

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

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

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 : SpectraGuard® Access Point / Sensor
 Test Item : RF Exposure Evaluation
 Test Site : No.3 OATS

3TX (PIFA Antenna)

802.11b (1Mbps) Output Power Into Antenna & RF Exposure Evaluation Distance (4.14dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
1	2412.00	269.1535	0.138909
6	2437.00	251.7677	0.129936
11	2462.00	261.2161	0.134813

Power density in column 4 is much lower than the limit (1 mW/cm²).

802.11g (6Mbps) Output Power Into Antenna & RF Exposure Evaluation Distance (4.14dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
01	2412.00	92.8966	0.047944
06	2437.00	439.5416	0.226846
11	2462.00	82.9851	0.042828

Power density in column 4 is much lower than the limit (1 mW/cm²).

802.11a (6Mbps) Output Power Into Antenna & RF Exposure Evaluation Distance (5.72dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
149	5745.00	116.4126	0.086443
157	5785.00	178.6488	0.132657
165	5825.00	192.7525	0.143130

Power density in column 4 is much lower than the limit (1 mW/cm²).

802.11n-20MHz_21.7Mbps - 2.4G Band
Output Power Into Antenna & RF Exposure Evaluation Distance (4.14dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
01	2412.00	95.0605	0.049060
06	2437.00	452.8976	0.233739
11	2462.00	81.0961	0.041853

Power density in column 4 is much lower than the limit (1 mW/cm²).

802.11n-40MHz_45Mbps - 2.4G Band
Output Power Into Antenna & RF Exposure Evaluation Distance (4.14dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
01	2422.00	66.0693	0.034098
04	2437.00	436.5158	0.225284
07	2452.00	67.6083	0.034892

Power density in column 4 is much lower than the limit (1 mW/cm²).

802.11n-20MHz_21.7Mbps - 5G Band
Output Power Into Antenna & RF Exposure Evaluation Distance (5.72dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
149	5745.00	116.9499	0.086842
157	5785.00	178.6488	0.132657
165	5825.00	194.0886	0.144122

Power density in column 4 is much lower than the limit (1 mW/cm²).

802.11n-40MHz_45Mbps - 5G Band
Output Power Into Antenna & RF Exposure Evaluation Distance (5.72dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
151	5755.00	93.3254	0.069300
159	5795.00	189.2344	0.140518

Power density in column 4 is much lower than the limit (1 mW/cm²).

802.11a (6Mbps) Output Power Into Antenna & RF Exposure Evaluation Distance (3.87dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
36	5180.00	40.0867	0.019442
44	5220.00	40.5509	0.019667
48	5240.00	41.4954	0.020125

Power density in column 4 is much lower than the limit (1 mW/cm²).

802.11n-20MHz_21.7Mbps
Output Power Into Antenna & RF Exposure Evaluation Distance (3.87Bi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
36	5180.00	43.2514	0.020976
44	5220.00	39.3550	0.019087
48	5240.00	40.0867	0.019442

Power density in column 4 is much lower than the limit (1 mW/cm²).

802.11n-40MHz_45Mbps
Output Power Into Antenna & RF Exposure Evaluation Distance (3.87dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
38	5190.00	40.7380	0.019757
46	5230.00	40.0867	0.019442

Power density in column 4 is much lower than the limit (1 mW/cm²).