



RADIO EXPOSURE TEST REPORT

FCC ID : UDX-600104010
Equipment : Wi-Fi 6E Access Point
Brand Name : Cisco
Model Name : MR57-HW
Applicant : Cisco Systems, Inc.
170 West Tasman Drive, San Jose, CA 95134 USA
Manufacturer : Cisco Systems, Inc.
170 West Tasman Drive, San Jose, CA 95134 USA
Standard : 47 CFR Part 2.1091

The product was received on Oct. 06, 2021, and testing was started from Oct. 16, 2021 and completed on Sep. 11, 2023. We, Sporton International Inc. Hsinchu Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in 47 CFR Part 2.1091 and shown compliance with the applicable technical standards.

The test results in this variant report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. Hsinchu Laboratory, the test report shall not be reproduced except in full.

Approved by: Sam Chen

Sporton International Inc. Hsinchu Laboratory

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Photographs of EUT v01	



Summary of Test Result

Report Clause	Ref Std. Clause	Test Items	Result (PASS/FAIL)	Remark
2	-	Exposure evaluation	PASS	-

Conformity Assessment Condition:

1. The test results (PASS/FAIL) with all measurement uncertainty excluded are presented against the regulation limits or in accordance with the requirements stipulated by the applicant/manufacture who shall bear all the risks of non-compliance that may potentially occur if measurement uncertainty is taken into account.
2. The measurement uncertainty please refer to each test result in the chapter "Measurement Uncertainty".

Disclaimer:

The product specifications of the EUT presented in the test report that may affect the test assessments are declared by the manufacturer who shall take full responsibility for the authenticity.

Reviewed by: Sam Chen

Report Producer: Sandy Chuang



1 General Description

1.1 EUT General Information

RF General Information			
Evaluation Mode	Frequency Range (MHz)	Operating Frequency (MHz)	Modulation Type
2.4GHz WLAN	2400-2483.5	2412-2462	802.11b: DSSS (DBPSK, DQPSK, CCK) 802.11g/n: OFDM (BPSK, QPSK, 16QAM, 64QAM) VHT: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM) 802.11ax: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM)
5GHz WLAN	5150-5250 5250-5350 5470-5725 5725-5850 5725-5895	5180-5240 5260-5320 5500-5720 5745-5825 5835-5885	802.11a/n: OFDM (BPSK, QPSK, 16QAM, 64QAM) 802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM) 802.11ax: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM)
6GHz WLAN (LPI Access Point)	5925-7125	5955-7115	802.11ax: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM)
6GHz WLAN (Standard Power Access Point)	5925-6425 6525-6875	5955-6415 6535-6855	802.11ax: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM)
Bluetooth	2400-2483.5	2402-2480	LE: GFSK



1.2 Antenna Information

Ant.	Port					Brand	P/N	Ant. Type	Connector	Gain (dBi)
	WLAN 2.4GHz	WLAN 5GHz UNII 1~3	WLAN 5GHz UNII 2C~4	WLAN 6GHz UNII 5~8	Bluetooth					
1	4	4	-	-	-	CISCO	95XKAN15.G42	PIFA	I-PEX	Note1
2	3	3	-	-	-	CISCO	95XKAN15.G43	PIFA	I-PEX	
3	2	2	-	-	-	CISCO	95XKAN15.G44	PIFA	I-PEX	
4	1	1	-	-	-	CISCO	95XKAN15.G45	PIFA	I-PEX	
5	-	-	2	2	-	CISCO	95XKAN15.G46	Dipole	I-PEX	
6	-	-	1	1	-	CISCO	95XKAN15.G47	Dipole	I-PEX	
7	-	-	4	4	-	CISCO	95XKAN15.G48	Dipole	I-PEX	
8	-	-	3	3	-	CISCO	95XKAN15.G49	Dipole	I-PEX	
9	1	1	-	-	-	CISCO	95XKAN15.G51	PIFA	I-PEX	
10	-	-	-	-	1	CISCO	95XKAN15.G50	PIFA	I-PEX	

Note1:

