# A Test Lab Techno Corp.

No.140-1, Chang-an St., Bade City, Tao-Yuan County 334, Taiwan (R.O.C.)
Tel：+886-3-2710188 / Fax：+886-3-2710190

## Part 15 C Measurement Report

| | | |
|---|---|---|
| **Report No.** | ： | **0912FR12** |
| **Applicant** | ： | **Acer Incorporated** |
| **Product Type** | ： | **WLAN Module** |
| **Trade Name** | ： | **acer** |
| **Model No.** | ： | **AR5B93** |
| **FCC ID** | ： | **HLZ-AR5B93** |
| **IC ID** | ： | **1754F-AR5B93** |
| **Serial No.** | ： | **ZE90SK01C19391A23B2500** |
| **Dates of Test** | ： | **Dec. 02 ~ Dec. 18, 2009** |
| **Test Specification** | ： | **FCC CFR Title 47 Part 15 Subpart C (15.247) (2008-10)** |
| | | **Canada RSS-210 Issue 7(June 2007)** |
| | | **Canada RSS-Gen Issue 2(June 2007)** |
| | | **ANSI C63.4-2003** |
| **Location of Test Lab.** | ： | **Chang-an Lab.** |

1. The test operations have to be performed with cautious behavior, the test results are as attached.
2. The test results are under chamber environment of A Test Lab Techno Corp. A Test Lab Techno Corp. does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples.
3. The measurement report has to be written approval of A Test Lab Techno Corp. It may only be reproduced or published in full. This report shall not be reproduced except in full, without the written approval of A Test Lab Techno Corp.
4. This document may be altered or revised by A Test Lab Techno. Corp. personnel only, and shall be noted in the revision section of the document.

**Miller Lee** **20091218**
**Approve Signer**

**John Cheng** **20091218**
**Testing Engineer**

# CERTIFICATION

**We hereby verify that:**

**The test data, data evaluation, test procedures and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.4:2003. All test were conducted by *A Test Lab Techno Corp. No.140-1, Chang-an St., Bade City, Tao-Yuan County 334, Taiwan (R.O.C.)* Also, we attest to the accuracy of each.**

**We further submit that the energy emitted by the sample EUT tested as described in the report is in compliance of FCC Rules Part 15 Subpart C (15.247).**

| | | |
|---|---|---|
| **Product Type** | : | **WLAN Module** |
| **Applicant** | : | **Acer Incorporated** |
| **Applicant Address** | : | **8F, 88, Sec.1, Hsin Tai Wu Rd. Hsichih, Taipei Hsien 221 Taiwan, R.O.C.** |
| **Manufacturer** | : | **Quanta Computer Inc.** |
| **Manufacturer Address** | : | **No.211, Wen Hwa 2nd Rd., Kuei Shan Hsiang, Tao Yuan Shien, Taiwan, R.O.C** |
| **Trade Name** | : | **acer** |
| **Model No.** | : | **AR5B93** |
| **FCC ID** | : | **HLZ-AR5B93** |
| **IC ID** | : | **1754F-AR5B93** |
| **Serial No.** | : | **ZE90SK01C19391A23B2500** |
| **Host Laptop PC** | | **Trade Name: acer ,Gateway, Packard Bell**<br>**Model Number: ZE8** |
| **EUT Rated Voltage** | : | **100-240Vac, 1A, 50/60Hz** |
| **Test Voltage** | : | **120Vac, 60Hz** |
| **Applicable Standard** | : | **FCC CFR Title 47 Part 15 Subpart C (15.247) (2008-10)**<br>**Canada RSS-210 Issue 7 (June 2007)**<br>**Canada RSS-Gen Issue 2 (June 2007)**<br>**ASNI C63.4-2003** |
| **Test Result** | : | **Complied** |

***Approved by :*** **Miller Lee 2009/12/18**

***Prepared by :*** **John Cheng 2009/12/18**


**A Test Lab Techno Corp.**

No.140-1, Chang-an St., Bade City, Tao-Yuan County 334, Taiwan (R.O.C.)
Tel：03-2710188 / Fax：03-2710190

# Contents

# 1. GENERAL

## 1.1 Description of Equipment under Test (EUT)

| | | |
|---|---|---|
| **Applicant** | : | Acer Incorporated |
| **Applicant Address** | : | 8F, 88, Sec.1, Hsin Tai Wu Rd. Hsichih, Taipei Hsien 221 Taiwan, R.O.C |
| **Manufacturer** | : | Quanta Computer Inc. |
| **Manufacturer Address** | : | No.211, Wen Hwa 2nd Rd., Kuei Shan Hsiang, Tao Yuan Shien, Taiwan, R.O.C. |
| **Product Type** | : | WLAN Module |
| **Trade Name** | : | acer |
| **Model No.** | : | AR5B93 |
| **FCC ID** | : | HLZ-AR5B93 |
| **IC ID** | : | 1754F-AR5B93 |
| **Serial No.** | : | ZE90SK01C19391A23B2500 |
| **Frequency Range** | : | IEEE 802.11b / IEEE 802.11g: 2412MHz~2462MHz<br>draft 802.11n Standard-20MHz: 2412MHz~2462MHz<br>draft 802.11n Wide-40MHz: 2422MHz~2452MHz |
| **Type of Modulation** | : | IEEE 802.11b:DSSS(CCK, DQPSK, DBPSK)<br>IEEE 802.11g:DSSS(CCK, DQPSK, DBPSK)+ OFDM(QPSK, BPSK, 16-QAM, 64-QAM)<br>draft 802.11n Standard-20MHz channel mode: OFDM(6.5,7.2, 13,14.4, 14.44, 19.5,217,26,28.89,28.9,39.43.3,43.33,52,57.78, 57.8, 58.5, 65.0, 72.2, 78, 86.67,104,115.56,117,130 and 144.44 Mbps)<br>draft 802.11n Wide-40MHz channel mode: OFDM(13.5,15,27,30,40.5,45, 54, 60,81,90,108,120,121.5,135,150,162,180,216,240,243, 270 and 300 Mbps) |
| **Hardware Version** | : | D2A |
| **Software Version** | : | V0.2103 |
| **Host Laptop PC** | | Trade Name: acer ,Gateway, Packard Bell<br>Model Number: ZE8 |
| **Component** | | |
| **Power Adapter** | : | HIPRO , HP-A0301R3<br>Input:100-240Vac, 50/60Hz, 1A<br>Output: 19Vdc, 1.58A, 30W<br>Cable in: Non-Shielded, 1.46 m<br>Cable out: Non-Shielded, 1.78 m |

## 1.2 Configuration of System under Test

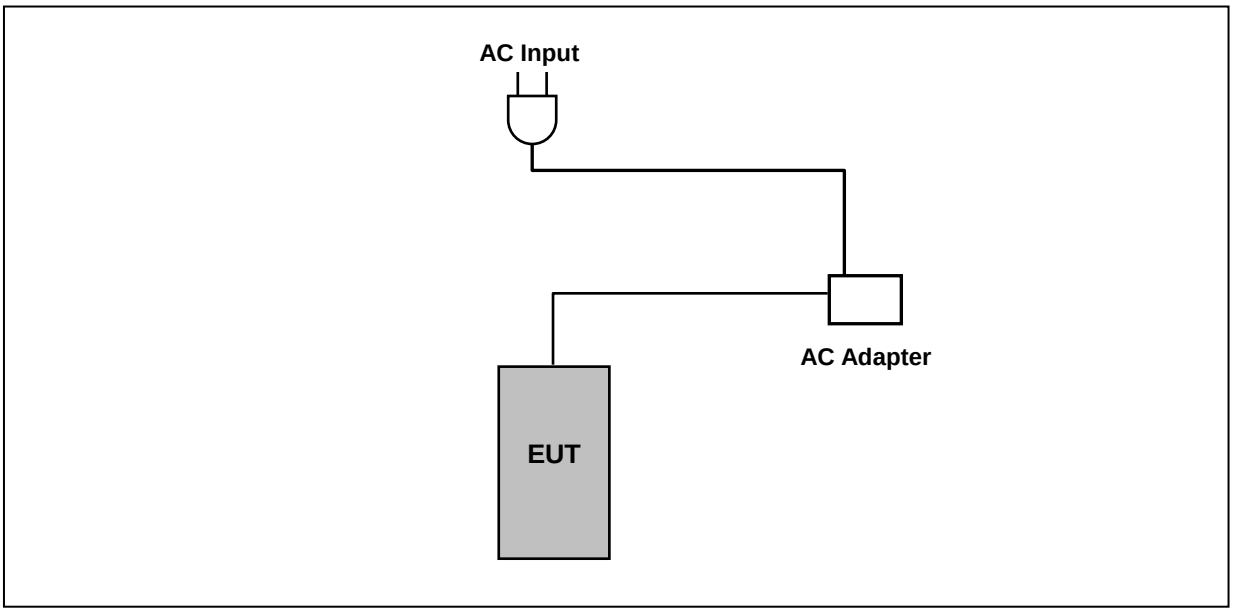



**Figure 1. Configuration of System Under Test**

During testing the EUT's Power port was connected to AC Adapter.

## 1.3 Test Facility

Ambient conditions in the laboratory:

| Items | Test Item | Required (IEC 68-1) | Actual |
|---|---|---|---|
| Temperature (°C) | ANSI C63.4 CE | 15-35 | 25 |
| Humidity (%RH) | | 30-60 | 50 |
| Barometric pressure (mbar) | | 860-1060 | 950-1000 |
| Temperature (°C) | ANSI C63.4 RE | 15-35 | 25 |
| Humidity (%RH) | | 30-60 | 50 |
| Barometric pressure (mbar) | | 860-1060 | 950-1000 |

Registration Number：854525

Designation Number：TW1330

Test Site Name: A Test Lab Techno Corp.

Test Site Location: No. 140 -1, Changan Street, Bade City, Taoyuan County, Taiwan R.O.C.

TEL: 886-3-271-0188 FAX: 886-3-271-0190

The chamber meets the characteristics of ANSI C63.4-2003. This site is on file with the FCC.

# 2. Maximum Conducted Output Power Requirements

## 2.1 Test Procedure

The tests below are run with the EUT's transmitter set at high power in TX mode. The EUT is needed to force selection of output power level and channel number. While testing, EUT was set to transmit continuously. Remove the Subjective device's antenna and connect the RF output port to spectrum analyzer. The maximum peak output power shall not exceed 1 watt.

For antennas with gains of 6 dBi or less, maximum allowed transmitter output is 1 watt (+30 dBm). For antennas with gains greater than 6 dBi, transmitter output level must be decreased by an amount equal to (GAIN - 6)/3 dBm.

The antenna port of the EUT was connected to the input of a power sensor. Power was read directly and cable loss correction was added to the reading to obtain power at the EUT antenna terminals.

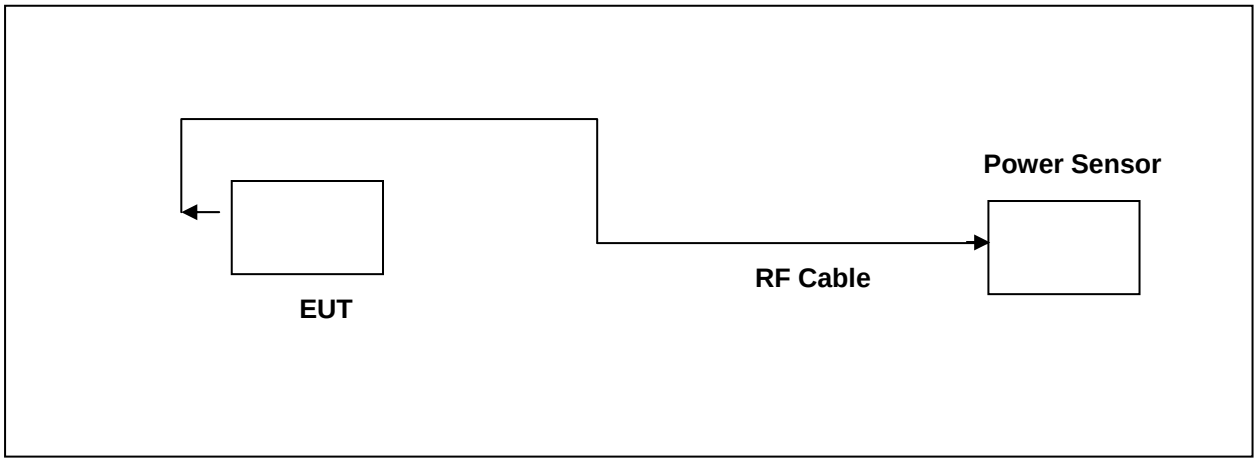
## 2.2 Limits

For systems using digital modulation in the 2400 - 2483.5 MHz bands: 1 Watt.

## 2.3 Test Equipment List

| Describe | Manufacturer | Model | Serial Number | Calibration | |
|---|---|---|---|---|---|
| | | | | Cal. Date | Due Date |
| WIDE BAND SENSOR | R&S | NRP-Z81 | 100017 | May 17, 2009 | May 17, 2010 |

## 2.4 Test Instruments Configuration



## 2.5 Test Result

**IEEE 802.11b_2.4GHz Rate 1M**

| Frequency (MHz) | Average | | | | Peak | | | |
|---|---|---|---|---|---|---|---|---|
| | Chan 0 (dBm) | Chan 1 (dBm) | Total Power | | Chan 0 (dBm) | Chan 1 (dBm) | Total Power | |
| | | | (dBm) | (W) | | | (dBm) | (W) |
| 2412 | 14.05 | 13.35 | 16.724 | 0.047 | 16.30 | 16.33 | 19.325 | 0.086 |
| 2437 | 12.97 | 13.40 | 16.201 | 0.042 | 15.95 | 16.38 | 19.181 | 0.083 |
| 2462 | 12.97 | 13.18 | 16.087 | 0.041 | 16.09 | 16.14 | 19.125 | 0.082 |

**IEEE 802.11g_2.4GHz Rate 6M**

| Frequency (MHz) | Average | | | | Peak | | | |
|---|---|---|---|---|---|---|---|---|
| | Chan 0 (dBm) | Chan 1 (dBm) | Total Power | | Chan 0 (dBm) | Chan 1 (dBm) | Total Power | |
| | | | (dBm) | (W) | | | (dBm) | (W) |
| 2412 | 11.10 | 11.54 | 14.336 | 0.027 | 19.00 | 19.60 | 22.321 | 0.171 |
| 2437 | 14.33 | 13.66 | 17.018 | 0.050 | 22.40 | 22.00 | 25.215 | 0.332 |
| 2462 | 10.52 | 11.40 | 13.993 | 0.025 | 18.64 | 19.49 | 22.096 | 0.162 |

**draft 802.11n Standard-20MHz_2.4GHz Rate 6.5M**

| Frequency (MHz) | Average | | | | Peak | | | |
|---|---|---|---|---|---|---|---|---|
| | Chan 0 (dBm) | Chan 1 (dBm) | Total Power | | Chan 0 (dBm) | Chan 1 (dBm) | Total Power | |
| | | | (dBm) | (W) | | | (dBm) | (W) |
| 2412 | 9.65 | 10.42 | 13.062 | 0.020 | 17.67 | 18.45 | 21.088 | 0.128 |
| 2437 | 14.24 | 13.61 | 16.947 | 0.050 | 22.39 | 21.78 | 25.106 | 0.324 |
| 2462 | 9.91 | 10.63 | 13.295 | 0.021 | 17.99 | 18.75 | 21.397 | 0.138 |

**draft 802.11n Wide-40MHz_2.4GHz Rate 13.5M**

| Frequency (MHz) | Average | | | | Peak | | | |
|---|---|---|---|---|---|---|---|---|
| | Chan 0 (dBm) | Chan 1 (dBm) | Total Power | | Chan 0 (dBm) | Chan 1 (dBm) | Total Power | |
| | | | (dBm) | (W) | | | (dBm) | (W) |
| 2422 | 8.23 | 8.84 | 11.556 | 0.014 | 16.34 | 17.11 | 19.752 | 0.094 |
| 2437 | 14.84 | 14.81 | 17.835 | 0.061 | 23.06 | 23.02 | 26.050 | 0.403 |
| 2452 | 8.78 | 9.65 | 12.247 | 0.017 | 16.95 | 17.83 | 20.423 | 0.110 |

Note: Average powers measured in above table are derived with a power meter and are ONLY for comparing the average powers measured in original application (Original ID: HLZ-AR5B93) with a power meter.

