

## **EMISSIONS TEST REPORT FOR A LOW POWER TRANSMITTER**

### **I. GENERAL INFORMATION**

Requirement: Federal Communications Commissions  
Test Requirements: 15.205, 15.207, 15.209, 15.407

Applicant: Airgo Networks Inc.

FCC ID: SA3-AGN1201AP0000

### **II. DESCRIPTION OF EQUIPMENT UNDER TEST (EUT)**

The Airgo Model AGN1201AP 802.11a/b/g True MIMO Access Point is a single radio version of the Airgo AGN1202AP dual radio Access Point product.

### **III. TEST DATES AND TEST LOCATION**

Testing was performed 28 January 2005. All tests were performed at:

Compliance Certification Services  
561F Monterey Road  
Morgan Hill, CA 95037

T.N. Cokenias  
EMC Consultant/Agent for Sensus Metering Systems

5 February 2005

### 15.203 Antenna connector requirement

The antenna is to be permanently attached to the product.

### 15.204 Antenna description

Antenna description	Gain
Omni Monopole	2 dBi 2.4 GHz band
3 in MIMO configuration (2 TX/RX, 1 RX only)	3 dBi 5 GHz bands

## TEST PROCEDURES

All tests were performed in accordance with the applicable procedures called out in the following document(s,) unless otherwise noted:

- 1) **ANSI C63.4 – 2003**, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz

## TEST RESULTS

### Radiated Emissions

**Test Requirement: 15.205, 15.247**

### Out of Band Measurements

**Test Requirement: 15.247**

### Measurement Equipment Used:

Agilent 4444A Spectrum Analyzer, 9 kHz-44 GHz  
EMCO 3115 Horn antenna, 1-18 GHz  
Miteq pre-amplifier, 1 – 26.5 GHz  
Bandpass/high pass filters

Radiated emissions generated by the transmitter portion of the EUT were measured.

1. The EUT was placed on a wooden table resting on a turntable on the test site. The EUT was configured to transmit continuously for each modulation at the maximum power levels recorded for power output measurements.

The search antenna was placed 3m from the EUT. The EUT antennas were arranged vertically as per normal installation.

2. The turntable was slowly rotated to locate the direction of maximum emission at each emission falling in the restricted bands of 15.205.
3. Radiated emissions were investigated for a LOW channel, a MID channel, and HIGH channel. Emissions were investigated to the 10<sup>th</sup> harmonic.
4. Once maximum direction was determined, the search antenna was raised and lowered in both vertical and horizontal polarizations. The maximum readings so obtained are recorded in the data listed below.

**Test Results:** PASS. Worst case results are presented. Refer to data sheets below.

### FCC Radiated Emissions Limits

#### Section 15.205 Restricted bands of operation.

(a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
0.495 - 0.505 (1)	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 -	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.52525	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	156.7 - 156.9	3260 - 3267	23.6 - 24.0
12.29 - 12.293	162.0125 - 167.17	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	167.72 - 173.2	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	240 - 285	3600 - 4400	(2)
13.36 - 13.41	322 - 335.4		

1 Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

2 Above 38.6

(b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

(c) Except as provided in paragraphs (d) and (e), regardless of the field strength limits specified elsewhere in this Subpart, the provisions of this Section apply to emissions from any intentional radiator.

#### Section 15.209 Radiated emission limits, general requirements.

(a) Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30 - 88	100 **	3
88 - 216	150 **	3
216 - 960	200 **	3
Above 960	500	3

\*\* Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

(b) In the emission table above, the tighter limit applies at the band edges.

(c) The level of any unwanted emissions from an intentional radiator operating under these general provisions shall not exceed the level of the fundamental emission. For intentional radiators which operate under the provisions of other Sections within this Part and which are required to reduce their unwanted emissions to the limits specified in this table, the limits in this table are based on the frequency of the unwanted emission and not the fundamental frequency. However, the level of any unwanted emissions shall not exceed the level of the fundamental frequency.

(d) The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

(e) The provisions in Sections 15.31, 15.33, and 15.35 for measuring emissions at distances other than the distances specified in the above table, determining the frequency range over which radiated emissions are to be measured, and limiting peak emissions apply to all devices operated under this Part.



