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., Taipe 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 / Designation Number:	788550 / TW0003

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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^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

$Pd = (Pout*G) / (4*pi*r^2)$
where
Pd = power density in mW/cm^2
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^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
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 = 3.78dBi + 10log(2) = 6.79dBi

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

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

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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