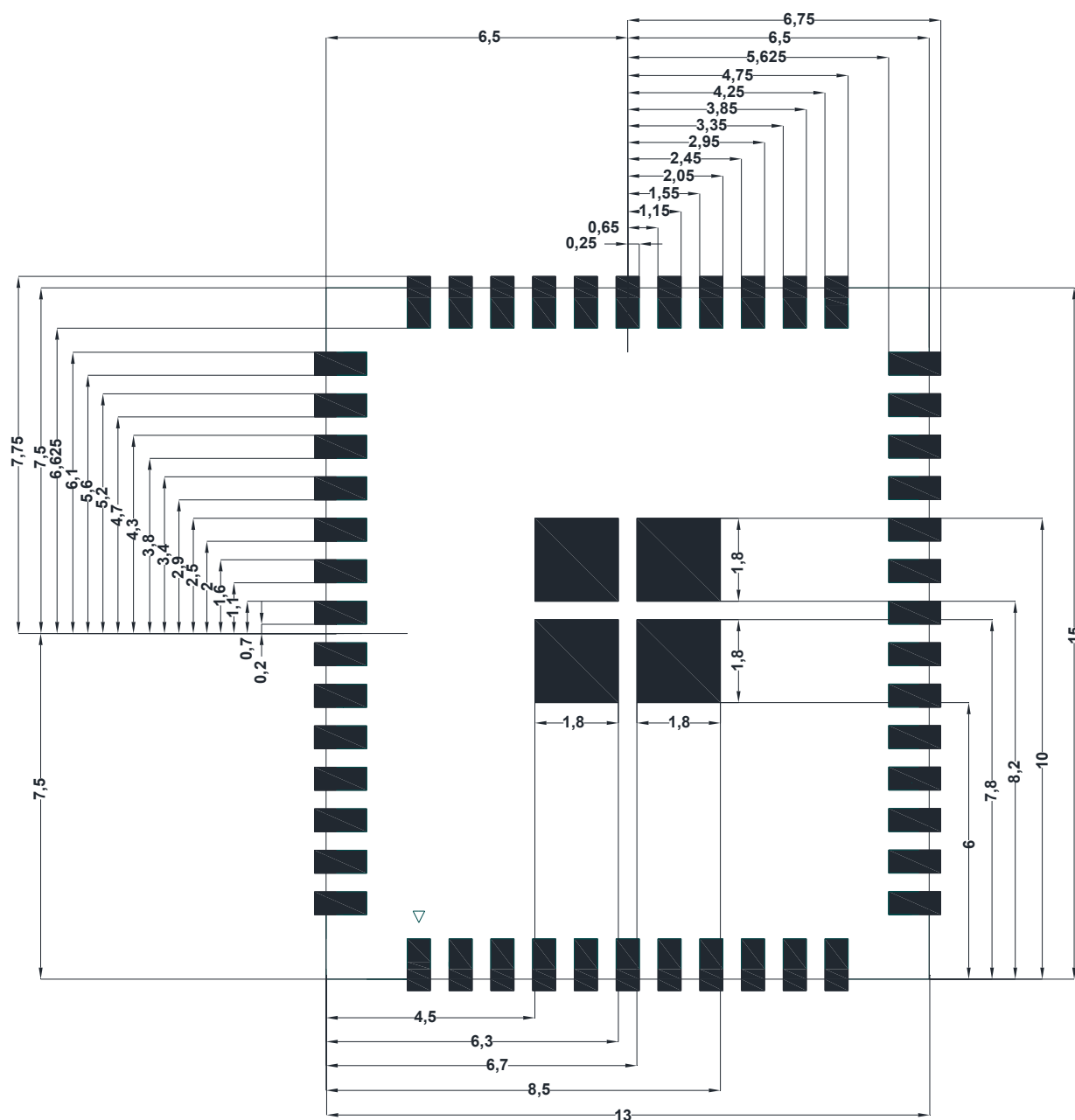
(Unit: mm)

< TOP VIEW >



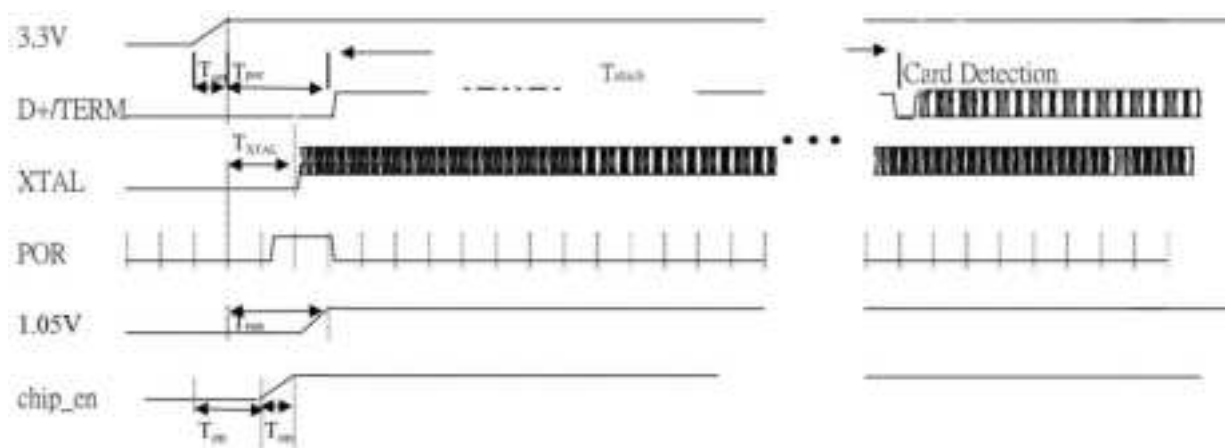
(Unit: mm)

< TOP VIEW >



6 Interface Timing Specification

6.1 USB Bus Timing during Power On Sequence



T_{on}: the main power ramp on duration

T_{por}: the power on reset releases and power management unit executes power on tasks

T_{attach}: USB attach state

T_{xtal}: XTAL starts

T_{en}: interval between the rising point of 3.3V and chip_en

The power on flow description:

After main 3.3V ramp up, the internal power on reset is released by power ready detection circuit and the power management unit will be enabled. The power management unit enables the internal regulator and clock circuits.

