

Radio Exposure Evaluation Report

FCC ID : UDX-600100010
Equipment : Wi-Fi 6 Outdoor Access Point
Brand Name : CISCO
Model Name : MR76-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 Jul. 25, 2019, and testing was started from Aug. 05, 2019 and completed on Dec. 09, 2019. We, SPORTON INTERNATIONAL INC. EMC & Wireless Communications 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 report must not be used by the client to claim product certification, approval, or endorsement by TAF or any agency of United States government.

The test results in this variant report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.



Approved by: Allen Lin

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory

No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)



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Summary of Test Result

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

Declaration of Conformity:

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

Comments and Explanations:

None.

Reviewed by: Ben Tseng

Report Producer: Ann Hou

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)
5GHz WLAN	5150-5250 5250-5350 5470-5725 5725-5850	5180-5240 5260-5320 5500-5700 5745-5825	802.11a/n: OFDM (BPSK, QPSK, 16QAM, 64QAM) 802.11ac: OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM) 802.11ax: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM)
Bluetooth	2400-2483.5	2402-2480	LE: DSSS (GFSK)

1.2 Table for Multiple Listing

The brand/model names in the following table are all refer to the identical product.

Sample	Description
SKU1: Screened C-temp	All the Samples are identical, the difference samples for difference NAND, DDR, Security chip.
SKU2: unscreened C-temp	

1.3 Table for Permissive Change

This product is an extension of original one reported under Sporton project number: FA972312

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

Modifications	Performance Checking
U-NII-2A and UNII-2C were added.	N/A

1.4 Testing Location

Testing Location			
☒	HWA YA	ADD : No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)	
		TEL : 886-3-327-3456	FAX : 886-3-327-0973
Test site Designation No. TW1190 with FCC.			
☐	JHUBEI	ADD : No.8, Ln. 724, Bo'ai St., Zhubei City, Hsinchu County, Taiwan (R.O.C.)	
		TEL : 886-3-656-9065	FAX : 886-3-656-9085
Test site Designation No. TW0006 with FCC.			

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 26 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

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

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 Calculated Result and Limit

Exposure Environment: General Population / Uncontrolled Exposure

WLAN 2.4G

Group 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;G1D	4.00	24.78	28.78	0.50	29.28	0.84723	26	0.09973	1.00000
2.4G;D1D	4.00	22.92	26.92	0.50	27.42	0.55208	26	0.06499	1.00000

Group 2

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;G1D	11.00	23.55	34.55	0.50	35.05	3.19890	26	0.37657	1.00000
2.4G;D1D	11.00	21.01	32.01	0.50	32.51	1.78238	26	0.20982	1.00000

Group 3

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;G1D	8.10	24.45	32.55	0.50	33.05	2.01837	26	0.23760	1.00000
2.4G;D1D	8.10	22.81	30.91	0.50	31.41	1.38357	26	0.16287	1.00000

Group 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;G1D	9.80	23.74	33.54	0.50	34.04	2.53513	26	0.29843	1.00000
2.4G;D1D	9.80	21.45	31.25	0.50	31.75	1.49624	26	0.17613	1.00000

Scanning Radio

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;G1D	4.60	13.68	18.28	0.50	18.78	0.07551	26	0.00889	1.00000
2.4G;D1D	4.60	21.72	26.32	0.50	26.82	0.48084	26	0.05660	1.00000

**Group 1(BF)**

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	7.01	19.46	26.47	0.50	26.97	0.49774	26	0.05859	1.00000

Group 2(BF)

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	14.01	19.46	33.47	0.50	33.97	2.49459	26	0.29366	1.00000

Group 3(BF)

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	11.11	19.46	30.57	0.50	31.07	1.27938	26	0.15061	1.00000

Group 4(BF)

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	12.81	19.29	32.10	0.50	32.60	1.81970	26	0.21421	1.00000

WLAN 5G**Group 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)
5.2G;D1D	7.00	21.97	28.97	0.50	29.47	0.88512	26	0.10419	1.00000
5.3G;D1D	7.00	22.17	29.17	0.50	29.67	0.92683	26	0.10910	1.00000
5.6G;D1D	7.00	22.49	29.49	0.50	29.99	0.99770	26	0.11745	1.00000
5.8G;D1D	7.00	24.52	31.52	0.50	32.02	1.59221	26	0.18743	1.00000

Group 2

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)
5.2G;D1D	13.00	9.79	22.79	0.50	23.29	0.21330	26	0.02511	1.00000
5.3G;D1D	13.00	16.42	29.42	0.50	29.92	0.98175	26	0.11557	1.00000
5.6G;D1D	13.00	16.42	29.42	0.50	29.92	0.98175	26	0.11557	1.00000
5.8G;D1D	13.00	22.45	35.45	0.50	35.95	3.93550	26	0.46328	1.00000

