



## Test Report

|              |  |
|--------------|--|
| Product Name | 1Port Device Server  |
| Model No.    | DS-12, DS-11, DS-11F-S, DS-11F-M, DS-11-W,<br>IDS-5011, IDS-5012, IDS-5011F-MM,<br>IDS-5011F-SS, IDS-5011-WG |
| FCC ID       | WHD-DS-11-WG   |

|           |  |
|-----------|--|
| Applicant | ORing Industrial Networking Corp.  |
| Address   | 4F., No.3, Lane 235, Baociao Rd., Sindian City, Taipei<br>County, Taiwan, (R.O.C.) |

|                 |                    |
|-----------------|--------------------|
| Date of Receipt | May. 16, 2008      |
| Issued Date     | June. 27, 2008     |
| Report No.      | 085264R-RFUSP05V01 |
| Version         | V1.0               |

The test results relate only to the samples tested.

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This report must not be used to claim product endorsement by NVLAP any agency of the U.S. Government

# Test Report Certification

Issued Date: June. 27, 2008

Report No.: 085264R-RFUSP05V01



**Accredited by NIST (NVLAP)**  
NVLAP Lab Code: 200533-0

|                     |  |
|---------------------|--|
| Product Name        | 1Port Device Server  |
| Applicant           | ORing Industrial Networking Corp.  |
| Address             | 4F., No.3, Lane 235, Baociao Rd., Sindian City, Taipei County, Taiwan, (R.O.C.)                        |
| Manufacturer        | ORing Industrial Networking Corp.  |
| Model No.           | DS-12, DS-11, DS-11F-S, DS-11F-M, DS-11-W, IDS-5011, IDS-5012, IDS-5011F-MM, IDS-5011F-SS, IDS-5011-WG |
| Rated Voltage       | AC 120V/60Hz   |
| Working Voltage     | DC 12V   |
| Trade Name          | ORing  |
| Applicable Standard | FCC CFR Title 47 Part 15 Subpart C: 2007<br>ANSI C63.4: 2003   |
| Test Result         | Complied   |



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Testing Laboratory

0914

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Attachment 1: EUT Test Photographs

Attachment 2: EUT Detailed Photographs

## 1. GENERAL INFORMATION

### 1.1. EUT Description

|                    |   |
|--------------------|---|
| Product Name       | 1Port Device Server   |
| Trade Name         | ORing   |
| Model No.          | DS-12, DS-11, DS-11F-S, DS-11F-M, DS-11-W, IDS-5011, IDS-5012, IDS-5011F-MM, IDS-5011F-SS, IDS-5011-WG  |
| FCC ID             | WHD-DS-11-WG  |
| Frequency Range    | 802.11b/g: 2412-2462MHz   |
| Channel Number     | 802.11b/g: 11   |
| Data Speed         | IEEE 802.11b – 1, 2, 5.5, 11Mbps<br>IEEE 802.11g – 6, 9, 12, 18, 24, 36 48, 54Mbps  |
| Type of Modulation | 802.11b: DSSS<br>DBPSK, DQPSK, CCK<br>802.11g: OFDM<br>BPSK, QPSK, 16QAM, 64QAM   |
| Antenna Type       | Dipole  |
| Antenna Gain       | Refer to the table “Antenna List”   |
| Channel Control    | Auto  |
| Power Adapter      | MFR: Sunny, M/N: STD-1204<br>Input: AC 100-240V, 50-60Hz, 1.0A<br>Output: DC 12V, 4.0A<br>Cable out: No-Shielded, 1.8m with two ferrite cores bonded.<br>Power Cord: Shielded, 2.0m |

#### Antenna List

| No. | Manufacturer | Part No.       | Peak Gain          |
|-----|--------------|----------------|--------------------|
| 1   | ARISTOTLE    | RFA-02-C2M2-03 | 2.09dBi in 2.4 GHz |

#### Frequency of Each Channel:

| Channel    | Frequency | Channel    | Frequency | Channel     | Frequency |
|------------|-----------|------------|-----------|-------------|-----------|
| Channel 1: | 2412 MHz  | Channel 5: | 2432 MHz  | Channel 9:  | 2452 MHz  |
| Channel 2: | 2417 MHz  | Channel 6: | 2437 MHz  | Channel 10: | 2457 MHz  |
| Channel 3: | 2422 MHz  | Channel 7: | 2442 MHz  | Channel 11: | 2462 MHz  |
| Channel 4: | 2427 MHz  | Channel 8: | 2447 MHz  |             |           |

Note:

1. The EUT is a 1Port Device Server with a built-in 2.4GHz WLAN transceiver.
2. The EUT is including ten models for different marketing requirement.

| Model Number              | Description   |
|---------------------------|---|
| DS-12,<br>IDS-5012        | Industrial 1-port RS232/422/485 to 2-port 10/100TX Device Server,<br>Power two input (12~48V)                     |
| DS-11, IDS-5011           | Industrial 1-port RS232/422/485 to 1-port 10/100TX Device Server,<br>Power two input (12~48V)                     |
| DS-11F-M,<br>IDS-5011F-MM | Industrial 1-port RS232/422/485 to 1-port 100FX multi-mode fiber Device Server,<br>Power two input (12~48V)       |
| DS-11F-S,<br>IDS-5011F-SS | Industrial 1-port RS232/422/485 to 1-port 100FX single-mode fiber Device Server,<br>Power two input (12~48V)      |
| DS-11-W,<br>IDS-5011-WG   | Industrial 1-port RS232/422/485 to 802.11 b/g WLAN and 1-port 10/100TX Device<br>Server, Power two input (12~48V) |

3. Regarding to the operation frequency, the lowest, middle and highest frequency are selected to perform the test.
4. Lowest and highest data rates are tested in each mode. Only worst case is shown in the report. (802.11b is 1Mbps and 802.11g is 6Mbps)
5. These tests are conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15 Subpart C Paragraph 15.247 for direct sequence spread spectrum devices.

## 1.2. Operational Description

The EUT is a 1Port Device Server with 11 channels. This device provides four kinds of transmitting speed 1, 2, 5.5 and 11Mbps. The modulation of device is BPSK, QPSK and CCK (IEEE 802.11b) and eight kinds of transmitting speed 6, 9, 12, 18, 24, 36, 48 and 54Mbps are provided. The technology of this device used is OFDM (IEEE 802.11g).

The device adapts direct sequence spread spectrum modulation. The antenna provides diversity function to improve the receiving function.

This 1Port Device Server, compliant with IEEE 802.11b and IEEE 802.11g, is a high-efficiency Wireless LAN adapter. It allows your computer to connect to a wireless network and to share resources, such as files or printers without being bound to the network wires. Operation in 2.4GHz Direct Sequence Spread Spectrum (DSSS) radio transmission, the 1Port Device Server Wired Equivalent Protection (WEP) algorithm is used. In addition, its standard compliance ensures that it can communicate with any IEEE 802.11b and IEEE 802.11g network.

|           |                             |
|-----------|-----------------------------|
| Test Mode | Mode 1: Transmitter 802.11b |
|           | Mode 2: Transmitter 802.11g |

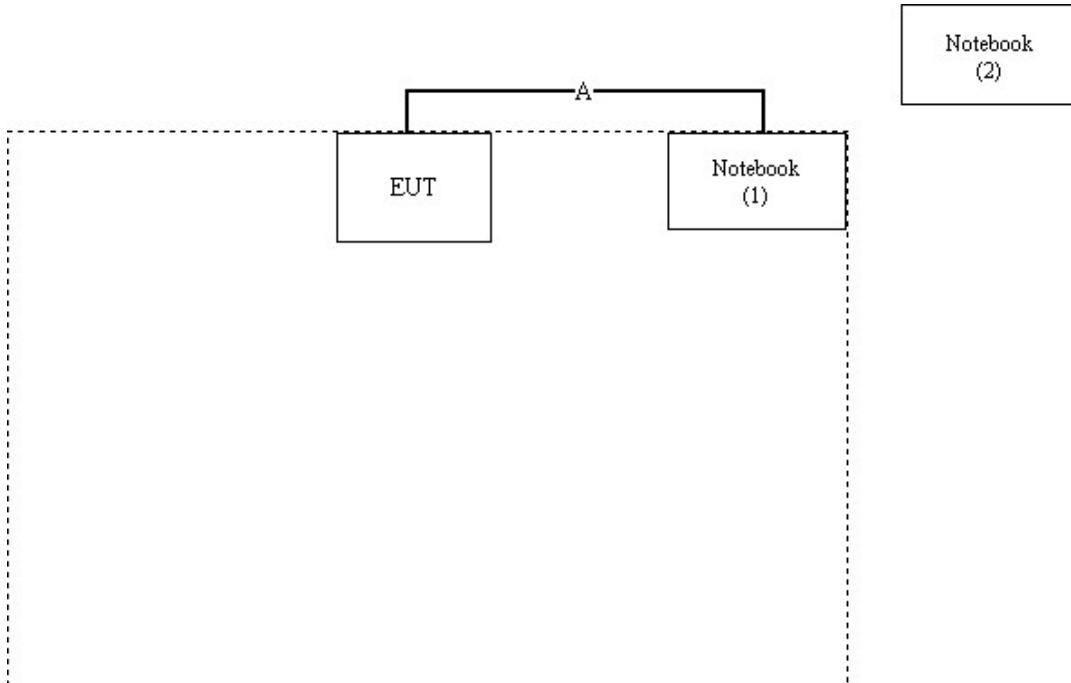
### 1.3. Tested System Details

The types for all equipment, plus descriptions of all cables used in the tested system (including inserted cards) are:

| Product        | Manufacturer | Model No. | Serial No. | FCC ID | Power Cord         |
|----------------|--------------|-----------|------------|--------|--------------------|
| 1. Notebook PC | DELL         | PP04X     | C8YYM1S    | N/A    | Non-Shielded, 0.8m |
| 2. Notebook PC | DELL         | PP04X     | C8YYM1S    | N/A    | Non-Shielded, 0.8m |

| Signal Cable Type | Signal cable Description |
|-------------------|--------------------------|
| A LAN Cable       | Shielded, 3.0m           |

### 1.4. Configuration of Test System



### 1.5. EUT Exercise Software

- (1) Setup the EUT as shown in Section 1.4
- (2) Execute <Http://192.168.10.2> Web site on the EUT.
- (3) Configure the test mode, the test channel, and the data rate.
- (4) Press “OK” to start the continuous Transmit.
- (5) Verify that the EUT works properly.

## 1.6. Test Facility

Ambient conditions in the laboratory:

| Items                      | Required (IEC 68-1) | Actual   |
|----------------------------|---------------------|----------|
| Temperature (°C)           | 15-35               | 20-35    |
| Humidity (%RH)             | 25-75               | 50-65    |
| Barometric pressure (mbar) | 860-1060            | 950-1000 |

Site Description: File on  
Federal Communications Commission  
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7435 Oakland Mills Road  
Columbia, MD 21046  
Registration Number: 92195  
Accreditation on NVLAP  
NVLAP Lab Code: 200533-0



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FCC Accreditation Number: TW1014



Testing Laboratory  
0914

## 2. Conducted Emission

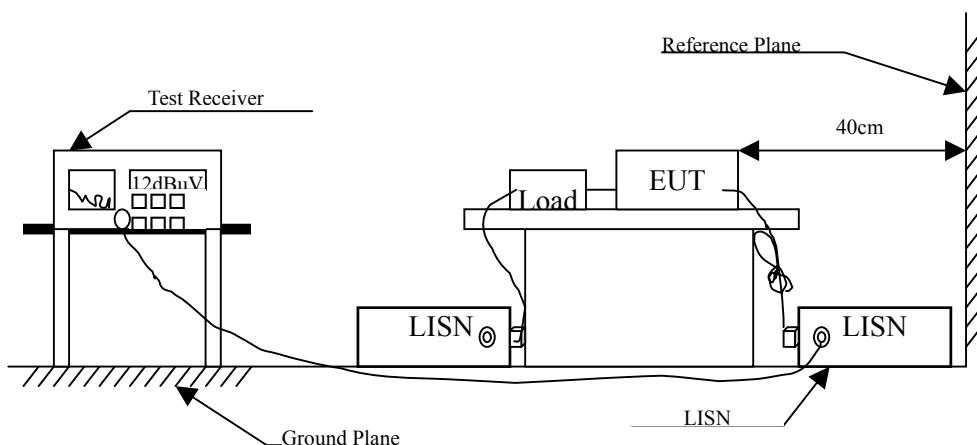
### 2.1. Test Equipment

The following test equipment are used during the conducted emission test:

| Item | Instrument         | Manufacturer | Type No./Serial No | Last Cal. | Remark      |
|------|--------------------|--------------|--------------------|-----------|-------------|
| 1    | Test Receiver      | R & S        | ESCS 30/825442/17  | May, 2008 |             |
| 2    | L.I.S.N.           | R & S        | ESH3-Z5/825016/6   | May, 2008 | EUT         |
| 3    | L.I.S.N.           | Kyoritsu     | KNW-407/8-1420-3   | May, 2008 | Peripherals |
| 4    | Pulse Limiter      | R & S        | ESH3-Z2            | May, 2008 |             |
| 5    | No.1 Shielded Room |              |                    |           | N/A         |

Note: 1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.

### 2.2. Test Setup



### 2.3. Limits

| FCC Part 15 Subpart C Paragraph 15.207 (dBuV) Limit |                      |                      |
|---|----------------------|----------------------|
| Frequency<br>MHz                                    | Limits               |                      |
|   | uV                   | dBuV                 |
| 0.15 - 0.50   | 66-56 <sub>(±)</sub> | 56-46 <sub>(±)</sub> |
| 0.50-5.0  | 56                   | 46                   |
| 5.0 - 30  | 60                   | 50                   |

## 2.4. Test Procedure

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

The EUT was placed on a platform of nominal size, 1 m by 1.5 m, raised 80 cm above the conducting ground plane. The vertical conducting plane was located 40 cm to the rear of the EUT. All other surfaces of EUT were at least 80 cm from any other grounded conducting surface. The EUT and simulators are connected to the main power through a line impedance stabilization network (LISN).