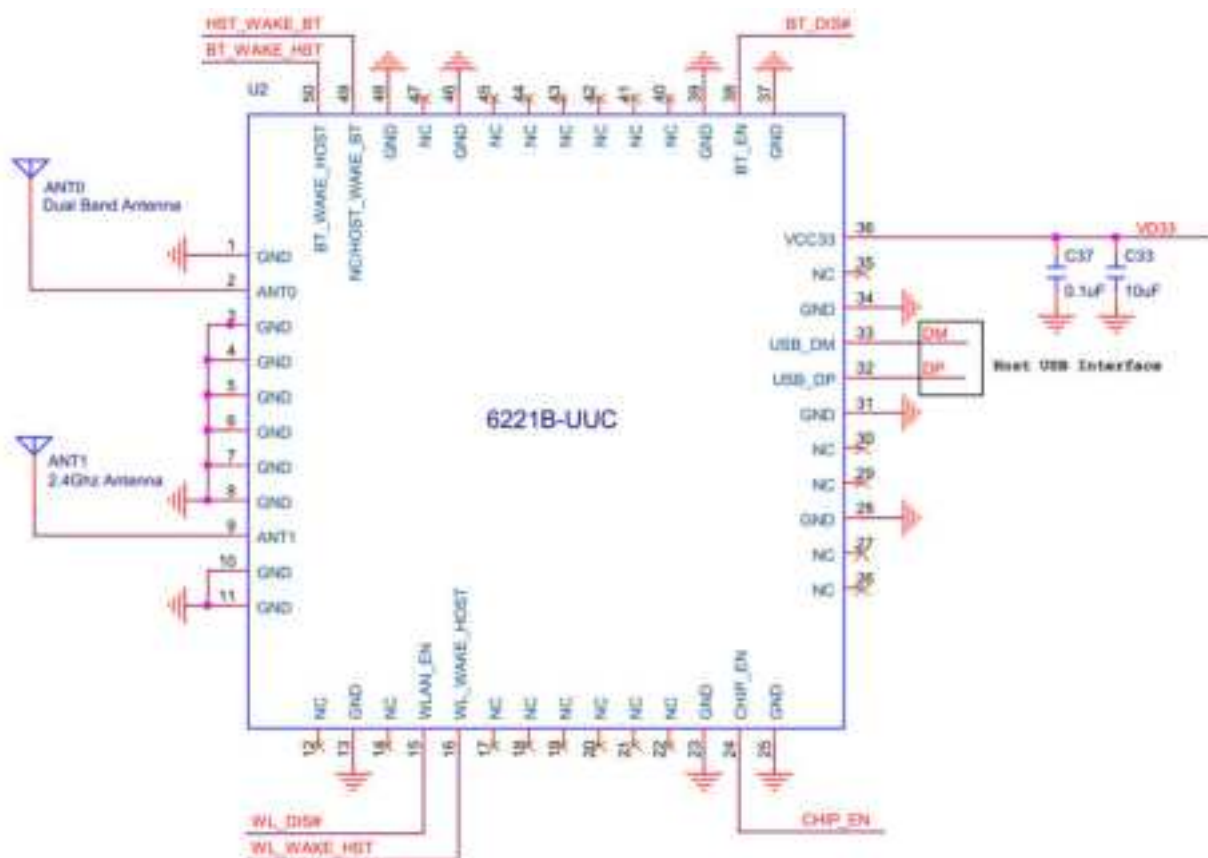
The power management unit also enables the USB circuits.

USB analog circuits attach resistors to indicate the insertion of the USB device.

The typical timing range:

| | Unit | Min | Typical | Max |
|---------------------|------|-----|---------|-----|
| T _{on} | ms | -- | 1.5 | 5 |
| T _{por} | ms | -- | 2 | 20 |
| T _{xtal} | ms | -- | 1.5 | 8 |
| T _{attach} | ms | 100 | 250 | -- |
| T _{1v0} | ms | -- | 3 | 11 |
| T _{en} | ms | 0 | 0 | 5 |

7 Reference Design



Note: Module requires independent power supply , supply capacity $\geq 600\text{mA}$ and ripple less than 100mV; Do not share power with amplifier, infrared device, camera, etc.

8 Ordering Information

| Part No. | Description |
|---------------|---------------------------------------------------------------------------------------------|
| FG6221BUUC-00 | RTL8821CU, 802.11a/b/g/n/ac, Wi-Fi 1T1R, BT v4.2, USB2.0, 15x13mm, dual antennae (external) |

