# TPV Component Specification

**Basic Information / 基本信息**

| TPV Part No. / 料号 | Supplier Part Name / 厂商型号 | Part Description / 品名描述 | |
|---|---|---|---|
| 368GWFBT018TCL | **WCT5GM2511** | **WiFi Module** | |
| Supplier Name / 厂商名称 | TPV Vendor Code / 厂商代码 | Manufacturing Location / 制造产地 | |
| **惠州高盛达科技有限公司** | **3736501** | **广东惠州** | |
| Safety Parts / 安规零件 | YES ☐ NO ■ | Net Weight / 净重(g) | 10.2±3% |

**Environmental Guarantee / 环境保证**

1. All raw materials of supplied parts should be met TPV latest version standard (RDEMS-01) and the requirement of regional or country laws and ordinances.
   料件之所有原材料必须符合 TPV 环境物质管理最新版本标准( RDEMS-01)及销售国家、地区的法律法规及机型申请适用之条例。
2. All raw materials of supplied parts comply below requirements or not (mark "√" in the "☐" if item complies; mark "×" in the "☐" if not).
   料件之所有原材料是否符合以下所列项目的环保要求？符合的项目，请在"☐"中打"√" ；不符合，请"☐"中打"×"。
   ☐ Free of halogen (Not contain any halogen in products or parts) / 无卤（部件不含任何卤素）
   ☐ Low halogen / 低卤 (According TPV standard RDEMS-01) /(依照 TPV RDEMS-01 标准 )
   ☐ Not contained any red phosphorus / 不含红磷
   ☐ VOCs / 挥发性有机物 (According TPV standard RDEMS-01) /(依照 TPV RDEMS-01 标准 )

**Important Notice / 重点说明**

1. Any specification change for component, especially following items: Raw Material, Process, Tooling, Factory, Label, halftone, and any engineering changed of production, should be approved by TPV.
   零件的任何变更，尤其原材、制程、模具、产地、标识、网版、以及任何生产之变更，必须得到 TPV 之承认。
2. Any engineering change for component should be in version record, supplier should provide management information for old version parts to TPV if required.
   任何零件之工程变更必须有版本记录，如需要，厂商必须提供库存之旧料管理信息状况。
3. Safety parts should be ensured that all safety certificate is complete and in the period of validity. Any change of safety certificate should be noticed to TPV timely and phased-in after approved by TPV.
   安规零件，须保证各项安规证书齐全且在有效期内。安规证书等任何变更必须及时报备 TPV，且必须得到 TPV 认可后导入。

**Supplier Information / 厂商信息**

| | | | | | |
|---|---|---|---|---|---|
| Prepared<br>承办 | 秦楠 | Check<br>确认 | 陈宇科 | Approved<br>核准 | 熊运自 |
| Tel.<br>电话 | 0752-209932 | Fax<br>传真 | / | Email<br>邮件 | Qinnan@gaosd.cn |
| Address<br>地址 | 广东省惠州市仲恺高新开发区华星路 2 号 | | | | |

## VERSION RECORD

| VERSION | DESCRIPTION OF CHANGE | OWNER | RELEASE DATE |
|---|---|---|---|
| A | Original Version | 秦楠 | 2019-05-10 |
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# IEEE 802.11 a/b/g/n/ac 2T/2R Dual Band USB Combo Module Integrated Bluetooth V2.1/3.0/4.2/5.0

**Model Number: WCT5GM2511**

(MediaTek：MT7668AU )

(本产品采用**GSD**提供的**MAC**地址)

| 客户认可<br>Custom Approval Section | | |
|---|---|---|
| Custom Name | | |
| Department | | |
| Approval | | Date： |

| 拟制<br>DESIGN | 审核<br>CHECK | 批准<br>APPROVAL |
|---|---|---|
| 秦楠 | 陈宇科 | 熊运自 |
| 2018-09-26 | 2018-09-26 | 2018-09-26 |

惠 州 高 盛 达 科 技 有 限 公 司
HUIZHOU GAOSHENGDA TECHNOLOGY CO.,LTD

中国惠州仲恺高新技术开发区华星路 **2** 号

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# Document revision history

| Revision | Date | Approved by | Remarks |
|---|---|---|---|
| Version 1.0 | 2018-09-26 | | Draft |
| Version 1.1 | 2018-12-20 | | 外形图更新 |
| Version 1.2 | 2019-03-20 | | Add: BT Antenna |
| Version 1.3 | 2019-05-10 | | Add: Package |
| Version 1.4 | 2019-07-10 | | Add: Product Picture |
| Version 1.5 | 2019-07-17 | | Add: SMT connector |
| Version 1.6 | 2019-07-29 | | Updata：Product Picture |
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# 1. General Description

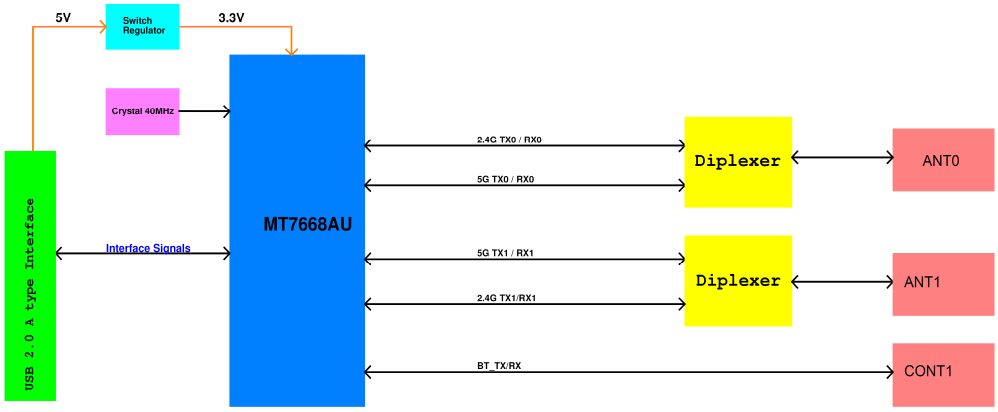
This document is to specify the product requirements for 802.11a/b/g/n/ac and BT combo module. This module based on MediaTek MT7668AU chipset that complied with IEEE 802.11b, IEEE 802.11g, IEEE 802.11n standard from 2.4~2.5GHz and IEEE 802.11a, IEEE 802.11ac , IEEE 802.11n standard from 5.15GHz ~ 5.85GHz , and it can be used to provide up to 11Mbps for IEEE 802.11b, 54Mbps for IEEE 802.11g, 300Mbps for 802.11n, 866.7Mbps for 802.11ac to connect your wireless LAN.The Bluetooth part supports latest 5.0+HS operation.

# 2. Features

- Compatible with IEEE 802.11a standard to provide wireless 54Mbps data rate
- Compatible with IEEE 802.11b standard to provide wireless 11Mbps data rate
- Compatible with IEEE 802.11g standard to provide wireless 54Mbps data rate
- Compatible with IEEE 802.11n standard to provide wireless 300Mbps data rate
- Compatible with IEEE 802.11ac standard to provide wireless 866.7Mbps date rate.
- Support 20MHz, 40MHz bandwidth in 2.4GHz band
- Support 20MHz, 40MHz, 80MHz bandwidth in 5GHz band
- Support MU-MIMO RX and DBDC (dual band dual concurrent)
- Support STBC, LDPC, TX Beamformer and RX Beamformee
- Greenfield, mixed mode, legacy modes support
- IEEE 802.11 d/e/h/i/j/k/mc/r/v/w support
- Security support for WFA WPA/WPA2 personal, WPS2.0, WAPI
- QoS support of WFA WMM, WMM PS
- Bluetooth specification 2.1+EDR
- Bluetooth 4.2 Low Energy (LE)
- Bluetooth 5.0
- High speed USB 2.0 interface
- RoHS compliant

# 3. Application Diagrams

## 3.1 Functional Block Diagram




## 3.2 General Requirements

### *3.2.1 IEEE 802.11b Section*

| | Feature | Detailed Description |
|---|---|---|
| 3.2.1.1 | Standard | ● IEEE 802.11b |
| 3.2.1.2 | Radio and Modulation Schemes | ● DQPSK , DBPSK and CCK with DSSS |
| 3.2.1.3 | Operating Frequency | ● 2400 ～ 2483.5MHz ISM band |
| 3.2.1.4 | Channel Numbers | ● 13 channels for Worldwide ; 11 channels for USA |
| 3.2.1.5 | Data Rate | ● at most 11Mbps |
| 3.2.1.6 | Media Access Protocol | ● CSMA/CA with ACK |
| 3.2.1.7 | Transmitter Output Power at Antenna Connector | ● Typical RF Output Power at each RF chain,and at room Temp. 25℃<br>● 18.14 dBm at 11Mbps （MAX） |
| 3.2.1.8 | Receiver Sensitivity at Antenna Connector | ● Typical Sensitivity at each RF chain. @Frame (1000-byte PDUs) Error Rate<8% at room Temp 25℃<br>● -83 dBm for 11Mbps |

### *3.2.2 IEEE 802.11g Section*

| | Feature | Detailed Description |
|---|---|---|
| 3.2.2.1 | Standard | ● IEEE 802.11g |
| 3.2.2.2 | Radio and Modulation Type | ● QPSK , BPSK , 16QAM ,64QAM with OFDM |
| 3.2.2.3 | Operating Frequency | ● 2400 ～ 2483.5MHz ISM band |
| 3.2.2.4 | Channel Numbers | ● 13 channels for Worldwide；11 channels for USA |
| 3.2.2.5 | Data Rate | ● at most 54Mbps |
| 3.2.2.6 | Media Access Protocol | ● CSMA/CA with ACK |
| 3.2.2.7 | Transmitter Output Power at Antenna Connector | ● Typical RF Output Power at each RF chain, at room Temp. 25℃<br>● 16.94 dBm at 54Mbps （MAX） |
| 3.2.2.8 | Receiver Sensitivity at Antenna Connector | ● Typical Sensitivity at each RF chain. @Frame (1000-byte PDUs) Error Rate<10% at room Temp 25℃<br>● -71 dBm for 54Mbps |

### *3.2.3 IEEE 802.11a Section*

| | Feature | Detailed Description |
|---|---|---|
| 3.2.3.1 | Standard | ● IEEE 802.11a |
| 3.2.3.2 | Radio and Modulation Type | ● QPSK , BPSK , 16QAM ,64QAM with OFDM |
| 3.2.3.3 | Operating Frequency | ● 5.15~5.25GHz<br>● 5.725~5.825GHz |
| 3.2.3.4 | Data Rate | ● at most 54Mbps |
| 3.2.3.5 | Media Access Protocol | ● CSMA/CA with ACK |
| 3.2.3.6 | Transmitter Output Power at Antenna Connector | ● Typical RF Output Power at each RF chain, at room Temp. 25℃<br>● 18.4 dBm at 54Mbps （MAX） |
| 3.2.3.7 | Receiver Sensitivity at Antenna Connector | ● Typical Sensitivity at each RF chain. @Frame (1000-byte PDUs) Error Rate<10% at room Temp 25℃<br>● -71 dBm for 54Mbps |
| | | |