# 3. Radiated Emissions Requirements

## 3.1 Test Procedure

The EUT and its simulators are placed on a turn table which is 0.8 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to ANSI C63.4:2003 on radiated measurement.

The EUT was positioned such that the distance from antenna to the EUT was 3 meters for the frequency under 1GHz and 3 meters for the frequency above 1GHz.

The bandwidth below 1GHz setting on the field strength meter (R&S Test Receiver ESCI) is 120 kHz and above 1GHz is 1MHz.

## 3.2 Radiated Emissions Limits

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

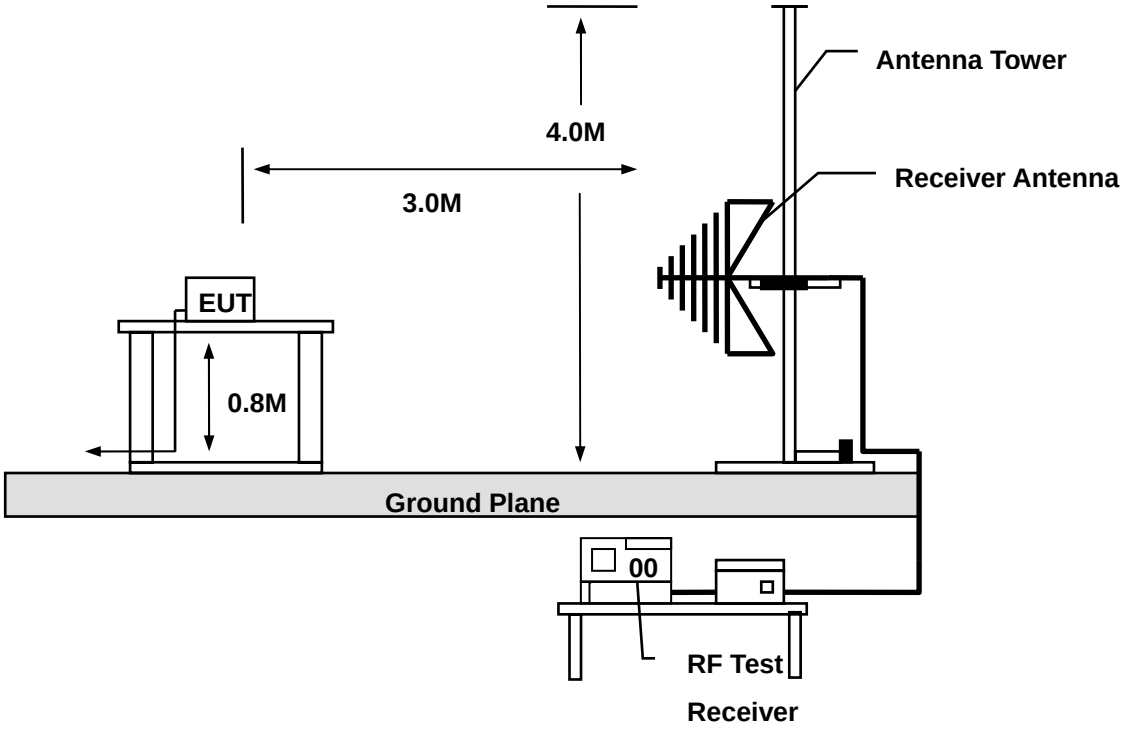
**Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54–72 MHz, 76– 88 MHz, 174–216 MHz or 470–806 MHz. However, operation within these frequency bands is permitted under other sections of this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

## 3.3 Test Equipment List

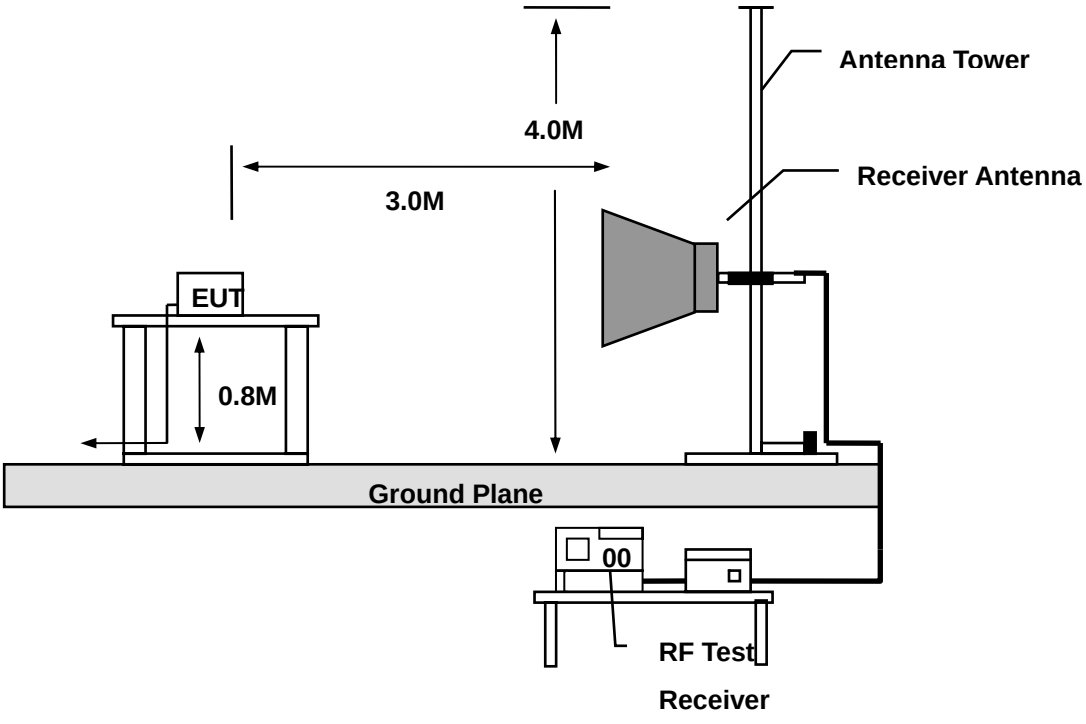
| Describe | Manufacturer | Model | Serial Number | Calibration | |
|---|---|---|---|---|---|
| | | | | Cal. Date | Due Date |
| Spectrum Analyzer | Agilent | E4408B | MY46181421 | Mar. 13, 2009 | Mar. 13, 2010 |
| Spectrum Analyzer | Agilent | E4408A | MY46180578 | Jan. 20, 2009 | Jan. 20, 2010 |
| Pre Amplifier | Agilent | 8449B | 3008A02457 | Mar. 04, 2009 | Mar. 04, 2010 |
| Pre Amplifier | Agilent | 8447D | 2944A11119 | Jan. 19, 2009 | Jan. 19, 2010 |
| Test Receiver | R&S | ESCI | 100367 | Jun. 05, 2009 | Jun. 05, 2010 |
| Bilog Antenna | SCHWARZBECK MESS-ELEKTRONIK | VULB9163 | 9163-270 | Jun. 23, 2009 | Jun. 23, 2010 |
| Horn Antenna | SCHWARZBECK MESS-ELEKTRONIK | BBHA9120D | 9120D-550 | Jul. 01, 2009 | Jul. 01, 2010 |
| Horn Antenna | SCHWARZBECK MESS-ELEKTRONIK | BBHA9170 | 9170-320 | Jun. 30, 2009 | Jun. 30, 2010 |
| Horn Antenna | SCHWARZBECK MESS-ELEKTRONIK | BBHA9120E | 0899 | Jun. 23, 2009 | Jun. 23, 2010 |

## 3.4 Test Instruments Configuration

**30 MHz ~ 1 GHz**




**1GHz ~ 26.5 GHz**



## 3.5 Test Results

### 3.5.1 Below 1GHz

| | |
|---|---|
| Test Mode: | Normal Link Mode |
| Model No: | AR5B93 |
| Test Date: | 12/18/2009 |
| Tested by: | John Cheng |

| Freq | Polarization (V/H) | Rd_level (dBuV) | Factor | Level (dBuV/m) | Limit (dBuV/m) | Over | detector |
|---|---|---|---|---|---|---|---|
| 30.27 | V | 39.54 | -13.32 | 26.22 | 40.00 | -13.78 | QP |
| 50.25 | V | 34.68 | -12.16 | 22.52 | 40.00 | -17.48 | QP |
| 90.48 | V | 45.69 | -13.07 | 32.62 | 43.50 | -10.88 | QP |
| 119.37 | V | 44.98 | -14.09 | 30.89 | 43.50 | -12.61 | QP |
| 175.26 | V | 41.69 | -14.62 | 27.07 | 43.50 | -16.43 | QP |
| 240.06 | V | 42.59 | -11.43 | 31.16 | 46.00 | -14.84 | QP |
| 409.20 | V | 39.57 | -8.25 | 31.32 | 46.00 | -14.68 | QP |
| 528.20 | V | 38.54 | -6.34 | 32.20 | 46.00 | -13.80 | QP |
| 584.20 | V | 36.58 | -5.08 | 31.50 | 46.00 | -14.50 | QP |
| 652.80 | V | 31.89 | -4.32 | 27.57 | 46.00 | -18.43 | QP |
| 819.40 | V | 34.58 | -1.86 | 32.72 | 46.00 | -13.28 | QP |
| 986.00 | V | 24.21 | 0.62 | 24.83 | 54.00 | -29.17 | QP |
| | | | | | | | |
| 30.00 | H | 35.87 | -13.32 | 22.55 | 40.00 | -17.45 | QP |
| 55.92 | H | 27.69 | -12.27 | 15.42 | 40.00 | -24.58 | QP |
| 89.13 | H | 36.87 | -13.45 | 23.42 | 43.50 | -20.08 | QP |
| 125.85 | H | 38.54 | -15.14 | 23.40 | 43.50 | -20.10 | QP |
| 199.56 | H | 42.54 | -13.17 | 29.37 | 43.50 | -14.13 | QP |
| 249.78 | H | 46.57 | -10.84 | 35.73 | 46.00 | -10.27 | QP |
| 399.40 | H | 41.25 | -8.34 | 32.91 | 46.00 | -13.09 | QP |
| 528.20 | H | 36.58 | -6.34 | 30.24 | 46.00 | -15.76 | QP |
| 620.60 | H | 36.98 | -4.41 | 32.57 | 46.00 | -13.43 | QP |
| 699.70 | H | 36.45 | -3.86 | 32.59 | 46.00 | -13.41 | QP |
| 798.40 | H | 35.18 | -2.33 | 32.85 | 46.00 | -13.15 | QP |
| 988.80 | H | 25.78 | 0.84 | 26.62 | 54.00 | -27.38 | QP |

### 3.5.2 Above 1GHz

| | |
|---|---|
| Test Mode: | RX Mode |
| Model No: | AR5B93 |
| Test Date: | 12/18/2009 |
| Tested by: | John Cheng |

| Freq | Polarization (V/H) | Rd_level (dBuV) | Factor | Level (dBuV/m) | Limit (dBuV/m) | Over | detector |
|---|---|---|---|---|---|---|---|
| 2640.50 | V | 43.14 | 0.97 | 44.11 | 74.00 | -29.89 | Peak |
| 2700.00 | V | 41.01 | 22.58 | 63.59 | 74.00 | -10.41 | Peak |
| 2700.00 | V | 21.08 | 22.58 | 43.66 | 54.00 | -10.34 | AVG |
| 9872.25 | V | 37.89 | 17.84 | 55.73 | 74.00 | -18.27 | Peak |
| 9872.25 | V | 27.93 | 17.84 | 45.77 | 54.00 | -8.23 | AVG |
| 14300.00 | V | 38.26 | 18.61 | 56.87 | 74.00 | -17.13 | Peak |
| 14300.00 | V | 27.09 | 18.61 | 45.70 | 54.00 | -8.30 | AVG |
| 18000.00 | V | 37.40 | 25.57 | 62.97 | 74.00 | -11.03 | Peak |
| 18000.00 | V | 17.23 | 25.57 | 42.80 | 54.00 | -11.20 | AVG |
| 18701.25 | V | 38.11 | 23.11 | 61.22 | 74.00 | -12.78 | Peak |
| 18701.25 | V | 19.50 | 23.11 | 42.61 | 54.00 | -11.39 | AVG |
| 21888.75 | V | 38.16 | 21.18 | 59.34 | 74.00 | -14.66 | Peak |
| 21888.75 | V | 19.91 | 21.18 | 41.09 | 54.00 | -12.91 | AVG |
| 25692.50 | V | 40.13 | 18.83 | 58.96 | 74.00 | -15.04 | Peak |
| 25692.50 | V | 21.30 | 18.83 | 40.13 | 54.00 | -13.87 | AVG |
| | | | | | | | |
| 2647.30 | H | 42.72 | 0.97 | 43.69 | 74.00 | -30.31 | Peak |
| 2700.00 | H | 40.87 | 22.58 | 63.45 | 74.00 | -10.55 | Peak |
| 2700.00 | H | 21.18 | 22.58 | 43.76 | 54.00 | -10.24 | AVG |
| 9397.75 | H | 39.13 | 17.07 | 56.20 | 74.00 | -17.80 | Peak |
| 9397.75 | H | 27.18 | 17.07 | 44.25 | 54.00 | -9.75 | AVG |
| 14220.00 | H | 38.77 | 18.78 | 57.55 | 74.00 | -16.45 | Peak |
| 14220.00 | H | 27.24 | 18.78 | 46.02 | 54.00 | -7.98 | AVG |
| 18000.00 | H | 37.05 | 25.57 | 62.62 | 74.00 | -11.38 | Peak |
| 18000.00 | H | 17.03 | 25.57 | 42.60 | 54.00 | -11.40 | AVG |
| 18425.00 | H | 38.08 | 23.14 | 61.22 | 74.00 | -12.78 | Peak |
| 18425.00 | H | 19.50 | 23.14 | 42.64 | 54.00 | -11.36 | AVG |
| 21867.50 | H | 37.94 | 21.19 | 59.13 | 74.00 | -14.87 | Peak |
| 21867.50 | H | 19.71 | 21.19 | 40.90 | 54.00 | -13.10 | AVG |
| 26223.75 | H | 39.79 | 18.42 | 58.21 | 74.00 | -15.79 | Peak |
| 26223.75 | H | 20.76 | 18.42 | 39.18 | 54.00 | -14.82 | AVG |