The LISN provides a 50 ohm /50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN. (Please refer to the block diagram of the test setup and photographs.)

Each current-carrying conductor of the EUT power cord, except the ground (safety) conductor, was individually connected through a LISN to the input power source.

The excess length of the power cord between the EUT and the LISN receptacle were folded back and forth at the center of the lead to form a bundle not exceeding 40 cm in length.

Conducted emissions were investigated over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

## 2.5. Uncertainty

± 2.26 dB

## 2.6. **Test Result of Conducted Emission**

Owing to the DC operation of EUT, this test item is not performed.

### 3. Peak Power Output

#### 3.1. Test Equipment

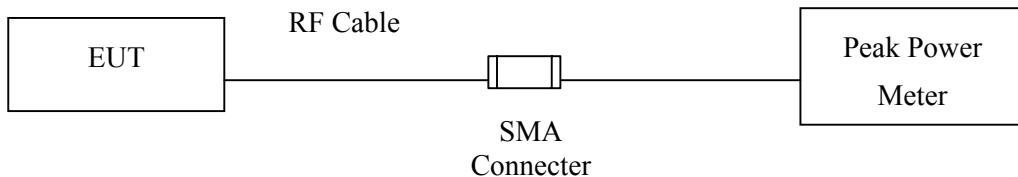
The following test equipments are used during the radiated emission tests:

| Equipment      | Manufacturer | Model No./Serial No. | Last Cal. |
|----------------|--------------|----------------------|-----------|
| X Power Meter  | Anritsu      | ML2495A/6K00003357   | May, 2008 |
| X Power Sensor | Anritsu      | MA2491A/034457       | May, 2008 |

Note: 1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.  
2. The test instruments marked with "X" are used to measure the final test results.

#### 3.2. Test Setup

Conducted Measurement



#### 3.3. Test procedures

The EUT was tested according to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

#### 3.4. Limits

The maximum peak power shall be less 1 Watt.

#### 3.5. Uncertainty

± 1.27 dB

### 3.6. Test Result of Peak Power Output

Product : 1Port Device Server  
Test Item : Peak Power Output Data  
Test Site : No.3 OATS  
Test Mode : Mode 1: Transmitter 802.11b

| Cable loss=0.5dB |                 | Peak Power Output Value (dBm) |       |         |        |                |
|------------------|-----------------|-------------------------------|-------|---------|--------|----------------|
| Channel No.      | Frequency (MHz) | Data Rate                     |       |         |        | Required Limit |
|                  |                 | 1 Mbps                        | 2Mbps | 5.5Mbps | 11Mbps |                |
| 1                | 2412.00         | 17.85                         | --    | --      | --     | 1Watt= 30 dBm  |
| 6                | 2437.00         | 17.35                         | 17.22 | 17.3    | 17.3   | 1Watt= 30 dBm  |
| 11               | 2462.00         | 17.16                         | --    | --      | --     | 1Watt= 30 dBm  |

Note: Peak Power Output Value =Reading value on peak power meter + cable loss

Product : 1Port Device Server  
 Test Item : Peak Power Output Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmitter 802.11g

| Cable loss=0.5dB |                 | Peak Power Output Value (dBm) |        |         |         |         |         |         |         |                |
|------------------|-----------------|-------------------------------|--------|---------|---------|---------|---------|---------|---------|----------------|
| Channel No.      | Frequency (MHz) | Data Rate (Mbps)              |        |         |         |         |         |         |         | Required Limit |
|                  |                 | 6 Mbps                        | 9 Mbps | 12 Mbps | 18 Mbps | 24 Mbps | 36 Mbps | 48 Mbps | 54 Mbps |                |
| 1                | 2412.00         | 16.74                         | --     | --      | --      | --      | --      | --      | --      | 1Watt= 30 dBm  |
| 6                | 2437.00         | 16.37                         | 16.25  | 16.22   | 16.31   | 16.14   | 16.05   | 16.18   | 16.22   | 1Watt= 30 dBm  |
| 11               | 2462.00         | 15.82                         | --     | --      | --      | --      | --      | --      | --      | 1Watt= 30 dBm  |

Note: Peak Power Output Value =Reading value on peak power meter + cable loss

## 4. Radiated Emission

### 4.1. Test Equipment

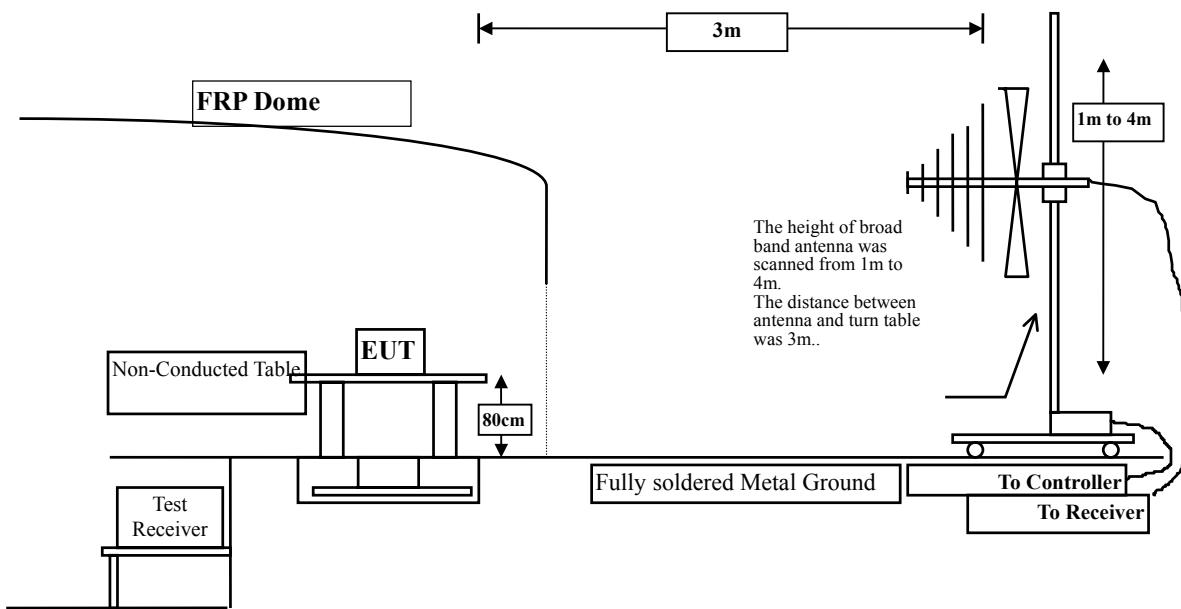
The following test equipments are used during the radiated emission test:

| Test Site | Equipment           | Manufacturer | Model No./Serial No.  | Last Cal.  |
|-----------|---------------------|--------------|-----------------------|------------|
| Site # 1  | Test Receiver       | R & S        | ESCS 30 / 825442/14   | May, 2008  |
|           | Spectrum Analyzer   | Advantest    | R3261C / 71720140     | May, 2008  |
|           | Pre-Amplifier       | HP           | 8447D/3307A01812      | May, 2008  |
|           | Bilog Antenna       | Chase        | CBL6112B / 12452      | Sep., 2007 |
|           | Horn Antenna        | EM           | EM6917 / 103325       | May, 2008  |
| Site # 2  | Test Receiver       | R & S        | ESCS 30 / 825442/17   | May, 2008  |
|           | Spectrum Analyzer   | Advantest    | R3261C / 71720609     | May, 2008  |
|           | Pre-Amplifier       | HP           | 8447D/3307A01814      | May, 2008  |
|           | Bilog Antenna       | Chase        | CBL6112B / 2455       | Sep., 2007 |
|           | Horn Antenna        | EM           | EM6917 / 103325       | May, 2008  |
| Site # 3  | X Test Receiver     | R & S        | ESI 26 / 838786 / 004 | May, 2008  |
|           | X Spectrum Analyzer | Agilent      | E4407B / US39440758   | May, 2008  |
|           | X Bilog Antenna     | SCHAFFNER    | CBL6112B / 2697       | May, 2008  |
|           | X Horn Antenna      | Schwarzbeck  | BBHA9120D / 305, 306  | July, 2007 |
|           | X Horn Antenna      | Schwarzbeck  | BBHA9170 / 208, 209   | July, 2007 |
|           | X Pre-Amplifier     | QTK          | QTK-AMP-01 / 0001     | July, 2007 |
|           | X Pre-Amplifier     | QTK          | QTK-AMP-03 / 0003     | May, 2008  |
|           | X Pre-Amplifier     | HP           | 8449B / 3008A01123    | July, 2007 |

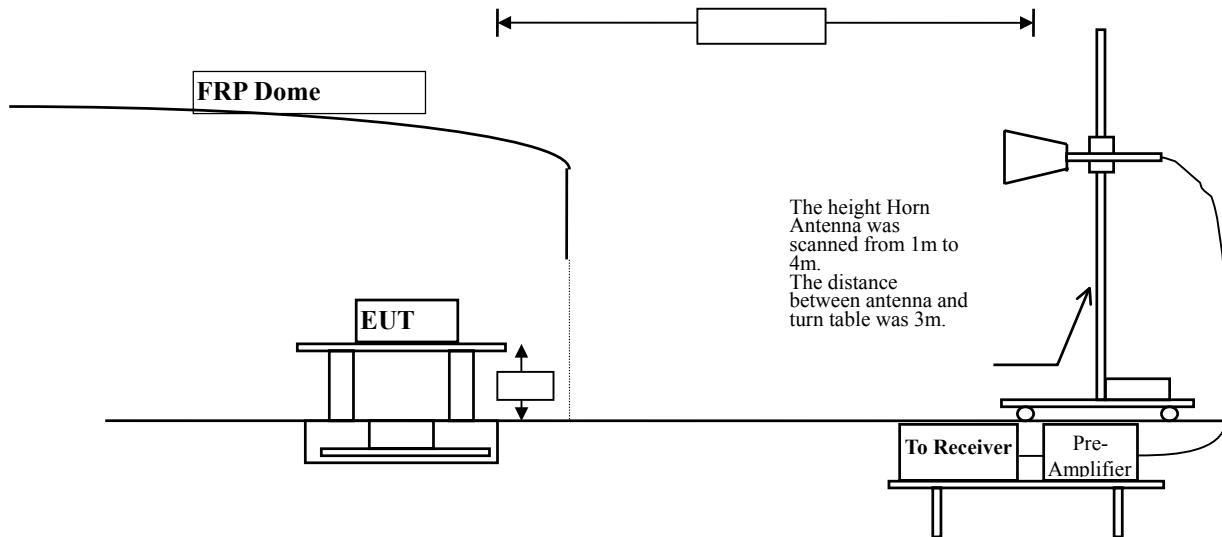
Note: 1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.  
 2. The test instruments marked with "X" are used to measure the final test results.

## 4.2. Test Setup

### Radiated Emission Below 1GHz



### Radiated Emission Above 1GHz



#### 4.3. Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

| <b>FCC Part 15 Subpart C Paragraph 15.209(a) Limits</b> |          |           |
|---|----------|-----------|
| Frequency<br>MHz  | uV/m @3m | dBuV/m@3m |
| 30-88   | 100      | 40        |
| 88-216  | 150      | 43.5      |
| 216-960   | 200      | 46        |
| Above 960   | 500      | 54        |

Remarks: E field strength (dBuV/m) = 20 log E field strength (uV/m)

#### 4.4. **Test Procedure**

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

The EUT is placed on a turn table which is 0.8 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna is scanned between 1 meter and 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4:2003 on radiated measurement.

The resolution bandwidth below 1GHz setting on the field strength meter is 120 kHz and above 1GHz is 1MHz.

Radiated emission measurements below 1GHz are made using broadband Bilog antenna and above 1GHz are made using Horn Antennas.

The measurement is divided into the Preliminary Measurement and the Final Measurement.

The suspected frequencies are searched for in Preliminary Measurement with the measurement antenna kept pointed at the source of the emission both in azimuth and elevation, with the polarization of the antenna oriented for maximum response. The antenna is pointed at an angle towards the source of the emission, and the EUT is rotated in both height and polarization to maximize the measured emission. The emission is kept within the illumination area of the 3 dB beamwidth of the antenna.

The worst radiated emission is measured on the Final Measurement.

The frequency range from 30MHz to 10th harmonics is checked.

