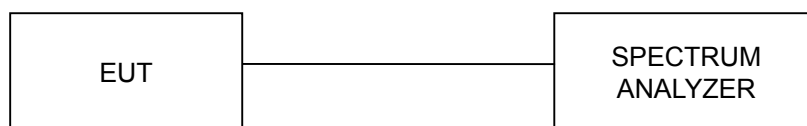


#### 4.5.5 TEST SETUP



#### 4.5.6 EUT OPERATING CONDITION

Same as Item 4.3.6

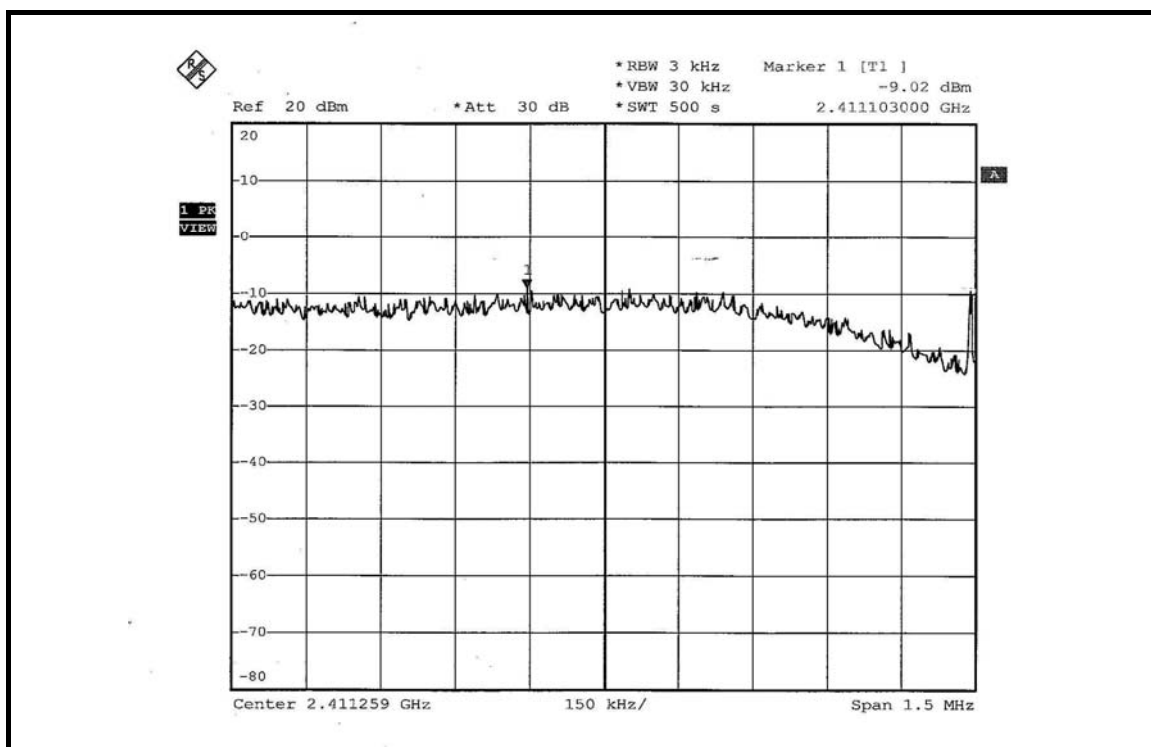
## 4.5.7 TEST RESULTS

### 802.11b DSSS MODULATION:

|                             |               |                                 |                        |
|-----------------------------|---------------|---------------------------------|------------------------|
| <b>MODULATION TYPE</b>      | DBPSK         | <b>TRANSFER RATE</b>            | 1Mbps                  |
| <b>INPUT POWER (SYSTEM)</b> | 120Vac, 60 Hz | <b>ENVIRONMENTAL CONDITIONS</b> | 25deg.C, 63%RH, 991hPa |
| <b>TESTED BY</b>            | Long Chen     |                                 |                        |

| CHANNEL | CHANNEL FREQUENCY (MHz ) | RF POWER LEVEL IN 3kHz BW (dBm) | MAXIMUM LIMIT (dBm) | PASS / FAIL |
|---------|--------------------------|---------------------------------|---------------------|-------------|
| 1       | 2412                     | -9.02                           | 8                   | PASS        |
| 6       | 2437                     | -9.29                           | 8                   | PASS        |
| 11      | 2462                     | -9.23                           | 8                   | PASS        |

### CH 1



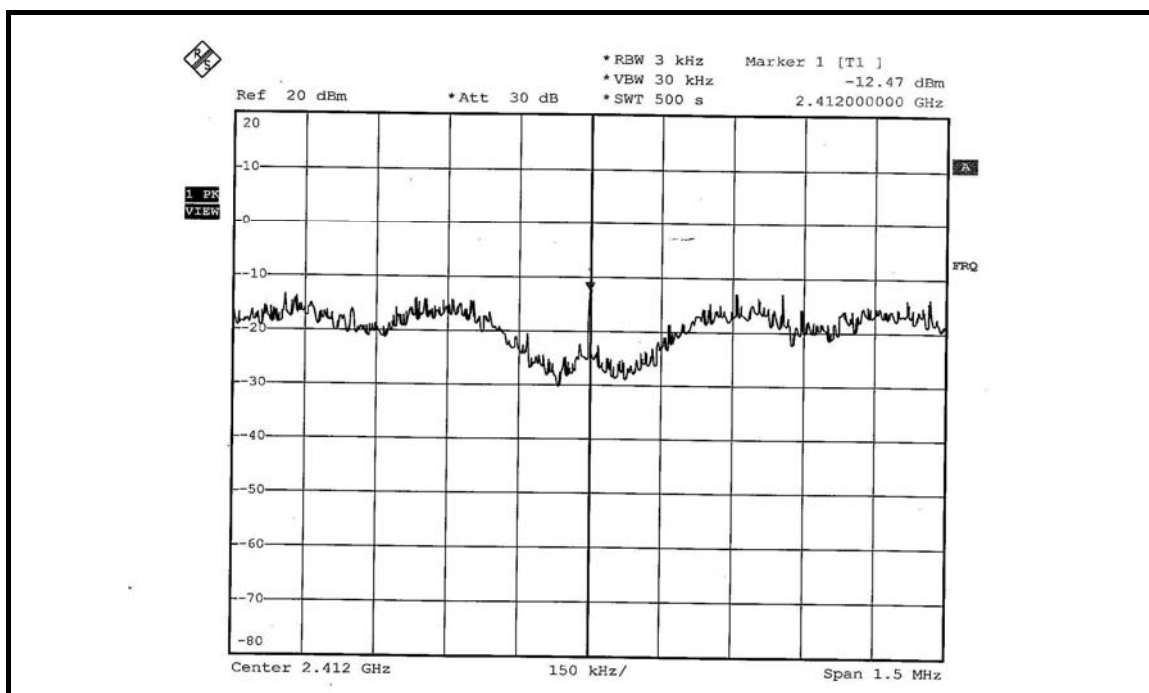


### 802.11g OFDM MODULATION:

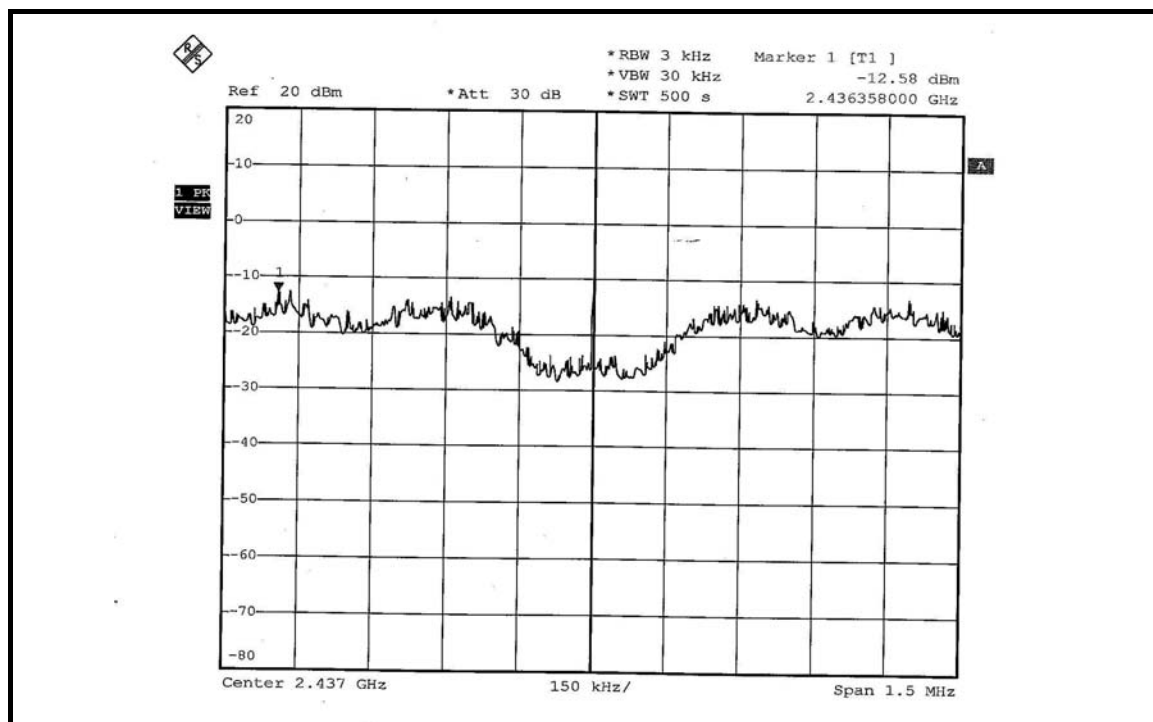
|                             |               |                                 |                        |
|-----------------------------|---------------|---------------------------------|------------------------|
| <b>MODULATION TYPE</b>      | BPSK          | <b>TRANSFER RATE</b>            | 6Mbps                  |
| <b>INPUT POWER (SYSTEM)</b> | 120Vac, 60 Hz | <b>ENVIRONMENTAL CONDITIONS</b> | 25deg.C, 63%RH, 991hPa |
| <b>TESTED BY</b>            | Long Chen     |                                 |                        |

| CHANNEL | CHANNEL FREQUENCY (MHz ) | RF POWER LEVEL IN 3kHz BW (dBm) | MAXIMUM LIMIT (dBm) | PASS / FAIL |
|---------|--------------------------|---------------------------------|---------------------|-------------|
| 1       | 2412                     | -12.47                          | 8                   | PASS        |
| 6       | 2437                     | -12.58                          | 8                   | PASS        |
| 11      | 2462                     | -12.60                          | 8                   | PASS        |

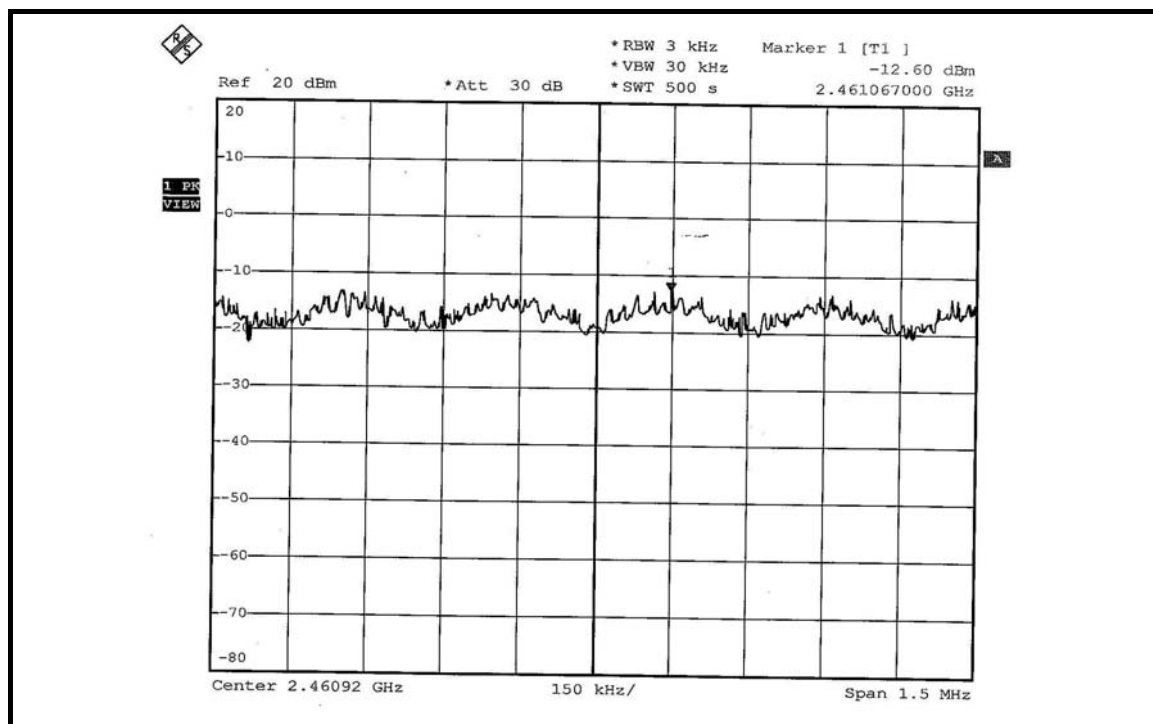
### CH 1



## CH 6



## CH 11

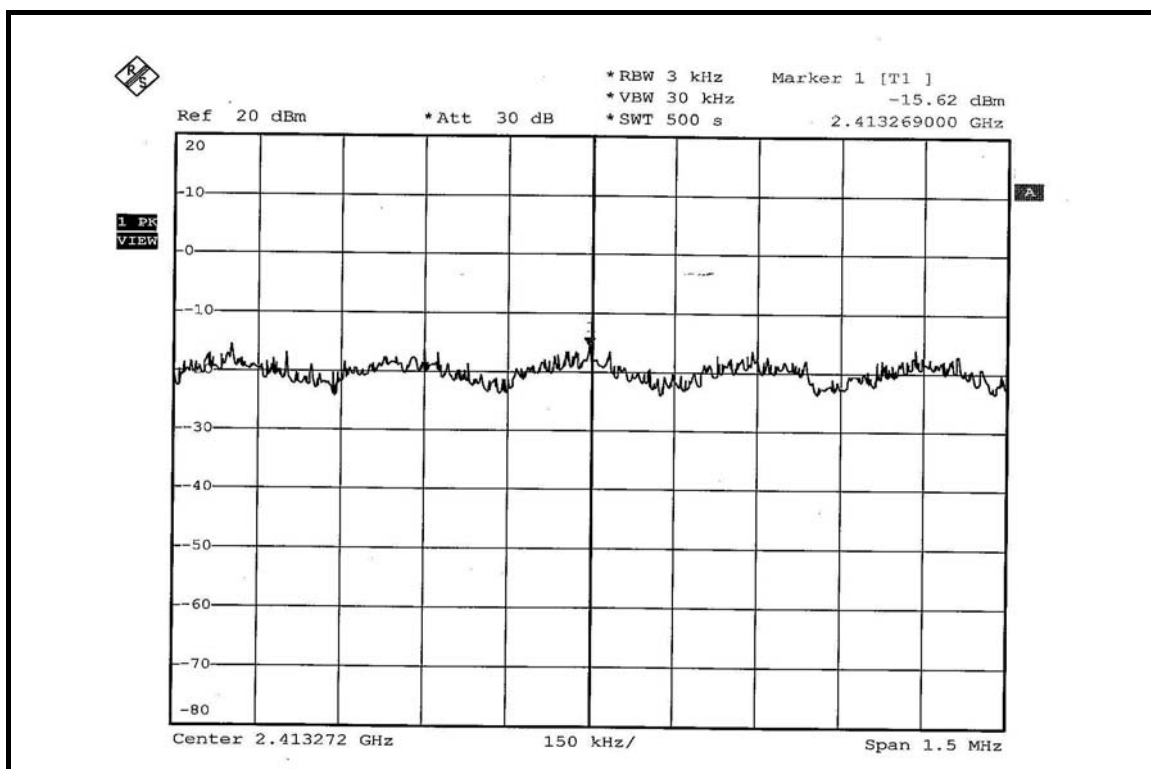


# DRAFT 802.11n (20MHz) OFDM MODULATION: DUAL TX

|                      |               |                          |                        |
|----------------------|---------------|--------------------------|------------------------|
| MODULATION TYPE      | BPSK          | TRANSFER RATE            | 13Mbps                 |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | ENVIRONMENTAL CONDITIONS | 25deg.C, 63%RH, 991hPa |
| TESTED BY            | Long Chen     |                          |                        |

