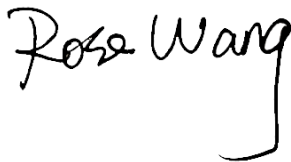


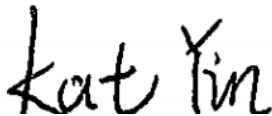
RF Exposure Evaluation Report

APPLICANT : Quetel Wireless Solutions Co., Ltd.
EQUIPMENT : LTE Module
BRAND NAME : Quetel
MODEL NAME : AG35-E
FCC ID : XMR201907AG35E
STANDARD : 47 CFR Part 2.1091
FCC KDB 447498 D01 v06

We, Sporton International (Kunshan) Inc., would like to declare that the device has been evaluated in accordance with 47 CFR Part 2.1091 and FCC KDB 447498 D01 v06, and pass the limit. Without written approval of Sporton International (Kunshan) Inc., the test report shall not be reproduced except in full.



Reviewed by: Rose Wang / Supervisor



Approved by: Kat Yin / Manager



Sporton International (Kunshan) Inc.

No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province
215300 People's Republic of China



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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA950911	Rev. 01	Initial issue of report	Jul. 11, 2019



1. Administration Data

1.1. Testing Laboratory

Sporton International (Kunshan) Inc. is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.02.

Testing Laboratory		
Test Firm	Sporton International (Kunshan) Inc.	
Test Site Location	No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China TEL : +86-512-57900158 FAX : +86-512-57900958	
Test Site No.	FCC Designation No.	FCC Test Firm Registration No.
	CN1257	314309

Applicant	
Company Name	Quectel Wireless Solutions Co., Ltd.
Address	7th Floor, Hongye Building, No.1801 Hongmei Road, Xuhui District, Shanghai 200233, China



2. Description of Equipment Under Test (EUT)

Product Feature & Specification	
EUT Type	LTE Module
Brand Name	Quectel
Model Name	AG35-E
FCC ID	XMR201907AG35E
Wireless Technology and Frequency Range	WCDMA Band V: 826.4 MHz ~ 846.6 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 7: 2502.5 MHz ~ 2567.5 MHz LTE Band 38: 2572.5 MHz ~ 2617.5 MHz
Mode	RMC/AMR 12.2Kbps HSDPA HSUPA DC-HSDPA HSPA+: 16QAM (Uplink is not supported) LTE: QPSK, 16QAM, 64QAM(Downlink only)
HW Version	R1.0
SW Version	AG35CEVAR05A06T4G
EUT Stage	Identical Prototype
Remark: 1. This device support voice function. 2. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.	



3. Maximum RF average output power among production units

<WCDMA>

Mode		Maximum Average power(dBm)
WCDMA	Band V	25.00

<LTE>

Mode		Maximum Average power(dBm)
LTE	Band 5	25.00
	Band 7	25.00
	Band 38	24.50



4. RF Exposure Limit Introduction

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:

$$S = \frac{PG}{4\pi R^2}$$

Where:

S = Power Density

P = Output Power at Antenna Terminals

G = Gain of Transmit Antenna (linear gain)

R = Distance from Transmitting Antenna



5. Radio Frequency Radiation Exposure Evaluation

5.1. Standalone Power Density Calculation

Band	Frequency (MHz)	Antenna Gain (dBi)	Maximum Power (dBm)	Maximum EIRP (dBm)	Average EIRP (mW)	Power Density at 20cm (mW/cm ²)	Limit (mW/cm ²)
WCDMA Band 5	826.4	9.00	25.00	34.00	2511.89	0.500	0.551
LTE Band 5	824.7	9.00	25.00	34.00	2511.89	0.500	0.550
LTE Band 7	2502.5	8.00	25.00	33.00	1995.26	0.397	1.000
LTE Band 38	2572.5	8.00	24.50	32.50	1778.28	0.354	1.000

Note: For conservativeness, the lowest frequency of each band is used to determine the MPE limit of that band.

5.2. Collocated Power Density Calculation

Note:

1. This MPE analysis is applicable to any collocated transmitters with transmit power for WLAN is less than or equal to 28dBm and for Bluetooth is less than or equal to 28dBm.
2. A maximum antenna gain of 5dBi for WLAN/BT has been assumed for all collocated antennas.

Band	Frequency (MHz)	Antenna Gain (dBi)	Maximum Power (dBm)	Maximum EIRP (dBm)	Average EIRP (mW)	Power Density at 20cm (mW/cm ²)	Limit (mW/cm ²)	Power Density / Limit
WCDMA Band V	826.4	8.00	25.00	33.00	1995.26	0.397	0.551	0.721
LTE Band 5	824.7	8.00	25.00	33.00	1995.26	0.397	0.550	0.722
LTE Band 7	2502.5	7.50	25.00	32.50	1778.28	0.354	1.000	0.354
LTE Band 38	2572.5	7.50	24.50	32.00	1584.89	0.315	1.000	0.315
WLNA2.4GHz Band	2412	5.00	23.00	28.00	630.96	0.126	1.000	0.126
WLNA5GHz Band	5180	5.00	23.00	28.00	630.96	0.126	1.000	0.126
Bluetooth	2402	5.00	23.00	28.00	630.96	0.126	1.000	0.126

WWAN Power Density / Limit	WLAN Power Density / Limit	Bluetooth Power Density / Limit	Σ(Power Density / Limit) of WWAN + WLAN + Bluetooth
0.722	0.126	0.126	0.974

Note:

1. Σ(Power Density / Limit): This is a summation of [(power density for each transmitter/antenna included in the simultaneous transmission)/ (corresponding MPE limit)], for WWAN + WLAN + Bluetooth.
2. Considering the WWAN module collocation with the WLAN and Bluetooth transmitter of the EIRP performance listed in the table above, the aggregated (power density /limit) is smaller than 1, and MPE of 3 collocated transmitters is compliant.



Conclusion:

Based on 47 CFR §2.1091 and FCC KDB 447498 D01 v06, the analysis concludes that this product when transmitting in standalone within a host device, is compliant with the FCC RF exposure requirements in mobile exposure condition, provided the conducted power and antenna gain do not exceed the limits for each given frequency band per wireless technology as follow table:

Device	Band	Frequency (MHz)	Maximum Conducted Power (dBm)	Standalone Maximum Antenna Gain (dBi)	Collocated Maximum Antenna Gain (dBi)
LTE Module	WCDMA Band V	826.4	25.00	9.00	8.00
	LTE Band 5	824.7	25.00	9.00	8.00
	LTE Band 7	2502.5	25.00	8.00	7.50
	LTE Band 38	2572.5	24.50	8.00	7.50
Collocated Transmitters	WLAN2.4GHz	2412.0	23.00		5.00
	WLAN5GHz	5180.0	23.00		5.00
	Bluetooth	2402.0	23.00		5.00