

FCC TEST REPORT

according to

FCC Rules and Regulations Part 15 Subpart B & C

| | |
|------------|--|
| Applicant | SparkLAN Communications, Ins. |
| Address | 3FL, No. 246, Sec. 1, Neihu Chiu, Taipei Taiwan 114, Taiwan R.O.C |
| Equipment | Wireless 11g High Speed AP Router |
| Model No. | WX-6615M |
| FCC ID | RYK230200403M |
| Trade Name | SparkLAN |

- The test result refers exclusively to the test presented test model / sample.
- Without written approval of *Exclusive Certification Corp.* the test report shall not be reproduced except in full.

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CERTIFICATE OF COMPLIANCE

according to

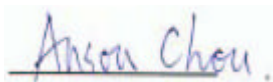
FCC Rules and Regulations Part 15 Subpart B & C

| | |
|-----------|--|
| Applicant | SparkLAN Communications, Ins. |
| Address | 3FL, No. 246, Sec. 1, Neihu Chiu, Taipei Taiwan 114, Taiwan R.O.C |
| Equipment | Wireless 11g High Speed AP Router |
| Model No. | WX-6615M |
| FCC ID | RYK230200403M |

I **HEREBY** CERTIFY THAT :

The measurements shown in this test report were made in accordance with the procedures given in **ANSI C63.4**. The equipment was **passed** the test performed according to **FCC Rules and Regulations Part 15 Subpart B & C (2002)**. The test was carried out on Apr. 05, 2004 at *Exclusive Certification Corp.*

Signature



Anson Chou / Manager

1. Report of Measurements and Examinations

1.1. List of Measurements and Examinations

| FCC Rule | Description of Test | Result |
|--------------------------------------|--|--------|
| 15.203 | . Antenna Requirement | Pass |
| 15.207 | . Conducted Emission | Pass |
| 15.209 | . Radiated Emission | Pass |
| 15.247(a)(2) | . 6dB Bandwidth | Pass |
| 15.247(b) | . Maximum Peak Output Power | Pass |
| 15.247(c) | . 100kHz Bandwidth of Frequency Band Edges | Pass |
| 15.247(d) | . Power Spectral Density | Pass |
| 1.1307 1.1310 2.1091 2.1093 | . RF Exposure Compliance | Pass |

Test by: Tony

1.2. Antenna Requirements

1.2.1. Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

1.3. Test of Conducted Emission

Conducted Emissions were measured from 150 kHz to 30 MHz with a bandwidth of 9 KHz on the 115 VAC power and return leads of the EUT according to the methods defined in ANSI C63.4-1992 Section 3.1. The EUT was placed on a nonmetallic stand in a shielded room 0.8 meters above the ground plane as shown in section 2.2. The interface cables and equipment positioning were varied within limits of reasonable applications to determine the position produced maximum conducted emissions.

1.3.1. Test Procedures

- a. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
- b. Connect EUT to the power mains through a line impedance stabilization network (LISN).
- c. All the support units are connecting to the other LISN.
- d. The LISN provides 50 ohm coupling impedance for the measuring instrument.
- e. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
- f. Both sides of AC line were checked for maximum conducted interference.
- g. The frequency range from 150 kHz to 30 MHz was searched.
- h. Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

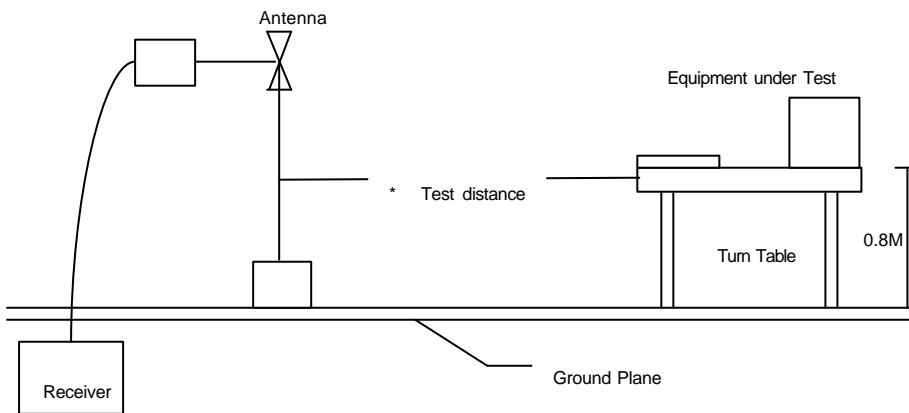
1.4. Test of Radiated Emission

Radiated emissions from 30 MHz to 25 GHz were measured according to the methods defines in ANSI C63.4-2001. The EUT was placed, 0.8 meter above the ground plane, as shown in section 5.6.3. The interface cables and equipment positions were varied within limits of reasonable applications to determine the positions producing maximum radiated emissions

1.4.1. Test Procedures

1. The EUT was placed on a rotatable table top 0.8 meter above ground.
2. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. The antenna is a broadband antenna and its height is varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna are set to make the measurement.
5. For each suspected emission the EUT was arranged to its worst case and then tune the antenna tower (from 1 M to 4 M) and turn table (from 0 degree to 360 degrees) to find the maximum reading.
6. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function and specified bandwidth with Maximum Hold Mode.
7. If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method and reported.
8. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

1.4.2. Typical Test Setup Layout of Radiated Emission

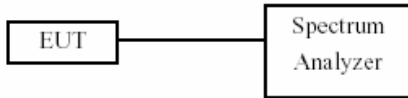


1.5. 6dB Bandwidth

1.5.1. Test Procedure :

1. The transmitter output was connected to the spectrum analyzer.
2. Set RBW of spectrum analyzer to 100 KHz and VBW to 100 KHz.
3. The 6 dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6 dB.

1.5.2. Test Setup Layout :



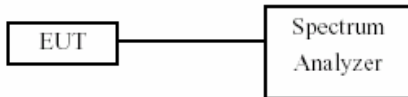
1.6. Maximum Peak Output Power

1.6.1 RF Power Output

The output from the transmitter was connected to the input of the RF Spectrum Analyzer (R&S FSP40). The method of measurement chosen was one that has been an acceptable test procedure per the FCC. The following describes the test procedure used.

Using the spectrum analyzers Band Power Measurement Function over the appropriate emission bandwidth (22MHz) gives the peak output reading. The following table lists the conducted power measurements.

1.6.2 Test Setup Layout :



← 格式化:項目符號及編號

1.7. Band Edges Measurement

1.7.1. Test Procedure :

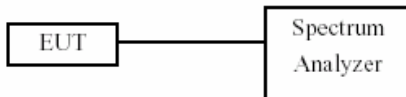
1. The transmitter output was connected to the spectrum analyzer via a low lose cable.
2. Set both RBW and VBW of spectrum analyzer to 100 KHz with convenient frequency span including 100 KHz bandwidth from band edge.
3. The band edges was measured and recorded.

1.8. Power Spectral Density

1.8.1. Test Procedure :

1. The transmitter output was connected to spectrum analyzer.
2. The spectrum analyzer' s resolution bandwidth were set at 3KHz RBW and 30KHz VBW as that of the fundamental frequency. Set the sweep time= $\text{span}/3\text{KHz}$.
3. The power spectral density was measured and recorded.
4. The Sweep time is allowed to be longer than $\text{span}/3\text{KHz}$ for a full response of the mixer in the spectrum analyzer.

1.8.2. Test Setup Layout :



1.9. Restricted Bands of Operation

Only spurious emissions are permitted in any of the frequency bands listed below:

| MHz | MHz | MHz | GHz |
|---------------------|-----------------------|-----------------|-----------------|
| 0.09000 – 0.11000 | 16.42000 – 16.42300 | 399.9 – 410.0 | 4.500 – 5.250 |
| 0.49500 – 0.505** | 16.69475 – 16.69525 | 608.0 – 614.0 | 5.350 – 5.460 |
| 2.17350 – 2.19050 | 16.80425 – 16.80475 | 960.0 – 1240.0 | 7.250 – 7.750 |
| 4.12500 – 4.12800 | 25.50000 – 25.67000 | 1300.0 – 1427.0 | 8.025 – 8.500 |
| 4.17725 – 4.17775 | 37.50000 – 38.25000 | 1435.0 – 1626.5 | 9.000 – 9.200 |
| 4.20725 – 4.20775 | 73.00000 – 74.60000 | 1645.5 – 1646.5 | 9.300 – 9.500 |
| 6.21500 – 6.21800 | 74.80000 – 75.20000 | 1660.0 – 1710.0 | 10.600 – 12.700 |
| 6.26775 – 6.26825 | 108.00000 – 121.94000 | 1718.8 – 1722.2 | 13.250 – 13.400 |
| 6.31175 – 6.31225 | 123.00000 – 138.00000 | 2200.0 – 2300.0 | 14.470 – 14.500 |
| 8.29100 – 8.29400 | 149.90000 – 150.05000 | 2310.0 – 2390.0 | 15.350 – 16.200 |
| 8.36200 – 8.36600 | 156.52475 – 156.52525 | 2483.5 – 2500.0 | 17.700 – 21.400 |
| 8.37625 – 8.38675 | 156.70000 – 156.90000 | 2655.0 – 2900.0 | 22.010 – 23.120 |
| 8.41425 – 8.41475 | 162.01250 – 167.17000 | 3260.0 – 3267.0 | 23.600 – 24.000 |
| 12.29000 – 12.29300 | 167.72000 – 173.20000 | 3332.0 – 3339.0 | 31.200 – 31.800 |
| 12.51975 – 12.52025 | 240.00000 – 285.00000 | 3345.8 – 3358.0 | 36.430 – 36.500 |
| 12.57675 – 12.57725 | 322.00000 – 335.40000 | 3600.0 – 4400.0 | Above 38.6 |
| 13.36000 – 13.41000 | | | |

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

1.10. Labeling Requirement

The device shall bear the following statement in a conspicuous location on the device:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

1.11. RF Exposure

FCC Rules and Regulations Part 1.1307, 1.1310, 2.1091, 2.1093:

RF Exposure Compliance

1.11.1. Limit For Maximum Permissible Exposure (MPE)

(A) Limits for Occupational / Controlled Exposure

| Frequency Range (MHz) | Electric Field Strength (E) (V/m) | Magnetic Field Strength (H) (A/m) | Power Density (S) (mW/ cm ²) | Averaging Time E ² , H ² or S (minutes) |
|-----------------------|-----------------------------------|-----------------------------------|--|---|
| 0.3-3.0 | 614 | 1.63 | (100)* | 6 |
| 3.0-30 | 1842/f | 4.89/f | (900/f)* | 6 |
| 30-300 | 61.4 | 0.163 | 1.0 | 6 |
| 300-1500 | | | F/300 | 6 |
| 1500-100,000 | | | 5 | 6 |

(B) Limits for General Population / Uncontrolled Exposure

| Frequency Range (MHz) | Electric Field Strength (E) (V/m) | Magnetic Field Strength (H) (A/m) | Power Density (S) (mW/cm ²) | Averaging Time E ² , H ² or S (minutes) |
|-----------------------|-----------------------------------|-----------------------------------|---|---|
| 0.3-1.34 | 614 | 1.63 | (100)* | 30 |
| 1.34-30 | 824/f | 2.19/f | (180/f)* | 30 |
| 30-300 | 27.5 | 0.073 | 0.2 | 30 |
| 300-1500 | | | F/1500 | 30 |
| 1500-100,000 | | | 1.0 | 30 |

F=frequency in MHz

*Plane-wave equivalent power density

1.11.2. MPE Calculations

$$E \text{ (V/m)} = \frac{\sqrt{30 \cdot P \cdot G}}{d} \quad \text{Power Density: Pd (mW/cm}^2\text{)} = \frac{E^2}{3770}$$

E = Electric field (V/m)

P = Peak output power (W)

G = Antenna numeric gain (numeric)

d = Separation distance (m)

Because the EUT is belong to General Population/ Uncontrolled Exposure. So the Limit of Power Density is 10 W/m². We can change the formula to:

$$d = \sqrt{\frac{30 \cdot P \cdot G}{3770}}$$

1.11.3. FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. In order to avoid the possibility of exceeding the FCC radio frequency exposure limits, human proximity to the antenna shall not be less than 20cm (8 inches) during normal operation. Proposed RF exposure safety information to include in User's Manual.

2. Test Configuration of Equipment under Test

2.1. Test Mode

The following test mode was performed for conduction test:

- 802.11b (CH 1) • 802.11b (CH 6) • 802.11b (CH 11)
- 802.11g (CH 1) • 802.11g (CH 6) • 802.11g (CH 11)

The following test mode was performed for radiation test:

- Receiving / Transmitting

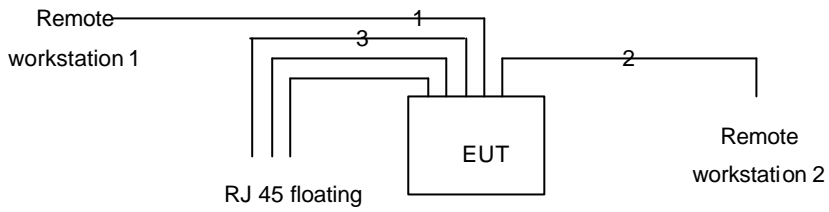
2.2. Description of Test System

| Device | Model No. | Manufacturer | Description |
|------------------------|---------------|--------------|---|
| PC (Remote site) | IGV | IBM | Power Cord, Unshielding, 1.8m |
| Monitor (Remote site) | 510A | SlimAGE | Power Cord, Unshielding, 1.8m Data Cable, Shielding, 1.35m |
| Keyboard (Remote site) | KB-0225 | IBM | Data Cable, Shielding, 1.85m |
| Mouse (Remote site) | MO28VO | IBM | Data Cable, Shielding, 1.85m |
| Notebook(Remote site) | R40(2723-BV1) | IBM | Power Cord, Unshielding, 1.8m |

Use Cable:

| Cable | Description |
|---------|--------------------|
| RJ-45*2 | Unshielding, 10 m |
| RJ-45*3 | Unshielding, 1.8 m |

2.3. Connection Diagram of Test System



1. The TP cable is connected from remote workstation1 to the EUT.
2. The TP cable is connected from remote workstation2 to the EUT.
3. These cables are floating.

2.4. Feature of Equipment under Test

The Wireless Router incorporates many advanced features, carefully designed to provide sophisticated functions while being easy to use.

2.5. History of this test report

ORIGINAL.