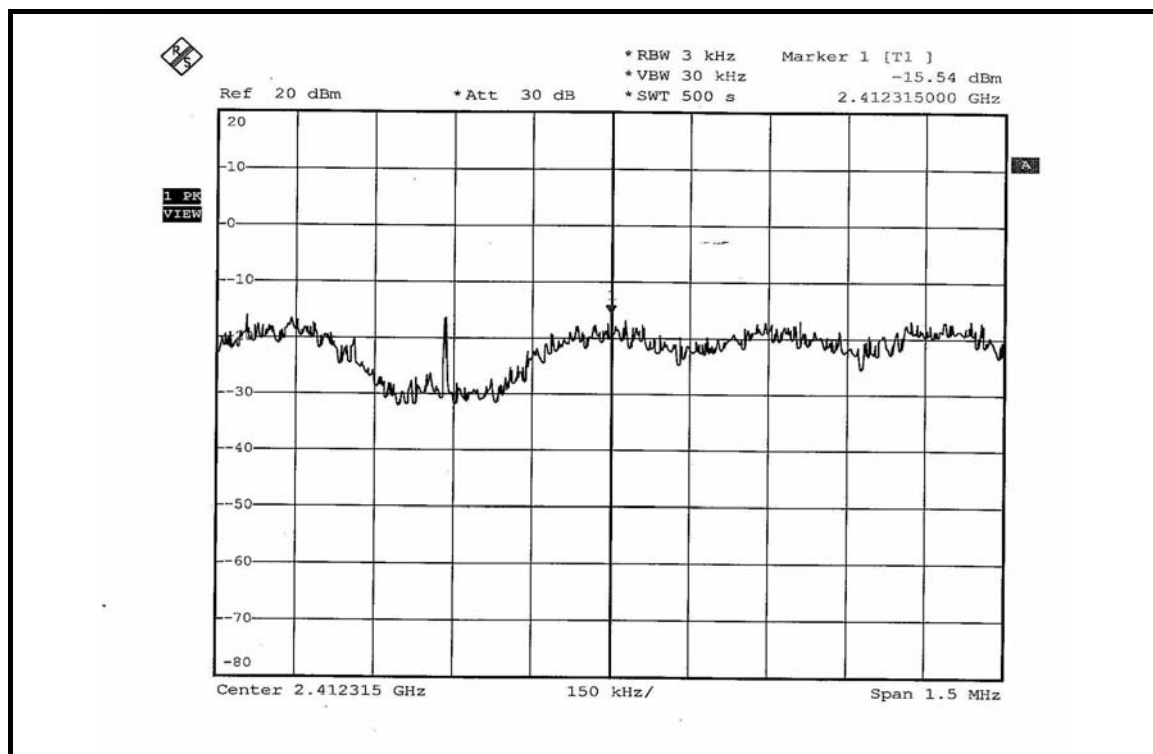
| CHANNEL | CHANNEL FREQUENCY (MHz ) | RF POWER LEVEL IN 3kHz BW (dBm) |         | MAXIMUM LIMIT (dBm) | PASS / FAIL |
|---------|--------------------------|---------------------------------|---------|---------------------|-------------|
|         |                          | CHAIN 0                         | CHAIN 1 |                     |             |
| 1       | 2412                     | -15.62                          | -15.54  | 8                   | PASS        |
| 6       | 2437                     | -15.54                          | -15.48  | 8                   | PASS        |
| 11      | 2462                     | -15.53                          | -15.55  | 8                   | PASS        |