#### 4.5. **Uncertainty**

± 3.9 dB above 1GHz

± 3.8 dB below 1GHz

#### 4.6. Test Result of Radiated Emission

Product : 1Port Device Server  
 Test Item : Harmonic Radiated Emission Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmitter 802.11b (2412MHz)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit  |
|-----------|----------------|---------------|-------------------|--------|--------|
| MHz       | dB             | dBuV          | dBuV/m            | dB     | dBuV/m |

##### Horizontal

###### Peak Detector:

|          |        |        |        |         |        |
|----------|--------|--------|--------|---------|--------|
| 4824.000 | 3.723  | 37.076 | 40.799 | -33.201 | 74.000 |
| 7236.000 | 9.439  | 35.801 | 45.239 | -28.761 | 74.000 |
| 9648.000 | 11.829 | 34.784 | 46.613 | -27.387 | 74.000 |

###### Average

###### Detector:

--

##### Vertical

###### Peak Detector:

|          |        |        |        |         |        |
|----------|--------|--------|--------|---------|--------|
| 4824.000 | 3.723  | 36.351 | 40.074 | -33.926 | 74.000 |
| 7236.000 | 9.439  | 35.990 | 45.428 | -28.572 | 74.000 |
| 9648.000 | 11.829 | 35.662 | 47.491 | -26.509 | 74.000 |

###### Average

###### Detector:

--

##### Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “\*”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : 1Port Device Server  
 Test Item : Harmonic Radiated Emission Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmitter 802.11b (2437 MHz)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit  |
|-----------|----------------|---------------|-------------------|--------|--------|
| MHz       | dB             | dBuV          | dBuV/m            | dB     | dBuV/m |

### Horizontal

**Peak Detector:**

|          |        |        |        |         |        |
|----------|--------|--------|--------|---------|--------|
| 4874.000 | 3.893  | 36.323 | 40.215 | -33.785 | 74.000 |
| 7311.000 | 9.624  | 35.459 | 45.083 | -28.917 | 74.000 |
| 9748.000 | 11.805 | 36.179 | 47.985 | -26.015 | 74.000 |

**Average**

**Detector:**

--

### Vertical

**Peak Detector:**

|          |        |        |        |         |        |
|----------|--------|--------|--------|---------|--------|
| 4874.000 | 3.893  | 36.517 | 40.409 | -33.591 | 74.000 |
| 7311.000 | 9.624  | 36.322 | 45.946 | -28.054 | 74.000 |
| 9748.000 | 11.805 | 35.900 | 47.706 | -26.294 | 74.000 |

**Average**

**Detector:**

--

**Note:**

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ \* ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : 1Port Device Server  
 Test Item : Harmonic Radiated Emission Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmitter 802.11b (2462 MHz)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit  |
|-----------|----------------|---------------|-------------------|--------|--------|
| MHz       | dB             | dBuV          | dBuV/m            | dB     | dBuV/m |

### Horizontal

**Peak Detector:**

|          |        |        |        |         |        |
|----------|--------|--------|--------|---------|--------|
| 4924.000 | 4.075  | 36.030 | 40.104 | -33.896 | 74.000 |
| 7386.000 | 9.812  | 35.245 | 45.057 | -28.943 | 74.000 |
| 9848.000 | 11.819 | 34.616 | 46.435 | -27.565 | 74.000 |

**Average**

**Detector:**

--

### Vertical

**Peak Detector:**

|          |        |        |        |         |        |
|----------|--------|--------|--------|---------|--------|
| 4924.000 | 4.075  | 35.191 | 39.265 | -34.735 | 74.000 |
| 7386.000 | 9.812  | 35.476 | 45.288 | -28.712 | 74.000 |
| 9848.000 | 11.819 | 35.369 | 47.188 | -26.812 | 74.000 |

**Average**

**Detector:**

--

**Note:**

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ \* ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : 1Port Device Server  
 Test Item : Harmonic Radiated Emission Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmitter 802.11g (2412MHz)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit  |
|-----------|----------------|---------------|-------------------|--------|--------|
| MHz       | dB             | dBuV          | dBuV/m            | dB     | dBuV/m |

### Horizontal

**Peak Detector:**

|          |        |        |        |         |        |
|----------|--------|--------|--------|---------|--------|
| 4824.000 | 3.723  | 36.312 | 40.035 | -33.965 | 74.000 |
| 7236.000 | 9.439  | 36.184 | 45.622 | -28.378 | 74.000 |
| 9648.000 | 11.829 | 35.619 | 47.448 | -26.552 | 74.000 |

### Average

**Detector:**

--

### Vertical

**Peak Detector:**

|          |        |        |        |         |        |
|----------|--------|--------|--------|---------|--------|
| 4824.000 | 3.723  | 36.407 | 40.130 | -33.870 | 74.000 |
| 7236.000 | 9.439  | 36.416 | 45.854 | -28.146 | 74.000 |
| 9648.000 | 11.829 | 35.803 | 47.632 | -26.368 | 74.000 |

### Average

**Detector:**

--

**Note:**

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ \* ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : 1Port Device Server  
 Test Item : Harmonic Radiated Emission Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmitter 802.11g (2437 MHz)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit  |
|-----------|----------------|---------------|-------------------|--------|--------|
| MHz       | dB             | dBuV          | dBuV/m            | dB     | dBuV/m |

### Horizontal

**Peak Detector:**

|          |        |        |        |         |        |
|----------|--------|--------|--------|---------|--------|
| 4874.000 | 3.893  | 36.182 | 40.074 | -33.926 | 74.000 |
| 7311.000 | 9.624  | 35.681 | 45.305 | -28.695 | 74.000 |
| 9748.000 | 11.805 | 35.723 | 47.529 | -26.471 | 74.000 |

**Average**

**Detector:**

--

### Vertical

**Peak Detector:**

|          |        |        |        |         |        |
|----------|--------|--------|--------|---------|--------|
| 4874.000 | 3.893  | 36.254 | 40.146 | -33.854 | 74.000 |
| 7311.000 | 9.624  | 35.654 | 45.278 | -28.722 | 74.000 |
| 9748.000 | 11.805 | 35.990 | 47.796 | -26.204 | 74.000 |

**Average**

**Detector:**

--

**Note:**

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ \* ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : 1Port Device Server  
 Test Item : Harmonic Radiated Emission Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmitter 802.11g (2462 MHz)

| Frequency | Correct Factor | Reading Level | Measurement Level | Margin | Limit  |
|-----------|----------------|---------------|-------------------|--------|--------|
| MHz       | dB             | dBuV          | dBuV/m            | dB     | dBuV/m |

### Horizontal

**Peak Detector:**

|          |        |        |        |         |        |
|----------|--------|--------|--------|---------|--------|
| 4924.000 | 4.075  | 35.963 | 40.037 | -33.963 | 74.000 |
| 7386.000 | 9.812  | 35.086 | 44.898 | -29.102 | 74.000 |
| 9848.000 | 11.819 | 35.411 | 47.230 | -26.770 | 74.000 |

**Average**

**Detector:**

--

### Vertical

**Peak Detector:**

|          |        |        |        |         |        |
|----------|--------|--------|--------|---------|--------|
| 4924.000 | 4.075  | 36.518 | 40.592 | -33.408 | 74.000 |
| 7386.000 | 9.812  | 35.998 | 45.810 | -28.190 | 74.000 |
| 9848.000 | 11.819 | 35.335 | 47.154 | -26.846 | 74.000 |

**Average**

**Detector:**

--

**Note:**

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ \* ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : 1Port Device Server  
 Test Item : General Radiated Emission Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmitter 802.11b (2437 MHz)

| Frequency         | Correct Factor | Reading Level | Measurement Level | Margin  | Limit  |
|-------------------|----------------|---------------|-------------------|---------|--------|
| MHz               | dB             | dBuV          | dBuV/m            | dB      | dBuV/m |
| <b>Horizontal</b> |                |               |                   |         |        |
| 386.475           | 15.733         | 26.647        | 42.380            | -3.620  | 46.000 |
| 481.050           | 18.786         | 23.404        | 42.190            | -3.810  | 46.000 |
| 575.625           | 19.517         | 20.733        | 40.250            | -5.750  | 46.000 |
| 599.875           | 19.999         | 17.417        | 37.416            | -8.584  | 46.000 |
| 750.225           | 21.085         | 18.602        | 39.687            | -6.313  | 46.000 |
| 767.200           | 22.117         | 17.628        | 39.745            | -6.255  | 46.000 |
| <b>Vertical</b>   |                |               |                   |         |        |
| 226.425           | 10.799         | 16.616        | 27.415            | -18.585 | 46.000 |
| 287.050           | 13.637         | 14.532        | 28.169            | -17.831 | 46.000 |
| 384.050           | 16.822         | 25.525        | 42.347            | -3.653  | 46.000 |
| 481.050           | 18.586         | 16.051        | 34.637            | -11.363 | 46.000 |
| 750.225           | 23.184         | 11.041        | 34.225            | -11.775 | 46.000 |
| 767.200           | 22.767         | 8.080         | 30.847            | -15.153 | 46.000 |

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “\*”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : 1Port Device Server  
 Test Item : General Radiated Emission Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmitter 802.11g (2437 MHz)

| Frequency         | Correct Factor | Reading Level | Measurement Level | Margin  | Limit  |
|-------------------|----------------|---------------|-------------------|---------|--------|
| MHz               | dB             | dBuV          | dBuV/m            | dB      | dBuV/m |
| <b>Horizontal</b> |                |               |                   |         |        |
| 381.625           | 15.715         | 28.071        | 43.786            | -2.214  | 46.000 |
| 403.450           | 16.819         | 21.637        | 38.456            | -7.544  | 46.000 |
| 481.050           | 18.786         | 23.683        | 42.469            | -3.531  | 46.000 |
| 575.625           | 19.517         | 21.603        | 41.120            | -4.880  | 46.000 |
| 750.225           | 21.085         | 18.852        | 39.937            | -6.063  | 46.000 |
| 767.200           | 22.117         | 18.750        | 40.867            | -5.133  | 46.000 |
| <b>Vertical</b>   |                |               |                   |         |        |
| 226.425           | 10.799         | 17.296        | 28.095            | -17.905 | 46.000 |
| 287.050           | 13.637         | 14.233        | 27.870            | -18.130 | 46.000 |
| 384.050           | 16.822         | 25.826        | 42.648            | -3.352  | 46.000 |
| 481.050           | 18.586         | 14.532        | 33.118            | -12.882 | 46.000 |
| 750.255           | 23.184         | 11.100        | 34.285            | -11.715 | 46.000 |
| 767.200           | 22.767         | 8.922         | 31.689            | -14.311 | 46.000 |

Note:

1. All Readings below 1GHz are Quasi-Peak, above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “\*”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

## 5. RF antenna conducted test

### 5.1. Test Equipment

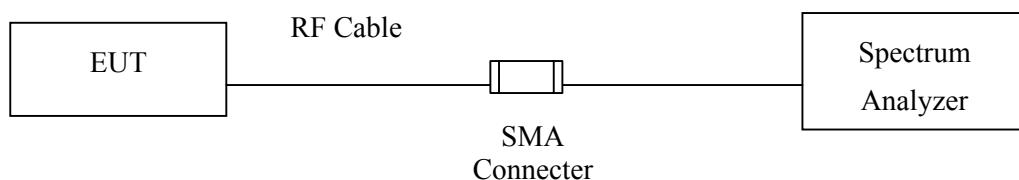
The following test equipments are used during the radiated emission tests:

| Equipment         | Manufacturer | Model No./Serial No.  | Last Cal.   |
|-------------------|--------------|-----------------------|-------------|
| Spectrum Analyzer | Agilent      | E4407B / US39440758   | May, 2008   |
| X Test Receiver   | R & S        | ESI 26 / 838786 / 004 | May, 2008   |
| Spectrum Analyzer | Agilent      | N9010A / MY48030495   | April, 2008 |

Note: 1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.  
2. The test instruments marked with "X" are used to measure the final test results.

### 5.2. Test Setup

#### RF antenna Conducted Measurement:



### 5.3. Limits

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum 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)).

### 5.4. Test Procedure

The EUT was tested according to DTS test procedure of Oct 2002 KDB558074 for compliance to FCC 47CFR 15.247 requirements.

Set RBW = 100 kHz, Set VBW > RBW, scan up through 10th harmonic.

### 5.5. Uncertainty

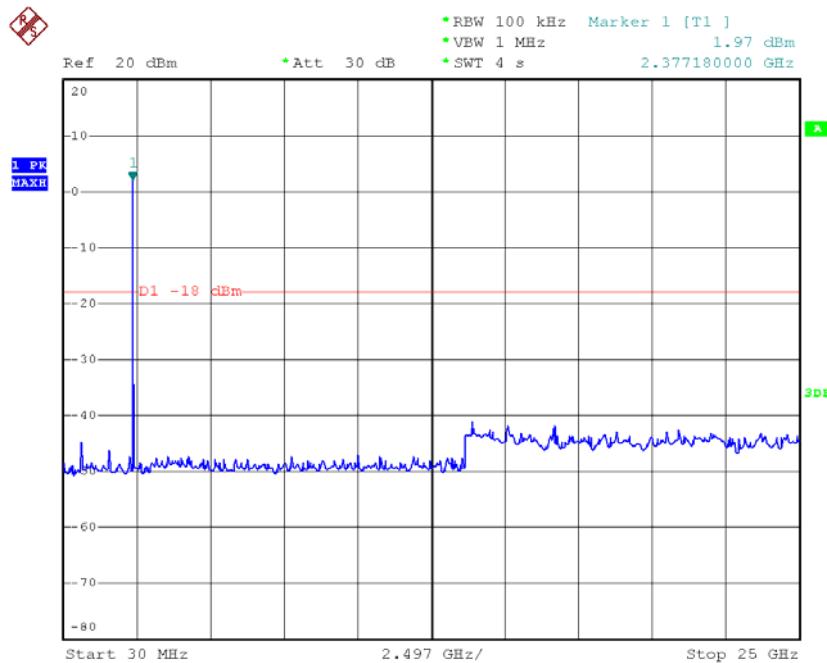
The measurement uncertainty

Conducted is defined as  $\pm 1.27\text{dB}$

## 5.6. Test Result of RF antenna conducted test

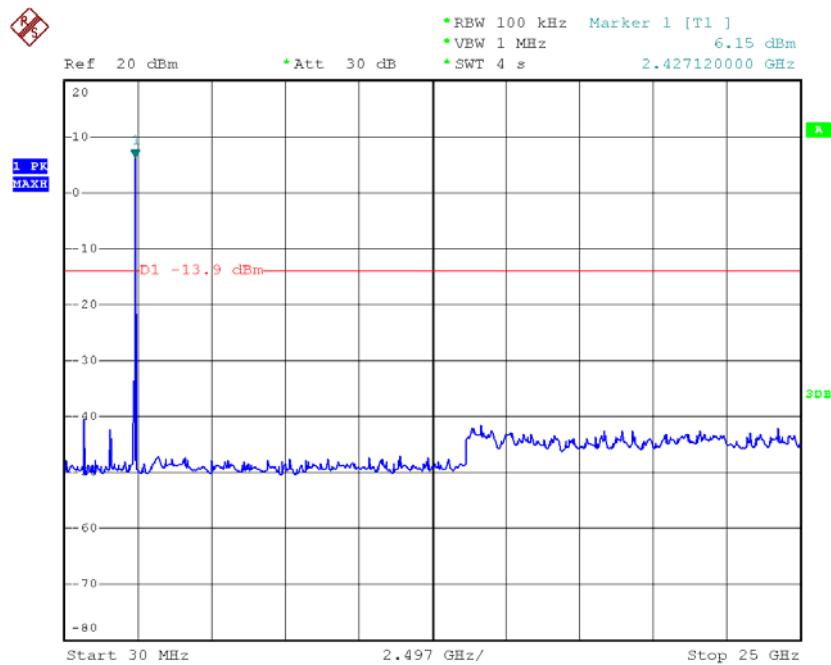
Product : 1Port Device Server  
Test Item : RF antenna conducted test  
Test Site : No.3 OATS  
Test Mode : Mode 1: Transmitter 802.11b

