# FCC TEST REPORT (15.247)

**REPORT NO.:** RF960822A05

**MODEL NO.:** MTG

**MODEL NAME:** XPS A2010, XPS A2010n

**RECEIVED:** Aug. 22, 2007

**TESTED:** Aug. 29 ~Sep. 21, 2007

**ISSUED:** Oct. 1, 2007

**APPLICANT:** ASUSTeK COMPUTER INC.

**ADDRESS:** NO. 15, LI-TE RD., PEITOU, TAIPEI, TAIWAN, R.O.C.

**ISSUED BY:** Advance Data Technology Corporation

**LAB LOCATION:** No. 47, 14th Ling, Chia Pau Tsuen, Lin Kou Hsiang 244, Taipei Hsien, Taiwan, R.O.C.

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# 1. CERTIFICATION

**PRODUCT:** Personal Computer
**BRAND NAME:** Dell
**MODEL NO.:** MTG
**MODEL NAME:** XPS A2010, XPS A2010n
**APPLICANT:** ASUSTeK COMPUTER INC.
**TEST SAMPLE:** ENGINEERING SAMPLE
**TESTED:** Aug. 29 ~Sep. 21, 2007
**STANDARDS:** FCC Part 15, Subpart C (Section 15.247),
ANSI C63.4-2003

The above equipment (Model: MTG) has been tested by **Advance Data Technology Corporation,** 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** : Annie Chang , **DATE:** Oct. 1, 2007
( Annie Chang / Senior Specialist )

**TECHNICAL ACCEPTANCE** : Jamison Chan , **DATE:** Oct. 1, 2007
Responsible for RF
( Jamison Chan / Senior Engineer )

**APPROVED BY** : Ken Liu , **DATE:** Oct. 1, 2007
( Ken Liu / Deputy Manager )

# 2. SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

| APPLIED STANDARD: FCC Part 15, Subpart C (Section 15.247) | | | |
|---|---|---|---|
| **Standard Section** | **Test Type and Limit** | **Result** | **Remark** |
| 15.207 | AC Power Conducted Emission | PASS | Meet the requirement of limit. Minimum passing margin is –-13.65dB at 0.181MHz |
| 15.247(a)(2) | Spectrum Bandwidth of a Direct Sequence Spread Spectrum System Limit: min. 500kHz | PASS | Meet the requirement of limit. |
| 15.247(b) | Maximum Peak Output Power Limit: max. 30dBm | PASS | Meet the requirement of limit. |
| 15.247(d) | Radiated Emissions Limit: Table 15.209 | PASS | Meet the requirement of limit. Minimum passing margin is –0.72dB at 2483.500MHz |
| 15.247(e) | Power Spectral Density Limit: max. 8dBm | PASS | Meet the requirement of limit. |
| 15.247(d) | Band Edge Measurement Limit: 30dB 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 | Frequency | Uncertainty |
|---|---|---|
| Conducted emissions | 9kHz ~ 30MHz | 2.44 dB |
| Radiated emissions | 30MHz ~ 1GHz | 3.75 dB |
| | 1GHz ~ 40GHz | 2.89 dB |

# 3. GENERAL INFORMATION

## 3.1 GENERAL DESCRIPTION OF EUT

| | |
|---|---|
| **EUT** | Personal Computer |
| **MODEL NO.** | MTG |
| **MODEL NAME** | XPS A2010, XPS A2010n |
| **FCC ID** | MSQ-MTG20 |
| **POWER SUPPLY** | AC I/P: 100-240V, 3A, 50-60Hz |
| **MODULATION TYPE** | CCK, DQPSK, DBPSK for DSSS<br>64QAM, 16QAM, QPSK, BPSK for OFDM |
| **MODULATION TECHNOLOGY** | DSSS, OFDM |
| **TRANSFER RATE** | 802.11b:11.0/ 5.5/ 2.0/ 1.0Mbps<br>802.11g: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps<br>802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0Mbps<br>Draft 802.11n (20MHz): 130.0/ 117.0/ 104.0/ 78.0/ 52.0/ 39.0/ 26.0/ 13.0/ 65.0/ 58.5/ 52.0/ 29.0/ 26.0/ 19.5/ 13.0/ 6.5Mbps<br>Draft 802.11n (40MHz): 270.0/ 243.0/ 216.0/ 162.0/ 108.0/ 81.0/ 54.0/ 27.0 /135.0/ 121.5/ 108.0/ 81.0/ 54.0/ 40.5/ 27.0/ 13.5Mbps |
| **FREQUENCY RANGE** | 2.4GHz: 2400 ~ 2483.5MHz<br>5.0GHz: 5150 ~ 5350MHz, 5725 ~ 5850MHz |
| **NUMBER OF CHANNEL** | **2.4GHz:**<br>11 for 802.11b, 802.11g, draft 802.11n (20MHz)<br>7 for draft 802.11n (40MHz)<br>**5.0GHz:**<br>5150 ~ 5350MHz:<br>8 for 802.11a, draft 802.11n (20MHz)<br>4 for draft 802.11n (40MHz)<br>5725 ~ 5850MHz:<br>5 for 802.11a, draft 802.11n (20MHz)<br>2 for draft 802.11n (40MHz) |
| **OUTPUT POWER** | 46.559mW for 2400 ~ 2483.5MHz<br>38.743mW for 5150 ~ 5350MHz<br>61.522mW for 5725 ~ 5850MHz |
| **ANTENNA TYPE** | 2.4GHz:<br>PIFA antenna (I-PEX & UFL connector) with -0.62dBi gain<br>5.0GHz:<br>PIFA antenna (I-PEX & UFL connector) with 4.26dBi gain |
| **DATA CABLE** | NA |
| **I/O PORTS** | Refer to user's manual |
| **ASSOCIATED DEVICES** | NA |

**NOTE:**

1. The EUT is a PC with built-in a WLAN IEEE802.11a/b/g/n card.

2. This report covered frequency range: 2400~2483.5MHz and 5725~5850MHz. Frequency range 5150~5350MHz showed in anther report, which report no. is RF960822A05-1.

3. The EUT has series models as follows:

| Brand Name | Model Name | Differentiation |
|---|---|---|
| Dell | MTG | Model no. |
| | XPS A2010 | Marketing Model no. |
| | XPS A2010n | Marketing Model no. |

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

4. The EUT incorporates a MIMO function. Physically, the card provides two completed transmitters and three receivers.

5. For the 802.11n, the EUT is 2 * 3 spatial MIMO (2Tx & 3Rx) without beam forming function.

6. When the EUT operating in 802.11b, 802.11g, 802.11a, the software operation, which is defined by manufacturer, only set single Tx.

7. The EUT complies with draft 802.11n standards and backwards compatible with 802.11b, 802.11g, 802.11a products.

8. The EUT operates in the 2.4GHz frequency spectrum with throughput of up to 270Mbps.

9. The co-located operation of this product with Bluetooth module and 2.4GHz module have been investigated in this application and the product continues comply with the relevant rules.

10. 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.

## 3.2 DESCRIPTION OF TEST MODES

### FOR 2.4GHz:

11 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 | | |

7 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 | | |

### FOR 5.0GHz (5725 ~ 5850MHz):

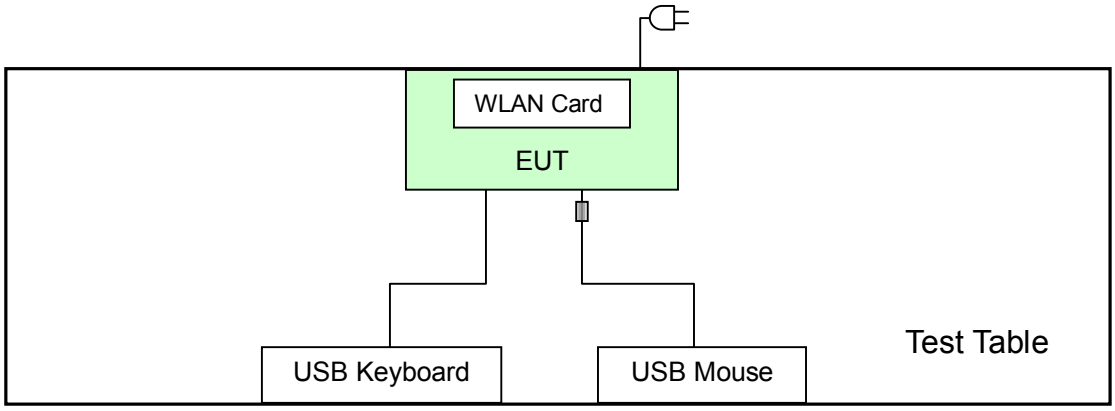
5 channels are provided for 802.11a, draft 802.11n (20MHz):

| CHANNEL | FREQUENCY | CHANNEL | FREQUENCY |
|---|---|---|---|
| 1 | 5745MHz | 4 | 5805MHz |
| 2 | 5765MHz | 5 | 5825MHz |
| 3 | 5785MHz | | |

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

| CHANNEL | FREQUENCY | CHANNEL | FREQUENCY |
|---|---|---|---|
| 1 | 5755MHz | 2 | 5795MHz |

## 3.2.1 CONFIGURATION OF SYSTEM UNDER TEST



## 3.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

**FOR 2.4GHz:**

| 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) |
|---|---|---|---|---|---|
| 802.11g | 1 to 11 | 1, 6, 11 | OFDM | BPSK | 6.0 |
| 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 |

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

☒ 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) |
|---|---|---|---|---|---|
| 802.11g | 1 to 11 | 1 | OFDM | BPSK | 6.0 |
| Draft 802.11n (20MHz) | 1 to 11 | 1 | OFDM | BPSK | 6.5 |
| Draft 802.11n (40MHz) | 1 to 7 | 1 | OFDM | BPSK | 13.5 |

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

☒ 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 | 1.0 |
| 802.11g | 1 to 11 | 1, 6, 11 | OFDM | BPSK | 6.0 |
| 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 |

**BANDEDGE 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 | 1.0 |
| 802.11g | 1 to 11 | 1, 11 | OFDM | BPSK | 6.0 |
| 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 | 1.0 |
| 802.11g | 1 to 11 | 1, 6, 11 | OFDM | BPSK | 6.0 |
| 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 |

## FOR 5.0GHz:

| 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) |
|---|---|---|---|---|---|
| 802.11a | 1 to 5 | 1 | OFDM | BPSK | 6.0 |

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

☒ 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) |
|---|---|---|---|---|---|
| 802.11a | 1 to 5 | 1 | OFDM | BPSK | 6.0 |

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

☒ 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) |
|---|---|---|---|---|---|
| 802.11a | 1 to 5 | 1, 3, 5 | OFDM | BPSK | 6.0 |
| Draft 802.11n (20MHz) | 1 to 5 | 1, 3, 5 | OFDM | BPSK | 6.5 |
| Draft 802.11n (40MHz) | 1 to 2 | 1, 2 | OFDM | BPSK | 13.5 |

**BANDEDGE 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) |
|---|---|---|---|---|---|
| 802.11a | 1 to 5 | 1, 5 | OFDM | BPSK | 6.0 |
| Draft 802.11n (20MHz) | 1 to 5 | 1, 5 | OFDM | BPSK | 6.5 |
| Draft 802.11n (40MHz) | 1 to 2 | 1, 2 | 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) |
|---|---|---|---|---|---|
| 802.11a | 1 to 5 | 1, 3, 5 | OFDM | BPSK | 6.0 |
| Draft 802.11n (20MHz) | 1 to 5 | 1, 3, 5 | OFDM | BPSK | 6.5 |
| Draft 802.11n (40MHz) | 1 to 2 | 1, 2 | OFDM | BPSK | 13.5 |

## 3.3 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF Product. 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.

## 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.

| NO. | PRODUCT | BRAND | MODEL NO. | SERIAL NO. | FCC ID |
|---|---|---|---|---|---|
| 1 | USB KEYBOARD | BTC | 5200U | G09302046659 | E5XKB5122U |
| 2 | USB MOUSE | MICROSOFT | X800898 | 9241804-30608 | FCC DoC Approved |

| NO. | SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS |
|---|---|
| 1 | 1.5 m braid shielded wire, terminated with USB connector via drain wire, w/o core. |
| 2 | 1.8 m foil shielded wire, terminated with USB connector via drain wire, with 1 core. |

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

# 4. TEST TYPES AND RESULTS (FOR 2.4GHz)

## 4.1 CONDUCTED EMISSION MEASUREMENT

### 4.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

| FREQUENCY OF EMISSION (MHz) | CONDUCTED LIMIT (dBμV) | |
|---|---|---|
| | 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 0.50MHz.

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 UNTIL |
|---|---|---|---|
| ROHDE & SCHWARZ Test Receiver | ESCS 30 | 838251/021 | Nov. 23, 2007 |
| ROHDE & SCHWARZ Artificial Mains Network (for EUT) | ESH3-Z5 | 100218 | Nov. 21, 2007 |
| LISN With Adapter (for EUT) | AD10 | C10Ada-001 | Nov. 21, 2007 |
| ROHDE & SCHWARZ Artificial Mains Network (for peripherals) | ESH3-Z5 | 100219 | Nov. 07, 2007 |
| ROHDE & SCHWARZ Artificial Mains Network (for peripherals) | ESH3-Z5 | 100220 | Oct. 26, 2007 |
| Software | ADT_Cond_V7.3.2 | NA | NA |
| Software | ADT_ISN_V7.3.2 | NA | NA |
| RF cable (JYEBAO) | 5D-FB | Cable-C10.01 | Mar. 01, 2008 |
| SUHNER Terminator (For ROHDE & SCHWARZ LISN) | 65BNC-5001 | E1-010773 | Feb. 11, 2008 |

**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 ADT Shielded Room No. 10.

3. The VCCI Site Registration No. C-1852.

## 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.

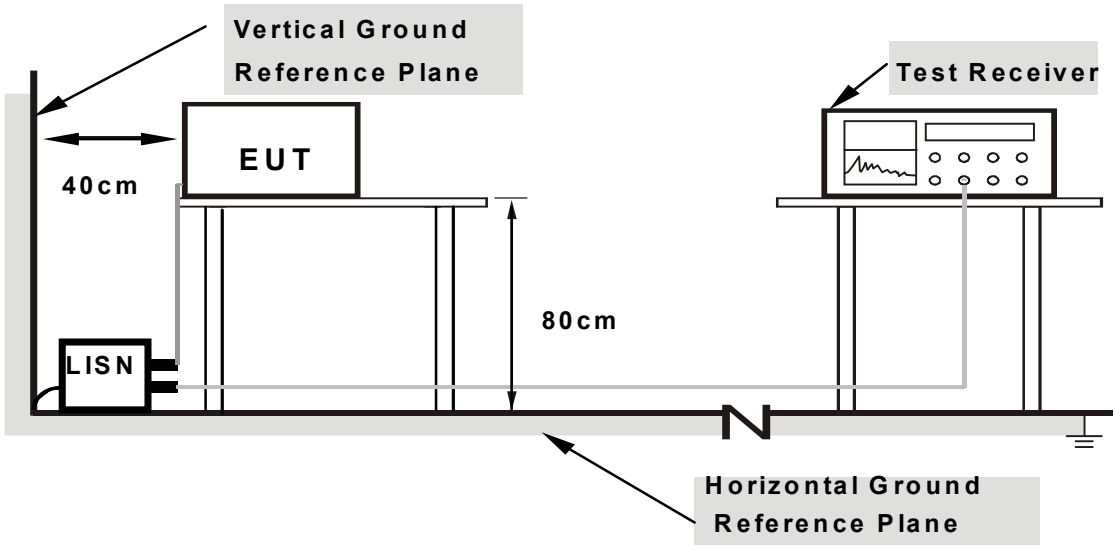
b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was 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 attached file (Test Setup Photo).

## 4.1.6 EUT OPERATING CONDITIONS

a. Turned on the power of all equipment.
b. Personal Computer (EUT) ran a test program (provided by manufacturer) to enable WALN card (EUT) under transmission/receiving condition continuously at specific channel frequency.
c. Personal Computer (EUT) sent messages to its screen.
d. Repeated c-d.

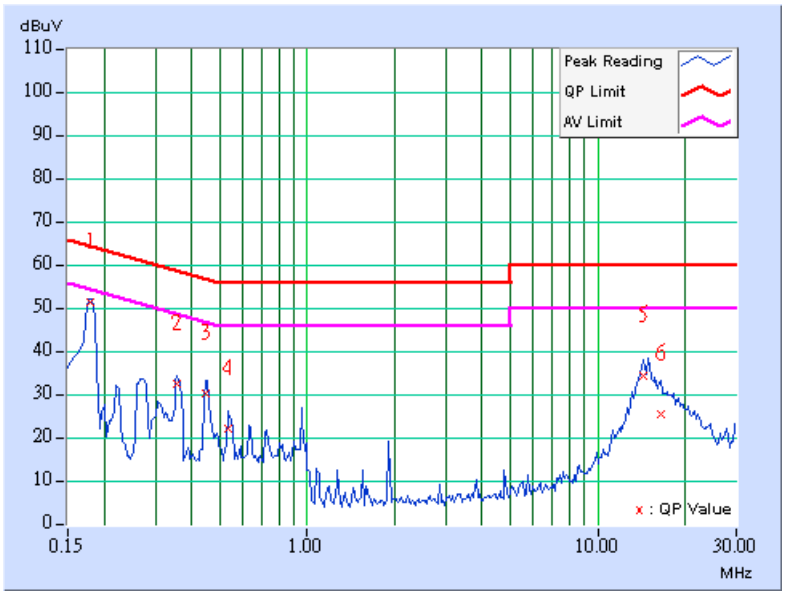
## 4.1.7 TEST RESULTS

**CONDUCTED WORST-CASE DATA: 802.11g OFDM MODULATION:**

| | | | |
|---|---|---|---|
| **MODULATION TYPE** | BPSK | **CHANNEL** | 1 |
| **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz | **6dB BANDWIDTH** | 9 kHz |
| **TRANSFER RATE** | 6.0Mbps | **PHASE** | Line 1 |
| **ENVIRONMENTAL CONDITIONS** | 25deg. C, 66%RH, 998hPa | **TESTED BY** | Jun Wu |

| No | Freq. | Corr. Factor | Reading Value | | Emission Level | | Limit | | Margin | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | [dB (uV)] | | [dB (uV)] | | [dB (uV)] | | (dB) | |
| | [MHz] | (dB) | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. |
| 1 | 0.180 | 0.20 | 50.38 | - | 50.58 | - | 64.49 | 54.49 | -13.91 | - |
| 2 | 0.357 | 0.20 | 31.26 | - | 31.46 | - | 58.80 | 48.80 | -27.34 | - |
| 3 | 0.450 | 0.22 | 29.36 | - | 29.58 | - | 56.88 | 46.88 | -27.31 | - |
| 4 | 0.534 | 0.24 | 21.17 | - | 21.41 | - | 56.00 | 46.00 | -34.59 | - |
| 5 | 14.422 | 1.05 | 33.08 | - | 34.13 | - | 60.00 | 50.00 | -25.87 | - |
| 6 | 16.462 | 1.19 | 24.54 | - | 25.73 | - | 60.00 | 50.00 | -34.27 | - |

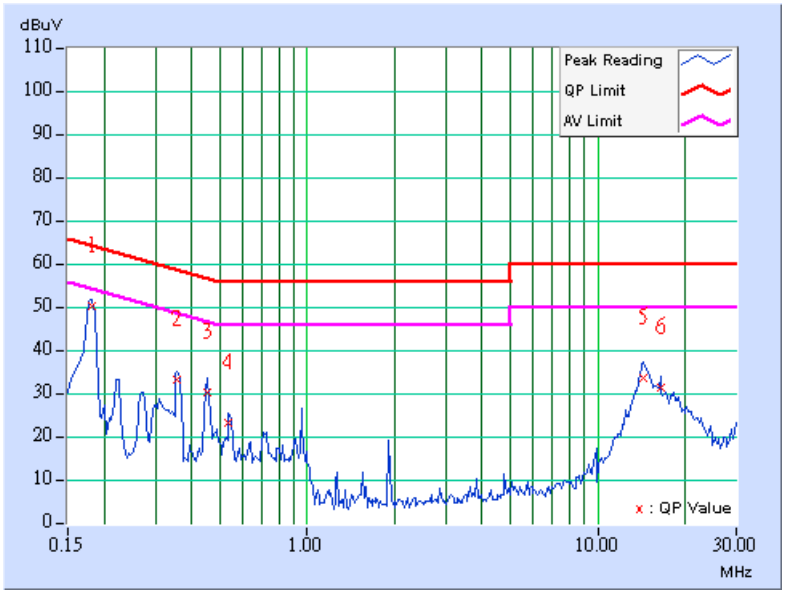
**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value =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



| | | | |
|---|---|---|---|
| **MODULATION TYPE** | BPSK | **CHANNEL** | 1 |
| **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz | **6dB BANDWIDTH** | 9 kHz |
| **TRANSFER RATE** | 6.0Mbps | **PHASE** | Line 2 |
| **ENVIRONMENTAL CONDITIONS** | 25deg. C, 66%RH, 998hPa | **TESTED BY** | Jun Wu |

| No | Freq. | Corr. Factor | Reading Value [dB (uV)] | | Emission Level [dB (uV)] | | Limit [dB (uV)] | | Margin (dB) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | [MHz] | (dB) | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. |
| 1 | 0.181 | 0.20 | 49.59 | - | 49.79 | - | 64.43 | 54.43 | -14.64 | - |
| 2 | 0.357 | 0.20 | 32.53 | - | 32.73 | - | 58.80 | 48.80 | -26.07 | - |
| 3 | 0.455 | 0.21 | 29.37 | - | 29.58 | - | 56.79 | 46.79 | -27.21 | - |
| 4 | 0.537 | 0.22 | 22.34 | - | 22.56 | - | 56.00 | 46.00 | -33.44 | - |
| 5 | 14.422 | 0.77 | 32.96 | - | 33.73 | - | 60.00 | 50.00 | -26.27 | - |
| 6 | 16.434 | 0.86 | 30.57 | - | 31.43 | - | 60.00 | 50.00 | -28.57 | - |

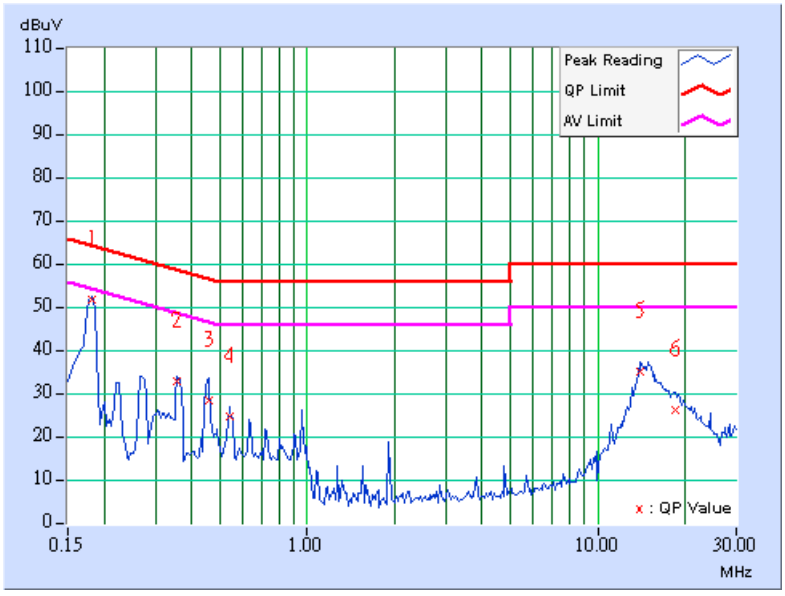
**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value =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



| | | | |
|---|---|---|---|
| **MODULATION TYPE** | BPSK | **CHANNEL** | 6 |
| **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz | **6dB BANDWIDTH** | 9 kHz |
| **TRANSFER RATE** | 6.0Mbps | **PHASE** | Line 1 |
| **ENVIRONMENTAL CONDITIONS** | 25deg. C, 66%RH, 998hPa | **TESTED BY** | Jun Wu |

| No | Freq. | Corr. Factor | Reading Value [dB (uV)] | | Emission Level [dB (uV)] | | Limit [dB (uV)] | | Margin (dB) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | [MHz] | (dB) | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. |
| 1 | 0.181 | 0.20 | 50.57 | - | 50.77 | - | 64.43 | 54.43 | -13.66 | - |
| 2 | 0.357 | 0.20 | 31.48 | - | 31.68 | - | 58.80 | 48.80 | -27.12 | - |
| 3 | 0.459 | 0.22 | 27.23 | - | 27.45 | - | 56.72 | 46.72 | -29.27 | - |
| 4 | 0.541 | 0.25 | 23.66 | - | 23.91 | - | 56.00 | 46.00 | -32.09 | - |
| 5 | 13.910 | 1.01 | 34.00 | - | 35.01 | - | 60.00 | 50.00 | -24.99 | - |
| 6 | 18.566 | 1.31 | 25.13 | - | 26.44 | - | 60.00 | 50.00 | -33.56 | - |

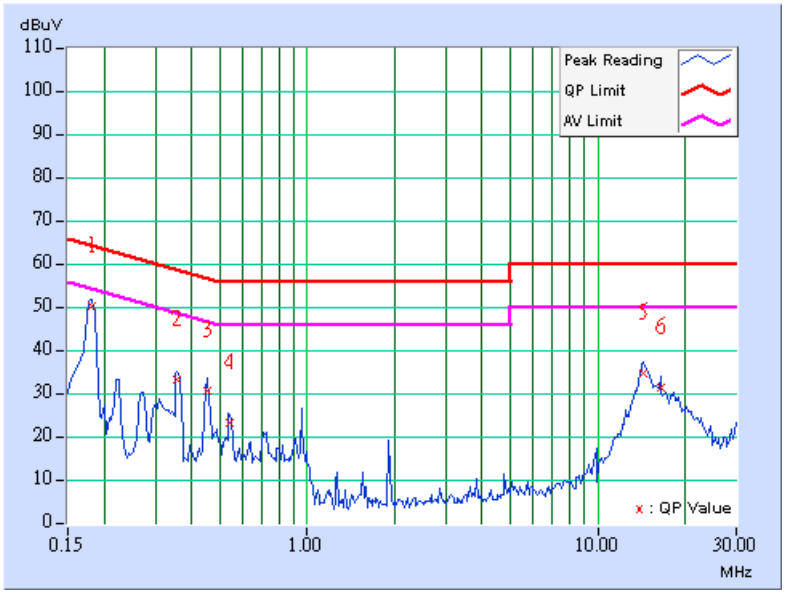
**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value =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



| | | | |
|---|---|---|---|
| **MODULATION TYPE** | BPSK | **CHANNEL** | 6 |
| **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz | **6dB BANDWIDTH** | 9 kHz |
| **TRANSFER RATE** | 6.0Mbps | **PHASE** | Line 2 |
| **ENVIRONMENTAL CONDITIONS** | 25deg. C, 66%RH, 998hPa | **TESTED BY** | Jun Wu |

| No | Freq. | Corr. Factor | Reading Value [dB (uV)] | | Emission Level [dB (uV)] | | Limit [dB (uV)] | | Margin (dB) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | [MHz] | (dB) | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. |
| 1 | 0.181 | 0.20 | 49.59 | - | 49.79 | - | 64.43 | 54.43 | -14.64 | - |
| 2 | 0.358 | 0.20 | 32.40 | - | 32.60 | - | 58.78 | 48.78 | -26.18 | - |
| 3 | 0.453 | 0.21 | 29.81 | - | 30.02 | - | 56.82 | 46.82 | -26.80 | - |
| 4 | 0.538 | 0.22 | 22.46 | - | 22.68 | - | 56.00 | 46.00 | -33.32 | - |
| 5 | 14.426 | 0.77 | 33.81 | - | 34.58 | - | 60.00 | 50.00 | -25.42 | - |
| 6 | 16.433 | 0.86 | 30.59 | - | 31.45 | - | 60.00 | 50.00 | -28.55 | - |

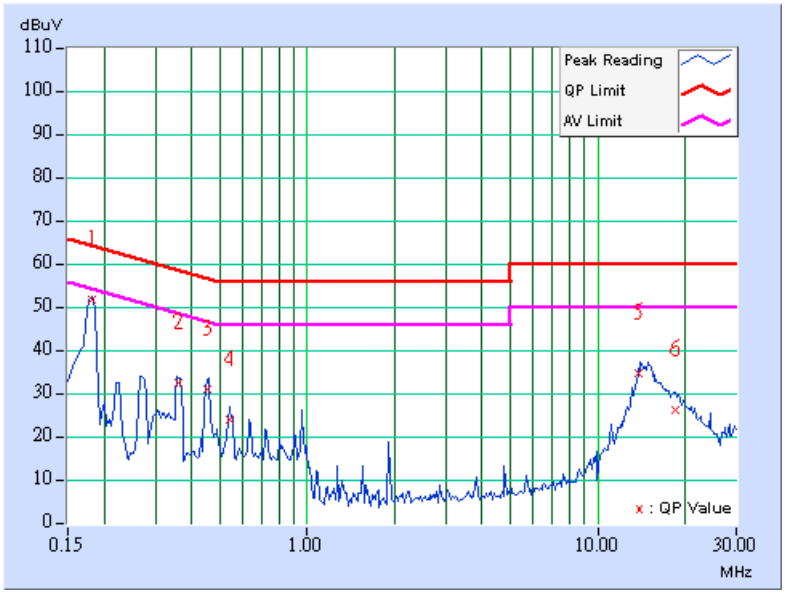
**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value =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



| | | | |
|---|---|---|---|
| **MODULATION TYPE** | BPSK | **CHANNEL** | 11 |
| **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz | **6dB BANDWIDTH** | 9 kHz |
| **TRANSFER RATE** | 6.0Mbps | **PHASE** | Line 1 |
| **ENVIRONMENTAL CONDITIONS** | 25deg. C, 66%RH, 998hPa | **TESTED BY** | Jun Wu |

| No | Freq. | Corr. Factor | Reading Value [dB (uV)] | | Emission Level [dB (uV)] | | Limit [dB (uV)] | | Margin (dB) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | [MHz] | (dB) | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. |
| 1 | 0.181 | 0.20 | 50.36 | - | 50.56 | - | 64.43 | 54.43 | -13.87 | - |
| 2 | 0.359 | 0.20 | 31.34 | - | 31.54 | - | 58.75 | 48.75 | -27.21 | - |
| 3 | 0.453 | 0.22 | 29.81 | - | 30.03 | - | 56.81 | 46.81 | -26.79 | - |
| 4 | 0.542 | 0.25 | 22.70 | - | 22.95 | - | 56.00 | 46.00 | -33.05 | - |
| 5 | 13.908 | 1.01 | 33.47 | - | 34.48 | - | 60.00 | 50.00 | -25.52 | - |
| 6 | 18.568 | 1.31 | 25.15 | - | 26.46 | - | 60.00 | 50.00 | -33.54 | - |

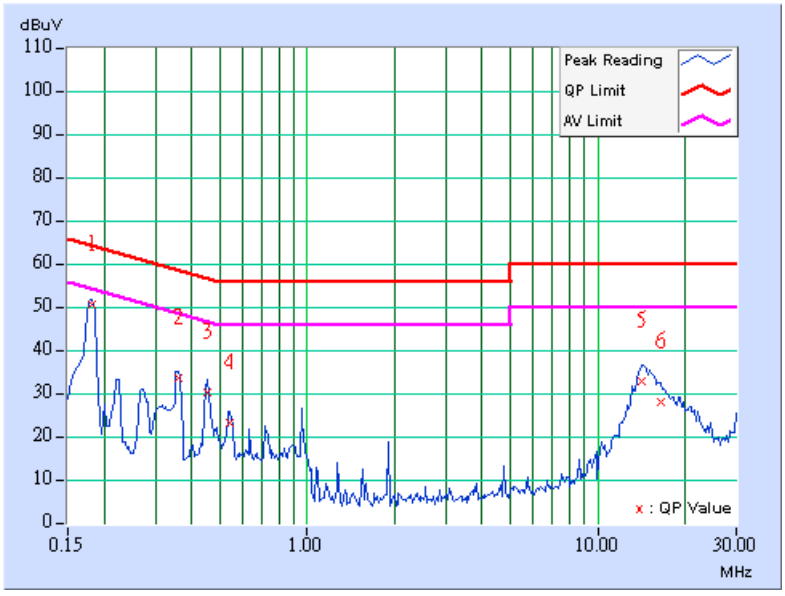
**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value =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



| | | | |
|---|---|---|---|
| **MODULATION TYPE** | BPSK | **CHANNEL** | 11 |
| **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz | **6dB BANDWIDTH** | 9 kHz |
| **TRANSFER RATE** | 6.0Mbps | **PHASE** | Line 2 |
| **ENVIRONMENTAL CONDITIONS** | 25deg. C, 66%RH, 998hPa | **TESTED BY** | Jun Wu |

| No | Freq. | Corr. Factor | Reading Value [dB (uV)] | | Emission Level [dB (uV)] | | Limit [dB (uV)] | | Margin (dB) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | [MHz] | (dB) | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. |
| 1 | 0.181 | 0.20 | 49.77 | - | 49.97 | - | 64.43 | 54.43 | -14.46 | - |
| 2 | 0.361 | 0.20 | 32.79 | - | 32.99 | - | 58.71 | 48.71 | -25.72 | - |
| 3 | 0.455 | 0.21 | 29.63 | - | 29.84 | - | 56.79 | 46.79 | -26.95 | - |
| 4 | 0.545 | 0.22 | 22.33 | - | 22.55 | - | 56.00 | 46.00 | -33.45 | - |
| 5 | 14.168 | 0.75 | 32.00 | - | 32.75 | - | 60.00 | 50.00 | -27.25 | - |
| 6 | 16.457 | 0.86 | 27.15 | - | 28.01 | - | 60.00 | 50.00 | -31.99 | - |

**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.

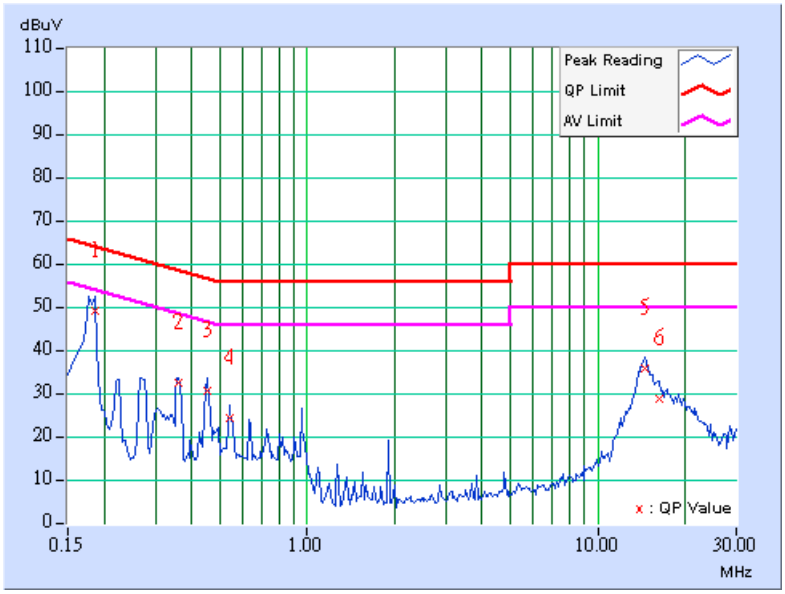


## DRAFT 802.11n (20MHz) OFDM MODULATION:

| | | | |
|---|---|---|---|
| **MODULATION TYPE** | BPSK | **CHANNEL** | 1 |
| **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz | **6dB BANDWIDTH** | 9 kHz |
| **TRANSFER RATE** | 6.5Mbps | **PHASE** | Line 1 |
| **ENVIRONMENTAL CONDITIONS** | 25deg. C, 66%RH, 998hPa | **TESTED BY** | Jun Wu |

| No | Freq. | Corr. Factor | Reading Value [dB (uV)] | | Emission Level [dB (uV)] | | Limit [dB (uV)] | | Margin (dB) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | [MHz] | (dB) | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. |
| 1 | 0.185 | 0.20 | 47.98 | - | 48.18 | - | 64.25 | 54.25 | -16.07 | - |
| 2 | 0.361 | 0.20 | 31.60 | - | 31.80 | - | 58.71 | 48.71 | -26.91 | - |
| 3 | 0.455 | 0.22 | 29.65 | - | 29.87 | - | 56.79 | 46.79 | -26.92 | - |
| 4 | 0.545 | 0.25 | 23.19 | - | 23.44 | - | 56.00 | 46.00 | -32.56 | - |
| 5 | 14.555 | 1.06 | 34.91 | - | 35.97 | - | 60.00 | 50.00 | -24.03 | - |
| 6 | 16.258 | 1.18 | 27.85 | - | 29.03 | - | 60.00 | 50.00 | -30.97 | - |

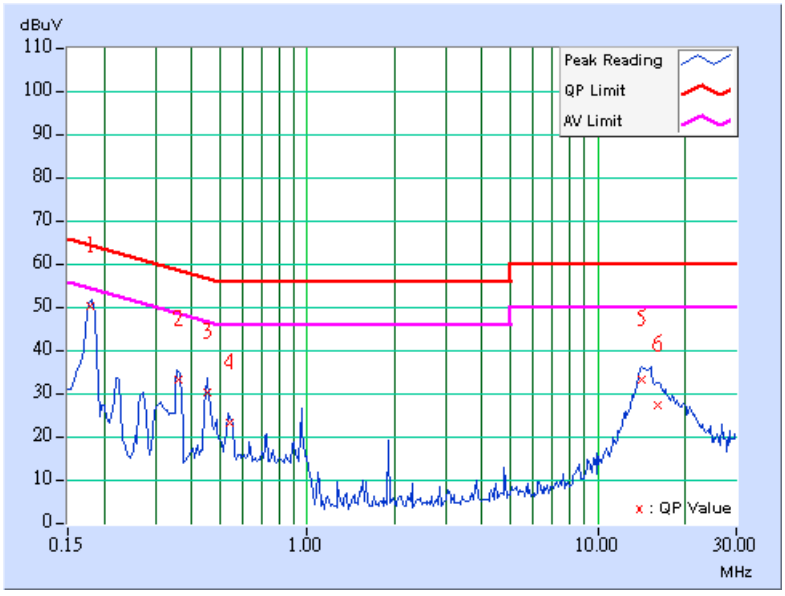
**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value =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



| | | | |
|---|---|---|---|
| **MODULATION TYPE** | BPSK | **CHANNEL** | 1 |
| **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz | **6dB BANDWIDTH** | 9 kHz |
| **TRANSFER RATE** | 6.5Mbps | **PHASE** | Line 2 |
| **ENVIRONMENTAL CONDITIONS** | 25deg. C, 66%RH, 998hPa | **TESTED BY** | Jun Wu |

| No | Freq. | Corr. Factor | Reading Value [dB (uV)] | | Emission Level [dB (uV)] | | Limit [dB (uV)] | | Margin (dB) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | [MHz] | (dB) | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. |
| 1 | 0.180 | 0.20 | 49.44 | - | 49.64 | - | 64.49 | 54.49 | -14.85 | - |
| 2 | 0.359 | 0.20 | 32.46 | - | 32.66 | - | 58.76 | 48.76 | -26.10 | - |
| 3 | 0.451 | 0.21 | 29.50 | - | 29.71 | - | 56.85 | 46.85 | -27.14 | - |
| 4 | 0.538 | 0.22 | 22.52 | - | 22.74 | - | 56.00 | 46.00 | -33.26 | - |
| 5 | 14.198 | 0.75 | 32.31 | - | 33.06 | - | 60.00 | 50.00 | -26.94 | - |
| 6 | 16.175 | 0.85 | 26.44 | - | 27.29 | - | 60.00 | 50.00 | -32.71 | - |

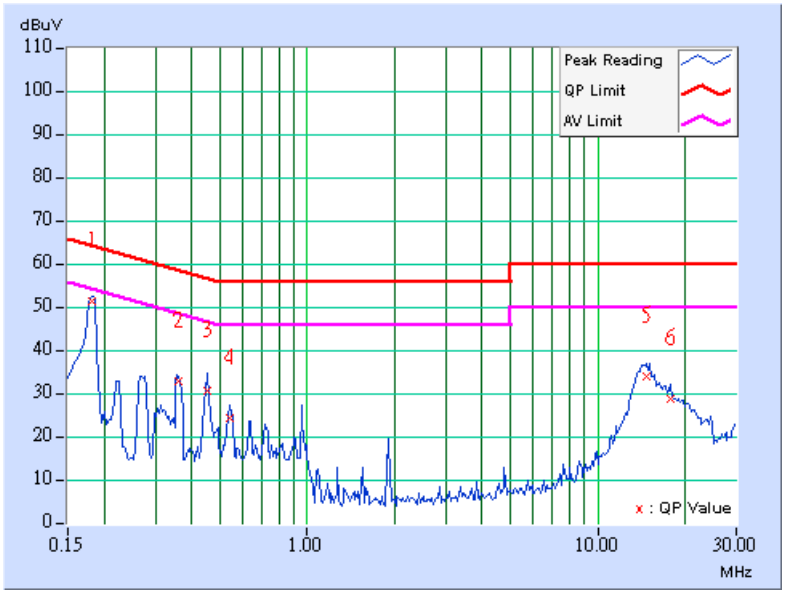
**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value =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



| | | | |
|---|---|---|---|
| **MODULATION TYPE** | BPSK | **CHANNEL** | 6 |
| **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz | **6dB BANDWIDTH** | 9 kHz |
| **TRANSFER RATE** | 6.5Mbps | **PHASE** | Line 1 |
| **ENVIRONMENTAL CONDITIONS** | 25deg. C, 66%RH, 998hPa | **TESTED BY** | Jun Wu |

| No | Freq. | Corr. Factor | Reading Value [dB (uV)] | | Emission Level [dB (uV)] | | Limit [dB (uV)] | | Margin (dB) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | [MHz] | (dB) | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. |
| 1 | 0.181 | 0.20 | 50.28 | - | 50.48 | - | 64.43 | 54.43 | -13.95 | - |
| 2 | 0.359 | 0.20 | 31.82 | - | 32.02 | - | 58.76 | 48.76 | -26.74 | - |
| 3 | 0.455 | 0.22 | 29.65 | - | 29.87 | - | 56.79 | 46.79 | -26.92 | - |
| 4 | 0.543 | 0.25 | 23.04 | - | 23.29 | - | 56.00 | 46.00 | -32.71 | - |
| 5 | 14.782 | 1.08 | 32.88 | - | 33.96 | - | 60.00 | 50.00 | -26.04 | - |
| 6 | 17.725 | 1.26 | 27.57 | - | 28.83 | - | 60.00 | 50.00 | -31.17 | - |

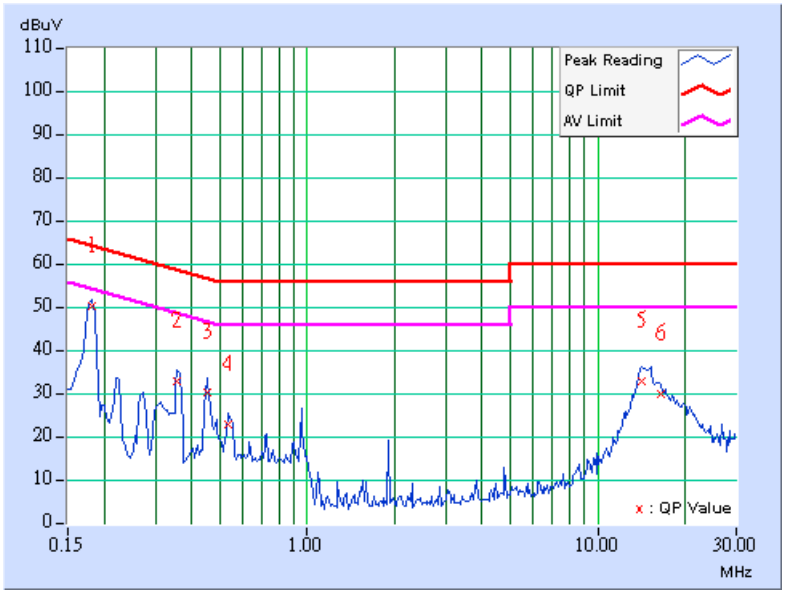
**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value =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



| | | | |
|---|---|---|---|
| **MODULATION TYPE** | BPSK | **CHANNEL** | 6 |
| **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz | **6dB BANDWIDTH** | 9 kHz |
| **TRANSFER RATE** | 6.5Mbps | **PHASE** | Line 2 |
| **ENVIRONMENTAL CONDITIONS** | 25deg. C, 66%RH, 998hPa | **TESTED BY** | Jun Wu |

| No | Freq. | Corr. Factor | Reading Value [dB (uV)] | | Emission Level [dB (uV)] | | Limit [dB (uV)] | | Margin (dB) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | [MHz] | (dB) | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. |
| 1 | 0.181 | 0.20 | 49.49 | - | 49.69 | - | 64.43 | 54.43 | -14.74 | - |
| 2 | 0.357 | 0.20 | 32.24 | - | 32.44 | - | 58.80 | 48.80 | -26.36 | - |
| 3 | 0.455 | 0.21 | 29.39 | - | 29.60 | - | 56.79 | 46.79 | -27.19 | - |
| 4 | 0.537 | 0.22 | 22.20 | - | 22.42 | - | 56.00 | 46.00 | -33.58 | - |
| 5 | 14.199 | 0.75 | 32.23 | - | 32.98 | - | 60.00 | 50.00 | -27.02 | - |
| 6 | 16.430 | 0.86 | 29.19 | - | 30.05 | - | 60.00 | 50.00 | -29.95 | - |

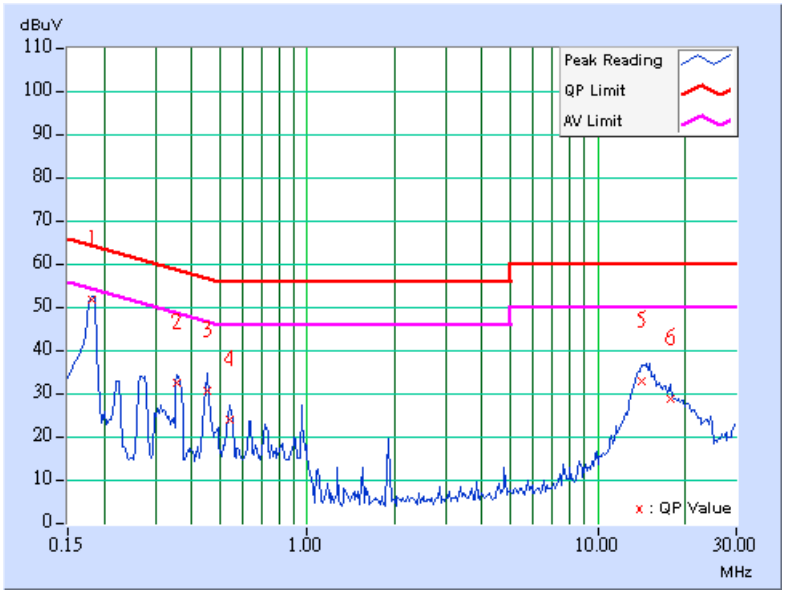
**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value =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



| | | | |
|---|---|---|---|
| **MODULATION TYPE** | BPSK | **CHANNEL** | 11 |
| **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz | **6dB BANDWIDTH** | 9 kHz |
| **TRANSFER RATE** | 6.5Mbps | **PHASE** | Line 1 |
| **ENVIRONMENTAL CONDITIONS** | 25deg. C, 66%RH, 998hPa | **TESTED BY** | Jun Wu |

| No | Freq. | Corr. Factor | Reading Value [dB (uV)] | | Emission Level [dB (uV)] | | Limit [dB (uV)] | | Margin (dB) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | [MHz] | (dB) | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. |
| **1** | **0.181** | **0.20** | **50.58** | **-** | **50.78** | **-** | **64.43** | **54.43** | **-13.65** | **-** |
| 2 | 0.357 | 0.20 | 31.48 | - | 31.68 | - | 58.80 | 48.80 | -27.12 | - |
| 3 | 0.455 | 0.22 | 29.59 | - | 29.81 | - | 56.79 | 46.79 | -26.98 | - |
| 4 | 0.545 | 0.25 | 22.68 | - | 22.93 | - | 56.00 | 46.00 | -33.07 | - |
| 5 | 14.230 | 1.04 | 31.68 | - | 32.72 | - | 60.00 | 50.00 | -27.28 | - |
| 6 | 17.727 | 1.26 | 27.47 | - | 28.73 | - | 60.00 | 50.00 | -31.27 | - |

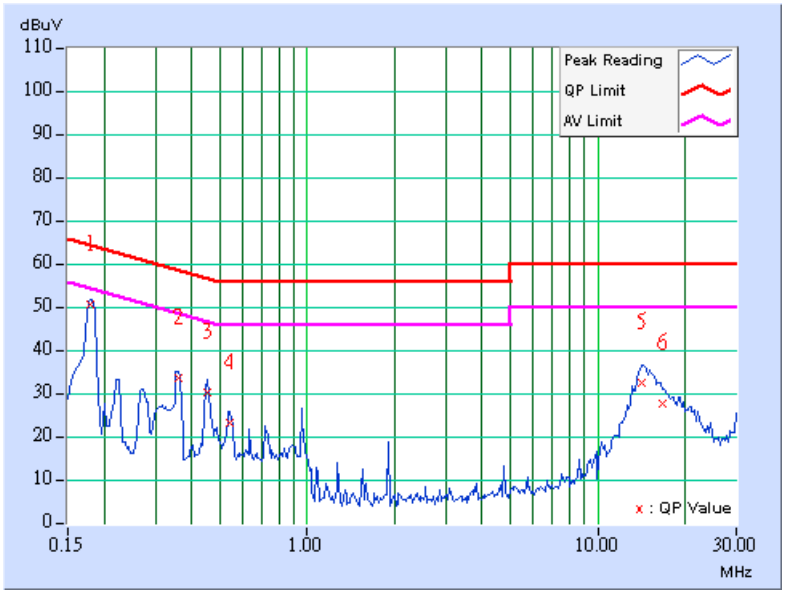
**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value =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



| | | | |
|---|---|---|---|
| **MODULATION TYPE** | BPSK | **CHANNEL** | 11 |
| **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz | **6dB BANDWIDTH** | 9 kHz |
| **TRANSFER RATE** | 6.5Mbps | **PHASE** | Line 2 |
| **ENVIRONMENTAL CONDITIONS** | 25deg. C, 66%RH, 998hPa | **TESTED BY** | Jun Wu |

| No | Freq. | Corr. Factor | Reading Value [dB (uV)] | | Emission Level [dB (uV)] | | Limit [dB (uV)] | | Margin (dB) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | [MHz] | (dB) | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. |
| 1 | 0.180 | 0.20 | 49.81 | - | 50.01 | - | 64.49 | 54.49 | -14.48 | - |
| 2 | 0.361 | 0.20 | 32.89 | - | 33.09 | - | 58.71 | 48.71 | -25.62 | - |
| 3 | 0.455 | 0.21 | 29.67 | - | 29.88 | - | 56.79 | 46.79 | -26.91 | - |
| 4 | 0.545 | 0.22 | 22.29 | - | 22.51 | - | 56.00 | 46.00 | -33.49 | - |
| 5 | 14.170 | 0.75 | 31.68 | - | 32.43 | - | 60.00 | 50.00 | -27.57 | - |
| 6 | 16.783 | 0.87 | 26.99 | - | 27.86 | - | 60.00 | 50.00 | -32.14 | - |

**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.

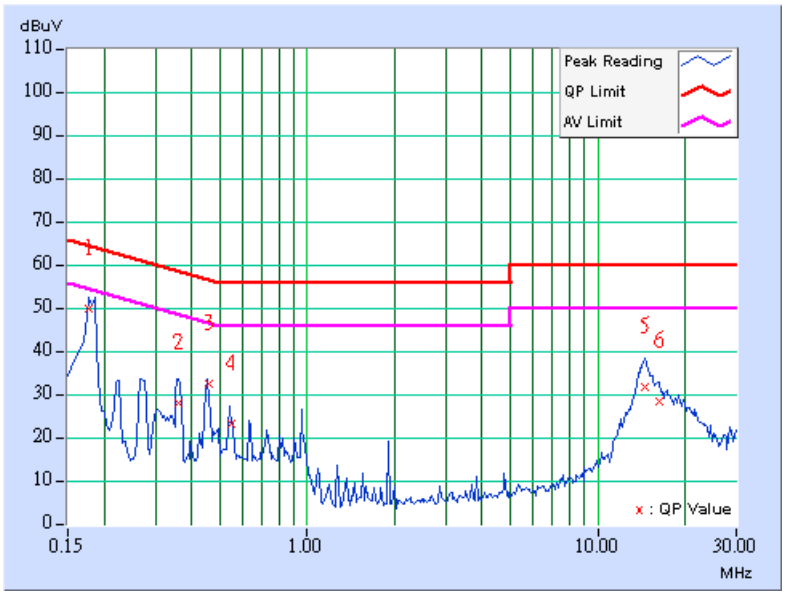


## DRAFT 802.11n (40MHz) OFDM MODULATION:

| | | | |
|---|---|---|---|
| **MODULATION TYPE** | BPSK | **CHANNEL** | 1 |
| **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz | **6dB BANDWIDTH** | 9 kHz |
| **TRANSFER RATE** | 13.5Mbps | **PHASE** | Line 1 |
| **ENVIRONMENTAL CONDITIONS** | 25deg. C, 66%RH, 998hPa | **TESTED BY** | Jun Wu |

| No | Freq. | Corr. Factor | Reading Value [dB (uV)] | | Emission Level [dB (uV)] | | Limit [dB (uV)] | | Margin (dB) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | [MHz] | (dB) | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. |
| 1 | 0.177 | 0.20 | 48.77 | - | 48.97 | - | 64.61 | 54.61 | -15.64 | - |
| 2 | 0.363 | 0.20 | 26.88 | - | 27.08 | - | 58.67 | 48.67 | -31.59 | - |
| 3 | 0.461 | 0.22 | 31.60 | - | 31.82 | - | 56.67 | 46.67 | -24.85 | - |
| 4 | 0.551 | 0.25 | 22.16 | - | 22.41 | - | 56.00 | 46.00 | -33.59 | - |
| 5 | 14.559 | 1.06 | 30.84 | - | 31.90 | - | 60.00 | 50.00 | -28.10 | - |
| 6 | 16.262 | 1.18 | 27.17 | - | 28.35 | - | 60.00 | 50.00 | -31.65 | - |

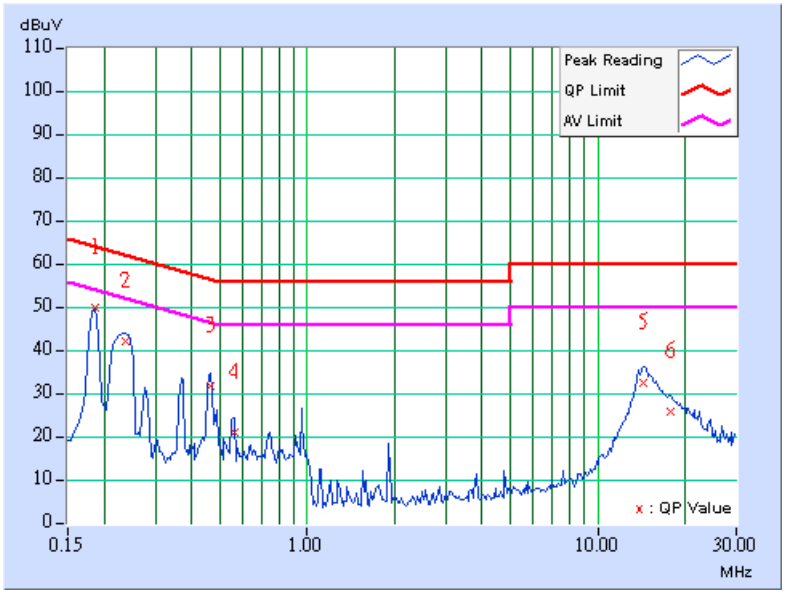
**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value =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



| | | | |
|---|---|---|---|
| **MODULATION TYPE** | BPSK | **CHANNEL** | 1 |
| **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz | **6dB BANDWIDTH** | 9 kHz |
| **TRANSFER RATE** | 13.5Mbps | **PHASE** | Line 2 |
| **ENVIRONMENTAL CONDITIONS** | 25deg. C, 66%RH, 998hPa | **TESTED BY** | Jun Wu |

| No | Freq. | Corr. Factor | Reading Value [dB (uV)] | | Emission Level [dB (uV)] | | Limit [dB (uV)] | | Margin (dB) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | [MHz] | (dB) | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. |
| 1 | 0.185 | 0.20 | 49.06 | - | 48.26 | - | 64.25 | 54.25 | -15.99 | - |
| 2 | 0.236 | 0.20 | 41.48 | - | 41.68 | - | 62.24 | 52.24 | -20.56 | - |
| 3 | 0.463 | 0.21 | 30.86 | - | 31.07 | - | 56.65 | 46.65 | -25.58 | - |
| 4 | 0.560 | 0.23 | 20.23 | - | 20.46 | - | 56.00 | 46.00 | -35.54 | - |
| 5 | 14.426 | 0.77 | 31.64 | - | 32.41 | - | 60.00 | 50.00 | -27.59 | - |
| 6 | 17.723 | 0.91 | 25.09 | - | 26.00 | - | 60.00 | 50.00 | -34.00 | - |

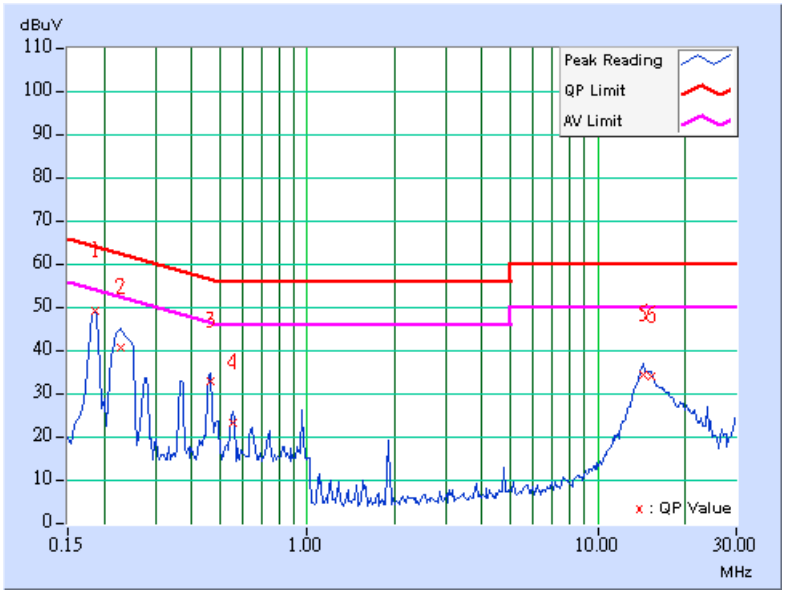
**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value =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



| | | | |
|---|---|---|---|
| **MODULATION TYPE** | BPSK | **CHANNEL** | 4 |
| **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz | **6dB BANDWIDTH** | 9 kHz |
| **TRANSFER RATE** | 13.5Mbps | **PHASE** | Line 1 |
| **ENVIRONMENTAL CONDITIONS** | 25deg. C, 66%RH, 998hPa | **TESTED BY** | Jun Wu |

| No | Freq. | Corr. Factor | Reading Value [dB (uV)] | | Emission Level [dB (uV)] | | Limit [dB (uV)] | | Margin (dB) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | [MHz] | (dB) | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. |
| 1 | 0.185 | 0.20 | 48.22 | - | 48.42 | - | 64.25 | 54.25 | -15.83 | - |
| 2 | 0.228 | 0.20 | 39.74 | - | 39.94 | - | 62.52 | 52.52 | -22.58 | - |
| 3 | 0.463 | 0.22 | 31.90 | - | 32.12 | - | 56.65 | 46.65 | -24.53 | - |
| 4 | 0.556 | 0.25 | 22.33 | - | 22.58 | - | 56.00 | 46.00 | -33.42 | - |
| 5 | 14.379 | 1.05 | 33.50 | - | 34.55 | - | 60.00 | 50.00 | -25.45 | - |
| 6 | 15.359 | 1.12 | 32.88 | - | 34.00 | - | 60.00 | 50.00 | -26.00 | - |

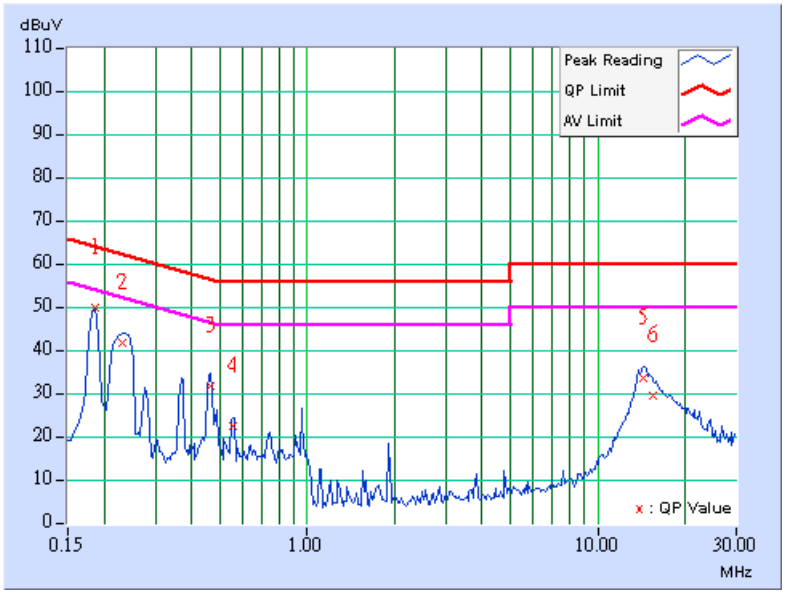
**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value =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



| | | | |
|---|---|---|---|
| **MODULATION TYPE** | BPSK | **CHANNEL** | 4 |
| **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz | **6dB BANDWIDTH** | 9 kHz |
| **TRANSFER RATE** | 13.5Mbps | **PHASE** | Line 2 |
| **ENVIRONMENTAL CONDITIONS** | 25deg. C, 66%RH, 998hPa | **TESTED BY** | Jun Wu |

| No | Freq. | Corr. Factor | Reading Value [dB (uV)] | | Emission Level [dB (uV)] | | Limit [dB (uV)] | | Margin (dB) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | [MHz] | (dB) | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. |
| 1 | 0.185 | 0.20 | 49.06 | - | 49.26 | - | 64.25 | 54.25 | -14.99 | - |
| 2 | 0.232 | 0.20 | 40.97 | - | 41.17 | - | 62.38 | 52.38 | -21.21 | - |
| 3 | 0.463 | 0.21 | 30.93 | - | 31.14 | - | 56.65 | 46.65 | -25.51 | - |
| 4 | 0.554 | 0.23 | 21.66 | - | 21.89 | - | 56.00 | 46.00 | -34.11 | - |
| 5 | 14.419 | 0.77 | 32.77 | - | 33.54 | - | 60.00 | 50.00 | -26.46 | - |
| 6 | 15.570 | 0.82 | 28.73 | - | 29.55 | - | 60.00 | 50.00 | -30.45 | - |

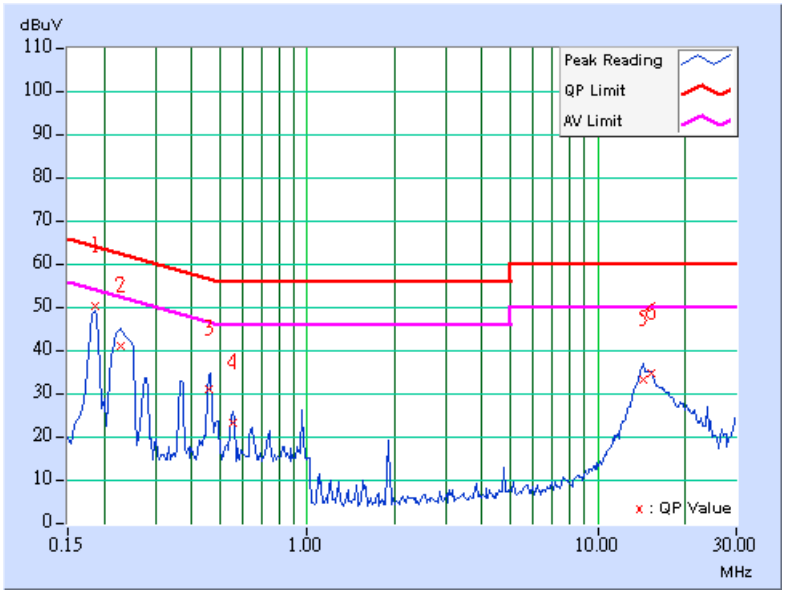
**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value =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



| | | | |
|---|---|---|---|
| **MODULATION TYPE** | BPSK | **CHANNEL** | 7 |
| **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz | **6dB BANDWIDTH** | 9 kHz |
| **TRANSFER RATE** | 13.5Mbps | **PHASE** | Line 1 |
| **ENVIRONMENTAL CONDITIONS** | 25deg. C, 66%RH, 998hPa | **TESTED BY** | Jun Wu |

| No | Freq. | Corr. Factor | Reading Value [dB (uV)] | | Emission Level [dB (uV)] | | Limit [dB (uV)] | | Margin (dB) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | [MHz] | (dB) | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. |
| 1 | 0.185 | 0.20 | 49.37 | - | 49.57 | - | 64.25 | 54.25 | -14.68 | - |
| 2 | 0.228 | 0.20 | 39.90 | - | 40.10 | - | 62.52 | 52.52 | -22.42 | - |
| 3 | 0.457 | 0.22 | 29.99 | - | 30.21 | - | 56.74 | 46.74 | -26.53 | - |
| 4 | 0.555 | 0.25 | 22.20 | - | 22.45 | - | 56.00 | 46.00 | -33.55 | - |
| 5 | 14.383 | 1.05 | 32.39 | - | 33.44 | - | 60.00 | 50.00 | -26.56 | - |
| 6 | 15.356 | 1.12 | 33.75 | - | 34.87 | - | 60.00 | 50.00 | -25.13 | - |

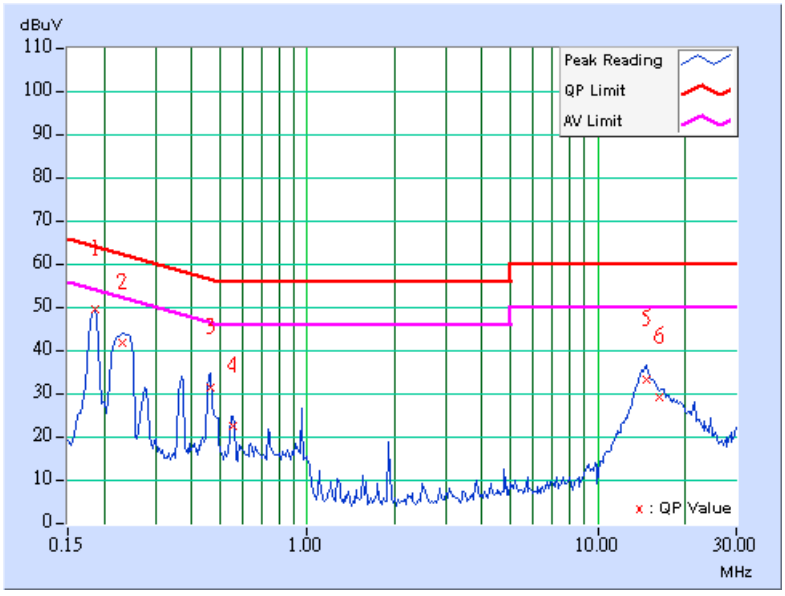
**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value =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



| | | | |
|---|---|---|---|
| **MODULATION TYPE** | BPSK | **CHANNEL** | 7 |
| **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz | **6dB BANDWIDTH** | 9 kHz |
| **TRANSFER RATE** | 13.5Mbps | **PHASE** | Line 2 |
| **ENVIRONMENTAL CONDITIONS** | 25deg. C, 66%RH, 998hPa | **TESTED BY** | Jun Wu |

| No | Freq. | Corr. Factor | Reading Value | | Emission Level | | Limit | | Margin | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | [dB (uV)] | | [dB (uV)] | | [dB (uV)] | | (dB) | |
| | [MHz] | (dB) | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. |
| 1 | 0.185 | 0.20 | 48.61 | - | 48.81 | - | 64.25 | 54.25 | -15.44 | - |
| 2 | 0.232 | 0.20 | 41.04 | - | 41.24 | - | 62.38 | 52.38 | -21.14 | - |
| 3 | 0.463 | 0.21 | 30.77 | - | 30.98 | - | 56.65 | 46.65 | -25.67 | - |
| 4 | 0.556 | 0.23 | 21.57 | - | 21.80 | - | 56.00 | 46.00 | -34.20 | - |
| 5 | 14.684 | 0.78 | 32.58 | - | 33.36 | - | 60.00 | 50.00 | -26.64 | - |
| 6 | 16.395 | 0.86 | 28.57 | - | 29.43 | - | 60.00 | 50.00 | -30.57 | - |

**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 UNTIL |
|---|---|---|---|
| HP Preamplifier | 8447D | 2432A03504 | May 09, 2008 |
| HP Preamplifier | 8449B | 3008A01201 | Oct. 10, 2007 |
| HP Preamplifier | 8449B | 3008A01292 | Aug. 05, 2008 |
| ROHDE & SCHWARZ TEST RECEIVER | ESI7 | 836697/012 | Oct. 24, 2007 |
| Schwarzbeck Antenna | VULB 9168 | 137 | Oct. 01, 2007 |
| Schwarzbeck Antenna | VHBA 9123 | 480 | Apr. 18, 2008 |
| EMCO Horn Antenna | 3115 | 6714 | Oct. 24, 2007 |
| EMCO Horn Antenna | 3115 | 9312-4192 | Apr. 19, 2008 |
| ADT. Turn Table | TT100 | 0306 | NA |
| ADT. Tower | AT100 | 0306 | NA |
| Software | ADT_Radiated_V7.6.15 | NA | NA |
| SUHNER RF cable | SF104-26.5 | CABLE-CH6-17m-01 | Dec. 11, 2007 |
| ROHDE & SCHWARZ Spectrum Analyzer | FSP 40 | 100036 | Mar. 13, 2008 |

**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 and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in ADT Chamber No. 6.
4. The Industry Canada Reference No. IC 3789-6.