| | |
|---|---|
| Test Mode: | IEEE 802.11b _ TX Mode _ CH2412 |
| Model No: | AR5B93 |
| Test Date: | 12/17/2009 |
| Tested by: | John Cheng |

| Freq | Polarization (V/H) | Rd_level (dBuV) | Factor | Level (dBuV/m) | Limit (dBuV/m) | Over | detector |
|---|---|---|---|---|---|---|---|
| 1195.50 | V | 58.41 | -4.99 | 53.42 | 74.00 | -20.58 | Peak |
| 1195.50 | V | 36.15 | -4.99 | 31.16 | 54.00 | -22.84 | AVG |
| 1994.50 | V | 55.50 | -1.71 | 53.79 | 74.00 | -20.21 | Peak |
| 1994.50 | V | 36.37 | -1.71 | 34.66 | 54.00 | -19.34 | AVG |
| 2490.90 | V | 55.20 | 0.26 | 55.46 | 74.00 | -18.54 | Peak |
| 2490.90 | V | 36.47 | 0.26 | 36.73 | 54.00 | -17.27 | AVG |
| 2700.00 | V | 41.27 | 22.58 | 63.85 | 74.00 | -10.15 | Peak |
| 2700.00 | V | 21.18 | 22.58 | 43.76 | 54.00 | -10.24 | AVG |
| 4817.00 | V | 44.45 | 7.42 | 51.87 | 74.00 | -22.13 | Peak |
| 4817.00 | V | 41.69 | 7.42 | 49.11 | 54.00 | -4.89 | AVG |
| 4981.25 | V | 43.09 | 7.89 | 50.98 | 74.00 | -23.02 | Peak |
| 4981.25 | V | 29.94 | 7.89 | 37.83 | 54.00 | -16.17 | AVG |
| 9361.25 | V | 39.23 | 16.98 | 56.21 | 74.00 | -17.79 | Peak |
| 9361.25 | V | 27.94 | 16.98 | 44.92 | 54.00 | -9.08 | AVG |
| 14040.00 | V | 38.20 | 18.66 | 56.86 | 74.00 | -17.14 | Peak |
| 14040.00 | V | 27.14 | 18.66 | 45.80 | 54.00 | -8.20 | AVG |
| 18000.00 | V | 37.19 | 25.57 | 62.76 | 74.00 | -11.24 | Peak |
| 18000.00 | V | 17.23 | 25.57 | 42.80 | 54.00 | -11.20 | AVG |
| 18743.75 | V | 37.78 | 23.13 | 60.91 | 74.00 | -13.09 | Peak |
| 18743.75 | V | 19.03 | 23.13 | 42.16 | 54.00 | -11.84 | AVG |
| 21527.50 | V | 38.40 | 21.35 | 59.75 | 74.00 | -14.25 | Peak |
| 21527.50 | V | 19.39 | 21.35 | 40.74 | 54.00 | -13.26 | AVG |
| 25416.25 | V | 40.25 | 19.03 | 59.28 | 74.00 | -14.72 | Peak |
| 25416.25 | V | 20.82 | 19.03 | 39.85 | 54.00 | -14.15 | AVG |
| | | | | | | | |
| 2496.00 | H | 53.93 | 0.25 | 54.18 | 74.00 | -19.82 | Peak |
| 2496.00 | H | 37.76 | 0.25 | 38.01 | 54.00 | -15.99 | AVG |
| 2700.00 | H | 40.82 | 22.58 | 63.40 | 74.00 | -10.60 | Peak |
| 2700.00 | H | 21.11 | 22.58 | 43.69 | 54.00 | -10.31 | AVG |
| 4824.00 | H | 39.17 | 7.48 | 46.65 | 74.00 | -27.35 | Peak |
| 9872.25 | H | 38.90 | 17.84 | 56.74 | 74.00 | -17.26 | Peak |
| 9872.25 | H | 27.79 | 17.84 | 45.63 | 54.00 | -8.37 | AVG |
| 14060.00 | H | 37.95 | 18.72 | 56.67 | 74.00 | -17.33 | Peak |
| 14060.00 | H | 27.45 | 18.72 | 46.17 | 54.00 | -7.83 | AVG |
| 18000.00 | H | 37.25 | 25.57 | 62.82 | 74.00 | -11.18 | Peak |
| 18000.00 | H | 17.12 | 25.57 | 42.69 | 54.00 | -11.31 | AVG |
| 18765.00 | H | 38.35 | 23.13 | 61.48 | 74.00 | -12.52 | Peak |
| 18765.00 | H | 19.19 | 23.13 | 42.32 | 54.00 | -11.68 | AVG |
| 21825.00 | H | 37.90 | 21.20 | 59.10 | 74.00 | -14.90 | Peak |
| 21825.00 | H | 19.19 | 21.20 | 40.39 | 54.00 | -13.61 | AVG |
| 25926.25 | H | 40.18 | 18.62 | 58.80 | 74.00 | -15.20 | Peak |
| 25926.25 | H | 21.18 | 18.62 | 39.80 | 54.00 | -14.20 | AVG |

| | |
|---|---|
| Test Mode: | IEEE 802.11b _ TX Mode _ CH2437 |
| Model No: | AR5B93 |
| Test Date: | 12/17/2009 |
| Tested by: | John Cheng |

| Freq | Polarization (V/H) | Rd_level (dBuV) | Factor | Level (dBuV/m) | Limit (dBuV/m) | Over | detector |
|---|---|---|---|---|---|---|---|
| 1198.90 | V | 58.86 | -4.91 | 53.95 | 74.00 | -20.05 | Peak |
| 1198.90 | V | 36.21 | -4.91 | 31.30 | 54.00 | -22.70 | AVG |
| 1996.20 | V | 55.30 | -1.66 | 53.64 | 74.00 | -20.36 | Peak |
| 1996.20 | V | 35.83 | -1.66 | 34.17 | 54.00 | -19.83 | AVG |
| 2496.00 | V | 55.06 | 0.25 | 55.31 | 74.00 | -18.69 | Peak |
| 2496.00 | V | 37.02 | 0.25 | 37.27 | 54.00 | -16.73 | AVG |
| 2700.00 | V | 41.12 | 22.58 | 63.70 | 74.00 | -10.30 | Peak |
| 2700.00 | V | 21.32 | 22.58 | 43.90 | 54.00 | -10.10 | AVG |
| 4871.75 | V | 44.49 | 7.72 | 52.21 | 74.00 | -21.79 | Peak |
| 4871.75 | V | 41.91 | 7.72 | 49.63 | 54.00 | -4.37 | AVG |
| 4981.25 | V | 42.88 | 7.89 | 50.77 | 74.00 | -23.23 | Peak |
| 4981.25 | V | 29.59 | 7.89 | 37.48 | 54.00 | -16.52 | AVG |
| 9343.00 | V | 39.79 | 16.93 | 56.72 | 74.00 | -17.28 | Peak |
| 9343.00 | V | 27.91 | 16.93 | 44.84 | 54.00 | -9.16 | AVG |
| 14060.00 | V | 38.10 | 18.72 | 56.82 | 74.00 | -17.18 | Peak |
| 14060.00 | V | 27.36 | 18.72 | 46.08 | 54.00 | -7.92 | AVG |
| 17980.00 | V | 38.24 | 25.21 | 63.45 | 74.00 | -10.55 | Peak |
| 17980.00 | V | 17.25 | 25.21 | 42.46 | 54.00 | -11.54 | AVG |
| 18148.75 | V | 38.10 | 23.22 | 61.32 | 74.00 | -12.68 | Peak |
| 18148.75 | V | 20.06 | 23.22 | 43.28 | 54.00 | -10.72 | AVG |
| 22526.25 | V | 38.27 | 20.89 | 59.16 | 74.00 | -14.84 | Peak |
| 22526.25 | V | 19.04 | 20.89 | 39.93 | 54.00 | -14.07 | AVG |
| 25968.75 | V | 40.77 | 18.58 | 59.35 | 74.00 | -14.65 | Peak |
| 25968.75 | V | 21.63 | 18.58 | 40.21 | 54.00 | -13.79 | AVG |
| | | | | | | | |
| 2521.50 | H | 52.18 | 0.41 | 52.59 | 74.00 | -21.41 | Peak |
| 2521.50 | H | 37.49 | 0.41 | 37.90 | 54.00 | -16.10 | AVG |
| 2700.00 | H | 41.67 | 22.58 | 64.25 | 74.00 | -9.75 | Peak |
| 2700.00 | H | 21.07 | 22.58 | 43.65 | 54.00 | -10.35 | AVG |
| 4874.00 | H | 38.64 | 7.72 | 46.36 | 74.00 | -27.64 | Peak |
| 9160.50 | H | 39.63 | 16.49 | 56.12 | 74.00 | -17.88 | Peak |
| 9160.50 | H | 27.94 | 16.49 | 44.43 | 54.00 | -9.57 | AVG |
| 14220.00 | H | 38.67 | 18.78 | 57.45 | 74.00 | -16.55 | Peak |
| 14220.00 | H | 27.16 | 18.78 | 45.94 | 54.00 | -8.06 | AVG |
| 18000.00 | H | 37.02 | 25.57 | 62.59 | 74.00 | -11.41 | Peak |
| 18000.00 | H | 17.54 | 25.57 | 43.11 | 54.00 | -10.89 | AVG |
| 18106.25 | H | 37.83 | 23.23 | 61.06 | 74.00 | -12.94 | Peak |
| 18106.25 | H | 19.91 | 23.23 | 43.14 | 54.00 | -10.86 | AVG |
| 21888.75 | H | 38.16 | 21.18 | 59.34 | 74.00 | -14.66 | Peak |
| 21888.75 | H | 19.73 | 21.18 | 40.91 | 54.00 | -13.09 | AVG |
| 25990.00 | H | 39.87 | 18.56 | 58.43 | 74.00 | -15.57 | Peak |
| 25990.00 | H | 21.87 | 18.56 | 40.43 | 54.00 | -13.57 | AVG |

| | |
|---|---|
| Test Mode: | IEEE 802.11b _ TX Mode _ CH2462 |
| Model No: | AR5B93 |
| Test Date: | 12/17/2009 |
| Tested by: | John Cheng |

| Freq | Polarization (V/H) | Rd_level (dBuV) | Factor | Level (dBuV/m) | Limit (dBuV/m) | Over | detector |
|---|---|---|---|---|---|---|---|
| 1197.20 | V | 57.35 | -4.95 | 52.40 | 74.00 | -21.60 | Peak |
| 1197.20 | V | 37.43 | -4.95 | 32.48 | 54.00 | -21.52 | AVG |
| 1996.20 | V | 55.93 | -1.66 | 54.27 | 74.00 | -19.73 | Peak |
| 1996.20 | V | 37.27 | -1.66 | 35.61 | 54.00 | -18.39 | AVG |
| 2700.00 | V | 41.42 | 22.58 | 64.00 | 74.00 | -10.00 | Peak |
| 2700.00 | V | 21.24 | 22.58 | 43.82 | 54.00 | -10.18 | AVG |
| 4871.75 | V | 43.53 | 7.72 | 51.25 | 74.00 | -22.75 | Peak |
| 4871.75 | V | 40.59 | 7.72 | 48.31 | 54.00 | -5.69 | AVG |
| 4999.50 | V | 43.25 | 8.04 | 51.29 | 74.00 | -22.71 | Peak |
| 4999.50 | V | 30.10 | 8.04 | 38.14 | 54.00 | -15.86 | AVG |
| 9927.00 | V | 38.36 | 17.78 | 56.14 | 74.00 | -17.86 | Peak |
| 9927.00 | V | 27.94 | 17.78 | 45.72 | 54.00 | -8.28 | AVG |
| 13980.00 | V | 38.47 | 18.62 | 57.09 | 74.00 | -16.91 | Peak |
| 13980.00 | V | 27.42 | 18.62 | 46.04 | 54.00 | -7.96 | AVG |
| 17980.00 | V | 38.79 | 25.21 | 64.00 | 74.00 | -10.00 | Peak |
| 17980.00 | V | 16.58 | 25.21 | 41.79 | 54.00 | -12.21 | AVG |
| 19360.00 | V | 38.47 | 22.84 | 61.31 | 74.00 | -12.69 | Peak |
| 19360.00 | V | 19.63 | 22.84 | 42.47 | 54.00 | -11.53 | AVG |
| 22696.25 | V | 37.85 | 20.88 | 58.73 | 74.00 | -15.27 | Peak |
| 22696.25 | V | 19.83 | 20.88 | 40.71 | 54.00 | -13.29 | AVG |
| 25968.75 | V | 40.45 | 18.58 | 59.03 | 74.00 | -14.97 | Peak |
| 25968.75 | V | 22.06 | 18.58 | 40.64 | 54.00 | -13.36 | AVG |
| 2370.20 | H | 54.97 | 0.18 | 55.15 | 74.00 | -18.85 | Peak |
| 2370.20 | H | 37.31 | 0.18 | 37.49 | 54.00 | -16.51 | AVG |
| 2700.00 | H | 41.16 | 22.58 | 63.74 | 74.00 | -10.26 | Peak |
| 2700.00 | H | 21.10 | 22.58 | 43.68 | 54.00 | -10.32 | AVG |
| 4871.75 | H | 39.89 | 7.72 | 47.61 | 74.00 | -26.39 | Peak |
| 9981.75 | H | 39.48 | 17.88 | 57.36 | 74.00 | -16.64 | Peak |
| 9981.75 | H | 27.96 | 17.88 | 45.84 | 54.00 | -8.16 | AVG |
| 14120.00 | H | 37.96 | 18.87 | 56.83 | 74.00 | -17.17 | Peak |
| 14120.00 | H | 27.41 | 18.87 | 46.28 | 54.00 | -7.72 | AVG |
| 18000.00 | H | 37.38 | 25.57 | 62.95 | 74.00 | -11.05 | Peak |
| 18000.00 | H | 17.21 | 25.57 | 42.78 | 54.00 | -11.22 | AVG |
| 18212.50 | H | 38.08 | 23.22 | 61.30 | 74.00 | -12.70 | Peak |
| 18212.50 | H | 20.47 | 23.22 | 43.69 | 54.00 | -10.31 | AVG |
| 21803.75 | H | 37.99 | 21.21 | 59.20 | 74.00 | -14.80 | Peak |
| 21803.75 | H | 19.58 | 21.21 | 40.79 | 54.00 | -13.21 | AVG |
| 25777.50 | H | 40.02 | 18.74 | 58.76 | 74.00 | -15.24 | Peak |
| 25777.50 | H | 21.19 | 18.74 | 39.93 | 54.00 | -14.07 | AVG |

| | |
|---|---|
| Test Mode: | IEEE 802.11g _ TX Mode _ CH2412 |
| Model No: | AR5B93 |
| Test Date: | 12/17/2009 |
| Tested by: | John Cheng |

