



## 4.6 BAND EDGES MEASUREMENT

### 4.6.1 LIMITS OF BAND EDGES MEASUREMENT

Below  $-20\text{dB}$  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 lose 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 = 10Hz) 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 12 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:**

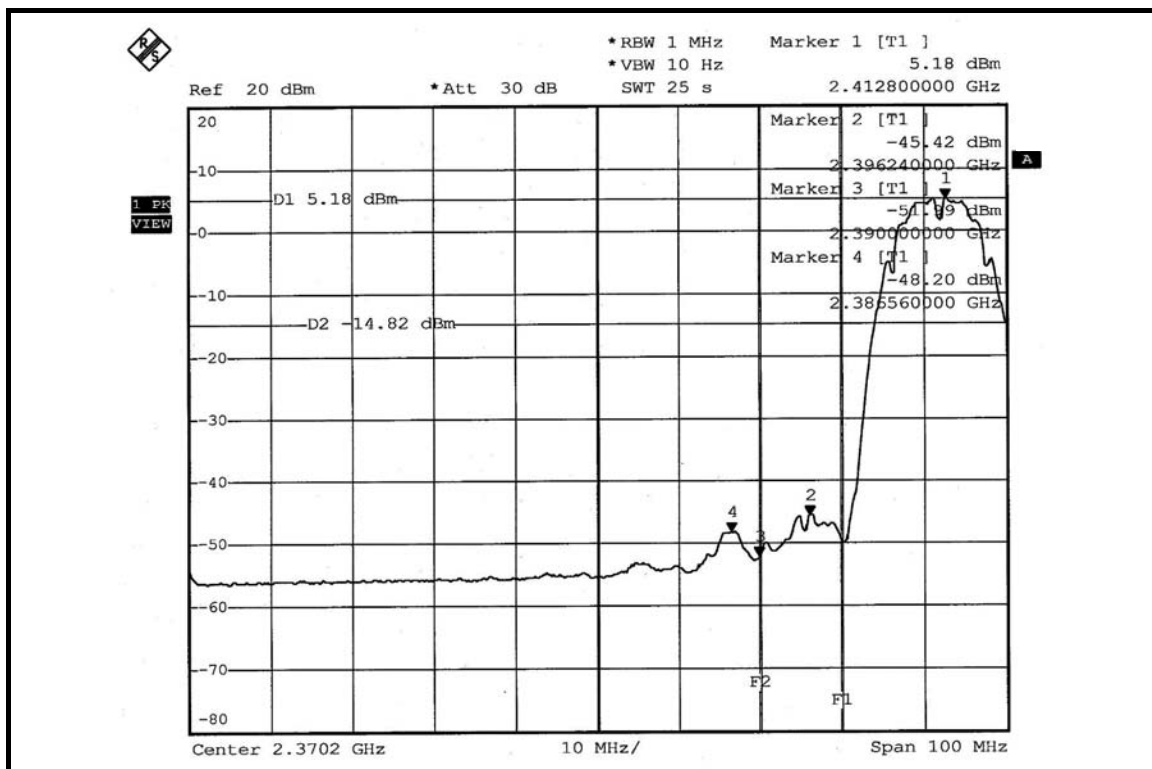
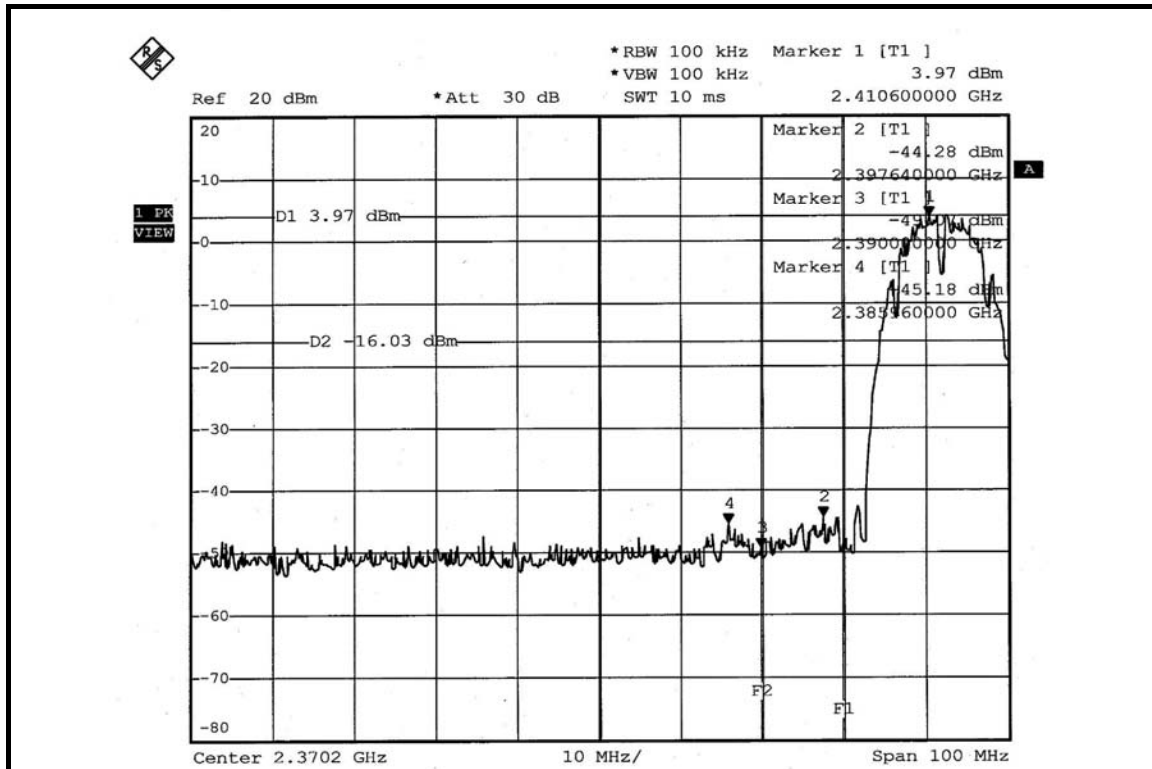