## 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 3 meters semi-anechoic chamber. 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 lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

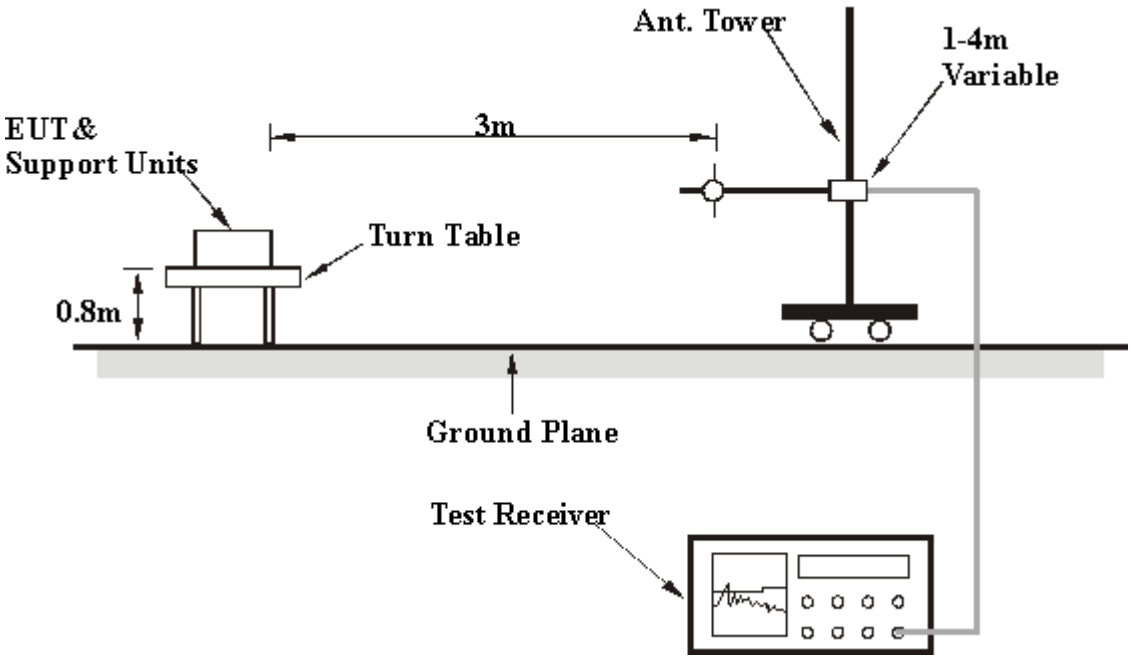
**NOTE:**

1. The resolution 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 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz 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 attached file (Test Setup Photo).

## 4.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6

## 4.2.7 TEST RESULTS

**BELOW 1GHz WORST-CASE DATA: 802.11g OFDM MODULATION:**

| | | | |
|---|---|---|---|
| **MODULATION TYPE** | BPSK | **CHANNEL** | 1 |
| **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz | **FREQUENCY RANGE** | Below 1000MHz |
| **TRANSFER RATE** | 6.0Mbps | **DETECTOR FUNCTION** | Quasi-Peak |
| **ENVIRONMENTAL CONDITIONS** | 25deg. C, 66%RH, 998hPa | **TESTED BY** | Jun Wu |

**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 | 51.383 | 26.96 QP | 40.00 | -13.04 | 1.37 H | 349 | 12.37 | 14.59 |
| 2 | 203.006 | 28.38 QP | 43.50 | -15.12 | 1.35 H | 190 | 16.55 | 11.83 |
| 3 | 449.880 | 30.82 QP | 46.00 | -15.18 | 1.29 H | 163 | 10.33 | 20.49 |
| 4 | 593.727 | 39.15 QP | 46.00 | -6.85 | 1.24 H | 322 | 14.77 | 24.38 |
| 5 | 712.305 | 39.24 QP | 46.00 | -6.76 | 1.18 H | 163 | 12.93 | 26.31 |
| 6 | 813.387 | 39.20 QP | 46.00 | -6.80 | 1.12 H | 139 | 10.87 | 28.33 |
| 7 | 914.469 | 39.94 QP | 46.00 | -6.06 | 1.05 H | 304 | 10.24 | 29.70 |

**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 | 31.944 | 27.63 QP | 40.00 | -12.37 | 1.00 V | 142 | 14.65 | 12.98 |
| 2 | 272.986 | 31.71 QP | 46.00 | -14.29 | 1.00 V | 154 | 16.28 | 15.43 |
| 3 | 432.385 | 33.74 QP | 46.00 | -12.26 | 1.00 V | 7 | 13.69 | 20.05 |
| 4 | 712.305 | 36.11 QP | 46.00 | -9.89 | 1.15 V | 301 | 9.80 | 26.31 |
| 5 | 813.387 | 37.16 QP | 46.00 | -8.84 | 1.18 V | 184 | 8.83 | 28.33 |
| 6 | 914.469 | 37.56 QP | 46.00 | -8.44 | 1.26 V | 247 | 7.86 | 29.70 |

**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)
3The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.

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

| | | | |
|---|---|---|---|
| **MODULATION TYPE** | BPSK | **CHANNEL** | 1 |
| **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz | **FREQUENCY RANGE** | Below 1000MHz |
| **TRANSFER RATE** | 6.5Mbps | **DETECTOR FUNCTION** | Quasi-Peak |
| **ENVIRONMENTAL CONDITIONS** | 25deg. C, 66%RH, 998hPa | **TESTED BY** | Jun Wu |

**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 | 45.551 | 26.83 QP | 40.00 | -13.17 | 1.34 H | 70 | 11.26 | 15.57 |
| 2 | 203.006 | 27.84 QP | 43.50 | -15.66 | 1.32 H | 187 | 16.01 | 11.83 |
| 3 | 269.098 | 29.21 QP | 46.00 | -16.79 | 1.28 H | 229 | 14.08 | 15.13 |
| 4 | 593.727 | 37.86 QP | 46.00 | -8.14 | 1.24 H | 319 | 13.48 | 24.38 |
| 5 | 712.305 | 38.62 QP | 46.00 | -7.38 | 1.20 H | 163 | 12.31 | 26.31 |
| 6 | 813.387 | 38.75 QP | 46.00 | -7.25 | 1.16 H | 142 | 10.42 | 28.33 |
| 7 | 914.469 | 40.09 QP | 46.00 | -5.91 | 1.05 H | 304 | 10.39 | 29.70 |

**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 | 31.944 | 26.59 QP | 40.00 | -13.41 | 1.00 V | 286 | 13.61 | 12.98 |
| 2 | 593.727 | 43.65 QP | 46.00 | -2.35 | 1.00 V | 316 | 19.27 | 24.38 |
| 3 | 667.595 | 34.03 QP | 46.00 | -11.97 | 1.07 V | 169 | 8.78 | 25.25 |
| 4 | 712.305 | 37.31 QP | 46.00 | -8.69 | 1.12 V | 337 | 11.00 | 26.31 |
| 5 | 813.387 | 36.55 QP | 46.00 | -9.45 | 1.19 V | 181 | 8.22 | 28.33 |
| 6 | 914.469 | 38.86 QP | 46.00 | -7.14 | 1.26 V | 250 | 9.16 | 29.70 |

**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)
3The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.

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

| | | | |
|---|---|---|---|
| **MODULATION TYPE** | BPSK | **CHANNEL** | 1 |
| **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz | **FREQUENCY RANGE** | Below 1000MHz |
| **TRANSFER RATE** | 13.5Mbps | **DETECTOR FUNCTION** | Quasi-Peak |
| **ENVIRONMENTAL CONDITIONS** | 25deg. C, 66%RH, 998hPa | **TESTED BY** | Jun Wu |

**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 | 45.551 | 35.55 QP | 40.00 | -4.45 | 1.36 H | 259 | 19.98 | 15.57 |
| 2 | 203.006 | 27.53 QP | 43.50 | -15.97 | 1.32 H | 196 | 15.70 | 11.83 |
| 3 | 300.200 | 30.19 QP | 46.00 | -15.81 | 1.35 H | 256 | 13.52 | 16.67 |
| 4 | 449.880 | 30.23 QP | 46.00 | -15.77 | 1.28 H | 151 | 9.74 | 20.49 |
| 5 | 593.727 | 38.82 QP | 46.00 | -7.18 | 1.24 H | 322 | 14.44 | 24.38 |
| 6 | 712.305 | 39.39 QP | 46.00 | -6.61 | 1.20 H | 166 | 13.08 | 26.31 |
| 7 | 813.387 | 39.42 QP | 46.00 | -6.58 | 1.15 H | 148 | 11.09 | 28.33 |
| 8 | 914.469 | 41.03 QP | 46.00 | -4.97 | 1.02 H | 307 | 11.33 | 29.70 |

**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 | 35.832 | 27.43 QP | 40.00 | -12.57 | 1.00 V | 58 | 13.83 | 13.60 |
| 2 | 432.385 | 32.22 QP | 46.00 | -13.78 | 1.00 V | 10 | 12.17 | 20.05 |
| 3 | 589.840 | 33.15 QP | 46.00 | -12.85 | 1.04 V | 313 | 8.86 | 24.29 |
| 4 | 663.707 | 32.84 QP | 46.00 | -13.16 | 1.16 V | 181 | 7.65 | 25.19 |
| 5 | 712.305 | 36.74 QP | 46.00 | -9.26 | 1.21 V | 289 | 10.43 | 26.31 |
| 6 | 813.387 | 37.37 QP | 46.00 | -8.63 | 1.27 V | 187 | 9.04 | 28.33 |
| 7 | 914.469 | 38.98 QP | 46.00 | -7.02 | 1.33 V | 250 | 9.28 | 29.70 |

**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)
3The other emission levels were very low against the limit.
4. Margin value = Emission level – Limit value.

## ABOVE 1GHz DATA: 802.11b DSSS MODULATION:

| | | | |
|---|---|---|---|
| **MODULATION TYPE** | DBPSK | **CHANNEL** | 1 |
| **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz | **FREQUENCY RANGE** | 1 ~ 25GHz |
| **TRANSFER RATE** | 1.0Mbps | **DETECTOR FUNCTION** | Peak (PK)<br>Average (AV) |
| **ENVIRONMENTAL CONDITIONS** | 24deg. C, 54%RH, 997hPa | **TESTED BY** | Jun Wu |

**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 | 2390.000 | 62.64 PK | 74.00 | -11.36 | 1.12 H | 12 | 28.22 | 34.42 |
| 2 | 2390.000 | 50.82 AV | 54.00 | -3.18 | 1.12 H | 12 | 16.40 | 34.42 |
| 3 | *2412.000 | 110.32 PK | | | 1.12 H | 12 | 75.86 | 34.46 |
| 4 | *2412.000 | 105.50 AV | | | 1.12 H | 12 | 71.04 | 34.46 |
| 5 | 4824.000 | 55.24 PK | 74.00 | -18.76 | 1.11 H | 12 | 13.79 | 41.45 |
| 6 | 4824.000 | 46.57 AV | 54.00 | -7.43 | 1.11 H | 12 | 5.12 | 41.45 |

**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 | 2390.000 | 60.91 PK | 74.00 | -13.09 | 1.00 V | 352 | 26.49 | 34.42 |
| 2 | 2390.000 | 49.87 AV | 54.00 | -4.13 | 1.00 V | 352 | 15.45 | 34.42 |
| 3 | *2412.000 | 105.72 PK | | | 1.00 V | 352 | 71.26 | 34.46 |
| 4 | *2412.000 | 100.81 AV | | | 1.00 V | 352 | 66.35 | 34.46 |
| 5 | 4824.000 | 53.72 PK | 74.00 | -20.28 | 1.19 V | 140 | 12.27 | 41.45 |
| 6 | 4824.000 | 44.23 AV | 54.00 | -9.77 | 1.19 V | 140 | 2.78 | 41.45 |

**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.

| | | | |
|---|---|---|---|
| **MODULATION TYPE** | DBPSK | **CHANNEL** | 6 |
| **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz | **FREQUENCY RANGE** | 1 ~ 25GHz |
| **TRANSFER RATE** | 1.0Mbps | **DETECTOR FUNCTION** | Peak (PK)<br>Average (AV) |
| **ENVIRONMENTAL CONDITIONS** | 24deg. C, 54%RH, 997hPa | **TESTED BY** | Jun Wu |

**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 | *2437.000 | 110.15 PK | | | 1.09 H | 9 | 75.64 | 34.51 |
| 2 | *2437.000 | 105.22 AV | | | 1.09 H | 9 | 70.71 | 34.51 |
| 3 | 4874.000 | 54.23 PK | 74.00 | -19.77 | 1.08 H | 340 | 12.66 | 41.57 |
| 4 | 4874.000 | 43.43 AV | 54.00 | -10.57 | 1.08 H | 340 | 1.86 | 41.57 |

**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 | *2437.000 | 104.20 PK | | | 1.00 V | 354 | 69.69 | 34.51 |
| 2 | *2437.000 | 99.63 AV | | | 1.00 V | 354 | 65.12 | 34.51 |
| 3 | 4874.000 | 58.10 PK | 74.00 | -15.90 | 1.00 V | 335 | 16.53 | 41.57 |
| 4 | 4874.000 | 52.84 AV | 54.00 | -1.16 | 1.00 V | 335 | 11.27 | 41.57 |

**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.

| | | | |
|---|---|---|---|
| **MODULATION TYPE** | DBPSK | **CHANNEL** | 11 |
| **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz | **FREQUENCY RANGE** | 1 ~ 25GHz |
| **TRANSFER RATE** | 1.0Mbps | **DETECTOR FUNCTION** | Peak (PK)<br>Average (AV) |
| **ENVIRONMENTAL CONDITIONS** | 24deg. C, 54%RH, 997hPa | **TESTED BY** | Jun Wu |

**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 | *2462.000 | 110.19 PK | | | 1.08 H | 10 | 75.63 | 34.56 |
| 2 | *2462.000 | 105.43 AV | | | 1.08 H | 10 | 70.87 | 34.56 |
| 3 | 2483.500 | 65.42 PK | 74.00 | -8.58 | 1.08 H | 10 | 30.81 | 34.61 |
| **4** | **2483.500** | **53.28 AV** | **54.00** | **-0.72** | **1.08 H** | **10** | **18.67** | **34.61** |
| 5 | 4924.000 | 54.65 PK | 74.00 | -19.35 | 1.00 H | 1 | 12.95 | 41.70 |
| 6 | 4924.000 | 43.58 AV | 54.00 | -10.42 | 1.00 H | 1 | 1.88 | 41.70 |

**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 | *2462.000 | 104.55 PK | | | 1.10 V | 344 | 69.99 | 34.56 |
| 2 | *2462.000 | 99.91 AV | | | 1.10 V | 344 | 65.35 | 34.56 |
| 3 | 2483.500 | 60.76 PK | 74.00 | -13.24 | 1.10 V | 344 | 26.15 | 34.61 |
| 4 | 2483.500 | 49.74 AV | 54.00 | -4.26 | 1.10 V | 344 | 15.13 | 34.61 |
| 5 | 4924.000 | 54.74 PK | 74.00 | -19.26 | 1.20 V | 179 | 13.04 | 41.70 |
| 6 | 4924.000 | 45.24 AV | 54.00 | -8.76 | 1.20 V | 179 | 3.54 | 41.70 |

**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.

## 802.11g OFDM MODULATION:

| | | | |
|---|---|---|---|
| **MODULATION TYPE** | BPSK | **CHANNEL** | 1 |
| **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz | **FREQUENCY RANGE** | 1 ~ 25GHz |
| **TRANSFER RATE** | 6.0Mbps | **DETECTOR FUNCTION** | Peak (PK)<br>Average (AV) |
| **ENVIRONMENTAL CONDITIONS** | 24deg. C, 54%RH, 997hPa | **TESTED BY** | Jun Wu |

| 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 | 2390.000 | 61.05 PK | 74.00 | -12.95 | 1.11 H | 356 | 26.63 | 34.42 |
| 2 | 2390.000 | 48.67 AV | 54.00 | -5.33 | 1.11 H | 356 | 14.25 | 34.42 |
| 3 | *2412.000 | 107.21 PK | | | 1.11 H | 356 | 72.75 | 34.46 |
| 4 | *2412.000 | 94.72 AV | | | 1.11 H | 356 | 60.26 | 34.46 |
| 5 | 4824.000 | 51.16 PK | 74.00 | -22.84 | 1.10 H | 330 | 9.71 | 41.45 |
| 6 | 4824.000 | 39.03 AV | 54.00 | -14.97 | 1.10 H | 330 | -2.42 | 41.45 |

| 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 | 2390.000 | 60.48 PK | 74.00 | -13.52 | 1.00 V | 5 | 26.06 | 34.42 |
| 2 | 2390.000 | 48.51 AV | 54.00 | -5.49 | 1.00 V | 5 | 14.09 | 34.42 |
| 3 | *2412.000 | 104.49 PK | | | 1.00 V | 5 | 70.03 | 34.46 |
| 4 | *2412.000 | 91.93 AV | | | 1.00 V | 5 | 57.47 | 34.46 |
| 5 | 4824.000 | 51.73 PK | 74.00 | -22.27 | 1.00 V | 345 | 10.28 | 41.45 |
| 6 | 4824.000 | 39.30 AV | 54.00 | -14.70 | 1.00 V | 345 | -2.15 | 41.45 |

**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.

| | | | |
|---|---|---|---|
| **MODULATION TYPE** | BPSK | **CHANNEL** | 6 |
| **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz | **FREQUENCY RANGE** | 1 ~ 25GHz |
| **TRANSFER RATE** | 6.0Mbps | **DETECTOR FUNCTION** | Peak (PK)<br>Average (AV) |
| **ENVIRONMENTAL CONDITIONS** | 24deg. C, 54%RH, 997hPa | **TESTED BY** | Jun Wu |

**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 | *2437.000 | 107.77 PK | | | 1.04 H | 356 | 73.26 | 34.51 |
| 2 | *2437.000 | 94.59 AV | | | 1.04 H | 356 | 60.08 | 34.51 |
| 3 | 4874.000 | 53.50 PK | 74.00 | -20.50 | 1.06 H | 358 | 11.93 | 41.57 |
| 4 | 4874.000 | 40.83 AV | 54.00 | -13.17 | 1.06 H | 358 | -0.74 | 41.57 |

**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 | *2437.000 | 103.97 PK | | | 1.09 V | 327 | 69.46 | 34.51 |
| 2 | *2437.000 | 91.76 AV | | | 1.09 V | 327 | 57.25 | 34.51 |
| 3 | 4874.000 | 52.33 PK | 74.00 | -21.67 | 1.11 V | 135 | 10.76 | 41.57 |
| 4 | 4874.000 | 39.34 AV | 54.00 | -14.66 | 1.11 V | 135 | -2.23 | 41.57 |

**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.

| | | | |
|---|---|---|---|
| **MODULATION TYPE** | BPSK | **CHANNEL** | 11 |
| **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz | **FREQUENCY RANGE** | 1 ~ 25GHz |
| **TRANSFER RATE** | 6.0Mbps | **DETECTOR FUNCTION** | Peak (PK)<br>Average (AV) |
| **ENVIRONMENTAL CONDITIONS** | 24deg. C, 54%RH, 997hPa | **TESTED BY** | Jun Wu |

**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 | *2462.000 | 108.11 PK | | | 1.08 H | 81 | 73.55 | 34.56 |
| 2 | *2462.000 | 95.23 AV | | | 1.08 H | 81 | 60.67 | 34.56 |
| 3 | 2483.500 | 63.17 PK | 74.00 | -10.83 | 1.08 H | 81 | 28.56 | 34.61 |
| 4 | 2483.500 | 49.10 AV | 54.00 | -4.90 | 1.08 H | 81 | 14.49 | 34.61 |
| 5 | 4924.000 | 53.39 PK | 74.00 | -20.61 | 1.13 H | 348 | 11.69 | 41.70 |
| 6 | 4924.000 | 40.96 AV | 54.00 | -13.04 | 1.13 H | 348 | -0.74 | 41.70 |

**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 | *2462.000 | 104.67 PK | | | 1.08 V | 350 | 70.11 | 34.56 |
| 2 | *2462.000 | 92.20 AV | | | 1.08 V | 350 | 57.64 | 34.56 |
| 3 | 2483.500 | 65.52 PK | 74.00 | -8.48 | 1.08 V | 350 | 30.91 | 34.61 |
| 4 | 2483.500 | 49.49 AV | 54.00 | -4.51 | 1.08 V | 350 | 14.88 | 34.61 |
| 5 | 4924.000 | 53.95 PK | 74.00 | -20.05 | 1.16 V | 143 | 12.25 | 41.70 |
| 6 | 4924.000 | 41.84 AV | 54.00 | -12.16 | 1.16 V | 143 | 0.14 | 41.70 |

**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.

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

| | | | |
|---|---|---|---|
| **MODULATION TYPE** | BPSK | **CHANNEL** | 1 |
| **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz | **FREQUENCY RANGE** | 1 ~ 25GHz |
| **TRANSFER RATE** | 6.5Mbps | **DETECTOR FUNCTION** | Peak (PK)<br>Average (AV) |
| **ENVIRONMENTAL CONDITIONS** | 26deg. C, 64%RH, 996hPa | **TESTED BY** | Jun Wu |

| 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 | 2390.000 | 57.66 PK | 74.00 | -16.34 | 1.17 H | 20 | 23.24 | 34.42 |
| 2 | 2390.000 | 46.91 AV | 54.00 | -7.09 | 1.17 H | 20 | 12.49 | 34.42 |
| 3 | *2412.000 | 107.27 PK | | | 1.17 H | 20 | 72.81 | 34.46 |
| 4 | *2412.000 | 95.26 AV | | | 1.17 H | 20 | 60.80 | 34.46 |
| 5 | 4824.000 | 52.19 PK | 74.00 | -21.81 | 1.60 H | 206 | 10.74 | 41.45 |
| 6 | 4824.000 | 39.18 AV | 54.00 | -14.82 | 1.60 H | 206 | -2.27 | 41.45 |

| 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 | 2390.000 | 58.61 PK | 74.00 | -15.39 | 1.00 V | 354 | 24.19 | 34.42 |
| 2 | 2390.000 | 46.45 AV | 54.00 | -7.55 | 1.00 V | 354 | 12.03 | 34.42 |
| 3 | *2412.000 | 104.95 PK | | | 1.00 V | 354 | 70.49 | 34.46 |
| 4 | *2412.000 | 92.32 AV | | | 1.00 V | 354 | 57.86 | 34.46 |
| 5 | 4824.000 | 51.26 PK | 74.00 | -22.74 | 1.19 V | 91 | 9.81 | 41.45 |
| 6 | 4824.000 | 38.92 AV | 54.00 | -15.08 | 1.19 V | 91 | -2.53 | 41.45 |

**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.

| | | | |
|---|---|---|---|
| **MODULATION TYPE** | BPSK | **CHANNEL** | 6 |
| **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz | **FREQUENCY RANGE** | 1 ~ 25GHz |
| **TRANSFER RATE** | 6.5Mbps | **DETECTOR FUNCTION** | Peak (PK)<br>Average (AV) |
| **ENVIRONMENTAL CONDITIONS** | 26deg. C, 64%RH, 996hPa | **TESTED BY** | Jun Wu |

**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 | *2437.000 | 106.65 PK | | | 1.36 H | 77 | 72.14 | 34.51 |
| 2 | *2437.000 | 93.63 AV | | | 1.36 H | 77 | 59.12 | 34.51 |
| 3 | 4874.000 | 51.36 PK | 74.00 | -22.64 | 1.32 H | 215 | 9.79 | 41.57 |
| 4 | 4874.000 | 39.49 AV | 54.00 | -14.51 | 1.32 H | 215 | -2.08 | 41.57 |

**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 | *2437.000 | 103.55 PK | | | 1.00 V | 350 | 69.04 | 34.51 |
| 2 | *2437.000 | 91.72 AV | | | 1.00 V | 350 | 57.21 | 34.51 |
| 3 | 4874.000 | 53.01 PK | 74.00 | -20.99 | 1.16 V | 70 | 11.44 | 41.57 |
| 4 | 4874.000 | 39.34 AV | 54.00 | -14.66 | 1.16 V | 70 | -2.23 | 41.57 |

**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.

| | | | |
|---|---|---|---|
| **MODULATION TYPE** | BPSK | **CHANNEL** | 11 |
| **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz | **FREQUENCY RANGE** | 1 ~ 25GHz |
| **TRANSFER RATE** | 6.5Mbps | **DETECTOR FUNCTION** | Peak (PK)<br>Average (AV) |
| **ENVIRONMENTAL CONDITIONS** | 26deg. C, 64%RH, 996hPa | **TESTED BY** | Jun Wu |

**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 | *2462.000 | 106.42 PK | | | 1.35 H | 75 | 71.86 | 34.56 |
| 2 | *2462.000 | 93.84 AV | | | 1.35 H | 75 | 59.28 | 34.56 |
| 3 | 2483.500 | 58.31 PK | 74.00 | -15.69 | 1.35 H | 75 | 23.70 | 34.61 |
| 4 | 2483.500 | 46.81 AV | 54.00 | -7.19 | 1.35 H | 75 | 12.20 | 34.61 |
| 5 | 4924.000 | 51.62 PK | 74.00 | -22.38 | 1.06 H | 170 | 9.92 | 41.70 |
| 6 | 4924.000 | 39.56 AV | 54.00 | -14.44 | 1.06 H | 170 | -2.14 | 41.70 |

**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 | *2462.000 | 102.75 PK | | | 1.00 V | 1 | 68.19 | 34.56 |
| 2 | *2462.000 | 90.13 AV | | | 1.00 V | 1 | 55.57 | 34.56 |
| 3 | 2483.500 | 58.07 PK | 74.00 | -15.93 | 1.00 V | 1 | 23.46 | 34.61 |
| 4 | 2483.500 | 46.16 AV | 54.00 | -7.84 | 1.00 V | 1 | 11.55 | 34.61 |
| 5 | 4924.000 | 51.71 PK | 74.00 | -22.29 | 1.16 V | 81 | 10.01 | 41.70 |
| 6 | 4924.000 | 39.76 AV | 54.00 | -14.24 | 1.16 V | 81 | -1.94 | 41.70 |

**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.

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

| | | | |
|---|---|---|---|
| **MODULATION TYPE** | BPSK | **CHANNEL** | 1 |
| **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz | **FREQUENCY RANGE** | 1 ~ 25GHz |
| **TRANSFER RATE** | 13.5Mbps | **DETECTOR FUNCTION** | Peak (PK)<br>Average (AV) |
| **ENVIRONMENTAL CONDITIONS** | 26deg. C, 64%RH, 996hPa | **TESTED BY** | Jun Wu |

**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 | 2390.000 | 61.52 PK | 74.00 | -12.48 | 1.13 H | 23 | 27.10 | 34.42 |
| 2 | 2390.000 | 47.25 AV | 54.00 | -6.75 | 1.13 H | 23 | 12.83 | 34.42 |
| 3 | *2422.000 | 104.53 PK | | | 1.13 H | 23 | 70.05 | 34.48 |
| 4 | *2422.000 | 74.81 AV | | | 1.13 H | 23 | 40.33 | 34.48 |
| 5 | 4844.000 | 51.51 PK | 74.00 | -22.49 | 1.17 H | 35 | 10.01 | 41.50 |
| 6 | 4844.000 | 39.04 AV | 54.00 | -14.96 | 1.17 H | 35 | -2.46 | 41.50 |

**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 | 2390.000 | 59.18 PK | 74.00 | -14.82 | 1.00 V | 3 | 24.76 | 34.42 |
| 2 | 2390.000 | 46.58 AV | 54.00 | -7.42 | 1.00 V | 3 | 12.16 | 34.42 |
| 3 | *2422.000 | 101.44 PK | | | 1.00 V | 3 | 66.96 | 34.48 |
| 4 | *2422.000 | 71.27 AV | | | 1.00 V | 3 | 36.79 | 34.48 |
| 5 | 4844.000 | 52.15 PK | 74.00 | -21.85 | 1.00 V | 156 | 10.65 | 41.50 |
| 6 | 4844.000 | 39.27 AV | 54.00 | -14.73 | 1.00 V | 156 | -2.23 | 41.50 |

**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.

.

| | | | |
|---|---|---|---|
| **MODULATION TYPE** | BPSK | **CHANNEL** | 4 |
| **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz | **FREQUENCY RANGE** | 1 ~ 25GHz |
| **TRANSFER RATE** | 13.5Mbps | **DETECTOR FUNCTION** | Peak (PK)<br>Average (AV) |
| **ENVIRONMENTAL CONDITIONS** | 26deg. C, 64%RH, 996hPa | **TESTED BY** | Jun Wu |

**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 | *2437.000 | 105.60 PK | | | 1.13 H | 7 | 71.09 | 34.51 |
| 2 | *2437.000 | 76.08 AV | | | 1.13 H | 7 | 41.57 | 34.51 |
| 3 | 4874.000 | 51.34 PK | 74.00 | -22.66 | 1.21 H | 133 | 9.77 | 41.57 |
| 4 | 4874.000 | 39.06 AV | 54.00 | -14.94 | 1.21 H | 133 | -2.51 | 41.57 |

**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 | *2437.000 | 101.05 PK | | | 1.00 V | 4 | 66.54 | 34.51 |
| 2 | *2437.000 | 72.70 AV | | | 1.00 V | 4 | 38.19 | 34.51 |
| 3 | 4874.000 | 52.02 PK | 74.00 | -21.98 | 1.00 V | 85 | 10.45 | 41.57 |
| 4 | 4874.000 | 39.30 AV | 54.00 | -14.70 | 1.00 V | 85 | -2.27 | 41.57 |

**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.

| | | | |
|---|---|---|---|
| **MODULATION TYPE** | BPSK | **CHANNEL** | 7 |
| **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz | **FREQUENCY RANGE** | 1 ~ 25GHz |
| **TRANSFER RATE** | 13.5Mbps | **DETECTOR FUNCTION** | Peak (PK)<br>Average (AV) |
| **ENVIRONMENTAL CONDITIONS** | 26deg. C, 64%RH, 996hPa | **TESTED BY** | Jun Wu |

**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 | *2452.000 | 105.70 PK | | | 1.57 H | 78 | 71.16 | 34.54 |
| 2 | *2452.000 | 76.72 AV | | | 1.57 H | 78 | 42.18 | 34.54 |
| 3 | 2483.500 | 59.24 PK | 74.00 | -14.76 | 1.57 H | 78 | 24.63 | 34.61 |
| 4 | 2483.500 | 47.43 AV | 54.00 | -6.57 | 1.57 H | 78 | 12.82 | 34.61 |
| 5 | 4904.000 | 51.99 PK | 74.00 | -22.01 | 1.17 H | 165 | 10.34 | 41.65 |
| 6 | 4904.000 | 39.66 AV | 54.00 | -14.34 | 1.17 H | 165 | -1.99 | 41.65 |

**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 | *2452.000 | 101.21 PK | | | 1.00 V | 14 | 66.67 | 34.54 |
| 2 | *2452.000 | 71.87 AV | | | 1.00 V | 14 | 37.33 | 34.54 |
| 3 | 2483.500 | 57.97 PK | 74.00 | -16.03 | 1.00 V | 14 | 23.36 | 34.61 |
| 4 | 2483.500 | 46.28 AV | 54.00 | -7.72 | 1.00 V | 14 | 11.67 | 34.61 |
| 5 | 4904.000 | 51.80 PK | 74.00 | -22.20 | 1.14 V | 100 | 10.15 | 41.65 |
| 6 | 4904.000 | 39.32 AV | 54.00 | -14.68 | 1.14 V | 100 | -2.33 | 41.65 |

**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.

## 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 UNTIL |
|---|---|---|---|
| SPECTRUM ANALYZER | FSP 40 | 100036 | Mar. 13, 2008 |

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

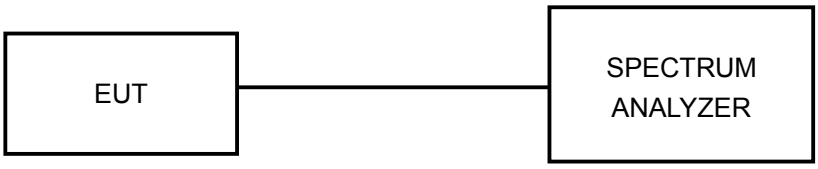
### 4.3.3 TEST PROCEDURE

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 300kHz 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.

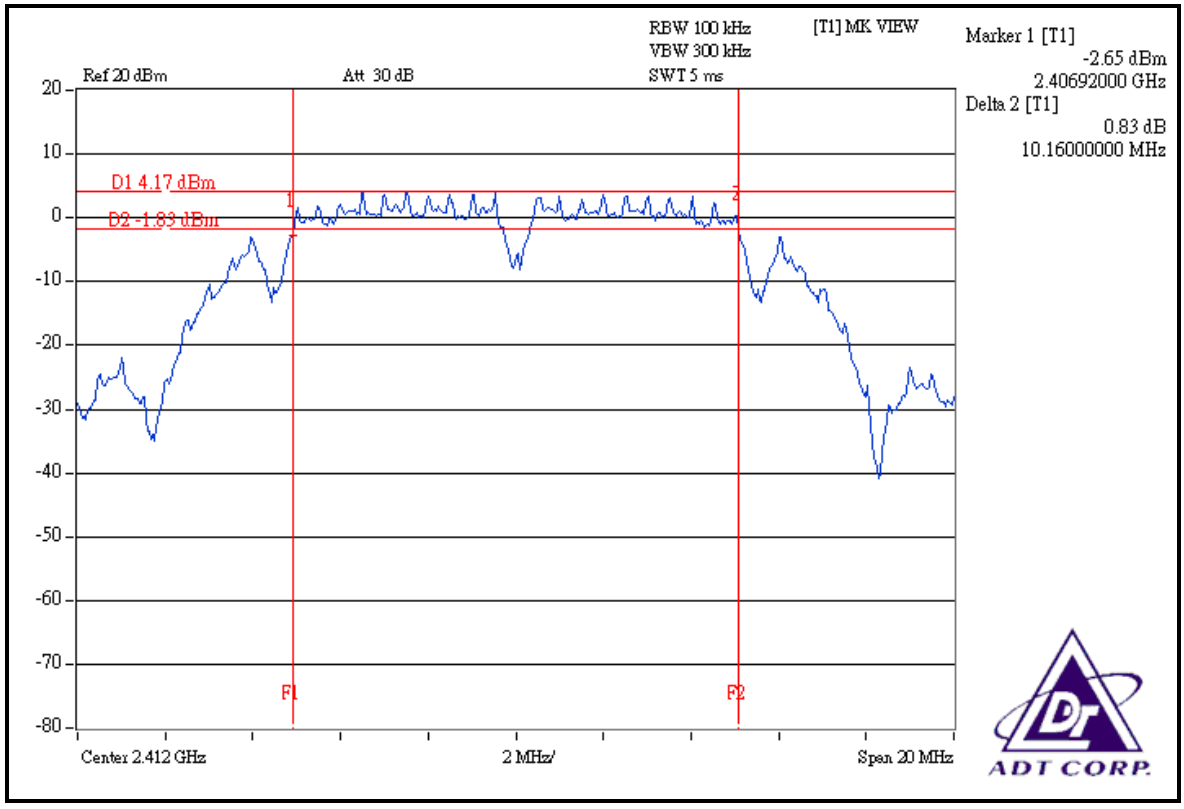
## 4.3.7 TEST RESULTS

### 802.11b DSSS MODULATION:

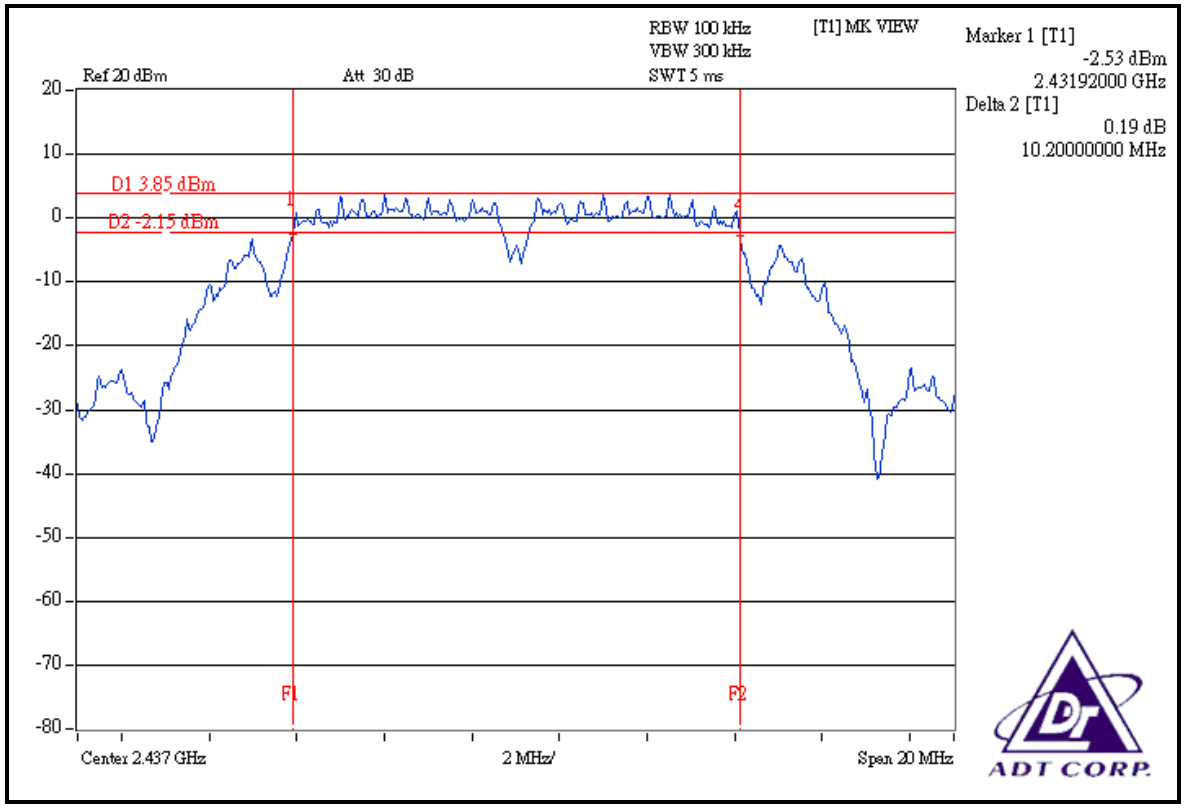
| | | | |
|---|---|---|---|
| **MODULATION TYPE** | DBPSK | **CHANNEL** | 1, 6, 11 |
| **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz | **TRANSFER RATE** | 1.0Mbps |
| **ENVIRONMENTAL CONDITIONS** | 25deg. C, 70%RH, 994hPa | **TESTED BY** | Jamison Chan |

| CHANNEL | CHANNEL FREQUENCY (MHz) | 6dB BANDWIDTH (MHz) | MINIMUM LIMIT (MHz) | PASS / FAIL |
|---|---|---|---|---|
| 1 | 2412 | 10.16 | 0.5 | PASS |
| 6 | 2437 | 10.20 | 0.5 | PASS |
| 11 | 2462 | 10.16 | 0.5 | PASS |

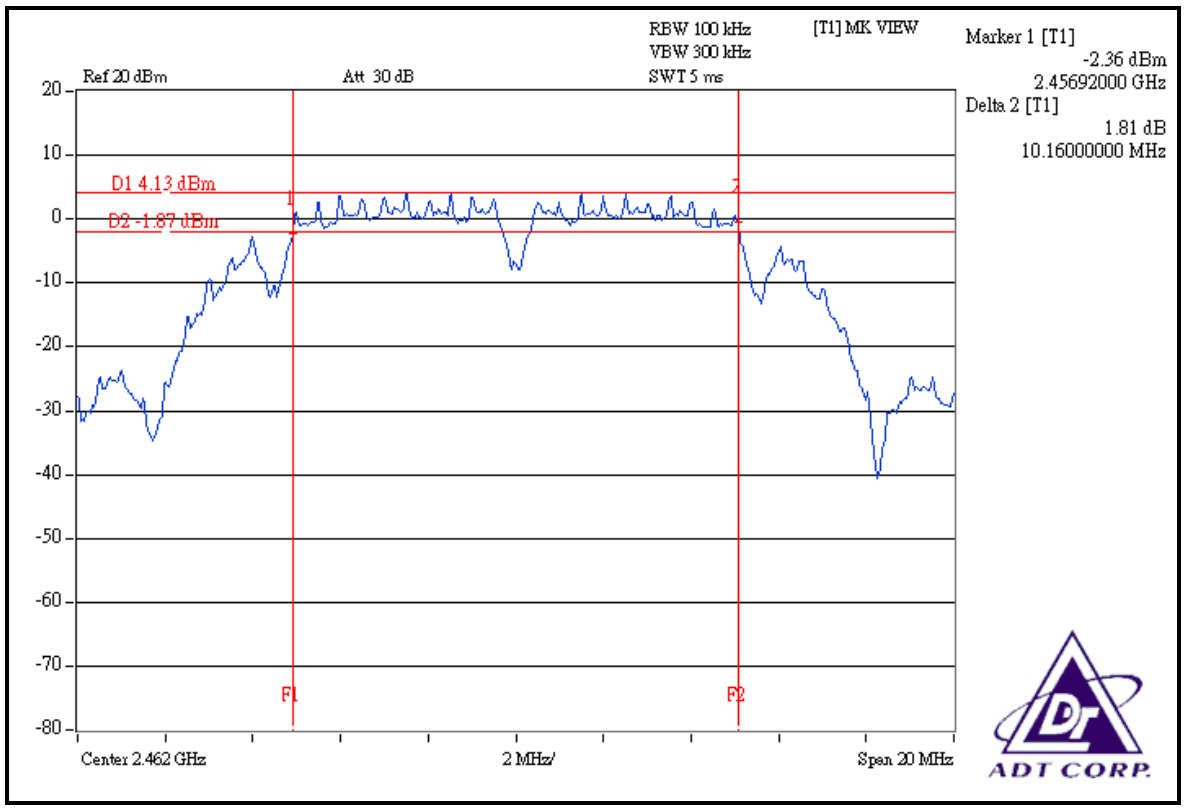
### CH 1



## CH 6


RBW 100 kHz
VBW 300 kHz
SWT 5 ms
[T1] MK VIEW
Marker 1 [T1]
-2.53 dBm
2.43192000 GHz
Delta 2 [T1]
0.19 dB
10.20000000 MHz
Ref 20 dBm
Att 30 dB
D1 3.85 dBm
D2 -2.15 dBm
F1
F2
Center 2.437 GHz
2 MHz/
Span 20 MHz
ADT CORP.

## CH 11

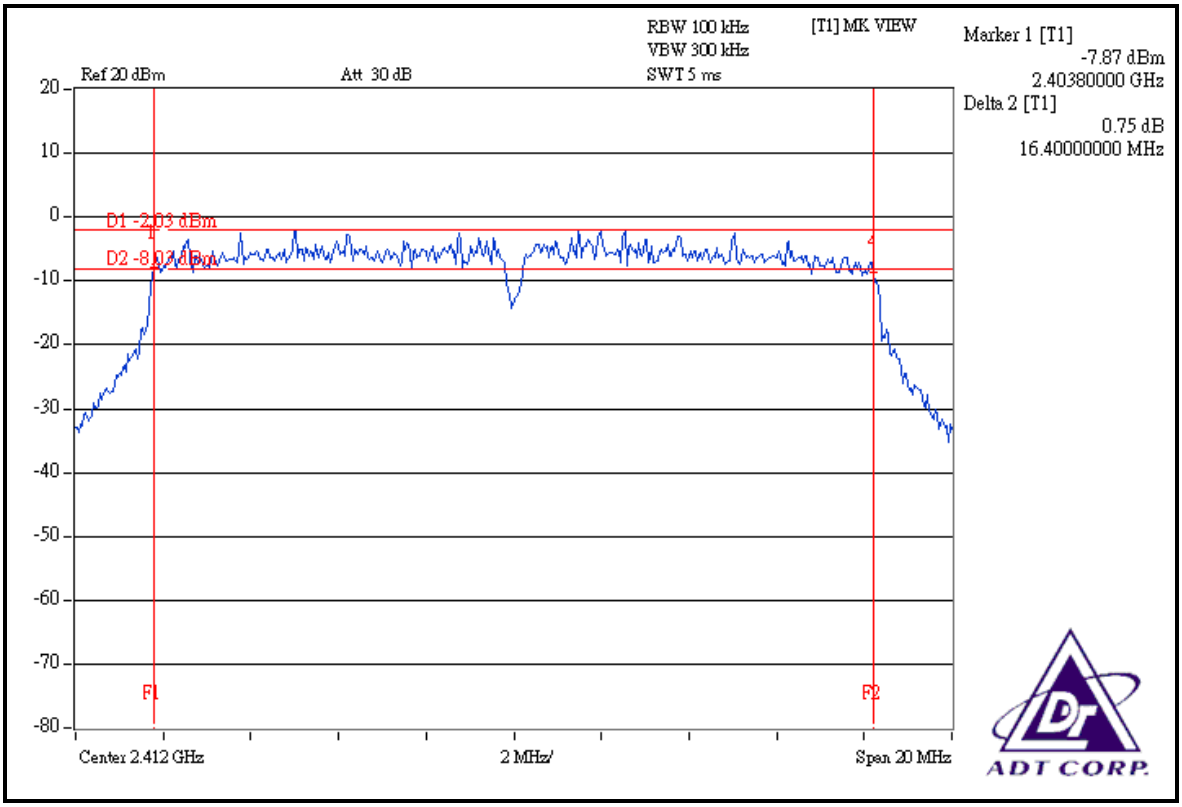

RBW 100 kHz
VBW 300 kHz
SWT 5 ms
[T1] MK VIEW
Marker 1 [T1]
-2.36 dBm
2.45692000 GHz
Delta 2 [T1]
1.81 dB
10.16000000 MHz
Ref 20 dBm
Att 30 dB
D1 4.13 dBm
D2 -1.87 dBm
F1
F2
Center 2.462 GHz
2 MHz/
Span 20 MHz
ADT CORP.

## 802.11g OFDM MODULATION:

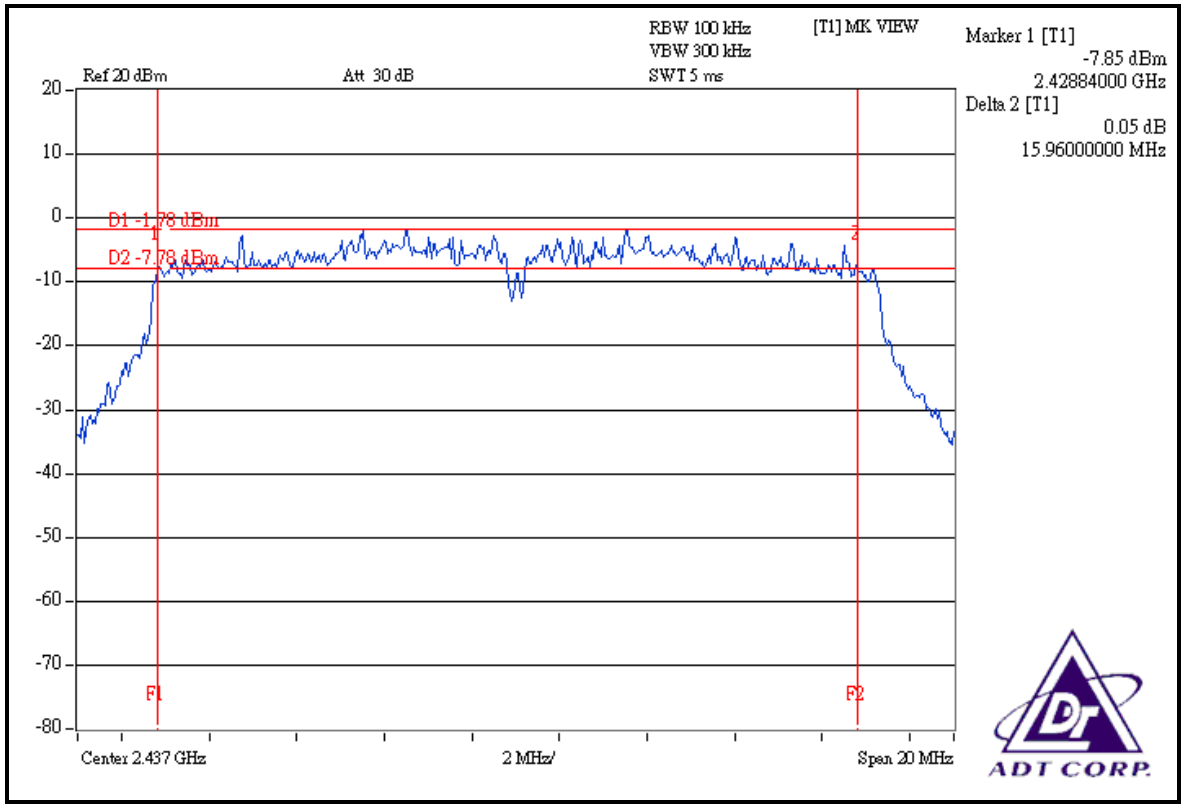
| MODULATION TYPE | BPSK | CHANNEL | 1, 6, 11 |
|---|---|---|---|
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | TRANSFER RATE | 6.0Mbps |
| ENVIRONMENTAL CONDITIONS | 25deg. C, 70%RH, 994hPa | TESTED BY | Jamison Chan |

| CHANNEL | CHANNEL FREQUENCY (MHz) | 6dB BANDWIDTH (MHz) | MINIMUM LIMIT (MHz) | PASS / FAIL |
|---|---|---|---|---|
| 1 | 2412 | 16.40 | 0.5 | PASS |
| 6 | 2437 | 15.96 | 0.5 | PASS |
| 11 | 2462 | 16.36 | 0.5 | PASS |

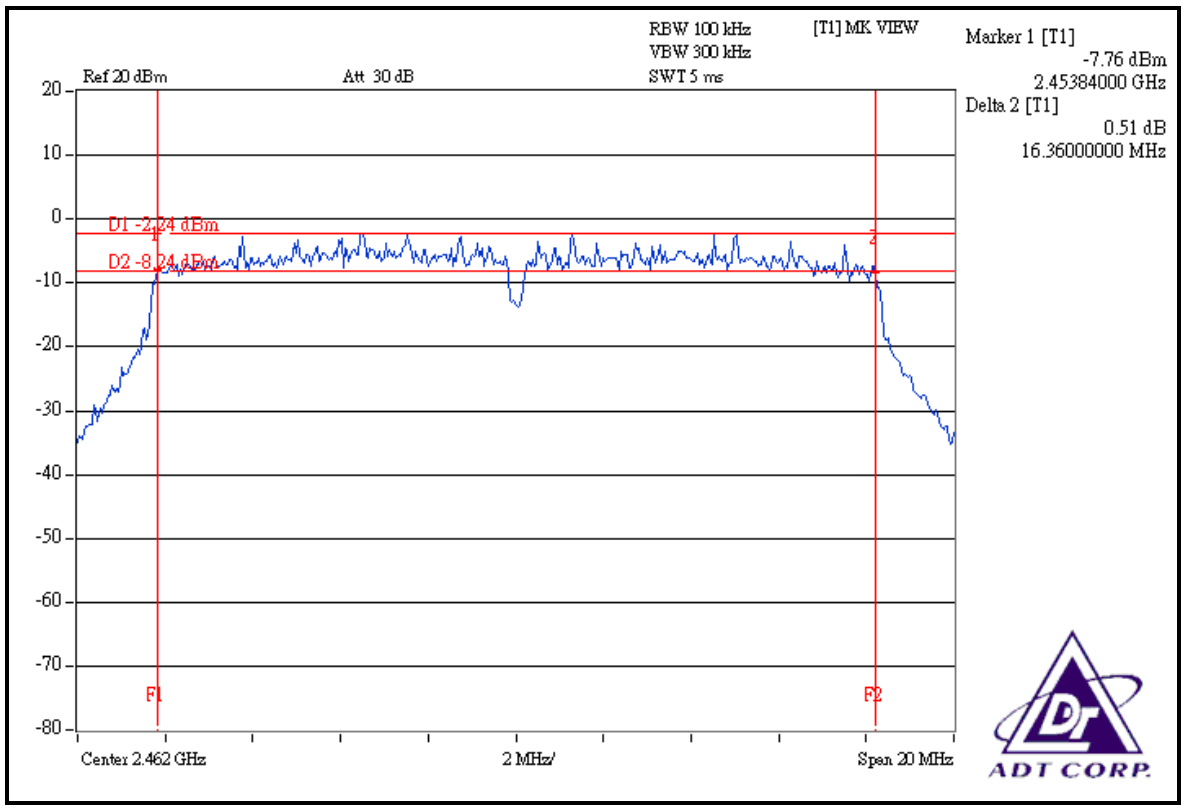
### CH 1



## CH 6


RBW 100 kHz
VBW 300 kHz
SWT 5 ms
[T1] MK VIEW
Marker 1 [T1]
-7.85 dBm
2.42884000 GHz
Delta 2 [T1]
0.05 dB
15.96000000 MHz
Ref 20 dBm
Att 30 dB
D1 -1.78 dBm
D2 -7.78 dBm
F1
F2
Center 2.437 GHz
2 MHz/
Span 20 MHz
ADT CORP.

## CH 11

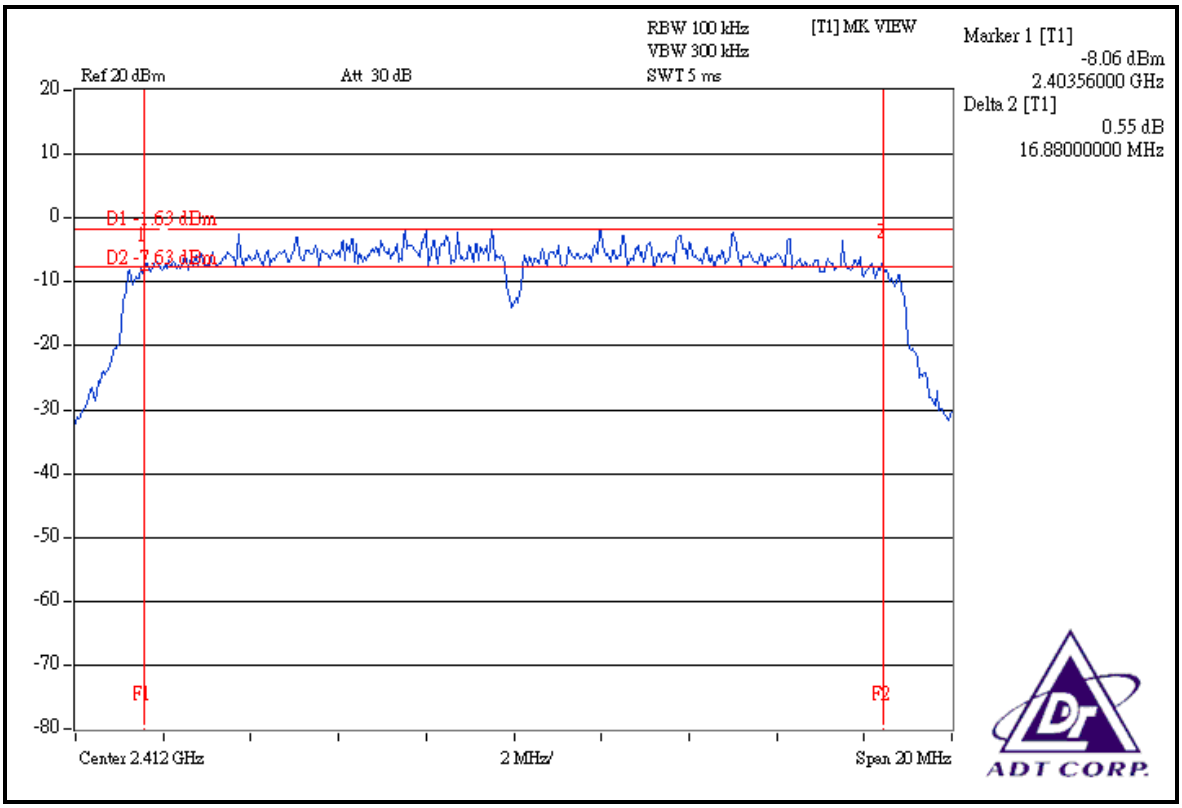

RBW 100 kHz
VBW 300 kHz
SWT 5 ms
[T1] MK VIEW
Marker 1 [T1]
-7.76 dBm
2.45384000 GHz
Delta 2 [T1]
0.51 dB
16.36000000 MHz
Ref 20 dBm
Att 30 dB
D1 -2.24 dBm
D2 -8.24 dBm
F1
F2
Center 2.462 GHz
2 MHz/
Span 20 MHz
ADT CORP.

