



FCC 47 CFR PART 15 SUBPART C

TEST REPORT

For

Portable Wireless AP Storage

Model Number : MGB100

Issued to

**Advance Multimedia Internet Technology Inc.
NO. 32, Hwan-Gong Rd. Yung Kang City, Tainan Hsien, Taiwan**

Issued by

**Compliance Certification Services Inc.
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No. 8, Jiu Ceng Ling, Jiaokeng Village, Sinhua
Township, Tainan Hsien 712, Taiwan R.O.C.
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1. TEST RESULT CERTIFICATION

Applicant : Advance Multimedia Internet Technology Inc.
Address : NO. 32, Hwan-Gong Rd. Yung Kang City, Tainan Hsien, Taiwan
Equipment Under Test : Portable Wireless AP Storage
Model Number : MGB100
Date of Test : October 20 ~ November 16, 2005

| APPLICABLE STANDARDS | |
|------------------------------|-------------------------|
| STANDARD | TEST RESULT |
| FCC 47 CFR Part 15 Subpart C | No non-compliance noted |

We hereby certify that:

The above equipment was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4 and the energy emitted by the sample EUT tested as described in this report is in compliance with the requirements of FCC Rules Part 15.207, 15.209, 15.247.

The test results of this report relate only to the tested sample EUT identified in this report.

Approved by:

Alex Chiu
Alex Chiu

Manager
Compliance Certification Services Inc.

Reviewed by:

Jeter Wu
Jeter Wu

Section Manager
Compliance Certification Services Inc.





2. EUT DESCRIPTION

| | |
|------------------------------|--|
| Product | Portable Wireless AP Storage |
| Model Number | MGB100 |
| Model Discrepancy | N/A |
| Power Supply | Power by Adaptor SINO-AMERICAN I /P : 120V 50/60Hz 0.4A Model: SA115B-05 O/P: 5Vdc 3A 15W |
| Frequency Range | 2412 ~ 2462 MHz |
| Transmit Power | IEEE802.11b mode: 20.49 dBm IEEE802.11g mode: 19.08 dBm |
| Modulation Technique | IEEE802.11b: DSSS IEEE802.11g: OFDM |
| Transmit Data Rate | IEEE802.11b: 11Mbps(CCK) with fall back rates of 5.5, 2, and 1Mbps IEEE802.11g: 54Mbps with fall back rates of 48/36/24/18/12/9/6 Mbps (OFDM) |
| Number of Channels | 11 Channels |
| Antenna Specification | SMA RF Antenna Type: Dipole Gain:1.8dBi No.:C381-510009-B |

Remark: The sample selected for test was engineering sample that approximated to production product and was provided by manufacturer. This submittal(s) (test report) is intended for FCC ID: PBLMGB100 filing to comply with Section 15.207, 15.209 and 15.247 of the FCC Part 15, Subpart C Rules.



3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4 and FCC CFR 47 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055, 2.1057, 15.207, 15.209 and 15.247.

EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

EUT EXERCISE

The EUT was operated in the engineering mode to fix the TX frequency that was for the purpose of the measurements.

According to its specifications, the EUT must comply with the requirements of the Section 15.207, 15.209 and 15.247 under the FCC Rules Part 15 Subpart C.

GENERAL TEST PROCEDURES

Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 13.1.4.1 of ANSI C63.4 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-peak and average detector modes.

Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 13.1.4.1 of ANSI C63.4.

**FCC PART 15.205 RESTRICTED BANDS OF OPERATIONS**

(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 |
| ¹ 0.495 - 0.505 | 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.



DESCRIPTION OF TEST MODES

The EUT (Model: MGB100) have been tested under operating condition.

Software used to control the EUT for staying in continuous transmitting and receiving mode is programmed.

There are two sources of power adapters: Delta / ADP-10SB and Delta / ADP-10ZB. After verified, the worst data of radiated spurious emission recorded in the test report is Delta / ADP-10SB.

After verification, all tests carried out are with the worst-case test modes as shown below except radiated spurious emission below 1GHz's worst case is in normal link mode.

IEEE802.11b: Channel 1(2412MHz), Channel 6(2437MHz) and Channel 11(2462MHz) with 11Mbps higher data rate were chosen for the final testing.

IEEE802.11g: Channel 1(2412MHz), Channel 6(2437MHz) and Channel 11(2462MHz) with 54Mbps higher data rate were chosen for the final testing.

4. INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.



5. FACILITIES AND ACCREDITATIONS

FACILITIES

All measurement facilities used to collect the measurement data are located at

No. 8, Jiu Ceng Ling, Jiaokeng Village, Sinhua Township, Tainan Hsien 712, Taiwan R.O.C.

The sites are constructed in conformance with the requirements of ANSI C63.7, ANSI C63.4 and CISPR Publication 22.

EQUIPMENT

Radiated emissions are measured with one or more of the following types of linearly polarized antennas: tuned dipole, biconical, log periodic, bi-log, and/or ridged waveguide, horn. Spectrum analyzers with pre-selectors and quasi-peak detectors are used to perform radiated measurements.

Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers.

Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

LABORATORY ACCREDITATIONS AND LISTING

The test facilities used to perform radiated and conducted emissions tests are accredited by National Voluntary Laboratory Accreditation Program for the specific scope of accreditation under Lab Code: 200627-0 to perform Electromagnetic Interference tests according to FCC PART 15 AND CISPR 22 requirements. No part of this report may be used to claim or imply product endorsement by NVLAP or any agency of the US Government. In addition, the test facilities are listed with Federal Communications Commission (Registration no: 228014).

**TABLE OF ACCREDITATIONS AND LISTINGS**

| Country | Agency | Scope of Accreditation | Logo |
|---------|--------|--|--|
| USA | NVLAP | EN 55014-1, CNS 13783-1, AS/NZS CISPR 14.1, IEC/CISPR 14-1, IEC/CISPR 22, CNS 13438, IEC 61000-3-2, IEC 61000-3-3, AS/NZS 61000.3.3, ANSI C63.4, AS/NZS CISPR 22, VCCI, IEC/CISPR 24, IEC 61000-4-2/4/5/6/8/11 |  NVLAP LAB CODE 200627-0 200627-0 |
| USA | FCC | 3/10 meter Open Area Test Sites to perform FCC Part 15/18 measurements |  228014 |
| Japan | VCCI | 3/10 meter Open Area Test Sites and conducted test sites to perform radiated/conducted measurements |  R-1989 C-2142 |
| Taiwan | CNLA | CISPR 11 FCC METHOD-47 CFR Part 18 EN 55011 CNS 13803, CISPR 14 EN 55014 CNS 13783-1, CISPR 22 EN 55022 VCCI FCC Method-47 CFR Part 15 Subpart B CNS 13438 |  1109 ILAC MRA |
| Taiwan | BSMI | CNS 13438, CNS 13783-1, CNS 13803 |  SL2-IS-E-0039 SL2-IN-E-0039 SL2-A1-E-0039 |

* No part of this report may be used to claim or imply product endorsement by NVLAP or any agency of the US Government.



6. SETUP OF EQUIPMENT UNDER TEST

SETUP CONFIGURATION OF EUT

See test photographs attached in Appendix 1 for the actual connections between EUT and support equipment.

SUPPORT EQUIPMENT

| No. | Product | Manufacturer | Model No. | FCC ID | Signal cable |
|-----|---------------|--------------|-----------|-----------|-------------------------|
| 1 | PC | HP | d330uT | DOC | N/A |
| 2 | LCD Monitor | HP | 1502 | DOC | VGA cable,shd,1.5m |
| 3 | Keyboard(PS2) | HP | KB-0133 | DOC | Keyboard cable,shd,1.9m |
| 4 | Mouse(PS2) | HP | M-S69 | JNZ211443 | Mouse cable,shd,1.8m |
| 5 | Note Book | HP | CNC 6000 | CNTPP2090 | N/A |

Remark:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.



7. FCC PART 15.247 REQUIREMENTS

6DB BANDWIDTH

LIMIT

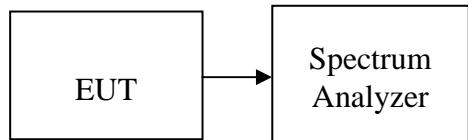
For the direct sequence systems, the minimum 6dB bandwidth shall be at least 500kHz.

MEASUREMENT EQUIPMENT USED

| Name of Equipment | Manufacturer | Model | Serial Number | Calibration Due |
|-------------------|--------------|-------|---------------|-----------------|
| SPECTRUM ANALYZER | R&S | FSEM | 829054/017 | March 18, 2005 |

Remark: Each piece of equipment is scheduled for calibration once a year.

Test Configuration



TEST PROCEDURE

1. Turn on PC and run test program.
2. Setup EUT in test mode.
3. Start test.



TEST RESULTS

No non-compliance noted

Test Data

Test mode: IEEE 802.11b

| Channel | Frequency (MHz) | Bandwidth (kHz) | Limit (kHz) | Margin (kHz) |
|---------|-----------------|-----------------|-------------|--------------|
| Low | 2412 | 12124 | >500 | PASS |
| Mid | 2437 | 12224 | | PASS |
| High | 2462 | 11923 | | PASS |

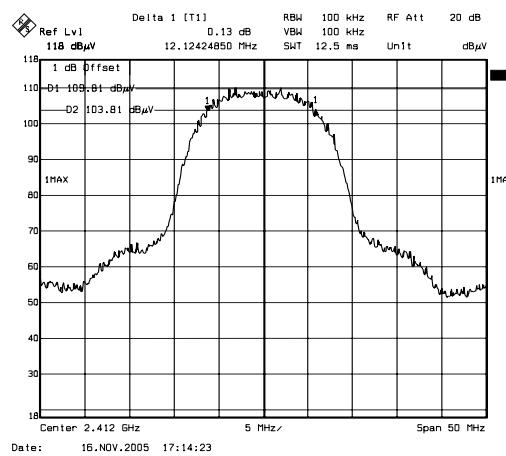
Test mode: IEEE 802.11g

| Channel | Frequency (MHz) | Bandwidth (kHz) | Limit (kHz) | Margin (kHz) |
|---------|-----------------|-----------------|-------------|--------------|
| Low | 2412 | 16533 | >500 | PASS |
| Mid | 2437 | 16533 | | PASS |
| High | 2462 | 16533 | | PASS |

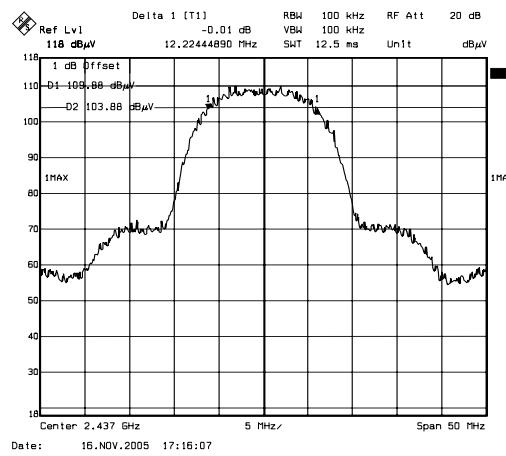
Test Plot

IEEE 802.11b mode

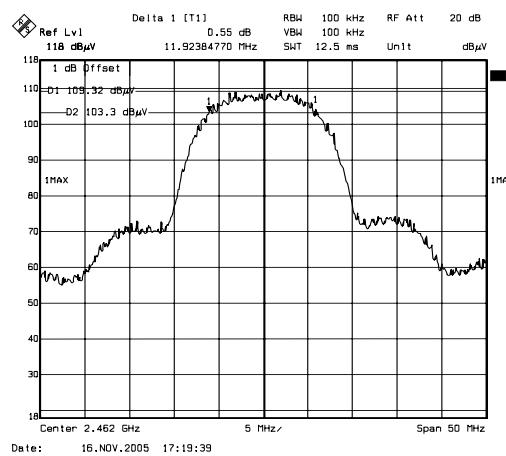
6dB Bandwidth (CH Low)

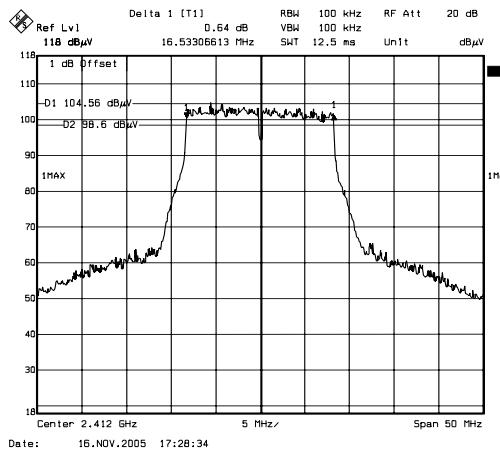
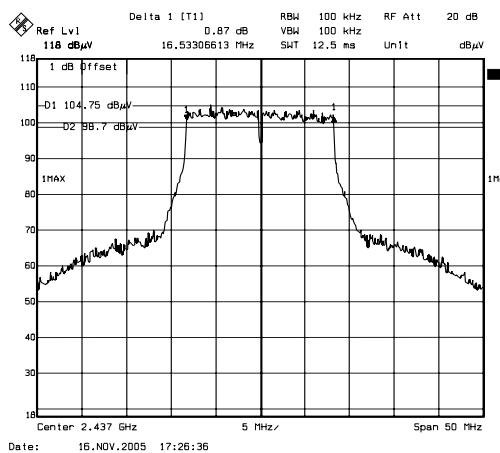
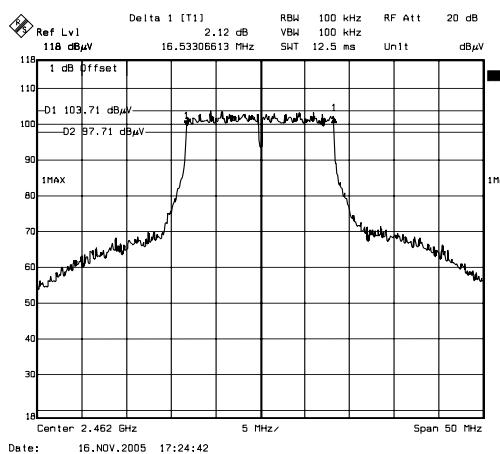


6dB Bandwidth (CH Mid)



6dB Bandwidth (CH High)



IEEE 802.11g mode**6dB Bandwidth (CH Low)****6dB Bandwidth (CH Mid)****6dB Bandwidth (CH High)**



PEAK POWER

LIMIT

The maximum peak output power of the intentional radiator shall not exceed the following:

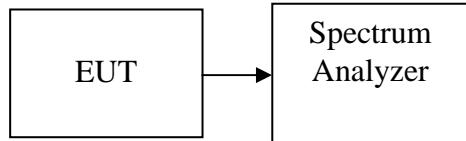
1. For systems using digital modulation in the bands of 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz: 1 watt.
2. Except as shown in paragraphs (b)(3) (i), (ii) and (iii) of this section, if transmitting antennas of directional gain greater than 6 dBi are used the peak output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1) or (b)(2) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

MEASUREMENT EQUIPMENT USED

| Name of Equipment | Manufacturer | Model | Serial Number | Calibration Due |
|-------------------|--------------|-------|---------------|-----------------|
| SPECTRUM ANALYZER | R&S | FSEM | 829054/017 | March 18, 2005 |

Remark: Each piece of equipment is scheduled for calibration once a year.

Test Configuration



TEST PROCEDURE

The transmitter output is connected to the Spectrum analyzer. The Spectrum analyzer is set to the peak power detection.