Ant.	Antenna Gain (dBi)											Remark
	WLAN 2.4GHz	WLAN 5GHz UNII 1	WLAN 5GHz UNII 2A	WLAN 5GHz UNII 2C	WLAN 5GHz UNII 3	WLAN 5GHz UNII 4	WLAN 6GHz UNII 5	WLAN 6GHz UNII 6	WLAN 6GHz UNII 7	WLAN 6GHz UNII 8	Blue tooth	
1	1.87	4.07	4.09	2.45	1.97	-	-	-	-	-	-	Radio 1
2	2.68	3.7	4.21	3	3.84	-	-	-	-	-	-	Radio 1
3	2.7	3.29	3.51	2.33	3.03	-	-	-	-	-	-	Radio 1
4	1.52	1.8	1.7	1.44	1.61	-	-	-	-	-	-	Radio 1
5	-	-	-	3.52	3.3	4.84	5.05	4.08	4.27	3.47	-	Radio 2
6	-	-	-	3.54	4.33	4.28	4.71	3.72	3.49	4.02	-	Radio 2
7	-	-	-	4.28	4.45	4.6	4.64	4.40	4.31	3.39	-	Radio 2
8	-	-	-	4.13	4.39	4.75	4.76	3.51	4.21	4.03	-	Radio 2
9	3.80	6.29	6.29	6.29	6.29	-	-	-	-	-	-	Radio 3
10	-	-	-	-	-	-	-	-	-	-	3.65	Radio 4

Note2:

Item	Directional Gain (dBi)						Remark
	WLAN 2.4GHz	WLAN 5GHz UNII 1	WLAN 5GHz UNII 2A	WLAN 5GHz UNII 2C	WLAN 5GHz UNII 3	WLAN 5GHz UNII 4	
2T1S	3.93	4.36	4.68	3.36	3.75	-	Radio 1
4T1S	5.7	6.45	6.36	5.06	5.18	-	
2T1S	-	-	-	5.32	6.01	5.57	Radio 2
4T1S	-	-	-	5.65	6.75	6.43	

Note3: Radio 1 (WLAN 2.4/5GHz UNII 1~3), Radio 2 (5GHz UNII 2C, 3, 4): The directional gain is measured which follows the procedure of KDB 662911 D03. The antenna report is provided in the operational description for this application.



Note4: The above information was declared by manufacturer.

The EUT has ten antennas.

For WLAN 2.4GHz function (Radio 1):

For IEEE 802.11b/g/n/VHT/ax mode (1TX, 2TX, 4TX/4RX):

For 1TX

Only Port 1 can be use as transmitting antenna.

For 2TX

Only Port 1 and Port 2 can be use as transmitting antenna.

Port 1 and Port 2 could transmit simultaneously.

For 4TX

Port 1, Port 2, Port 3 and Port 4 can be use as transmitting antenna.

Port 1, Port 2, Port 3 and Port 4 could transmit simultaneously.

For 4RX

Port 1, Port 2, Port 3 and Port 4 can be used as receiving antennas.

Port 1, Port 2, Port 3 and Port 4 could receive simultaneously.

For WLAN 5GHz function (Radio 1 and Radio 2):

For IEEE 802.11a/n/ac/ax mode (1TX, 2TX, 4TX/4RX):

For 1TX

Only Port 1 can be use as transmitting antenna.

For 2TX

Only Port 1 and Port 2 can be use as transmitting antenna.

Port 1 and Port 2 could transmit simultaneously.

For 4TX

Port 1, Port 2, Port 3 and Port 4 can be use as transmitting antenna.

Port 1, Port 2, Port 3 and Port 4 could transmit simultaneously.

For 4RX

Port 1, Port 2, Port 3 and Port 4 can be used as receiving antennas.

Port 1, Port 2, Port 3 and Port 4 could receive simultaneously.

For 6GHz function (Radio 2):

For IEEE 802.11ax mode (1TX, 2TX, 4TX/4RX):

For 1TX

Only Port 1 can be use as transmitting antenna.

For 2TX

Only Port 1 and Port 2 can be use as transmitting antenna.

Port 1 and Port 2 could transmit simultaneously.

For 4TX

Port 1, Port 2, Port 3 and Port 4 can be use as transmitting antenna.

Port 1, Port 2, Port 3 and Port 4 could transmit simultaneously.

For 4RX

Port 1, Port 2, Port 3 and Port 4 can be used as receiving antennas.

Port 1, Port 2, Port 3 and Port 4 could receive simultaneously.