| Freq | Polarization (V/H) | Rd_level (dBuV) | Factor | Level (dBuV/m) | Limit (dBuV/m) | Over | detector |
|---|---|---|---|---|---|---|---|
| 2499.40 | V | 53.78 | 0.25 | 54.03 | 74.00 | -19.97 | Peak |
| 2499.40 | V | 37.31 | 0.25 | 37.56 | 54.00 | -16.44 | AVG |
| 2700.00 | V | 42.90 | 22.58 | 65.48 | 74.00 | -8.52 | Peak |
| 2700.00 | V | 21.18 | 22.58 | 43.76 | 54.00 | -10.24 | AVG |
| 3211.00 | V | 53.53 | 2.85 | 56.38 | 74.00 | -17.62 | Peak |
| 3211.00 | V | 50.09 | 2.85 | 52.94 | 54.00 | -1.06 | AVG |
| 4835.25 | V | 47.20 | 7.61 | 54.81 | 74.00 | -19.19 | Peak |
| 4835.25 | V | 38.52 | 7.61 | 46.13 | 54.00 | -7.87 | AVG |
| 9178.75 | V | 40.17 | 16.39 | 56.56 | 74.00 | -17.44 | Peak |
| 9178.75 | V | 27.52 | 16.39 | 43.91 | 54.00 | -10.09 | AVG |
| 14100.00 | V | 38.22 | 18.90 | 57.12 | 74.00 | -16.88 | Peak |
| 14100.00 | V | 27.63 | 18.90 | 46.53 | 54.00 | -7.47 | AVG |
| 18000.00 | V | 37.74 | 25.57 | 63.31 | 74.00 | -10.69 | Peak |
| 18000.00 | V | 17.15 | 25.57 | 42.72 | 54.00 | -11.28 | AVG |
| 19317.50 | V | 38.29 | 22.89 | 61.18 | 74.00 | -12.82 | Peak |
| 19317.50 | V | 19.99 | 22.89 | 42.88 | 54.00 | -11.12 | AVG |
| 21527.50 | V | 37.99 | 21.35 | 59.34 | 74.00 | -14.66 | Peak |
| 21527.50 | V | 19.61 | 21.35 | 40.96 | 54.00 | -13.04 | AVG |
| 24417.50 | V | 39.71 | 19.71 | 59.42 | 74.00 | -14.58 | Peak |
| 24417.50 | V | 21.44 | 19.71 | 41.15 | 54.00 | -12.85 | AVG |
| 2490.90 | H | 51.45 | 0.26 | 51.71 | 74.00 | -22.29 | Peak |
| 2490.90 | H | 35.83 | 0.26 | 36.09 | 54.00 | -17.91 | AVG |
| 2700.00 | H | 41.38 | 22.58 | 63.96 | 74.00 | -10.04 | Peak |
| 2700.00 | H | 21.24 | 22.58 | 43.82 | 54.00 | -10.18 | AVG |
| 3211.00 | H | 51.35 | 2.85 | 54.20 | 74.00 | -19.80 | Peak |
| 3211.00 | H | 48.11 | 2.85 | 50.96 | 54.00 | -3.04 | AVG |
| 4824.00 | H | 39.41 | 7.48 | 46.89 | 74.00 | -27.11 | Peak |
| 9361.25 | H | 39.85 | 16.98 | 56.83 | 74.00 | -17.17 | Peak |
| 9361.25 | H | 27.93 | 16.98 | 44.91 | 54.00 | -9.09 | AVG |
| 14240.00 | H | 38.06 | 18.71 | 56.77 | 74.00 | -17.23 | Peak |
| 14240.00 | H | 27.54 | 18.71 | 46.25 | 54.00 | -7.75 | AVG |
| 17940.00 | H | 38.26 | 24.71 | 62.97 | 74.00 | -11.03 | Peak |
| 17940.00 | H | 17.42 | 24.71 | 42.13 | 54.00 | -11.87 | AVG |
| 18042.50 | H | 38.05 | 23.27 | 61.32 | 74.00 | -12.68 | Peak |
| 18042.50 | H | 20.27 | 23.27 | 43.54 | 54.00 | -10.46 | AVG |
| 21888.75 | H | 37.99 | 21.18 | 59.17 | 74.00 | -14.83 | Peak |
| 21888.75 | H | 19.74 | 21.18 | 40.92 | 54.00 | -13.08 | AVG |
| 25628.75 | H | 40.16 | 18.89 | 59.05 | 74.00 | -14.95 | Peak |
| 25628.75 | H | 20.98 | 18.89 | 39.87 | 54.00 | -14.13 | AVG |

| | |
|---|---|
| Test Mode: | IEEE 802.11g _ TX Mode _ CH2437 |
| Model No: | AR5B93 |
| Test Date: | 12/17/2009 |
| Tested by: | John Cheng |

| Freq | Polarization (V/H) | Rd_level (dBuV) | Factor | Level (dBuV/m) | Limit (dBuV/m) | Over | detector |
|---|---|---|---|---|---|---|---|
| 1991.10 | V | 55.99 | -1.84 | 54.15 | 74.00 | -19.85 | Peak |
| 1991.10 | V | 35.93 | -1.84 | 34.09 | 54.00 | -19.91 | AVG |
| 2700.00 | V | 42.28 | 22.58 | 64.86 | 74.00 | -9.14 | Peak |
| 2700.00 | V | 21.53 | 22.58 | 44.11 | 54.00 | -9.89 | AVG |
| 3247.50 | V | 52.53 | 2.41 | 54.94 | 74.00 | -19.06 | Peak |
| 3247.50 | V | 50.58 | 2.41 | 52.99 | 54.00 | -1.01 | AVG |
| 4871.75 | V | 48.62 | 7.72 | 56.34 | 74.00 | -17.66 | Peak |
| 4871.75 | V | 38.23 | 7.72 | 45.95 | 54.00 | -8.05 | AVG |
| 9343.00 | V | 39.66 | 16.93 | 56.59 | 74.00 | -17.41 | Peak |
| 9343.00 | V | 27.96 | 16.93 | 44.89 | 54.00 | -9.11 | AVG |
| 14280.00 | V | 38.39 | 18.63 | 57.02 | 74.00 | -16.98 | Peak |
| 14280.00 | V | 27.32 | 18.63 | 45.95 | 54.00 | -8.05 | AVG |
| 17980.00 | V | 38.12 | 25.21 | 63.33 | 74.00 | -10.67 | Peak |
| 17980.00 | V | 17.24 | 25.21 | 42.45 | 54.00 | -11.55 | AVG |
| 18255.00 | V | 38.43 | 23.20 | 61.63 | 74.00 | -12.37 | Peak |
| 18255.00 | V | 20.31 | 23.20 | 43.51 | 54.00 | -10.49 | AVG |
| 21803.75 | V | 37.84 | 21.21 | 59.05 | 74.00 | -14.95 | Peak |
| 21803.75 | V | 19.59 | 21.21 | 40.80 | 54.00 | -13.20 | AVG |
| 26032.50 | V | 40.26 | 18.54 | 58.80 | 74.00 | -15.20 | Peak |
| 26032.50 | V | 21.49 | 18.54 | 40.03 | 54.00 | -13.97 | AVG |
| | | | | | | | |
| 2666.00 | H | 50.77 | 0.98 | 51.75 | 74.00 | -22.25 | Peak |
| 2666.00 | H | 35.21 | 0.98 | 36.19 | 54.00 | -17.81 | AVG |
| 2700.00 | H | 41.18 | 22.58 | 63.76 | 74.00 | -10.24 | Peak |
| 2700.00 | H | 21.18 | 22.58 | 43.76 | 54.00 | -10.24 | AVG |
| 3247.50 | H | 51.49 | 2.41 | 53.90 | 74.00 | -20.10 | Peak |
| 3247.50 | H | 49.25 | 2.41 | 51.66 | 54.00 | -2.34 | AVG |
| 4871.75 | H | 42.47 | 7.72 | 50.19 | 74.00 | -23.81 | Peak |
| 4871.75 | H | 35.43 | 7.72 | 43.15 | 54.00 | -10.85 | AVG |
| 10000.00 | H | 38.44 | 17.94 | 56.38 | 74.00 | -17.62 | Peak |
| 10000.00 | H | 27.82 | 17.94 | 45.76 | 54.00 | -8.24 | AVG |
| 14180.00 | H | 38.51 | 18.85 | 57.36 | 74.00 | -16.64 | Peak |
| 14180.00 | H | 27.59 | 18.85 | 46.44 | 54.00 | -7.56 | AVG |
| 18000.00 | H | 37.97 | 25.57 | 63.54 | 74.00 | -10.46 | Peak |
| 18000.00 | H | 17.34 | 25.57 | 42.91 | 54.00 | -11.09 | AVG |
| 18510.00 | H | 38.36 | 23.10 | 61.46 | 74.00 | -12.54 | Peak |
| 18510.00 | H | 19.10 | 23.10 | 42.20 | 54.00 | -11.80 | AVG |
| 21888.75 | H | 37.64 | 21.18 | 58.82 | 74.00 | -15.18 | Peak |
| 21888.75 | H | 19.90 | 21.18 | 41.08 | 54.00 | -12.92 | AVG |
| 26053.75 | H | 40.07 | 18.52 | 58.59 | 74.00 | -15.41 | Peak |
| 26053.75 | H | 21.39 | 18.52 | 39.91 | 54.00 | -14.09 | AVG |

| | |
|---|---|
| Test Mode: | IEEE 802.11g _ TX Mode _ CH2462 |
| Model No: | AR5B93 |
| Test Date: | 12/17/2009 |
| Tested by: | John Cheng |

| Freq | Polarization (V/H) | Rd_level (dBuV) | Factor | Level (dBuV/m) | Limit (dBuV/m) | Over | detector |
|---|---|---|---|---|---|---|---|
| 1992.80 | V | 55.24 | -1.77 | 53.47 | 74.00 | -20.53 | Peak |
| 1992.80 | V | 35.83 | -1.77 | 34.06 | 54.00 | -19.94 | AVG |
| 2700.00 | V | 40.85 | 22.58 | 63.43 | 74.00 | -10.57 | Peak |
| 2700.00 | V | 21.38 | 22.58 | 43.96 | 54.00 | -10.04 | AVG |
| 3284.00 | V | 52.75 | 2.37 | 55.12 | 74.00 | -18.88 | Peak |
| 3284.00 | V | 50.15 | 2.37 | 52.52 | 54.00 | -1.48 | AVG |
| 4926.50 | V | 43.14 | 7.66 | 50.80 | 74.00 | -23.20 | Peak |
| 9361.25 | V | 39.34 | 16.98 | 56.32 | 74.00 | -17.68 | Peak |
| 9361.25 | V | 27.52 | 16.98 | 44.50 | 54.00 | -9.50 | AVG |
| 14200.00 | V | 38.58 | 18.86 | 57.44 | 74.00 | -16.56 | Peak |
| 14200.00 | V | 27.01 | 18.86 | 45.87 | 54.00 | -8.13 | AVG |
| 17980.00 | V | 38.30 | 25.21 | 63.51 | 74.00 | -10.49 | Peak |
| 17980.00 | V | 16.99 | 25.21 | 42.20 | 54.00 | -11.80 | AVG |
| 18042.50 | V | 38.09 | 23.27 | 61.36 | 74.00 | -12.64 | Peak |
| 18042.50 | V | 19.59 | 23.27 | 42.86 | 54.00 | -11.14 | AVG |
| 21952.50 | V | 38.35 | 21.15 | 59.50 | 74.00 | -14.50 | Peak |
| 21952.50 | V | 19.53 | 21.15 | 40.68 | 54.00 | -13.32 | AVG |
| 25968.75 | V | 39.84 | 18.58 | 58.42 | 74.00 | -15.58 | Peak |
| 25968.75 | V | 21.77 | 18.58 | 40.35 | 54.00 | -13.65 | AVG |
| | | | | | | | |
| 2686.40 | H | 51.18 | 1.02 | 52.20 | 74.00 | -21.80 | Peak |
| 2686.40 | H | 35.87 | 1.02 | 36.89 | 54.00 | -17.11 | AVG |
| 2700.00 | H | 41.28 | 22.58 | 63.86 | 74.00 | -10.14 | Peak |
| 2700.00 | H | 21.39 | 22.58 | 43.97 | 54.00 | -10.03 | AVG |
| 3284.00 | H | 52.81 | 2.37 | 55.18 | 74.00 | -18.82 | Peak |
| 3284.00 | H | 50.21 | 2.37 | 52.58 | 54.00 | -1.42 | AVG |
| 4924.00 | H | 39.22 | 7.65 | 46.87 | 74.00 | -27.13 | Peak |
| 9397.75 | H | 39.27 | 17.07 | 56.34 | 74.00 | -17.66 | Peak |
| 9397.75 | H | 28.03 | 17.07 | 45.10 | 54.00 | -8.90 | AVG |
| 13980.00 | H | 38.30 | 18.62 | 56.92 | 74.00 | -17.08 | Peak |
| 13980.00 | H | 27.22 | 18.62 | 45.84 | 54.00 | -8.16 | AVG |
| 18000.00 | H | 37.51 | 25.57 | 63.08 | 74.00 | -10.92 | Peak |
| 18000.00 | H | 17.24 | 25.57 | 42.81 | 54.00 | -11.19 | AVG |
| 18701.25 | H | 38.05 | 23.11 | 61.16 | 74.00 | -12.84 | Peak |
| 18701.25 | H | 18.97 | 23.11 | 42.08 | 54.00 | -11.92 | AVG |
| 21633.75 | H | 37.66 | 21.28 | 58.94 | 74.00 | -15.06 | Peak |
| 21633.75 | H | 19.34 | 21.28 | 40.62 | 54.00 | -13.38 | AVG |
| 24438.75 | H | 39.69 | 19.69 | 59.38 | 74.00 | -14.62 | Peak |
| 24438.75 | H | 20.57 | 19.69 | 40.26 | 54.00 | -13.74 | AVG |

| Test Mode: | draft 802.11n Standard-20MHz _ TX Mode _ CH2412 |
|---|---|
| Model No: | AR5B93 |
| Test Date: | 12/17/2009 |
| Tested by: | John Cheng |