## FOR CHAIN 0: CH 1

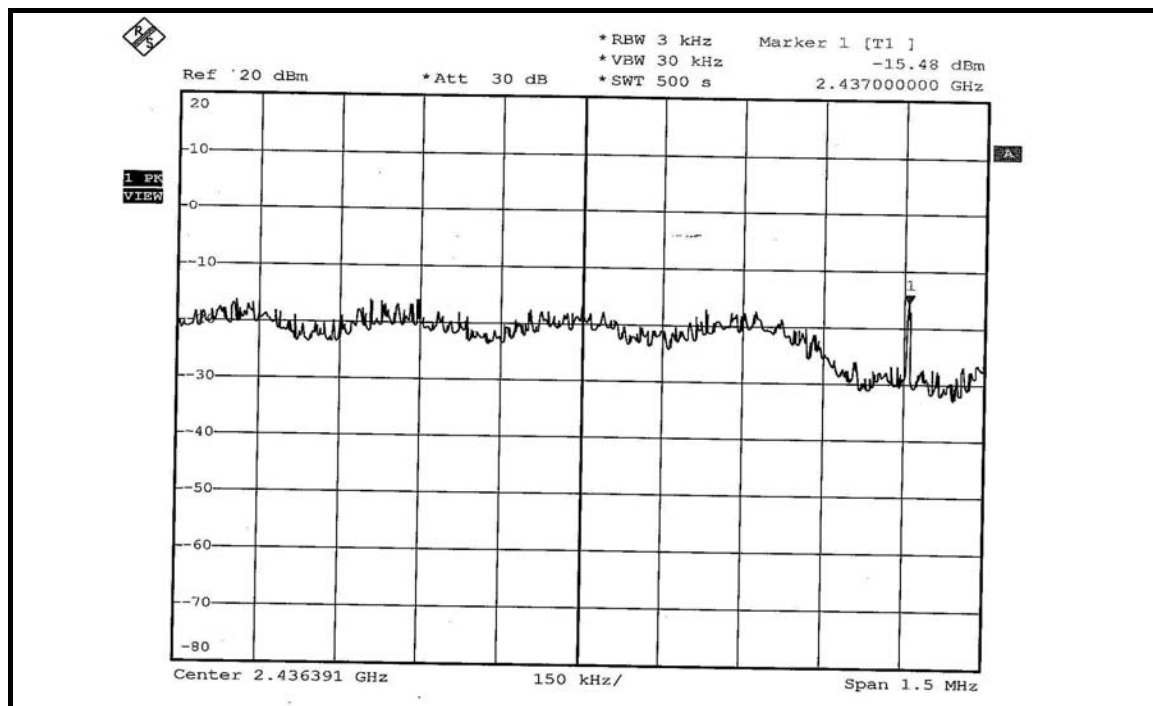




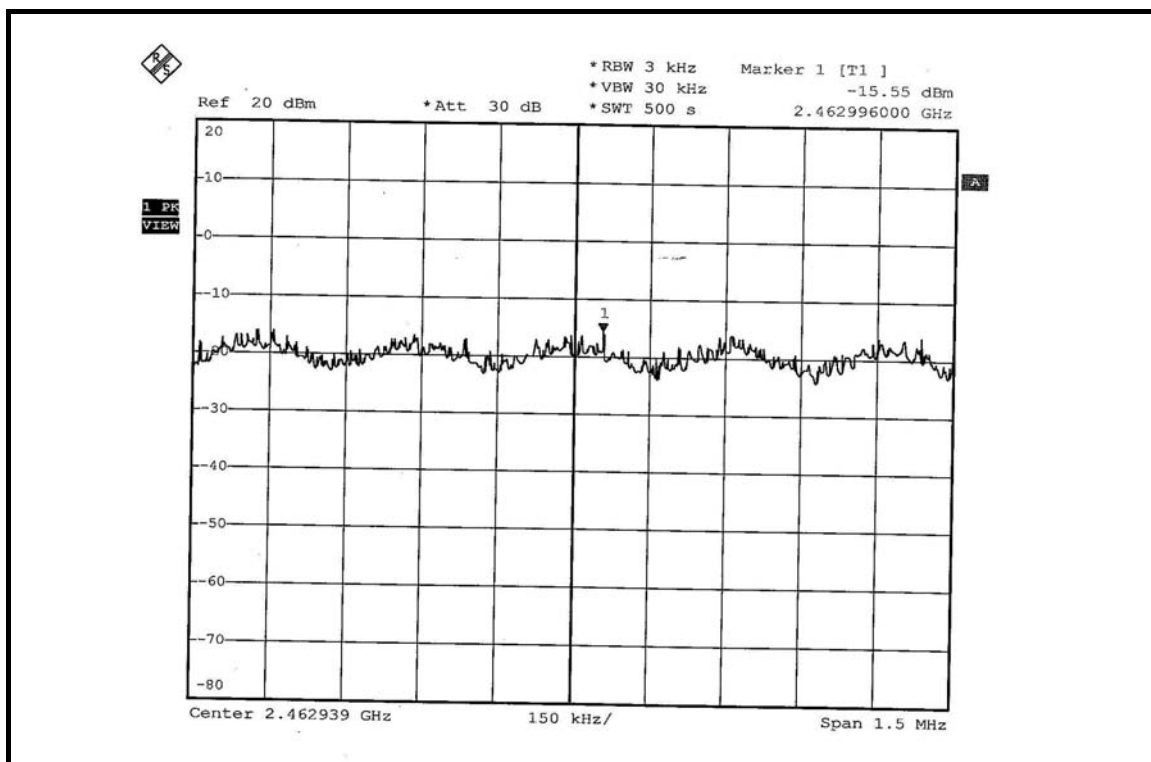
# FOR CHAIN 1: CH 1



# CH 6



# CH 11

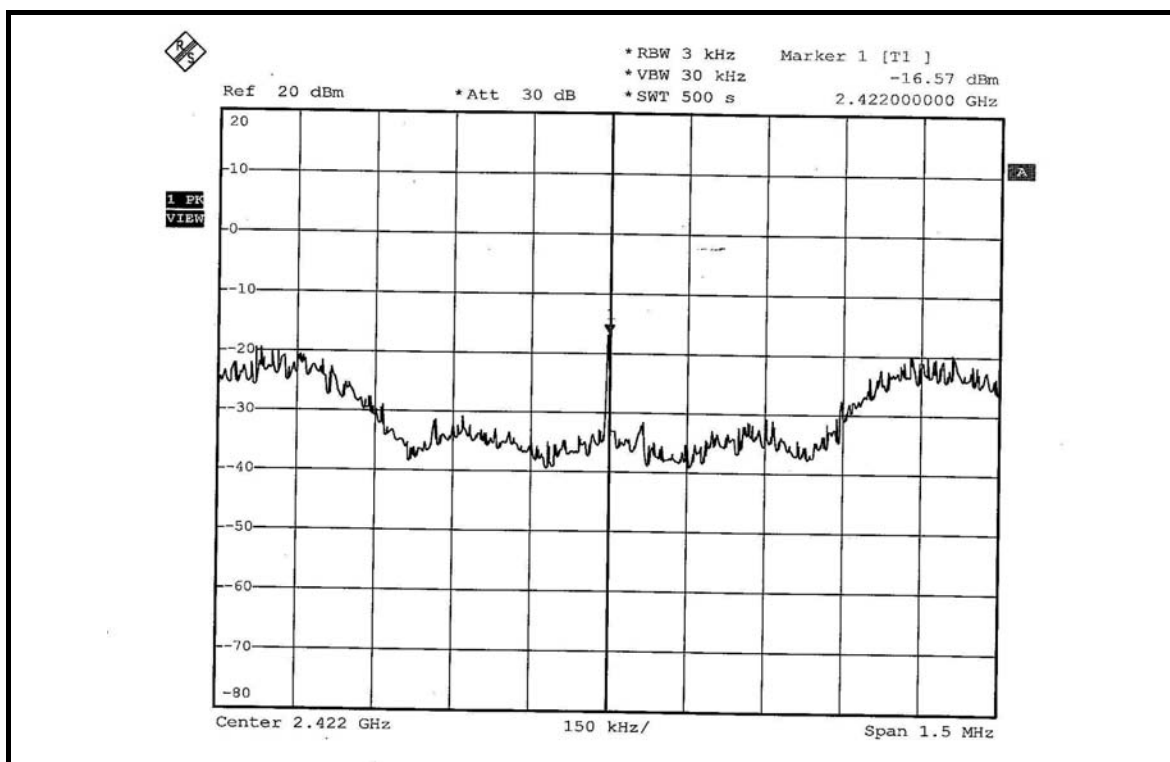


### DRAFT 802.11n (40MHz) OFDM MODULATION: DUAL TX

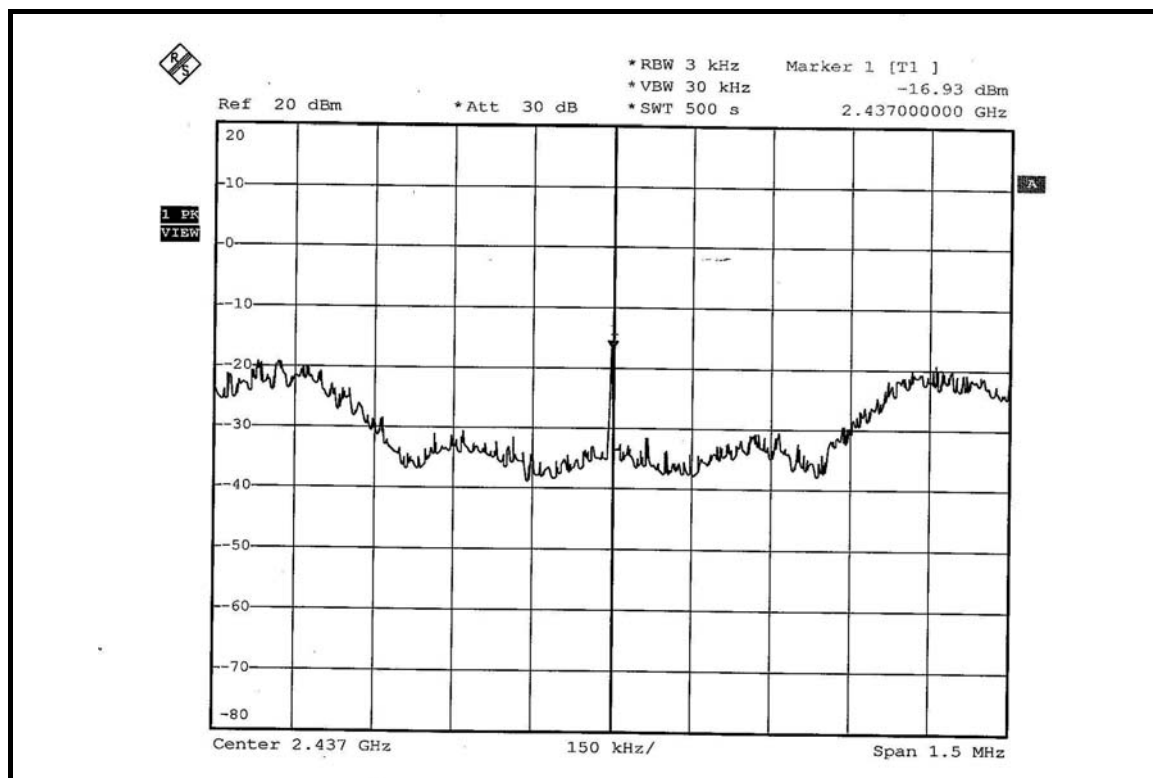
|                      |               |                          |                        |
|----------------------|---------------|--------------------------|------------------------|
| MODULATION TYPE      | BPSK          | TRANSFER RATE            | 27Mbps                 |
| INPUT POWER (SYSTEM) | 120Vac, 60 Hz | ENVIRONMENTAL CONDITIONS | 25deg.C, 63%RH, 991hPa |
| TESTED BY            | Long Chen     |                          |                        |

| CHANNEL | CHANNEL FREQUENCY (MHz ) | RF POWER LEVEL IN 3kHz BW (dBm) |         | MAXIMUM LIMIT (dBm) | PASS / FAIL |
|---------|--------------------------|---------------------------------|---------|---------------------|-------------|
|         |                          | CHAIN 0                         | CHAIN 1 |                     |             |
| 1       | 2422                     | -16.57                          | -16.14  | 8                   | PASS        |
| 4       | 2437                     | -16.93                          | -16.40  | 8                   | PASS        |
| 7       | 2452                     | -16.52                          | -16.41  | 8                   | PASS        |

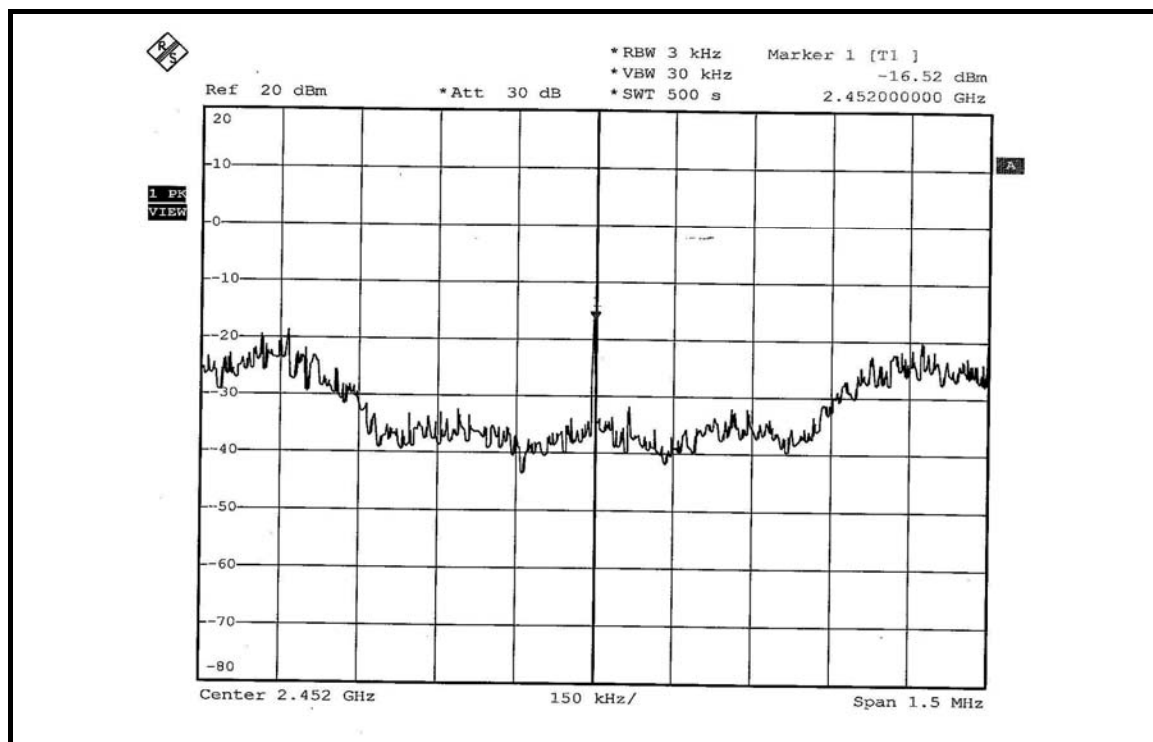
### FOR CHAIN 0: CH 1



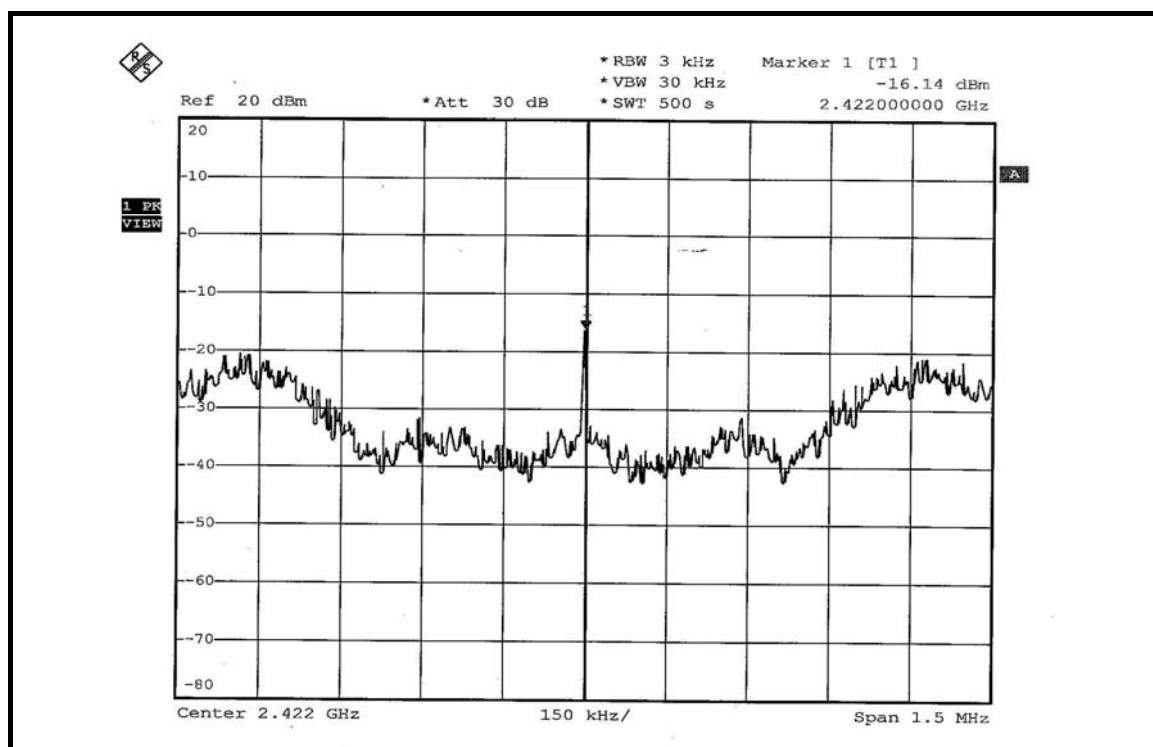
## CH 4



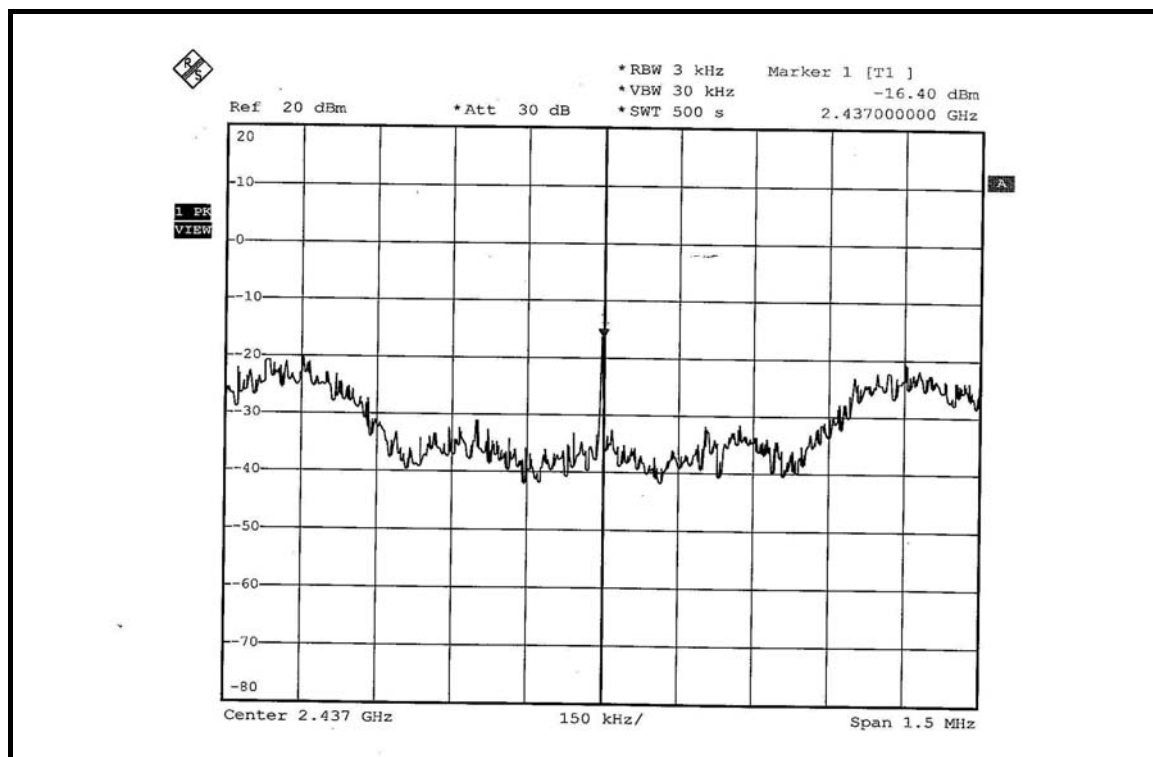
## CH 7



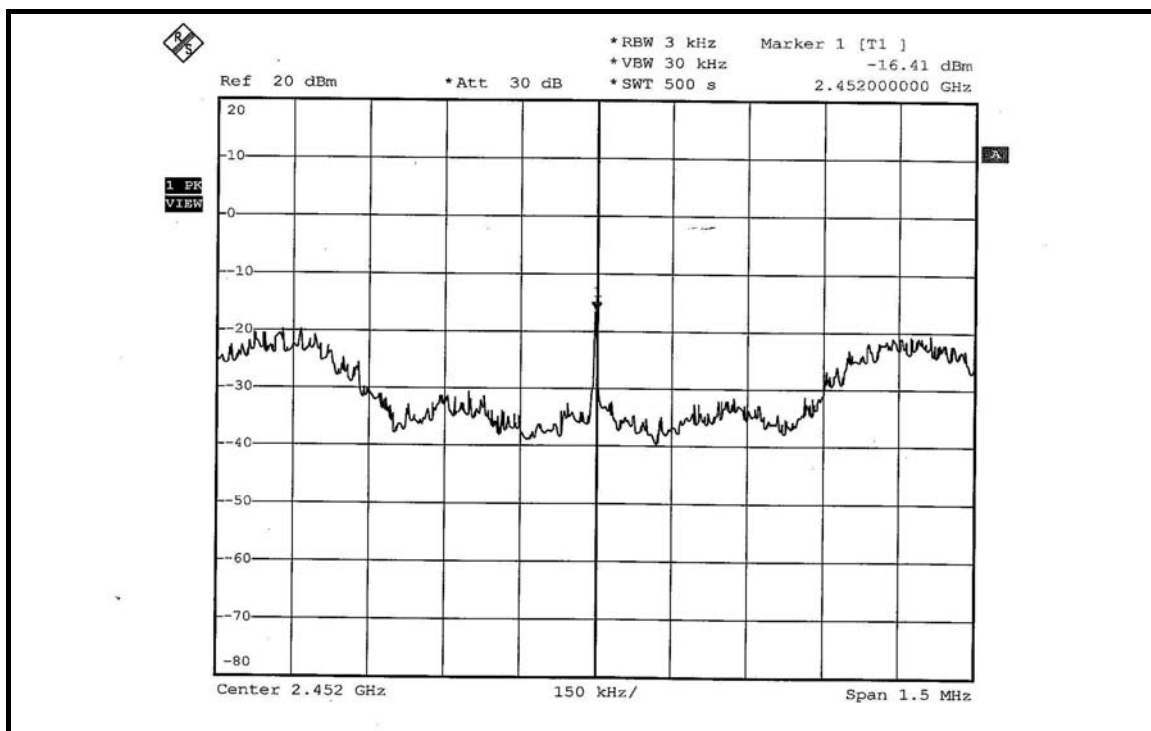
# FOR CHAIN 1: CH 1



# CH 4



## CH 7



## 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 |
|----------------------------|-----------|------------|------------------|
| R&S SPECTRUM ANALYZER      | FSEK30    | 100049     | Aug. 14, 2006    |

**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

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

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

### 4.6.4 DEVIATION FROM TEST STANDARD

No deviation

### 4.6.5 EUT OPERATING CONDITION

Same as Item 4.3.6

#### 4.6.6 TEST RESULTS

The spectrum plots are attached on the following 24 images. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement in part 15.247(d).

