



FCC RADIO EXPOSURE TEST REPORT

FCC ID : QXO-AP560H
Equipment : 802.11ax Access Point
Brand Name : Extreme Networks
Model Name : AP560h
Applicant : Extreme Networks, Inc.
6480 Via Del Oro, San Jose, CA 95119
Manufacturer : Extreme Networks, Inc.
6480 Via Del Oro, San Jose, CA 95119
Standard : 47 CFR Part 2.1091

The product was received on Mar. 13, 2019, and testing was started from Mar. 22, 2019 and completed on May 22, 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 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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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: Wendy Pan



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 5725-5850	5180-5240 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	LE: DSSS (GFSK)
Thread	2400-2483.5	2405-2480	Thread: O-QPSK (250kbps)

1.2 Table for Multiple Listing

The EUT has three radios, the information as following table:

Radio	Function		
	WLAN 2.4GHz	WLAN 5GHz	Bluetooth/Thread
1	V	V	-
2	-	V	-
3	-	-	V

2. Table for EUT support function

Function	Support Type	Support Band
AP	Master	WLAN 2.4GHz/Bluetooth/Thread/WLAN 5GHz Band 1~4
Client	Slave without Radar Detection (Sensor Mode)	WLAN 2.4GHz/Bluetooth/Thread/WLAN 5GHz Band 1+4
Bridge	Master	WLAN 2.4GHz/Bluetooth/Thread/WLAN 5GHz Band 1+4
Mesh	Master	WLAN 2.4GHz/Bluetooth/Thread/WLAN 5GHz Band 1+4

Note: The above information was declared by manufacturer.

1.3 Testing Location

Testing Location



☐	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
☒	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 4086B 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 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

For Antenna 1 / Beam width 30/70:

Test Mode: 1T1S

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 (Radio 1)	7.89	23.28	31.17	0.50	31.67	1.46893	26	0.17292	1
5.2G;D1D (Radio 1)	8.27	22.09	30.36	0.50	30.86	1.21899	26	0.14349	1
5.8G;D1D (Radio 1)	8.27	20.09	28.36	0.50	28.86	0.76913	26	0.09054	1
5.2G;D1D (Radio 2)	7.93	20.06	27.99	0.50	28.49	0.70632	26	0.08314	1
5.8G;D1D (Radio 2)	7.93	23.01	30.94	0.50	31.44	1.39316	26	0.16400	1

Test Mode: 2T2S

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 (Radio 1)	7.89	23.17	31.06	0.50	31.56	1.43219	26	0.16859	1
5.2G;D1D (Radio 1)	8.27	23.68	31.95	0.50	32.45	1.75792	26	0.20693	1
5.8G;D1D (Radio 1)	8.27	21.50	29.77	0.50	30.27	1.06414	26	0.12527	1
5.2G;D1D (Radio 2)	7.93	22.30	30.23	0.50	30.73	1.18304	26	0.13926	1
5.8G;D1D (Radio 2)	7.93	24.87	32.80	0.50	33.30	2.13796	26	0.25167	1

Test Mode: 4T1S

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 (Radio 1)	7.89	28.07	35.96	0.03	35.99	3.97192	26	0.46756	1
5.2G;D1D (Radio 1)	14.29	21.65	35.94	0.05	35.99	3.97192	26	0.46756	1
5.8G;D1D (Radio 1)	14.29	21.69	35.98	0.01	35.99	3.97192	26	0.46756	1
5.2G;D1D (Radio 2)	13.95	22.04	35.99	0.00	35.99	3.97192	26	0.46756	1
5.8G;D1D (Radio 2)	13.95	22.03	35.98	0.01	35.99	3.97192	26	0.46756	1

**Test Mode: 4T4S**

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 (Radio 1)	7.89	25.02	32.91	0.50	33.41	2.19280	26	0.25813	1
5.2G;D1D (Radio 1)	8.27	26.28	34.55	0.50	35.05	3.19890	26	0.37656	1
5.8G;D1D (Radio 1)	8.27	24.51	32.78	0.50	33.28	2.12814	26	0.25051	1
5.2G;D1D (Radio 2)	7.93	25.43	33.36	0.50	33.86	2.43220	26	0.28631	1
5.8G;D1D (Radio 2)	7.93	27.35	35.28	0.50	35.78	3.78443	26	0.44549	1

**For Antenna 2 / Beam width 70/70:****Test Mode: 1T1S**

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 (Radio 1)	6.22	22.96	29.18	0.50	29.68	0.92897	26	0.10935	1
5.2G;D1D (Radio 1)	6.16	21.22	27.38	0.50	27.88	0.61376	26	0.07225	1
5.8G;D1D (Radio 1)	6.16	19.84	26.00	0.50	26.50	0.44668	26	0.05258	1
5.2G;D1D (Radio 2)	6.32	20.18	26.50	0.50	27.00	0.50119	26	0.05900	1
5.8G;D1D (Radio 2)	6.32	23.49	29.81	0.50	30.31	1.07399	26	0.12643	1