9 The Key Material List

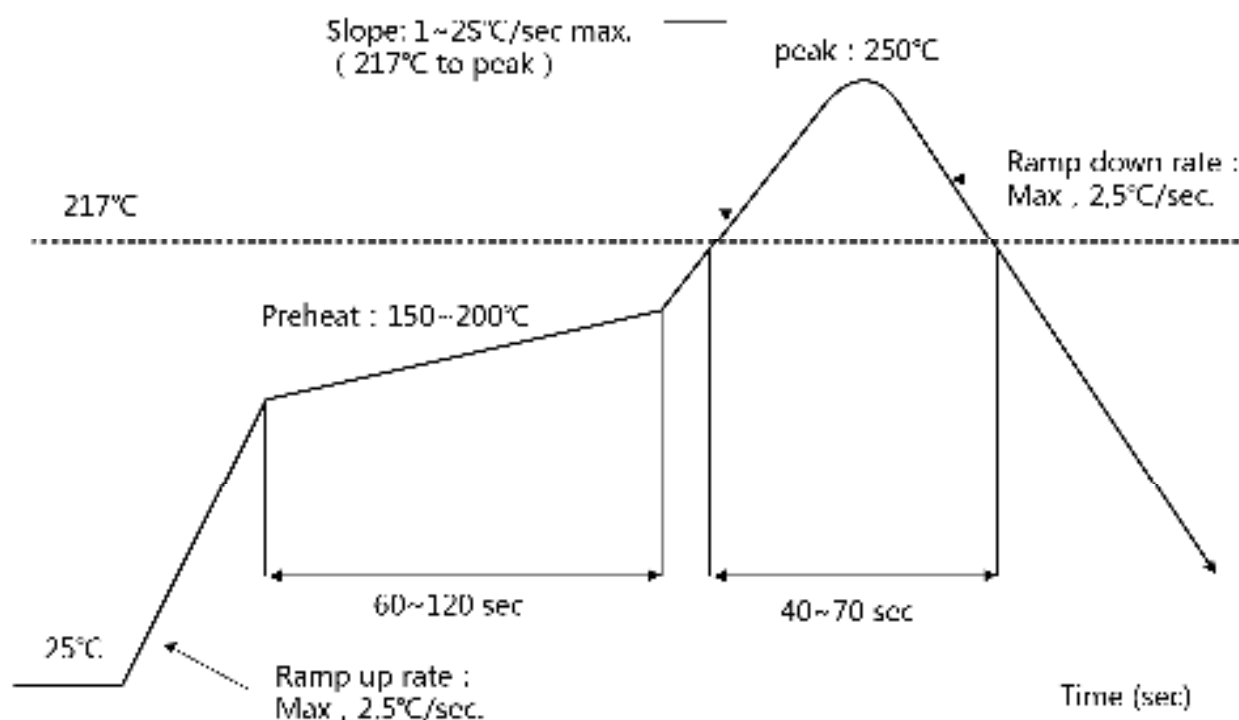
| | | |
|-------------|----------|----------------------------------------------------------|
| Main | Inductor | 0603 2.2UH,±20% 850mA MPH160809S2R2MT (Sunlord) |
| Alternative | Inductor | 0603, 2.2UH, 20%, 850mA, MGFL1608F2R2MT-LF (Microgate) |
| Main | Diplexer | DP1005-E2455FBT/LF (ACX) |
| Main | Crystal | 2520 40MHZ 15PF, 10ppm SX25Y040000BF1T-C (TKD) |
| Alternative | Crystal | 2520 40MHZ 15PF, 10ppm (TST) |
| Alternative | Crystal | 2520 40MHZ 15PF, 10ppm -30+85°C E2SB40E00001AE (HOSONIC) |
| Alternative | Crystal | 2520 40MHZ 15PF, 10ppm 8Z40000022 (TXC) |
| Main | Chipset | RTL8821CU-CG, QFN56 (Realtek) |

10 Recommended Reflow Profile

Referred to IPC/JEDEC standard.

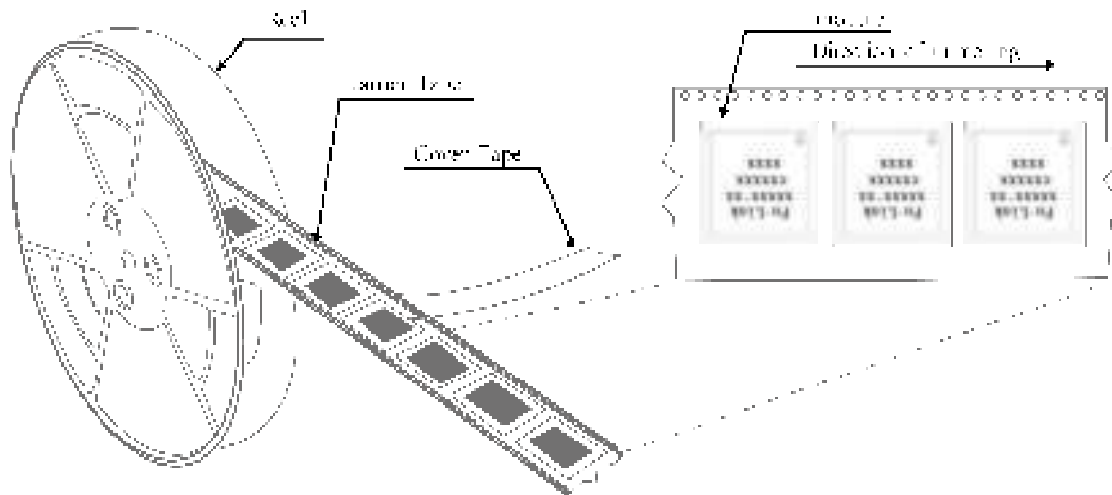
Peak Temperature : <250°C

Number of Times : ≤2 times



11 Package Information

11.1 Reel



11.2 Packaging Details

The take-up package:



Using self-adhesive tape
Color of plastic disc: blue



NY bag size: TBD



Internal box size: TBD



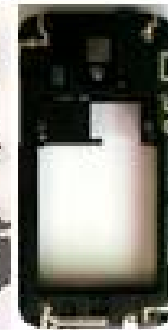
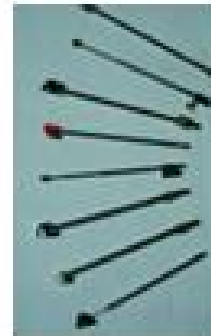
Carton size: TBD

11.3 Moisture Sensitivity

The modules is a Moisture Sensitive Level 3 device, in according with standard IPC/JEDEC J-STD-020, take care of all the requirements for this kind of components.

