Variant RF Exposure Report

Report No.:	SABAYS-WTW-P20110319A
FCC ID:	W23-WMU62XX
Test Model:	WMU6202
Series Model:	WMU6203, WMU6204, WMU6205, WMU6206, WMU6207
Received Date:	Nov. 27, 2018
Date of Evaluation:	Jan. 21, 2019
Issued Date:	Jun. 03, 2021
Applicant:	jjPlus Corporation
Address:	15F-7, No. 2, Jianba Road, Zhonghe Dist., New Taipei City, Taiwan (R.O.C.)
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Lin Kou Laboratories
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan
Test Location:	B2F., No.215, Sec. 3, Beixin Rd., Xindian Dist., New Taipei City 231, Taiwan
FCC Registration / Designation Number:	427177 / TW0011

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Release Control Record

Issue No.	Description	Date Issued
SABAYS-WTW-P20110319A	Original Release	Jun. 03, 2021

1 Certificate of Conformity

Product:	11ac 2T2R WIFI & BT Module
Brand:	jjPlus
Test Model:	WMU6202
Series Model:	WMU6203, WMU6204, WMU6205, WMU6206, WMU6207
Sample Status:	wifi module
Applicant:	jjPlus Corporation
Date of Evaluation:	Jan. 21, 2019
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 RF characteristics under the conditions specified in this report.

Prepared by : Gina Liu , **Date:** Jun. 03, 2021

Gina Liu / Specialist

Approved by : , **Date:** Jun. 03, 2021

Dylan Chiou / Project Engineer

2 General Information

This report is prepared for FCC class II permissive change. This report is issued as a supplementary report to BV CPS report no. SA181127C08. Due to no effect on any test item, the original calculated MPE value was kept.

3 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/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**.

2.4 Antenna Gain

The antennas information is listed as below. (New antenna is marked in boldface.)

Antenna Type	Brand	Model	Antenna Gain (dBi)		
			BT	2.4G	5G
Dipole	LYNwave	AOA160-221020-000000	3.0	3.0	2.0
	LYNwave	AOA160-221034-000000	3.0	3.0	3.0
	LYNwave	AOA160-221050-000000	5.0	5.0	5.0
PCB	N/A	N/A	3.6	3.6	5.3
	N/A	N/A	3.6	3.6	4.7
PIFA	**SINBON**	**A9706632**	**4.1**	**4.1**	**3.5**
	SINBON	**A9706633**	**4.8**	**4.8**	**4.1**

* 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

Band	Frequency Band (MHz)	Max Power (dBm)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
WLAN	2412-2462	26.85	8.01	20	0.609	1.00
	5180-5240	16.32	8.01	20	0.054	1.00
	5260-5320	16.30	8.01	20	0.054	1.00
	5500-5700	16.33	8.01	20	0.054	1.00
	5745-5825	16.30	8.01	20	0.054	1.00
BT	2402-2480	5.77	5.00	20	0.002	1.00

NOTE:
2.4GHz: Directional gain = $G_{ANT} + 10 \log(N_{ANT}/N_{SS}) = 8.01$ dBi
5.0GHz: Directional gain = $G_{ANT} + 10 \log(N_{ANT}/N_{SS}) = 8.01$ dBi

Conclusion:

The formula of calculated the MPE is:

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

CPD = Calculation power density

LPD = Limit of power density

WLAN 2.4GHz + BT = 0.609 + 0.002 = 0.612
Therefore the maximum calculations of above situations are less than the "1" limit.

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