

RF Exposure Report

Report No.: SA180330C21A

FCC ID: YOR-MR2200AC

Test Model: MR2200ac

Received Date: Mar. 30, 2018

Test Date: Apr. 11 ~ Jun. 14, 2018

Issued Date: Jun. 29, 2018

Applicant: Synology Incorporated

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

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Test Location: No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, TAIWAN (R.O.C.)

**FCC Registration /
Designation Number:** 788550 / TW0003



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Release Control Record

Issue No.	Description	Date Issued
SA180330C21A	Original release	Jun. 29, 2018

1 Certificate of Conformity

Product: 802.11ac Wireless Router

Brand: Synology

Test Model: MR2200ac

Sample Status: Engineering sample

Applicant: Synology Incorporated

Test Date: Apr. 11 ~ Jun. 14, 2018

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 RF characteristics under the conditions specified in this report.

Prepared by : Celine Chou , **Date:** Jun. 29, 2018
Celine Chou / Specialist

Approved by : Bruce Chen , **Date:** Jun. 29, 2018
Bruce Chen / Project Engineer

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				
300-1500	F/1500	30
1500-100,000	1.0	30

F = Frequency in MHz

2.2 MPE Calculation Formula

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

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 20cm away from the body of the user. So, this device is classified as **Mobile Device**.

3 Calculation Result of Maximum Conducted Power

Frequency Band (MHz)	Max Power (dBm)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm ²)	Limit (mW/cm ²)
CDD Mode					
2412-2462	27.04	6.79	20	0.481	1
5180-5240	25.08	5.74	20	0.240	1
5260-5320	23.57	5.74	20	0.170	1
5500-5700	23.74	6.88	20	0.229	1
5745-5825	25.36	6.88	20	0.333	1
Beamforming Mode					
2412-2462	20.10	6.79	20	0.097	1
5180-5240	22.07	5.74	20	0.120	1
5260-5320	20.56	5.74	20	0.085	1
5500-5700	20.73	6.88	20	0.115	1
5745-5825	22.35	6.88	20	0.167	1

Note:

2412 ~ 2462MHz: Directional gain = 3.78dBi + 10log(2) = 6.79dBi

5180 ~ 5240MHz: Directional gain = 2.73dBi + 10log(2) = 5.74dBi

5260 ~ 5320MHz: Directional gain = 2.73dBi + 10log(2) = 5.74dBi

5500 ~ 5700MHz: Directional gain = 3.87dBi + 10log(2) = 6.88dBi

5745 ~ 5825MHz: Directional gain = 3.87dBi + 10log(2) = 6.88dBi

Conclusion:

Both of the WLAN 2.4G & WLAN 5G Band 1/2 or WLAN 2.4G & WLAN 5G Band 3/4 can transmit simultaneously, WLAN 5G Band 1/2 & 5G Band 3/4 cannot transmit simultaneously, the formula of calculated the MPE is:

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

CPD = Calculation power density

LPD = Limit of power density

1. 2.4G + 5G Band 1 or 2 = 0.481 + 0.240 = 0.721

2. 2.4G + 5G Band 3 or 4 = 0.481 + 0.333 = 0.814

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

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