### *3.2.4 IEEE 802.11n Section*

| | Feature | Detailed Description | |
|---|---|---|---|
| 3.2.4.1 | Standard | • IEEE 802.11n | |
| 3.2.4.2 | Radio and Modulation Type | • BPSK , QPSK , 16QAM ,64QAM with OFDM | |
| 3.2.4.3 | Operating Frequency | • 2.4GHz :2400 ~ 2483.5MHz for ISM band<br>5GHz : 5.15~5.25GHz； 5.725~5.825GHz； | |
| 3.2.4.4 | Data Rate | at most 300 Mbps | |
| 3.2.4.5 | Media Access Protocol | • CSMA/CA with ACK | |
| 3.2.4.6 | Transmitter Output Power at Antenna Connector | • Typical RF Output Power at each RF chain,and at roomTemp. 25℃ | |
| | | • 2.4GHz Band/HT20<br>17.98dBm at MCS7 | • 2.4GHz Band/HT40<br>19.61dBm at MCS7 |
| | | • 5GHz Band/HT20<br>18.9dBm at MCS7 | • 5GHz Band/HT40<br>19.3dBm at MCS7 |
| 3.2.4.7 | Receiver Sensitivity at Antenna Connector | Typical Sensitivity at each RF chain. @Frame(1000-byte PDUs)Error Rate=10% and at room Temp. 25℃ | |
| | | 2.4GHz Band/HT20<br>●-68dBm at MCS7 | 2.4GHz Band/HT40<br>● -66dBm at MCS7 |
| | | 5GHz Band/HT20<br>● -68dBmat MCS7 | 5GHz Band/HT40<br>● -66dBm at MCS7 |

### 3.2.5 IEEE 802.11ac Section

| | Feature | Detailed Description |
|---|---|---|
| 3.2.5.1 | Standard | • IEEE 802.11ac |
| 3.2.5.2 | Radio and Modulation Type | • QPSK , BPSK , 16QAM ,64QAM,256QAM with OFDM |
| 3.2.5.3 | Operating Frequency | • 5GHz : 5.15~5.25GHz；<br>5.725~5.825GHz； |
| 3.2.5.4 | Data Rate | • at most 866.7 Mbps |
| 3.2.5.5 | Media Access Protocol | • CSMA/CA with ACK |
| 3.2.5.6 | Transmitter Output Power at Antenna Connector | ● Typical RF Output Power at each RF chain, at room Temp. 25℃<br>● 18.8 dBm HT20（MAX）<br>18.8 dBm HT40（MAX）<br>18.2 dBm HT80（MAX） |
| 3.2.5.7 | Receiver Sensitivity at Antenna Connector | Typical Sensitivity at each RF chain. @Frame(1000-byte PDUs)Error Rate<10% at room Temp 25℃ |

| | |
|---|---|
| 5GHz Band / HT20<br>• -64dBm at MCS8 | 5GHz Band / HT40<br>• -58dBm at MCS9 |
| 5GHz Band / HT80<br>• -55dBm at MCS9 | |

### 3.2.6 Bluetooth Section

| Feather | Description | | |
|---|---|---|---|
| **General specification** | | | |
| Bluetooth standard | Bluetooth V2.1,V3.0, V4.2 , V5.0 | | |
| Frequency band | 2402MHz-2480MHz | | |
| Channel Numbers | 79 channels for BDR+EDR<br>40 channels for BLE | | |
| Modulation | GFSK, π/4-DQPSK and 8DPSK | | |
| **RF specification** | | | |
| | Min（dBm） | Type（dBm） | Max（dBm） |
| BDR Output Power | | 5.9 | |
| BLE Output Power | | 4 | |
| Sensitive @BER=0.1% FOR GFSK(1Mbps) | | -86 | |
| Sensitive @BER=0.01% FOR π/4-DQPSK(2Mbps) | | -86 | |
| Sensitive @BER=0.01% FOR 8DPSK(3Mbps) | | -80 | |
| Maximum input level | GFSK(1Mbps) -20dBm | | |
| | π/4-DQPSK(2Mbps) -20dBm | | |
| | 8DQPSK(3Mbps) -20dBm | | |
| Sensitive @PER=30.8% FOR BLE | | -90 | |

# 4. Electrical and Thermal Characteristics

## 4.1 Temperature Limit Ratings

| Parameter | Minimum | Maximum | Units |
|---|---|---|---|
| Storage Temperature | -40 | +80 | C |
| Ambient Operating Temperature | 0 | 60 | C |
| Junction Temperature | 0 | 125 | C |

## 4.2 General Section

| | Feature | Detailed Description |
|---|---|---|
| 5.2.1 | Antenna Type | ● On- board PIFA Antenna(WIFI); I-PEX connector(BT) |
| 5.2.2 | Operating Voltage | ● 5V±10% |
| 5.2.3 | Current Consumption | ● ＜300mA@RX<br>● ＜1000mA@TX |
| 5.2.4 | Form Factor and Interface | ● High Speed USB2.0 Interface |

## 4.3 Software

| | |
|---|---|
| **Driver** | Windows, Linux, Android |
| **Security** | 64/128-bits WEP, WPA, WPA2 |

## 4.4 EEPROM Information

### BT

| | |
|---|---|
| **Vendor ID** | default |
| **Product ID** | default |

### WiFi

| | |
|---|---|
| **Reg Domain** | Worldwide 2.4G/5G<br>Read from registry；Control by driver |
| | —— |
| **Vendor ID** | default |
| **Product ID** | default |

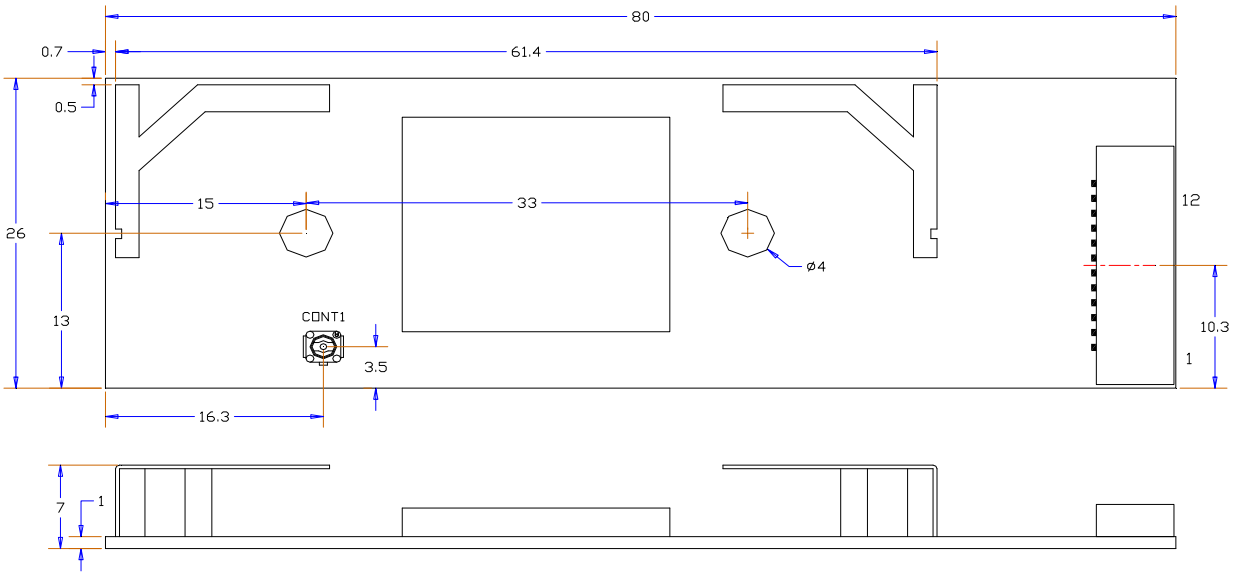
## 4.5 DC Characteristics

| Symbol | Parameter | Min | TYPE | Max | Unit |
|---|---|---|---|---|---|
| $V_{IL}$ | Input Low Voltage | -0.3 | | VDD3.3*0.25 | V |
| $V_{IH}$ | Input High Voltage | VDD3.3*0.625 | | VDD3.3+0.3 | V |
| $V_{OL}$ | Output Low Voltage | -0.3 | | 0.4 | V |
| $V_{OH}$ | Output High Voltage | VDD3.3-0.4 | | VDD3.3+0.3 | V |

## 4.6 Power consumption

| | mode | | | 正常使用 MAX 值 | | 瞬间启动 MAX 值 | |
|---|---|---|---|---|---|---|---|
| | | | | 2.4G | 5G | 2.4G | 5G |
| Power consumption | 正常使用（联网跑传输率） | Wifi | TX | 470mA | 570mA | 700mA | 940mA |
| | | | RX | 150mA | 160mA | 250mA | 260mA |
| | | BT | | 160mA | | 200mA | |
| | Idle Mode（联网不跑传输率） | | | 160mA | | | |

## 5、Mechanical Dimensions




CONT1：BT　RF

尺寸误差范围：

| DIM (MM) | Tolerance (MM) |
|---|---|
| 0-5 | ±0.15 |
| 5-10 | ±0.30 |
| 10-50 | ±0.50 |
| 50-100 | ±0.60 |

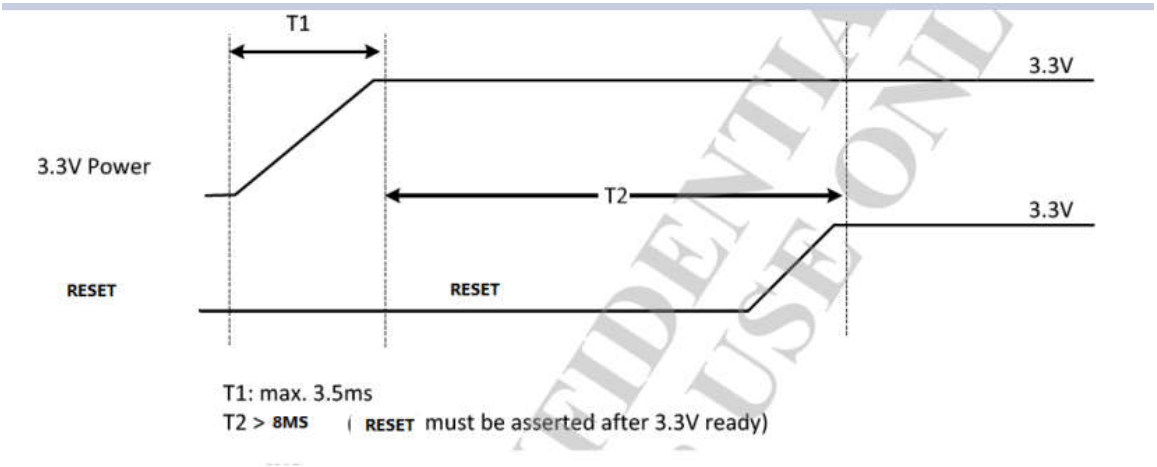
| Pin | Symbol | Remark | I/O |
|---|---|---|---|
| 1 | 5V | VDD 5V | I |
| 2 | 5V | VDD 5V | I |
| 3 | GND | GND | - |
| 4 | USB- DP | USB Communication signal USB-DP | I/O |
| 5 | USB -DM | USB Communication signal USB-DM | I/O |
| 6 | GND | GND | - |
| 7 | WOWLAN | Wake on Wireless LAN<br>（内有10K电阻到3.3V上拉），低电平有效 | O |
| 8 | GND | GND | - |
| 9 | BT-WAKE -HOST | BT wake up host（内有10K电阻到3.3V上拉），低电平有效 | 0 |
| 10 | RESET | Reset controlled by main SOC（内有10K电阻到3.3V上拉），低电平有效 | I |
| 11 | NC | - | - |
| 12 | NC | - | - |

