



A D T

# FCC TEST REPORT

**REPORT NO.:** RF980826H05

**MODEL NO.:** W301, RP-WP5112E

**RECEIVED:** Aug. 26, 2009

**TESTED:** Sep. 02 to 04, 2009

**ISSUED:** Sep. 21, 2009

**APPLICANT:** NETRONIX , INC.

**ADDRESS:** No. 945, Boai St., Jubei City,  
Hsin-Chu,302,Taiwan, R.O.C.

**ISSUED BY:** Bureau Veritas Consumer Products Services  
(H.K.) Ltd., Taoyuan Branch

**TEST LOCATION:** No. 81-1, Lu Liao Keng, 9th Ling,Wu Lung  
Tsuen, Chiung Lin Hsiang, Hsin Chu Hsien  
307, Taiwan

This test report consists of 88 pages in total. It may be duplicated completely for legal use with the approval of the applicant. It should not be reproduced except in full, without the written approval of our laboratory. The client should not use it to claim product endorsement by TAF or any government agencies. The test results in the report only apply to the tested sample.





## Table of Contents

|       |                                                          |    |
|-------|----------------------------------------------------------|----|
| 1.    | CERTIFICATION .....                                      | 4  |
| 2.    | SUMMARY OF TEST RESULTS .....                            | 5  |
| 2.1   | MEASUREMENT UNCERTAINTY .....                            | 6  |
| 3.    | GENERAL INFORMATION .....                                | 7  |
| 3.1   | GENERAL DESCRIPTION OF EUT .....                         | 7  |
| 3.2   | DESCRIPTION OF TEST MODES .....                          | 9  |
| 3.2.1 | TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL: ..... | 10 |
| 3.3   | GENERAL DESCRIPTION OF APPLIED STANDARDS .....           | 12 |
| 3.4   | DESCRIPTION OF SUPPORT UNITS.....                        | 13 |
| 3.5   | CONFIGURATION OF SYSTEM UNDER TEST .....                 | 14 |
| 4.    | TEST TYPES AND RESULTS .....                             | 15 |
| 4.1   | CONDUCTED EMISSION MEASUREMENT .....                     | 15 |
| 4.1.1 | LIMITS OF CONDUCTED EMISSION MEASUREMENT .....           | 15 |
| 4.1.2 | TEST INSTRUMENTS.....                                    | 15 |
| 4.1.3 | TEST PROCEDURES .....                                    | 16 |
| 4.1.4 | DEVIATION FROM TEST STANDARD .....                       | 16 |
| 4.1.5 | TEST SETUP .....                                         | 17 |
| 4.1.6 | EUT OPERATING CONDITIONS .....                           | 17 |
| 4.1.7 | TEST RESULTS .....                                       | 18 |
| 4.2   | RADIATED EMISSION MEASUREMENT .....                      | 20 |
| 4.2.1 | LIMITS OF RADIATED EMISSION MEASUREMENT .....            | 20 |
| 4.2.2 | TEST INSTRUMENTS.....                                    | 21 |
| 4.2.3 | TEST PROCEDURES .....                                    | 22 |
| 4.2.4 | DEVIATION FROM TEST STANDARD .....                       | 22 |
| 4.2.5 | TEST SETUP .....                                         | 23 |
| 4.2.6 | EUT OPERATING CONDITIONS .....                           | 23 |
|       | Below 1GHz Test Data .....                               | 24 |
| 4.2.7 | TEST RESULTS .....                                       | 24 |
|       | Above 1GHz Test Data .....                               | 25 |
| 4.2.8 | TEST RESULTS .....                                       | 25 |
| 4.3   | 6dB BANDWIDTH MEASUREMENT .....                          | 53 |
| 4.3.1 | LIMITS OF 6dB BANDWIDTH MEASUREMENT .....                | 53 |
| 4.3.2 | TEST INSTRUMENTS.....                                    | 53 |
| 4.3.3 | TEST PROCEDURE.....                                      | 54 |
| 4.3.4 | DEVIATION FROM TEST STANDARD .....                       | 54 |
| 4.3.5 | TEST SETUP .....                                         | 54 |
| 4.3.6 | EUT OPERATING CONDITIONS .....                           | 54 |
| 4.3.7 | TEST RESULTS .....                                       | 55 |



A D T

|       |                                                                                            |    |
|-------|--------------------------------------------------------------------------------------------|----|
| 4.4   | MAXIMUM PEAK OUTPUT POWER.....                                                             | 63 |
| 4.4.1 | LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT .....                                      | 63 |
| 4.4.2 | INSTRUMENTS.....                                                                           | 63 |
| 4.4.3 | TEST PROCEDURES .....                                                                      | 63 |
| 4.4.4 | DEVIATION FROM TEST STANDARD .....                                                         | 63 |
| 4.4.5 | TEST SETUP .....                                                                           | 63 |
| 4.4.6 | EUT OPERATING CONDITIONS .....                                                             | 63 |
| 4.4.7 | TEST RESULTS .....                                                                         | 64 |
| 4.5   | POWER SPECTRAL DENSITY MEASUREMENT.....                                                    | 66 |
| 4.5.1 | LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT .....                                         | 66 |
| 4.5.2 | TEST INSTRUMENTS.....                                                                      | 66 |
| 4.5.3 | TEST PROCEDURE.....                                                                        | 67 |
| 4.5.4 | DEVIATION FROM TEST STANDARD .....                                                         | 67 |
| 4.5.5 | TEST SETUP .....                                                                           | 67 |
| 4.5.6 | EUT OPERATING CONDITION.....                                                               | 67 |
| 4.5.7 | TEST RESULTS .....                                                                         | 68 |
| 4.6   | CONDUCTED OUT-BAND EMISSION MEASUREMENT.....                                               | 76 |
| 4.6.1 | LIMITS OF Conducted Out-Band Emission MEASUREMENT .....                                    | 76 |
| 4.6.2 | TEST INSTRUMENTS.....                                                                      | 76 |
| 4.6.3 | TEST PROCEDURE.....                                                                        | 76 |
| 4.6.4 | DEVIATION FROM TEST STANDARD .....                                                         | 77 |
| 4.6.5 | EUT OPERATING CONDITION.....                                                               | 77 |
| 4.6.6 | TEST RESULTS .....                                                                         | 77 |
| 4.7   | ANTENNA REQUIREMENT .....                                                                  | 86 |
| 4.7.1 | STANDARD APPLICABLE.....                                                                   | 86 |
| 4.7.2 | ANTENNA CONNECTED CONSTRUCTION.....                                                        | 86 |
| 5.    | INFORMATION ON THE TESTING LABORATORIES .....                                              | 87 |
| 6.    | APPENDIX-A- MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES<br>TO THE EUT BY THE LAB ..... | 88 |



## 1. CERTIFICATION

**PRODUCT:** IEEE802.11n Wireless 1T2R PCI  
**BRAND NAME:** NETRONIX, REPOTEC  
**MODEL NO.:** W301, RP-WP5112E  
**TEST SAMPLE:** MASS-PRODUCTION  
**TESTED:** Sep. 02 to 04, 2009  
**APPLICANT:** NETRONIX , INC.  
**STANDARDS:** FCC Part 15, Subpart C (Section 15.247),  
ANSI C63.4-2003

The above equipment (Model: W301) has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

**PREPARED BY** : Midoli Peng , **DATE:** Sep. 21, 2009  
( Midoli Peng, Specialist )

**TECHNICAL ACCEPTANCE** : Hank Chung , **DATE:** Sep. 21, 2009  
Responsible for RF ( Hank Chung, Deputy Manager )

**APPROVED BY** : May Chen , **DATE:** Sep. 21, 2009  
(May Chen, Deputy Manager )

## 2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

| <b>APPLIED STANDARD: FCC Part 15, Subpart C (Section 15.247)</b> |                                                                                                          |               |                                                                                   |
|------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|---------------|-----------------------------------------------------------------------------------|
| <b>Standard Section</b>                                          | <b>Test Type and Limit</b>                                                                               | <b>Result</b> | <b>Remark</b>                                                                     |
| 15.207                                                           | AC Power Conducted Emission                                                                              | PASS          | Meet the requirement of limit.<br>Minimum passing margin is -12.21dB at 11.414MHz |
| 15.247(a)(2)                                                     | Spectrum Bandwidth of a Direct Sequence Spread Spectrum System<br>Limit: min. 500kHz                     | PASS          | Meet the requirement of limit.                                                    |
| 15.247(b)                                                        | Maximum Peak Output Power<br>Limit: max. 30dBm                                                           | PASS          | Meet the requirement of limit.                                                    |
| 15.247(d)                                                        | Radiated Emissions<br>Limit: Table 15.209                                                                | PASS          | Meet the requirement of limit.<br>Minimum passing margin is -1.10dB at 2483.64MHz |
| 15.247(e)                                                        | Power Spectral Density<br>Limit: max. 8dBm                                                               | PASS          | Meet the requirement of limit.                                                    |
| 15.247(d)                                                        | Conducted Out-Band Emission Measurement<br>Limit: 20dB less than the peak value of fundamental frequency | PASS          | Meet the requirement of limit.                                                    |

## 2.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of  $k=2$ .

| Measurement                       | Value    |
|-----------------------------------|----------|
| Conducted emissions               | 2.44 dB  |
| Radiated emissions (30MHz-1GHz)   | 3.83 dB  |
| Radiated emissions (1GHz -18GHz)  | 2.44 dB  |
| Radiated emissions (18GHz -40GHz) | 2.668 dB |



A D T

### 3. GENERAL INFORMATION

#### 3.1 GENERAL DESCRIPTION OF EUT

|                              |                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>PRODUCT</b>               | IEEE802.11n Wireless 1T2R PCI                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>MODEL NO.</b>             | W301, RP-WP5112E                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>FCC ID</b>                | NOI-W301                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>POWER SUPPLY</b>          | DC 3.3 V from host equipment                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>MODULATION TYPE</b>       | CCK, DQPSK, DBPSK for DSSS<br>64QAM, 16QAM, QPSK, BPSK for OFDM                                                                                                                                                                                                                                                                                                                                                                         |
| <b>MODULATION TECHNOLOGY</b> | DSSS, OFDM                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>TRANSFER RATE</b>         | 802.11b: 11 / 5.5 / 2 / 1Mbps<br>802.11g: 54 / 48 / 36 / 24 / 18 / 12 / 9 / 6Mbps<br>Draft 802.11n (20MHz, 800ns GI): 65 / 58.5 / 52 / 39 / 26 / 19.5 / 13 / 6.5Mbps<br>Draft 802.11n (40MHz, 800ns GI): 135 / 121.5 / 108 / 81 / 54 / 40.5 / 27 / 13.5Mbps<br>Draft 802.11n (20MHz, 400ns GI): 72.2 / 65 / 57.8 / 43.3 / 28.9 / 21.7 / 14.4 / 7.2Mbps<br>Draft 802.11n (40MHz, 400ns GI): 150 / 135 / 120 / 90 / 60 / 45 / 30 / 15Mbps |
| <b>FREQUENCY RANGE</b>       | 2412 ~ 2462MHz                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>NUMBER OF CHANNEL</b>     | 11 for 802.11b, 802.11g, draft 802.11n (20MHz)<br>7 for draft 802.11n (40MHz)                                                                                                                                                                                                                                                                                                                                                           |
| <b>MAXIMUM OUTPUT POWER</b>  | 802.11b: 76.384mW<br>802.11g: 208.930mW<br>draft 802.11n (20MHz): 158.489mW<br>draft 802.11n (40MHz): 169.824mW                                                                                                                                                                                                                                                                                                                         |
| <b>ANTENNA TYPE</b>          | Please see note 2                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>DATA CABLE</b>            | NA                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>I/O PORT</b>              | NA                                                                                                                                                                                                                                                                                                                                                                                                                                      |

#### NOTE:

1. The EUT has two brand names and model names, which are identical to each other in all aspects except for the followings:

| Brand Name | Model Name |
|------------|------------|
| NETRONIX   | W301       |
| REPOTEC    | RP-WP5112E |

From the above models, model: **W301** was selected as representative model for the test and its data was recorded in this report.



A D T

2. There are two antennas provided to this EUT, please refer to the following table:

| No. | Antenna Type | Gain (dBi) | Antenna Connector |
|-----|--------------|------------|-------------------|
| 1   | Dipole       | 2          | SMA Male Reverse  |
| 2   | Dipole       | 2          | SMA Male Reverse  |

3. The EUT incorporates a SIMO function with 802.11b, 802.11g, draft 802.11n. Physically, the EUT provides one completed transmitter and receivers.
4. The EUT is 1 \* 2 spatial SIMO without beam forming function. The antenna configuration is one transmitter antenna and two receiver antenna, as there are 2 Dipole antennas. There is one transmitter and two receiver.
5. The EUT complies with draft 802.11n standards and backwards compatible with 802.11b, 802.11g products.
6. The EUT, operates in the 2.4GHz frequency range, lets you connect IEEE 802.11g or IEEE 802.11b and draft 802.11n technique devices to the network.
7. The above EUT information was declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.





A D T

### 3.2 DESCRIPTION OF TEST MODES

Eleven channels are provided for 802.11b, 802.11g, draft 802.11n (20MHz):

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

Seven channels are provided for draft 802.11n (40MHz):

| CHANNEL | FREQUENCY | CHANNEL | FREQUENCY |
|---------|-----------|---------|-----------|
| 1       | 2422MHz   | 5       | 2442MHz   |
| 2       | 2427MHz   | 6       | 2447MHz   |
| 3       | 2432MHz   | 7       | 2452MHz   |
| 4       | 2437MHz   |         |           |

### 3.2.1 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL:

| EUT CONFIGURE MODE | APPLICABLE TO |         |         |      | DESCRIPTION |
|--------------------|---------------|---------|---------|------|-------------|
|                    | PLC           | RE < 1G | RE ≥ 1G | APCM |             |
| -                  | √             | √       | √       | √    | -           |

Where **PLC**: Power Line Conducted Emission      **RE < 1G**: Radiated Emission below 1GHz  
**RE ≥ 1G**: Radiated Emission above 1GHz      **APCM**: Antenna Port Conducted Measurement

#### **POWER LINE CONDUCTED EMISSION TEST:**

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

| MODE    | AVAILABLE CHANNEL | TESTED CHANNEL | MODULATION TECHNOLOGY | MODULATION TYPE | DATA RATE (Mbps) |
|---------|-------------------|----------------|-----------------------|-----------------|------------------|
| 802.11b | 1 to 11           | 1              | DSSS                  | DBPSK           | 1                |

#### **RADIATED EMISSION TEST (BELOW 1 GHz):**

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

| MODE    | AVAILABLE CHANNEL | TESTED CHANNEL | MODULATION TECHNOLOGY | MODULATION TYPE | DATA RATE (Mbps) |
|---------|-------------------|----------------|-----------------------|-----------------|------------------|
| 802.11b | 1 to 11           | 1              | DSSS                  | DBPSK           | 1                |



A D T

### **RADIATED EMISSION TEST (ABOVE 1 GHz):**

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

| MODE                  | AVAILABLE CHANNEL | TESTED CHANNEL | MODULATION TECHNOLOGY | MODULATION TYPE | DATA RATE (Mbps) |
|-----------------------|-------------------|----------------|-----------------------|-----------------|------------------|
| 802.11b               | 1 to 11           | 1, 6, 11       | DSSS                  | DBPSK           | 1                |
| 802.11g               | 1 to 11           | 1, 6, 11       | OFDM                  | BPSK            | 6                |
| Draft 802.11n (20MHz) | 1 to 11           | 1, 6, 11       | OFDM                  | BPSK            | 6.5              |
| Draft 802.11n (40MHz) | 1 to 7            | 1, 4, 7        | OFDM                  | BPSK            | 13.5             |

### **CONDUCTED OUT-BAND EMISSION MEASUREMENT:**

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

| MODE                  | AVAILABLE CHANNEL | TESTED CHANNEL | MODULATION TECHNOLOGY | MODULATION TYPE | DATA RATE (Mbps) |
|-----------------------|-------------------|----------------|-----------------------|-----------------|------------------|
| 802.11b               | 1 to 11           | 1, 11          | DSSS                  | DBPSK           | 1                |
| 802.11g               | 1 to 11           | 1, 11          | OFDM                  | BPSK            | 6                |
| Draft 802.11n (20MHz) | 1 to 11           | 1, 11          | OFDM                  | BPSK            | 6.5              |
| Draft 802.11n (40MHz) | 1 to 7            | 1, 7           | OFDM                  | BPSK            | 13.5             |

### **ANTENNA PORT CONDUCTED MEASUREMENT:**

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

| MODE                  | AVAILABLE CHANNEL | TESTED CHANNEL | MODULATION TECHNOLOGY | MODULATION TYPE | DATA RATE (Mbps) |
|-----------------------|-------------------|----------------|-----------------------|-----------------|------------------|
| 802.11b               | 1 to 11           | 1, 6, 11       | DSSS                  | DBPSK           | 1                |
| 802.11g               | 1 to 11           | 1, 6, 11       | OFDM                  | BPSK            | 6                |
| Draft 802.11n (20MHz) | 1 to 11           | 1, 6, 11       | OFDM                  | BPSK            | 6.5              |
| Draft 802.11n (40MHz) | 1 to 7            | 1, 4, 7        | OFDM                  | BPSK            | 13.5             |

### 3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is an IEEE802.11n Wireless 1T2R PCI. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

#### **FCC Part 15, Subpart C. (15.247)**

#### **ANSI C63.4-2003**

All test items have been performed and recorded as per the above standards.

**NOTE:** The EUT is also considered as a kind of computer peripheral, because the connection to computer is necessary for typical use. It has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.



A D T

### 3.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

| For Conducted Emission Test |                   |       |               |                          |            |
|-----------------------------|-------------------|-------|---------------|--------------------------|------------|
| NO.                         | PRODUCT           | BRAND | MODEL NO.     | SERIAL NO.               | FCC ID     |
| 1                           | PERSONAL COMPUTER | DELL  | DH8           | 8H90618                  | FCC DoC    |
| 2                           | MONITOR           | DELL  | E228WFPc      | CN-OX765G-64180-88P-09ZM | FCC DoC    |
| 3                           | PRINTER           | EPSON | LQ-300+       | DCGY017097               | FCC DoC    |
| 4                           | MODEM             | ACEEX | 1414          | 0206026778               | IFAXDM1414 |
| 5                           | KEYBOARD          | DELL  | SK-8115       | MY-0J4635-71619-67V-0114 | FCC DoC    |
| 6                           | MOUSE             | DELL  | M056UOA       | FOROOSWW                 | FCC DoC    |
| For Radiated Emission Test  |                   |       |               |                          |            |
| NO.                         | PRODUCT           | BRAND | MODEL NO.     | SERIAL NO.               | FCC ID     |
| 1                           | PERSONAL COMPUTER | DELL  | DH8           | 8H90618                  | FCC DoC    |
| 2                           | MONITOR           | ADi   | VD-695        | 023050L10301430          | FCC DoC    |
| 3                           | PRINTER           | HP    | LaserJet 1000 | CNBR454327               | NA         |
| 4                           | MODEM             | ACEEX | 1414          | 0206026776               | IFAXDM1414 |
| 5                           | KEYBOARD          | HP    | KB-0316       | BC3520DVBVK37S           | FCC DoC    |
| 6                           | MOUSE             | BTC   | M851          | G00347024422             | FCC DoC    |

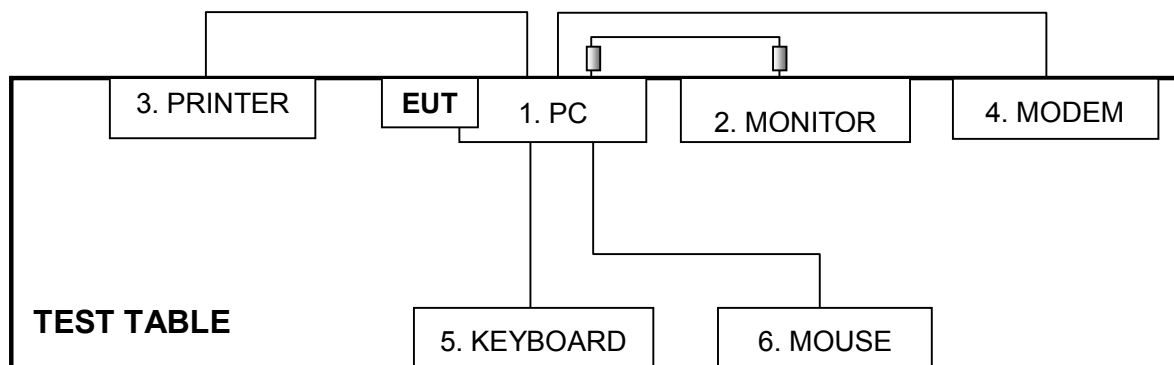


A D T

| For Conducted Emission Test |                                                                                                       |
|-----------------------------|-------------------------------------------------------------------------------------------------------|
| NO.                         | SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS                                                   |
| 1                           | NA                                                                                                    |
| 2                           | 1.8 m braid shielded wire, terminated with VGA connector via metallic frame, with two cores.          |
| 3                           | 1.9 m braid shielded wire, terminated with DB25 and centronics connector via metallic frame, w/o core |
| 4                           | 1 m braid shielded wire, terminated with DB25 and DB9 connector via metallic frame, w/o core.         |
| 5                           | 1.9 m foil shielded wire, terminal by frame, PS/2 connector, w/o Core.                                |
| 6                           | 1.8 m foil shielded wire, terminal by frame, PS/2 connector, w/o Core.                                |
| For Radiated Emission Test  |                                                                                                       |
| NO.                         | SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS                                                   |
| 1                           | NA                                                                                                    |
| 2                           | 1.8 m braid shielded wire, terminated with VGA connector via metallic frame, with two cores.          |
| 3                           | 1.8 m braid shielded wire, terminated with DB25 and centronics connector via metallic frame, w/o core |
| 4                           | 1 m braid shielded wire, terminated with DB25 and DB9 connector via metallic frame, w/o core.         |
| 5                           | 1.9 m foil shielded wire, terminal by frame, USB connector, w/o Core.                                 |
| 6                           | 1.8 m foil shielded wire, terminal by frame, USB connector, w/o Core.                                 |

**NOTE:** All power cords of the above support units are non shielded (1.8m).

### 3.5 CONFIGURATION OF SYSTEM UNDER TEST



## 4. TEST TYPES AND RESULTS

### 4.1 CONDUCTED EMISSION MEASUREMENT

#### 4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

| FREQUENCY OF EMISSION (MHz) | CONDUCTED LIMIT (dB $\mu$ V) |          |
|-----------------------------|------------------------------|----------|
|                             | Quasi-peak                   | Average  |
| 0.15-0.5                    | 66 to 56                     | 56 to 46 |
| 0.5-5                       | 56                           | 46       |
| 5-30                        | 60                           | 50       |

- NOTE:**
1. The lower limit shall apply at the transition frequencies.
  2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.
  3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

#### 4.1.2 TEST INSTRUMENTS

| DESCRIPTION & MANUFACTURER                            | MODEL NO.             | SERIAL NO. | CALIBRATED DATE | CALIBRATED UNTIL |
|-------------------------------------------------------|-----------------------|------------|-----------------|------------------|
| Test Receiver                                         | ESCS 30               | 100375     | Mar. 23, 2009   | Mar. 22, 2010    |
| Line-Impedance Stabilization Network (for Peripheral) | ENV-216               | 100071     | Nov. 26, 2008   | Nov. 25, 2009    |
| Line-Impedance Stabilization Network (for EUT)        | ESH3-Z5               | 848773/004 | Nov. 05, 2008   | Nov. 04, 2009    |
| RF Cable (JYEBAO)                                     | 5DFB                  | COBCAB-001 | Aug. 15, 2009   | Aug. 14, 2010    |
| 50 ohms Terminator                                    | 50                    | 3          | Nov. 05, 2008   | Nov. 04, 2009    |
| Software                                              | BV<br>ADT_Cond_V7.3.7 | NA         | NA              | NA               |

**Note:**

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Shielded Room No. B.
3. The VCCI Con B Registration No. is C-2193.

#### 4.1.3 TEST PROCEDURES

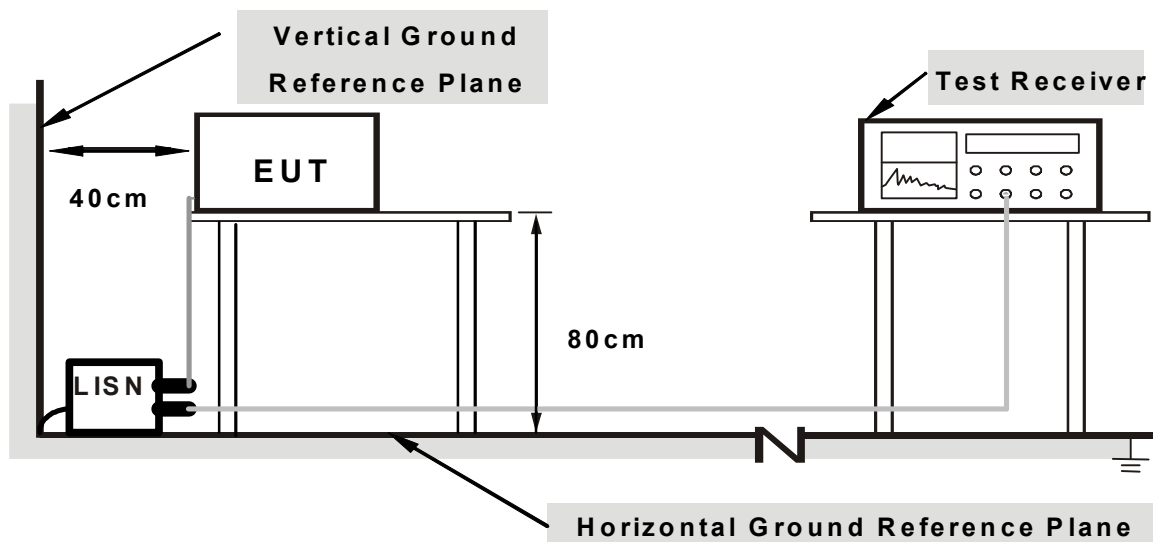
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) were not recorded.

#### 4.1.4 DEVIATION FROM TEST STANDARD

No deviation



#### 4.1.5 TEST SETUP



**Note: 1. Support units were connected to second LISN.**

**2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes**

For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

#### 4.1.6 EUT OPERATING CONDITIONS

1. Connect the EUT with the support unit 1 (PC) which placed on a testing table.
2. Support unit 1 (PC) run test program “RT3x7xQA.exe” to enable EUT under transmission condition continuously at specific channel frequency.

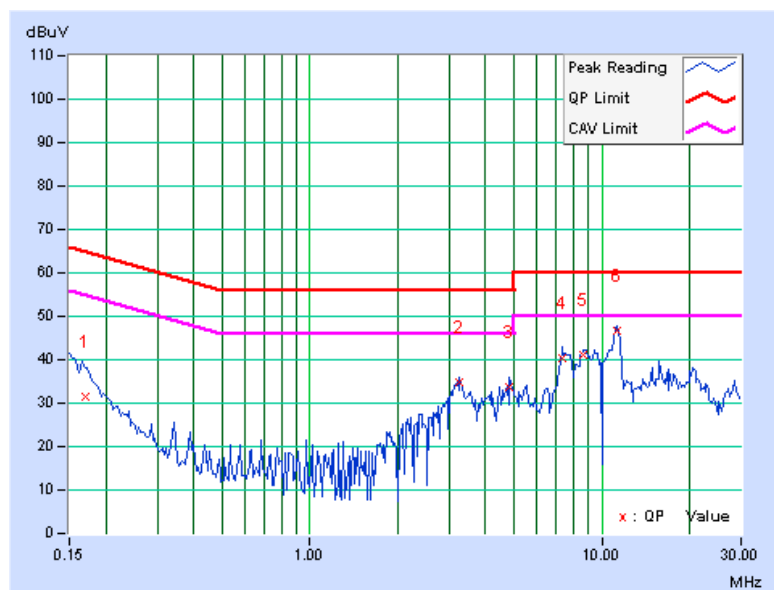
### 4.1.7 TEST RESULTS

#### 802.11b DSSS MODULATION

| EUT TEST CONDITION       |                         | MEASUREMENT DETAIL   |               |
|--------------------------|-------------------------|----------------------|---------------|
| CHANNEL                  | Channel 1               | PHASE                | Line (L)      |
| MODULATION TYPE          | DBPSK                   | 6dB BANDWIDTH        | 9 kHz         |
| TRANSFER RATE            | 1Mbps                   | INPUT POWER (SYSTEM) | 120Vac, 60 Hz |
| ENVIRONMENTAL CONDITIONS | 25deg. C, 62%RH, 965hPa | TESTED BY            | Phoenix Huang |

| No | Freq. [MHz] | Corr. Factor (dB) | Reading Value [dB (uV)] |     | Emission Level [dB (uV)] |     | Limit [dB (uV)] |       | Margin (dB) |     |
|----|-------------|-------------------|-------------------------|-----|--------------------------|-----|-----------------|-------|-------------|-----|
|    |             |                   | Q.P.                    | AV. | Q.P.                     | AV. | Q.P.            | AV.   | Q.P.        | AV. |
| 1  | 0.171       | 0.17              | 31.32                   | -   | 31.49                    | -   | 64.92           | 54.92 | -33.43      | -   |
| 2  | 3.242       | 0.59              | 34.36                   | -   | 34.95                    | -   | 56.00           | 46.00 | -21.05      | -   |
| 3  | 4.836       | 0.67              | 32.90                   | -   | 33.57                    | -   | 56.00           | 46.00 | -22.43      | -   |
| 4  | 7.305       | 0.83              | 39.37                   | -   | 40.20                    | -   | 60.00           | 50.00 | -19.80      | -   |
| 5  | 8.660       | 0.92              | 40.36                   | -   | 41.28                    | -   | 60.00           | 50.00 | -18.72      | -   |
| +6 | 11.320      | 1.04              | 45.66                   | -   | 46.70                    | -   | 60.00           | 50.00 | -13.30      | -   |

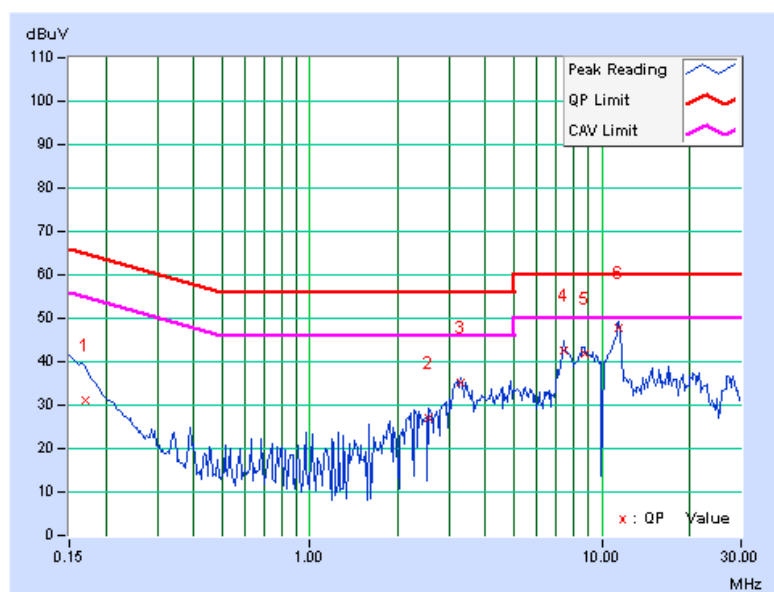
- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
  3. The emission levels of other frequencies were very low against the limit.
  4. Margin value = Emission level - Limit value
  5. Correction factor = Insertion loss + Cable loss
  6. Emission Level = Correction Factor + Reading Value.



| EUT TEST CONDITION       |                         | MEASUREMENT DETAIL   |               |
|--------------------------|-------------------------|----------------------|---------------|
| CHANNEL                  | Channel 1               | PHASE                | Neutral (N)   |
| MODULATION TYPE          | DBPSK                   | 6dB BANDWIDTH        | 9 kHz         |
| TRANSFER RATE            | 1Mbps                   | INPUT POWER (SYSTEM) | 120Vac, 60 Hz |
| ENVIRONMENTAL CONDITIONS | 25deg. C, 62%RH, 965hPa | TESTED BY            | Phoenix Huang |

| No        | Freq. [MHz]   | Corr. Factor (dB) | Reading Value [dB (uV)] |       | Emission Level [dB (uV)] |       | Limit [dB (uV)] |              | Margin (dB)   |       |
|-----------|---------------|-------------------|-------------------------|-------|--------------------------|-------|-----------------|--------------|---------------|-------|
|           |               |                   | Q.P.                    | AV.   | Q.P.                     | AV.   | Q.P.            | AV.          | Q.P.          | AV.   |
|           |               |                   | 1                       | 0.171 | 0.10                     | 30.86 | -               | 30.96        | -             | 64.91 |
| 2         | 2.566         | 0.48              | 26.55                   | -     | 27.03                    | -     | 56.00           | 46.00        | -28.97        | -     |
| 3         | 3.289         | 0.51              | 34.76                   | -     | 35.27                    | -     | 56.00           | 46.00        | -20.73        | -     |
| 4         | 7.402         | 0.73              | 41.99                   | -     | 42.72                    | -     | 60.00           | 50.00        | -17.28        | -     |
| 5         | 8.707         | 0.79              | 41.04                   | -     | 41.83                    | -     | 60.00           | 50.00        | -18.17        | -     |
| <b>+6</b> | <b>11.414</b> | <b>0.88</b>       | <b>46.91</b>            | -     | <b>47.79</b>             | -     | <b>60.00</b>    | <b>50.00</b> | <b>-12.21</b> | -     |

- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
  2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
  3. The emission levels of other frequencies were very low against the limit.
  4. Margin value = Emission level - Limit value
  5. Correction factor = Insertion loss + Cable loss
  6. Emission Level = Correction Factor + Reading Value.