For Scanning Radio 3:

For WLAN 2.4GHz function

For 802.11b/g/n/VHT/ax mode (1RX):

Only Port 1 can be used as receiving functions.

For WLAN 5GHz function

For IEEE 802.11a/n/ac/ax mode (1RX):

Only Port 1 can be used as receiving functions.

For Bluetooth function (Radio 4):

For Bluetooth mode (1TX/1RX):

Only Port 1 can be used as transmitting/receiving antenna.



1.3 Table for Radio function

Function Radio	WLAN 2.4GHz	WLAN 5GHz UNII 1	WLAN 5GHz UNII 2A	WLAN 5GHz UNII 2C	WLAN 5GHz UNII 3	WLAN 5GHz UNII 4	WLAN 6GHz UNII 5~8	Bluetooth
1 (Iron Radio)	V	V	V	V	V	-	-	-
2 (Pine Radio)	-	-	-	V	V	V	V	-
3 (Scanning Radio)	V	V	V	V	V	-	-	-
4	-	-	-	-	-	-	-	V

Note: The above information was declared by manufacturer.

1.4 Table for EUT Operation Function

Mode	Operation Function
1	R1: 2.4GHz/5GHz Low Band+R2: 5GHz High band+R3: 2.4GHz+R4: Bluetooth
2	R1: 2.4GHz/5GHz Low Band+R2: 5GHz High band+R3: 5GHz+R4: Bluetooth
3	R1: 2.4GHz/5GHz Full Band+R2: 6GHz+R3: 2.4GHz+R4: Bluetooth
4	R1: 2.4GHz/5GHz Full Band+R2: 6GHz+R3: 5GHz+R4: Bluetooth
5	R1: 2.4GHz/5GHz Full Band+R2: 6GHz(Standard Power Access Point)+R3: 2.4GHz+R4: Bluetooth
6	R1: 2.4GHz/5GHz Full Band+R2: 6GHz(Standard Power Access Point)+R3: 5GHz+R4: Bluetooth

Note: The above information was declared by manufacturer.

1.5 Table for Permissive Change

This product is an extension of original one reported under Sporton project number: FA181947-02.

Below is the table for the change of the product with respect to the original one.

Modifications	Performance Checking
1. Adding Standard Power Access Point for the device. 2. Updating calculated distance from "27" cm to "54" cm	RF Exposure

1.6 Accessories

Wall-mounted rack*1



1.7 Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- ♦ 47 CFR Part 2.1091
- ♦ KDB 447498 D04 Interim General RF Exposure Guidance v01

The following reference test guidance is not within the scope of accreditation of TAF.

- ♦ 47 CFR Part 1.1307
- ♦ 47 CFR Part 1.1310

1.8 Testing Location

Testing Location Information	
Test Lab. : Sporton International Inc. Hsinchu Laboratory	
Hsinchu (TAF: 3787)	ADD: No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County 302010, Taiwan (R.O.C.) TEL: 886-3-656-9065 FAX: 886-3-656-9085 Test site Designation No. TW3787 with FCC. Conformity Assessment Body Identifier (CABID) TW3787 with ISED.



2 Maximum Permissible Exposure

2.1 Limit of Maximum Permissible Exposure

(A) Limits for Occupational / Controlled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-3.0	614	1.63	*(100)	<6
3.0-30	1842/f	4.89/f	*(900/f ²)	<6
30-300	61.4	0.163	1.0	<6
300-1500	-	-	f/300	<6
1500-100,000	-	-	5	<6

(B) Limits for General Population / Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/ cm ²)	Averaging Time E ² , H ² or S (minutes)
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

Note: f = frequency in MHz ; *Plane-wave equivalent power density

2.2 MPE Calculation Method

The MPE was calculated at 54 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

$$E \text{ (V/m)} = \frac{\sqrt{30 \times P \times G}}{d} \qquad \text{Power Density: } Pd \text{ (W/m}^2\text{)} = \frac{E^2}{377}$$

E = Electric field (V/m)

P = RF output power (W)

G = EUT Antenna numeric gain (numeric)

d = Separation distance between radiator and human body (m)