TEST RESULTS

No non-compliance noted

Test Data

Test mode: IEEE 802.11b

| Channel | Frequency (MHz) | Reading Power(dBm) | Factor (dB) | Output Power(dBm) | Output Power(W) | Limit(W) | Result |
|---------|-----------------|--------------------|-------------|-------------------|-----------------|----------|--------|
| Low | 2412 | 19.34 | 1 | 20.34 | 0.10814 | 1 | PASS |
| Mid | 2437 | 19.49 | 1 | 20.49 | 0.11194 | | PASS |
| High | 2462 | 18.71 | 1 | 19.71 | 0.09354 | | PASS |

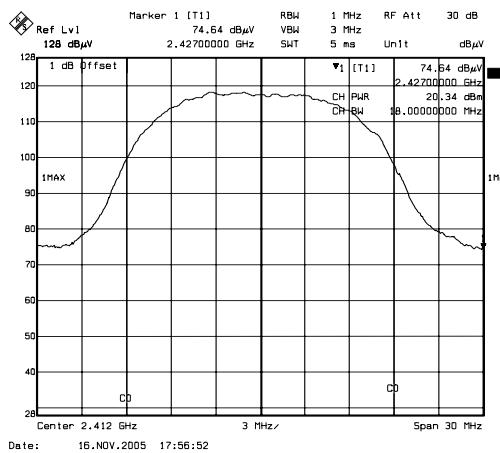
Test mode: IEEE 802.11g

| Channel | Frequency (MHz) | Reading Power(dBm) | Factor (dB) | Output Power(dBm) | Output Power(W) | Limit(W) | Result |
|---------|-----------------|--------------------|-------------|-------------------|-----------------|----------|--------|
| Low | 2412 | 17.81 | 1 | 18.81 | 0.07603 | 1 | PASS |
| Mid | 2437 | 18.08 | 1 | 19.08 | 0.08091 | | PASS |
| High | 2462 | 17.28 | 1 | 18.28 | 0.06730 | | PASS |

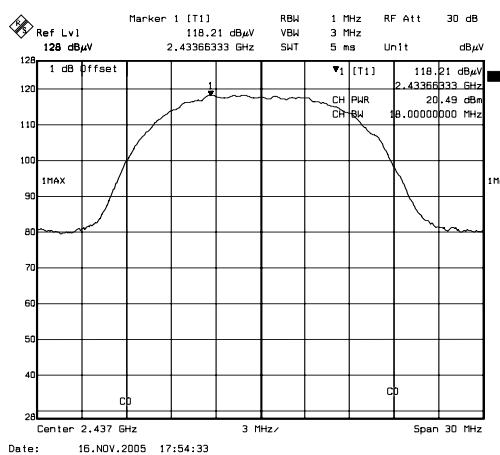
Test Plot

IEEE 802.11b mode

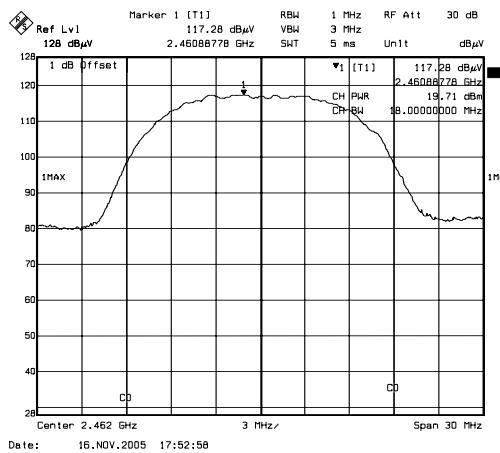
Peak power (CH Low)



Peak power (CH Mid)

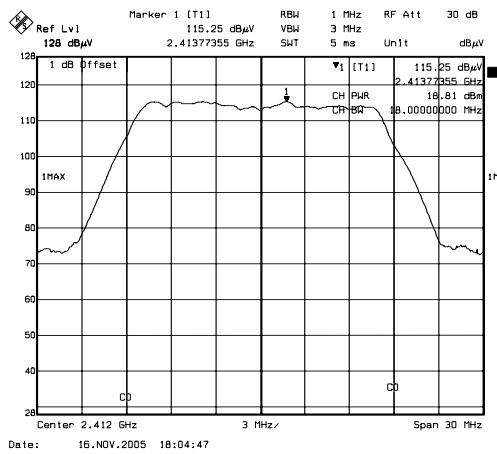


Peak power (CH High)

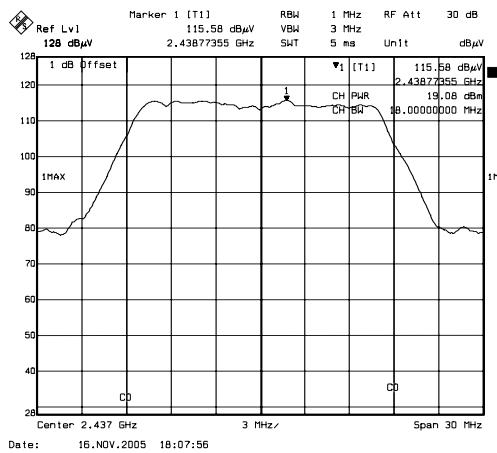


IEEE 802.11g mode

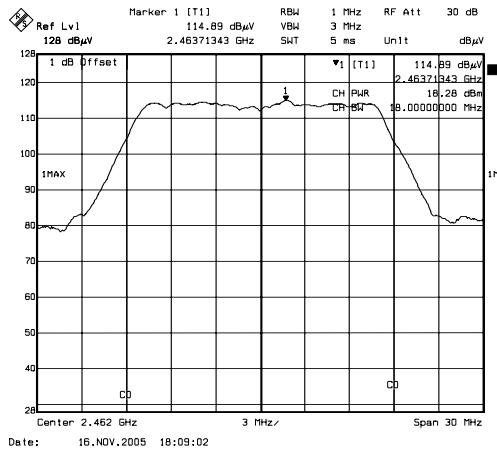
Peak power (CH Low)



Peak power (CH Mid)



Peak power (CH High)



BAND EDGES MEASUREMENT

LIMIT

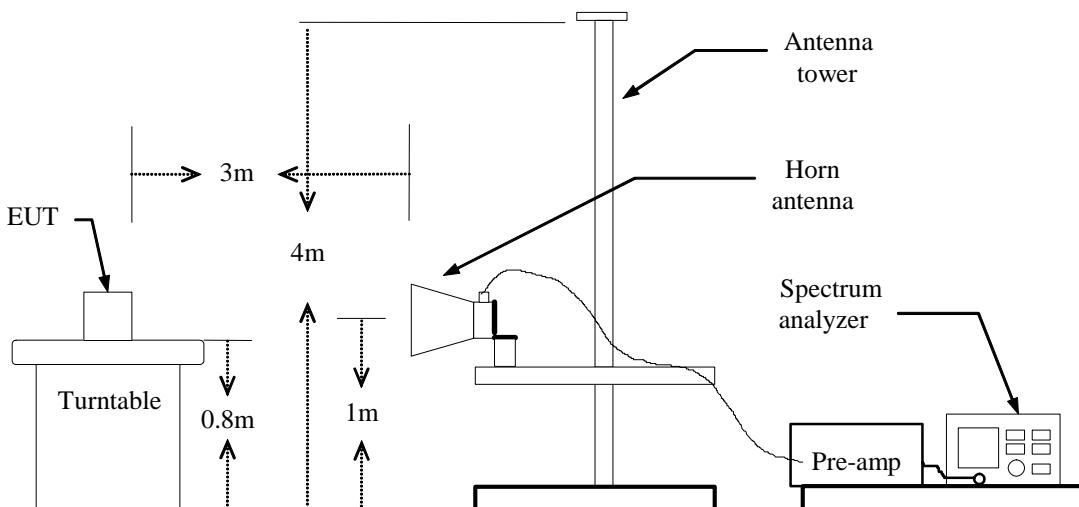
According to §15.247(c), in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in 15.209(a).

MEASUREMENT EQUIPMENT USED

| Name of Equipment | Manufacturer | Model | Serial Number | Calibration Due |
|-------------------|--------------|-------|---------------|-----------------|
| SPECTRUM ANALYZER | R&S | FSEM | 829054/017 | March 18, 2005 |

Remark: Each piece of equipment is scheduled for calibration once a year.

Test Configuration

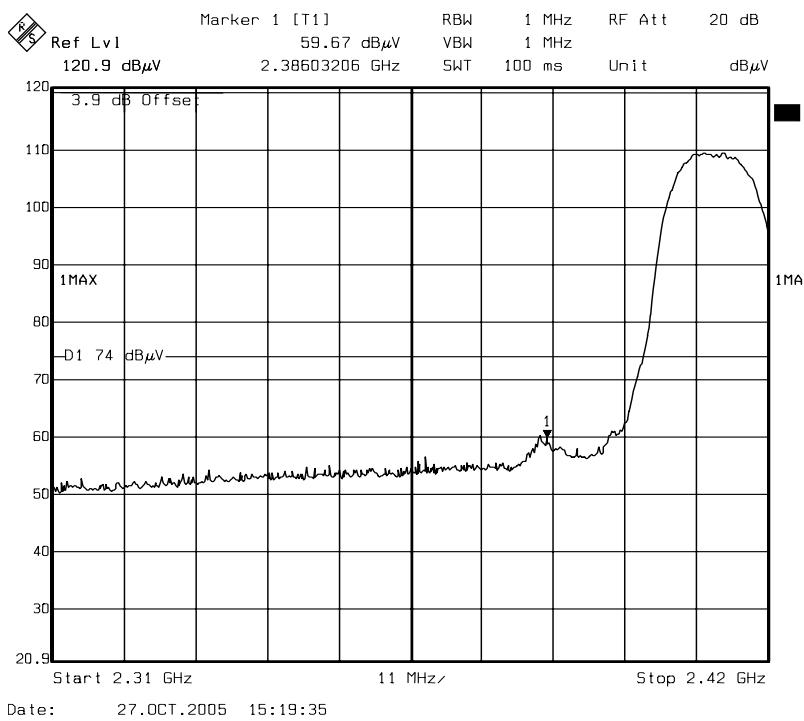
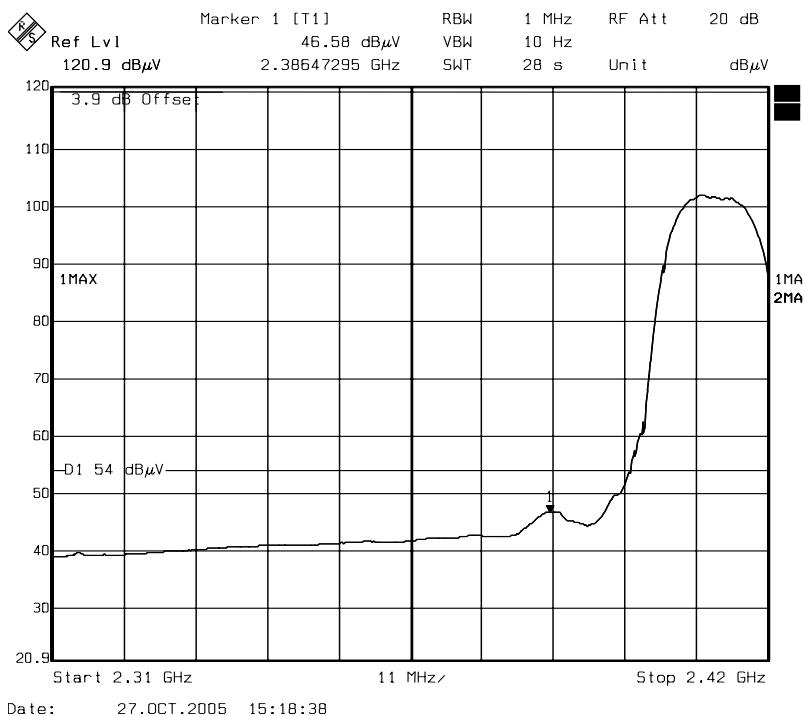


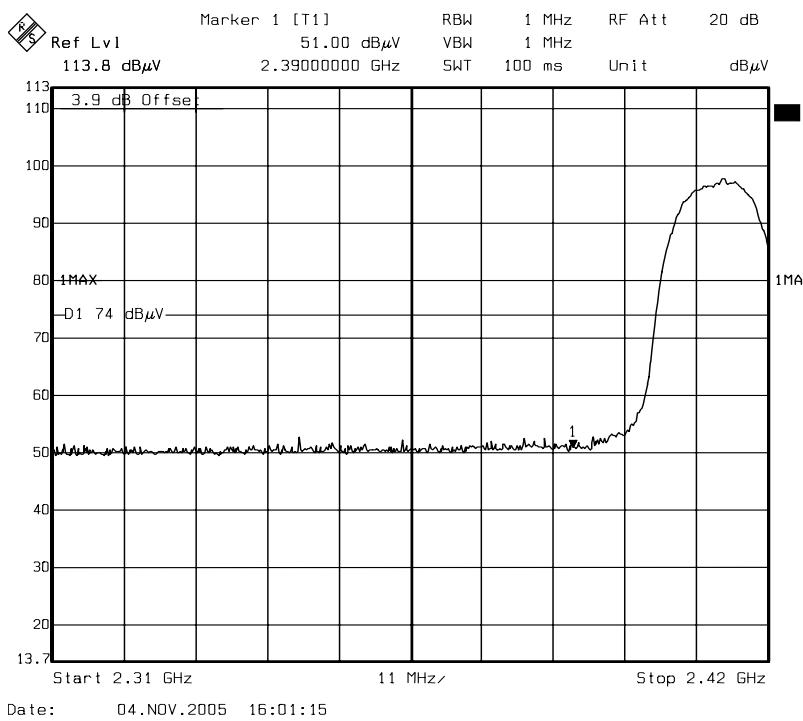
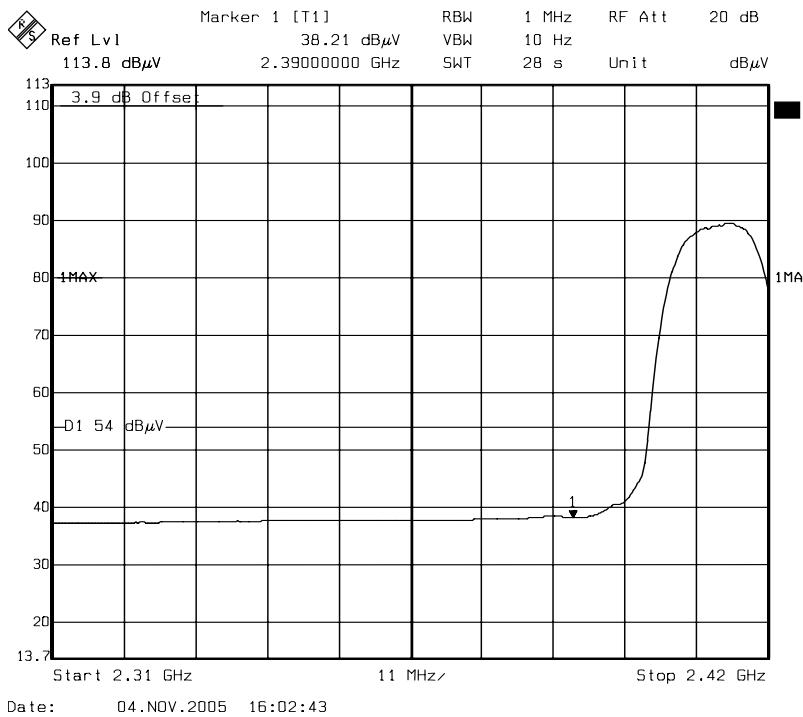
TEST PROCEDURE

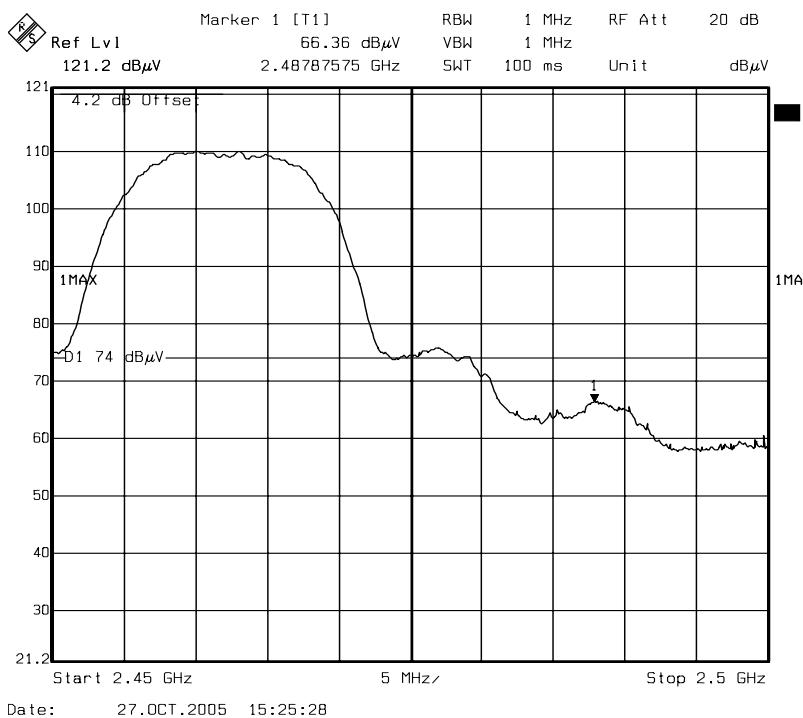
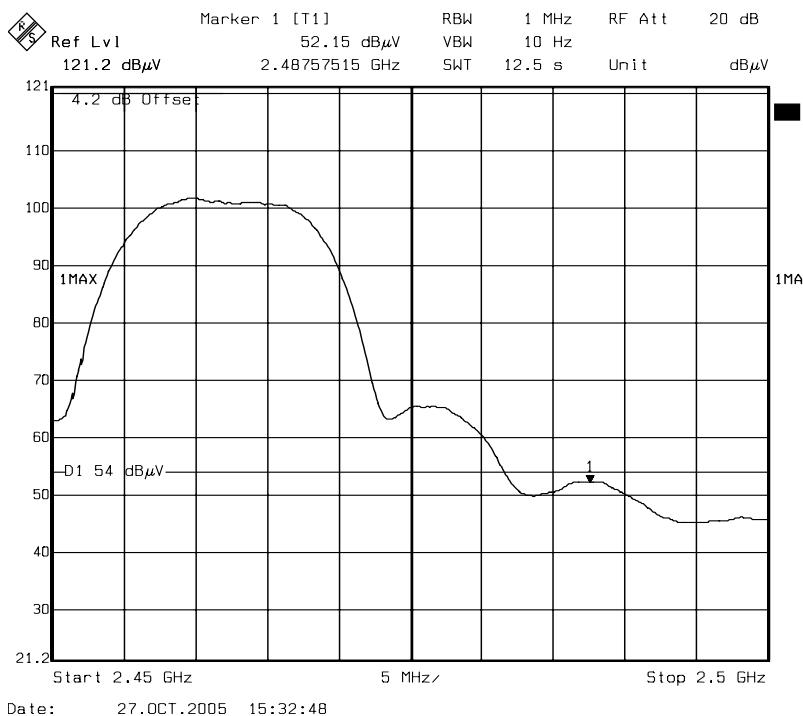
1. The EUT is placed on a turntable, which is 0.8m above the ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.
4. Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:
 - (a) PEAK: RBW=VBW=1MHz / Sweep=AUTO
 - (b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO
5. Repeat the procedures until all the PEAK and AVERAGE versus POLARIZATION are measured.