## 6. Component preparation

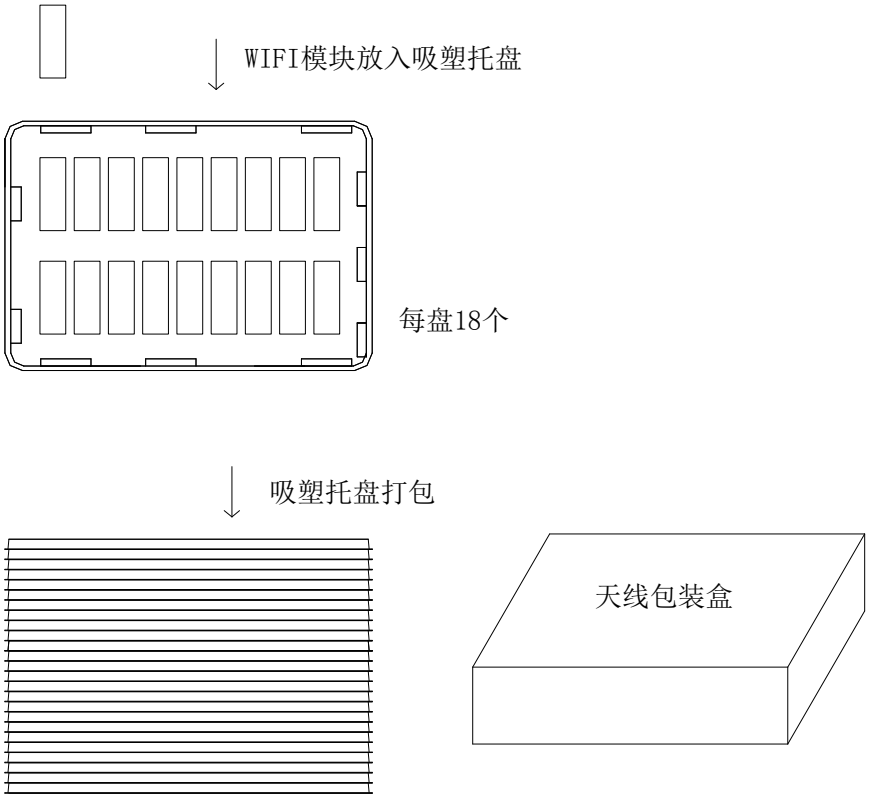
**Part List**

| 物料名称/ Type | 供应商品牌/ Manufacturer |
|---|---|
| 晶振/ Crystal oscillator | 晶宝时频 CREC/加高 HARMONY |
| 电阻/ Resistance | 华新科 Walsin /国巨 **Yageo** |
| WIFI 芯片/IC | MTK |
| 电容/ Capacitance | Murata（村田）/华新科 Walsin/国巨 **Yageo** |
| 电感/ Inductance | Murata（村田）/奇力新 CHILISIN |
| 印制板/PCB | 富智祥 FUZHIXIANG/科翔 KEXIANG |
| 双工器/IC | 华新科/ Walsin |
| 降压管（DC-DC） | FITI |
| SMT connector | 新富尔/豪益/新亚 |

