

RF Exposure Report

Report No.: SABBQZ-WTW-P21060012

FCC ID: PY321100531

Test Model: MR70

Series Model: MS70

Received Date: 2021/6/7

Test Date: 2021/10/20

Issued Date: 2021/10/29

**Applicant and
Manufacturer:** NETGEAR, INC.

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

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Test Location: E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300,
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**FCC Registration /
Designation Number:** 723255 / TW2022



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Release Control Record

Issue No.	Description	Date Issued
SABBQZ-WTW-P21060012	Original release.	2021/10/29

1 Certificate of Conformity

Product: Mesh WiFi 6 Router, Mesh WiFi 6 Satellite

Brand: NETGEAR

Test Model: MR70

Series Model: MS70

Sample Status: Engineering sample

**Applicant and
Manufacturer:** NETGEAR, INC.

Test Date: 2021/10/20

Standards: FCC Part 2 (Section 2.1091)

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 : Evy Chen , **Date:** 2021/10/29
Evy Chen / Specialist

Approved by : Clark Lin , **Date:** 2021/10/29
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

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

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 22 cm away from the body of the user. So, this device is classified as **Mobile Device**.

2.4 Antenna Gain

Antenna NO.	RF Chain NO.	Antenna Net Gain(dBi)	Frequency range	Antenna Type	Connector Type
2.4G_0	0	2.85	2.4~2.4835GHz	PIFA	ipex(MHF)
2.4G_1	1	2.8	2.4~2.4835GHz	PIFA	ipex(MHF)
5G_0	0	2.11	5.15~5.25GHz	PIFA	ipex(MHF)
		2.11	5.25~5.35GHz		
		2.45	5.47~5.725GHz		
		2.31	5.725~5.85GHz		
5G_1	1	2.82	5.15~5.25GHz	PIFA	ipex(MHF)
		2.82	5.25~5.35GHz		
		2.65	5.47~5.725GHz		
		2.74	5.725~5.85GHz		

*The above Antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.

2.5 Calculation Result of Maximum Conducted Power

CDD Mode

Operation Mode	Evaluation Frequency (MHz)	Max. Average Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)	Pass/ Fail
WiFi 2.4G	2412-2462	893.878	2.85	22	0.28328	1	Pass
WiFi 5G (U-NII-1)	5180-5250	667.974	2.82	22	0.21023	1	Pass
WiFi 5G (U-NII-2A)	5250-5320	247.558	2.82	22	0.07792	1	Pass
WiFi 5G (U-NII-2C)	5500-5720	246.715	2.65	22	0.07467	1	Pass
WiFi 5G (U-NII-3)	5745-5825	868.573	2.74	22	0.26838	1	Pass

Beamforming Mode

Operation Mode	Evaluation Frequency (MHz)	Max. Average Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)	Pass/ Fail
WiFi 2.4G	2412-2462	602.659	5.84	22	0.38020	1	Pass
WiFi 5G (U-NII-1)	5180-5250	544.575	5.48	22	0.31623	1	Pass
WiFi 5G (U-NII-2A)	5250-5320	247.558	5.48	22	0.14375	1	Pass
WiFi 5G (U-NII-2C)	5500-5720	246.715	5.56	22	0.14593	1	Pass
WiFi 5G (U-NII-3)	5745-5825	867.187	5.54	22	0.51057	1	Pass

Note:

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

- 2.4GHz: Directional gain = $10 \log[(10^{G0/20} + 10^{G1/20})^2 / 2] = 5.84 \text{ dBi}$
- 5GHz:
 - For U-NII-1 & 2A: Directional gain = $10 \log[(10^{G0/20} + 10^{G1/20})^2 / 2] = 5.48 \text{ dBi}$
 - For U-NII-2C: Directional gain = $10 \log[(10^{G0/20} + 10^{G1/20})^2 / 2] = 5.56 \text{ dBi}$
 - For U-NII-3: Directional gain = $10 \log[(10^{G0/20} + 10^{G1/20})^2 / 2] = 5.54 \text{ dBi}$

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

CDD Mode

$$\text{WLAN 2.4GHz} + \text{WLAN 5GHz} = 0.28328 / 1 + 0.26838 / 1 = 0.55166$$

Beamforming Mode

$$\text{WLAN 2.4GHz} + \text{WLAN 5GHz} = 0.38020 / 1 + 0.51057 / 1 = 0.89077$$

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

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