

Radio Exposure Evaluation Report

FCC ID : LDKMU6CR2417

Equipment : Cisco Catalyst 9136I Access Point

Brand Name : Cisco

Model Name : C9136I-B

Applicant : Cisco Systems Inc
125 West Tasman Drive , San Jose, CA 95134, USA.

Manufacturer : Cisco Systems, Inc.
170 West Tasman Drive, San Jose, CA 95134, USA.

Standard : 47 CFR FCC Part 2 Subpart J, section 2.1091

The product was received on Aug. 09, 2021, and testing was started from Aug. 12, 2021 and completed on Sep. 28, 2021. We, SPORTON INTERNATIONAL INC. Hsinhua Laboratory, would like to declare that the tested sample has been evaluated in accordance with the procedures given in 47 CFR FCC Part 2 Subpart J, section 2.1091 and shown compliance with the applicable technical standards.

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



Approved by: Allen Lin

SPORTON INTERNATIONAL INC. Hsinhua Laboratory
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Photographs of EUT V01



History of this test report

Report No.	Version	Description	Issued Date
FA180526	01	Initial issue of report	Oct. 25, 2021



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: Amber Chiu



1 General Description

1.1 Information

1.1.1 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	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, 1024QAM)
6GHz WLAN	5925-7125	5955-7095 5965-7085 5985-7025 6025-6985	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)
Bluetooth	2400-2483.5	2402-2480	LE: DSSS (GFSK)

1.1.2 Antenna Information

Ant.	Brand	Model Name	Antenna Type	Connector
1	Foxconn	361.01530.005	PIFA	I-PEX
2	Foxconn	361.01530.005	PIFA	I-PEX
3	Foxconn	361.01530.005	PIFA	I-PEX
4	Foxconn	361.01530.005	PIFA	I-PEX
5	Foxconn	361.01530.005	Dipole	I-PEX
6	Foxconn	361.01530.005	Dipole	I-PEX
7	Foxconn	361.01530.005	Dipole	I-PEX
8	Foxconn	361.01530.005	Dipole	I-PEX
9	Foxconn	361.01530.005	PIFA	I-PEX
10	Foxconn	361.01530.005	PIFA	I-PEX
11	Foxconn	361.01530.005	PIFA	I-PEX
12	Foxconn	361.01530.005	PIFA	I-PEX



Ant.	Brand	Model Name	Antenna Type	Connector
13	Foxconn	361.01530.005	PIFA	I-PEX
14	Foxconn	361.01530.005	PIFA	I-PEX
15	Foxconn	361.01530.005	PIFA	I-PEX

Serving Radio

Ant.	Port	Gain (dBi)					
		2.4G	5G Primary	5G Secondary	5G Dual	6G	BT
1	1	4	5	-	5	-	-
2	2	4	5	-	5	-	-
3	3	4	5	-	5	-	-
4	4	4	5	-	5	-	-
5	5	-	-	5	5	-	-
6	6	-	-	5	5	-	-
7	7	-	-	5	5	-	-
8	8	-	-	5	5	-	-
9	1	-	-	-	-	6	-
10	2	-	-	-	-	6	-
11	3	-	-	-	-	6	-
12	4	-	-	-	-	6	-

Scanning Radio

Ant.	Port	Gain (dBi)			
		2.4G	5G	6G	BT
13	1	6	6	6	-
14	2	6	6	6	-

Ant.	Port	Gain (dBi)			
		2.4G	5G	6G	BT
15	1	-	-	-	5

Note 1: The EUT has fifteen antennas.

Note 2: The antenna for dual mode is cross polarized.

For 2.4GHz function:

For IEEE 802.11 b/g/n/VHT/ax mode (2TX/2RX)

Ant. 13 (port 1) and Ant. 14 (port 2) could transmit/receive simultaneously.

For IEEE 802.11 b/g/n/VHT/ax mode (4TX/4RX)

Ant. 1 (port 1), Ant. 2 (port 2), Ant. 3 (port 3) and Ant. 4 (port 4) could transmit/receive simultaneously.



For BT function:

For IEEE 802.15.1 Bluetooth mode (1TX/1RX)

Only Ant. 15 (port 1) can be used as transmitting/receiving antenna.