## 4.2 RADIATED EMISSION MEASUREMENT

### 4.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

Emissions radiated outside of the specified bands, shall be according to the general radiated limits in 15.209 as following:

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

**NOTE:**

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

#### 4.2.2 TEST INSTRUMENTS

| DESCRIPTION & MANUFACTURER         | MODEL NO.                | SERIAL NO.  | CALIBRATED DATE | CALIBRATED UNTIL |
|------------------------------------|--------------------------|-------------|-----------------|------------------|
| ADVANTEST Spectrum Analyzer        | U3751                    | 160200410   | July. 17, 2009  | July. 16, 2010   |
| ADVANTEST Spectrum Analyzer        | U3772                    | 160100280   | July 26, 2009   | July 25, 2010    |
| HP Pre_Amplifier                   | 8449B                    | 3008A01922  | Sep. 25, 2008   | Sep. 24, 2009    |
| ROHDE & SCHWARZ Test Receiver      | ESVS 30                  | 841977/002  | Nov. 03, 2008   | Nov. 02, 2009    |
| SCHAFFNER(CHASE) Broadband Antenna | CBL6112B                 | 2798        | April 29, 2009  | April 28, 2010   |
| Schwarzbeck Horn_Antenna           | BBHA9120-D1              | D123        | Sep. 30, 2008   | Sep. 29, 2009    |
| Schwarzbeck Horn_Antenna           | BBHA 9170                | BBHA9170153 | Jan. 23, 2009   | Jan. 22, 2010    |
| RF Switches                        | MP59B                    | 6100175593  | Sep. 01, 2009   | Aug. 31, 2010    |
| RF Cable                           | 8DFB                     | STBCAB-001  | Sep. 01, 2009   | Aug. 31, 2010    |
| Software                           | ADT_Radiated_V7.6.15.9.2 | NA          | NA              | NA               |
| CT Antenna Tower & Turn Table      | NA                       | NA          | NA              | NA               |
| CORCOM AC Filter                   | MRI2030                  | 024/019     | NA              | NA               |

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

2. The horn antenna, HP preamplifier (model: 8449B) and Spectrum Analyzer (model: U3772) are used only for the measurement of emission frequency above 1GHz if tested.

3. The test was performed in Open Site No. B.

4. The VCCI Site Registration No. is R-847.

5. The FCC Site Registration No. is 92753.

6. The CANADA Site Registration No. is IC 7450G-2.

#### 4.2.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10 dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10 dB margin would be re-tested one by one using the quasi-peak method or average method as specified and then reported in Data sheet peak mode and QP mode.

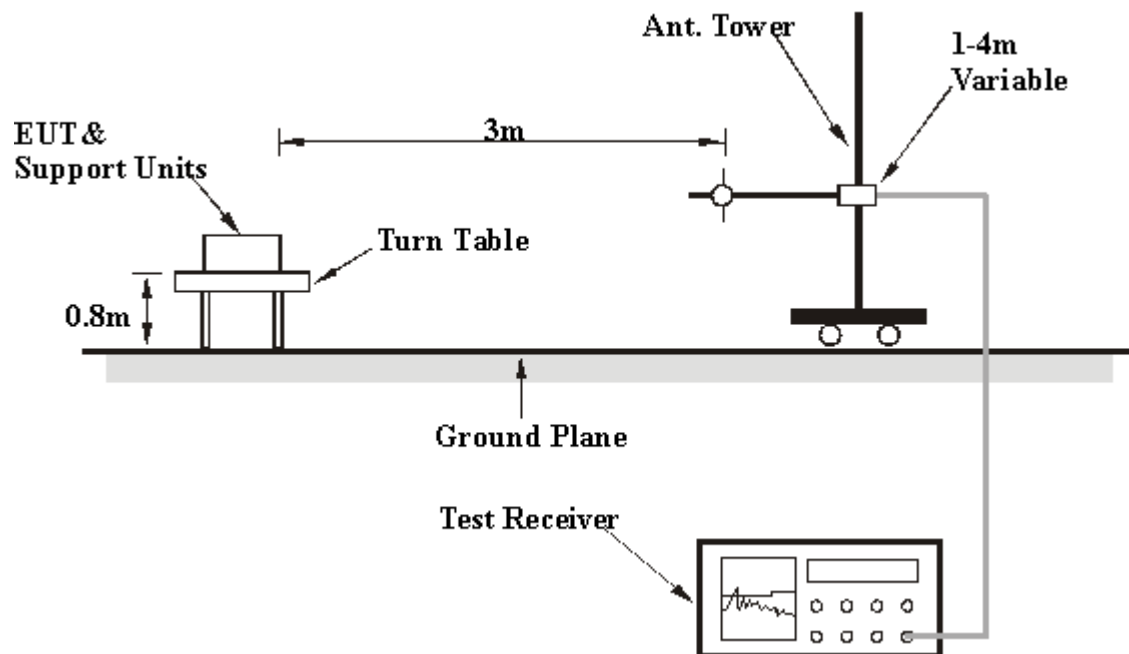
**NOTE:**

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Peak detection (PK) and Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 10 Hz for Average detection (AV) at frequency above 1GHz.

#### 4.2.4 DEVIATION FROM TEST STANDARD

No deviation

#### 4.2.5 TEST SETUP



For the actual test configuration, please refer to the related item – Photographs of the Test Configuration.

#### 4.2.6 EUT OPERATING CONDITIONS

Same as the 4.1.6



A D T

**Below 1GHz Test Data****4.2.7 TEST RESULTS****BELOW 1GHz WORST-CASE DATA : 802.11b DSSS MODULATION**

| EUT TEST CONDITION       |                               | MEASUREMENT DETAIL |               |
|--------------------------|-------------------------------|--------------------|---------------|
| CHANNEL                  | Channel 1                     | FREQUENCY RANGE    | Below 1000MHz |
| INPUT POWER (SYSTEM)     | 120Vac, 60 Hz                 | DETECTOR FUNCTION  | Quasi-Peak    |
| ENVIRONMENTAL CONDITIONS | 25.0deg. C, 60.0%RH<br>965hPa | TESTED BY          | Max Tseng     |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |             |                         |                |             |                    |                      |                  |                          |
|-----------------------------------------------------|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| NO.                                                 | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1                                                   | 120.00      | 32.71 QP                | 43.50          | -10.79      | 2.52 H             | 16                   | 19.56            | 13.15                    |
| 2                                                   | 200.00      | 30.74 QP                | 43.50          | -12.76      | 1.69 H             | 312                  | 18.96            | 11.78                    |
| 3                                                   | 300.00      | 37.75 QP                | 46.00          | -8.25       | 2.58 H             | 142                  | 21.34            | 16.41                    |
| 4                                                   | 400.00      | 36.34 QP                | 46.00          | -9.66       | 2.21 H             | 116                  | 16.91            | 19.43                    |
| 5                                                   | 500.00      | 36.49 QP                | 46.00          | -9.51       | 1.62 H             | 224                  | 14.25            | 22.24                    |
| 6                                                   | 800.00      | 36.61 QP                | 46.00          | -9.39       | 1.00 H             | 171                  | 10.47            | 26.14                    |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M   |             |                         |                |             |                    |                      |                  |                          |
| NO.                                                 | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1                                                   | 120.00      | 30.37 QP                | 43.50          | -13.13      | 1.00 V             | 62                   | 17.22            | 13.15                    |
| 2                                                   | 151.57      | 29.08 QP                | 43.50          | -14.42      | 1.00 V             | 306                  | 16.36            | 12.72                    |
| 3                                                   | 300.30      | 38.00 QP                | 46.00          | -8.00       | 1.36 V             | 69                   | 21.58            | 16.42                    |
| 4                                                   | 400.00      | 35.66 QP                | 46.00          | -10.34      | 1.63 V             | 279                  | 16.23            | 19.43                    |
| 5                                                   | 500.00      | 36.78 QP                | 46.00          | -9.22       | 1.55 V             | 184                  | 14.54            | 22.24                    |
| 6                                                   | 816.13      | 42.85 QP                | 46.00          | -3.15       | 2.26 V             | 81                   | 16.51            | 26.34                    |

- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
  2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
  3. The other emission levels were very low against the limit.
  4. Margin value = Emission level – Limit value.





A D T

## Above 1GHz Test Data

### 4.2.8 TEST RESULTS

#### 802.11b DSSS MODULATION

| EUT TEST CONDITION       |                               | MEASUREMENT DETAIL |                           |
|--------------------------|-------------------------------|--------------------|---------------------------|
| CHANNEL                  | Channel 1                     | FREQUENCY RANGE    | 1 ~ 25GHz                 |
| INPUT POWER (SYSTEM)     | 120Vac, 60 Hz                 | DETECTOR FUNCTION  | Peak (PK)<br>Average (AV) |
| ENVIRONMENTAL CONDITIONS | 25.0deg. C, 63.0%RH<br>965hPa | TESTED BY          | Phoenix Huang             |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |             |                         |                |             |                    |                      |                  |                          |
|-----------------------------------------------------|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| NO.                                                 | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1                                                   | 2386.27     | 54.67 PK                | 74.00          | -19.33      | 1.00 H             | 98                   | 24.65            | 30.02                    |
| 2                                                   | 2386.27     | 42.56 AV                | 54.00          | -11.44      | 1.00 H             | 98                   | 12.54            | 30.02                    |
| 3                                                   | *2412.00    | 99.55 PK                |                |             | 1.00 H             | 98                   | 69.43            | 30.12                    |
| 4                                                   | *2412.00    | 97.30 AV                |                |             | 1.00 H             | 98                   | 67.18            | 30.12                    |
| 5                                                   | 4824.00     | 44.93 PK                | 74.00          | -29.07      | 1.42 H             | 42                   | 9.45             | 35.48                    |
| 6                                                   | 4824.00     | 39.12 AV                | 54.00          | -14.88      | 1.42 H             | 42                   | 3.64             | 35.48                    |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M   |             |                         |                |             |                    |                      |                  |                          |
| NO.                                                 | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1                                                   | 2386.27     | 56.11 PK                | 74.00          | -17.89      | 1.75 V             | 200                  | 26.09            | 30.02                    |
| 2                                                   | 2386.27     | 44.65 AV                | 54.00          | -9.35       | 1.75 V             | 200                  | 14.63            | 30.02                    |
| 3                                                   | *2412.00    | 107.73 PK               |                |             | 1.75 V             | 201                  | 77.61            | 30.12                    |
| 4                                                   | *2412.00    | 105.47 AV               |                |             | 1.75 V             | 201                  | 75.35            | 30.12                    |
| 5                                                   | 4824.00     | 48.26 PK                | 74.00          | -25.74      | 1.00 V             | 19                   | 12.78            | 35.48                    |
| 6                                                   | 4824.00     | 42.28 AV                | 54.00          | -11.72      | 1.00 V             | 19                   | 6.80             | 35.48                    |

- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
  2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
  3. The other emission levels were very low against the limit.
  4. Margin value = Emission level – Limit value.
  5. “ \* “: Fundamental frequency.



A D T

| EUT TEST CONDITION       |                               | MEASUREMENT DETAIL |                           |
|--------------------------|-------------------------------|--------------------|---------------------------|
| CHANNEL                  | Channel 6                     | FREQUENCY RANGE    | 1 ~ 25GHz                 |
| INPUT POWER (SYSTEM)     | 120Vac, 60 Hz                 | DETECTOR FUNCTION  | Peak (PK)<br>Average (AV) |
| ENVIRONMENTAL CONDITIONS | 25.0deg. C, 63.0%RH<br>965hPa | TESTED BY          | Phoenix Huang             |

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

| NO. | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
|-----|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| 1   | *2437.00    | 103.12 PK               |                |             | 1.50 H             | 148                  | 72.91            | 30.21                    |
| 2   | *2437.00    | 100.94 AV               |                |             | 1.50 H             | 148                  | 70.73            | 30.21                    |
| 3   | 4874.00     | 44.95 PK                | 74.00          | -29.05      | 1.28 H             | 32                   | 9.33             | 35.62                    |
| 4   | 4874.00     | 38.27 AV                | 54.00          | -15.73      | 1.28 H             | 32                   | 2.65             | 35.62                    |
| 5   | 7311.00     | 49.91 PK                | 74.00          | -24.09      | 1.20 H             | 44                   | 8.64             | 41.27                    |
| 6   | 7311.00     | 41.12 AV                | 54.00          | -12.88      | 1.20 H             | 44                   | -0.15            | 41.27                    |

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

| NO. | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
|-----|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| 1   | *2437.00    | 108.59 PK               |                |             | 1.28 V             | 119                  | 78.38            | 30.21                    |
| 2   | *2437.00    | 105.73 AV               |                |             | 1.28 V             | 119                  | 75.52            | 30.21                    |
| 3   | 4874.00     | 46.23 PK                | 74.00          | -27.77      | 1.00 V             | 23                   | 10.61            | 35.62                    |
| 4   | 4874.00     | 40.27 AV                | 54.00          | -13.73      | 1.00 V             | 23                   | 4.65             | 35.62                    |
| 5   | 7311.00     | 51.63 PK                | 74.00          | -22.37      | 1.00 V             | 32                   | 10.36            | 41.27                    |
| 6   | 7311.00     | 44.07 AV                | 54.00          | -9.93       | 1.00 V             | 32                   | 2.80             | 41.27                    |

- REMARKS:**
- Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
  - Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
  - The other emission levels were very low against the limit.
  - Margin value = Emission level – Limit value.
  - \* \* \*: Fundamental frequency.



A D T

| EUT TEST CONDITION       |                               | MEASUREMENT DETAIL |                           |
|--------------------------|-------------------------------|--------------------|---------------------------|
| CHANNEL                  | Channel 11                    | FREQUENCY RANGE    | 1 ~ 25GHz                 |
| INPUT POWER (SYSTEM)     | 120Vac, 60 Hz                 | DETECTOR FUNCTION  | Peak (PK)<br>Average (AV) |
| ENVIRONMENTAL CONDITIONS | 25.0deg. C, 63.0%RH<br>965hPa | TESTED BY          | Phoenix Huang             |

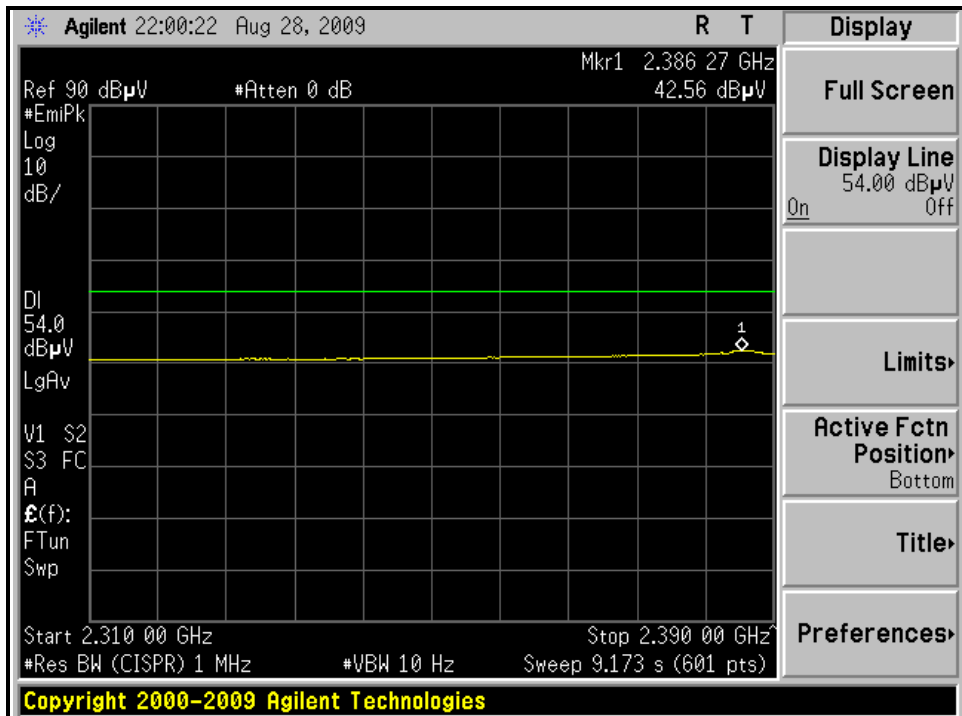
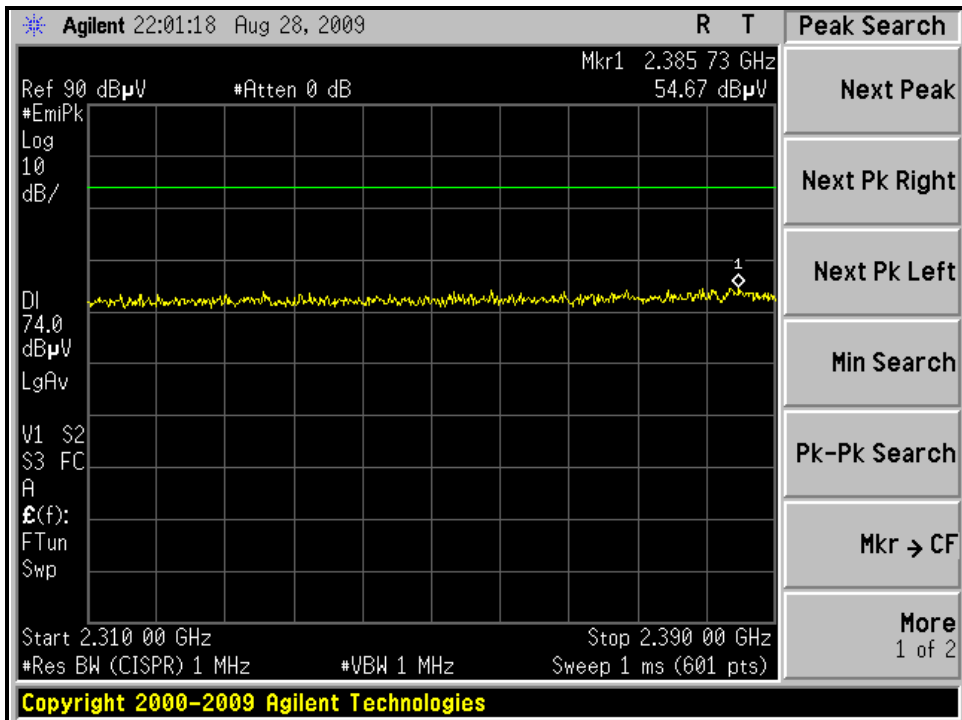
| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |             |                         |                |             |                    |                      |                  |                          |
|-----------------------------------------------------|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| NO.                                                 | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1                                                   | *2462.00    | 104.21 PK               |                |             | 1.45 H             | 137                  | 73.90            | 30.31                    |
| 2                                                   | *2462.00    | 102.05 AV               |                |             | 1.45 H             | 137                  | 71.74            | 30.31                    |
| 3                                                   | 2487.71     | 55.82 PK                | 74.00          | -18.18      | 1.44 H             | 136                  | 25.41            | 30.41                    |
| 4                                                   | 2487.71     | 42.26 AV                | 54.00          | -11.74      | 1.44 H             | 136                  | 11.85            | 30.41                    |
| 5                                                   | 4924.00     | 47.32 PK                | 74.00          | -26.68      | 1.25 H             | 284                  | 11.57            | 35.75                    |
| 6                                                   | 4924.00     | 40.72 AV                | 54.00          | -13.28      | 1.25 H             | 284                  | 4.97             | 35.75                    |
| 7                                                   | 7386.00     | 49.53 PK                | 74.00          | -24.47      | 1.11 H             | 13                   | 8.09             | 41.44                    |
| 8                                                   | 7386.00     | 37.37 AV                | 54.00          | -16.63      | 1.11 H             | 13                   | -4.07            | 41.44                    |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M   |             |                         |                |             |                    |                      |                  |                          |
| NO.                                                 | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1                                                   | *2462.00    | 108.47 PK               |                |             | 1.41 V             | 202                  | 78.16            | 30.31                    |
| 2                                                   | *2462.00    | 106.38 AV               |                |             | 1.41 V             | 202                  | 76.07            | 30.31                    |
| 3                                                   | 2484.74     | 55.29 PK                | 74.00          | -18.71      | 1.42 V             | 201                  | 24.89            | 30.40                    |
| 4                                                   | 2484.74     | 42.63 AV                | 54.00          | -11.37      | 1.42 V             | 201                  | 12.23            | 30.40                    |
| 5                                                   | 4924.00     | 44.63 PK                | 74.00          | -29.37      | 1.00 V             | 11                   | 8.88             | 35.75                    |
| 6                                                   | 4924.00     | 38.78 AV                | 54.00          | -15.22      | 1.00 V             | 11                   | 3.03             | 35.75                    |
| 7                                                   | 7386.00     | 49.57 PK                | 74.00          | -24.43      | 1.00 V             | 28                   | 8.13             | 41.44                    |
| 8                                                   | 7386.00     | 40.37 AV                | 54.00          | -13.63      | 1.00 V             | 28                   | -1.07            | 41.44                    |

- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
  2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
  3. The other emission levels were very low against the limit.
  4. Margin value = Emission level – Limit value.
  5. “ \* “: Fundamental frequency.



A D T

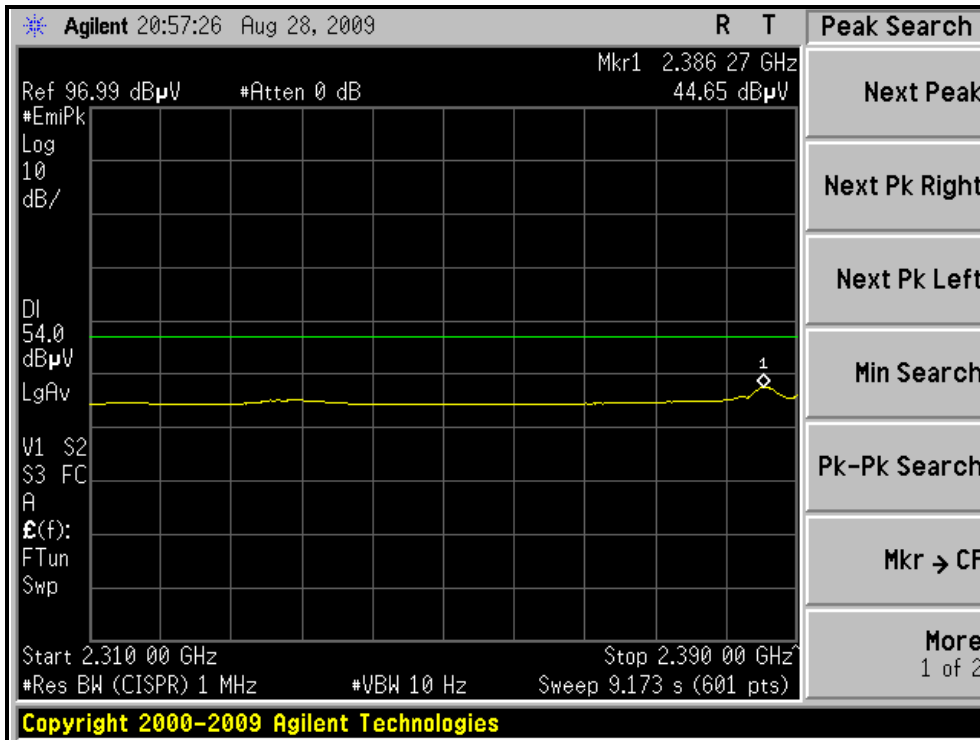
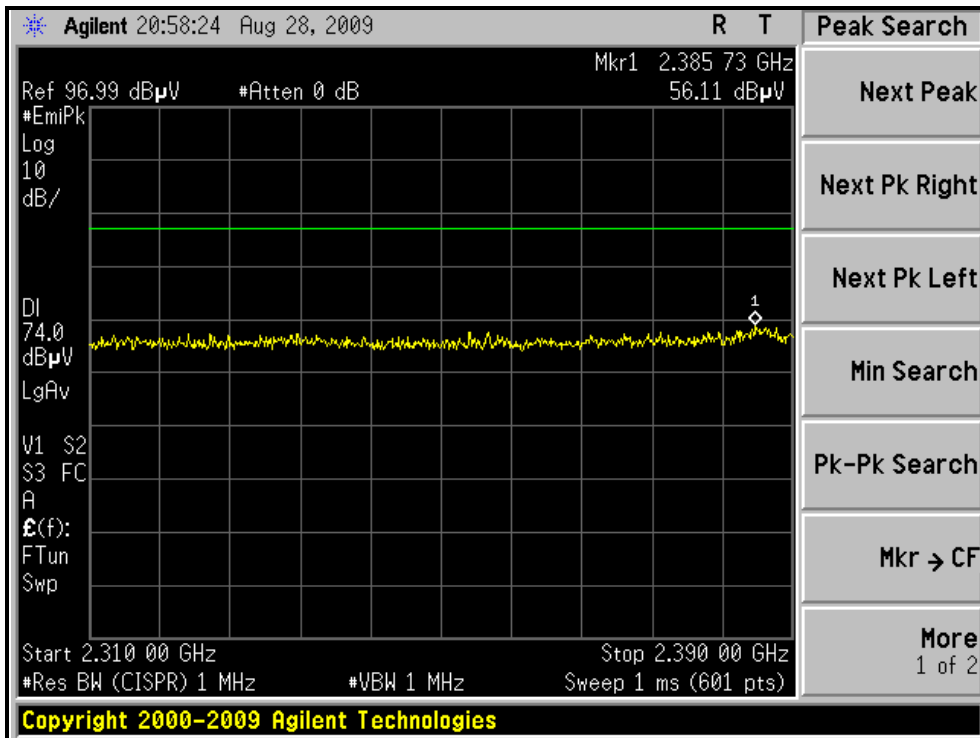
RESTRICTED BANDEDGE (802.11b MODE,CH1, HORIZONTAL )