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

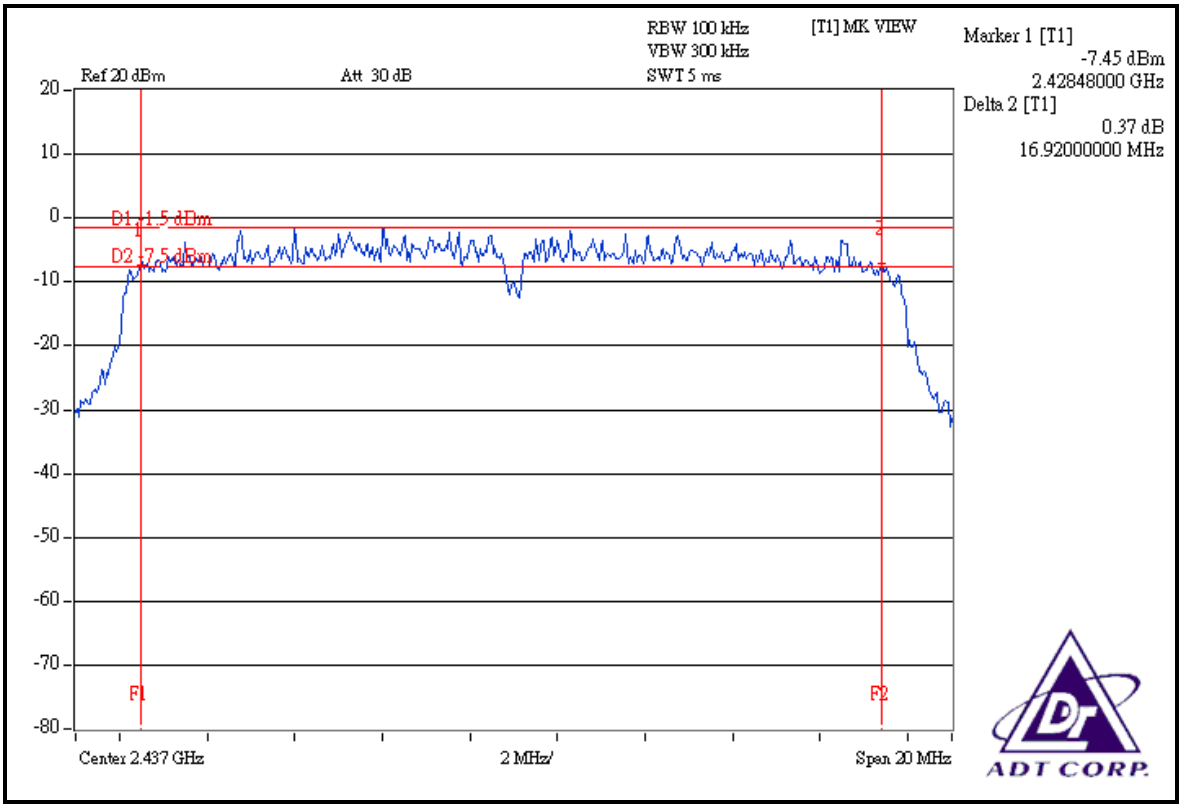
| | | | |
|---|---|---|---|
| **MODULATION TYPE** | BPSK | **CHANNEL** | 1, 6, 11 |
| **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz | **TRANSFER RATE** | 6.5Mbps |
| **ENVIRONMENTAL CONDITIONS** | 25deg. C, 70%RH, 994hPa | **TESTED BY** | Jamison Chan |

| CHANNEL | CHANNEL FREQUENCY (MHz) | 6dB BANDWIDTH (MHz) | | MINIMUM LIMIT (MHz) | PASS / FAIL |
|---|---|---|---|---|---|
| | | CHAIN 0 | CHAIN 1 | | |
| 1 | 2412 | 16.88 | 16.72 | 0.5 | PASS |
| 6 | 2437 | 16.92 | 16.72 | 0.5 | PASS |
| 11 | 2462 | 15.76 | 16.96 | 0.5 | PASS |

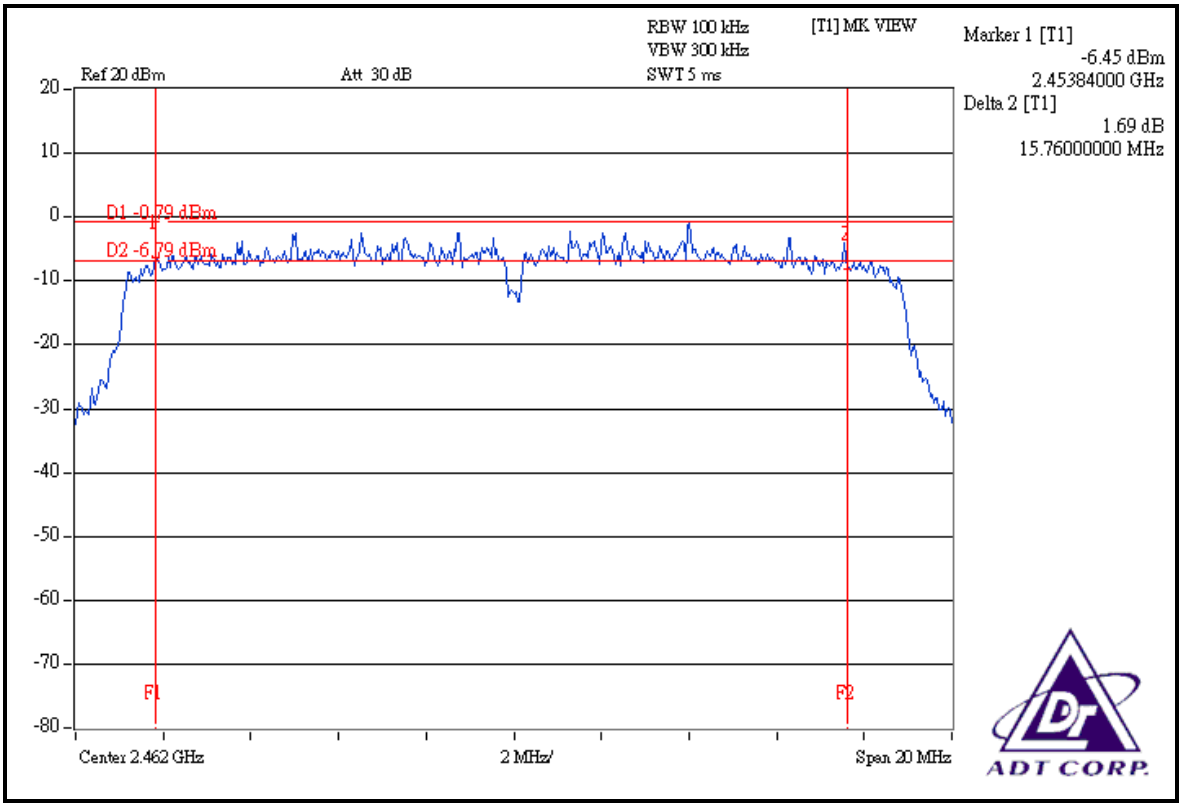
## FOR CHAIN 0: CH 1



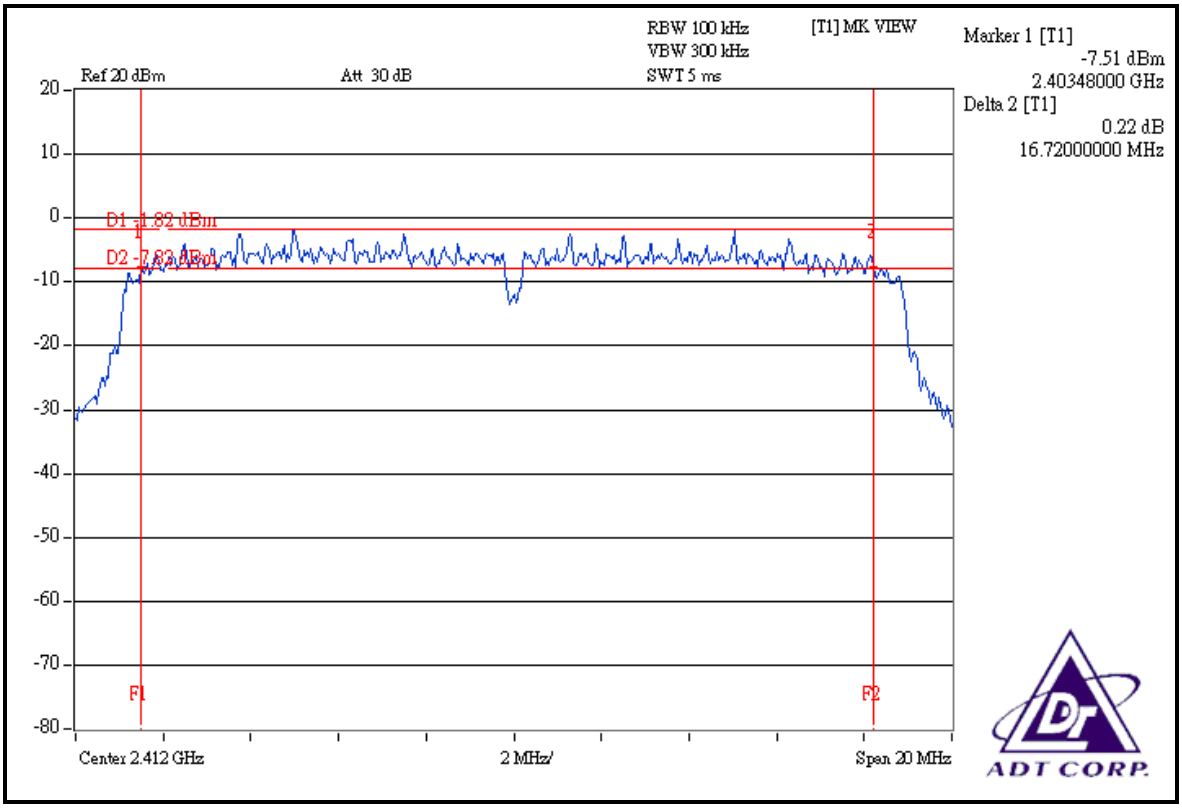
## CH 6


RBW 100 kHz
VBW 300 kHz
SWT 5 ms
[T1] MK VIEW
Marker 1 [T1]
-7.45 dBm
2.42848000 GHz
Delta 2 [T1]
0.37 dB
16.92000000 MHz
Ref 20 dBm
Att 30 dB
D1 -1.5 dBm
D2 -7.5 dBm
F1
F2
Center 2.437 GHz
2 MHz/
Span 20 MHz
ADT CORP.

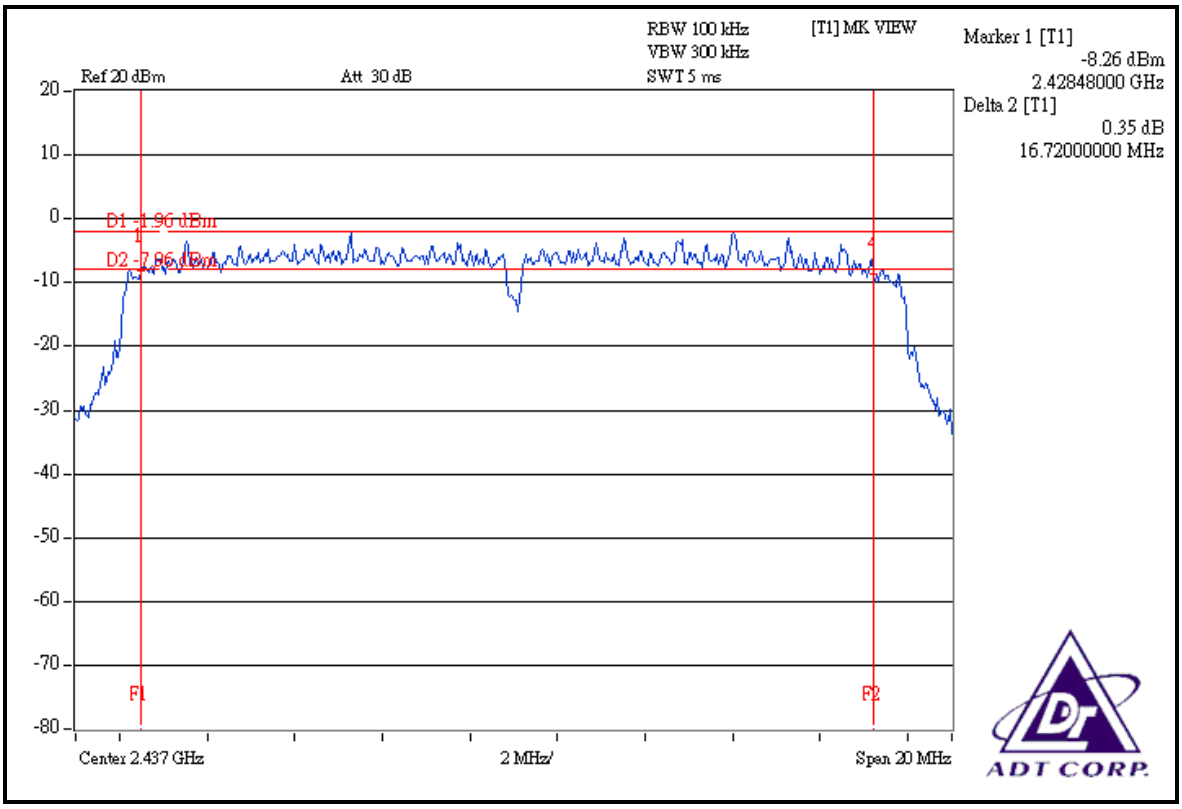
## CH 11


RBW 100 kHz
VBW 300 kHz
SWT 5 ms
[T1] MK VIEW
Marker 1 [T1]
-6.45 dBm
2.45384000 GHz
Delta 2 [T1]
1.69 dB
15.76000000 MHz
Ref 20 dBm
Att 30 dB
D1 -0.79 dBm
D2 -6.79 dBm
F1
F2
Center 2.462 GHz
2 MHz/
Span 20 MHz
ADT CORP.

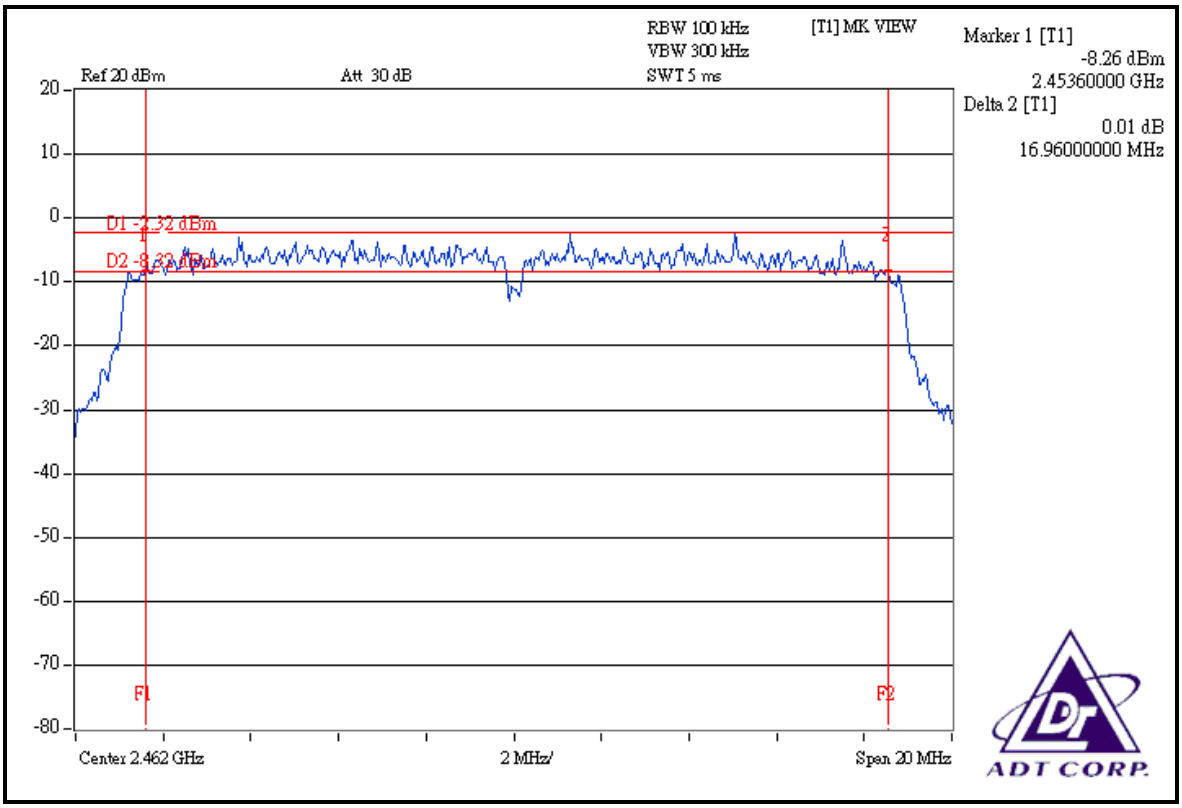
## FOR CHAIN 1: CH 1




## CH 6



## CH 11

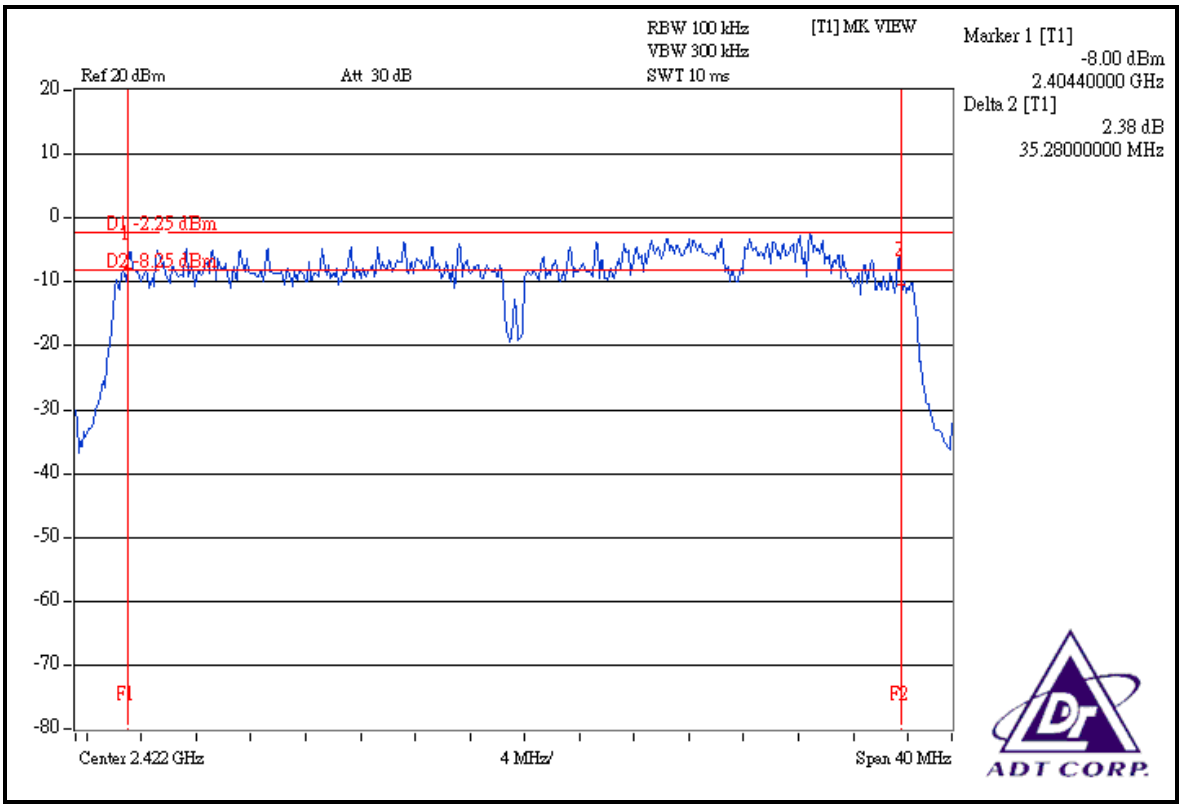

RBW 100 kHz
VBW 300 kHz
SWT 5 ms
[T1] MK VIEW
Marker 1 [T1]
-8.26 dBm
2.45360000 GHz
Delta 2 [T1]
0.01 dB
16.96000000 MHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
F1
F2
Center 2.462 GHz
2 MHz/
Span 20 MHz
ADT CORP.

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

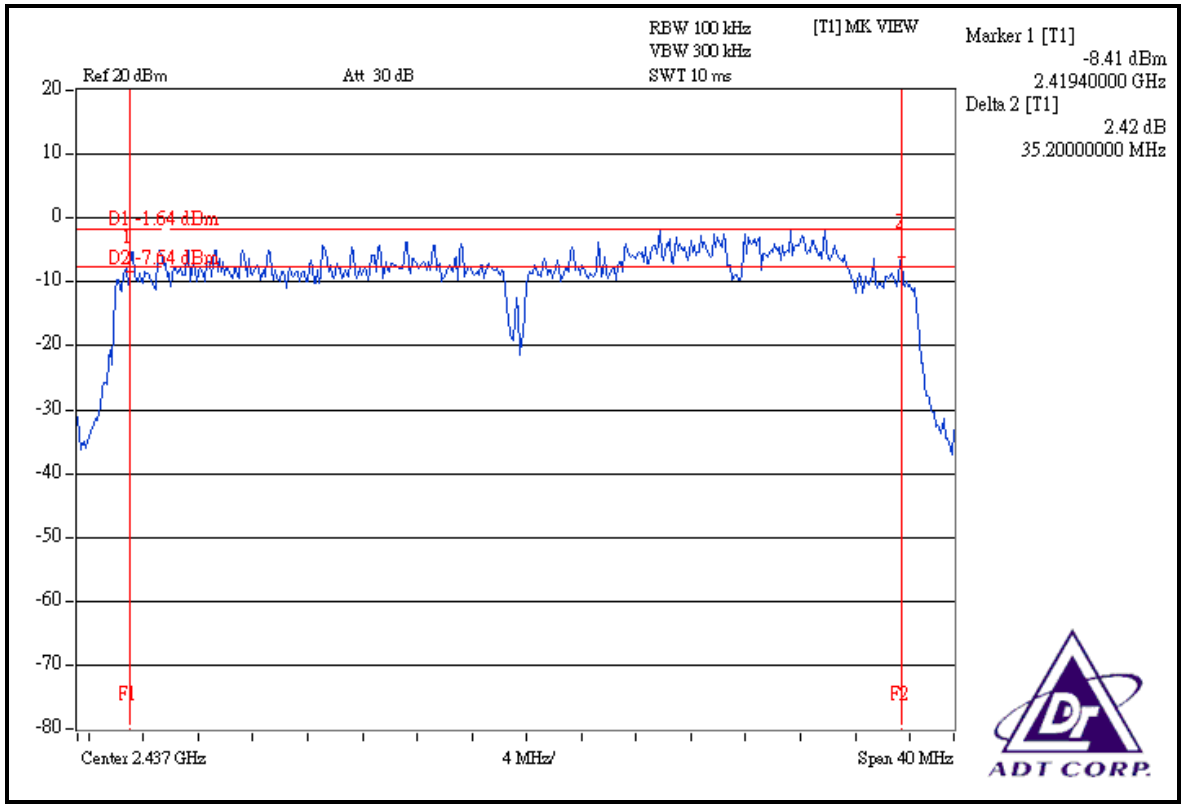
| | | | |
|---|---|---|---|
| **MODULATION TYPE** | BPSK | **CHANNEL** | 1, 4, 7 |
| **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz | **TRANSFER RATE** | 13.5Mbps |
| **ENVIRONMENTAL CONDITIONS** | 25deg. C, 70%RH, 994hPa | **TESTED BY** | Jamison Chan |

| CHANNEL | CHANNEL FREQUENCY (MHz) | 6dB BANDWIDTH (MHz) | | MINIMUM LIMIT (MHz) | PASS / FAIL |
|---|---|---|---|---|---|
| | | CHAIN 0 | CHAIN 1 | | |
| 1 | 2422 | 35.28 | 35.76 | 0.5 | PASS |
| 4 | 2437 | 35.20 | 36.08 | 0.5 | PASS |
| 7 | 2452 | 35.20 | 36.00 | 0.5 | PASS |

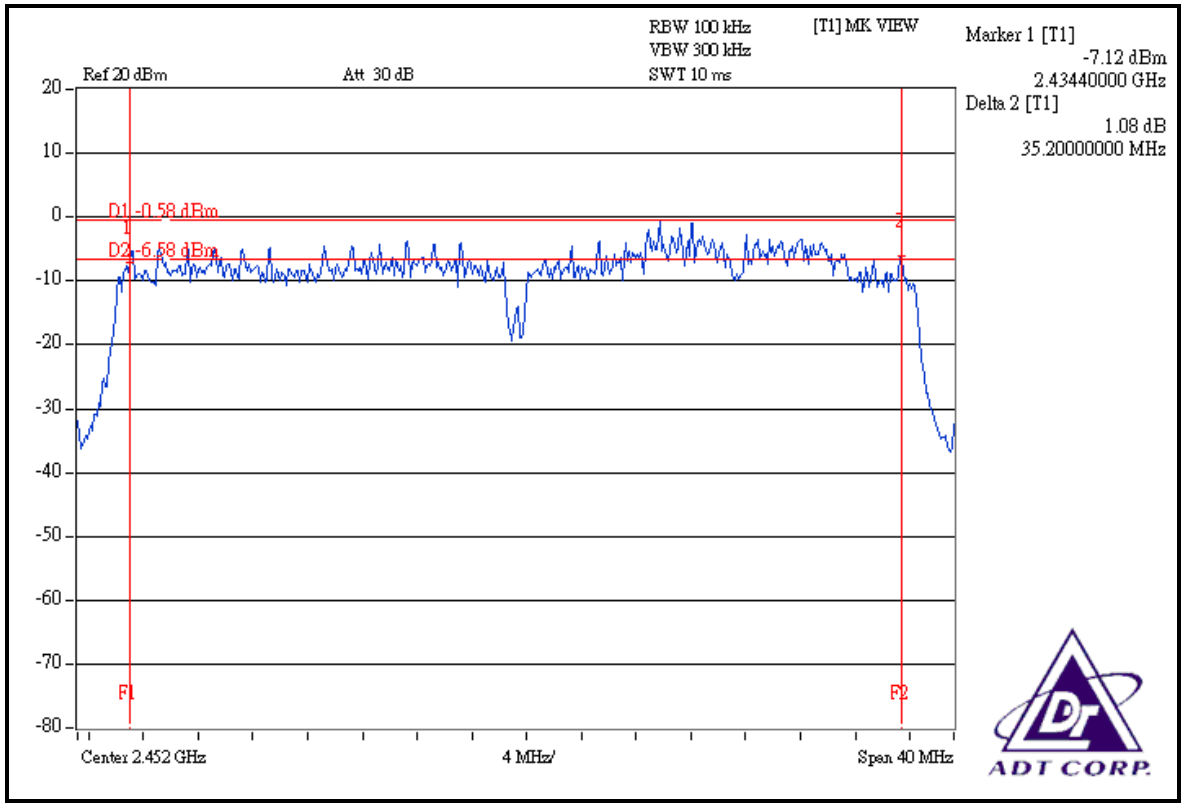
## FOR CHAIN 0: CH 1



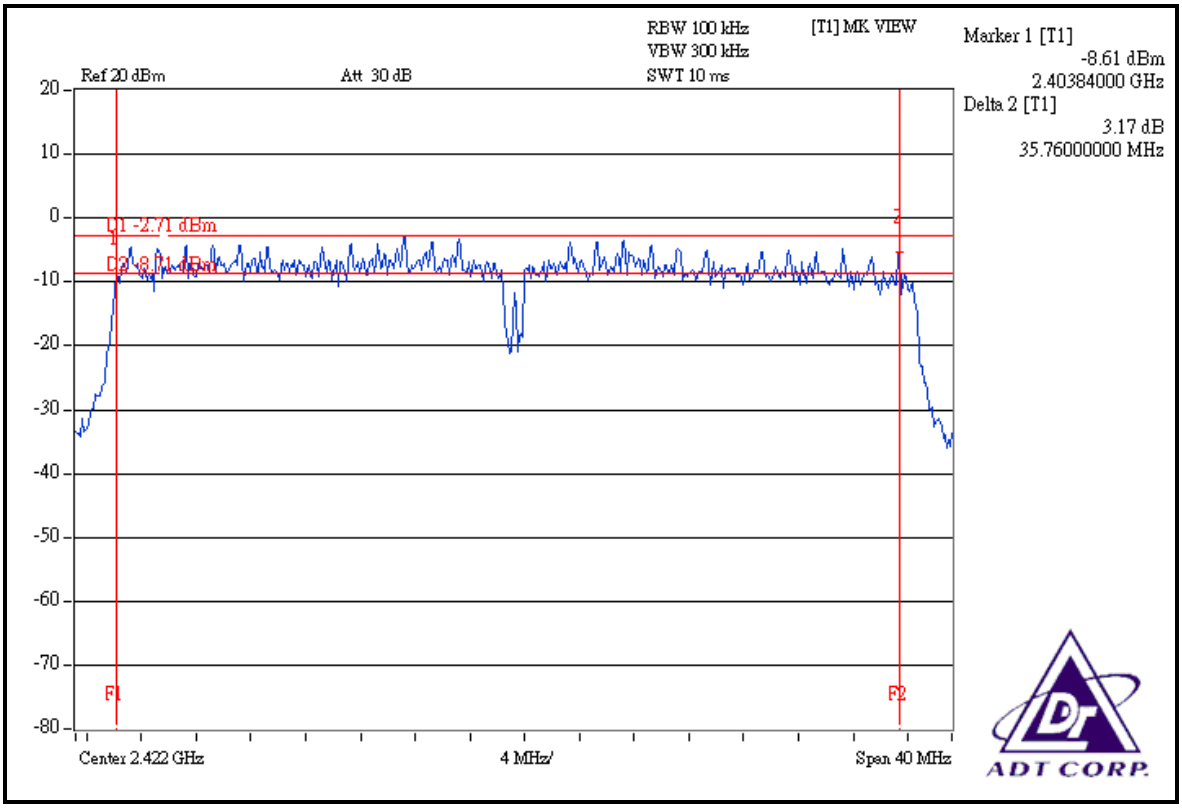
## CH 4


RBW 100 kHz
VBW 300 kHz
SWT 10 ms
[T1] MK VIEW
Marker 1 [T1]
-8.41 dBm
2.41940000 GHz
Delta 2 [T1]
2.42 dB
35.20000000 MHz
Ref 20 dBm
Att 30 dB
D1 -1.64 dBm
D2 -7.64 dBm
F1
F2
Center 2.437 GHz
4 MHz/
Span 40 MHz
ADT CORP.

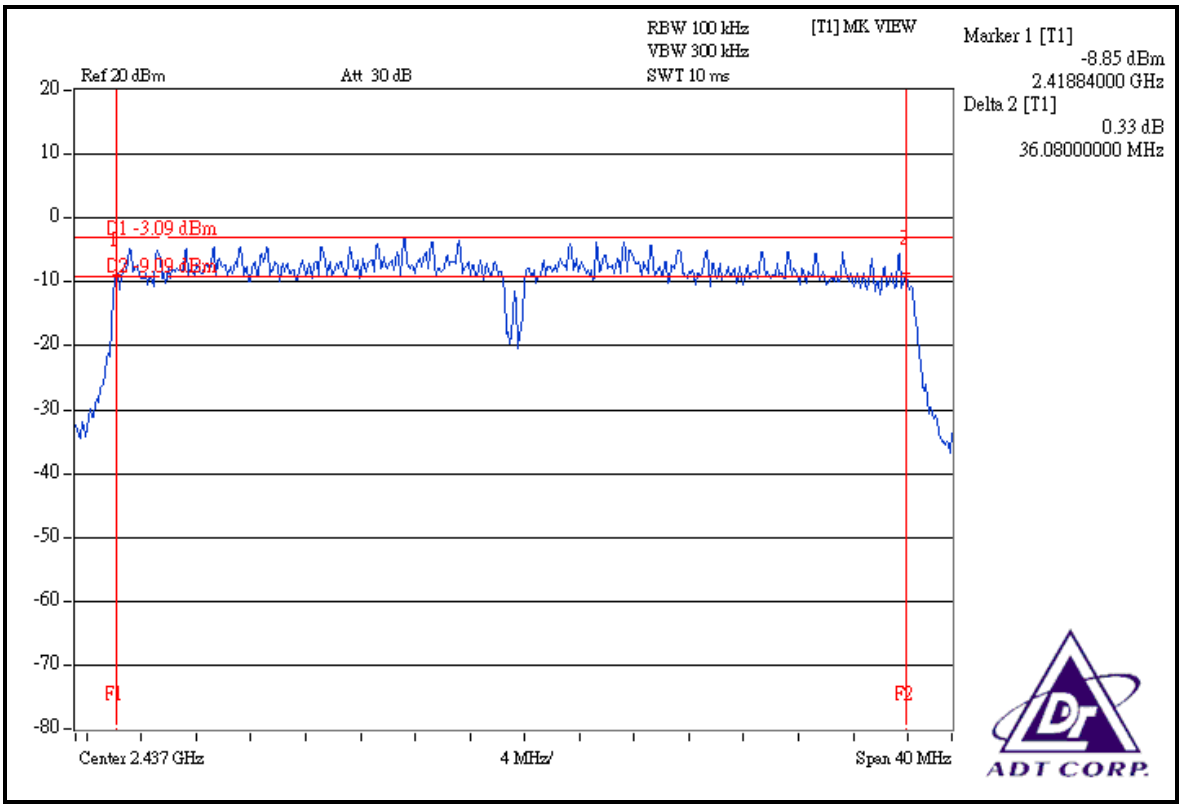
## CH 7


RBW 100 kHz
VBW 300 kHz
SWT 10 ms
[T1] MK VIEW
Marker 1 [T1]
-7.12 dBm
2.43440000 GHz
Delta 2 [T1]
1.08 dB
35.20000000 MHz
Ref 20 dBm
Att 30 dB
D1 -0.58 dBm
D2 -6.58 dBm
F1
F2
Center 2.452 GHz
4 MHz/
Span 40 MHz
ADT CORP.

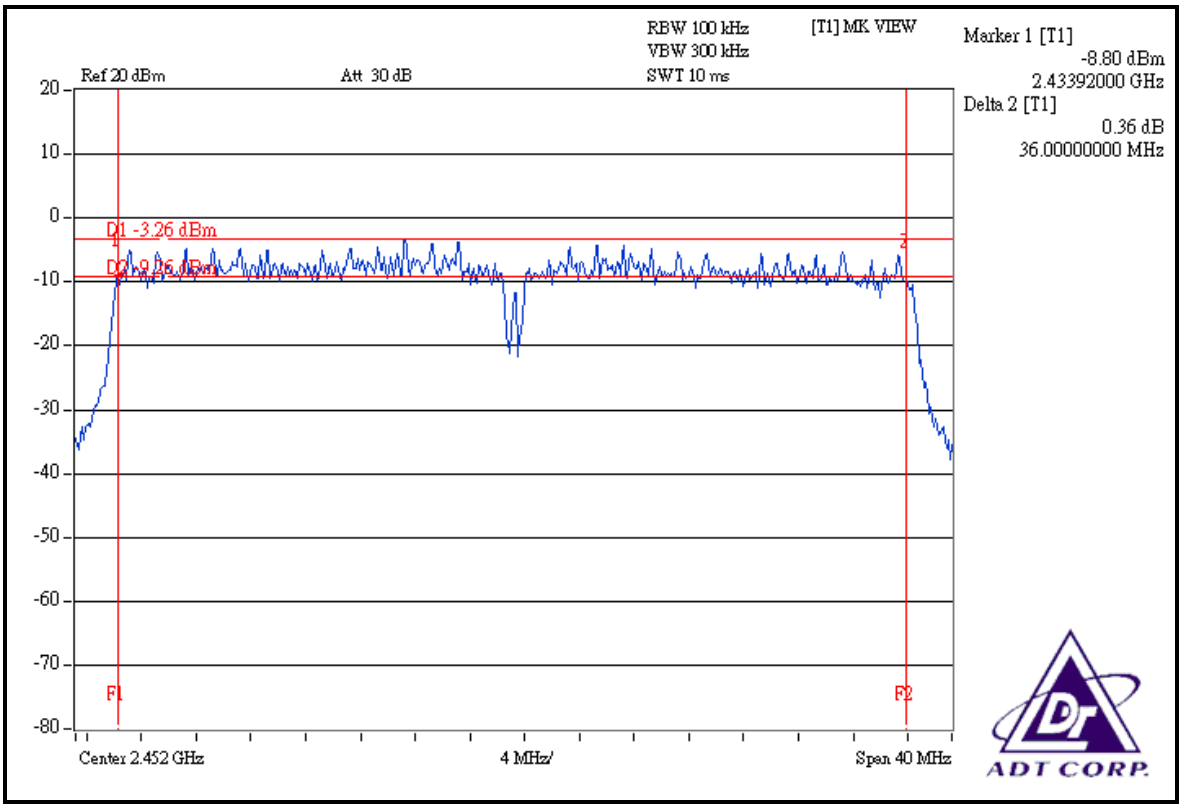
## FOR CHAIN 1: CH 1




## CH 4



## CH 7


RBW 100 kHz
VBW 300 kHz
SWT 10 ms
[T1] MK VIEW
Marker 1 [T1]
-8.80 dBm
2.43392000 GHz
Delta 2 [T1]
0.36 dB
36.00000000 MHz
Ref 20 dBm
Att 30 dB
D1 -3.26 dBm
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
F1
F2
Center 2.452 GHz
4 MHz/
Span 40 MHz
ADT CORP.

## 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 UNTIL |
|---|---|---|---|
| ROHDE & SCHWARZ Spectrum Analyzer | FSP 40 | 100036 | Mar. 13, 2008 |
| ROHDE & SCHWARZ Signal Generator | SMR 40 | 100231 | Mar. 27, 2008 |
| Tektronix Oscilloscope | TDS1012 | C019167 | Jan. 16, 2008 |
| Narda Detector | 4503A | FSCM99899 | NA |

**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. A detector was used on the output port of the EUT. An oscilloscope was used to read the response of the detector.
2. Replaced the EUT by the signal generator. The center frequency of the S.G was adjusted to the center frequency of the measured channel.
3. Adjusted the power to have the same reading on oscilloscope. 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

## 4.4.7 TEST RESULTS

### 802.11b DSSS MODULATION:

| MODULATION TYPE | DBPSK | CHANNEL | 1, 6, 11 |
|---|---|---|---|
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | TRANSFER RATE | 1.0Mbps |
| ENVIRONMENTAL CONDITIONS | 25deg. C, 70%RH, 994hPa | TESTED BY | Jamison Chan |

| CHANNEL | CHANNEL FREQUENCY (MHz) | PEAK POWER OUTPUT (mW) | PEAK POWER OUTPUT (dBm) | PEAK POWER LIMIT (dBm) | PASS / FAIL |
|---|---|---|---|---|---|
| 1 | 2412 | 46.559 | 16.68 | 30 | PASS |
| 6 | 2437 | 45.604 | 16.59 | 30 | PASS |
| 11 | 2462 | 43.053 | 16.34 | 30 | PASS |

### 802.11g OFDM MODULATION:

| MODULATION TYPE | BPSK | CHANNEL | 1, 6, 11 |
|---|---|---|---|
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | TRANSFER RATE | 6.0Mbps |
| ENVIRONMENTAL CONDITIONS | 25deg. C, 70%RH, 994hPa | TESTED BY | Jamison Chan |

| CHANNEL | CHANNEL FREQUENCY (MHz) | PEAK POWER OUTPUT (mW) | PEAK POWER OUTPUT (dBm) | PEAK POWER LIMIT (dBm) | PASS / FAIL |
|---|---|---|---|---|---|
| 1 | 2412 | 40.832 | 16.11 | 30 | PASS |
| 6 | 2437 | 37.325 | 15.72 | 30 | PASS |
| 11 | 2462 | 39.084 | 15.92 | 30 | PASS |

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

| | | | |
|---|---|---|---|
| **MODULATION TYPE** | BPSK | **CHANNEL** | 1, 6, 11 |
| **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz | **TRANSFER RATE** | 6.5Mbps |
| **ENVIRONMENTAL CONDITIONS** | 25deg. C, 70%RH, 994hPa | **TESTED BY** | Jamison Chan |

| CHAN. | CHANNEL FREQUENCY (MHz) | PEAK POWER OUTPUT (mW) | | PEAK POWER OUTPUT (dBm) | | TOTAL PEAK POWER (mW) | TOTAL PEAK POWER (dBm) | PEAK POWER LIMIT (dBm) | PASS / FAIL |
|---|---|---|---|---|---|---|---|---|---|
| | | CHAIN 0 | CHAIN 1 | CHAIN 0 | CHAIN 1 | | | | |
| 1 | 2412 | 17.593 | 16.106 | 12.44 | 12.07 | 33.645 | 15.27 | 30 | PASS |
| 6 | 2437 | 17.298 | 15.031 | 12.38 | 11.77 | 32.330 | 15.10 | 30 | PASS |
| 11 | 2462 | 16.558 | 15.524 | 12.19 | 11.91 | 32.082 | 15.06 | 30 | PASS |

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

| | | | |
|---|---|---|---|
| **MODULATION TYPE** | BPSK | **CHANNEL** | 1, 4, 7 |
| **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz | **TRANSFER RATE** | 13.5Mbps |
| **ENVIRONMENTAL CONDITIONS** | 25deg. C, 70%RH, 994hPa | **TESTED BY** | Jamison Chan |

| CHANNEL | CHANNEL FREQUENCY (MHz) | PEAK POWER OUTPUT (mW) | | PEAK POWER OUTPUT (dBm) | | TOTAL PEAK POWER (mW) | TOTAL PEAK POWER (dBm) | PEAK POWER LIMIT (dBm) | PASS / FAIL |
|---|---|---|---|---|---|---|---|---|---|
| | | CHAIN 0 | CHAIN 1 | CHAIN 0 | CHAIN 1 | | | | |
| 1 | 2422 | 21.380 | 20.941 | 13.30 | 13.21 | 42.321 | 16.27 | 30 | PASS |
| 4 | 2437 | 24.155 | 18.793 | 13.83 | 12.74 | 42.948 | 16.33 | 30 | PASS |
| 7 | 2452 | 21.184 | 18.923 | 13.26 | 12.77 | 40.107 | 16.03 | 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 UNTIL |
|---|---|---|---|
| SPECTRUM ANALYZER | FSP 40 | 100036 | Mar. 13, 2008 |

**NOTE:** 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

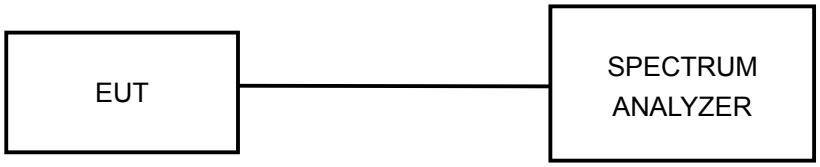
The transmitter output was connected to the spectrum analyzer through an attenuator, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3kHz RBW and 30kHz VBW, set sweep time = span/3kHz. The power spectral density was measured and recorded.

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

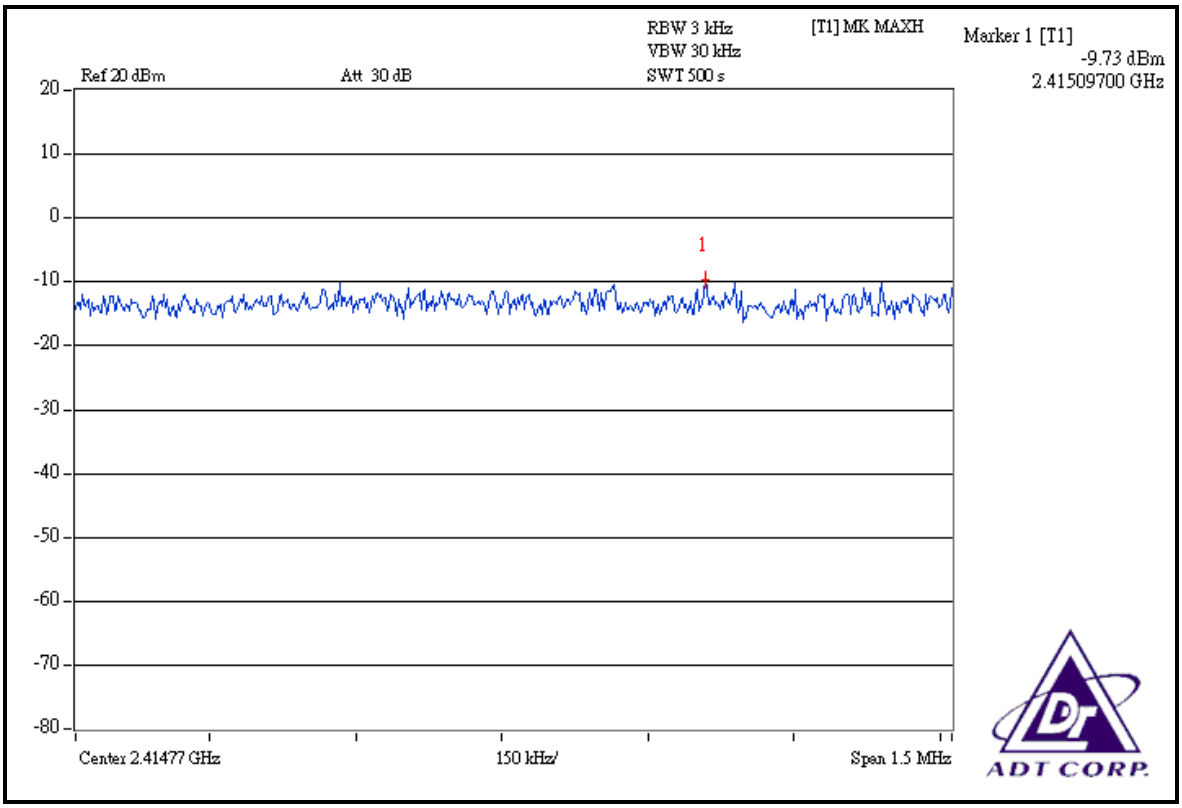
## 4.5.7 TEST RESULTS

### 802.11b DSSS MODULATION:

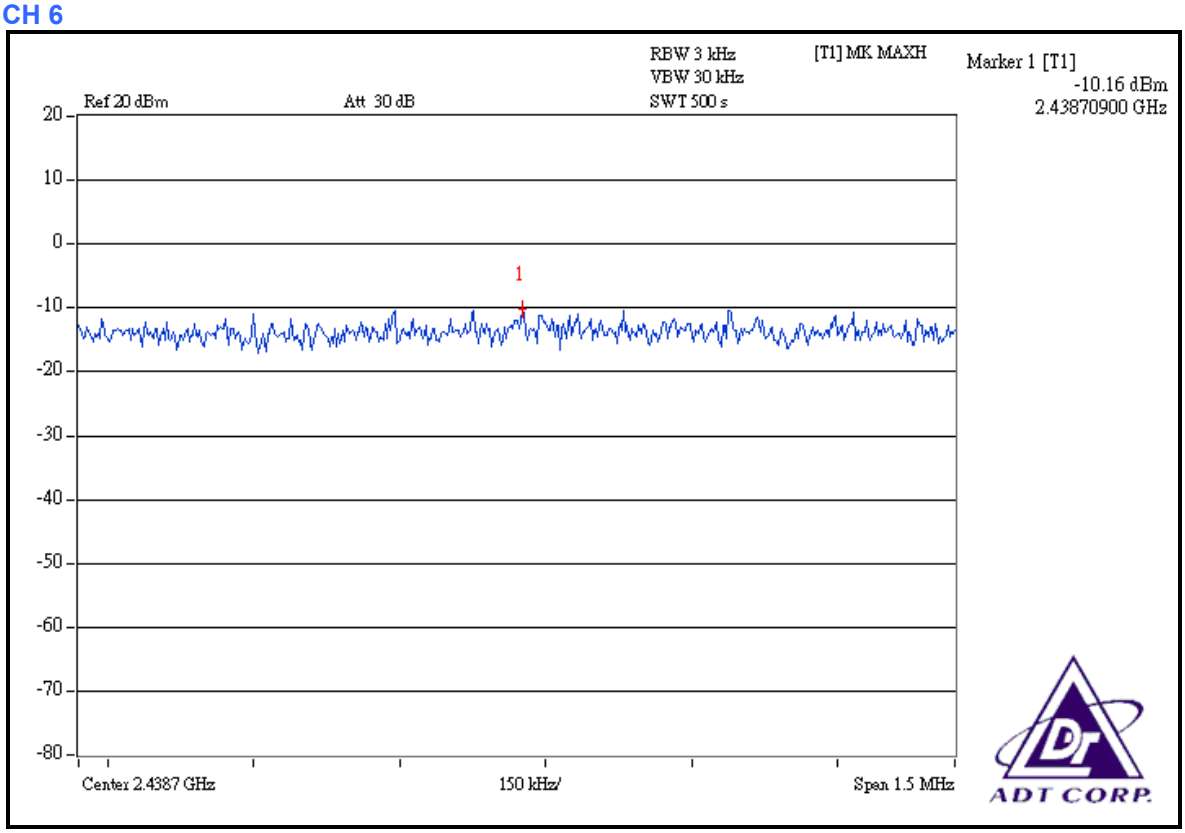
| | | | |
|---|---|---|---|
| **MODULATION TYPE** | DBPSK | **CHANNEL** | 1, 6, 11 |
| **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz | **TRANSFER RATE** | 1.0Mbps |
| **ENVIRONMENTAL CONDITIONS** | 25deg. C, 70%RH, 994hPa | **TESTED BY** | Jamison Chan |

| CHANNEL | CHANNEL FREQUENCY (MHz ) | RF POWER LEVEL IN 3kHz BW (dBm) | MAXIMUM LIMIT (dBm) | PASS / FAIL |
|---|---|---|---|---|
| 1 | 2412 | -9.73 | 8 | PASS |
| 6 | 2437 | -10.16 | 8 | PASS |
| 11 | 2462 | -10.03 | 8 | PASS |

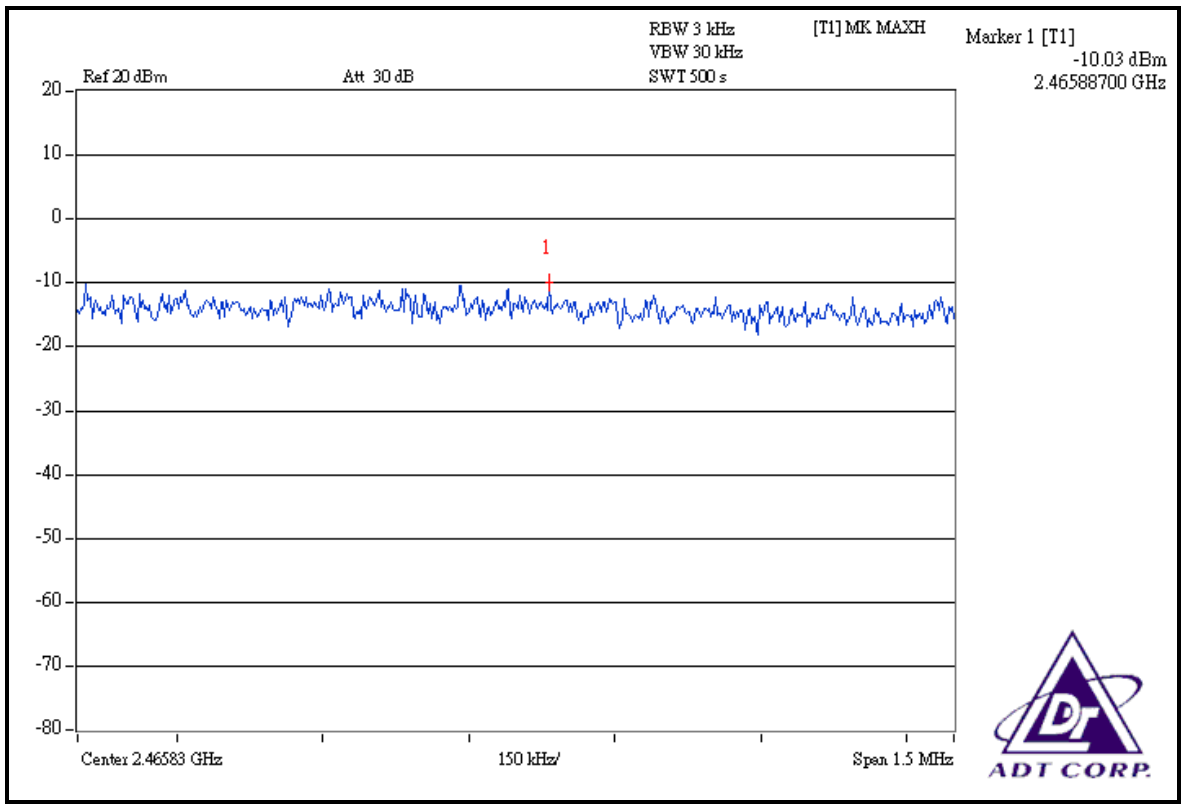
### CH 1



## CH 6


RBW 3 kHz
VBW 30 kHz
SWT 500 s
[T1] MK MAXH
Marker 1 [T1]
-10.16 dBm
2.43870900 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
1
Center 2.4387 GHz
150 kHz/
Span 1.5 MHz
ADT CORP.

## CH 11

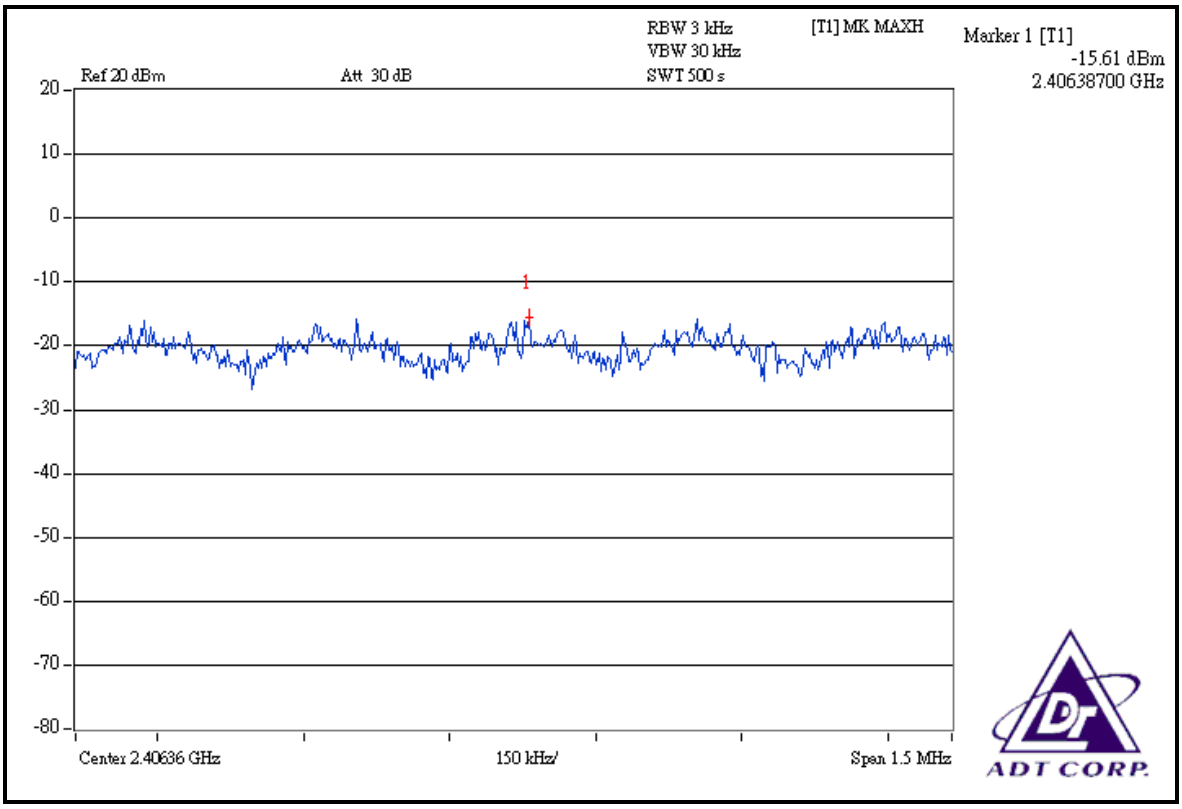

RBW 3 kHz
VBW 30 kHz
SWT 500 s
[T1] MK MAXH
Marker 1 [T1]
-10.03 dBm
2.46588700 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
1
Center 2.46583 GHz
150 kHz/
Span 1.5 MHz
ADT CORP.

## 802.11g OFDM MODULATION:

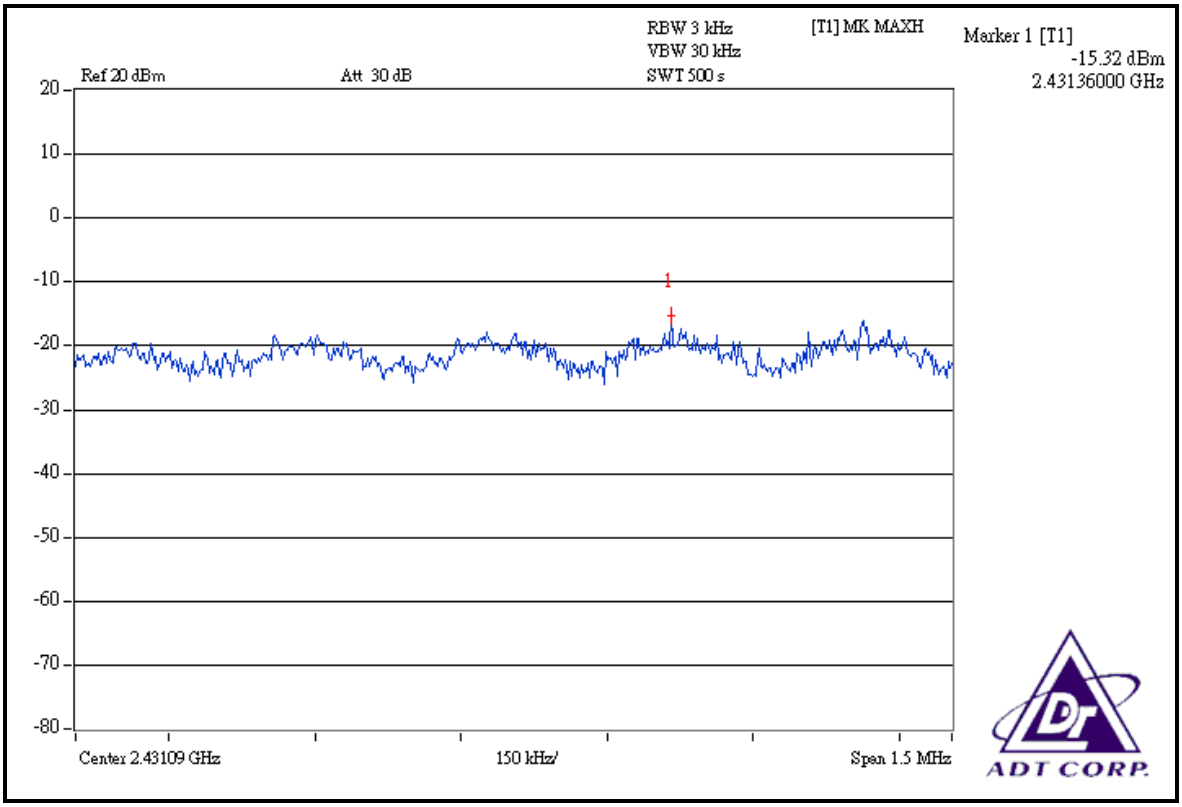
| MODULATION TYPE | BPSK | CHANNEL | 1, 6, 11 |
|---|---|---|---|
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | TRANSFER RATE | 6.0Mbps |
| ENVIRONMENTAL CONDITIONS | 25deg. C, 70%RH, 994hPa | TESTED BY | Jamison Chan |

| CHANNEL | CHANNEL FREQUENCY (MHz ) | RF POWER LEVEL IN 3kHz BW (dBm) | MAXIMUM LIMIT (dBm) | PASS / FAIL |
|---|---|---|---|---|
| 1 | 2412 | -15.61 | 8 | PASS |
| 6 | 2437 | -15.32 | 8 | PASS |
| 11 | 2462 | -16.01 | 8 | PASS |

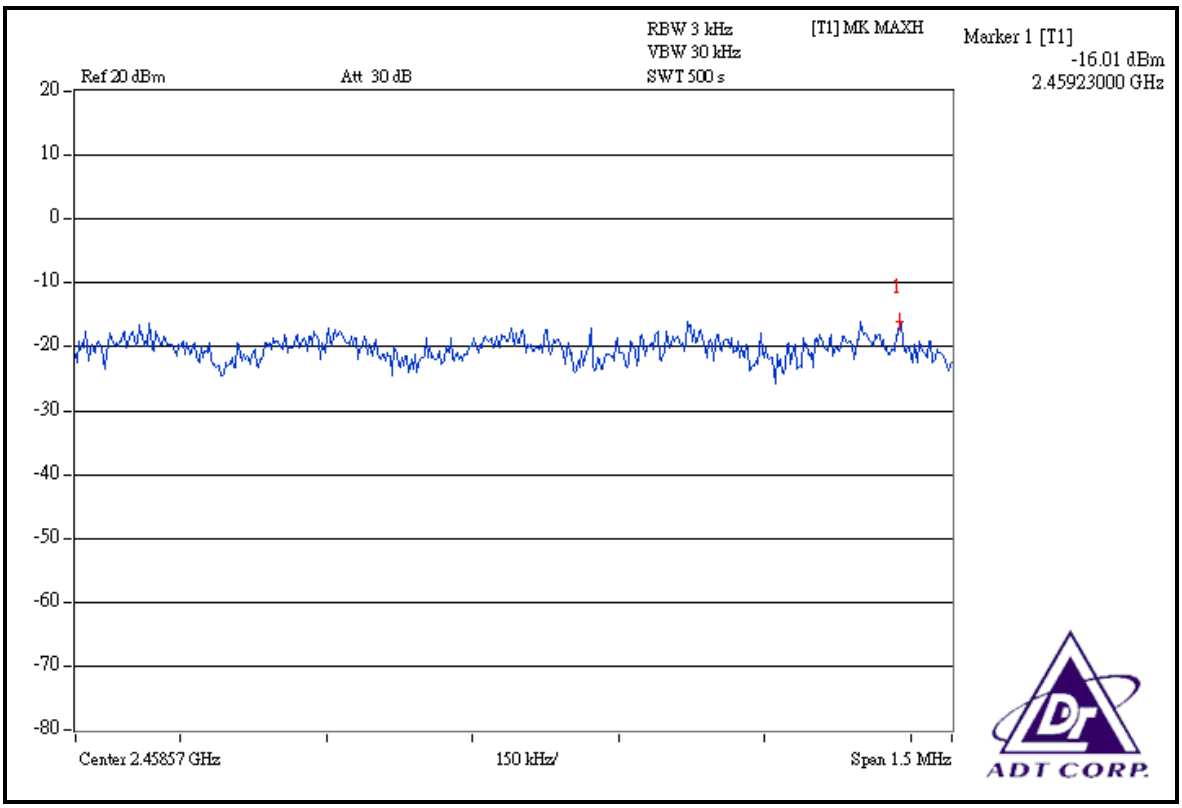
### CH 1



## CH 6


RBW 3 kHz
VBW 30 kHz
SWT 500 s
[T1] MK MAXH
Marker 1 [T1]
-15.32 dBm
2.43136000 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 2.43109 GHz
150 kHz/
Span 1.5 MHz
ADT CORP.

## CH 11

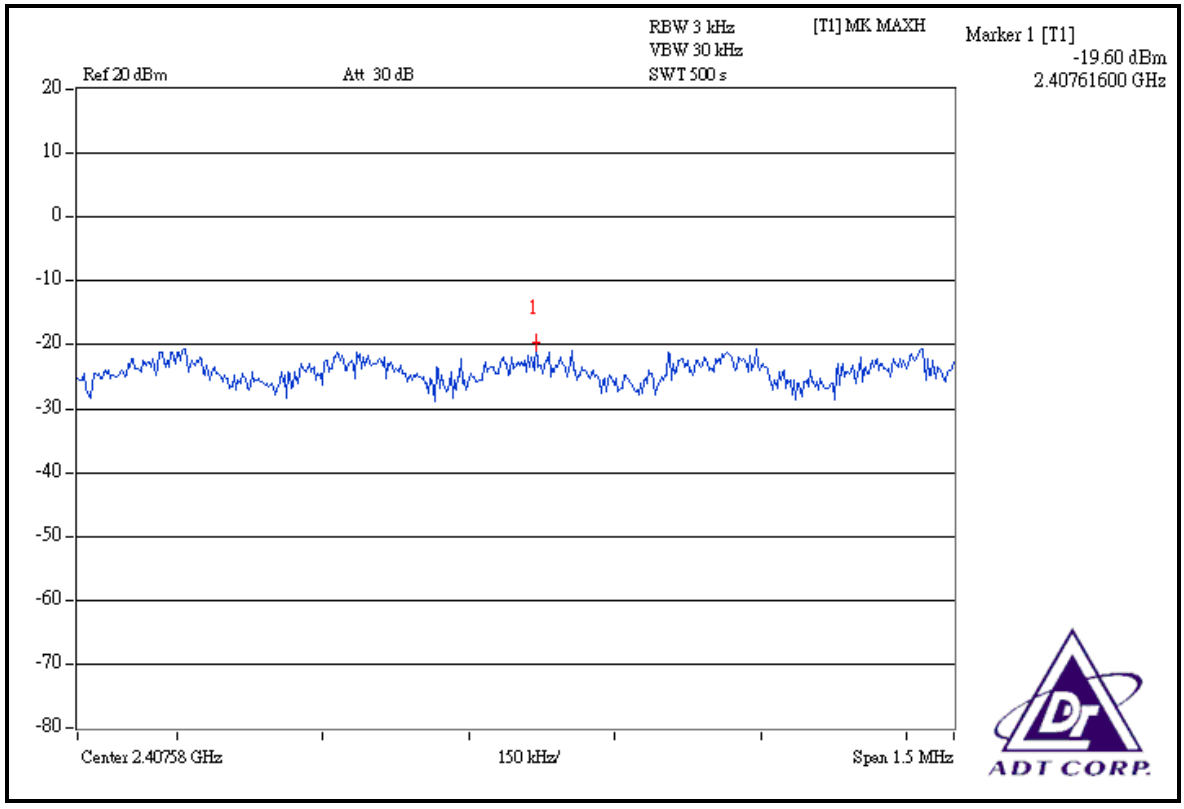

RBW 3 kHz
VBW 30 kHz
SWT 500 s
[T1] MK MAXH
Marker 1 [T1]
-16.01 dBm
2.45923000 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 2.45857 GHz
150 kHz/
Span 1.5 MHz
ADT CORP.