3. General Information of Test

| | |
|--------------------------------|--|
| Test Site: | Exclusive Certification Corp. 4F-2, No. 28, Lane 78, Xing-Ai Rd. Nei-hu, Taipei City 114 Taiwan R.O.C. |
| Test Site Location (OATS1-SD): | No.68-1, Shihbachongsi, shihding Township, Taipei County 223, Taiwan, R.O.C. |
| Test Voltage: | AC 110V/ 60Hz |
| Test in Compliance with: | ANSI C63.4-1992 FCC Part 15 Subpart C |
| Frequency Range Investigated: | Conducted: from 150kHz to 30 MHz Radiation: from 30 MHz to 24620MHz |
| Test Distance: | The test distance of radiated emission from antenna to EUT is 3 M. |

4. Test Result and Data

4.1. Antenna Requirement

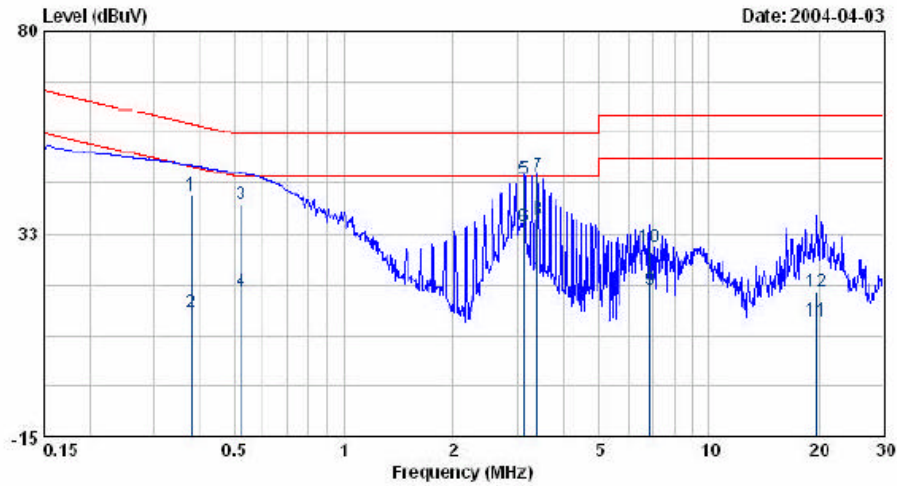
4.1.1. Antenna Construction and Directional Gain

Antenna type: A 1.8 dBi gain dipole antenna with reverse SMA connector is employed.

Test Result of Conducted Emission

EUT : WXG615M
 Power : 110V 60Hz
 Test Mode : 802.11b CH1
 Memo :

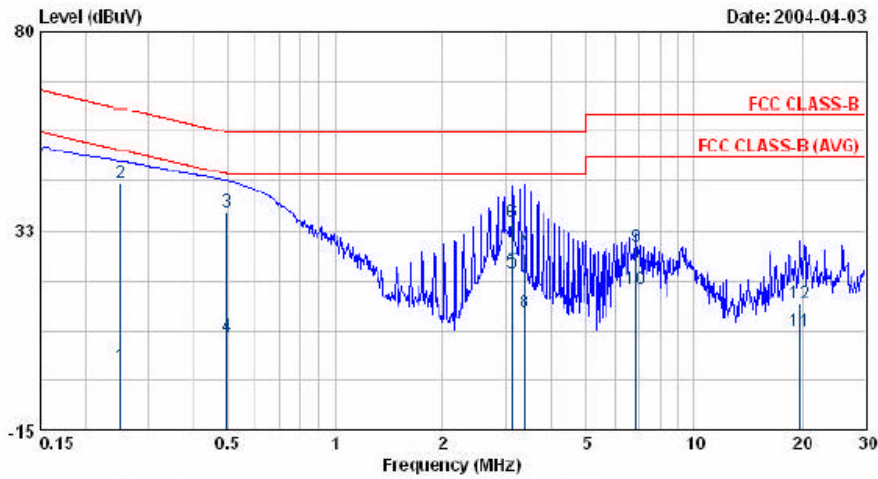
Pol/Phase : NEUTRAL
 Temperature : 24 °C
 Humidity : 62 %



| Freq | Read | Factor | Level | Limit | Over | Remark |
|------|-------|--------|-------|-------|--------|---------|
| MHz | dBuV | dB | dBuV | dBuV | dBuV | |
| 0 | 40.92 | 0.36 | 41.28 | 58.28 | -17.00 | QP |
| 0 | 13.84 | 0.36 | 14.20 | 48.28 | -34.08 | AVERAGE |
| 1 | 38.85 | 0.37 | 39.22 | 56.00 | -16.78 | QP |
| 1 | 18.71 | 0.37 | 19.08 | 46.00 | -26.92 | AVERAGE |
| 8 | 44.57 | 0.46 | 45.03 | 56.00 | -10.97 | QP |
| 8 | 33.45 | 0.46 | 33.91 | 46.00 | -12.09 | AVERAGE |
| 2 | 45.39 | 0.47 | 45.86 | 56.00 | -10.14 | QP |
| 2 | 35.51 | 0.47 | 35.98 | 46.00 | -10.02 | AVERAGE |
| 8 | 19.07 | 0.50 | 19.57 | 50.00 | -30.43 | AVERAGE |
| 8 | 28.68 | 0.50 | 29.18 | 60.00 | -30.82 | QP |
| 0 | 11.67 | 0.57 | 12.24 | 50.00 | -37.76 | AVERAGE |
| 0 | 18.57 | 0.57 | 19.14 | 60.00 | -40.86 | QP |

EUT : WX6615M
 Power : 110V 60Hz
 Test Mode : 802.11b CH1
 Memo :

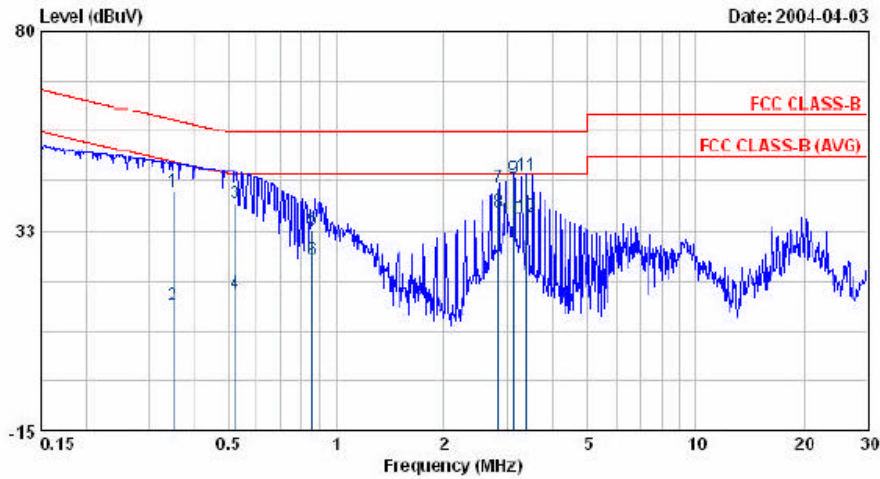
Pol/Phase : LINE
 Temperature : 24 °C
 Humidity : 62 %



| Freq | Read Level | Factor | Level | Limit | Over Limit | Remark |
|--------|------------|--------|-------|-------|------------|---------|
| MHz | dBuV | dB | dBuV | dBuV | dBuV | |
| 0.251 | --- | 0.33 | 0.33 | 51.73 | -51.40 | AVERAGE |
| 0.251 | 43.53 | 0.33 | 43.86 | 61.73 | -17.87 | QP |
| 0.497 | 36.64 | 0.37 | 37.01 | 56.06 | -19.04 | QP |
| 0.497 | 6.89 | 0.37 | 7.26 | 46.06 | -38.79 | AVERAGE |
| 3.106 | 21.96 | 0.46 | 22.42 | 46.00 | -23.58 | AVERAGE |
| 3.107 | 33.76 | 0.46 | 34.24 | 56.00 | -21.76 | QP |
| 3.361 | 26.41 | 0.47 | 26.88 | 56.00 | -29.12 | QP |
| 3.361 | 12.70 | 0.47 | 13.17 | 46.00 | -32.83 | AVERAGE |
| 6.858 | 27.99 | 0.50 | 28.49 | 60.00 | -31.51 | QP |
| 6.858 | 18.19 | 0.50 | 18.69 | 50.00 | -31.31 | AVERAGE |
| 19.735 | 8.23 | 0.57 | 8.80 | 50.00 | -41.20 | AVERAGE |
| 19.735 | 14.69 | 0.57 | 15.26 | 60.00 | -44.74 | QP |

EUT : WX6615M
 Power : 110V 60Hz
 Test Mode : 802.11b CH6
 Memo :

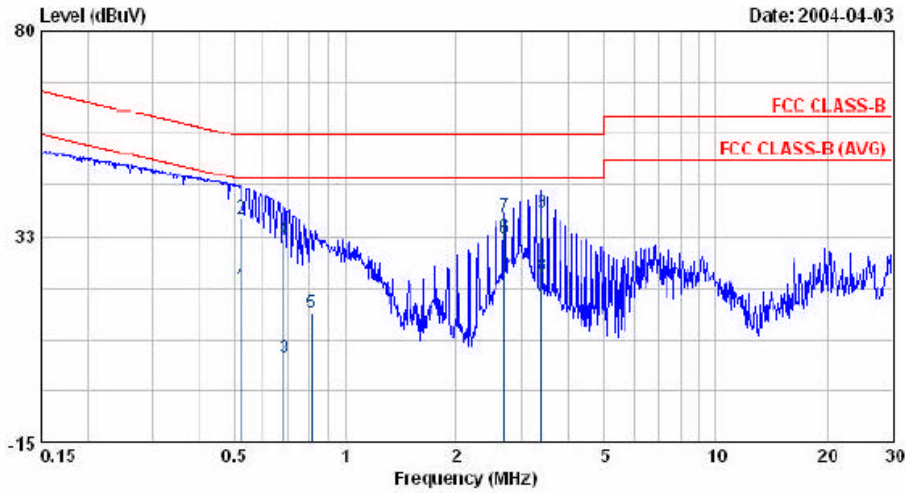
Pol/Phase : NEUTRAL
 Temperature : 24 °C
 Humidity : 62 %



| Freq | Read Level | Factor | Level | Limit | Over Limit | Remark |
|------|------------|--------|-------|-------|------------|---------|
| MHz | dBuV | dB | dBuV | dBuV | dBuV | |
| 0 | 41.45 | 0.35 | 41.80 | 58.97 | -17.17 | QP |
| 0 | 14.53 | 0.35 | 14.88 | 48.97 | -34.09 | AVERAGE |
| 0 | 38.61 | 0.37 | 38.98 | 56.00 | -17.02 | QP |
| 0 | 17.48 | 0.37 | 17.85 | 46.00 | -28.15 | AVERAGE |
| 6 | 32.26 | 0.40 | 32.66 | 56.00 | -23.34 | QP |
| 6 | 24.04 | 0.40 | 25.24 | 46.00 | -20.76 | AVERAGE |
| 4 | 42.17 | 0.46 | 42.63 | 56.00 | -13.37 | QP |
| 8 | 36.33 | 0.46 | 36.79 | 46.00 | -9.21 | AVERAGE |
| 9 | 44.52 | 0.46 | 44.98 | 56.00 | -11.02 | QP |
| 9 | 34.72 | 0.46 | 35.18 | 46.00 | -10.82 | AVERAGE |
| 3 | 45.25 | 0.47 | 45.72 | 56.00 | -10.28 | QP |
| 3 | 35.33 | 0.47 | 35.80 | 46.00 | -10.20 | AVERAGE |

EUT : WX6615M
 Power : 110V 60Hz
 Test Mode : 802.11b CH6
 Memo :

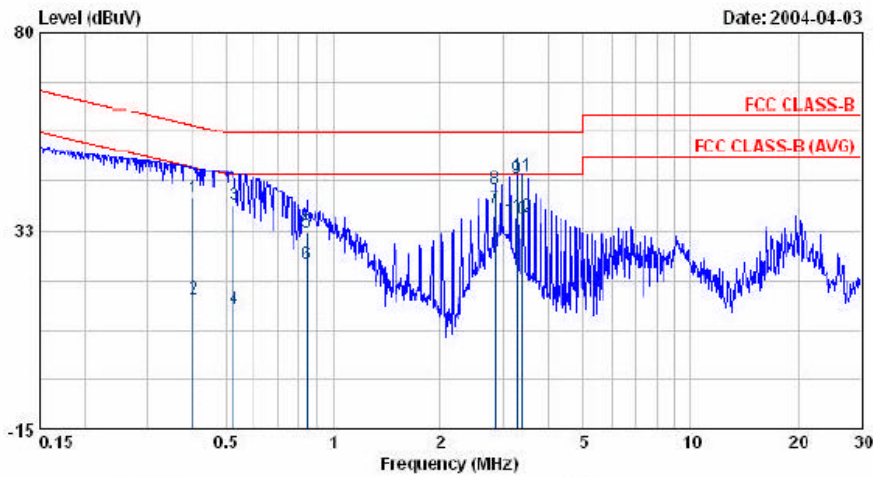
Pol/Phase : LINE
 Temperature : 24 °C
 Humidity : 62 %



| Freq | Read Level | Factor | Level | Limit | Over Limit | Remark |
|-------|------------|--------|-------|-------|------------|---------|
| MHz | dBuV | dB | dBuV | dBuV | dBuV | |
| 0.520 | 20.48 | 0.37 | 20.85 | 46.00 | -25.15 | AVERAGE |
| 0.520 | 36.28 | 0.37 | 36.65 | 56.00 | -19.35 | QP |
| 0.683 | 3.93 | 0.39 | 4.32 | 46.00 | -41.68 | AVERAGE |
| 0.683 | 31.30 | 0.39 | 31.69 | 56.00 | -24.31 | QP |
| 0.811 | 14.42 | 0.40 | 14.82 | 46.00 | -31.18 | AVERAGE |
| 2.693 | 31.50 | 0.46 | 32.04 | 46.00 | -13.96 | AVERAGE |
| 2.693 | 36.27 | 0.46 | 36.73 | 56.00 | -19.27 | QP |
| 3.381 | 22.96 | 0.47 | 23.43 | 46.00 | -22.57 | AVERAGE |
| 3.381 | 37.53 | 0.47 | 38.00 | 56.00 | -18.00 | QP |

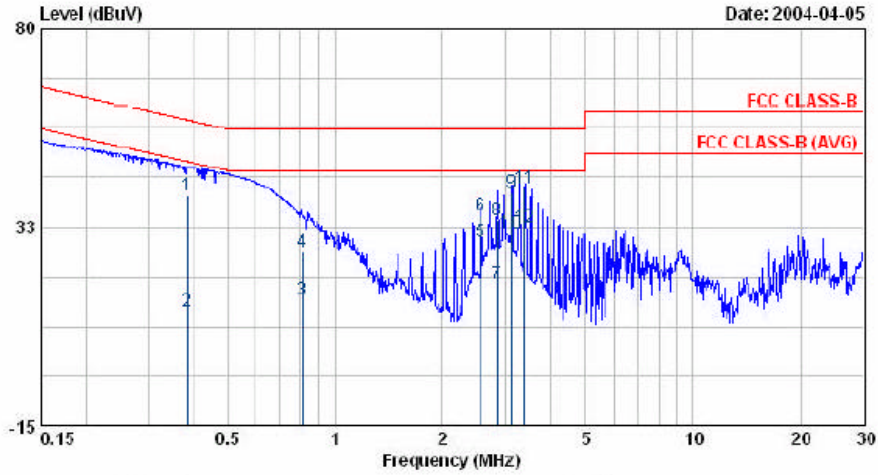
EUT : WX6615M
 Power : 110V 60Hz
 Test Mode : 802.11b CH11
 Memo :