A D T

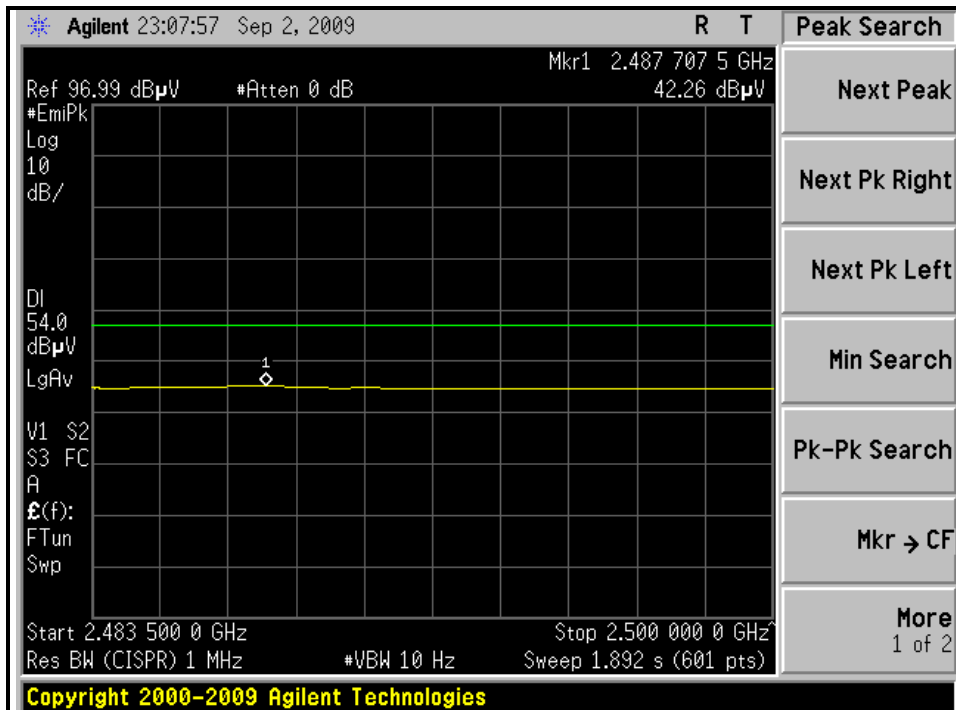
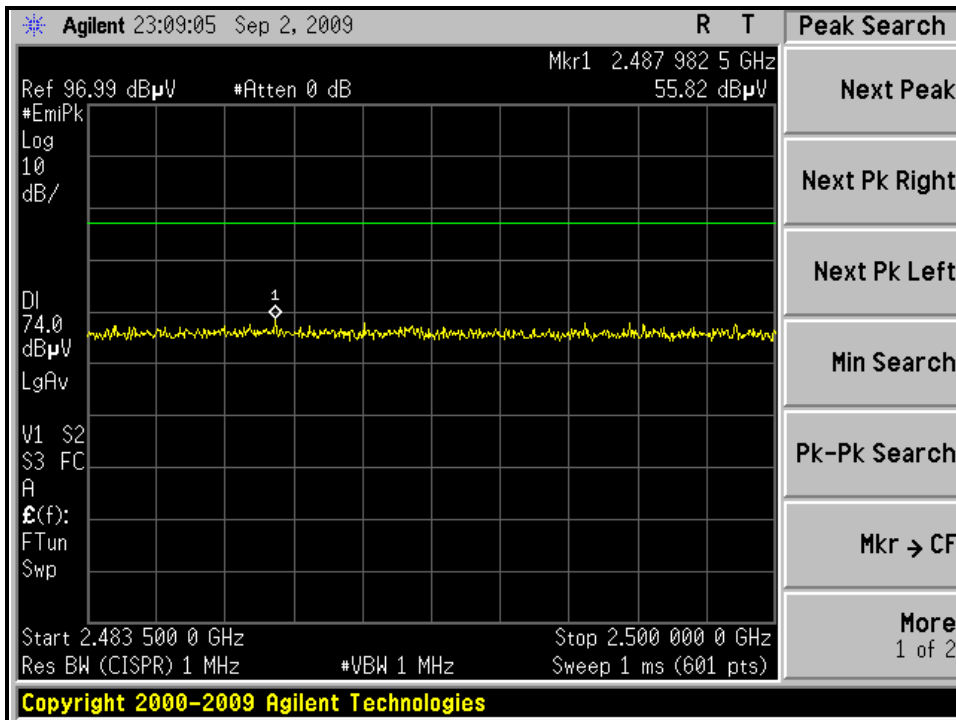
RESTRICTED BANDEDGE (802.11b MODE, CH1, VERTICAL )





A D T

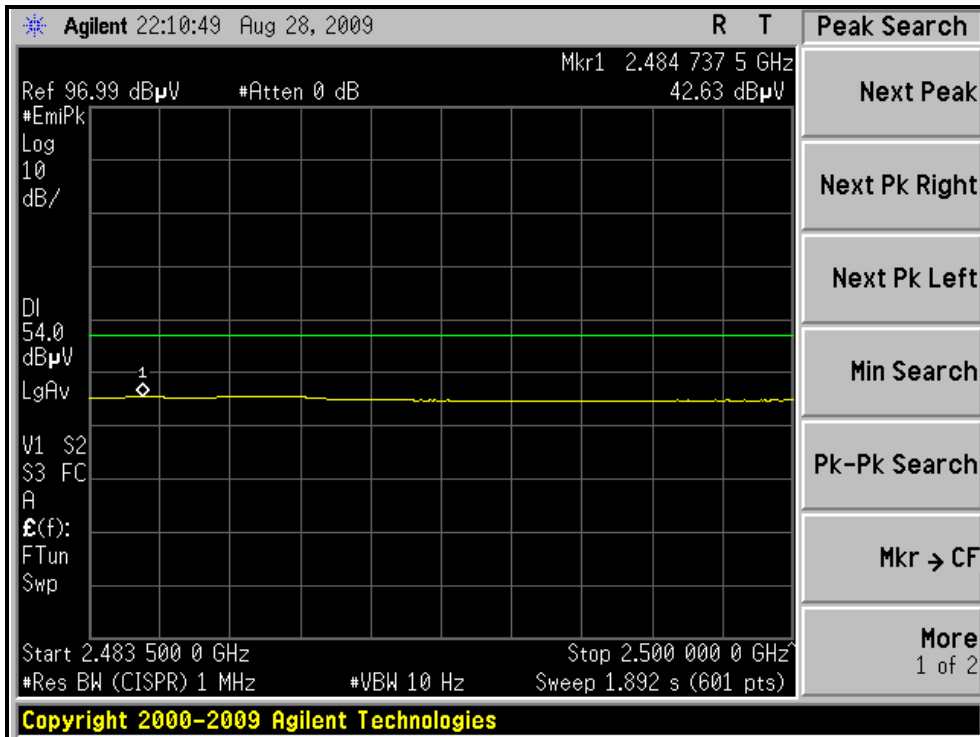
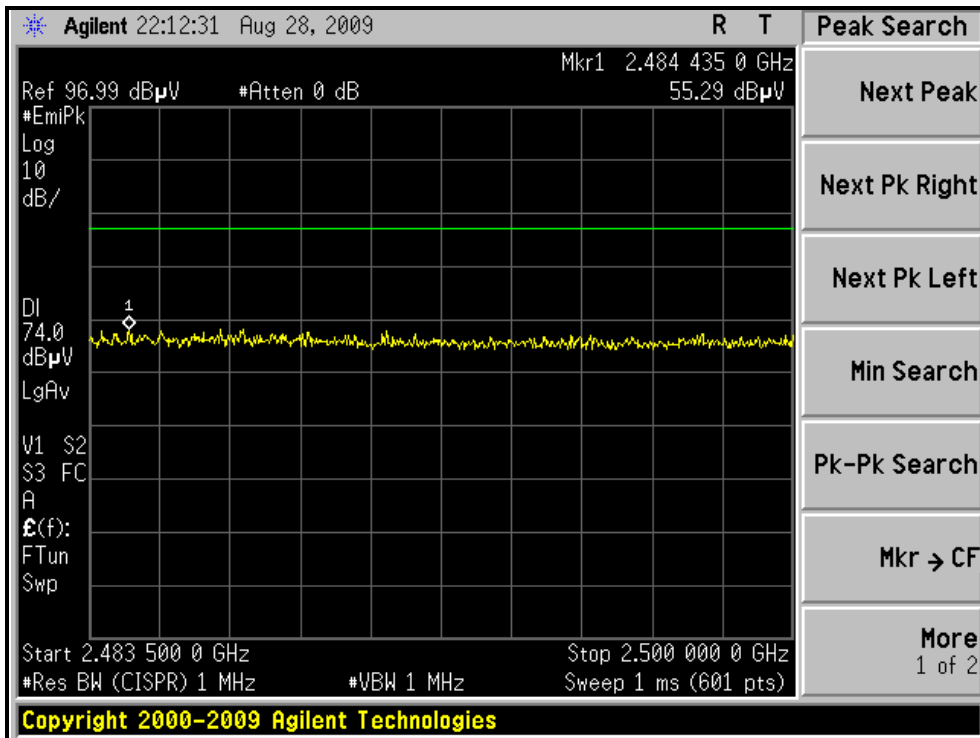
RESTRICTED BANDEDGE (802.11b MODE,CH11, HORIZONTAL )





A D T

RESTRICTED BANDEDGE (802.11b MODE,CH11, VERTICAL )





A D T

### 802.11g OFDM MODULATION

| EUT TEST CONDITION       |                               | MEASUREMENT DETAIL |                           |
|--------------------------|-------------------------------|--------------------|---------------------------|
| CHANNEL                  | Channel 1                     | FREQUENCY RANGE    | 1 ~ 25GHz                 |
| INPUT POWER (SYSTEM)     | 120Vac, 60 Hz                 | DETECTOR FUNCTION  | Peak (PK)<br>Average (AV) |
| ENVIRONMENTAL CONDITIONS | 25.0deg. C, 63.0%RH<br>965hPa | TESTED BY          | Phoenix Huang             |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |             |                         |                |             |                    |                      |                  |                          |
|-----------------------------------------------------|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| NO.                                                 | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1                                                   | 2390.00     | 55.20 PK                | 74.00          | -18.80      | 1.44 H             | 136                  | 25.17            | 30.03                    |
| 2                                                   | 2390.00     | 42.60 AV                | 54.00          | -11.40      | 1.44 H             | 136                  | 12.57            | 30.03                    |
| 3                                                   | *2412.00    | 103.29 PK               |                |             | 1.44 H             | 136                  | 73.17            | 30.12                    |
| 4                                                   | *2412.00    | 94.42 AV                |                |             | 1.44 H             | 136                  | 64.30            | 30.12                    |
| 5                                                   | 4824.00     | 42.45 PK                | 74.00          | -31.55      | 1.32 H             | 285                  | 6.97             | 35.48                    |
| 6                                                   | 4824.00     | 30.10 AV                | 54.00          | -23.90      | 1.32 H             | 285                  | -5.38            | 35.48                    |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M   |             |                         |                |             |                    |                      |                  |                          |
| NO.                                                 | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1                                                   | 2390.00     | 66.39 PK                | 74.00          | -7.61       | 1.49 V             | 202                  | 36.36            | 30.03                    |
| 2                                                   | 2390.00     | 50.69 AV                | 54.00          | -3.31       | 1.49 V             | 202                  | 20.66            | 30.03                    |
| 3                                                   | *2412.00    | 107.56 PK               |                |             | 1.49 V             | 200                  | 77.44            | 30.12                    |
| 4                                                   | *2412.00    | 98.78 AV                |                |             | 1.49 V             | 200                  | 68.66            | 30.12                    |
| 5                                                   | 4824.00     | 46.56 PK                | 74.00          | -27.44      | 1.08 V             | 35                   | 11.08            | 35.48                    |
| 6                                                   | 4824.00     | 35.13 AV                | 54.00          | -18.87      | 1.08 V             | 35                   | -0.35            | 35.48                    |

- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
  2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
  3. The other emission levels were very low against the limit.
  4. Margin value = Emission level – Limit value.
  5. “ \* “: Fundamental frequency.





A D T

| EUT TEST CONDITION       |                               | MEASUREMENT DETAIL |                           |
|--------------------------|-------------------------------|--------------------|---------------------------|
| CHANNEL                  | Channel 6                     | FREQUENCY RANGE    | 1 ~ 25GHz                 |
| INPUT POWER (SYSTEM)     | 120Vac, 60 Hz                 | DETECTOR FUNCTION  | Peak (PK)<br>Average (AV) |
| ENVIRONMENTAL CONDITIONS | 25.0deg. C, 63.0%RH<br>965hPa | TESTED BY          | Phoenix Huang             |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |             |                         |                |             |                    |                      |                  |                          |
|-----------------------------------------------------|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| NO.                                                 | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1                                                   | *2437.00    | 102.84 PK               |                |             | 1.47 H             | 149                  | 72.63            | 30.21                    |
| 2                                                   | *2437.00    | 93.98 AV                |                |             | 1.47 H             | 149                  | 63.77            | 30.21                    |
| 3                                                   | 4874.00     | 41.15 PK                | 74.00          | -32.85      | 1.28 H             | 283                  | 5.53             | 35.62                    |
| 4                                                   | 4874.00     | 29.75 AV                | 54.00          | -24.25      | 1.28 H             | 283                  | -5.87            | 35.62                    |
| 5                                                   | 7311.00     | 47.72 PK                | 74.00          | -26.28      | 1.15 H             | 40                   | 6.45             | 41.27                    |
| 6                                                   | 7311.00     | 35.83 AV                | 54.00          | -18.17      | 1.15 H             | 40                   | -5.44            | 41.27                    |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M   |             |                         |                |             |                    |                      |                  |                          |
| NO.                                                 | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1                                                   | *2437.00    | 107.92 PK               |                |             | 1.28 V             | 121                  | 77.71            | 30.21                    |
| 2                                                   | *2437.00    | 99.43 AV                |                |             | 1.28 V             | 121                  | 69.22            | 30.21                    |
| 3                                                   | 4874.00     | 41.63 PK                | 74.00          | -32.37      | 1.00 V             | 35                   | 6.01             | 35.62                    |
| 4                                                   | 4874.00     | 29.93 AV                | 54.00          | -24.07      | 1.00 V             | 35                   | -5.69            | 35.62                    |
| 5                                                   | 7311.00     | 50.69 PK                | 74.00          | -23.31      | 1.00 V             | 28                   | 9.42             | 41.27                    |
| 6                                                   | 7311.00     | 36.97 AV                | 54.00          | -17.03      | 1.00 V             | 28                   | -4.30            | 41.27                    |

- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
  2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
  3. The other emission levels were very low against the limit.
  4. Margin value = Emission level – Limit value.
  5. “ \* “: Fundamental frequency.



A D T

| EUT TEST CONDITION       |                               | MEASUREMENT DETAIL |                           |
|--------------------------|-------------------------------|--------------------|---------------------------|
| CHANNEL                  | Channel 11                    | FREQUENCY RANGE    | 1 ~ 25GHz                 |
| INPUT POWER (SYSTEM)     | 120Vac, 60 Hz                 | DETECTOR FUNCTION  | Peak (PK)<br>Average (AV) |
| ENVIRONMENTAL CONDITIONS | 25.0deg. C, 63.0%RH<br>965hPa | TESTED BY          | Phoenix Huang             |

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

| NO. | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
|-----|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| 1   | *2462.00    | 103.93 PK               |                |             | 1.44 H             | 147                  | 73.62            | 30.31                    |
| 2   | *2462.00    | 95.18 AV                |                |             | 1.44 H             | 147                  | 64.87            | 30.31                    |
| 3   | 2483.50     | 59.42 PK                | 74.00          | -14.58      | 1.44 H             | 144                  | 29.02            | 30.40                    |
| 4   | 2483.50     | 45.23 AV                | 54.00          | -8.77       | 1.44 H             | 144                  | 14.83            | 30.40                    |
| 5   | 4924.00     | 42.76 PK                | 74.00          | -31.24      | 1.25 H             | 285                  | 7.01             | 35.75                    |
| 6   | 4924.00     | 30.15 AV                | 54.00          | -23.85      | 1.25 H             | 285                  | -5.60            | 35.75                    |
| 7   | 7386.00     | 48.71 PK                | 74.00          | -25.29      | 1.12 H             | 20                   | 7.27             | 41.44                    |
| 8   | 7386.00     | 36.17 AV                | 54.00          | -17.83      | 1.12 H             | 20                   | -5.27            | 41.44                    |

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

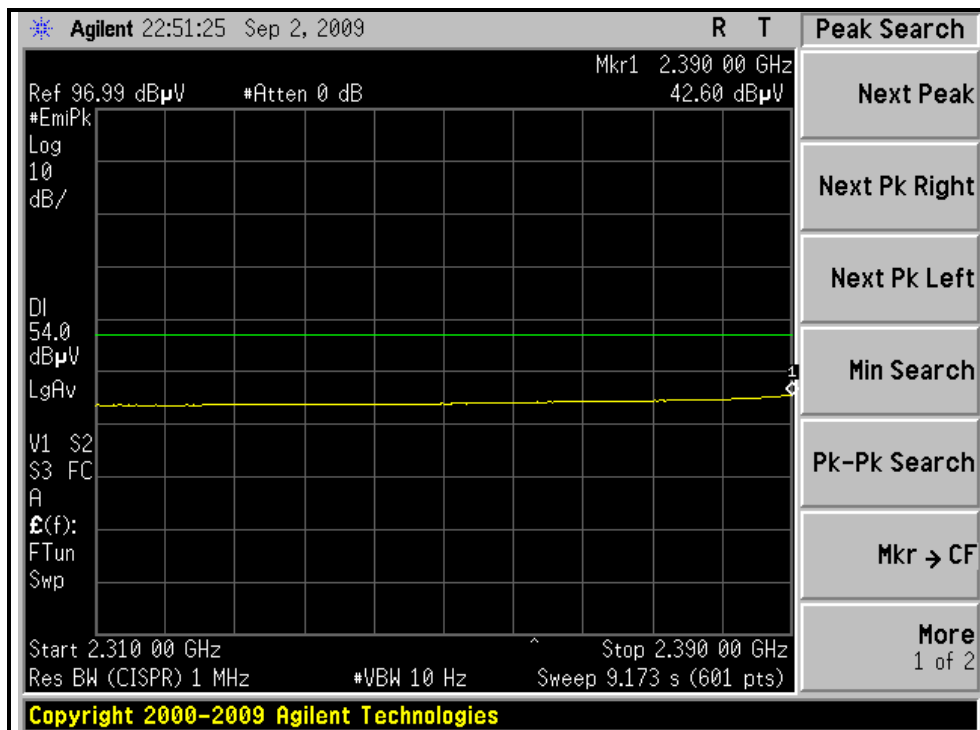
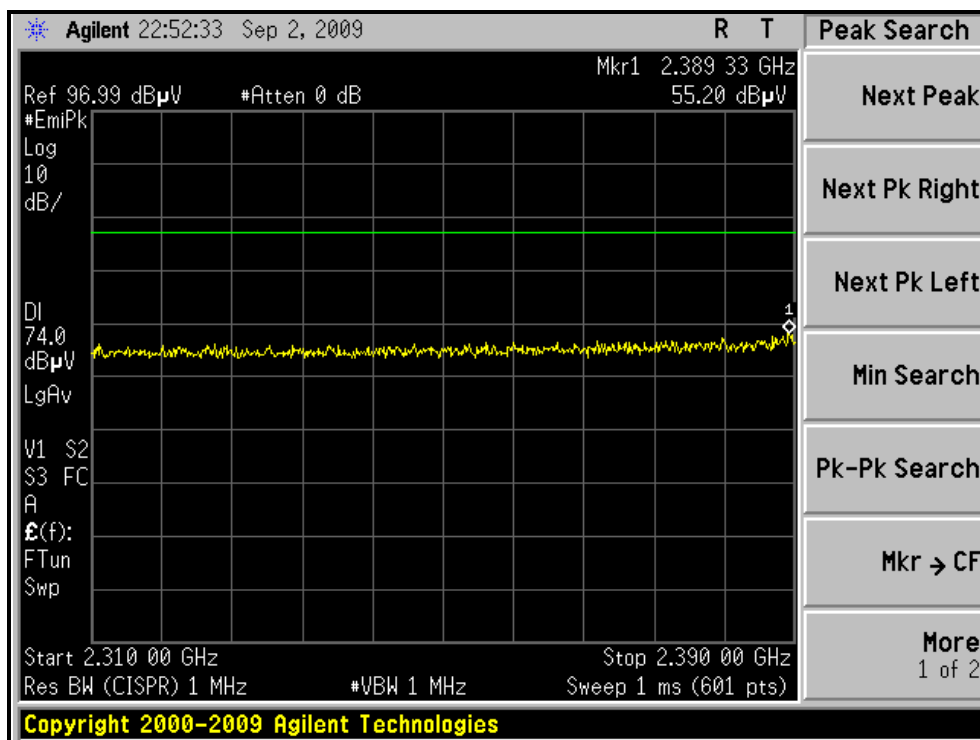
| NO. | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
|-----|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| 1   | *2462.00    | 107.69 PK               |                |             | 1.41 V             | 204                  | 77.38            | 30.31                    |
| 2   | *2462.00    | 99.23 AV                |                |             | 1.41 V             | 204                  | 68.92            | 30.31                    |
| 3   | 2483.53     | 62.08 PK                | 74.00          | -11.92      | 1.41 V             | 200                  | 31.68            | 30.40                    |
| 4   | 2483.53     | 48.42 AV                | 54.00          | -5.58       | 1.41 V             | 200                  | 18.02            | 30.40                    |
| 5   | 4924.00     | 44.47 PK                | 74.00          | -29.53      | 1.04 V             | 34                   | 8.72             | 35.75                    |
| 6   | 4924.00     | 32.56 AV                | 54.00          | -21.44      | 1.04 V             | 34                   | -3.19            | 35.75                    |
| 7   | 7386.00     | 51.17 PK                | 74.00          | -22.83      | 1.20 V             | 345                  | 9.73             | 41.44                    |
| 8   | 7386.00     | 38.01 AV                | 54.00          | -15.99      | 1.20 V             | 345                  | -3.43            | 41.44                    |

- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
  2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
  3. The other emission levels were very low against the limit.
  4. Margin value = Emission level – Limit value.
  5. “ \* “: Fundamental frequency.



A D T

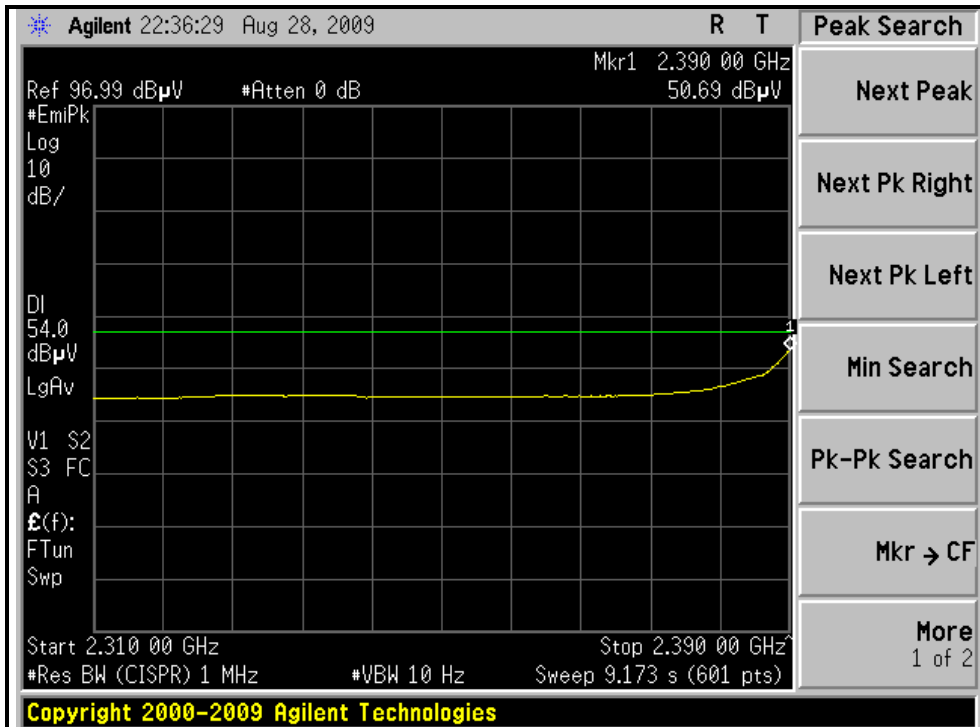
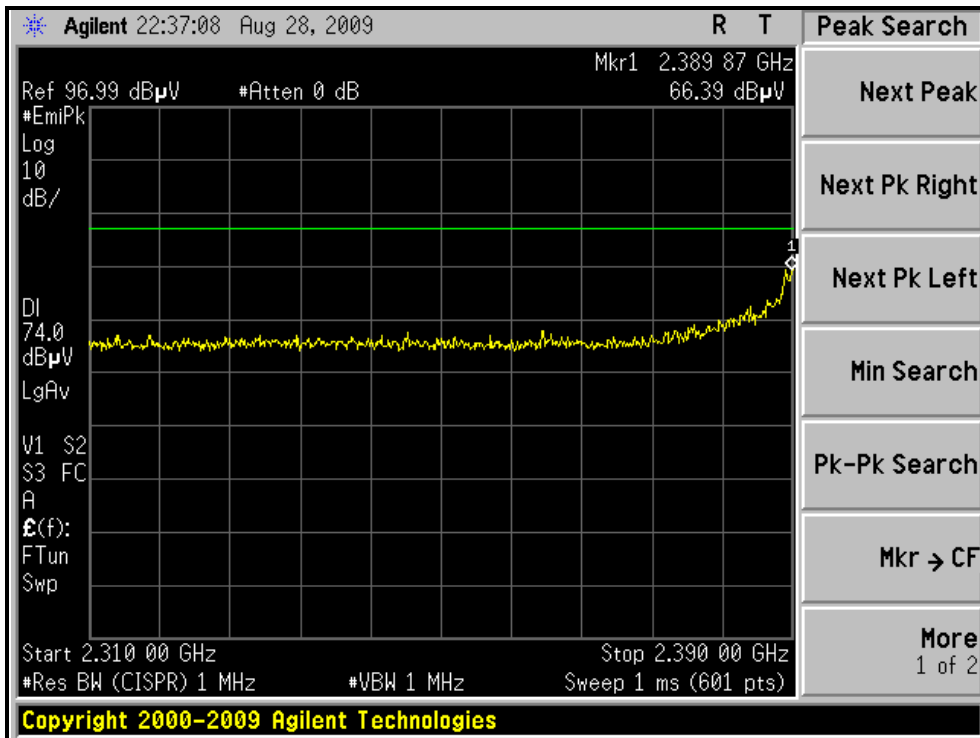
RESTRICTED BANDEDGE (802.11g MODE, CH1, HORIZONTAL )





A D T

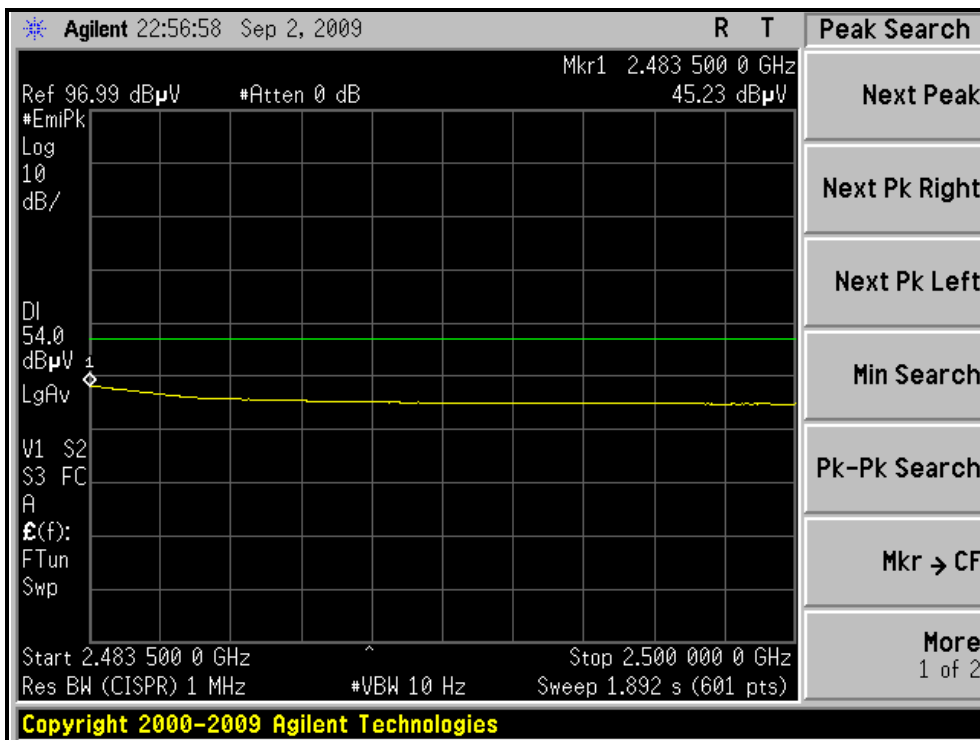
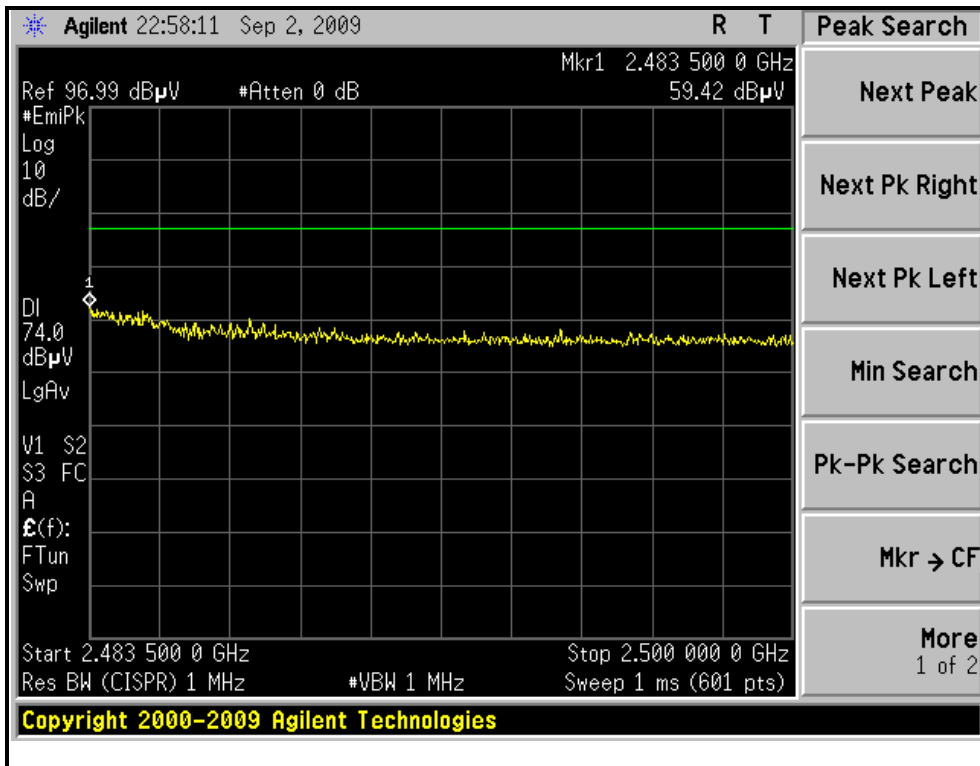
RESTRICTED BANDEDGE (802.11g MODE, CH1, VERTICAL )





