

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 (Dipole Antenna)

802.11b (1Mbps) Output Power Into Antenna & RF Exposure Evaluation Distance (3dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
1	2412.00	221.3095	0.087848
6	2437.00	291.7427	0.115806
11	2462.00	143.2188	0.056850

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 (3dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
01	2412.00	55.4626	0.022016
06	2437.00	374.1106	0.148501
11	2462.00	61.2350	0.024307

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 (5dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
149	5745.00	109.3956	0.068823
157	5785.00	172.1869	0.108325
165	5825.00	169.4338	0.106593

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 (3dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
01	2412.00	65.0130	0.025807
06	2437.00	385.4784	0.153014
11	2462.00	59.8412	0.023754

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 (3dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
01	2422.00	33.0370	0.013114
04	2437.00	389.0451	0.154430
07	2452.00	32.5087	0.012904

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 (5dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
149	5745.00	115.3453	0.072566
157	5785.00	167.1091	0.105131
165	5825.00	167.8804	0.105616

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 (5dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
151	5755.00	74.6449	0.046960
159	5795.00	174.5822	0.109832

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 (5dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
36	5180.00	18.2810	0.011501
44	5220.00	15.5239	0.009766
48	5240.00	14.2233	0.008948

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 (5dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
36	5180.00	18.1134	0.011395
44	5220.00	18.4077	0.011581
48	5240.00	17.9887	0.011317

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 (5dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm ²)
38	5190.00	19.5884	0.012323
46	5230.00	20.4644	0.012875

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