RF Exposure Report

Report No.:	SABEMV-WTW-P20070304
FCC ID:	XCNUBC1329
Test Model:	UBC1329
Received Date:	July 15, 2020
Test Date:	July 26, 2020
Issued Date:	Aug. 06, 2020
Applicant:	Ubee Interactive Corp.
Address:	10F-1, No. 5, Taiyuan 1st St. Jhubei Ci, Hsinchu County 302, Taiwan , R.O.C.
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory
Lab Address:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan
Test Location:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan
FCC Registration / Designation Number:	723255 / TW2022

Table of Contents

Release Control Record

Issue No.	Description	Date Issued
SABEMV-WTW-P20070304	Original release.	Aug. 06, 2020

1 Certificate of Conformity

Product:	DOCSIS 3.1 Advanced WiFi 6 Voice Gateway
Brand:	Ubee
Test Model:	UBC1329
Sample Status:	Mass product
Applicant:	Ubee Interactive Corp.
Test Date:	July 26, 2020
Standards:	FCC Part 2 (Section 2.1091) IEEE C95.3 -2002
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 EMC characteristics under the conditions specified in this report.

Prepared by : Cherry Chuo , **Date:** Aug. 06, 2020

Cherry Chuo / Specialist

Approved by : , **Date:** Aug. 06, 2020

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

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

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 35 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. ex. Chain0/1	Frequency Range (GHz)	Antenna Gain (dBi)	Antenna Type	Connector Type
1	2G Chain 0 / 5G Chain 2	2.4~2.4835	3.79	PCB	i-pex(MHF)
		5.15~5.25	1.61		
		5.725~5.85	1.01		
2	5G Chain3	2.4~2.4835	NA	PCB	i-pex(MHF)
		5.15~5.25	2.06		
		5.725~5.85	1.82		
3	2G Chain 1 / 5G Chain 1	2.4~2.4835	3.07	PCB	i-pex(MHF)
		5.15~5.25	2.76		
		5.725~5.85	1.24		
4	2G Chain 2 / 5G Chain 0	2.4~2.4835	3.5	PCB	i-pex(MHF)
		5.15~5.25	3.26		
		5.725~5.85	3.36		

* 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

Operation Mode	Evaluation Frequency (MHz)	Max. Average Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
WLAN 2.4GHz	2412~2462	960.327	8.23	35	0.41502	1
WLAN 5GHz (U-NII-1)	5180~5250	963.474	8.47	35	0.44004	1
WLAN 5GHz (U-NII-3)	5745~5825	971.53	7.93	35	0.39184	1

Note:

1. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
2. 2.4GHz: The directional gain = 10 log[($10^{G0/20}$ + $10^{G1/20}$ + $10^{G2/20}$ / 3] = 8.23 dBi
3. 5GHz(U-NII-1): The directional gain = 10 log[($10^{G0/20}$ + $10^{G1/20}$ + $10^{G2/20}$ + $10^{G3/20}$ / 4] = 8.47 dBi
   5GHz(U-NII-3): The directional gain = 10 log[($10^{G0/20}$ + $10^{G1/20}$ + $10^{G2/20}$ + $10^{G3/20}$ / 4] = 7.93 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 + 5GHz= 0.41502 / 1 + 0.44004 / 1 = 0.85506

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

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