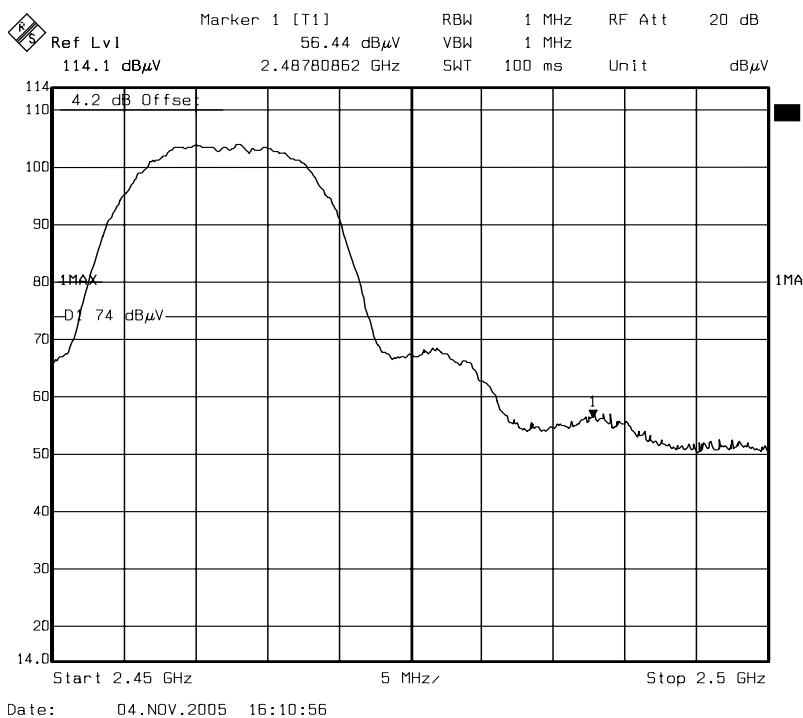
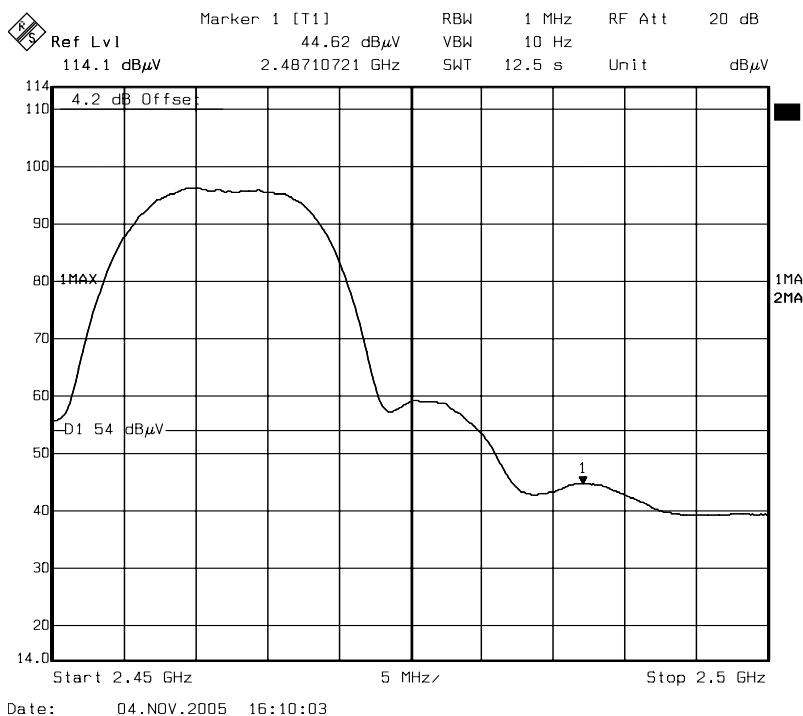
TEST RESULTS

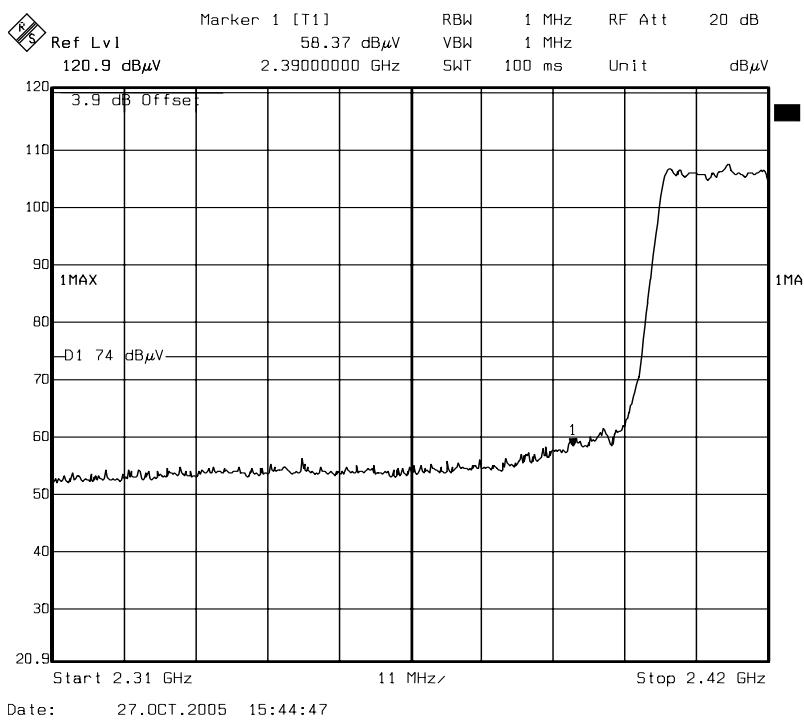
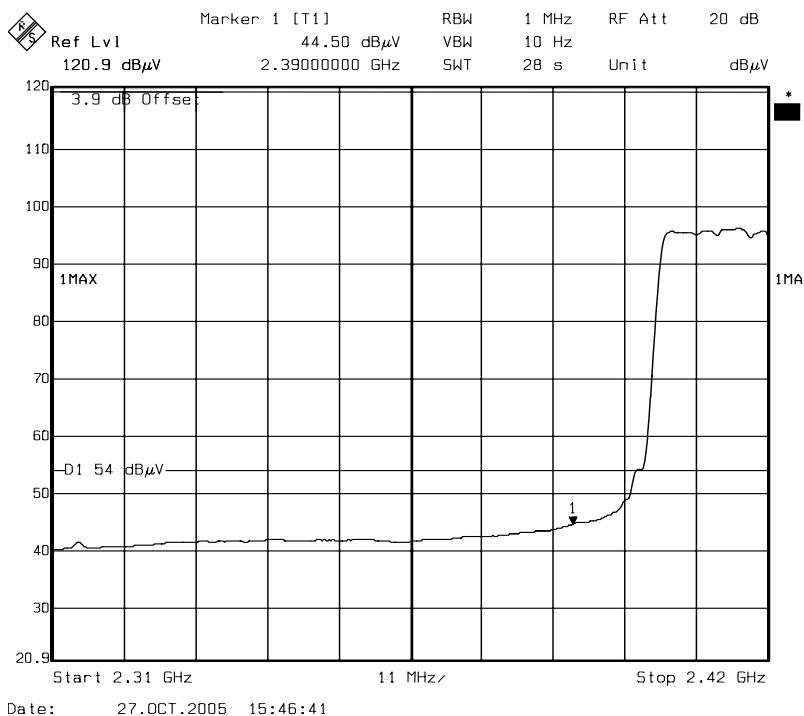
Refer to attach spectrum analyzer data chart.

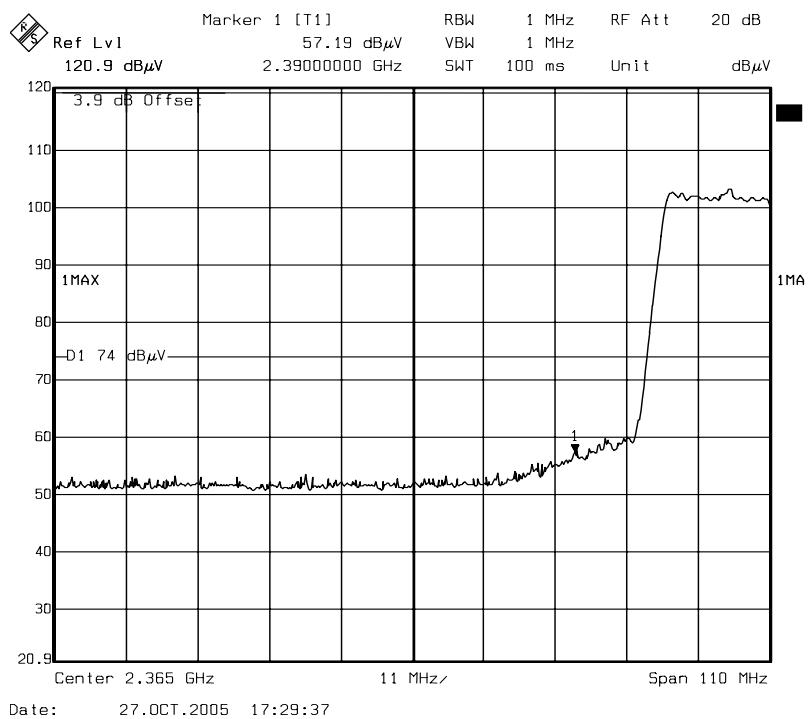
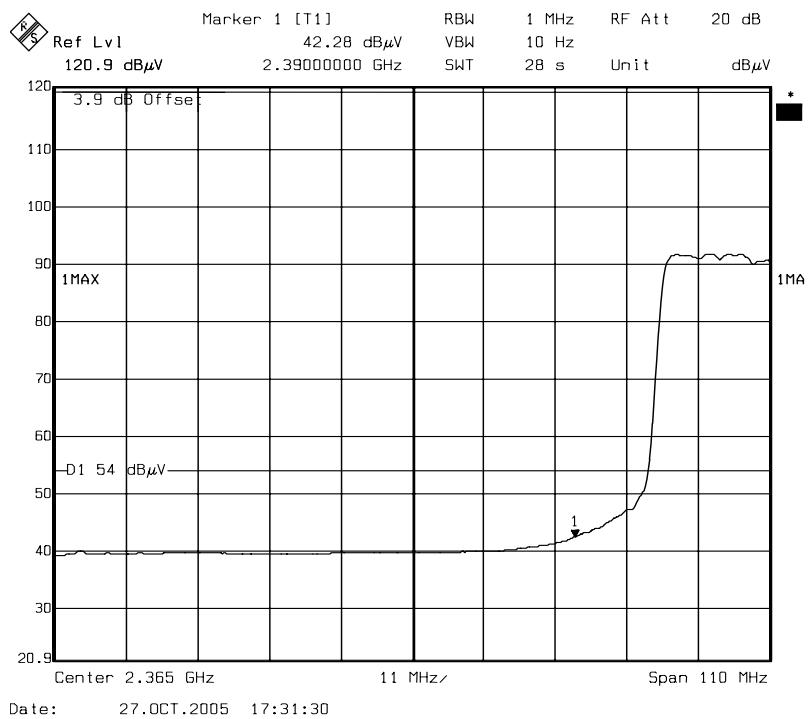
Band Edges (IEEE 802.11b mode / CH Low)**Detector mode: Peak Polarity: Vertical****Detector mode: Average Polarity: Vertical**

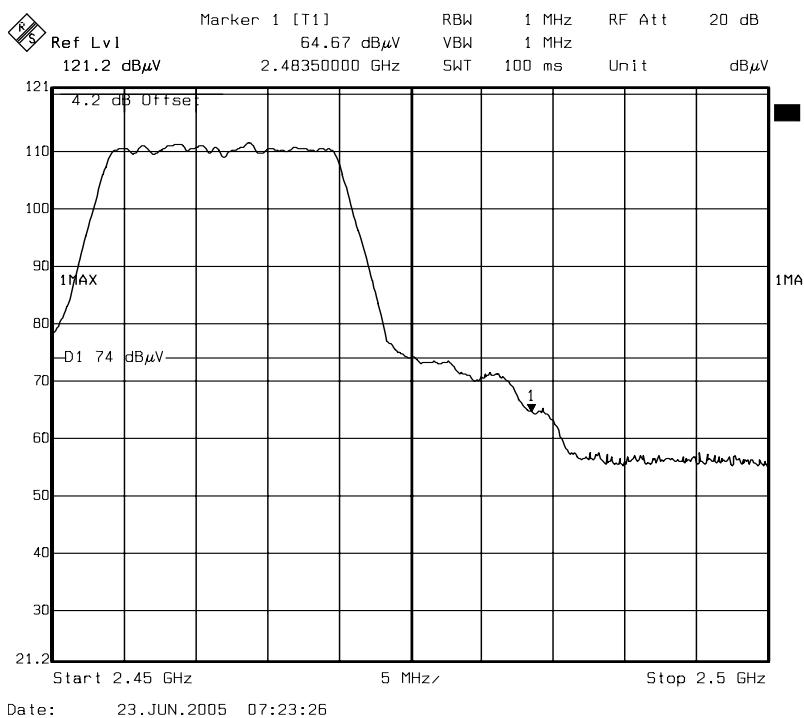
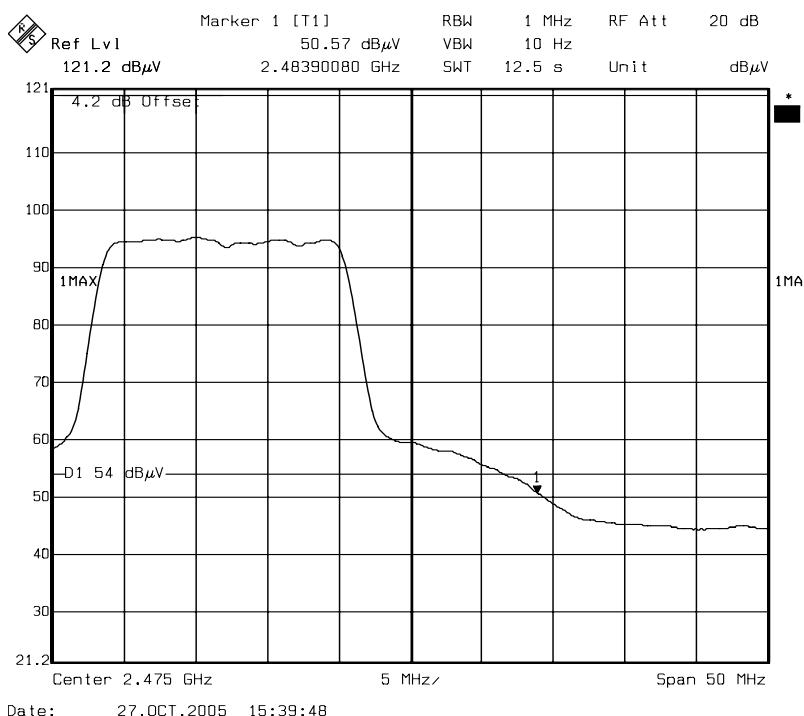
Detector mode: Peak Polarity: Horizontal**Detector mode: Average Polarity: Horizontal**

