



RF Test Report

Applicant: Quectel Wireless Solutions Co., Ltd.
Address: Building 5, Shanghai Business Park Phase III (Area B), No.1016
Tianlin Road, Minhang District, Shanghai, 200233 China
Product: Smart Module
Model No.: SC200E-WF
Brand Name: QUECTEL
FCC ID: XMR2024SC200EWF
Standards: FCC CFR47 Part 2.1091
FCC KDB 447498 D01 v06
Report No.: PD20240072RF06
Issue Date: 2024/06/14
Test Result: PASS *

* The above equipment has been tested and compliance with the requirement of the relative standards by Hefei Panwin Technology Co., Ltd.

Reviewed By: Jerry Zhang

Approved By: Alec Yang

Hefei Panwin Technology Co., Ltd.

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Revision History

| Report No. | Version | Description | Issue Date | Note |
|----------------|---------|----------------|------------|-------|
| PD20240072RF06 | 01 | Initial Report | 2024/06/14 | Valid |

Remark:

We, Hefei Panwin Technology Co., Ltd., would like to declare that the tested sample has been evaluated in accordance with the procedures given in FCC CFR47 Part 2.1091 and shown compliance with the applicable technical standards. The evaluation related to FCC CFR47 Part 2 is not within the scope of A2LA accreditation.

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1 Test Laboratory

1.1 Notes of the Test Report

This report is invalid without signature of auditor and approver or with any alterations. The report shall not be partially reproduced without written approval of the testing company. Entrusted test results are only responsible for incoming samples. If there is any objection to the testing report, it shall be raised to the testing company within 15 days from the date of receiving the report. In the test results, "NA" means "not applicable", and the test items marked with "Δ" are subcontracted projects.

1.2 Testing Laboratory

| | |
|---------------------|--|
| Company Name | Hefei Panwin Technology Co., Ltd. |
| Address | Floor 1, Zone E, Plant 2#, Mingzhu Industrial Park, No.106 Chuangxin Avenue, High-tech Zone, Hefei City, Anhui Province, China |
| Telephone | +86-0551-63811775 |
| Post Code | 230031 |

2 General Description of Equipment under Test

2.1 Details of Application

| | |
|-----------------------------|---|
| Applicant | Quectel Wireless Solutions Co., Ltd. |
| Applicant Address | Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai, 200233 China |
| Manufacturer | Quectel Wireless Solutions Co., Ltd. |
| Manufacturer Address | Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai, 200233 China |

2.2 Details of EUT

| | |
|---|--|
| Product | Smart Module |
| Model | SC200E-WF |
| HW Version | R2.0 |
| SW Version | SC200EWFDAR12A01 |
| Antenna Type | External Antenna |
| Mode of Operation | Bluetooth Bluetooth LE Wi-Fi 2.4G Wi-Fi 5G |
| Max. Conducted Power | Bluetooth: 9.10dBm Bluetooth LE: 0.57dBm Wi-Fi 2.4G: 17.75dBm Wi-Fi 5G: 17.00dBm |
| Max Gain | Bluetooth & Bluetooth LE & Wi-Fi 2.4G: 0.47dBi Wi-Fi 5G: 5150MHz to 5250MHz: -0.67dBi Wi-Fi 5G: 5250MHz to 5350MHz: -0.19dBi Wi-Fi 5G: 5470MHz to 5725MHz: 1.28dBi Wi-Fi 5G: 5725MHz to 5850MHz: 1.10dBi |
| Rated Power Supply Voltage | Typical 3.8Vdc |
| Note : The declared of product specification for EUT and/or Antenna presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification. | |

3 Test Condition

3.1 Laboratory Environment

| | |
|---------------------------------|-----------------------|
| Temperature | Min.= 18°C, Max.=25°C |
| Relative Humidity | Min.= 30%, Max.=70% |
| Ground System Resistance | < 1 Ω |

- Ambient noise is checked and found very low and in compliance with requirement of standards.
- Reflection of surrounding objects is minimized and in compliance with requirement of standards.

4 Maximum Permissible Exposure (EMF)

According to ANSI/IEEE C95.1-1992, the criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio frequency (RF) radiation as specified in §1.1310.

| Frequency range (MHz) | Electric field strength (V/m) | Magnetic field strength (A/m) | Power density (mW/cm ²) | Averaging time (minutes) |
|--|-------------------------------|-------------------------------|-------------------------------------|--------------------------|
| (A) Limits for Occupational/Controlled Exposures | | | | |
| 0.3-3.0 | 614 | 1.63 | *(100) | 6 |
| 3.0-30 | 1842/f | 4.89/f | *(900/f ²) | 6 |
| 30-300 | 61.4 | 0.163 | 1.0 | 6 |
| 300-1500 | | | f/300 | 6 |
| 1500-100,000 | | | 5 | 6 |
| (B) Limits for General Population/Uncontrolled Exposure | | | | |
| 0.3-1.34 | 614 | 1.63 | *(100) | 30 |
| 1.34-30 | 824/f | 2.19/f | *(180/f ²) | 30 |
| 30-300 | 27.5 | 0.073 | 0.2 | 30 |
| 300-1500 | | | f/1500 | 30 |
| 1500-100,000 | | | 1.0 | 30 |

The MPE was calculated at 20 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

$$S = PG / 4\pi R^2$$

Where:

S = Power density (in appropriate units, e.g. mW/cm²)

P = Time-average maximum tune up procedure (in appropriate units, e.g., mW)

G = The numeric gain of the antenna

R = Distance to the center of radiation of the antenna (20 cm = limit for MPE)

Appendix A – Test Results

A.1 Maximum Measured Conducted Output Power and Antenna Gain

| Band | TX Freq. (MHz) | Max. Conducted Power (dBm) | Antenna Gain (dBi) |
|------------|----------------|----------------------------|--------------------|
| Bluetooth | 2402 to 2480 | 9.10 | 0.47 |
| Wi-Fi 2.4G | 2412 to 2462 | 17.75 | 0.47 |
| Wi-Fi 5G | 5150 to 5850 | 17.00 | -0.19 |

A.2 Test Results of Maximum Permissible Exposure

| Band | Max. Conducted Power (dBm) | Antenna Gain (dBi) | Maximum EIRP(dBm) | PG (mW) | Test Result (mW/cm ²) | Limit Value (mW/cm ²) |
|------------|----------------------------|--------------------|-------------------|---------|-----------------------------------|-----------------------------------|
| Bluetooth | 9.10 | 0.47 | 9.57 | 9.06 | 0.002 | 1.000 |
| Wi-Fi 2.4G | 17.75 | 0.47 | 18.22 | 66.37 | 0.013 | 1.000 |
| Wi-Fi 5G | 17.00 | -0.19 | 16.81 | 47.97 | 0.010 | 1.000 |

Note 1: According to the EUT characteristic, Bluetooth, Wi-Fi 2.4G and Wi-Fi 5G can't transmit simultaneously.

Note 2: For mobile or fixed location transmitters, minimum separation distance is 20cm, even if calculations indicate EMF distance is less.

Conclusion:

According to 47 CFR §2.1091, the RF exposure analysis concludes that the RF Exposure is FCC compliant.

Appendix B – The EUT Appearance

Refer to “Attachment A.1: External Photograph” and “ Attachment A.2: Internal Photograph” file.

***** End of the Report *****