A D T

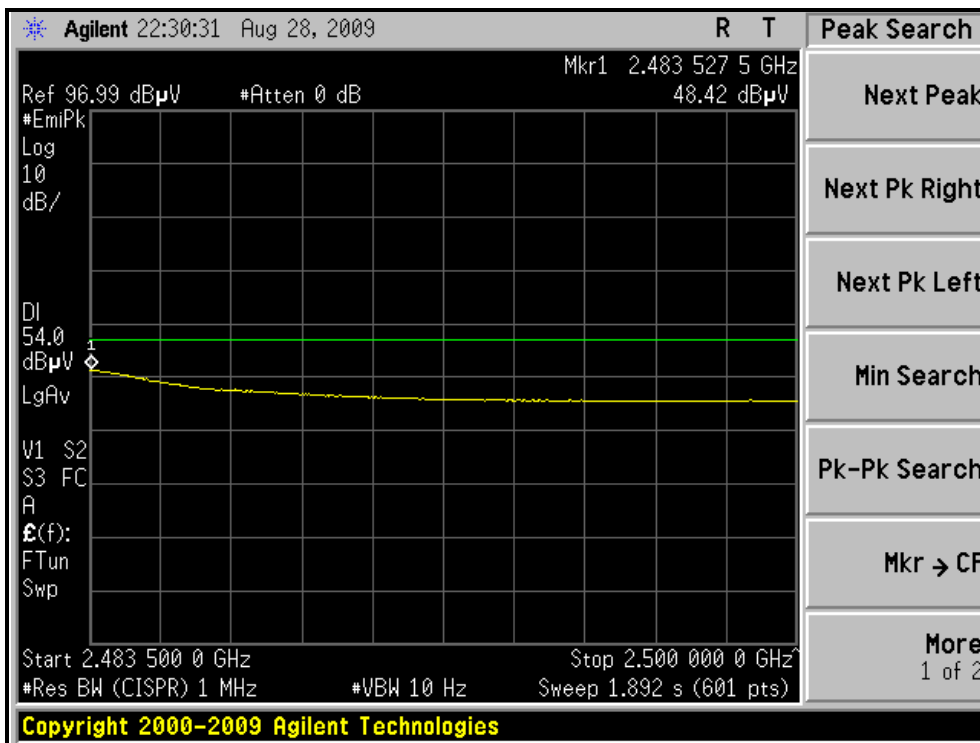
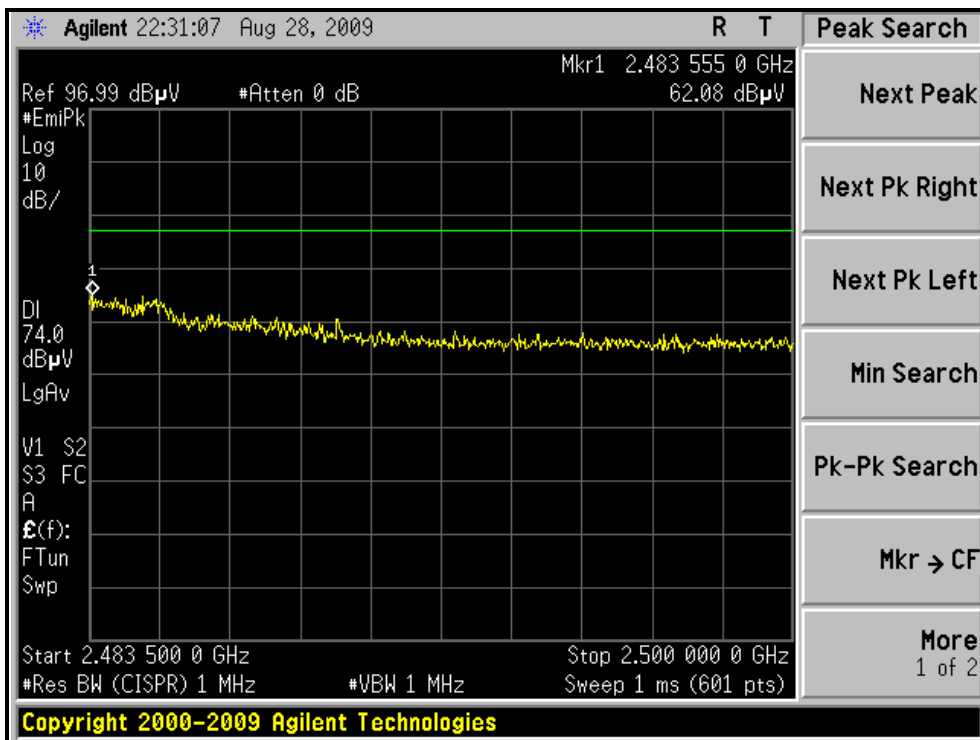
RESTRICTED BANDEDGE (802.11g MODE, CH11, HORIZONTAL )





A D T

RESTRICTED BANDEDGE (802.11g MODE,CH11, VERTICAL )





A D T

**DRAFT 802.11n (20MHz) OFDM MODULATION**

| EUT TEST CONDITION       |                               | MEASUREMENT DETAIL |                           |
|--------------------------|-------------------------------|--------------------|---------------------------|
| CHANNEL                  | Channel 1                     | FREQUENCY RANGE    | 1 ~ 25GHz                 |
| INPUT POWER (SYSTEM)     | 120Vac, 60 Hz                 | DETECTOR FUNCTION  | Peak (PK)<br>Average (AV) |
| ENVIRONMENTAL CONDITIONS | 25.0deg. C, 63.0%RH<br>965hPa | TESTED BY          | Phoenix Huang             |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |             |                         |                |             |                    |                      |                  |                          |
|-----------------------------------------------------|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| NO.                                                 | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1                                                   | 2390.00     | 56.09 PK                | 74.00          | -17.91      | 1.46 H             | 150                  | 26.06            | 30.03                    |
| 2                                                   | 2390.00     | 42.76 AV                | 54.00          | -11.24      | 1.46 H             | 150                  | 12.73            | 30.03                    |
| 3                                                   | *2412.00    | 101.85 PK               |                |             | 1.46 H             | 149                  | 71.73            | 30.12                    |
| 4                                                   | *2412.00    | 92.71 AV                |                |             | 1.46 H             | 149                  | 62.59            | 30.12                    |
| 5                                                   | 4824.00     | 43.10 PK                | 74.00          | -30.90      | 1.30 H             | 288                  | 7.62             | 35.48                    |
| 6                                                   | 4824.00     | 30.05 AV                | 54.00          | -23.95      | 1.30 H             | 288                  | -5.43            | 35.48                    |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M   |             |                         |                |             |                    |                      |                  |                          |
| NO.                                                 | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1                                                   | 2390.00     | 70.38 PK                | 74.00          | -3.62       | 1.50 V             | 202                  | 40.35            | 30.03                    |
| 2                                                   | 2390.00     | 49.10 AV                | 54.00          | -4.90       | 1.50 V             | 202                  | 19.07            | 30.03                    |
| 3                                                   | *2412.00    | 106.93 PK               |                |             | 1.49 V             | 203                  | 76.81            | 30.12                    |
| 4                                                   | *2412.00    | 97.23 AV                |                |             | 1.49 V             | 203                  | 67.11            | 30.12                    |
| 5                                                   | 4824.00     | 45.99 PK                | 74.00          | -28.01      | 1.07 V             | 31                   | 10.51            | 35.48                    |
| 6                                                   | 4824.00     | 34.31 AV                | 54.00          | -19.69      | 1.07 V             | 31                   | -1.17            | 35.48                    |

- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
  2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
  3. The other emission levels were very low against the limit.
  4. Margin value = Emission level – Limit value.
  5. “ \* “: Fundamental frequency.



A D T

| EUT TEST CONDITION       |                               | MEASUREMENT DETAIL |                           |
|--------------------------|-------------------------------|--------------------|---------------------------|
| CHANNEL                  | Channel 6                     | FREQUENCY RANGE    | 1 ~ 25GHz                 |
| INPUT POWER (SYSTEM)     | 120Vac, 60 Hz                 | DETECTOR FUNCTION  | Peak (PK)<br>Average (AV) |
| ENVIRONMENTAL CONDITIONS | 25.0deg. C, 63.0%RH<br>965hPa | TESTED BY          | Phoenix Huang             |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |             |                         |                |             |                    |                      |                  |                          |
|-----------------------------------------------------|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| NO.                                                 | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1                                                   | *2437.00    | 101.84 PK               |                |             | 1.45 H             | 135                  | 71.63            | 30.21                    |
| 2                                                   | *2437.00    | 92.72 AV                |                |             | 1.45 H             | 135                  | 62.51            | 30.21                    |
| 3                                                   | 4874.00     | 41.16 PK                | 74.00          | -32.84      | 1.26 H             | 281                  | 5.54             | 35.62                    |
| 4                                                   | 4874.00     | 29.76 AV                | 54.00          | -24.24      | 1.26 H             | 281                  | -5.86            | 35.62                    |
| 5                                                   | 7311.00     | 48.00 PK                | 74.00          | -26.00      | 1.14 H             | 39                   | 6.73             | 41.27                    |
| 6                                                   | 7311.00     | 35.78 AV                | 54.00          | -18.22      | 1.14 H             | 39                   | -5.49            | 41.27                    |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M   |             |                         |                |             |                    |                      |                  |                          |
| NO.                                                 | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1                                                   | *2437.00    | 107.48 PK               |                |             | 1.28 V             | 121                  | 77.27            | 30.21                    |
| 2                                                   | *2437.00    | 97.88 AV                |                |             | 1.28 V             | 121                  | 67.67            | 30.21                    |
| 3                                                   | 4874.00     | 41.15 PK                | 74.00          | -32.85      | 1.00 V             | 46                   | 5.53             | 35.62                    |
| 4                                                   | 4874.00     | 29.45 AV                | 54.00          | -24.55      | 1.00 V             | 46                   | -6.17            | 35.62                    |
| 5                                                   | 7311.00     | 48.89 PK                | 74.00          | -25.11      | 1.00 V             | 28                   | 7.62             | 41.27                    |
| 6                                                   | 7311.00     | 35.72 AV                | 54.00          | -18.28      | 1.00 V             | 28                   | -5.55            | 41.27                    |

- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
  2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
  3. The other emission levels were very low against the limit.
  4. Margin value = Emission level – Limit value.
  5. “ \* “: Fundamental frequency.





A D T

| EUT TEST CONDITION       |                               | MEASUREMENT DETAIL |                           |
|--------------------------|-------------------------------|--------------------|---------------------------|
| CHANNEL                  | Channel 11                    | FREQUENCY RANGE    | 1 ~ 25GHz                 |
| INPUT POWER (SYSTEM)     | 120Vac, 60 Hz                 | DETECTOR FUNCTION  | Peak (PK)<br>Average (AV) |
| ENVIRONMENTAL CONDITIONS | 25.0deg. C, 63.0%RH<br>965hPa | TESTED BY          | Phoenix Huang             |

**ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M**

| NO. | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
|-----|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| 1   | *2462.00    | 103.01 PK               |                |             | 1.42 H             | 143                  | 72.70            | 30.31                    |
| 2   | *2462.00    | 93.52 AV                |                |             | 1.42 H             | 143                  | 63.21            | 30.31                    |
| 3   | 2483.50     | 59.96 PK                | 74.00          | -14.04      | 1.42 H             | 143                  | 29.56            | 30.40                    |
| 4   | 2483.50     | 44.85 AV                | 54.00          | -9.15       | 1.42 H             | 143                  | 14.45            | 30.40                    |
| 5   | 4924.00     | 42.37 PK                | 74.00          | -31.63      | 1.27 H             | 285                  | 6.62             | 35.75                    |
| 6   | 4924.00     | 29.26 AV                | 54.00          | -24.74      | 1.27 H             | 285                  | -6.49            | 35.75                    |
| 7   | 7386.00     | 47.81 PK                | 74.00          | -26.19      | 1.13 H             | 18                   | 6.37             | 41.44                    |
| 8   | 7386.00     | 36.05 AV                | 54.00          | -17.95      | 1.13 H             | 18                   | -5.39            | 41.44                    |

**ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M**

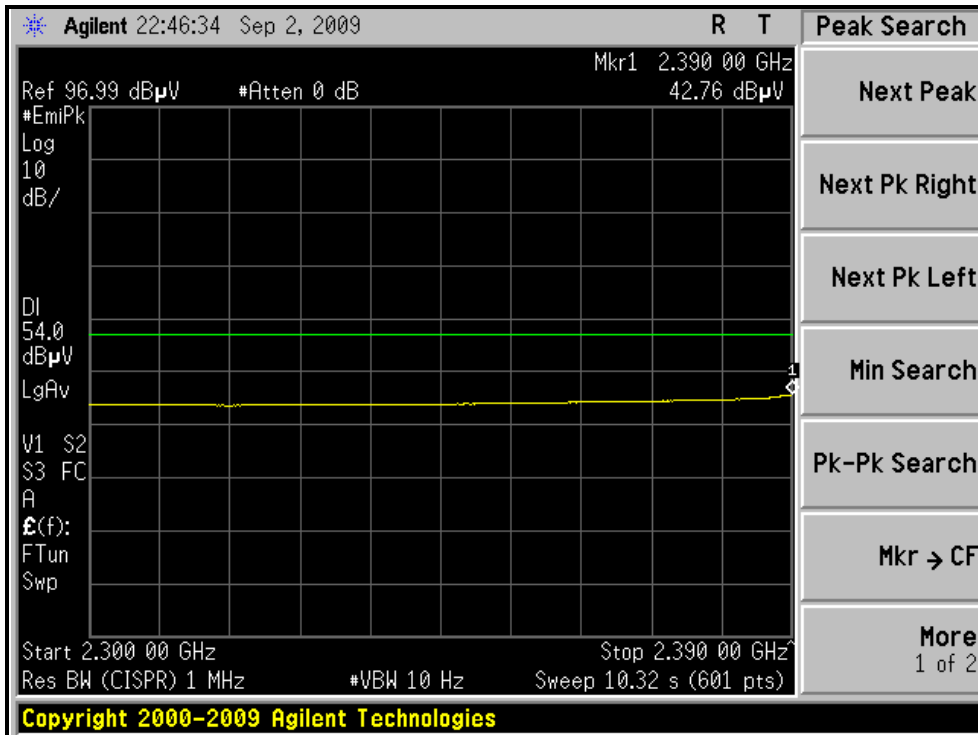
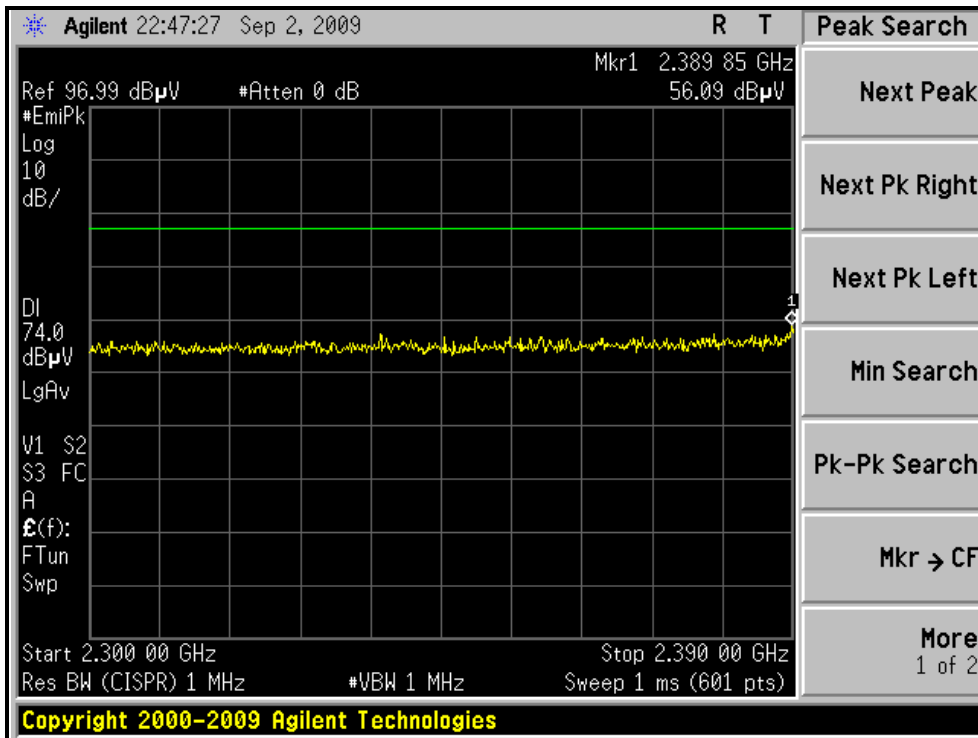
| NO. | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
|-----|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| 1   | *2462.00    | 107.56 PK               |                |             | 1.42 V             | 203                  | 77.25            | 30.31                    |
| 2   | *2462.00    | 98.15 AV                |                |             | 1.42 V             | 203                  | 67.84            | 30.31                    |
| 3   | 2483.50     | 63.23 PK                | 74.00          | -10.77      | 1.42 V             | 201                  | 32.83            | 30.40                    |
| 4   | 2483.50     | 46.90 AV                | 54.00          | -7.10       | 1.42 V             | 201                  | 16.50            | 30.40                    |
| 5   | 4924.00     | 45.29 PK                | 74.00          | -28.71      | 1.08 V             | 40                   | 9.54             | 35.75                    |
| 6   | 4924.00     | 32.15 AV                | 54.00          | -21.85      | 1.08 V             | 40                   | -3.60            | 35.75                    |
| 7   | 7386.00     | 50.10 PK                | 74.00          | -23.90      | 1.20 V             | 346                  | 8.66             | 41.44                    |
| 8   | 7386.00     | 37.75 AV                | 54.00          | -16.25      | 1.20 V             | 346                  | -3.69            | 41.44                    |

- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
  2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
  3. The other emission levels were very low against the limit.
  4. Margin value = Emission level – Limit value.
  5. “ \* “: Fundamental frequency.



A D T

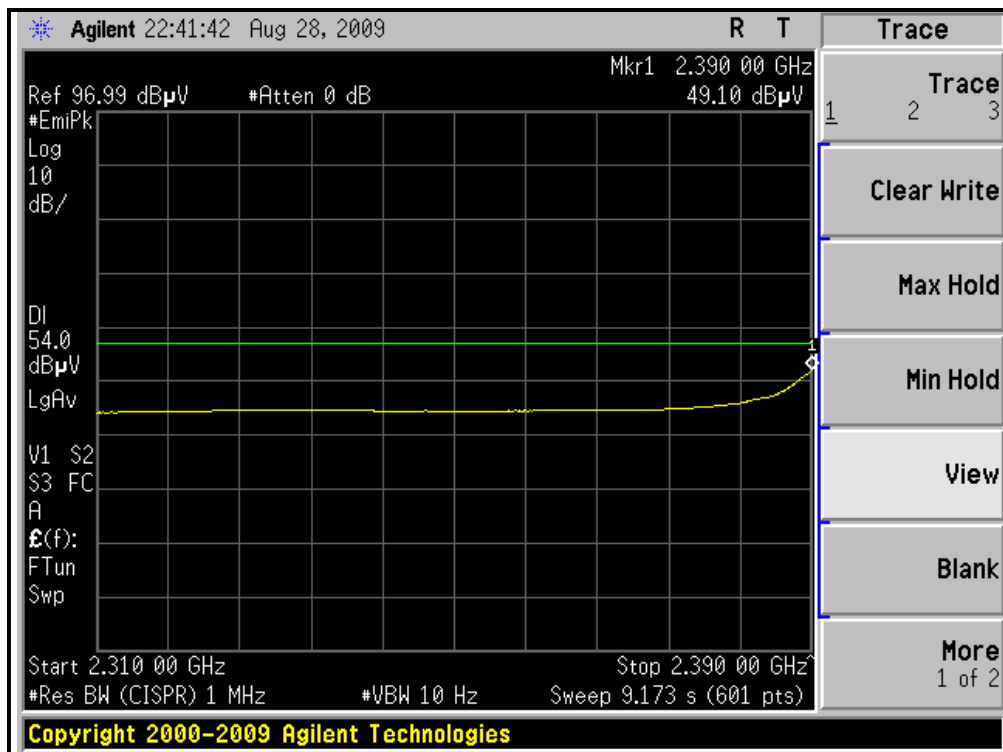
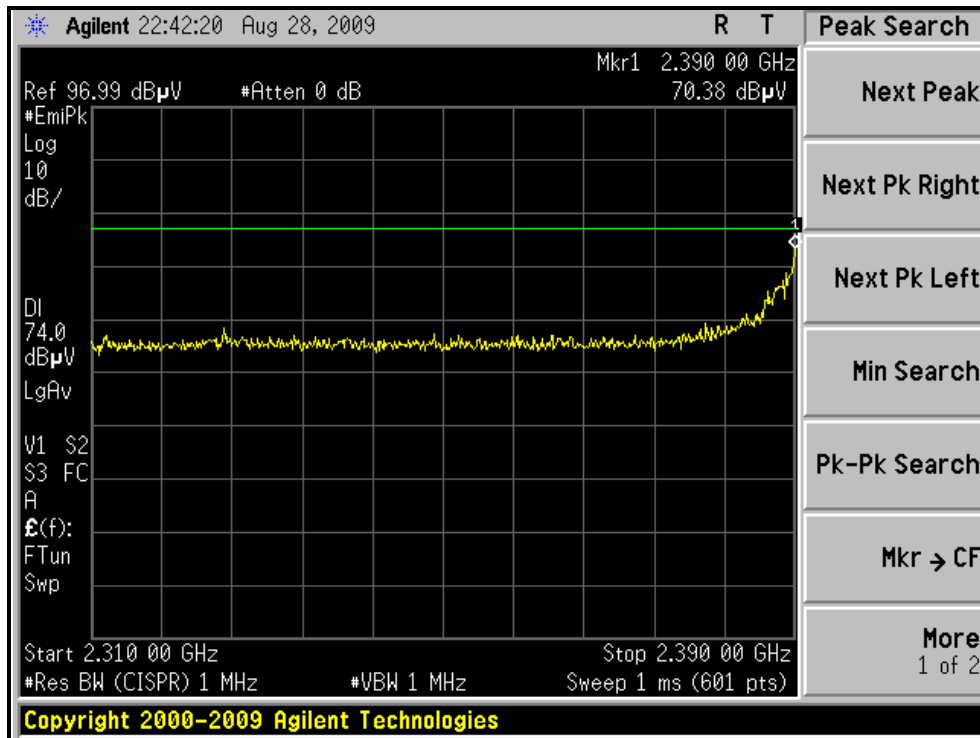
RESTRICTED BANDEDGE (DRAFT 802.11n (20MHz) MODE, CH1, HORIZONTAL )





A D T

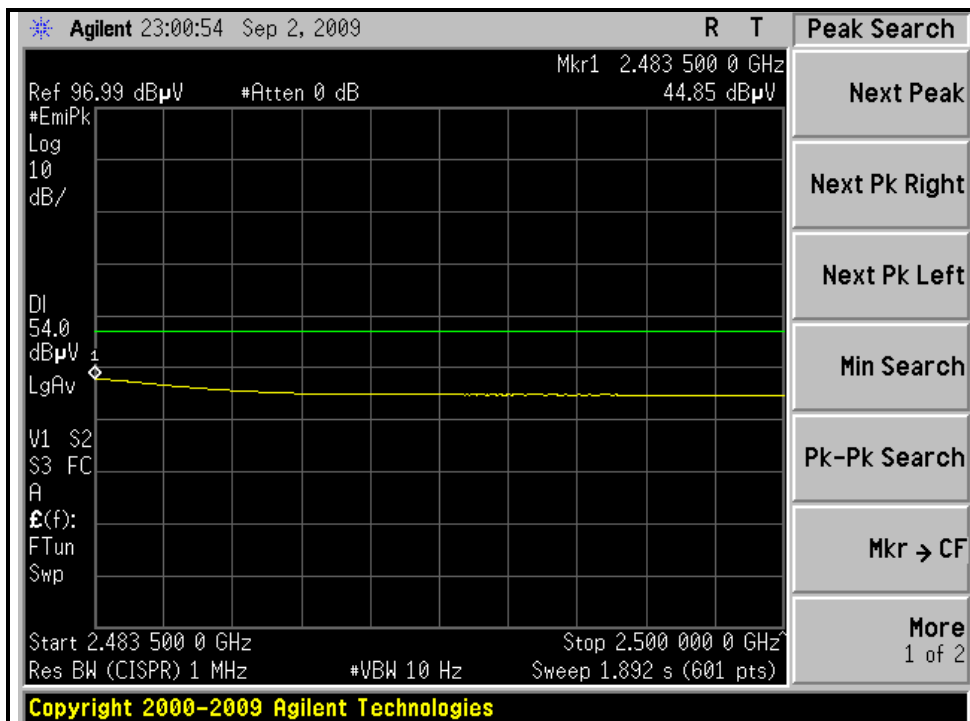
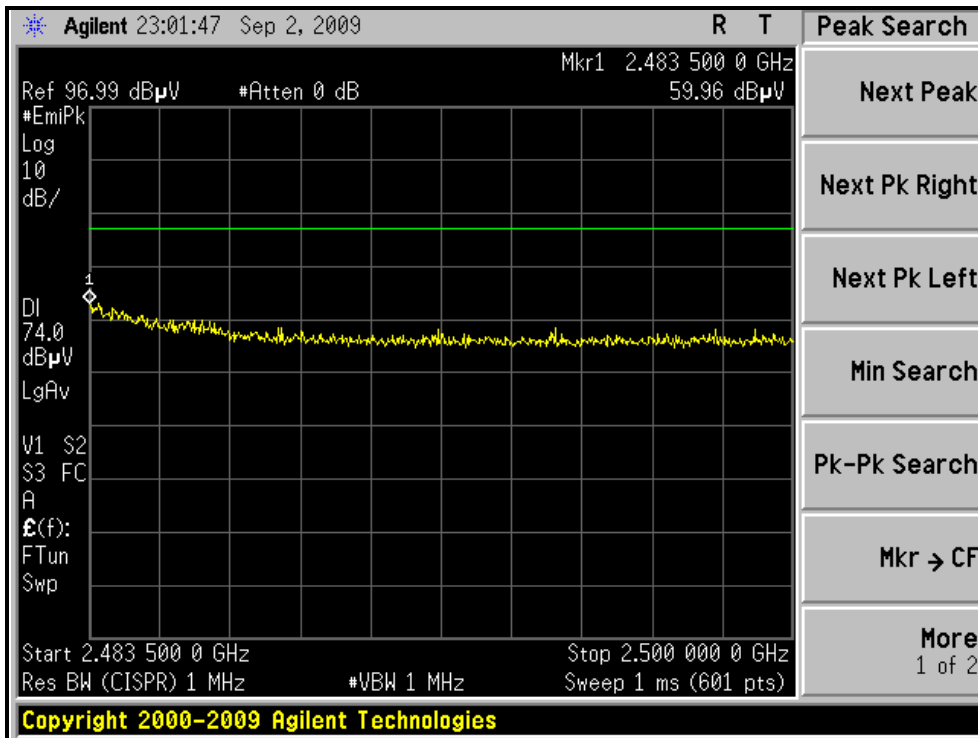
RESTRICTED BANDEDGE (DRAFT 802.11n (20MHz) MODE, CH1, VERTICAL )





A D T

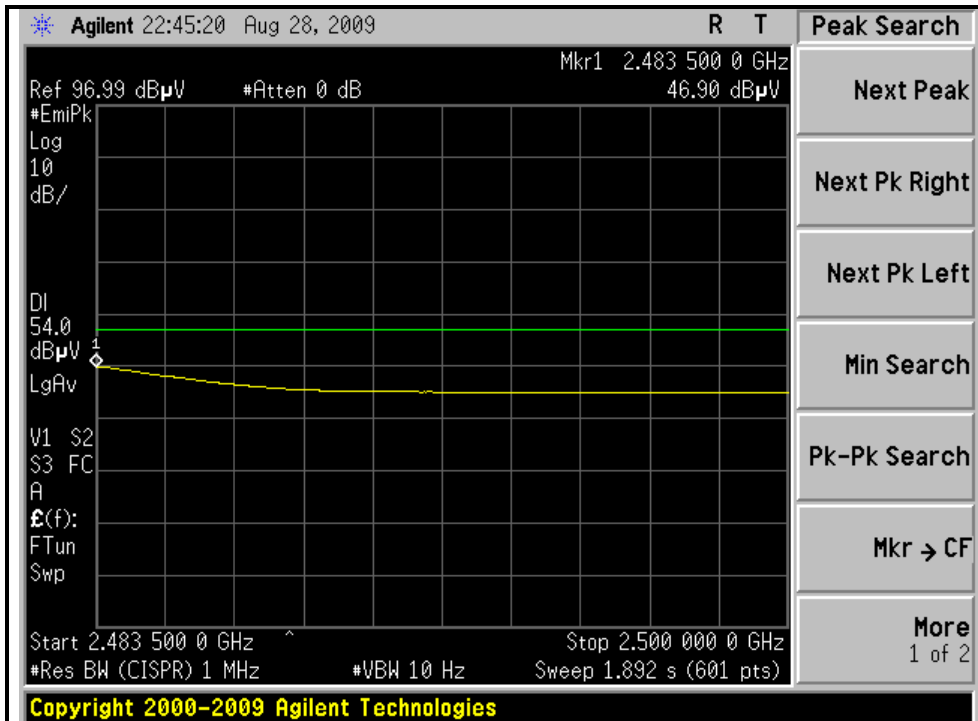
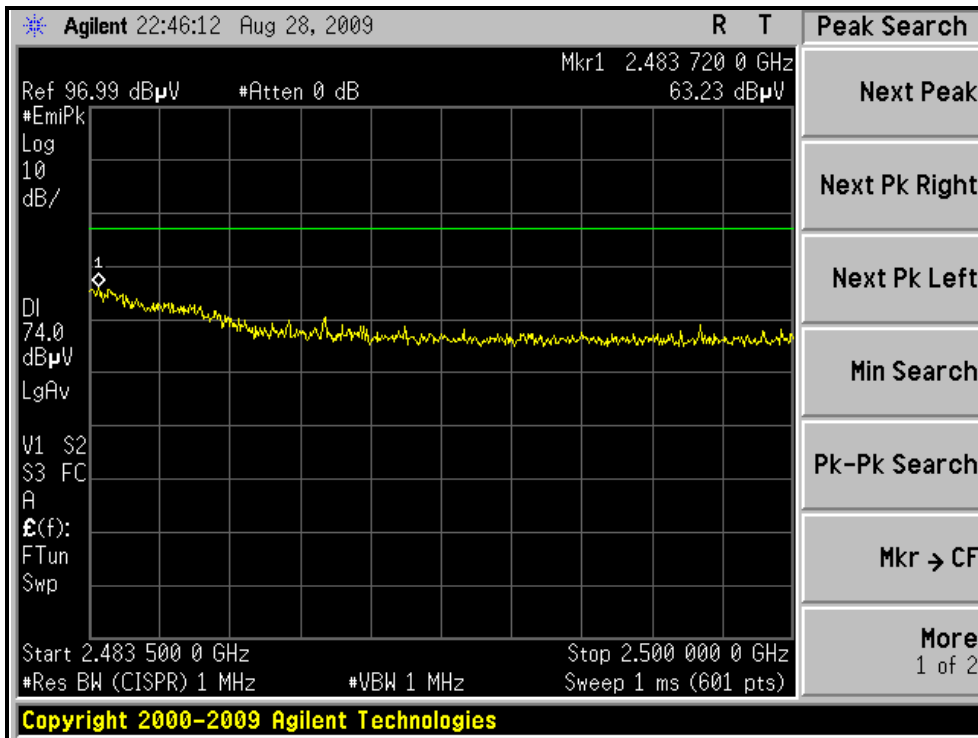
RESTRICTED BANDEDGE (DRAFT 802.11n (20MHz) MODE, CH11, HORIZONTAL )





