RF Exposure Evaluation declaration

Product Name ： Spark Wave 2 AC1200 - Dualband Concurrent Enterprise AP
Trade Name ： IgniteNet
Model No. ： SP-W2-AC1200
FCC ID. ： HED-SPW2AC1200

Applicant : Accton Technology Corp
Address ： No.1, Creation Rd. III, Science-based Industrial Park, Hsinchu, Taiwan, R.O.C.

Date of Receipt : Jul. 14, 2017
Date of Declaration : Aug. 23, 2017
Report No. : 1770196R-RFUSP02V00
Report Version : V1.0

Testing Laboratory
3024

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: $Pd = (Pout*G)/(4*pi*r^2)$

Where

Pd = power density in mW/cm^2

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 3.1416

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

Pd id the limit of MPE, 1 mW/cm^2 . 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℃ and 78％ RH.

1.3. Test Result of RF Exposure Evaluation

Product	Spark Wave 2 AC1200 - Dualband Concurrent Enterprise AP
Test Mode	Transmit_ CDD mode
Test Condition	RF Exposure Evaluation

Antenna Gain

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 6 dBi in linear 3.98 scale.

Output Power into Antenna & RF Exposure Evaluation Distance:

IEEE 802.11b (ANT 0+1)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm^2)
1	2412	305.8440	0.24217
6	2437	394.0034	0.31197
11	2462	250.2649	0.19816

IEEE 802.11g (ANT 0+1)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm^2)
1	2412	76.7185	0.06075
6	2437	262.1803	0.20759
11	2462	77.2859	0.06119

The power density Pd (4th column) at a distance of 20 cm calculated from the Friis transmission formula is far below the limit of 1 mW/cm^2.

The results are evaluated using the maximum power.

Product	Spark Wave 2 AC1200 - Dualband Concurrent Enterprise AP
Test Mode	Transmit_ MIMO Mode
Test Condition	RF Exposure Evaluation

Antenna Gain

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 6 dBi in linear 3.98 scale.

Output Power into Antenna & RF Exposure Evaluation Distance:

IEEE 802.11n (20MHz) (ANT 0+1)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm^2)
1	2412	76.3836	0.06048
6	2437	249.4595	0.19752
11	2462	85.4280	0.06764

IEEE 802.11n (40MHz) (ANT 0+1)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm^2)
3	2422	34.5541	0.02736
6	2437	53.2844	0.04219
9	2452	26.5583	0.02103

The power density Pd (4th column) at a distance of 20 cm calculated from the Friis transmission formula is far below the limit of 1 mW/cm^2.

The results are evaluated using the maximum power.

Product	Spark Wave 2 AC1200 - Dualband Concurrent Enterprise AP
Test Mode	Transmit_ CDD Mode
Test Condition	RF Exposure Evaluation

Antenna Gain

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 8 dBi in linear 6.31 scale.

Output Power into Antenna & RF Exposure Evaluation Distance:

IEEE 802.11a (ANT 0+1)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm^2)
36	5180	114.1826	0.14334
40	5220	360.5786	0.45265
44	5240	236.3742	0.29673

IEEE 802.11a (ANT 0+1)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm^2)
149	5745	369.5728	0.46394
157	5785	347.1363	0.43577
165	5825	342.3734	0.42979

The power density Pd (4th column) at a distance of 20 cm calculated from the Friis transmission formula is far below the limit of 1 mW/cm^2.

The results are evaluated using the maximum power.

Product	Spark Wave 2 AC1200 - Dualband Concurrent Enterprise AP
Test Mode	Transmit_ MIMO Mode
Test Condition	RF Exposure Evaluation

Antenna Gain

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 8 dBi in linear scale.

Output Power into Antenna & RF Exposure Evaluation Distance:

IEEE 802.11n (20MHz) (ANT 0+1)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm^2)
36	5180	128.4103	0.16120
40	5220	379.7519	0.47671
44	5240	289.7344	0.36371

IEEE 802.11n (20MHz) (ANT 0+1)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm^2)
149	5745	376.3570	0.47245
157	5785	345.7801	0.43407
165	5825	348.8189	0.43788

The power density Pd (4th column) at a distance of 20 cm calculated from the Friis transmission formula is far below the limit of 1 mW/cm^2.

The results are evaluated using the maximum power.

Product	Spark Wave 2 AC1200 - Dualband Concurrent Enterprise AP
Test Mode	Transmit_ MIMO Mode
Test Condition	RF Exposure Evaluation

Antenna Gain

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 8 dBi in linear scale.

Output Power into Antenna & RF Exposure Evaluation Distance:

IEEE 802.11n (40MHz) (ANT 0+1)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm^2)
38	5190	66.2217	0.08313
46	5230	203.7042	0.25572

IEEE 802.11n (40MHz) (ANT 0+1)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm^2)
151	5755	260.1357	0.32656
159	5795	327.7178	0.41139

The power density Pd (4th column) at a distance of 20 cm calculated from the Friis transmission formula is far below the limit of 1 mW/cm^2.

The results are evaluated using the maximum power.

Product	Spark Wave 2 AC1200 - Dualband Concurrent Enterprise AP
Test Mode	Transmit_ MIMO Mode
Test Condition	RF Exposure Evaluation

Antenna Gain

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 8 dBi in linear scale.

Output Power into Antenna & RF Exposure Evaluation Distance:

IEEE 802.11ac (80MHz) (ANT 0+1)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm^2)
42	5210	35.3997	0.04444

IEEE 802.11ac (80MHz) (ANT 0+1)			
WLAN Function			
Channel	Channel Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm^2)
155	5775	127.8792	0.16053

The power density Pd (4th column) at a distance of 20 cm calculated from the Friis transmission formula is far below the limit of 1 mW/cm^2.

The results are evaluated using the maximum power.

Product	Spark Wave 2 AC1200 - Dualband Concurrent Enterprise AP
Test Mode	Transmit
Test Condition	RF Exposure Evaluation

Power Density (2.4GHz) (mW/cm2)	Power Density (5GHz) (mW/cm2)	Total Power Density (2.4GHz+5GHz) (mW/cm2)	Limit (mW/cm2)
0.31197	0.47245	0.78442	1.00