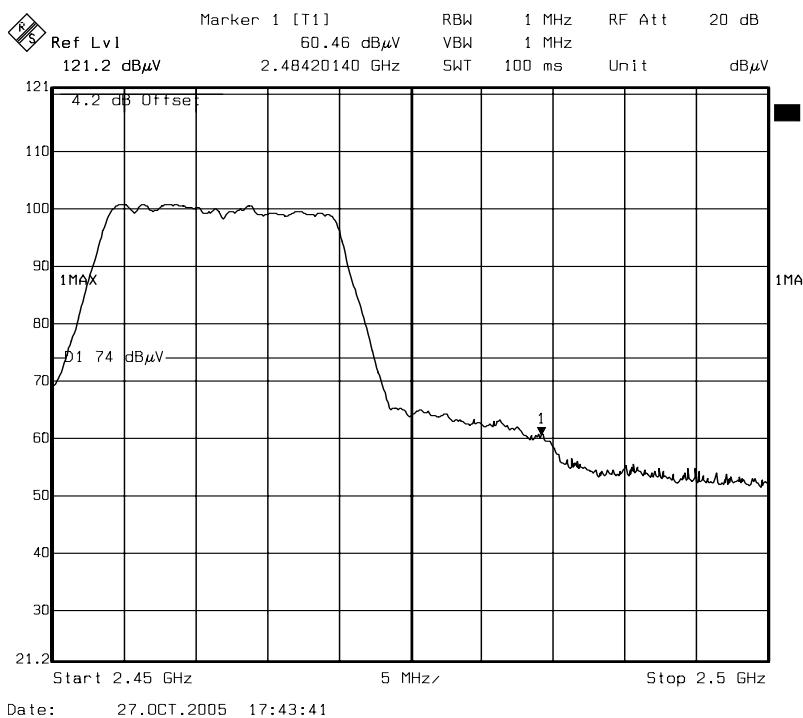
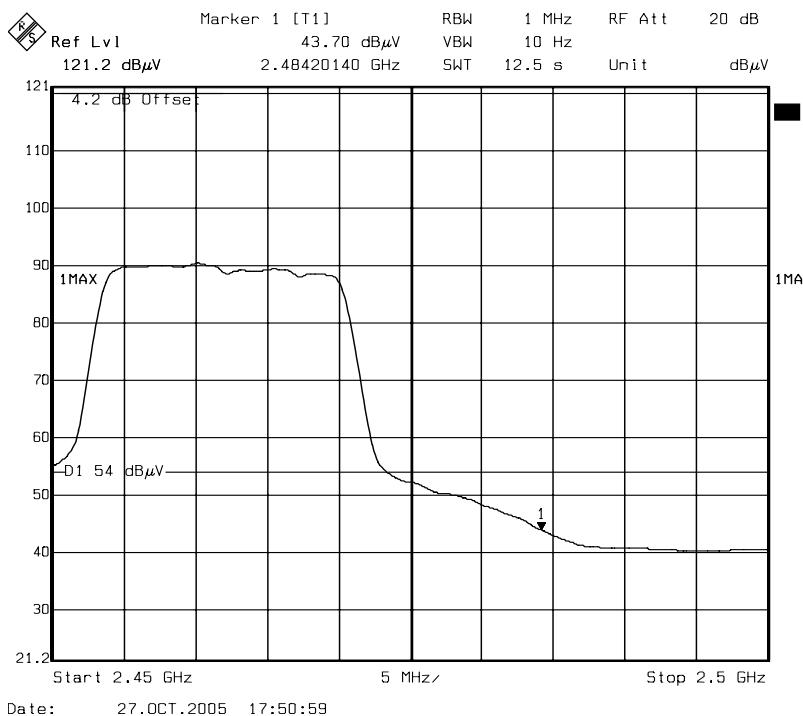
Band Edges (IEEE 802.11b mode / CH High)**Detector mode: Peak Polarity: Vertical****Detector mode: Average Polarity: Vertical**

Detector mode: Peak Polarity: Horizontal**Detector mode: Average Polarity: Horizontal**

Band Edges (IEEE 802.11g mode / CH Low)**Detector mode: Peak Polarity: Vertical****Detector mode: Average Polarity: Vertical**

Detector mode: Peak Polarity: Horizontal**Detector mode: Average Polarity: Horizontal**

Band Edges (IEEE 802.11g mode / CH High)**Detector mode: Peak Polarity: Vertical****Detector mode: Average Polarity: Vertical**

Detector mode: Peak Polarity: Horizontal**Detector mode: Average Polarity: Horizontal**



PEAK POWER SPECTRAL DENSITY

LIMIT

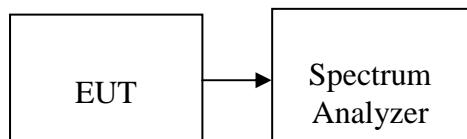
1. For direct sequence systems, the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3kHz band during any time interval of continuous transmission.
2. The direct sequence operating of the hybrid system, with the frequency hopping operation turned off, shall comply with the power density requirements of paragraph (d) of this section.

MEASUREMENT EQUIPMENT USED

| Name of Equipment | Manufacturer | Model | Serial Number | Calibration Due |
|-------------------|--------------|-------|---------------|-----------------|
| SPECTRUM ANALYZER | R&S | FSEM | 829054/017 | March 18, 2005 |

Remark: Each piece of equipment is scheduled for calibration once a year.

Test Configuration



TEST PROCEDURE

1. Place the EUT on the table and set it in transmitting mode.
Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
2. Set the spectrum analyzer as RBW = 3kHz, VBW = 10kHz, Span = 300kHz, Sweep=100s
3. Record the max. reading.
4. Repeat the above procedure until the measurements for all frequencies are completed.



TEST RESULTS

No non-compliance noted

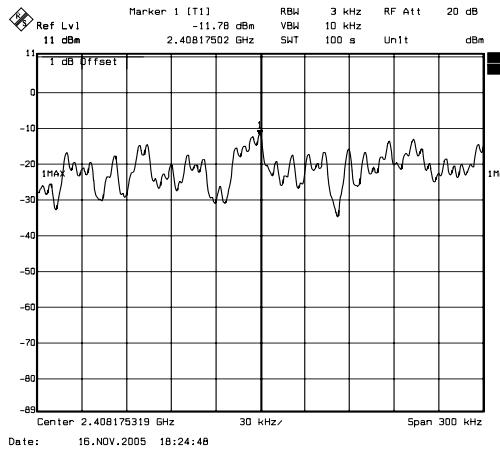
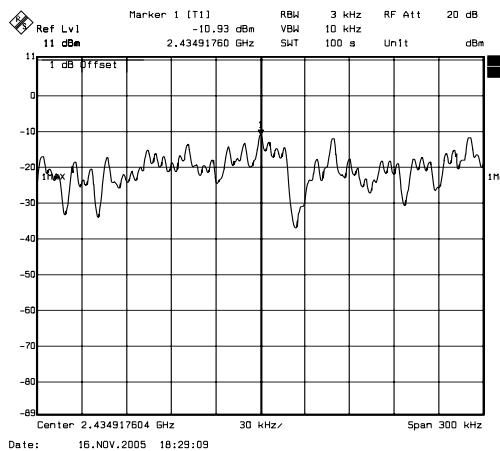
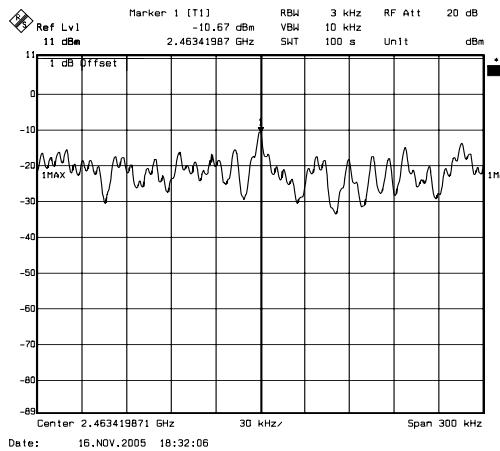
Test Data

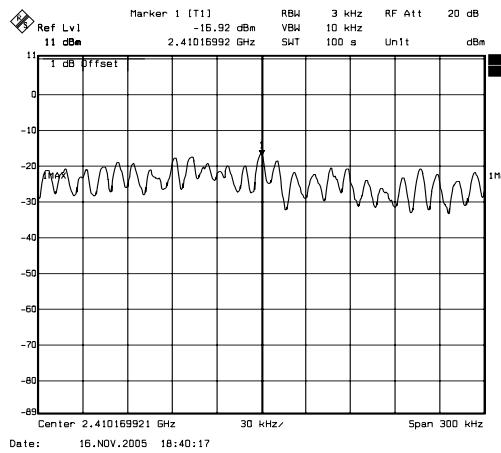
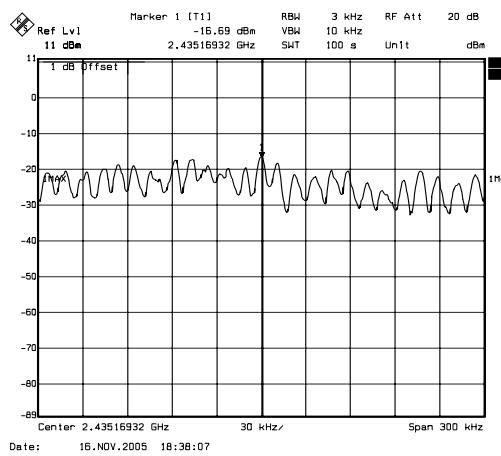
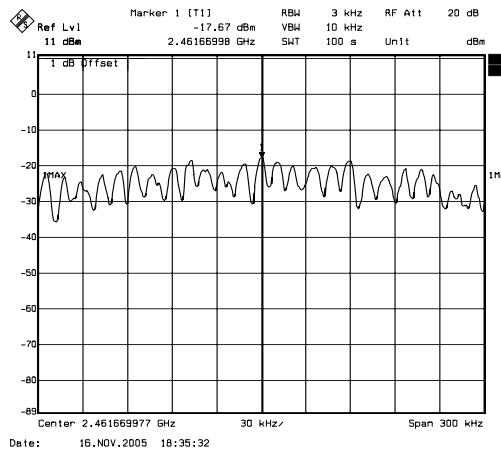
Test mode: IEEE 802.11b

| Channel | Frequency (MHz) | Reading Power(dBm) | Factor (dB) | PPSD (dBm) | Limit (dBm) | Result |
|---------|-----------------|--------------------|-------------|------------|-------------|--------|
| Low | 2412 | -12.78 | 1 | -11.78 | 8 | PASS |
| Mid | 2437 | -11.93 | 1 | -10.93 | | PASS |
| High | 2462 | -11.97 | 1 | -10.97 | | PASS |

Test mode: IEEE 802.11g

| Channel | Frequency (MHz) | Reading Power(dBm) | Factor (dB) | PPSD (dBm) | Limit (dBm) | Result |
|---------|-----------------|--------------------|-------------|------------|-------------|--------|
| Low | 2412 | -17.92 | 1 | -16.92 | 8 | PASS |
| Mid | 2437 | -17.69 | 1 | -16.69 | | PASS |
| High | 2462 | -18.67 | 1 | -17.67 | | PASS |

Test Plot**IEEE 802.11b mode****PPSD (CH Low)****PPSD (CH Mid)****PPSD (CH High)**

IEEE 802.11g mode**PPSD (CH Low)****PPSD (CH Mid)****PPSD (CH High)**



RADIO FREQUENCY EXPOSURE

LIMIT

Systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines. See §15.247(i) and §1.1307(b)(1) of this chapter.

EUT Specification

| | |
|-----------------------------------|---|
| EUT | Portable Wireless AP Storage |
| Frequency band (Operating) | <input checked="" type="checkbox"/> WLAN: 2.412GHz ~ 2.462GHz <input type="checkbox"/> WLAN: 5.18GHz ~ 5.32GHz / 5.50GHz ~ 5.70GHz <input type="checkbox"/> WLAN: 5.745GHz ~ 5.825GHz <input type="checkbox"/> Others |
| Device category | <input type="checkbox"/> Portable (<20cm separation) <input checked="" type="checkbox"/> Mobile (>20cm separation) <input type="checkbox"/> Others |
| Exposure classification | <input type="checkbox"/> Occupational/Controlled exposure (S = 5mW/cm ²) <input checked="" type="checkbox"/> General Population/Uncontrolled exposure (S=1mW/cm ²) |
| Antenna diversity | <input checked="" type="checkbox"/> Single antenna <input type="checkbox"/> Multiple antennas <input type="checkbox"/> Tx diversity <input type="checkbox"/> Rx diversity <input checked="" type="checkbox"/> Tx/Rx diversity |
| Max. output power | 20.49 dBm (584.79mW) |
| Antenna gain (Max) | 1.8 dBi (Numeric gain: 1.5136) |
| Evaluation applied | <input checked="" type="checkbox"/> MPE Evaluation <input type="checkbox"/> SAR Evaluation |

Remark:

1. The maximum output power is 20.49dBm (111.94mW) at 2437MHz (with 1.5136 numeric antenna gain.)
2. DTS device is not subject to routine RF evaluation; MPE estimate is used to justify the compliance.
3. For mobile or fixed location transmitters, no SAR consideration applied. The minimum separation generally be used is at least 20 cm, even if the calculations indicate that the MPE distance would be lesser.

TEST RESULTS

No non-compliance noted.

**Calculation**

$$\text{Given } E = \sqrt{\frac{30 \times P \times G}{d}} \quad \& \quad S = \frac{E^2}{3770}$$

Where E = Field Strength in Volts / meter

P = Power in Watts

G = Numeric antenna gain

d = Distance in meters

S = Power Density in milliwatts / square centimeter

Combining equations and re-arranging the terms to express the distance as a function of the remaining variables yields:

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

Changing to units of mW and cm, using:

$$P \text{ (mW)} = P \text{ (W)} / 1000 \text{ and}$$

$$d \text{ (cm)} = 100 * d \text{ (m)}$$

Yields

$$d = 100 \times \sqrt{\frac{30 \times (P / 1000) \times G}{3770 \times S}} = 0.282 \times \sqrt{\frac{P \times G}{S}}$$

Where d = distance in cm

P = Power in mW

G = Numeric antenna gain

S = Power Density in mW / cm²

Substituting the logarithmic form of power and gain using:

$$P \text{ (mW)} = 10^{(P \text{ (dBm)} / 10)} \text{ and}$$

$$G \text{ (numeric)} = 10^{(G \text{ (dBi)} / 10)}$$

Yields

$$d = 0.282 \times \frac{10^{(P+G)/20}}{\sqrt{20}}$$

Equation 1

Where d = MPE safe distance in cm

P = Power in dBm

G = Antenna Gain in dBi

S = Power Density Limit in mW / cm²



Maximum Permissible Exposure (2.4 GHz Band)

EUT output power = 111.9438mW

Antenna Gain = 1.5136 (Numeric gain)

S = 1.0 mW / cm² from 1.1310 Table 1

Substituting these parameters into the above Equation 1:

→ MPE Safe Distance = 3.7065 cm

(For mobile or fixed location transmitters, the minimum separation distance is 20 cm, even if calculations indicate that the MPE distance would be less.)



SPURIOUS EMISSIONS

CONDUCTED MEASUREMENT

LIMIT

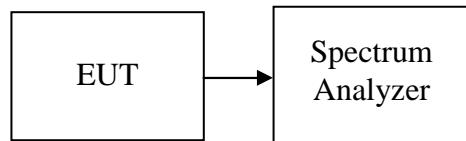
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in Section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

MEASUREMENT EQUIPMENT USED

| Name of Equipment | Manufacturer | Model | Serial Number | Calibration Due |
|-------------------|--------------|-------|---------------|-----------------|
| SPECTRUM ANALYZER | R&S | FSEM | 829054/017 | March 18, 2005 |

Remark: Each piece of equipment is scheduled for calibration once a year.

Test Configuration



TEST PROCEDURE

Conducted RF measurements of the transmitter output were made to confirm that the EUT antenna port conducted emissions meet the specified limit and to identify any spurious signals that require further investigation or measurements on the radiated emissions site.

The transmitter output is connected to the spectrum analyzer. The resolution bandwidth is set to 100 KHz. The video bandwidth is set to 100 KHz.

Measurements are made over the 30MHz to 26GHz range with the transmitter set to the lowest, middle, and highest channels.