A D T

RESTRICTED BANDEDGE (DRAFT 802.11n (20MHz) MODE,CH11, VERTICAL )





A D T

**DRAFT 802.11n (40MHz) OFDM MODULATION**

| EUT TEST CONDITION       |                               | MEASUREMENT DETAIL |                           |
|--------------------------|-------------------------------|--------------------|---------------------------|
| CHANNEL                  | Channel 1                     | FREQUENCY RANGE    | 1 ~ 25GHz                 |
| INPUT POWER (SYSTEM)     | 120Vac, 60 Hz                 | DETECTOR FUNCTION  | Peak (PK)<br>Average (AV) |
| ENVIRONMENTAL CONDITIONS | 25.0deg. C, 63.0%RH<br>965hPa | TESTED BY          | Phoenix Huang             |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |             |                         |                |             |                    |                      |                  |                          |
|-----------------------------------------------------|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| NO.                                                 | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1                                                   | 2388.80     | 57.96 PK                | 74.00          | -16.04      | 1.49 H             | 146                  | 27.93            | 30.03                    |
| 2                                                   | 2388.80     | 45.14 AV                | 54.00          | -8.86       | 1.49 H             | 146                  | 15.11            | 30.03                    |
| 3                                                   | *2422.00    | 99.01 PK                |                |             | 1.44 H             | 137                  | 68.85            | 30.16                    |
| 4                                                   | *2422.00    | 89.20 AV                |                |             | 1.44 H             | 137                  | 59.04            | 30.16                    |
| 5                                                   | 4844.00     | 42.19 PK                | 74.00          | -31.81      | 1.29 H             | 273                  | 6.65             | 35.54                    |
| 6                                                   | 4844.00     | 29.97 AV                | 54.00          | -24.03      | 1.29 H             | 273                  | -5.57            | 35.54                    |
| 7                                                   | 7266.00     | 48.37 PK                | 74.00          | -25.63      | 1.14 H             | 71                   | 7.22             | 41.15                    |
| 8                                                   | 7266.00     | 35.87 AV                | 54.00          | -18.13      | 1.14 H             | 71                   | -5.28            | 41.15                    |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M   |             |                         |                |             |                    |                      |                  |                          |
| NO.                                                 | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1                                                   | 2390.00     | 69.94 PK                | 74.00          | -4.06       | 1.46 V             | 200                  | 39.91            | 30.03                    |
| 2                                                   | 2390.00     | 52.78 AV                | 54.00          | -1.22       | 1.46 V             | 200                  | 22.75            | 30.03                    |
| 3                                                   | *2422.00    | 103.60 PK               |                |             | 1.47 V             | 202                  | 73.44            | 30.16                    |
| 4                                                   | *2422.00    | 94.08 AV                |                |             | 1.47 V             | 202                  | 63.92            | 30.16                    |
| 5                                                   | 4844.00     | 44.31 PK                | 74.00          | -29.69      | 1.05 V             | 36                   | 8.77             | 35.54                    |
| 6                                                   | 4844.00     | 32.65 AV                | 54.00          | -21.35      | 1.05 V             | 36                   | -2.89            | 35.54                    |
| 7                                                   | 7266.00     | 49.77 PK                | 74.00          | -24.23      | 1.21 V             | 351                  | 8.62             | 41.15                    |
| 8                                                   | 7266.00     | 37.33 AV                | 54.00          | -16.67      | 1.21 V             | 351                  | -3.82            | 41.15                    |

- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
  2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
  3. The other emission levels were very low against the limit.
  4. Margin value = Emission level – Limit value.
  5. “ \* “: Fundamental frequency.



A D T

| EUT TEST CONDITION       |                               | MEASUREMENT DETAIL |                           |
|--------------------------|-------------------------------|--------------------|---------------------------|
| CHANNEL                  | Channel 4                     | FREQUENCY RANGE    | 1 ~ 25GHz                 |
| INPUT POWER (SYSTEM)     | 120Vac, 60 Hz                 | DETECTOR FUNCTION  | Peak (PK)<br>Average (AV) |
| ENVIRONMENTAL CONDITIONS | 25.0deg. C, 63.0%RH<br>965hPa | TESTED BY          | Phoenix Huang             |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |             |                         |                |             |                    |                      |                  |                          |
|-----------------------------------------------------|-------------|-------------------------|----------------|-------------|--------------------|----------------------|------------------|--------------------------|
| NO.                                                 | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1                                                   | *2437.00    | 100.79 PK               |                |             | 1.45 H             | 136                  | 70.58            | 30.21                    |
| 2                                                   | *2437.00    | 91.17 AV                |                |             | 1.45 H             | 136                  | 60.96            | 30.21                    |
| 3                                                   | 4874.00     | 42.66 PK                | 74.00          | -31.34      | 1.30 H             | 287                  | 7.04             | 35.62                    |
| 4                                                   | 4874.00     | 29.89 AV                | 54.00          | -24.11      | 1.30 H             | 287                  | -5.73            | 35.62                    |
| 5                                                   | 7311.00     | 48.46 PK                | 74.00          | -25.54      | 1.13 H             | 67                   | 7.19             | 41.27                    |
| 6                                                   | 7311.00     | 35.79 AV                | 54.00          | -18.21      | 1.13 H             | 67                   | -5.48            | 41.27                    |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M   |             |                         |                |             |                    |                      |                  |                          |
| NO.                                                 | FREQ. (MHz) | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB) | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1                                                   | *2437.00    | 104.22 PK               |                |             | 1.43 V             | 204                  | 74.01            | 30.21                    |
| 2                                                   | *2437.00    | 95.25 AV                |                |             | 1.43 V             | 204                  | 65.04            | 30.21                    |
| 3                                                   | 2483.50     | 64.94 PK                | 74.00          | -9.06       | 1.42 V             | 202                  | 34.54            | 30.40                    |
| 4                                                   | 2483.50     | 49.61 AV                | 54.00          | -4.39       | 1.42 V             | 202                  | 19.21            | 30.40                    |
| 5                                                   | 4874.00     | 45.01 PK                | 74.00          | -28.99      | 1.09 V             | 36                   | 9.39             | 35.62                    |
| 6                                                   | 4874.00     | 32.81 AV                | 54.00          | -21.19      | 1.09 V             | 36                   | -2.81            | 35.62                    |
| 7                                                   | 7311.00     | 50.67 PK                | 74.00          | -23.33      | 1.19 V             | 346                  | 9.40             | 41.27                    |
| 8                                                   | 7311.00     | 37.36 AV                | 54.00          | -16.64      | 1.19 V             | 346                  | -3.91            | 41.27                    |

- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
  2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
  3. The other emission levels were very low against the limit.
  4. Margin value = Emission level – Limit value.
  5. “ \* “: Fundamental frequency.



A D T

| EUT TEST CONDITION       |                               | MEASUREMENT DETAIL |                           |
|--------------------------|-------------------------------|--------------------|---------------------------|
| CHANNEL                  | Channel 7                     | FREQUENCY RANGE    | 1 ~ 25GHz                 |
| INPUT POWER (SYSTEM)     | 120Vac, 60 Hz                 | DETECTOR FUNCTION  | Peak (PK)<br>Average (AV) |
| ENVIRONMENTAL CONDITIONS | 25.0deg. C, 63.0%RH<br>965hPa | TESTED BY          | Phoenix Huang             |

| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |                |                         |                |              |                    |                      |                  |                          |
|-----------------------------------------------------|----------------|-------------------------|----------------|--------------|--------------------|----------------------|------------------|--------------------------|
| NO.                                                 | FREQ. (MHz)    | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB)  | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1                                                   | *2452.00       | 100.00 PK               |                |              | 1.43 H             | 134                  | 69.73            | 30.27                    |
| 2                                                   | *2452.00       | 90.66 AV                |                |              | 1.43 H             | 134                  | 60.39            | 30.27                    |
| 3                                                   | 2484.41        | 62.26 PK                | 74.00          | -11.74       | 1.44 H             | 142                  | 31.86            | 30.40                    |
| 4                                                   | 2484.41        | 48.34 AV                | 54.00          | -5.66        | 1.44 H             | 142                  | 17.94            | 30.40                    |
| 5                                                   | 4904.00        | 42.03 PK                | 74.00          | -31.97       | 1.26 H             | 280                  | 6.33             | 35.70                    |
| 6                                                   | 4904.00        | 29.85 AV                | 54.00          | -24.15       | 1.26 H             | 280                  | -5.85            | 35.70                    |
| 7                                                   | 7356.00        | 48.50 PK                | 74.00          | -25.50       | 1.15 H             | 25                   | 7.13             | 41.37                    |
| 8                                                   | 7356.00        | 35.88 AV                | 54.00          | -18.12       | 1.15 H             | 25                   | -5.49            | 41.37                    |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M   |                |                         |                |              |                    |                      |                  |                          |
| NO.                                                 | FREQ. (MHz)    | EMISSION LEVEL (dBuV/m) | LIMIT (dBuV/m) | MARGIN (dB)  | ANTENNA HEIGHT (m) | TABLE ANGLE (Degree) | RAW VALUE (dBuV) | CORRECTION FACTOR (dB/m) |
| 1                                                   | *2452.00       | 103.61 PK               |                |              | 1.43 V             | 204                  | 73.34            | 30.27                    |
| 2                                                   | *2452.00       | 94.31 AV                |                |              | 1.43 V             | 204                  | 64.04            | 30.27                    |
| 3                                                   | 2483.64        | 68.16 PK                | 74.00          | -5.84        | 1.40 V             | 201                  | 37.76            | 30.40                    |
| 4                                                   | <b>2483.64</b> | <b>52.90 AV</b>         | <b>54.00</b>   | <b>-1.10</b> | <b>1.40 V</b>      | <b>201</b>           | <b>22.50</b>     | <b>30.40</b>             |
| 5                                                   | 4904.00        | 44.61 PK                | 74.00          | -29.39       | 1.08 V             | 32                   | 8.91             | 35.70                    |
| 6                                                   | 4904.00        | 32.02 AV                | 54.00          | -21.98       | 1.08 V             | 32                   | -3.68            | 35.70                    |
| 7                                                   | 7356.00        | 50.20 PK                | 74.00          | -23.80       | 1.18 V             | 349                  | 8.83             | 41.37                    |
| 8                                                   | 7356.00        | 37.51 AV                | 54.00          | -16.49       | 1.18 V             | 349                  | -3.86            | 41.37                    |

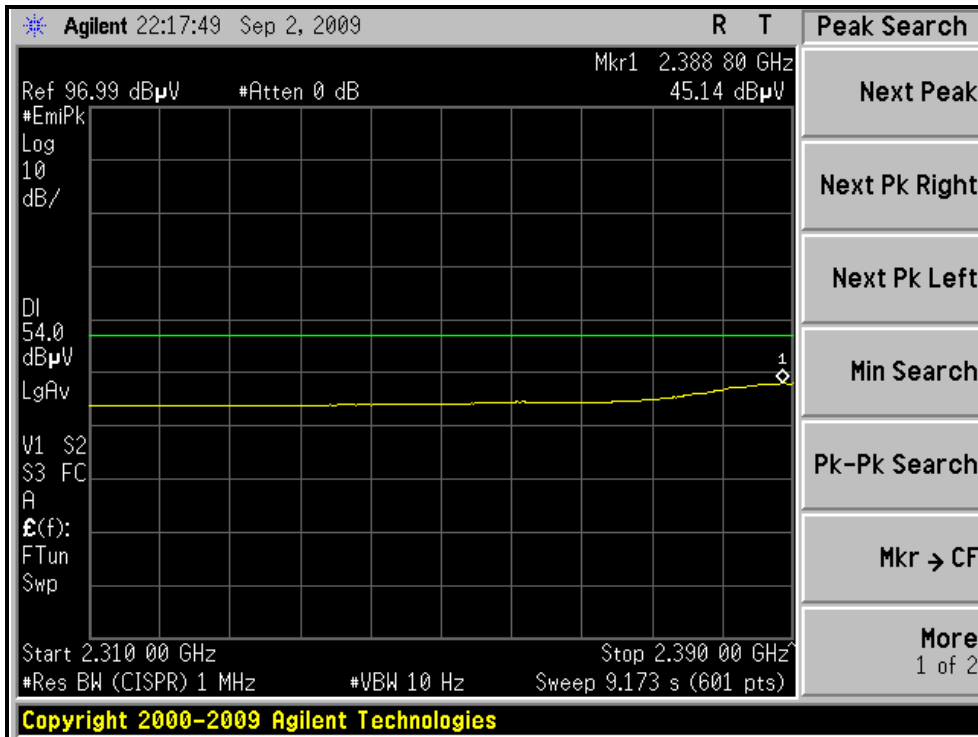
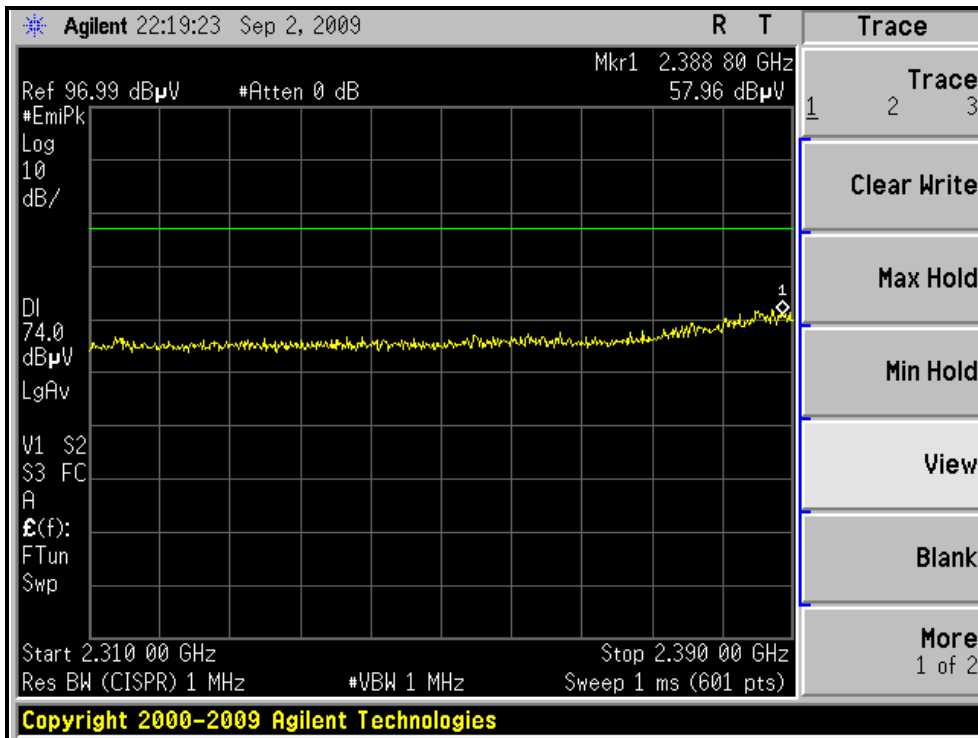
- REMARKS:**
1. Emission level (dBuV/m) = Raw Value (dBuV) + Correction Factor (dB/m).
  2. Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB).
  3. The other emission levels were very low against the limit.
  4. Margin value = Emission level – Limit value.
  5. “ \* “: Fundamental frequency.





A D T

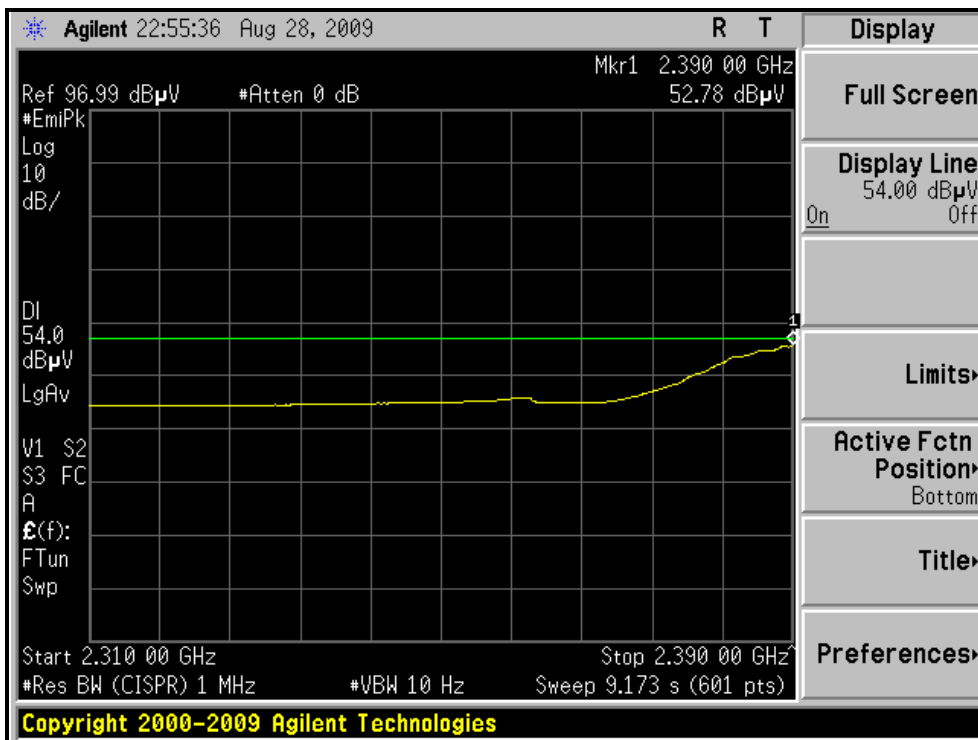
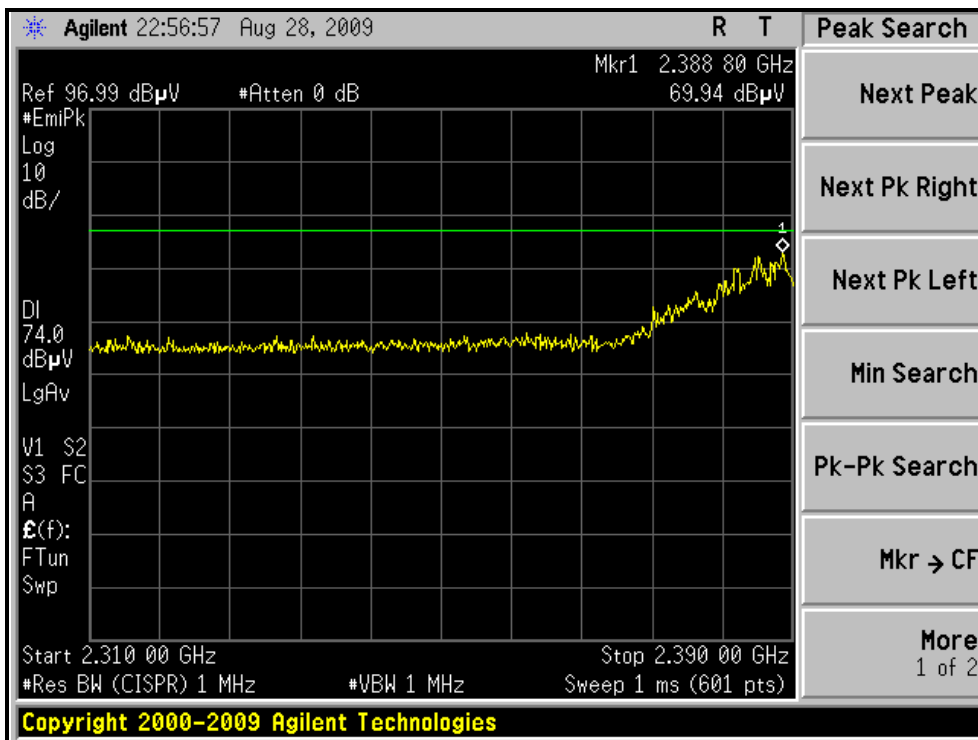
RESTRICTED BANDEDGE (DRAFT 802.11n (40MHz) MODE, CH1, HORIZONTAL )





A D T

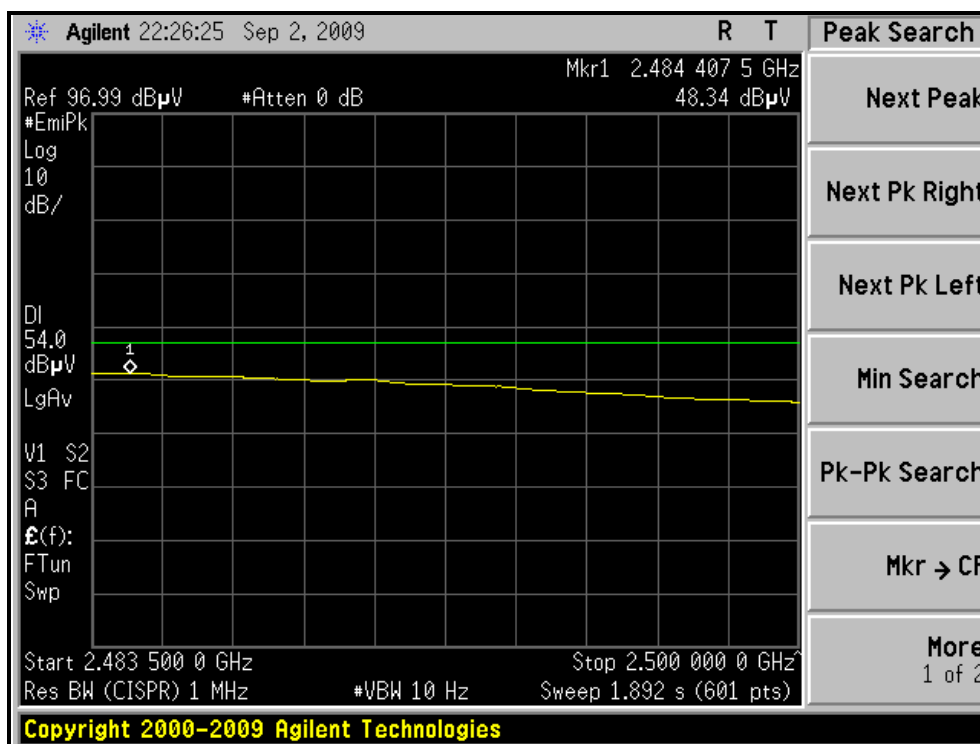
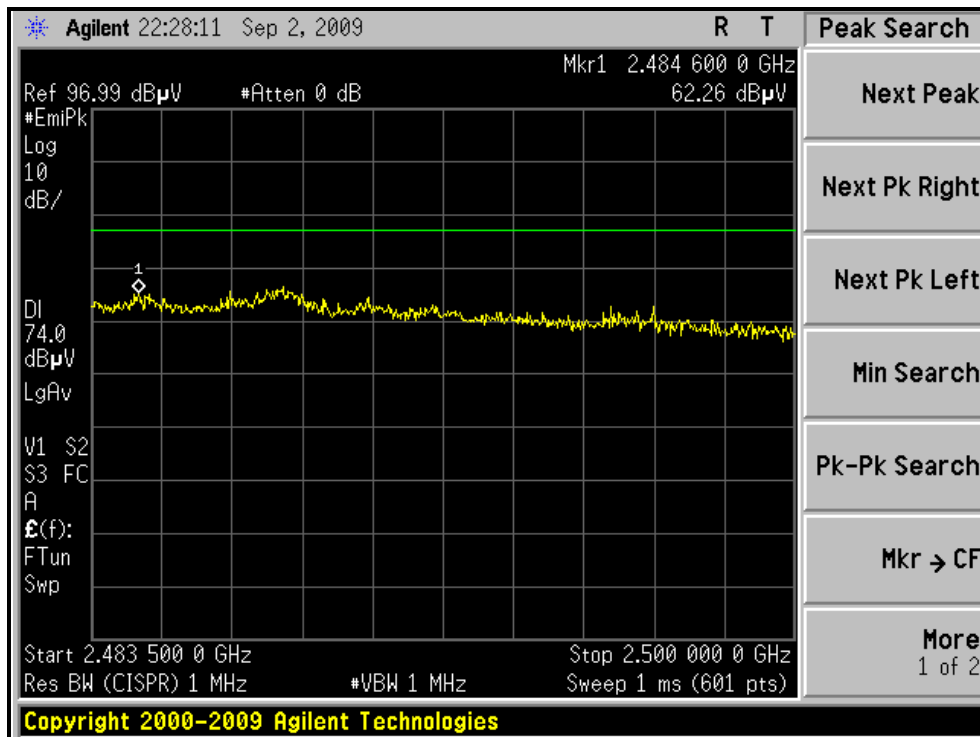
RESTRICTED BANDEDGE (DRAFT 802.11n (40MHz) MODE, CH1, VERTICAL )





A D T

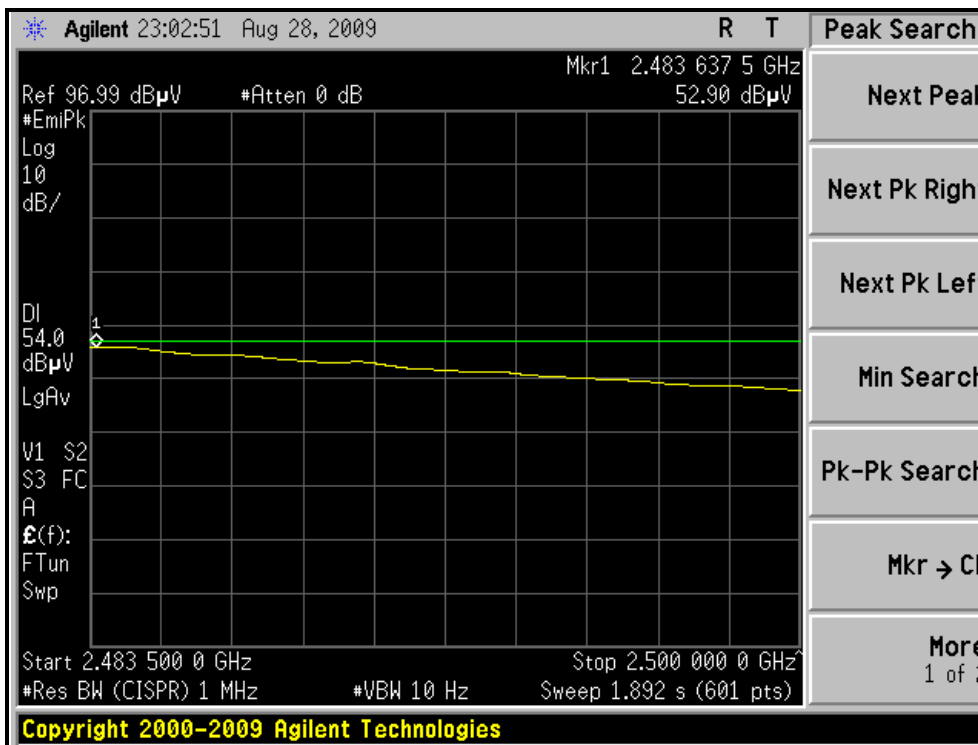
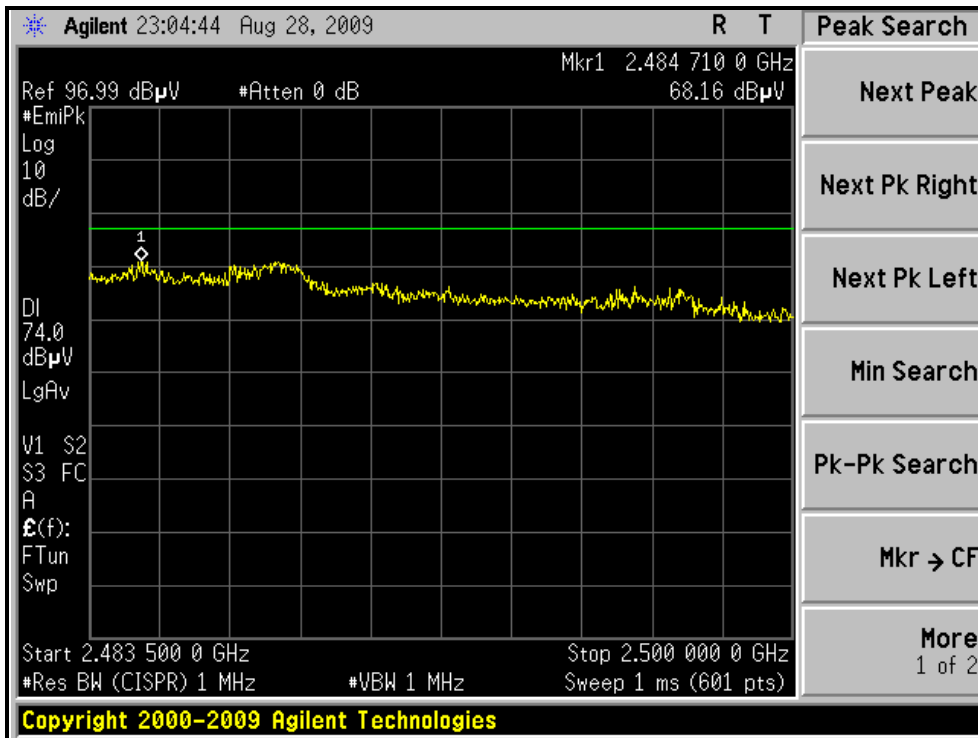
RESTRICTED BANDEDGE (DRAFT 802.11n (40MHz) MODE,CH7, HORIZONTAL )





A D T

RESTRICTED BANDEDGE (DRAFT 802.11n (40MHz) MODE,CH7, VERTICAL )





A D T

### 4.3 6dB BANDWIDTH MEASUREMENT

#### 4.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

#### 4.3.2 TEST INSTRUMENTS

| DESCRIPTION & MANUFACTURER | MODEL NO. | SERIAL NO. | CALIBRATED DATE | CALIBRATED UNTIL |
|----------------------------|-----------|------------|-----------------|------------------|
| R&S SPECTRUM ANALYZER      | FSP40     | 100037     | Aug. 03, 2009   | Aug. 02, 2010    |

**NOTE:**

- 1.The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

#### 4.3.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with 100kHz RBW and 100kHz VBW. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.