### Channel 01 (2412MHz)



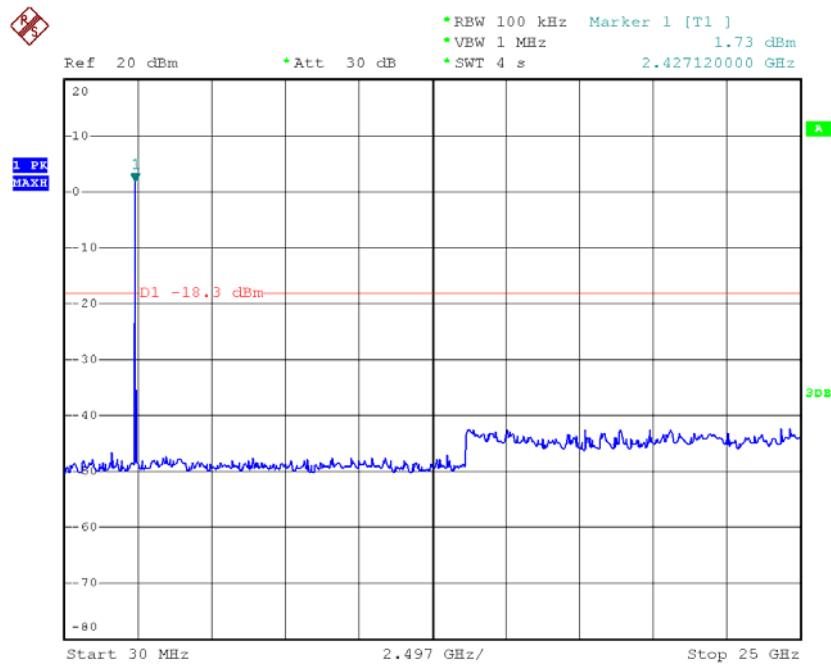
Date: 14.MAY.2008 14:25:15

**Channel 06 (2437MHz)**



Date: 14.MAY.2008 14:27:26

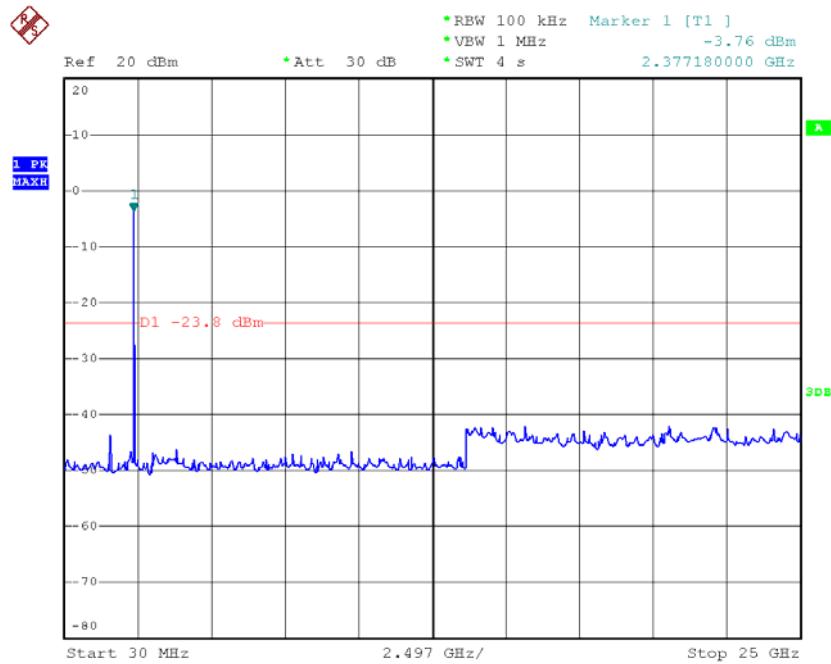
**Channel 11 (2462MHz)**



Date: 14.MAY.2008 14:28:09

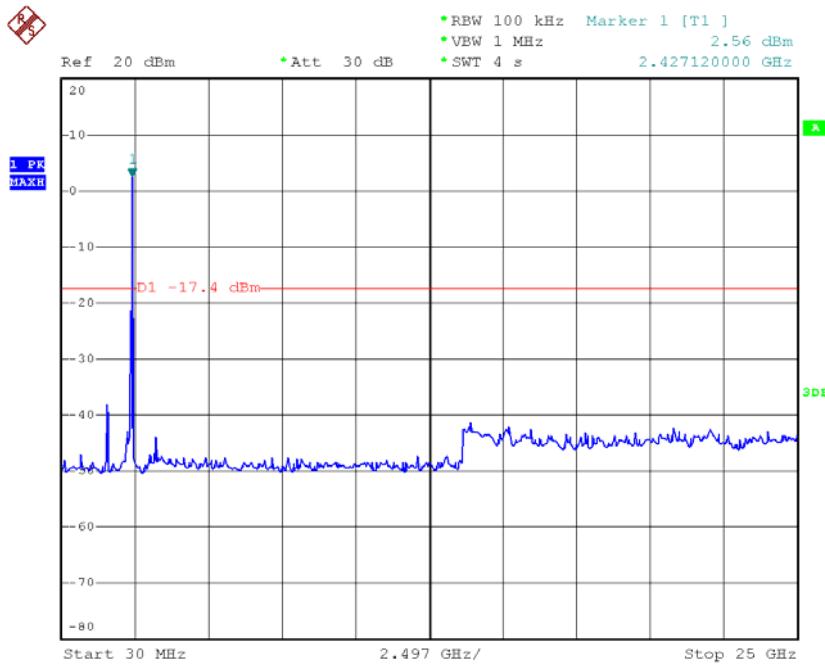
Product : 1Port Device Server  
Test Item : RF Antenna Conducted Spurious  
Test Site : No.3 OATS  
Test Mode : Mode 2: Transmitter 802.11g

### Channel 01 (2412MHz)



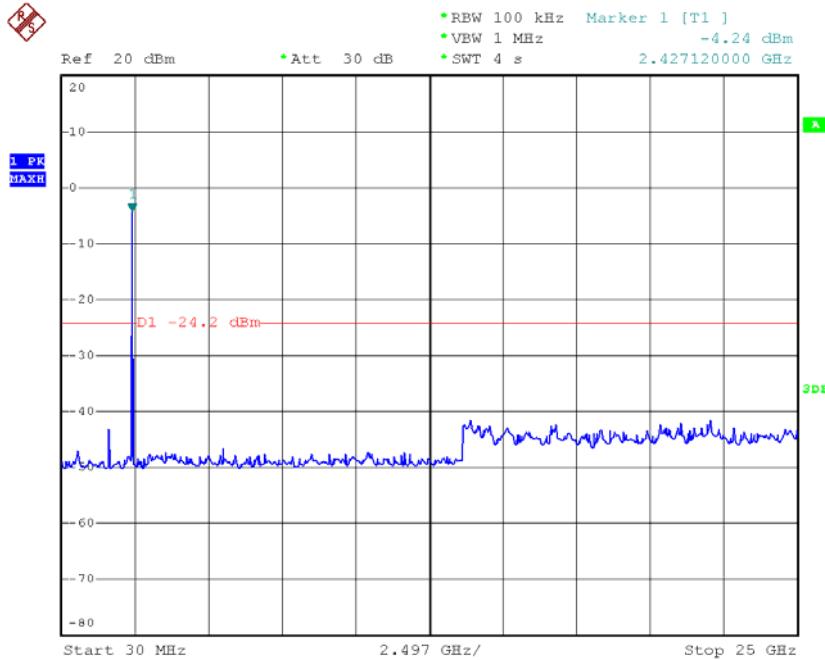
Date: 14.MAY.2008 14:28:52

## Channel 06 (2437MHz)



Date: 14.MAY.2008 14:29:45

## Channel 11 (2462MHz)



Date: 14.MAY.2008 14:30:30

## 6. Radiated Emission Band Edge

### 6.1. Test Equipment

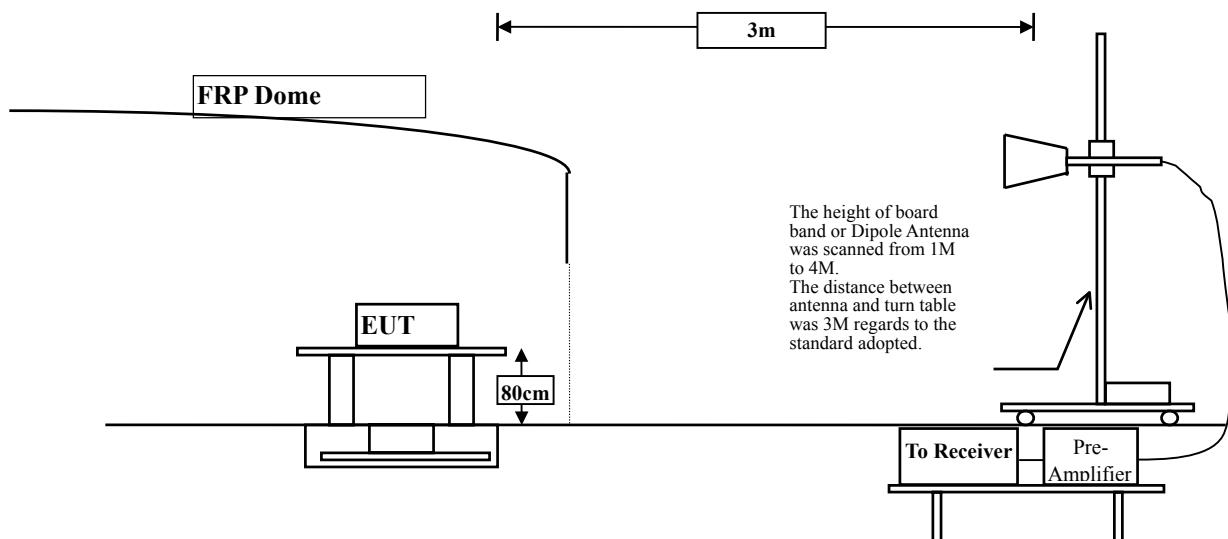
The following test equipments are used during the band edge tests:

| Equipment           | Manufacturer | Model No./Serial No.  | Last Cal.  |
|---------------------|--------------|-----------------------|------------|
| X Test Receiver     | R & S        | ESI 26 / 838786 / 004 | May, 2008  |
| X Spectrum Analyzer | Agilent      | E4407B / US39440758   | May, 2008  |
| X Bilog Antenna     | SCHAFFNER    | CBL6112B / 2697       | May, 2008  |
| X Horn Antenna      | Schwarzbeck  | BBHA9120D / 305, 306  | July, 2007 |
| X Horn Antenna      | Schwarzbeck  | BBHA9170 / 208, 209   | July, 2007 |
| X Pre-Amplifier     | QTK          | QTK-AMP-01 / 0001     | July, 2007 |
| X Pre-Amplifier     | QTK          | QTK-AMP-03 / 0003     | May, 2008  |
| X Pre-Amplifier     | HP           | 8449B / 3008A01123    | July, 2007 |

Note: 1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.  
 2. The test instruments marked with "X" are used to measure the final test results.

### 6.2. Test Setup

#### RF Radiated Measurement:



### 6.3. Limits

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 20dB below the level of the fundamental or to the general radiated emission limits in paragraph 15.209, whichever is the lesser attenuation.

#### **6.4. Test Procedure**

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

The EUT is placed on a turn table which is 0.8 meter above ground. The turn table is rotated 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna is scanned from 1 meter to 4 meters to find out the maximum emission level. This is repeated for both horizontal and vertical polarization of the antenna. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4:2003 on radiated measurement.