## 7. Interface Timing Specification

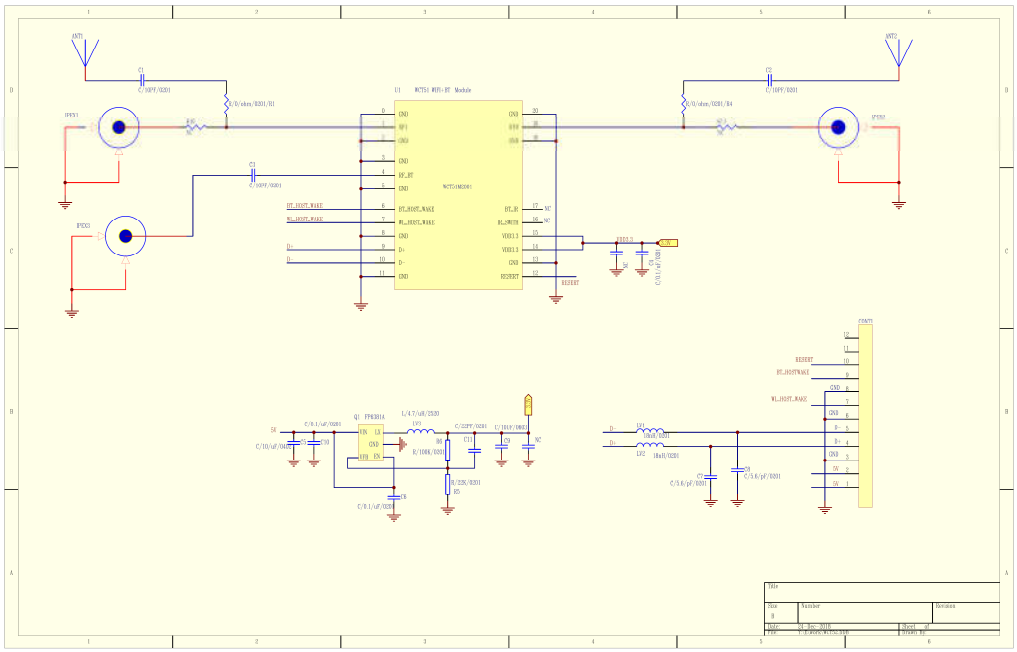


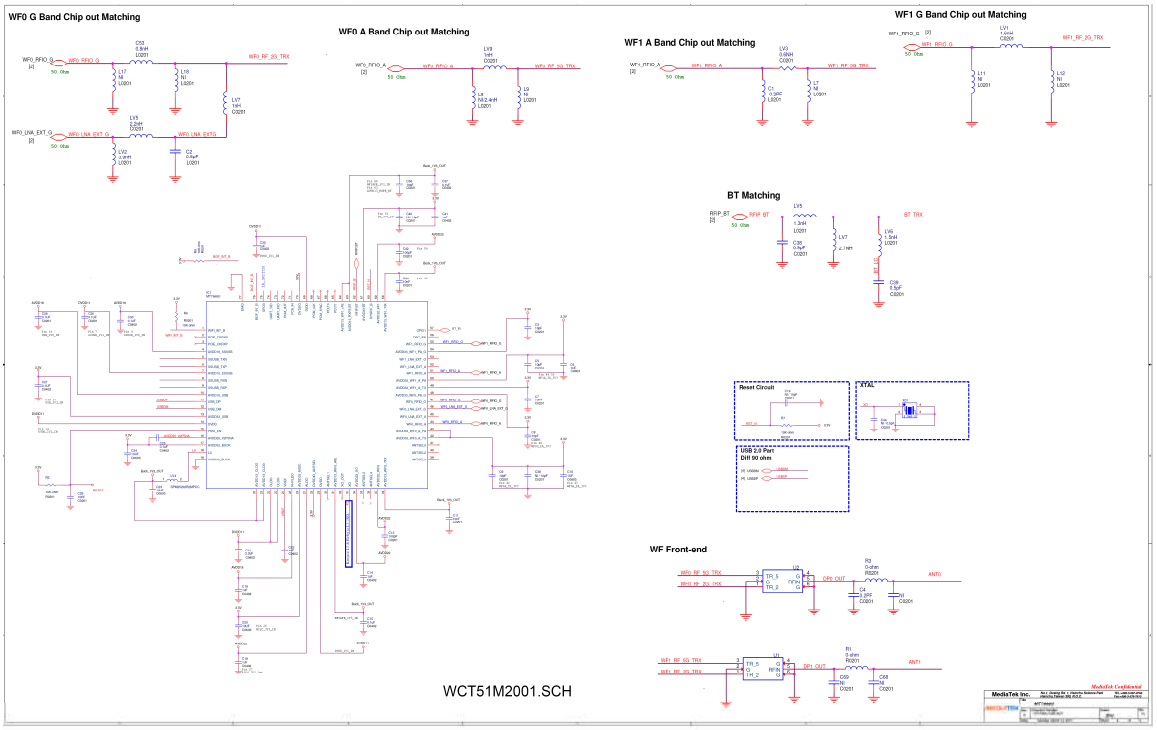
## 8. Package




外箱尺寸：340X253X200mmmm
一箱包装数量： WIFI 模块270只
相配的天线270只

## 9 :Schematic diagram

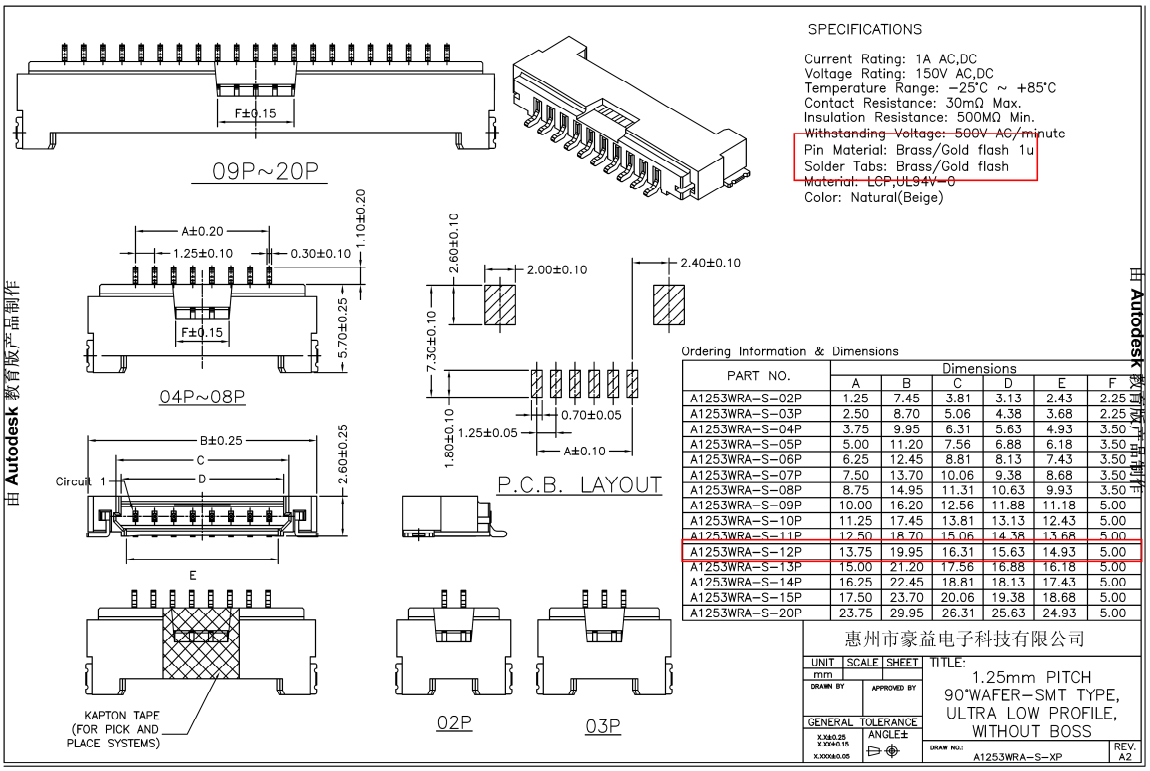




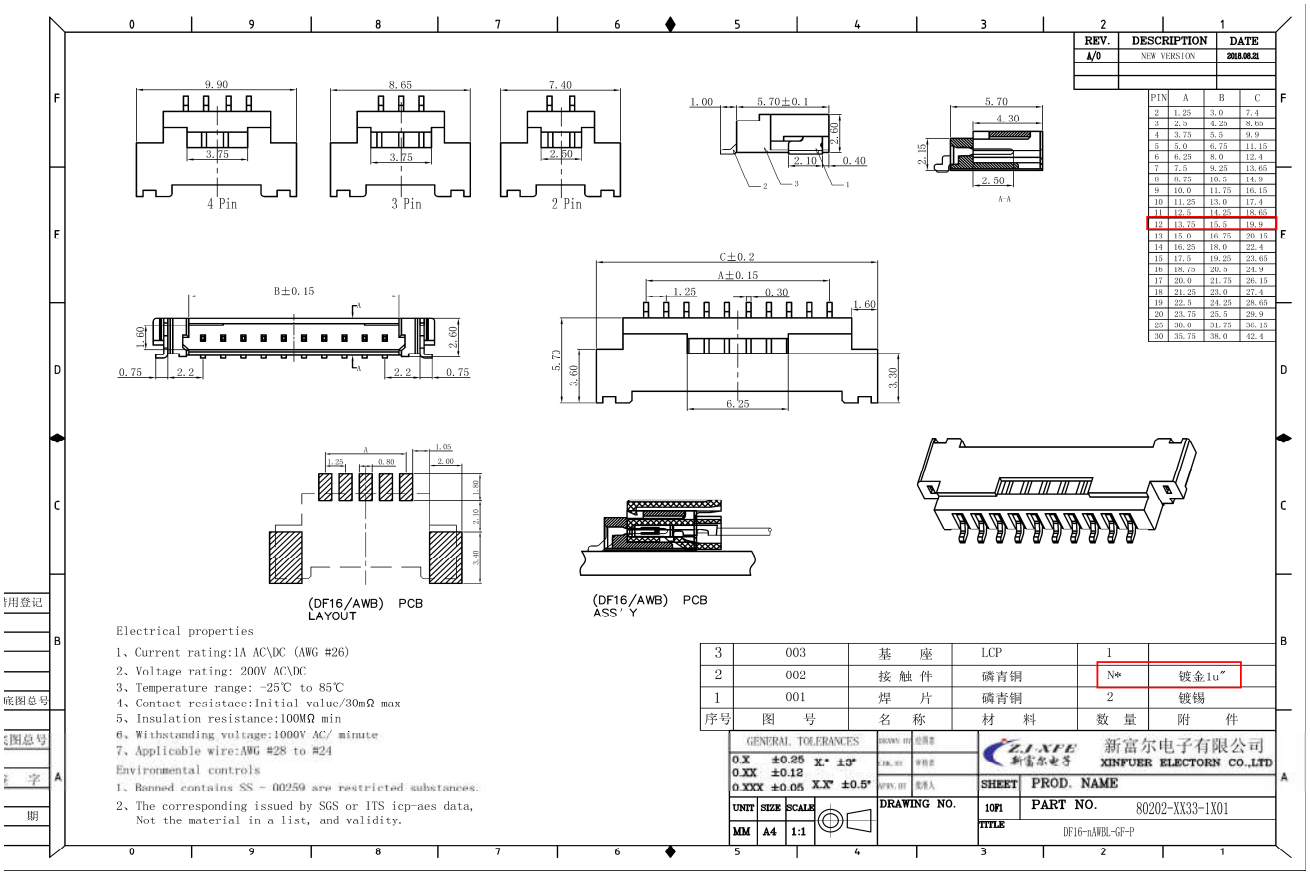
## 10. Product Picture



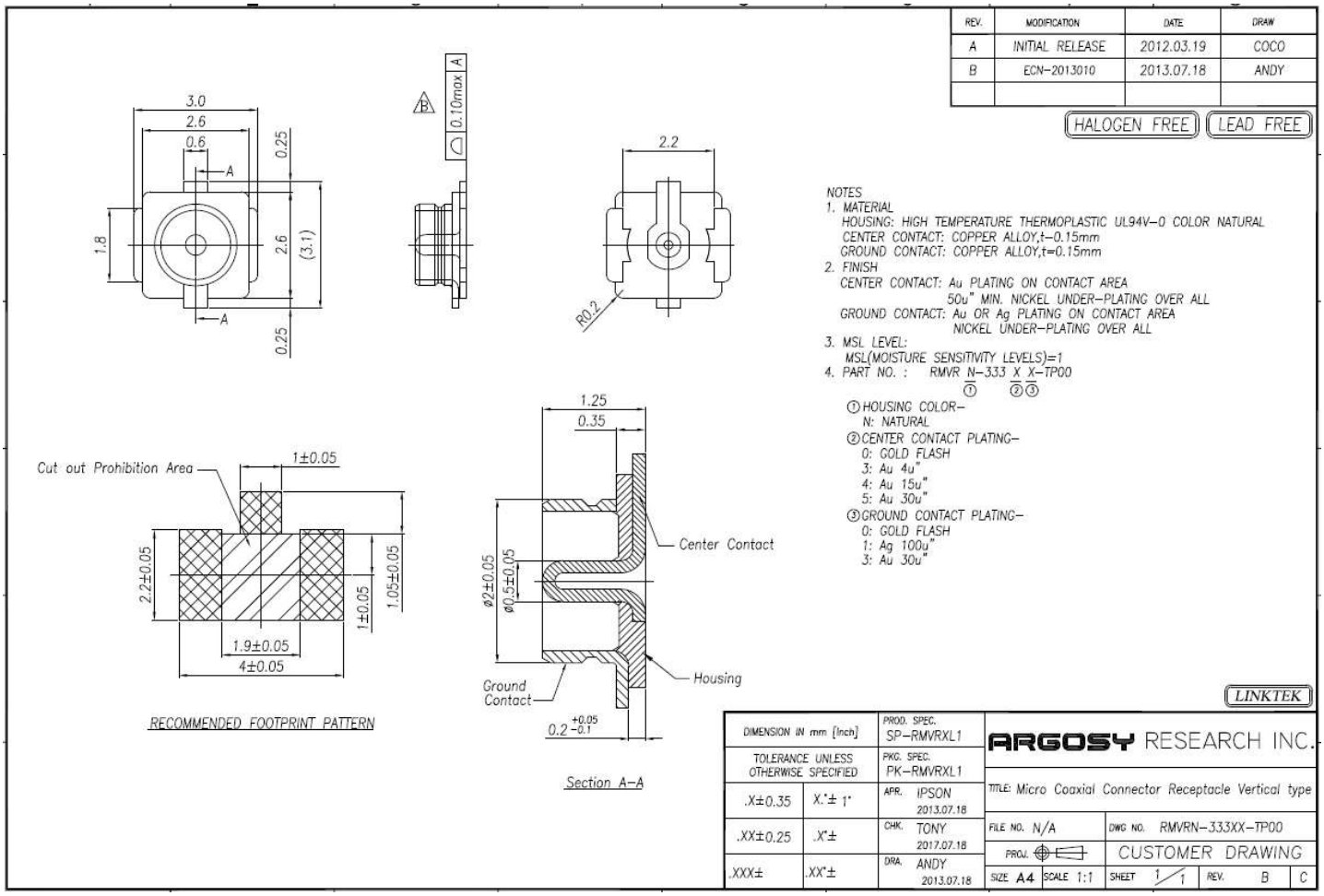

# 11、SMT connector



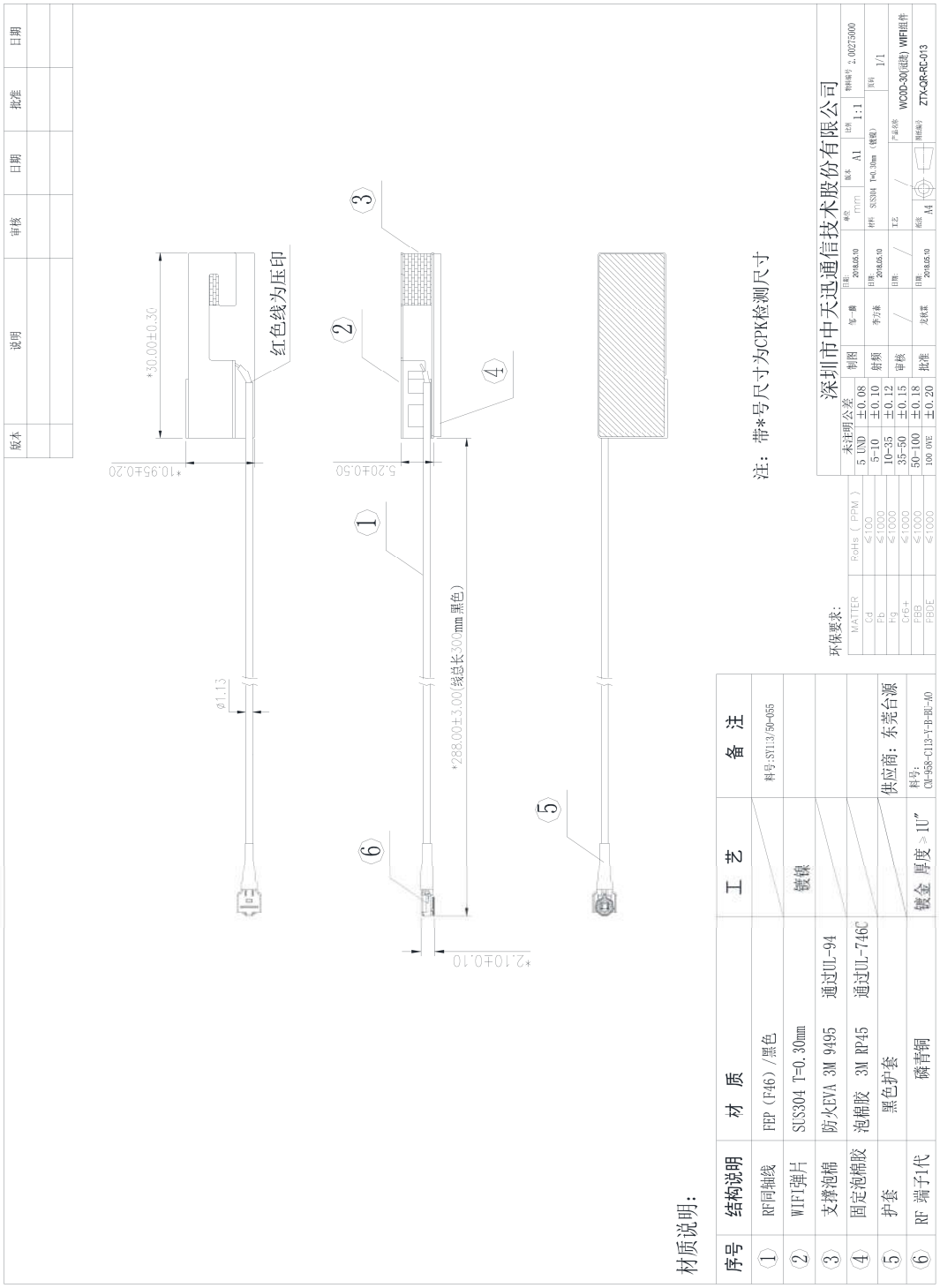

| PART NO. | Dimensions | | | | | |
|---|---|---|---|---|---|---|
| | A | B | C | D | E | F |
| A1253WRA-S-02P | 1.25 | 7.45 | 3.81 | 3.13 | 2.43 | 2.25 |
| A1253WRA-S-03P | 2.50 | 8.70 | 5.06 | 4.38 | 3.68 | 2.25 |
| A1253WRA-S-04P | 3.75 | 9.95 | 6.31 | 5.63 | 4.93 | 3.50 |
| A1253WRA-S-05P | 5.00 | 11.20 | 7.56 | 6.88 | 6.18 | 3.50 |
| A1253WRA-S-06P | 6.25 | 12.45 | 8.81 | 8.13 | 7.43 | 3.50 |
| A1253WRA-S-07P | 7.50 | 13.70 | 10.06 | 9.38 | 8.68 | 3.50 |
| A1253WRA-S-08P | 8.75 | 14.95 | 11.31 | 10.63 | 9.93 | 3.50 |
| A1253WRA-S-09P | 10.00 | 16.20 | 12.56 | 11.88 | 11.18 | 5.00 |
| A1253WRA-S-10P | 11.25 | 17.45 | 13.81 | 13.13 | 12.43 | 5.00 |
| A1253WRA-S-11P | 12.50 | 18.70 | 15.06 | 14.38 | 13.68 | 5.00 |
| A1253WRA-S-12P | 13.75 | 19.95 | 16.31 | 15.63 | 14.93 | 5.00 |
| A1253WRA-S-13P | 15.00 | 21.20 | 17.56 | 16.88 | 16.18 | 5.00 |
| A1253WRA-S-14P | 16.25 | 22.45 | 18.81 | 18.13 | 17.43 | 5.00 |
| A1253WRA-S-15P | 17.50 | 23.70 | 20.06 | 19.38 | 18.68 | 5.00 |
| A1253WRA-S-20P | 23.75 | 29.95 | 26.31 | 25.63 | 24.93 | 5.00 |



## Appendix 1 : I-PEX Connector




## Appendix 2 : BT Antenna




材质说明：

| 序号 | 结构说明 | 材 质 | 工 艺 | 备 注 |
|---|---|---|---|---|
| ① | RF同轴线 | FEP（F46）/黑色 | | 料号:ST13/50-055 |
| ② | WIFI弹片 | SUS304 T=0.30mm | 镀镍 | |
| ③ | 支撑泡棉 | 防火EVA 3M 9495 | 通过UL-94 | |
| ④ | 固定泡棉胶 | 泡棉胶 3M RP45 | 通过UL-746C | |
| ⑤ | 护套 | 黑色护套 | | 供应商：东莞台源 |
| ⑥ | RF 端子1代 | 磷青铜 | 镀金 厚度≥1U" | 料号:<br>CW-958-C113-Y-B-BU-40 |

环保要求：

| MATTER | RoHs（PPM） |
|---|---|
| Cd | ≤100 |
| Pb | ≤1000 |
| Hg | ≤1000 |
| Cr6+ | ≤1000 |
| PBB | ≤1000 |
| PBDE | ≤1000 |

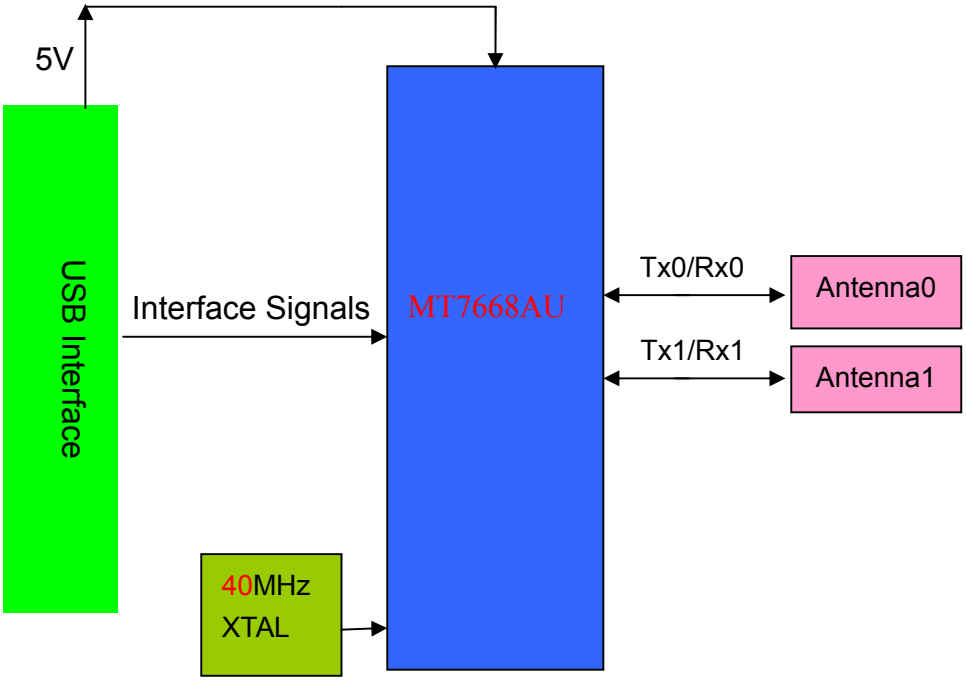
# 测 试 报 告

2T2R 11a/b/g/n/ac WLAN USB module DUT Report

| | |
|---|---|
| 产品名称： | 无线发射、接收模块 |
| 产品型号： | WCT5GM2511 |
| 检测目的： | 电性能测试 |
| 检测日期： | 2018.11.8 |
| 编　　号： | 18-11-6 |
| 拟　　制： | 钟意妮 |
| 审　　核： | 张森林 |
| 批　　准： | 陈宇科 |

# DUT information

Function block diagram