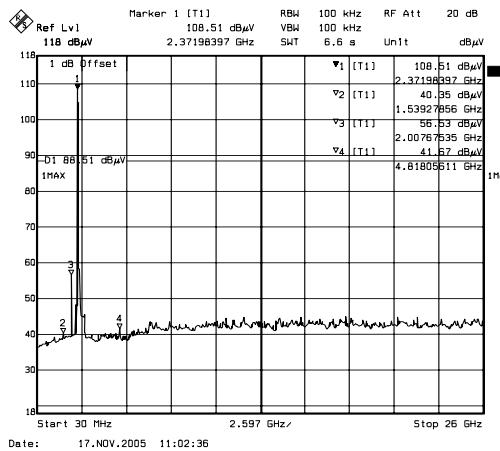
TEST RESULTS

No non-compliance noted

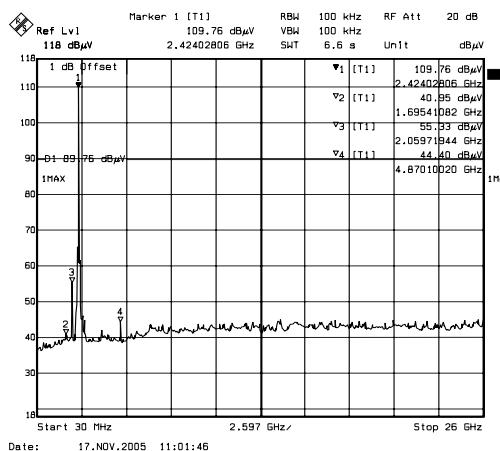
Test Plot

IEEE 802.11b mode

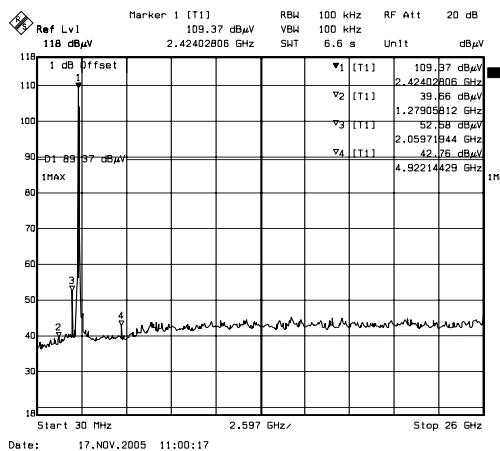
CH Low



CH Mid

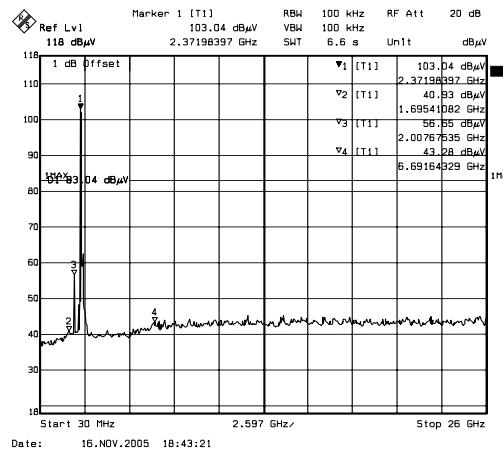


CH High

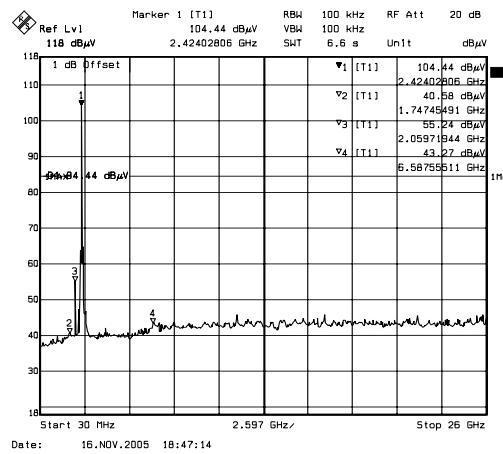


IEEE 802.11g mode

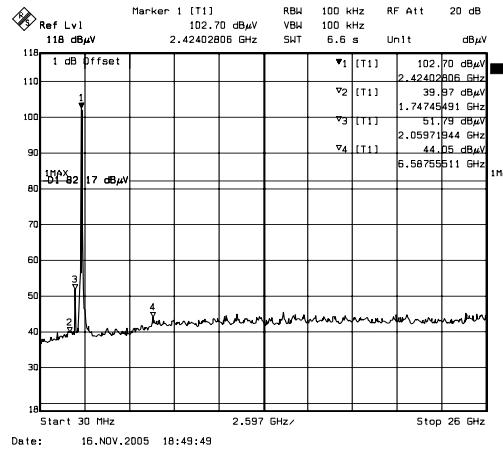
CH Low



CH Mid



CH High





RADIATED EMISSIONS

LIMIT

1. 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 (mV/m) | Measurement Distance (m) |
|-----------------|-----------------------|--------------------------|
| 30-88 | 100* | 3 |
| 88-216 | 150* | 3 |
| 216-960 | 200* | 3 |
| Above 960 | 500 | 3 |

Remark: 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.

2. In the above emission table, the tighter limit applies at the band edges.

| Frequency (Hz) | Field Strength (µV/m at 3-meter) | Field Strength (dBµV/m at 3-meter) |
|----------------|----------------------------------|------------------------------------|
| 30-88 | 100 | 40 |
| 88-216 | 150 | 43.5 |
| 216-960 | 200 | 46 |
| Above 960 | 500 | 54 |

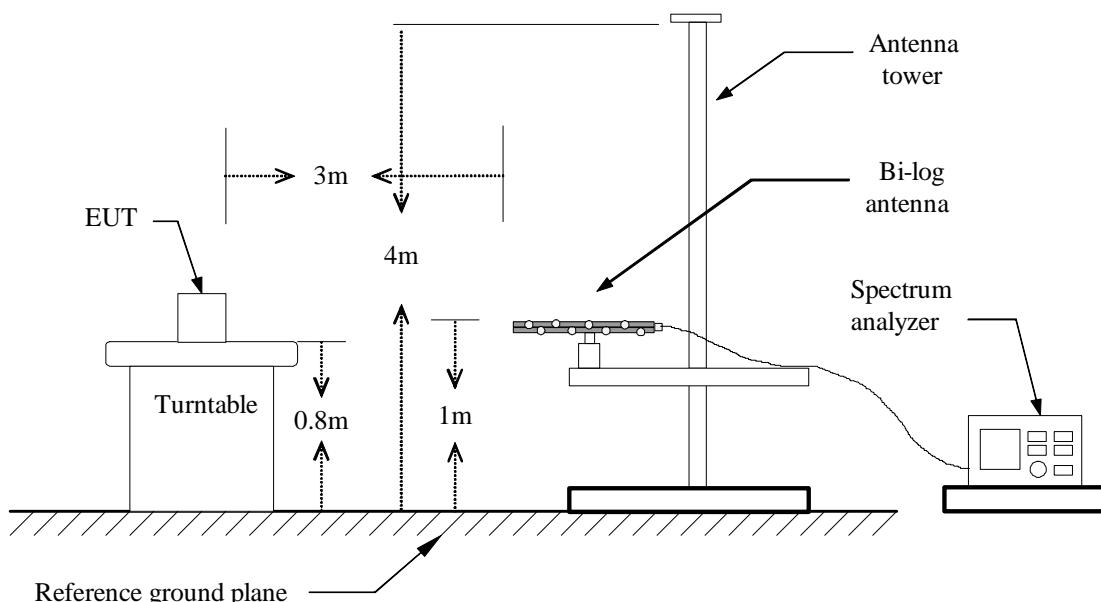
MEASUREMENT EQUIPMENT USED

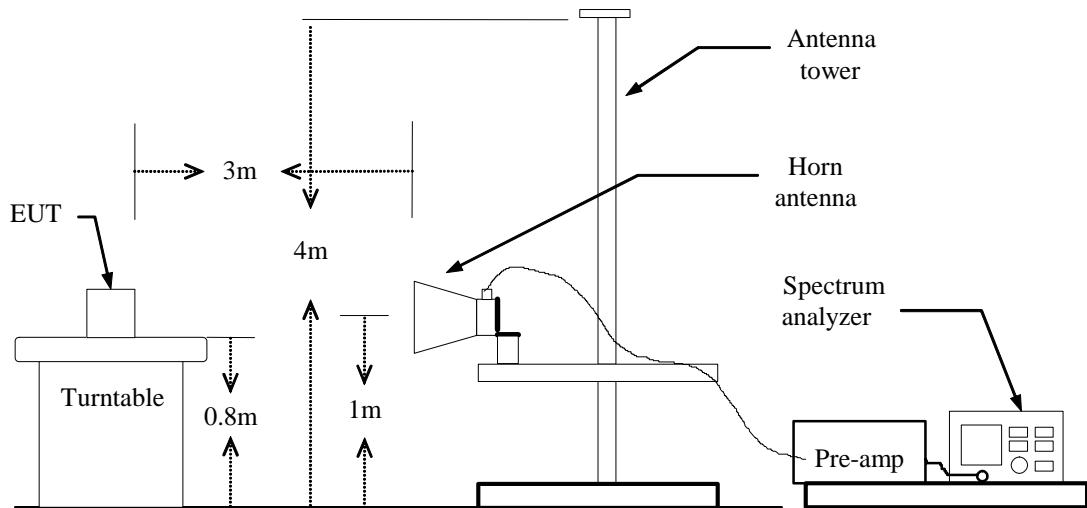
| Open Area Test Site # 6 | | | | |
|-------------------------|--------------|-----------------|---------------|-----------------|
| Name of Equipment | Manufacturer | Model | Serial Number | Calibration Due |
| O.A.T.S | ----- | ----- | No.6 | SEP. 12, 2005 |
| EMI RECEIVER | R&S | ESVS10 | 833206/012 | FEB. 24, 2005 |
| Spectrum Analyzer | R&S | FSEM | 829054/017 | MAR. 18, 2005 |
| BI-LOG ANTENNA | CHASE | CBL6112B | 2563 | FEB. 16, 2005 |
| Horn Antenna | Com-Power | AH-118 | 071033 | AUG. 30, 2005 |
| 18G Cable | SMA | SUCOFLEX104(1M) | 001 | MAR. 22, 2005 |
| Pre-Amplifier | HP | 8447F | 2727A02227 | MAR. 03, 2005 |
| Signal Generator | HP | 8673C | 2938A00663 | FEB. 02, 2005 |
| RF SWITCH | ----- | ERS-180A | ----- | JAN. 31, 2005 |
| POWER METER | IFR | 8541C | 1835448 | APR. 07, 2005 |

Remark: Each piece of equipment is scheduled for calibration once a year.

Test Configuration

Below 1 GHz



Above 1 GHz**TEST PROCEDURE**

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Set the spectrum analyzer in the following setting as:

Below 1GHz:

RBW=100kHz / VBW=300kHz / Sweep=AUTO

Above 1GHz:

(a) PEAK: RBW=VBW=1MHz / Sweep=AUTO

(b) AVERAGE: RBW=1MHz / VBW=10Hz / Sweep=AUTO

7. Repeat above procedures until the measurements for all frequencies are complete.



TEST RESULTS

Below 1 GHz

Operation Mode: MGB100

Test Date: November 16, 2005

Temperature: 28.5°C

Tested by: Jerry Chang

Humidity: 58 % RH

Polarity: Horizontal; Vertical

| Freq- Uency (MHz) | Meter Reading at 3 m(dB μ V/M) | Antenna Factor | Cable Loss | Limits | Emission Level at 3 m(dB μ V/M) | Detector Mode | Margin |
|-------------------------|---------------------------------------|-------------------|---------------|--------|--|------------------|------------|
| | | | | | (dB) | (dB μ V/M) | Horizontal |
| 133.32 | 22.00 | 11.99 | 1.11 | 43.50 | 35.09 | QP | -8.41 |
| 124.99 | 12.20 | 12.35 | 1.05 | 43.50 | 25.60 | QP | -17.90 |
| 250.00 | 9.80 | 13.73 | 1.50 | 46.00 | 25.03 | QP | -20.97 |
| 266.67 | 11.80 | 13.73 | 1.53 | 46.00 | 27.06 | QP | -18.94 |
| 666.69 | 14.20 | 19.39 | 3.32 | 46.00 | 36.91 | QP | -9.09 |
| 800.00 | 8.90 | 21.13 | 3.50 | 46.00 | 33.53 | QP | -12.47 |
| 933.35 | 12.20 | 22.40 | 3.90 | 46.00 | 38.50 | QP | -7.50 |

| Freq- Uency (MHz) | Meter Reading at 3 m(dB μ V/M) | Antenna Factor | Cable Loss | Limits | Emission Level at 3 m(dB μ V/M) | Detector Mode | Margin |
|-------------------------|---------------------------------------|-------------------|---------------|--------|--|------------------|----------|
| | | | | | (dB) | (dB μ V/M) | Vertical |
| 133.33 | 21.70 | 11.99 | 1.11 | 43.50 | 34.79 | QP | -8.71 |
| 124.99 | 15.90 | 12.35 | 1.05 | 43.50 | 29.30 | QP | -14.20 |
| 250.01 | 11.20 | 13.73 | 1.50 | 46.00 | 26.43 | QP | -19.57 |
| 266.68 | 13.70 | 13.73 | 1.53 | 46.00 | 28.96 | QP | -17.04 |
| 666.67 | 13.50 | 19.39 | 3.32 | 46.00 | 36.21 | QP | -9.79 |
| 800.00 | 5.10 | 21.13 | 3.50 | 46.00 | 29.73 | QP | -16.27 |
| 933.35 | 9.60 | 22.40 | 3.90 | 46.00 | 35.90 | QP | -10.10 |

Remark:

1. Measuring frequencies from 30 MHz to the 1GHz.
2. Radiated emissions measured in frequency range from 30 MHz to 1000MHz were made with an instrument using Peak detector mode.
3. Data of measurement within this frequency range shown “ --- ” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
4. The IF bandwidth of SPA between 30MHz to 1GHz was 100kHz.

**Above 1 GHz****Operation Mode:** TX / IEEE 802.11b mode / CH Low**Test Date:** October 31, 2005**Temperature:** 27.3°C**Tested by:** Jerry Chang**Humidity:** 69 % RH**Polarity:** Horizontal

| TX / IEEE 802.11b mode / CH Low | | | | Measurement Distance at 3m | | | | Horizontal polarity | |
|---------------------------------|--------------|--------------|-------|----------------------------|--------|----------------|-----------------------|---------------------|---------|
| Freq. | Reading | AF | Closs | Pre-amp | Filter | Level | Limit | Margin | Mark |
| (MHz) | (dB μ V) | (dB μ V) | (dB) | (dB) | dB | (dB μ V/m) | (dB μ V/m) | (dB) | (P/Q/A) |
| 2013.16 | 102.12 | 29.03 | 5.53 | 31.91 | 1.05 | 105.81 | Fundamental Frequency | P | A |
| 2013.16 | 94.09 | 29.03 | 5.53 | 31.91 | 1.05 | 97.78 | | | |
| 2038.19 | 43.23 | 29.08 | 5.56 | 31.91 | 1.06 | 47.02 | 85.81 | -38.79 | P |
| 2038.19 | 35.75 | 29.08 | 5.56 | 31.91 | 1.06 | 39.54 | 77.78 | -38.24 | A |
| * 4076.17 | 41.69 | 30.46 | 7.68 | 32.95 | 0.60 | 47.48 | 74.00 | -26.52 | P |
| * 4076.17 | 29.39 | 30.46 | 7.68 | 32.95 | 0.60 | 35.18 | 54.00 | -18.82 | A |
| * 4823.95 | 39.92 | 33.65 | 8.29 | 32.80 | 0.69 | 49.75 | 74.00 | -24.25 | P |
| * 4823.95 | 28.28 | 33.65 | 8.29 | 32.80 | 0.69 | 38.11 | 54.00 | -15.89 | A |
| N/A | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | P |
| N/A | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | A |

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Spectrum setting:
 - a. Peak Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 1MHz, Sweep time = Auto.
 - b. AV Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 10Hz, b. Sweep time = Auto.
5. Remark “*” means the Restricted band.

**Operation Mode:** TX / IEEE 802.11b mode / CH Low**Test Date:** October 31, 2005**Temperature:** 27.3°C**Tested by:** Jerry Chang**Humidity:** 69 % RH**Polarity:** Vertical

| TX / IEEE 802.11b mode / CH Low | | | | Measurement Distance at 3m | | | | Vertical polarity | |
|---------------------------------|-------------------------|--------------------|---------------|----------------------------|--------------|-------------------------|-------------------------|-------------------|-----------------|
| Freq. (MHz) | Reading (dB μ V) | AF (dB μ V) | Closs (dB) | Pre-amp (dB) | Filter dB | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Mark (P/Q/A) |
| 2413.16 | 105.57 | 29.83 | 6.01 | 31.86 | 0.00 | 109.54 | Fundamental Frequency | P | |
| 2413.16 | 97.92 | 29.83 | 6.01 | 31.86 | 0.00 | 101.89 | | A | |
| 2038.11 | 45.41 | 29.08 | 5.56 | 31.91 | 1.06 | 49.20 | 89.54 | -40.35 | P |
| 2038.11 | 39.71 | 29.08 | 5.56 | 31.91 | 1.06 | 43.50 | 81.89 | -38.40 | A |
| * 4076.18 | 42.50 | 30.46 | 7.68 | 32.95 | 0.60 | 48.29 | 74.00 | -25.71 | P |
| * 4076.18 | 31.80 | 30.46 | 7.68 | 32.95 | 0.60 | 37.59 | 54.00 | -16.41 | A |
| * 4824.03 | 40.23 | 33.65 | 8.29 | 32.80 | 0.69 | 50.07 | 74.00 | -23.93 | P |
| * 4824.03 | 28.28 | 33.65 | 8.29 | 32.80 | 0.69 | 38.12 | 54.00 | -15.88 | A |
| N/A | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | P |
| N/A | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | A |

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Spectrum setting:
 - a. Peak Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 1MHz, Sweep time = Auto.
 - b. AV Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 10Hz, b. Sweep time = Auto.
5. Remark “*” means the Restricted band.