#### **6.5. Uncertainty**

$\pm$  3.9 dB above 1GHz

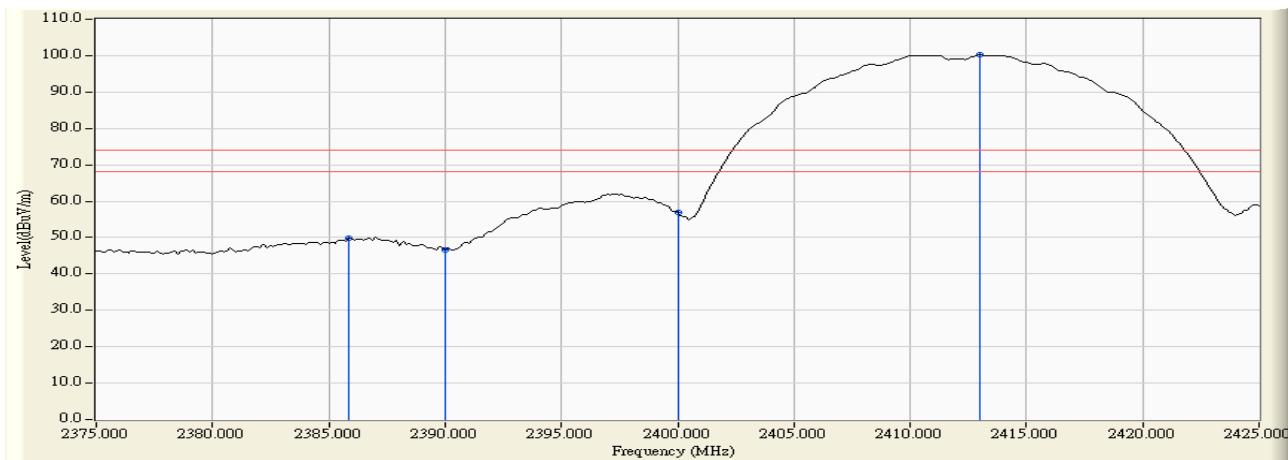
## 6.6. Test Result of Band Edge

Product : 1Port Device Server  
Test Item : Band Edge Data  
Test Site : No.3 OATS  
Test Mode : Mode 1: Transmitter 802.11b

### RF Radiated Measurement (Horizontal):

| Channel  | Frequency (MHz) | Correct Factor (dB) | Reading Level (dBuV) | Emission Level (dBuV/m) | Peak Limit (dBuV/m) | Average Limit (dBuV/m) | Result |
|----------|-----------------|---------------------|----------------------|-------------------------|---------------------|------------------------|--------|
| 1 (Peak) | 2385.875        | -2.397              | 52.296               | 49.899                  | 74.00               | 54.00                  | Pass   |

Figure Channel 1: **Horizontal (Peak)**



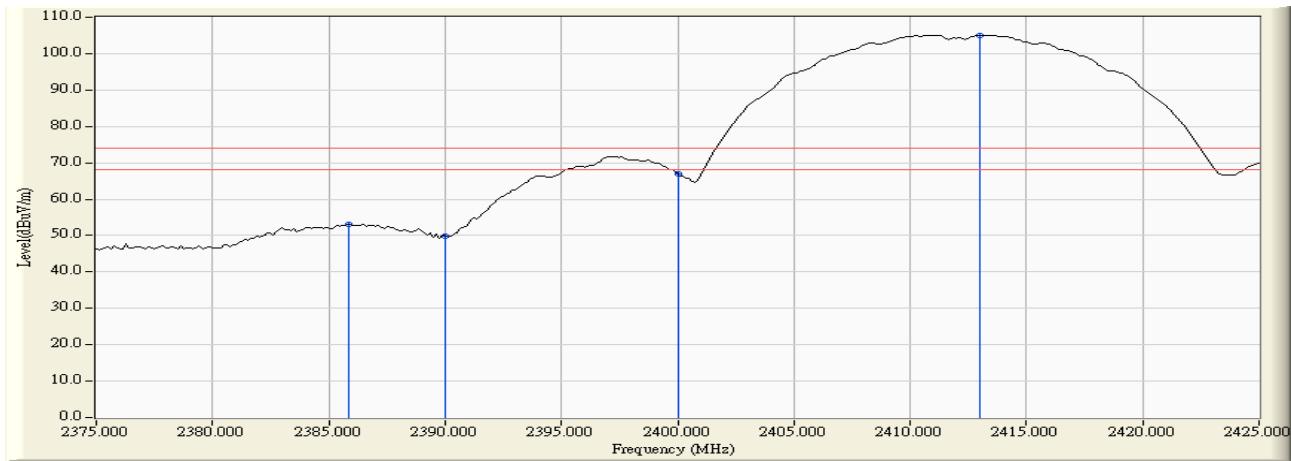
Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “\*”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : 1Port Device Server  
Test Item : Band Edge Data  
Test Site : No.3 OATS  
Test Mode : Mode 1: Transmitter 802.11b

**RF Radiated Measurement (Vertical):**

| Channel  | Frequency (MHz) | Correct Fcator (dB) | Reading Level (dBuV) | Emission Level (dBuV/m) | Peak Limit (dBuV/m) | Average Limit (dBuV/m) | Result |
|----------|-----------------|---------------------|----------------------|-------------------------|---------------------|------------------------|--------|
| 1 (Peak) | 2385.875        | -2.397              | 55.392               | 52.995                  | 74.00               | 54.00                  | Pass   |

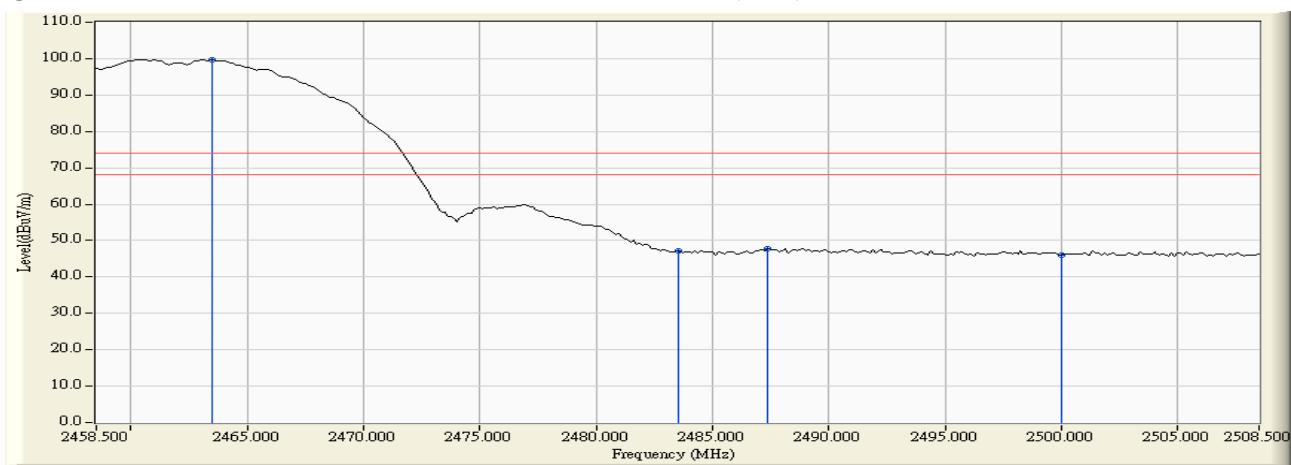
**Figure Channel 1:****Vertical (Peak)****Note:**

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “\*”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : 1Port Device Server  
 Test Item : Band Edge Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmitter 802.11b

**RF Radiated Measurement (Horizontal):**

| Channel  | Frequency (MHz) | Correct Factor (dB) | Reading Level (dBuV) | Emission Level (dBuV/m) | Peak Limit (dBuV/m) | Average Limit (dBuV/m) | Result |
|----------|-----------------|---------------------|----------------------|-------------------------|---------------------|------------------------|--------|
| 11(Peak) | 2487.375        | -1.926              | 49.598               | 47.673                  | 74.00               | 54.00                  | Pass   |

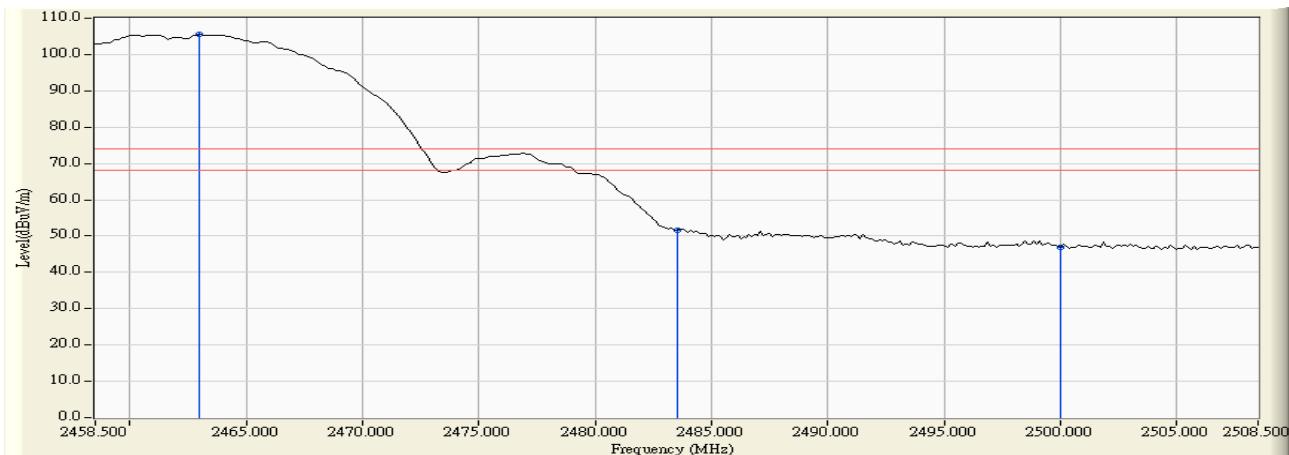
**Figure Channel 11:**
**Horizontal (Peak)**

**Note:**

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “\*”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : 1Port Device Server  
Test Item : Band Edge Data  
Test Site : No.3 OATS  
Test Mode : Mode 1: Transmitter 802.11b

**RF Radiated Measurement (Vertical):**

| Channel  | Frequency (MHz) | Correct Factor (dB) | Reading Level (dBuV) | Emission Level (dBuV/m) | Peak Limit (dBuV/m) | Average Limit (dBuV/m) | Result |
|----------|-----------------|---------------------|----------------------|-------------------------|---------------------|------------------------|--------|
| 11(Peak) | 2483.500        | -1.937              | 53.668               | 51.731                  | 74.00               | 54.00                  | Pass   |

**Figure Channel 11:****Vertical (Peak)****Note:**

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “\*”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : 1Port Device Server  
 Test Item : Band Edge Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmitter 802.11g

#### RF Radiated Measurement (Horizontal):

| Channel     | Frequency (MHz) | Correct Factor (dB) | Reading Level (dBuV) | Emission Level (dBuV/m) | Peak Limit (dBuV/m) | Average Limit (dBuV/m) | Result |
|-------------|-----------------|---------------------|----------------------|-------------------------|---------------------|------------------------|--------|
| 1 (Peak)    | 2390.000        | -2.378              | 58.931               | 56.554                  | 74.00               | 54.00                  | Pass   |
| 1 (Average) | 2390.000        | -2.378              | 43.371               | 40.994                  | 74.00               | 54.00                  | Pass   |

Figure Channel 1:

Horizontal (Peak)

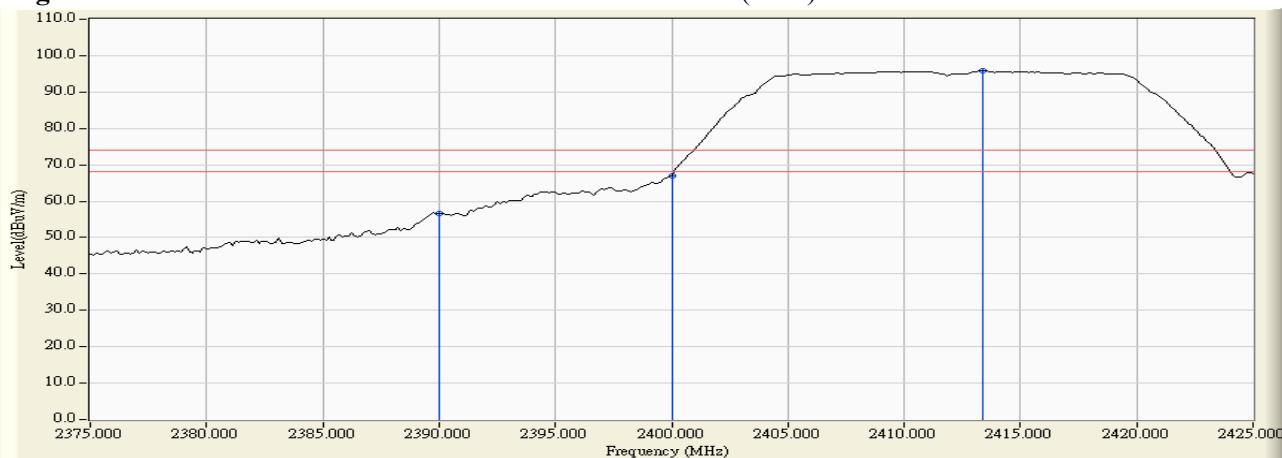
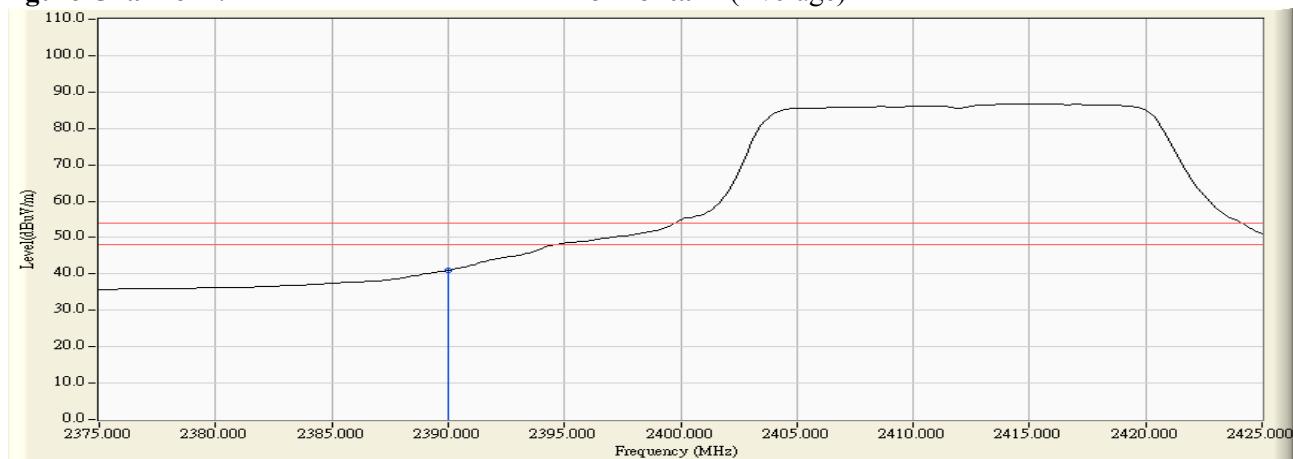


