

# RF Exposure Evaluation declaration

Product Name : SpectraGuard® Access Point / Sensor

Model No. : SS-300AT-C-60

FCC ID : TOR-SS300ATC60

Applicant : AirTight Networks, Inc.

Address : 339 N. Bernardo Avenue, Suite #200, Mountain View, California, USA

Date of Receipt : Jul. 03, 2013

Date of Declaration : Aug. 20, 2013

Report No. : 137146R-RFUSP28V01-A

The declaration results relate only to the samples calculated.

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## 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 <sup>2</sup> )	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:  $P_d = (P_{out} * G) / (4 * \pi * r^2)$

Where

$P_d$  = power density in mW/cm<sup>2</sup>

$P_{out}$  = 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

$P_d$  is the limit of MPE, 1 mW/cm<sup>2</sup>. 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 : SpectraGuard® Access Point / Sensor  
Test Item : RF Exposure Evaluation  
Test Site : No.3 OATS

#### 2TX (PIFA Antenna)

##### 802.11b (1Mbps) Output Power Into Antenna & RF Exposure Evaluation Distance (3.89dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm <sup>2</sup> )
1	2412.00	77.6247	0.037821
6	2437.00	179.4734	0.087444
11	2462.00	71.9449	0.035053

Power density in column 4 is much lower than the limit (1 mW/cm<sup>2</sup>).

##### 802.11g (6Mbps) Output Power Into Antenna & RF Exposure Evaluation Distance (3.89dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm <sup>2</sup> )
01	2412.00	17.9473	0.008744
06	2437.00	174.9847	0.085257
11	2462.00	13.7404	0.006695

Power density in column 4 is much lower than the limit (1 mW/cm<sup>2</sup>).

##### 802.11a (6Mbps) Output Power Into Antenna & RF Exposure Evaluation Distance (2.9dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm <sup>2</sup> )
149	5745.00	65.4636	0.025394
157	5785.00	285.7591	0.110849
165	5825.00	261.8183	0.101562

Power density in column 4 is much lower than the limit (1 mW/cm<sup>2</sup>).

### 802.11n-20MHz\_14.4Mbps - 2.4G Band

#### Output Power Into Antenna & RF Exposure Evaluation Distance (3.89dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm <sup>2</sup> )
01	2412.00	18.7068	0.009114
06	2437.00	178.6488	0.087042
11	2462.00	14.7231	0.007173

Power density in column 4 is much lower than the limit (1 mW/cm<sup>2</sup>).

### 802.11n-40MHz\_30Mbps - 2.4G Band

#### Output Power Into Antenna & RF Exposure Evaluation Distance (3.89dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm <sup>2</sup> )
01	2422.00	10.5196	0.005125
04	2437.00	172.9816	0.084281
07	2452.00	8.7297	0.004253

Power density in column 4 is much lower than the limit (1 mW/cm<sup>2</sup>).

### 802.11n-20MHz\_14.4Mbps - 5G Band

#### Output Power Into Antenna & RF Exposure Evaluation Distance (2.9dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm <sup>2</sup> )
149	5745.00	93.3254	0.036202
157	5785.00	272.2701	0.105616
165	5825.00	244.3431	0.094783

Power density in column 4 is much lower than the limit (1 mW/cm<sup>2</sup>).

### 802.11n-40MHz\_30Mbps - 5G Band

#### Output Power Into Antenna & RF Exposure Evaluation Distance (2.9dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm <sup>2</sup> )
151	5755.00	73.7904	0.028624
159	5795.00	231.2065	0.089687

Power density in column 4 is much lower than the limit (1 mW/cm<sup>2</sup>).

**802.11a (6Mbps) Output Power Into Antenna & RF Exposure Evaluation Distance (2.64dBi):**

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm <sup>2</sup> )
36	5180.00	48.7528	0.017813
44	5220.00	45.4988	0.016624
48	5240.00	46.1318	0.016855

Power density in column 4 is much lower than the limit (1 mW/cm<sup>2</sup>).

**802.11n-20MHz\_14.4Mbps**
**Output Power Into Antenna & RF Exposure Evaluation Distance (2.64Bi):**

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm <sup>2</sup> )
36	5180.00	44.8745	0.016396
44	5220.00	46.9894	0.017168
48	5240.00	45.7088	0.016701

Power density in column 4 is much lower than the limit (1 mW/cm<sup>2</sup>).

**802.11n-40MHz\_30Mbps**
**Output Power Into Antenna & RF Exposure Evaluation Distance (2.64dBi):**

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm <sup>2</sup> )
38	5190.00	45.2898	0.016547
46	5230.00	45.4988	0.016624

Power density in column 4 is much lower than the limit (1 mW/cm<sup>2</sup>).