



RF Exposure Evaluation Declaration

FCC ID: XMR2021BC660KGL
Application: Quectel Wireless Solutions Company Limited
Application Type: Certification
Product: NB-IoT Module
Model No.: BC660K-GL
Brand Name: Quectel
Test Procedure(s): KDB 447498 D01v06
Test Date: December 08 ~ 27, 2020

Reviewed By:

Sunny Sun

Sunny Sun

Approved By:

Robin Wu

Robin Wu



The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standards through the calibration of the equipment and evaluated measurement uncertainty herein.

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Revision History

Report No.	Version	Description	Issue Date	Note
2012RSU022-U7	Rev. 01	Initial Report	04-06-2021	Valid

1. GENERAL INFORMATION

1.1. Applicant

Quectel Wireless Solutions Company Limited
 Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District,
 Shanghai, China 200233

1.2. Manufacturer

Quectel Wireless Solutions Company Limited
 Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District,
 Shanghai, China 200233

1.3. Testing Facility

<input checked="" type="checkbox"/>	Test Site - MRT Suzhou Laboratory
	Laboratory Location (Suzhou - Wuzhong) D8 Building, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China
	Laboratory Location (Suzhou - SIP) 4b Building, Liando U Valley, No.200 Xingpu Rd., Shengpu Town, Suzhou Industrial Park, China
	Laboratory Accreditations
	A2LA: 3628.01 CNAS: L10551 FCC: CN1166 ISED: CN0001 VCCI: R-20025, G-20034, C-20020, T-20020
<input type="checkbox"/>	Test Site - MRT Shenzhen Laboratory
	Laboratory Location (Shenzhen) 1G, Building A, Junxiangda Building, Zhongshanyuan Road West, Nanshan District, Shenzhen, China
	Laboratory Accreditations
	A2LA: 3628.02 CNAS: L10551 FCC: CN1284 ISED: CN0105
<input type="checkbox"/>	Test Site - MRT Taiwan Laboratory
	Laboratory Location (Taiwan) No. 38, Fuxing 2 nd Rd., Guishan Dist., Taoyuan City 333, Taiwan (R.O.C.)
	Laboratory Accreditations
	TAF: L3261-190725 FCC: 291082, TW3261 ISED: TW3261

2. PRODUCT INFORMATION

2.1. Equipment Description

Product Name:	NB-IoT Module
Model No.:	BC660K-GL
Brand Name:	Quectel
Hardware Version:	R1.0
Software Version:	BC660KGLAAR01A03
IMEI.:	866207050001894; 866207050001886
Operating Temp.:	-35 ~ 75 °C
Supply Voltage:	2.2 ~ 4.3Vdc, typical 3.3Vdc
NB-IoT Specification	
Single Band:	NB-IoT Band 2, 4, 5, 12, 13, 17, 25, 66, 85
Modulation:	BPSK, QPSK
Category:	Release 14 (Cat NB2)
Deployment:	Stand-alone
Sub-carrier Spacing:	3.75kHz, 15kHz

3. RF Exposure Evaluation

3.1. Limits

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)

Limits for Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Average Time (Minutes)
(A) Limits for Occupational/ Control Exposures				
300-1500	--	--	f/300	6
1500-100,000	--	--	5	6
(B) Limits for General Population/ Uncontrolled Exposures				
300-1500	--	--	f/1500	30
1500-100,000	--	--	1	30

f= Frequency in MHz

Calculation Formula: $Pd = (Pout \cdot G) / (4 \cdot \pi \cdot r^2)$

Where

Pd = power density in mW/cm²

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 3.1416

r = distance between observation point and center of the radiator in cm

Pd is the limit of MPE, 1mW/cm². If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

3.2. Test Result of RF Exposure Evaluation

Product	NB-IoT Module
Test Item	RF Exposure Evaluation

Test Mode	Frequency Band (MHz)	Maximum Conducted Power (dBm)	Antenna Gain (dBi)	ERP (EIRP) (dBm)	Power Density at 20cm (mW/cm ²)	Limit (mW/cm ²)
NB-IoT Band 2	1850 ~ 1910	25.00	8.00	33.00	0.3969	1.0000
NB-IoT Band 4	1710 ~ 1755	25.00	8.00	33.00	0.3969	1.0000
NB-IoT Band 5	824 ~ 849	25.00	5.00	30.00	0.1989	0.5493
NB-IoT Band 12	699 ~ 716	25.00	5.00	30.00	0.1989	0.4660
NB-IoT Band 13	777 ~ 787	25.00	5.00	30.00	0.1989	0.5180
NB-IoT Band 17	704 ~ 716	25.00	5.00	30.00	0.1989	0.4693
NB-IoT Band 25	1850 ~ 1915	25.00	8.00	33.00	0.3969	1.0000
NB-IoT Band 66	1710 ~ 1780	25.00	8.00	33.00	0.3969	1.0000
NB-IoT Band 85	698 ~ 716	25.00	5.00	30.00	0.1989	0.4653

Appendix A - EUT Photograph

Refer to "2012RSU022-UE" file.