#### 4.3.4 DEVIATION FROM TEST STANDARD

No deviation

#### 4.3.5 TEST SETUP



#### 4.3.6 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

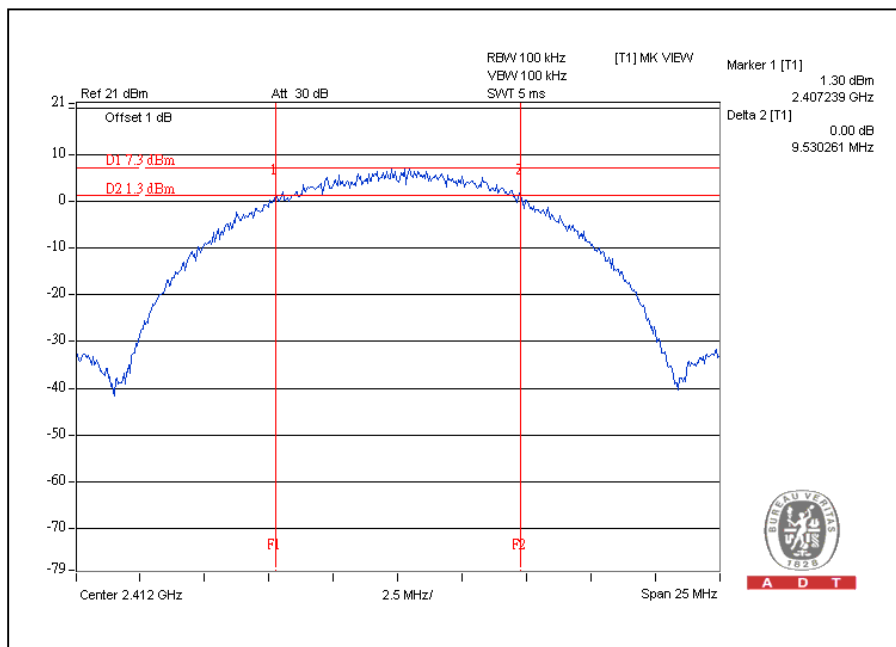
### 4.3.7 TEST RESULTS

#### 802.11b DSSS MODULATION:

|                             |               |                                 |                        |
|-----------------------------|---------------|---------------------------------|------------------------|
| <b>MODULATION TYPE</b>      | DBPSK         | <b>TRANSFER RATE</b>            | 1Mbps                  |
| <b>INPUT POWER (SYSTEM)</b> | 120Vac, 60 Hz | <b>ENVIRONMENTAL CONDITIONS</b> | 25deg.C, 60%RH, 965hPa |
| <b>TESTED BY</b>            | Phoenix Huang |                                 |                        |

| CHANNEL | CHANNEL FREQUENCY (MHz) | 6dB BANDWIDTH (MHz) | MINIMUM LIMIT (MHz) | PASS / FAIL |
|---------|-------------------------|---------------------|---------------------|-------------|
| 1       | 2412                    | 9.53                | 0.5                 | PASS        |
| 6       | 2437                    | 9.53                | 0.5                 | PASS        |
| 11      | 2462                    | 9.93                | 0.5                 | PASS        |

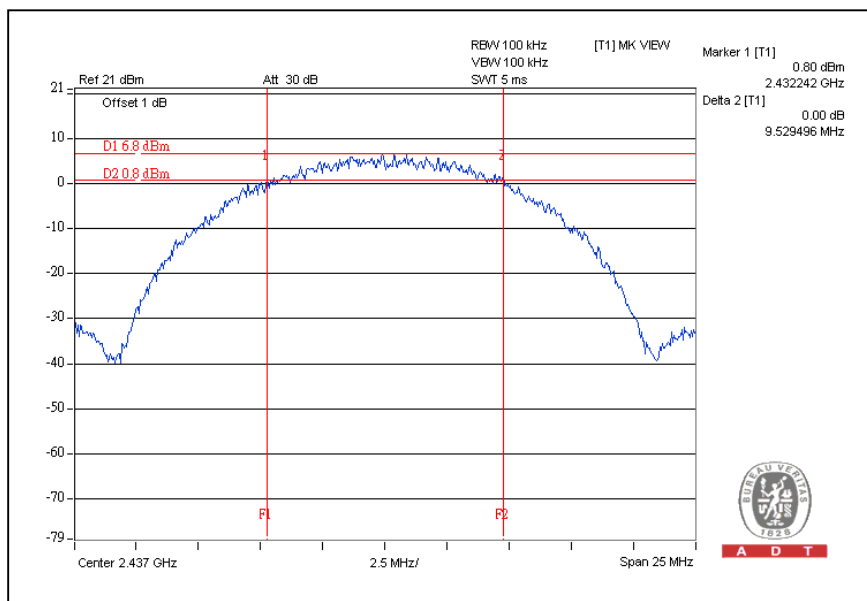
#### CH1



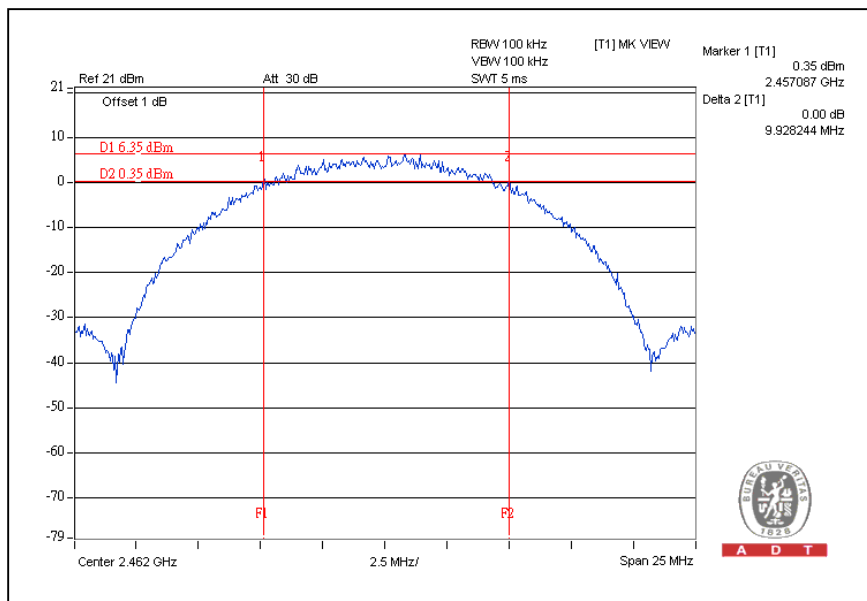


A D T

### CH6



### CH11







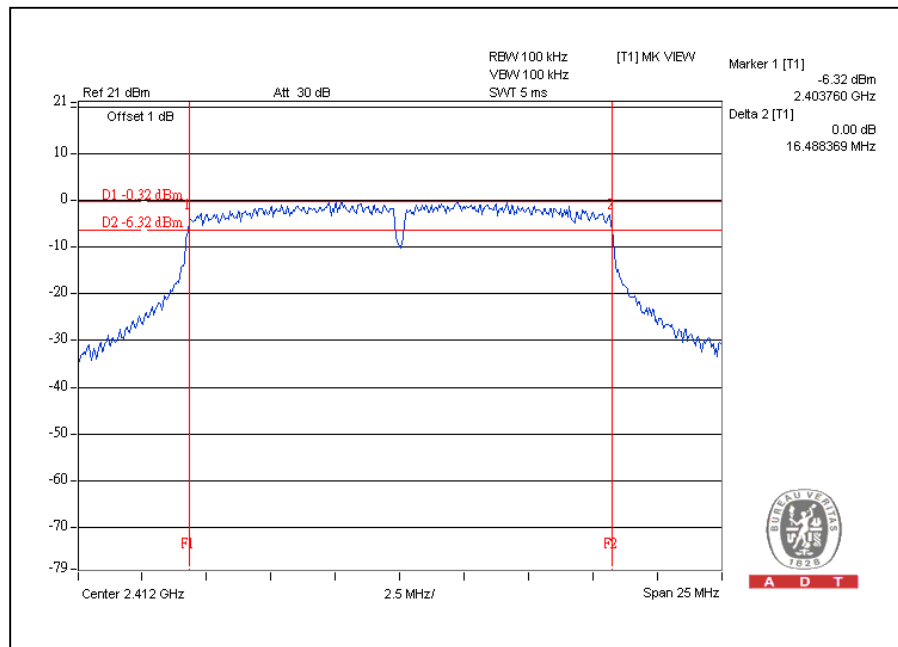
A D T

### 802.11g OFDM MODULATION:

|                             |               |                                 |                        |
|-----------------------------|---------------|---------------------------------|------------------------|
| <b>MODULATION TYPE</b>      | BPSK          | <b>TRANSFER RATE</b>            | 6Mbps                  |
| <b>INPUT POWER (SYSTEM)</b> | 120Vac, 60 Hz | <b>ENVIRONMENTAL CONDITIONS</b> | 25deg.C, 60%RH, 965hPa |
| <b>TESTED BY</b>            | Phoenix Huang |                                 |                        |

| CHANNEL | CHANNEL FREQUENCY (MHz) | 6dB BANDWIDTH (MHz) | MINIMUM LIMIT (MHz) | PASS / FAIL |
|---------|-------------------------|---------------------|---------------------|-------------|
| 1       | 2412                    | 16.49               | 0.5                 | PASS        |
| 6       | 2437                    | 16.50               | 0.5                 | PASS        |
| 11      | 2462                    | 16.48               | 0.5                 | PASS        |

CH1

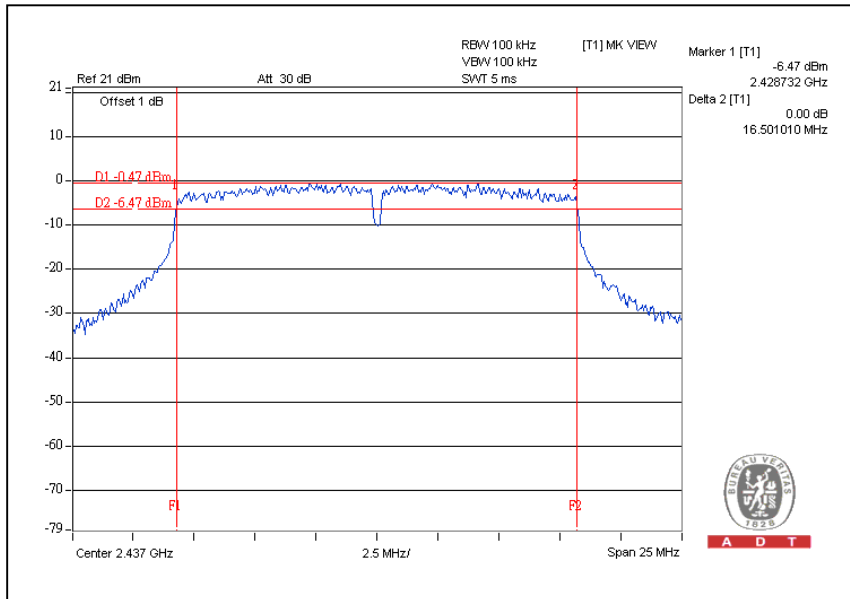


A D T

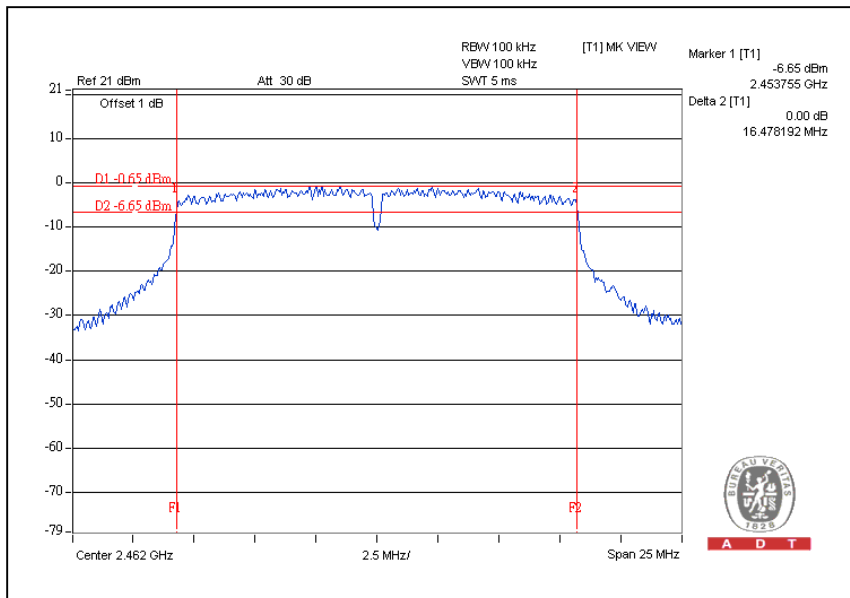


A D T

### CH6



### CH11





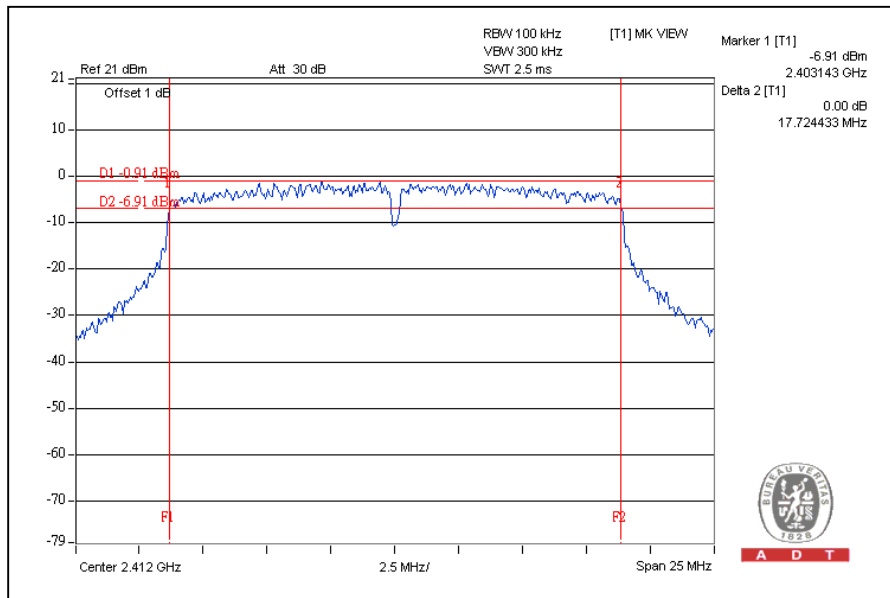
A D T

**DRAFT 802.11n (20MHz) OFDM MODULATION:**

|                             |               |                                 |                        |
|-----------------------------|---------------|---------------------------------|------------------------|
| <b>MODULATION TYPE</b>      | BPSK          | <b>TRANSFER RATE</b>            | 6.5Mbps                |
| <b>INPUT POWER (SYSTEM)</b> | 120Vac, 60 Hz | <b>ENVIRONMENTAL CONDITIONS</b> | 25deg.C, 60%RH, 965hPa |
| <b>TESTED BY</b>            | Phoenix Huang |                                 |                        |

| CHANNEL | CHANNEL FREQUENCY (MHz) | 6dB BANDWIDTH (MHz) | MINIMUM LIMIT (MHz) | PASS / FAIL |
|---------|-------------------------|---------------------|---------------------|-------------|
| 1       | 2412                    | 17.72               | 0.5                 | PASS        |
| 6       | 2437                    | 17.71               | 0.5                 | PASS        |
| 11      | 2462                    | 17.71               | 0.5                 | PASS        |

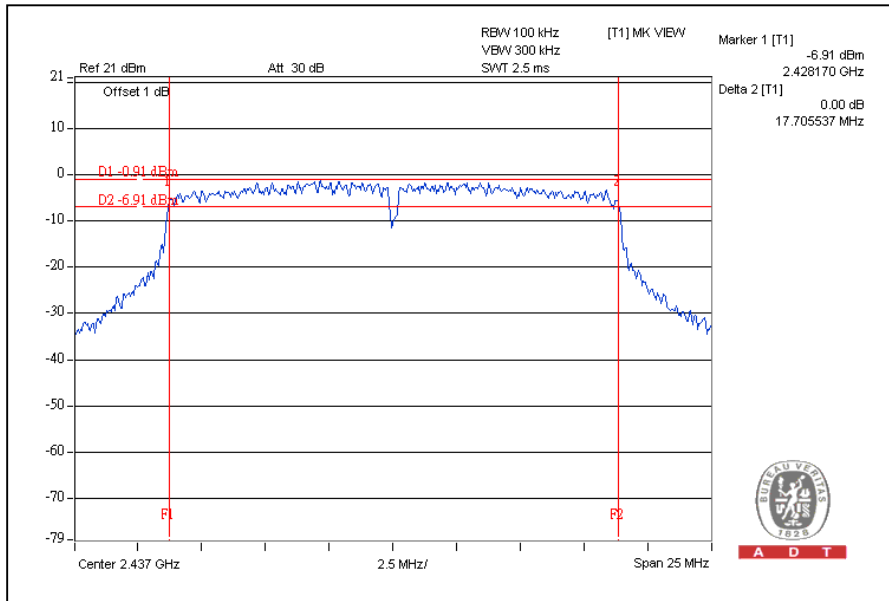
CH1





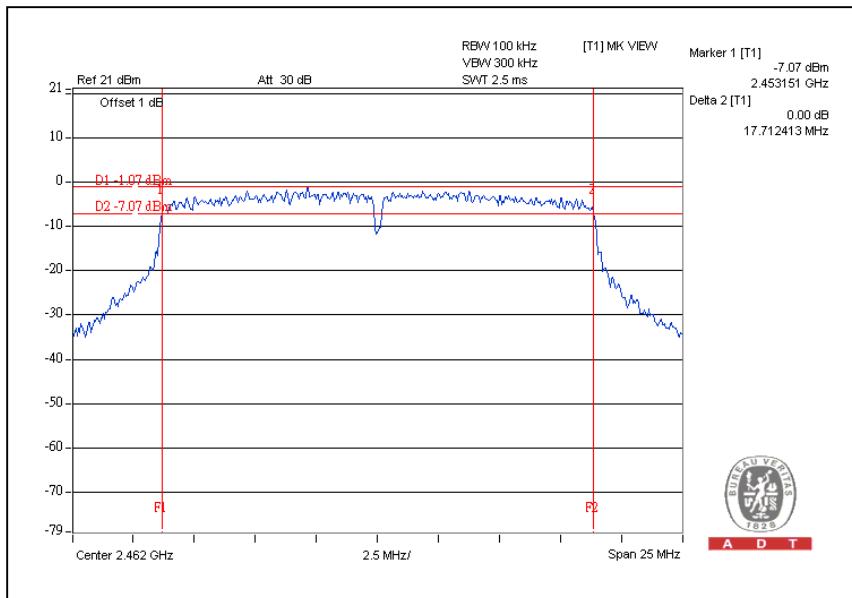
A D T

### CH6



A D T

### CH11



A D T



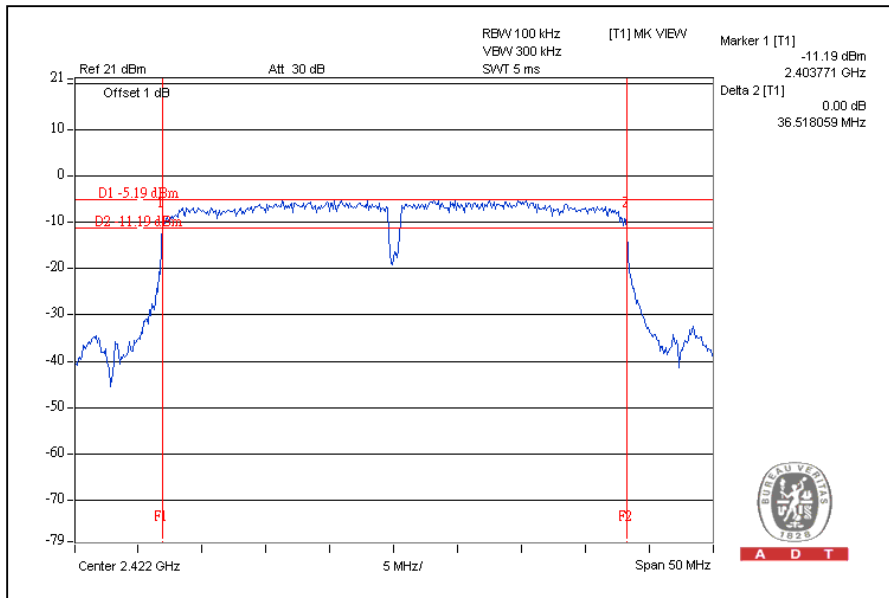
A D T

**DRAFT 802.11n (40MHz) OFDM MODULATION:**

|                             |               |                                 |                        |
|-----------------------------|---------------|---------------------------------|------------------------|
| <b>MODULATION TYPE</b>      | BPSK          | <b>TRANSFER RATE</b>            | 13.5Mbps               |
| <b>INPUT POWER (SYSTEM)</b> | 120Vac, 60 Hz | <b>ENVIRONMENTAL CONDITIONS</b> | 25deg.C, 60%RH, 965hPa |
| <b>TESTED BY</b>            | Phoenix Huang |                                 |                        |

| CHANNEL | CHANNEL FREQUENCY (MHz) | 6dB BANDWIDTH (MHz) | MINIMUM LIMIT (MHz) | PASS / FAIL |
|---------|-------------------------|---------------------|---------------------|-------------|
| 1       | 2422                    | 36.52               | 0.5                 | PASS        |
| 4       | 2437                    | 36.48               | 0.5                 | PASS        |
| 7       | 2452                    | 36.49               | 0.5                 | PASS        |

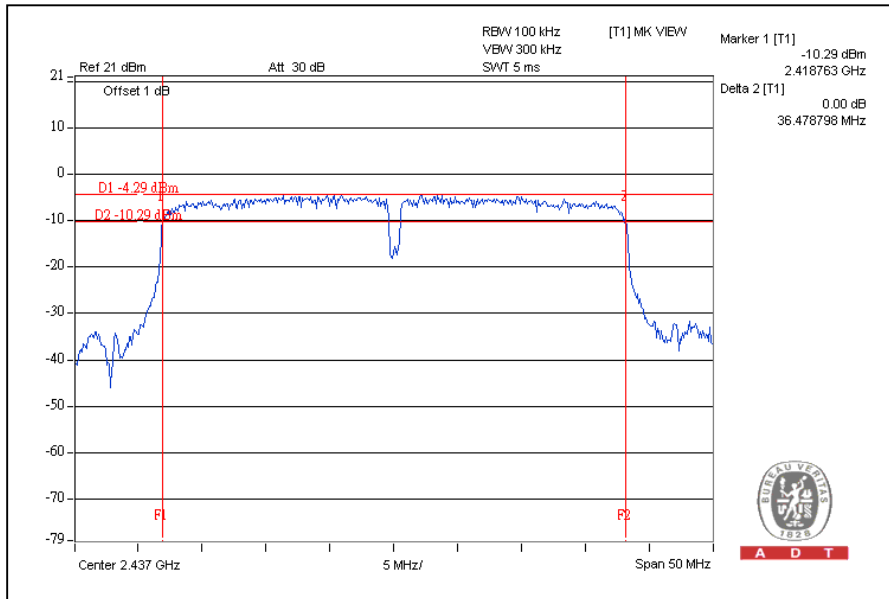
CH1



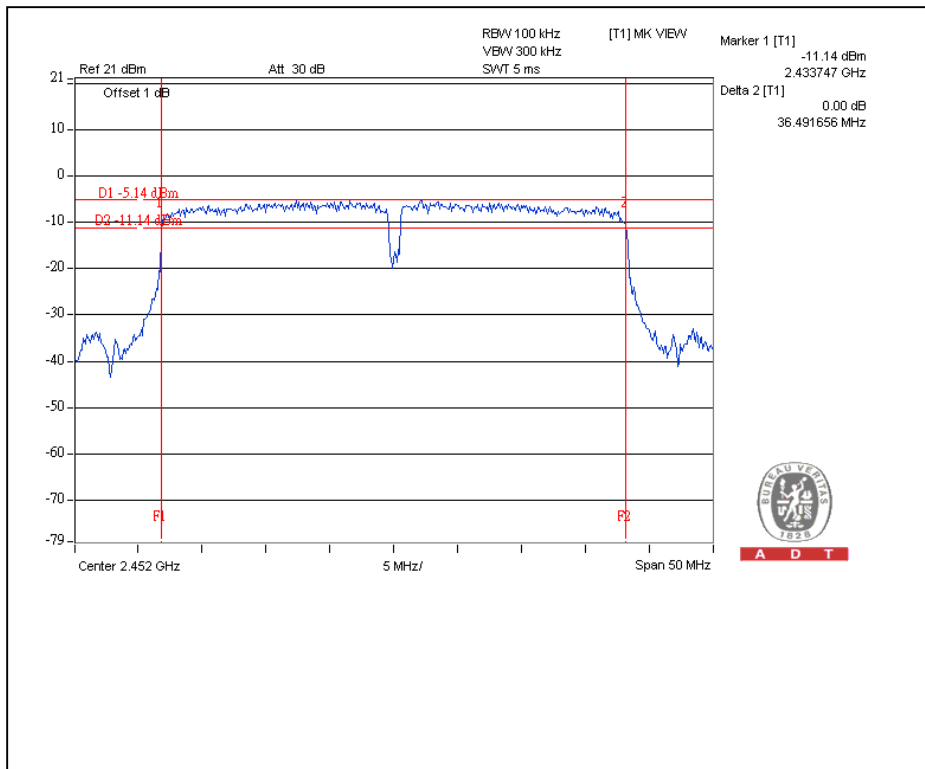


A D T

### CH4



### CH7



#### 4.4 MAXIMUM PEAK OUTPUT POWER

##### 4.4.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

The Maximum Peak Output Power Measurement is 30dBm.

##### 4.4.2 INSTRUMENTS

| DESCRIPTION & MANUFACTURER | MODEL NO. | SERIAL NO. | CALIBRATED DATE | CALIBRATED UNTIL |
|----------------------------|-----------|------------|-----------------|------------------|
| Anritsu Power Meter        | ML2495A   | 0824006    | April 25, 2009  | April 24, 2010   |
| Pulse Power Sensor         | MA2411B   | 0738172    | April 25, 2009  | April 24, 2010   |

**NOTE:**

The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

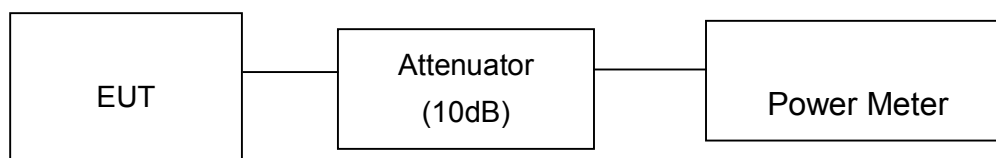
##### 4.4.3 TEST PROCEDURES

1. The transmitter output was connected to the power meter through an attenuator; the bandwidth of the fundamental frequency was measured with the power meter.
2. Record the power level.