Figure Channel 1:

Horizontal (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “ \* ”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : 1Port Device Server  
 Test Item : Band Edge Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmitter 802.11g

#### RF Radiated Measurement (Vertical):

| Channel     | Frequency (MHz) | Correct Fcator (dB) | Reading Level (dBuV) | Emission Level (dBuV/m) | Peak Limit (dBuV/m) | Average Limit (dBuV/m) | Result |
|-------------|-----------------|---------------------|----------------------|-------------------------|---------------------|------------------------|--------|
| 1 (Peak)    | 2390.000        | -2.378              | 68.749               | 66.372                  | 74.00               | 54.00                  | Pass   |
| 1 (Average) | 2390.000        | -2.378              | 51.815               | 49.438                  | 74.00               | 54.00                  | Pass   |

Figure Channel 1: Vertical (Peak)

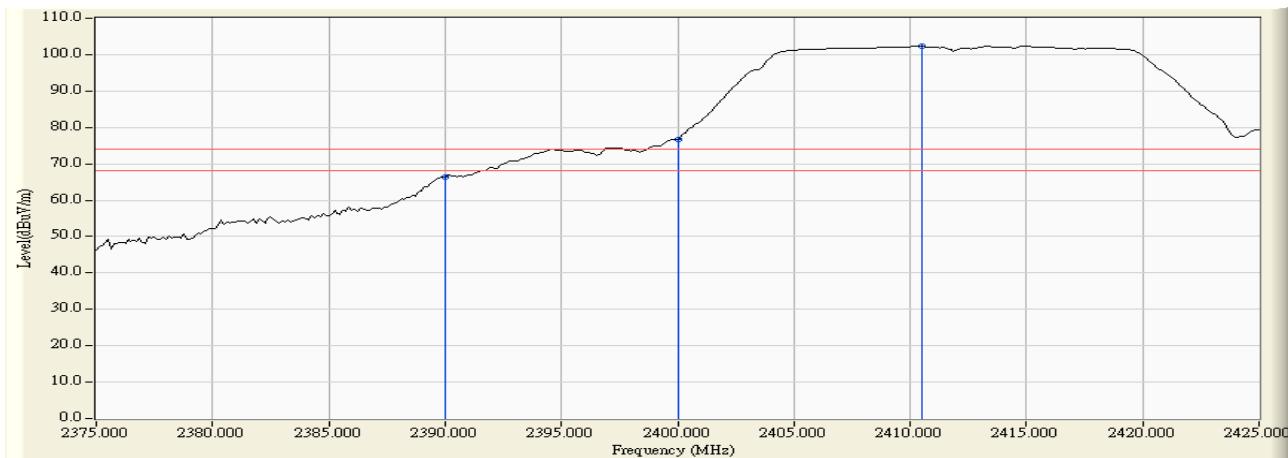
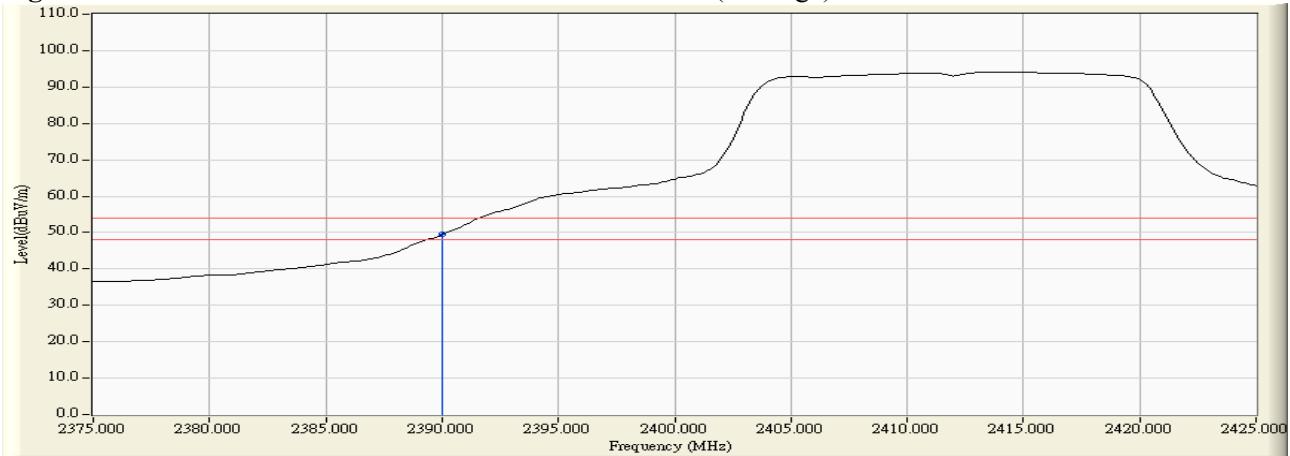


Figure Channel 1: Vertical (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “\*”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

Product : 1Port Device Server  
 Test Item : Band Edge Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmitter 802.11g

#### RF Radiated Measurement (Horizontal):

| Channel     | Frequency (MHz) | Correct Factor (dB) | Reading Level (dBuV) | Emission Level (dBuV/m) | Peak Limit (dBuV/m) | Average Limit (dBuV/m) | Result |
|-------------|-----------------|---------------------|----------------------|-------------------------|---------------------|------------------------|--------|
| 11(Peak)    | 2483.500        | -1.937              | 55.583               | 53.646                  | 74.00               | 54.00                  | Pass   |
| 11(Average) | 2483.500        | -1.937              | 40.718               | 38.781                  | 74.00               | 54.00                  | Pass   |

Figure Channel 11:

Horizontal (Peak)

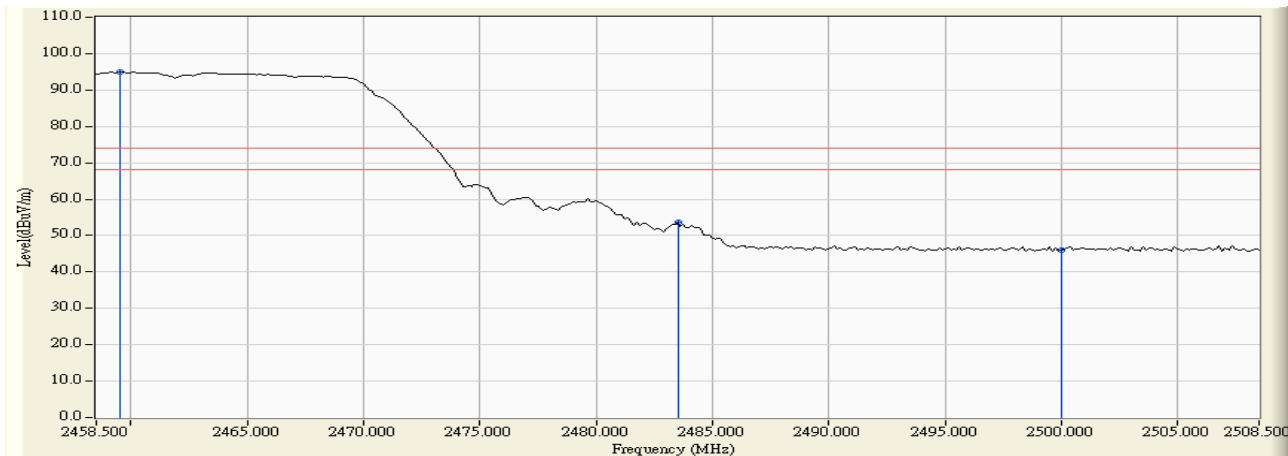
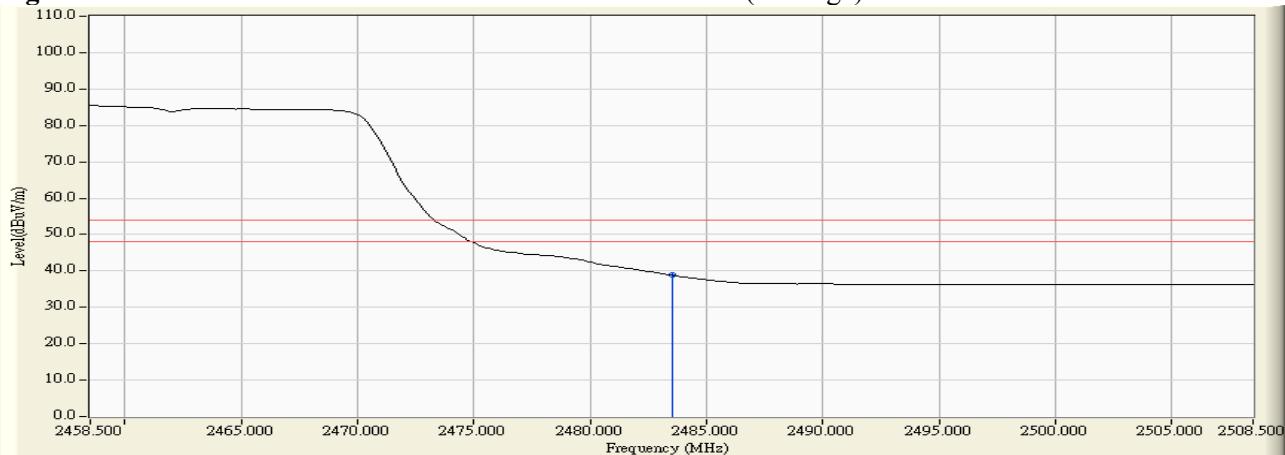


Figure Channel 11:

Horizontal (Average)



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “\*”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

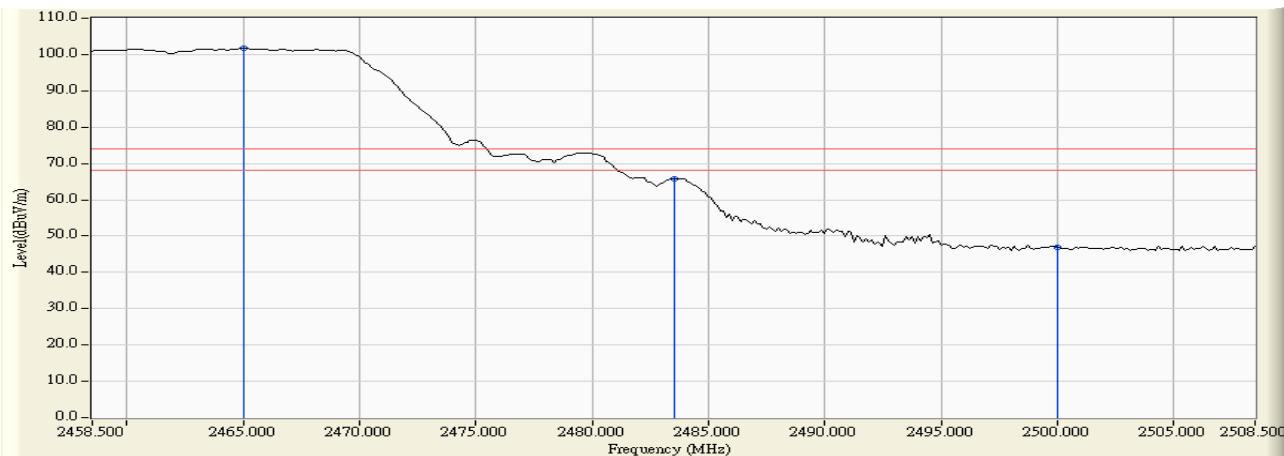
Product : 1Port Device Server  
 Test Item : Band Edge Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmitter 802.11g

**RF Radiated Measurement (Vertical):**

| Channel  | Frequency (MHz) | Correct Factor (dB) | Reading Level (dBuV) | Emission Level (dBuV/m) | Peak Limit (dBuV/m) | Average Limit (dBuV/m) | Result |
|----------|-----------------|---------------------|----------------------|-------------------------|---------------------|------------------------|--------|
| 11(Peak) | 2483.500        | -1.937              | 67.759               | 65.822                  | 74.00               | 54.00                  | Pass   |
| 11(Peak) | 2483.500        | -1.937              | 40.718               | 38.781                  | 74.00               | 54.00                  | Pass   |

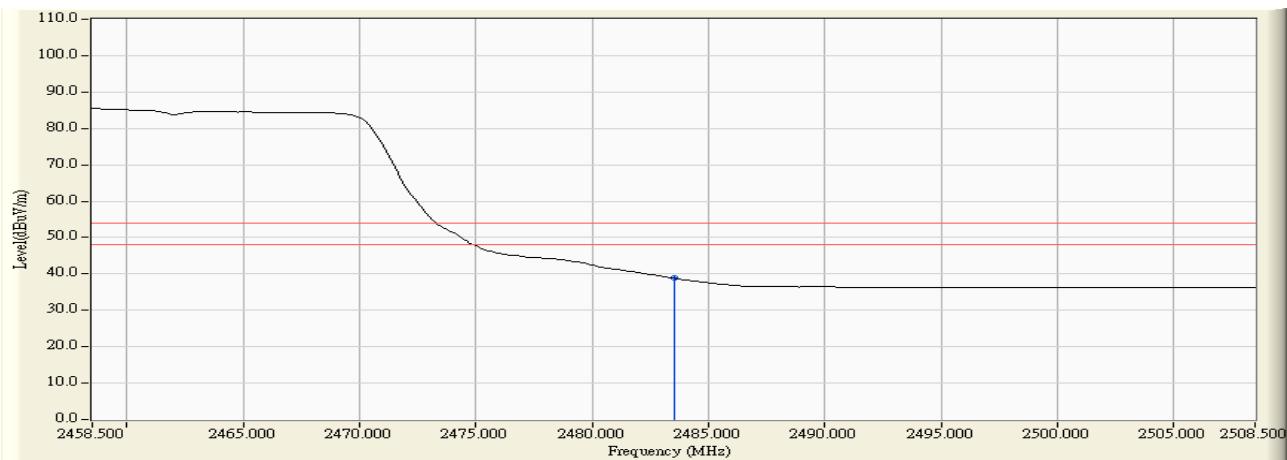
**Figure Channel 11:**

**Vertical (Peak)**



**Figure Channel 11:**

**Vertical (Average)**



Note:

1. All readings above 1GHz are performed with peak and/or average measurements as necessary.
2. Peak measurements: RBW = 1MHz, VBW = 3 MHz, Sweep: Auto.
3. Average measurements: RBW = 1MHz, VBW = 10 Hz, Sweep: Auto.
4. “\*”, means this data is the worst emission level.
5. Measurement Level = Reading Level + Correct Factor.
6. The average measurement was not performed when the peak measured data under the limit of average detection.