#### 802.11b DSSS MODULATION:

##### NOTE 1:

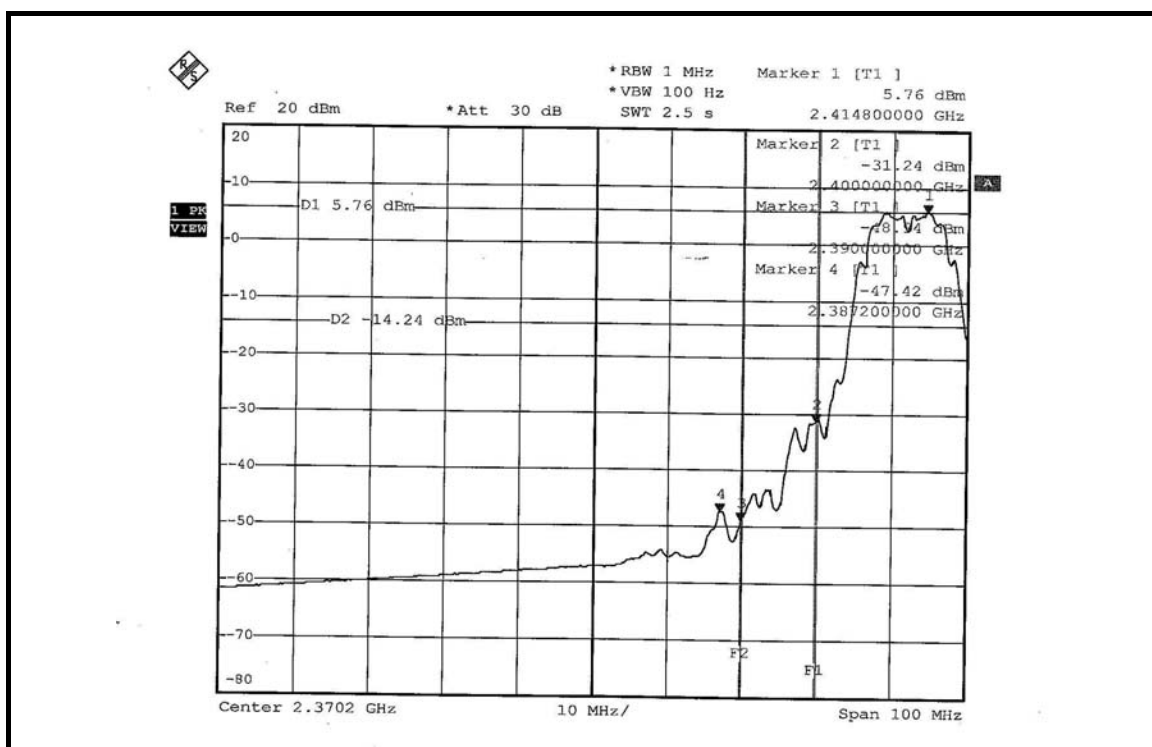
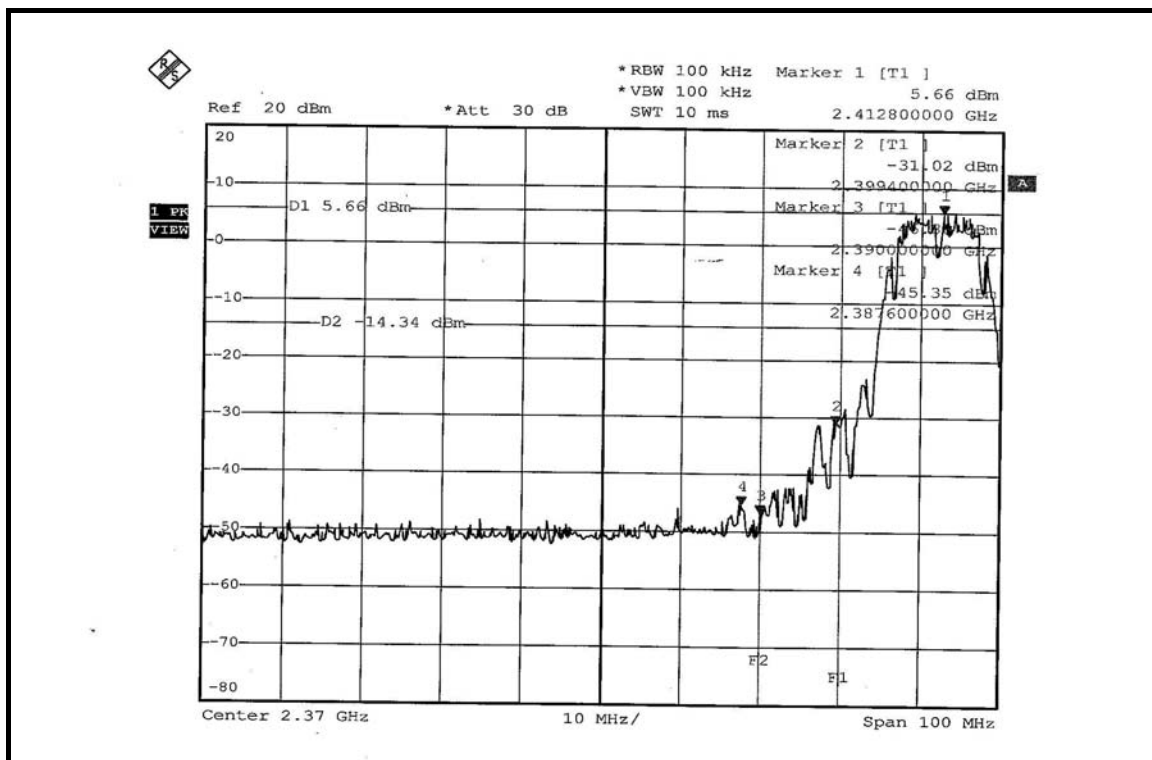
The band edge emission plot of DSSS technique on the next page shows 51.01dBc between carrier maximum power and local maximum emission in restrict band (2.38760GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 109.61dBuV/m (Peak), so the maximum field strength in restrict band is  $109.61 - 51.01 = 58.60$ dBuV/m which is under 74dBuV/m limit.

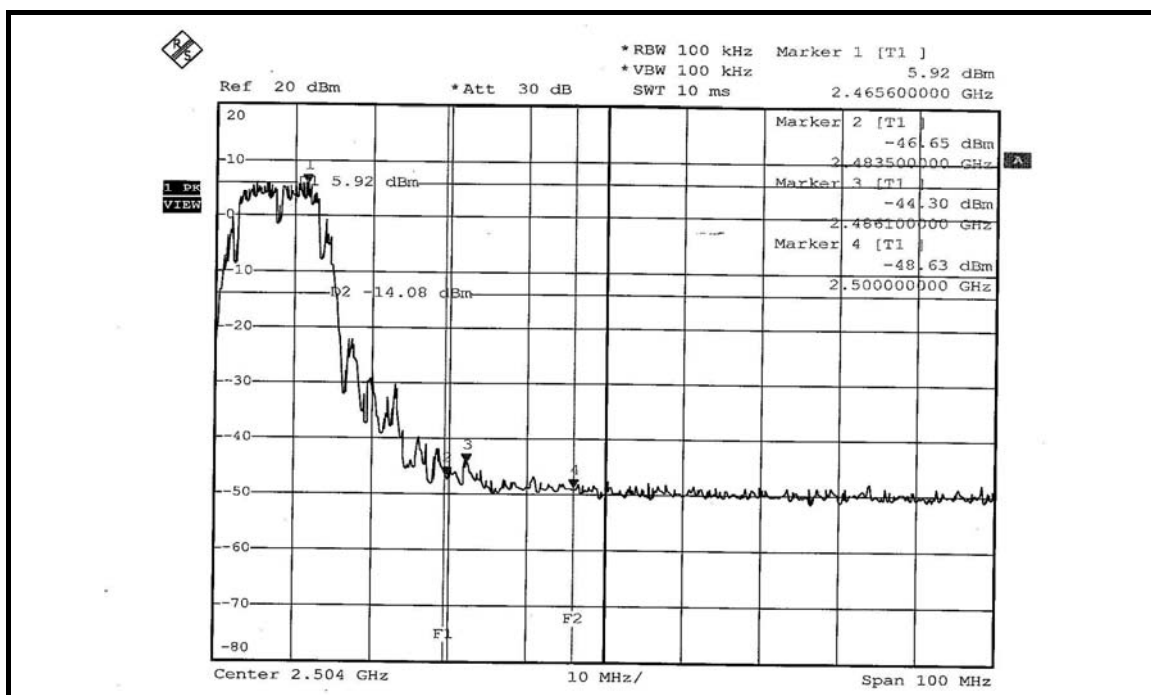
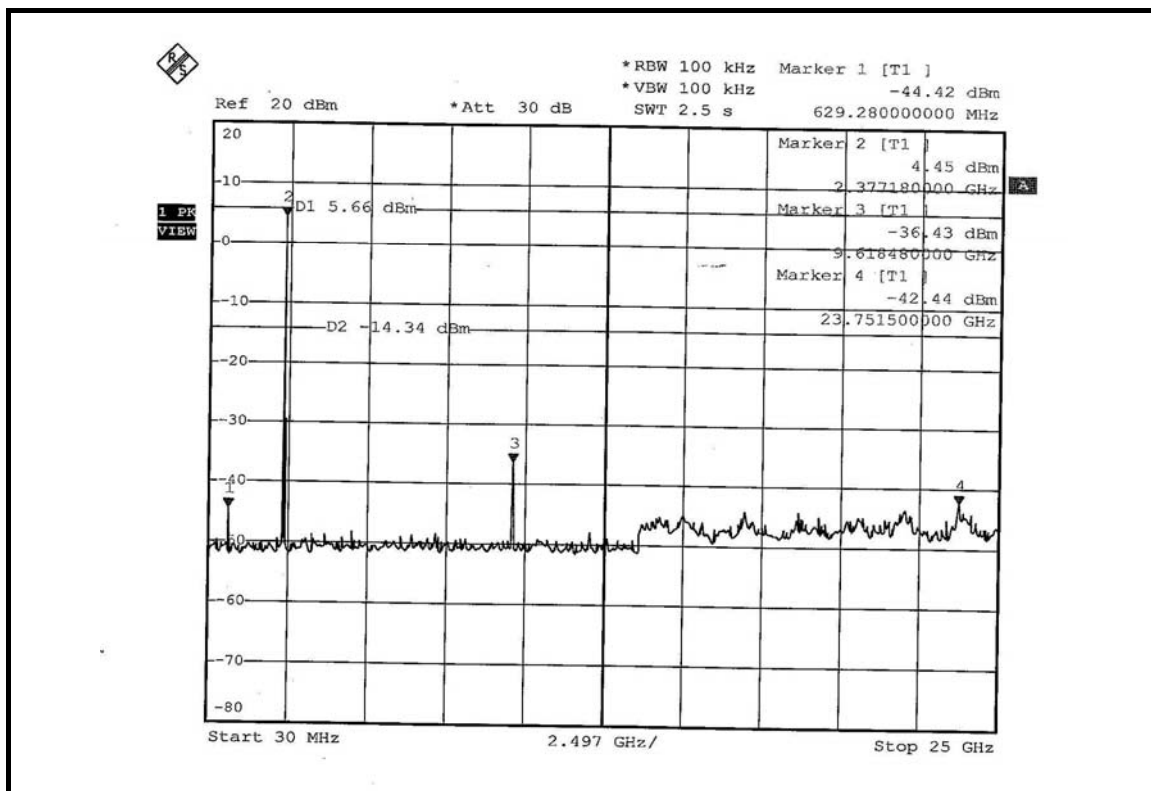
The band edge emission plot of DSSS technique on the next page shows 53.18dBc between carrier maximum power and local maximum emission in restrict band (2.38720GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 106.45dBuV/m (Average), so the maximum field strength in restrict band is  $106.45 - 53.18 = 53.27$ dBuV/m which is under 54dBuV/m limit.