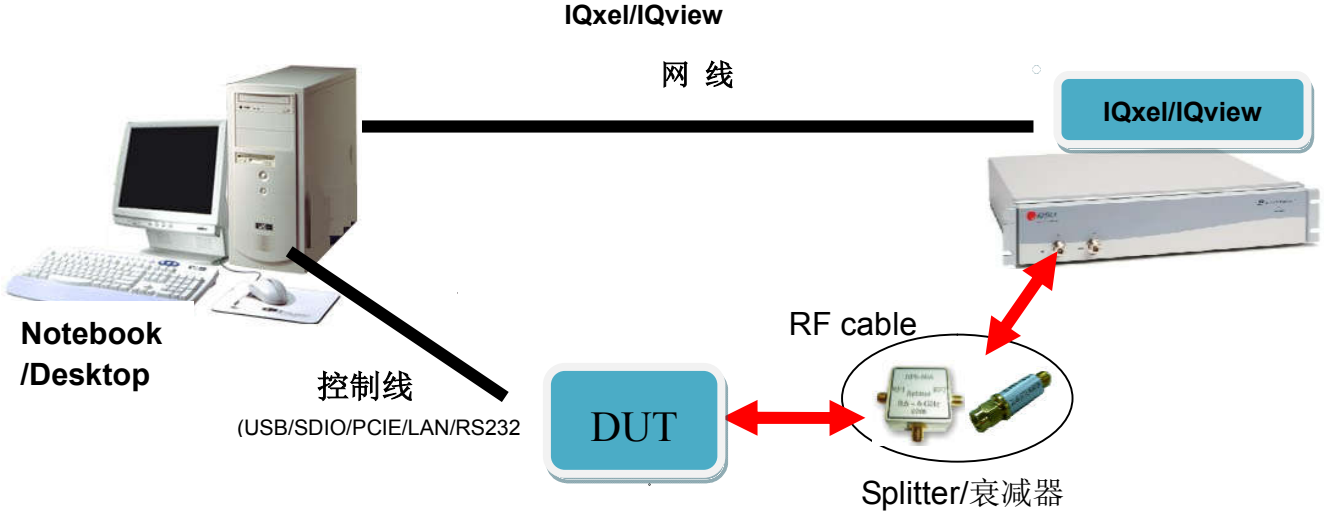



# Basic RF Testing

**Equipment**

1. Notebook/Desktop
2. QA test
3. IQxel/IQview

**Test Environment**



# 1.EVM & Transmitter Power

## 1.1 EVM

**Purpose**

The test is to measure the EVM of the DUT.

## 1.2 Transmitter Power

**Purpose**

The test is to measure the Device Under Test (DUT) transmitter maximum output power.

## 1.3 Transmit Center Frequency Tolerance

**Purpose**

To verify the transmitter (DUT) central frequency offset is within the specified limits.

## Tx Performance

11b mode (2.4G)

EVM test results

| Mode | Rate | ANT0(天线 0) | | | ANT1(天线 1) | | | Pass Criteria |
|---|---|---|---|---|---|---|---|---|
| | | Ch 1 | Ch 6 | Ch 11 | Ch 1 | Ch 6 | Ch 11 | |
| 11b CCK | 1Mbps | —— | —— | —— | —— | —— | —— | |
| | 2Mbps | —— | —— | —— | —— | —— | —— | |
| | 5.5Mbps | —— | —— | —— | —— | —— | —— | |
| | 11Mbps | -21.9 | -22.0 | -22.1 | -21.9 | -22.0 | -22.1 | **<-10dB** |

Transmitter power test results

| Mode | Rate | ANT0(天线 0) | | | ANT1(天线 1) | | | Pass Criteria |
|---|---|---|---|---|---|---|---|---|
| | | Ch 1 | Ch 6 | Ch 11 | Ch 1 | Ch 6 | Ch 11 | |
| 11b CCK | 1Mbps | —— | —— | —— | —— | —— | —— | |
| | 2Mbps | —— | —— | —— | —— | —— | —— | |
| | 5.5Mbps | —— | —— | —— | —— | —— | —— | |
| | 11Mbps | 16.5 | 16.6 | 16.6 | 17.0 | 17.1 | 17.2 | **16±2 dBm** |

Transmit Center Frequency Tolerance Test Result

| Mode | Rate | ANT0(天线 0) | | | ANT1(天线 1) | | | Pass Criteria |
|---|---|---|---|---|---|---|---|---|
| | | Ch 1 | Ch 6 | Ch 11 | Ch 1 | Ch 6 | Ch 11 | |
| 11b CCK | 1Mbps | —— | —— | —— | —— | —— | —— | **±10 PPm** |
| | 2Mbps | —— | —— | —— | —— | —— | —— | |
| | 5.5Mbps | —— | —— | —— | —— | —— | —— | |
| | 11Mbps | -1.5 | -1.4 | -1.3 | -0.5 | -1.3 | -1.2 | |

11g mode(2.4G)
EVM test results

| Mode | Rate | ANT0(天线 0) | | | ANT1(天线 1) | | | Pass Criteria |
|---|---|---|---|---|---|---|---|---|
| | | Ch 1 | Ch 6 | Ch 11 | Ch 1 | Ch 6 | Ch 11 | |
| 11g OFDM | 6 Mbps | —— | —— | —— | —— | —— | —— | |
| | 9 Mbps | —— | —— | —— | —— | —— | —— | |
| | 12 Mbps | —— | —— | —— | —— | —— | —— | |
| | 18 Mbps | —— | —— | —— | —— | —— | —— | |
| | 24 Mbps | —— | —— | —— | —— | —— | —— | |
| | 36 Mbps | —— | —— | —— | —— | —— | —— | |
| | 48 Mbps | —— | —— | —— | —— | —— | —— | |
| | 54 Mbps | -38.4 | -38.2 | -37.3 | -38.1 | -38.6 | -37.5 | **<-25dB** |