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

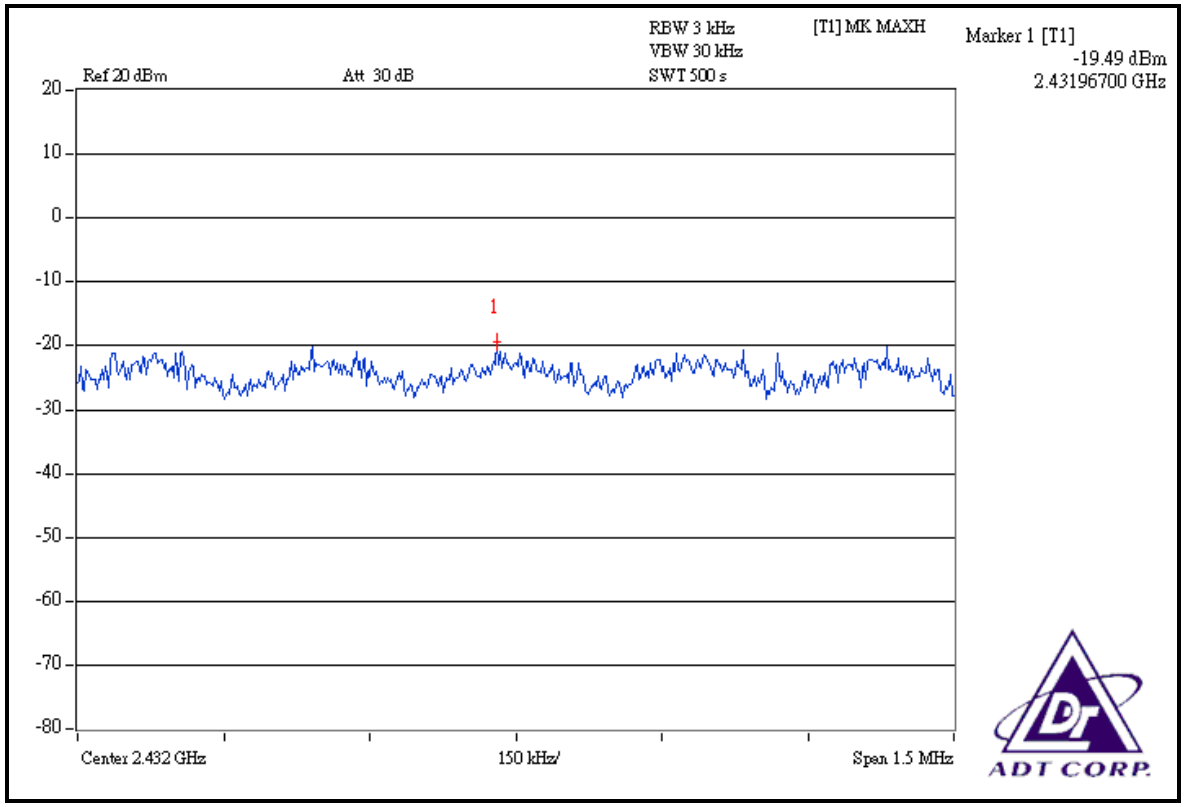
| | | | |
|---|---|---|---|
| **MODULATION TYPE** | BPSK | **CHANNEL** | 1, 6, 11 |
| **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz | **TRANSFER RATE** | 6.5Mbps |
| **ENVIRONMENTAL CONDITIONS** | 25deg. C, 70%RH, 994hPa | **TESTED BY** | Jamison Chan |

| CHANNEL | CHANNEL FREQUENCY (MHz) | RF POWER LEVEL IN 3kHz BW (mW) | | RF POWER LEVEL IN 3kHz BW (dBm) | | TOTAL POWER DENSITY (mW) | TOTAL POWER DENSITY (dBm) | MAX. LIMIT (dBm) | PASS / FAIL |
|---|---|---|---|---|---|---|---|---|---|
| | | CHAIN 0 | CHAIN 1 | CHAIN 0 | CHAIN 1 | | | | |
| 1 | 2412 | 0.011 | 0.012 | -19.60 | -19.24 | 0.023 | -16.41 | 8 | PASS |
| 6 | 2437 | 0.011 | 0.022 | -19.49 | -16.59 | 0.033 | -14.79 | 8 | PASS |
| 11 | 2462 | 0.009 | 0.008 | -20.33 | -20.94 | 0.017 | -17.61 | 8 | PASS |

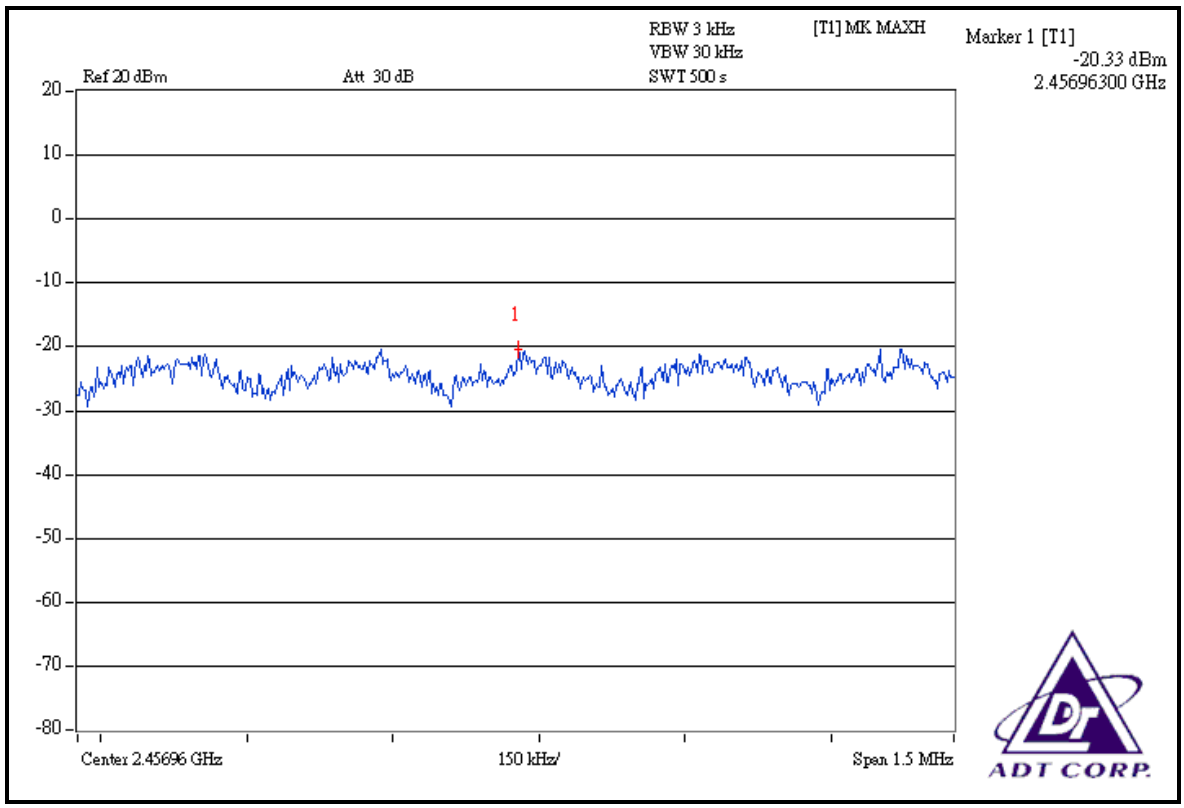
## FOR CHAIN 0: CH 1



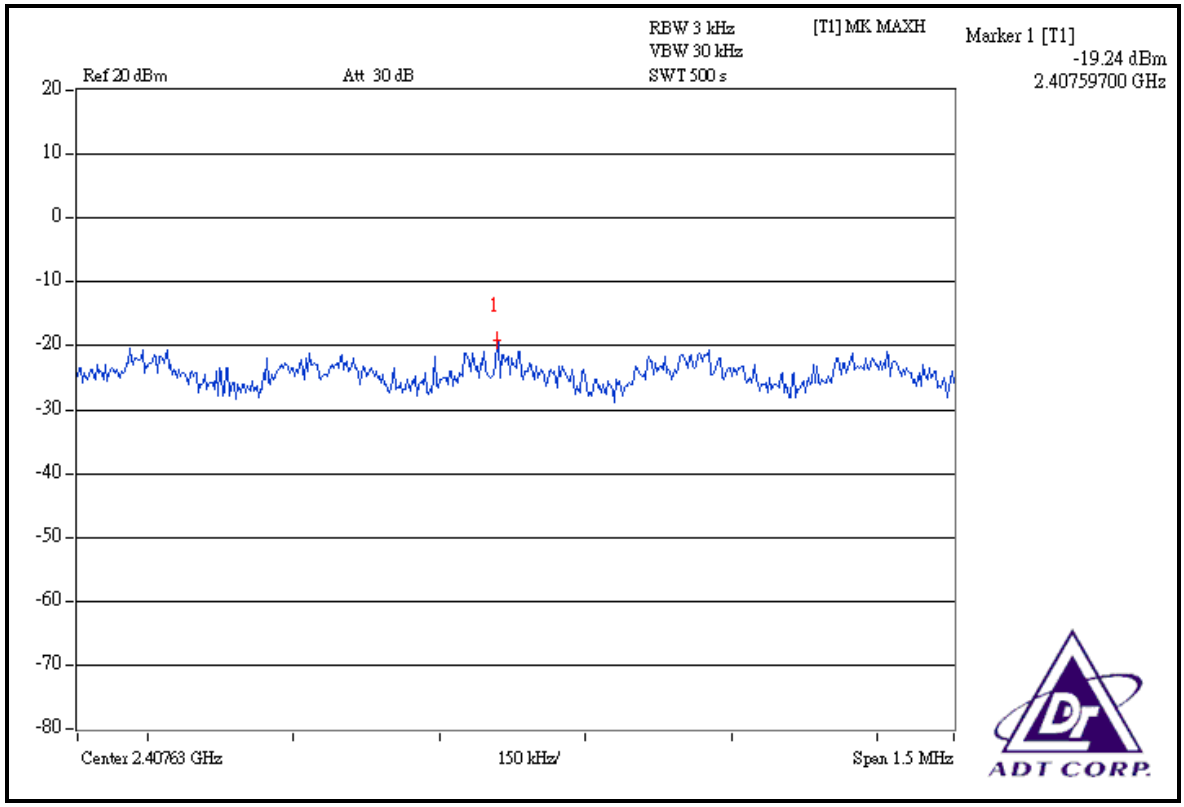
## CH 6


RBW 3 kHz
VBW 30 kHz
SWT 500 s
[T1] MK MAXH
Marker 1 [T1]
-19.49 dBm
2.43196700 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
1
Center 2.432 GHz
150 kHz/
Span 1.5 MHz
ADT CORP.

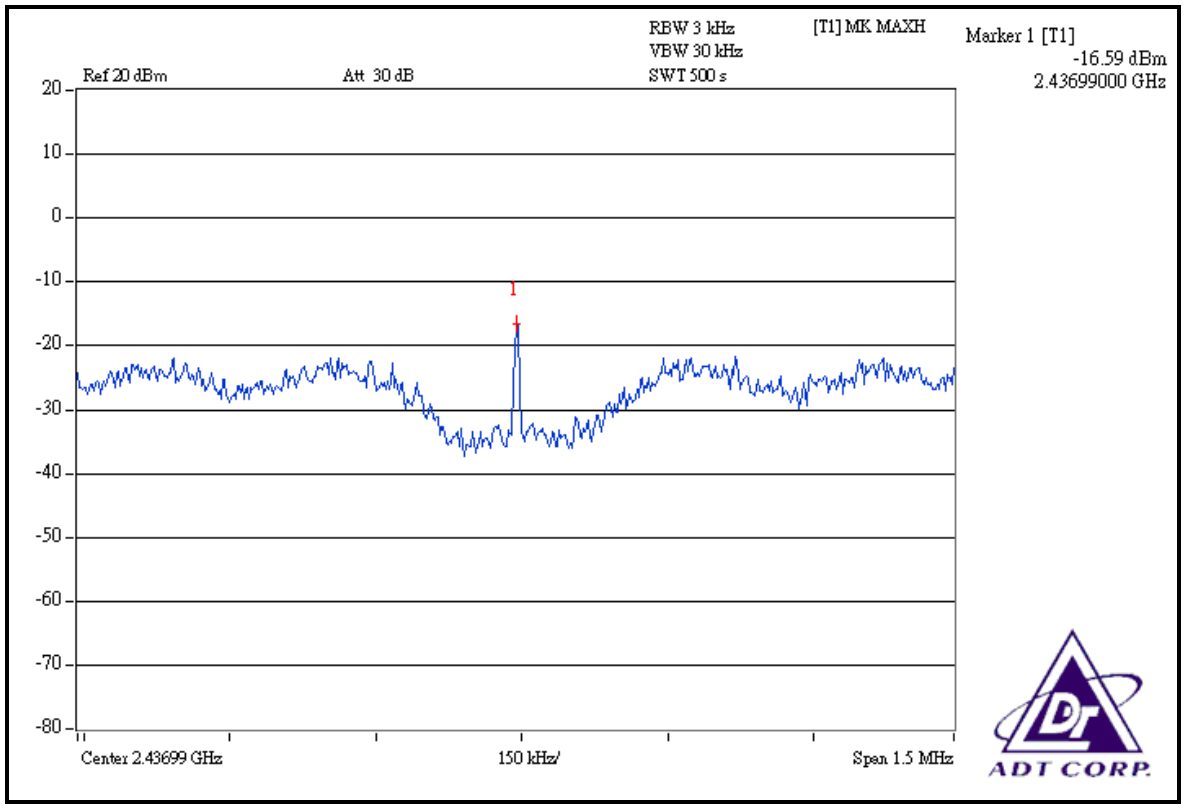
## CH 11


RBW 3 kHz
VBW 30 kHz
SWT 500 s
[T1] MK MAXH
Marker 1 [T1]
-20.33 dBm
2.45696300 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
1
Center 2.45696 GHz
150 kHz/
Span 1.5 MHz
ADT CORP.

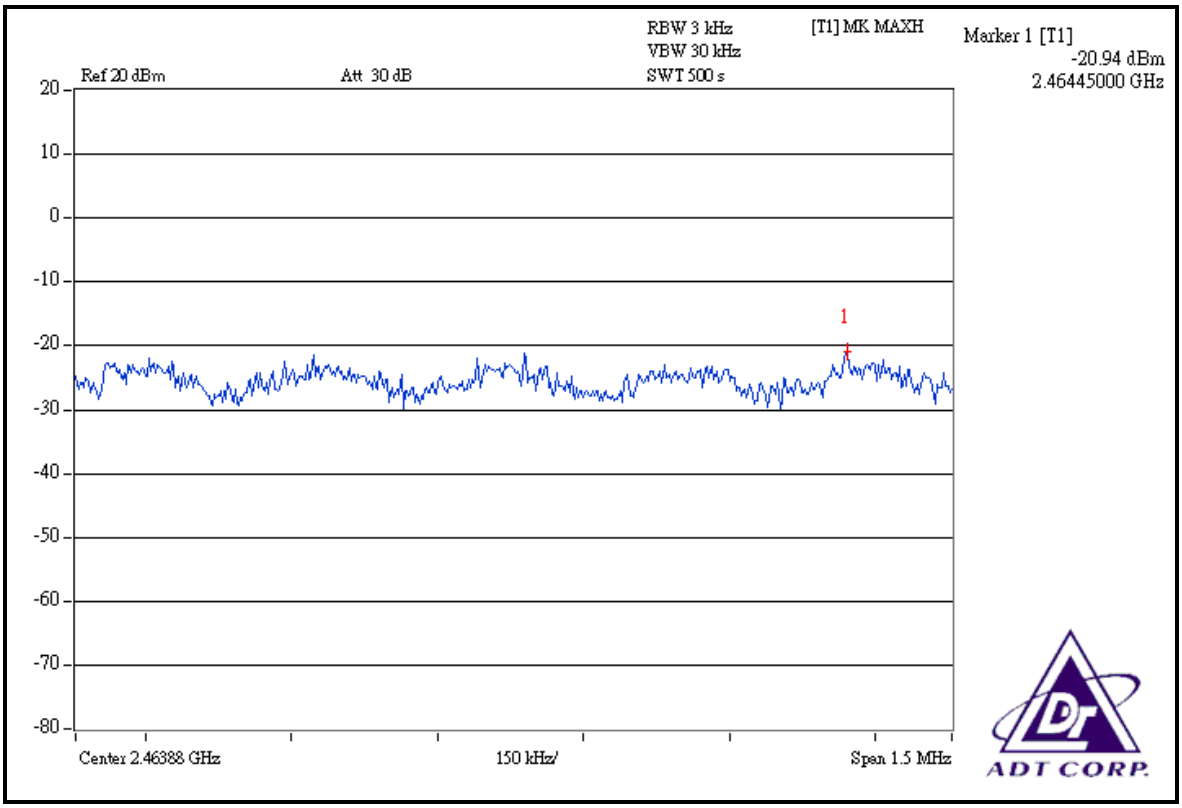
## FOR CHAIN 1: CH 1




## CH 6



## CH 11

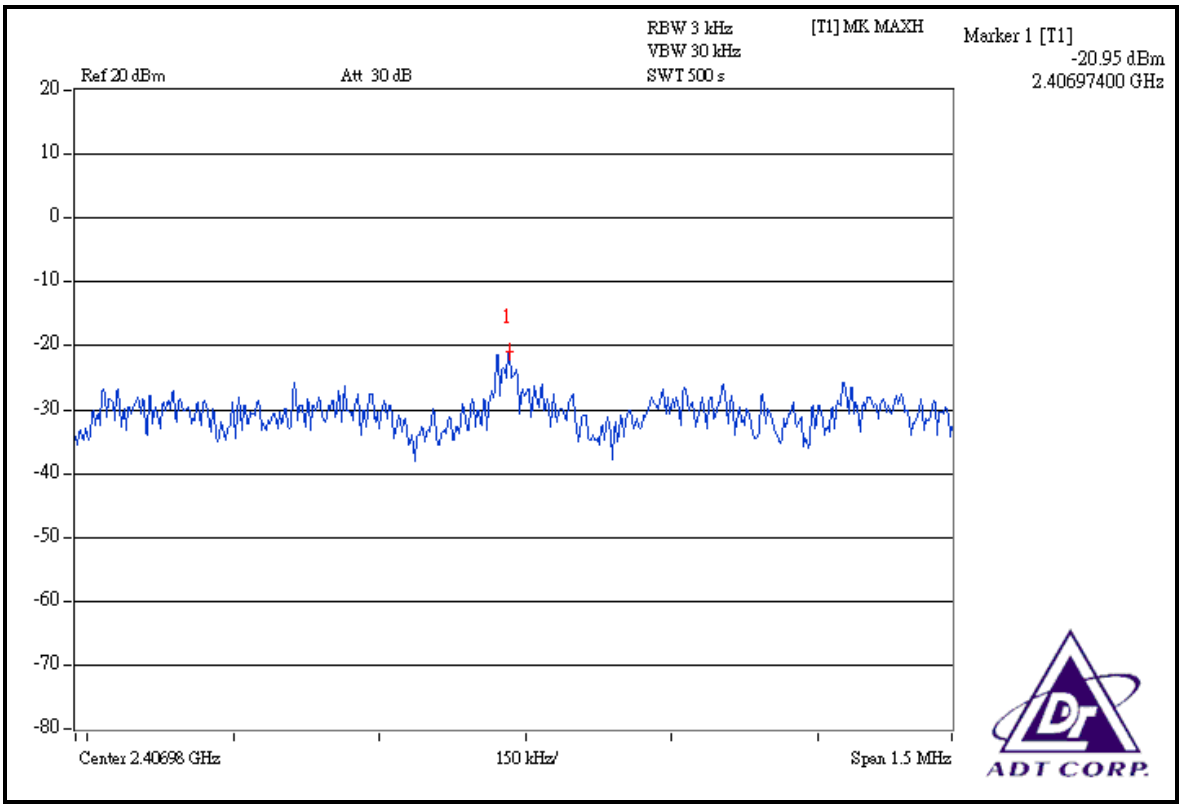

RBW 3 kHz
VBW 30 kHz
SWT 500 s
[T1] MK MAXH
Marker 1 [T1]
-20.94 dBm
2.46445000 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
1
Center 2.46388 GHz
150 kHz/
Span 1.5 MHz

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

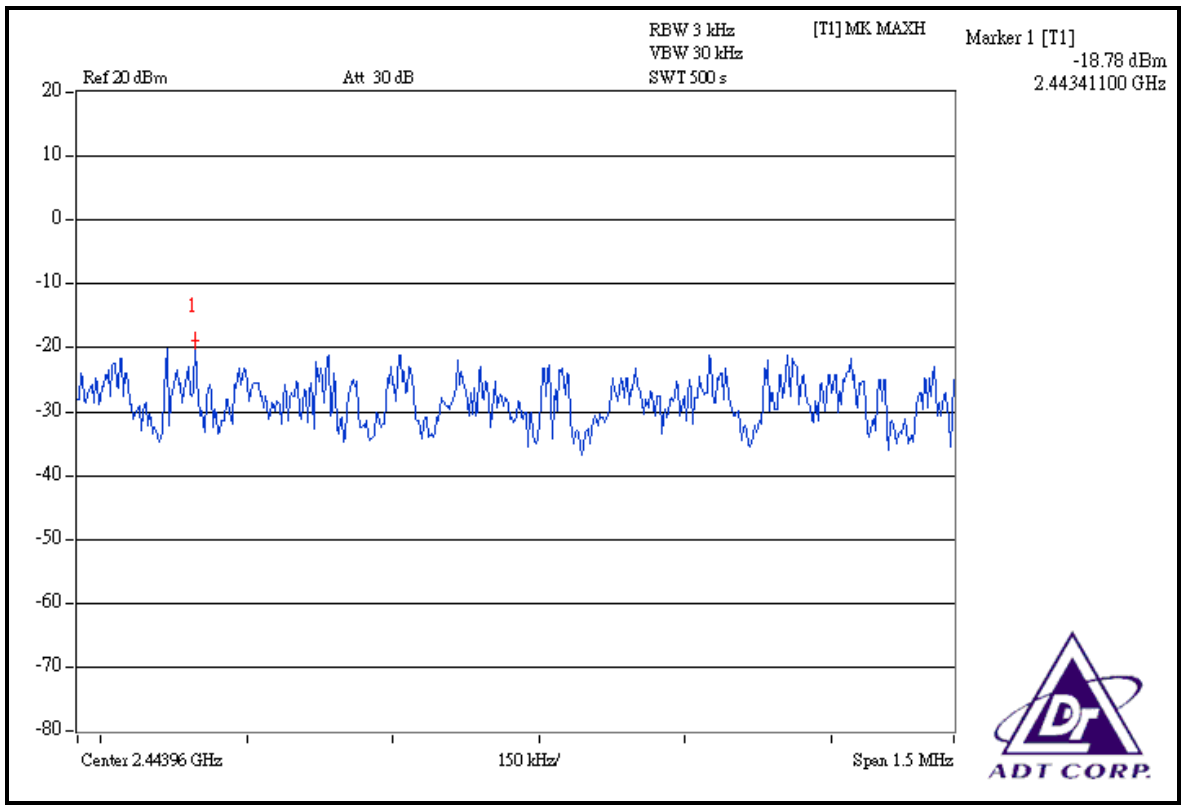
| | | | |
|---|---|---|---|
| **MODULATION TYPE** | BPSK | **CHANNEL** | 1, 4, 7 |
| **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz | **TRANSFER RATE** | 13.5Mbps |
| **ENVIRONMENTAL CONDITIONS** | 25deg. C, 70%RH, 994hPa | **TESTED BY** | Jamison Chan |

| CHANNEL | CHANNEL FREQUENCY (MHz) | RF POWER LEVEL IN 3kHz BW (mW) | | RF POWER LEVEL IN 3kHz BW (dBm) | | TOTAL POWER DENSITY (mW) | TOTAL POWER DENSITY (dBm) | MAX. LIMIT (dBm) | PASS / FAIL |
|---|---|---|---|---|---|---|---|---|---|
| | | CHAIN 0 | CHAIN 1 | CHAIN 0 | CHAIN 1 | | | | |
| 1 | 2422 | 0.008 | 0.008 | -20.95 | -20.90 | 0.016 | -17.91 | 8 | PASS |
| 4 | 2437 | 0.013 | 0.010 | -18.78 | -20.11 | 0.023 | -16.38 | 8 | PASS |
| 7 | 2452 | 0.009 | 0.008 | -20.35 | -20.99 | 0.017 | -17.65 | 8 | PASS |

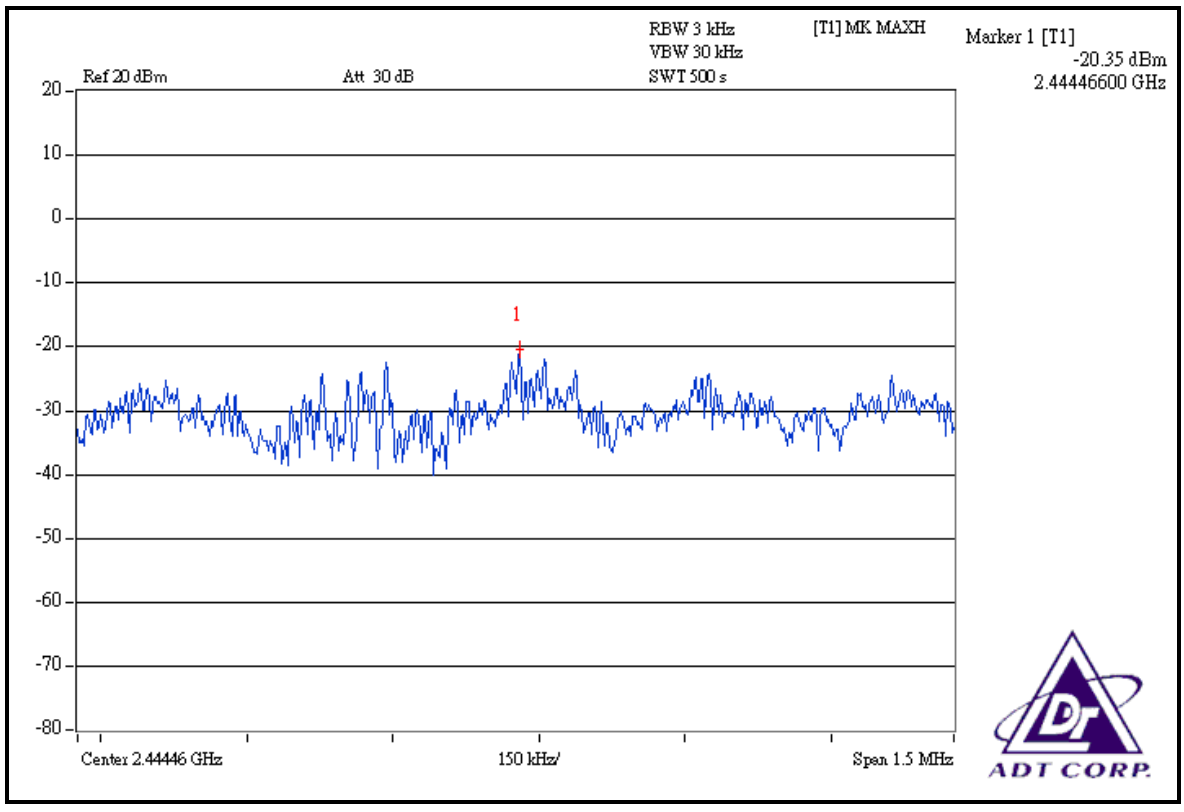
## FOR CHAIN 0: CH 1



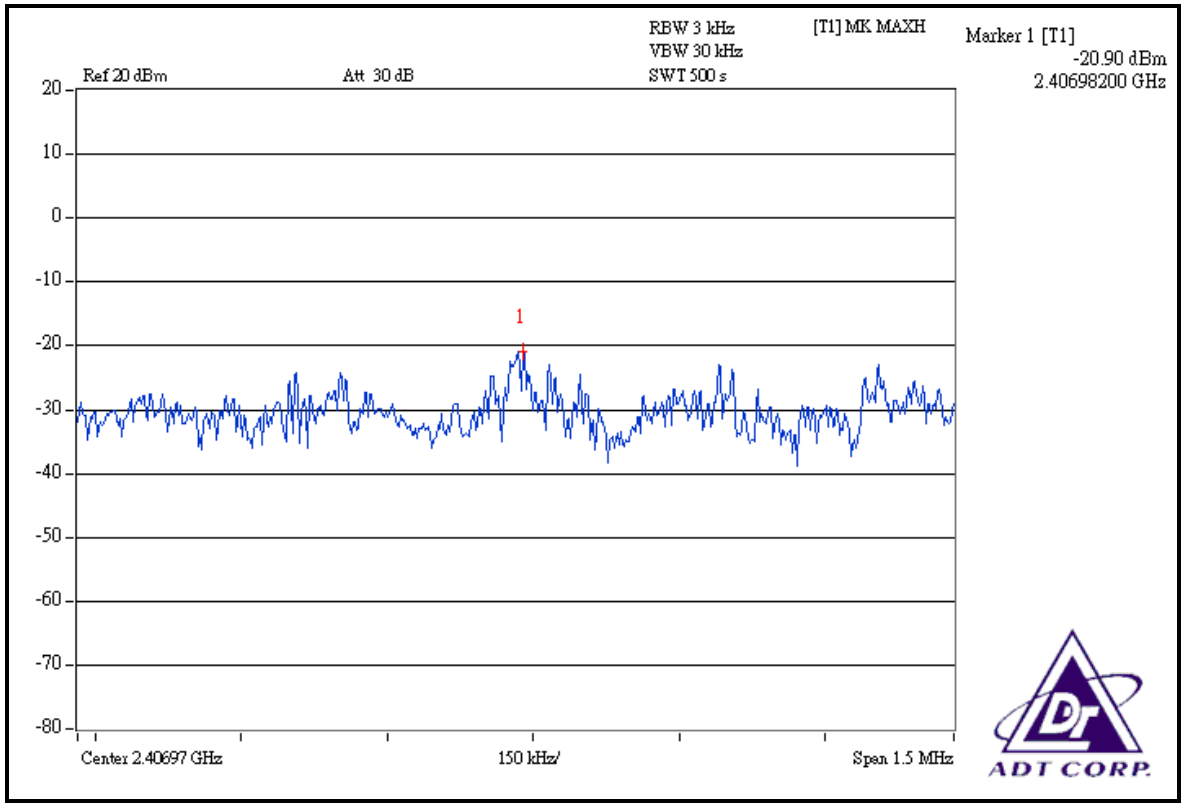
## CH 4


RBW 3 kHz
VBW 30 kHz
SWT 500 s
[T1] MK MAXH
Marker 1 [T1]
-18.78 dBm
2.44341100 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
1
Center 2.44396 GHz
150 kHz/
Span 1.5 MHz
ADT CORP.

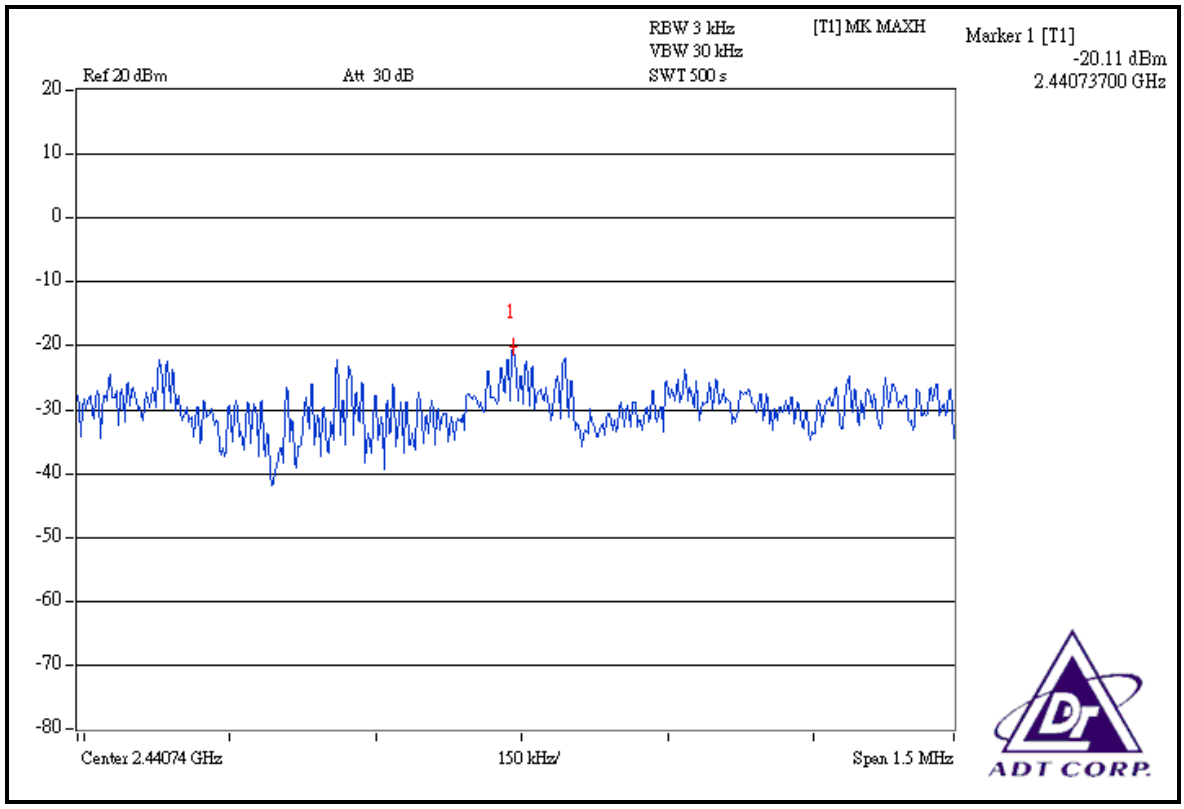
## CH 7


RBW 3 kHz
VBW 30 kHz
SWT 500 s
[T1] MK MAXH
Marker 1 [T1]
-20.35 dBm
2.44446600 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
1
Center 2.44446 GHz
150 kHz/
Span 1.5 MHz
ADT CORP.

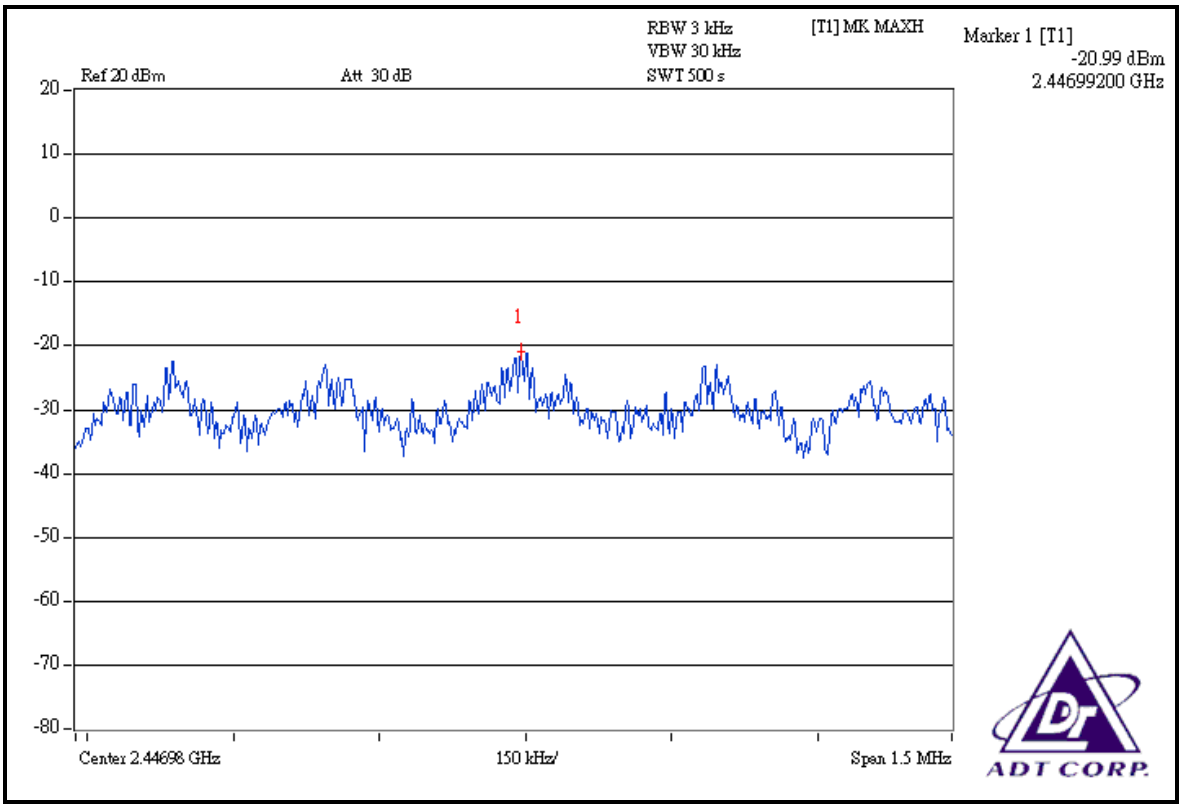
## FOR CHAIN 1: CH 1




## CH 4



## CH 7


RBW 3 kHz
VBW 30 kHz
SWT 500 s
[T1] MK MAXH
Marker 1 [T1]
-20.99 dBm
2.44699200 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
1
Center 2.44698 GHz
150 kHz/
Span 1.5 MHz

## 4.6 BAND EDGES MEASUREMENT

### 4.6.1 LIMITS OF BAND EDGES 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 UNTIL |
|---|---|---|---|
| **802.11b, 802.11g:** | | | |
| SPECTRUM ANALYZER | FSP 40 | 100036 | Mar. 13, 2008 |
| **DRAFT 802.11n (20MHz), DRAFT 802.11n (40MHz):** | | | |
| HP Preamplifier | 8447D | 2432A03504 | May 09, 2008 |
| HP Preamplifier | 8449B | 3008A01201 | Oct. 10, 2007 |
| HP Preamplifier | 8449B | 3008A01292 | Aug. 05, 2008 |
| Schwarzbeck Antenna | VULB 9168 | 137 | Oct. 01, 2007 |
| Schwarzbeck Antenna | VHBA 9123 | 480 | Apr. 18, 2008 |
| EMCO Horn Antenna | 3115 | 6714 | Oct. 24, 2007 |
| EMCO Horn Antenna | 3115 | 9312-4192 | Apr. 19, 2008 |
| ADT. Turn Table | TT100 | 0306 | NA |
| ADT. Tower | AT100 | 0306 | NA |
| Software | ADT_Radiated_V7.6.15 | NA | NA |
| SUHNER RF cable | SF104-26.5 | CABLE-CH6-17m-01 | Dec. 11, 2007 |
| ROHDE & SCHWARZ Spectrum Analyzer | FSP 40 | 100036 | Mar. 13, 2008 |

**NOTE:** 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

**802.11b, 802.11g:**

The transmitter output was connected to the spectrum analyzer via a low lose cable. Set both RBW and VBW of spectrum analyzer to 100kHz with suitable frequency span including 300kMHz bandwidth from band edge. The band edges was measured and recorded.

The spectrum plots (Peak RBW =100kHz, VBW = 300kHz; Average RBW = 1MHz, VBW = 10Hz) are attached on the following pages.

**DRAFT 802.11n (20MHz), DRAFT 802.11n (40MHz):**

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. 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. Set both RBW and VBW of spectrum analyzer to 100kHz with suitable frequency span including 100MHz bandwidth from band edge. The band edges was measured and recorded.

The spectrum plots (Peak RBW =100kHz, VBW = 300kHz; Average RBW = 1MHz, VBW = 10Hz) are attached on the following pages.

**NOTE:** The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz for Average detection (AV) at frequency above 1GHz.

## 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 pages. 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

**NOTE 1:**

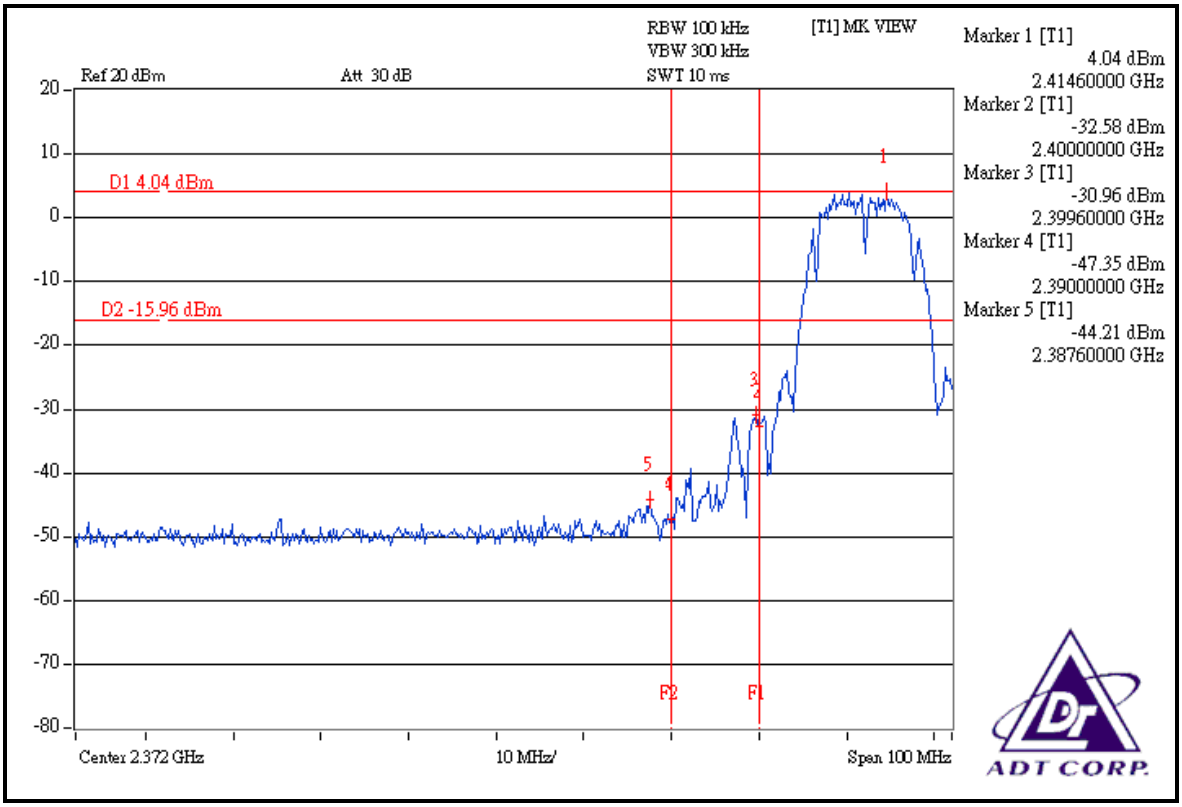
The band edge emission plot on the next page shows 48.25dBc between carrier maximum power and local maximum emission in restrict band (2.3876GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 110.32dBuV/m (Peak), so the maximum field strength in restrict band is 110.32 – 48.25 = 62.07dBuV/m which is under 74dBuV/m limit.

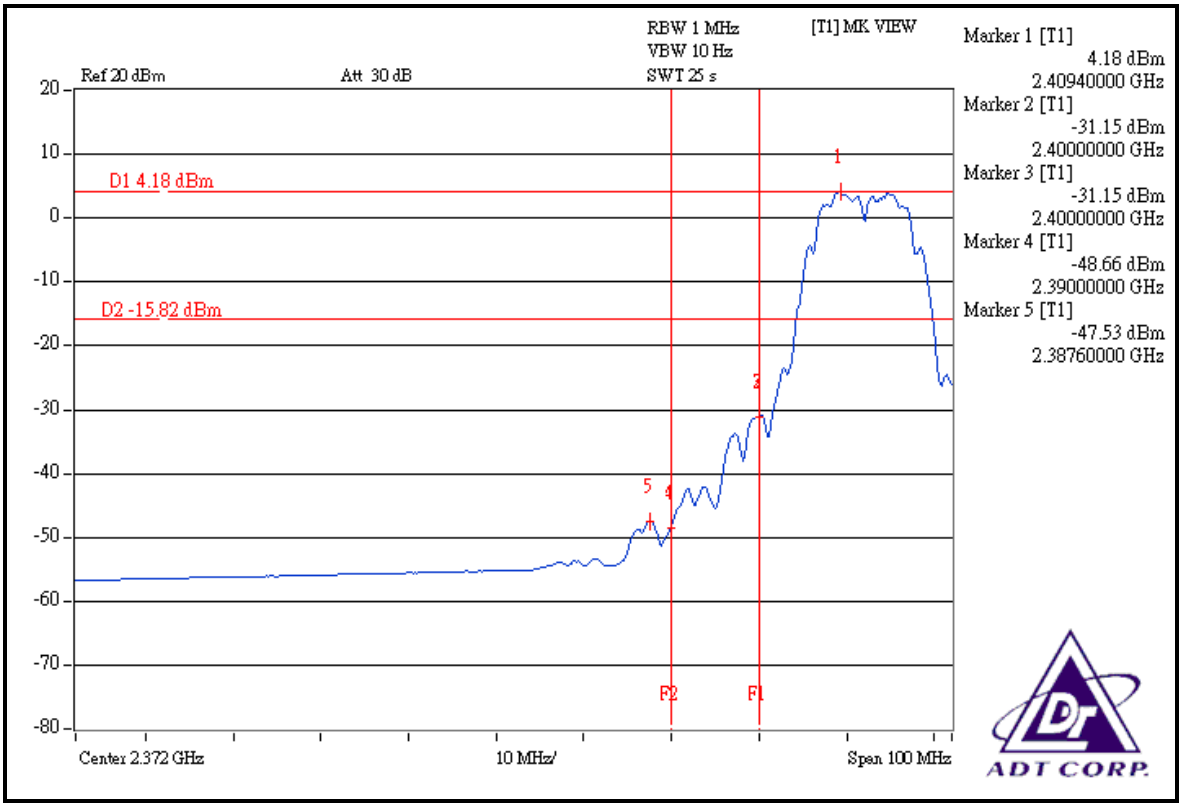
The band edge emission plot on the next page shows 51.71dBc between carrier maximum power and local maximum emission in restrict band (2.3876GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 105.50dBuV/m (Average), so the maximum field strength in restrict band is 105.50 – 51.71 = 53.79dBuV/m which is under 54dBuV/m limit.

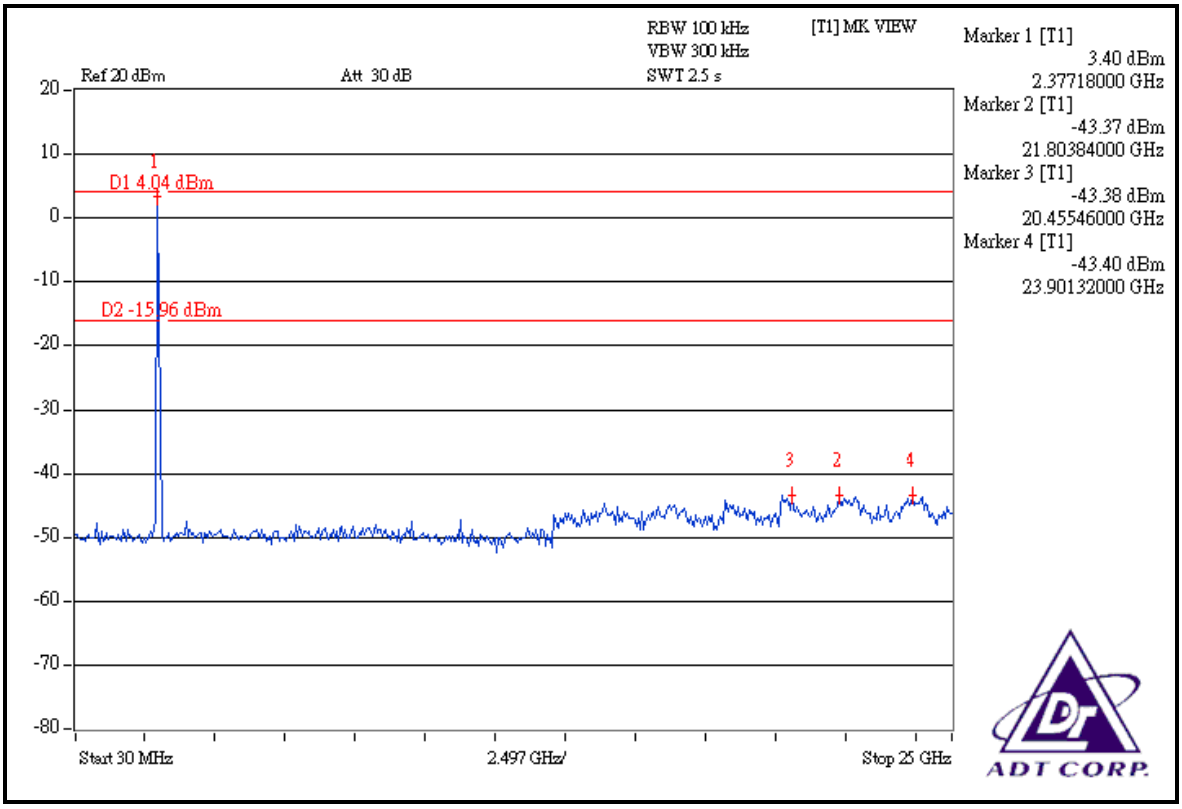
**NOTE 2:**

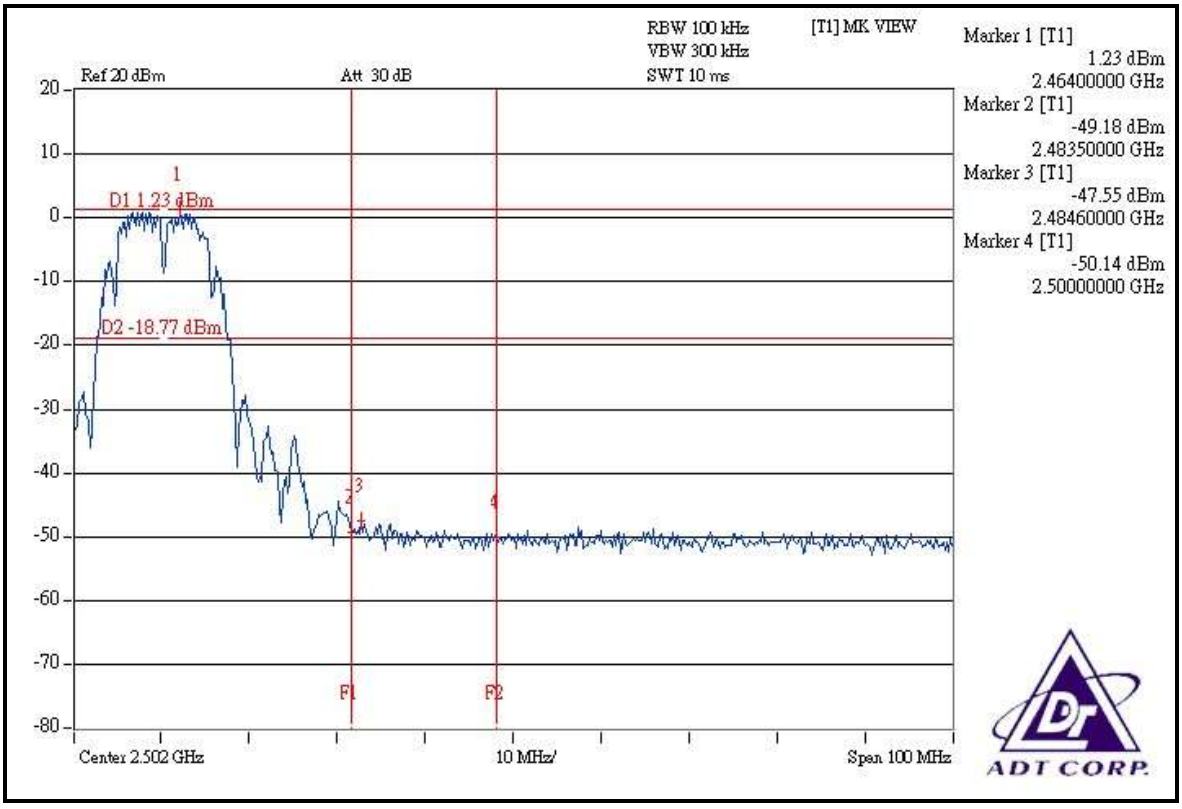
The band edge emission plot on the next second page shows 48.78dBc between carrier maximum power and local maximum emission in restrict band (2.4846GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 110.19dBuV/m (Peak), so the maximum field strength in restrict band is 110.19 – 48.78 = 61.41dBuV/m which is under 74dBuV/m limit.

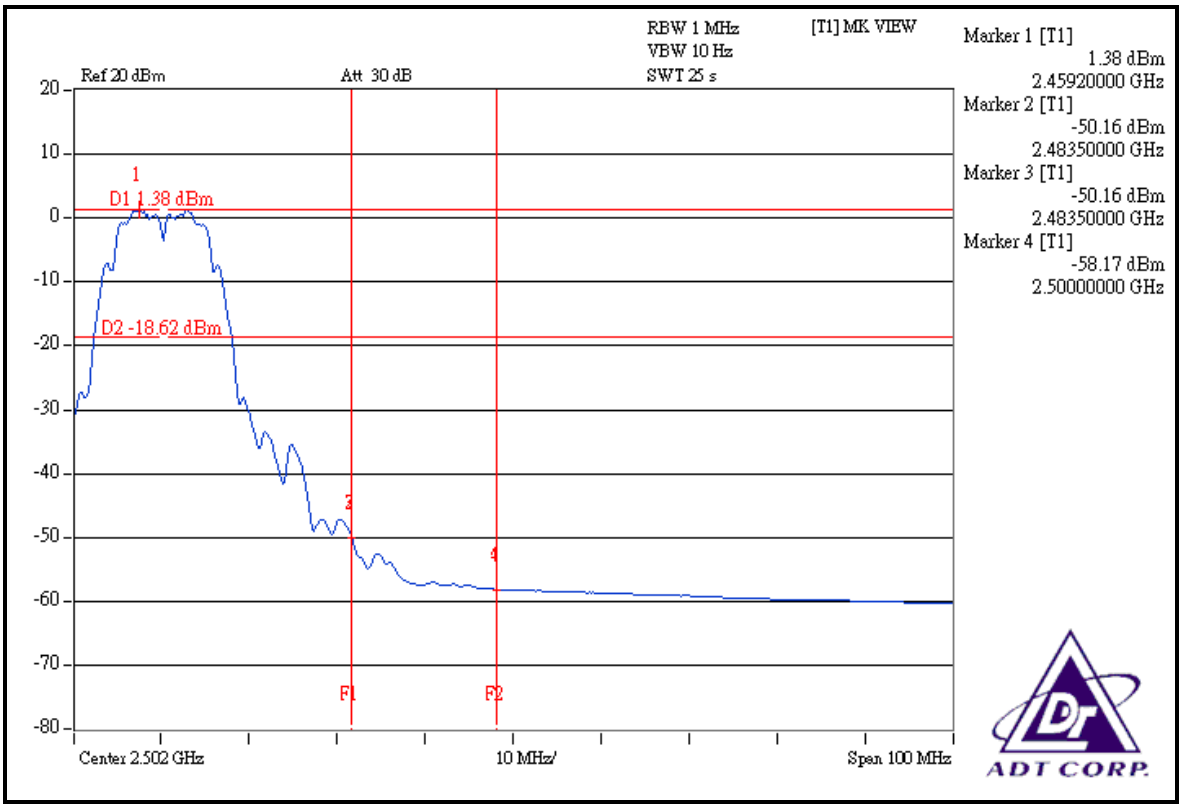
The band edge emission plot on the next third page shows 51.54dBc between carrier maximum power and local maximum emission in restrict band (2.4835GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 105.43dBuV/m (Average), so the maximum field strength in restrict band is 105.43 – 51.54 = 53.89dBuV/m which is under 54dBuV/m limit.

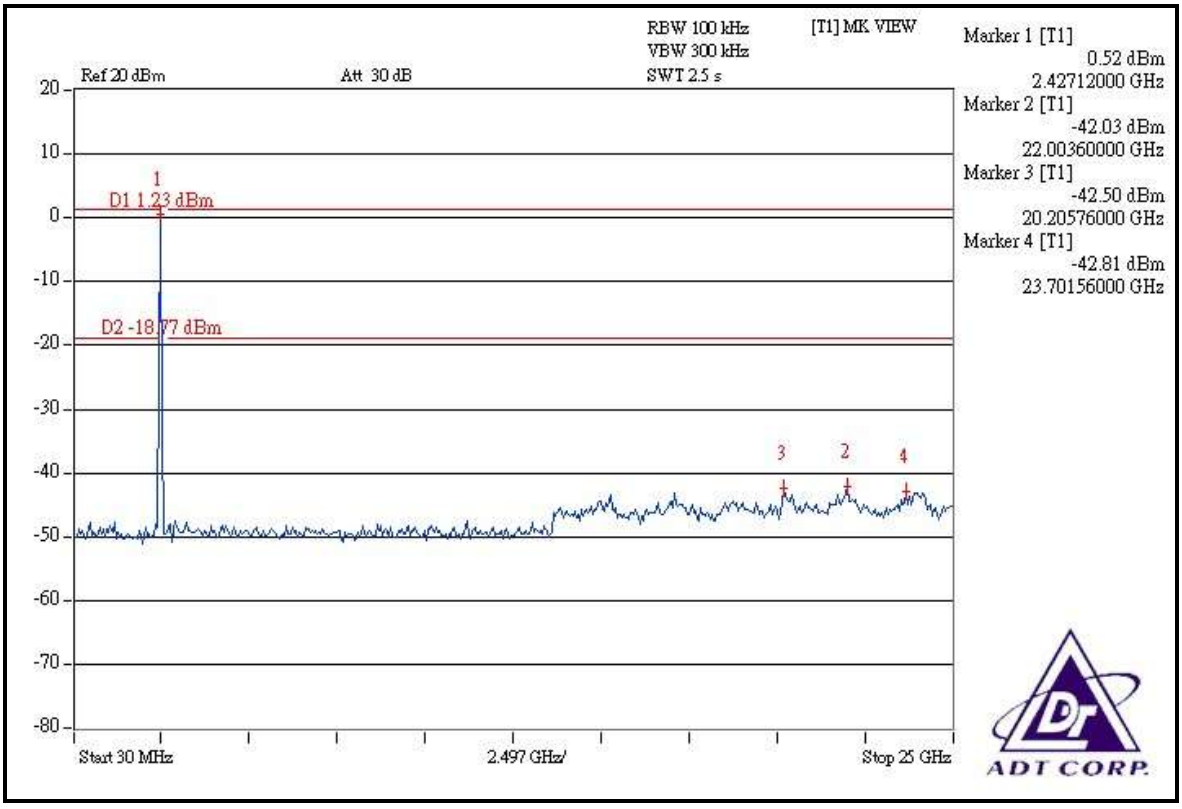

RBW 100 kHz
VBW 300 kHz
SWT 10 ms
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 4.04 dBm
D2 -15.96 dBm
Marker 1 [T1]
4.04 dBm
2.41460000 GHz
Marker 2 [T1]
-32.58 dBm
2.40000000 GHz
Marker 3 [T1]
-30.96 dBm
2.39960000 GHz
Marker 4 [T1]
-47.35 dBm
2.39000000 GHz
Marker 5 [T1]
-44.21 dBm
2.38760000 GHz
Center 2.372 GHz
10 MHz/
Span 100 MHz
ADT CORP.


RBW 1 MHz
VBW 10 Hz
SWT 25 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 4.18 dBm
D2 -15.82 dBm
Marker 1 [T1]
4.18 dBm
2.40940000 GHz
Marker 2 [T1]
-31.15 dBm
2.40000000 GHz
Marker 3 [T1]
-31.15 dBm
2.40000000 GHz
Marker 4 [T1]
-48.66 dBm
2.39000000 GHz
Marker 5 [T1]
-47.53 dBm
2.38760000 GHz
Center 2.372 GHz
10 MHz/
Span 100 MHz
ADT CORP.


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 4.04 dBm
D2 -15.96 dBm
Marker 1 [T1]
3.40 dBm
2.37718000 GHz
Marker 2 [T1]
-43.37 dBm
21.80384000 GHz
Marker 3 [T1]
-43.38 dBm
20.45546000 GHz
Marker 4 [T1]
-43.40 dBm
23.90132000 GHz
Start 30 MHz
2.497 GHz/
Stop 25 GHz
ADT CORP.


RBW 100 kHz
VBW 300 kHz
SWT 10 ms
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 1.23 dBm
D2 -18.77 dBm
Marker 1 [T1]
1.23 dBm
2.46400000 GHz
Marker 2 [T1]
-49.18 dBm
2.48350000 GHz
Marker 3 [T1]
-47.55 dBm
2.48460000 GHz
Marker 4 [T1]
-50.14 dBm
2.50000000 GHz
Center 2.502 GHz
10 MHz/
Span 100 MHz
ADT CORP.


RBW 1 MHz
VBW 10 Hz
SWT 25 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 1.38 dBm
D2 -18.62 dBm
F1
F2
Center 2.502 GHz
10 MHz/
Span 100 MHz
Marker 1 [T1]
1.38 dBm
2.45920000 GHz
Marker 2 [T1]
-50.16 dBm
2.48350000 GHz
Marker 3 [T1]
-50.16 dBm
2.48350000 GHz
Marker 4 [T1]
-58.17 dBm
2.50000000 GHz


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 1.23 dBm
D2 -18.77 dBm
Start 30 MHz
2.497 GHz/
Stop 25 GHz
Marker 1 [T1]
0.52 dBm
2.42712000 GHz
Marker 2 [T1]
-42.03 dBm
22.00360000 GHz
Marker 3 [T1]
-42.50 dBm
20.20576000 GHz
Marker 4 [T1]
-42.81 dBm
23.70156000 GHz

## 802.11g OFDM MODULATION

**NOTE 1:**

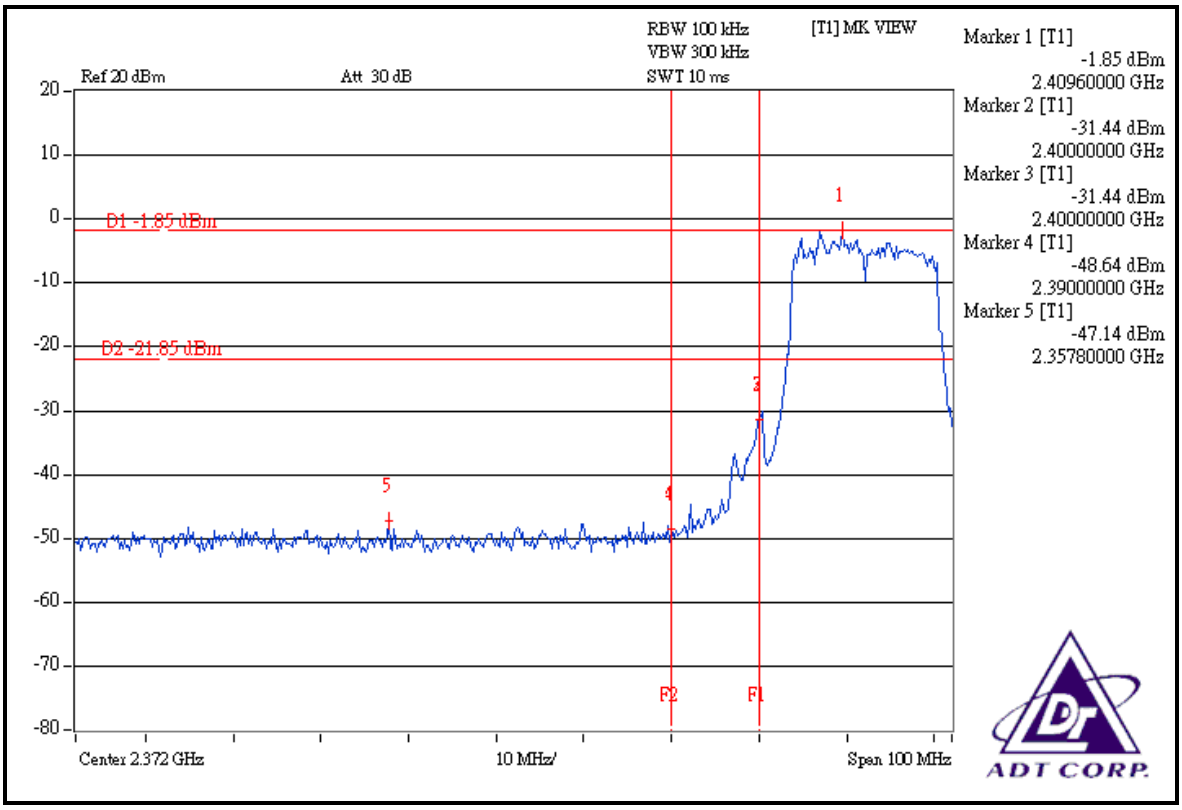
The band edge emission plot on the next page shows 45.29dBc between carrier maximum power and local maximum emission in restrict band (2.3578GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 107.21dBuV/m (Peak), so the maximum field strength in restrict band is 107.21 – 45.29 = 61.92dBuV/m which is under 74dBuV/m limit.