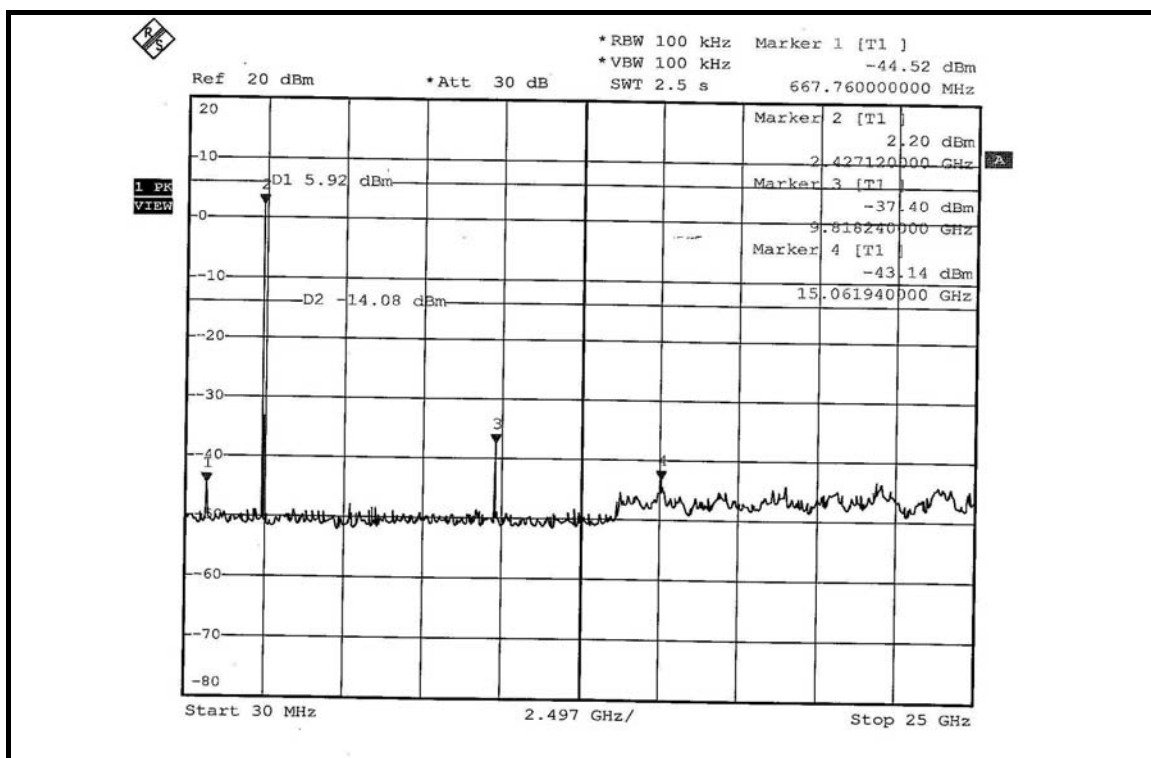
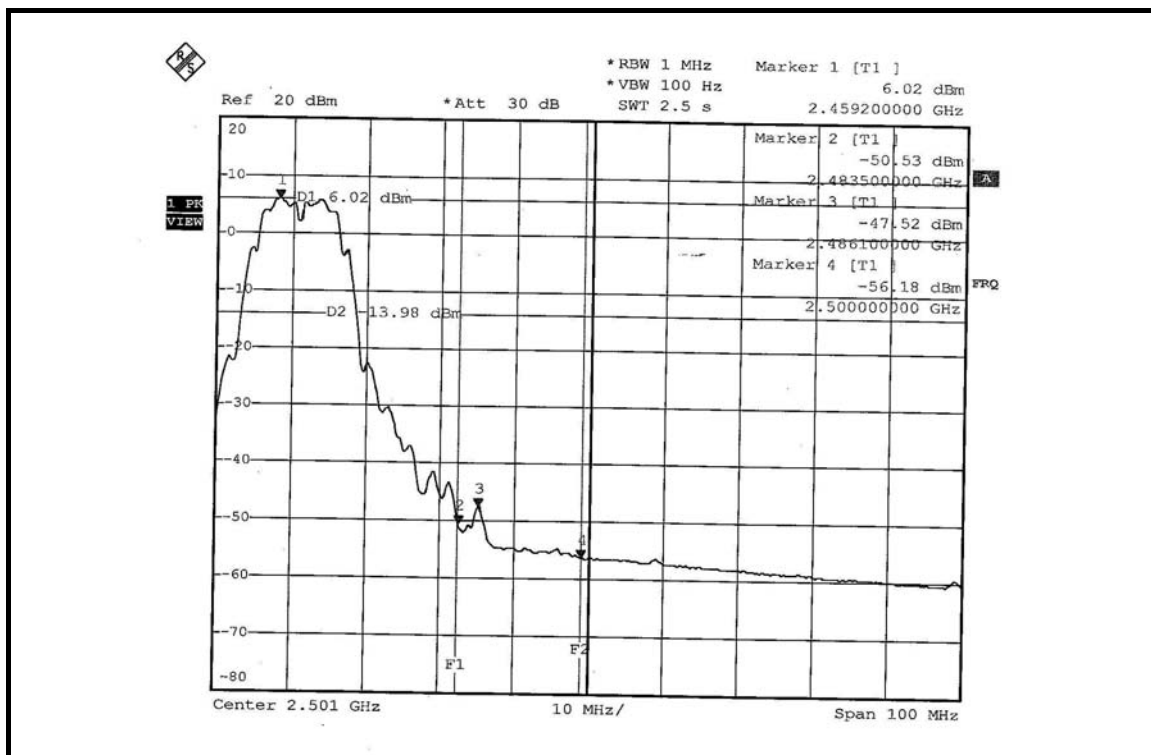
##### NOTE 2:

The band edge emission plot of DSSS technique on the next second page shows 50.22dBc between carrier maximum power and local maximum emission in restrict band (2.48610GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 109.93dBuV/m (Peak), so the maximum field strength in restrict band is  $109.93 - 50.22 = 59.71$ dBuV/m which is under 74dBuV/m limit.

The band edge emission plot of DSSS technique on the next third page shows 53.54dBc between carrier maximum power and local maximum emission in restrict band (2.48610GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 106.80dBuV/m (Average), so the maximum field strength in restrict band is  $106.80 - 53.54 = 53.26$ dBuV/m which is under 54dBuV/m limit.







## 802.11g OFDM MODULATION:

### NOTE 1:

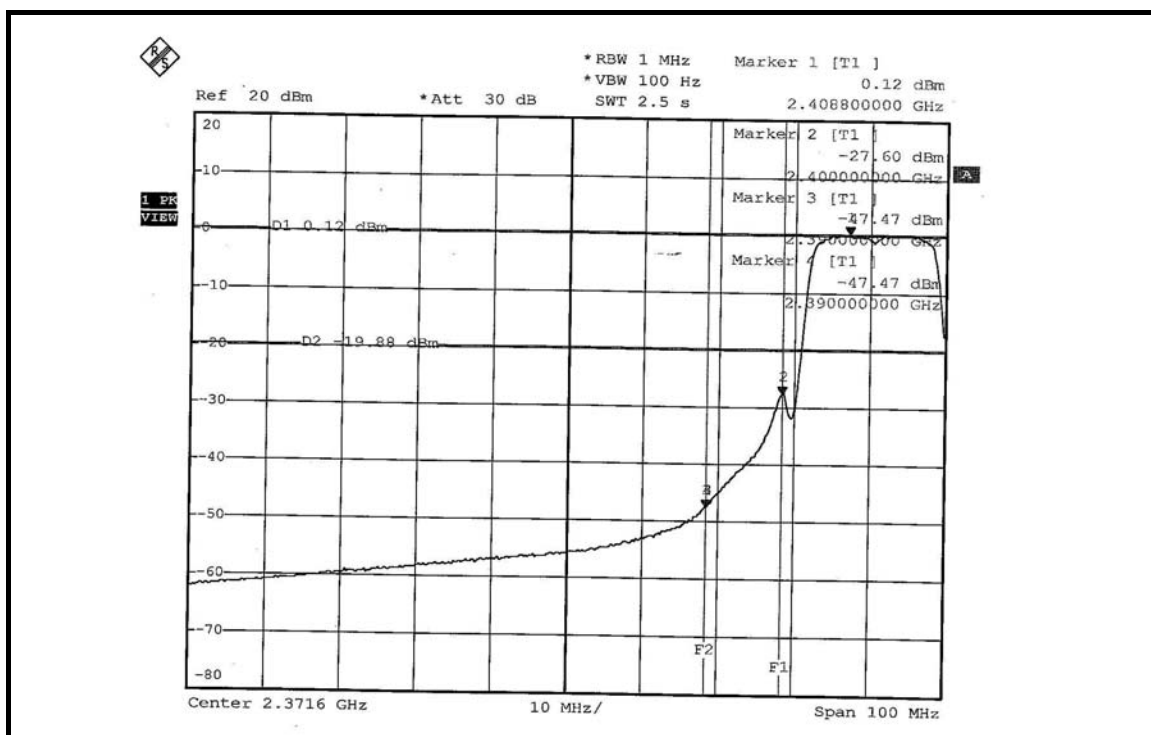
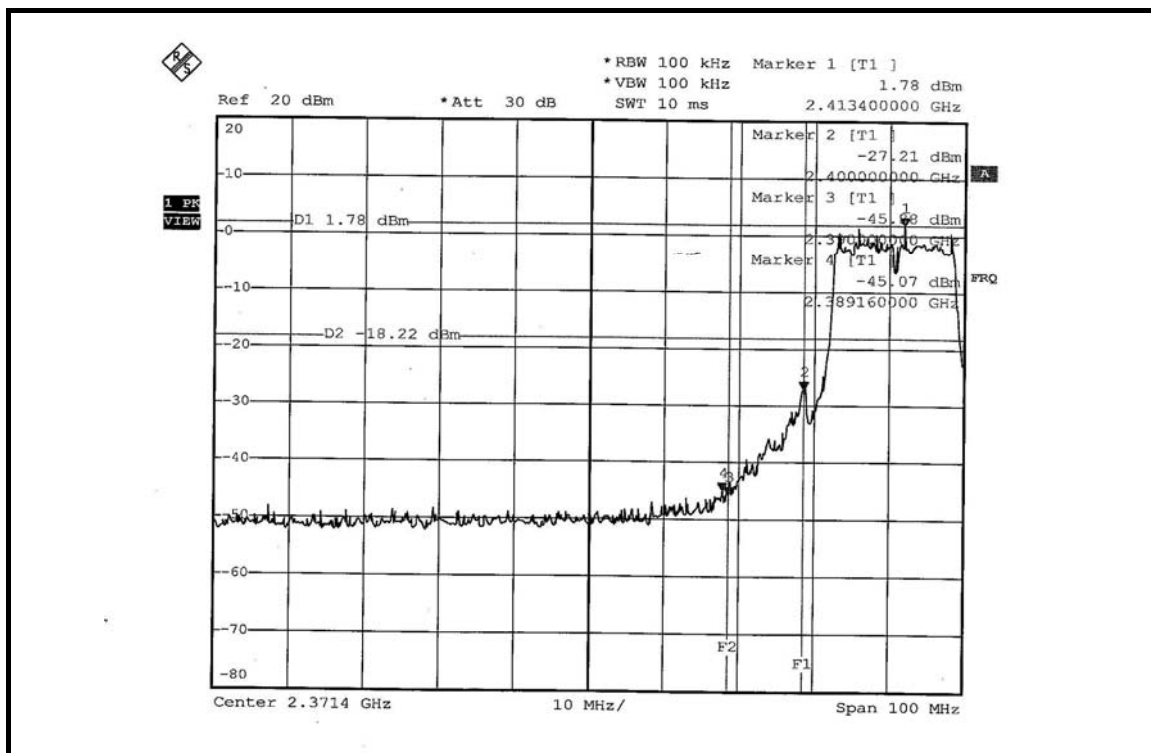
The band edge emission plot of OFDM technique on the next page shows 46.85dBc between carrier maximum power and local maximum emission in restrict band (2.38916GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 110.46dBuV/m (Peak), so the maximum field strength in restrict band is  $110.46 - 46.85 = 63.61$ dBuV/m which is under 74dBuV/m limit.

The band edge emission plot of OFDM technique on the next page shows 47.59dBc between carrier maximum power and local maximum emission in restrict band (2.39000GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 100.05dBuV/m (Average), so the maximum field strength in restrict band is  $100.05 - 47.59 = 52.46$ dBuV/m which is under 54dBuV/m limit.

### NOTE 2:

The band edge emission plot of OFDM technique on the next second page shows 45.07dBc between carrier maximum power and local maximum emission in restrict band (2.48350GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 110.73dBuV/m (Peak), so the maximum field strength in restrict band is  $110.73 - 45.07 = 65.66$ dBuV/m which is under 74dBuV/m limit.

The band edge emission plot of OFDM technique on the next third page shows 47.97dBc between carrier maximum power and local maximum emission in restrict band (2.48350GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 100.41dBuV/m (Average), so the maximum field strength in restrict band is  $100.41 - 47.97 = 52.44$ dBuV/m which is under 54dBuV/m limit.







## **DRAFT 802.11n (20MHz) OFDM MODULATION: DUAL TX**

### **NOTE 1:**

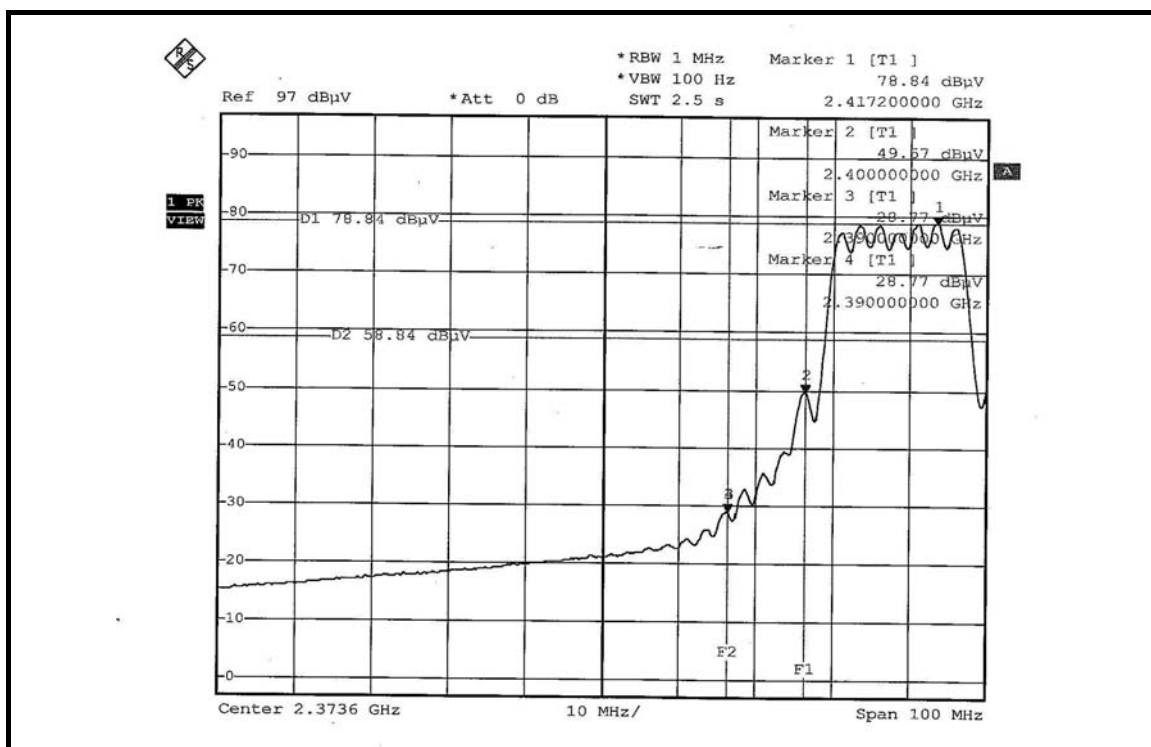
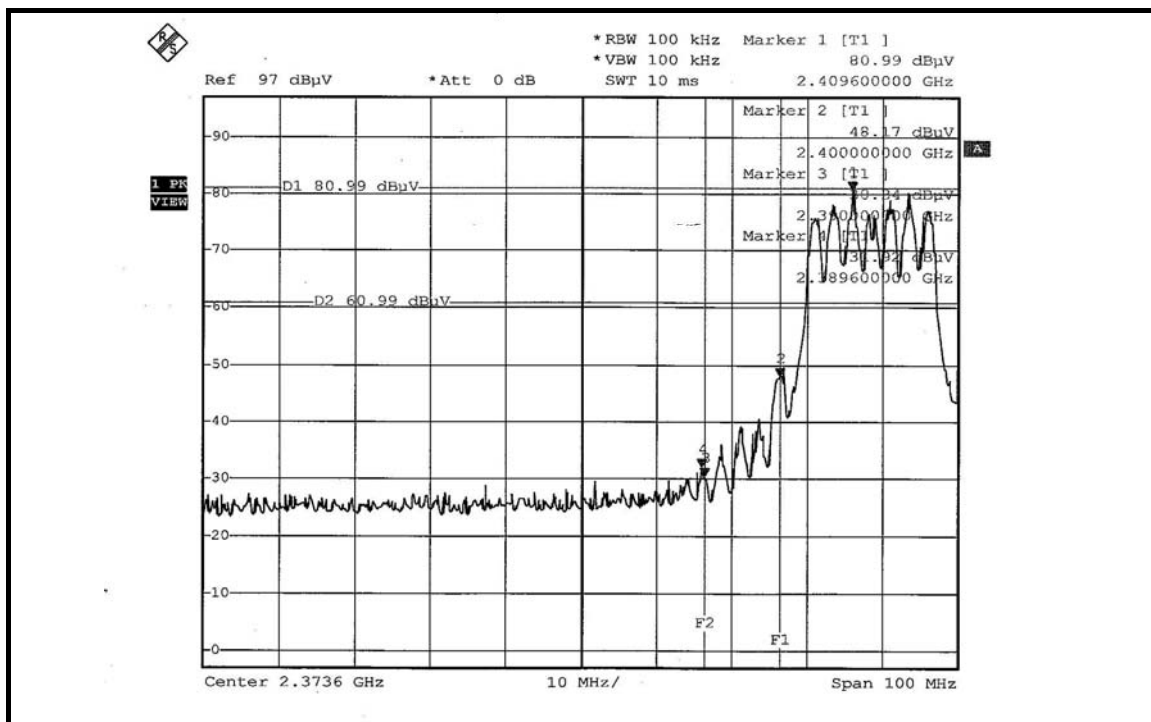
The band edge emission plot of OFDM technique on the next page shows 49.07dBc between carrier maximum power and local maximum emission in restrict band (2.38960GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 108.86dBuV/m (Peak), so the maximum field strength in restrict band is  $108.86 - 49.07 = 59.79$ dBuV/m which is under 74dBuV/m limit.