Pol/Phase : NEUTRAL
 Temperature : 24 °C
 Humidity : 62 %



| Freq | Read | Factor | Level | Limit | Over | Remark |
|------|-------|--------|-------|-------|--------|---------|
| MHz | dBuV | dB | dBuV | dBuV | dBuV | |
| 4 | 40.05 | 0.36 | 40.41 | 57.77 | -17.36 | QP |
| 4 | 15.82 | 0.36 | 16.18 | 47.77 | -31.59 | AVERAGE |
| 7 | 38.38 | 0.38 | 38.76 | 56.00 | -17.24 | QP |
| 7 | 13.59 | 0.38 | 13.97 | 46.00 | -32.03 | AVERAGE |
| 4 | 31.67 | 0.40 | 32.07 | 56.00 | -23.93 | QP |
| 4 | 23.99 | 0.40 | 24.39 | 46.00 | -21.61 | AVERAGE |
| 5 | 37.40 | 0.46 | 37.86 | 46.00 | -8.14 | AVERAGE |
| 5 | 42.12 | 0.46 | 42.58 | 56.00 | -13.42 | QP |
| 6 | 44.44 | 0.46 | 44.90 | 56.00 | -11.10 | QP |
| 6 | 34.73 | 0.46 | 35.19 | 46.00 | -10.81 | AVERAGE |
| 4 | 45.06 | 0.47 | 45.53 | 56.00 | -10.47 | QP |
| 4 | 35.20 | 0.47 | 35.67 | 46.00 | -10.33 | AVERAGE |

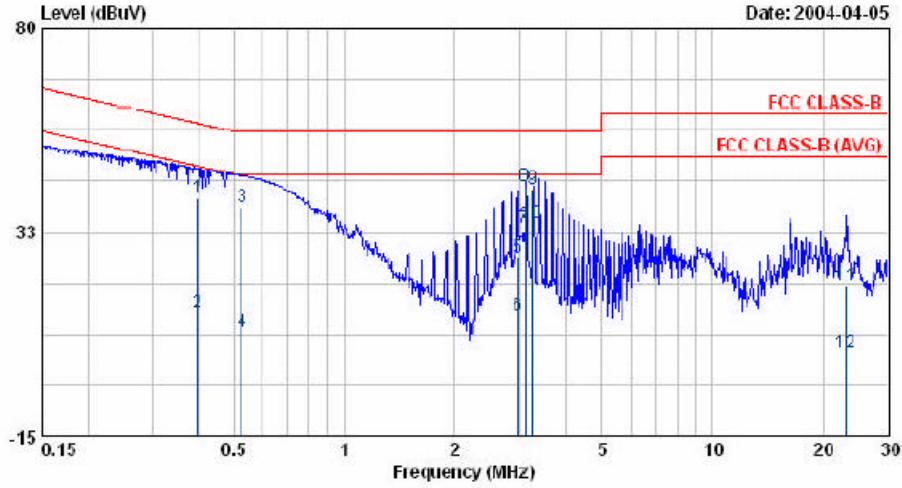
EUT : WX6615M
 Power : 110V 60Hz
 Test Mode : 802.11b CH11
 Memo :
 Pol/Phase : LINE
 Temperature : 24 °C
 Humidity : 62 %



| Freq | Read Level | Factor | Level | Limit | Over Limit | Remark |
|-------|------------|--------|-------|-------|------------|---------|
| MHz | dBuV | dB | dBuV | dBuV | dBuV | |
| 0.385 | 39.71 | 0.36 | 40.07 | 58.17 | -18.10 | QP |
| 0.385 | 11.98 | 0.36 | 12.34 | 48.17 | -35.83 | AVERAGE |
| 0.811 | 14.88 | 0.40 | 15.28 | 46.00 | -30.72 | AVERAGE |
| 0.811 | 25.85 | 0.40 | 26.25 | 56.00 | -29.75 | QP |
| 2.567 | 28.37 | 0.45 | 28.82 | 46.00 | -17.18 | AVERAGE |
| 2.567 | 34.65 | 0.45 | 35.10 | 56.00 | -20.90 | QP |
| 2.839 | 18.51 | 0.46 | 18.97 | 46.00 | -27.03 | AVERAGE |
| 2.839 | 33.65 | 0.46 | 34.11 | 56.00 | -21.89 | QP |
| 3.107 | 40.12 | 0.46 | 40.58 | 56.00 | -15.42 | QP |
| 3.107 | 30.52 | 0.46 | 30.98 | 46.00 | -15.02 | AVERAGE |
| 3.374 | 41.42 | 0.47 | 41.89 | 56.00 | -14.11 | QP |
| 3.374 | 31.98 | 0.47 | 32.45 | 46.00 | -13.55 | AVERAGE |

EUT : WX6615M
 Power : 110V 60Hz
 Test Mode : 802.11g CH1
 Memo :

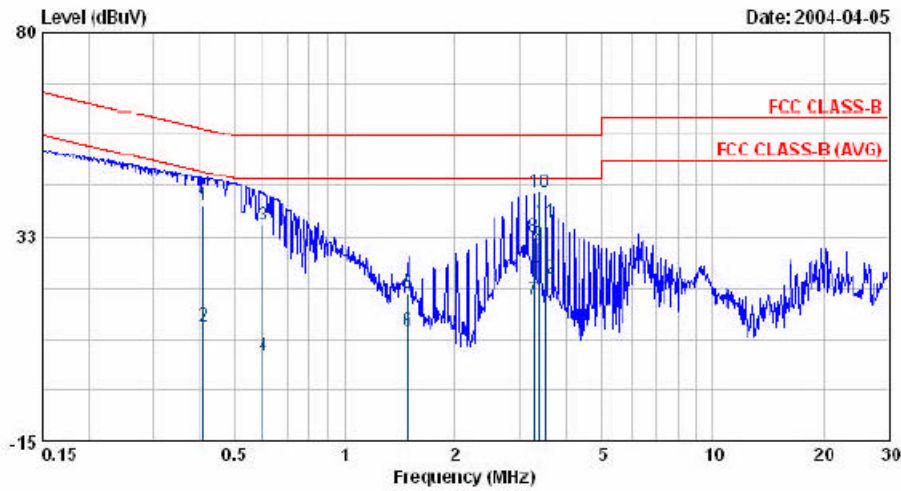
Pol/Phase : NEUTRAL
 Temperature : 24 °C
 Humidity : 62 %



| Freq | Read Level | Factor | Level | Limit | Over Limit | Remark |
|--------|------------|--------|-------|-------|------------|---------|
| MHz | dBuV | dB | dBuV | dBuV | dBuV | |
| 0.397 | 40.08 | 0.36 | 40.44 | 57.92 | -17.48 | QP |
| 0.397 | 13.61 | 0.36 | 13.97 | 47.92 | -33.95 | AVERAGE |
| 0.527 | 37.88 | 0.38 | 38.26 | 56.00 | -17.74 | QP |
| 0.527 | 8.97 | 0.38 | 9.35 | 46.00 | -36.65 | AVERAGE |
| 2.976 | 25.98 | 0.46 | 26.44 | 56.00 | -29.56 | QP |
| 2.976 | 12.00 | 0.46 | 13.34 | 46.00 | -32.66 | AVERAGE |
| 3.088 | 32.83 | 0.46 | 33.29 | 46.00 | -12.71 | AVERAGE |
| 3.088 | 42.72 | 0.46 | 43.18 | 56.00 | -12.82 | QP |
| 3.227 | 42.01 | 0.46 | 42.47 | 56.00 | -13.53 | QP |
| 3.227 | 34.07 | 0.46 | 34.53 | 46.00 | -11.47 | AVERAGE |
| 23.140 | 19.71 | 0.58 | 20.29 | 60.00 | -39.71 | QP |
| 23.140 | 4.07 | 0.58 | 4.65 | 50.00 | -45.35 | AVERAGE |

EUT : WX6615M
 Power : 110V 60Hz
 Test Mode : 802.11g CH1
 Memo :

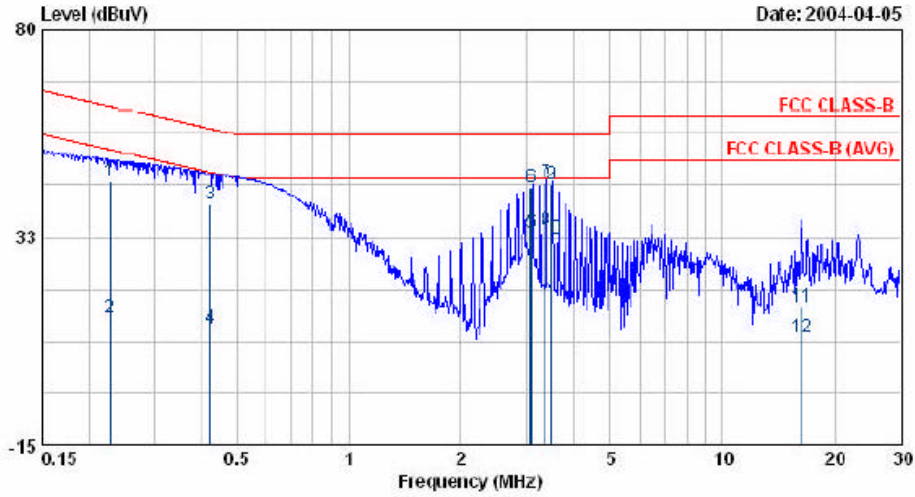
Pol/Phase : LINE
 Temperature : 24 °C
 Humidity : 62 %



| Freq | Read Level | Factor | Level | Limit | Over Limit | Remark |
|-------|------------|--------|-------|-------|------------|---------|
| MHz | dBuV | dB | dBuV | dBuV | dBuV | |
| 0.413 | 39.20 | 0.36 | 39.56 | 57.59 | -18.03 | QP |
| 0.413 | 11.50 | 0.36 | 11.86 | 47.59 | -35.73 | AVERAGE |
| 0.599 | 34.56 | 0.38 | 34.94 | 56.00 | -21.06 | QP |
| 0.599 | 4.37 | 0.38 | 4.75 | 46.00 | -41.25 | AVERAGE |
| 1.485 | 18.98 | 0.43 | 19.41 | 56.00 | -36.59 | QP |
| 1.485 | 10.24 | 0.43 | 10.67 | 46.00 | -35.33 | AVERAGE |
| 3.241 | 17.55 | 0.46 | 18.01 | 46.00 | -27.99 | AVERAGE |
| 3.241 | 31.76 | 0.46 | 32.22 | 56.00 | -23.78 | QP |
| 3.366 | 30.02 | 0.47 | 30.49 | 46.00 | -15.51 | AVERAGE |
| 3.366 | 42.16 | 0.47 | 42.63 | 56.00 | -13.37 | QP |
| 3.509 | 35.18 | 0.47 | 35.65 | 56.00 | -20.35 | QP |
| 3.509 | 22.44 | 0.47 | 22.91 | 46.00 | -23.09 | AVERAGE |

EUT : WX6615M
 Power : 110V 60Hz
 Test Mode : 802.11g CH6
 Memo :

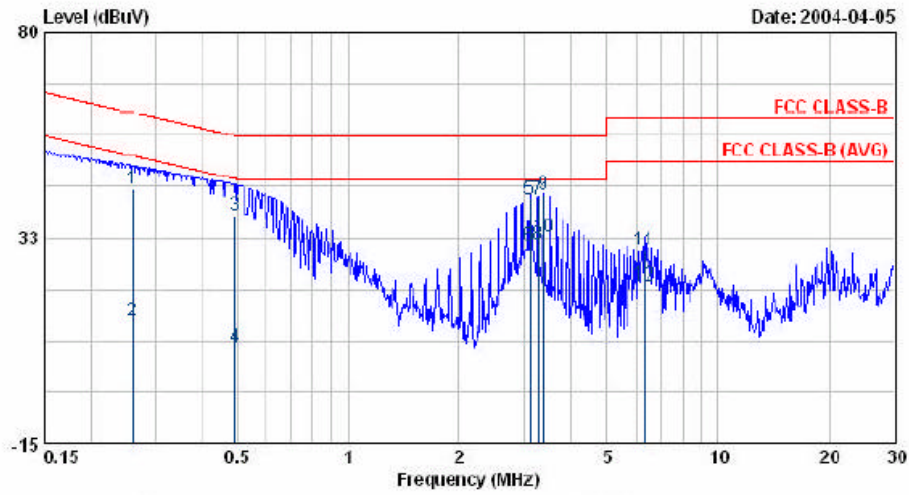
Pol/Phase : NEUTRAL
 Temperature : 24 °C
 Humidity : 62 %



| Freq | Read Level | Factor | Level | Limit | Over Limit | Remark |
|--------|------------|--------|-------|-------|------------|---------|
| MHz | dBuV | dB | dBuV | dBuV | dBuV | |
| 0.228 | 44.90 | 0.33 | 45.23 | 62.52 | -17.30 | QP |
| 0.228 | 14.06 | 0.33 | 14.39 | 52.52 | -38.14 | AVERAGE |
| 0.424 | 39.50 | 0.36 | 39.86 | 57.38 | -17.51 | QP |
| 0.424 | 11.58 | 0.36 | 11.94 | 47.38 | -35.43 | AVERAGE |
| 3.079 | 33.07 | 0.46 | 33.53 | 46.00 | -12.47 | AVERAGE |
| 3.079 | 43.51 | 0.46 | 43.97 | 56.00 | -12.03 | QP |
| 3.349 | 44.28 | 0.47 | 44.75 | 56.00 | -11.25 | QP |
| 3.349 | 33.72 | 0.47 | 34.19 | 46.00 | -11.81 | AVERAGE |
| 3.480 | 43.91 | 0.47 | 44.38 | 56.00 | -11.62 | QP |
| 3.480 | 31.40 | 0.47 | 31.87 | 46.00 | -14.13 | AVERAGE |
| 16.303 | 15.99 | 0.56 | 16.55 | 60.00 | -43.45 | QP |
| 16.303 | 9.19 | 0.56 | 9.75 | 50.00 | -40.25 | AVERAGE |

EUT : WX6615M
 Power : 110V 60Hz
 Test Mode : 802.11g CH6
 Memo :