Moreover, please pay attention to following conditions:

- a) Calculated shelf life in sealed bag: 12 months at <40°C and <90% RH
- b) Environmental condition during the production: 30°C / 60% RH according to IPC/JEDEC J-STD-033A paragraph 5
- c) The maximum time between the opening of the sealed bag and the reflow process must be 168 hours if condition
- b) IPC/JEDEC J-STD-033A paragraph 5 is respected
- d) Baking is required if conditions b) or c) are not respected
- e) Baking is required if the humidity indicator inside the bag indicates 10% RH or more



天线测试报告 V1.0

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日期: 2020.08.12

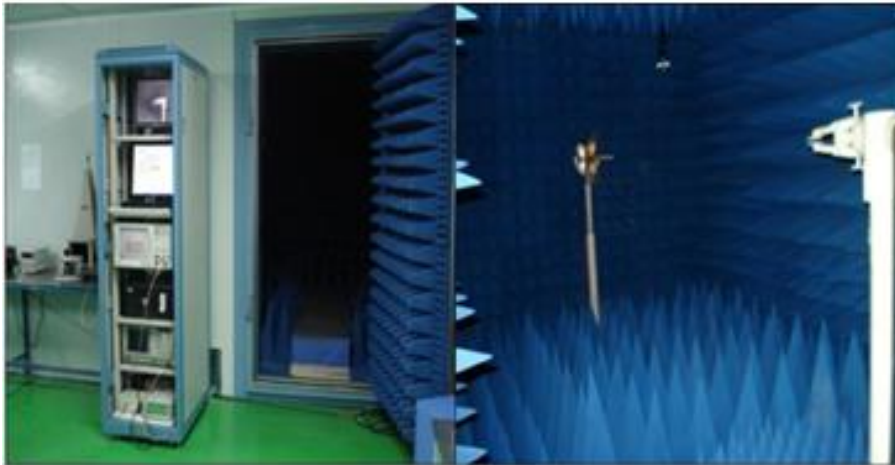
目录

| | |
|---|------|
| 1 | 匹配电路 |
| 2 | 无源图 |
| 3 | 无源效率 |
| 4 | 天线图纸 |
| 5 | |
| 6 | |



测试环境

- 天线特性使用ETS测试系统微波暗室，微波暗室尺寸7m x 4m x 3m，测试频率700MHz---6GHz.
- S11 测试使用Agilent E5071B 网络分析仪



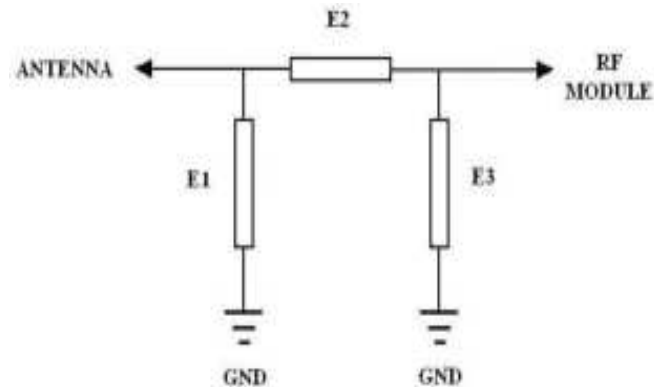
微波暗室



Agilent E5071B 网络分析仪

1.匹配电路:

匹配电路是否有改动: 否

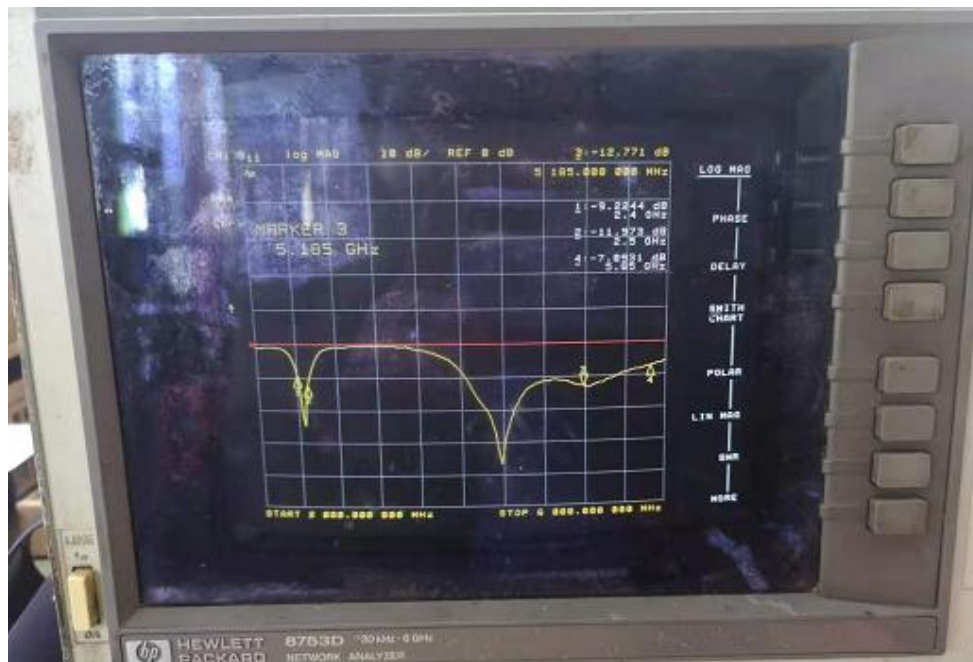


WIFI

| Element | Value |
|---------|-------|
| E1 | 无 |
| E2 | 无 |
| E3 | 无 |

2.无源图

回波损耗图



Smith 图

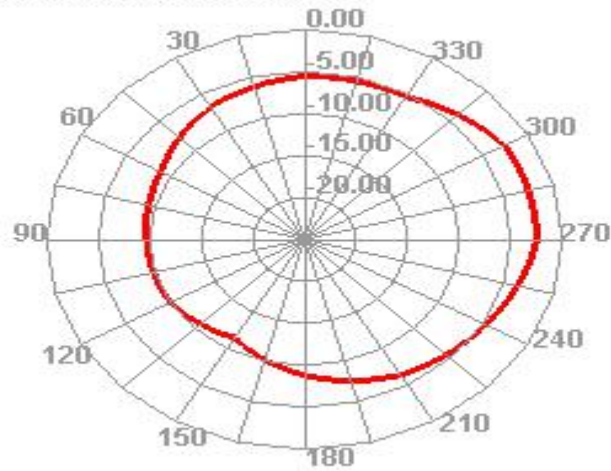


3.无源效率

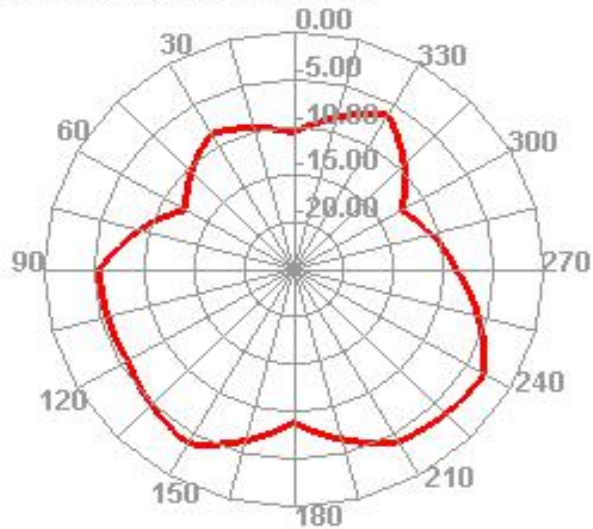
2.4-2.5GHz

| Freq (MHz) | Effi (%) | Effi (dB) | Gain (dBi) |
|---------------|-------------|--------------|---------------|
| 2400 | 36.65 | -4.52 | 2.35 |
| 2410 | 35.79 | -4.35 | 2.07 |
| 2420 | 35.46 | -4.67 | 2.02 |
| 2430 | 37.56 | -4.51 | 2.37 |
| 2440 | 38.27 | -3.21 | 2.75 |
| 2450 | 40.45 | -3.72 | 2.88 |
| 2460 | 42.16 | -3.75 | 2.89 |
| 2470 | 42.71 | -4.45 | 2.82 |
| 2480 | 39.54 | -4.73 | 2.24 |
| 2490 | 38.78 | -4.57 | 2.18 |
| 2500 | 37.68 | -4.34 | 2.34 |

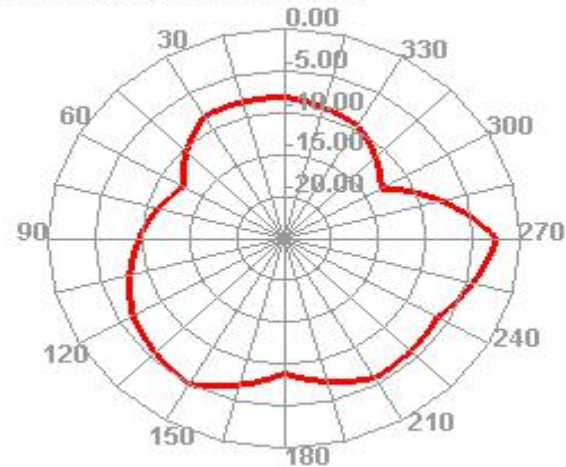
2410.000MHz H



2410.000MHz E1



2410.000MHz E2



3.无源效率

5.15-5.85GHz

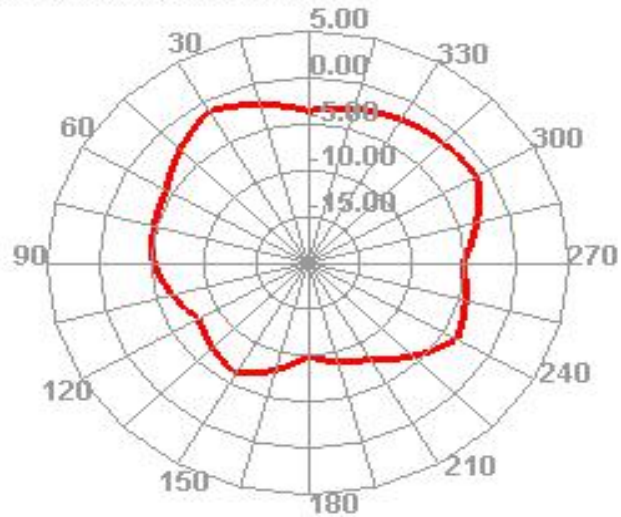
| Freq (MHz) | Effi (%) | Effi (dB) | Gain (dBi) |
|---------------|-------------|--------------|---------------|
| 5150 | 45.35 | -4.52 | 1.29 |
| 5160 | 45.97 | -4.44 | 1.46 |
| 5170 | 48.22 | -4.18 | 1.56 |
| 5180 | 44.5 | -4.62 | 1.41 |
| 5190 | 41.11 | -5.07 | 1.55 |
| 5200 | 43.7 | -4.72 | 1.17 |
| 5210 | 45.95 | -4.44 | 1.12 |
| 5220 | 49.46 | -4.04 | 1.55 |
| 5230 | 47.61 | -4.25 | 1.26 |
| 5240 | 44.74 | -4.59 | 1.09 |
| 5250 | 43.25 | -4.78 | 1.21 |
| 5260 | 44.62 | -4.61 | 1.23 |
| 5270 | 49.71 | -4.01 | 1.67 |
| 5280 | 47.84 | -4.22 | 1.48 |
| 5290 | 47.87 | -4.22 | 1.58 |
| 5300 | 43.76 | -4.72 | 1.19 |
| 5310 | 42.91 | -4.83 | 1.11 |
| 5320 | 49.02 | -4.09 | 1.05 |
| 5330 | 48.92 | -4.1 | 1.17 |
| 5340 | 49.25 | -4.06 | 1.3 |
| 5350 | 47.64 | -4.24 | 1.29 |
| 5360 | 44.33 | -4.64 | 1.87 |