**Operation Mode:** TX / IEEE 802.11b mode / CH Mid**Test Date:** October 31, 2005**Temperature:** 27.3°C**Tested by:** Jerry Chang**Humidity:** 69 % RH**Polarity:** Horizontal

| TX / IEEE 802.11b mode / CH Mid | | | | Measurement Distance at 3m | | | | Horizontal polarity | |
|---------------------------------|--------------|--------------|-------|----------------------------|--------|----------------|-----------------------|---------------------|---------|
| Freq. | Reading | AF | Closs | Pre-amp | Filter | Level | Limit | Margin | Mark |
| (MHz) | (dB μ V) | (dB μ V) | (dB) | (dB) | dB | (dB μ V/m) | (dB μ V/m) | (dB) | (P/Q/A) |
| 2435.04 | 101.79 | 29.87 | 6.03 | 31.86 | 0.00 | 105.83 | Fundamental Frequency | P | |
| 2435.04 | 94.19 | 29.87 | 6.03 | 31.86 | 0.00 | 98.23 | | A | |
| 2062.93 | 46.64 | 29.13 | 5.59 | 31.90 | 1.07 | 50.52 | 85.83 | -35.31 | P |
| 2062.93 | 42.18 | 29.13 | 5.59 | 31.90 | 1.07 | 46.06 | 78.23 | -32.17 | A |
| * 4125.86 | 42.26 | 30.76 | 7.72 | 32.92 | 0.60 | 48.41 | 74.00 | -25.59 | P |
| * 4125.86 | 30.06 | 30.76 | 7.72 | 32.92 | 0.60 | 36.21 | 54.00 | -17.79 | A |
| * 4824.01 | 40.71 | 33.65 | 8.29 | 32.80 | 0.69 | 50.54 | 74.00 | -23.46 | P |
| * 4824.01 | 28.67 | 33.65 | 8.29 | 32.80 | 0.69 | 38.50 | 54.00 | -15.50 | A |
| N/A | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | P |
| N/A | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | A |

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Spectrum setting:
 - a. Peak Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 1MHz, Sweep time = Auto.
 - b. AV Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 10Hz, b. Sweep time = Auto.
5. Remark “*” means the Restricted band.

**Operation Mode:** TX / IEEE 802.11b mode / CH Mid**Test Date:** October 31, 2005**Temperature:** 27.3°C**Tested by:** Jerry Chang**Humidity:** 69 % RH**Polarity:** Vertical

| TX / IEEE 802.11b mode / CH Mid | | | | Measurement Distance at 3m | | | | Vertical polarity | |
|---------------------------------|--------------|--------------|-------|----------------------------|--------|----------------|-----------------------|-------------------|---------|
| Freq. | Reading | AF | Closs | Pre-amp | Filter | Level | Limit | Margin | Mark |
| (MHz) | (dB μ V) | (dB μ V) | (dB) | (dB) | dB | (dB μ V/m) | (dB μ V/m) | (dB) | (P/Q/A) |
| 2437.99 | 106.21 | 29.88 | 6.04 | 31.86 | 0.00 | 110.26 | Fundamental Frequency | P | |
| 2437.99 | 98.28 | 29.88 | 6.04 | 31.86 | 0.00 | 102.33 | | A | |
| 2063.16 | 46.78 | 29.13 | 5.59 | 31.90 | 1.07 | 50.66 | 90.26 | -39.60 | P |
| 2063.16 | 41.69 | 29.13 | 5.59 | 31.90 | 1.07 | 45.57 | 82.33 | -36.76 | A |
| * 4125.88 | 42.10 | 30.76 | 7.72 | 32.92 | 0.60 | 48.25 | 74.00 | -25.75 | P |
| * 4125.88 | 31.54 | 30.76 | 7.72 | 32.92 | 0.60 | 37.69 | 54.00 | -16.31 | A |
| * 4874.16 | 40.45 | 33.75 | 8.34 | 32.81 | 0.71 | 50.44 | 74.00 | -23.56 | P |
| * 4874.16 | 28.56 | 33.75 | 8.34 | 32.81 | 0.71 | 38.55 | 54.00 | -15.45 | A |
| N/A | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | P |
| N/A | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | A |

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Spectrum setting:
 - a. Peak Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 1MHz, Sweep time = Auto.
 - b. AV Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 10Hz, b. Sweep time = Auto.
5. Remark “*” means the Restricted band.

**Operation Mode:** TX / IEEE 802.11b mode / CH High**Test Date:** October 31, 2005**Temperature:** 27.3°C**Tested by:** Jerry Chang**Humidity:** 69 % RH**Polarity:** Horizontal

| TX / IEEE 802.11b mode / CH High | | | | Measurement Distance at 3m | | | | Horizontal polarity | |
|----------------------------------|--------------|--------------|-------|----------------------------|--------|----------------|-----------------------|---------------------|---------|
| Freq. | Reading | AF | Closs | Pre-amp | Filter | Level | Limit | Margin | Mark |
| (MHz) | (dB μ V) | (dB μ V) | (dB) | (dB) | dB | (dB μ V/m) | (dB μ V/m) | (dB) | (P/Q/A) |
| 2460.02 | 99.52 | 29.92 | 6.06 | 31.85 | 0.00 | 103.65 | Fundamental Frequency | P | A |
| 2463.33 | 91.56 | 29.93 | 6.07 | 31.85 | 0.00 | 95.70 | | | |
| 2087.92 | 42.42 | 29.18 | 5.62 | 31.90 | 1.08 | 46.40 | 83.65 | -37.25 | P |
| 2087.92 | 33.48 | 29.18 | 5.62 | 31.90 | 1.08 | 37.46 | 75.70 | -38.24 | A |
| * 4176.07 | 41.17 | 31.06 | 7.75 | 32.89 | 0.60 | 47.68 | 74.00 | -26.32 | P |
| * 4176.07 | 29.73 | 31.06 | 7.75 | 32.89 | 0.60 | 36.24 | 54.00 | -17.76 | A |
| * 4924.10 | 40.73 | 33.85 | 8.39 | 32.83 | 0.73 | 50.87 | 74.00 | -23.13 | P |
| * 4924.19 | 28.28 | 33.85 | 8.39 | 32.83 | 0.73 | 38.42 | 54.00 | -15.58 | A |
| N/A | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | P |
| N/A | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | A |

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Spectrum setting:
 - a. Peak Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 1MHz, Sweep time = Auto.
 - b. AV Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 10Hz, b. Sweep time = Auto.
5. Remark “*” means the Restricted band.

**Operation Mode:** TX / IEEE 802.11b mode / CH High**Test Date:** October 31, 2005**Temperature:** 27.3°C**Tested by:** Jerry Chang**Humidity:** 69 % RH**Polarity:** Vertical

| TX / IEEE 802.11b mode / CH High | | | | Measurement Distance at 3m | | | | Vertical polarity | |
|----------------------------------|-------------------------|--------------------|---------------|----------------------------|--------------|-------------------------|-------------------------|-------------------|-----------------|
| Freq. (MHz) | Reading (dB μ V) | AF (dB μ V) | Closs (dB) | Pre-amp (dB) | Filter dB | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Mark (P/Q/A) |
| 2459.61 | 104.75 | 29.92 | 6.06 | 31.85 | 0.00 | 108.88 | Fundamental Frequency | P | |
| 2459.61 | 97.25 | 29.92 | 6.06 | 31.85 | 0.00 | 101.38 | | A | |
| 2087.92 | 45.13 | 29.18 | 5.62 | 31.90 | 1.08 | 49.11 | 88.88 | -39.77 | P |
| 2087.92 | 39.71 | 29.18 | 5.62 | 31.90 | 1.08 | 43.69 | 81.38 | -37.69 | A |
| * 4175.83 | 41.78 | 31.05 | 7.75 | 32.89 | 0.60 | 48.29 | 74.00 | -25.71 | P |
| * 4175.83 | 30.98 | 31.05 | 7.75 | 32.89 | 0.60 | 37.49 | 54.00 | -16.51 | A |
| * 4924.25 | 40.86 | 33.85 | 8.39 | 32.83 | 0.73 | 51.00 | 74.00 | -23.00 | P |
| * 4924.25 | 29.63 | 33.85 | 8.39 | 32.83 | 0.73 | 39.77 | 54.00 | -14.23 | A |
| N/A | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | P |
| N/A | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | A |

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Spectrum setting:
 - a. Peak Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 1MHz, Sweep time = Auto.
 - b. AV Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 10Hz, b. Sweep time = Auto.
5. Remark “*” means the Restricted band.

**Operation Mode:** TX / IEEE 802.11g mode / CH Low**Test Date:** October 31, 2005**Temperature:** 27.3°C**Tested by:** Jerry Chang**Humidity:** 69 % RH**Polarity:** Horizontal

| TX / IEEE 802.11g mode / CH Low | | | | Measurement Distance at 3m | | | | Horizontal polarity | |
|---------------------------------|--------------|--------------|-------|----------------------------|--------|----------------|-----------------------|---------------------|---------|
| Freq. | Reading | AF | Closs | Pre-amp | Filter | Level | Limit | Margin | Mark |
| (MHz) | (dB μ V) | (dB μ V) | (dB) | (dB) | dB | (dB μ V/m) | (dB μ V/m) | (dB) | (P/Q/A) |
| 2413.82 | 99.23 | 29.83 | 6.01 | 31.86 | 1.25 | 104.45 | Fundamental Frequency | P | A |
| 2413.82 | 87.58 | 29.83 | 6.01 | 31.86 | 1.25 | 92.80 | | | |
| 2038.22 | 43.22 | 29.08 | 5.56 | 31.91 | 1.06 | 47.01 | 84.45 | -37.44 | P |
| 2038.22 | 35.48 | 29.08 | 5.56 | 31.91 | 1.06 | 39.27 | 72.80 | -33.53 | A |
| * 4076.11 | 41.24 | 30.46 | 7.68 | 32.95 | 0.60 | 47.03 | 74.00 | -26.97 | P |
| * 4076.11 | 31.22 | 30.46 | 7.68 | 32.95 | 0.60 | 37.01 | 54.00 | -16.99 | A |
| * 4824.02 | 40.23 | 33.65 | 8.29 | 32.80 | 0.69 | 50.07 | 74.00 | -23.93 | P |
| * 4824.02 | 28.69 | 33.65 | 8.29 | 32.80 | 0.69 | 38.53 | 54.00 | -15.47 | A |
| N/A | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | P |
| N/A | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | A |

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Spectrum setting:
 - a. Peak Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 1MHz, Sweep time = Auto.
 - b. AV Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 10Hz, b. Sweep time = Auto.
5. Remark “*” means the Restricted band.

**Operation Mode:** TX / IEEE 802.11g mode / CH Low**Test Date:** October 31, 2005**Temperature:** 27.3°C**Tested by:** Jerry Chang**Humidity:** 69 % RH**Polarity:** Vertical

| TX / IEEE 802.11g mode / CH Low | | | | Measurement Distance at 3m | | | | Vertical polarity | |
|---------------------------------|-------------------------|--------------------|---------------|----------------------------|--------------|-------------------------|-------------------------|-------------------|-----------------|
| Freq. (MHz) | Reading (dB μ V) | AF (dB μ V) | Closs (dB) | Pre-amp (dB) | Filter dB | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Mark (P/Q/A) |
| 2413.82 | 103.38 | 29.83 | 6.01 | 31.86 | 0.00 | 107.35 | Fundamental Frequency | P | |
| 2413.82 | 92.08 | 29.83 | 6.01 | 31.86 | 0.00 | 96.05 | | A | |
| 2038.06 | 44.23 | 29.08 | 5.56 | 31.91 | 1.06 | 48.02 | 87.35 | -39.34 | P |
| 2038.06 | 39.10 | 29.08 | 5.56 | 31.91 | 1.06 | 42.89 | 76.05 | -33.17 | A |
| * 4076.09 | 42.35 | 30.46 | 7.68 | 32.95 | 0.60 | 48.14 | 74.00 | -25.86 | P |
| * 4076.09 | 30.98 | 30.46 | 7.68 | 32.95 | 0.60 | 36.77 | 54.00 | -17.23 | A |
| * 4824.08 | 39.86 | 33.65 | 8.29 | 32.80 | 0.69 | 49.70 | 74.00 | -24.30 | P |
| * 4824.08 | 28.28 | 33.65 | 8.29 | 32.80 | 0.69 | 38.12 | 54.00 | -15.88 | A |
| N/A | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | P |
| N/A | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | A |

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Spectrum setting:
 - a. Peak Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 1MHz, Sweep time = Auto.
 - b. AV Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 10Hz, b. Sweep time = Auto.
5. Remark “*” means the Restricted band.

**Operation Mode:** TX / IEEE 802.11g mode / CH Mid**Test Date:** October 31, 2005**Temperature:** 27.3°C**Tested by:** Jerry Chang**Humidity:** 69 % RH**Polarity:** Horizontal

| | TX / IEEE 802.11g mode / CH Mid | | | | Measurement Distance at 3m | | | Horizontal polarity | | |
|---|---------------------------------|-------------------------|--------------------|---------------|----------------------------|--------------|-------------------------|-------------------------|----------------|-----------------|
| | Freq. (MHz) | Reading (dB μ V) | AF (dB μ V) | Closs (dB) | Pre-amp (dB) | Filter dB | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Mark (P/Q/A) |
| | 2429.75 | 97.98 | 29.86 | 6.03 | 31.86 | 0.00 | 102.01 | Fundamental Frequency | P | A |
| | 2429.75 | 87.06 | 29.86 | 6.03 | 31.86 | 0.00 | 91.09 | | | |
| | 2063.09 | 45.69 | 29.13 | 5.59 | 31.90 | 1.07 | 49.57 | 82.01 | -32.44 | P |
| | 2063.09 | 41.45 | 29.13 | 5.59 | 31.90 | 1.07 | 45.33 | 71.09 | -25.76 | A |
| * | 4126.26 | 41.63 | 30.76 | 7.72 | 32.92 | 0.60 | 47.78 | 74.00 | -26.22 | P |
| * | 4126.26 | 29.78 | 30.76 | 7.72 | 32.92 | 0.60 | 35.93 | 54.00 | -18.07 | A |
| * | 4824.19 | 40.63 | 33.65 | 8.29 | 32.80 | 0.69 | 50.47 | 74.00 | -23.53 | P |
| * | 4824.19 | 28.28 | 33.65 | 8.29 | 32.80 | 0.69 | 38.12 | 54.00 | -15.88 | A |
| | N/A | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | P |
| | N/A | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | A |

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Spectrum setting:
 - a. Peak Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 1MHz, Sweep time = Auto.
 - b. AV Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 10Hz, b. Sweep time = Auto.
5. Remark “*” means the Restricted band.

**Operation Mode:** TX / IEEE 802.11g mode / CH Mid**Test Date:** October 31, 2005**Temperature:** 27.3°C**Tested by:** Jerry Chang**Humidity:** 69 % RH**Polarity:** Vertical

| TX / IEEE 802.11g mode / CH Mid | | | | Measurement Distance at 3m | | | | Vertical polarity | |
|---------------------------------|--------------|--------------|-------|----------------------------|--------|----------------|-----------------------|-------------------|---------|
| Freq. | Reading | AF | Closs | Pre-amp | Filter | Level | Limit | Margin | Mark |
| (MHz) | (dB μ V) | (dB μ V) | (dB) | (dB) | dB | (dB μ V/m) | (dB μ V/m) | (dB) | (P/Q/A) |
| 2438.77 | 102.86 | 29.88 | 6.04 | 31.86 | 0.00 | 106.92 | Fundamental Frequency | P | |
| 2438.77 | 92.21 | 29.88 | 6.04 | 31.86 | 0.00 | 96.27 | | A | |
| 2063.16 | 46.59 | 29.13 | 5.59 | 31.90 | 1.07 | 50.47 | 86.92 | -36.45 | P |
| 2063.16 | 41.03 | 29.13 | 5.59 | 31.90 | 1.07 | 44.91 | 76.27 | -31.36 | A |
| * 4125.88 | 41.96 | 30.76 | 7.72 | 32.92 | 0.60 | 48.11 | 74.00 | -25.89 | P |
| * 4125.88 | 31.65 | 30.76 | 7.72 | 32.92 | 0.60 | 37.80 | 54.00 | -16.20 | A |
| * 4874.16 | 41.22 | 33.75 | 8.34 | 32.81 | 0.71 | 51.21 | 74.00 | -22.79 | P |
| * 4874.16 | 29.13 | 33.75 | 8.34 | 32.81 | 0.71 | 39.12 | 54.00 | -14.88 | A |
| N/A | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | P |
| N/A | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | A |

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Spectrum setting:
 - a. Peak Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 1MHz, Sweep time = Auto.
 - b. AV Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 10Hz, b. Sweep time = Auto.
5. Remark “*” means the Restricted band.

