



FCC RADIO EXPOSURE TEST REPORT

FCC ID : LDK-SMST9105AXI
Equipment : Catalyst 9105AX 802.11ax Access Point,
Catalyst 1105AX 802.11ax Access Point
Brand Name : Cisco
Model Name : C9105AXI-B, C9105AXI-C, C9105AXI-D, C9105AXI-F,
C9105AXI-N, C9105AXI-S, C9105AXI-K, C9105AXI-x,
C1105AXI-B, C1105AXI-C, C1105AXI-D, C1105AXI-F,
C1105AXI-N, C1105AXI-S, C1105AXI-K, C1105AXI-x
(Refer to section 1.2 for more details)
Applicant : Cisco Systems, Inc.
125 West Tasman Drive, San Jose, California, United States, 95134-1706
Manufacturer : Cisco Systems, Inc.
125 West Tasman Drive, San Jose, California, United States, 95134-1706
Standard : 47 CFR Part 2.1091

The product was received on Apr. 20, 2020, and testing was started from Apr. 28, 2020 and completed on Jun. 01, 2020. 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 government.

The test results in this 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: Cliff Chang

SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory

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



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Photographs of EUT v01



History of this test report

Report No.	Version	Description	Issued Date
FA992016-02	01	Initial issue of report	Jun. 10, 2020



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:

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

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) 802.11ax: OFDMA (BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM)
5GHz WLAN	5150-5250 5250-5350 5470-5725 5725-5850	5180-5240 5260-5320 5500-5720 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)
Bluetooth	2400-2483.5	2402-2480	GFSK
Zigbee	2400-2483.5	2405-2480	O-QPSK



1.2 Table for Multiple Listing

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

Equipment Name	Model Name	Description
Catalyst 9105AX 802.11ax Access Point	C9105AXI-B	All the models are identical, the difference equipment names/model names for difference marketing strategy.
	C9105AXI-C	
	C9105AXI-D	
	C9105AXI-F	
	C9105AXI-N	
	C9105AXI-S	
	C9105AXI-K	
	C9105AXI-x (x can be A-Z, regional country code)	
Catalyst 1105AX 802.11ax Access Point	C1105AXI-B	
	C1105AXI-C	
	C1105AXI-D	
	C1105AXI-F	
	C1105AXI-N	
	C1105AXI-S	
	C1105AXI-K	
	C1105AXI-x (x can be A-Z, regional country code)	

From the above models, model: C9105AXI-B was selected as representative model for the test and its data was recorded in this report.

1.3 Testing Location

Testing Location		
<input type="checkbox"/>	HWA YA	ADD : No. 52, Hwa Ya 1st Rd., Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL : 886-3-327-3456 FAX : 886-3-327-0973
<input checked="" type="checkbox"/>	JHUBEI	ADD : No.8, Lane 724, Bo-ai St., Jhubei City, HsinChu County 302, Taiwan, R.O.C. TEL : 886-3-656-9065 FAX : 886-3-656-9085

Test site Designation No. TW0006 with FCC.

Test site registered number IC 4086D with Industry Canada.



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)*	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)*	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 20 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/cm ²)	S Limit (mW/cm ²)
2.4G;D1D	6.43	20.46	26.89	0.50	27.39	0.54828	20	0.10907	1.00000
5.2G;D1D	7.51	20.73	28.24	0.50	28.74	0.74817	20	0.14884	1.00000
5.3G;D1D	7.51	20.36	27.87	0.50	28.37	0.68707	20	0.13669	1.00000
5.6G;D1D	7.79	20.44	28.23	0.50	28.73	0.74645	20	0.14850	1.00000
5.8G;D1D	7.79	20.28	28.07	0.50	28.57	0.71945	20	0.14313	1.00000
2.4G;BT-LE	2.30	5.28	7.58	0.50	8.08	0.00643	20	0.00128	1.00000
2.4G;G1D (Zigbee)	2.30	5.28	7.58	0.50	8.08	0.00643	20	0.00128	1.00000

Simultaneous Transmission Analysis Mode: WLAN 2.4GHz + WLAN 5GHz + Bluetooth LE

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)
2.4G;D1D	6.43	20.46	26.89	0.50	27.39	0.54828	20	0.10907	1.00000	0.10907
5.2G;D1D	7.51	20.73	28.24	0.50	28.74	0.74817	20	0.14884	1.00000	0.14884
2.4G;BT-LE	2.30	5.28	7.58	0.50	8.08	0.00643	20	0.00128	1.00000	0.00128
									Sum Ratio	0.25919
									Ratio Limit	1

Simultaneous Transmission Analysis Mode: WLAN 2.4GHz + WLAN 5GHz + Zigbee

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)
2.4G;D1D	6.43	20.46	26.89	0.50	27.39	0.54828	20	0.10907	1.00000	0.10907
5.2G;D1D	7.51	20.73	28.24	0.50	28.74	0.74817	20	0.14884	1.00000	0.14884
2.4G;G1D (Zigbee)	2.30	5.28	7.58	0.50	8.08	0.00643	20	0.00128	1.00000	0.00128
									Sum Ratio	0.25919
									Ratio Limit	1

Note: The above antenna gain was declared by manufacturer.

—————THE END—————