## 7. Occupied Bandwidth

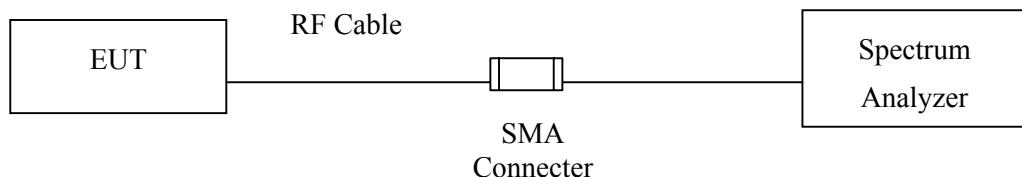
### 7.1. Test Equipment

The following test equipments are used during the radiated emission tests:

| Equipment         | Manufacturer | Model No./Serial No.  | Last Cal.   |
|-------------------|--------------|-----------------------|-------------|
| X Test Receiver   | R & S        | ESI 26 / 838786 / 004 | May, 2008   |
| Spectrum Analyzer | Agilent      | E4407B / US39440758   | May, 2008   |
| Spectrum Analyzer | Agilent      | N9010A / MY48030495   | April, 2008 |

Note: 1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.  
2. The test instruments marked with "X" are used to measure the final test results.

### 7.2. Test Setup



### 7.3. Test Procedures

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

Set RBW = 100 kHz, Span greater than RBW.

### 7.4. Limits

The 6 dB bandwidth must be greater than 500 kHz.

### 7.5. Uncertainty

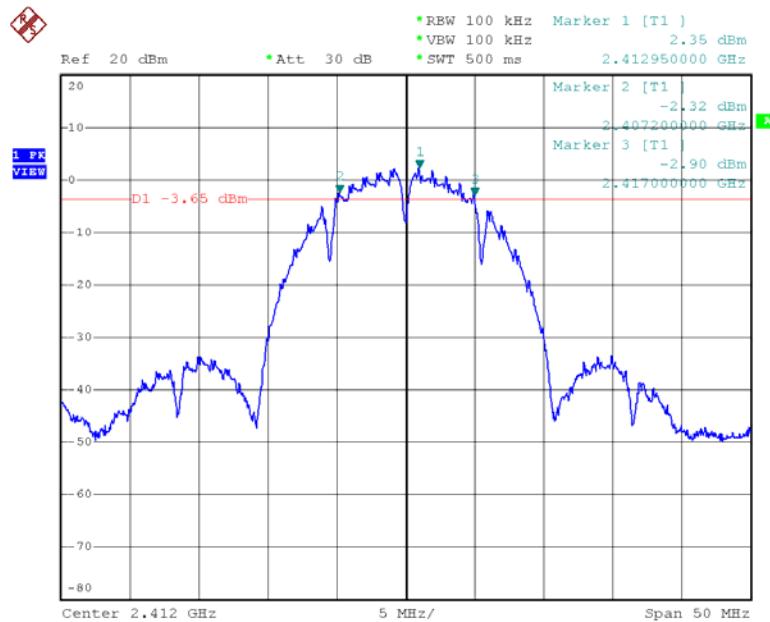
± 150Hz

## 7.6. Test Result of Occupied Bandwidth

Product : 1Port Device Server  
 Test Item : Occupied Bandwidth Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 1: Transmitter 802.11b

| Channel No. | Frequency (MHz) | Measurement Level (kHz) | Required Limit (kHz) | Result |
|-------------|-----------------|-------------------------|----------------------|--------|
| 1 (1Mbps)   | 2412.00         | 10000                   | >500                 | Pass   |
| 6 (1Mbps)   | 2437.00         | 90000                   | >500                 | Pass   |
| 11 (1Mbps)  | 2462.00         | 10000                   | >500                 | Pass   |

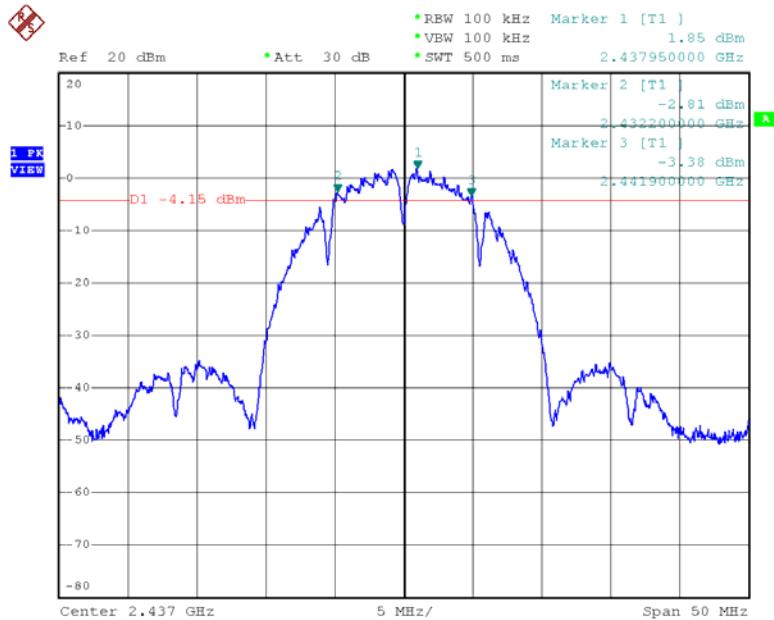
### Channel 1:



PN1

Date: 30.MAY.2007 06:45:52

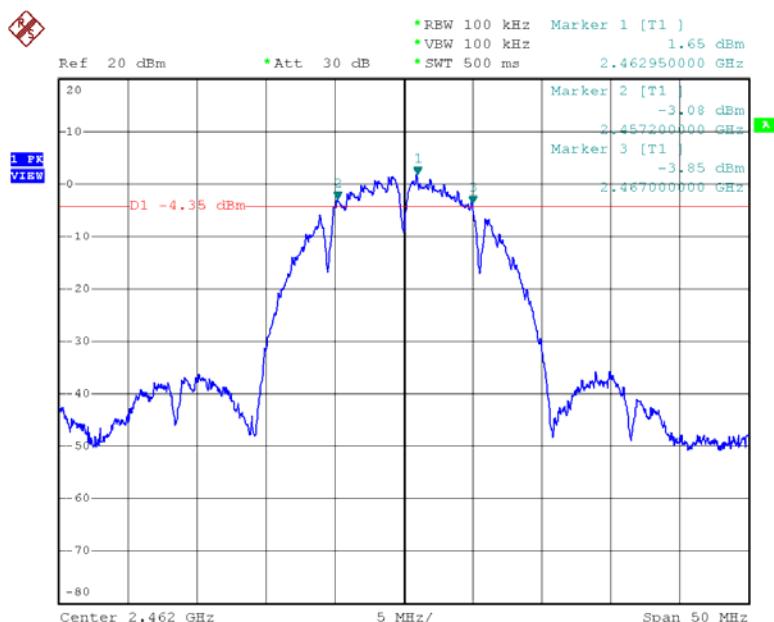
### Channel 6:



PN1

Date: 30.MAY.2007 06:47:06

### Channel 11:



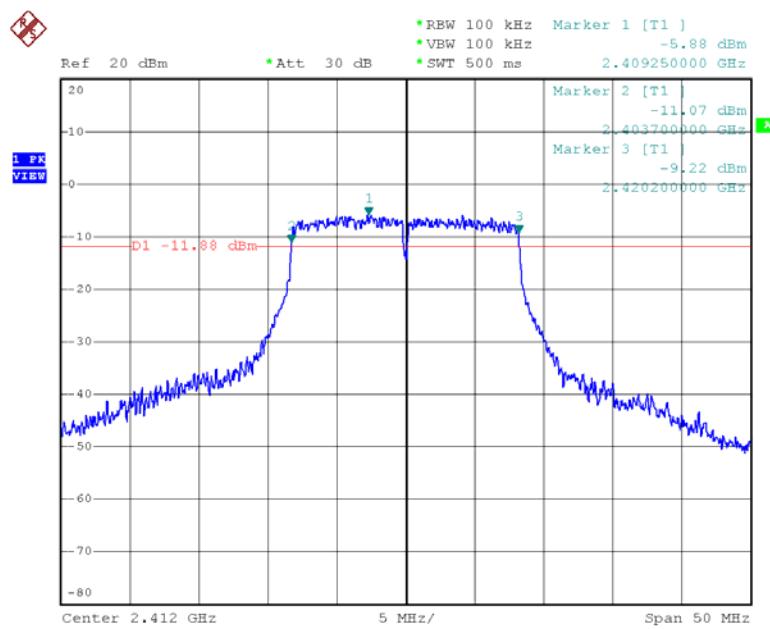
PN1

Date: 30.MAY.2007 06:48:39

Product : 1Port Device Server  
Test Item : Occupied Bandwidth Data  
Test Site : No.3 OATS  
Test Mode : Mode 2: Transmitter 802.11g

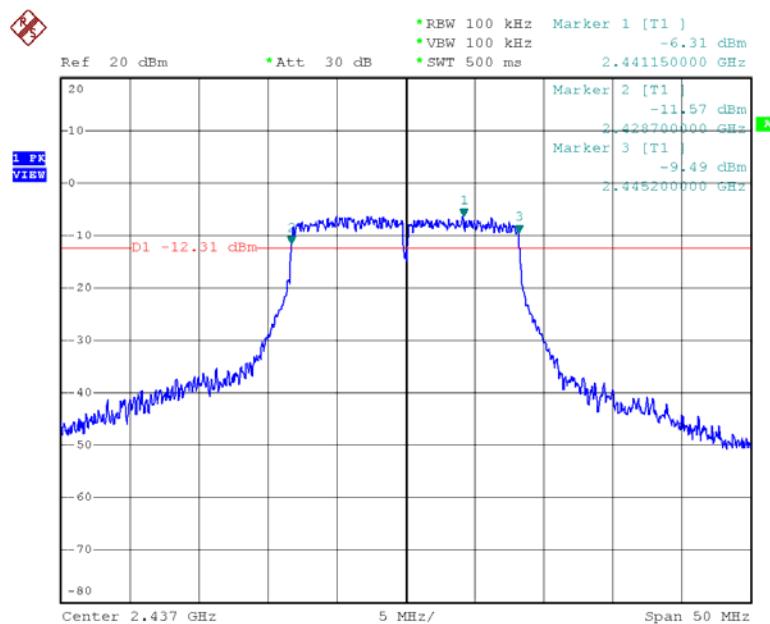
| Channel No. | Frequency (MHz) | Measurement Level (kHz) | Required Limit (kHz) | Result |
|-------------|-----------------|-------------------------|----------------------|--------|
| 1 (6Mbps)   | 2412.00         | 17000                   | >500                 | Pass   |
| 6 (6Mbps)   | 2437.00         | 17000                   | >500                 | Pass   |
| 11 (6Mbps)  | 2462.00         | 19000                   | >500                 | Pass   |