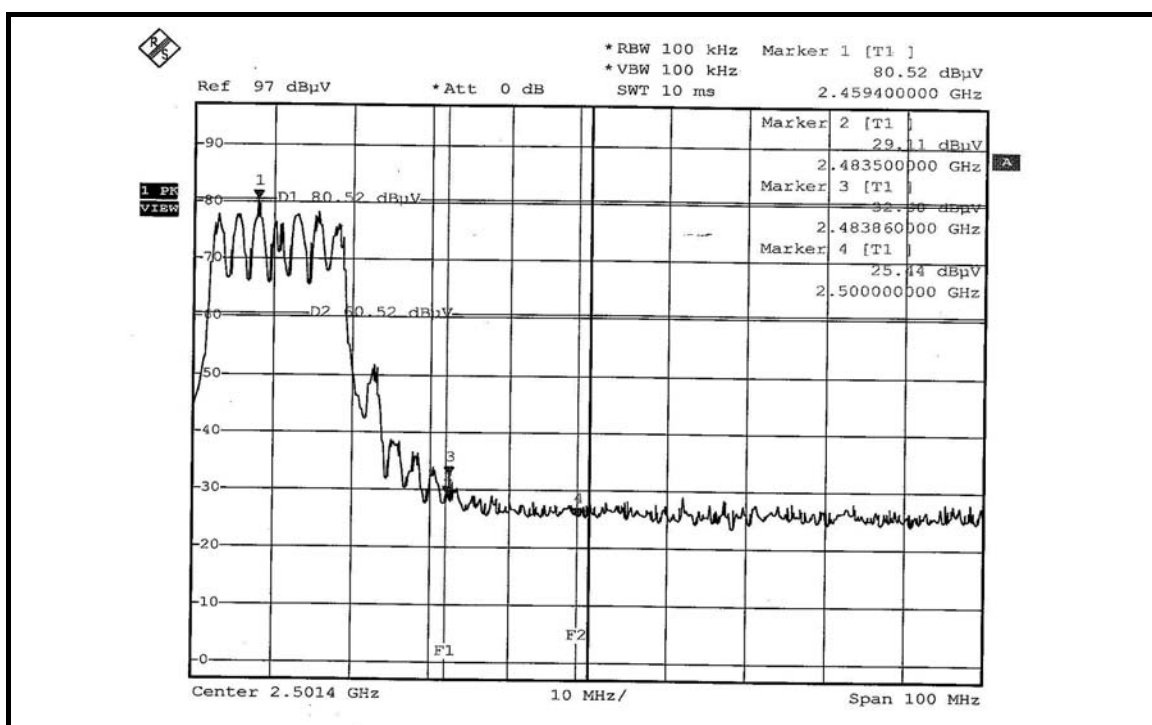
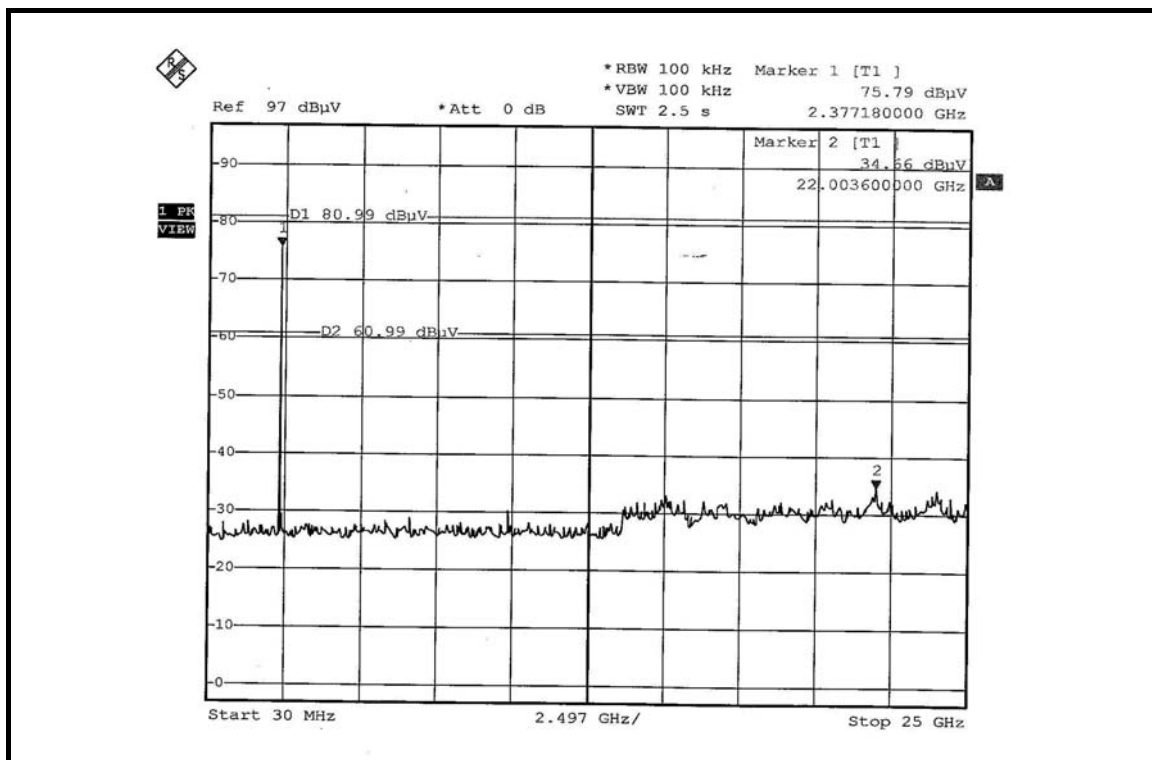
The band edge emission plot of OFDM technique on the next page shows 50.07dBc between carrier maximum power and local maximum emission in restrict band (2.39000GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 98.54dBuV/m (Average), so the maximum field strength in restrict band is  $98.54 - 50.07 = 48.47$ dBuV/m which is under 54dBuV/m limit.

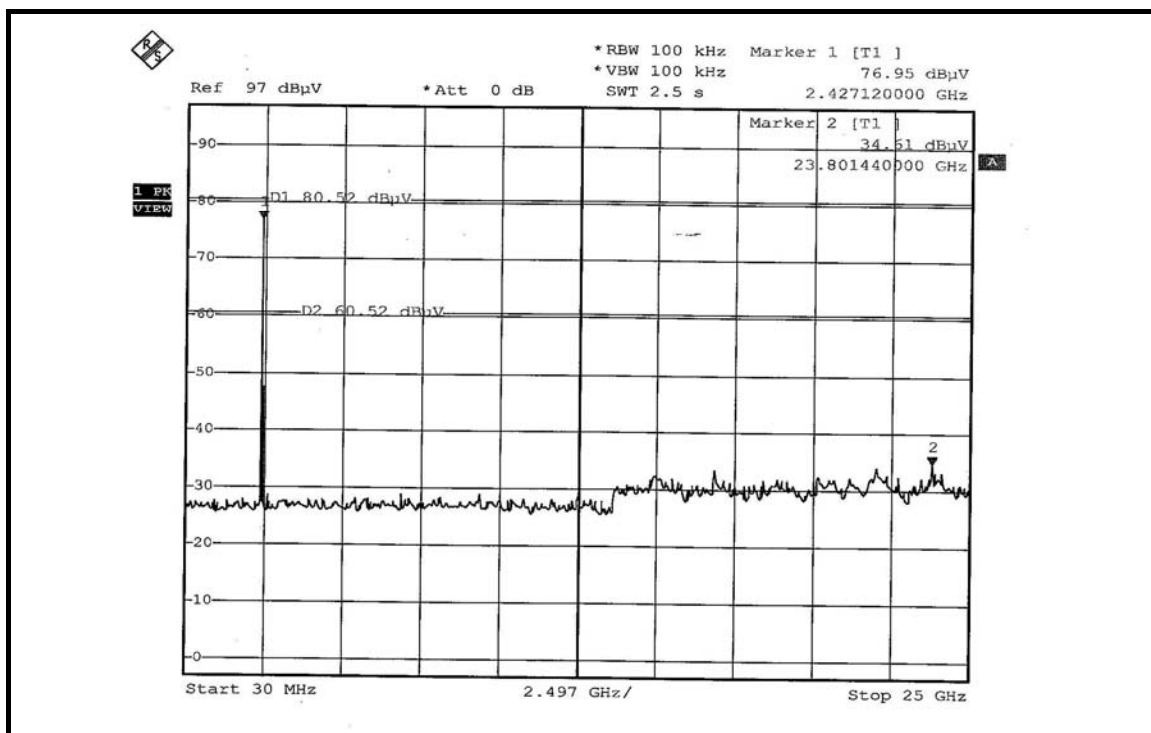
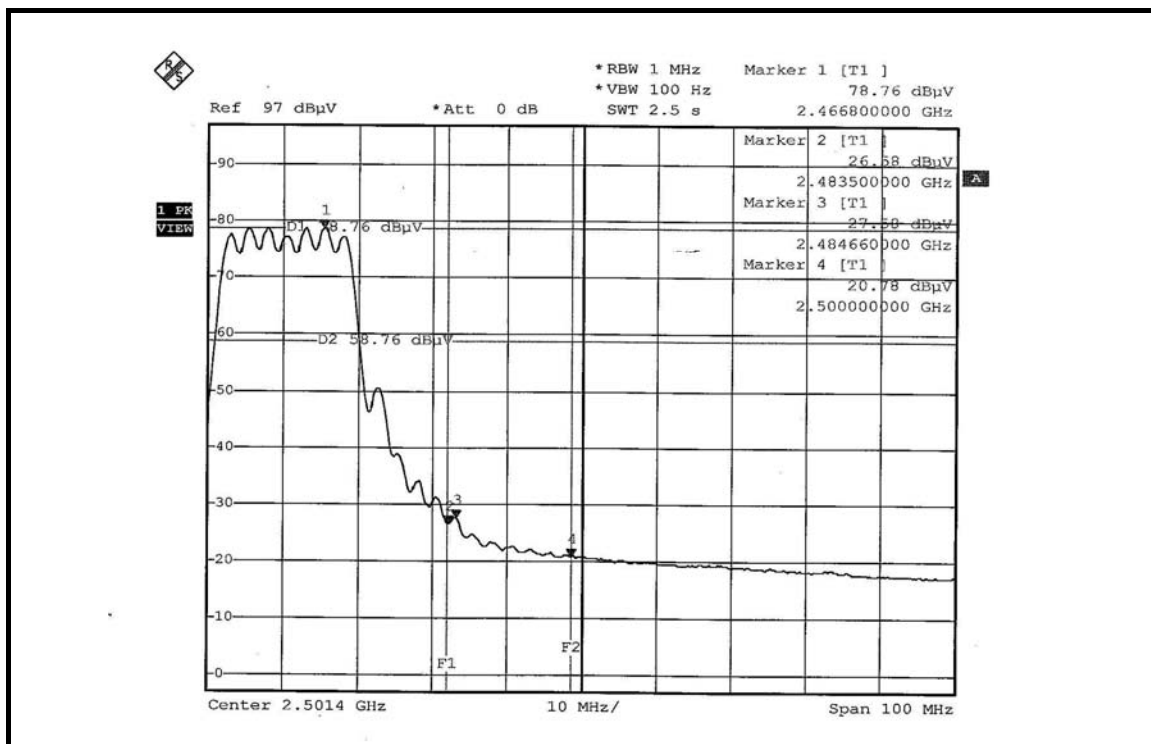
### **NOTE 2:**

The band edge emission plot of OFDM technique on the next second page shows 47.84dBc between carrier maximum power and local maximum emission in restrict band (2.48386GHz) is 109.01dBuV/m (Peak), so the maximum field strength in restrict band is  $109.01 - 47.84 = 61.17$ dBuV/m which is under 74dBuV/m limit.

The band edge emission plot of OFDM technique on the next third page shows 51.18dBc between carrier maximum power and local maximum emission in restrict band (2.48466GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 98.71dBuV/m (Average), so the maximum field strength in restrict band is  $98.71 - 51.18 = 47.53$ dBuV/m which is under 54dBuV/m limit.