For 5GHz function:

For IEEE 802.11 a/n/ac/ax mode (2TX/2RX)

Ant. 13 (port 1) and Ant. 14 (port 2) could transmit/receive simultaneously.

For IEEE 802.11 a/n/ac/ax mode (4TX/4RX)

Ant. 1 (port 1), Ant. 2 (port 2), Ant. 3 (port 3) and Ant. 4 (port 4) could transmit/receive simultaneously.

Ant. 5 (port 5), Ant. 6 (port 6), Ant. 7 (port 7) and Ant. 8 (port 8) could transmit/receive simultaneously.

For IEEE 802.11 a/n/ac/ax mode (8TX/8RX)

Ant. 1 (port 1), Ant. 2 (port 2), Ant. 3 (port 3), Ant. 4 (port 4), Ant. 5 (port 5), Ant. 6 (port 6), Ant. 7(port 7), and Ant. 8 (port 8) could transmit/receive simultaneously.

For 6GHz function:

For IEEE 802.11 a/ax mode (2TX/2RX)

Ant. 13 (port 1) and Ant. 14 (port 2) could transmit/receive simultaneously.

For IEEE 802.11 a/ax mode (4TX/4RX)

Ant. 9 (port 1), Ant. 10 (port 2), Ant. 11(port 3) and Ant. 12 (port 4) could transmit/receive simultaneously.

1.1.3 Accessories

Accessories				
PoE	Brand Name	DELTA	Model Name	ADH-65AR B
	Power Rating	I/P: 100 - 240 Vac, 2.0 A, O/P: 56 Vdc, 1.161 A		

Reminder: Regarding to more detail and other information, please refer to user manual.

1.2 Testing Location

Test Lab. : Sporton International Inc. Hsinhua Laboratory		
<input checked="" type="checkbox"/>	Hsinhua (TAF: 3785)	ADD: No.52, Huaya 1st Rd., Guishan Dist., Taoyuan City 333411, Taiwan (R.O.C.) TEL: 886-3-327-3456 FAX: 886-3-327-0973
Test site Designation No. TW3785 with FCC.		
<input type="checkbox"/>	Wen 33rd.St. (TAF: 3785)	ADD: No.14-1, Ln. 19, Wen 33rd St., Guishan Dist., Taoyuan City 333010, Taiwan (R.O.C.) TEL: 886-3-318-0787 FAX: 886-3-318-0287
Test site Designation No. TW0008 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

Multiple Transmitters Condition

Co-location as simultaneously transmitting (co-transmitting) and the evaluation shall be consider that simultaneous transmissions from co-located devices the individual transmitters are evaluated separately. After sum of the individual value (basic restriction / reference level) are measured/calculated also have to under basic restriction / reference level.

Co-transmitting mode: WLAN 2.4G (Serving Radio Primary)+ WLAN 5G (Serving Radio Primary)+
WLAN 5G (Serving Radio Secondary)+ WLAN 6G+ Bluetooth

2.2 MPE Calculation Method

The MPE was calculated at 27 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 Calculated Result and Limit

Exposure Environment: General Population / Uncontrolled Exposure

Mode	DG (dBi)	Power (dBm)	EIRP (dBm)	Tolerance (dB)	Tune-up EIRP (dBm)	Tune-up EIRP (W)	Distance (cm)	S (mW/cm2)	Lim (mW/cm2)	Ratio (S/Limit)
2.4G;D1D	10.02	22.25	32.27	0.50	32.77	1.89234	27	0.20657	1.00000	0.20657
5.8G;D1D	11.02	23.23	34.25	0.50	34.75	2.98538	27	0.32588	1.00000	0.32588
5.8G;D1D	11.02	23.23	34.25	0.50	34.75	2.98538	27	0.32588	1.00000	0.32588
6.7G;D1D	12.02	15.36	27.38	0.50	27.88	0.61376	27	0.06700	1.00000	0.06700
2.4G;BT-LE	5	18.78	23.78	0.50	24.28	0.26792	27	0.02925	1.00000	0.02925
									Sum Ratio	0.95458
									Ratio Limit	1

—————THE END—————