RF Exposure Evaluation declaration

Product Name : SpectraGuard Sensor

Model No. : SS-300-AT-C-50

FCC ID : TOR-SS300ATC50

Applicant : AirTight Networks, Inc.

Address : 339 N. Bernardo Avenue, Suite #200 Mountain View, CA United States 94043

Date of Receipt : Aug. 30, 2010

Date of Declaration : Sep. 17, 2010

Report No. : 109037R-RFUSP32V01

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: $Pd = (Pout*G)/(4*pi*r^2)$

Where

Pd = power density in mW/cm^2

Pout = 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

Pd id 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℃and 78％ RH.

1.3. Test Result of RF Exposure Evaluation

Product : SpectraGuard Sensor
Test Item : RF Exposure Evaluation
Test Site : No.3 OATS

802.11b (1Mbps) Output Power Into Antenna & RF Exposure Evaluation Distance (6.16dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm2)
1	2412.00	459.1980	0.377338
6	2437.00	881.0489	0.723987
11	2462.00	469.8941	0.386127

The RF exposure at 20 cm is below limit.

802.11g (6Mbps) Output Power Into Antenna & RF Exposure Evaluation Distance (6.16dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm2)
1	2412.00	535.7967	0.440282
6	2437.00	883.0799	0.725656
11	2462.00	638.2635	0.524482

The RF exposure at 20 cm is below limit.

802.11a (6Mbps) Output Power Into Antenna & RF Exposure Evaluation Distance (6.30dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm2)
149	5745.00	790.6786	0.671012
157	5785.00	881.0489	0.747705
165	5825.00	835.6030	0.709138

The RF exposure at 20 cm is below limit.

802.11n-20MHz_13Mbps - 2.4G Band

Output Power Into Antenna & RF Exposure Evaluation Distance (6.16dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm2)
01	2412.00	454.9881	0.373879
06	2437.00	946.2372	0.777554
11	2462.00	534.5644	0.439269

The RF exposure at 20 cm is below limit.

802.11n-40MHz_27Mbps - 2.4G Band

Output Power Into Antenna & RF Exposure Evaluation Distance (6.16dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm2)
01	2422.00	274.1574	0.225284
04	2437.00	903.6495	0.742558
07	2452.00	182.8100	0.150221

The RF exposure at 20 cm is below limit.

802.11n-20MHz_13Mbps - 5G Band

Output Power Into Antenna & RF Exposure Evaluation Distance (6.30dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm2)
149	5745.00	843.3348	0.715699
157	5785.00	859.0135	0.729005
165	5825.00	799.8343	0.678782

The RF exposure at 20 cm is below limit.

802.11n-40MHz_27Mbps - 5G Band

Output Power Into Antenna & RF Exposure Evaluation Distance (6.30dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm2)
151	5755.00	857.0378	0.727328
159	5795.00	831.7638	0.705879

The RF exposure at 20 cm is below limit.

802.11a (6Mbps) Output Power Into Antenna & RF Exposure Evaluation Distance (6.24dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm2)
36	5180.00	17.4181	0.014579
44	5220.00	19.0546	0.015949
48	5240.00	17.9061	0.014988

The RF exposure at 20 cm is below limit.

802.11a (6Mbps) Output Power Into Antenna & RF Exposure Evaluation Distance (6.24dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm2)
52	5260.00	97.4990	0.081608
60	5300.00	133.0454	0.111360
64	5320.00	65.6145	0.054920

The RF exposure at 20 cm is below limit.

802.11a (6Mbps) Output Power Into Antenna & RF Exposure Evaluation Distance (6.30dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm2)
100	5500.00	103.2761	0.087646
120	5600.00	173.3804	0.147140
140	5700.00	140.6048	0.119325

The RF exposure at 20 cm is below limit.

802.11n-20MHz_13Mbps

Output Power Into Antenna & RF Exposure Evaluation Distance (6.24dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm2)
36	5180.00	22.5944	0.018912
44	5220.00	21.3796	0.017895
48	5240.00	21.9280	0.018354

The RF exposure at 20 cm is below limit.

802.11n-20MHz_13Mbps

Output Power Into Antenna & RF Exposure Evaluation Distance (6.24dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm2)
52	5260.00	119.9499	0.100399
60	5300.00	128.5287	0.107580
64	5320.00	66.3743	0.055556

The RF exposure at 20 cm is below limit.

802.11n-20MHz_13Mbps

Output Power Into Antenna & RF Exposure Evaluation Distance (6.30dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm2)
100	5500.00	85.1138	0.072232
120	5600.00	145.2112	0.123234
140	5700.00	140.9289	0.119600

The RF exposure at 20 cm is below limit.

802.11n-40MHz_27Mbps

Output Power Into Antenna & RF Exposure Evaluation Distance (6.24dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm2)
38	5190.00	24.2661	0.020311
46	5230.00	35.9749	0.030111

The RF exposure at 20 cm is below limit.

802.11n-40MHz_27Mbps

Output Power Into Antenna & RF Exposure Evaluation Distance (6.24dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm2)
54	5270.00	143.5489	0.120152
62	5310.00	27.2270	0.022789

The RF exposure at 20 cm is below limit.

802.11n-40MHz_27Mbps

Output Power Into Antenna & RF Exposure Evaluation Distance (6.30dBi):

Channel	Frequency (MHz)	Output Power to Antenna (mW)	Power Density at R = 20 cm (mW/cm2)
102	5510.00	27.2270	0.023106
118	5590.00	27.2898	0.023160
134	5670.00	168.6553	0.143130

The RF exposure at 20 cm is below limit.