

## RF Exposure Report

**Report No.:** SA180330C21

**FCC ID:** YOR-MR2200AC

**Test Model:** MR2200ac

**Received Date:** Mar. 30, 2018

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

**Issued Date:** Jun. 27, 2018

**Applicant:** Synology Incorporated

**Address:** 3F-3, No. 106, Chang An W. Rd., Taipei Taiwan 103

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

**Lab Address:** No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan (R.O.C.)

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

**FCC Registration /** 788550 / TW0003

**Designation Number:**



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## Table of Contents

<b>Release Control Record</b> .....	<b>3</b>
<b>1      Certificate of Conformity</b> .....	<b>4</b>
<b>2      RF Exposure</b> .....	<b>5</b>
2.1    Limits for Maximum Permissible Exposure (MPE).....	5
2.2    MPE Calculation Formula .....	5
2.3    Classification .....	5
<b>3      Calculation Result of Maximum Conducted Power</b> .....	<b>6</b>

### Release Control Record

Issue No.	Description	Date Issued
SA180330C21	Original release	Jun. 27, 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. 27, 2018

Celine Chou / Specialist

**Approved by :** Bruce Chen, **Date:** Jun. 27, 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 <sup>2</sup> )	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

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

where

Pd = power density in mW/cm<sup>2</sup>

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 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 <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
CDD Mode					
2412-2462	27.04	6.79	20	0.481	1
5180-5240	25.08	5.74	20	0.240	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
5745-5825	22.35	6.88	20	0.167	1

Note:

2412 ~ 2462MHz: Directional gain =  $3.78\text{dBi} + 10\log(2) = 6.79\text{dBi}$

5180 ~ 5240MHz: Directional gain =  $2.73\text{dBi} + 10\log(2) = 5.74\text{dBi}$

5745 ~ 5825MHz: Directional gain =  $3.87\text{dBi} + 10\log(2) = 6.88\text{dBi}$

#### Conclusion:

Both of the WLAN 2.4G & WLAN 5G can transmit simultaneously, the formula of calculated the MPE is:

CPD1 / LPD1 + CPD2 / LPD2 + .....etc. < 1

CPD = Calculation power density

LPD = Limit of power density

1. 2.4G + 5G Band 1 =  $0.481 + 0.240 = 0.721$

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

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

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