Transmitter power test results

| Mode | Rate | ANT0(天线 0) | | | ANT1(天线 1) | | | Pass Criteria |
|---|---|---|---|---|---|---|---|---|
| | | Ch 1 | Ch 6 | Ch 11 | Ch 1 | Ch 6 | Ch 11 | |
| 11g OFDM | 6 Mbps | —— | —— | —— | —— | —— | —— | |
| | 9 Mbps | —— | —— | —— | —— | —— | —— | |
| | 12 Mbps | —— | —— | —— | —— | —— | —— | |
| | 18 Mbps | —— | —— | —— | —— | —— | —— | |
| | 24 Mbps | —— | —— | —— | —— | —— | —— | |
| | 36 Mbps | —— | —— | —— | —— | —— | —— | |
| | 48 Mbps | —— | —— | —— | —— | —— | —— | |
| | 54 Mbps | 14.6 | 14.7 | 14.8 | 14.9 | 14.9 | 14.9 | **14±2 dBm** |

Transmit Center Frequency Tolerance Test Result

| Mode | Rate | ANT0(天线 0) | | | ANT1(天线 1) | | | Pass Criteria |
|---|---|---|---|---|---|---|---|---|
| | | Ch 1 | Ch 6 | Ch 11 | Ch 1 | Ch 6 | Ch 11 | |
| 11g OFDM | 6 Mbps | —— | —— | —— | —— | —— | —— | |
| | 9 Mbps | —— | —— | —— | —— | —— | —— | |
| | 12 Mbps | —— | —— | —— | —— | —— | —— | |
| | 18 Mbps | —— | —— | —— | —— | —— | —— | |
| | 24 Mbps | —— | —— | —— | —— | —— | —— | |
| | 36 Mbps | —— | —— | —— | —— | —— | —— | |
| | 48 Mbps | —— | —— | —— | —— | —— | —— | |
| | 54 Mbps | -0.4 | -0.8 | -1.2 | -0.8 | -0.4 | -0.9 | **±10 ppm** |

11n 20MHz mode(2.4G)

EVM test results

| Mode | Rate | ANT0(天线 0) | | | ANT1(天线 1) | | | Pass Criteria |
|---|---|---|---|---|---|---|---|---|
| | | Ch 1 | Ch 6 | Ch 11 | Ch 1 | Ch 6 | Ch 11 | |
| 11n HT20 | MCS0 | —— | —— | —— | —— | —— | —— | |
| | MCS1 | —— | —— | —— | —— | —— | —— | |
| | MCS2 | —— | —— | —— | —— | —— | —— | |
| | MCS3 | —— | —— | —— | —— | —— | —— | |
| | MCS4 | —— | —— | —— | —— | —— | —— | |
| | MCS5 | —— | —— | —— | —— | —— | —— | |
| | MCS6 | —— | —— | —— | —— | —— | —— | |
| | MCS7 | -37.1 | -36.5 | -36.9 | -36.2 | -36.1 | -36.6 | **<-28dB** |

Transmitter power test results

| Mode | Rate | ANT0(天线 0) | | | ANT1(天线 1) | | | Pass Criteria |
|---|---|---|---|---|---|---|---|---|
| | | Ch 1 | Ch 6 | Ch 11 | Ch 1 | Ch 6 | Ch 11 | |
| 11n HT20 | MCS0 | —— | —— | —— | —— | —— | —— | |
| | MCS1 | —— | —— | —— | —— | —— | —— | |
| | MCS2 | —— | —— | —— | —— | —— | —— | |
| | MCS3 | —— | —— | —— | —— | —— | —— | |
| | MCS4 | —— | —— | —— | —— | —— | —— | |
| | MCS5 | —— | —— | —— | —— | —— | —— | |
| | MCS6 | —— | —— | —— | —— | —— | —— | |
| | MCS7 | 14.0 | 14.1 | 14.1 | 14.4 | 14.3 | 14.3 | **13±2 dBm** |

Transmit Center Frequency Tolerance Test Result

| Mode | Rate | ANT0(天线 0) | | | ANT1(天线 1) | | | Pass Criteria |
|---|---|---|---|---|---|---|---|---|
| | | Ch 1 | Ch 6 | Ch 11 | Ch 1 | Ch 6 | Ch 11 | |
| 11n HT20 | MCS0 | —— | —— | —— | —— | —— | —— | |
| | MCS1 | —— | —— | —— | —— | —— | —— | |
| | MCS2 | —— | —— | —— | —— | —— | —— | |
| | MCS3 | —— | —— | —— | —— | —— | —— | |
| | MCS4 | —— | —— | —— | —— | —— | —— | |
| | MCS5 | —— | —— | —— | —— | —— | —— | |
| | MCS6 | —— | —— | —— | —— | —— | —— | |
| | MCS7 | -0.9 | -0.9 | -1.2 | -0.4 | -1.4 | -0.3 | **±10 PPm** |

11n 40MHz mode(2.4G)

EVM test results

| Mode | Rate | ANT0(天线 0) | | | ANT1(天线 1) | | | Pass Criteria |
|---|---|---|---|---|---|---|---|---|
| | | Ch 3 | Ch 7 | Ch 9 | Ch 3 | Ch 7 | Ch 9 | |
| 11n HT40 | MCS0 | —— | —— | —— | —— | —— | —— | |
| | MCS1 | —— | —— | —— | —— | —— | —— | |
| | MCS2 | —— | —— | —— | —— | —— | —— | |
| | MCS3 | —— | —— | —— | —— | —— | —— | |
| | MCS4 | —— | —— | —— | —— | —— | —— | |
| | MCS5 | —— | —— | —— | —— | —— | —— | |
| | MCS6 | —— | —— | —— | —— | —— | —— | |
| | MCS7 | -37.4 | -37.7 | -36.6 | -38.0 | -37.3 | -36.1 | **<-28dB** |

Transmitter power test results

| Mode | Rate | ANT0(天线 0) | | | ANT1(天线 1) | | | Pass Criteria |
|---|---|---|---|---|---|---|---|---|
| | | Ch 3 | Ch 7 | Ch 9 | Ch 3 | Ch 7 | Ch 9 | |
| 11n HT40 | MCS0 | —— | —— | —— | —— | —— | —— | |
| | MCS1 | —— | —— | —— | —— | —— | —— | |
| | MCS2 | —— | —— | —— | —— | —— | —— | |
| | MCS3 | —— | —— | —— | —— | —— | —— | |
| | MCS4 | —— | —— | —— | —— | —— | —— | |
| | MCS5 | —— | —— | —— | —— | —— | —— | |
| | MCS6 | —— | —— | —— | —— | —— | —— | |
| | MCS7 | 13.2 | 13.3 | 13.3 | 13.8 | 13.9 | 13.8 | **13±2 dBm** |

Transmit Center Frequency Tolerance Test Result

| Mode | Rate | ANT0(天线 0) | | | ANT1(天线 1) | | | Pass Criteria |
|---|---|---|---|---|---|---|---|---|
| | | Ch 3 | Ch 7 | Ch 9 | Ch 3 | Ch 7 | Ch 9 | |
| 11n HT40 | MCS0 | —— | —— | —— | —— | —— | —— | |
| | MCS1 | —— | —— | —— | —— | —— | —— | |
| | MCS2 | —— | —— | —— | —— | —— | —— | |
| | MCS3 | —— | —— | —— | —— | —— | —— | |
| | MCS4 | —— | —— | —— | —— | —— | —— | |
| | MCS5 | —— | —— | —— | —— | —— | —— | |
| | MCS6 | —— | —— | —— | —— | —— | —— | |
| | MCS7 | -0.6 | -0.8 | -0.9 | -0.4 | -1.1 | -1.3 | **±10 PPm** |

11a mode(5G)

EVM test results

| Mode | Rate | ANT0(天线 0) | | | ANT1(天线 1) | | | Pass Criteria |
|---|---|---|---|---|---|---|---|---|
| | | Ch 36 | Ch 100 | Ch 161 | Ch 36 | Ch 100 | Ch 161 | |
| 11a OFDM | 6 Mbps | —— | —— | —— | —— | —— | —— | |
| | 9 Mbps | —— | —— | —— | —— | —— | —— | |
| | 12 Mbps | —— | —— | —— | —— | —— | —— | |
| | 18 Mbps | —— | —— | —— | —— | —— | —— | |
| | 24 Mbps | —— | —— | —— | —— | —— | —— | |
| | 36 Mbps | —— | —— | —— | —— | —— | —— | |
| | 48 Mbps | —— | —— | —— | —— | —— | —— | |
| | 54 Mbps | -35.3 | -37.4 | -36.0 | -35.8 | -37.3 | -37.1 | **<-25dB** |

Transmitter power test results

| Mode | Rate | ANT0(天线 0) | | | ANT1(天线 1) | | | Pass Criteria |
|---|---|---|---|---|---|---|---|---|
| | | Ch 36 | Ch 100 | Ch 161 | Ch 36 | Ch 100 | Ch 161 | |
| 11a OFDM | 6 Mbps | —— | —— | —— | —— | —— | —— | |
| | 9 Mbps | —— | —— | —— | —— | —— | —— | |
| | 12 Mbps | —— | —— | —— | —— | —— | —— | |
| | 18 Mbps | —— | —— | —— | —— | —— | —— | |
| | 24 Mbps | —— | —— | —— | —— | —— | —— | |
| | 36 Mbps | —— | —— | —— | —— | —— | —— | |
| | 48 Mbps | —— | —— | —— | —— | —— | —— | |
| | 54 Mbps | 14.3 | 14.5 | 14.3 | 14.0 | 14.8 | 14.9 | **14±2 dBm** |

Transmit Center Frequency Tolerance Test Result

| Mode | Rate | ANT0(天线 0) | | | ANT1(天线 1) | | | Pass Criteria |
|---|---|---|---|---|---|---|---|---|
| | | Ch 36 | Ch 100 | Ch 161 | Ch 36 | Ch 100 | Ch 161 | |
| 11a OFDM | 6 Mbps | —— | —— | —— | —— | —— | —— | |
| | 9 Mbps | —— | —— | —— | —— | —— | —— | |
| | 12 Mbps | —— | —— | —— | —— | —— | —— | |
| | 18 Mbps | —— | —— | —— | —— | —— | —— | |
| | 24 Mbps | —— | —— | —— | —— | —— | —— | |
| | 36 Mbps | —— | —— | —— | —— | —— | —— | |
| | 48 Mbps | —— | —— | —— | —— | —— | —— | |
| | 54 Mbps | -1.4 | -1.5 | -2.1 | -1.6 | -1.8 | -1.4 | **±10 PPm** |

11n 20MHz mode(5G)