**AC Line Conducted Emissions**  
**Test Requirement: 15.107, 15.207**

**Measurement Equipment Used:**

Rhode & Schwarz EMI Receiver ESHS-20  
Fischer Custom Communication LISN, FCC-LISN-50/250-25-2

**Test Procedure**

1. The EUT was placed on a wooden table 40 cm from a vertical ground plane and approximately 80 cm above the horizontal ground plane on the floor. The EUT was set to transmit in normally.
2. Line conducted data was recorded for both NEUTRAL and HOT lines.

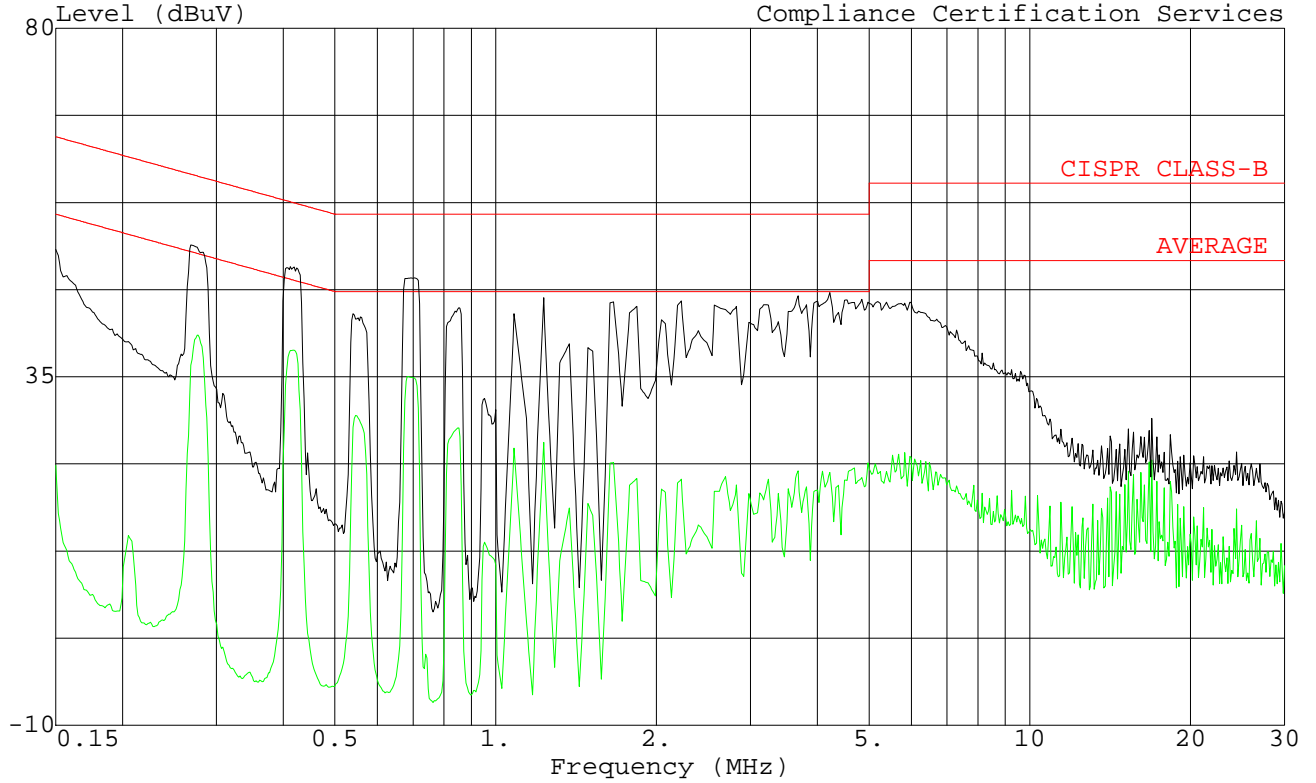
**Test Results**

PASS. Refer to test plots below.