| Freq (MHz) | Effi (%) | Effi (dB) | Gain (dBi) |
|---------------|-------------|--------------|---------------|
| 5380 | 39.52 | -4.03 | 1.69 |
| 5390 | 40.41 | -3.93 | 1.88 |
| 5400 | 43.63 | -3.6 | 2.26 |
| 5410 | 40.2 | -3.96 | 1.95 |
| 5420 | 41.62 | -3.81 | 2.19 |
| 5430 | 42.65 | -3.7 | 2.34 |
| 5440 | 45.97 | -3.38 | 2.64 |
| 5450 | 44.26 | -3.54 | 2.51 |
| 5460 | 42.71 | -3.69 | 2.28 |
| 5470 | 42.11 | -3.76 | 2.28 |
| 5480 | 41.56 | -3.81 | 2.21 |
| 5490 | 47.58 | -3.23 | 2.89 |
| 5500 | 46.8 | -3.3 | 2.82 |
| 5510 | 45 | -3.47 | 2.54 |
| 5520 | 42.84 | -3.68 | 2.35 |
| 5530 | 41.39 | -3.83 | 2.19 |
| 5540 | 45.51 | -3.42 | 2.56 |
| 5550 | 48.49 | -3.14 | 2.66 |
| 5560 | 47.63 | -3.22 | 2.77 |
| 5570 | 44.93 | -3.47 | 2.42 |
| 5580 | 42.91 | -3.67 | 2.2 |
| 5590 | 44.48 | -3.52 | 2.33 |
| 5600 | 46.5 | -3.33 | 2.39 |
| 5610 | 45.52 | -3.42 | 2.28 |

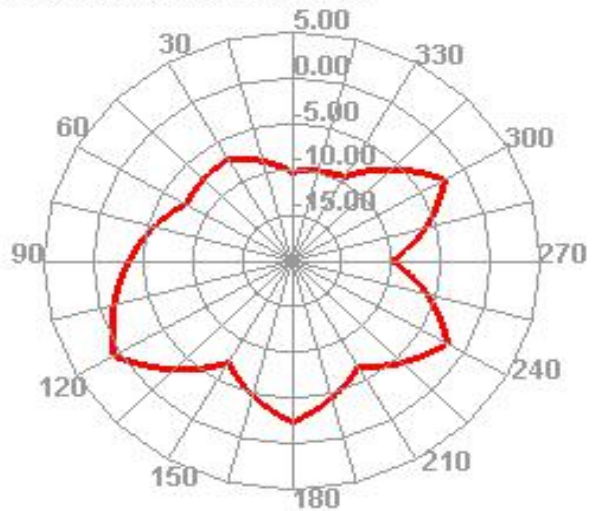
| Freq (MHz) | Effi (%) | Effi (dB) | Gain (dBi) |
|---------------|-------------|--------------|---------------|
| 5620 | 43.77 | -3.59 | 2.07 |
| 5630 | 42.17 | -3.75 | 1.91 |
| 5640 | 43.31 | -3.63 | 2.09 |
| 5650 | 46.75 | -3.3 | 2.42 |
| 5660 | 48.1 | -3.18 | 2.48 |
| 5670 | 46.61 | -3.31 | 2.11 |
| 5680 | 43.88 | -3.58 | 1.88 |
| 5690 | 42.45 | -3.72 | 1.6 |
| 5700 | 44.22 | -3.54 | 1.78 |
| 5710 | 47.77 | -3.21 | 2.09 |
| 5720 | 49.33 | -3.07 | 2.29 |
| 5730 | 46.31 | -3.34 | 1.73 |
| 5740 | 41.38 | -3.83 | 1.52 |
| 5750 | 40.92 | -3.88 | 1.25 |
| 5760 | 44.37 | -3.53 | 1.51 |
| 5770 | 46.85 | -3.29 | 1.8 |
| 5780 | 45.37 | -3.43 | 1.61 |
| 5790 | 39.09 | -4.08 | 0.92 |
| 5800 | 34.9 | -4.57 | 0.77 |
| 5810 | 37.56 | -4.25 | 0.87 |
| 5820 | 41.71 | -3.8 | 1.23 |
| 5830 | 45.11 | -3.46 | 1.41 |
| 5840 | 37.81 | -4.22 | 0.72 |
| 5850 | 32.38 | -4.9 | 0.66 |



