



RF Exposure Evaluation Declaration

Product Name : Wireless Access Point

Model No. : AP410C

FCC ID : QXO-AP410C

Applicant : Extreme Networks, Inc

Address : 6480 Via Del Oro, San Jose, CA 95119

Date of Receipt : Sep. 20, 2019

Issued Date : Dec. 30, 2019

Report No. : 1992128R-RF-US-P20V01

Report Version : V1.1

The test results presented in this report relate only to the object tested.

The measurement result is considered in conformance with the requirement if it is within the prescribed limit, It is not necessary to account the uncertainty associated with the measurement result, unless the specification, standard or customer have special requirements

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Test Report Certification

Issued Date: Dec. 30, 2019

Report No.: 1992128R-RF-US-P20V01



Product Name : Wireless Access Point
Applicant : Extreme Networks, Inc
Address : 6480 Via Del Oro, San Jose, CA 95119
Manufacturer : Extreme Networks, Inc
Address : 6480 Via Del Oro, San Jose, CA 95119
Model No. : AP410C
Brand : Extreme Networks
FCC ID : QXO-AP410C
EUT Voltage : DC 37~57V
Applicable Standard : KDB 447498D01V06
FCC Part1.1310
Test Result : Complied
Performed Location : DEKRA Testing and Certification (Suzhou) Co., Ltd.
No.99 Hongye Rd., Suzhou Industrial Park, Suzhou,
215006, Jiangsu, China
TEL: +86-512-6251-5088 / FAX: +86-512-6251-5098
FCC Designation Number: CN1199

Documented By :



(Project Assistant: Kitty Li)

Reviewed By :



(Senior Engineer: Frank He)

Approved By :



(Engineer Supervisor: Jack Zhang)

1. RF Exposure Evaluation

1.1. Limits

According to FCC 1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in 1.1307(b)

LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Average Time (Minutes)
(A) Limits for Occupational/ Control Exposures				
300-1500	--	--	F/300	6
1500-100,000	--	--	5	6
(B) Limits for General Population/ Uncontrolled Exposures				
300-1500	--	--	F/1500	6
1500-100,000	--	--	1	30

F= Frequency in MHz

Friis Formula

Friis transmission formula: $P_d = (P_{out} \cdot G) / (4 \cdot \pi \cdot r^2)$

Where

P_d = power density in mW/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 3.1416

R = distance between observation point and center of the radiator in cm

P_d is the limit of MPE, 1 mW/cm². If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.

1.2. Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

The temperature and related humidity: 18°C and 78% RH.

1.3. Test Result of RF Exposure Evaluation

Product	:	Wireless Access Point
Test Item	:	RF Exposure Evaluation
Test Site	:	AC-6

Antenna Information:

BLE 2.4GHz:

Antenna Model No.	N/A					
Antenna Manufacturer	N/A					
Antenna Delivery	☒	1*TX+1*RX	☐	2*TX+2*RX	☐	3*TX+3*RX
Antenna Technology	☒	SISO				
	☐	MIMO	☐	Basic methodology		
			☐	Sectorized antenna systems		
			☐	Cross-polarized antennas		
			☐	Unequal antenna gains, with equal transmit powers		
			☐	Spatial Multiplexing		
			☐	Cyclic Delay Diversity (CDD)		
Antenna Type	PIFA					
Antenna Gain	3.4dBi					

WLAN 2.4GHz:

Antenna Model No.	N/A				
Antenna Manufacturer	N/A				
Antenna Delivery	☒	1*TX+1*RX	☒	2*TX+2*RX	☐ 3*TX+3*RX
Antenna Technology	☒	SISO			
	☒	MIMO	☐	Basic methodology	
			☐	Sectorized antenna systems	
			☐	Cross-polarized antennas	
			☐	Unequal antenna gains, with equal transmit powers	
			☒	Spatial Multiplexing	
			☒	Cyclic Delay Diversity (CDD)	
Antenna Type	PIFA				
Antenna Gain(Radio 1)					
Antenna Technology	Ant Gain (dBi)				
Ant 4(Radio 1)	4.00				
Antenna Gain(Radio 2)					
Antenna Technology	Ant Gain (dBi)				
☒	SISO	☒	Ant1 (Radio 2)	3.80	
☒		Ant2 (Radio 2)	3.90		
☒	CDD			3.90dBi for Power; 6.91dBi for PSD	
☒	Beam-forming			6.91dBi for Power; 6.91dBi for PSD	

WLAN 5GHz:

Antenna Model No.	N/A									
Antenna Manufacturer	N/A									
Antenna Delivery	☒	1*TX+1*RX	☒	2*TX+2*RX	☒	3*TX+3*RX	☒	4*TX+4*RX		
Antenna Technology	☒	SISO								
	☒	MIMO	☐	Basic methodology						
			☐	Sectorized antenna systems						
			☐	Cross-polarized antennas						
			☐	Unequal antenna gains, with equal transmit powers						
			☒	Spatial Multiplexing						
			☒	Cyclic Delay Diversity (CDD)						
Antenna Type	PIFA									
Antenna Gain(Radio 1)										
Antenna Technology	Ant Gain (dBi)									
Ant 4(Radio 1)	3.3									
Antenna Gain(Radio 2)										
Antenna Technology	Ant Gain (dBi)									
☒	SISO	☒	Ant1 (Radio 2)	4.5						
☒		Ant2 (Radio 2)	4.7							
☒	CDD			4.7dBi for Power; 7.71dBi for PSD						
☒	Beam-forming			7.71dBi for Power; 7.71dBi for PSD						

Antenna Gain(Radio 3)			
Antenna Technology			Ant Gain (dBi)
☒	SISO	☒ Ant3 (Radio 3)	4.7
		☒ Ant5 (Radio 3)	4.6
		☒ Ant6 (Radio 3)	4.6
		☒ Ant7 (Radio 3)	4.7
☒	2*2 CDD		4.7dBi for Power; 7.71dBi for PSD
☒	2*2 Beam-forming		7.71dBi for Power; 7.71dBi for PSD
☒	4*4 CDD		4.7dBi for Power; 10.72dBi for PSD
☒	4*4 Beam-forming		10.72dBi for Power; 10.72dBi for PSD

Note: The device supports 3 radios, radio 1(1*1 2.4GHz & 1*1 5GHz full band); radio 2(2*2 2.4GHz & 2*2 5GHz low band); radio 3(4*4 5GHz full band & 1*1 BLE), and radio 2 & 3 can works with Dual 2.4GHz & 5GHz mode and Dual 5GHz mode. As the 5GHz high band filter is different between two modes, additional Radio 3 5GHz high band mode is tested for compliance.

Dual 2.4GHz & 5GHz mode: Radio 2(2.4GHz 2*2) + Radio 3(5GHz full band 4*4)

Dual 5GHz mode: Radio 2(5GHz low band 2*2) + Radio 3(5GHz high band 4*4)

Power Density

Standalone modes:

AP410C:

Wireless Radio	Test Mode	Frequency Band (MHz)	Maximum EIRP (dBm)	Power Density at R = 20cm (mW/cm ²)	Power Density Limit at R = 20 cm (mW/cm ²)
Radio 3	BLE	2400 ~ 2483.5	9.79	0.002	1.0
Radio 1	802.11b/g/n/ac/ax	2400 ~ 2483.5	26.93	0.098	1.0
Radio 2	802.11b/g/n/ac/ax	2400 ~ 2483.5	31.8	0.301	1.0
Radio 1	802.11a/n/ac/ax	5150 ~ 5250 & 5725 ~ 5850	23.76	0.047	1.0
Radio 2	802.11a/n/ac/ax	5150 ~ 5250	29.63	0.183	1.0
Radio 3 Full band	802.11a/n/ac/ax	5150 ~ 5250 & 5725 ~ 5850	34.61	0.575	1.0
Radio 3 High band	802.11a/n/ac/ax	5725 ~ 5850	33.83	0.481	1.0

Simultaneous transmission:

Wireless Configure	Frequency Range (MHz)	Maximum EIRP (dBm)				Limit of Power Density S(mW/cm ²)	Power Density S at R = 20 cm (mW/cm ²)				Rate	Limit
		Radio 1	Radio 2	Radio 3	BLE		Radio 1	Radio 2	Radio 3	BLE		
Radio 1 + Radio 2(2.4GHz Only) + Radio 3(5GHz Full Band) + BLE	2.4G+5G	26.93	31.8	34.61	9.79	1.0	0.098	0.301	0.575	0.002	0.976	1
Radio 1 + Radio 2(5GHz Low Band) + Radio 3(5GHz High Band) + BLE	2.4G+5G	26.93	29.63	33.83	9.79	1.0	0.098	0.183	0.481	0.002	0.763	1

The EUT support simultaneously transmit with Radio 1 + Radio 2+ Radio 3 + BLE.

The worst combination should be shown in the report. The simultaneously safety distance is 20cm for installed for Wireless Access Point without any other radio equipment.

_____ The End _____