Data#: 7 File#: 05U3240.EMI

Date: 01-28-2005 Time: 16:27:40

Compliance Certification Services



Trace: 5

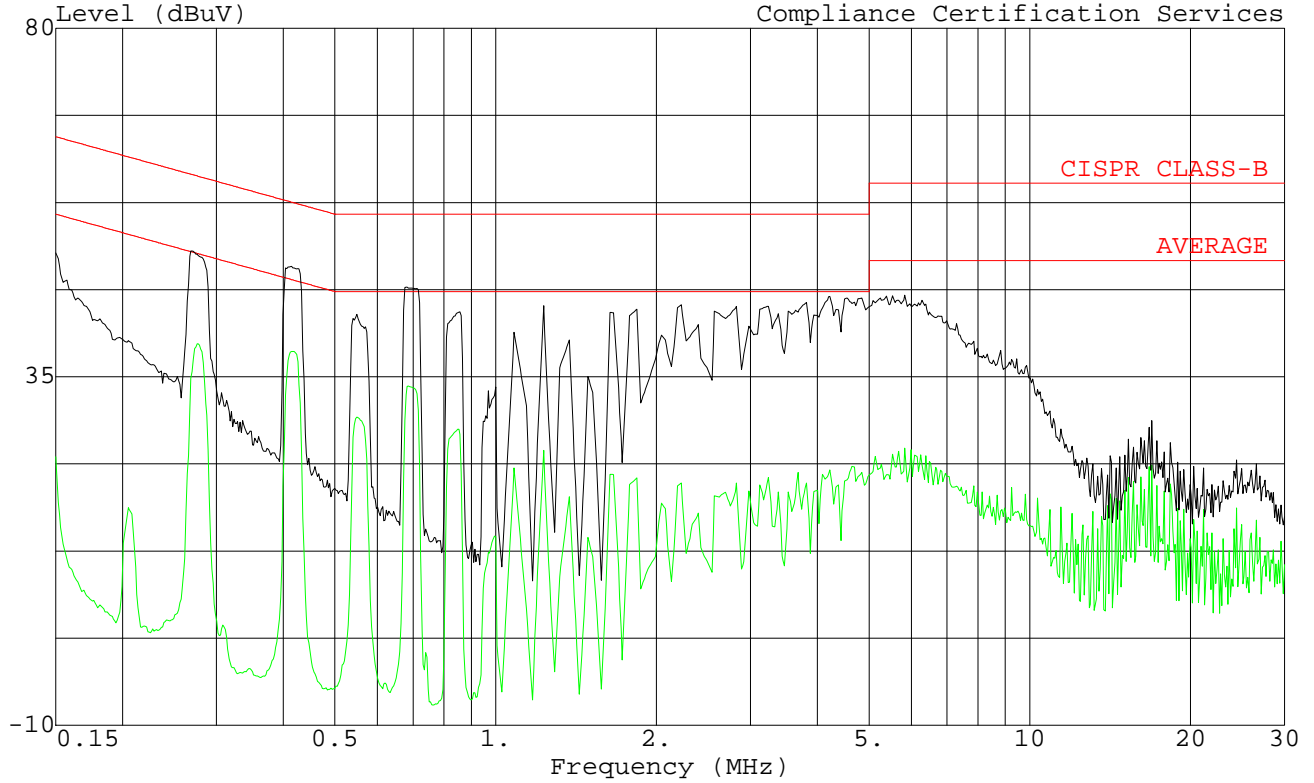
Ref Trace:

Project No. : 05U3240-1  
 Test Engr : William Zhuang  
 Company : T. Cokenias  
 EUT : Airgo 802.11 a/b/g Single Radio Acces  
 : Point  
 Model No. : AP1201  
 Test Config.: EUT with Antenna & AC/DC Adapter  
 Type of Test: FCC B  
 Mode of Op. : TX  
 AC Mains : L1: Peak (Black), Average (Green)

Data#: 14 File#: 05U3240.EMI

Date: 01-28-2005 Time: 16:36:35

Compliance Certification Services



Trace: 12

Ref Trace:

Project No. : 05U3240-1  
 Test Engr : William Zhuang  
 Company : T. Cokenias  
 EUT : Airgo 802.11 a/b/g Single Radio Acces  
 : Point  
 Model No. : AP1201  
 Test Config.: EUT with Antenna & AC/DC Adapter  
 Type of Test: FCC B  
 Mode of Op. : TX  
 AC Mains : L2: Peak (Black), Average (Green)