| Freq | Polarization (V/H) | Rd_level (dBuV) | Factor | Level (dBuV/m) | Limit (dBuV/m) | Over | detector |
|---|---|---|---|---|---|---|---|
| 2492.60 | V | 52.66 | 0.25 | 52.91 | 74.00 | -21.09 | Peak |
| 2492.60 | V | 35.42 | 0.25 | 35.67 | 54.00 | -18.33 | AVG |
| 2700.00 | V | 41.22 | 22.58 | 63.80 | 74.00 | -10.20 | Peak |
| 2700.00 | V | 21.35 | 22.58 | 43.93 | 54.00 | -10.07 | AVG |
| 3211.00 | V | 51.03 | 2.85 | 53.88 | 74.00 | -20.12 | Peak |
| 3211.00 | V | 48.99 | 2.85 | 51.84 | 54.00 | -2.16 | AVG |
| 4817.00 | V | 45.82 | 7.42 | 53.24 | 74.00 | -20.76 | Peak |
| 4817.00 | V | 34.47 | 7.42 | 41.89 | 54.00 | -12.11 | AVG |
| 9416.00 | V | 39.61 | 17.07 | 56.68 | 74.00 | -17.32 | Peak |
| 9416.00 | V | 27.92 | 17.07 | 44.99 | 54.00 | -9.01 | AVG |
| 14200.00 | V | 38.68 | 18.86 | 57.54 | 74.00 | -16.46 | Peak |
| 14200.00 | V | 27.15 | 18.86 | 46.01 | 54.00 | -7.99 | AVG |
| 17980.00 | V | 37.74 | 25.21 | 62.95 | 74.00 | -11.05 | Peak |
| 17980.00 | V | 17.01 | 25.21 | 42.22 | 54.00 | -11.78 | AVG |
| 18743.75 | V | 38.14 | 23.13 | 61.27 | 74.00 | -12.73 | Peak |
| 18743.75 | V | 19.36 | 23.13 | 42.49 | 54.00 | -11.51 | AVG |
| 21782.50 | V | 38.14 | 21.22 | 59.36 | 74.00 | -14.64 | Peak |
| 21782.50 | V | 19.46 | 21.22 | 40.68 | 54.00 | -13.32 | AVG |
| 25480.00 | V | 40.64 | 18.99 | 59.63 | 74.00 | -14.37 | Peak |
| 25480.00 | V | 21.29 | 18.99 | 40.28 | 54.00 | -13.72 | AVG |
| | | | | | | | |
| 2465.40 | H | 51.84 | 0.18 | 52.02 | 74.00 | -21.98 | Peak |
| 2465.40 | H | 35.80 | 0.18 | 35.98 | 54.00 | -18.02 | AVG |
| 2700.00 | H | 41.29 | 22.58 | 63.87 | 74.00 | -10.13 | Peak |
| 2700.00 | H | 21.18 | 22.58 | 43.76 | 54.00 | -10.24 | AVG |
| 3211.00 | H | 48.46 | 2.85 | 51.31 | 74.00 | -22.69 | Peak |
| 3211.00 | H | 44.39 | 2.85 | 47.24 | 54.00 | -6.76 | AVG |
| 4817.00 | H | 40.56 | 7.42 | 47.98 | 74.00 | -26.02 | Peak |
| 9963.50 | H | 38.54 | 17.82 | 56.36 | 74.00 | -17.64 | Peak |
| 9963.50 | H | 27.52 | 17.82 | 45.34 | 54.00 | -8.66 | AVG |
| 14160.00 | H | 38.28 | 18.83 | 57.11 | 74.00 | -16.89 | Peak |
| 14160.00 | H | 27.46 | 18.83 | 46.29 | 54.00 | -7.71 | AVG |
| 17920.00 | H | 37.83 | 24.84 | 62.67 | 74.00 | -11.33 | Peak |
| 17920.00 | H | 17.36 | 24.84 | 42.20 | 54.00 | -11.80 | AVG |
| 18701.25 | H | 37.68 | 23.11 | 60.79 | 74.00 | -13.21 | Peak |
| 18701.25 | H | 19.16 | 23.11 | 42.27 | 54.00 | -11.73 | AVG |
| 21910.00 | H | 38.13 | 21.16 | 59.29 | 74.00 | -14.71 | Peak |
| 21910.00 | H | 19.61 | 21.16 | 40.77 | 54.00 | -13.23 | AVG |
| 25522.50 | H | 40.95 | 18.97 | 59.92 | 74.00 | -14.08 | Peak |
| 25522.50 | H | 21.26 | 18.97 | 40.23 | 54.00 | -13.77 | AVG |

| Test Mode: | draft 802.11n Standard-20MHz _ TX Mode _ CH2437 |
|---|---|
| Model No: | AR5B93 |
| Test Date: | 12/17/2009 |
| Tested by: | John Cheng |

| Freq | Polarization (V/H) | Rd_level (dBuV) | Factor | Level (dBuV/m) | Limit (dBuV/m) | Over | detector |
|---|---|---|---|---|---|---|---|
| 2496.00 | V | 52.58 | 0.25 | 52.83 | 74.00 | -21.17 | Peak |
| 2496.00 | V | 36.02 | 0.25 | 36.27 | 54.00 | -17.73 | AVG |
| 2700.00 | V | 41.31 | 22.58 | 63.89 | 74.00 | -10.11 | Peak |
| 2700.00 | V | 21.28 | 22.58 | 43.86 | 54.00 | -10.14 | AVG |
| 3247.50 | V | 52.20 | 2.41 | 54.61 | 74.00 | -19.39 | Peak |
| 3247.50 | V | 49.50 | 2.41 | 51.91 | 54.00 | -2.09 | AVG |
| 4871.75 | V | 49.38 | 7.72 | 57.10 | 74.00 | -16.90 | Peak |
| 4871.75 | V | 35.93 | 7.72 | 43.65 | 54.00 | -10.35 | AVG |
| 9689.75 | V | 38.95 | 17.35 | 56.30 | 74.00 | -17.70 | Peak |
| 9689.75 | V | 27.83 | 17.35 | 45.18 | 54.00 | -8.82 | AVG |
| 14200.00 | V | 38.14 | 18.86 | 57.00 | 74.00 | -17.00 | Peak |
| 14200.00 | V | 27.06 | 18.86 | 45.92 | 54.00 | -8.08 | AVG |
| 18000.00 | V | 37.96 | 25.57 | 63.53 | 74.00 | -10.47 | Peak |
| 18000.00 | V | 17.32 | 25.57 | 42.89 | 54.00 | -11.11 | AVG |
| 18807.50 | V | 37.95 | 23.16 | 61.11 | 74.00 | -12.89 | Peak |
| 18807.50 | V | 18.90 | 23.16 | 42.06 | 54.00 | -11.94 | AVG |
| 21867.50 | V | 38.03 | 21.19 | 59.22 | 74.00 | -14.78 | Peak |
| 21867.50 | V | 20.14 | 21.19 | 41.33 | 54.00 | -12.67 | AVG |
| 25395.00 | V | 40.45 | 19.04 | 59.49 | 74.00 | -14.51 | Peak |
| 25395.00 | V | 21.30 | 19.04 | 40.34 | 54.00 | -13.66 | AVG |
| | | | | | | | |
| 2494.30 | H | 51.97 | 0.26 | 52.23 | 74.00 | -21.77 | Peak |
| 2494.30 | H | 35.72 | 0.26 | 35.98 | 54.00 | -18.02 | AVG |
| 2700.00 | H | 41.09 | 22.58 | 63.67 | 74.00 | -10.33 | Peak |
| 2700.00 | H | 21.52 | 22.58 | 44.10 | 54.00 | -9.90 | AVG |
| 3247.50 | H | 52.06 | 2.41 | 54.47 | 74.00 | -19.53 | Peak |
| 3247.50 | H | 48.52 | 2.41 | 50.93 | 54.00 | -3.07 | AVG |
| 4871.75 | H | 42.94 | 7.72 | 50.66 | 74.00 | -23.34 | Peak |
| 4871.75 | H | 34.22 | 7.72 | 41.94 | 54.00 | -12.06 | AVG |
| 9343.00 | H | 40.17 | 16.93 | 57.10 | 74.00 | -16.90 | Peak |
| 9343.00 | H | 27.62 | 16.93 | 44.55 | 54.00 | -9.45 | AVG |
| 14200.00 | H | 38.27 | 18.86 | 57.13 | 74.00 | -16.87 | Peak |
| 14200.00 | H | 27.08 | 18.86 | 45.94 | 54.00 | -8.06 | AVG |
| 17900.00 | H | 38.35 | 24.96 | 63.31 | 74.00 | -10.69 | Peak |
| 17900.00 | H | 17.39 | 24.96 | 42.35 | 54.00 | -11.65 | AVG |
| 18106.25 | H | 37.86 | 23.23 | 61.09 | 74.00 | -12.91 | Peak |
| 18106.25 | H | 20.21 | 23.23 | 43.44 | 54.00 | -10.56 | AVG |
| 21506.25 | H | 37.51 | 21.35 | 58.86 | 74.00 | -15.14 | Peak |
| 21506.25 | H | 19.73 | 21.35 | 41.08 | 54.00 | -12.92 | AVG |
| 25990.00 | H | 40.42 | 18.56 | 58.98 | 74.00 | -15.02 | Peak |
| 25990.00 | H | 22.17 | 18.56 | 40.73 | 54.00 | -13.27 | AVG |

| | |
|---|---|
| Test Mode: | draft 802.11n Standard-20MHz _ TX Mode _ CH2462 |
| Model No: | AR5B93 |
| Test Date: | 12/17/2009 |
| Tested by: | John Cheng |

| Freq | Polarization (V/H) | Rd_level (dBuV) | Factor | Level (dBuV/m) | Limit (dBuV/m) | Over | detector |
|---|---|---|---|---|---|---|---|
| 2659.20 | V | 51.28 | 0.92 | 52.20 | 74.00 | -21.80 | Peak |
| 2659.20 | V | 35.27 | 0.92 | 36.19 | 54.00 | -17.81 | AVG |
| 2700.00 | V | 41.65 | 22.58 | 64.23 | 74.00 | -9.77 | Peak |
| 2700.00 | V | 21.18 | 22.58 | 43.76 | 54.00 | -10.24 | AVG |
| 3284.00 | V | 52.57 | 2.37 | 54.94 | 74.00 | -19.06 | Peak |
| 3284.00 | V | 48.53 | 2.37 | 50.90 | 54.00 | -3.10 | AVG |
| 4926.50 | V | 41.18 | 7.66 | 48.84 | 74.00 | -25.16 | Peak |
| 9142.25 | V | 40.01 | 16.45 | 56.46 | 74.00 | -17.54 | Peak |
| 9142.25 | V | 27.52 | 16.45 | 43.97 | 54.00 | -10.03 | AVG |
| 14220.00 | V | 38.78 | 18.78 | 57.56 | 74.00 | -16.44 | Peak |
| 14220.00 | V | 27.24 | 18.78 | 46.02 | 54.00 | -7.98 | AVG |
| 18000.00 | V | 37.78 | 25.57 | 63.35 | 74.00 | -10.65 | Peak |
| 18000.00 | V | 17.69 | 25.57 | 43.26 | 54.00 | -10.74 | AVG |
| 18680.00 | V | 38.33 | 23.09 | 61.42 | 74.00 | -12.58 | Peak |
| 18680.00 | V | 19.77 | 23.09 | 42.86 | 54.00 | -11.14 | AVG |
| 21527.50 | V | 38.36 | 21.35 | 59.71 | 74.00 | -14.29 | Peak |
| 21527.50 | V | 19.69 | 21.35 | 41.04 | 54.00 | -12.96 | AVG |
| 26160.00 | V | 40.69 | 18.45 | 59.14 | 74.00 | -14.86 | Peak |
| 26160.00 | V | 20.95 | 18.45 | 39.40 | 54.00 | -14.60 | AVG |
| | | | | | | | |
| 2655.80 | H | 51.68 | 0.94 | 52.62 | 74.00 | -21.38 | Peak |
| 2655.80 | H | 35.28 | 0.94 | 36.22 | 54.00 | -17.78 | AVG |
| 2700.00 | H | 41.33 | 22.58 | 63.91 | 74.00 | -10.09 | Peak |
| 2700.00 | H | 21.42 | 22.58 | 44.00 | 54.00 | -10.00 | AVG |
| 3284.00 | H | 52.99 | 2.37 | 55.36 | 74.00 | -18.64 | Peak |
| 3284.00 | H | 50.15 | 2.37 | 52.52 | 54.00 | -1.48 | AVG |
| 4924.00 | H | 38.58 | 7.65 | 46.23 | 74.00 | -27.77 | Peak |
| 9981.75 | H | 38.45 | 17.88 | 56.33 | 74.00 | -17.67 | Peak |
| 9981.75 | H | 27.93 | 17.88 | 45.81 | 54.00 | -8.19 | AVG |
| 14000.00 | H | 38.39 | 18.67 | 57.06 | 74.00 | -16.94 | Peak |
| 14000.00 | H | 27.55 | 18.67 | 46.22 | 54.00 | -7.78 | AVG |
| 18000.00 | H | 37.51 | 25.57 | 63.08 | 74.00 | -10.92 | Peak |
| 18000.00 | H | 17.31 | 25.57 | 42.88 | 54.00 | -11.12 | AVG |
| 18042.50 | H | 37.74 | 23.27 | 61.01 | 74.00 | -12.99 | Peak |
| 18042.50 | H | 20.33 | 23.27 | 43.60 | 54.00 | -10.40 | AVG |
| 21803.75 | H | 37.92 | 21.21 | 59.13 | 74.00 | -14.87 | Peak |
| 21803.75 | H | 19.52 | 21.21 | 40.73 | 54.00 | -13.27 | AVG |
| 26117.50 | H | 39.84 | 18.47 | 58.31 | 74.00 | -15.69 | Peak |
| 26117.50 | H | 21.00 | 18.47 | 39.47 | 54.00 | -14.53 | AVG |

| | |
|---|---|
| Test Mode: | draft 802.11n Wide-40MHz _ TX Mode _ CH2422 |
| Model No: | AR5B93 |
| Test Date: | 12/17/2009 |
| Tested by: | John Cheng |

| Freq | Polarization (V/H) | Rd_level (dBuV) | Factor | Level (dBuV/m) | Limit (dBuV/m) | Over | detector |
|---|---|---|---|---|---|---|---|
| 2497.70 | V | 52.60 | 0.25 | 52.85 | 74.00 | -21.15 | Peak |
| 2497.70 | V | 35.93 | 0.25 | 36.18 | 54.00 | -17.82 | AVG |
| 2700.00 | V | 42.27 | 22.58 | 64.85 | 74.00 | -9.15 | Peak |
| 2700.00 | V | 21.37 | 22.58 | 43.95 | 54.00 | -10.05 | AVG |
| 3229.25 | V | 53.44 | 2.72 | 56.16 | 74.00 | -17.84 | Peak |
| 3229.25 | V | 50.12 | 2.72 | 52.84 | 54.00 | -1.16 | AVG |
| 4853.50 | V | 41.19 | 7.69 | 48.88 | 74.00 | -25.12 | Peak |
| 9324.75 | V | 39.45 | 16.91 | 56.36 | 74.00 | -17.64 | Peak |
| 9324.75 | V | 27.92 | 16.91 | 44.83 | 54.00 | -9.17 | AVG |
| 14160.00 | V | 38.00 | 18.83 | 56.83 | 74.00 | -17.17 | Peak |
| 14160.00 | V | 27.41 | 18.83 | 46.24 | 54.00 | -7.76 | AVG |
| 18000.00 | V | 36.94 | 25.57 | 62.51 | 74.00 | -11.49 | Peak |
| 18000.00 | V | 17.59 | 25.57 | 43.16 | 54.00 | -10.84 | AVG |
| 18595.00 | V | 38.20 | 23.07 | 61.27 | 74.00 | -12.73 | Peak |
| 18595.00 | V | 19.15 | 23.07 | 42.22 | 54.00 | -11.78 | AVG |
| 21973.75 | V | 37.89 | 21.13 | 59.02 | 74.00 | -14.98 | Peak |
| 21973.75 | V | 19.94 | 21.13 | 41.07 | 54.00 | -12.93 | AVG |
| 25480.00 | V | 40.32 | 18.99 | 59.31 | 74.00 | -14.69 | Peak |
| 25480.00 | V | 21.18 | 18.99 | 40.17 | 54.00 | -13.83 | AVG |
| | | | | | | | |
| 2497.70 | H | 51.79 | 0.25 | 52.04 | 74.00 | -21.96 | Peak |
| 2497.70 | H | 35.21 | 0.25 | 35.46 | 54.00 | -18.54 | AVG |
| 2700.00 | H | 40.79 | 22.58 | 63.37 | 74.00 | -10.63 | Peak |
| 2700.00 | H | 21.42 | 22.58 | 44.00 | 54.00 | -10.00 | AVG |
| 3229.25 | H | 49.68 | 2.72 | 52.40 | 74.00 | -21.60 | Peak |
| 3229.25 | H | 47.62 | 2.72 | 50.34 | 54.00 | -3.66 | AVG |
| 4844.00 | H | 38.41 | 7.67 | 46.08 | 74.00 | -27.92 | Peak |
| 9817.50 | H | 38.17 | 17.75 | 55.92 | 74.00 | -18.08 | Peak |
| 9817.50 | H | 27.89 | 17.75 | 45.64 | 54.00 | -8.36 | AVG |
| 14080.00 | H | 38.39 | 18.81 | 57.20 | 74.00 | -16.80 | Peak |
| 14080.00 | H | 27.24 | 18.81 | 46.05 | 54.00 | -7.95 | AVG |
| 18000.00 | H | 36.83 | 25.57 | 62.40 | 74.00 | -11.60 | Peak |
| 18000.00 | H | 17.68 | 25.57 | 43.25 | 54.00 | -10.75 | AVG |
| 18488.75 | H | 37.98 | 23.12 | 61.10 | 74.00 | -12.90 | Peak |
| 18488.75 | H | 19.02 | 23.12 | 42.14 | 54.00 | -11.86 | AVG |
| 21846.25 | H | 38.02 | 21.20 | 59.22 | 74.00 | -14.78 | Peak |
| 21846.25 | H | 19.99 | 21.20 | 41.19 | 54.00 | -12.81 | AVG |
| 25968.75 | H | 40.68 | 18.58 | 59.26 | 74.00 | -14.74 | Peak |
| 25968.75 | H | 21.85 | 18.58 | 40.43 | 54.00 | -13.57 | AVG |