### Channel 1:



PN1  
Date: 30.MAY.2007 07:03:06

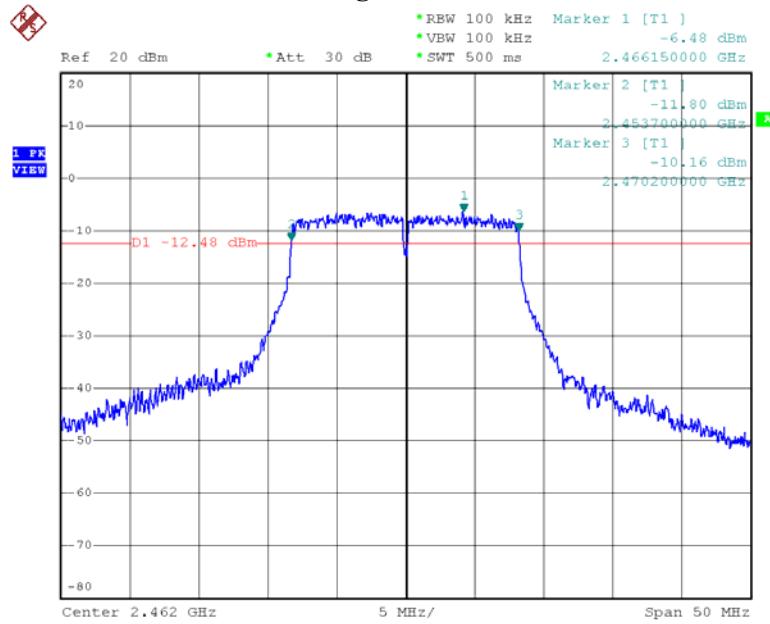
**Channel 6:**



PN1

Date: 30.MAY.2007 07:04:05

**Figure Channel 11:**



PN1

Date: 30.MAY.2007 07:06:47

## 8. Power Density

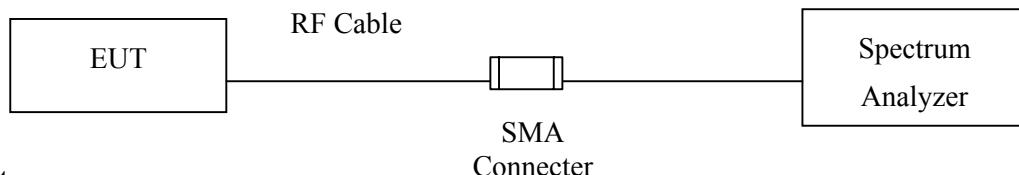
### 8.1. Test Equipment

The following test equipments are used during the radiated emission tests:

| Equipment         | Manufacturer | Model No./Serial No.  | Last Cal.   |
|-------------------|--------------|-----------------------|-------------|
| X Test Receiver   | R & S        | ESI 26 / 838786 / 004 | May, 2008   |
| Spectrum Analyzer | Agilent      | E4407B / US39440758   | May, 2008   |
| Spectrum Analyzer | Agilent      | N9010A / MY48030495   | April, 2008 |

Note: 1. All equipments are calibrated with traceable calibrations. Each calibration is traceable to the national or international standards.  
2. The test instruments marked with "X" are used to measure the final test results.

### 8.2. Test Setup



### 8.3. Limits

The transmitted power density averaged over any 1 second interval shall not be greater +8dBm in any 3kHz bandwidth.

### 8.4. Test Procedures

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

Set RBW= 3 kHz, VBW=10KHz, Sweep time=(SPAN/3KHz), detector=Peak detector

### 8.5. Uncertainty

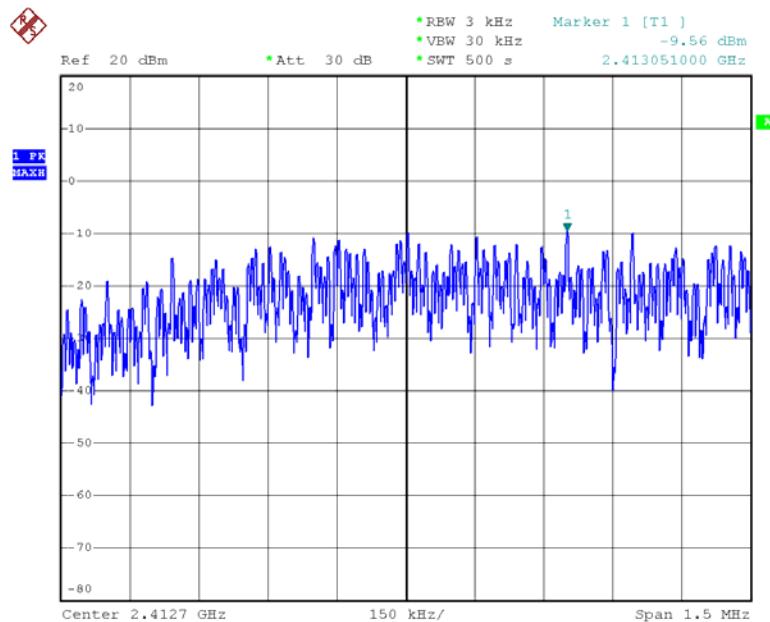
± 1.27 dB

## 8.6. Test Result of Power Density

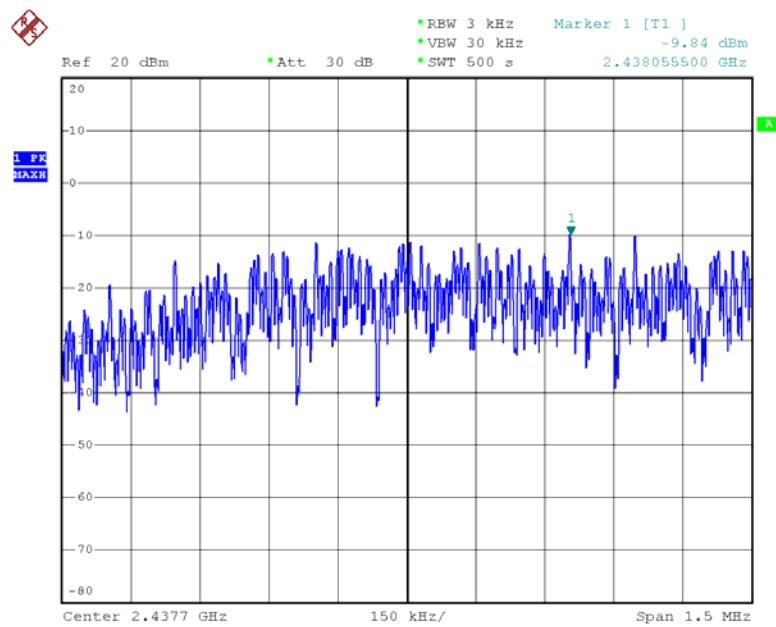
Product : 1Port Device Server  
Test Item : Power Density Data  
Test Site : No.3 OATS  
Test Mode : Mode 1: Transmitter 802.11b

| Channel No. | Frequency (MHz) | Measurement Level (dBm) | Required Limit (dBm) | Result |
|-------------|-----------------|-------------------------|----------------------|--------|
| 1 (1Mbps)   | 2412.00         | -9.56                   | < 10dBm              | Pass   |
| 6 (1Mbps)   | 2437.00         | -9.84                   | < 10dBm              | Pass   |
| 11 (1Mbps)  | 2462.00         | -10.03                  | < 10dBm              | Pass   |

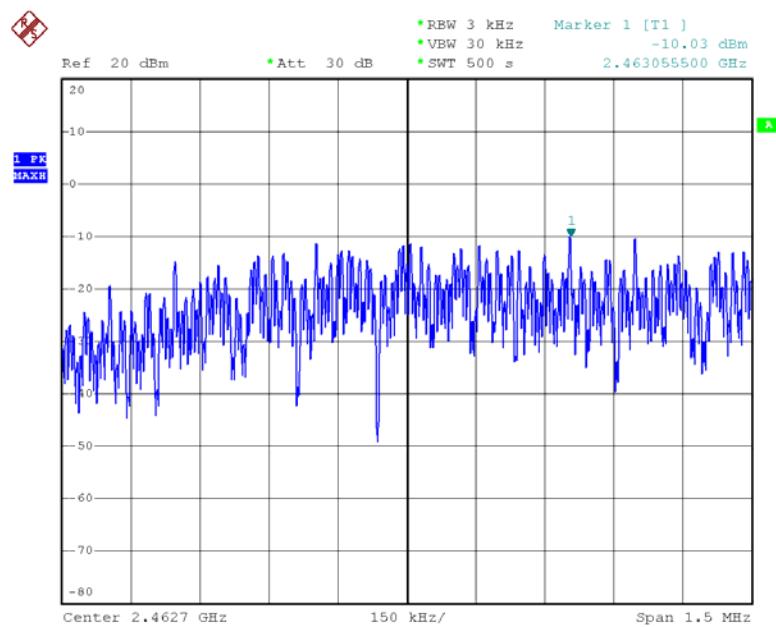
### Channel 1:



**Channel 6:**



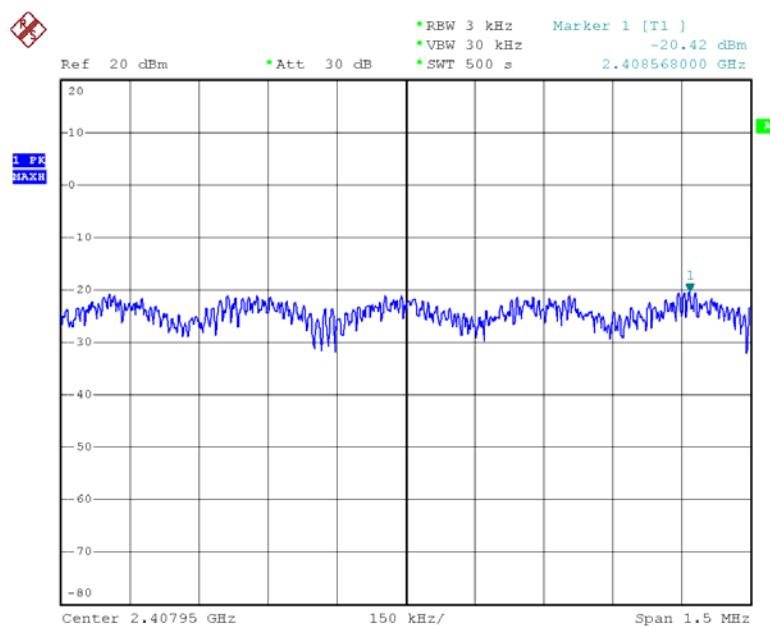
**Channel 11:**

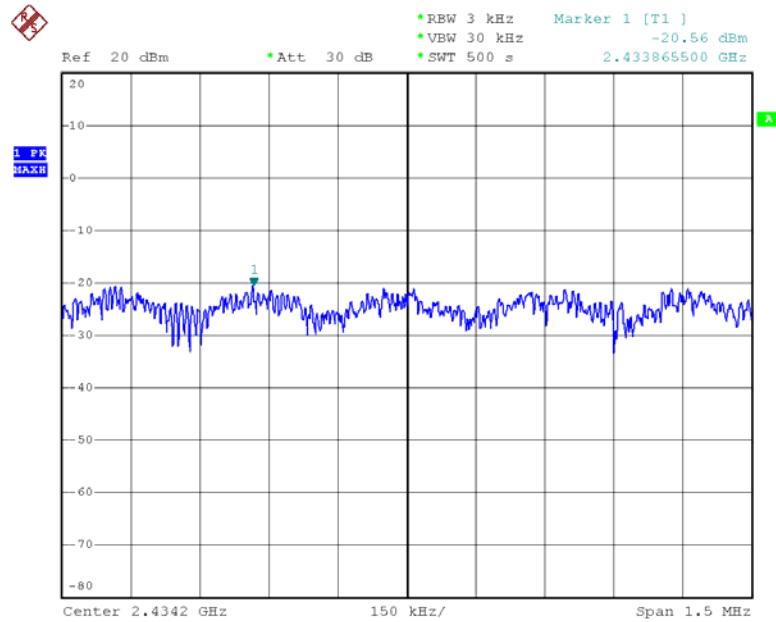
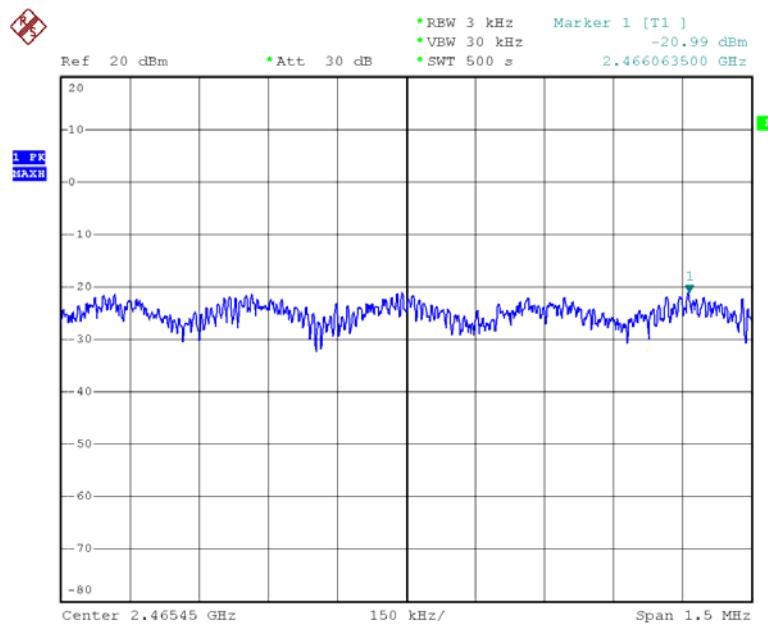


Product : 1Port Device Server  
 Test Item : Power Density Data  
 Test Site : No.3 OATS  
 Test Mode : Mode 2: Transmitter 802.11g

| Channel No. | Frequency (MHz) | Measurement Level (dBm) | Required Limit (dBm) | Result |
|-------------|-----------------|-------------------------|----------------------|--------|
| 1 (6Mbps)   | 2412.00         | -20.42                  | < 10dBm              | Pass   |
| 6 (6Mbps)   | 2437.00         | -20.56                  | < 10dBm              | Pass   |
| 11 (6Mbps)  | 2462.00         | -20.99                  | < 10dBm              | Pass   |

### Channel 1:



**Channel 6:****Channel 11:**

**9. EMI Reduction Method During Compliance Testing**

No modification was made during testing.