**Operation Mode:** TX / IEEE 802.11g mode / CH High**Test Date:** October 31, 2005**Temperature:** 27.3°C**Tested by:** Jerry Chang**Humidity:** 69 % RH**Polarity:** Horizontal

| TX / IEEE 802.11g mode / CH High | | | | Measurement Distance at 3m | | | | Horizontal polarity | |
|----------------------------------|--------------|--------------|-------|----------------------------|--------|----------------|-----------------------|---------------------|---------|
| Freq. | Reading | AF | Closs | Pre-amp | Filter | Level | Limit | Margin | Mark |
| (MHz) | (dB μ V) | (dB μ V) | (dB) | (dB) | dB | (dB μ V/m) | (dB μ V/m) | (dB) | (P/Q/A) |
| 2458.52 | 96.36 | 29.92 | 6.06 | 31.85 | 0.00 | 100.48 | Fundamental Frequency | P | A |
| 2458.52 | 86.02 | 29.92 | 6.06 | 31.85 | 0.00 | 90.14 | | | |
| 2088.16 | 42.93 | 29.18 | 5.62 | 31.90 | 1.08 | 46.91 | 80.48 | -33.58 | P |
| 2088.16 | 33.69 | 29.18 | 5.62 | 31.90 | 1.08 | 37.67 | 70.14 | -32.48 | A |
| * 4176.01 | 42.36 | 31.06 | 7.75 | 32.89 | 0.60 | 48.87 | 74.00 | -25.13 | P |
| * 4176.01 | 30.08 | 31.06 | 7.75 | 32.89 | 0.60 | 36.59 | 54.00 | -17.41 | A |
| * 4923.15 | 40.79 | 33.85 | 8.39 | 32.83 | 0.73 | 50.93 | 74.00 | -23.07 | P |
| * 4923.15 | 28.29 | 33.85 | 8.39 | 32.83 | 0.73 | 38.43 | 54.00 | -15.57 | A |
| N/A | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | P |
| N/A | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | A |

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Spectrum setting:
 - a. Peak Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 1MHz, Sweep time = Auto.
 - b. AV Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 10Hz, b. Sweep time = Auto.
5. Remark “*” means the Restricted band.

**Operation Mode:** TX / IEEE 802.11g mode / CH High**Test Date:** October 31, 2005**Temperature:** 27.3°C**Tested by:** Jerry Chang**Humidity:** 69 % RH**Polarity:** Vertical

| TX / IEEE 802.11g mode / CH High | | | | Measurement Distance at 3m | | | | Vertical polarity | |
|----------------------------------|-------------------------|--------------------|---------------|----------------------------|--------------|-------------------------|-------------------------|-------------------|-----------------|
| Freq. (MHz) | Reading (dB μ V) | AF (dB μ V) | Closs (dB) | Pre-amp (dB) | Filter dB | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Mark (P/Q/A) |
| 2454.70 | 101.36 | 29.91 | 6.06 | 31.86 | 0.00 | 105.47 | Fundamental Frequency | P | A |
| 2454.70 | 90.92 | 29.91 | 6.06 | 31.86 | 0.00 | 95.03 | | | |
| 2088.32 | 46.36 | 29.18 | 5.62 | 31.90 | 1.08 | 50.34 | 85.47 | -35.13 | P |
| 2088.32 | 40.25 | 29.18 | 5.62 | 31.90 | 1.08 | 44.23 | 75.03 | -30.80 | A |
| * 4176.13 | 41.65 | 31.06 | 7.75 | 32.89 | 0.60 | 48.16 | 74.00 | -25.84 | P |
| * 4176.13 | 31.26 | 31.06 | 7.75 | 32.89 | 0.60 | 37.77 | 54.00 | -16.23 | A |
| * 4924.15 | 40.25 | 33.85 | 8.39 | 32.83 | 0.73 | 50.39 | 74.00 | -23.61 | P |
| * 4924.15 | 29.29 | 33.85 | 8.39 | 32.83 | 0.73 | 39.43 | 54.00 | -14.57 | A |
| N/A | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | P |
| N/A | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | A |

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin>20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Spectrum setting:
 - a. Peak Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 1MHz, Sweep time = Auto.
 - b. AV Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 10Hz, b. Sweep time = Auto.
5. Remark “*” means the Restricted band.

**Operation Mode:** RX / IEEE 802.11b mode / CH Low**Test Date:** October 31, 2005**Temperature:** 27.3°C**Tested by:** Jerry Chang**Humidity:** 69 % RH**Polarity:** Horizontal; Vertical

| RX / IEEE 802.11b mode / CH Low | | | | Measurement Distance at 3m | | | | Horizontal polarity | |
|---------------------------------|-------------------------|--------------------|---------------|----------------------------|--------------|-------------------------|-------------------------|---------------------|-----------------|
| Freq. (MHz) | Reading (dB μ V) | AF (dB μ V) | Closs (dB) | Pre-amp (dB) | Filter dB | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Mark (P/Q/A) |
| 2038.10 | 45.24 | 29.08 | 5.56 | 31.91 | 1.06 | 49.03 | 74 | -24.97 | P |
| 2038.10 | 39.13 | 29.08 | 5.56 | 31.91 | 1.06 | 42.92 | 54 | -11.08 | A |
| 4076.03 | 42.26 | 30.46 | 7.68 | 32.95 | 0.60 | 48.05 | 74 | -25.95 | P |
| 4076.03 | 33.48 | 30.46 | 7.68 | 32.95 | 0.60 | 39.27 | 54 | -14.73 | A |
| N/A | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | P |
| N/A | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | A |

| RX / IEEE 802.11b mode / CH Low | | | | Measurement Distance at 3m | | | | Vertical polarity | |
|---------------------------------|-------------------------|--------------------|---------------|----------------------------|--------------|-------------------------|-------------------------|-------------------|-----------------|
| Freq. (MHz) | Reading (dB μ V) | AF (dB μ V) | Closs (dB) | Pre-amp (dB) | Filter dB | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Mark (P/Q/A) |
| 2038.06 | 43.51 | 29.08 | 5.56 | 31.91 | 1.06 | 47.30 | 74 | -26.70 | P |
| 2038.06 | 36.55 | 29.08 | 5.56 | 31.91 | 1.06 | 40.34 | 54 | -13.66 | A |
| 4076.23 | 43.98 | 30.46 | 7.68 | 32.95 | 0.60 | 49.77 | 74 | -24.23 | P |
| 4076.23 | 36.40 | 30.46 | 7.68 | 32.95 | 0.60 | 42.19 | 54 | -11.81 | A |
| N/A | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | P |
| N/A | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | A |

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Spectrum setting:
 - a. Peak Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 1MHz, Sweep time = Auto.
 - b. AV Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 10Hz, b. Sweep time = Auto.
5. Remark “*” means the Restricted band.

**Operation Mode:** RX / IEEE 802.11b mode / CH Mid**Test Date:** October 31, 2005**Temperature:** 27.3°C**Tested by:** Jerry Chang**Humidity:** 69 % RH**Polarity:** Horizontal; Vertical

| RX / IEEE 802.11b mode / CH Mid | | | | Measurement Distance at 3m | | | | Horizontal polarity | |
|---------------------------------|-------------------------|--------------------|---------------|----------------------------|--------------|-------------------------|-------------------------|---------------------|-----------------|
| Freq. (MHz) | Reading (dB μ V) | AF (dB μ V) | Closs (dB) | Pre-amp (dB) | Filter dB | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Mark (P/Q/A) |
| 2062.93 | 46.15 | 29.13 | 5.59 | 31.90 | 1.07 | 50.03 | 74 | -23.97 | P |
| 2062.93 | 41.43 | 29.13 | 5.59 | 31.90 | 1.07 | 45.31 | 54 | -8.69 | A |
| 4125.84 | 45.41 | 30.76 | 7.72 | 32.92 | 0.60 | 51.56 | 74 | -22.44 | P |
| 4125.84 | 38.08 | 30.76 | 7.72 | 32.92 | 0.60 | 44.23 | 54 | -9.77 | A |
| N/A | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | P |
| N/A | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | A |

| RX / IEEE 802.11b mode / CH Mid | | | | Measurement Distance at 3m | | | | Vertical polarity | |
|---------------------------------|-------------------------|--------------------|---------------|----------------------------|--------------|-------------------------|-------------------------|-------------------|-----------------|
| Freq. (MHz) | Reading (dB μ V) | AF (dB μ V) | Closs (dB) | Pre-amp (dB) | Filter dB | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Mark (P/Q/A) |
| 2062.89 | 44.96 | 29.13 | 5.59 | 31.90 | 1.07 | 48.84 | 74 | -25.16 | P |
| 2062.89 | 38.70 | 29.13 | 5.59 | 31.90 | 1.07 | 42.58 | 54 | -11.42 | A |
| 4125.88 | 42.10 | 30.76 | 7.72 | 32.92 | 0.60 | 48.25 | 74 | -25.75 | P |
| 4125.88 | 31.54 | 30.76 | 7.72 | 32.92 | 0.60 | 37.69 | 54 | -16.31 | A |
| N/A | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | P |
| N/A | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | A |

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Spectrum setting:
 - a. Peak Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 1MHz, Sweep time = Auto.
 - b. AV Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 10Hz, b. Sweep time = Auto.
5. Remark “*” means the Restricted band.

**Operation Mode:** RX / IEEE 802.11b mode / CH High**Test Date:** October 31, 2005**Temperature:** 27.3°C**Tested by:** Jerry Chang**Humidity:** 69 % RH**Polarity:** Horizontal; Vertical

| RX / IEEE 802.11b mode / CH High | | | | Measurement Distance at 3m | | | | Horizontal polarity | |
|----------------------------------|-------------------------|--------------------|---------------|----------------------------|--------------|-------------------------|-------------------------|---------------------|-----------------|
| Freq. (MHz) | Reading (dB μ V) | AF (dB μ V) | Closs (dB) | Pre-amp (dB) | Filter dB | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Mark (P/Q/A) |
| 2088.16 | 44.72 | 29.18 | 5.62 | 31.90 | 1.08 | 48.70 | 74 | -25.30 | P |
| 2088.16 | 39.05 | 29.18 | 5.62 | 31.90 | 1.08 | 43.03 | 54 | -10.97 | A |
| 4175.73 | 42.87 | 31.05 | 7.75 | 32.89 | 0.60 | 49.38 | 74 | -24.62 | P |
| 4175.73 | 33.48 | 31.05 | 7.75 | 32.89 | 0.60 | 39.99 | 54 | -14.01 | A |
| N/A | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | P |
| N/A | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | A |

| RX / IEEE 802.11b mode / CH High | | | | Measurement Distance at 3m | | | | Vertical polarity | |
|----------------------------------|-------------------------|--------------------|---------------|----------------------------|--------------|-------------------------|-------------------------|-------------------|-----------------|
| Freq. (MHz) | Reading (dB μ V) | AF (dB μ V) | Closs (dB) | Pre-amp (dB) | Filter dB | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Mark (P/Q/A) |
| 2089.21 | 44.36 | 29.18 | 5.62 | 31.90 | 1.08 | 48.34 | 74 | -25.66 | P |
| 2089.21 | 37.28 | 29.18 | 5.62 | 31.90 | 1.08 | 41.26 | 54 | -12.74 | A |
| 4176.23 | 44.42 | 31.06 | 7.75 | 32.89 | 0.60 | 50.93 | 74 | -23.07 | P |
| 4176.23 | 37.28 | 31.06 | 7.75 | 32.89 | 0.60 | 43.79 | 54 | -10.21 | A |
| N/A | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | P |
| N/A | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | A |

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Spectrum setting:
 - a. Peak Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 1MHz, Sweep time = Auto.
 - b. AV Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 10Hz, b. Sweep time = Auto.
5. Remark “*” means the Restricted band.

**Operation Mode:** RX / IEEE 802.11g mode / CH Low**Test Date:** October 31, 2005**Temperature:** 27.3°C**Tested by:** Jerry Chang**Humidity:** 69 % RH**Polarity:** Horizontal; Vertical

| RX / IEEE 802.11g mode / CH Low | | | | Measurement Distance at 3m | | | | Horizontal polarity | |
|---------------------------------|-------------------------|--------------------|---------------|----------------------------|--------------|-------------------------|-------------------------|---------------------|-----------------|
| Freq. (MHz) | Reading (dB μ V) | AF (dB μ V) | Closs (dB) | Pre-amp (dB) | Filter dB | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Mark (P/Q/A) |
| 2037.96 | 44.25 | 29.08 | 5.56 | 31.91 | 1.06 | 48.04 | 74 | -25.96 | P |
| 2037.96 | 38.45 | 29.08 | 5.56 | 31.91 | 1.06 | 42.24 | 54 | -11.76 | A |
| 4075.91 | 42.36 | 30.46 | 7.68 | 32.95 | 0.60 | 48.15 | 74 | -25.85 | P |
| 4075.91 | 31.28 | 30.46 | 7.68 | 32.95 | 0.60 | 37.07 | 54 | -16.93 | A |
| N/A | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | P |
| N/A | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | A |

| RX / IEEE 802.11g mode / CH Low | | | | Measurement Distance at 3m | | | | Vertical polarity | |
|---------------------------------|-------------------------|--------------------|---------------|----------------------------|--------------|-------------------------|-------------------------|-------------------|-----------------|
| Freq. (MHz) | Reading (dB μ V) | AF (dB μ V) | Closs (dB) | Pre-amp (dB) | Filter dB | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Mark (P/Q/A) |
| 2038.12 | 42.16 | 29.08 | 5.56 | 31.91 | 1.06 | 45.95 | 74 | -28.05 | P |
| 2038.12 | 36.25 | 29.08 | 5.56 | 31.91 | 1.06 | 40.04 | 54 | -13.96 | A |
| 4076.22 | 43.86 | 30.46 | 7.68 | 32.95 | 0.60 | 49.65 | 74 | -24.35 | P |
| 4076.22 | 35.69 | 30.46 | 7.68 | 32.95 | 0.60 | 41.48 | 54 | -12.52 | A |
| N/A | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | P |
| N/A | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | A |

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Spectrum setting:
 - a. Peak Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 1MHz, Sweep time = Auto.
 - b. AV Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 10Hz, b. Sweep time = Auto.
5. Remark “*” means the Restricted band.

**Operation Mode:** RX / IEEE 802.11g mode / CH Mid**Test Date:** October 31, 2005**Temperature:** 27.3°C**Tested by:** Jerry Chang**Humidity:** 69 % RH**Polarity:** Horizontal; Vertical

| RX / IEEE 802.11g mode / CH Mid | | | | Measurement Distance at 3m | | | | Horizontal polarity | |
|---------------------------------|-------------------------|--------------------|---------------|----------------------------|--------------|-------------------------|-------------------------|---------------------|-----------------|
| Freq. (MHz) | Reading (dB μ V) | AF (dB μ V) | Closs (dB) | Pre-amp (dB) | Filter dB | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Mark (P/Q/A) |
| 2063.03 | 45.69 | 29.13 | 5.59 | 31.90 | 1.07 | 49.57 | 74 | -24.43 | P |
| 2063.03 | 40.74 | 29.13 | 5.59 | 31.90 | 1.07 | 44.62 | 54 | -9.38 | A |
| 4126.15 | 45.21 | 30.76 | 7.72 | 32.92 | 0.60 | 51.36 | 74 | -22.64 | P |
| 4126.15 | 38.26 | 30.76 | 7.72 | 32.92 | 0.60 | 44.41 | 54 | -9.59 | A |
| N/A | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | P |
| N/A | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | A |

| RX / IEEE 802.11g mode / CH Mid | | | | Measurement Distance at 3m | | | | Vertical polarity | |
|---------------------------------|-------------------------|--------------------|---------------|----------------------------|--------------|-------------------------|-------------------------|-------------------|-----------------|
| Freq. (MHz) | Reading (dB μ V) | AF (dB μ V) | Closs (dB) | Pre-amp (dB) | Filter dB | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Mark (P/Q/A) |
| 2062.96 | 44.25 | 29.13 | 5.59 | 31.90 | 1.07 | 48.13 | 74 | -25.87 | P |
| 2062.96 | 38.22 | 29.13 | 5.59 | 31.90 | 1.07 | 42.10 | 54 | -11.90 | A |
| 4125.86 | 41.69 | 30.76 | 7.72 | 32.92 | 0.60 | 47.84 | 74 | -26.16 | P |
| 4125.86 | 30.98 | 30.76 | 7.72 | 32.92 | 0.60 | 37.13 | 54 | -16.87 | A |
| N/A | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | P |
| N/A | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | A |

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Spectrum setting:
 - a. Peak Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 1MHz, Sweep time = Auto.
 - b. AV Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 10Hz, b. Sweep time = Auto.
5. Remark “*” means the Restricted band.