| | |
|---|---|
| Test Mode: | draft 802.11n Wide-40MHz _ TX Mode _ CH2437 |
| Model No: | AR5B93 |
| Test Date: | 12/17/2009 |
| Tested by: | John Cheng |

| Freq | Polarization (V/H) | Rd_level (dBuV) | Factor | Level (dBuV/m) | Limit (dBuV/m) | Over | detector |
|---|---|---|---|---|---|---|---|
| 2630.30 | V | 50.63 | 0.91 | 51.54 | 74.00 | -22.46 | Peak |
| 2630.30 | V | 35.66 | 0.91 | 36.57 | 54.00 | -17.43 | AVG |
| 2700.00 | V | 41.38 | 22.58 | 63.96 | 74.00 | -10.04 | Peak |
| 2700.00 | V | 21.37 | 22.58 | 43.95 | 54.00 | -10.05 | AVG |
| 3265.75 | V | 52.62 | 2.29 | 54.91 | 74.00 | -19.09 | Peak |
| 3265.75 | V | 45.96 | 2.29 | 48.25 | 54.00 | -5.75 | AVG |
| 4871.75 | V | 40.98 | 7.72 | 48.70 | 74.00 | -25.30 | Peak |
| 9762.75 | V | 38.43 | 17.70 | 56.13 | 74.00 | -17.87 | Peak |
| 9762.75 | V | 27.85 | 17.70 | 45.55 | 54.00 | -8.45 | AVG |
| 14100.00 | V | 37.96 | 18.90 | 56.86 | 74.00 | -17.14 | Peak |
| 14100.00 | V | 27.15 | 18.90 | 46.05 | 54.00 | -7.95 | AVG |
| 17980.00 | V | 37.12 | 25.21 | 62.33 | 74.00 | -11.67 | Peak |
| 17980.00 | V | 17.44 | 25.21 | 42.65 | 54.00 | -11.35 | AVG |
| 18467.50 | V | 37.49 | 23.12 | 60.61 | 74.00 | -13.39 | Peak |
| 18467.50 | V | 19.24 | 23.12 | 42.36 | 54.00 | -11.64 | AVG |
| 21888.75 | V | 38.42 | 21.18 | 59.60 | 74.00 | -14.40 | Peak |
| 21888.75 | V | 19.67 | 21.18 | 40.85 | 54.00 | -13.15 | AVG |
| 25586.25 | V | 40.60 | 18.92 | 59.52 | 74.00 | -14.48 | Peak |
| 25586.25 | V | 21.04 | 18.92 | 39.96 | 54.00 | -14.04 | AVG |
| | | | | | | | |
| 2635.40 | H | 50.60 | 0.95 | 51.55 | 74.00 | -22.45 | Peak |
| 2635.40 | H | 35.54 | 0.95 | 36.49 | 54.00 | -17.51 | AVG |
| 2700.00 | H | 40.95 | 22.58 | 63.53 | 74.00 | -10.47 | Peak |
| 2700.00 | H | 21.25 | 22.58 | 43.83 | 54.00 | -10.17 | AVG |
| 3265.75 | H | 46.56 | 2.29 | 48.85 | 74.00 | -25.15 | Peak |
| 3265.75 | H | 40.65 | 2.29 | 42.94 | 54.00 | -11.06 | AVG |
| 4874.00 | H | 38.42 | 7.72 | 46.14 | 74.00 | -27.86 | Peak |
| 9616.75 | H | 39.50 | 17.25 | 56.75 | 74.00 | -17.25 | Peak |
| 9616.75 | H | 27.42 | 17.25 | 44.67 | 54.00 | -9.33 | AVG |
| 14240.00 | H | 38.04 | 18.71 | 56.75 | 74.00 | -17.25 | Peak |
| 14240.00 | H | 27.64 | 18.71 | 46.35 | 54.00 | -7.65 | AVG |
| 17980.00 | H | 38.24 | 25.21 | 63.45 | 74.00 | -10.55 | Peak |
| 17980.00 | H | 17.62 | 25.21 | 42.83 | 54.00 | -11.17 | AVG |
| 18106.25 | H | 37.97 | 23.23 | 61.20 | 74.00 | -12.80 | Peak |
| 18106.25 | H | 20.38 | 23.23 | 43.61 | 54.00 | -10.39 | AVG |
| 21527.50 | H | 38.06 | 21.35 | 59.41 | 74.00 | -14.59 | Peak |
| 21527.50 | H | 19.48 | 21.35 | 40.83 | 54.00 | -13.17 | AVG |
| 25543.75 | H | 40.95 | 18.95 | 59.90 | 74.00 | -14.10 | Peak |
| 25543.75 | H | 21.41 | 18.95 | 40.36 | 54.00 | -13.64 | AVG |

| | |
|---|---|
| Test Mode: | draft 802.11n Wide-40MHz _ TX Mode _ CH2452 |
| Model No: | AR5B93 |
| Test Date: | 12/17/2009 |
| Tested by: | John Cheng |

| Freq | Polarization (V/H) | Rd_level (dBuV) | Factor | Level (dBuV/m) | Limit (dBuV/m) | Over | detector |
|---|---|---|---|---|---|---|---|
| 2667.70 | V | 50.52 | 1.00 | 51.52 | 74.00 | -22.48 | Peak |
| 2667.70 | V | 35.42 | 1.00 | 36.42 | 54.00 | -17.58 | AVG |
| 2700.00 | V | 41.17 | 22.58 | 63.75 | 74.00 | -10.25 | Peak |
| 2700.00 | V | 21.28 | 22.58 | 43.86 | 54.00 | -10.14 | AVG |
| 3284.00 | V | 52.10 | 2.37 | 54.47 | 74.00 | -19.53 | Peak |
| 3284.00 | V | 50.15 | 2.37 | 52.52 | 54.00 | -1.48 | AVG |
| 4908.25 | V | 43.62 | 7.69 | 51.31 | 74.00 | -22.69 | Peak |
| 4908.25 | V | 33.09 | 7.69 | 40.78 | 54.00 | -13.22 | AVG |
| 9671.50 | V | 39.02 | 17.15 | 56.17 | 74.00 | -17.83 | Peak |
| 9671.50 | V | 27.85 | 17.15 | 45.00 | 54.00 | -9.00 | AVG |
| 14160.00 | V | 37.74 | 18.83 | 56.57 | 74.00 | -17.43 | Peak |
| 14160.00 | V | 27.06 | 18.83 | 45.89 | 54.00 | -8.11 | AVG |
| 18000.00 | V | 37.39 | 25.57 | 62.96 | 74.00 | -11.04 | Peak |
| 18000.00 | V | 17.03 | 25.57 | 42.60 | 54.00 | -11.40 | AVG |
| 18063.75 | V | 38.03 | 23.26 | 61.29 | 74.00 | -12.71 | Peak |
| 18063.75 | V | 19.96 | 23.26 | 43.22 | 54.00 | -10.78 | AVG |
| 22165.00 | V | 38.27 | 21.04 | 59.31 | 74.00 | -14.69 | Peak |
| 22165.00 | V | 19.34 | 21.04 | 40.38 | 54.00 | -13.62 | AVG |
| 26096.25 | V | 39.91 | 18.49 | 58.40 | 74.00 | -15.60 | Peak |
| 26096.25 | V | 21.11 | 18.49 | 39.60 | 54.00 | -14.40 | AVG |
| | | | | | | | |
| 2608.20 | H | 50.67 | 0.67 | 51.34 | 74.00 | -22.66 | Peak |
| 2608.20 | H | 35.18 | 0.67 | 35.85 | 54.00 | -18.15 | AVG |
| 2700.00 | H | 40.98 | 22.58 | 63.56 | 74.00 | -10.44 | Peak |
| 2700.00 | H | 21.24 | 22.58 | 43.82 | 54.00 | -10.18 | AVG |
| 3284.00 | H | 49.32 | 2.37 | 51.69 | 74.00 | -22.31 | Peak |
| 3284.00 | H | 47.85 | 2.37 | 50.22 | 54.00 | -3.78 | AVG |
| 4904.00 | H | 39.31 | 7.71 | 47.02 | 74.00 | -26.98 | Peak |
| 9963.50 | H | 38.45 | 17.82 | 56.27 | 74.00 | -17.73 | Peak |
| 9963.50 | H | 27.51 | 17.82 | 45.33 | 54.00 | -8.67 | AVG |
| 14080.00 | H | 38.26 | 18.81 | 57.07 | 74.00 | -16.93 | Peak |
| 14080.00 | H | 27.64 | 18.81 | 46.45 | 54.00 | -7.55 | AVG |
| 18000.00 | H | 37.20 | 25.57 | 62.77 | 74.00 | -11.23 | Peak |
| 18000.00 | H | 17.64 | 25.57 | 43.21 | 54.00 | -10.79 | AVG |
| 19317.50 | H | 38.44 | 22.89 | 61.33 | 74.00 | -12.67 | Peak |
| 19317.50 | H | 19.47 | 22.89 | 42.36 | 54.00 | -11.64 | AVG |
| 21888.75 | H | 37.93 | 21.18 | 59.11 | 74.00 | -14.89 | Peak |
| 21888.75 | H | 19.55 | 21.18 | 40.73 | 54.00 | -13.27 | AVG |
| 25968.75 | H | 40.29 | 18.58 | 58.87 | 74.00 | -15.13 | Peak |
| 25968.75 | H | 21.72 | 18.58 | 40.30 | 54.00 | -13.70 | AVG |

# 4. Band Edges Requirements

## 4.1 Test Procedure

The EUT was setup to ANSI C63.4, 2003; tested to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

The emissions on the harmonics frequencies, the limits, and the margin of compliance are presented. These tests were made when the transmitter was in full radiated power. The additional test was performed to show compliance with the requirement at the lower and upper band-edges of the emission.

EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission and PEAK set RBW=VBW=1MHz and AVERAGE set RBW=1MHz / VBW=10Hz

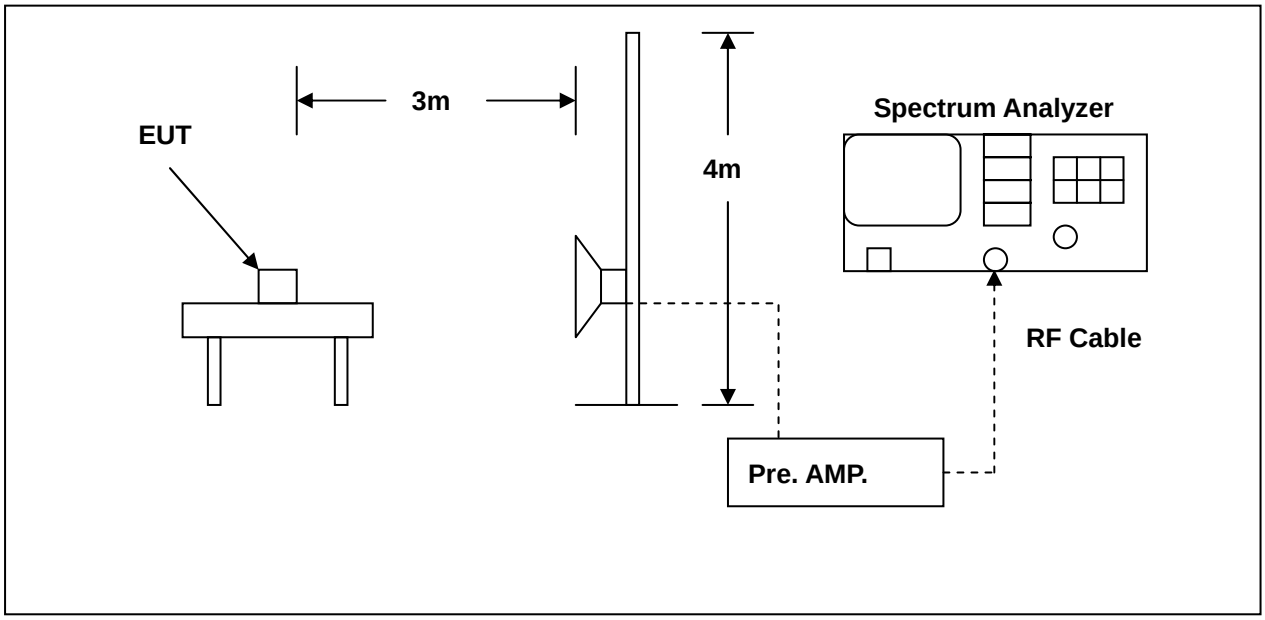
## 4.2 Limits

The provisions of Section 15.205 of this part apply to intentional radiators operating under this section.In addition, radiated emissions which fall in the restricted bands must also comply with the radiated emission limits.

## 4.3 Test Equipment List

| Describe | Manufacturer | Model | Serial Number | Calibration | |
|---|---|---|---|---|---|
| | | | | Cal. Date | Due Date |
| Spectrum Analyzer | Agilent | E4408B | MY45107753 | Jun. 08, 2009 | Jun. 08, 2010 |
| Spectrum Analyzer | Agilent | E4408A | MY46180578 | Jan. 20, 2009 | Jan. 20, 2010 |
| Pre Amplifier | Agilent | 8449B | 3008A02237 | Jun. 08, 2009 | Jun. 08, 2010 |
| Horn Antenna | SCHWARZBECK MESS-ELEKTRONI | BBHA9120D | 9120D-550 | Jul. 01, 2009 | Jul. 01, 2010 |

## 4.4 Test Instruments Configuration




## 4.5 Test Result

EUT : WLAN Module

Model No. : AR5B93

Test Mode : #1 IEEE 802.11b_2.4GHz Link Mode Low CH & High CH

#2 IEEE 802.11g_2.4GHz Link Mode Low CH & High CH

#3 draft 802.11n Standard-20MHz_2.4GHz Link Mode Low CH & High CH

#4 draft 802.11n Wide-40MHz_2.4GHz Link Mode Low CH & High CH

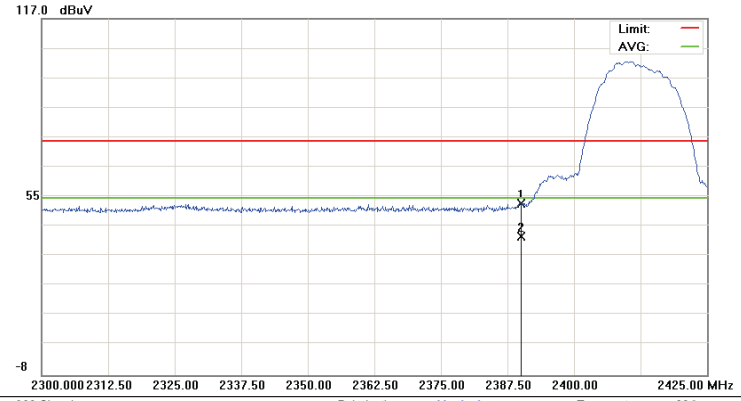
Test Date : 12/02/2009

Please refer to next page of detail testing data.