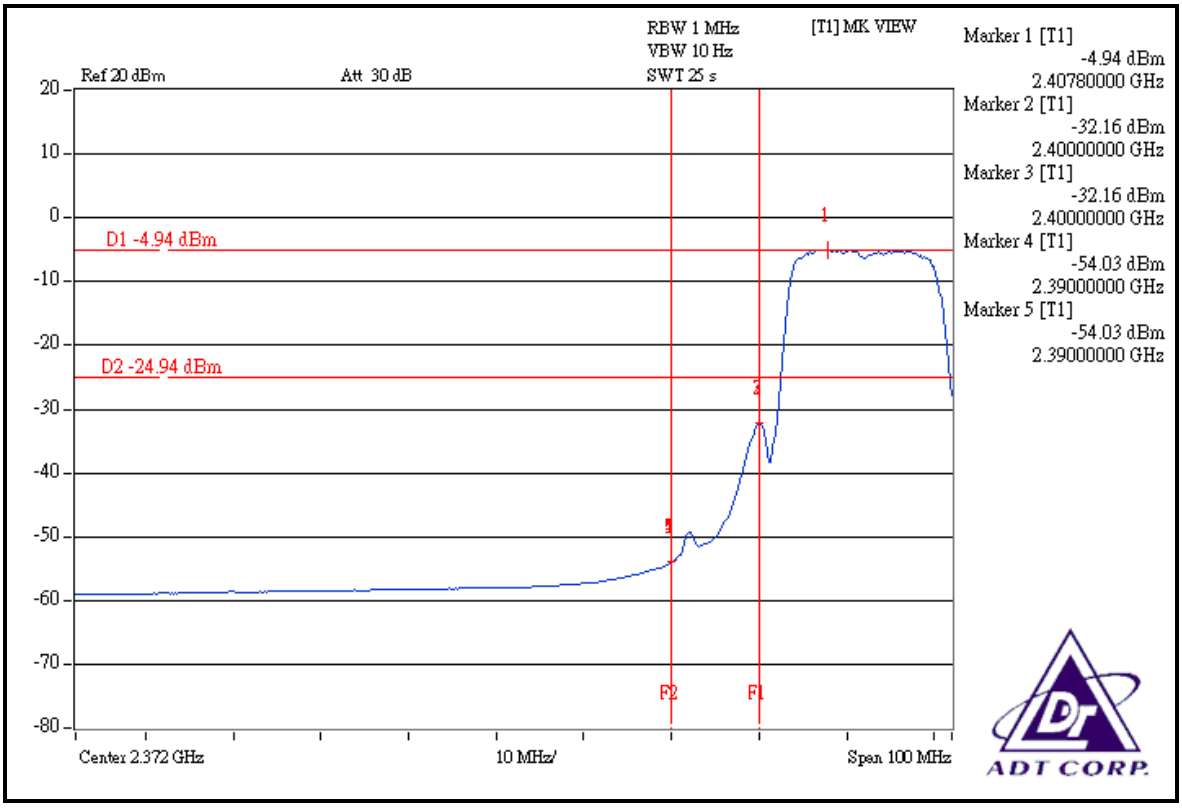
The band edge emission plot on the next page shows 49.09dBc between carrier maximum power and local maximum emission in restrict band (2.3900GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 94.72dBuV/m (Average), so the maximum field strength in restrict band is 94.72 –49.09 = 45.63dBuV/m which is under 54dBuV/m limit.

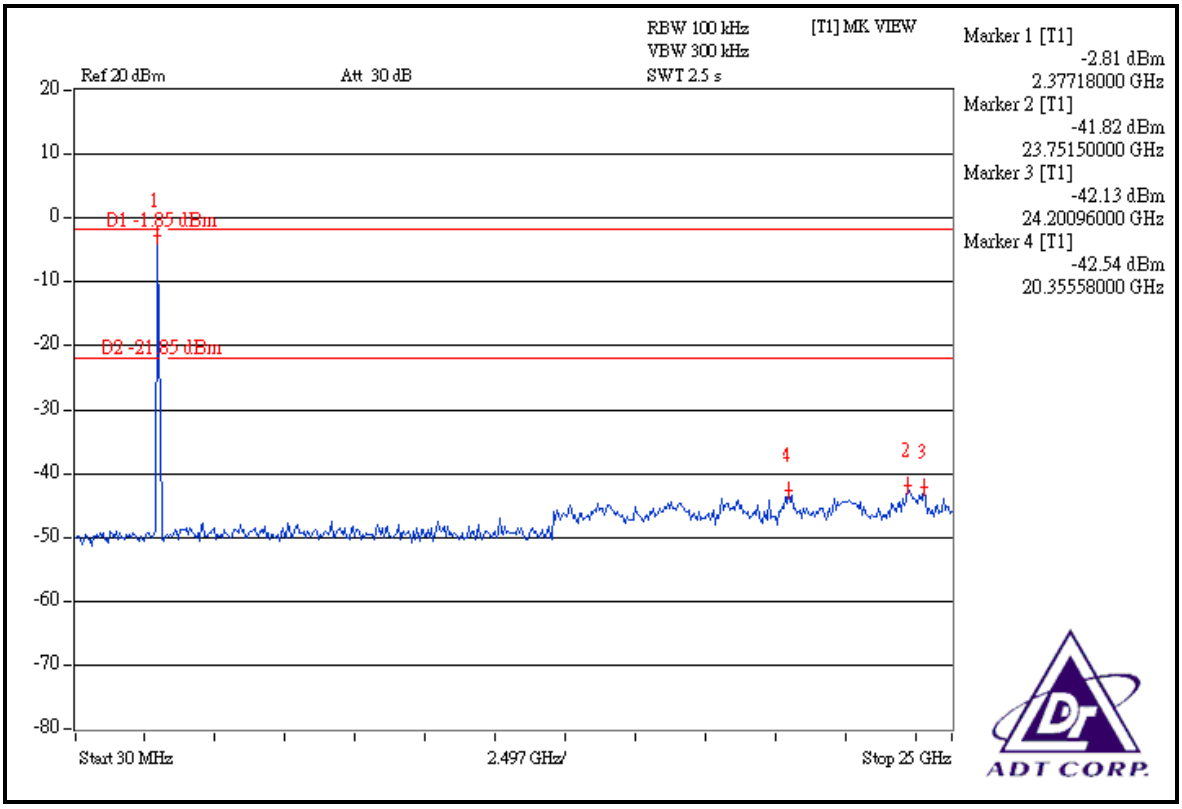
**NOTE 2:**

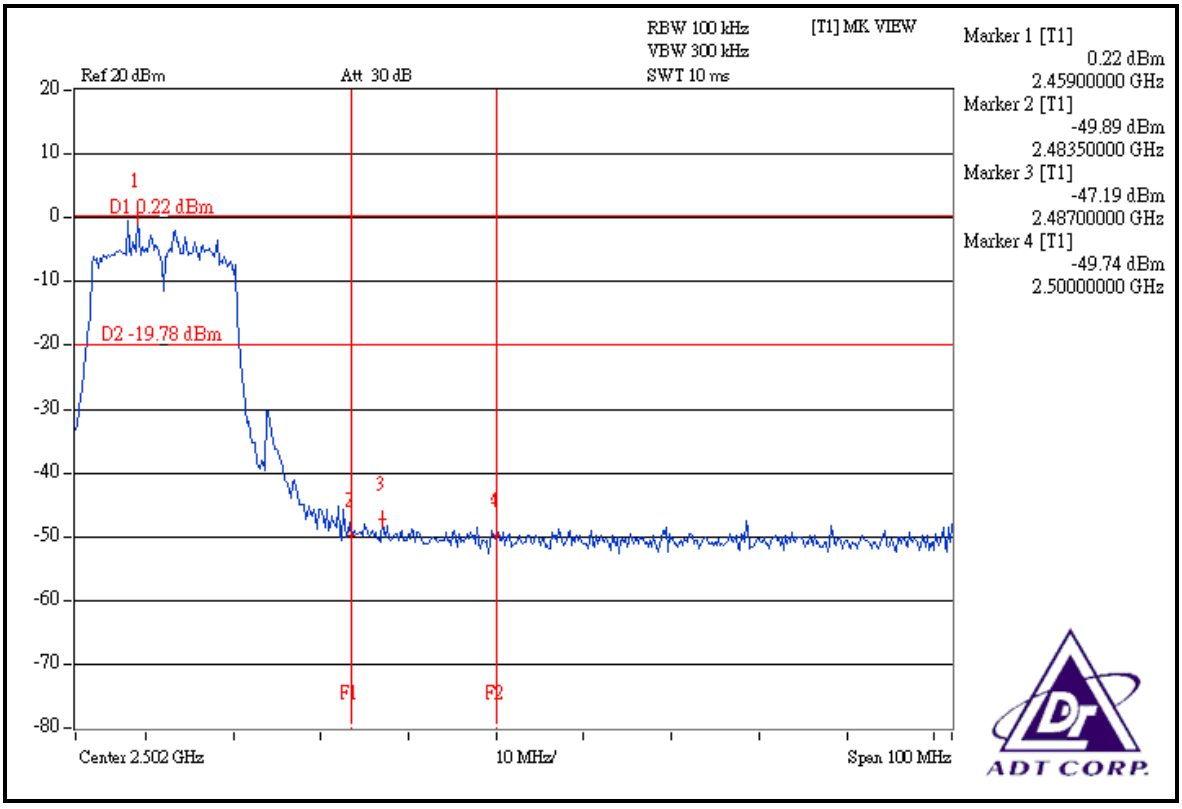
The band edge emission plot on the next second page shows 47.41dBc between carrier maximum power and local maximum emission in restrict band (2.4870GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 108.11dBuV/m (Peak), so the maximum field strength in restrict band is 108.11 – 47.41 = 60.70dBuV/m which is under 74dBuV/m limit.

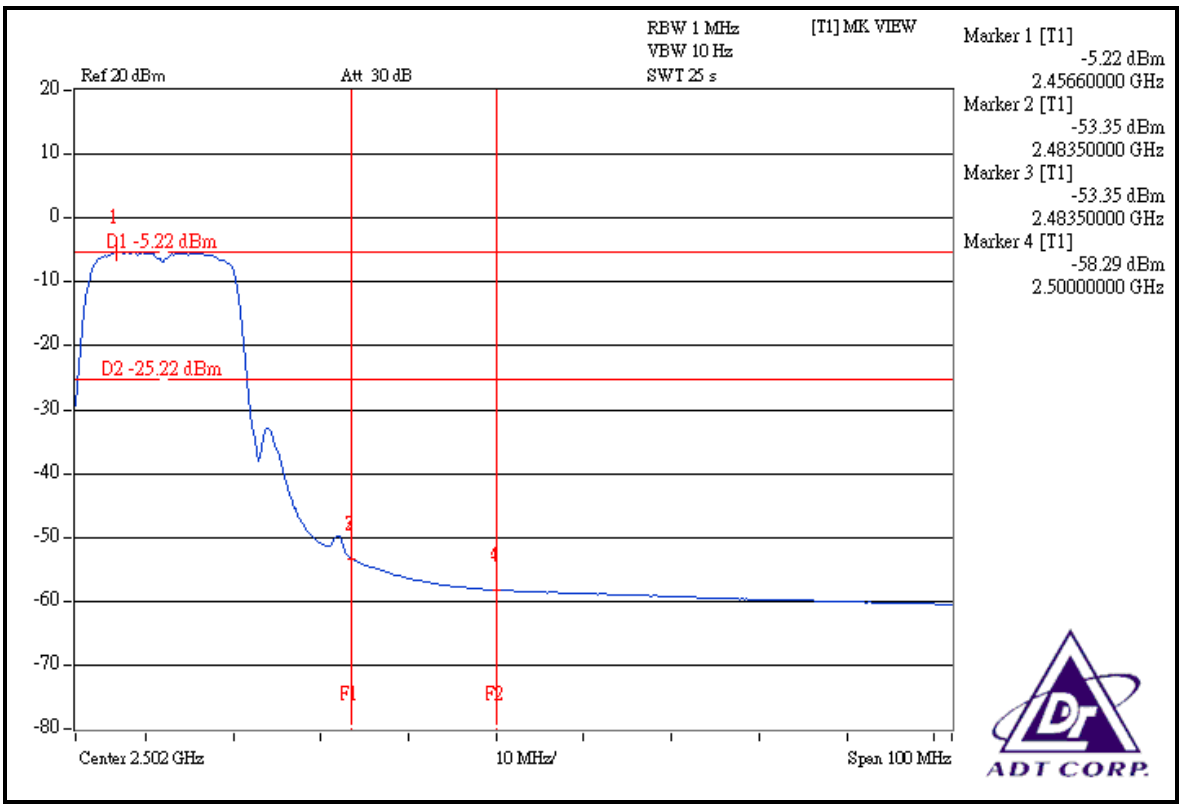
The band edge emission plot on the next third page shows 48.13dBc between carrier maximum power and local maximum emission in restrict band (2.4835GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 95.23dBuV/m (Average), so the maximum field strength in restrict band is 95.23 – 48.13 = 47.10dBuV/m which is under 54dBuV/m limit.

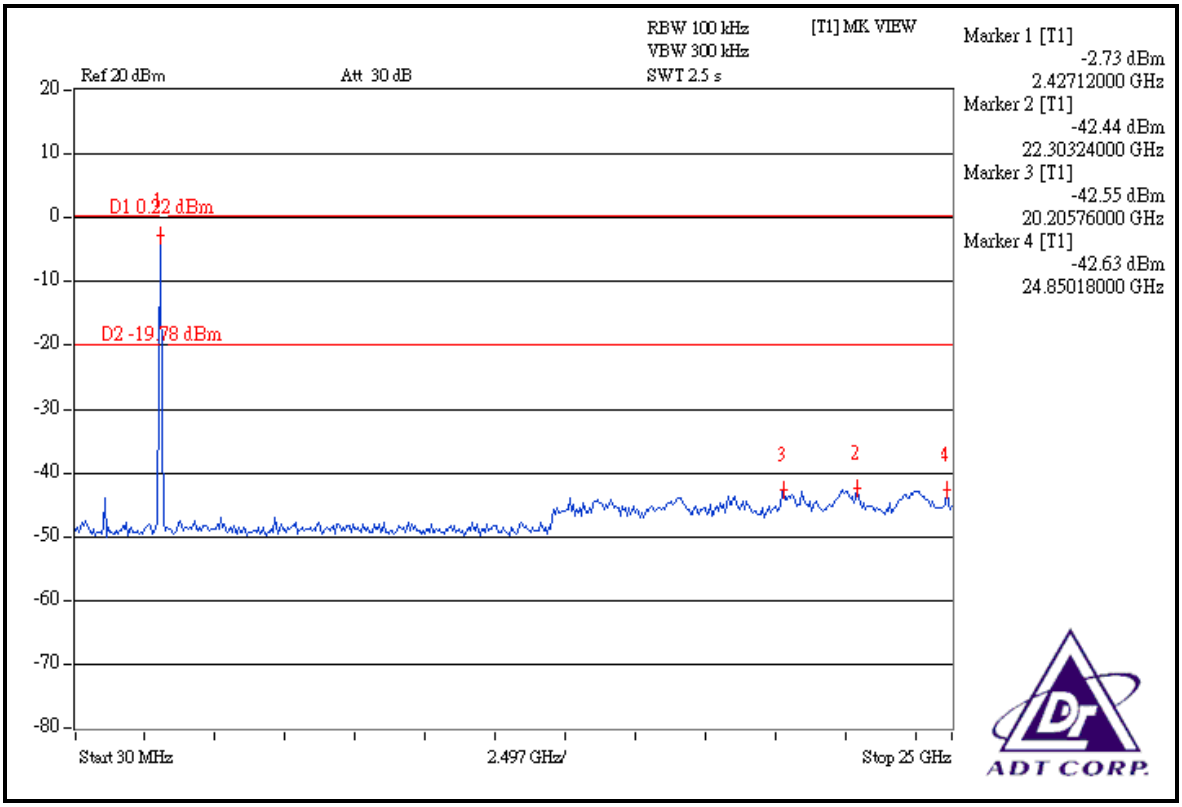

RBW 100 kHz
VBW 300 kHz
SWT 10 ms
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 -1.85 dBm
D2 -21.85 dBm
Center 2.372 GHz
10 MHz/
Span 100 MHz
Marker 1 [T1]
-1.85 dBm
2.40960000 GHz
Marker 2 [T1]
-31.44 dBm
2.40000000 GHz
Marker 3 [T1]
-31.44 dBm
2.40000000 GHz
Marker 4 [T1]
-48.64 dBm
2.39000000 GHz
Marker 5 [T1]
-47.14 dBm
2.35780000 GHz
ADT CORP.


RBW 1 MHz
VBW 10 Hz
SWT 25 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 -4.94 dBm
D2 -24.94 dBm
Center 2.372 GHz
10 MHz/
Span 100 MHz
Marker 1 [T1]
-4.94 dBm
2.40780000 GHz
Marker 2 [T1]
-32.16 dBm
2.40000000 GHz
Marker 3 [T1]
-32.16 dBm
2.40000000 GHz
Marker 4 [T1]
-54.03 dBm
2.39000000 GHz
Marker 5 [T1]
-54.03 dBm
2.39000000 GHz
ADT CORP.


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
Marker 1 [T1]
-2.81 dBm
2.37718000 GHz
Marker 2 [T1]
-41.82 dBm
23.75150000 GHz
Marker 3 [T1]
-42.13 dBm
24.20096000 GHz
Marker 4 [T1]
-42.54 dBm
20.35558000 GHz
D1 -1.85 dBm
D2 -21.85 dBm
Start 30 MHz
2.497 GHz/
Stop 25 GHz


RBW 100 kHz
VBW 300 kHz
SWT 10 ms
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
Marker 1 [T1]
0.22 dBm
2.45900000 GHz
Marker 2 [T1]
-49.89 dBm
2.48350000 GHz
Marker 3 [T1]
-47.19 dBm
2.48700000 GHz
Marker 4 [T1]
-49.74 dBm
2.50000000 GHz
D1 0.22 dBm
D2 -19.78 dBm
F1
F2
Center 2.502 GHz
10 MHz/
Span 100 MHz


RBW 1 MHz
VBW 10 Hz
SWT 25 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 -5.22 dBm
D2 -25.22 dBm
F1
F2
Center 2.502 GHz
10 MHz/
Span 100 MHz
Marker 1 [T1]
-5.22 dBm
2.45660000 GHz
Marker 2 [T1]
-53.35 dBm
2.48350000 GHz
Marker 3 [T1]
-53.35 dBm
2.48350000 GHz
Marker 4 [T1]
-58.29 dBm
2.50000000 GHz


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 0.22 dBm
D2 -19.78 dBm
Start 30 MHz
2.497 GHz/
Stop 25 GHz
Marker 1 [T1]
-2.73 dBm
2.42712000 GHz
Marker 2 [T1]
-42.44 dBm
22.30324000 GHz
Marker 3 [T1]
-42.55 dBm
20.20576000 GHz
Marker 4 [T1]
-42.63 dBm
24.85018000 GHz

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

**NOTE 1:**

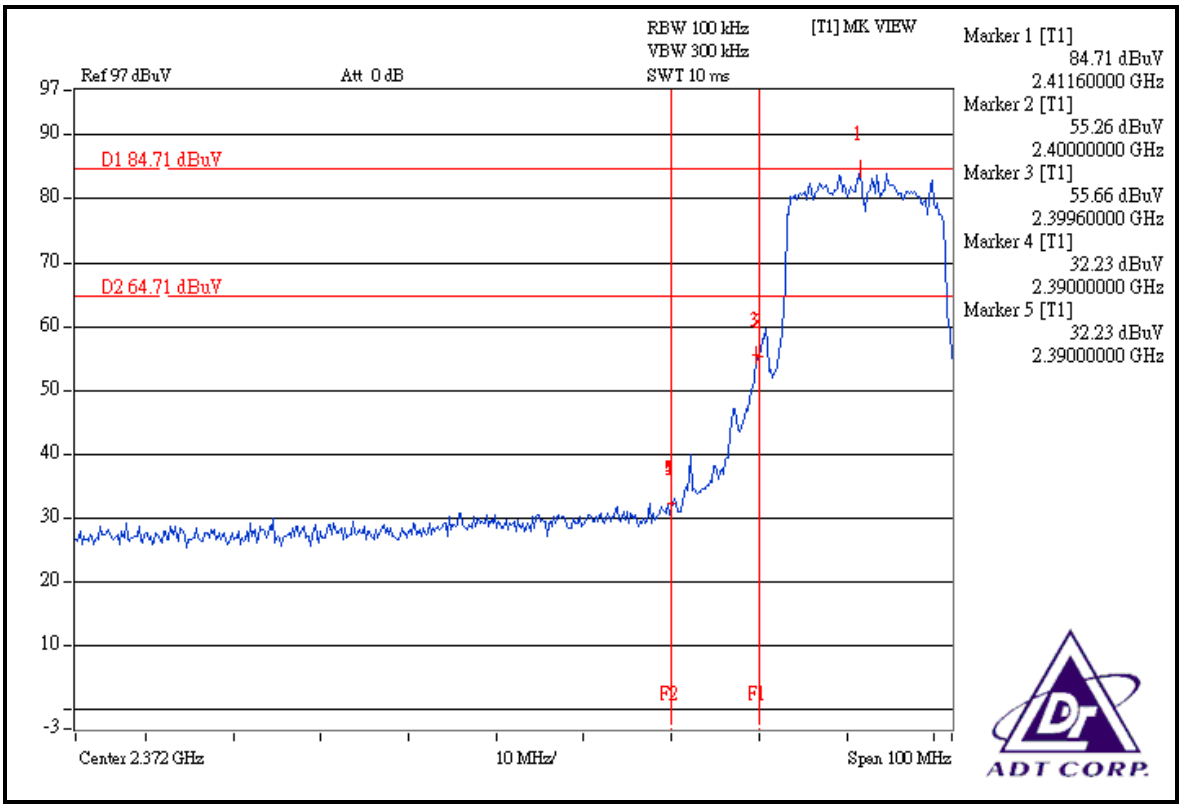
The band edge emission plot on the next page shows 52.48dBc between carrier maximum power and local maximum emission in restrict band (2.3900GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 107.27dBuV/m (Peak), so the maximum field strength in restrict band is 107.27 – 52.48 = 54.79dBuV/m which is under 74dBuV/m limit.

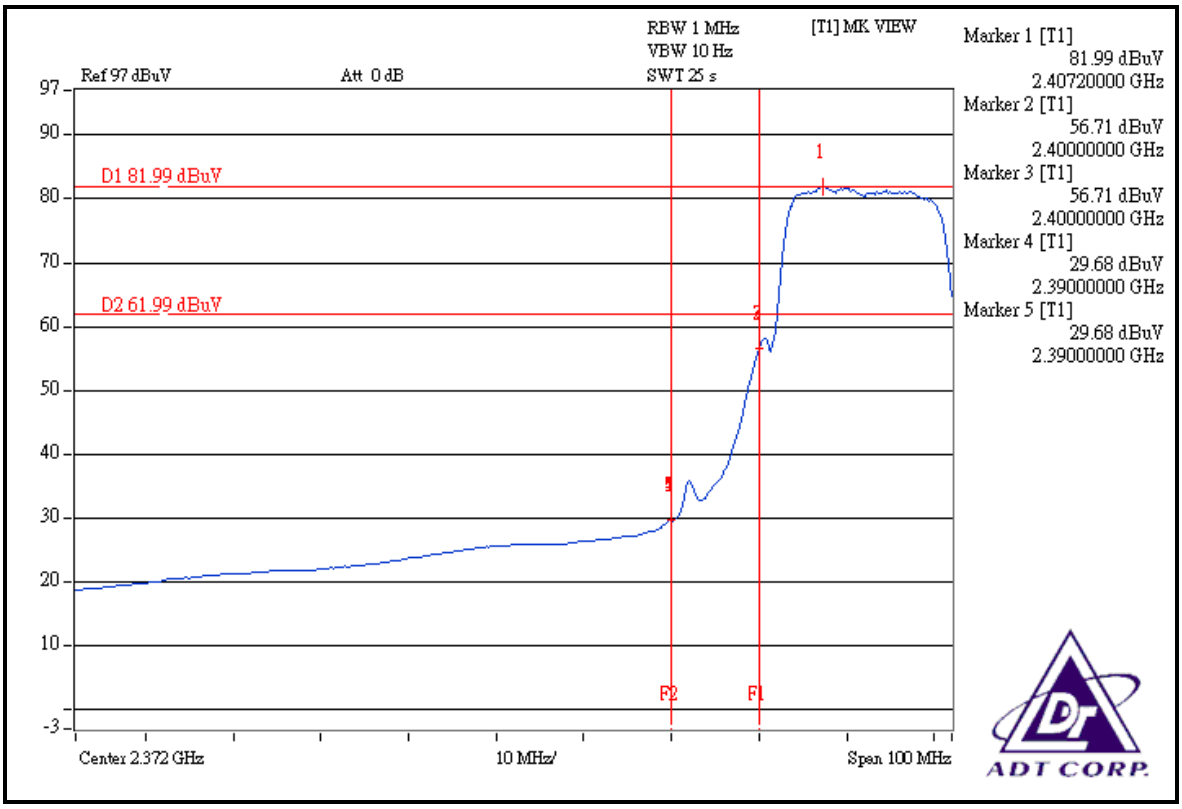
The band edge emission plot on the next page shows 52.31dBc between carrier maximum power and local maximum emission in restrict band (2.3900GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 95.26dBuV/m (Average), so the maximum field strength in restrict band is 95.26 – 52.31 = 42.95dBuV/m which is under 54dBuV/m limit.

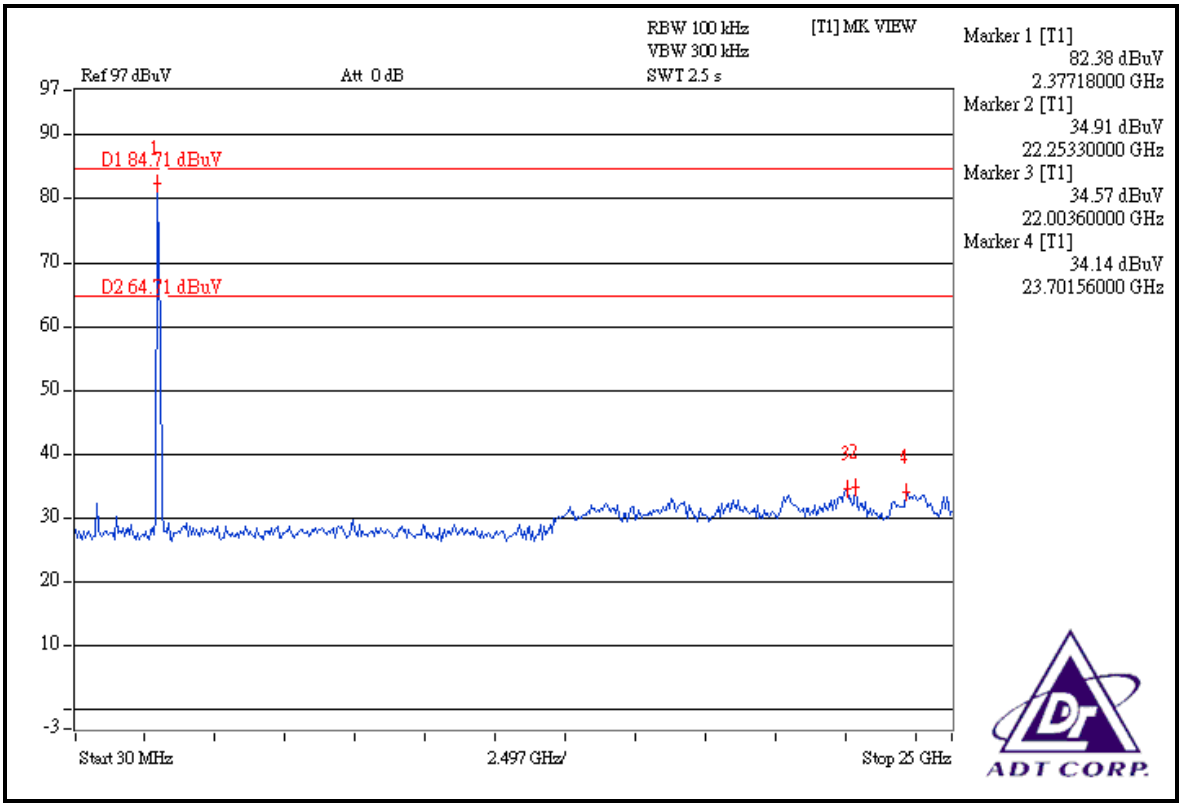
**NOTE 2:**

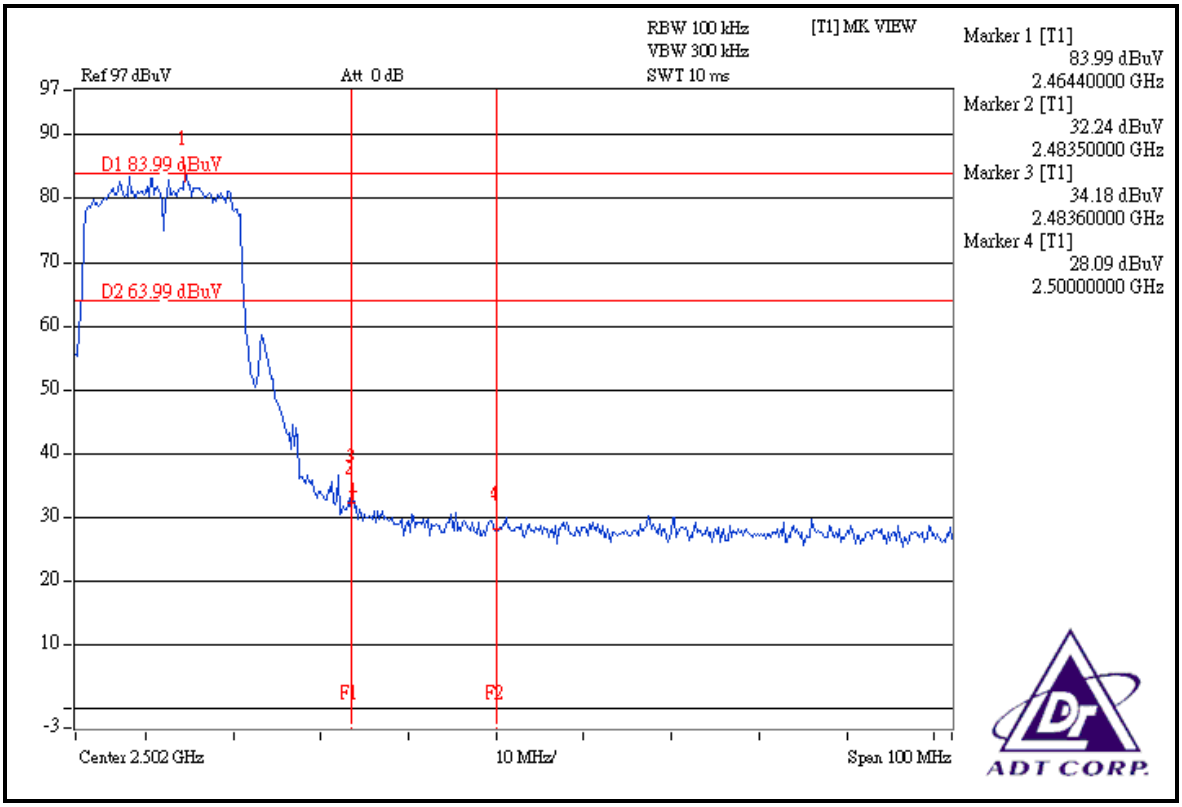
The band edge emission plot on the next second page shows 49.81dBc between carrier maximum power and local maximum emission in restrict band (2.4836GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 106.42dBuV/m (Peak), so the maximum field strength in restrict band is 106.42 – 49.81 = 56.61dBuV/m which is under 74dBuV/m limit.

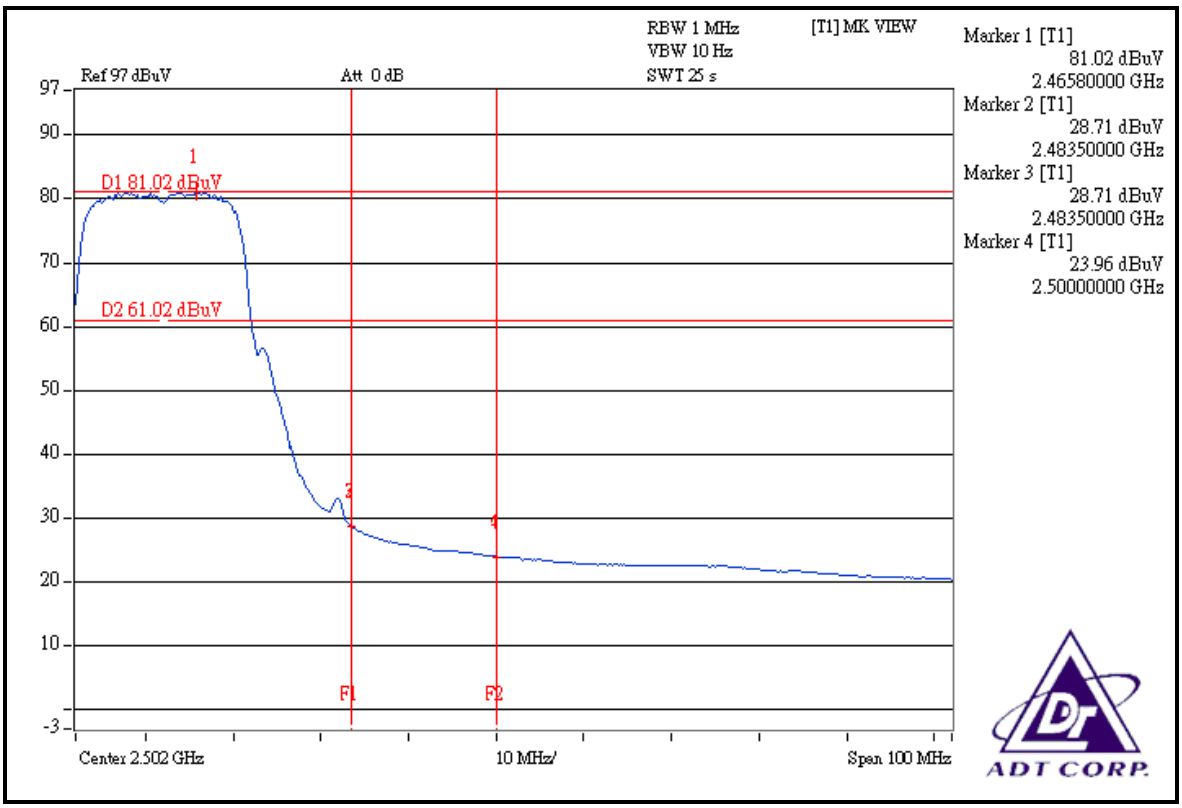
The band edge emission plot on the next third page shows 52.31dBc between carrier maximum power and local maximum emission in restrict band (2.4835GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 93.84dBuV/m (Average), so the maximum field strength in restrict band is 93.84 – 52.31 = 41.53dBuV/m which is under 54dBuV/m limit.

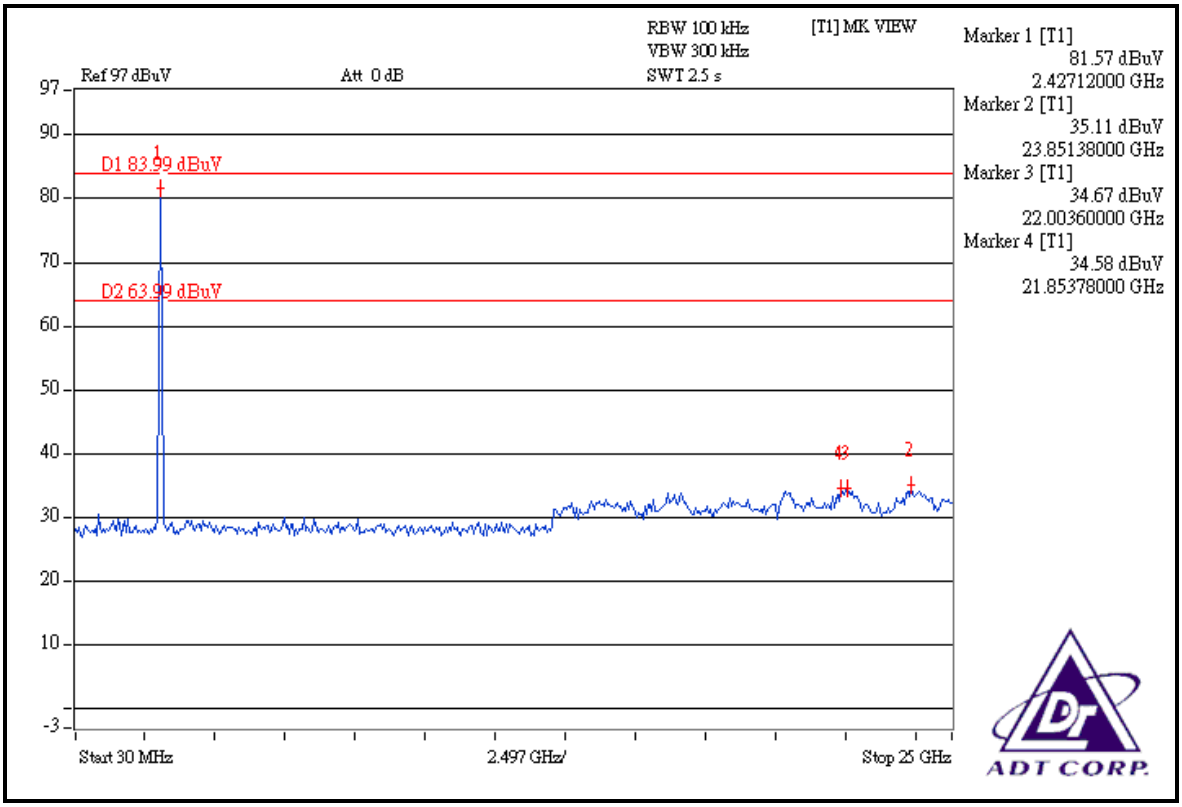

RBW 100 kHz
VBW 300 kHz
SWT 10 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 84.71 dBuV
D2 64.71 dBuV
Marker 1 [T1]
84.71 dBuV
2.41160000 GHz
Marker 2 [T1]
55.26 dBuV
2.40000000 GHz
Marker 3 [T1]
55.66 dBuV
2.39960000 GHz
Marker 4 [T1]
32.23 dBuV
2.39000000 GHz
Marker 5 [T1]
32.23 dBuV
2.39000000 GHz
97
90
80
70
60
50
40
30
20
10
-3
F2
F1
Center 2.372 GHz
10 MHz/
Span 100 MHz
ADT CORP.


RBW 1 MHz
VBW 10 Hz
SWT 25 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 81.99 dBuV
D2 61.99 dBuV
Marker 1 [T1]
81.99 dBuV
2.40720000 GHz
Marker 2 [T1]
56.71 dBuV
2.40000000 GHz
Marker 3 [T1]
56.71 dBuV
2.40000000 GHz
Marker 4 [T1]
29.68 dBuV
2.39000000 GHz
Marker 5 [T1]
29.68 dBuV
2.39000000 GHz
97
90
80
70
60
50
40
30
20
10
-3
F2
F1
Center 2.372 GHz
10 MHz/
Span 100 MHz
ADT CORP.


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 84.71 dBuV
D2 64.71 dBuV
Marker 1 [T1]
82.38 dBuV
2.37718000 GHz
Marker 2 [T1]
34.91 dBuV
22.25330000 GHz
Marker 3 [T1]
34.57 dBuV
22.00360000 GHz
Marker 4 [T1]
34.14 dBuV
23.70156000 GHz
Start 30 MHz
2.497 GHz/
Stop 25 GHz


RBW 100 kHz
VBW 300 kHz
SWT 10 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 83.99 dBuV
D2 63.99 dBuV
Marker 1 [T1]
83.99 dBuV
2.46440000 GHz
Marker 2 [T1]
32.24 dBuV
2.48350000 GHz
Marker 3 [T1]
34.18 dBuV
2.48360000 GHz
Marker 4 [T1]
28.09 dBuV
2.50000000 GHz
F1
F2
Center 2.502 GHz
10 MHz/
Span 100 MHz


RBW 1 MHz
VBW 10 Hz
SWT 25 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 81.02 dBuV
D2 61.02 dBuV
F1
F2
Center 2.502 GHz
10 MHz/
Span 100 MHz
Marker 1 [T1]
81.02 dBuV
2.46580000 GHz
Marker 2 [T1]
28.71 dBuV
2.48350000 GHz
Marker 3 [T1]
28.71 dBuV
2.48350000 GHz
Marker 4 [T1]
23.96 dBuV
2.50000000 GHz


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 83.99 dBuV
D2 63.99 dBuV
Start 30 MHz
2.497 GHz/
Stop 25 GHz
Marker 1 [T1]
81.57 dBuV
2.42712000 GHz
Marker 2 [T1]
35.11 dBuV
23.85138000 GHz
Marker 3 [T1]
34.67 dBuV
22.00360000 GHz
Marker 4 [T1]
34.58 dBuV
21.85378000 GHz

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

**NOTE 1:**

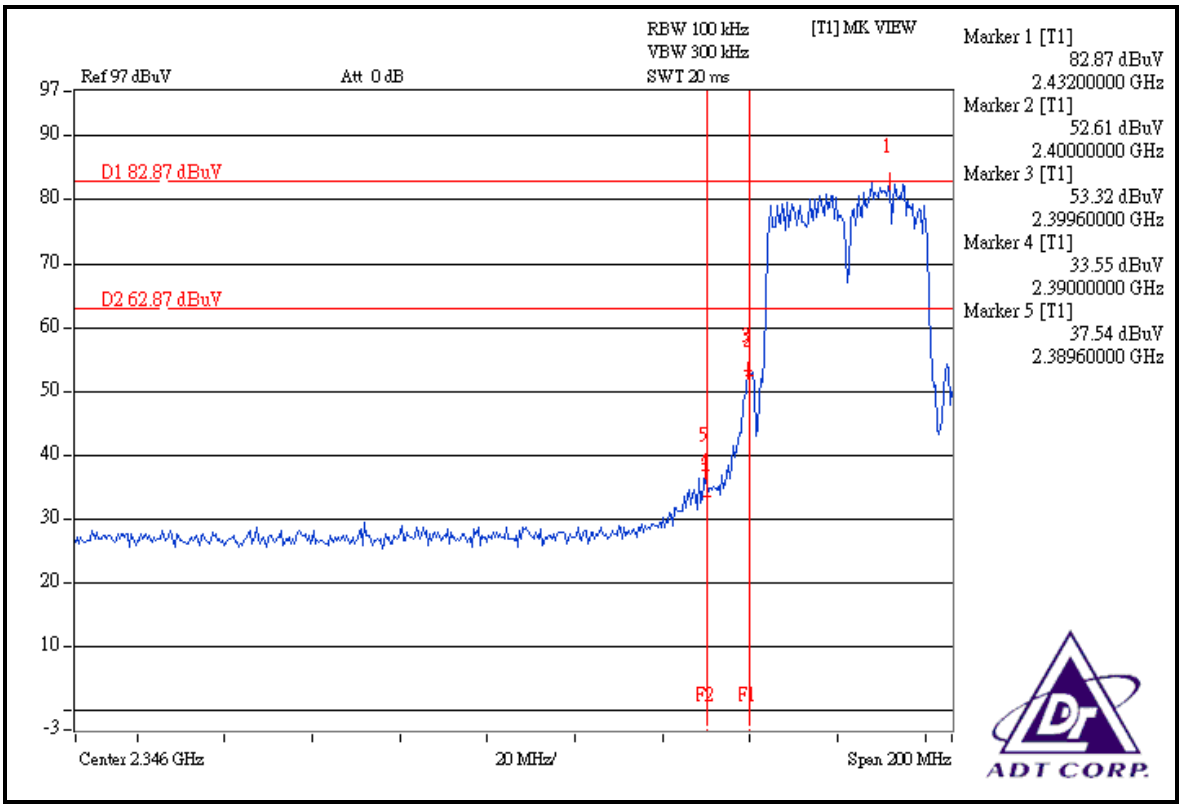
The band edge emission plot on the next page shows 45.33dBc between carrier maximum power and local maximum emission in restrict band (2.3896GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 104.53dBuV/m (Peak), so the maximum field strength in restrict band is 104.53 – 45.33 = 59.20dBuV/m which is under 74dBuV/m limit.

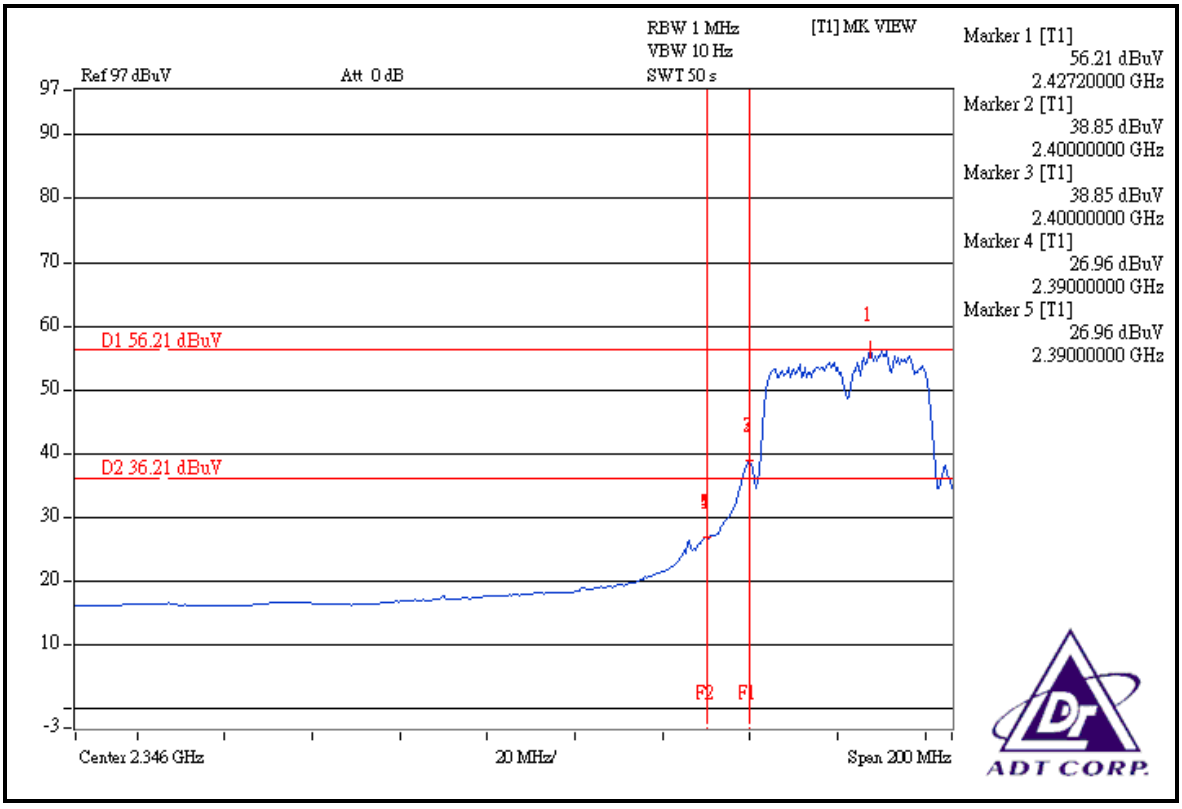
The band edge emission plot on the next page shows 29.25dBc between carrier maximum power and local maximum emission in restrict band (2.3900GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 74.81dBuV/m (Average), so the maximum field strength in restrict band is 74.81 – 29.25 = 45.56dBuV/m which is under 54dBuV/m limit.

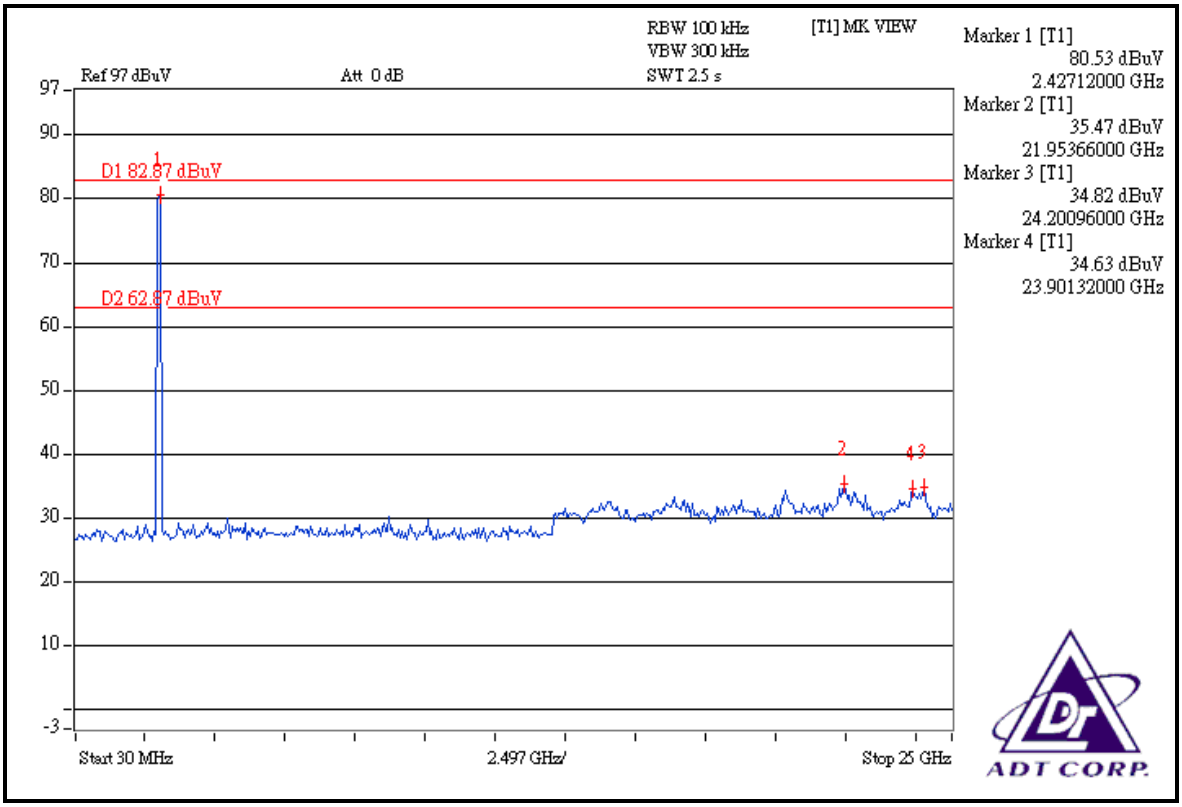
**NOTE 2:**

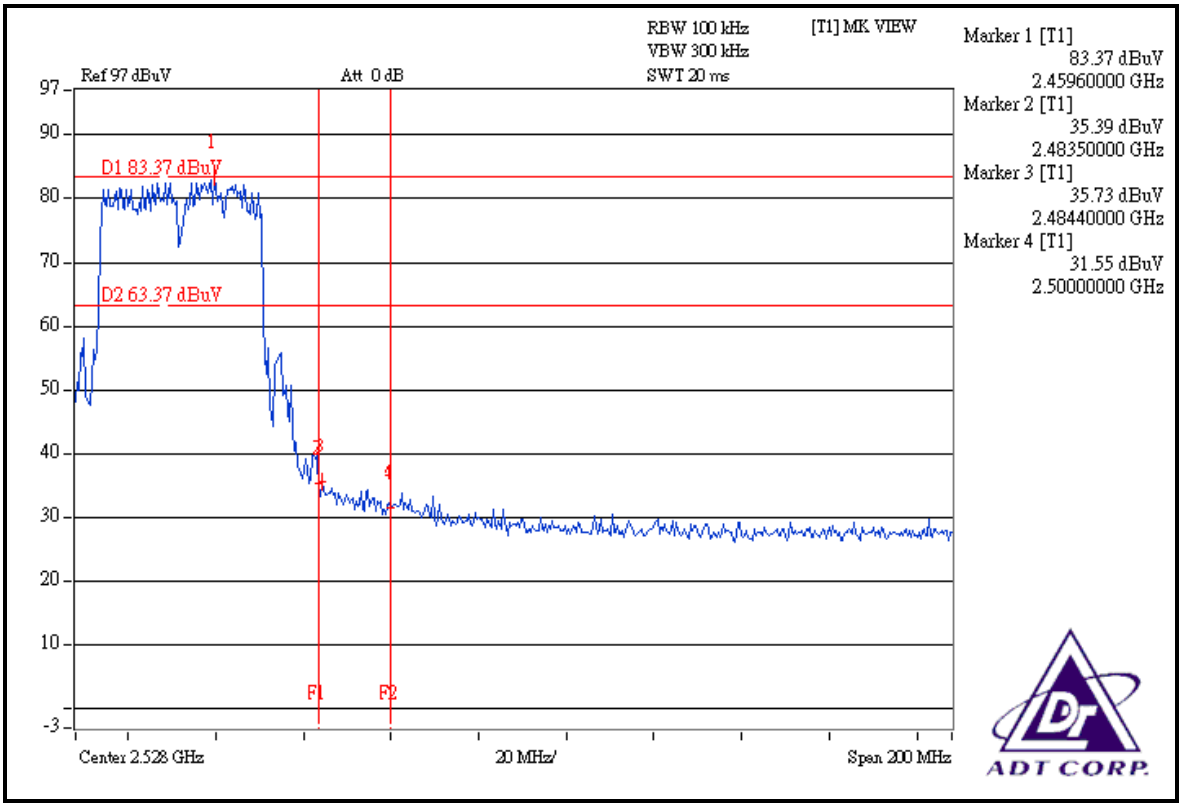
The band edge emission plot on the next second page shows 47.64dBc between carrier maximum power and local maximum emission in restrict band (2.4844GHz). The emission of carrier strength list in the test result of channel 7 at the item 4.2.7 is 105.70dBuV/m (Peak), so the maximum field strength in restrict band is 105.70 – 47.64 = 58.06dBuV/m which is under 74dBuV/m limit.

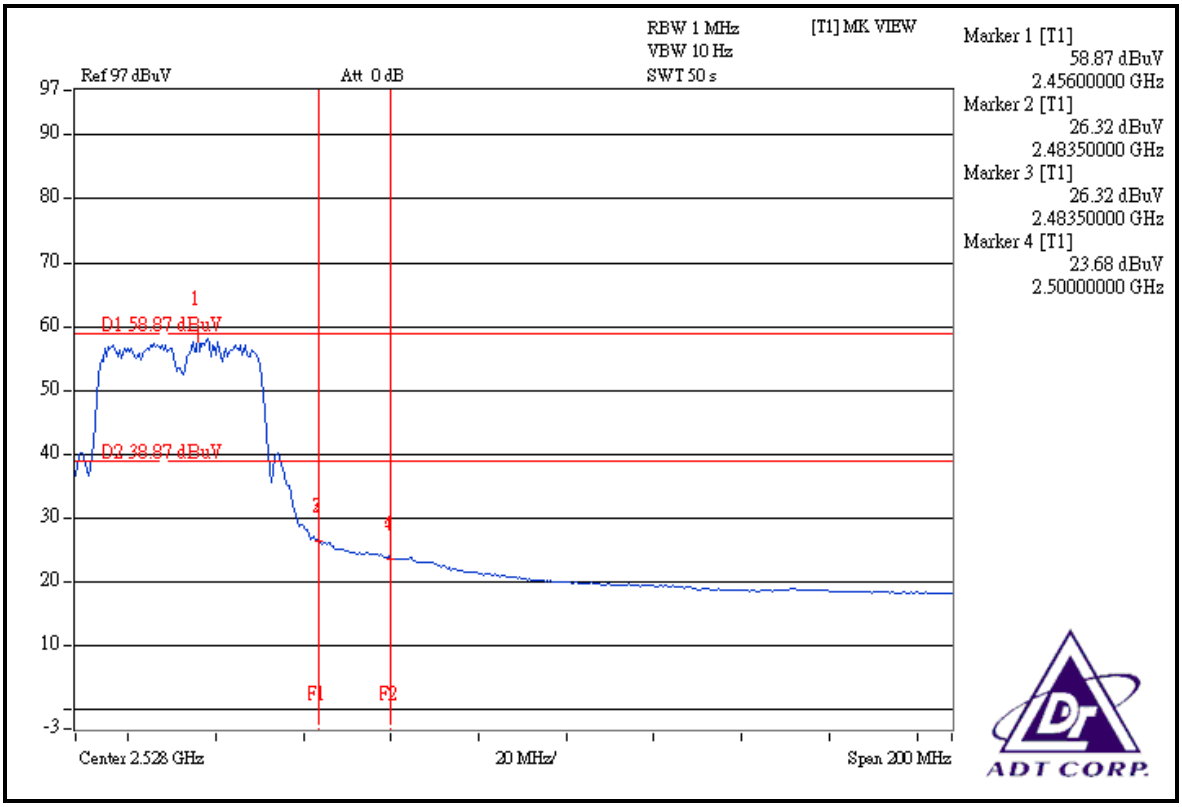
The band edge emission plot on the next third page shows 32.55dBc between carrier maximum power and local maximum emission in restrict band (2.4835GHz). The emission of carrier strength list in the test result of channel 7 at the item 4.2.7 is 76.72dBuV/m (Average), so the maximum field strength in restrict band is 76.72 – 32.55 = 44.17dBuV/m which is under 54dBuV/m limit.

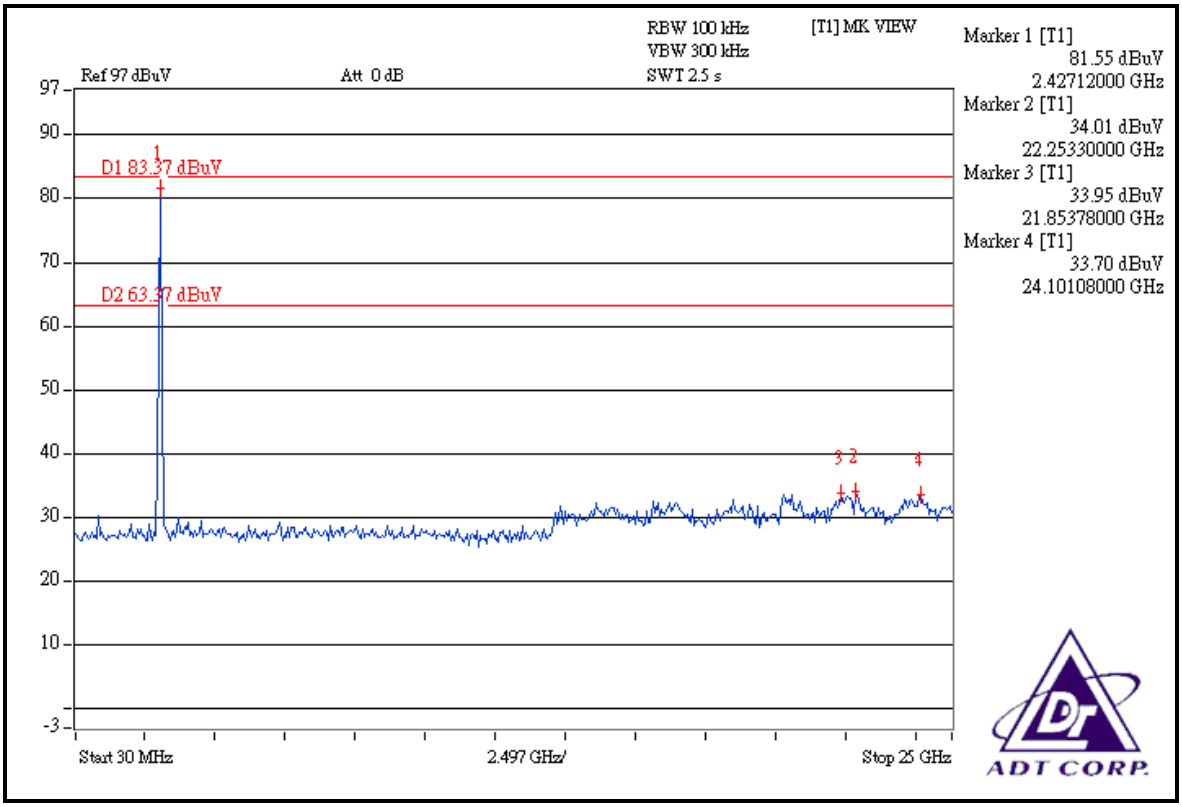

RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 82.87 dBuV
D2 62.87 dBuV
Marker 1 [T1]
82.87 dBuV
2.43200000 GHz
Marker 2 [T1]
52.61 dBuV
2.40000000 GHz
Marker 3 [T1]
53.32 dBuV
2.39960000 GHz
Marker 4 [T1]
33.55 dBuV
2.39000000 GHz
Marker 5 [T1]
37.54 dBuV
2.38960000 GHz
F2
F1
Center 2.346 GHz
20 MHz/
Span 200 MHz
ADT CORP.


RBW 1 MHz
VBW 10 Hz
SWT 50 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 56.21 dBuV
D2 36.21 dBuV
Marker 1 [T1]
56.21 dBuV
2.42720000 GHz
Marker 2 [T1]
38.85 dBuV
2.40000000 GHz
Marker 3 [T1]
38.85 dBuV
2.40000000 GHz
Marker 4 [T1]
26.96 dBuV
2.39000000 GHz
Marker 5 [T1]
26.96 dBuV
2.39000000 GHz
F2
F1
Center 2.346 GHz
20 MHz/
Span 200 MHz
ADT CORP.


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 82.87 dBuV
D2 62.87 dBuV
Marker 1 [T1]
80.53 dBuV
2.42712000 GHz
Marker 2 [T1]
35.47 dBuV
21.95366000 GHz
Marker 3 [T1]
34.82 dBuV
24.20096000 GHz
Marker 4 [T1]
34.63 dBuV
23.90132000 GHz
Start 30 MHz
2.497 GHz/
Stop 25 GHz
ADT CORP.


RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 83.37 dBuV
D2 63.37 dBuV
Marker 1 [T1]
83.37 dBuV
2.45960000 GHz
Marker 2 [T1]
35.39 dBuV
2.48350000 GHz
Marker 3 [T1]
35.73 dBuV
2.48440000 GHz
Marker 4 [T1]
31.55 dBuV
2.50000000 GHz
Center 2.528 GHz
20 MHz/
Span 200 MHz
ADT CORP.


RBW 1 MHz
VBW 10 Hz
SWT 50 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
58.87 dBuV
2.45600000 GHz
Marker 2 [T1]
26.32 dBuV
2.48350000 GHz
Marker 3 [T1]
26.32 dBuV
2.48350000 GHz
Marker 4 [T1]
23.68 dBuV
2.50000000 GHz
D1 58.87 dBuV
D2 38.87 dBuV
F1
F2
Center 2.528 GHz
20 MHz/
Span 200 MHz
ADT CORP.