The band edge emission plot of DSSS technique on the next page shows 49.15dBc between carrier maximum power and local maximum emission in restrict band (2.38596GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 106.78dBuV/m (Peak), so the maximum field strength in restrict band is  $106.78 - 49.15 = 57.63$ dBuV/m which is under 74dBuV/m limit.

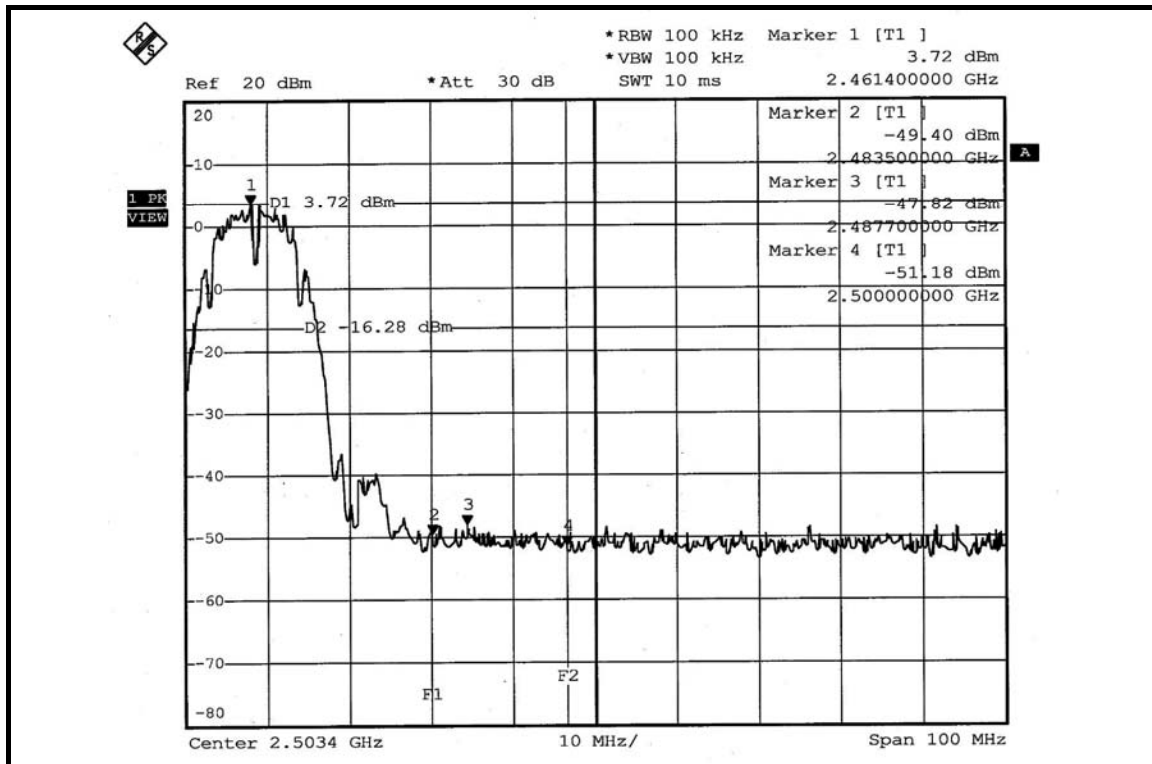