The formula can be changed to

$$Pd = \frac{30 \times P \times G}{377 \times d^2}$$



2.3 MPE Exemption

Option (A): 1.1307(b)(3)(i)(A): Available maximum time-averaged power is < 1 mW

Option (B): 1.1307(b)(3)(i)(B): Device operates between 300 MHz and 6 GHz and the maximum time-averaged power or effective radiated power (ERP), whichever is greater, <= Pth.

$$P_{th} \text{ (mW)} = \begin{cases} ERP_{20 \text{ cm}} (d/20 \text{ cm})^x & d \leq 20 \text{ cm} \\ ERP_{20 \text{ cm}} & 20 \text{ cm} < d \leq 40 \text{ cm} \end{cases}$$

Where

$$x = -\log_{10} \left(\frac{60}{ERP_{20 \text{ cm}} \sqrt{f}} \right) \text{ and } f \text{ is in GHz;}$$

and

$$ERP_{20 \text{ cm}} \text{ (mW)} = \begin{cases} 2040f & 0.3 \text{ GHz} \leq f < 1.5 \text{ GHz} \\ 3060 & 1.5 \text{ GHz} \leq f \leq 6 \text{ GHz} \end{cases}$$

d = the separation distance (cm);

Option (C): 1.1307(b)(3)(i)(C): ERP is below a threshold calculated based on the distance

R between the person and the antenna / radiating structure, where $R > \lambda / 2 \pi$.

Single RF Sources Subject to Routine Environmental Evaluation	
RF Source frequency (MHz)	Threshold ERP (watts)
0.3-1.34	1,920 R ² .
1.34-30	3,450 R ² /f ² .
30-300	3.83 R ² .
300-1,500	0.0128 R ² f.
1,500-100,000	19.2R ² .
Note: R is in meters, f is in MHz.	



2.4 Calculated Result and Limit

Exposure Environment: General Population / Uncontrolled Exposure

<Radio 1>

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up EIRP (dBm)	Tune-up EIRP (W)	Distance (cm)	S (mW/cm ²)	S Limit (mW/cm ²)
2.4G;D1D	5.70	25.78	31.48	0.50	31.98	1.57761	54	0.04305	1.00000
5.2G;D1D	6.45	27.89	34.34	0.50	34.84	3.04789	54	0.08317	1.00000
5.3G;D1D	6.36	23.47	29.83	0.16	29.99	0.99770	54	0.02723	1.00000
5.6G;D1D	5.06	23.81	28.87	0.50	29.37	0.86497	54	0.02360	1.00000
5.8G;D1D	5.18	27.54	32.72	0.50	33.22	2.09894	54	0.05728	1.00000

<Radio 2>

WLAN 5GHz

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up EIRP (dBm)	Tune-up EIRP (W)	Distance (cm)	S (mW/cm ²)	S Limit (mW/cm ²)
5.6G;D1D	5.65	23.95	29.60	0.39	29.99	0.99770	54	0.02723	1.00000
5.8G;D1D	6.75	28.74	35.49	0.50	35.99	3.97192	54	0.10839	1.00000
5.81G;D1D	6.43	28.46	34.89	0.50	35.39	3.45939	54	0.09440	1.00000

WLAN 6GHz(LPI Access Point)

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up EIRP (dBm)	Tune-up EIRP (W)	Distance (cm)	S (mW/cm ²)	S Limit (mW/cm ²)
6.2G;D1D	10.81	-	26.46	0.50	26.96	0.49659	54	0.01355	1.00000
6.4G;D1D	3.72	-	25.73	0.50	26.23	0.41976	54	0.01145	1.00000
6.7G;D1D	10.10	-	26.20	0.50	26.70	0.46774	54	0.01276	1.00000
7.0G;D1D	9.75	-	24.63	0.50	25.13	0.32584	54	0.00889	1.00000

For WLAN 6GHz(Standard Power Access Point)

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up EIRP (dBm)	Tune-up EIRP (W)	Distance (cm)	S (mW/cm ²)	S Limit (mW/cm ²)
6.2G;D1D	10.81	-	29.69	0.50	30.19	1.04472	54	0.02851	1.00000
6.7G;D1D	4.31	-	28.34	0.50	28.84	0.76560	54	0.02089	1.00000