## **DRAFT 802.11n (40MHz) OFDM MODULATION: DUAL TX**

### **NOTE 1:**

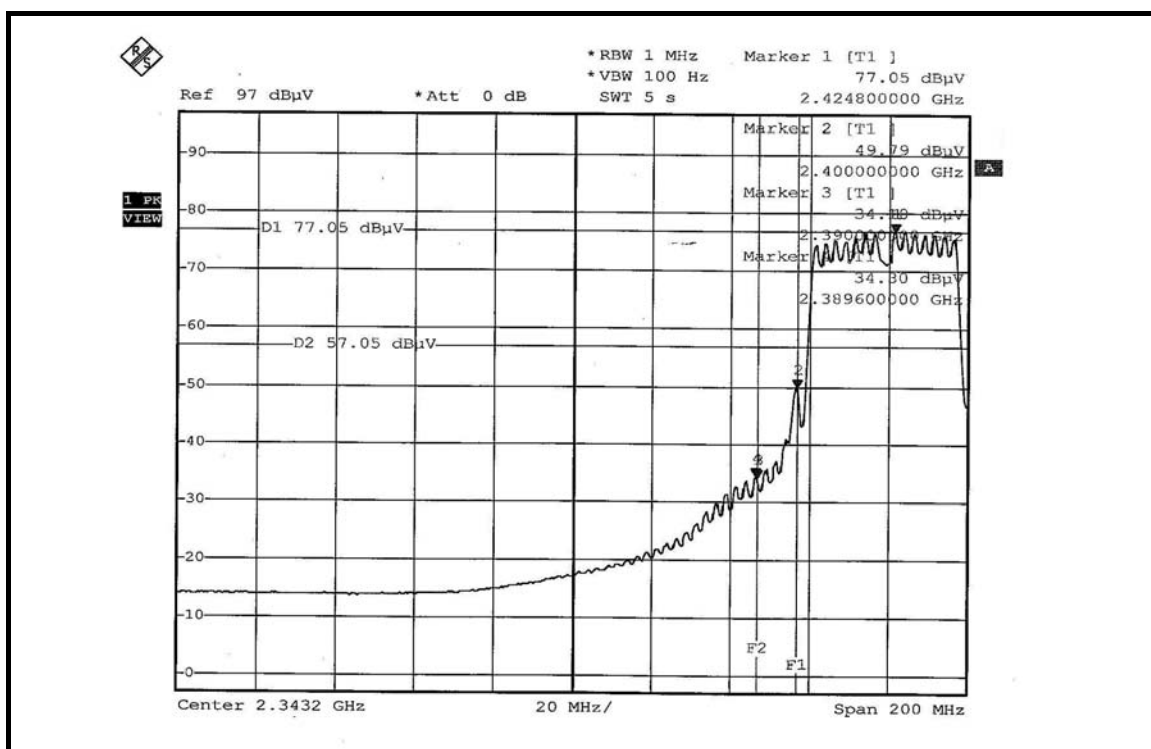
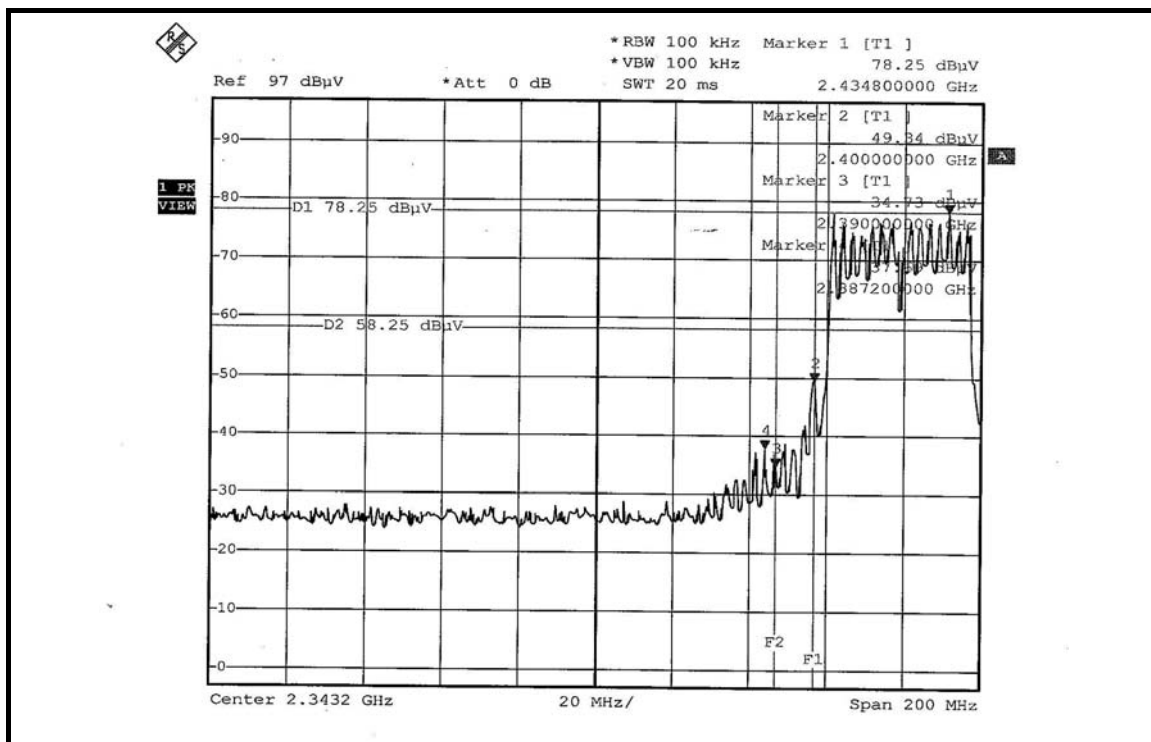
The band edge emission plot of OFDM technique on the next page shows 40.56dBc between carrier maximum power and local maximum emission in restrict band (2.38720GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 106.51dBuV/m (Peak), so the maximum field strength in restrict band is  $106.51 - 40.56 = 65.95$ dBuV/m which is under 74dBuV/m limit.

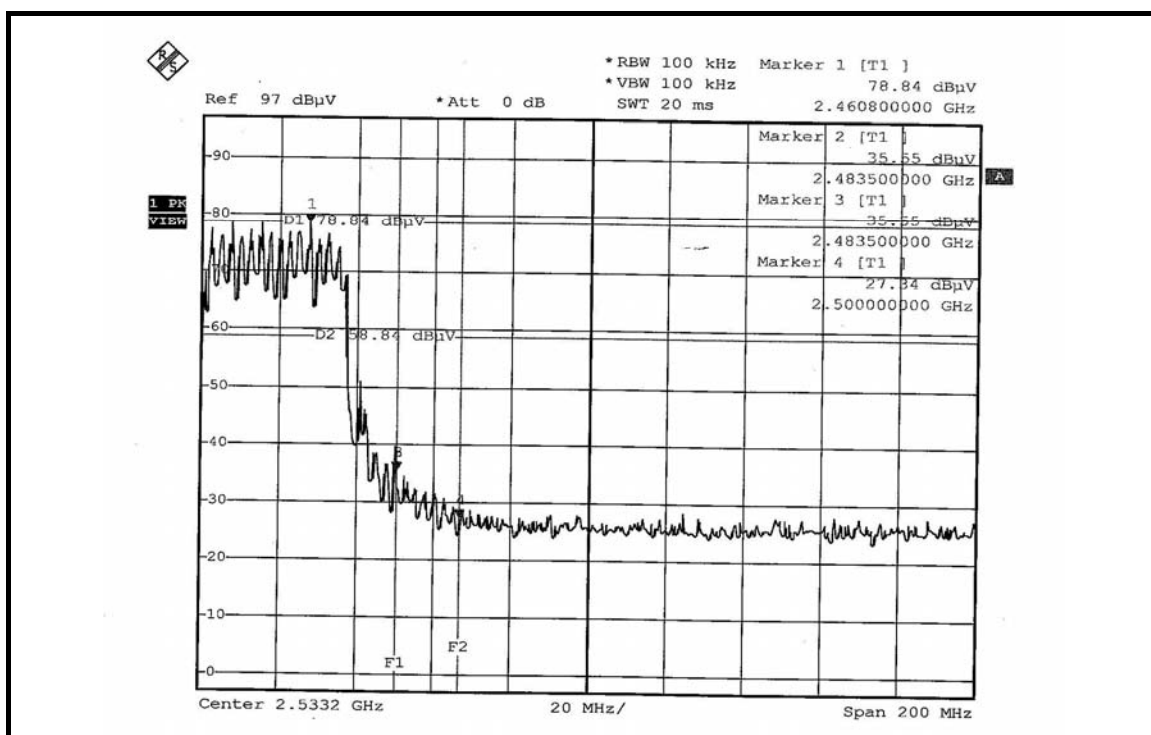
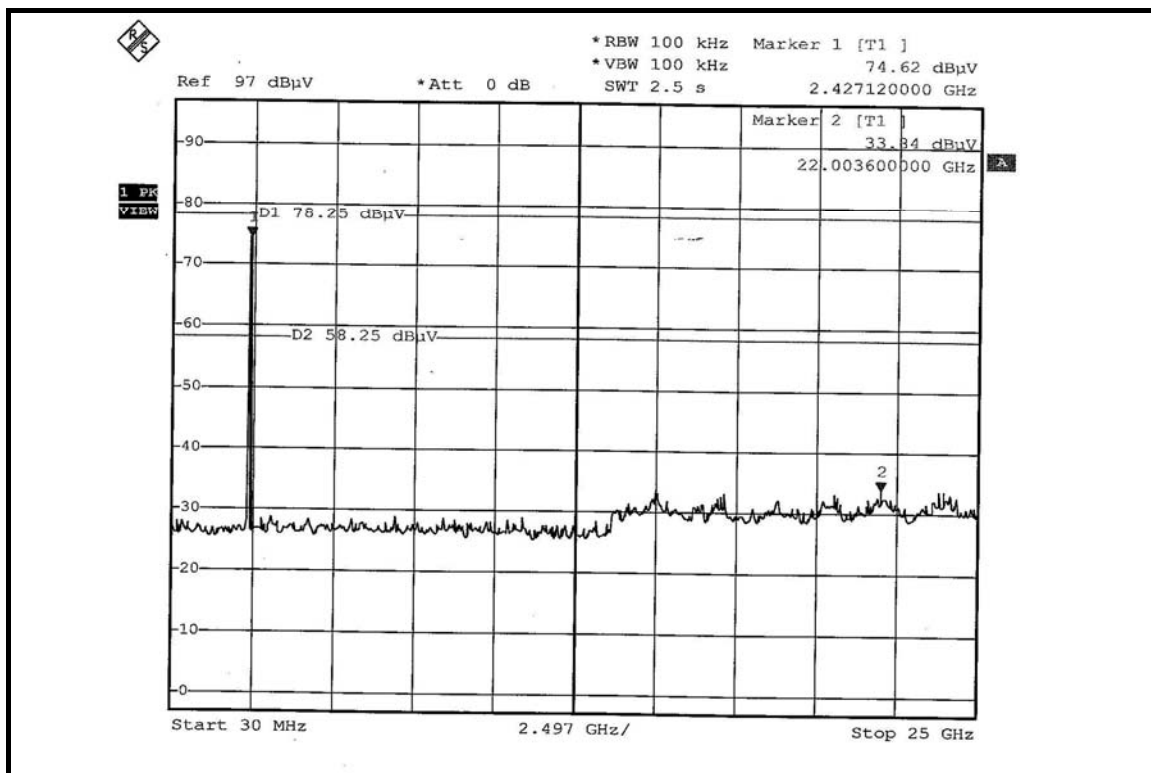
The band edge emission plot of OFDM technique on the next page shows 42.75dBc between carrier maximum power and local maximum emission in restrict band (2.38960GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 96.11dBuV/m (Average), so the maximum field strength in restrict band is  $96.11 - 42.75 = 53.36$ dBuV/m which is under 54dBuV/m limit.