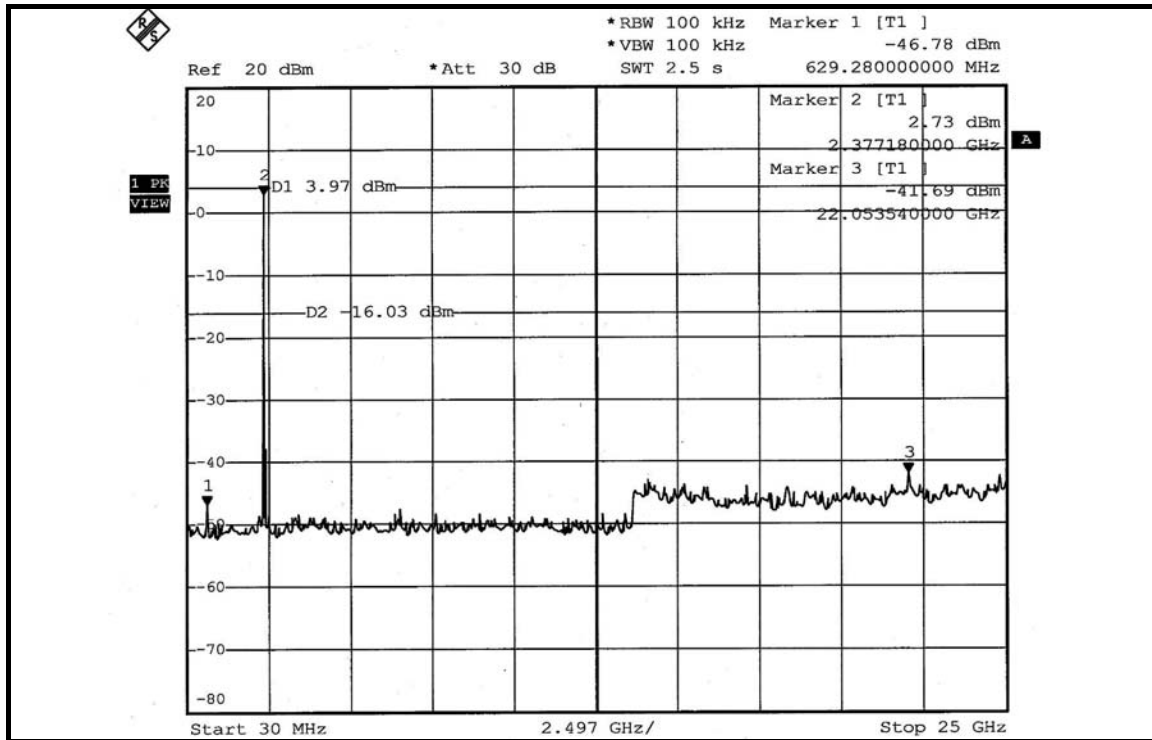
The band edge emission plot of DSSS technique on the next page shows 53.38dBc between carrier maximum power and local maximum emission in restrict band (2.38656GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 103.23dBuV/m (Average), so the maximum field strength in restrict band is  $103.23 - 53.38 = 49.85$ dBuV/m which is under 54dBuV/m limit.

