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Report No.: 2012RSU022-U7 Report Version: V01 Issue Date: 04-06-2021

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

Approved By:

Robin vvu





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	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

\boxtimes	☐ 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					
	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				
	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	Electric Field	Magnetic Field	Power Density	Average Time	
(MHz)	Strength (V/m)	Strength (A/m)	(mW/cm ²)	(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: $Pd = (Pout*G)/(4*pi*r^2)$

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

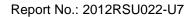
Pd is the limit of MPE, 1mW/cm². If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.



3.2. Test Result of RF Exposure Evaluation

Product	NB-IoT Module
Test Item	RF Exposure Evaluation

Test Mode	Frequency	Maximum	Antenna	ERP	Power Density	Limit
	Band (MHz)	Conducted	Gain	(EIRP)	at 20cm	(mW/
		Power (dBm)	(dBi)	(dBm)	(mW/cm ²)	cm²)
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.