RF Exposure Report

Report No.:	SABAOZ-WTW-P22030776
FCC ID:	W59AP3020
Test Model:	AP-3020
Received Date:	2022/3/15
Test Date:	2022/4/20
Issued Date:	2022/6/2
Applicant:	Legrand AV Inc.
Address:	6436 City West Pkwy, Eden Prairie, MN 55344 USA
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
SABAOZ-WTW-P22030776	Original release.	2022/6/2

1 Certificate of Conformity

Product:	Wireless AC1300 Dual-Band AP
Brand:	LUXUL
Test Model:	AP-3020
Sample Status:	Engineering sample
Applicant:	Legrand AV Inc.
Test Date:	2022/4/20
Standards:	FCC Part 2 (Section 2.1091) 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 : Vivian Huang , **Date:** 2022/6/2

Vivian Huang / Specialist

Approved by : , **Date:** 2022/6/2

May Chen / 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 24cm away from the body of the user. So, this device is classified as **Mobile Device**.

2.4 Antenna Gain

Antenna No.	RF Chain No.	Brand	Model	Antenna Gain (dBi)	Frequency Range (GHz)	Antenna Type	Connector Type	Cable Length (cm)
1	0	HONGBO	290-20492	4.7	5.15~5.85	PIFA	ipex(MHF)	15
2	0	HONGBO	290-20493	4.6	2.4~2.5	PIFA	ipex(MHF)	9.4
3	1	HONGBO	290-20494	4.8	5.15~5.85	PIFA	ipex(MHF)	16.2
4	1	HONGBO	290-20495	2.8	2.4~2.5	PIFA	ipex(MHF)	8.8

Note: 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

CDD mode:

Operation Mode	Evaluation Frequency (MHz)	Max. Average Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)	Result
WLAN 2.4GHz	2412~2462	664.713	4.6	24	0.26485	1	Pass
WLAN 5GHz (U-NII-1)	5180~5240	467.008	4.8	24	0.19485	1	Pass
WLAN 5GHz (U-NII-3)	5745~5825	568.753	4.8	24	0.23730	1	Pass

Beamforming mode:

Operation Mode	Evaluation Frequency (MHz)	Max. Average Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)	Result
WLAN 2.4GHz	2412~2462	618.164	6.76	24	0.40502	1	Pass
WLAN 5GHz (U-NII-1)	5180~5240	467.008	7.76	24	0.38521	1	Pass
WLAN 5GHz (U-NII-3)	5745~5825	568.753	7.76	24	0.46913	1	Pass

NOTE:

1. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.
2. 2.4GHz: Directional gain = 10 $\log[(10^{Chain0/20} + 10^{Chain1/20})^2 / 2]$ = 6.76 dBi
3. 5GHz: Directional gain = 10 $\log[(10^{Chain0/20} + 10^{Chain1/20})^2 / 2]$ = 7.76 dBi

Conclusion:

The formula of calculated the MPE is:

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

CPD = Calculation power density

LPD = Limit of power density

CDD mode:

WLAN 2.4GHz + WLAN 5GHz = 0.26485 / 1 + 0.23730 / 1 = 0.50215

Beamforming mode:

WLAN 2.4GHz + WLAN 5GHz = 0.40502 / 1 + 0.46913 / 1 = 0.87415

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

--- END ---