<Radio 4>

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up EIRP (dBm)	Tune-up EIRP (W)	Distance (cm)	S (mW/cm ²)	S Limit (mW/cm ²)
2.4G;BT-LE	3.65	19.00	22.65	0.50	23.15	0.20654	54	0.00564	1.00000



<Radio 1>

MPE Exemption Option C							
Frequency (MHz)	$\lambda/2\pi$ (m)	R (m)	Tune-up EIRP (dBm)	Tune-up ERP (dBm)	Tune-up ERP (W)	ERP Threshold (W)	MPE Exemption
2437	0.0196	0.54	29.89	27.74	0.594	5.599	Complies
5200	0.0092		32.68	30.53	1.130	5.599	Complies

<Radio 2>

For WLAN 5GHz

MPE Exemption Option C							
Frequency (MHz)	$\lambda/2\pi$ (m)	R (m)	Tune-up EIRP (dBm)	Tune-up ERP (dBm)	Tune-up ERP (W)	ERP Threshold (W)	MPE Exemption
5785	0.0082	0.54	35.99	33.84	2.421	5.599	Complies

For WLAN 6GHz(LPI Access Point)

MPE Exemption Option C							
Frequency (MHz)	$\lambda/2\pi$ (m)	R (m)	Tune-up EIRP (dBm)	Tune-up ERP (dBm)	Tune-up ERP (W)	ERP Threshold (W)	MPE Exemption
6185	0.0077	0.54	26.96	24.81	0.303	5.599	Complies

For WLAN 6GHz(Standard Power Access Point)

MPE Exemption Option C							
Frequency (MHz)	$\lambda/2\pi$ (m)	R (m)	Tune-up EIRP (dBm)	Tune-up ERP (dBm)	Tune-up ERP (W)	ERP Threshold (W)	MPE Exemption
5955	0.0080	0.54	30.19	28.04	0.637	5.599	Complies

<Radio 4>

MPE Exemption Option C							
Frequency (MHz)	$\lambda/2\pi$ (m)	R (m)	Tune-up EIRP (dBm)	Tune-up ERP (dBm)	Tune-up ERP (W)	ERP Threshold (W)	MPE Exemption
2440	0.0196	0.54	23.15	21.00	0.126	5.599	Complies



Simultaneous Transmission Analysis Mode:

Mode 1: R1: 2.4GHz/5GHz Low Band + R2: 5GHz High band + R4: Bluetooth

Simultaneous Transmissions Option C							
Frequency (MHz)	R (m)	Tune-up EIRP (dBm)	Tune-up ERP (dBm)	Tune-up ERP (W)	ERP Threshold (W)	Simultaneous Transmissions	Simultaneous Transmissions Limit
R1 2437	0.54	31.98	29.83	0.962	5.599	0.96	<= 1
R1 5200		34.84	32.69	1.858	5.599		
R2 5785		35.99	33.84	2.421	5.599		
R4 2440		23.15	21.00	0.126	5.599		

Mode 2: R1: 2.4GHz/5GHz Full Band + R2: 6GHz (LPI Access Point) + R4: Bluetooth

Simultaneous Transmissions Option C							
Frequency (MHz)	R (m)	Tune-up EIRP (dBm)	Tune-up ERP (dBm)	Tune-up ERP (W)	ERP Threshold (W)	Simultaneous Transmissions	Simultaneous Transmissions Limit
R1 2437	0.54	29.89	27.74	0.594	5.599	0.38	<= 1
R1 5200		32.68	30.53	1.130	5.599		
R2 6185		26.96	24.81	0.303	5.599		
R4 2440		23.15	21.00	0.126	5.599		

Mode 3: R1: 2.4GHz/5GHz Full Band + R2: 6GHz (Standard Power Access Point) + R4: Bluetooth

Simultaneous Transmissions Option C							
Frequency (MHz)	R (m)	Tune-up EIRP (dBm)	Tune-up ERP (dBm)	Tune-up ERP (W)	ERP Threshold (W)	Simultaneous Transmissions	Simultaneous Transmissions Limit
R1 2437	0.54	29.89	27.74	0.594	5.599	0.44	<= 1
R1 5200		32.68	30.53	1.130	5.599		
R2 5955		30.19	28.04	0.637	5.599		
R4 2440		23.15	21.00	0.126	5.599		

Note: The above antenna gain was declared by manufacturer.

—————THE END—————