RBW 100 kHz
VBW 300 kHz
SWT 2.5 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
81.55 dBuV
2.42712000 GHz
Marker 2 [T1]
34.01 dBuV
22.25330000 GHz
Marker 3 [T1]
33.95 dBuV
21.85378000 GHz
Marker 4 [T1]
33.70 dBuV
24.10108000 GHz
D1 83.37 dBuV
D2 63.37 dBuV
Start 30 MHz
2.497 GHz/
Stop 25 GHz
ADT CORP.

## 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

The antenna used in this product is PIFA antenna with I-PEX & UFL connectors. The maximum Gain of the antenna is -0.62dBi.

# 5. TEST TYPES AND RESULTS (FOR 5.0GHz)

## 5.1 CONDUCTED EMISSION MEASUREMENT

### 5.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

| FREQUENCY OF EMISSION (MHz) | CONDUCTED LIMIT (dBμV) | |
|---|---|---|
| | 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 0.50MHz.

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.

### 5.1.2 T EST INSTRUMENTS

| DESCRIPTION & MANUFACTURER | MODEL NO. | SERIAL NO. | CALIBRATED UNTIL |
|---|---|---|---|
| ROHDE & SCHWARZ Test Receiver | ESCS 30 | 838251/021 | Nov. 23, 2007 |
| ROHDE & SCHWARZ Artificial Mains Network (for EUT) | ESH3-Z5 | 100218 | Nov. 21, 2007 |
| LISN With Adapter (for EUT) | AD10 | C10Ada-001 | Nov. 21, 2007 |
| ROHDE & SCHWARZ Artificial Mains Network (for peripherals) | ESH3-Z5 | 100219 | Nov. 07, 2007 |
| ROHDE & SCHWARZ Artificial Mains Network (for peripherals) | ESH3-Z5 | 100220 | Oct. 26, 2007 |
| Software | ADT_Cond_V7.3.2 | NA | NA |
| Software | ADT_ISN_V7.3.2 | NA | NA |
| RF cable (JYEBAO) | 5D-FB | Cable-C10.01 | Mar. 01, 2008 |
| SUHNER Terminator (For ROHDE & SCHWARZ LISN) | 65BNC-5001 | E1-010773 | Feb. 11, 2008 |

**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 ADT Shielded Room No. 10.

3. The VCCI Site Registration No. C-1852.

## 5.1.3 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.

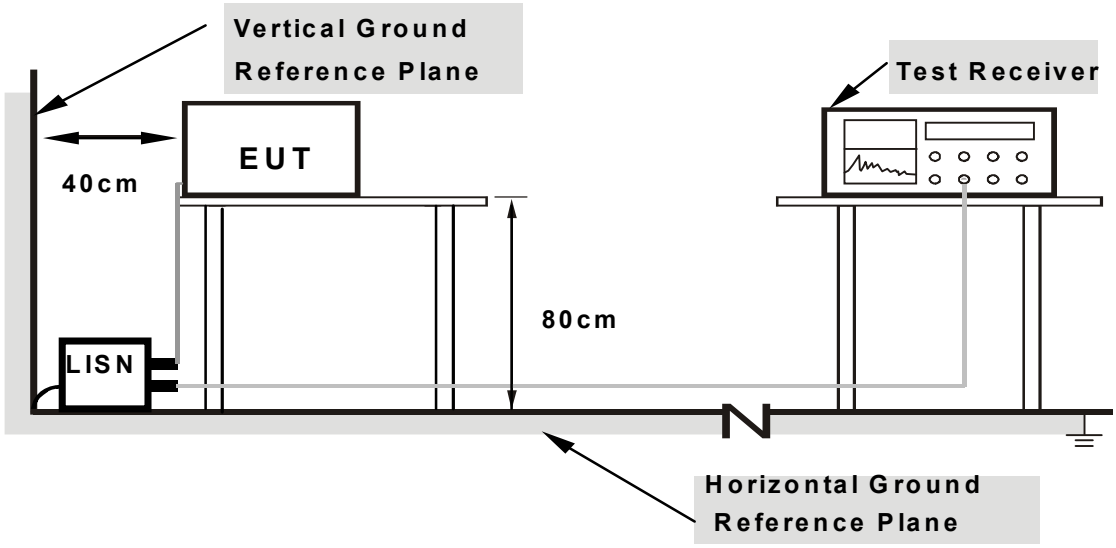
b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

## 5.1.4 DEVIATION FROM TEST STANDARD

No deviation

## 5.1.5 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 attached file (Test Setup Photo).

## 5.1.6 EUT OPERATING CONDITIONS

Same as 4.1.6

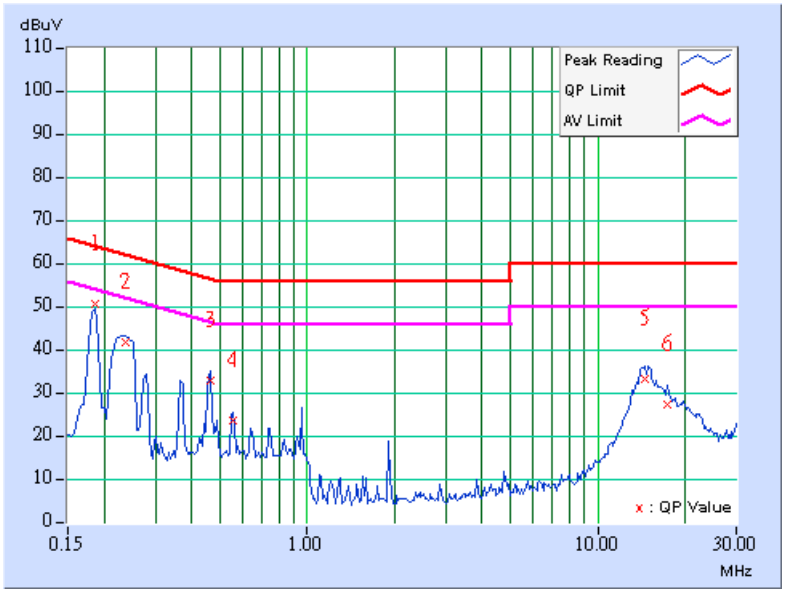
## 5.1.7 TEST RESULTS

**CONDUCTED WORST-CASE DATA: 802.11a OFDM MODULATION:**

| | | | |
|---|---|---|---|
| **MODULATION TYPE** | BPSK | **CHANNEL** | 1 |
| **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz | **6dB BANDWIDTH** | 9 kHz |
| **TRANSFER RATE** | 6.0Mbps | **PHASE** | Line 1 |
| **ENVIRONMENTAL CONDITIONS** | 25deg. C, 66%RH, 998hPa | **TESTED BY** | Jun Wu |

| No | Freq. | Corr. Factor | Reading Value [dB (uV)] | | Emission Level [dB (uV)] | | Limit [dB (uV)] | | Margin (dB) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | [MHz] | (dB) | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. |
| 1 | 0.185 | 0.20 | 49.44 | - | 49.64 | - | 64.25 | 54.25 | -14.61 | - |
| 2 | 0.236 | 0.20 | 40.72 | - | 40.92 | - | 62.24 | 52.24 | -21.32 | - |
| 3 | 0.463 | 0.22 | 31.53 | - | 31.75 | - | 56.65 | 46.65 | -24.90 | - |
| 4 | 0.552 | 0.25 | 22.35 | - | 22.60 | - | 56.00 | 46.00 | -33.40 | - |
| 5 | 14.531 | 1.06 | 32.26 | - | 33.32 | - | 60.00 | 50.00 | -26.68 | - |
| 6 | 17.469 | 1.25 | 26.25 | - | 27.50 | - | 60.00 | 50.00 | -32.50 | - |

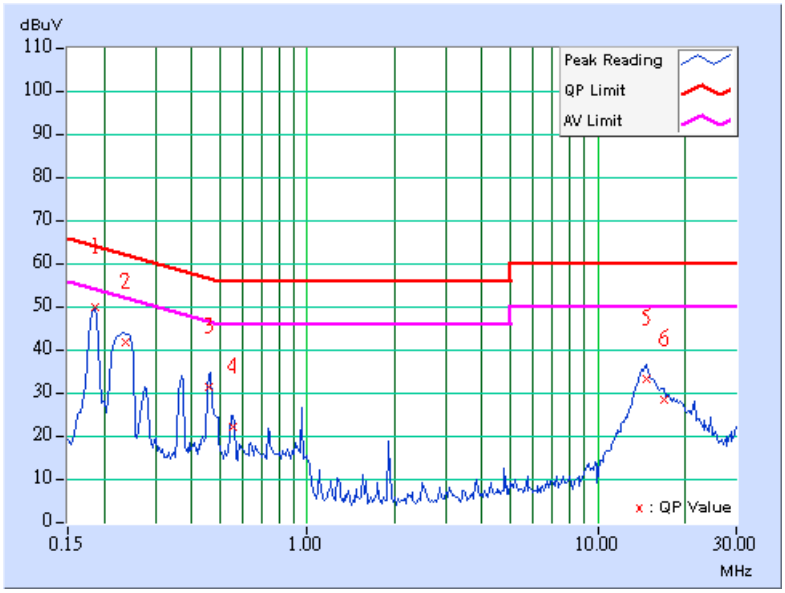
**REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value =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



| | | | |
|---|---|---|---|
| **MODULATION TYPE** | BPSK | **CHANNEL** | 1 |
| **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz | **6dB BANDWIDTH** | 9 kHz |
| **TRANSFER RATE** | 6.0Mbps | **PHASE** | Line 2 |
| **ENVIRONMENTAL CONDITIONS** | 25deg. C, 66%RH, 998hPa | **TESTED BY** | Jun Wu |

| No | Freq. | Corr. Factor | Reading Value [dB (uV)] | | Emission Level [dB (uV)] | | Limit [dB (uV)] | | Margin (dB) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | [MHz] | (dB) | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. |
| 1 | 0.185 | 0.20 | 49.02 | - | 49.22 | - | 64.25 | 54.25 | -15.03 | - |
| 2 | 0.236 | 0.20 | 41.14 | - | 41.34 | - | 62.23 | 52.23 | -20.89 | - |
| 3 | 0.460 | 0.21 | 30.75 | - | 30.96 | - | 56.69 | 46.69 | -25.73 | - |
| 4 | 0.553 | 0.23 | 21.51 | - | 21.74 | - | 56.00 | 46.00 | -34.26 | - |
| 5 | 14.687 | 0.78 | 32.44 | - | 33.22 | - | 60.00 | 50.00 | -26.78 | - |
| 6 | 16.922 | 0.88 | 27.48 | - | 28.36 | - | 60.00 | 50.00 | -31.64 | - |

**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.



## 5.2 RADIATED EMISSION MEASUREMENT

### 5.2.1 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.

## 5.2.2 TEST INSTRUMENTS

| DESCRIPTION & MANUFACTURER | MODEL NO. | SERIAL NO. | CALIBRATED UNTIL |
|---|---|---|---|
| HP Preamplifier | 8447D | 2432A03504 | May 09, 2008 |
| HP Preamplifier | 8449B | 3008A01201 | Oct. 10, 2007 |
| HP Preamplifier | 8449B | 3008A01292 | Aug. 05, 2008 |
| ROHDE & SCHWARZ TEST RECEIVER | ESI7 | 836697/012 | Oct. 24, 2007 |
| Schwarzbeck Antenna | VULB 9168 | 137 | Oct. 01, 2007 |
| Schwarzbeck Antenna | VHBA 9123 | 480 | Apr. 18, 2008 |
| EMCO Horn Antenna | 3115 | 6714 | Oct. 24, 2007 |
| EMCO Horn Antenna | 3115 | 9312-4192 | Apr. 19, 2008 |
| ADT. Turn Table | TT100 | 0306 | NA |
| ADT. Tower | AT100 | 0306 | NA |
| Software | ADT_Radiated_V7.6.15 | NA | NA |
| SUHNER RF cable | SF104-26.5 | CABLE-CH6-17m-01 | Dec. 11, 2007 |
| ROHDE & SCHWARZ Spectrum Analyzer | FSP 40 | 100036 | Mar. 13, 2008 |

**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 and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in ADT Chamber No. 6.
4. The Industry Canada Reference No. IC 3789-6.

## 5.2.3 TEST PROCEDURES

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meters semi-anechoic chamber. 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 lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

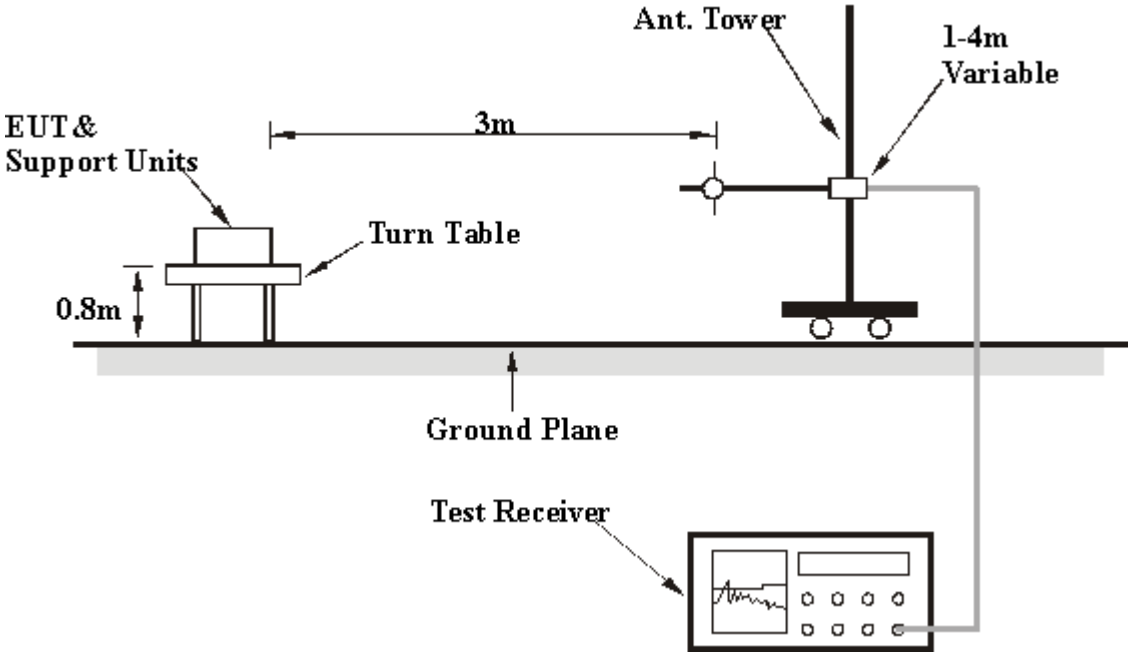
**NOTE:**

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 1MHz and video bandwidth is 3MHz for Peak detection at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 10Hz for Average detection (AV) at frequency above 1GHz.

## 5.2.4 DEVIATION FROM TEST STANDARD

No deviation

## 5.2.5 TEST SETUP




For the actual test configuration, please refer to the attached file (Test Setup Photo).

## 5.2.6 EUT OPERATING CONDITIONS

Same as 4.1.6

## 5.2.7 TEST RESULTS

**BELOW 1GHz WORST-CASE DATA: 802.11a OFDM MODULATION:**

| | | | |
|---|---|---|---|
| **MODULATION TYPE** | BPSK | **CHANNEL** | 1 |
| **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz | **FREQUENCY RANGE** | Below 1000MHz |
| **TRANSFER RATE** | 6.0Mbps | **DETECTOR FUNCTION** | Quasi-Peak |
| **ENVIRONMENTAL CONDITIONS** | 25deg. C, 66%RH, 998hPa | **TESTED BY** | Jun Wu |

**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 | 203.006 | 28.31 QP | 43.50 | -15.19 | 1.33 H | 193 | 16.48 | 11.83 |
| 2 | 593.727 | 39.47 QP | 46.00 | -6.53 | 1.28 H | 316 | 15.09 | 24.38 |
| 3 | 712.305 | 38.75 QP | 46.00 | -7.25 | 1.24 H | 166 | 12.44 | 26.31 |
| 4 | 751.182 | 30.82 QP | 46.00 | -15.18 | 1.20 H | 217 | 2.81 | 28.01 |
| 5 | 813.387 | 39.89 QP | 46.00 | -6.11 | 1.13 H | 244 | 11.56 | 28.33 |
| 6 | 896.974 | 35.32 QP | 46.00 | -10.68 | 1.10 H | 16 | 5.83 | 29.49 |
| 7 | 914.469 | 38.98 QP | 46.00 | -7.02 | 1.08 H | 316 | 9.28 | 29.70 |

**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 | 31.944 | 26.99 QP | 40.00 | -13.01 | 1.00 V | 10 | 14.01 | 12.98 |
| 2 | 432.385 | 31.77 QP | 46.00 | -14.23 | 1.00 V | 10 | 11.72 | 20.05 |
| 3 | 584.008 | 31.36 QP | 46.00 | -14.64 | 1.06 V | 322 | 7.21 | 24.15 |
| 4 | 593.727 | 44.32 QP | 46.00 | -1.68 | 1.10 V | 313 | 19.94 | 24.38 |
| 5 | 712.305 | 36.22 QP | 46.00 | -9.78 | 1.17 V | 307 | 9.91 | 26.31 |
| 6 | 813.387 | 37.38 QP | 46.00 | -8.62 | 1.24 V | 187 | 9.05 | 28.33 |

**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.

## ABOVE 1GHz DATA: 802.11a OFDM MODULATION:

| | | | |
|---|---|---|---|
| **MODULATION TYPE** | BPSK | **CHANNEL** | 1 |
| **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz | **FREQUENCY RANGE** | 1 ~ 40GHz |
| **TRANSFER RATE** | 6.0Mbps | **DETECTOR FUNCTION** | Peak (PK)<br>Average (AV) |
| **ENVIRONMENTAL CONDITIONS** | 24deg. C, 54%RH, 997hPa | **TESTED BY** | Jun Wu |

**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 | 5725.000 | 71.52 PK | 74.00 | -2.48 | 1.32 H | 354 | 27.92 | 43.60 |
| 2 | 5725.000 | 52.45 AV | 54.00 | -1.55 | 1.32 H | 354 | 8.85 | 43.60 |
| 3 | *5745.000 | 105.75 PK | | | 1.32 H | 354 | 62.11 | 43.64 |
| 4 | *5745.000 | 96.16 AV | | | 1.32 H | 354 | 52.52 | 43.64 |
| 5 | #11490.000 | 63.00 PK | 74.00 | -11.00 | 1.03 H | 215 | 9.93 | 53.08 |
| 6 | #11490.000 | 50.18 AV | 54.00 | -3.82 | 1.03 H | 215 | -2.89 | 53.08 |

**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 | 5725.000 | 67.35 PK | 74.00 | -6.65 | 1.00 V | 182 | 23.75 | 43.60 |
| 2 | 5725.000 | 47.16 AV | 54.00 | -6.84 | 1.00 V | 182 | 3.56 | 43.60 |
| 3 | *5745.000 | 101.88 PK | | | 1.00 V | 182 | 58.24 | 43.64 |
| 4 | *5745.000 | 89.74 AV | | | 1.00 V | 182 | 46.10 | 43.64 |
| 5 | #11490.000 | 62.84 PK | 74.00 | -11.16 | 1.27 V | 180 | 9.77 | 53.08 |
| 6 | #11490.000 | 50.22 AV | 54.00 | -3.78 | 1.27 V | 180 | -2.85 | 53.08 |

**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.
6. " # ": The radiated frequency falling in the restricted band.
7. The limit value is defined as per 15.247.

| | | | |
|---|---|---|---|
| **MODULATION TYPE** | BPSK | **CHANNEL** | 3 |
| **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz | **FREQUENCY RANGE** | 1 ~ 40GHz |
| **TRANSFER RATE** | 6.0Mbps | **DETECTOR FUNCTION** | Peak (PK)<br>Average (AV) |
| **ENVIRONMENTAL CONDITIONS** | 24deg. C, 54%RH, 997hPa | **TESTED BY** | Jun Wu |

**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 | *5785.000 | 104.24 PK | | | 1.40 H | 356 | 60.53 | 43.71 |
| 2 | *5785.000 | 92.25 AV | | | 1.40 H | 356 | 48.54 | 43.71 |
| 3 | #11570.000 | 64.55 PK | 74.00 | -9.45 | 1.09 H | 15 | 11.22 | 53.33 |
| 4 | #11570.000 | 51.41 AV | 54.00 | -2.59 | 1.09 H | 15 | -1.92 | 53.33 |

**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 | *5785.000 | 101.15 PK | | | 1.07 V | 61 | 57.44 | 43.71 |
| 2 | *5785.000 | 88.98 AV | | | 1.07 V | 61 | 45.27 | 43.71 |
| 3 | #11570.000 | 65.14 PK | 74.00 | -8.86 | 1.05 V | 264 | 11.81 | 53.33 |
| 4 | #11570.000 | 51.08 AV | 54.00 | -2.92 | 1.05 V | 264 | -2.25 | 53.33 |

**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.
6. " # ": The radiated frequency falling in the restricted band.
7. The limit value is defined as per 15.247.

| | | | |
|---|---|---|---|
| **MODULATION TYPE** | BPSK | **CHANNEL** | 5 |
| **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz | **FREQUENCY RANGE** | 1 ~ 40GHz |
| **TRANSFER RATE** | 6.0Mbps | **DETECTOR FUNCTION** | Peak (PK)<br>Average (AV) |
| **ENVIRONMENTAL CONDITIONS** | 24deg. C, 54%RH, 997hPa | **TESTED BY** | Jun Wu |

**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 | *5825.000 | 103.19 PK | | | 1.30 H | 3 | 59.41 | 43.78 |
| 2 | *5825.000 | 90.92 AV | | | 1.30 H | 3 | 47.14 | 43.78 |
| 3 | 5850.000 | 57.71 PK | 74.00 | -16.29 | 1.30 H | 3 | 13.89 | 43.82 |
| 4 | 5850.000 | 43.06 AV | 54.00 | -10.94 | 1.30 H | 3 | -0.76 | 43.82 |
| 5 | #11650.000 | 62.70 PK | 74.00 | -11.30 | 1.08 H | 225 | 9.10 | 53.60 |
| 6 | #11650.000 | 51.84 AV | 54.00 | -2.16 | 1.08 H | 225 | -1.76 | 53.60 |

**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 | *5825.000 | 104.36 PK | | | 1.14 V | 43 | 60.58 | 43.78 |
| 2 | *5825.000 | 92.25 AV | | | 1.14 V | 43 | 48.47 | 43.78 |
| 3 | 5850.000 | 61.01 PK | 74.00 | -12.99 | 1.14 V | 43 | 17.19 | 43.82 |
| 4 | 5850.000 | 43.57 AV | 54.00 | -10.43 | 1.14 V | 43 | -0.25 | 43.82 |
| 5 | #11650.000 | 63.69 PK | 74.00 | -10.31 | 1.00 V | 142 | 10.09 | 53.60 |
| 6 | #11650.000 | 51.89 AV | 54.00 | -2.11 | 1.00 V | 142 | -1.71 | 53.60 |

**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.
6. " # ": The radiated frequency falling in the restricted band.
7. The limit value is defined as per 15.247.

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

| | | | |
|---|---|---|---|
| **MODULATION TYPE** | BPSK | **CHANNEL** | 1 |
| **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz | **FREQUENCY RANGE** | 1 ~ 40GHz |
| **TRANSFER RATE** | 6.5Mbps | **DETECTOR FUNCTION** | Peak (PK)<br>Average (AV) |
| **ENVIRONMENTAL CONDITIONS** | 26deg. C, 64%RH, 995hPa | **TESTED BY** | Jun Wu |

**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 | 5725.000 | 71.14 PK | 74.00 | -2.86 | 1.54 H | 354 | 27.54 | 43.60 |
| 2 | 5725.000 | 51.55 AV | 54.00 | -2.45 | 1.54 H | 354 | 7.95 | 43.60 |
| 3 | *5745.000 | 106.05 PK | | | 1.54 H | 354 | 62.41 | 43.64 |
| 4 | *5745.000 | 93.97 AV | | | 1.54 H | 354 | 50.33 | 43.64 |
| 5 | #11490.000 | 64.06 PK | 74.00 | -9.94 | 1.32 H | 274 | 10.98 | 53.08 |
| 6 | #11490.000 | 51.24 AV | 54.00 | -2.76 | 1.32 H | 274 | -1.84 | 53.08 |

**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 | 5725.000 | 72.09 PK | 74.00 | -1.91 | 1.00 V | 181 | 28.49 | 43.60 |
| 2 | 5725.000 | 51.15 AV | 54.00 | -2.85 | 1.00 V | 181 | 7.55 | 43.60 |
| 3 | *5745.000 | 105.55 PK | | | 1.00 V | 181 | 61.91 | 43.64 |
| 4 | *5745.000 | 92.77 AV | | | 1.00 V | 181 | 49.13 | 43.64 |
| 5 | #11490.000 | 63.27 PK | 74.00 | -10.73 | 1.21 V | 85 | 10.19 | 53.08 |
| 6 | #11490.000 | 51.45 AV | 54.00 | -2.55 | 1.21 V | 85 | -1.63 | 53.08 |

**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.
6. " # ": The radiated frequency falling in the restricted band.
7. The limit value is defined as per 15.247.

| | | | |
|---|---|---|---|
| **MODULATION TYPE** | BPSK | **CHANNEL** | 3 |
| **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz | **FREQUENCY RANGE** | 1 ~ 40GHz |
| **TRANSFER RATE** | 6.5Mbps | **DETECTOR FUNCTION** | Peak (PK)<br>Average (AV) |
| **ENVIRONMENTAL CONDITIONS** | 26deg. C, 64%RH, 995hPa | **TESTED BY** | Jun Wu |

**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 | *5785.000 | 106.90 PK | | | 1.03 H | 325 | 63.19 | 43.71 |
| 2 | *5785.000 | 94.03 AV | | | 1.03 H | 325 | 50.32 | 43.71 |
| 3 | #11570.000 | 64.18 PK | 74.00 | -9.82 | 1.07 H | 63 | 10.85 | 53.33 |
| 4 | #11570.000 | 51.27 AV | 54.00 | -2.73 | 1.07 H | 63 | -2.06 | 53.33 |

**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 | *5785.000 | 104.02 PK | | | 1.00 V | 177 | 60.31 | 43.71 |
| 2 | *5785.000 | 92.47 AV | | | 1.00 V | 177 | 48.76 | 43.71 |
| 3 | #11570.000 | 63.63 PK | 74.00 | -10.37 | 1.22 V | 151 | 10.30 | 53.33 |
| 4 | #11570.000 | 51.21 AV | 54.00 | -2.79 | 1.22 V | 151 | -2.12 | 53.33 |

**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.
6. " # ": The radiated frequency falling in the restricted band.
7. The limit value is defined as per 15.247.

| | | | |
|---|---|---|---|
| **MODULATION TYPE** | BPSK | **CHANNEL** | 5 |
| **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz | **FREQUENCY RANGE** | 1 ~ 40GHz |
| **TRANSFER RATE** | 6.5Mbps | **DETECTOR FUNCTION** | Peak (PK)<br>Average (AV) |
| **ENVIRONMENTAL CONDITIONS** | 26deg. C, 64%RH, 995hPa | **TESTED BY** | Jun Wu |

**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 | *5825.000 | 107.28 PK | | | 1.02 H | 332 | 63.50 | 43.78 |
| 2 | *5825.000 | 94.11 AV | | | 1.02 H | 332 | 50.33 | 43.78 |
| 3 | 5850.000 | 67.92 PK | 74.00 | -6.08 | 1.02 H | 332 | 24.10 | 43.82 |
| 4 | 5850.000 | 45.52 AV | 54.00 | -8.48 | 1.02 H | 332 | 1.70 | 43.82 |
| 5 | #11650.000 | 65.13 PK | 74.00 | -8.87 | 1.13 H | 265 | 11.53 | 53.60 |
| 6 | #11650.000 | 52.28 AV | 54.00 | -1.72 | 1.13 H | 265 | -1.32 | 53.60 |

**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 | *5825.000 | 103.79 PK | | | 1.00 V | 31 | 60.01 | 43.78 |
| 2 | *5825.000 | 90.83 AV | | | 1.00 V | 31 | 47.05 | 43.78 |
| 3 | 5850.000 | 66.69 PK | 74.00 | -7.31 | 1.00 V | 31 | 22.87 | 43.82 |
| 4 | 5850.000 | 44.05 AV | 54.00 | -9.95 | 1.00 V | 31 | 0.23 | 43.82 |
| 5 | #11650.000 | 64.73 PK | 74.00 | -9.27 | 1.26 V | 124 | 11.13 | 53.60 |
| 6 | #11650.000 | 51.74 AV | 54.00 | -2.26 | 1.26 V | 124 | -1.86 | 53.60 |

**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.
6. " # ": The radiated frequency falling in the restricted band.
7. The limit value is defined as per 15.247.

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

| | | | |
|---|---|---|---|
| **MODULATION TYPE** | BPSK | **CHANNEL** | 1 |
| **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz | **FREQUENCY RANGE** | 1 ~ 40GHz |
| **TRANSFER RATE** | 13.5Mbps | **DETECTOR FUNCTION** | Peak (PK)<br>Average (AV) |
| **ENVIRONMENTAL CONDITIONS** | 26deg. C, 64%RH, 995hPa | **TESTED BY** | Jun Wu |

| 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 | 5725.000 | 71.90 PK | 74.00 | -2.10 | 1.46 H | 3 | 28.30 | 43.60 |
| 2 | 5725.000 | 52.53 AV | 54.00 | -1.47 | 1.46 H | 3 | 8.93 | 43.60 |
| 3 | *5755.000 | 104.43 PK | | | 1.46 H | 3 | 60.78 | 43.65 |
| 4 | *5755.000 | 82.25 AV | | | 1.46 H | 3 | 38.60 | 43.65 |
| 5 | #11510.000 | 63.49 PK | 74.00 | -10.51 | 1.14 H | 210 | 10.36 | 53.13 |
| 6 | #11510.000 | 51.18 AV | 54.00 | -2.82 | 1.14 H | 210 | -1.95 | 53.13 |

| 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 | 5725.000 | 66.30 PK | 74.00 | -7.70 | 1.60 V | 209 | 22.70 | 43.60 |
| 2 | 5725.000 | 49.35 AV | 54.00 | -4.65 | 1.60 V | 209 | 5.75 | 43.60 |
| 3 | *5755.000 | 101.21 PK | | | 1.60 V | 209 | 57.56 | 43.65 |
| 4 | *5755.000 | 79.66 AV | | | 1.60 V | 209 | 36.01 | 43.65 |
| 5 | #11510.000 | 64.29 PK | 74.00 | -9.71 | 1.26 V | 214 | 11.16 | 53.13 |
| 6 | #11510.000 | 51.31 AV | 54.00 | -2.69 | 1.26 V | 214 | -1.82 | 53.13 |

**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.
6. " # ": The radiated frequency falling in the restricted band.
7. The limit value is defined as per 15.247.

| | | | |
|---|---|---|---|
| **MODULATION TYPE** | BPSK | **CHANNEL** | 2 |
| **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz | **FREQUENCY RANGE** | 1 ~ 40GHz |
| **TRANSFER RATE** | 13.5Mbps | **DETECTOR FUNCTION** | Peak (PK)<br>Average (AV) |
| **ENVIRONMENTAL CONDITIONS** | 26deg. C, 64%RH, 995hPa | **TESTED BY** | Jun Wu |

**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 | *5795.000 | 103.83 PK | | | 1.43 H | 4 | 60.10 | 43.73 |
| 2 | *5795.000 | 82.00 AV | | | 1.43 H | 4 | 38.27 | 43.73 |
| 3 | 5850.000 | 55.83 PK | 74.00 | -18.17 | 1.43 H | 4 | 12.01 | 43.82 |
| 4 | 5850.000 | 42.16 AV | 54.00 | -11.84 | 1.43 H | 4 | -1.66 | 43.82 |
| 5 | #11590.000 | 64.48 PK | 74.00 | -9.52 | 1.28 H | 96 | 11.08 | 53.40 |
| 6 | #11590.000 | 51.90 AV | 54.00 | -2.10 | 1.28 H | 96 | -1.50 | 53.40 |

**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 | *5795.000 | 101.96 PK | | | 1.00 V | 182 | 58.23 | 43.73 |
| 2 | *5795.000 | 81.04 AV | | | 1.00 V | 182 | 37.31 | 43.73 |
| 3 | 5850.000 | 54.33 PK | 74.00 | -19.67 | 1.00 V | 182 | 10.51 | 43.82 |
| 4 | 5850.000 | 42.03 AV | 54.00 | -11.97 | 1.00 V | 182 | -1.79 | 43.82 |
| 5 | #11590.000 | 65.03 PK | 74.00 | -8.97 | 1.09 V | 321 | 11.63 | 53.40 |
| 6 | #11590.000 | 51.77 AV | 54.00 | -2.23 | 1.09 V | 321 | -1.63 | 53.40 |

**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.
6. " # ": The radiated frequency falling in the restricted band.
7. The limit value is defined as per 15.247.

## 5.3 6dB BANDWIDTH MEASUREMENT

### 5.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5MHz.

### 5.3.2 TEST INSTRUMENTS

| DESCRIPTION & MANUFACTURER | MODEL NO. | SERIAL NO. | CALIBRATED UNTIL |
|---|---|---|---|
| SPECTRUM ANALYZER | FSP 40 | 100036 | Mar. 13, 2008 |

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

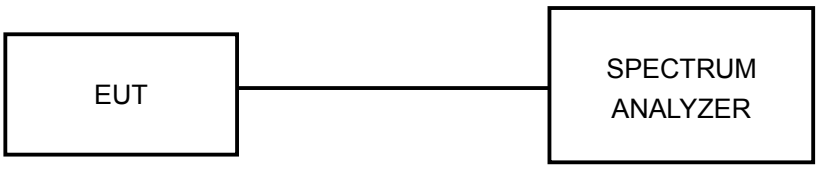
### 5.3.3 TEST PROCEDURE

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 300kHz VBW. The 6dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 6dB.

## 5.3.4 DEVIATION FROM TEST STANDARD

No deviation

## 5.3.5 TEST SETUP




## 5.3.6 EUT OPERATING CONDITIONS

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

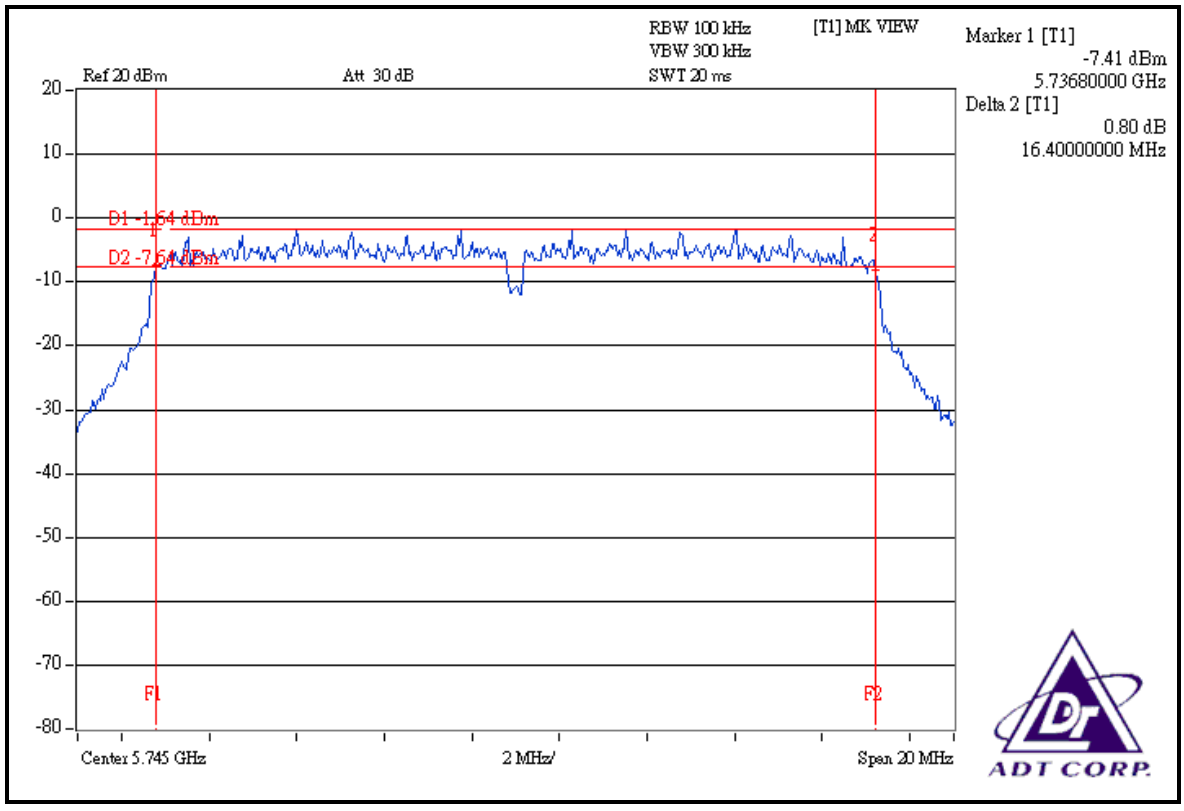
## 5.3.7 TEST RESULTS

### 802.11a OFDM MODULATION:

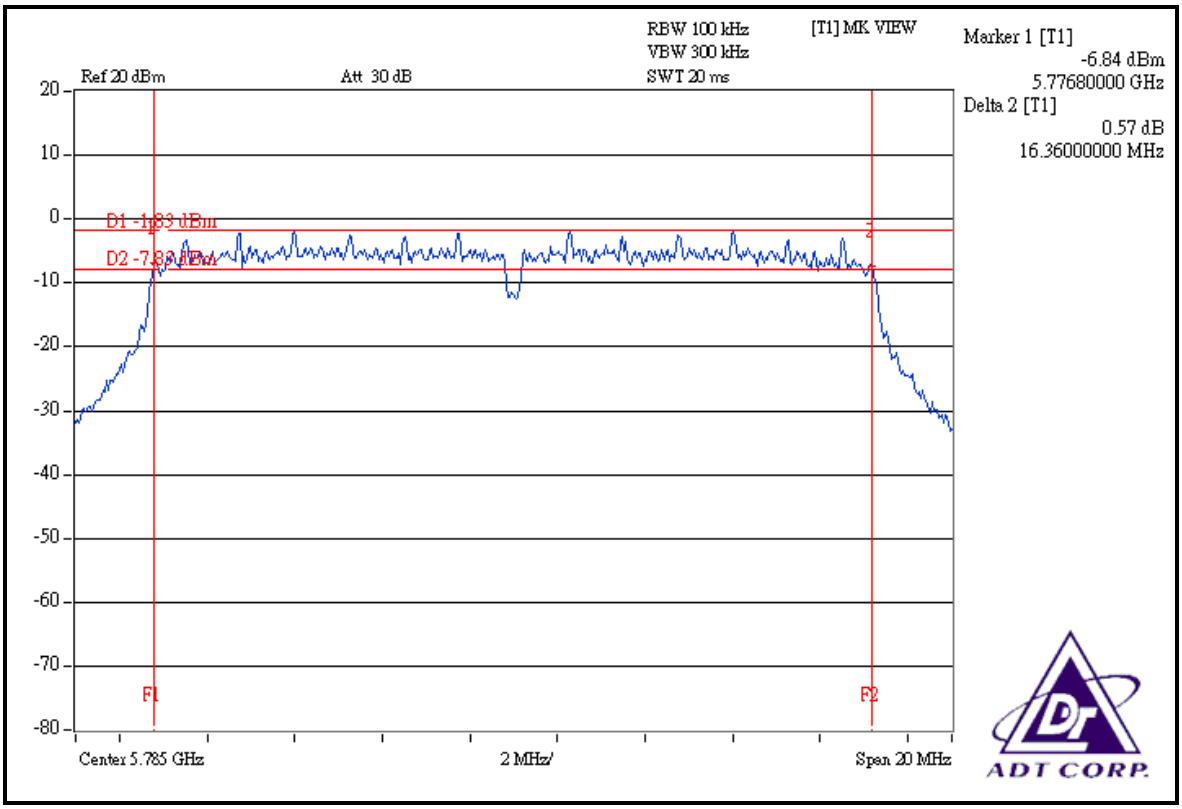
| MODULATION TYPE | BPSK | CHANNEL | 1, 3, 5 |
|---|---|---|---|
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | TRANSFER RATE | 6.0Mbps |
| ENVIRONMENTAL CONDITIONS | 25deg. C, 70%RH, 996hPa | TESTED BY | Jamison Chan |

| CHANNEL | CHANNEL FREQUENCY (MHz) | 6dB BANDWIDTH (MHz) | MINIMUM LIMIT (MHz) | PASS / FAIL |
|---|---|---|---|---|
| 1 | 5745 | 16.40 | 0.5 | PASS |
| 3 | 5785 | 16.36 | 0.5 | PASS |
| 5 | 5825 | 16.36 | 0.5 | PASS |

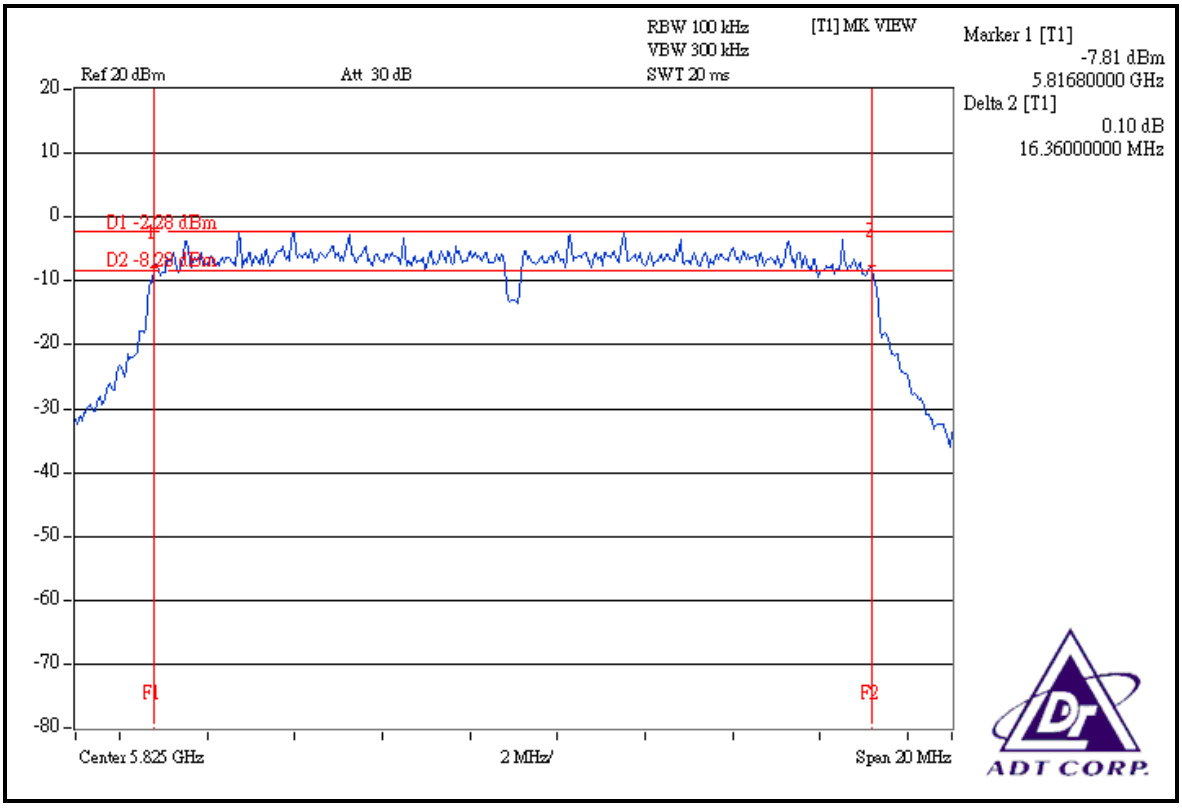
### CH 1



## CH 3


RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Marker 1 [T1]
-6.84 dBm
5.77680000 GHz
Delta 2 [T1]
0.57 dB
16.36000000 MHz
Ref 20 dBm
Att 30 dB
D1 -1.83 dBm
D2 -7.83 dBm
F1
F2
Center 5.785 GHz
2 MHz/
Span 20 MHz
ADT CORP.

## CH 5

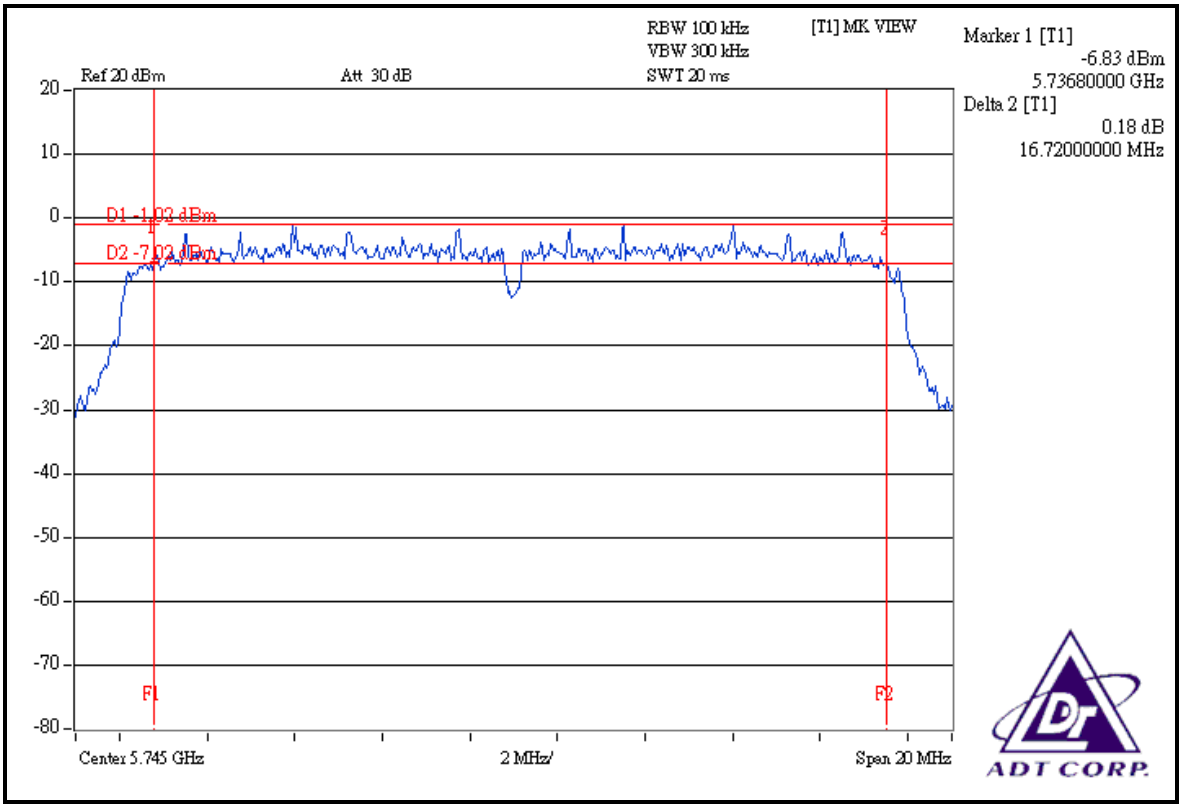

RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Marker 1 [T1]
-7.81 dBm
5.81680000 GHz
Delta 2 [T1]
0.10 dB
16.36000000 MHz
Ref 20 dBm
Att 30 dB
D1 -2.28 dBm
D2 -8.28 dBm
F1
F2
Center 5.825 GHz
2 MHz/
Span 20 MHz
ADT CORP.

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

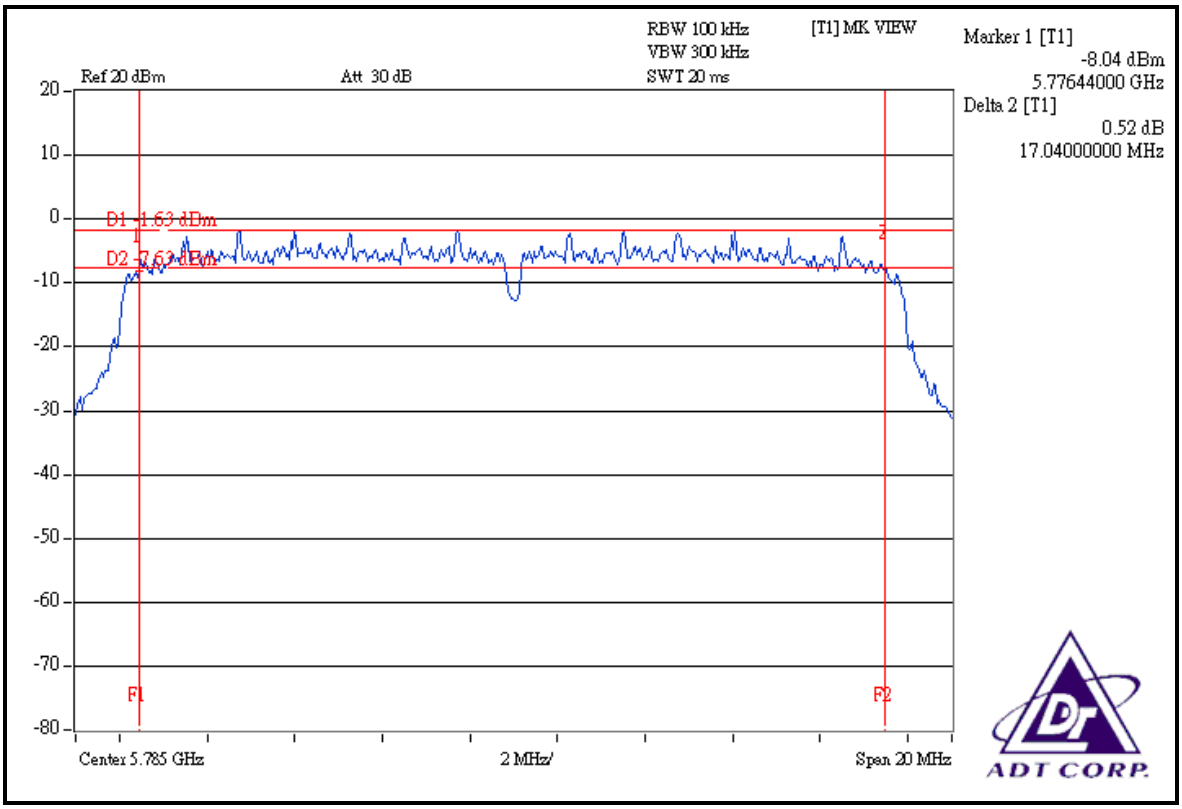
| | | | |
|---|---|---|---|
| **MODULATION TYPE** | BPSK | **CHANNEL** | 1, 3, 5 |
| **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz | **TRANSFER RATE** | 6.5Mbps |
| **ENVIRONMENTAL CONDITIONS** | 25deg. C, 70%RH, 996hPa | **TESTED BY** | Jamison Chan |

| CHANNEL | CHANNEL FREQUENCY (MHz) | 6dB BANDWIDTH (MHz) | | MINIMUM LIMIT (MHz) | PASS / FAIL |
|---|---|---|---|---|---|
| | | CHAIN 0 | CHAIN 1 | | |
| 1 | 5745 | 16.72 | 16.72 | 0.5 | PASS |
| 3 | 5785 | 17.04 | 16.96 | 0.5 | PASS |
| 5 | 5825 | 16.96 | 17.20 | 0.5 | PASS |

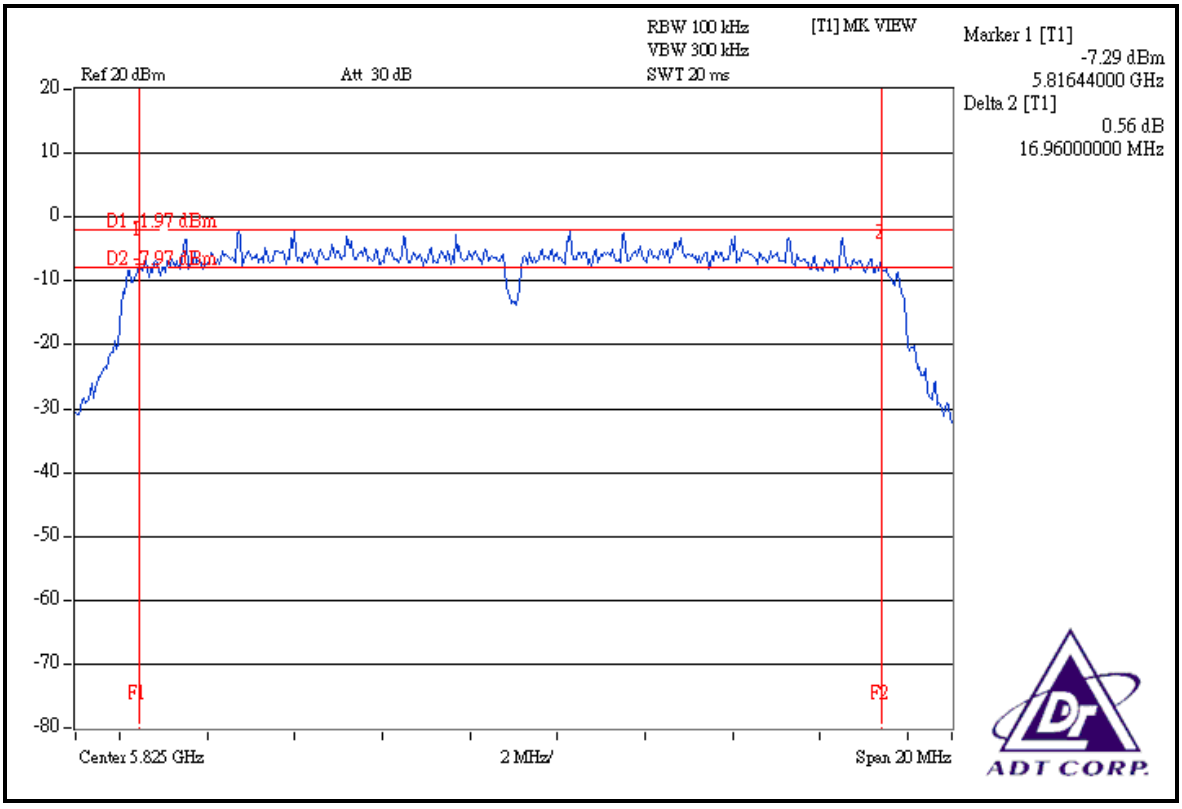
### FOR CHAIN 0: CH 1



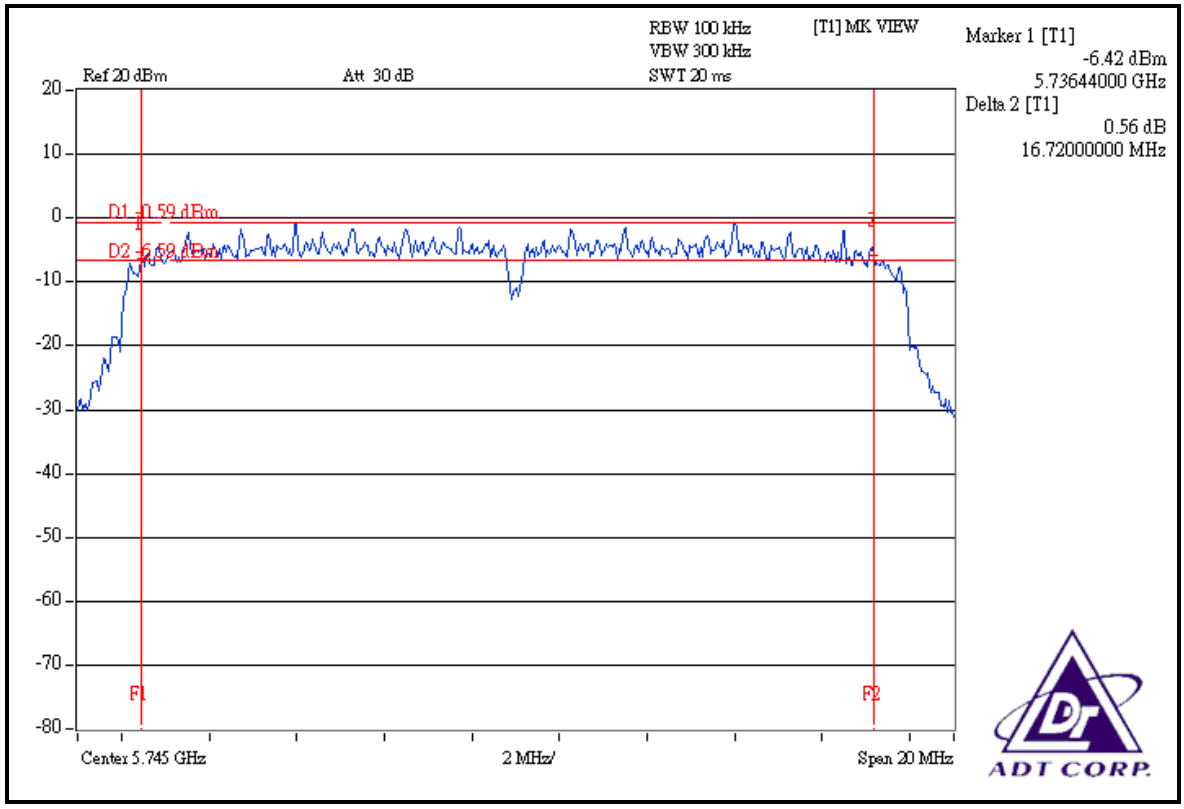
## CH 3


RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Marker 1 [T1]
-8.04 dBm
5.77644000 GHz
Delta 2 [T1]
0.52 dB
17.04000000 MHz
Ref 20 dBm
Att 30 dB
D1 1.63 dBm
D2 7.63 dBm
F1
F2
Center 5.785 GHz
2 MHz/
Span 20 MHz
ADT CORP.

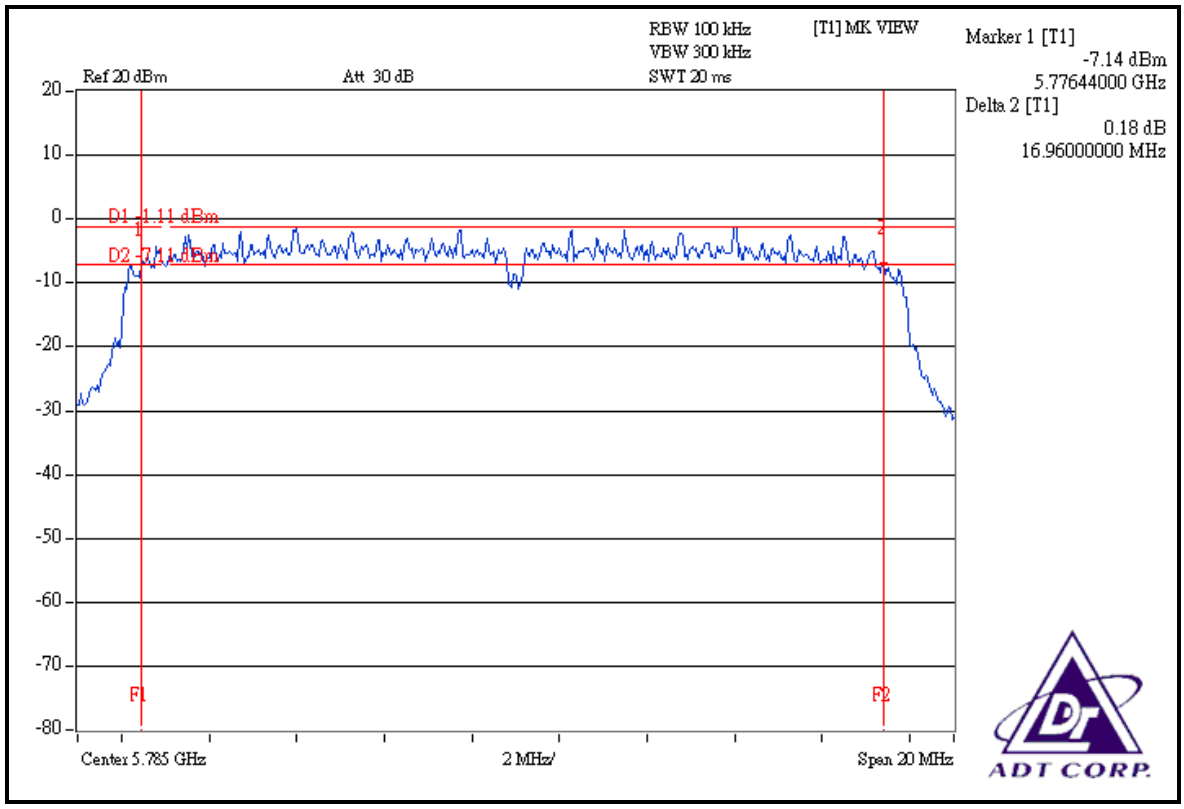
## CH 5


RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Marker 1 [T1]
-7.29 dBm
5.81644000 GHz
Delta 2 [T1]
0.56 dB
16.96000000 MHz
Ref 20 dBm
Att 30 dB
D1 1.97 dBm
D2 7.97 dBm
F1
F2
Center 5.825 GHz
2 MHz/
Span 20 MHz
ADT CORP.

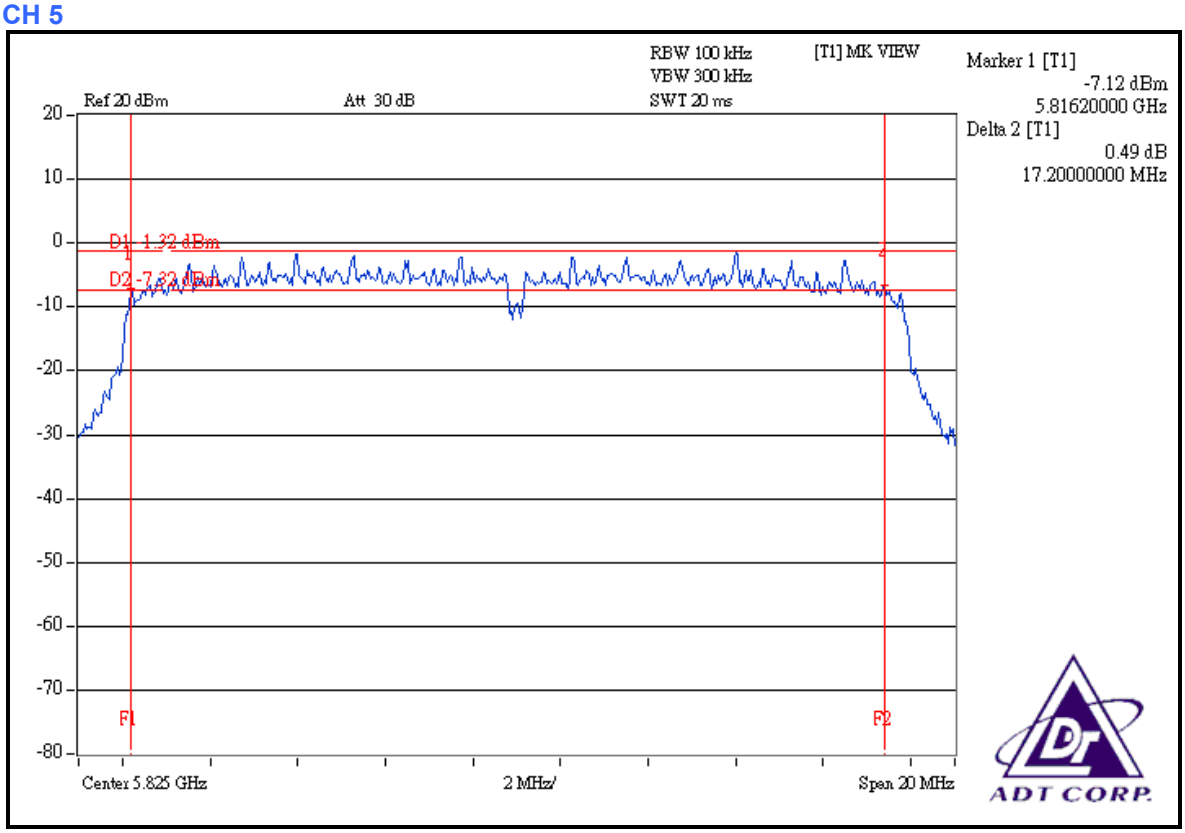
## FOR CHAIN 1: CH 1




## CH 3



## CH 5

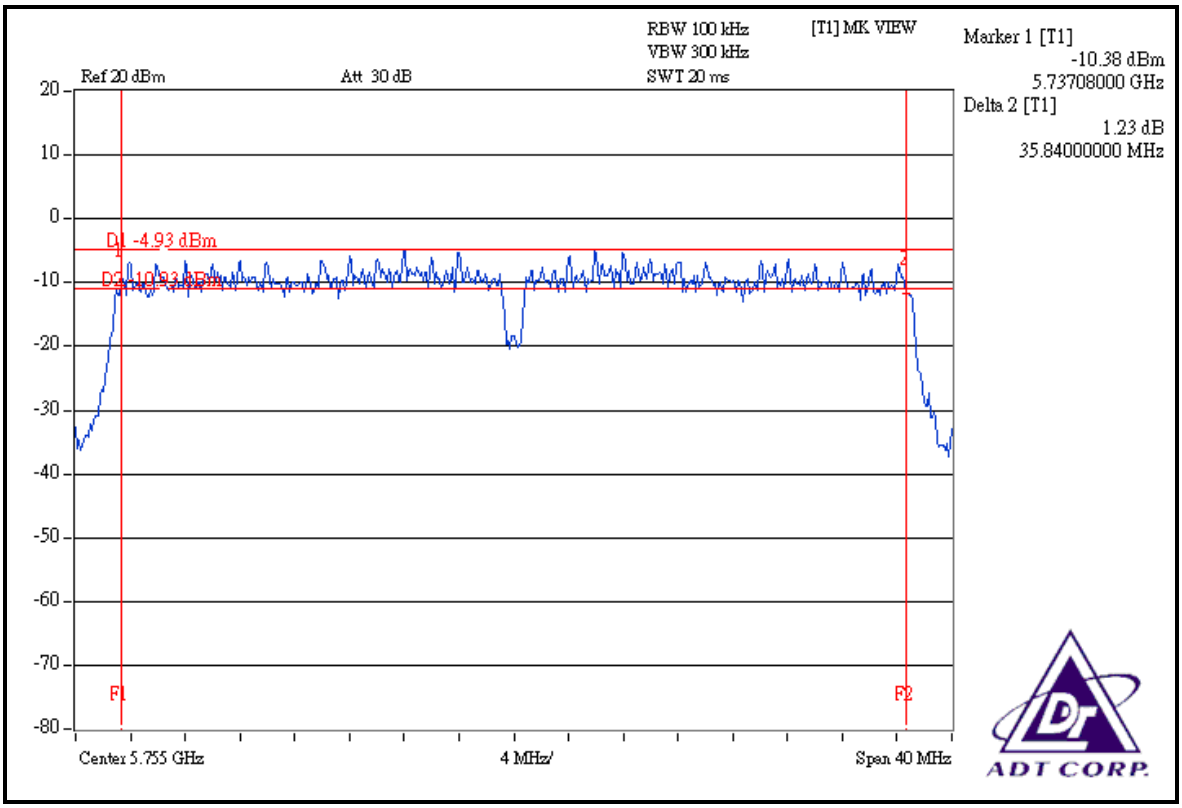

RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Marker 1 [T1]
-7.12 dBm
5.81620000 GHz
Delta 2 [T1]
0.49 dB
17.20000000 MHz
Ref 20 dBm
Att 30 dB
D1 1.32 dBm
D2 -7.83 dBm
F1
F2
Center 5.825 GHz
2 MHz/
Span 20 MHz
ADT CORP.