Notes:

1. Margin= Amplitude - Limits
2. Height of table for EUT placed: 0.8 Meter.
3. ANT= Antenna height.
4. Duty= Duty cycle correction factor.
5. Dis= Distance extrapolation factor.
6. Amplitude= Reading Amplitude – Amplifier gain + Cable loss + Antenna factor
   (Auto calculate in spectrum analyzer)
7. Actual Amp= Amplitude – Duty – Dis.

File :AR5B93(Band Edge) Data :#1 Date: 2009-12-11 Time: 下午 04:45:37




Site: : 966 Chamber
Limit: FCC part 15 (PK)
EUT: Notebook PC
M/N: AR5B93
Mode: IEEE 802.11b
Note: 2412MHz

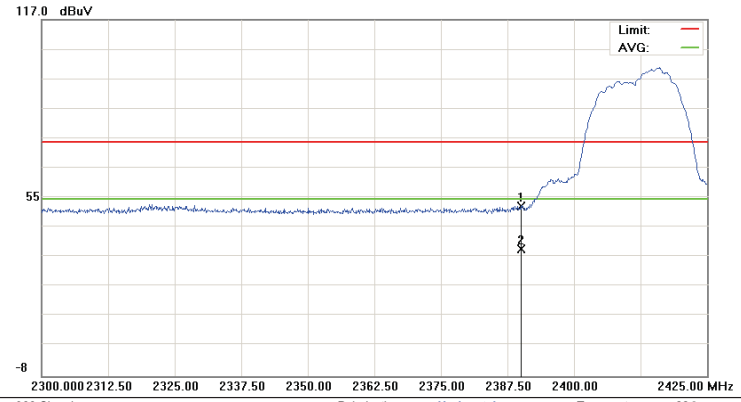
Polarization: *Vertical*
Power:
Distance: 3m

Temperature: 22 ℃
Humidity: 60 %
RBW: 1000 KHz VBW: 1000 KHz

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | Antenna Height | Table Degree | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | cm | degree | Comment |
| 1 | | 2390.000 | 51.98 | 0.16 | 52.14 | 74.00 | -21.86 | peak | | | |
| 2 | * | 2390.000 | 40.43 | 0.16 | 40.59 | 54.00 | -13.41 | AVG | | | |

*:Maximum data x:Over limit !:over margin

File :AR5B93(Band Edge) Data :#5 Date: 2009-12-11 Time: 下午 04:48:54




Site: : 966 Chamber
Limit: FCC part 15 (PK)
EUT: Notebook PC
M/N: AR5B93
Mode: IEEE 802.11b
Note: 2412MHz

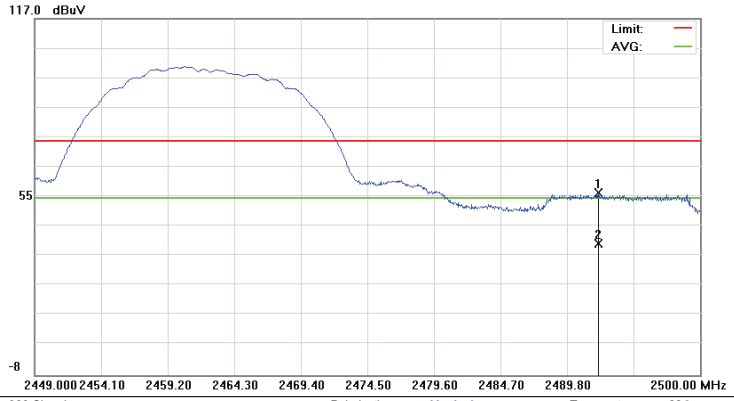
Polarization: *Horizontal*
Power:
Distance: 3m

Temperature: 22 ℃
Humidity: 60 %
RBW: 1000 KHz VBW: 1000 KHz

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | Antenna Height | Table Degree | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | cm | degree | Comment |
| 1 | | 2390.000 | 51.40 | 0.16 | 51.56 | 74.00 | -22.44 | peak | | | |
| 2 | * | 2390.000 | 36.36 | 0.16 | 36.52 | 54.00 | -17.48 | AVG | | | |

*:Maximum data x:Over limit !:over margin

File :AR5B93(Band Edge) Data :#3 Date: 2009-12-11 Time: 下午 04:56:03




Site: : 966 Chamber
Limit: FCC part 15 (PK)
EUT: Notebook PC
M/N: AR5B93
Mode: IEEE 802.11b
Note: 2462MHz

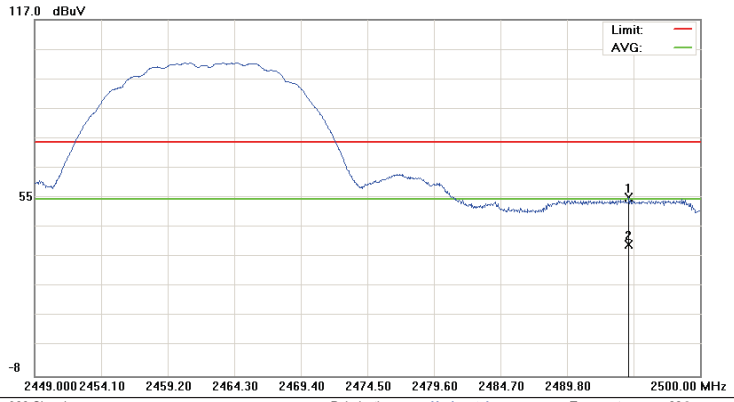
Polarization: *Vertical*
Power:
Distance: 3m

Temperature: 22 ℃
Humidity: 60 %
RBW: 1000 KHz VBW: 1000 KHz

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | Antenna Height | Table Degree | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | cm | degree | Comment |
| 1 | | 2492.197 | 55.54 | 0.25 | 55.79 | 74.00 | -18.21 | peak | | | |
| 2 | * | 2492.197 | 37.95 | 0.25 | 38.20 | 54.00 | -15.80 | AVG | | | |

*:Maximum data x:Over limit !:over margin

File :AR5B93(Band Edge) Data :#7 Date: 2009-12-11 Time: 下午 05:01:37




Site: : 966 Chamber
Limit: FCC part 15 (PK)
EUT: Notebook PC
M/N: AR5B93
Mode: IEEE 802.11b
Note: 2462MHz

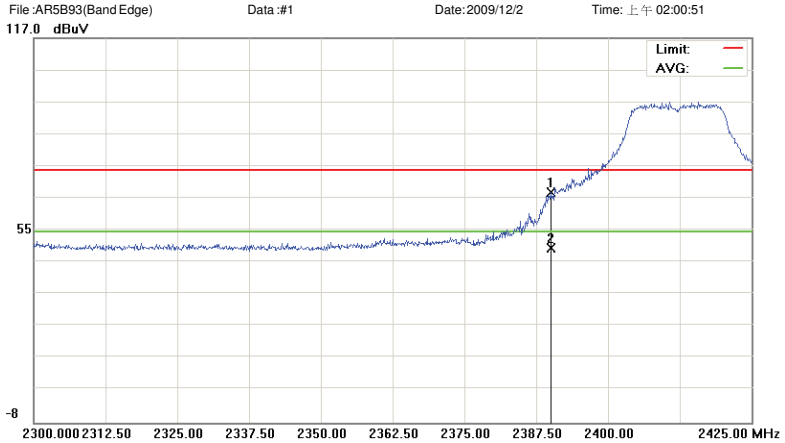
Polarization: *Horizontal*
Power:
Distance: 3m

Temperature: 22 ℃
Humidity: 60 %
RBW: 1000 KHz VBW: 1000 KHz

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | Antenna Height | Table Degree | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | cm | degree | Comment |
| 1 | | 2494.543 | 54.32 | 0.26 | 54.58 | 74.00 | -19.42 | peak | | | |
| 2 | * | 2494.543 | 37.83 | 0.26 | 38.09 | 54.00 | -15.91 | AVG | | | |

*:Maximum data x:Over limit !:over margin

File :AR5B93(Band Edge) Data :#1 Date:2009/12/2 Time: 上午 02:00:51




Site: : 966 Chamber
Limit: FCC part 15 (PK)
EUT: Notebook PC
M/N: AR5B93
Mode: IEEE 802.11g
Note: 2412MHz

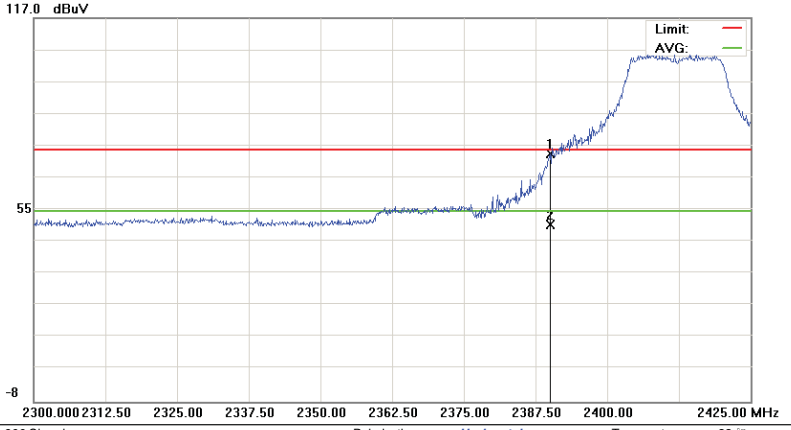
Polarization: *Vertical*
Power:
Distance: 3m

Temperature: 22 ℃
Humidity: 60 %
RBW: 1000 KHz VBW: 1000 KHz

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | Antenna Height | Table Degree | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | Detector | cm | degree | Comment |
| 1 | | 2390.000 | 66.81 | 0.16 | 66.97 | 74.00 | -7.03 | peak | | | |
| 2 | * | 2390.000 | 48.48 | 0.16 | 48.64 | 54.00 | -5.36 | AVG | | | |

*:Maximum data x:Over limit !:over margin

File :AR5B93(Band Edge) Data :#5 Date:2009/12/2 Time: 上午 02:04:41




Site: : 966 Chamber
Limit: FCC part 15 (PK)
EUT: Notebook PC
M/N: AR5B93
Mode: IEEE 802.11g
Note: 2412MHz

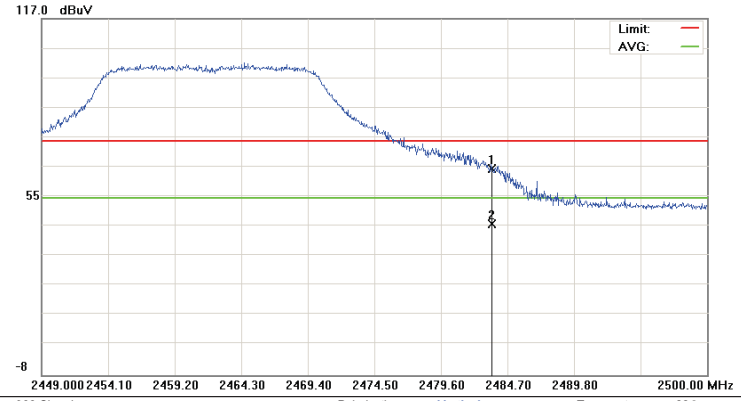
Polarization: *Horizontal*
Power:
Distance: 3m

Temperature: 22 ℃
Humidity: 60 %
RBW: 1000 KHz VBW: 1000 KHz

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | Antenna Height | Table Degree | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | Detector | cm | degree | Comment |
| 1 | * | 2390.000 | 72.74 | 0.16 | 72.90 | 74.00 | -1.10 | peak | | | |
| 2 | | 2390.000 | 49.53 | 0.16 | 49.69 | 54.00 | -4.31 | AVG | | | |

*:Maximum data x:Over limit !:over margin

File :AR5B93(Band Edge) Data :#3 Date: 2009/12/2 Time: 上午 01:39:41




Site: : 966 Chamber
Limit: FCC part 15 (PK)
EUT: Notebook PC
M/N: AR5B93
Mode: IEEE 802.11g
Note: 2462MHz

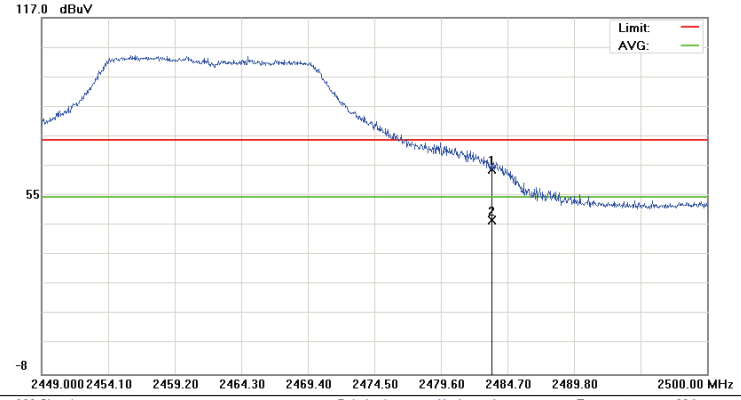
Polarization: *Vertical*
Power:
Distance: 3m

Temperature: 22 ℃
Humidity: 60 %
RBW: 1000 KHz VBW: 1000 KHz

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | Antenna Height | Table Degree | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | cm | degree | Comment |
| 1 | | 2483.510 | 64.20 | 0.25 | 64.45 | 74.00 | -9.55 | peak | | | |
| 2 | * | 2483.510 | 44.81 | 0.25 | 45.06 | 54.00 | -8.94 | AVG | | | |

*:Maximum data x:Over limit !:over margin

File :AR5B93(Band Edge) Data :#7 Date: 2009/12/2 Time: 上午 01:44:37




Site: : 966 Chamber
Limit: FCC part 15 (PK)
EUT: Notebook PC
M/N: AR5B93
Mode: IEEE 802.11g
Note: 2462MHz

