

# RF Exposure Evaluation declaration

Product Name	SpectraGuard® Access Point / Sensor
Model No.	SS-300-AT-C-60
FCC ID	TOR-SS300AT60

Applicant	AirTight Networks, Inc.
Address	339 N. Bernardo Avenue, Suite #200, Mountain View, California, USA

Date of Receipt	Oct. 11, 2012
Date of Declaration	Oct. 29, 2012
Report No.	12A193R-RFUSP28V01

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  $\text{mW/cm}^2$

$P_{out}$  = 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,  $1 \text{ mW/cm}^2$ . 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:  $18^\circ\text{C}$  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	78.8860	0.038435
6	2437.00	171.7908	0.083701
11	2462.00	68.0769	0.033169

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> )
1	2412.00	17.9473	0.008744
6	2437.00	163.6817	0.079750
11	2462.00	13.4896	0.006572

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	68.3912	0.026530
157	5785.00	289.7344	0.112391
165	5825.00	268.5344	0.104167

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	17.2584	0.008409
06	2437.00	161.8080	0.078837
11	2462.00	14.7911	0.007207

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	9.8628	0.004805
04	2437.00	160.3245	0.078114
07	2452.00	9.0782	0.004423

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	89.1251	0.034572
157	5785.00	263.6331	0.102266
165	5825.00	230.1442	0.089275

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	71.4496	0.027716
159	5795.00	223.8721	0.086842

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	46.2381	0.016894
44	5220.00	42.4620	0.015514
48	5240.00	41.8794	0.015301

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	42.3643	0.015479
44	5220.00	44.6684	0.016320
48	5240.00	43.4510	0.015876

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	41.0204	0.014988
46	5230.00	43.5512	0.015912

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