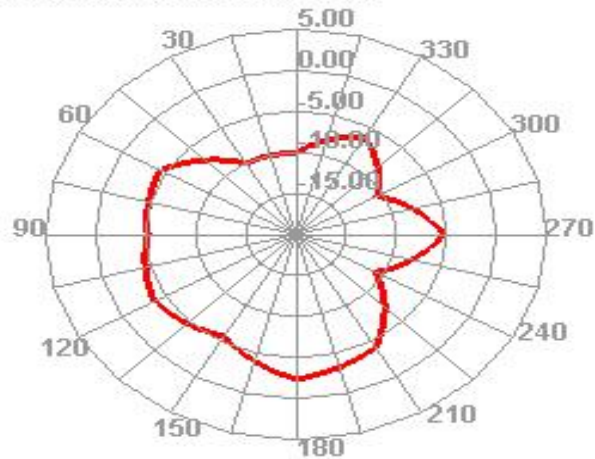
5180.000MHz H

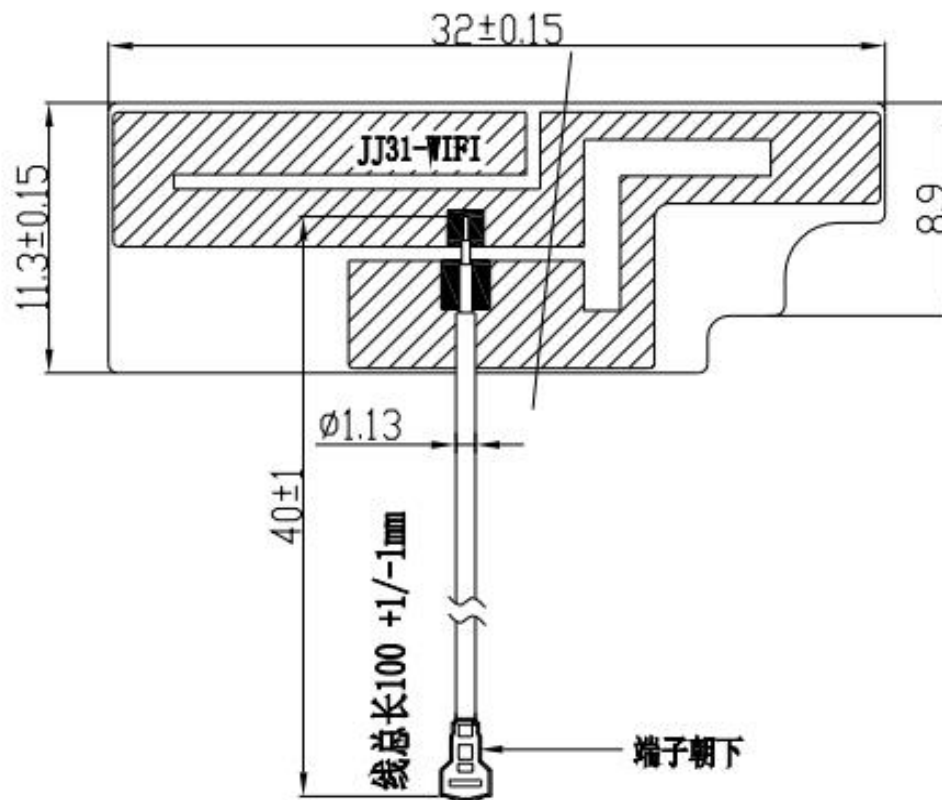


5180.000MHz E1



5180.000MHz E2





注:

1. 材料: FPC 基材: 1B/25, 表面颜色为哑光黑。
2. 反面整体背胶类型: 3M-9471LE。
3. 表面不可以有污染物、擦伤、黑点。
4. 镀镍厚度2~6um, 不可有镀镍后易断裂及脱落, 导电不良, 电路部分断裂等不良现象。
5. 背胶需要够盐冲击实验: 实验条件: -40~+85摄氏度 16个周期(一周期为30分钟)。
6. 该图为原尺寸比例图, *为重点管控尺寸

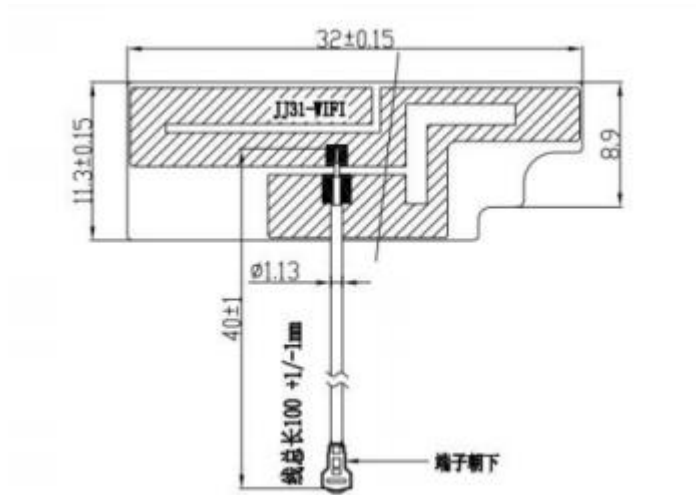
注: 所有孔均为通孔, 红色线为打断线。

| GENERAL TOLERANCE TABLE | | | | 深圳市勤新科技有限公司 | | | |
|-------------------------|-----------|------------|-----------|------------------|------|-------------|--------|
| DIMENSIONS | | TOLERANCES | | | | | |
| SIZE RANGE | TOLERANCE | SIZE RANGE | TOLERANCE | THE DRAWING CODE | DATE | REVISION | DATE |
| 0-40 | ±0.15 | 0-40 | ±0.15 | PROJECT NAME | DATE | PROJECT NO. | DATE |
| 40-60 | ±0.20 | 60-80 | ±0.25 | MATERIAL | NO. | APPROVED | DATE |
| 60-80 | ±0.25 | 80-100 | ±0.30 | SCALE | 1:1 | mm | 1 of 1 |