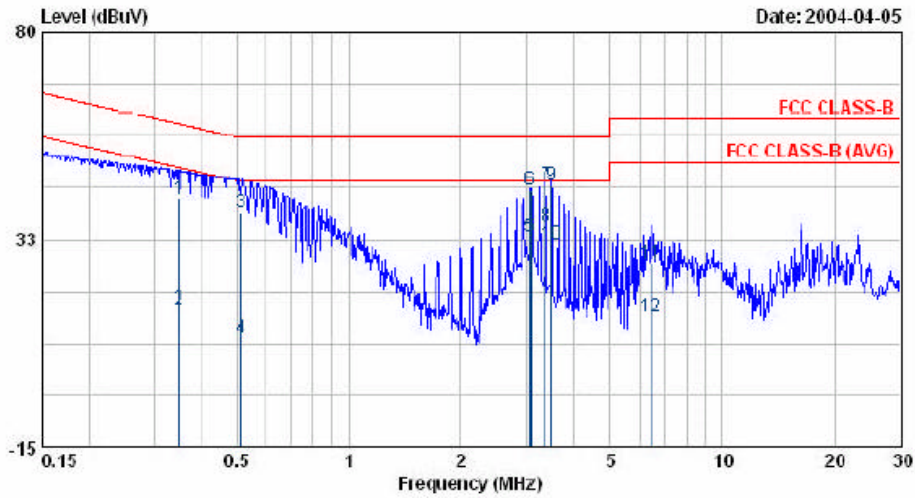
Pol/Phase : LINE
 Temperature : 24 °C
 Humidity : 62 %



| Freq | Read Level | Factor | Level | Limit | Over Limit | Remark |
|-------|------------|--------|-------|-------|------------|---------|
| MHz | dBuV | dB | dBuV | dBuV | dBuV | |
| 0.260 | 43.55 | 0.33 | 43.88 | 61.42 | -17.54 | QP |
| 0.260 | 13.14 | 0.33 | 13.47 | 51.42 | -37.95 | AVERAGE |
| 0.492 | 37.04 | 0.37 | 37.41 | 56.14 | -18.73 | QP |
| 0.492 | 7.04 | 0.37 | 7.41 | 46.14 | -38.73 | AVERAGE |
| 3.090 | 40.98 | 0.46 | 41.44 | 56.00 | -14.56 | QP |
| 3.090 | 30.25 | 0.46 | 30.71 | 46.00 | -15.29 | AVERAGE |
| 3.232 | 41.00 | 0.46 | 41.46 | 56.00 | -14.54 | QP |
| 3.232 | 30.63 | 0.46 | 31.09 | 46.00 | -14.91 | AVERAGE |
| 3.363 | 42.00 | 0.47 | 42.47 | 56.00 | -13.53 | QP |
| 3.363 | 32.24 | 0.47 | 32.71 | 46.00 | -13.29 | AVERAGE |
| 6.319 | 28.99 | 0.50 | 29.49 | 60.00 | -30.51 | QP |
| 6.319 | 21.15 | 0.50 | 21.65 | 50.00 | -28.35 | AVERAGE |

EUT : WX6615M
 Power : 110V 60Hz
 Test Mode : 802.11g CH11
 Memo :

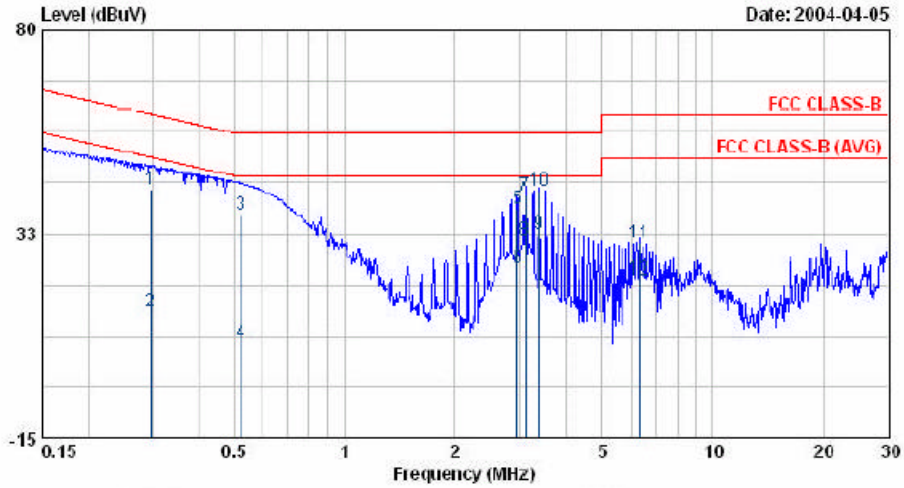
Pol/Phase : NEUTRAL
 Temperature : 24 °C
 Humidity : 62 %



| Freq | Read Level | Factor | Level | Limit | Over Limit | Remark |
|-------|------------|--------|-------|-------|------------|---------|
| MHZ | dBuV | dB | dBuV | dBuV | dBuV | |
| 0.348 | 41.21 | 0.35 | 41.56 | 59.00 | -17.44 | QP |
| 0.348 | 16.37 | 0.35 | 16.72 | 49.00 | -32.28 | AVERAGE |
| 0.511 | 38.20 | 0.37 | 38.57 | 56.00 | -17.43 | QP |
| 0.511 | 9.71 | 0.37 | 10.08 | 46.00 | -35.92 | AVERAGE |
| 3.067 | 32.56 | 0.46 | 33.02 | 46.00 | -12.98 | AVERAGE |
| 3.067 | 43.52 | 0.46 | 43.98 | 56.00 | -12.02 | QP |
| 3.340 | 44.30 | 0.47 | 44.77 | 56.00 | -11.23 | QP |
| 3.340 | 35.13 | 0.47 | 35.60 | 46.00 | -10.40 | AVERAGE |
| 3.472 | 44.28 | 0.47 | 44.75 | 56.00 | -11.25 | QP |
| 3.472 | 30.72 | 0.47 | 31.19 | 46.00 | -14.81 | AVERAGE |
| 6.420 | 26.41 | 0.50 | 26.91 | 60.00 | -33.09 | QP |
| 6.420 | 14.54 | 0.50 | 15.04 | 50.00 | -34.96 | AVERAGE |

EUT : WX6615M
 Power : 110V 60Hz
 Test Mode : 802.11g CH11
 Memo :

Pol/Phase : LINE
 Temperature : 24 °C
 Humidity : 62 %



| Freq | Read Level | Factor | Level | Limit | Over Limit | Remark |
|-------|------------|--------|-------|-------|------------|---------|
| MHz | dBuV | dB | dBuV | dBuV | dBuV | |
| 0.296 | 42.33 | 0.34 | 42.67 | 60.37 | -17.70 | QP |
| 0.296 | 14.17 | 0.34 | 14.51 | 50.37 | -35.86 | AVERAGE |
| 0.524 | 36.32 | 0.37 | 36.69 | 56.00 | -19.31 | QP |
| 0.524 | 6.88 | 0.37 | 7.25 | 46.00 | -38.75 | AVERAGE |
| 2.966 | 37.67 | 0.46 | 38.13 | 56.00 | -17.87 | QP |
| 2.966 | 23.91 | 0.46 | 24.37 | 46.00 | -21.63 | AVERAGE |
| 3.091 | 40.74 | 0.46 | 41.20 | 56.00 | -14.80 | QP |
| 3.091 | 30.62 | 0.46 | 31.08 | 46.00 | -14.92 | AVERAGE |
| 3.365 | 31.81 | 0.47 | 32.28 | 46.00 | -13.72 | AVERAGE |
| 3.365 | 41.97 | 0.47 | 42.44 | 56.00 | -13.56 | QP |
| 6.319 | 29.58 | 0.50 | 30.08 | 60.00 | -29.92 | QP |
| 6.319 | 21.47 | 0.50 | 21.97 | 50.00 | -28.03 | AVERAGE |

4.1.2. Photographs of Conducted Emission Test

FRONT VIEW



REAR VIEW



4.2. Test Result of Radiated Emission

4.2.1. RF Portion

Modulation Standard: IEEE 802.11b

Operation Mode: Receiving/ Transmitting

Test Date: Apr. 02, 2004 Temperature: 24 Humidity: 65%

a) Channel 1

Fundamental Frequency: 2412 MHz

| Frequency (MHz) | Reading(dBuV) | | | | Factor (dB) Corr. | Result@3m (dBuV/m) | | Limit@3m (dBuV/m) | | Margin (dB) | Table Deg. (Deg.) | Ant High (m) |
|-----------------|---------------|------|------|------|-------------------|--------------------|------|-------------------|------|-------------|-------------------|--------------|
| | H | | V | | | Peak | Ave. | Peak | Ave. | | | |
| | Peak | Ave. | Peak | Ave. | | | | | | | | |
| 4824 | 48.2 | 36.1 | 48.9 | 35.3 | -6.4 | 42.5 | 29.7 | 74 | 54 | -24.3 | 170 | 2 |
| 7236 | 59.7 | 46.8 | 58.3 | 45.7 | -10.5 | 49.2 | 36.3 | 74 | 54 | -17.7 | 170 | 2 |
| 12060 | 65.7 | 51.8 | 66.1 | 52.4 | -14.5 | 51.6 | 37.9 | 74 | 54 | -16.1 | 170 | 2 |
| 14472 | --- | --- | --- | --- | --- | --- | --- | 74 | 54 | --- | --- | --- |
| 19296 | --- | --- | --- | --- | --- | --- | --- | 74 | 54 | --- | --- | --- |

b) Channel 6

Fundamental Frequency: 2437 MHz

| Frequency (MHz) | Reading(dBuV) | | | | Factor (dB) Corr. | Result@3m (dBuV/m) | | Limit@3m (dBuV/m) | | Margin (dB) | Table Deg. (Deg.) | Ant High (m) |
|-----------------|---------------|------|------|------|-------------------|--------------------|------|-------------------|------|-------------|-------------------|--------------|
| | H | | V | | | Peak | Ave. | Peak | Ave. | | | |
| | Peak | Ave. | Peak | Ave. | | | | | | | | |
| 4874 | 48.1 | 35.4 | 47.5 | 36.4 | -6.4 | 41.7 | 30 | 74 | 54 | -24.0 | 170 | 2 |
| 7311 | 58.4 | 45.3 | 59.7 | 46.8 | -10.5 | 49.2 | 36.3 | 74 | 54 | -17.7 | 170 | 2 |
| 12185 | 66.0 | 52.3 | 65.4 | 51.7 | -14.5 | 51.5 | 37.8 | 74 | 54 | -16.2 | 170 | 2 |
| 19496 | --- | --- | --- | --- | --- | --- | --- | 74 | 54 | --- | --- | --- |

c) Channel 11

Fundamental Frequency: 2462 MHz

| Frequency (MHz) | Reading(dBuV) | | | | Factor (dB) Corr. | Result@3m (dBuV/m) | | Limit@3m (dBuV/m) | | Margin (dB) | Table Deg. (Deg.) | Ant High (m) |
|-----------------|---------------|------|------|------|-------------------|--------------------|------|-------------------|------|-------------|-------------------|--------------|
| | H | | V | | | Peak | Ave. | Peak | Ave. | | | |
| | Peak | Ave. | Peak | Ave. | | | | | | | | |
| 4924 | 48.5 | 36.3 | 49.0 | 35.9 | -6.4 | 42.6 | 29.9 | 74 | 54 | -24.1 | 170 | 2 |
| 7386 | 59.7 | 46.9 | 58.5 | 45.7 | -10.5 | 49.2 | 36.4 | 74 | 54 | -17.6 | 170 | 2 |
| 19696 | --- | --- | --- | --- | --- | --- | --- | 74 | 54 | --- | --- | --- |
| 22158 | --- | --- | --- | --- | --- | --- | --- | 74 | 54 | --- | --- | --- |

Note:

1. Item of margin shown in above table refer to average limit.
2. Remark "----" means that the emissions level is too low to be measured.
3. Item "Margin" referred to Average limit while there is only peak result.

Modulation Standard: IEEE 802.11g

Operation Mode: Receiving/ Transmitting

Test Date: Apr. 02, 2004 Temperature: 24 Humidity: 65%

d) Channel 1

Fundamental Frequency: 2412 MHz

| Frequency (MHz) | Reading(dBuV) | | | | Factor (dB) Corr. | Result@3m (dBuV/m) | | Limit@3m (dBuV/m) | | Margin (dB) | Table Deg. (Deg.) | Ant High (m) |
|-----------------|---------------|------|------|------|-------------------|--------------------|------|-------------------|------|-------------|-------------------|--------------|
| | H | | V | | | Peak | Ave. | Peak | Ave. | | | |
| | Peak | Ave. | Peak | Ave. | | | | | | | | |
| 4824 | 48.2 | 36.2 | 48.7 | 35.3 | -6.4 | 42.3 | 29.8 | 74 | 54 | -24.3 | 170 | 2 |
| 7236 | 59.7 | 46.8 | 58.7 | 46.3 | -10.5 | 49.2 | 36.3 | 74 | 54 | -17.7 | 170 | 2 |
| 12060 | 65.9 | 50.9 | 65.8 | 51.5 | -14.5 | 51.3 | 37.0 | 74 | 54 | -17.0 | 170 | 2 |
| 14472 | --- | --- | --- | --- | --- | --- | --- | 74 | 54 | --- | --- | --- |
| 19296 | --- | --- | --- | --- | --- | --- | --- | 74 | 54 | --- | --- | --- |

e) Channel 6

Fundamental Frequency: 2437 MHz

| Frequency (MHz) | Reading(dBuV) | | | | Factor (dB) Corr. | Result@3m (dBuV/m) | | Limit@3m (dBuV/m) | | Margin (dB) | Table Deg. (Deg.) | Ant High (m) |
|-----------------|---------------|------|------|------|-------------------|--------------------|------|-------------------|------|-------------|-------------------|--------------|
| | H | | V | | | Peak | Ave. | Peak | Ave. | | | |
| | Peak | Ave. | Peak | Ave. | | | | | | | | |
| 4874 | 48.7 | 36.3 | 48.2 | 35.2 | -6.4 | 42.3 | 29.9 | 74 | 54 | -24.1 | 170 | 2 |
| 7311 | 59.4 | 45.3 | 59.7 | 46.7 | -10.5 | 49.2 | 36.2 | 74 | 54 | -17.8 | 170 | 2 |
| 12185 | 65.8 | 51.9 | 64.3 | 52.3 | -14.5 | 51.3 | 37.8 | 74 | 54 | -16.2 | 170 | 2 |
| 19496 | --- | --- | --- | --- | --- | --- | --- | 74 | 54 | --- | --- | --- |

f) Channel 11

Fundamental Frequency: 2462 MHz

| Frequency (MHz) | Reading(dBuV) | | | | Factor (dB) Corr. | Result@3m (dBuV/m) | | Limit@3m (dBuV/m) | | Margin (dB) | Table Deg. (Deg.) | Ant High (m) |
|-----------------|---------------|------|------|------|-------------------|--------------------|------|-------------------|------|-------------|-------------------|--------------|
| | H | | V | | | Peak | Ave. | Peak | Ave. | | | |
| | Peak | Ave. | Peak | Ave. | | | | | | | | |
| 4924 | 48.9 | 35.7 | 48.4 | 36.4 | -6.4 | 42.5 | 30.0 | 74 | 54 | -24.0 | 170 | 2 |
| 7386 | 58.7 | 46.8 | 59.2 | 45.2 | -10.5 | 48.7 | 36.3 | 74 | 54 | -17.7 | 170 | 2 |
| 19696 | --- | --- | --- | --- | --- | --- | --- | 74 | 54 | --- | --- | --- |
| 22158 | --- | --- | --- | --- | --- | --- | --- | 74 | 54 | --- | --- | --- |

Note:

1. Item of margin shown in above table refer to average limit.
2. Remark "----" means that the emissions level is too low to be measured.
3. Item "Margin" referred to Average limit while there is only peak result.

