Radio Exposure Evaluation Report

FCC ID	:	**QXO-AP310**
Equipment	:	**Wireless Access Point**
Brand Name	:	Extreme networks or Extreme Networks
Model Name	:	**AP310i, AP310e**
Applicant	:	**Extreme Networks, Inc.** **6480 Via Del Oro, San Jose, CA 95119, United States**
Manufacturer	:	**Extreme Networks, Inc.** **6480 Via Del Oro, San Jose, CA 95119, United States**
Standard	:	**47 CFR Part 2.1091**

The product was received on Oct. 18, 2019, and testing was started from Nov. 01, 2019 and completed on Jan. 02, 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 United States 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.

Allen Lin

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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History of this test report

Report No.	Version	Description	Issued Date
FA992608-01	01	Initial issue of report	Apr. 06, 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:
None.

Reviewed by: Sam Tsai

Report Producer: Debby Hung

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) 802.11 ax: 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) 802.11 ax: OFDMA(BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM)
Bluetooth	2400-2483.5	2402-2480	LE: DSSS (GFSK)
Thread	2400-2483.5	2405-2480	DSSS (O-QPSK)

1.2 Table for Multiple Listing

Sample Number	Model Name	Description
1	AP310i	The “i” in AP310i indicates that it comes with internal antennas and the “e” in AP310e indicates that the access point comes with external antenna connectors.
2	AP310e	

1.3 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/ cm²)	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/ cm²)	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 (V/m) = $\frac{\sqrt{30 \times P \times G}}{d}$ Power Density: *Pd* (W/m²) = $\frac{E^2}{377}$

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

2.4G(Radio 1)+ 5G(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	10.50	23.95	34.45	0.50	34.95	3.12608	26	0.36800	1.00000	0.36800
5.2G;D1D	13.71	21.74	35.45	0.50	35.95	3.93550	26	0.46328	1.00000	0.46328
2.4G;BT-LE	8.00	1.08	9.08	0.50	9.58	0.00908	26	0.00107	1.00000	0.00107
									Sum Ratio	0.83235
									Ratio Limit	1

2.4G(Radio1)+ 5G(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	10.50	23.95	34.45	0.50	34.95	3.12608	26	0.36800	1.00000	0.36800
5.2G;D1D	13.71	21.74	35.45	0.50	35.95	3.93550	26	0.46328	1.00000	0.46328
2.4G;D1D	8.00	1.25	9.25	0.50	9.75	0.00944	26	0.00111	1.00000	0.00111
									Sum Ratio	0.83239
									Ratio Limit	1

5G(Radio 1)+ 5G(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)
5.2G;D1D	13.71	21.75	35.46	0.50	35.96	3.94457	26	0.46435	1.00000	0.46435
5.2G;D1D	13.71	21.74	35.45	0.50	35.95	3.93550	26	0.46328	1.00000	0.46328
2.4G;BT-LE	8.00	1.08	9.08	0.50	9.58	0.00908	26	0.00107	1.00000	0.00107
									Sum Ratio	0.92870
									Ratio Limit	1

5G(Radio 1)+ 5G(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)
5.2G;D1D	13.71	21.75	35.46	0.50	35.96	3.94457	26	0.46435	1.00000	0.46435
5.2G;D1D	13.71	21.74	35.45	0.50	35.95	3.93550	26	0.46328	1.00000	0.46328
2.4G;D1D	8.00	1.25	9.25	0.50	9.75	0.00944	26	0.00111	1.00000	0.00111
									Sum Ratio	0.92874
									Ratio Limit	1

———THE END———