Test Mode: 2T2S

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 (Radio 1)	6.22	22.88	29.10	0.50	29.60	0.91201	26	0.10736	1
5.2G;D1D (Radio 1)	6.16	24.17	30.33	0.50	30.83	1.21060	26	0.14251	1
5.8G;D1D (Radio 1)	6.16	22.48	28.64	0.50	29.14	0.82035	26	0.09657	1
5.2G;D1D (Radio 2)	6.32	23.09	29.41	0.50	29.91	0.97949	26	0.11530	1
5.8G;D1D (Radio 2)	6.32	25.92	32.24	0.50	32.74	1.87932	26	0.22122	1

Test Mode: 4T1S

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 (Radio 1)	6.22	28.40	34.62	0.50	35.12	3.25087	26	0.38268	1
5.2G;D1D (Radio 1)	12.18	23.72	35.90	0.09	35.99	3.97192	26	0.46756	1
5.8G;D1D (Radio 1)	12.18	23.53	35.71	0.28	35.99	3.97192	26	0.46756	1
5.2G;D1D (Radio 2)	12.34	23.62	35.96	0.03	35.99	3.97192	26	0.46756	1
5.8G;D1D (Radio 2)	12.34	23.64	35.98	0.01	35.99	3.97192	26	0.46756	1

**Test Mode: 4T4S**

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 (Radio 1)	6.22	25.51	31.73	0.50	32.23	1.67109	26	0.19671	1
5.2G;D1D (Radio 1)	6.16	26.47	32.63	0.50	33.13	2.05589	26	0.24201	1
5.8G;D1D (Radio 1)	6.16	24.33	30.49	0.50	30.99	1.25603	26	0.14785	1
5.2G;D1D (Radio 2)	6.32	25.94	32.26	0.50	32.76	1.88799	26	0.22225	1
5.8G;D1D (Radio 2)	6.32	28.11	34.43	0.50	34.93	3.11172	26	0.36630	1

For Bluetooth Function:

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 (Radio 3)	2.61	-0.93	1.68	0.50	2.18	0.00165	26	0.00019	1

For Thread Function:

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 (Radio 3)	2.61	0.92	3.53	0.50	4.03	0.00253	26	0.00030	1

**Simultaneous Transmission Analysis Mode:**

The EUT has two antenna one is Antenna 1 / Beam width 30/70 and other is Antenna 2 / Beam width 70/70 and the worst case was found at Antenna 1 / Beam width 30/70. So the measurement will follow this same test configuration.

Mode 1: WLAN 2.4GHz (Radio 1) + WLAN 5GHz (Radio 2) + Bluetooth (Radio 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)	Ratio (S/Limit)
2.4G;G1D (Radio 1)	7.89	28.07	35.96	0.03	35.99	3.97192	26	0.46756	1	0.46756
5.2G;D1D (Radio 2)	13.95	22.04	35.99	0.00	35.99	3.97192	26	0.46756	1	0.46756
2.4G;BT (Radio 3)	2.61	-0.93	1.68	0.50	2.18	0.00165	26	0.00019	1	0.00019
									Sum Ratio	0.93531
									Ratio Limit	1

Mode 2: WLAN 5GHz (Radio 1) + WLAN 5GHz (Radio 2) + Bluetooth (Radio 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)	Ratio (S/Limit)
5.8G;D1D (Radio 1)	14.29	21.69	35.98	0.01	35.99	3.97192	26	0.46756	1	0.46756
5.2G;D1D (Radio 2)	13.95	22.04	35.99	0.00	35.99	3.97192	26	0.46756	1	0.46756
2.4G;BT (Radio 3)	2.61	-0.93	1.68	0.50	2.18	0.00165	26	0.00019	1	0.00019
									Sum Ratio	0.93531
									Ratio Limit	1

Mode 3: WLAN 2.4GHz (Radio 1) + WLAN 5GHz (Radio 2) + Thread (Radio 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)	Ratio (S/Limit)
2.4G;G1D (Radio 1)	7.89	28.07	35.96	0.03	35.99	3.97192	26	0.46756	1	0.46756
5.2G;D1D (Radio 2)	13.95	22.04	35.99	0.00	35.99	3.97192	26	0.46756	1	0.46756
2.4G;D1D (Radio 3)	2.61	0.92	3.53	0.50	4.03	0.00253	26	0.00030	1	0.00030
									Sum Ratio	0.93542
									Ratio Limit	1

**Mode 4: WLAN 5GHz (Radio 1) + WLAN 5GHz (Radio 2) + Thread (Radio 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)	Ratio (S/Limit)
5.8G;D1D (Radio 1)	14.29	21.69	35.98	0.01	35.99	3.97192	26	0.46756	1	0.46756
5.2G;D1D (Radio 2)	13.95	22.04	35.99	0.00	35.99	3.97192	26	0.46756	1	0.46756
2.4G;D1D (Radio 3)	2.61	0.92	3.53	0.50	4.03	0.00253	26	0.00030	1	0.00030
									Sum Ratio	0.93542
									Ratio Limit	1

Note: The above antenna gain was declared by manufacturer.

————THE END————