Modulation Standard: IEEE 802.11b

a) Emission frequencies below 1 GHz

Test Date: Apr. 02, 2004 Temperature: 24 Humidity: 65%

| Frequency (MHz) | Ant-Pol HV | Meter Reading (dBUV) | Corrected Factor (dB) | Result@3m (dBUV/m) | Limit@3m (dBUV/m) | Margin (dB) | Table Deg. | Ant High (m) |
|-----------------|------------|----------------------|-----------------------|--------------------|-------------------|-------------|------------|--------------|
| 55.32 | V | 56.94 | -20.04 | 36.9 | 40.0 | -3.1 | 240 | 1 |
| 58.15 | H | 56.34 | -20.04 | 36.3 | 40.0 | -3.7 | 180 | 2 |
| 126.04 | V | 61.27 | -26.87 | 34.4 | 43.5 | -9.1 | 240 | 1 |
| 162.89 | H | 64.38 | -26.48 | 37.9 | 43.5 | -5.6 | 180 | 2 |
| 255.04 | H | 62.49 | -25.59 | 36.9 | 46.0 | -9.1 | 180 | 2 |
| 255.04 | V | 60.79 | -25.59 | 35.2 | 46.0 | -10.8 | 240 | 1 |
| 324.83 | H | 62.86 | -25.36 | 37.5 | 46.0 | -8.5 | 180 | 2 |
| 324.88 | V | 61.26 | -25.36 | 35.9 | 46.0 | -10.1 | 240 | 1 |
| 484.93 | V | 63.12 | -25.52 | 37.6 | 46.0 | -8.4 | 240 | 1 |
| 487.85 | H | 66.32 | -25.52 | 40.8 | 46.0 | -5.2 | 180 | 2 |
| 644.97 | H | 67.16 | -25.16 | 45.0 | 46.0 | -4.0 | 180 | 2 |
| 644.98 | V | 67.36 | -25.16 | 42.2 | 46.0 | -3.8 | 240 | 1 |

b) Emission frequencies above 1 GHz

Radiated emission frequencies above 1 GHz to 25 GHz were too low to be measured.

Modulation Standard: IEEE 802.11g

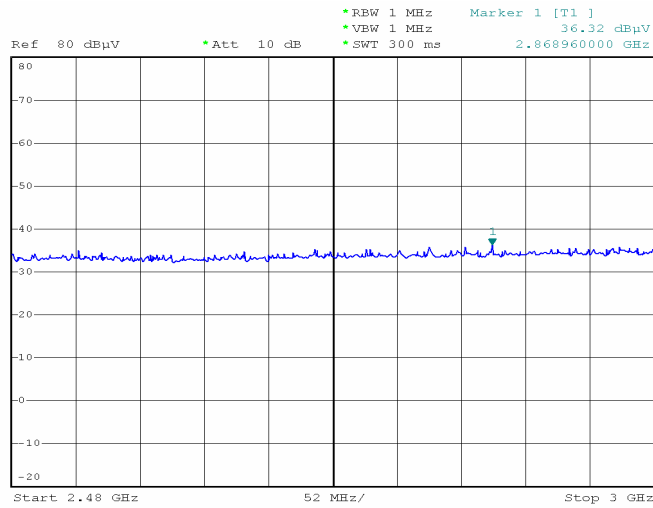
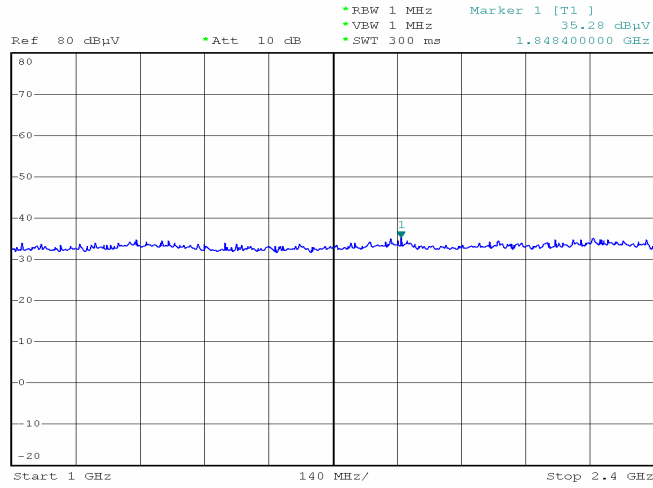
a) Emission frequencies below 1 GHz

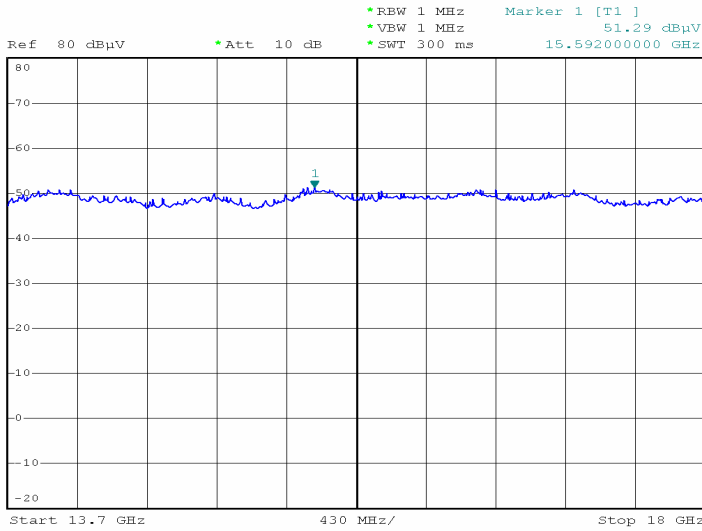
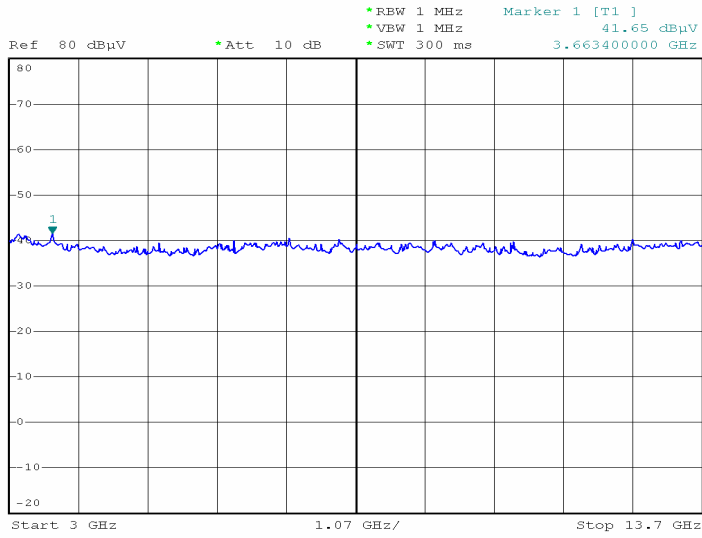
Test Date: Apr. 02, 2004 Temperature: 24 Humidity: 65%

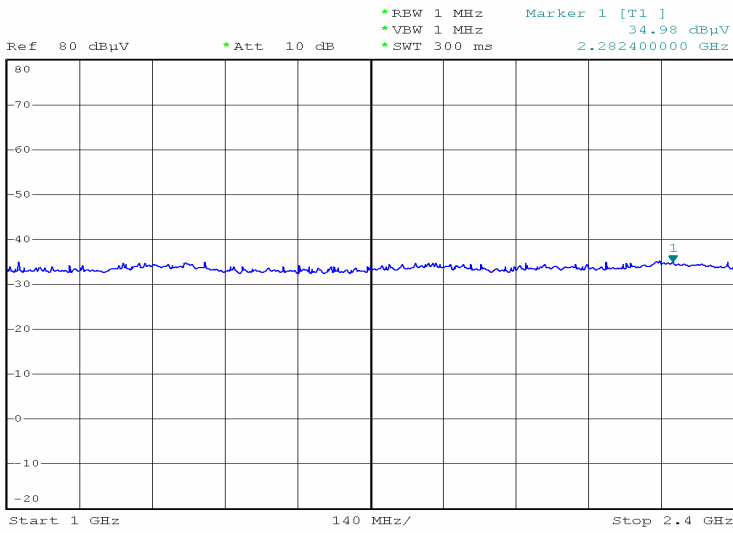
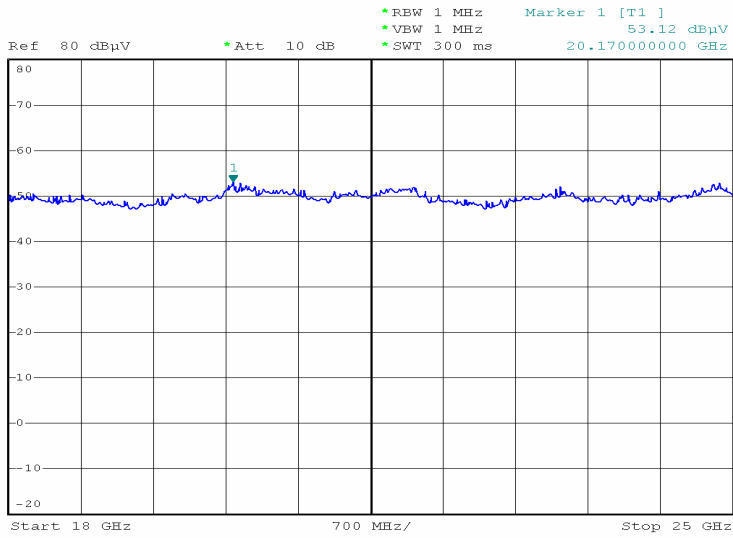
| Frequency (MHz) | Ant-Pol HV | Meter Reading (dBuV) | Corrected Factor (dB) | Result@3m (dBuV/m) | Limit@3m (dBuV/m) | Margin (dB) | Table Deg. | Ant High (m) |
|-----------------|------------|----------------------|-----------------------|--------------------|-------------------|-------------|------------|--------------|
| 55.24 | V | 57.04 | -20.04 | 37.0 | 40.0 | -3.0 | 240 | 1 |
| 57.25 | H | 56.54 | -20.04 | 36.5 | 40.0 | -3.5 | 180 | 2 |
| 125.63 | V | 63.37 | -26.87 | 36.5 | 43.5 | -7.0 | 240 | 1 |
| 251.14 | H | 66.59 | -25.59 | 41.0 | 46.0 | -5.0 | 180 | 2 |
| 251.13 | V | 67.09 | -25.59 | 41.5 | 46.0 | -4.5 | 240 | 1 |
| 481.40 | H | 66.02 | -25.52 | 40.5 | 46.0 | -5.5 | 180 | 2 |
| 481.30 | V | 647.82 | -25.52 | 39.3 | 46.0 | -6.7 | 240 | 1 |
| 640.80 | H | 62.96 | -25.16 | 37.8 | 46.0 | -8.2 | 180 | 2 |
| 640.90 | V | 64.16 | -25.16 | 39.0 | 46.0 | -7.0 | 240 | 1 |
| 799.90 | H | 65.73 | -23.93 | 41.8 | 46.0 | -4.2 | 180 | 2 |
| 799.80 | V | 64.13 | -23.93 | 40.2 | 46.0 | -5.8 | 240 | 1 |

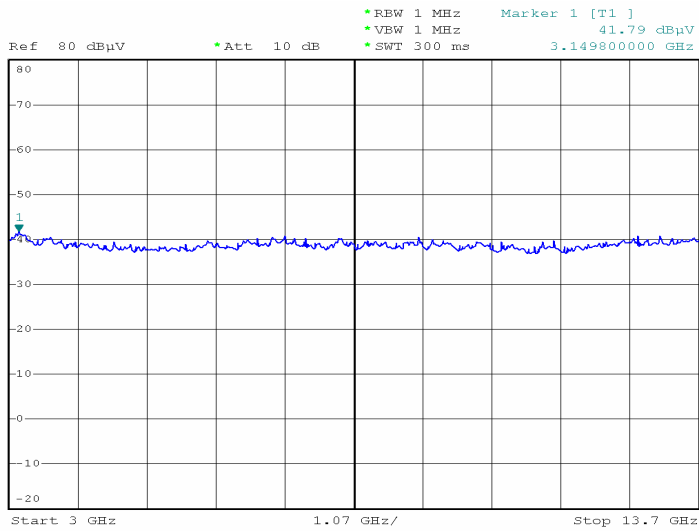
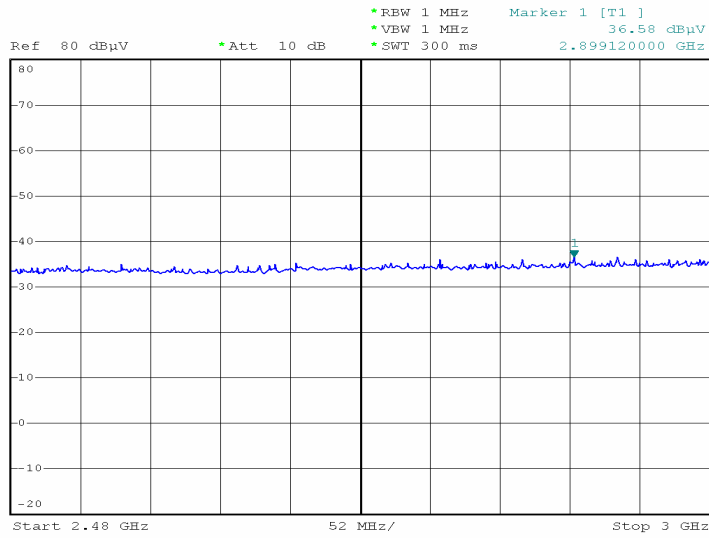
b) Emission frequencies above 1 GHz

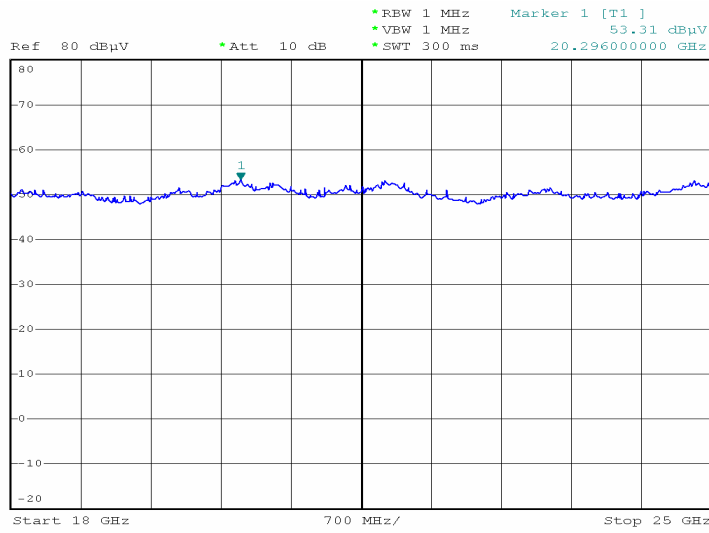
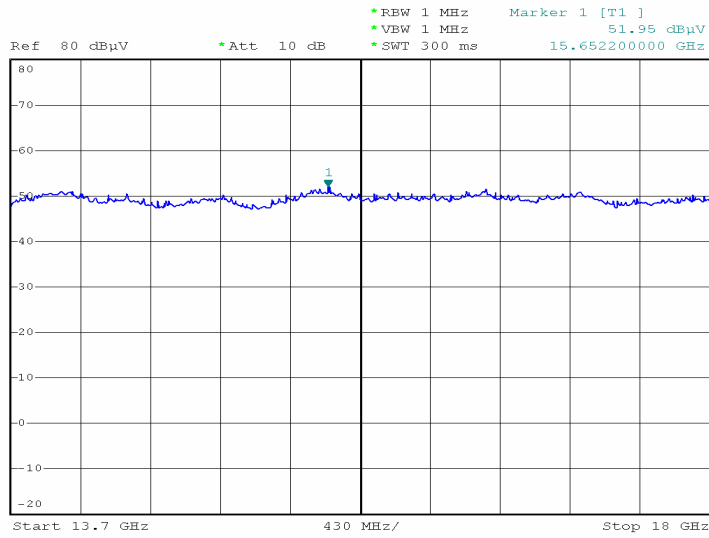
Radiated emission frequencies above 1 GHz to 25 GHz were too low to be measured.

