

RF Exposure Report

Report No.: SABBQZ-WTW-P20110514

FCC ID: PY321200536

Test Model: Perseverance

Series Model: Ingenuity, Phobos, Deimos

Received Date: Nov. 17, 2020

Test Date: Jan. 15, 2021

Issued Date: July 19, 2021

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

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

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

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Release Control Record

| Issue No. | Description | Date Issued |
|----------------------|-------------------|---------------|
| SABBQZ-WTW-P20110514 | Original release. | July 19, 2021 |

1 Certificate of Conformity

Product: WiFi Device

Brand: NETGEAR

Test Model: Perseverance

Series Model: Ingenuity, Phobos, Deimos

Sample Status: Engineering sample

Applicant: NETGEAR, Inc.

Test Date: Jan. 15, 2021

Standards: FCC Part 2 (Section 2.1091)

References Test Guidance KDB 447498 D01 General RF Exposure Guidance v06

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 : Vivian Huang , **Date:** July 19, 2021
Vivian Hunag / Specialist

Approved by : Clark Lin , **Date:** July 19, 2021
Clark Lin / Technical Manager

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

$$Pd = (Pout * G) / (4 * \pi * r^2)$$

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

2.3 Classification

The antenna of this product, under normal use condition, is at least 34cm away from the body of the user.

So, this device is classified as **Mobile Device**.

2.4 Antenna Gain

1. The directional antenna gain, please refer to the following table:

| Band | Directional Antenna Gain (dBi) |
|---------|--------------------------------|
| 2.4G | 6.66 |
| UNII-1 | 6.43 |
| UNII-2A | 6.45 |
| UNII-2C | 6.3 |
| UNII-3 | 6.21 |

Note: More detailed information, please refer to antenna specification.

2. The antennas provided to the EUT, please refer to the following table:

| Antenna No. | RF Chain No. | Antenna Net Gain(dBi) | Frequency range | Antenna Type | Connector Type |
|-------------|--------------|-----------------------|-----------------|--------------|----------------|
| 6G-1 | 6GHz Chain 0 | 4.09 | 5.925~6.425GHz | Dipole | i-pex(MHF) |
| | | 1.78 | 6.425~6.525GHz | | |
| | | 3.37 | 6.525~6.875GHz | | |
| | | 4.31 | 6.875~7.125GHz | | |
| 6G-2 | 6GHz Chain 1 | 4.39 | 5.925~6.425GHz | Dipole | i-pex(MHF) |
| | | 2.16 | 6.425~6.525GHz | | |
| | | 3.51 | 6.525~6.875GHz | | |
| | | 4.45 | 6.875~7.125GHz | | |
| 6G-3 | 6GHz Chain 2 | 3.77 | 5.925~6.425GHz | Dipole | i-pex(MHF) |
| | | 2.62 | 6.425~6.525GHz | | |
| | | 3.75 | 6.525~6.875GHz | | |
| | | 4.48 | 6.875~7.125GHz | | |
| 6G-4 | 6GHz Chain 3 | 4.38 | 5.925~6.425GHz | Dipole | i-pex(MHF) |
| | | 4.38 | 6.425~6.525GHz | | |
| | | 4.48 | 6.525~6.875GHz | | |
| | | 3.9 | 6.875~7.125GHz | | |

2.5 Calculation Result

| Operation Mode | Max Power (mW) | Antenna Gain (dBi) | Distance (cm) | Power Density (mW/cm ²) | Limit (mW/cm ²) | Pass / Fail |
|-------------------|----------------|--------------------|---------------|-------------------------------------|-----------------------------|-------------|
| WLAN 2.4GHz | 992.242 | 6.66 | 34 | 0.31656 | 1 | Pass |
| WLAN 5GHz U-NII-1 | 961.831 | 6.43 | 34 | 0.29103 | 1 | Pass |
| WLAN 5GHz U-NII-3 | 974.358 | 6.21 | 34 | 0.28025 | 1 | Pass |

| Operation Mode | Max EIRP (mW) | Distance (cm) | Power Density (mW/cm ²) | Limit (mW/cm ²) | Pass / Fail |
|----------------|---------------|---------------|-------------------------------------|-----------------------------|-------------|
| WLAN 6GHz NSS4 | 506.991 | 34 | 0.03490 | 1 | Pass |

NOTE:

- Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

Conclusion:

The formula of calculated the MPE is:

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

CPD = Calculation power density

LPD = Limit of power density

$$\text{WLAN 2.4GHz} + \text{WLAN 5GHz (Low Band)} + \text{WLAN 5GHz (High Band)} + \text{WLAN 6GHz} =$$

$$0.31656 / 1 + 0.29103 / 1 + 0.28025 / 1 + 0.03490 / 1 = 0.92292$$

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

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