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

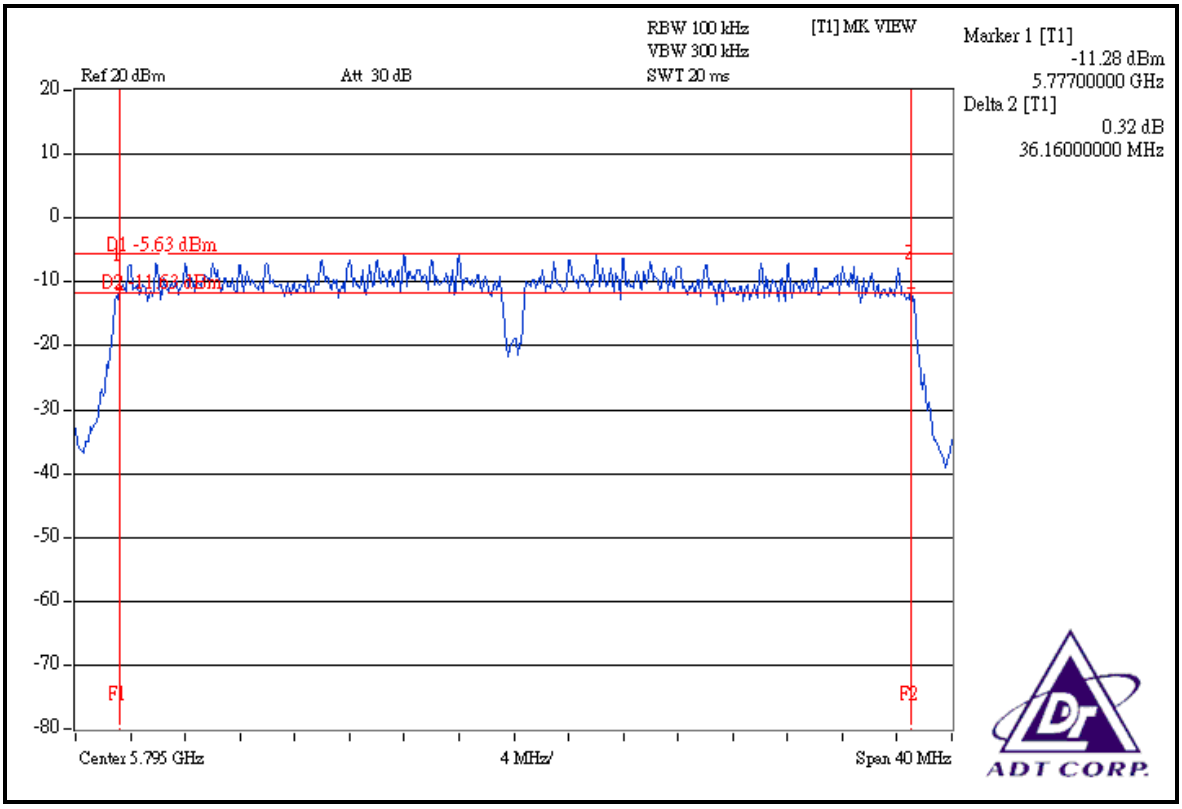
| | | | |
|---|---|---|---|
| **MODULATION TYPE** | BPSK | **CHANNEL** | 1, 2 |
| **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz | **TRANSFER RATE** | 13.5Mbps |
| **ENVIRONMENTAL CONDITIONS** | 25deg. C, 70%RH, 996hPa | **TESTED BY** | Jamison Chan |

| CHANNEL | CHANNEL FREQUENCY (MHz) | 6dB BANDWIDTH (MHz) | | MINIMUM LIMIT (MHz) | PASS / FAIL |
|---|---|---|---|---|---|
| | | CHAIN 0 | CHAIN 1 | | |
| 1 | 5755 | 35.84 | 35.76 | 0.5 | PASS |
| 2 | 5795 | 36.16 | 36.00 | 0.5 | PASS |

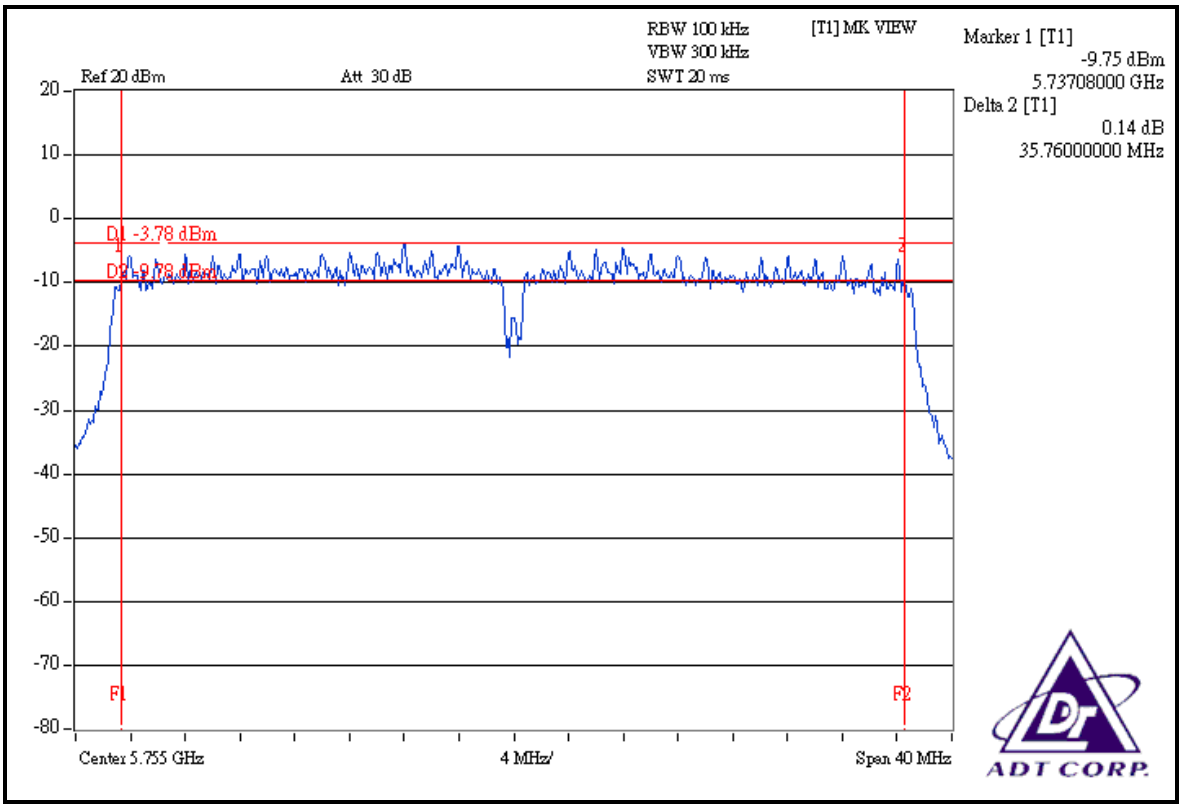
## FOR CHAIN 0: CH 1



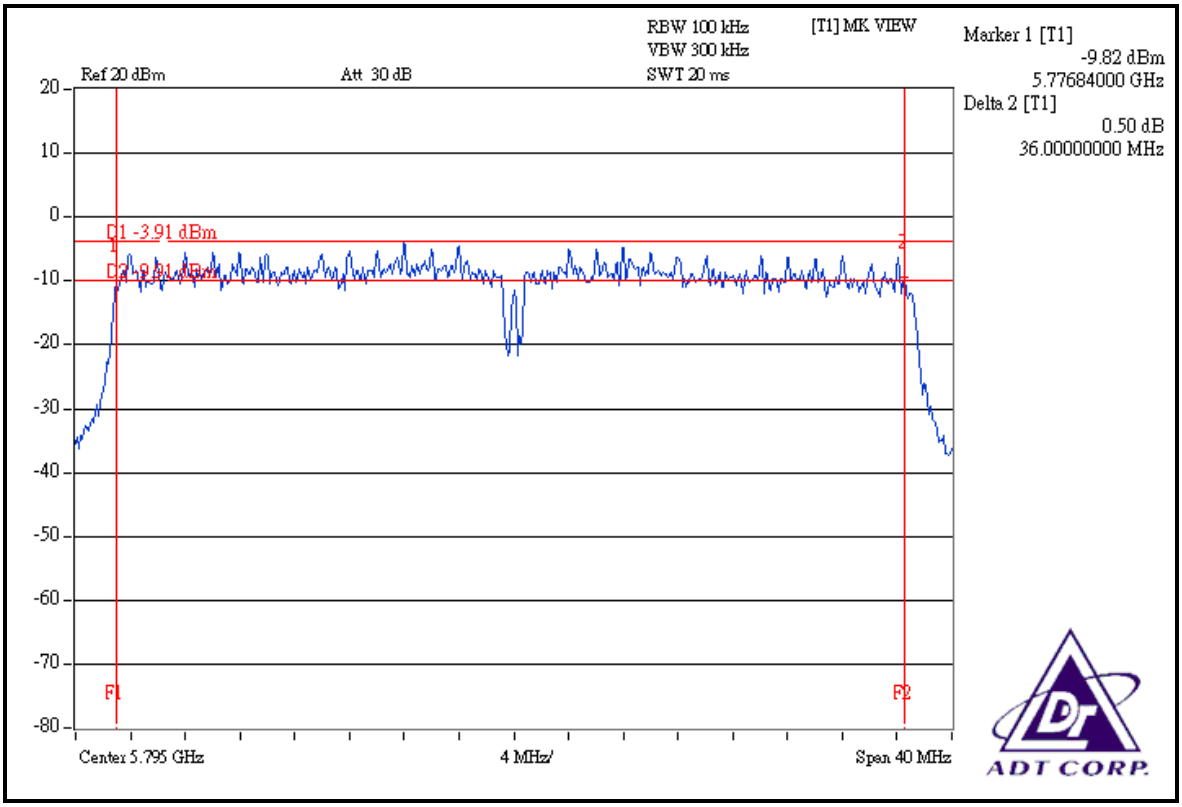
## CH 2




## FOR CHAIN 1: CH 1



## CH 2


RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Marker 1 [T1]
-9.82 dBm
5.77684000 GHz
Delta 2 [T1]
0.50 dB
36.00000000 MHz
Ref 20 dBm
Att 30 dB
D1 -3.91 dBm
D2 -4.41 dBm
F1
F2
Center 5.795 GHz
4 MHz/
Span 40 MHz

## 5.4 MAXIMUM PEAK OUTPUT POWER

### 5.4.1 LIMITS OF MAXIMUM PEAK OUTPUT POWER MEASUREMENT

The Maximum Peak Output Power Measurement is 30dBm.

### 5.4.2 INSTRUMENTS

| DESCRIPTION & MANUFACTURER | MODEL NO. | SERIAL NO. | CALIBRATED UNTIL |
|---|---|---|---|
| ROHDE & SCHWARZ Spectrum Analyzer | FSP 40 | 100036 | Mar. 13, 2008 |
| ROHDE & SCHWARZ Signal Generator | SMR 40 | 100231 | Mar. 27, 2008 |
| Tektronix Oscilloscope | TDS1012 | C019167 | Jan. 16, 2008 |
| Narda Detector | 4503A | FSCM99899 | NA |

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

### 5.4.3 TEST PROCEDURES

1. A detector was used on the output port of the EUT. An oscilloscope was used to read the response of the detector.
2. Replaced the EUT by the signal generator. The center frequency of the S.G was adjusted to the center frequency of the measured channel.
3. Adjusted the power to have the same reading on oscilloscope. Record the power level.

## 5.4.4 DEVIATION FROM TEST STANDARD

No deviation

## 5.4.5 TEST SETUP


## 5.4.6 EUT OPERATING CONDITIONS

Same as Item 5.3.6

## 5.4.7 TEST RESULTS

### 802.11a OFDM MODULATION:

| MODULATION TYPE | BPSK | CHANNEL | 1, 3, 5 |
|---|---|---|---|
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | TRANSFER RATE | 6.0Mbps |
| ENVIRONMENTAL CONDITIONS | 25deg. C, 70%RH, 996hPa | TESTED BY | Jamison Chan |

| CHANNEL | CHANNEL FREQUENCY (MHz) | PEAK POWER OUTPUT (mW) | PEAK POWER OUTPUT (dBm) | PEAK POWER LIMIT (dBm) | PASS / FAIL |
|---|---|---|---|---|---|
| 1 | 5745 | 56.494 | 17.52 | 30 | PASS |
| 3 | 5785 | 51.880 | 17.15 | 30 | PASS |
| 5 | 5825 | 48.529 | 16.86 | 30 | PASS |

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

| MODULATION TYPE | BPSK | CHANNEL | 1, 3, 5 |
|---|---|---|---|
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | TRANSFER RATE | 6.5Mbps |
| ENVIRONMENTAL CONDITIONS | 25deg. C, 70%RH, 996hPa | TESTED BY | Jamison Chan |

| CHANNEL | CHANNEL FREQUENCY (MHz) | PEAK POWER OUTPUT (mW) | | PEAK POWER OUTPUT (dBm) | | TOTAL PEAK POWER (mW) | TOTAL PEAK POWER (dBm) | PEAK POWER LIMIT (dBm) | PASS / FAIL |
|---|---|---|---|---|---|---|---|---|---|
| | | CHAIN 0 | CHAIN 1 | CHAIN 0 | CHAIN 1 | | | | |
| 1 | 5745 | 29.174 | 28.184 | 14.65 | 14.50 | 57.358 | 17.59 | 30 | PASS |
| 3 | 5785 | 26.915 | 29.174 | 14.30 | 14.65 | 56.090 | 17.49 | 30 | PASS |
| 5 | 5825 | 25.119 | 26.669 | 14.00 | 14.26 | 51.787 | 17.14 | 30 | PASS |

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

| | | | |
|---|---|---|---|
| **MODULATION TYPE** | BPSK | **CHANNEL** | 1, 2 |
| **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz | **TRANSFER RATE** | 13.5Mbps |
| **ENVIRONMENTAL CONDITIONS** | 25deg. C, 70%RH, 996hPa | **TESTED BY** | Jamison Chan |

| CHANNEL | CHANNEL FREQUENCY (MHz) | PEAK POWER OUTPUT (mW) | | PEAK POWER OUTPUT (dBm) | | TOTAL PEAK POWER (mW) | TOTAL PEAK POWER (dBm) | PEAK POWER LIMIT (dBm) | PASS / FAIL |
|---|---|---|---|---|---|---|---|---|---|
| | | CHAIN 0 | CHAIN 1 | CHAIN 0 | CHAIN 1 | | | | |
| 1 | 5755 | 30.339 | 29.717 | 14.82 | 14.73 | 60.056 | 17.79 | 30 | PASS |
| 2 | 5795 | 30.832 | 30.690 | 14.89 | 14.87 | 61.522 | 17.89 | 30 | PASS |

## 5.5 POWER SPECTRAL DENSITY MEASUREMENT

### 5.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm.

### 5.5.2 TEST INSTRUMENTS

| DESCRIPTION & MANUFACTURER | MODEL NO. | SERIAL NO. | CALIBRATED UNTIL |
|---|---|---|---|
| SPECTRUM ANALYZER | FSP 40 | 100036 | Mar. 13, 2008 |

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

### 5.5.3 TEST PROCEDURE

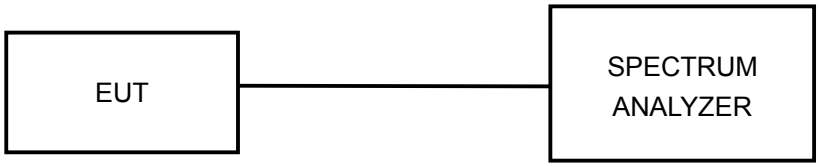
The transmitter output was connected to the spectrum analyzer through an attenuator, the bandwidth of the fundamental frequency was measured with the spectrum analyzer using 3kHz RBW and 30kHz VBW, set sweep time = span/3kHz. The power spectral density was measured and recorded.

The sweep time is allowed to be longer than span/3kHz for a full response of the mixer in the spectrum analyzer.

## 5.5.4 DEVIATION FROM TEST STANDARD

No deviation

## 5.5.5 TEST SETUP




## 5.5.6 EUT OPERATING CONDITION

Same as Item 5.3.6

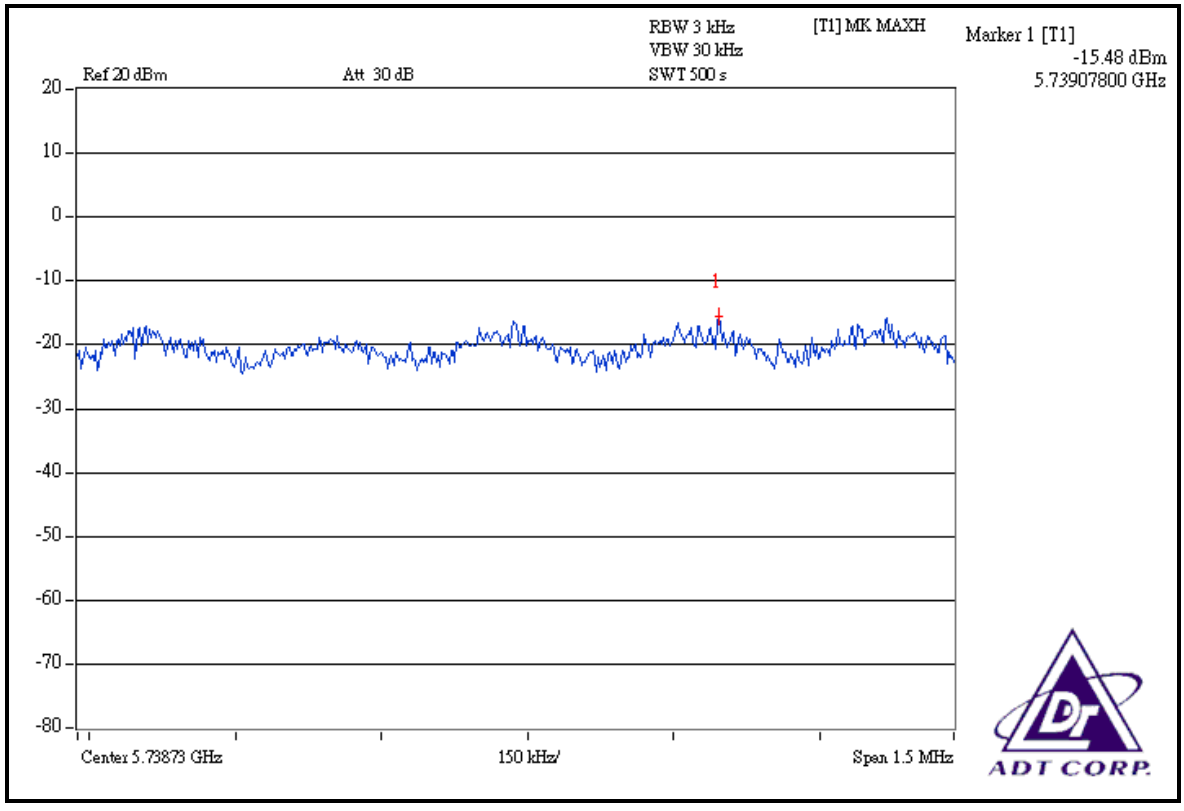
## 5.5.7 TEST RESULTS

### 802.11a OFDM MODULATION:

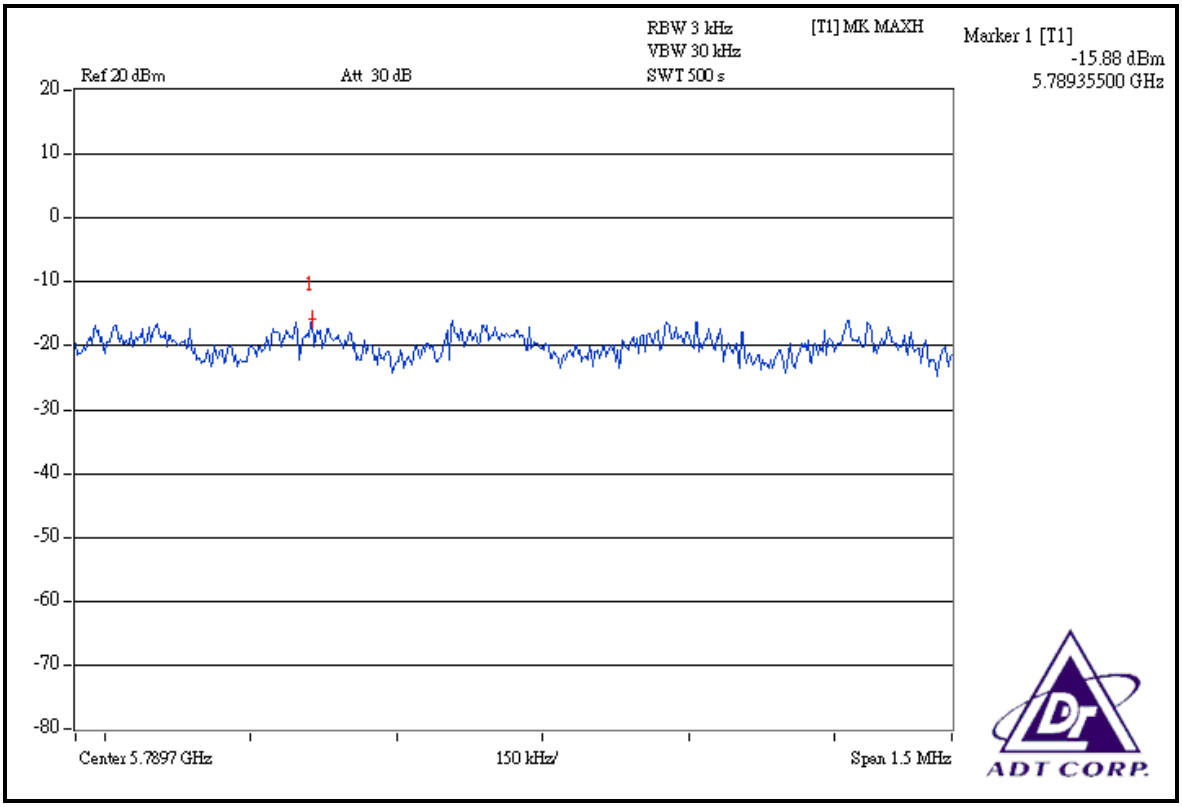
| MODULATION TYPE | BPSK | CHANNEL | 1, 3, 5 |
|---|---|---|---|
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | TRANSFER RATE | 6.0Mbps |
| ENVIRONMENTAL CONDITIONS | 25deg. C, 70%RH, 996hPa | TESTED BY | Jamison Chan |

| CHANNEL | CHANNEL FREQUENCY (MHz ) | RF POWER LEVEL IN 3kHz BW (dBm) | MAXIMUM LIMIT (dBm) | PASS / FAIL |
|---|---|---|---|---|
| 1 | 5745 | -15.48 | 8 | PASS |
| 3 | 5785 | -15.88 | 8 | PASS |
| 5 | 5825 | -16.32 | 8 | PASS |

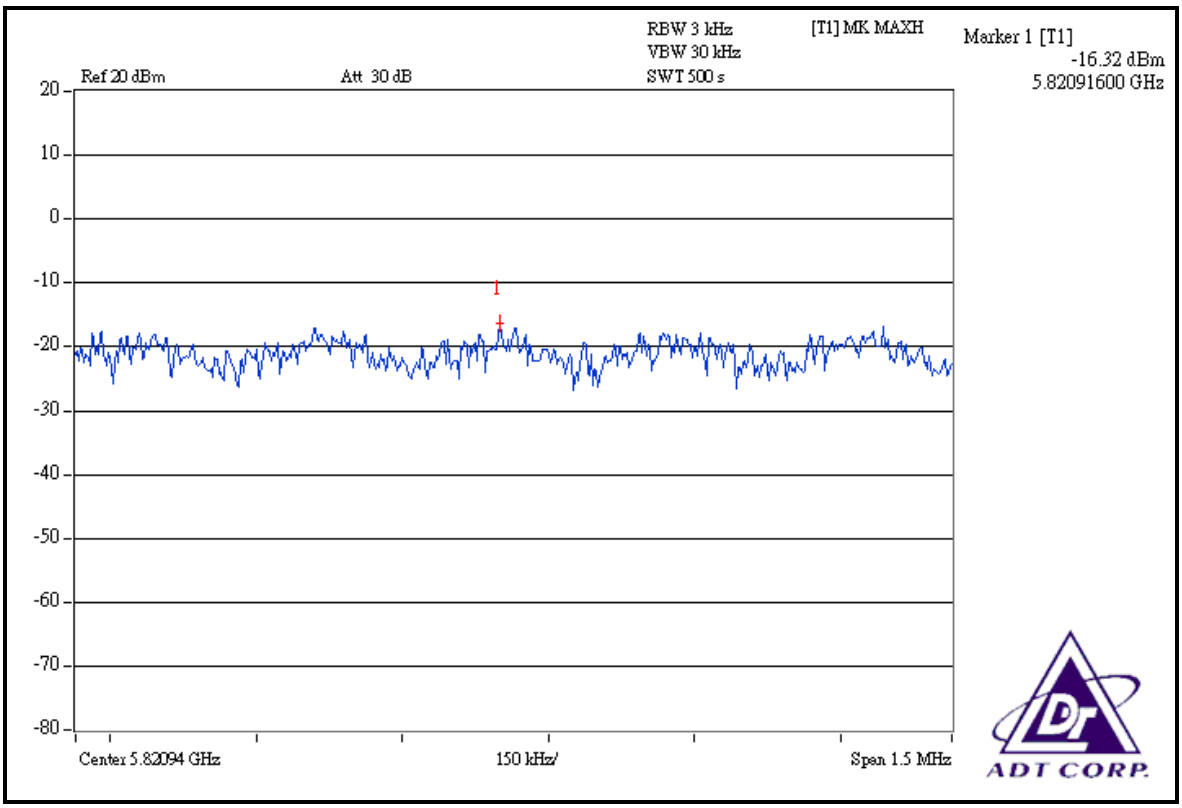
### CH 1



## CH 3


RBW 3 kHz
VBW 30 kHz
SWT 500 s
[T1] MK MAXH
Marker 1 [T1]
-15.88 dBm
5.78935500 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 5.7897 GHz
150 kHz/
Span 1.5 MHz
ADT CORP.

## CH 5

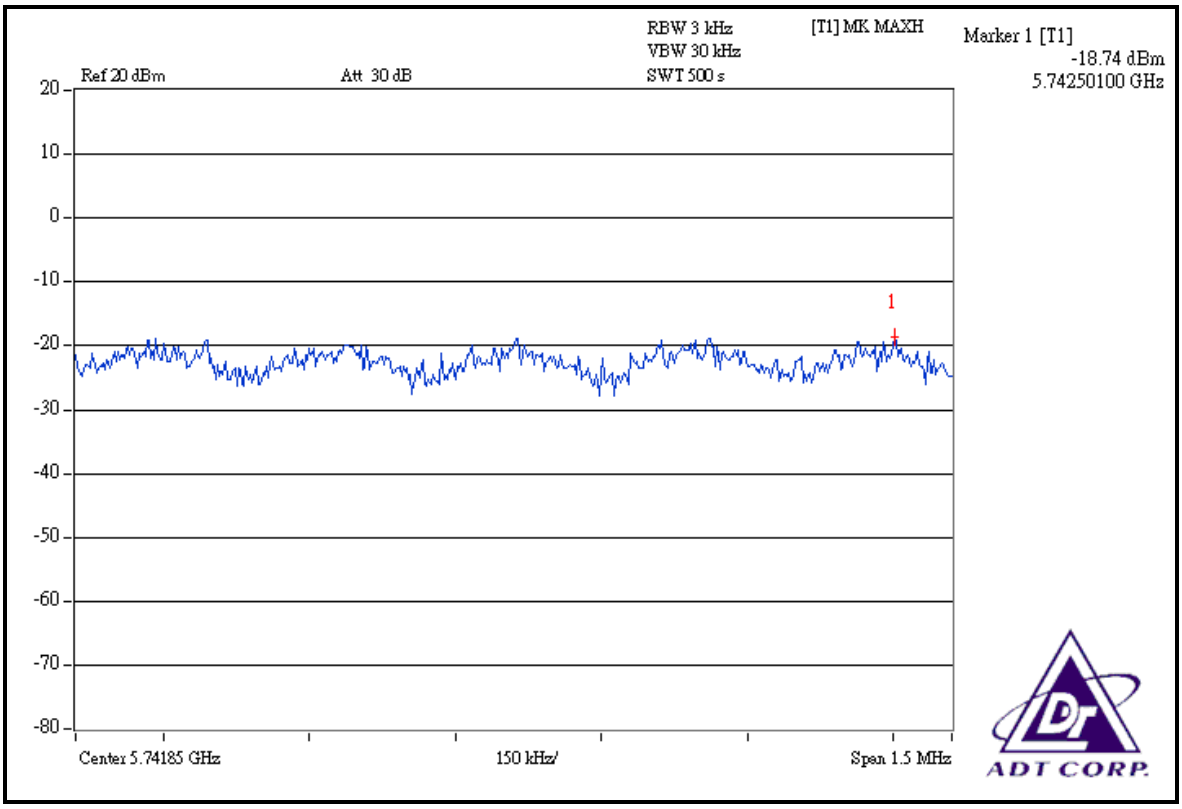

RBW 3 kHz
VBW 30 kHz
SWT 500 s
[T1] MK MAXH
Marker 1 [T1]
-16.32 dBm
5.82091600 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
Center 5.82094 GHz
150 kHz/
Span 1.5 MHz
ADT CORP.

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

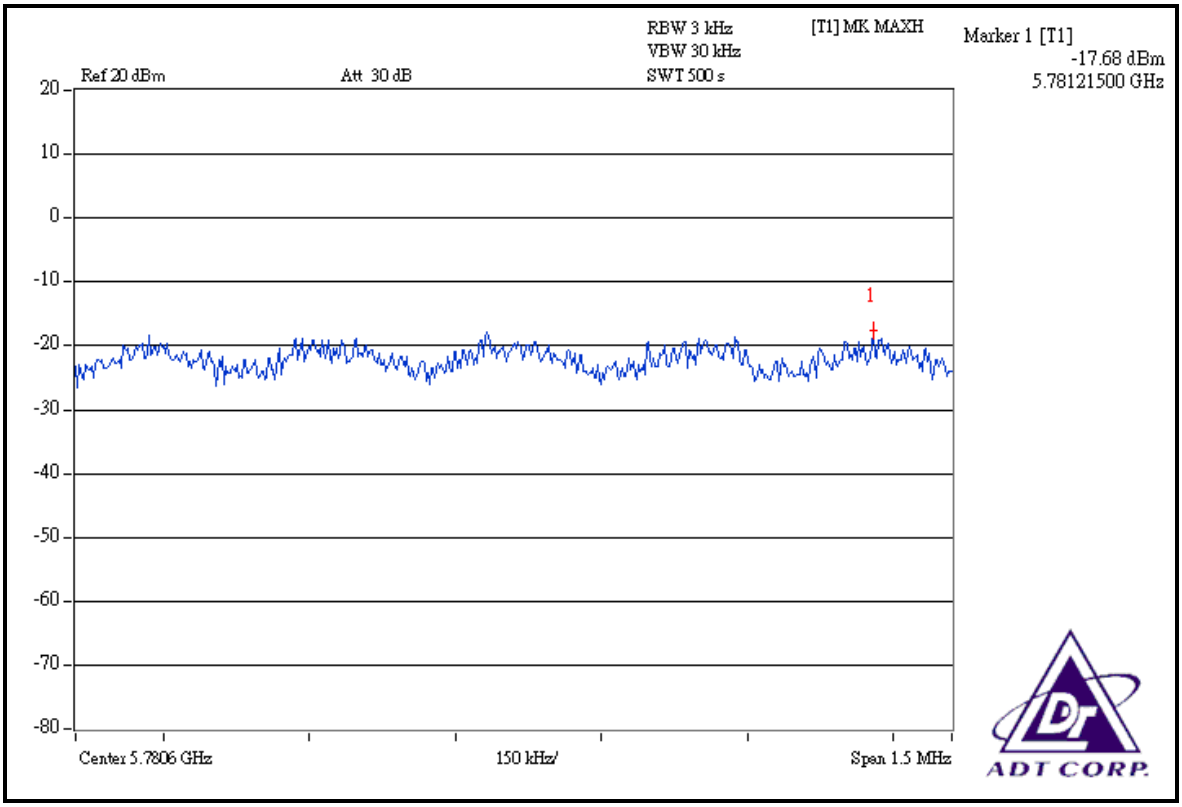
| | | | |
|---|---|---|---|
| **MODULATION TYPE** | BPSK | **CHANNEL** | 1, 3, 5 |
| **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz | **TRANSFER RATE** | 6.5Mbps |
| **ENVIRONMENTAL CONDITIONS** | 25deg. C, 70%RH, 996hPa | **TESTED BY** | Jamison Chan |

| CHANNEL | CHANNEL FREQUENCY (MHz) | RF POWER LEVEL IN 3kHz BW (mW) | | RF POWER LEVEL IN 3kHz BW (dBm) | | TOTAL POWER DENSITY (mW) | TOTAL POWER DENSITY (dBm) | MAX. LIMIT (dBm) | PASS / FAIL |
|---|---|---|---|---|---|---|---|---|---|
| | | CHAIN 0 | CHAIN 1 | CHAIN 0 | CHAIN 1 | | | | |
| 1 | 5745 | 0.013 | 0.017 | -18.74 | -17.66 | 0.031 | -15.16 | 8 | PASS |
| 3 | 5785 | 0.017 | 0.018 | -17.68 | -17.35 | 0.035 | -14.50 | 8 | PASS |
| 5 | 5825 | 0.016 | 0.014 | -18.08 | -18.47 | 0.030 | -15.26 | 8 | PASS |

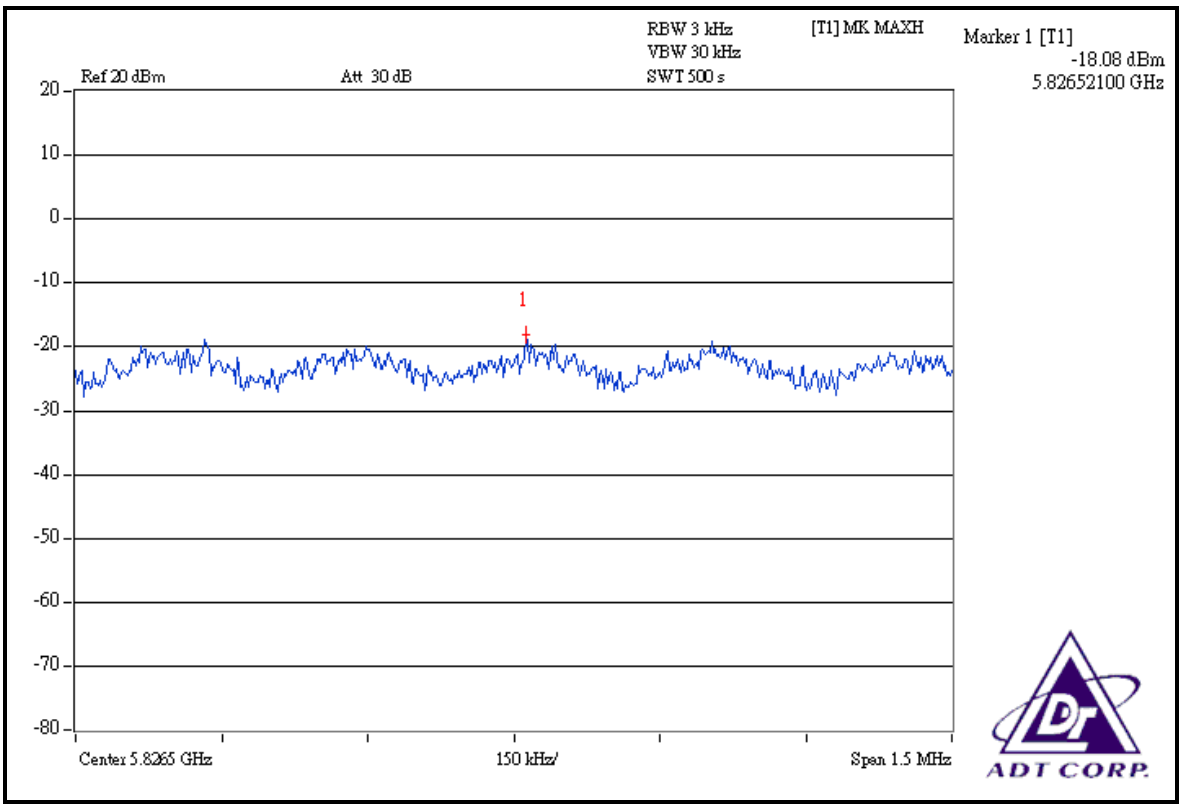
## FOR CHAIN 0: CH 1



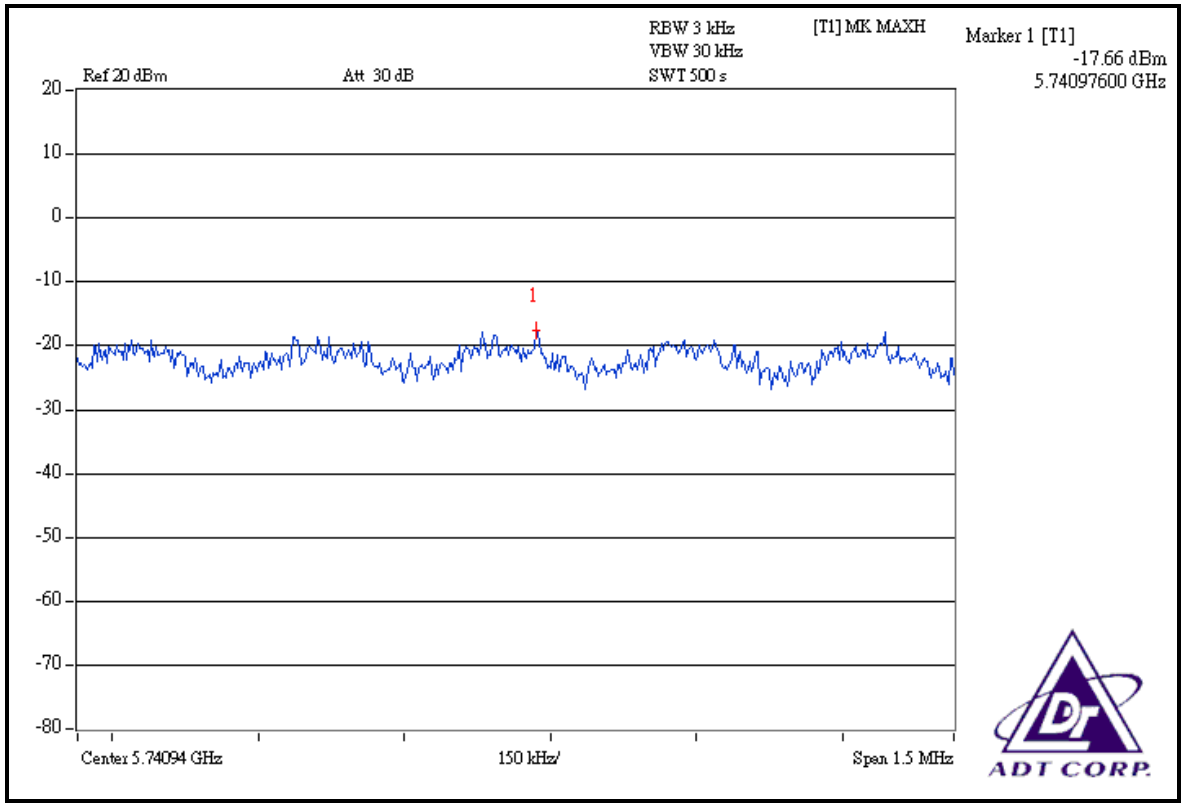
## CH 3


RBW 3 kHz
VBW 30 kHz
SWT 500 s
[T1] MK MAXH
Marker 1 [T1]
-17.68 dBm
5.78121500 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
1
Center 5.7806 GHz
150 kHz/
Span 1.5 MHz
ADT CORP.

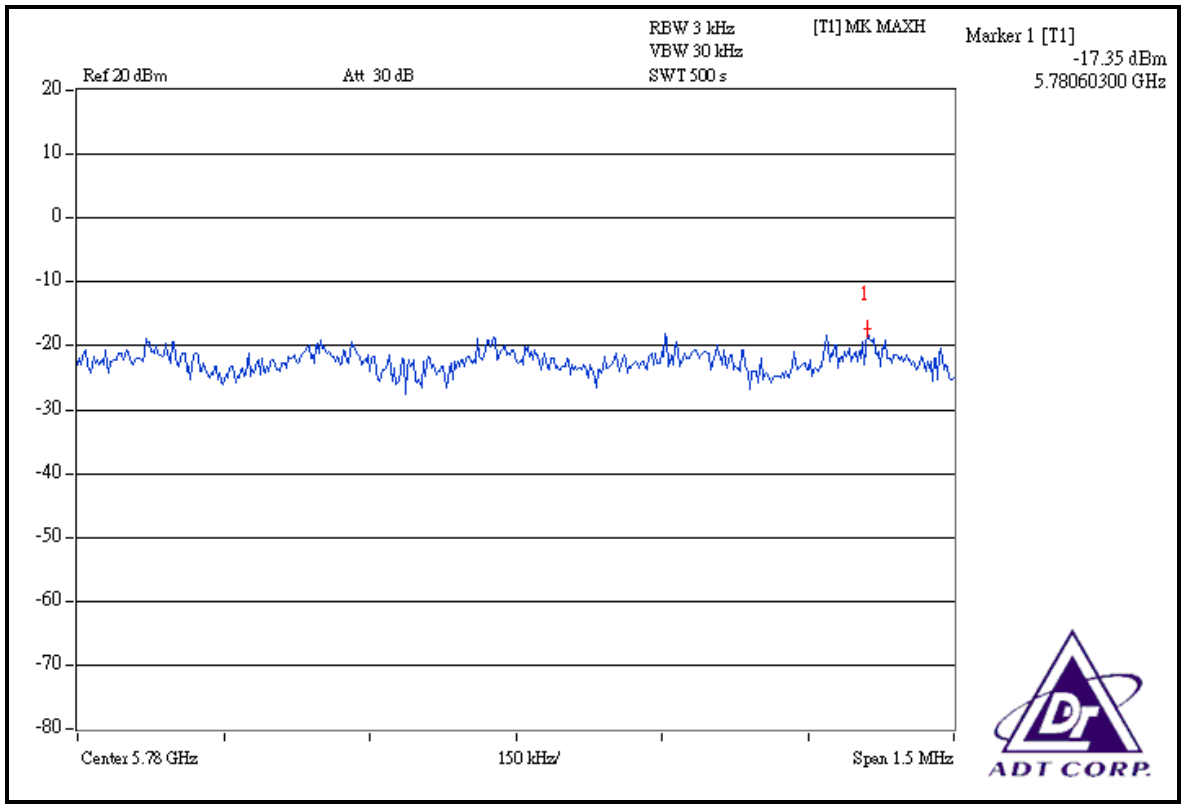
## CH 5


RBW 3 kHz
VBW 30 kHz
SWT 500 s
[T1] MK MAXH
Marker 1 [T1]
-18.08 dBm
5.82652100 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
1
Center 5.8265 GHz
150 kHz/
Span 1.5 MHz
ADT CORP.

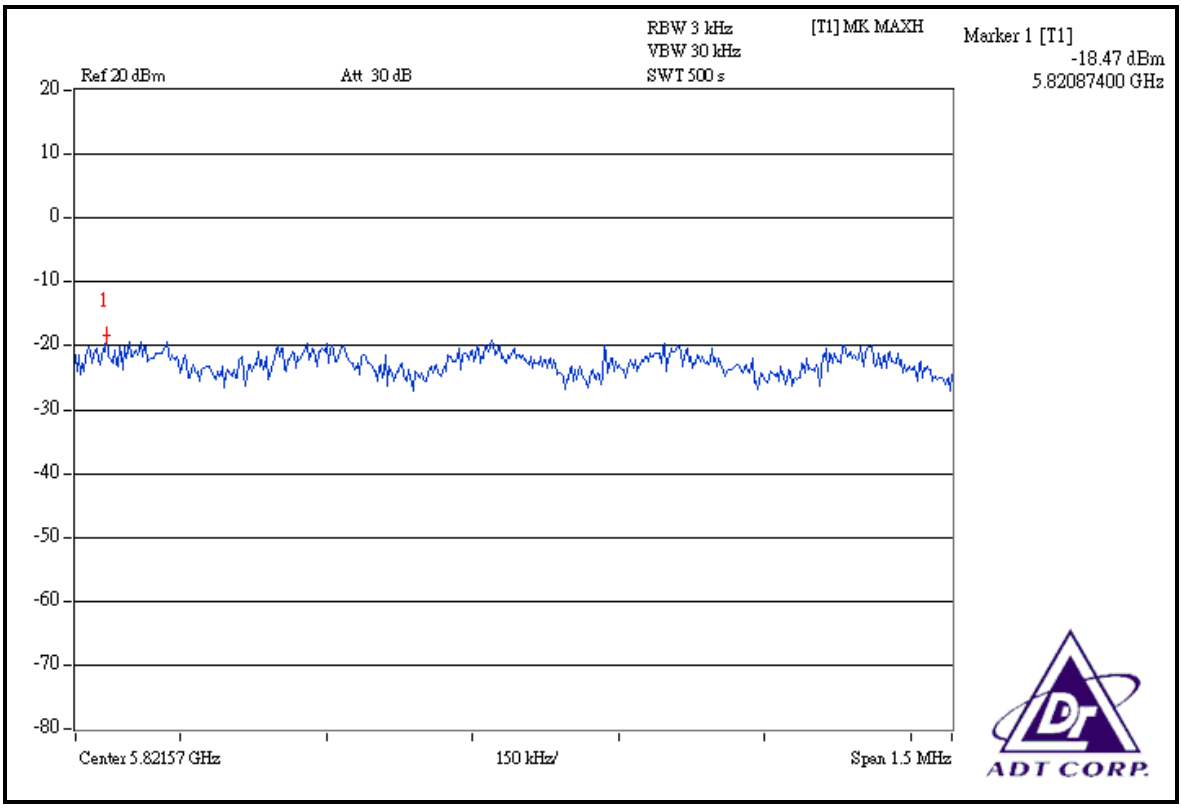
## FOR CHAIN 1: CH 1




## CH 3



## CH 5

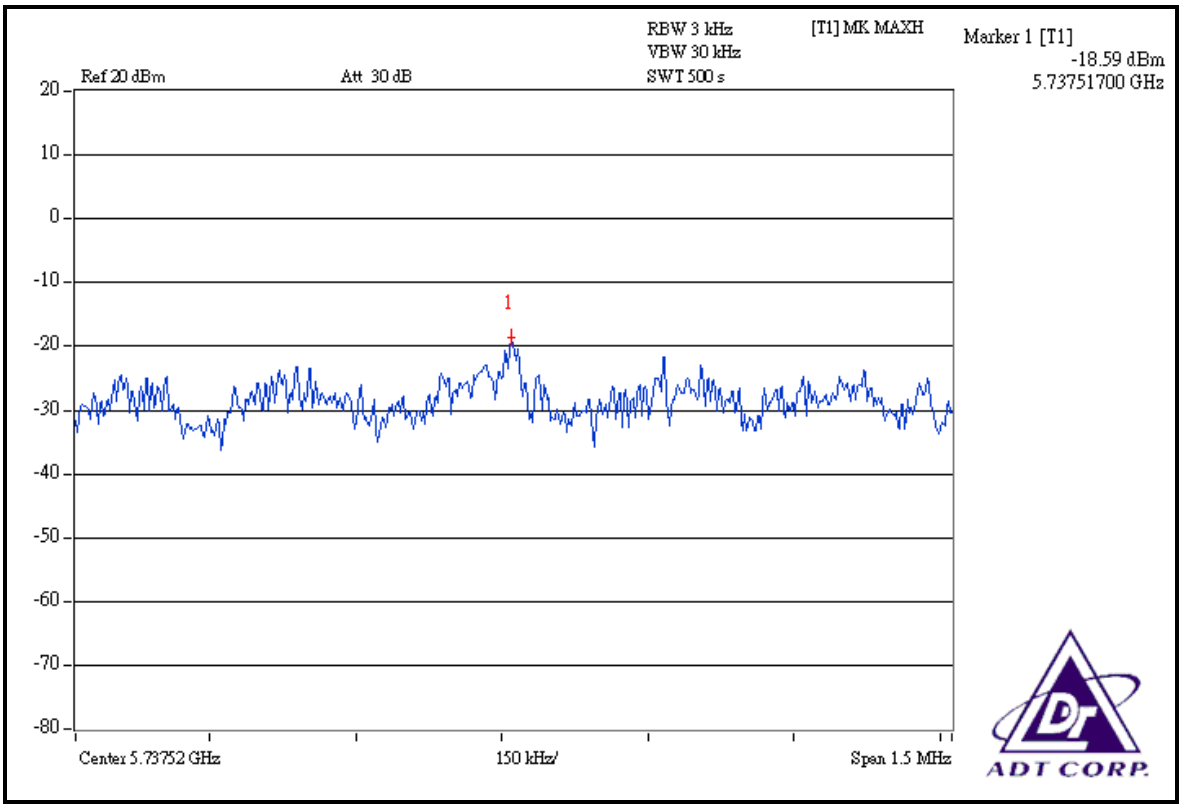

RBW 3 kHz
VBW 30 kHz
SWT 500 s
[T1] MK MAXH
Marker 1 [T1]
-18.47 dBm
5.82087400 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
1
Center 5.82157 GHz
150 kHz/
Span 1.5 MHz
ADT CORP.

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

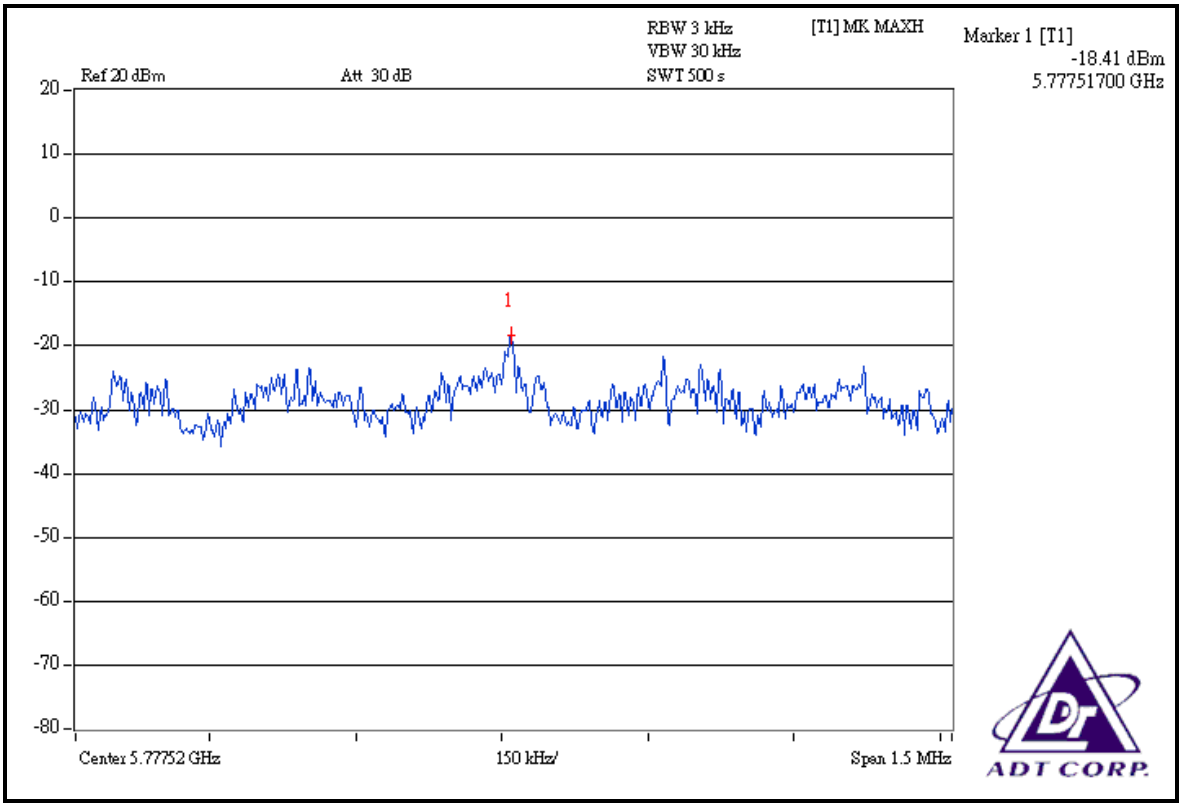
| | | | |
|---|---|---|---|
| **MODULATION TYPE** | BPSK | **CHANNEL** | 1, 2 |
| **INPUT POWER (SYSTEM)** | 120Vac, 60 Hz | **TRANSFER RATE** | 13.5Mbps |
| **ENVIRONMENTAL CONDITIONS** | 25deg. C, 70%RH, 996hPa | **TESTED BY** | Jamison Chan |

| CHANNEL | CHANNEL FREQUENCY (MHz) | RF POWER LEVEL IN 3kHz BW (mW) | | RF POWER LEVEL IN 3kHz BW (dBm) | | TOTAL POWER DENSITY (mW) | TOTAL POWER DENSITY (dBm) | MAX. LIMIT (dBm) | PASS / FAIL |
|---|---|---|---|---|---|---|---|---|---|
| | | CHAIN 0 | CHAIN 1 | CHAIN 0 | CHAIN 1 | | | | |
| 1 | 5755 | 0.014 | 0.019 | -18.59 | -17.21 | 0.033 | -14.84 | 8 | PASS |
| 2 | 5795 | 0.014 | 0.021 | -18.41 | -16.87 | 0.035 | -14.56 | 8 | PASS |

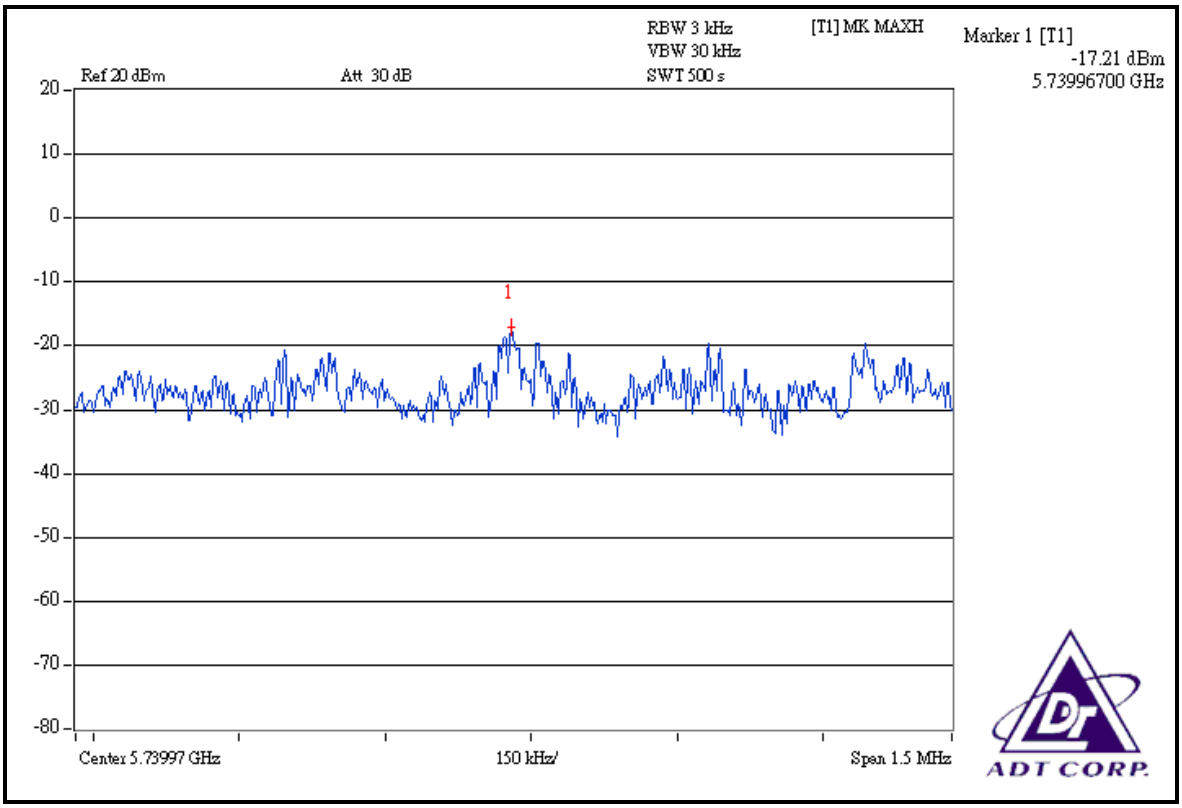
## FOR CHAIN 0: CH 1



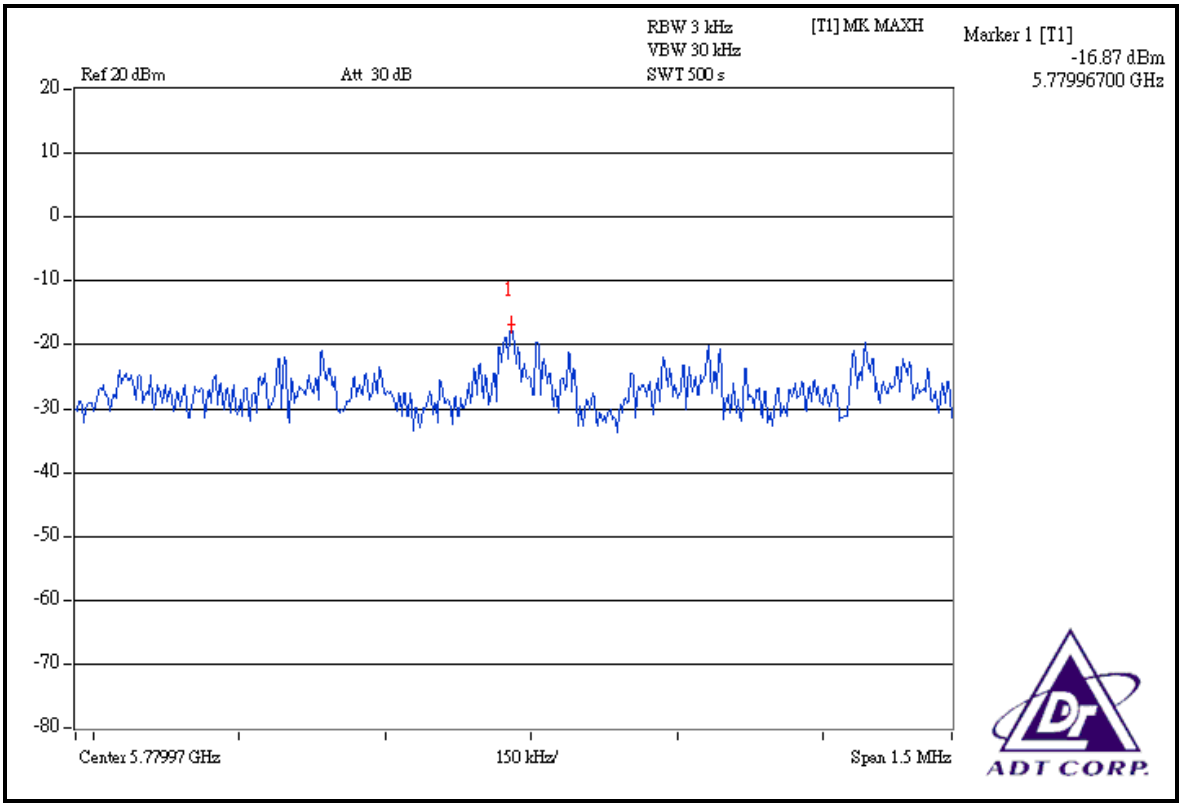
## CH 2




## FOR CHAIN 1: CH 1



## CH 2


RBW 3 kHz
VBW 30 kHz
SWT 500 s
[T1] MK MAXH
Marker 1 [T1]
-16.87 dBm
5.77996700 GHz
Ref 20 dBm
Att 30 dB
20
10
0
-10
-20
-30
-40
-50
-60
-70
-80
1
Center 5.77997 GHz
150 kHz/
Span 1.5 MHz
ADT CORP.

## 5.6 BAND EDGES MEASUREMENT

### 5.6.1 LIMITS OF BAND EDGES MEASUREMENT

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

### 5.6.2 TEST INSTRUMENTS

| DESCRIPTION & MANUFACTURER | MODEL NO. | SERIAL NO. | CALIBRATED UNTIL |
|---|---|---|---|
| **802.11a:** | | | |
| SPECTRUM ANALYZER | FSP 40 | 100036 | Mar. 13, 2008 |
| **DRAFT 802.11n (20MHz), DRAFT 802.11n (40MHz):** | | | |
| HP Preamplifier | 8447D | 2432A03504 | May 09, 2008 |
| HP Preamplifier | 8449B | 3008A01201 | Oct. 10, 2007 |
| HP Preamplifier | 8449B | 3008A01292 | Aug. 05, 2008 |
| Schwarzbeck Antenna | VULB 9168 | 137 | Oct. 01, 2007 |
| Schwarzbeck Antenna | VHBA 9123 | 480 | Apr. 18, 2008 |
| EMCO Horn Antenna | 3115 | 6714 | Oct. 24, 2007 |
| EMCO Horn Antenna | 3115 | 9312-4192 | Apr. 19, 2008 |
| ADT. Turn Table | TT100 | 0306 | NA |
| ADT. Tower | AT100 | 0306 | NA |
| Software | ADT_Radiated_V7.6.15 | NA | NA |
| SUHNER RF cable | SF104-26.5 | CABLE-CH6-17m-01 | Dec. 11, 2007 |
| ROHDE & SCHWARZ Spectrum Analyzer | FSP 40 | 100036 | Mar. 13, 2008 |

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

## 5.6.3 TEST PROCEDURE

**802.11a:**

The transmitter output was connected to the spectrum analyzer via a low lose cable. Set both RBW and VBW of spectrum analyzer to 100kHz with suitable frequency span including 300kHz bandwidth from band edge. The band edges was measured and recorded.