EVM test results

| Mode | Rate | ANT0(天线 0) | | | ANT1(天线 1) | | | Pass Criteria |
|---|---|---|---|---|---|---|---|---|
| | | Ch 36 | Ch 100 | Ch 161 | Ch 36 | Ch 100 | Ch 161 | |
| 11n HT20 | MCS0 | —— | —— | —— | —— | —— | —— | |
| | MCS1 | —— | —— | —— | —— | —— | —— | |
| | MCS2 | —— | —— | —— | —— | —— | —— | |
| | MCS3 | —— | —— | —— | —— | —— | —— | |
| | MCS4 | —— | —— | —— | —— | —— | —— | |
| | MCS5 | —— | —— | —— | —— | —— | —— | |
| | MCS6 | —— | —— | —— | —— | —— | —— | |
| | MCS7 | -34.5 | -35.1 | -35.2 | -34.8 | -36.0 | -35.6 | **<-28dB** |

Transmitter power test results

| Mode | Rate | ANT0(天线 0) | | | ANT1(天线 1) | | | Pass Criteria |
|---|---|---|---|---|---|---|---|---|
| | | Ch 36 | Ch 100 | Ch 161 | Ch 36 | Ch 100 | Ch 161 | |
| 11n HT20 | MCS0 | —— | —— | —— | —— | —— | —— | |
| | MCS1 | —— | —— | —— | —— | —— | —— | |
| | MCS2 | —— | —— | —— | —— | —— | —— | |
| | MCS3 | —— | —— | —— | —— | —— | —— | |
| | MCS4 | —— | —— | —— | —— | —— | —— | |
| | MCS5 | —— | —— | —— | —— | —— | —— | |
| | MCS6 | —— | —— | —— | —— | —— | —— | |
| | MCS7 | 13.1 | 13.3 | 13.3 | 13.1 | 13.8 | 13.7 | **13±2 dBm** |

Transmit Center Frequency Tolerance Test Result

| Mode | Rate | ANT0(天线 0) | | | ANT1(天线 1) | | | Pass Criteria |
|---|---|---|---|---|---|---|---|---|
| | | Ch 36 | Ch 100 | Ch 161 | Ch 36 | Ch 100 | Ch 161 | |
| 11n HT20 | MCS0 | —— | —— | —— | —— | —— | —— | |
| | MCS1 | —— | —— | —— | —— | —— | —— | |
| | MCS2 | —— | —— | —— | —— | —— | —— | |
| | MCS3 | —— | —— | —— | —— | —— | —— | |
| | MCS4 | —— | —— | —— | —— | —— | —— | |
| | MCS5 | —— | —— | —— | —— | —— | —— | |
| | MCS6 | —— | —— | —— | —— | —— | —— | |
| | MCS7 | -2.2 | -2.2 | -1.8 | -1.5 | -1.8 | -1.3 | **±10 PPm** |

11n 40MHz mode(5G)
EVM test results

| Mode | Rate | ANT0(天线 0) | | | ANT1(天线 1) | | | Pass Criteria |
|---|---|---|---|---|---|---|---|---|
| | | Ch 38 | Ch 102 | Ch 159 | Ch 38 | Ch 102 | Ch 159 | |
| 11n HT40 | MCS0 | —— | —— | —— | —— | —— | —— | |
| | MCS1 | —— | —— | —— | —— | —— | —— | |
| | MCS2 | —— | —— | —— | —— | —— | —— | |
| | MCS3 | —— | —— | —— | —— | —— | —— | |
| | MCS4 | —— | —— | —— | —— | —— | —— | |
| | MCS5 | —— | —— | —— | —— | —— | —— | |
| | MCS6 | —— | —— | —— | —— | —— | —— | |
| | MCS7 | -34.8 | -35.9 | -35.5 | -36.4 | -37.0 | -36.3 | **<-28dB** |

Transmitter power test results

| Mode | Rate | ANT0(天线 0) | | | ANT1(天线 1) | | | Pass Criteria |
|---|---|---|---|---|---|---|---|---|
| | | Ch 38 | Ch 102 | Ch 159 | Ch 38 | Ch 102 | Ch 159 | |
| 11n HT40 | MCS0 | —— | —— | —— | —— | —— | —— | |
| | MCS1 | —— | —— | —— | —— | —— | —— | |
| | MCS2 | —— | —— | —— | —— | —— | —— | |
| | MCS3 | —— | —— | —— | —— | —— | —— | |
| | MCS4 | —— | —— | —— | —— | —— | —— | |
| | MCS5 | —— | —— | —— | —— | —— | —— | |
| | MCS6 | —— | —— | —— | —— | —— | —— | |
| | MCS7 | 13.0 | 13.3 | 12.9 | 12.7 | 13.3 | 13.1 | **13±2 dBm** |

Transmit Center Frequency Tolerance Test Result

| Mode | Rate | ANT0(天线 0) | | | ANT1(天线 1) | | | Pass Criteria |
|---|---|---|---|---|---|---|---|---|
| | | Ch 38 | Ch 102 | Ch 159 | Ch 38 | Ch 102 | Ch 159 | |
| 11n HT40 | MCS0 | —— | —— | —— | —— | —— | —— | |
| | MCS1 | —— | —— | —— | —— | —— | —— | |
| | MCS2 | —— | —— | —— | —— | —— | —— | |
| | MCS3 | —— | —— | —— | —— | —— | —— | |
| | MCS4 | —— | —— | —— | —— | —— | —— | |
| | MCS5 | —— | —— | —— | —— | —— | —— | |
| | MCS6 | —— | —— | —— | —— | —— | —— | |
| | MCS7 | -1.4 | -1.6 | -1.6 | -0.7 | -1.2 | -1.1 | **±10 PPm** |

11ac 20MHz mode(5G)

EVM test results

| Mode | Rate | ANT0(天线 0) | | | ANT1(天线 1) | | | Pass Criteria |
|---|---|---|---|---|---|---|---|---|
| | | Ch 36 | Ch 100 | Ch 161 | Ch36 | Ch 100 | Ch 161 | |
| 11ac HT20 | MCS0 | —— | —— | —— | —— | —— | —— | |
| | MCS8 | -34.2 | -35.0 | -35.9 | -34.8 | -36.2 | -36.1 | <-30dB |

Transmitter power test results

| Mode | Rate | ANT0(天线 0) | | | ANT1(天线 1) | | | Pass Criteria |
|---|---|---|---|---|---|---|---|---|
| | | Ch 36 | Ch 100 | Ch 161 | Ch36 | Ch 100 | Ch 161 | |
| 11ac HT20 | MCS0 | —— | —— | —— | —— | —— | —— | |
| | MCS8 | 12.5 | 12.7 | 12.6 | 12.3 | 12.6 | 12.6 | 11±2 dBm |

Transmit Center Frequency Tolerance Test Result

| Mode | Rate | ANT0(天线 0) | | | ANT1(天线 1) | | | Pass Criteria |
|---|---|---|---|---|---|---|---|---|
| | | Ch 36 | Ch 100 | Ch 161 | Ch36 | Ch 100 | Ch 161 | |
| 11ac HT20 | MCS0 | —— | —— | —— | —— | —— | —— | |
| | MCS8 | -2.3 | -1.4 | -1.4 | -1.4 | -1.9 | -1.2 | ±10 PPm |

11ac 40MHz mode(5G)

EVM test results

| Mode | Rate | ANT0(天线 0) | | | ANT1(天线 1) | | | Pass Criteria |
|---|---|---|---|---|---|---|---|---|
| | | Ch 38 | Ch 102 | Ch 159 | Ch 38 | Ch 102 | Ch 159 | |
| 11ac HT40 | MCS8 | —— | —— | —— | —— | —— | —— | |
| | MCS9 | -35.0 | -36.3 | -35.3 | -35.8 | -37.0 | -37.2 | <-32dB |

Transmitter power test results

| Mode | Rate | ANT0(天线 0) | | | ANT1(天线 1) | | | Pass Criteria |
|---|---|---|---|---|---|---|---|---|
| | | Ch 38 | Ch 102 | Ch 159 | Ch 38 | Ch 102 | Ch 159 | |
| 11ac HT40 | MCS8 | —— | —— | —— | —— | —— | —— | |
| | MCS9 | 12.4 | 12.9 | 12.3 | 12.2 | 12.6 | 12.4 | 11±2 dBm |

Transmit Center Frequency Tolerance Test Result

| Mode | Rate | ANT0(天线 0) | | | ANT1(天线 1) | | | Pass Criteria |
|---|---|---|---|---|---|---|---|---|
| | | Ch 38 | Ch 102 | Ch 159 | Ch 38 | Ch 102 | Ch 159 | |
| 11ac HT40 | MCS8 | —— | —— | —— | —— | —— | —— | |
| | MCS9 | -2.2 | -1.6 | -3.1 | -1.4 | -0.7 | -0.6 | ±10 PPm |

11ac 80MHz mode(5G)

EVM test results

| Mode | Rate | ANT0(天线 0) | | | ANT1(天线 1) | | | Pass Criteria |
|---|---|---|---|---|---|---|---|---|
| | | Ch 42 | Ch 106 | Ch 155 | Ch 42 | Ch 106 | Ch 155 | |
| 11ac HT80 | MCS0 | —— | —— | —— | —— | —— | —— | |
| | MCS9 | -35.8 | -35.2 | -35.3 | -36.1 | -36.4 | -36.3 | <-32dB |

Transmitter power test results

| Mode | Rate | ANT0(天线 0) | | | ANT1(天线 1) | | | Pass Criteria |
|---|---|---|---|---|---|---|---|---|
| | | Ch 42 | Ch 106 | Ch 155 | Ch 42 | Ch 106 | Ch 155 | |
| 11ac HT80 | MCS0 | —— | —— | —— | —— | —— | —— | |
| | MCS9 | 12.6 | 12.8 | 12.3 | 12.2 | 12.6 | 12.4 | 11±2 dBm |

Transmit Center Frequency Tolerance Test Result

| Mode | Rate | ANT0(天线 0) | | | ANT1(天线 1) | | | Pass Criteria |
|---|---|---|---|---|---|---|---|---|
| | | Ch 42 | Ch 106 | Ch 155 | Ch 42 | Ch 106 | Ch 155 | |
| 11ac HT80 | MCS0 | —— | —— | —— | —— | —— | —— | |
| | MCS9 | -2.8 | -2.7 | -2.6 | -1.3 | -1.3 | -1.7 | ±10 PPm |

## 1.4 Receiver Sensitivity

**Purpose**

To verify receiver minimum input level of the DUT.