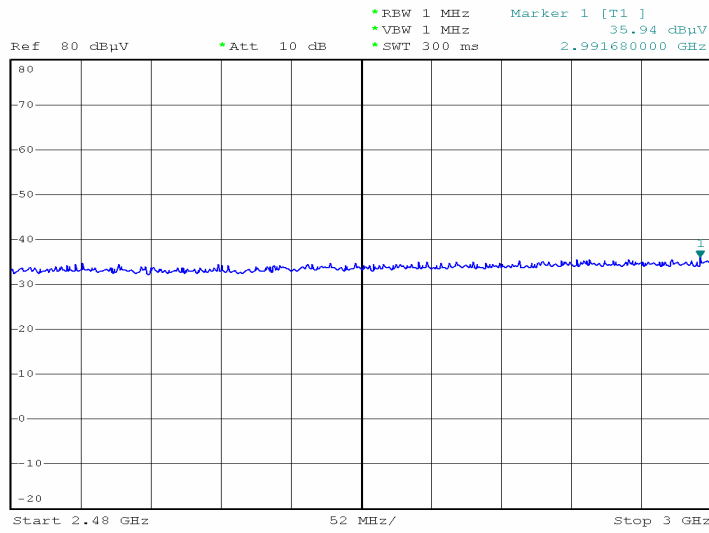
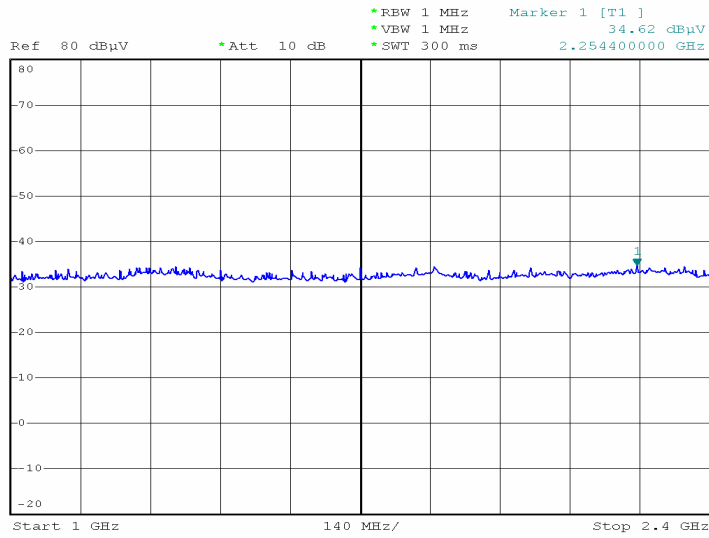


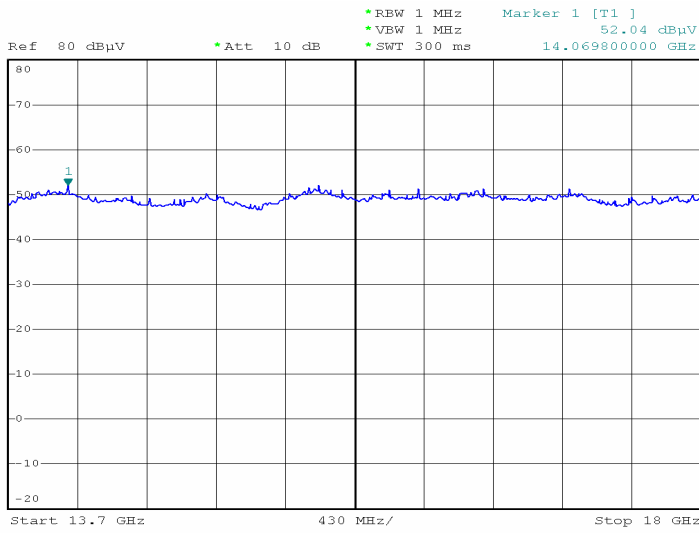
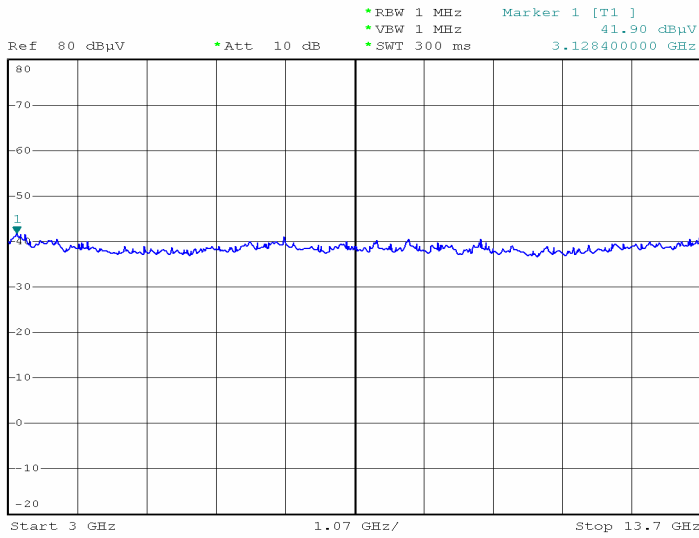


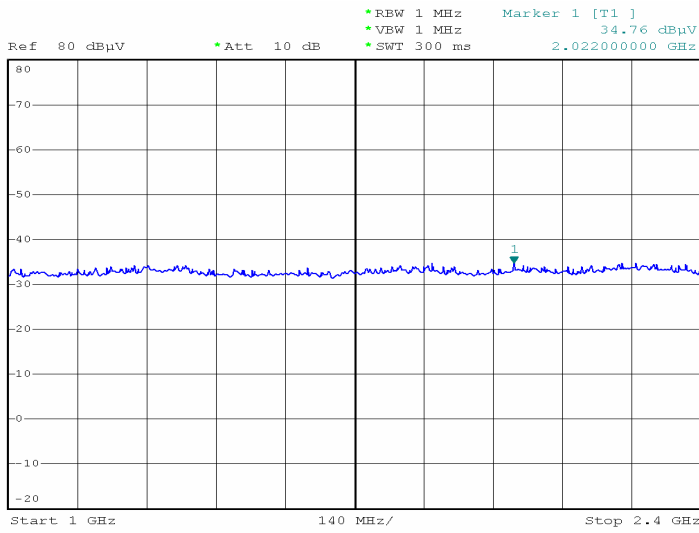
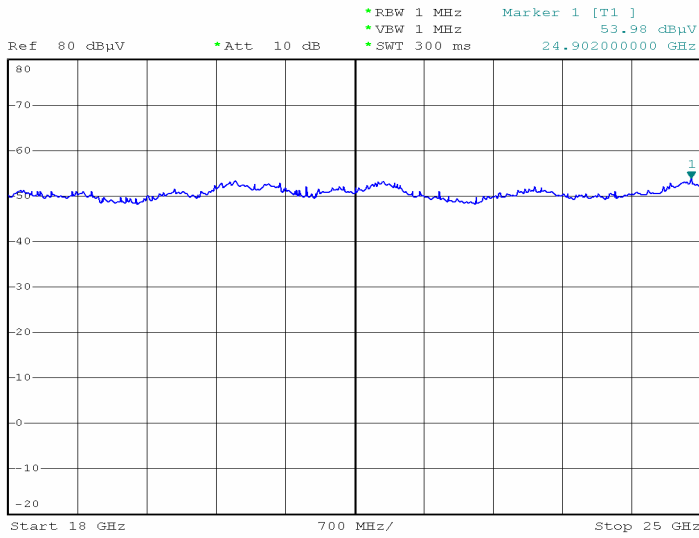


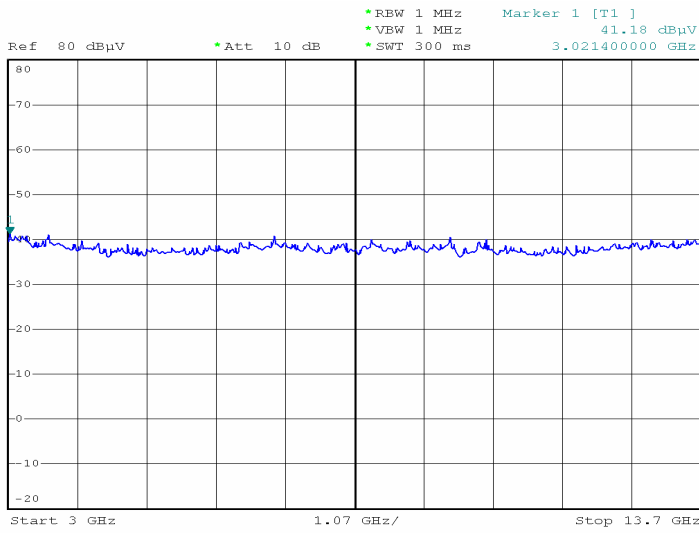
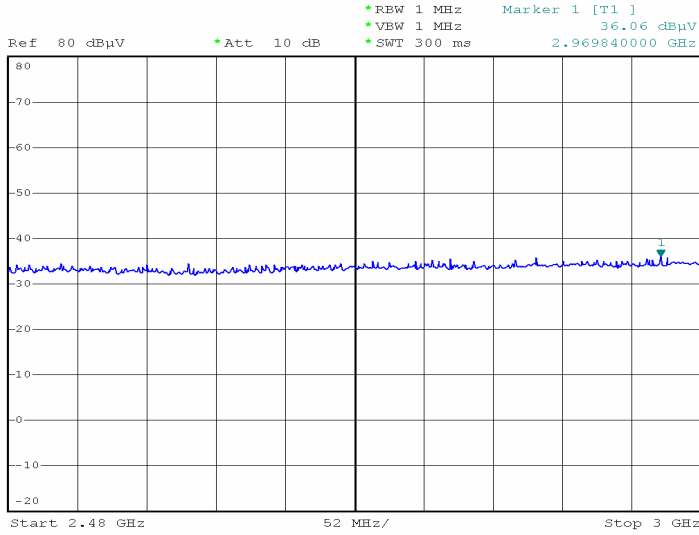


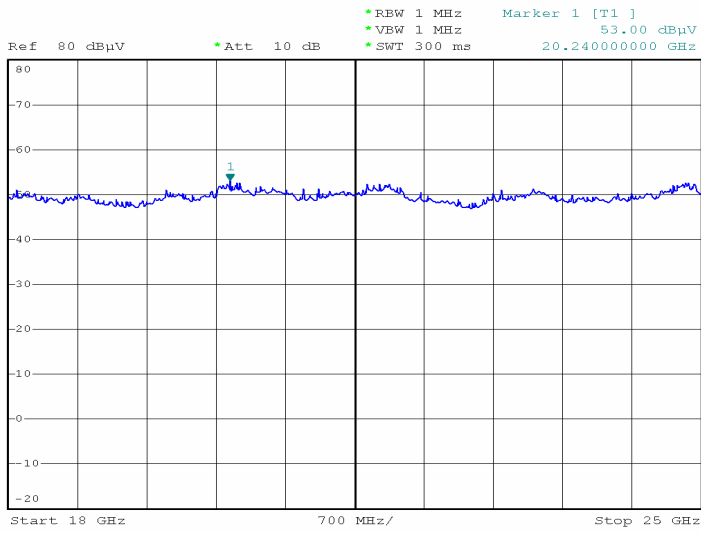
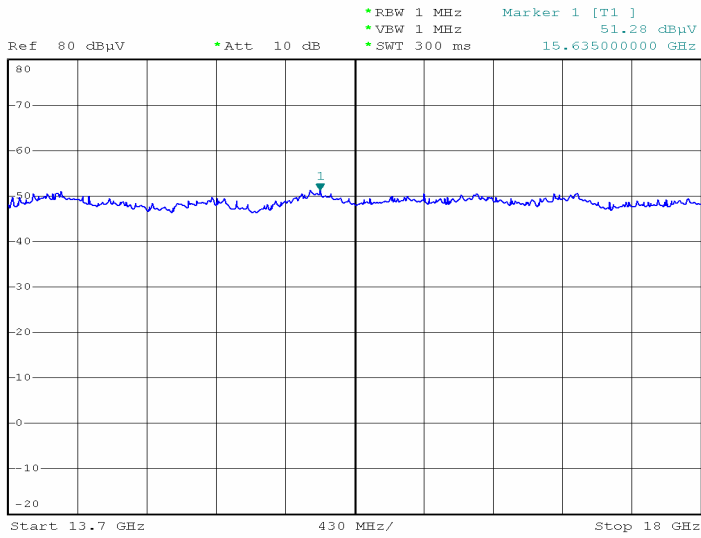












