

RF Exposure Report

Report No.: SA190725E05

FCC ID: PY319200445

Test Model: RAX20

Series Model: RAX15

Received Date: July 25, 2019

Test Date: July 29 to Aug. 06, 2019

Issued Date: Aug. 12, 2019

Applicant: NETGEAR, Inc.

Address: 350 East Plumeria Drive San Jose, CA 95134

Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Hsin Chu Laboratory

Lab Address: E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300,
Taiwan R.O.C.

Test Location: E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300,
Taiwan R.O.C.

**FCC Registration /
Designation Number:** 723255 / TW2022

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Release Control Record

Issue No.	Description	Date Issued
SA190725E05	Original release.	Aug. 12, 2019

1 Certificate of Conformity

Product: AX1800 Wi-Fi Router

Brand: NETGEAR

Test Model: RAX20

Series Model: RAX15

Sample Status: ENGINEERING SAMPLE

Applicant: NETGEAR, Inc.

Test Date: July 29 to Aug. 06, 2019

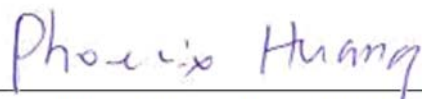
Standards: FCC Part 2 (Section 2.1091)

KDB 447498 D01 General RF Exposure Guidance v06

IEEE C95.1-1992

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

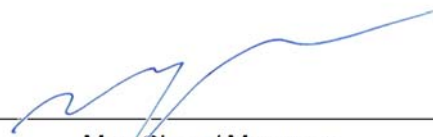
Prepared by :


Phoenix Huang / Specialist

, Date:

Aug. 12, 2019

Approved by :


May Chen / Manager

, Date:

Aug. 12, 2019

2 RF Exposure

2.1 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)
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

f = Frequency in MHz ; *Plane-wave equivalent power density

2.2 MPE Calculation Formula

$$P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot r^2)$$

where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

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

2.3 Classification

The antenna of this product, under normal use condition, is at least 25 cm away from the body of the user. So, this device is classified as **Mobile Device**.

2.4 Antenna Gain

Antenna No.	Transmitter Circuit	Antenna Net Gain (dBi)	Frequency Range (GHz)	Antenna Type	Connector Type	Cable Length (mm)
1	Chain 0	2.36	2.4~2.4835	Dipole	i-pex(MHF)	140
		3.38	5.15~5.25			
		2.94	5.25~5.35			
		2.25	5.47~5.725			
		2.12	5.725~5.85			
2	Chain 1	1.86	2.4~2.4835	Dipole	i-pex(MHF)	210
		3.39	5.15~5.25			
		2.8	5.25~5.35			
		1.83	5.47~5.725			
		1.65	5.725~5.85			

2.5 Calculation Result of Maximum Conducted Power

Operation Mode	Evaluation Frequency (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
WLAN (2.4GHz)	2462	980.128	5.12	25	0.40569	1
WLAN (U-NII-1)	5240	867.058	6.4	25	0.48190	1
WLAN (U-NII-3)	5745	931.038	4.9	25	0.36633	1

Note:

- Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
- 2.4GHz: The directional gain = $10 \log[(10^{G0/20} + 10^{G1/20})^2 / 2] = 5.12\text{dBi}$
 5GHz: U-NII-1: The directional gain = $10 \log[(10^{G0/20} + 10^{G1/20})^2 / 2] = 6.4\text{dBi}$
 U-NII-3: The directional gain = $10 \log[(10^{G0/20} + 10^{G1/20})^2 / 2] = 4.9\text{dBi}$

Conclusion:

The formula of calculated the MPE is:

$$\text{CPD1} / \text{LPD1} + \text{CPD2} / \text{LPD2} + \dots \text{etc.} < 1$$

CPD = Calculation power density

LPD = Limit of power density

$$\text{WLAN 2.4GHz} + \text{WLAN 5GHz} = 0.40569 / 1 + 0.48190 / 1 = 0.88759$$

Therefore the maximum calculations of above situations are less than the "1" limit.

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