

MPE TEST REPORT

Applicant Quectel Wireless Solutions Co., Ltd

FCC ID XMR20SC200RWF

Product Smart Module

Brand Quectel

Model SC200R-WF

Report No. R2010A0716-M1

Issue Date December 17, 2020

TA Technology (Shanghai) Co., Ltd. tested the above equipment in accordance with the requirements in **FCC 47 CFR Part 1 1.1310**. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Prepared by: Yu Wang

Approved by: Guangchang Fan

Guangchang Fan

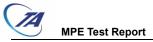
TA Technology (Shanghai) Co., Ltd.

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1 Test Laboratory

1.1 Notes of the Test Report

This report shall not be reproduced in full or partial, without the written approval of **TA technology** (shanghai) co., Ltd. The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein . Measurement Uncertainties were not taken into account and are published for informational purposes only. This report is written to support regulatory compliance of the applicable standards stated above.

1.2. Test facility

FCC (Designation number: CN1179, Test Firm Registration Number: 446626)

TA Technology (Shanghai) Co., Ltd. has been listed on the US Federal Communications Commission list of test facilities recognized to perform electromagnetic emissions measurements.

1.3 Testing Location

Company: TA Technology (Shanghai) Co., Ltd.

Address: No.145, Jintang Rd, Tangzhen Industry Park, Pudong Shanghai, China

City: Shanghai

Post code: 201201

Country: P. R. China

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1.4 Laboratory Environment

Temperature	Min. = 18°C, Max. = 25 °C



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Relative humidity Min. = 30%, Max. = 70%				
Ground system resistance $< 0.5 \Omega$				
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.



2 Description of Equipment under Test

Client Information

Applicant	Quectel Wireless Solutions Co., Ltd	
Applicant address Building 5, Shanghai Business Park Phase III (Area B), No.10 Tianlin Road, Minhang District, Shanghai, China 200233		
Manufacturer Quectel Wireless Solutions Co., Ltd		
Manufacturer address	Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai, China 200233	

General Technologies

Model	SC200R-WF
SN	E18671975000050
Hardware Version	R1.0
Software Version	SC200RWFNAR04A02
Date of Testing:	November 6, 2020~ November 11, 2020

Note: 1. The EUT is sent from the applicant to TA and the information of the EUT is declared by the applicant.

2. All indications of Pass/Fail in this report are opinions expressed by TA Technology (Shanghai) Co., Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only.

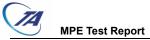


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3 Maximum conducted output power (measured) and antenna Gain

The numeric gain (G) of the antenna with a gain specified in dB is determined by Numeric gain (G)= $10^{(antenna gain/10)}$

Band	Maximum Conducted Output Power (dBm)		Antenna Gain	Numeric gain	
	(dBm)	(mW)	(dBi)		
WIFI 2.4G	18.50	70.795	0.25	1.059	
WIFI 5G	17.50	56.234	1.10	1.288	
ВТ	11.00	12.589	0.25	1.059	
BLE	2.00	1.585	0.25	1.059	



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4 Test Result

According to section 1.1310 of FCC 47 CFR Part 1, limits for maximum permissible exposure (MPE) are as following

TABLE 1 – LIMITS FOR MAXIMUN PERMISSIBLE EXPOSURE (MPE)

Frequency Range	Electric Field	Magnetic Field	Power Density	Averaging Time		
(MHz)	Strength	Strength		0.57 100		
A-5-000 GaV	(V/m)	(AVm)	(mW/cm2)	(minutes)		
	(A) Limits for Occu	upational/Controlle	d Exposures			
0.3-3.0	614	1.63	*(100)	6		
3-30	1842/f	4.89/f	*(900/f2)	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/f2)	30		
30-300	27.5	0.073	0.2	30		
300-1500			f/1500	30		
1500-100,000			1.0	30		

f = frequency in MHz

Note1. Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational / controlled limits apply provided he or she is made aware of the potential for exposure.

Note2: General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can not exercise control over their exposure.

^{* =} Plane-wave equivalent power density



The maximum permissible exposure for 300~1500 MHz is f/1500, for 1500~100,000MHz is 1.0.S	The maximum	permissible exposu	re for 300~1500) MHz is f/1500, fo	or 1500~100,000MHz is 1.0.Sc
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Band	The maximum permissible exposure
Wi-Fi 2.4G	1.0mW/cm ²
Wi-Fi 5G	1.0mW/cm ²
ВТ	1.0mW/cm ²
BLE	1.0mW/cm ²



RF Exposure Calculations:

The following information provides the minimum separation distance for the highest gain antenna provided. This calculation is based on the conducted power, considering maximum power and antenna gain. The formula shown in KDB 447498 D01 is used in the calculation.

Equation from KDB 447498 D01 General RF Exposure Guidance v06 (10/23/2015) is:

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

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)

Band	PG (mW)	Test Result (mW/cm ²)	Limit Value (mW/cm ²)	The MPE ratio	Conclusion
Wi-Fi 2.4G	74.989	0.0149	1.000	0.0149	Pass
Wi-Fi 5G	72.444	0.0144	1.000	0.0144	Pass
ВТ	13.335	0.0027	1.000	0.0027	Pass
BLE	1.679	0.0003	1.000	0.0003	Pass

Note: **R** = 20cm

∏= 3.1416

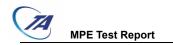
The MPE ratio = Mac Test Result ÷ Limit Value

So the simultaneous transmitting antenna pairs as below:

∑of MPE ratios=Wi-Fi 2.4G + Wi-Fi 5G + BT+ BLE =0.0149+0.0144+0.0027+0.0003=0.0323 <1

Note: For transmitters, minimum separation distance is 20cm, even if calculations indicate MPE distance is less.

******END OF REPORT ******



ANNEX A: The EUT Appearance

The EUT Appearance are submitted separately.