4.2.2. Photographs of Radiated Emission Test

FRONT VIEW



EAR VIEW



4.3. 6dB Bandwidth Measurement Data

(1) Modulation Standard: IEEE 802.11b

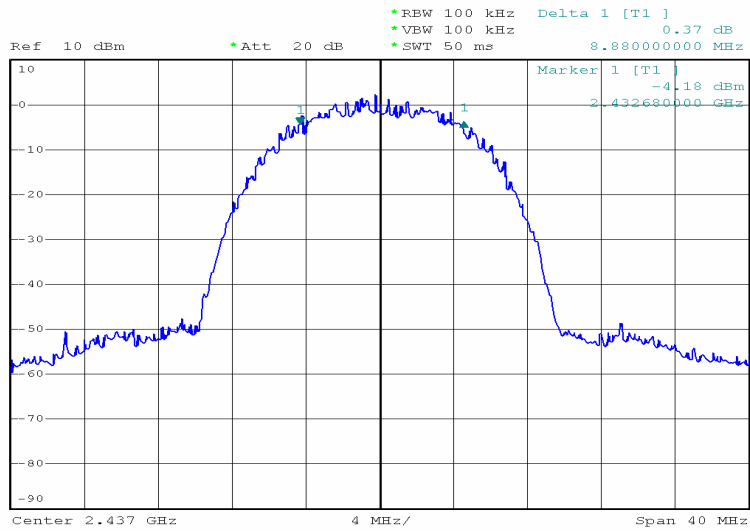
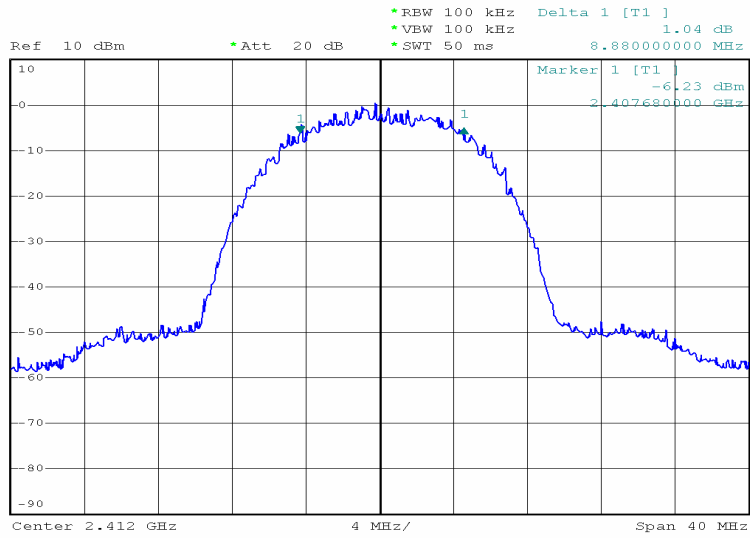
Test Date: Apr. 02. 2004 Temperature: 24 Humidity: 65%

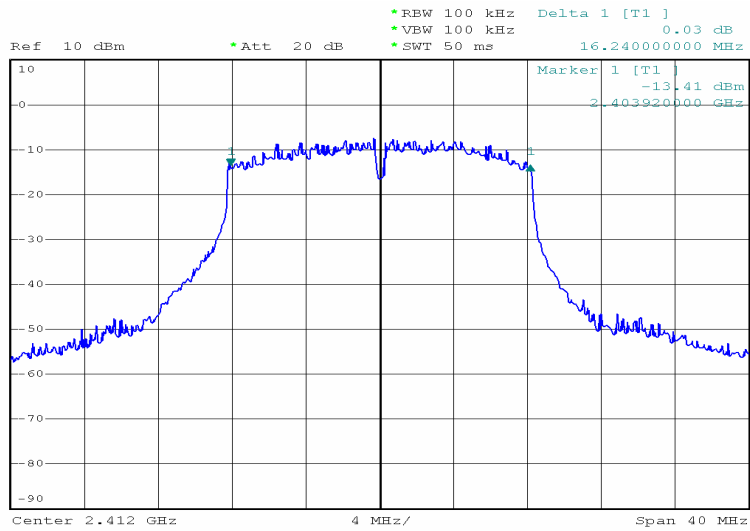
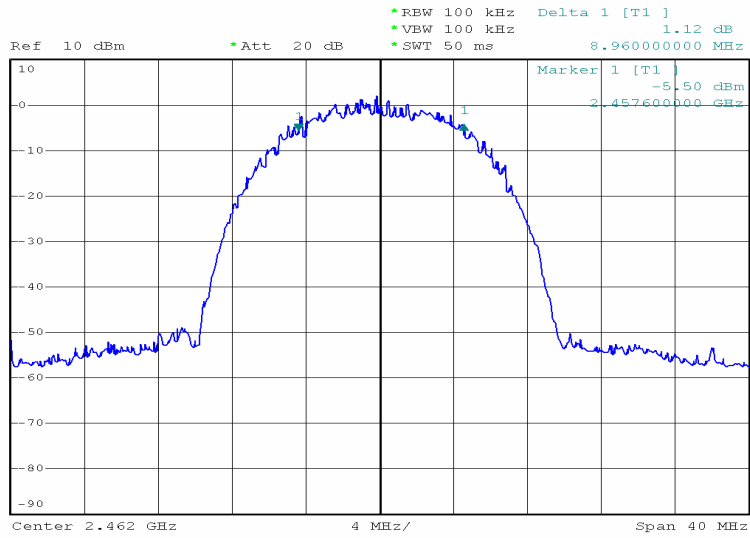
- a) Channel 01: 6dB Emission Bandwidth is 8.88 MHz
- b) Channel 06: 6dB Emission Bandwidth is 8.88 MHz
- c) Channel 11: 6dB Emission Bandwidth is 8.96 MHz

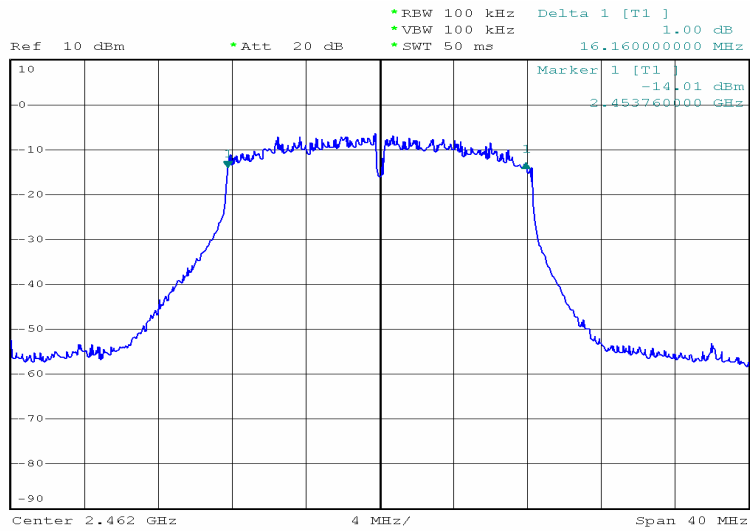
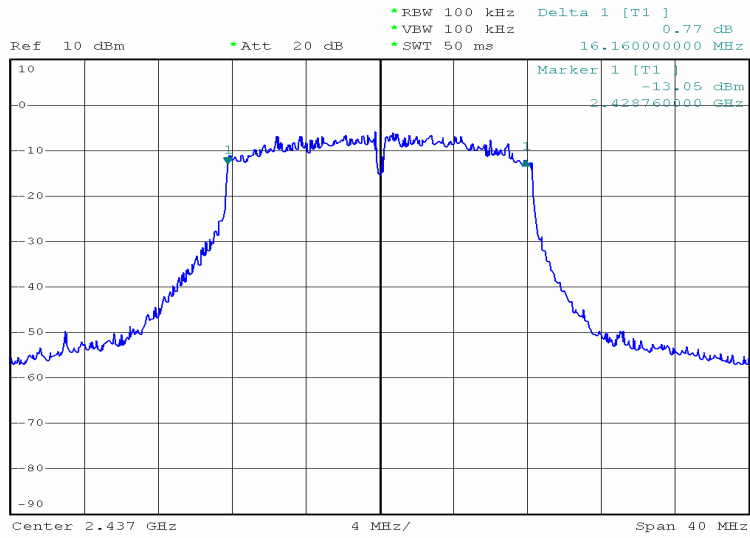
(2) Modulation Standard: IEEE 802.11g

Test Date: Apr. 02. 2004 Temperature: 24 Humidity: 65%

- a) Channel 01: 6dB Emission Bandwidth is 16.24 MHz
- b) Channel 06: 6dB Emission Bandwidth is 16.16 MHz
- c) Channel 11: 6dB Emission Bandwidth is 16.16 MHz







4.4. Peak Output Power Measurement Data

(1) Modulation Standard: IEEE 802.11b

Test Date: Apr. 02. 2004 Temperature: 24 Humidity: 65%

- a) Channel 01: Output Peak Power is 14.97dBm or 31.4mW
- b) Channel 06: Output Peak Power is 16.62dBm or 45.9mW
- c) Channel 11: Output Peak Power is 16.15dBm or 41.2mW

(2) Modulation Standard: IEEE 802.11g

Test Date: Apr. 02. 2004 Temperature: 24 Humidity: 65%

- a) Channel 01: Output Peak Power is 11.85dBm or 15.3mW
- b) Channel 06: Output Peak Power is 13.65dBm or 23.2mW
- c) Channel 11: Output Peak Power is 13.13dBm or 20.6mW

Band Edges Measurement Data

← 格式化:項目符號及編號

(1) Modulation Standard: IEEE 802.11b

Test Date: Apr. 02. 2004 Temperature: 24 Humidity: 65%

- a) Lower Band Edge: maximum value is -45.66dBm that is attenuated more than 20dB
- b) Upper Band Edge: maximum value is -49.12dBm that is attenuated more than 20dB

(2) Modulation Standard: IEEE 802.11g

Test Date: Apr. 02. 2004 Temperature: 24 Humidity: 65%

- a) Lower Band Edge: maximum value is -43.48dBm that is attenuated more than 20dB
- b) Upper Band Edge: maximum value is -44.53dBm that is attenuated more than 20dB

Modulation Standard: IEEE 802.11b

Operation Mode: Receiving/ Transmitting

Test Date: Apr. 02. 2004 Temperature: 24 Humidity: 65%

a) Channel 1

Fundamental Frequency: 2412 MHz

| Frequency (MHz) | Reading(dBuV) | | | | Factor (dB) Corr. | Result@3m (dBuV/m) | | Limit@3m (dBuV/m) | | Margin (dB) | Table Deg. (Deg.) | Ant High (m) |
|--------------------|---------------|------|------|------|-------------------------|-----------------------|------|----------------------|------|----------------|-------------------------|--------------------|
| | H | | V | | | Peak | Ave. | Peak | Ave. | | | |
| | Peak | Ave. | Peak | Ave. | | | | | | | | |
| 2390.0 | 56.7 | 46.9 | 57.2 | 47.7 | 1 | 58.2 | 48.4 | 74 | 54 | -5.6 | 180 | 1 |
| 2483.5 | 57.2 | 46.5 | 57.8 | 46.1 | 1 | 58.8 | 47.5 | 74 | 54 | -6.5 | 180 | 1 |

b) Channel 6

Fundamental Frequency: 2437 MHz

| Frequency (MHz) | Reading(dBuV) | | | | Factor (dB) Corr. | Result@3m (dBuV/m) | | Limit@3m (dBuV/m) | | Margin (dB) | Table Deg. (Deg.) | Ant High (m) |
|--------------------|---------------|------|------|------|-------------------------|-----------------------|------|----------------------|------|----------------|-------------------------|--------------------|
| | H | | V | | | Peak | Ave. | Peak | Ave. | | | |
| | Peak | Ave. | Peak | Ave. | | | | | | | | |
| 2390.0 | 57.1 | 47.5 | 56.5 | 46.9 | 1 | 58.1 | 48.5 | 74 | 54 | -5.5 | 180 | 1 |
| 2483.5 | 56.9 | 43.8 | 57.4 | 44.3 | 1 | 58.4 | 45.3 | 74 | 54 | -8.7 | 180 | 1 |

c) Channel 11

Fundamental Frequency: 2462 MHz

| Frequency (MHz) | Reading(dBuV) | | | | Factor (dB) Corr. | Result@3m (dBuV/m) | | Limit@3m (dBuV/m) | | Margin (dB) | Table Deg. (Deg.) | Ant High (m) |
|--------------------|---------------|------|------|------|-------------------------|-----------------------|------|----------------------|------|----------------|-------------------------|--------------------|
| | H | | V | | | Peak | Ave. | Peak | Ave. | | | |
| | Peak | Ave. | Peak | Ave. | | | | | | | | |
| 2390.0 | 56.9 | 47.3 | 56.1 | 47.9 | 1 | 57.9 | 48.9 | 74 | 54 | -5.1 | 180 | 1 |
| 2483.5 | 57.2 | 45.0 | 57.6 | 44.3 | 1 | 58.6 | 46.0 | 74 | 54 | -8.0 | 180 | 1 |

Modulation Standard: IEEE 802.11g

Operation Mode: Receiving/ Transmitting

Test Date: Apr. 02. 2004 Temperature: 24 Humidity: 65%

a) Channel 1

Fundamental Frequency: 2412 MHz

| Frequency (MHz) | Reading(dBuV) | | | | Factor (dB) Corr. | Result@3m (dBuV/m) | | Limit@3m (dBuV/m) | | Margin (dB) | Table Deg. (Deg.) | Ant High (m) |
|--------------------|---------------|------|------|------|-------------------------|-----------------------|------|----------------------|------|----------------|-------------------------|--------------------|
| | H | | V | | | Peak | Ave. | Peak | Ave. | | | |
| | Peak | Ave. | Peak | Ave. | | | | | | | | |
| 2390.0 | 57.2 | 48.3 | 56.8 | 47.9 | 1 | 58.2 | 49.3 | 74 | 54 | -4.7 | 180 | 1 |
| 2483.5 | 65.8 | 46.5 | 64.3 | 47.0 | 1 | 66.8 | 48.0 | 74 | 54 | -6.0 | 180 | 1 |

b) Channel 6

Fundamental Frequency: 2437 MHz

| Frequency (MHz) | Reading(dBuV) | | | | Factor (dB) Corr. | Result@3m (dBuV/m) | | Limit@3m (dBuV/m) | | Margin (dB) | Table Deg. (Deg.) | Ant High (m) |
|--------------------|---------------|------|------|------|-------------------------|-----------------------|------|----------------------|------|----------------|-------------------------|--------------------|
| | H | | V | | | Peak | Ave. | Peak | Ave. | | | |
| | Peak | Ave. | Peak | Ave. | | | | | | | | |
| 2390.0 | 54.8 | 46.2 | 55.7 | 47.8 | 1 | 56.7 | 48.8 | 74 | 54 | -5.2 | 180 | 1 |
| 2483.5 | 56.8 | 43.9 | 55.3 | 44.3 | 1 | 57.8 | 45.3 | 74 | 54 | -8.7 | 180 | 1 |

c) Channel 11

Fundamental Frequency: 2462 MHz

| Frequency (MHz) | Reading(dBuV) | | | | Factor (dB) Corr. | Result@3m (dBuV/m) | | Limit@3m (dBuV/m) | | Margin (dB) | Table Deg. (Deg.) | Ant High (m) |
|--------------------|---------------|------|------|------|-------------------------|-----------------------|------|----------------------|------|----------------|-------------------------|--------------------|
| | H | | V | | | Peak | Ave. | Peak | Ave. | | | |
| | Peak | Ave. | Peak | Ave. | | | | | | | | |
| 2390.0 | 56.6 | 48.0 | 57.1 | 47.3 | 1 | 58.1 | 49.0 | 74 | 54 | -5.0 | 180 | 1 |
| 2483.5 | 57.5 | 44.8 | 56.8 | 44.2 | 1 | 58.5 | 45.8 | 74 | 54 | -8.2 | 180 | 1 |

