RF Exposure Report

Report No.:	MFBCKS-WTW-P21030821A
FCC ID:	UDX-60079011
Test Model:	MR46-HW
Received Date:	2022/4/29
Test Date:	2022/5/23
Issued Date:	2022/6/10
Applicant:	Cisco Systems, Inc.
Address:	170 West Tasman Drive, San Jose, CA 95134 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
MFBCKS-WTW-P21030821A	Original release.	2022/6/10

1 Certificate of Conformity

Product:	4x4 Wi-Fi 6 Access Point
Brand:	Cisco
Test Model:	MR46-HW
Sample Status:	Engineering sample
Applicant:	Cisco Systems, Inc.
Test Date:	2022/5/23
FCC Rule Part:	FCC Part 2 (Section 2.1091)
Standard:	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:** 2022/6/10

Vivian Huang / Specialist

Approved by : , **Date:** 2022/6/10

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 33 cm away from the body of the user. So, this device is classified as **Mobile Device**.

2.4 Antenna Gain

WLAN Directional gain table – 4TX			
Frequency range (GHz)	Directional Antenna Gain (dBi)	Antenna Type	Antenna Connector
2.4 ~ 2.4835	7.74	PIFA	i-pex(MHF)
5.15 ~ 5.25	8.40		
5.25 ~ 5.35	8.93		
5.47 ~ 5.725	8.51		
5.725 ~ 5.85	8.11		

WLAN Directional gain table – 2TX				
Frequency range (GHz)	Antenna Combine Type	Directional Antenna Gain (dBi)	Antenna Type	Antenna Connector
2.4 ~ 2.4835	2.4G Ant. 1+4	6.12	PIFA	i-pex(MHF)
5.15 ~ 5.25	5.15G Ant. 1+3	6.62		
5.25 ~ 5.35	5.35G Ant. 1+2	7.50		
5.47 ~ 5.725	5.55G Ant. 3+4	7.71		
5.725 ~ 5.85	5.85G Ant. 3+4	7.27		

Bluetooth antenna spec.			
Antenna Net Gain (dBi)	Frequency range (GHz)	Antenna Type	Antenna Connector
4.24	2.4 ~ 2.4835	PIFA	i-pex(MHF)

Note: More detailed information, please refer to operating description.

*Detail antenna specification please refer to antenna datasheet and/or antenna measurement report.

2.5 Calculation Result of Maximum Conducted Power

Operation Mode	Evaluation Frequency (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
WLAN 2.4GHz	2437	825.254	3.70	33	0.14137	1
WLAN 5GHz	5745	881.839	4.51	33	0.18203	1
BT-LE	2402	4.009	4.24	33	0.00078	1

Note:
1. Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

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 + WLAN 5GHz + Bluetooth = 0.14137 / 1 +0.18203 / 1 + 0.00078 / 1 = 0.32418

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

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