**Group 3**

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)
5.2G;D1D	7.10	19.19	26.29	0.50	26.79	0.47753	26	0.05621	1.00000
5.3G;D1D	7.10	22.17	29.27	0.50	29.77	0.94842	26	0.11165	1.00000
5.6G;D1D	7.10	22.14	29.24	0.50	29.74	0.94189	26	0.11088	1.00000
5.8G;D1D	7.10	25.33	32.43	0.50	32.93	1.96336	26	0.23112	1.00000

Group 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)
5.2G;D1D	11.30	11.49	22.79	0.50	23.29	0.21330	26	0.02511	1.00000
5.3G;D1D	11.30	18.02	29.32	0.50	29.82	0.95940	26	0.11294	1.00000
5.6G;D1D	11.30	18.15	29.45	0.50	29.95	0.98855	26	0.11637	1.00000
5.8G;D1D	11.30	24.17	35.47	0.50	35.97	3.95367	26	0.46542	1.00000

Scanning Radio

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)
5.2G;D1D	5.90	15.06	20.96	0.50	21.46	0.13996	26	0.01648	1.00000
5.3G;D1D	5.90	16.24	22.14	0.50	22.64	0.18365	26	0.02162	1.00000
5.6G;D1D	5.90	14.61	20.51	0.50	21.01	0.12618	26	0.01485	1.00000
5.8G;D1D	5.90	8.72	14.62	0.50	15.12	0.03251	26	0.00383	1.00000

Group 1(BF)

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)
5.2G;D1D	10.01	19.32	29.33	0.50	29.83	0.96161	26	0.11320	1.00000
5.3G;D1D	10.01	19.38	29.39	0.50	29.89	0.97499	26	0.11477	1.00000
5.6G;D1D	10.01	19.24	29.25	0.50	29.75	0.94406	26	0.11113	1.00000
5.8G;D1D	10.01	19.62	29.63	0.50	30.13	1.03039	26	0.12130	1.00000

Group 2(BF)

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)
5.2G;D1D	16.01	9.78	25.79	0.50	26.29	0.42560	26	0.05010	1.00000
5.3G;D1D	16.01	13.38	29.39	0.50	29.89	0.97499	26	0.11477	1.00000
5.6G;D1D	16.01	13.48	29.49	0.50	29.99	0.99770	26	0.11745	1.00000
5.8G;D1D	16.01	19.62	35.63	0.50	36.13	4.10204	26	0.48288	1.00000

**Group 3(BF)**

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)
5.2G;D1D	10.11	19.19	29.30	0.50	29.80	0.95499	26	0.11242	1.00000
5.3G;D1D	10.11	19.38	29.49	0.50	29.99	0.99770	26	0.11745	1.00000
5.6G;D1D	10.11	19.21	29.32	0.50	29.82	0.95940	26	0.11294	1.00000
5.8G;D1D	10.11	19.62	29.73	0.50	30.23	1.05439	26	0.12412	1.00000

Group 4(BF)

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)
5.2G;D1D	14.31	11.26	25.57	0.50	26.07	0.40458	26	0.04763	1.00000
5.3G;D1D	14.31	15.10	29.41	0.50	29.91	0.97949	26	0.11530	1.00000
5.6G;D1D	14.31	14.93	29.24	0.50	29.74	0.94189	26	0.11088	1.00000
5.8G;D1D	14.31	19.62	33.93	0.50	34.43	2.77332	26	0.32647	1.00000

BT

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	4.70	19.22	23.92	0.50	24.42	0.27669	26	0.03257	1.00000

WLAN 2.4G + 5G BF + scanning 2.4G + BT

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)	Ratio (S/Limit)
5.8G;D1D	16.01	19.62	35.63	0.50	36.13	4.10204	26	0.48288	1.00000	0.48288
2.4G;G1D	11.00	23.55	34.55	0.50	35.05	3.19890	26	0.37657	1.00000	0.37657
2.4G;D1D	4.60	21.72	26.32	0.50	26.82	0.48084	26	0.05660	1.00000	0.05660
2.4G;BT-LE	4.70	19.22	23.92	0.50	24.42	0.27669	26	0.03257	1.00000	0.03257
									Sum Ratio	0.94862
									Ratio Limit	1

WLAN 2.4G + 5G BF + scanning 5G + BT

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)	Ratio (S/Limit)
5.8G;D1D	16.01	19.62	35.63	0.50	36.13	4.10204	26	0.48288	1.00000	0.48288
2.4G;G1D	11.00	23.55	34.55	0.50	35.05	3.19890	26	0.37657	1.00000	0.37657
5.2G;D1D	5.90	15.06	20.96	0.50	21.46	0.13996	26	0.01648	1.00000	0.01648
2.4G;BT-LE	4.70	19.22	23.92	0.50	24.42	0.27669	26	0.03257	1.00000	0.03257
									Sum Ratio	0.98264
									Ratio Limit	1

—————THE END—————