(1) Modulation Standard: IEEE 802.11b

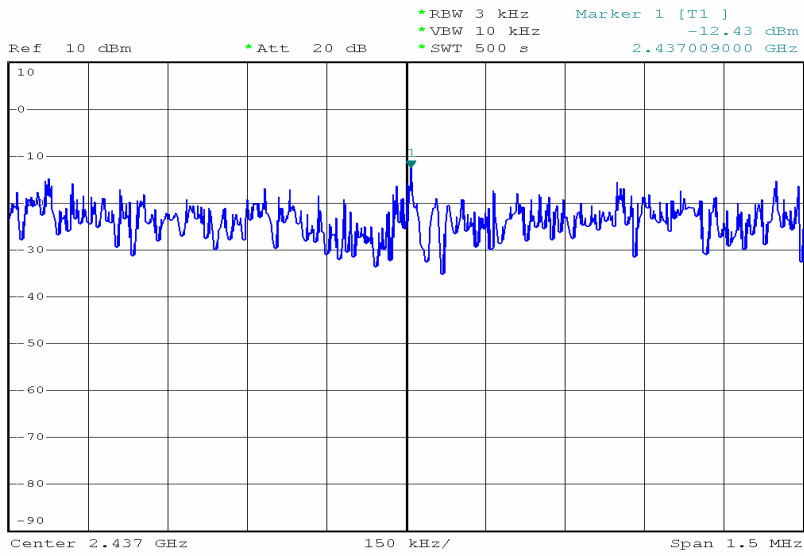
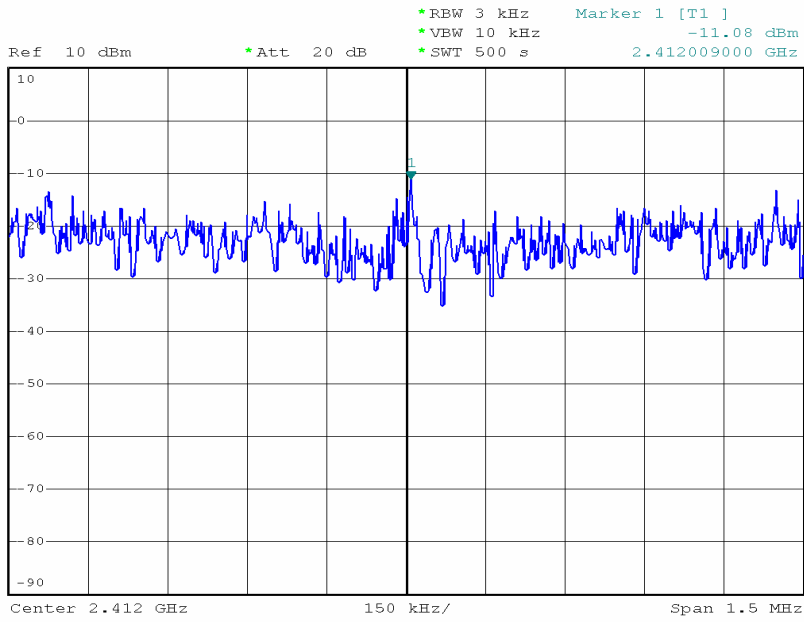
Test Date: Apr. 02. 2004 Temperature: 24 Humidity: 65%

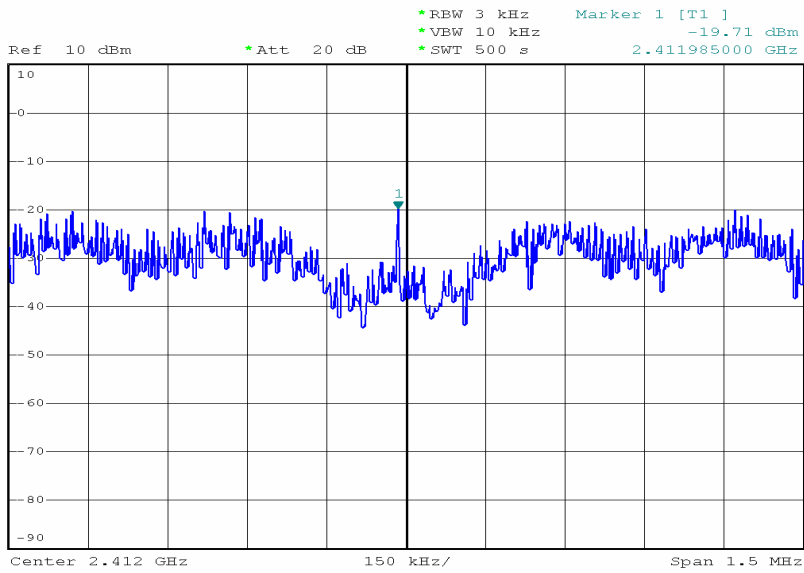
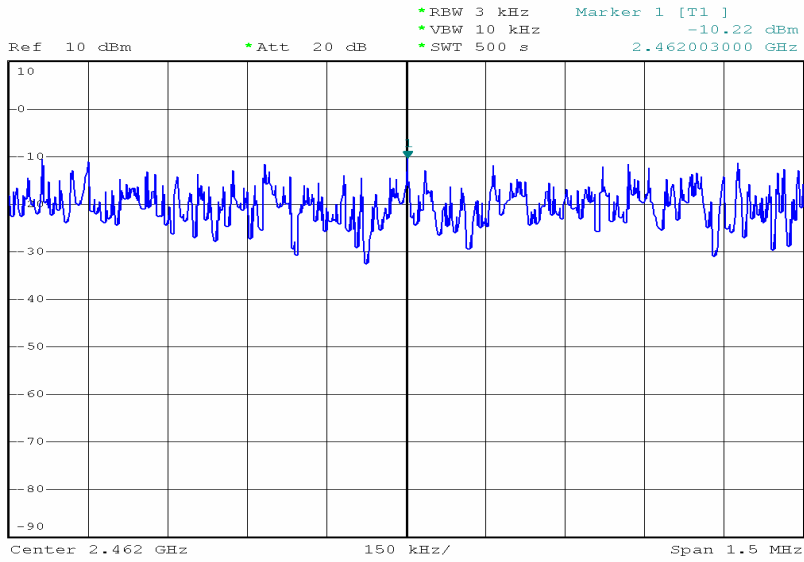
- a) Channel 01: Maximum Power Density of 3 kHz Bandwidth is -11.08dBm
- b) Channel 06: Maximum Power Density of 3 kHz Bandwidth is -12.43dBm
- c) Channel 11: Maximum Power Density of 3 kHz Bandwidth is -10.22dBm

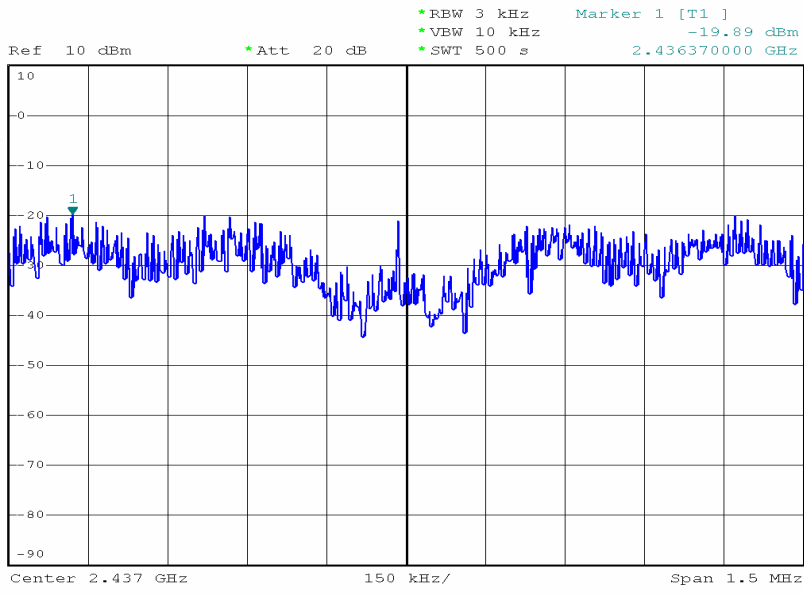
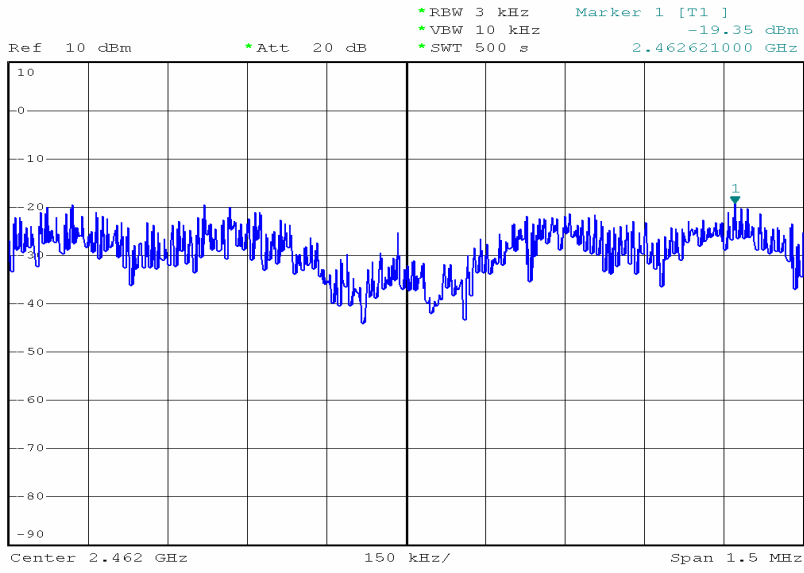
(2) Modulation Standard: IEEE 802.11g

Test Date: Apr. 02. 2004 Temperature: 24 Humidity: 65%

- a) Channel 01: Maximum Power Density of 3 kHz Bandwidth is -19.71dBm
- b) Channel 06: Maximum Power Density of 3 kHz Bandwidth is -19.89dBm
- c) Channel 11: Maximum Power Density of 3 kHz Bandwidth is -19.35dBm







4.5. Test Result of RF Exposure Evaluation

- . Product: Wireless Router
- . Test Item: RF Exposure Evaluation Data
- . Test site: OATSI-SD
- . Test Mode: Normal Operation

4.5.1. Antenna Gain

The maximum Gain is 1.8 dBi.

4.5.2. EUT Operation condition

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

4.5.3. Output Power into Antenna & RF Exposure Evaluation Distance

Modulation Standard: IEEE 802.11b

Test Date: Apr. 02, 2004 Temperature: 25 Humidity: 63%

| Channel | Channel Frequency (MHz) | Output Power to Antenna (dBm) | Power Density (S) (mW/cm ²) |
|---------|----------------------------|----------------------------------|--|
| 01 | 2412 | 14.47 | 0.125 |
| 06 | 2437 | 15.71 | 0.182 |
| 11 | 2462 | 16.86 | 0.164 |

Modulation Standard: IEEE 802.11g

Test Date: Apr. 02, 2004 Temperature: 25 Humidity: 63%

| Channel | Channel Frequency (MHz) | Output Power to Antenna (dBm) | Power Density (S) (mW/cm ²) |
|---------|----------------------------|----------------------------------|--|
| 01 | 2412 | 11.55 | 0.057 |
| 06 | 2437 | 12.83 | 0.076 |
| 11 | 2462 | 13.97 | 0.099 |

The distance r (4th column) calculated from the Friis transmission formula is far shorter than 20 cm separation requirement. So, RF exposure limit warning or SAR test are not required.

5. List of Measuring Equipment Used

| No | Instrument/Ancillary | Type | Manufacturer | Serial No. | Valid Date. |
|----|----------------------|-------------|--------------|-------------|-------------|
| 1 | BILOG ANTENNA | CBL6111C | SCHAFFNER | 2762 | 2004/11/03 |
| 2 | PREAMPLIFIER | RFP4002 | SCHAFFNER | 010 | 2004/11/03 |
| 3 | RECEIVER | SCR3501 | SCHAFFNER | 437 | 2004/11/03 |
| 4 | SIGNAL GENERATOR | 8648B | HP | 3629U00612 | 2006/02/08 |
| 5 | SPECTRUM ANALYZER | 8594E | HP | 3520A01913 | 2005/01/15 |
| 6 | AMPLIFIER | 8447D | AGILENT | 2944A10593 | 2004/10/09 |
| 7 | AMPLIFIER | 8447D | AGILENT | 2944A10531 | 2004/07/08 |
| 8 | SERIES POWER METER | E4416A | AGILENT | GB41292146 | 2004/11/05 |
| 9 | POWER SENSOR | E9327A | AGILENT | US40441392 | 2004/10/06 |
| 10 | DIPOLE ANTENNA | AD-100 | COM-POWER | 721011 | 2004/12/02 |
| 11 | DIPOLE ANTENNA | AD-100 | COM-POWER | 721010 | 2004/12/02 |
| 12 | SPECTRUM ANALYZER | R3131A | ADVANTEST | 131000021 | 2004/11/24 |
| 13 | SPECTRUM ANALYZER | FSP40 | R&S | 100047 | 2004/12/16 |
| 14 | PREAMPLIFIER | 8449B | AGILENT | 3008A01954 | 2005/01/04 |
| 15 | HORN ANTENNA | 3115 | EMCO | 31601 | 2005/01/13 |
| 16 | HORN ANTENNA | 3115 | EMCO | 31589 | 2005/01/14 |
| 17 | HORN ANTENNA | 3116 | EMCO | 31970 | 2005/01/29 |
| 18 | HORN ANTENNA | 3116 | EMCO | 31974 | 2005/01/29 |
| 19 | EMI RECEIVER | 8546A | HP | 3807A00454 | 2005/02/12 |
| 20 | RF FILTER SECTION | 85460A | HP | 3704A00386 | 2005/02/12 |
| 21 | SIGNAL GENERATOR | 83640A | HP | 2927A00107 | 2006/03/16 |
| 22 | ATTENUATOR | 8491B | AGILENT | 50703 | 2004/12/16 |
| 23 | ATTENUATOR | 8491B | AGILENT | 50705 | 2004/12/16 |
| 24 | TEMPERATURE CHAMBER | TMJ-9712 | T MACHINE | T-12-040111 | 2005/03/05 |
| 25 | HIGH PASS FILTER | 84300-80038 | HP | 002 | N/A |
| 26 | HIGH PASS FILTER | 84300-80038 | HP | 006 | N/A |
| 27 | DC Power Supply | GPD-3030 | GM | 7020936 | N/A |
| 28 | AC POWER CONVERTER | AFC-11005 | APC | F103120008 | N/A |