**Operation Mode:** RX / IEEE 802.11g mode / CH High**Test Date:** October 31, 2005**Temperature:** 27.3°C**Tested by:** Jerry Chang**Humidity:** 69 % RH**Polarity:** Horizontal; Vertical

| RX / IEEE 802.11g mode / CH High | | | | Measurement Distance at 3m | | | | Horizontal polarity | |
|----------------------------------|-------------------------|--------------------|---------------|----------------------------|--------------|-------------------------|-------------------------|---------------------|-----------------|
| Freq. (MHz) | Reading (dB μ V) | AF (dB μ V) | Closs (dB) | Pre-amp (dB) | Filter dB | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Mark (P/Q/A) |
| 2087.99 | 43.26 | 29.18 | 5.62 | 31.90 | 1.08 | 47.24 | 74 | -26.76 | P |
| 2087.99 | 38.69 | 29.18 | 5.62 | 31.90 | 1.08 | 42.67 | 54 | -11.33 | A |
| 4176.32 | 41.69 | 31.06 | 7.75 | 32.89 | 0.60 | 48.20 | 74 | -25.80 | P |
| 4176.32 | 33.10 | 31.06 | 7.75 | 32.89 | 0.60 | 39.61 | 54 | -14.39 | A |
| N/A | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | P |
| N/A | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | A |

| RX / IEEE 802.11g mode / CH High | | | | Measurement Distance at 3m | | | | Vertical polarity | |
|----------------------------------|-------------------------|--------------------|---------------|----------------------------|--------------|-------------------------|-------------------------|-------------------|-----------------|
| Freq. (MHz) | Reading (dB μ V) | AF (dB μ V) | Closs (dB) | Pre-amp (dB) | Filter dB | Level (dB μ V/m) | Limit (dB μ V/m) | Margin (dB) | Mark (P/Q/A) |
| 2088.03 | 44.26 | 29.18 | 5.62 | 31.90 | 1.08 | 48.24 | 74 | -25.76 | P |
| 2088.03 | 38.33 | 29.18 | 5.62 | 31.90 | 1.08 | 42.31 | 54 | -11.69 | A |
| 4176.12 | 44.15 | 31.06 | 7.75 | 32.89 | 0.60 | 50.66 | 74 | -23.34 | P |
| 4176.12 | 38.69 | 31.06 | 7.75 | 32.89 | 0.60 | 45.20 | 54 | -8.80 | A |
| N/A | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | P |
| N/A | ----- | ----- | ----- | ----- | ----- | ----- | ----- | ----- | A |

Remark:

1. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.
2. Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20dB from the applicable limit) and considered that's already beyond the background noise floor.
3. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.
4. Spectrum setting:
 - a. Peak Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 1MHz, Sweep time = Auto.
 - b. AV Setting 1GHz to 10th harmonics of fundamental, RBW = 1MHz, VBW = 10Hz, b. Sweep time = Auto.
5. Remark “*” means the Restricted band.



POWER LINE CONDUCTED EMISSIONS

LIMIT

For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed 250 microvolts (The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz). The limits at specific frequency range is listed as follows:

| Frequency Range (MHz) | Limits (dB μ V) | |
|-----------------------|---------------------|----------|
| | Quasi-peak | Average |
| 0.15 to 0.50 | 66 to 56 | 56 to 46 |
| 0.50 to 5 | 56 | 46 |
| 5 to 30 | 60 | 50 |

Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line (*Live Line* and *Neutral Line*) and ground at the power terminals.

MEASUREMENT EQUIPMENT USED

| Name of Equipment | Manufacturer | Model | Serial Number | Calibration Due |
|----------------------|--------------|--------------|---------------|-------------------------------------|
| L.I.S.N. | SCHWARZBECK | NNLK 8121 | 8121-446 | OCT. 21, 2005 For Insertion loss |
| | | | 8121-308 | OCT. 04, 2005 For Insertion loss |
| TEST RECEIVER | R&S | ESCS 30 | 100348 | JUN. 17, 2005 |
| TYPE N COAXIAL CABLE | ----- | ----- | ----- | FEB. 26, 2005 |

Remark: Each piece of equipment is scheduled for calibration once a year.

Test Configuration

See test photographs attached in Appendix 1 for the actual connections between EUT and support equipment.

TEST PROCEDURE

1. The EUT was placed on a table, which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured were complete.

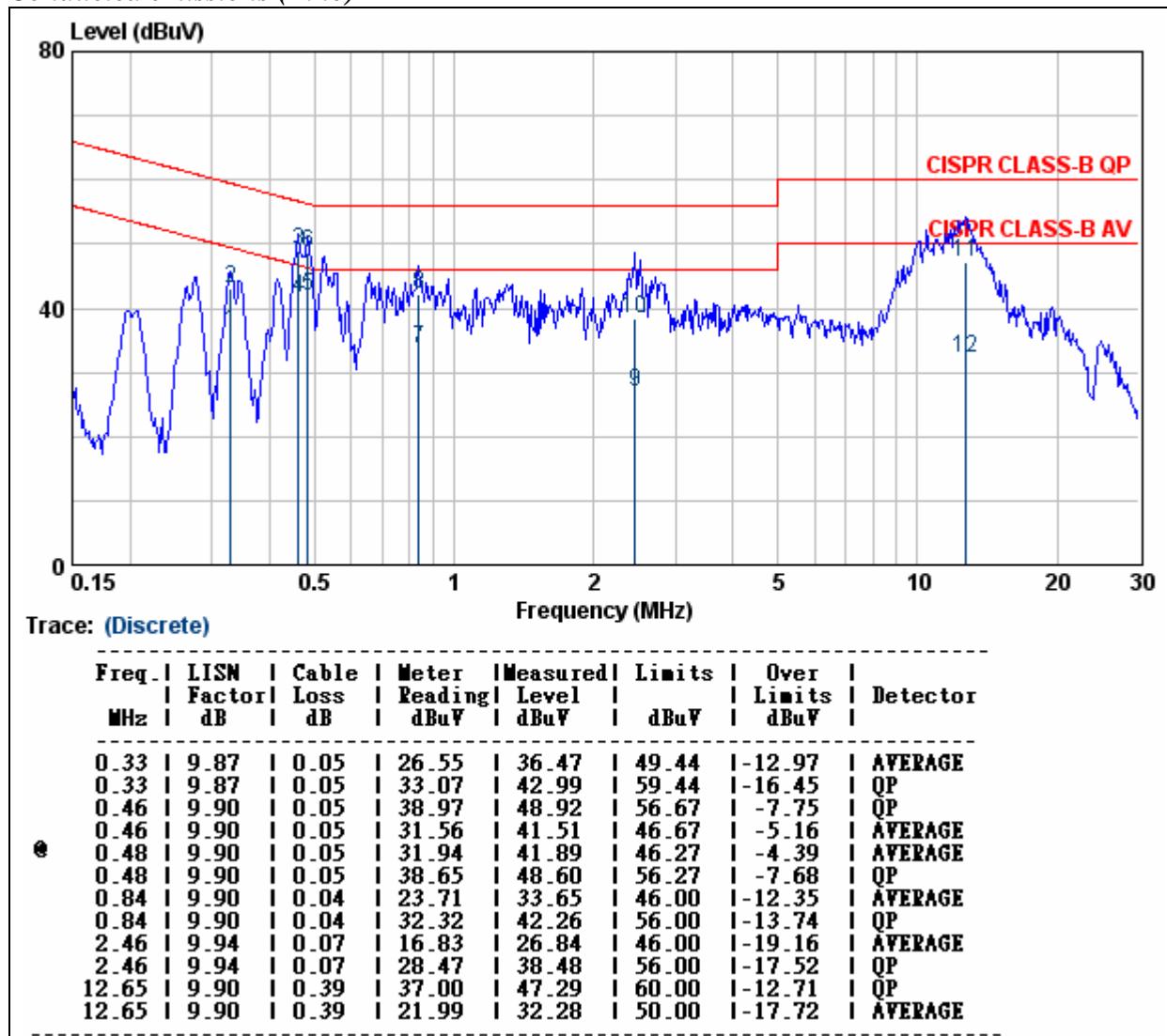
TEST RESULTS

The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range. Significant peaks are then marked as shown on the following data page, and these signals are then quasi-peaked.

Test Data

| | | | |
|-----------------|--------------|------------|------------------|
| Operation Mode: | TX + RX mode | Test Date: | October 20, 2005 |
| Temperature: | 25°C | Humidity: | 55% RH |
| Tested by: | Boy Wu | Test Mode | Normal Link |

Conducted emissions (Line)

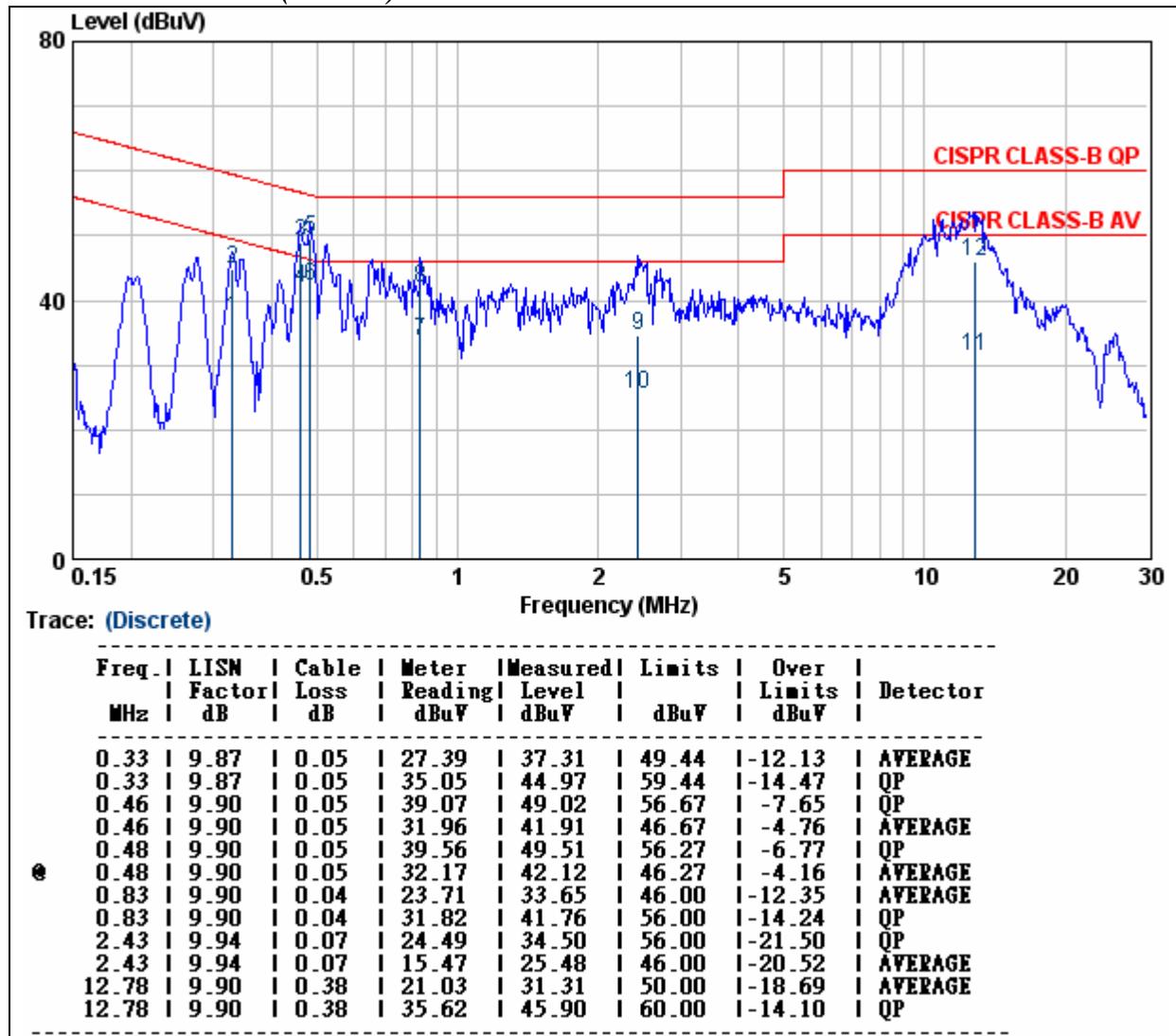


Remark:

- 1 Measuring frequencies from 0.15 MHz to 30MHz.
- 2 The emissions measured in frequency range from 0.15 MHz to 30MHz were made with an instrument using Quasi-peak detector and average detector.
- 3 The IF bandwidth of SPA between 0.15MHz to 30MHz was 10kHz; the IF bandwidth of Test Receiver between 0.15MHz to 30MHz was 9kHz;
- 4 a. Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB)
b. Over Limit value (dB) = Level (dBuV) - Limit Line (dBuV)

Operation Mode: TX + RX mode
Temperature: 25°C
Tested by: Boy Wu

Test Date: October 20, 2005
Humidity: 55% RH
Test Mode: Normal Link

Conducted emissions (Neutral)

Remark:

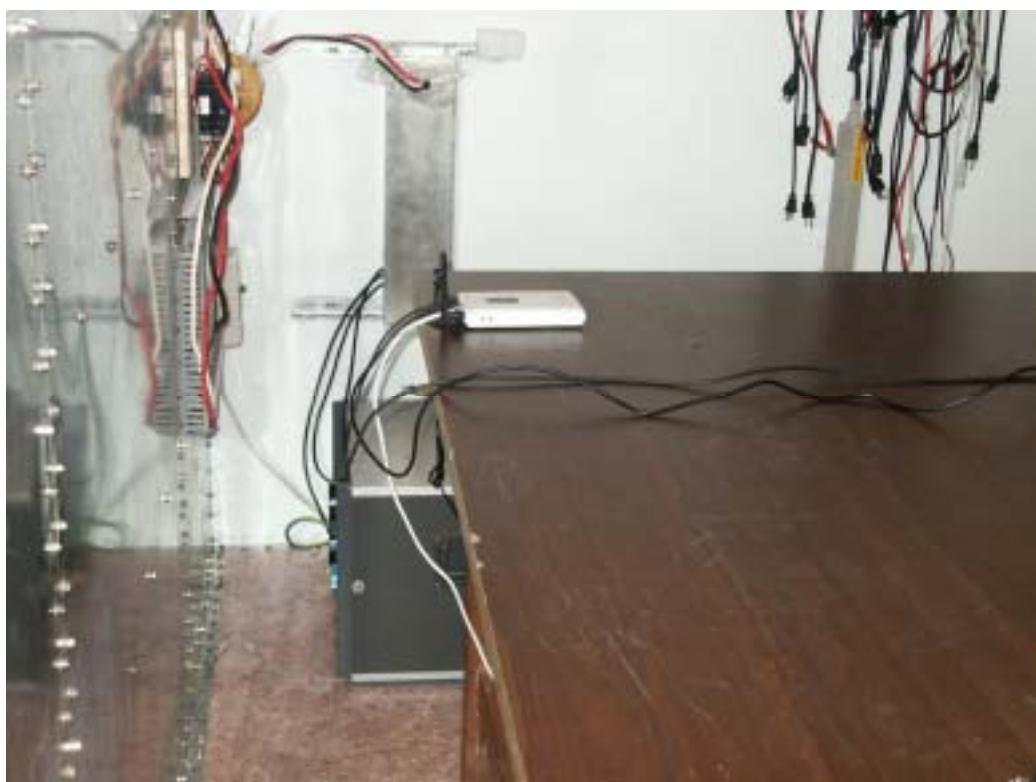
- 1 Measuring frequencies from 0.15 MHz to 30MHz.
- 2 The emissions measured in frequency range from 0.15 MHz to 30MHz were made with an instrument using Quasi-peak detector and average detector.
- 3 The IF bandwidth of SPA between 0.15MHz to 30MHz was 10kHz; the IF bandwidth of Test Receiver between 0.15MHz to 30MHz was 9kHz;
- 4 a. Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB)
b. Over Limit value (dB) = Level (dBuV) - Limit Line (dBuV)

8. APPENDIX 1

PHOTOGRAPHS OF TEST SETUP

Radiated Emission Set up Photos



Conducted Emission Set Up Photos



Compliance Certification Services Inc.

Report No: 51020401-RP1

FCC ID: PBLMGB100

Date of Issue: November 18, 2005