##### 4.4.4 DEVIATION FROM TEST STANDARD

No deviation

##### 4.4.5 TEST SETUP



##### 4.4.6 EUT OPERATING CONDITIONS

Same as Item 4.3.6



A D T

#### 4.4.7 TEST RESULTS

##### 802.11b DSSS MODULATION:

|                             |               |                                 |                        |
|-----------------------------|---------------|---------------------------------|------------------------|
| <b>MODULATION TYPE</b>      | DBPSK         | <b>TRANSFER RATE</b>            | 1Mbps                  |
| <b>INPUT POWER (SYSTEM)</b> | 120Vac, 60 Hz | <b>ENVIRONMENTAL CONDITIONS</b> | 25deg.C, 60%RH, 965hPa |
| <b>TESTED BY</b>            | Phoenix Huang |                                 |                        |

| CHANNEL | CHANNEL FREQUENCY (MHz) | PEAK POWER OUTPUT (dBm) | PEAK POWER OUTPUT (mW) | PEAK POWER LIMIT (dBm) | PASS / FAIL |
|---------|-------------------------|-------------------------|------------------------|------------------------|-------------|
| 1       | 2412                    | 18.83                   | 76.384                 | 30                     | PASS        |
| 6       | 2437                    | 18.37                   | 68.707                 | 30                     | PASS        |
| 11      | 2462                    | 18.39                   | 69.024                 | 30                     | PASS        |

##### 802.11g OFDM MODULATION:

|                             |               |                                 |                        |
|-----------------------------|---------------|---------------------------------|------------------------|
| <b>MODULATION TYPE</b>      | BPSK          | <b>TRANSFER RATE</b>            | 6Mbps                  |
| <b>INPUT POWER (SYSTEM)</b> | 120Vac, 60 Hz | <b>ENVIRONMENTAL CONDITIONS</b> | 25deg.C, 60%RH, 965hPa |
| <b>TESTED BY</b>            | Phoenix Huang |                                 |                        |

| CHANNEL | CHANNEL FREQUENCY (MHz) | PEAK POWER OUTPUT (dBm) | PEAK POWER OUTPUT (mW) | PEAK POWER LIMIT (dBm) | PASS / FAIL |
|---------|-------------------------|-------------------------|------------------------|------------------------|-------------|
| 1       | 2412                    | 23.20                   | 208.930                | 30                     | PASS        |
| 6       | 2437                    | 23.00                   | 199.526                | 30                     | PASS        |
| 11      | 2462                    | 22.80                   | 190.546                | 30                     | PASS        |





A D T

**DRAFT 802.11n (20MHz) OFDM MODULATION:**

|                             |               |                                 |                        |
|-----------------------------|---------------|---------------------------------|------------------------|
| <b>MODULATION TYPE</b>      | BPSK          | <b>TRANSFER RATE</b>            | 6.5Mbps                |
| <b>INPUT POWER (SYSTEM)</b> | 120Vac, 60 Hz | <b>ENVIRONMENTAL CONDITIONS</b> | 25deg.C, 60%RH, 965hPa |
| <b>TESTED BY</b>            | Phoenix Huang |                                 |                        |

| CHANNEL | CHANNEL FREQUENCY (MHz) | PEAK POWER OUTPUT (dBm) | PEAK POWER OUTPUT (mW) | PEAK POWER LIMIT (dBm) | PASS / FAIL |
|---------|-------------------------|-------------------------|------------------------|------------------------|-------------|
| 1       | 2412                    | 22.00                   | 158.489                | 30                     | PASS        |
| 6       | 2437                    | 21.80                   | 151.356                | 30                     | PASS        |
| 11      | 2462                    | 21.70                   | 147.911                | 30                     | PASS        |

**DRAFT 802.11n (40MHz) OFDM MODULATION:**

|                             |               |                                 |                        |
|-----------------------------|---------------|---------------------------------|------------------------|
| <b>MODULATION TYPE</b>      | BPSK          | <b>TRANSFER RATE</b>            | 13.5Mbps               |
| <b>INPUT POWER (SYSTEM)</b> | 120Vac, 60 Hz | <b>ENVIRONMENTAL CONDITIONS</b> | 25deg.C, 60%RH, 965hPa |
| <b>TESTED BY</b>            | Phoenix Huang |                                 |                        |

| CHANNEL | CHANNEL FREQUENCY (MHz) | PEAK POWER OUTPUT (dBm) | PEAK POWER OUTPUT (mW) | PEAK POWER LIMIT (dBm) | PASS / FAIL |
|---------|-------------------------|-------------------------|------------------------|------------------------|-------------|
| 1       | 2422                    | 21.60                   | 144.544                | 30                     | PASS        |
| 4       | 2437                    | 22.30                   | 169.824                | 30                     | PASS        |
| 7       | 2452                    | 21.80                   | 151.356                | 30                     | PASS        |



## 4.5 POWER SPECTRAL DENSITY MEASUREMENT

### 4.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

### 4.5.2 TEST INSTRUMENTS

| DESCRIPTION & MANUFACTURER | MODEL NO. | SERIAL NO. | CALIBRATED DATE | CALIBRATED UNTIL |
|----------------------------|-----------|------------|-----------------|------------------|
| R&S SPECTRUM ANALYZER      | FSP40     | 100037     | Aug. 03, 2009   | Aug. 02, 2010    |

**NOTE:**

- 1.The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

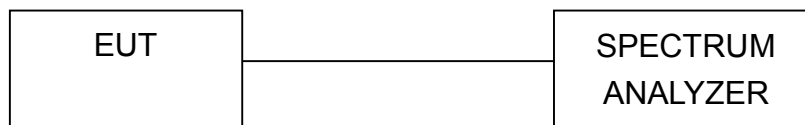
#### 4.5.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer through an attenuator, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3kHz RBW and 30kHz VBW, set sweep time = span/3kHz. The power spectral density was measured and recorded. The sweep time is allowed to be longer than span/3kHz for a full response of the mixer in the spectrum analyzer.

#### 4.5.4 DEVIATION FROM TEST STANDARD

No deviation

#### 4.5.5 TEST SETUP



#### 4.5.6 EUT OPERATING CONDITION

Same as Item 4.3.6



A D T

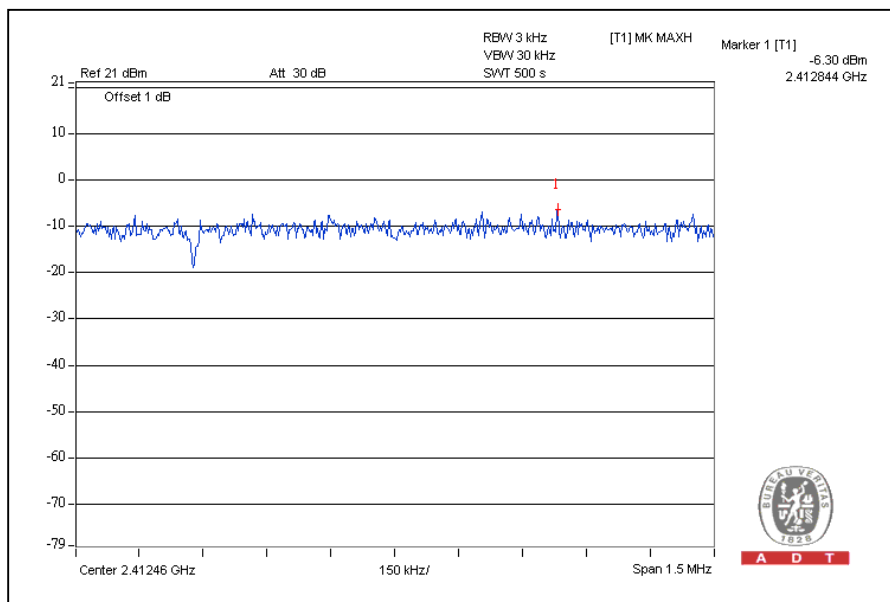
### 4.5.7 TEST RESULTS

#### 802.11b DSSS MODULATION:

|                             |               |                                 |                        |
|-----------------------------|---------------|---------------------------------|------------------------|
| <b>MODULATION TYPE</b>      | DBPSK         | <b>TRANSFER RATE</b>            | 1Mbps                  |
| <b>INPUT POWER (SYSTEM)</b> | 120Vac, 60 Hz | <b>ENVIRONMENTAL CONDITIONS</b> | 25deg.C, 60%RH, 965hPa |
| <b>TESTED BY</b>            | Phoenix Huang |                                 |                        |

| CHANNEL | CHANNEL FREQUENCY (MHz ) | RF POWER LEVEL IN 3kHz BW (dBm) | MAXIMUM LIMIT (dBm) | PASS / FAIL |
|---------|--------------------------|---------------------------------|---------------------|-------------|
| 1       | 2412                     | -6.30                           | 8                   | PASS        |
| 6       | 2437                     | -5.24                           | 8                   | PASS        |
| 11      | 2462                     | -7.80                           | 8                   | PASS        |

#### CH1

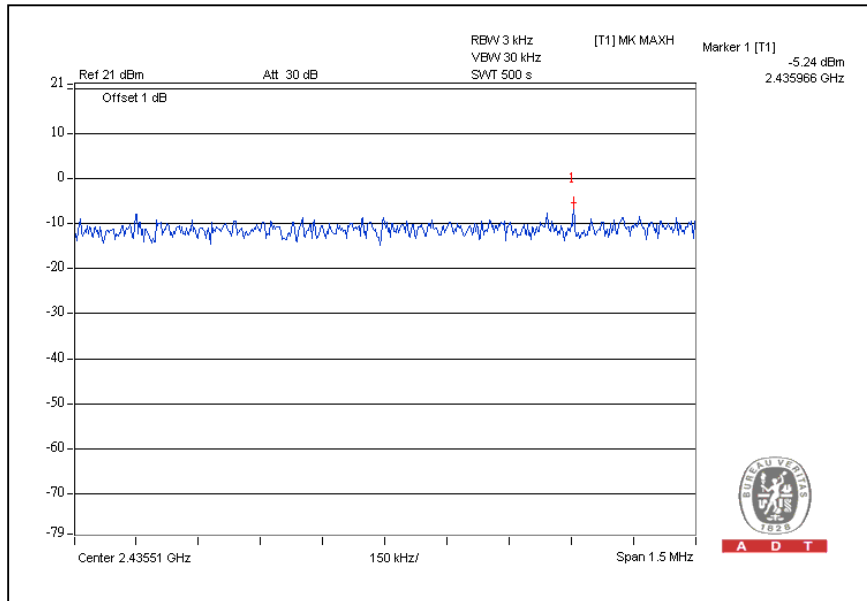


A D T

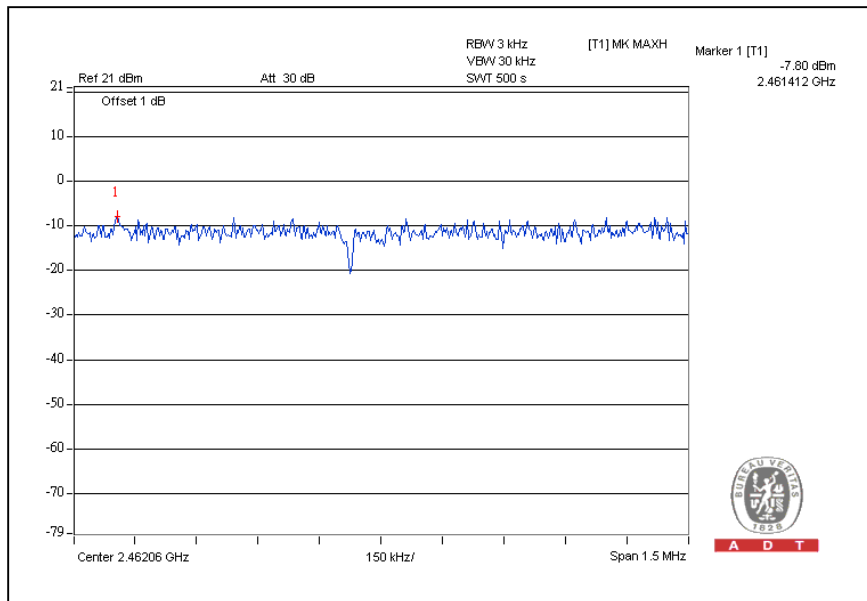


A D T

### CH6



### CH11





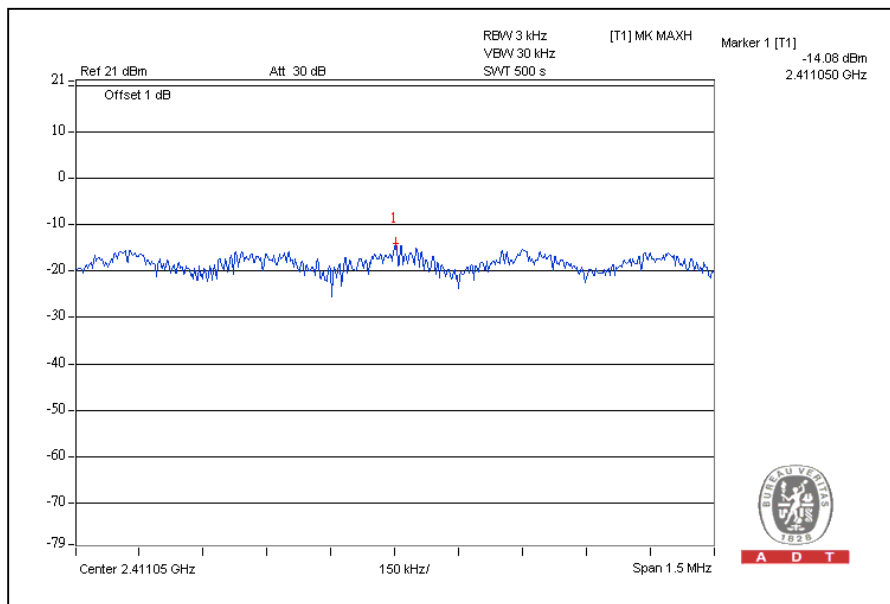
A D T

### 802.11g OFDM MODULATION:

|                             |               |                                 |                        |
|-----------------------------|---------------|---------------------------------|------------------------|
| <b>MODULATION TYPE</b>      | BPSK          | <b>TRANSFER RATE</b>            | 6Mbps                  |
| <b>INPUT POWER (SYSTEM)</b> | 120Vac, 60 Hz | <b>ENVIRONMENTAL CONDITIONS</b> | 25deg.C, 60%RH, 965hPa |
| <b>TESTED BY</b>            | Phoenix Huang |                                 |                        |

| CHANNEL | CHANNEL FREQUENCY (MHz ) | RF POWER LEVEL IN 3kHz BW (dBm) | MAXIMUM LIMIT (dBm) | PASS / FAIL |
|---------|--------------------------|---------------------------------|---------------------|-------------|
| 1       | 2412                     | -14.08                          | 8                   | PASS        |
| 6       | 2437                     | -14.31                          | 8                   | PASS        |
| 11      | 2462                     | -14.74                          | 8                   | PASS        |

CH1

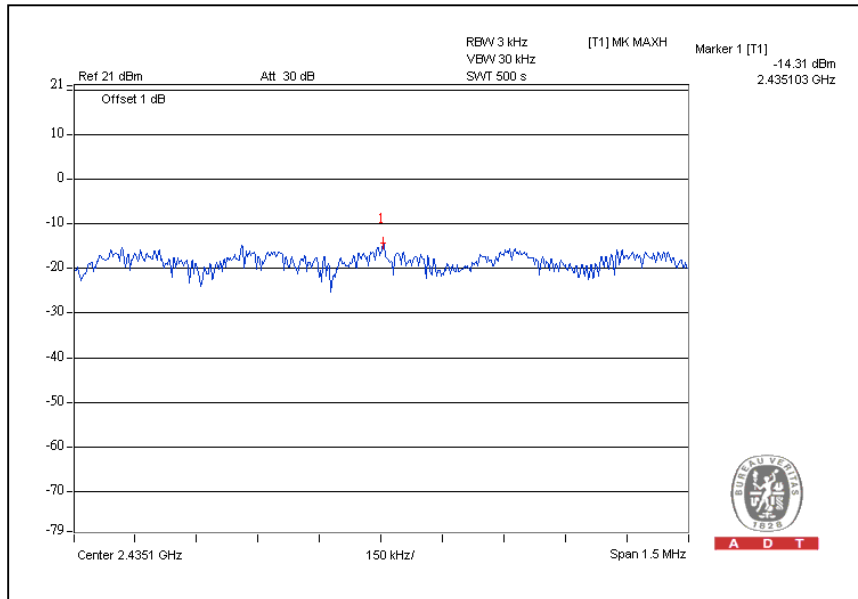


A D T

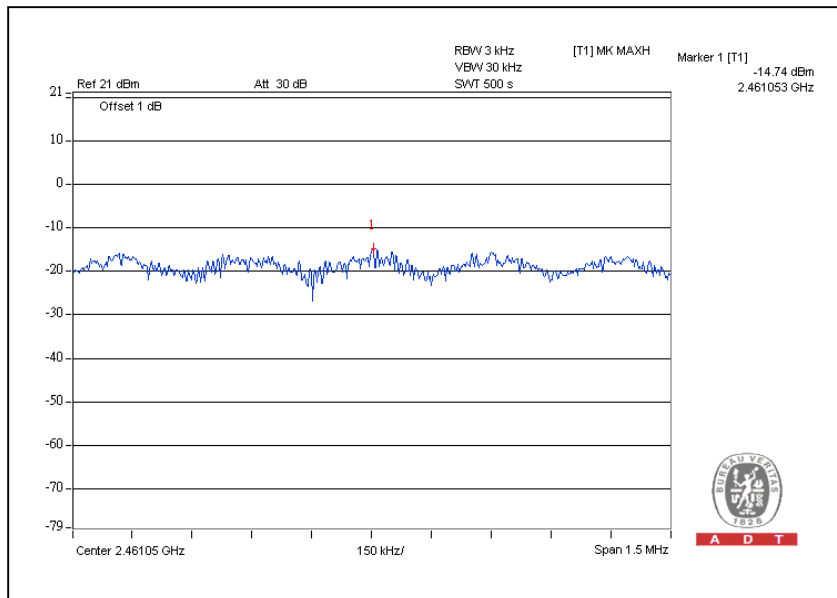


A D T

### CH6



### CH11





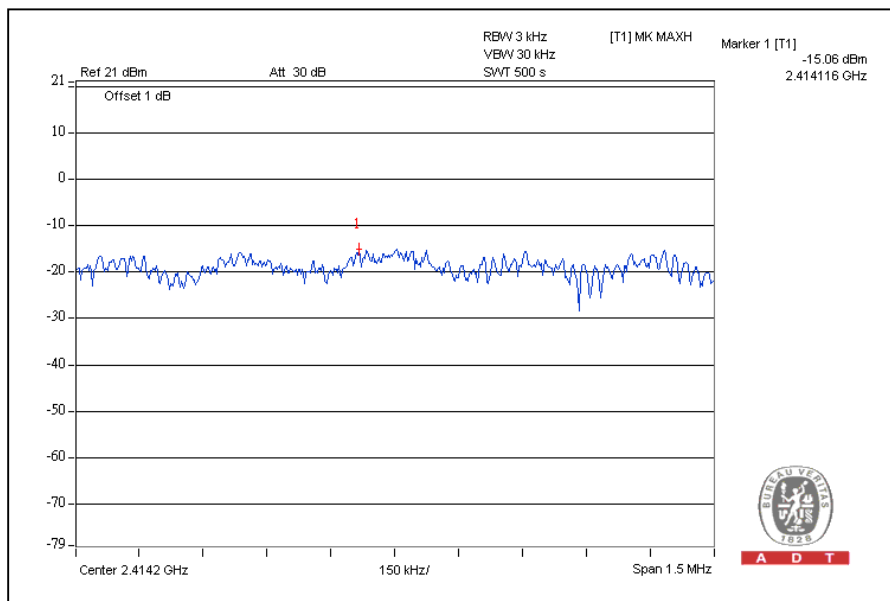
A D T

**DRAFT 802.11n (20MHz) OFDM MODULATION:**

|                             |               |                                 |                         |
|-----------------------------|---------------|---------------------------------|-------------------------|
| <b>MODULATION TYPE</b>      | BPSK          | <b>TRANSFER RATE</b>            | 6.5Mbps                 |
| <b>INPUT POWER (SYSTEM)</b> | 120Vac, 60 Hz | <b>ENVIRONMENTAL CONDITIONS</b> | 25 deg.C, 60%RH, 965hPa |
| <b>TESTED BY</b>            | Phoenix Huang |                                 |                         |

| CHANNEL | CHANNEL FREQUENCY (MHz ) | RF POWER LEVEL IN 3kHz BW (dBm) | MAXIMUM LIMIT (dBm) | PASS / FAIL |
|---------|--------------------------|---------------------------------|---------------------|-------------|
| 1       | 2412                     | -15.06                          | 8                   | PASS        |
| 6       | 2437                     | -15.11                          | 8                   | PASS        |
| 11      | 2462                     | -15.37                          | 8                   | PASS        |

CH1



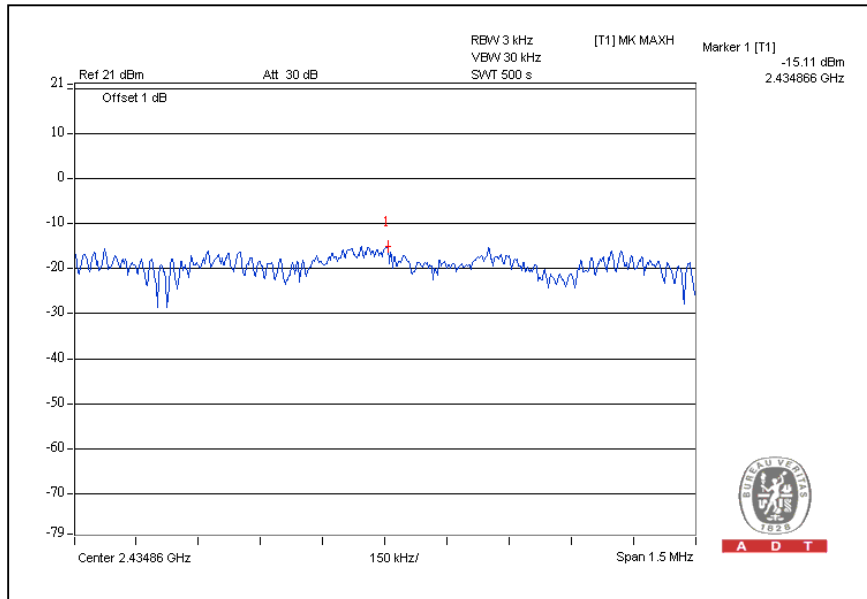
A D T



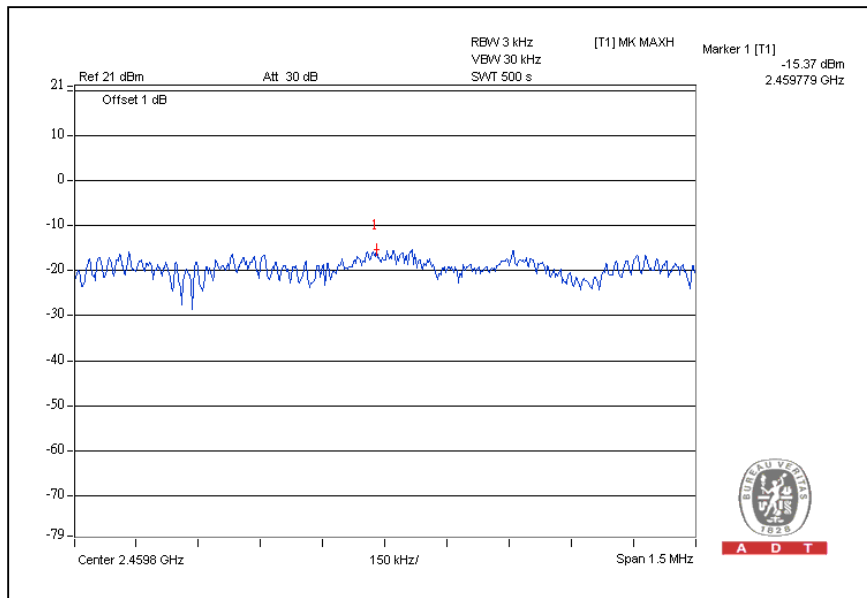


A D T

### CH6



### CH11





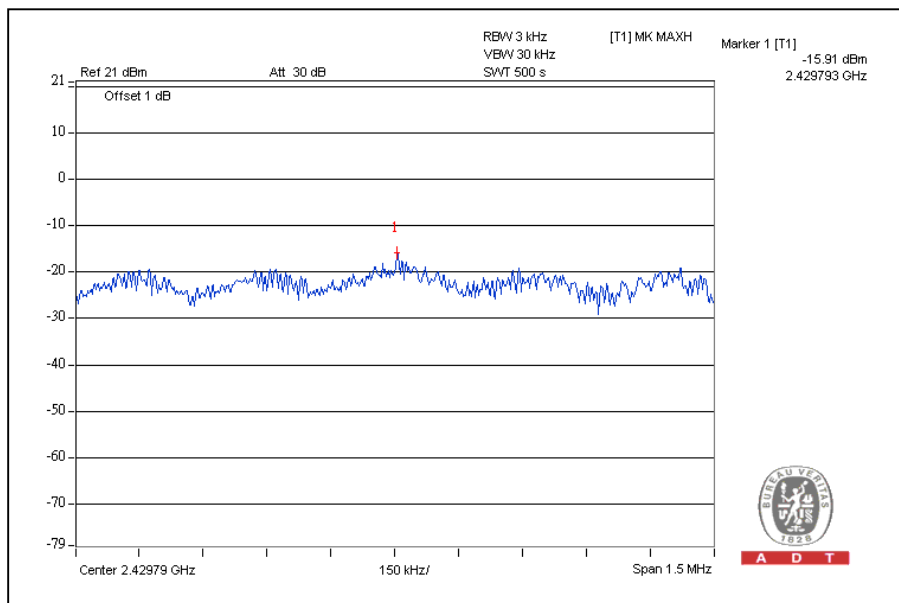
A D T

**DRAFT 802.11n (40MHz) OFDM MODULATION:**

|                             |               |                                 |                        |
|-----------------------------|---------------|---------------------------------|------------------------|
| <b>MODULATION TYPE</b>      | BPSK          | <b>TRANSFER RATE</b>            | 13.5Mbps               |
| <b>INPUT POWER (SYSTEM)</b> | 120Vac, 60 Hz | <b>ENVIRONMENTAL CONDITIONS</b> | 25deg.C, 60%RH, 965hPa |
| <b>TESTED BY</b>            | Phoenix Huang |                                 |                        |

| CHANNEL | CHANNEL FREQUENCY (MHz ) | RF POWER LEVEL IN 3kHz BW (dBm) | MAXIMUM LIMIT (dBm) | PASS / FAIL |
|---------|--------------------------|---------------------------------|---------------------|-------------|
| 1       | 2422                     | -15.91                          | 8                   | PASS        |
| 4       | 2437                     | -17.97                          | 8                   | PASS        |
| 7       | 2452                     | -18.13                          | 8                   | PASS        |

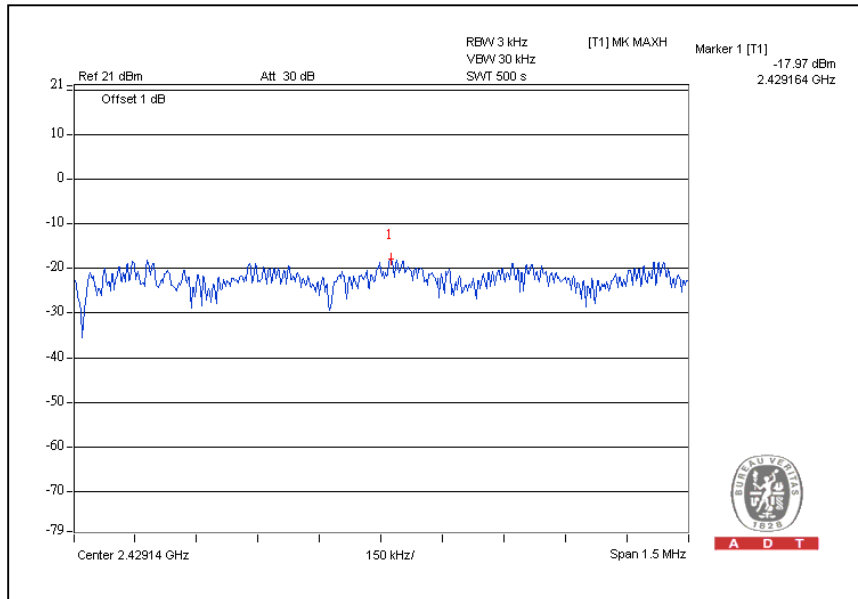
CH1



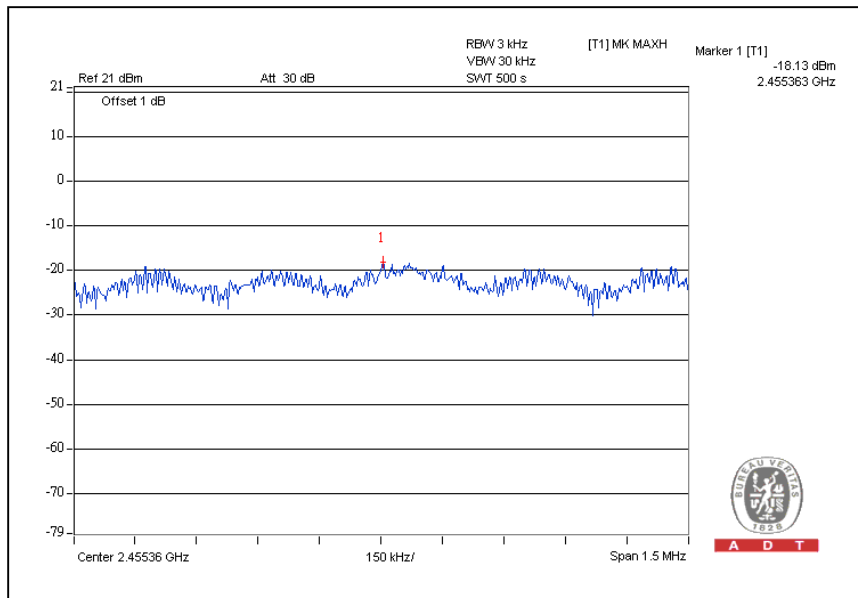


A D T

### CH4



### CH7



## 4.6 CONDUCTED OUT-BAND EMISSION MEASUREMENT

### 4.6.1 LIMITS OF CONDUCTED OUT-BAND EMISSION MEASUREMENT

Below -20dB of the highest emission level of operating band (in 100KHz Resolution Bandwidth).

### 4.6.2 TEST INSTRUMENTS

| DESCRIPTION & MANUFACTURER | MODEL NO. | SERIAL NO. | CALIBRATED DATE | CALIBRATED UNTIL |
|----------------------------|-----------|------------|-----------------|------------------|
| R&S SPECTRUM ANALYZER      | FSP40     | 100037     | Aug. 03, 2009   | Aug. 02, 2010    |

**NOTE:**

- 1.The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.

### 4.6.3 TEST PROCEDURE

The transmitter output was connected to the spectrum analyzer via a low loss cable. Set both RBW and VBW of spectrum analyzer to 100kHz with suitable frequency span including 100 MHz bandwidth from band edge. The band edges was measured and recorded.

The spectrum plots (RBW = VBW = 100kHz) are attached on the following pages.