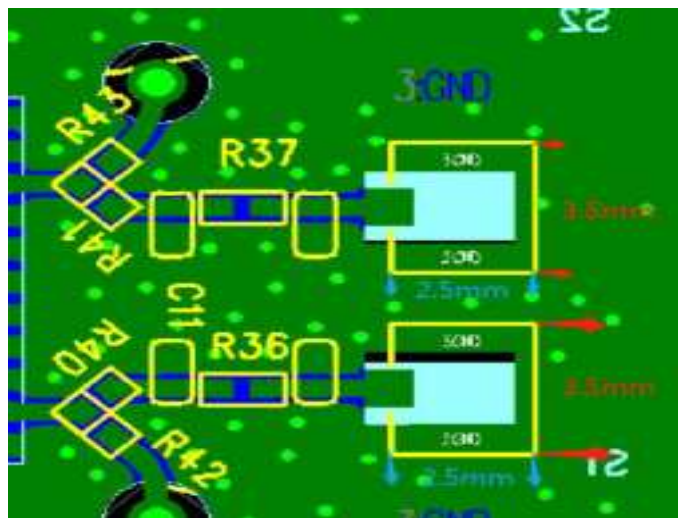


You can see antenna size is 32mm*11.3mm* From below Specification.

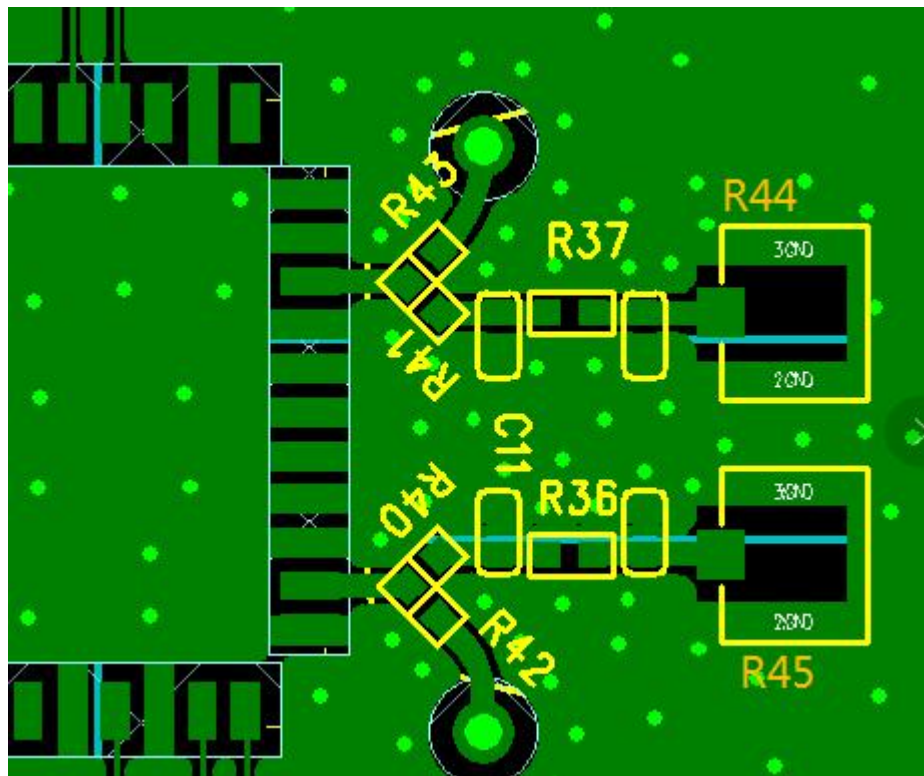
You can see antenna size is 32mm*11.3mm* From below Specification.



And PCB Pad size for IPEX terminal just follow the below chart.



The FPC antenna is connected to the PCB at the position of R43.R44, the RF line (the Line between the FPC antenna and Wifi Module) must be 50ohm.



| | |
|-----|--------|
| R36 | 0 ohm |
| R37 | 0 ohm |
| R40 | 0 ohm |
| R41 | 0 ohm |
| R44 | IPEX 2 |
| R45 | IPEX 1 |

Antenna info:
External antenna
Manufacture: HUNAN FN-LINK TECHNOLOGY LIMITED
Model: 6221B-UUC
Antenna gain 2.0dBi per antenna
Antenna number:2

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, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Any Changes or modifications 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.

We will retain control over the final installation of the modular such that compliance of the end product is assured. In such cases, an operating condition on the limit modular approval for the module must be only approved for use when installed in devices produced by a specific manufacturer. If any hardware modify or RF control software modify will be made by host manufacturer, C2PC or new certificate should be apply to get approval, if those change and modification made by host manufacturer not expressly approved by the party responsible for compliance, then it is illegal.

FCC Radiation Exposure Statement

The modular can be installed or integrated in mobile or fix devices only. This modular cannot be installed in any portable device.

This modular complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. This modular must be installed and operated with a minimum distance of 20 cm between the radiator and user body.

If the FCC identification number is not visible when the module is installed inside another device, then the outside of the device into which the module is installed must also display a label referring to the enclosed module. This exterior label can use wording such as the following: "Contains Transmitter Module FCC ID: 2AATL-F12ASUM13 Or Contains FCC ID: 2AATL-F12ASUM13"

When the module is installed inside another device, the user manual of the host must contain below warning statements;

1. 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.

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.

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

The devices must be installed and used in strict accordance with the manufacturer's instructions as described in the user documentation that comes with the product.

Any company of the host device which install this modular with limit modular approval should perform the test of radiated & conducted emission and spurious emission, etc. according to FCC part 15C : 15.247 and 15.407 and 15.209 & 15.207 , 15B Class B requirement, Only if the test result comply with FCC part 15C : 15.247 and 15.407 and 15.209 & 15.207 , 15B Class B requirement, then the host can be sold legally.