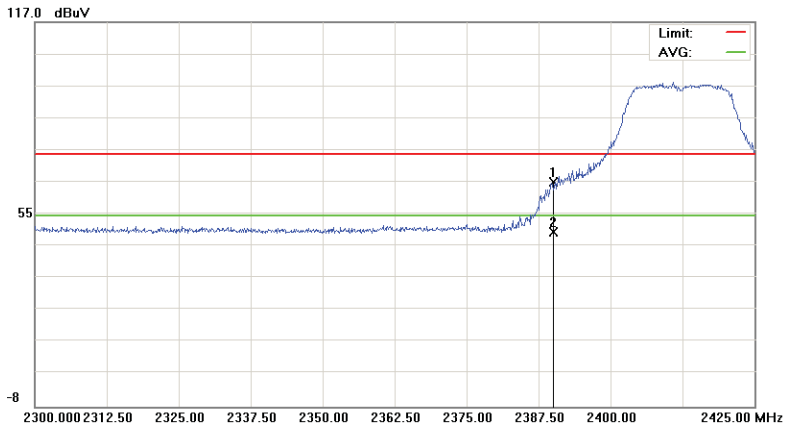
Polarization: *Horizontal*
Power:
Distance: 3m

Temperature: 22 ℃
Humidity: 60 %
RBW: 1000 KHz VBW: 1000 KHz

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | Antenna Height | Table Degree | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | cm | degree | Comment |
| 1 | | 2483.510 | 63.61 | 0.25 | 63.86 | 74.00 | -10.14 | peak | | | |
| 2 | * | 2483.510 | 45.69 | 0.25 | 45.94 | 54.00 | -8.06 | AVG | | | |

*:Maximum data x:Over limit !:over margin

File :AR5B93(Band Edge) Data :#1 Date: 2009/12/2 Time: 上午 02:17:18




Site: : 966 Chamber
Limit: FCC part 15 (PK)
EUT: Notebook PC
M/N: AR5B93
Mode: drat 802.11n Standard-20MHz
Note: 2412MHz

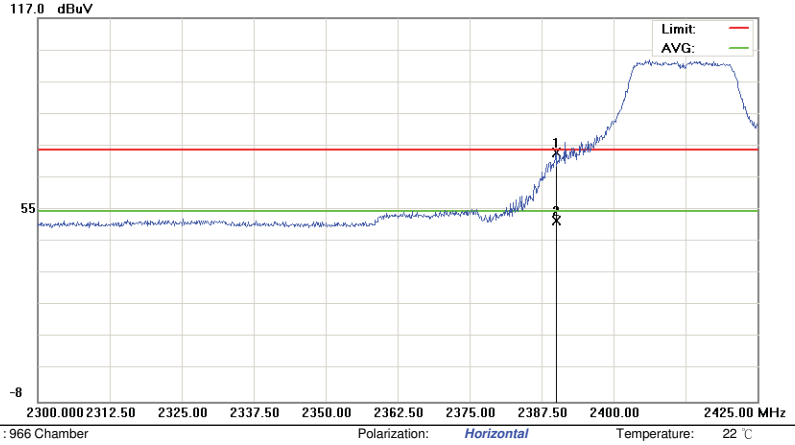
Polarization: *Vertical*
Power:
Distance: 3m

Temperature: 22 ℃
Humidity: 60 %
RBW: 1000 KHz VBW: 1000 KHz

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | Antenna Height | Table Degree | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | Detector | cm | degree | Comment |
| 1 | | 2390.000 | 64.82 | 0.16 | 64.98 | 74.00 | -9.02 | peak | | | |
| 2 | * | 2390.000 | 48.45 | 0.16 | 48.61 | 54.00 | -5.39 | AVG | | | |

*:Maximum data x:Over limit !:over margin

File :AR5B93(Band Edge) Data :#5 Date: 2009/12/2 Time: 上午 02:22:16




Site: : 966 Chamber
Limit: FCC part 15 (PK)
EUT: Notebook PC
M/N: AR5B93
Mode: drat 802.11n Standard-20MHz
Note: 2412MHz

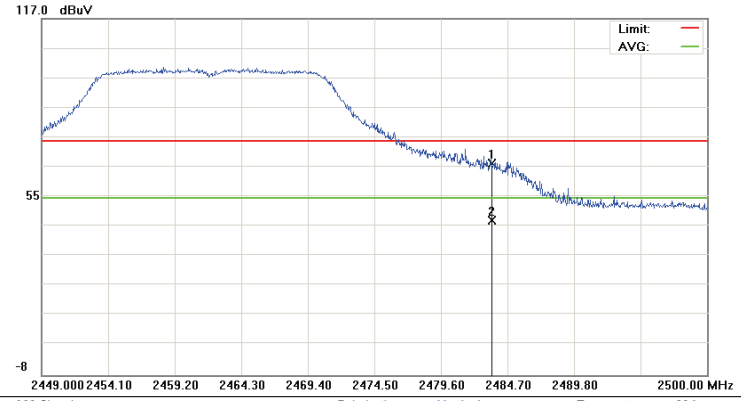
Polarization: *Horizontal*
Power:
Distance: 3m

Temperature: 22 ℃
Humidity: 60 %
RBW: 1000 KHz VBW: 1000 KHz

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | Antenna Height | Table Degree | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | Detector | cm | degree | Comment |
| 1 | * | 2390.000 | 72.94 | 0.16 | 73.10 | 74.00 | -0.90 | peak | | | |
| 2 | | 2390.000 | 50.72 | 0.16 | 50.88 | 54.00 | -3.12 | AVG | | | |

*:Maximum data x:Over limit !:over margin

File :AR5B93(Band Edge) Data :#3 Date: 2009/12/2 Time: 上午 02:28:25




Site: : 966 Chamber
Limit: FCC part 15 (PK)
EUT: Notebook PC
M/N: AR5B93
Mode: drat 802.11n Standard-20MHz
Note: 2462MHz

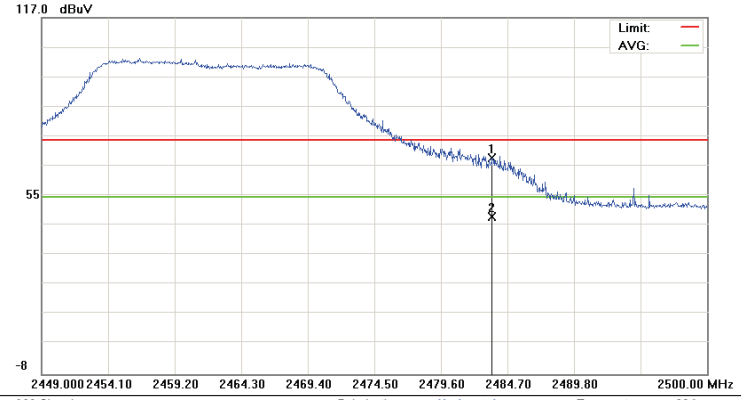
Polarization: *Vertical*
Power:
Distance: 3m

Temperature: 22 ℃
Humidity: 60 %
RBW: 1000 KHz VBW: 1000 KHz

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | Antenna Height | Table Degree | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | cm | degree | Comment |
| 1 | * | 2483.510 | 65.99 | 0.25 | 66.24 | 74.00 | -7.76 | peak | | | |
| 2 | | 2483.510 | 45.91 | 0.25 | 46.16 | 54.00 | -7.84 | AVG | | | |

*:Maximum data x:Over limit !:over margin

File :AR5B93(Band Edge) Data :#7 Date: 2009/12/2 Time: 上午 02:32:23




Site: : 966 Chamber
Limit: FCC part 15 (PK)
EUT: Notebook PC
M/N: AR5B93
Mode: drat 802.11n Standard-20MHz
Note: 2462MHz

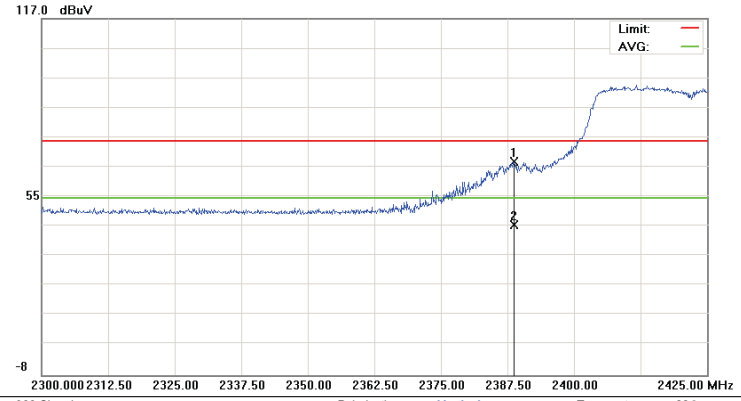
Polarization: *Horizontal*
Power:
Distance: 3m

Temperature: 22 ℃
Humidity: 60 %
RBW: 1000 KHz VBW: 1000 KHz

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | Antenna Height | Table Degree | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | cm | degree | Comment |
| 1 | * | 2483.510 | 67.40 | 0.25 | 67.65 | 74.00 | -6.35 | peak | | | |
| 2 | | 2483.510 | 46.80 | 0.25 | 47.05 | 54.00 | -6.95 | AVG | | | |

*:Maximum data x:Over limit !:over margin

File :AR5B93(Band Edge) Data :#1 Date: 2009/12/2 Time: 上午 02:54:57




Site: : 966 Chamber
Limit: FCC part 15 (PK)
EUT: Notebook PC
M/N: AR5B93
Mode: drat 802.11n Wide-40MHz
Note: 2422MHz

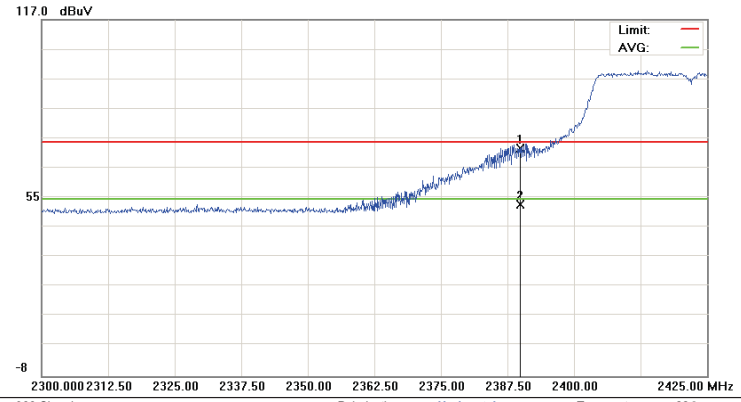
Polarization: *Vertical*
Power:
Distance: 3m

Temperature: 22 ℃
Humidity: 60 %
RBW: 1000 KHz VBW: 1000 KHz

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | Antenna Height | Table Degree | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | cm | degree | Comment |
| 1 | * | 2388.750 | 66.55 | 0.16 | 66.71 | 74.00 | -7.29 | peak | | | |
| 2 | | 2388.750 | 44.47 | 0.16 | 44.63 | 54.00 | -9.37 | AVG | | | |

*:Maximum data x:Over limit !:over margin

File :AR5B93(Band Edge) Data :#5 Date: 2009/12/2 Time: 上午 02:58:49




Site: : 966 Chamber
Limit: FCC part 15 (PK)
EUT: Notebook PC
M/N: AR5B93
Mode: drat 802.11n Wide-40MHz
Note: 2422MHz

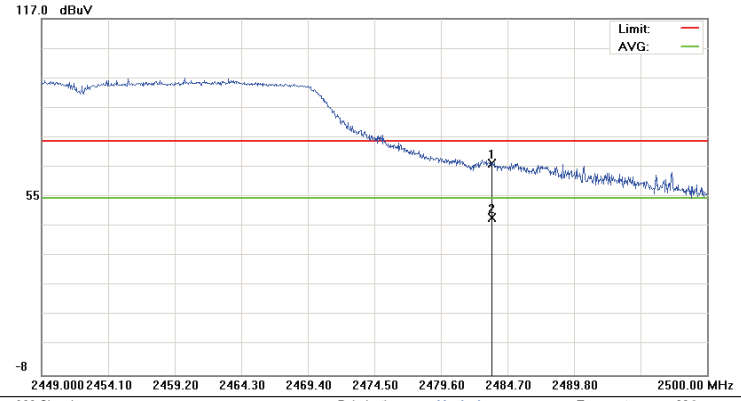
Polarization: *Horizontal*
Power:
Distance: 3m

Temperature: 22 ℃
Humidity: 60 %
RBW: 1000 KHz VBW: 1000 KHz

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | Antenna Height | Table Degree | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | cm | degree | Comment |
| 1 | | 2389.800 | 71.76 | 0.16 | 71.92 | 74.00 | -2.08 | peak | | | |
| 2 | * | 2389.800 | 52.01 | 0.16 | 52.17 | 54.00 | -1.83 | AVG | | | |

*:Maximum data x:Over limit !:over margin

File :AR5B93(Band Edge) Data :#3 Date: 2009/12/2 Time: 上午 02:46:42




Site: : 966 Chamber
Limit: FCC part 15 (PK)
EUT: Notebook PC
M/N: AR5B93
Mode: drat 802.11n Wide-40MHz
Note: 2452MHz

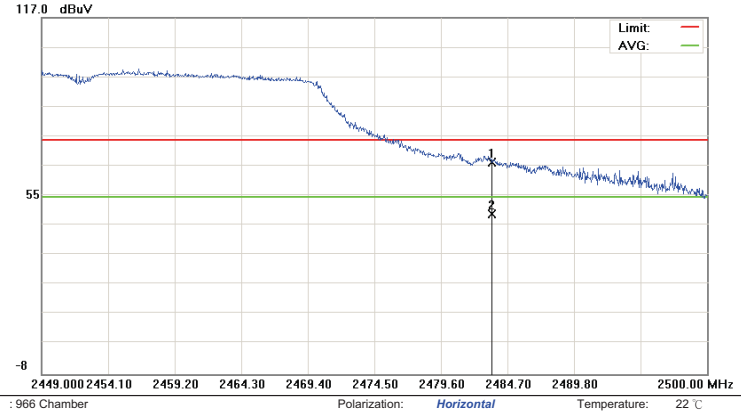
Polarization: *Vertical*
Power:
Distance: 3m

Temperature: 22 ℃
Humidity: 60 %
RBW: 1000 KHz VBW: 1000 KHz

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | Antenna Height | Table Degree | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | cm | degree | Comment |
| 1 | | 2483.510 | 65.90 | 0.25 | 66.15 | 74.00 | -7.85 | peak | | | |
| 2 | * | 2483.510 | 46.92 | 0.25 | 47.17 | 54.00 | -6.83 | AVG | | | |

*:Maximum data x:Over limit !:over margin

File :AR5B93(Band Edge) Data :#7 Date: 2009/12/2 Time: 上午 02:50:41




Site: : 966 Chamber
Limit: FCC part 15 (PK)
EUT: Notebook PC
M/N: AR5B93
Mode: drat 802.11n Wide-40MHz
Note: 2452MHz

Polarization: *Horizontal*
Power:
Distance: 3m

Temperature: 22 ℃
Humidity: 60 %
RBW: 1000 KHz VBW: 1000 KHz

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | Antenna Height | Table Degree | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV/m | dBuV/m | dB | Detector | cm | degree | Comment |
| 1 | | 2483.510 | 65.84 | 0.25 | 66.09 | 74.00 | -7.91 | peak | | | |
| 2 | * | 2483.510 | 47.74 | 0.25 | 47.99 | 54.00 | -6.01 | AVG | | | |

*:Maximum data x:Over limit !:over margin

# 5. Antenna Requirements

## 5.1 Standard Applicable

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

## 5.2 Antenna Connector Construction

The antenna used in this product is **PIFA Antenna**. And the maximum Gain of this antenna is only **-1.77** dBi.