The spectrum plots (Peak RBW =100kHz, VBW = 300kHz; Average RBW = 1MHz, VBW = 10Hz) are attached on the following pages.

**DRAFT 802.11n (20MHz), DRAFT 802.11n (40MHz):**

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. 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. Set both RBW and VBW of spectrum analyzer to 100kHz with suitable frequency span including 100MHz bandwidth from band edge. The band edges was measured and recorded.

The spectrum plots (Peak RBW =100kHz, VBW = 300kHz; Average RBW = 1MHz, VBW = 10Hz) are attached on the following pages.

**NOTE:** The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz for Average detection (AV) at frequency above 1GHz.

## 5.6.4 DEVIATION FROM TEST STANDARD

No deviation

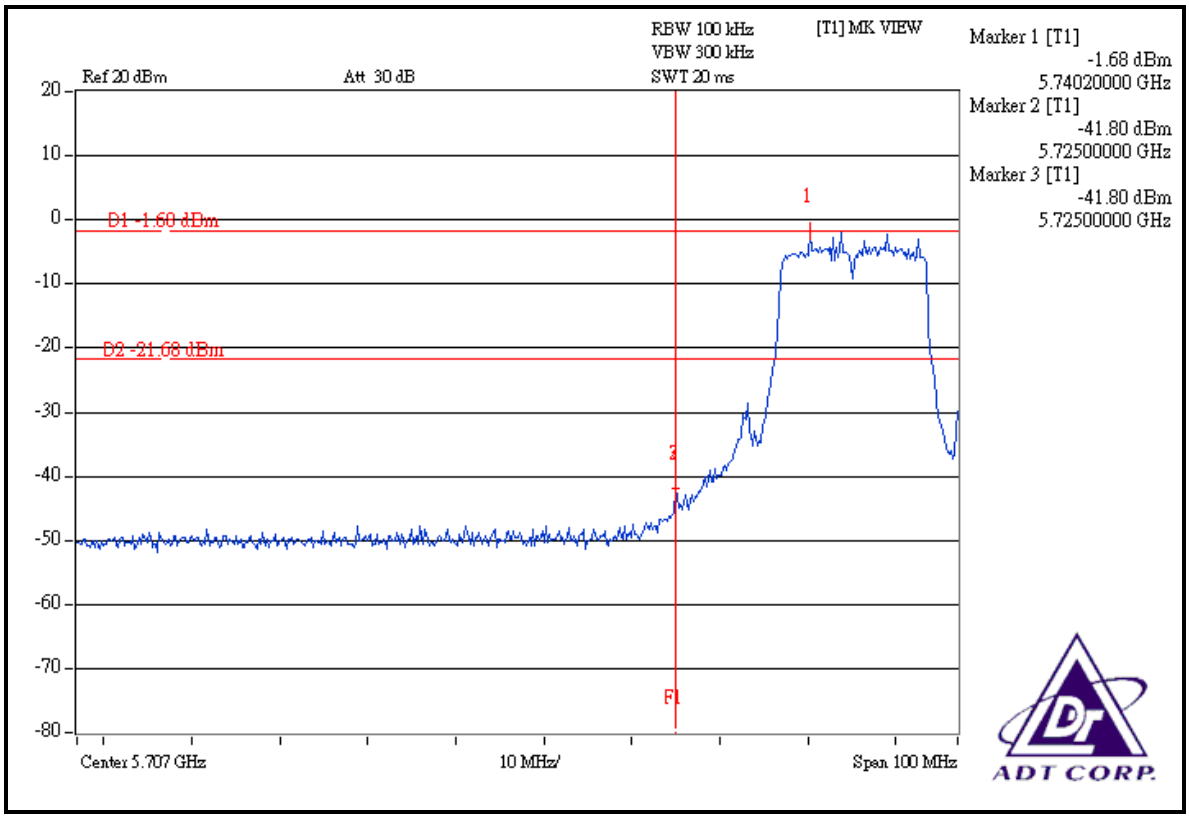
## 5.6.5 EUT OPERATING CONDITION

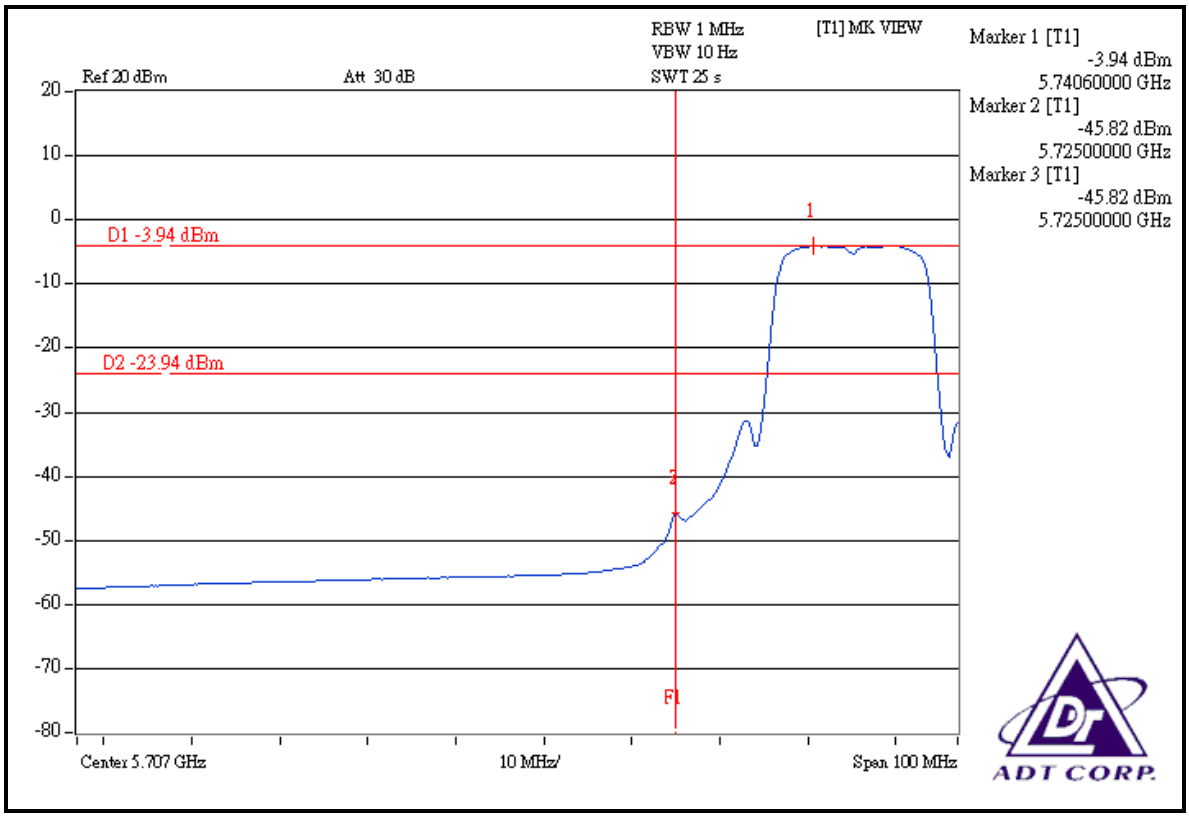
Same as Item 5.3.6

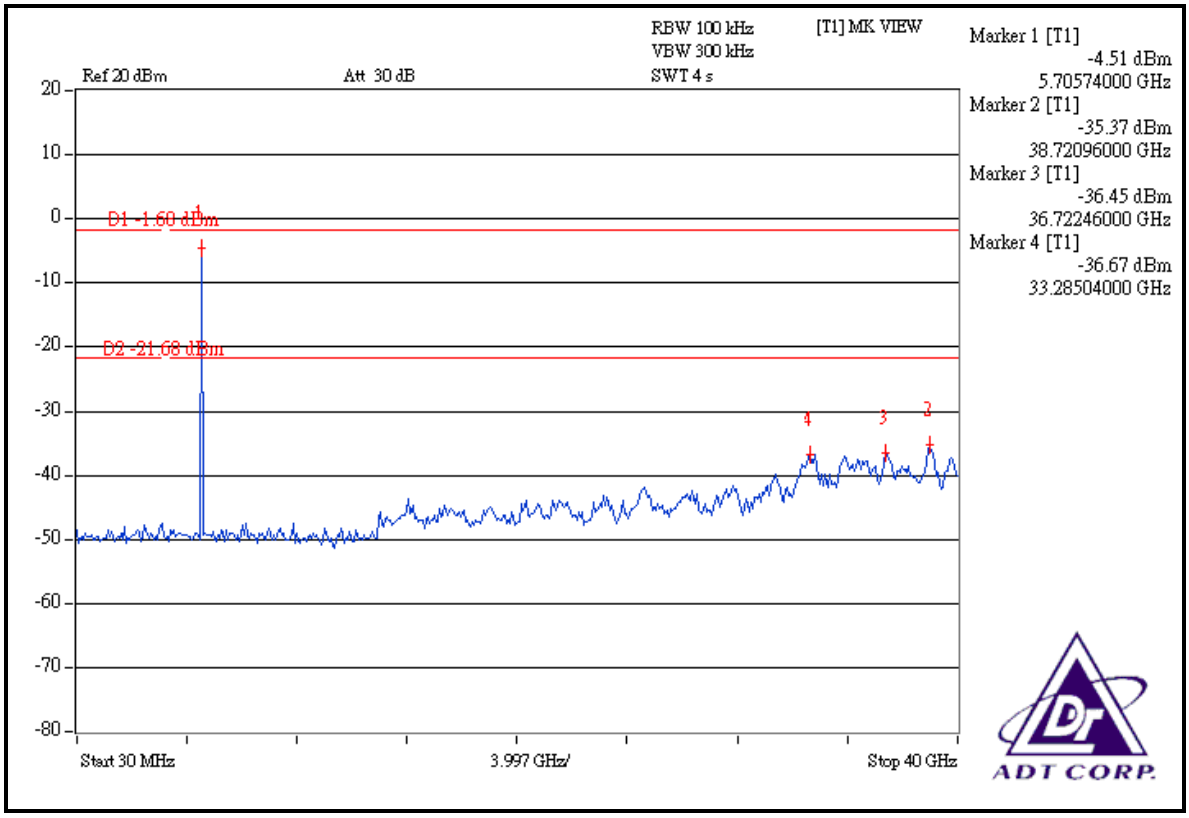
## 5.6.6 TEST RESULTS

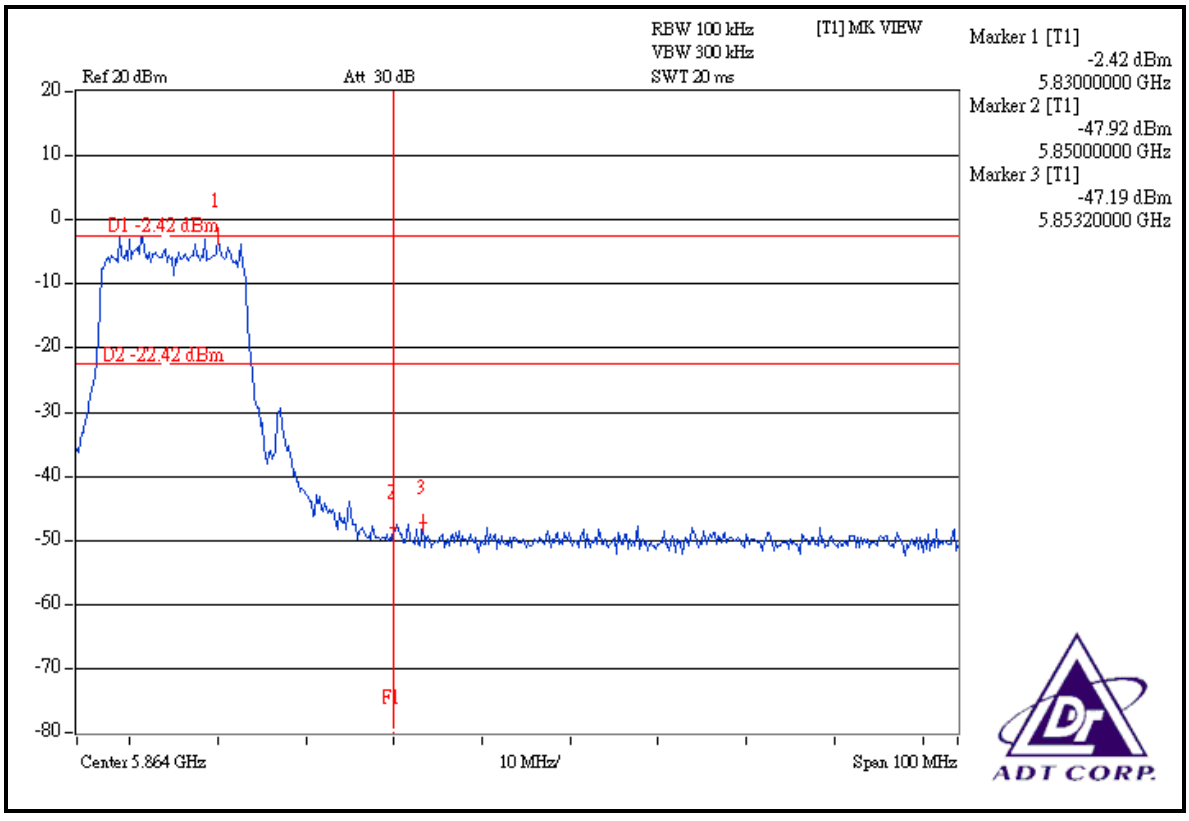
The spectrum plots are attached on the following pages. D1 line indicates the highest level, D2 line indicates the 20dB offset below D1. It shows compliance with the requirement in part 15.247(d).

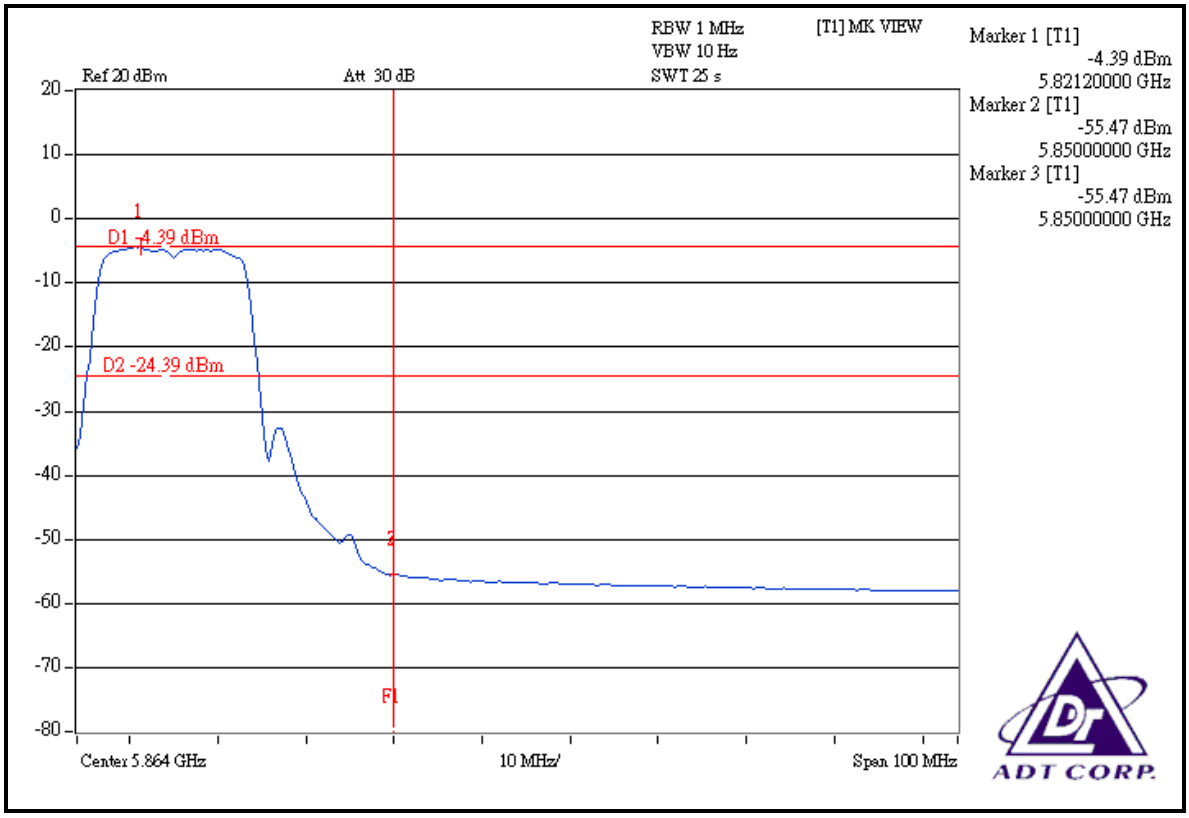
## 802.11a OFDM MODULATION:

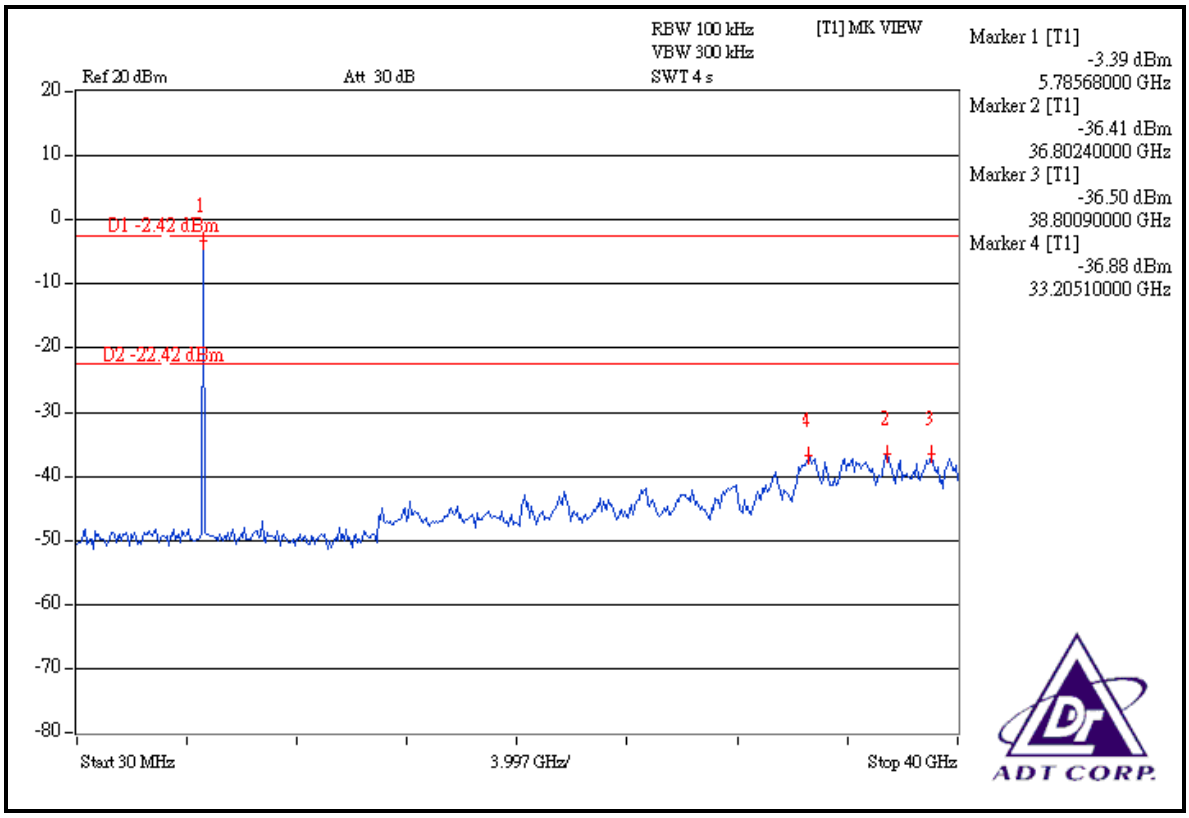


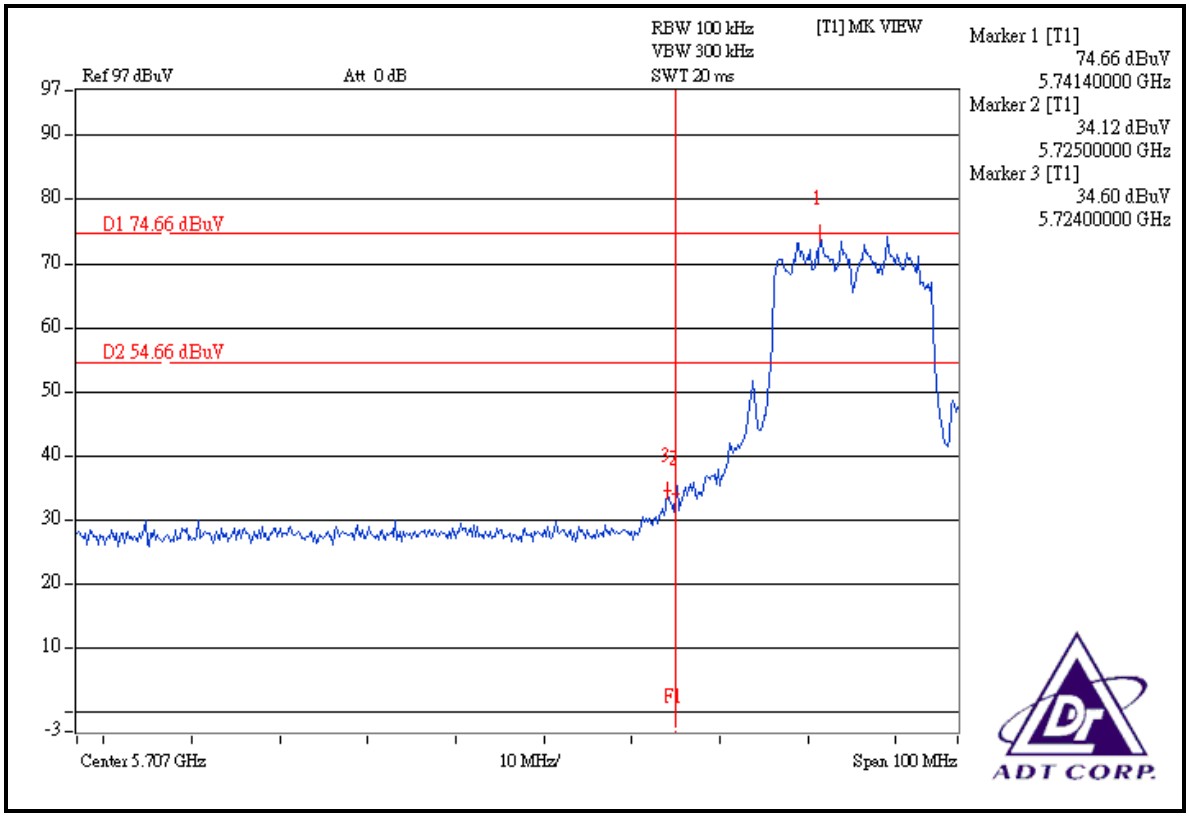

RBW 100 kHz
VBW 300 kHz
SWT 4 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 -1.60 dBm
D2 -21.68 dBm
Marker 1 [T1]
-4.51 dBm
5.70574000 GHz
Marker 2 [T1]
-35.37 dBm
38.72096000 GHz
Marker 3 [T1]
-36.45 dBm
36.72246000 GHz
Marker 4 [T1]
-36.67 dBm
33.28504000 GHz
Start 30 MHz
3.997 GHz/
Stop 40 GHz

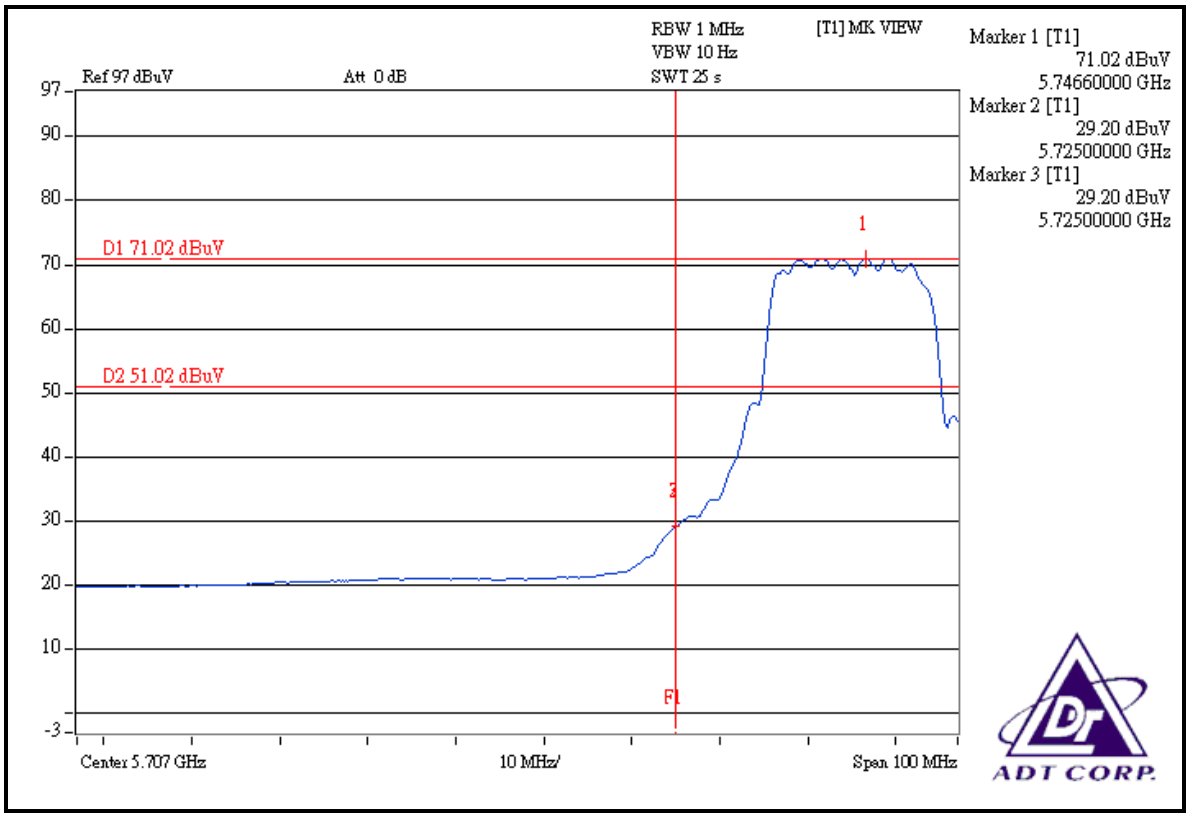

RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
D1 -2.42 dBm
D2 -22.42 dBm
Marker 1 [T1]
-2.42 dBm
5.83000000 GHz
Marker 2 [T1]
-47.92 dBm
5.85000000 GHz
Marker 3 [T1]
-47.19 dBm
5.85320000 GHz
Center 5.864 GHz
10 MHz/
Span 100 MHz

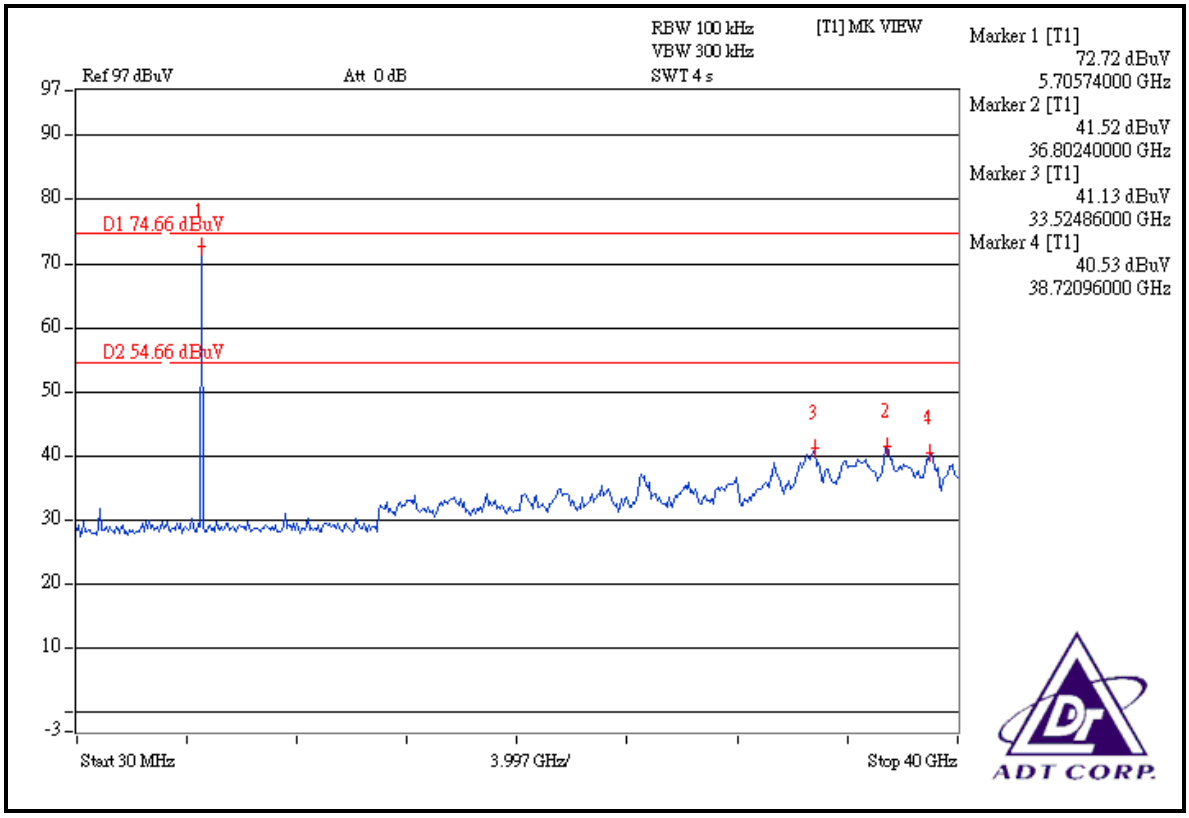

RBW 1 MHz
VBW 10 Hz
SWT 25 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
Marker 1 [T1]
-4.39 dBm
5.82120000 GHz
Marker 2 [T1]
-55.47 dBm
5.85000000 GHz
Marker 3 [T1]
-55.47 dBm
5.85000000 GHz
D1 -4.39 dBm
D2 -24.39 dBm
Center 5.864 GHz
10 MHz/
Span 100 MHz

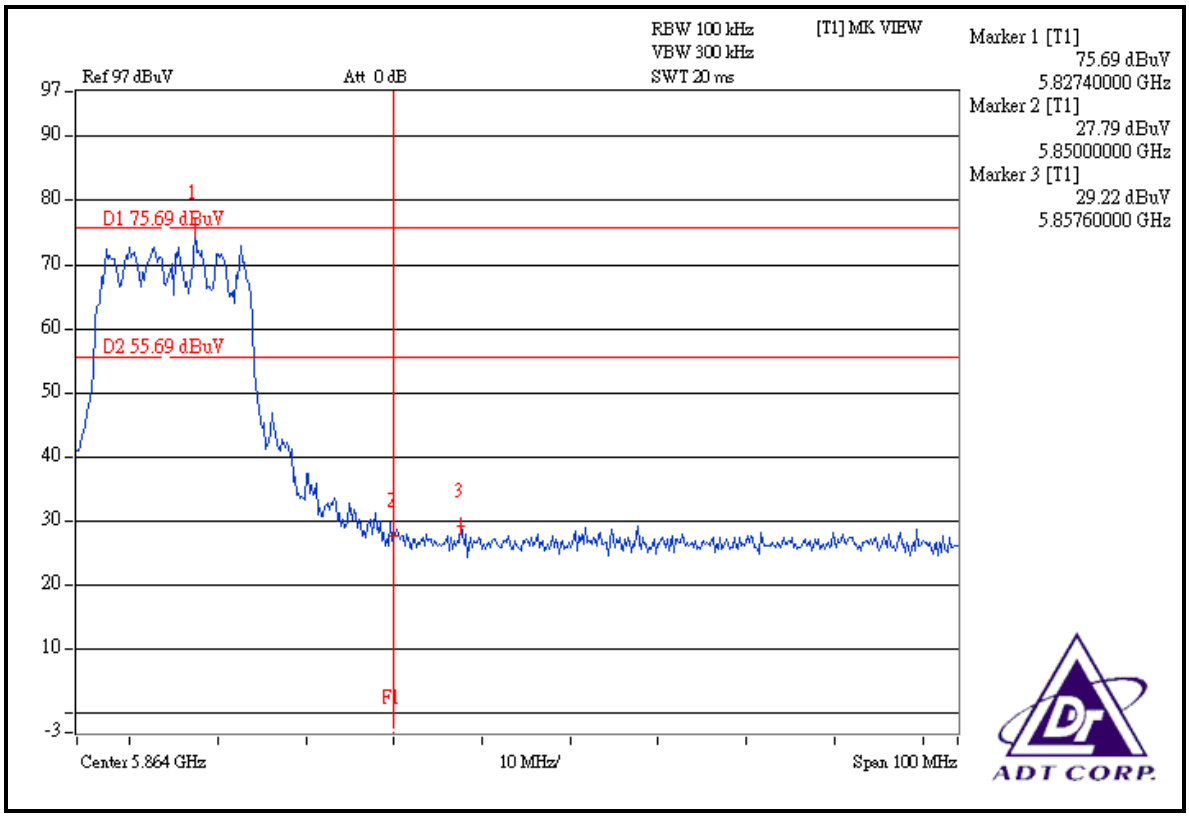

RBW 100 kHz
VBW 300 kHz
SWT 4 s
[T1] MK VIEW
Ref 20 dBm
Att 30 dB
Marker 1 [T1]
-3.39 dBm
5.78568000 GHz
Marker 2 [T1]
-36.41 dBm
36.80240000 GHz
Marker 3 [T1]
-36.50 dBm
38.80090000 GHz
Marker 4 [T1]
-36.88 dBm
33.20510000 GHz
D1 -2.42 dBm
D2 -22.42 dBm
Start 30 MHz
3.997 GHz/
Stop 40 GHz

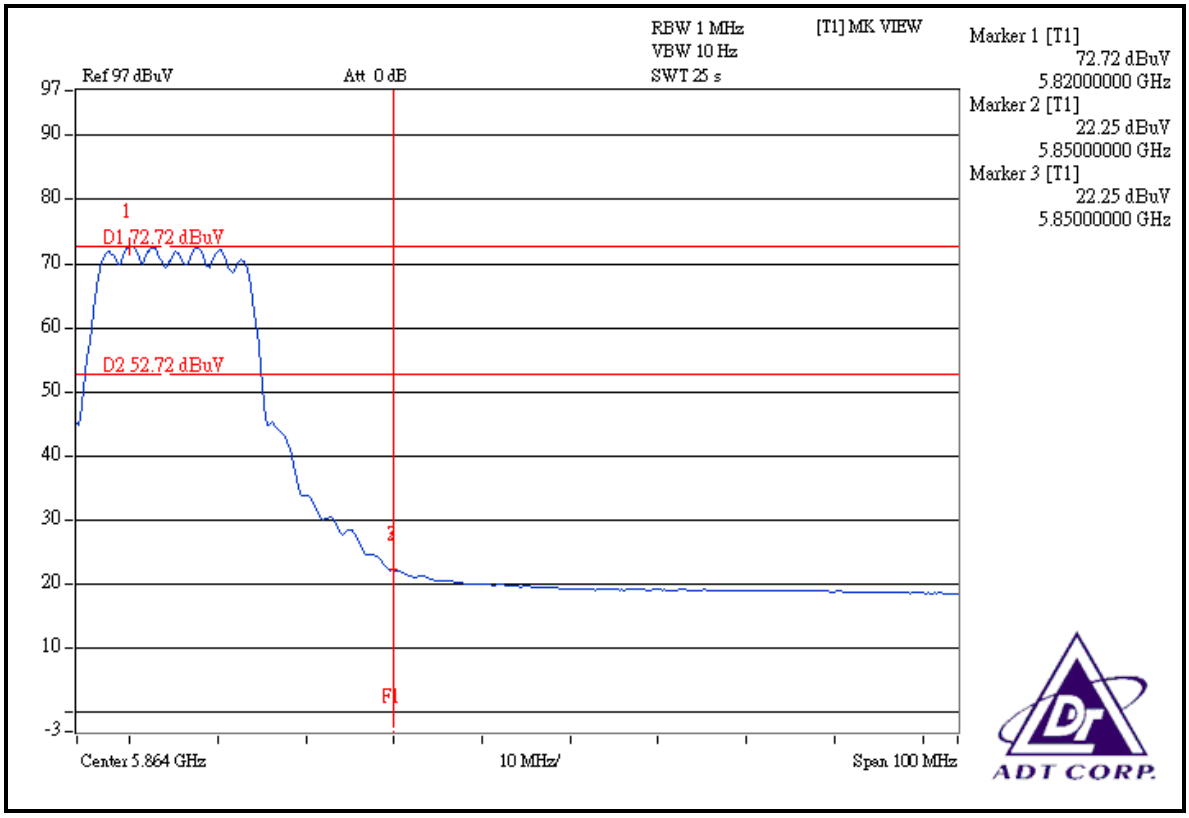
## DRAFT 802.11n (20MHz) OFDM MODULATION:

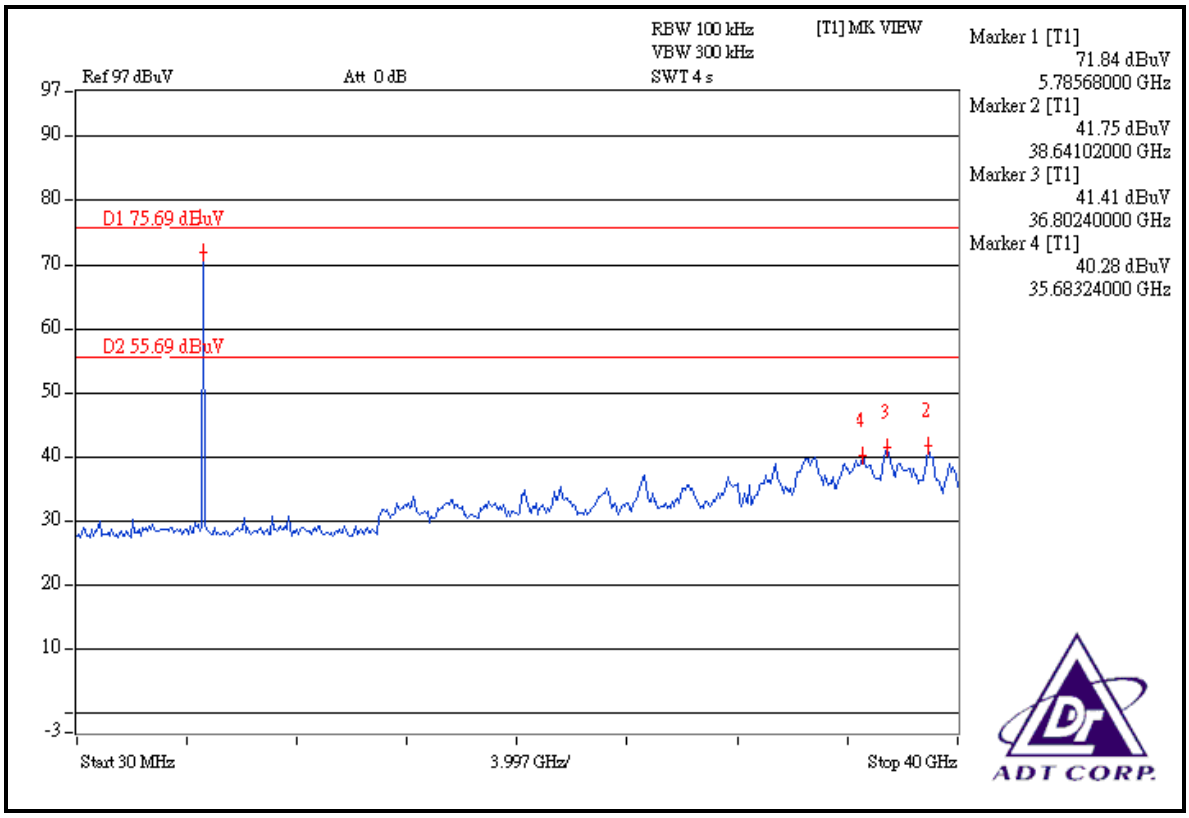


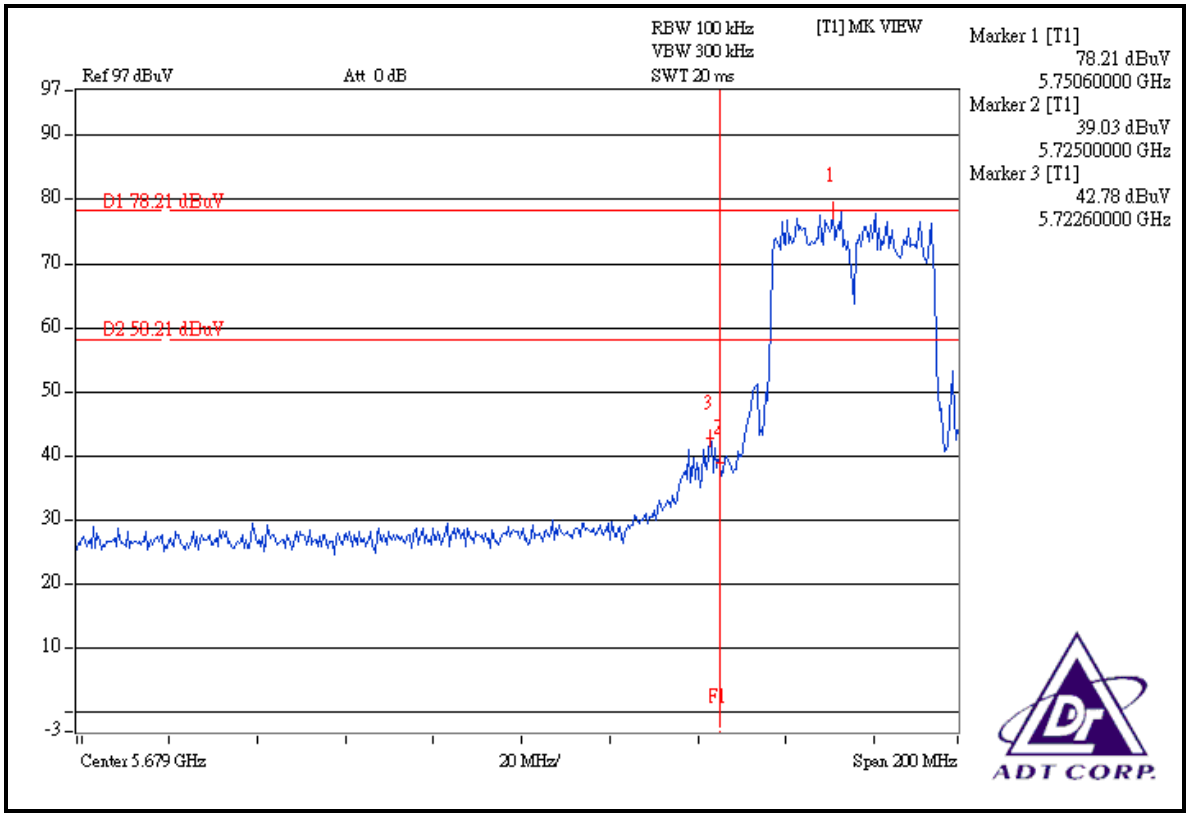

RBW 100 kHz
VBW 300 kHz
SWT 4 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 74.66 dBuV
D2 54.66 dBuV
Start 30 MHz
3.997 GHz/
Stop 40 GHz
Marker 1 [T1]
72.72 dBuV
5.70574000 GHz
Marker 2 [T1]
41.52 dBuV
36.80240000 GHz
Marker 3 [T1]
41.13 dBuV
33.52486000 GHz
Marker 4 [T1]
40.53 dBuV
38.72096000 GHz
ADT CORP.

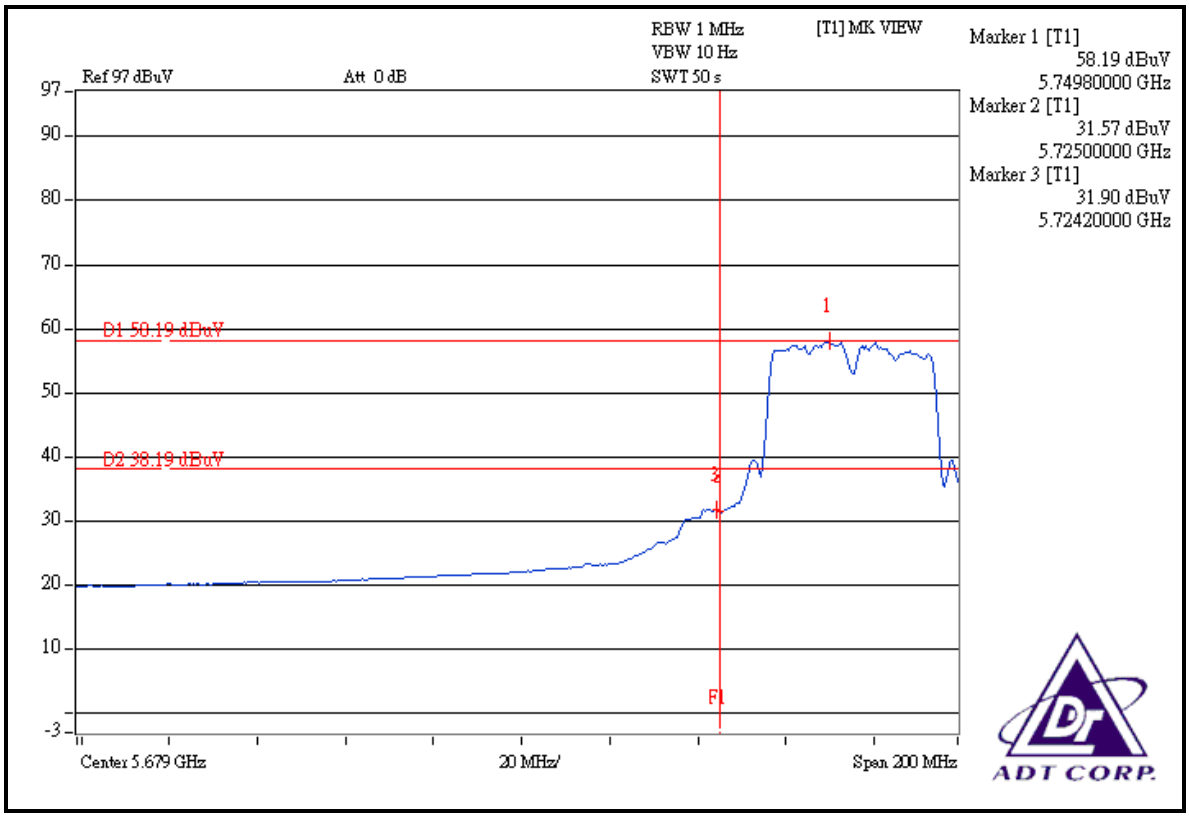

RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 75.69 dBuV
D2 55.69 dBuV
Center 5.864 GHz
10 MHz/
Span 100 MHz
Marker 1 [T1]
75.69 dBuV
5.82740000 GHz
Marker 2 [T1]
27.79 dBuV
5.85000000 GHz
Marker 3 [T1]
29.22 dBuV
5.85760000 GHz
ADT CORP.

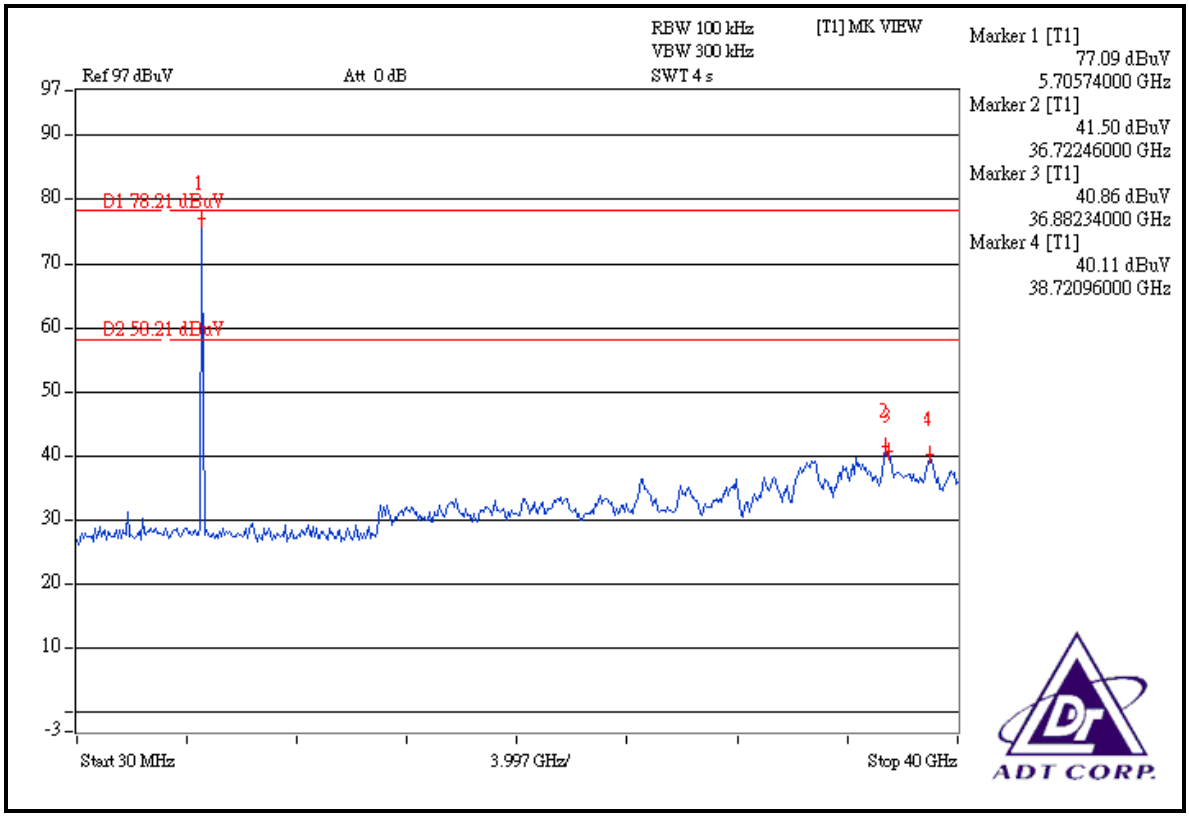

RBW 1 MHz
VBW 10 Hz
SWT 25 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
72.72 dBuV
5.82000000 GHz
Marker 2 [T1]
22.25 dBuV
5.85000000 GHz
Marker 3 [T1]
22.25 dBuV
5.85000000 GHz
D1 72.72 dBuV
D2 52.72 dBuV
Center 5.864 GHz
10 MHz/
Span 100 MHz

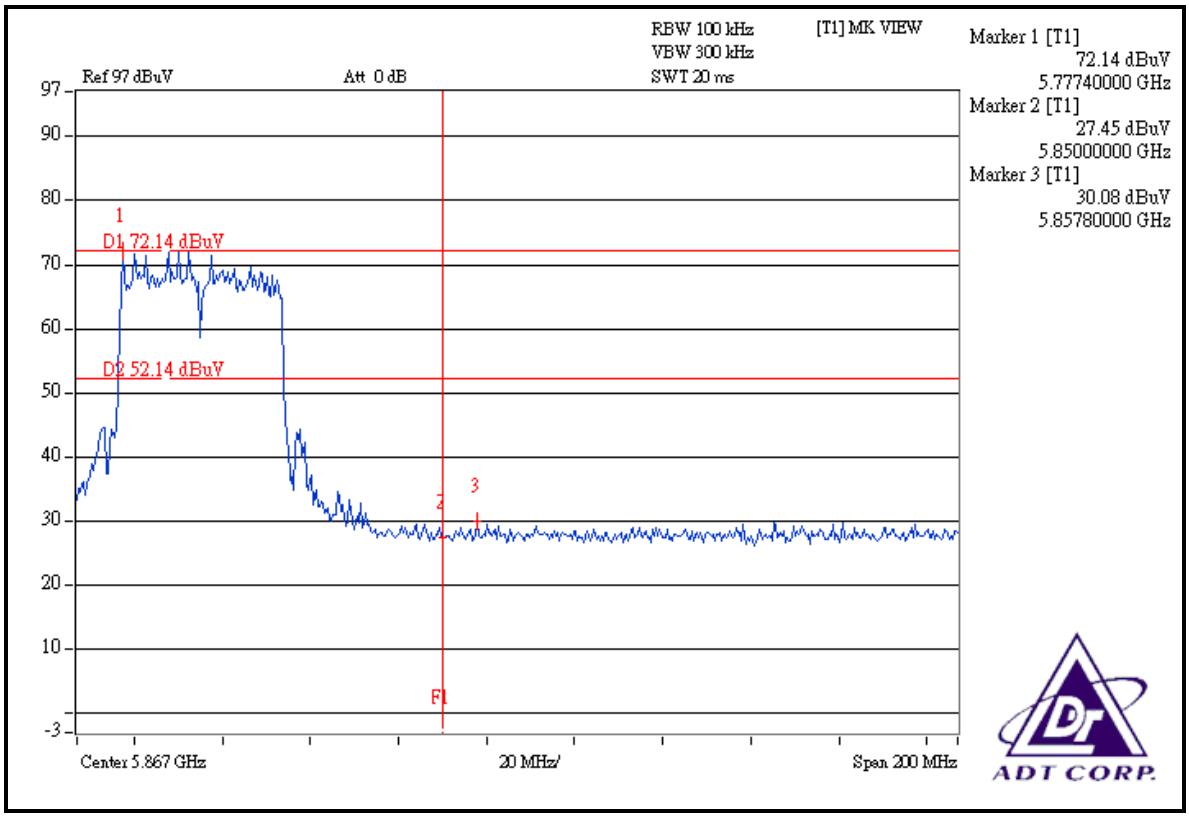

RBW 100 kHz
VBW 300 kHz
SWT 4 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
71.84 dBuV
5.78568000 GHz
Marker 2 [T1]
41.75 dBuV
38.64102000 GHz
Marker 3 [T1]
41.41 dBuV
36.80240000 GHz
Marker 4 [T1]
40.28 dBuV
35.68324000 GHz
D1 75.69 dBuV
D2 55.69 dBuV
Start 30 MHz
3.997 GHz/
Stop 40 GHz

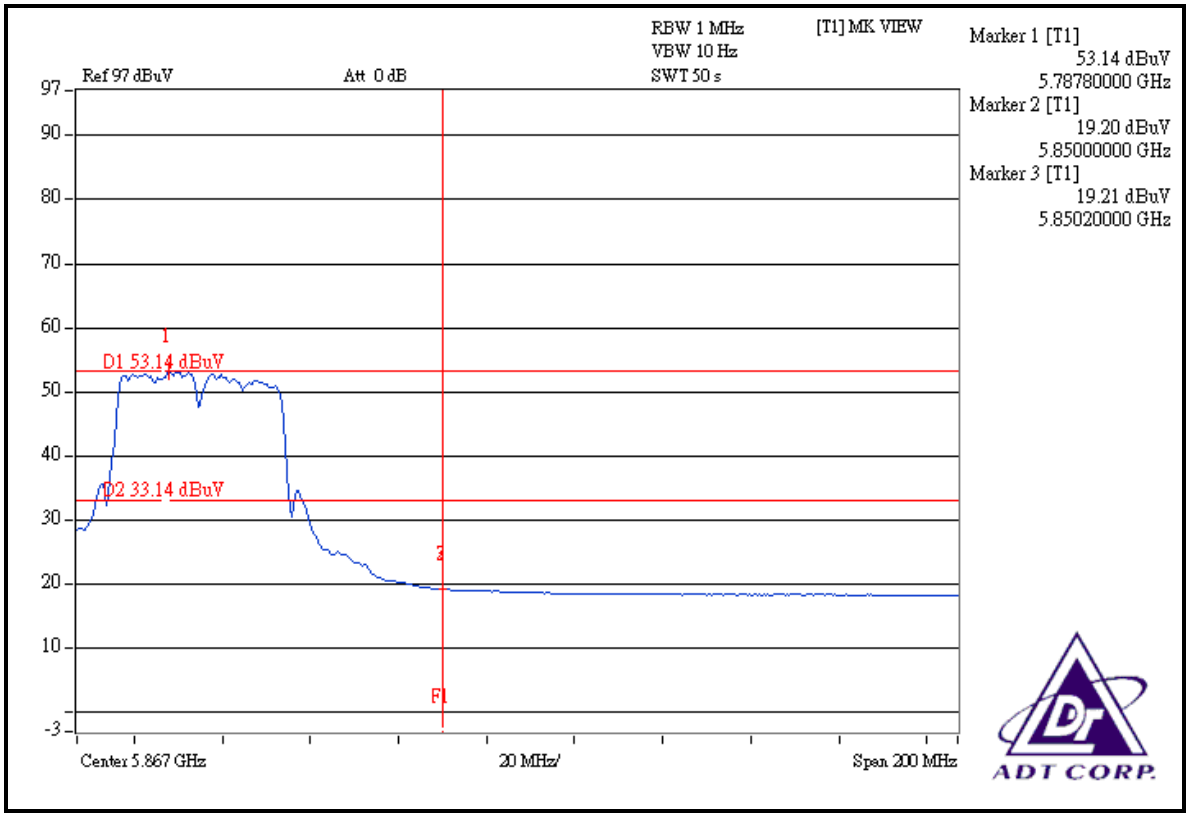
## DRAFT 802.11n (40MHz) OFDM MODULATION:

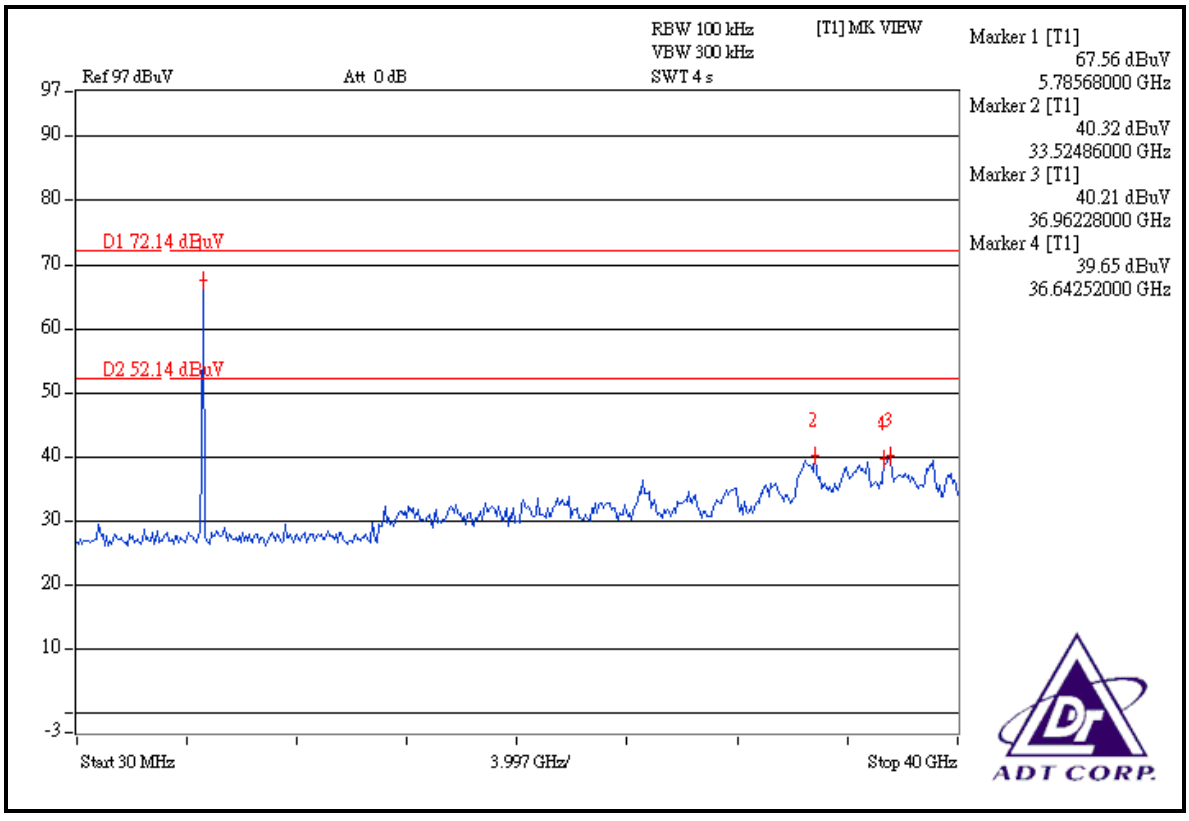



RBW 100 kHz
VBW 300 kHz
SWT 4 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 78.21 dBuV
D2 50.21 dBuV
Marker 1 [T1]
77.09 dBuV
5.70574000 GHz
Marker 2 [T1]
41.50 dBuV
36.72246000 GHz
Marker 3 [T1]
40.86 dBuV
36.88234000 GHz
Marker 4 [T1]
40.11 dBuV
38.72096000 GHz
Start 30 MHz
3.997 GHz/
Stop 40 GHz
ADT CORP.


RBW 100 kHz
VBW 300 kHz
SWT 20 ms
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
D1 72.14 dBuV
D2 52.14 dBuV
Marker 1 [T1]
72.14 dBuV
5.77740000 GHz
Marker 2 [T1]
27.45 dBuV
5.85000000 GHz
Marker 3 [T1]
30.08 dBuV
5.85780000 GHz
Center 5.867 GHz
20 MHz/
Span 200 MHz
ADT CORP.


RBW 1 MHz
VBW 10 Hz
SWT 50 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
53.14 dBuV
5.78780000 GHz
Marker 2 [T1]
19.20 dBuV
5.85000000 GHz
Marker 3 [T1]
19.21 dBuV
5.85020000 GHz
D1 53.14 dBuV
D2 33.14 dBuV
Center 5.867 GHz
20 MHz/
Span 200 MHz
ADT CORP.


RBW 100 kHz
VBW 300 kHz
SWT 4 s
[T1] MK VIEW
Ref 97 dBuV
Att 0 dB
Marker 1 [T1]
67.56 dBuV
5.78568000 GHz
Marker 2 [T1]
40.32 dBuV
33.52486000 GHz
Marker 3 [T1]
40.21 dBuV
36.96228000 GHz
Marker 4 [T1]
39.65 dBuV
36.64252000 GHz
D1 72.14 dBuV
D2 52.14 dBuV
Start 30 MHz
3.997 GHz/
Stop 40 GHz
ADT CORP.

## 5.7 ANTENNA REQUIREMENT

### 5.7.1 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(a), 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.

### 5.7.2 ANTENNA CONNECTED CONSTRUCTION

The antenna used in this product is PIFA antenna with I-PEX & UFL connectors. The maximum Gain of the antenna is 4.26dBi.

# 6. PHOTOGRAPHS OF THE TEST CONFIGURATION

Please refer to the attached file (Test Setup Photo).

# 7. INFORMATION ON THE TESTING LABORATORIES

We, ADT Corp., 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.

| | |
|---|---|
| **USA** | FCC, UL, A2LA |
| **Germany** | TUV Rheinland |
| **Japan** | VCCI |
| **Norway** | NEMKO |
| **Canada** | INDUSTRY CANADA , CSA |
| **R.O.C.** | TAF, BSMI, NCC |
| **Netherlands** | Telefication |
| **Singapore** | GOST-ASIA(MOU) |
| **Russia** | 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. If you have any comments, please feel free to contact us at the following:


**Linko EMC/RF Lab**:
Tel: 886-2-26052180
Fax: 886-2-26051924

**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


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

# 8. 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.