

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.

The declaration shall not be reproduced except in full without the written approval of QuieTek Corporation.
This report must not be used to claim product endorsement by NVLAP any agency of the U.S. Government

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/cm^2

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/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°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	207.0141	0.082173
6	2437.00	271.6439	0.107828
11	2462.00	133.3521	0.052933

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)
1	2412.00	50.8159	0.020171
6	2437.00	346.7369	0.137636
11	2462.00	57.8096	0.022947

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	65.4636	0.025985
06	2437.00	358.0964	0.142145
11	2462.00	56.2341	0.022322

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	31.2608	0.012409
04	2437.00	370.6807	0.147140
07	2452.00	30.6902	0.012182

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	37.1535	0.023374
44	5220.00	43.0527	0.027085
48	5240.00	30.9030	0.019442

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	42.4620	0.026713
44	5220.00	43.1519	0.027148
48	5240.00	32.2849	0.020311

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	30.6196	0.019263
46	5230.00	33.4195	0.021025

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