**11b mode (2.4G)**

| Mode | Rate | ANT0(天线 0) | | | ANT1(天线 1) | | | Pass Criteria |
|---|---|---|---|---|---|---|---|---|
| | | Ch 1 | Ch 6 | Ch 11 | Ch 1 | Ch 6 | Ch 11 | |
| 11b CCK | 1Mbps | —— | —— | —— | —— | —— | —— | |
| | 2Mbps | —— | —— | —— | —— | —— | —— | |
| | 5.5Mbps | —— | —— | —— | —— | —— | —— | |
| | 11Mbps | -91 | -90.5 | -90.5 | -90 | -90 | -90 | ≦ -76dBm |

**11g mode (2.4G)**

| Mode | Rate | ANT0(天线 0) | | | ANT1(天线 1) | | | Pass Criteria |
|---|---|---|---|---|---|---|---|---|
| | | Ch 1 | Ch 6 | Ch 11 | Ch 1 | Ch 6 | Ch 11 | |
| 11g OFDM | 6 Mbps | —— | —— | —— | —— | —— | —— | |
| | 9 Mbps | —— | —— | —— | —— | —— | —— | |
| | 12 Mbps | —— | —— | —— | —— | —— | —— | |
| | 18 Mbps | —— | —— | —— | —— | —— | —— | |
| | 24 Mbps | —— | —— | —— | —— | —— | —— | |
| | 36 Mbps | —— | —— | —— | —— | —— | —— | |
| | 48 Mbps | —— | —— | —— | —— | —— | —— | |
| | 54 Mbps | -78.5 | -78 | -78 | -77.5 | -77.5 | -77.5 | ≦ -65dBm |

**11n 20MHz(2.4G)**

| Mode | Rate | ANT0(天线 0) | | | ANT1(天线 1) | | | Pass Criteria |
|---|---|---|---|---|---|---|---|---|
| | | Ch 1 | Ch 6 | Ch 11 | Ch 1 | Ch 6 | Ch 11 | |
| 11N HT20 | MCS0 | —— | —— | —— | —— | —— | —— | |
| | MCS1 | —— | —— | —— | —— | —— | —— | |
| | MCS2 | —— | —— | —— | —— | —— | —— | |
| | MCS3 | —— | —— | —— | —— | —— | —— | |
| | MCS4 | —— | —— | —— | —— | —— | —— | |
| | MCS5 | —— | —— | —— | —— | —— | —— | |
| | MCS6 | —— | —— | —— | —— | —— | —— | |
| | MCS7 | -77 | -76.5 | -76.5 | -76 | -76 | -76 | ≦ -64dBm |

**11n 40MHz(2.4G)**

| Mode | Rate | ANT0(天线 0) | | | ANT1(天线 1) | | | Pass Criteria |
|---|---|---|---|---|---|---|---|---|
| | | Ch 3 | Ch 7 | Ch 9 | Ch 3 | Ch 7 | Ch 9 | |
| 11N HT40 | MCS0 | —— | —— | —— | —— | —— | —— | |
| | MCS1 | —— | —— | —— | —— | —— | —— | |
| | MCS2 | —— | —— | —— | —— | —— | —— | |
| | MCS3 | —— | —— | —— | —— | —— | —— | |
| | MCS4 | —— | —— | —— | —— | —— | —— | |
| | MCS5 | —— | —— | —— | —— | —— | —— | |
| | MCS6 | —— | —— | —— | —— | —— | —— | |
| | MCS7 | -74 | -74 | -73.5 | -73 | -73 | -73 | ≦ -61dBm |

**11a mode (5G)**

| Mode | Rate | ANT0(天线 0) | | | ANT1(天线 1) | | | Pass Criteria |
|---|---|---|---|---|---|---|---|---|
| | | Ch 36 | Ch 100 | Ch 161 | Ch 36 | Ch 100 | Ch 161 | |
| 11a OFDM | 6 Mbps | —— | —— | —— | —— | —— | —— | |
| | 9 Mbps | —— | —— | —— | —— | —— | —— | |
| | 12 Mbps | —— | —— | —— | —— | —— | —— | |
| | 18 Mbps | —— | —— | —— | —— | —— | —— | |
| | 24 Mbps | —— | —— | —— | —— | —— | —— | |
| | 36 Mbps | —— | —— | —— | —— | —— | —— | |
| | 48 Mbps | —— | —— | —— | —— | —— | —— | |
| | 54 Mbps | -77 | -77.5 | -77 | -77.5 | -77.5 | -77.5 | ≦ -65dBm |

**11n 20MHz(5G)**

| Mode | Rate | ANT0(天线 0) | | | ANT1(天线 1) | | | Pass Criteria |
|---|---|---|---|---|---|---|---|---|
| | | Ch 36 | Ch 100 | Ch 161 | Ch 36 | Ch 100 | Ch 161 | |
| 11N HT20 | MCS0 | —— | —— | —— | —— | —— | —— | |
| | MCS1 | —— | —— | —— | —— | —— | —— | |
| | MCS2 | —— | —— | —— | —— | —— | —— | |
| | MCS3 | —— | —— | —— | —— | —— | —— | |
| | MCS4 | —— | —— | —— | —— | —— | —— | |
| | MCS5 | —— | —— | —— | —— | —— | —— | |
| | MCS6 | —— | —— | —— | —— | —— | —— | |
| | MCS7 | -75.5 | -76 | -75.5 | -76 | -76 | -75.5 | ≦ -64dBm |

**11n 40MHz(5G)**

| Mode | Rate | ANT0(天线 0) | | | ANT1(天线 1) | | | Pass Criteria |
|---|---|---|---|---|---|---|---|---|
| | | Ch 38 | Ch 102 | Ch 159 | Ch 38 | Ch 102 | Ch 159 | |
| 11N HT40 | MCS0 | —— | —— | —— | —— | —— | —— | |
| | MCS1 | —— | —— | —— | —— | —— | —— | |
| | MCS2 | —— | —— | —— | —— | —— | —— | |
| | MCS3 | —— | —— | —— | —— | —— | —— | |
| | MCS4 | —— | —— | —— | —— | —— | —— | |
| | MCS5 | —— | —— | —— | —— | —— | —— | |
| | MCS6 | —— | —— | —— | —— | —— | —— | |
| | MCS7 | -72.5 | -73 | -72.5 | -73 | -73 | -73 | ≦ -61dBm |

**11ac HT20 mode (5G)**

| Mode | Rate | ANT0(天线 0) | | | ANT1(天线 1) | | | Pass Criteria |
|---|---|---|---|---|---|---|---|---|
| | | Ch 36 | Ch100 | Ch 161 | Ch36 | Ch 100 | Ch 161 | |
| 11ac HT20 误包率 PER≦10% | MCS0 | —— | —— | —— | —— | —— | —— | |
| | MCS8 | -70.5 | -71 | -70.5 | -71 | -71 | -71 | ≦-59dBm |

**11ac HT40 mode (5G)**

| Mode | Rate | ANT0(天线 0) | | | ANT1(天线 1) | | | Pass Criteria |
|---|---|---|---|---|---|---|---|---|
| | | Ch 38 | Ch 102 | Ch 159 | Ch 38 | Ch 102 | Ch159 | |
| 11ac HT40 误包率 PER≦10% | MCS0 | —— | —— | —— | —— | —— | —— | |
| | MCS9 | -66.5 | -66.5 | -66.5 | -66.5 | -66.5 | -66.5 | ≦-54dBm |

**11ac HT80 mode (5G)**

| Mode | Rate | ANT0(天线 0) | | | ANT1(天线 1) | | | Pass Criteria |
|---|---|---|---|---|---|---|---|---|
| | | Ch 42 | Ch 106 | Ch 155 | Ch 42 | Ch 106 | Ch 155 | |
| 11ac HT80 误包率 PER≦10% | MCS0 | —— | —— | —— | —— | —— | —— | |
| | MCS9 | -63 | -63 | -62.5 | -63 | -63 | -63 | ≦-51dBm |

## 1.5 The TX average current test results(mA) 只做记录

| Mode | | mA |
|---|---|---|
| 2.4G | CCK 1Mbps | 250 |
| | HT20 MCS8(双) | 420 |
| | HT40 MCS8(双) | 330 |
| 5G | HT20 MCS8(双) | 420 |
| | HT40 MCS8(双) | 400 |

## 1.6 The RX average current test results(mA) 只做记录

| Mode | | mA |
|---|---|---|
| 5G | 11AC80 MCS9 | 110 |

**This is a module device, when it was installed to the host device, the host device should be labeled with“ Contains FCC ID:ARS-WCT5GM2511”or “Contains IC: 9190A-WCT5GM2511”**

| |
|---|
| **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.** |

| |
|---|
| **FCC CAUTION**<br>**Changes or modifications not expressly approved by the party responsible for compliance could void the user’s authority to operate the equipment.** |

| |
|---|
| **This transmitter must not be co-located or operated in conjunction with any other antenna or transmitter.** |

| |
|---|
| **This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment and meets the FCC radio frequency (RF) Exposure Guidelines. This equipment should be installed and operated keeping the radiator at least 20cm or more away from person’s body.** |

**[for ISED(IC)]**

| |
|---|
| **This device contains licence-exempt transmitters/receivers that comply with Innovation, Science and Economic Development Canada’s license-exempt RSSs. Operation is subject to the following two conditions:**<br>**(1) This device may not cause interference**<br>**(2) This device must accept any interference, including interference that may cause undesired operation of the device.** |
| **L’ émetterur/récepteur exempt de licence contenu dans le present appareil est conforme aus CNR d’Innovation, Science et Développement économique Canada** |

**applicables aux apparerils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :**
**1) L'appareil ne doit pas produire de brouillage;**
**2) L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.**

| |
|---|
| **for indoor use only (5150-5250MHz)** |
| **Pour usage intérieur seulement (5150-5250MHz)** |

| |
|---|
| **This equipment complies with ISED radiation exposure limits set forth for an uncontrolled environment and meets RSS-102 of the ISED radio frequency (RF) Exposure rules. This equipment should be installed and operated keeping the radiator at least 20cm or more away from person's body.** |
| **Cet équipement est conforme aux limites d'exposition aux rayonnements énoncées pour un environnement non contrôlé et respecte les règles d'exposition aux fréquences radioélectriques (RF) CNR-102 de l'ISDE. Cet équipement doit être installé et utilisé en gardant une distance de 20 cm ou plus entre le radiateur et le corps humain.** |

**[for FCC]**

**Compliance with FCC requirement 15.407(c)**
**Data transmission is always initiated by software, which is the passed down through the MAC, through the digital and analog baseband, and finally to the RF chip. Several special packets are initiated by the MAC. These are the only ways the digital baseband portion will turn on the RF transmitter, which it then turns off at the end of the packet. Therefore, the transmitter will be on only while one of the aforementioned packets is being transmitted. In other words, this device automatically discontinue transmission in case of either absence of information to transmit or operational failure.**

**[for ISED(IC)]**

**Data transmission is always initiated by software, which is the passed down through the MAC, through the digital and analog baseband, and finally to the RF chip.**

| |
|---|
| **Several special packets are initiated by the MAC. These are the only ways the digital baseband portion will turn on the RF transmitter, which it then turns off at the end of the packet. Therefore, the transmitter will be on only while one of the aforementioned packets is being transmitted. In other words, this device automatically discontinue transmission in case of either absence of information to transmit or operational failure.** |
| **La transmission des données est toujours initiée par le logiciel, puis les données sont transmises par l'intermédiaire du MAC, par la bande de base numérique et analogique et, enfin, à la puce RF. Plusieurs paquets spéciaux sont initiés par le MAC. Ce sont les seuls moyens pour qu'une partie de la bande de base numérique active l'émetteur RF, puis désactive celui-ci à la fin du paquet. En conséquence, l'émetteur reste uniquement activé lors de la transmission d'un des paquets susmentionnés. En d'autres termes, ce dispositif interrompt automatiquement toute transmission en cas d'absence d'information à transmettre ou de défaillance.** |

**[§15.105 Information to the user.]**

| |
|---|
| **For a Class B digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual:**<br><br>**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:**<br><br>**—Reorient or relocate the receiving antenna.**<br><br>**—Increase the separation between the equipment and receiver.**<br><br>**—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.**<br><br>**Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.** |