#### 4.6.4 DEVIATION FROM TEST STANDARD

No deviation

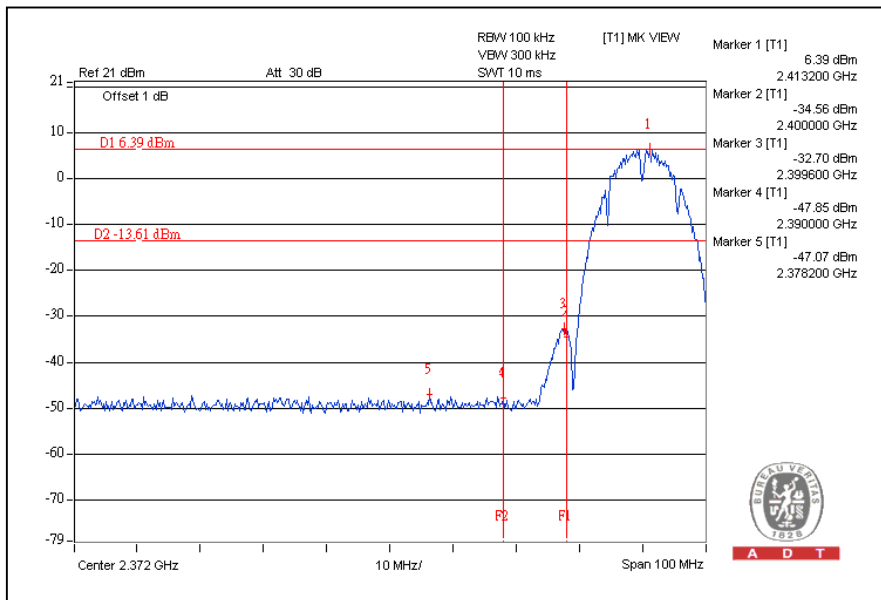
#### 4.6.5 EUT OPERATING CONDITION

Same as Item 4.3.6

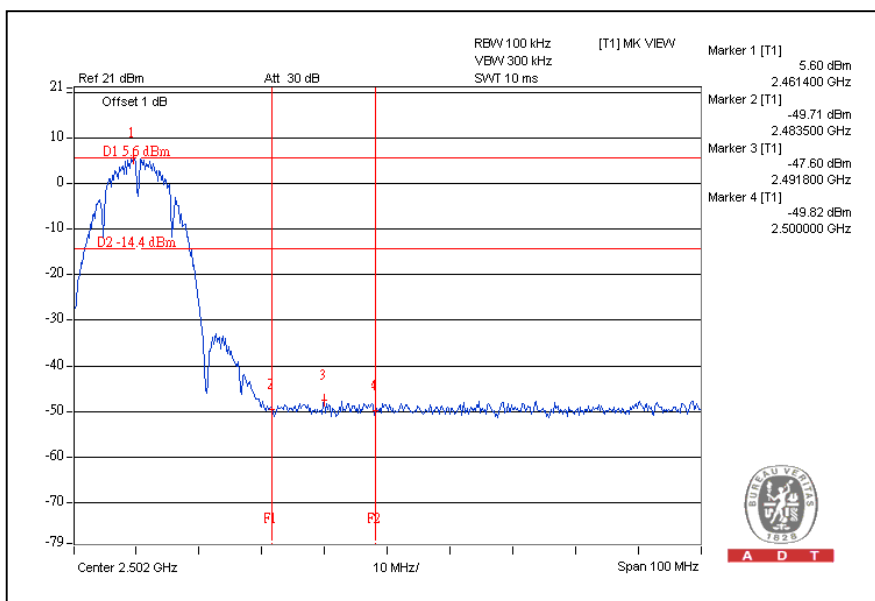
#### 4.6.6 TEST RESULTS

The spectrum plots are attached on the following images. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement in part 15.247(d).

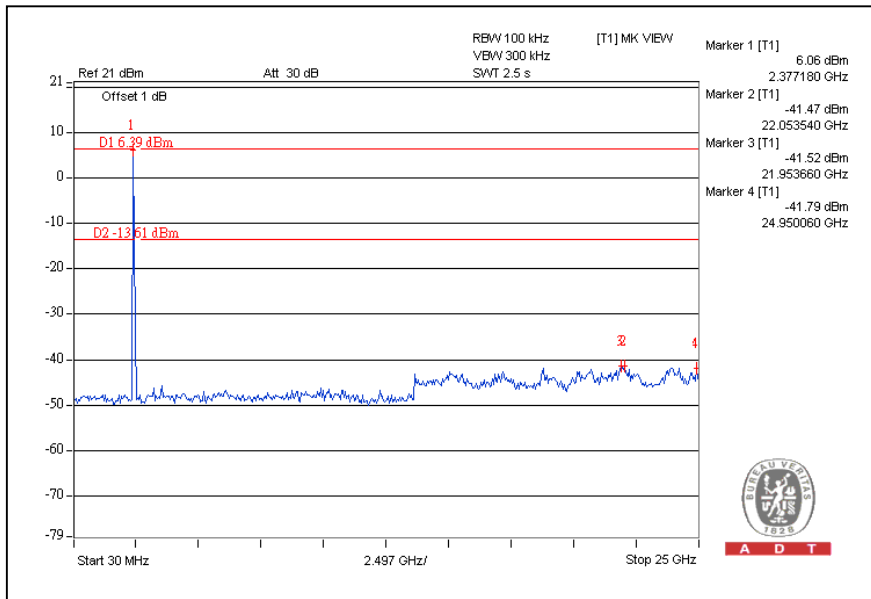
## 802.11b DSSS MODULATION: CH1



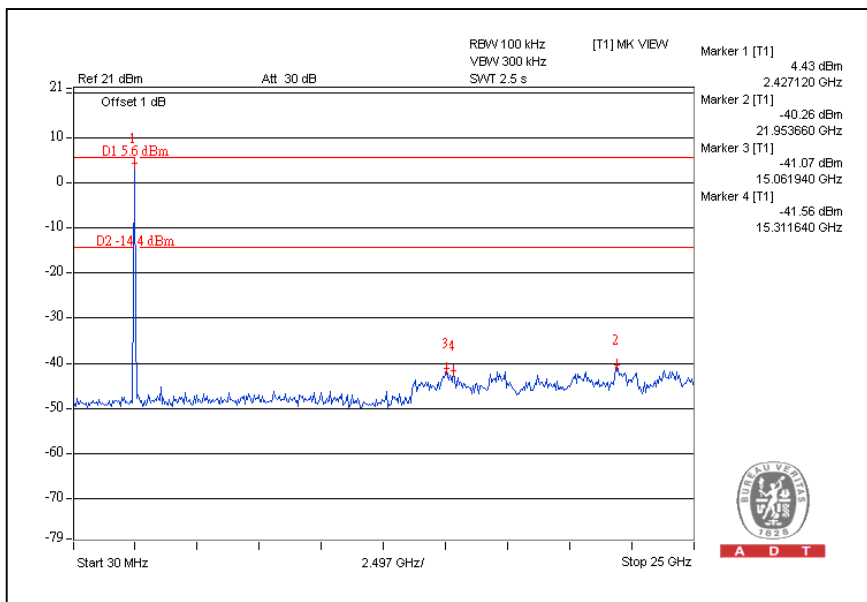
## CH11



### CH1



### CH11

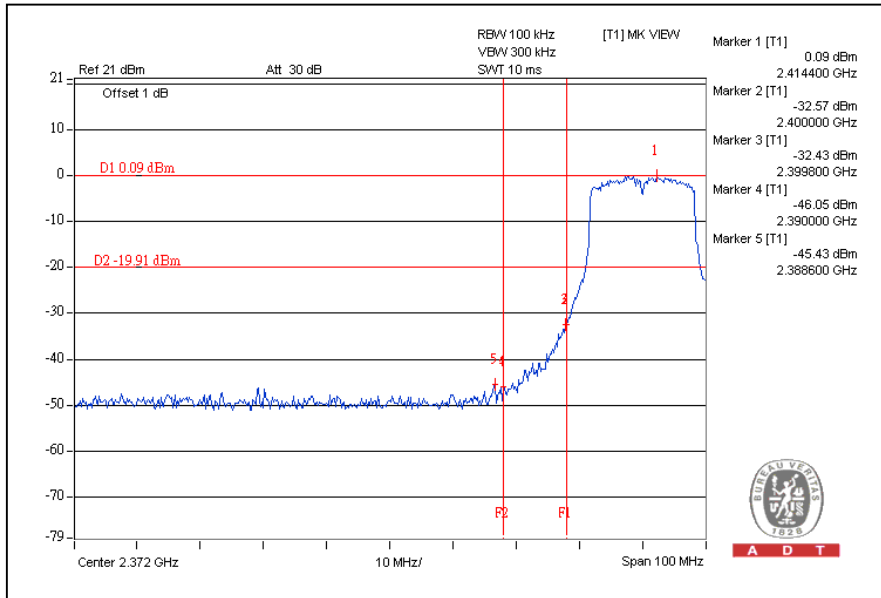




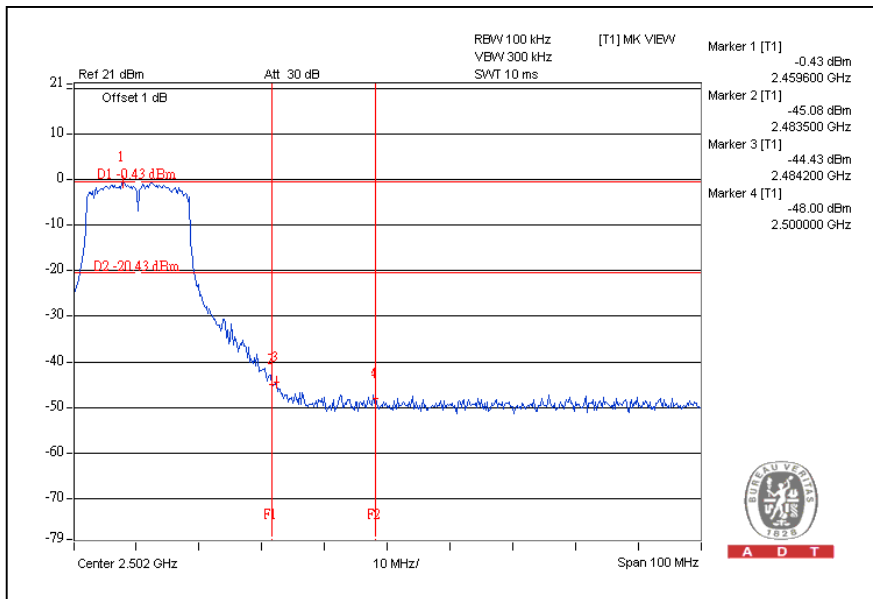
A D T

# 802.11g OFDM MODULATION:

## CH 1



## CH11

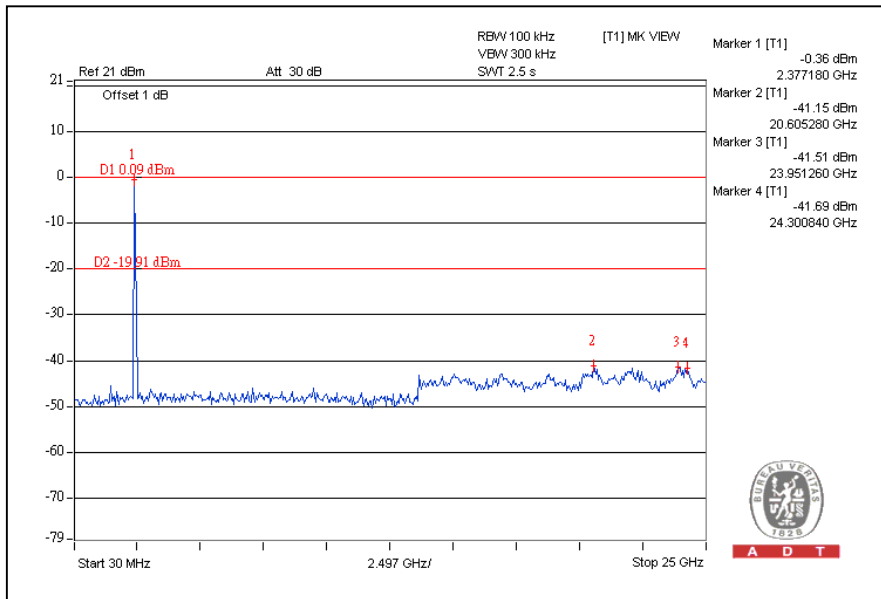




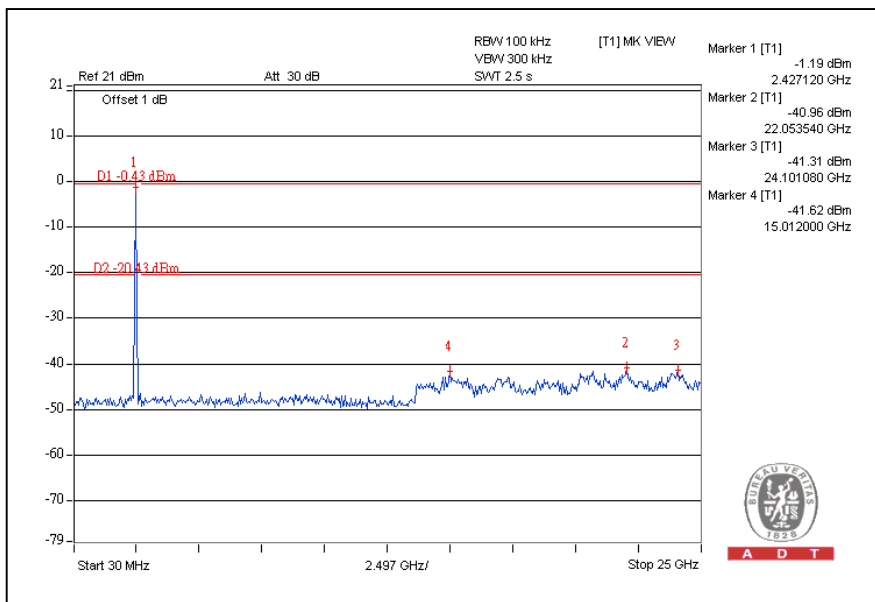


A D T

### CH1



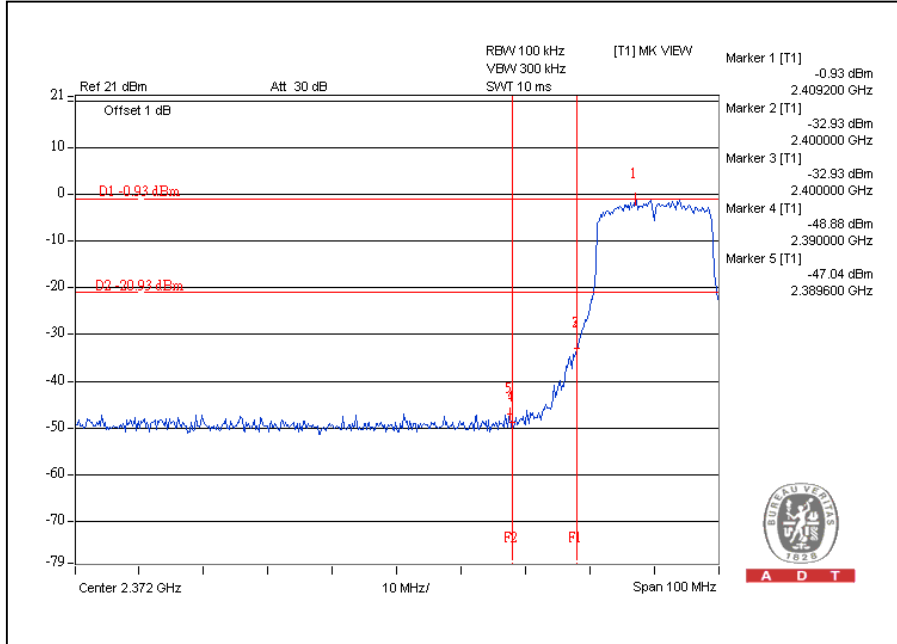
### CH11





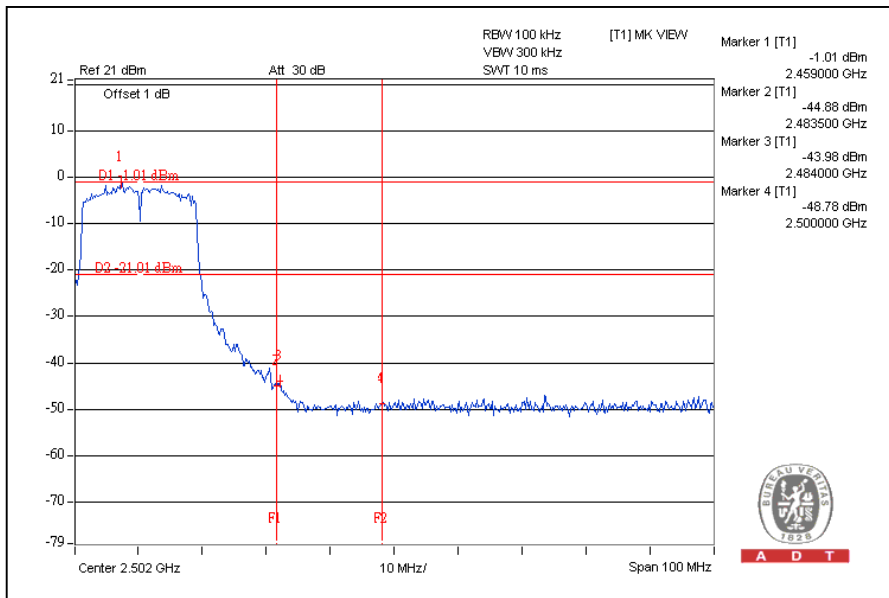
A D T

# DRAFT 802.11n (20MHz) OFDM MODULATION: CH1



A D T

# CH11

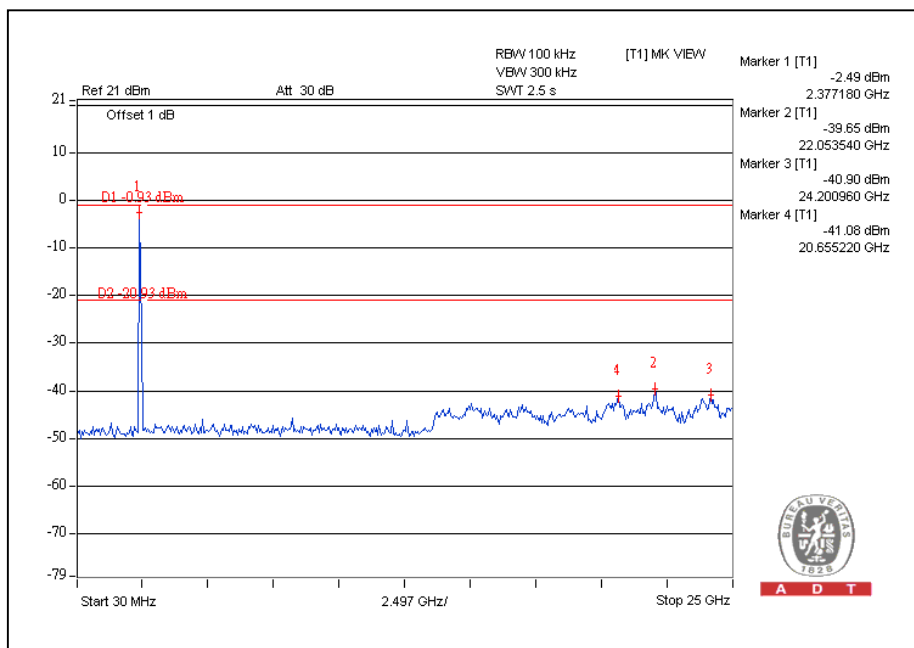


A D T

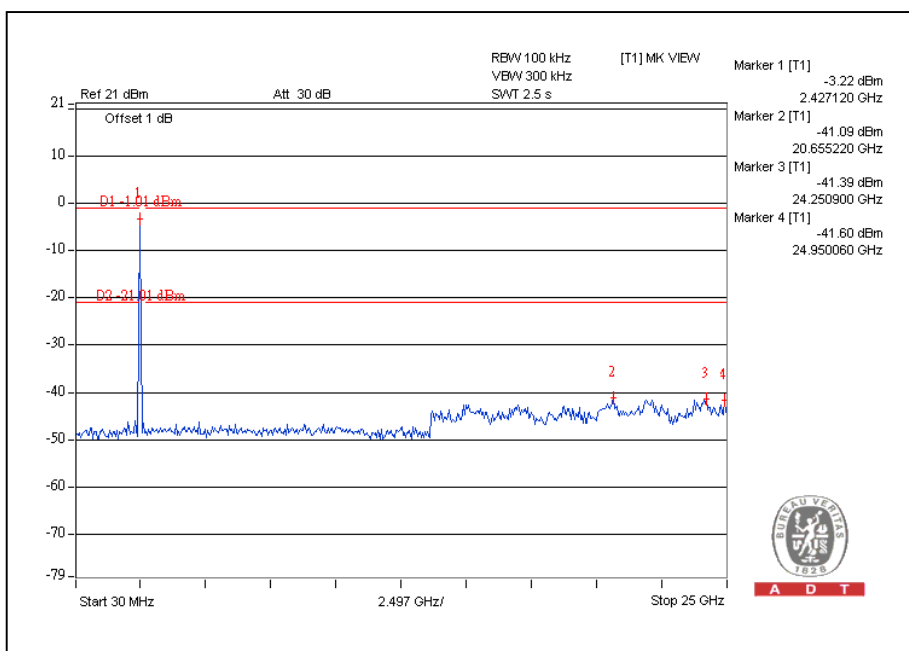


A D T

# CH1



# CH11

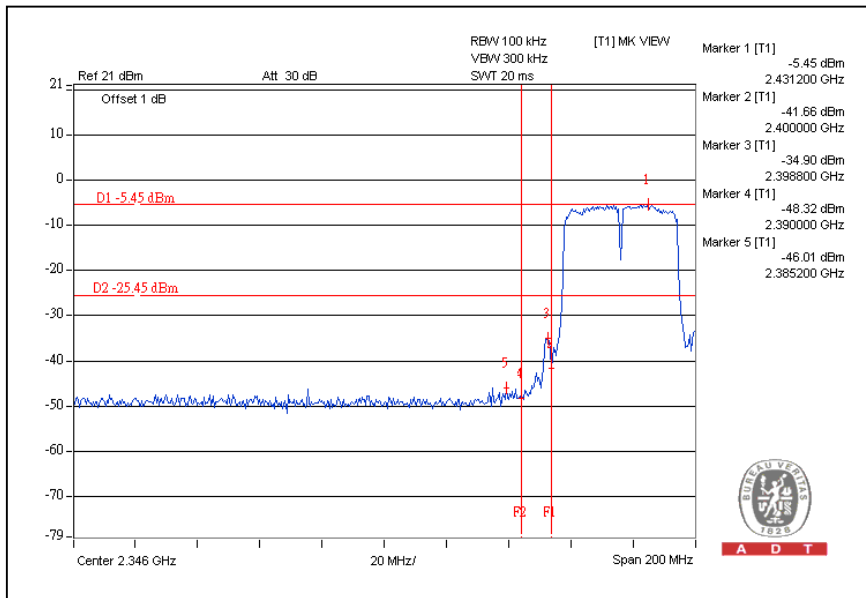




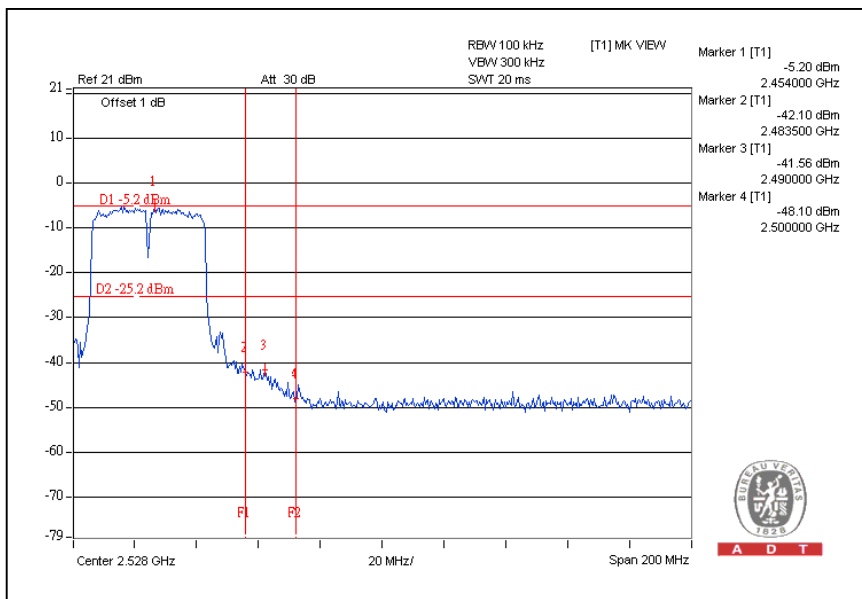
A D T

### DRAFT 802.11n (40MHz) OFDM MODULATION:

CH1



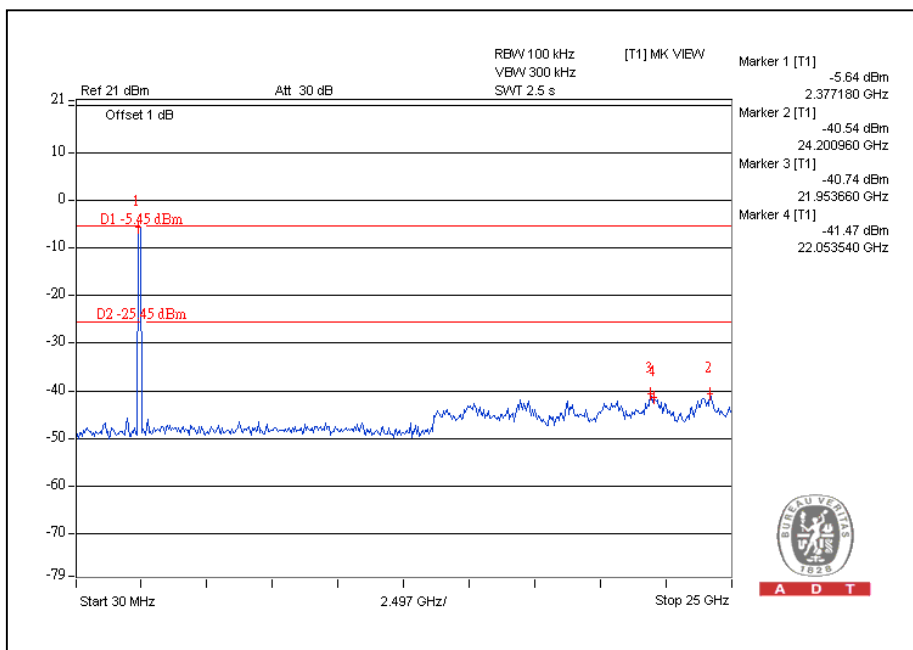
CH7



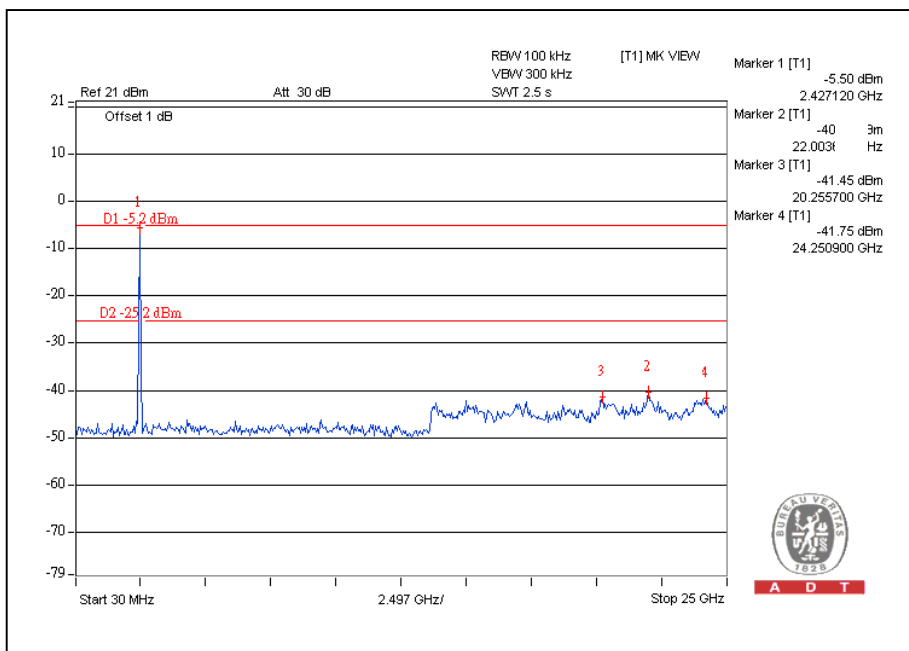


A D T

### CH1



### CH7



## 4.7 ANTENNA REQUIREMENT

### 4.7.1 STANDARD APPLICABLE

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

### 4.7.2 ANTENNA CONNECTED CONSTRUCTION

There are two antennas provided to this EUT, please refer to the following table:

| No. | Antenna Type | Gain (dBi) | Antenna Connector |
|-----|--------------|------------|-------------------|
| 1   | Dipole       | 2          | SMA Male Reverse  |
| 2   | Dipole       | 2          | SMA Male Reverse  |



A D T

## 5. INFORMATION ON THE TESTING LABORATORIES

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025.

|                    |                      |
|--------------------|----------------------|
| <b>USA</b>         | FCC, NVLAP           |
| <b>Germany</b>     | TUV Rheinland        |
| <b>Japan</b>       | VCCI                 |
| <b>Norway</b>      | NEMKO                |
| <b>Canada</b>      | INDUSTRY CANADA, CSA |
| <b>R.O.C.</b>      | TAF, BSMI, NCC       |
| <b>Netherlands</b> | Telefication         |
| <b>Singapore</b>   | GOST-ASIA(MOU)       |
| <b>Russia</b>      | CERTIS(MOU)          |

Copies of accreditation certificates of our laboratories obtained from approval agencies can be downloaded from our web site:

[www.adt.com.tw/index.5/phtml](http://www.adt.com.tw/index.5/phtml). If you have any comments, please feel free to contact us at the following:

**Linko EMC/RF Lab:**

Tel: 886-2-26052180

Fax: 886-2-26052943

**Hsin Chu EMC/RF Lab:**

Tel: 886-3-5935343

Fax: 886-3-5935342

**Hwa Ya EMC/RF/Safety Telecom Lab:**

Tel: 886-3-3183232

Fax: 886-3-3185050

**Web Site:** [www.adt.com.tw](http://www.adt.com.tw)

The address and road map of all our labs can be found in our web site also



A D T

## **6.APPENDIX-A- MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB**

No any modifications are made to the EUT by the lab during the test.

**---END---**