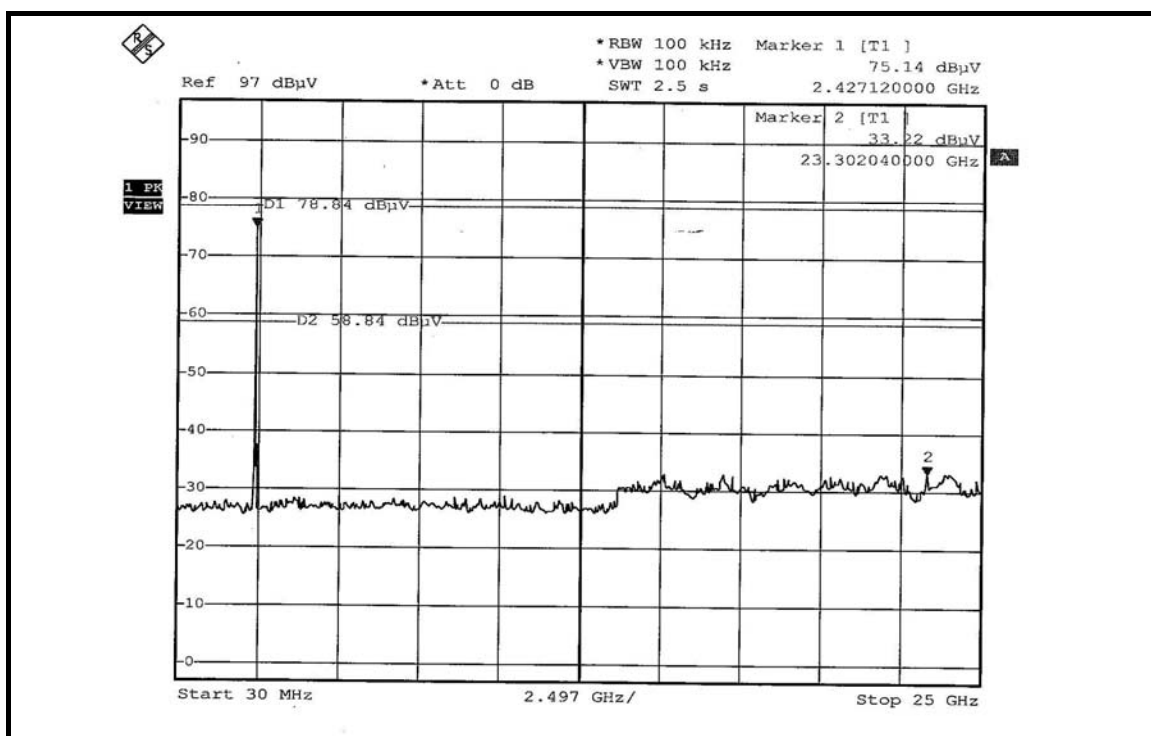
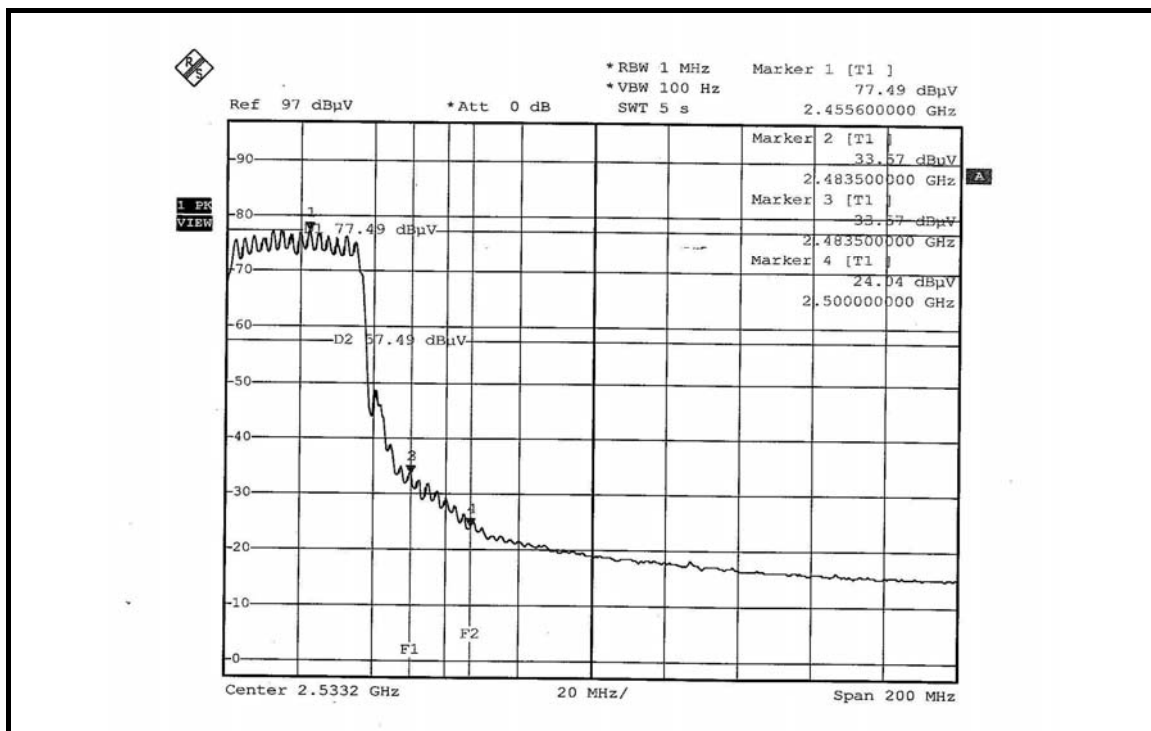
### **NOTE 2:**

The band edge emission plot of OFDM technique on the next second page shows 43.29dBc between carrier maximum power and local maximum emission in restrict band (2.48350GHz). The emission of carrier strength list in the test result of channel 7 at the item 4.2.7 is 107.12dBuV/m (Peak), so the maximum field strength in restrict band is  $107.12 - 43.29 = 63.83$ dBuV/m which is under 74dBuV/m limit.

The band edge emission plot of OFDM technique on the next third page shows 43.92dBc between carrier maximum power and local maximum emission in restrict band (2.48350GHz). The emission of carrier strength list in the test result of channel 7 at the item 4.2.7 is 96.74dBuV/m (Average), so the maximum field strength in restrict band is  $96.74 - 43.92 = 52.82$ dBuV/m which is under 54dBuV/m limit.







## **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.

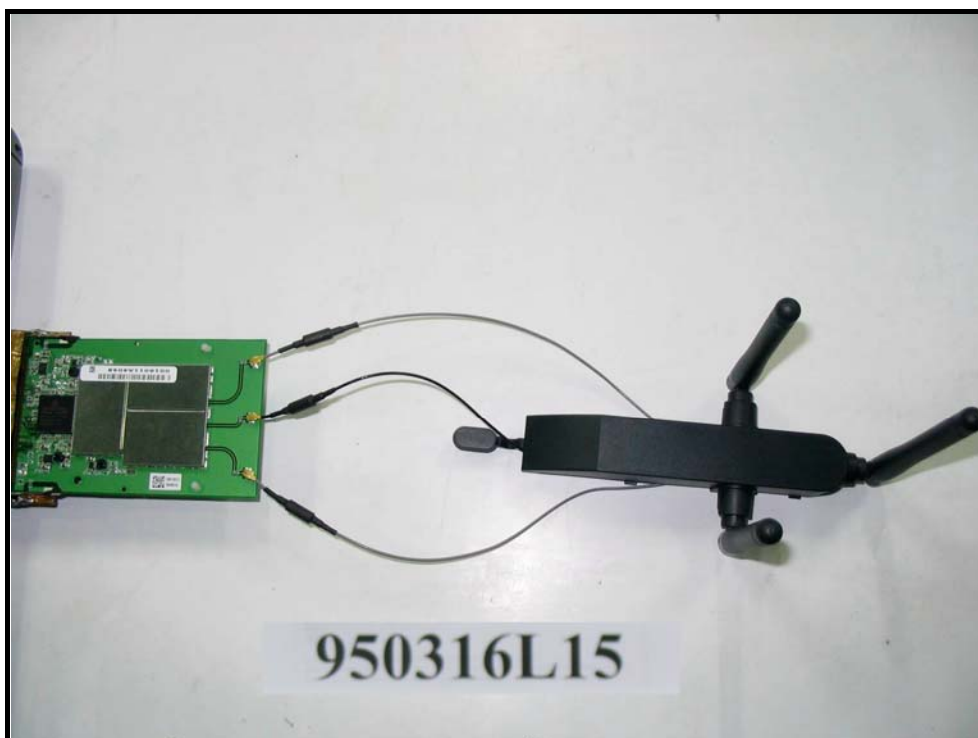
### **4.7.2 ANTENNA CONNECTED CONSTRUCTION**

The antenna used in this product is Dipole antenna with UFL connector. The maximum Gain of the antenna is 2dBi.

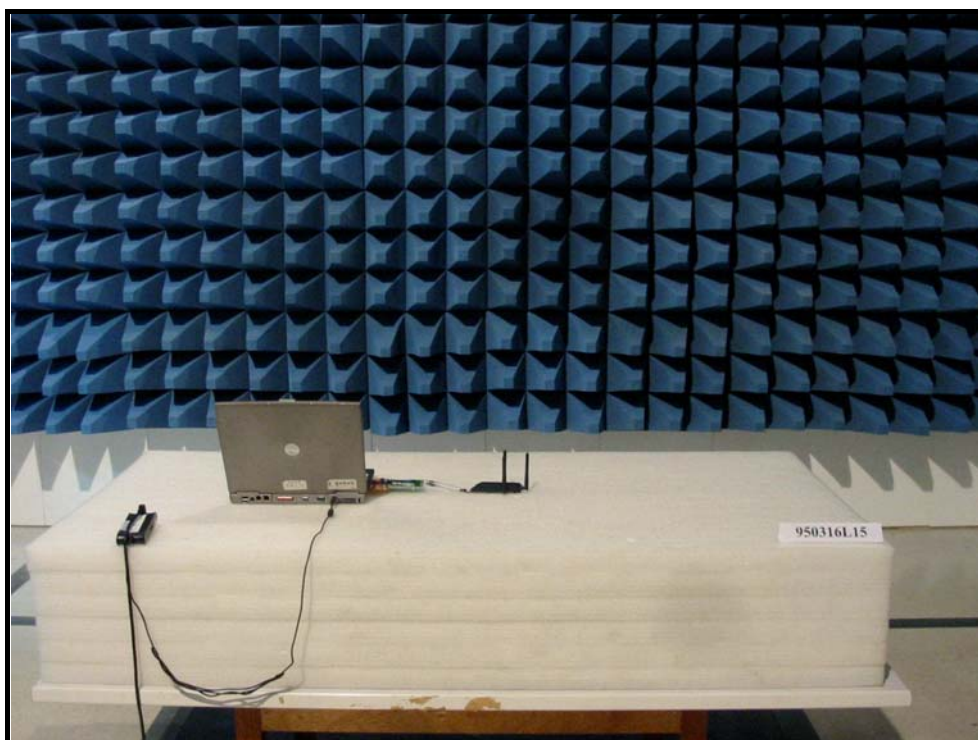
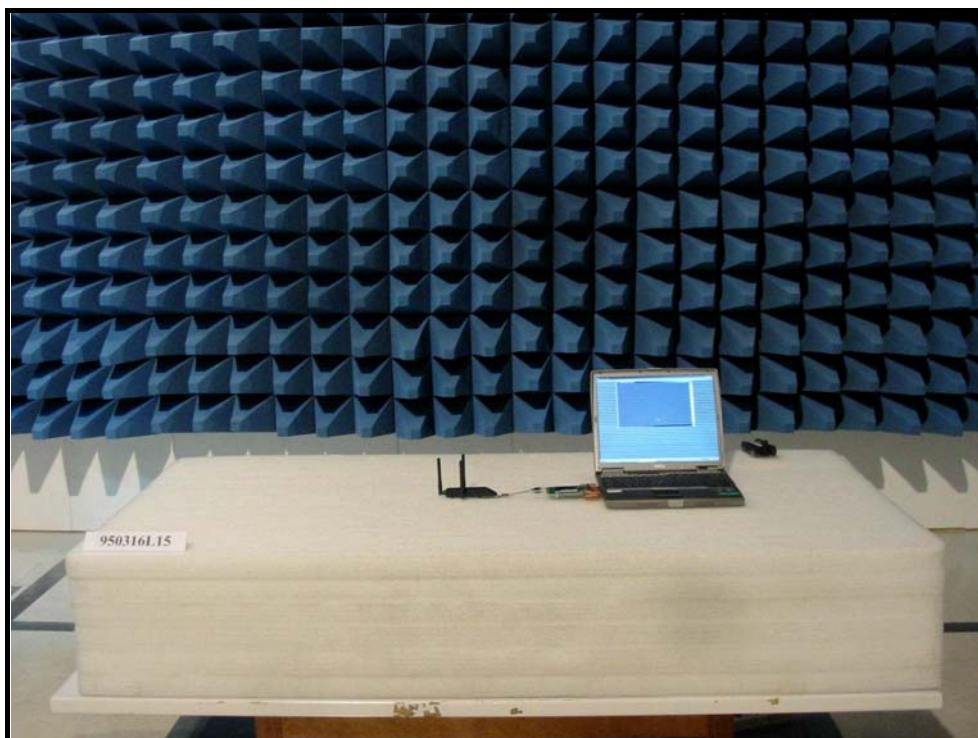
## 5. PHOTOGRAPHS OF THE TEST CONFIGURATION

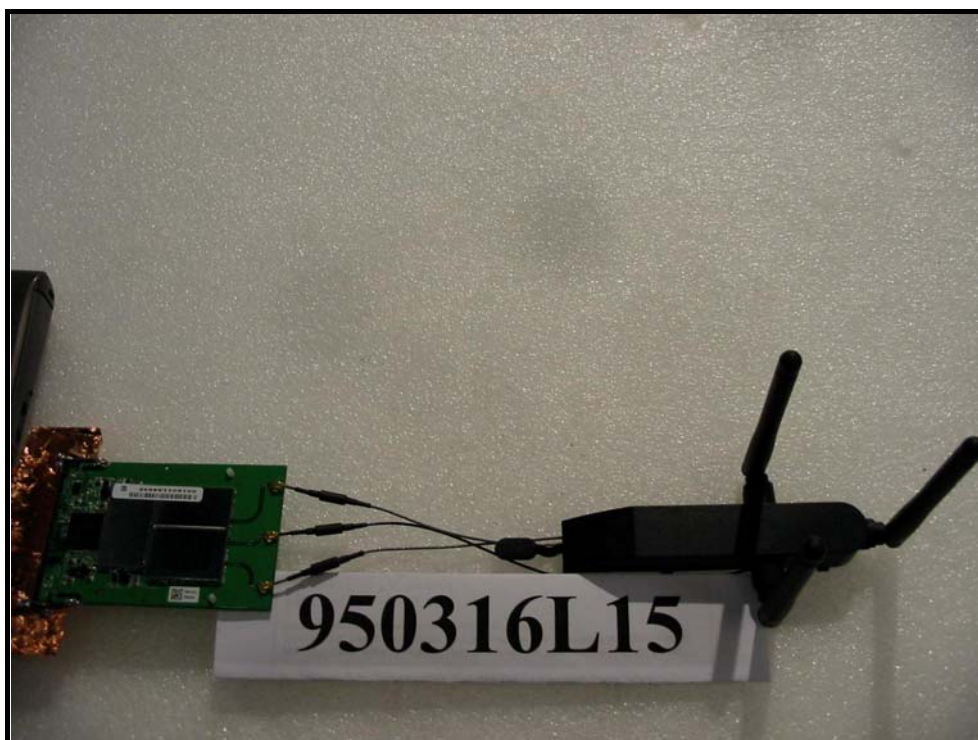
### CONDUCTED EMISSION TEST





## RADIATED EMISSION TEST





## 6. 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.

|                    |                       |
|--------------------|-----------------------|
| <b>USA</b>         | FCC, UL, A2LA         |
| <b>Germany</b>     | TUV Rheinland         |
| <b>Japan</b>       | VCCI                  |
| <b>Norway</b>      | NEMKO                 |
| <b>Canada</b>      | INDUSTRY CANADA , CSA |
| <b>R.O.C.</b>      | CNLA, BSMI, DGT       |
| <b>Netherlands</b> | Telefication          |
| <b>Singapore</b>   | PSB , GOST-ASIA(MOU)  |
| <b>Russia</b>      | CERTIS(MOU)           |

Copies of accreditation certificates of our laboratories obtained from approval agencies can be downloaded from our web site: [www.adt.com.tw/index.5/phtml](http://www.adt.com.tw/index.5/phtml).  
If you have any comments, please feel free to contact us at the following:

### **Linko EMC/RF Lab:**

Tel: 886-2-26052180

Fax: 886-2-26052943

### **Hsin Chu EMC/RF Lab:**

Tel: 886-3-5935343

Fax: 886-3-5935342

### **Hwa Ya EMC/RF/Safety Telecom Lab: Linko RF Lab.**

Tel: 886-3-3183232

Fax: 886-3-3185050

Tel: 886-3-3270910

Fax: 886-3-3270892

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

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

## **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.