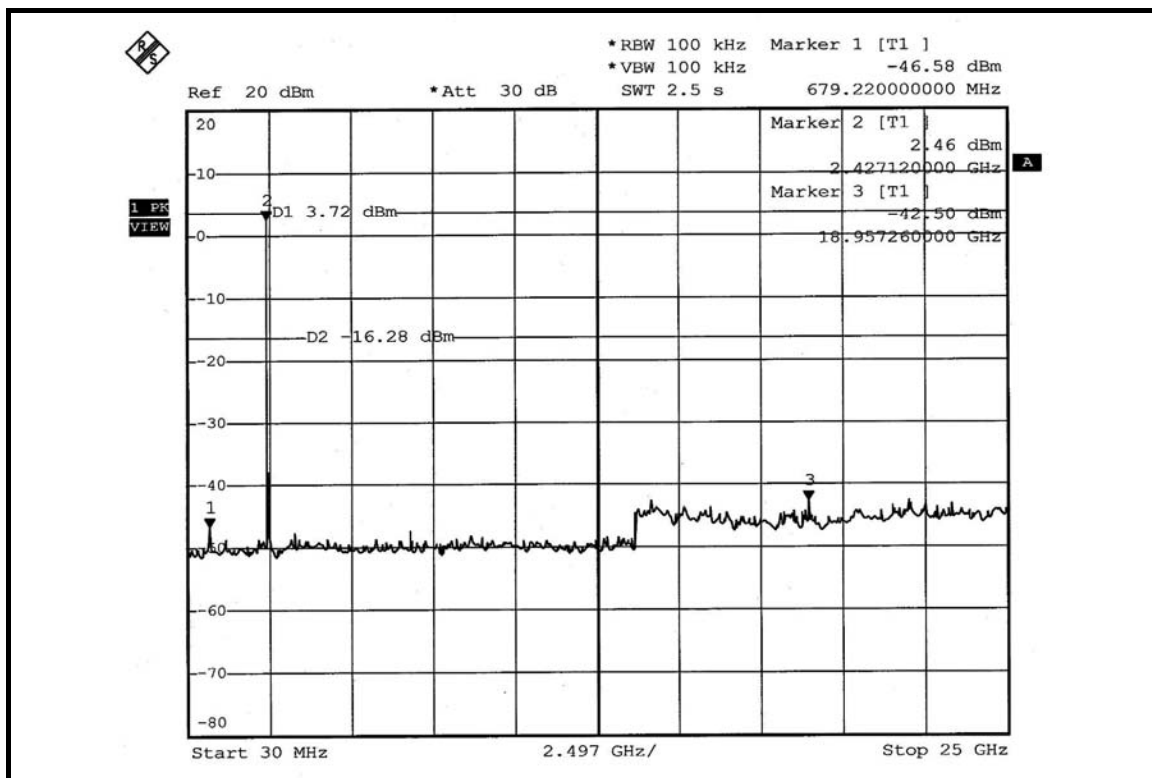
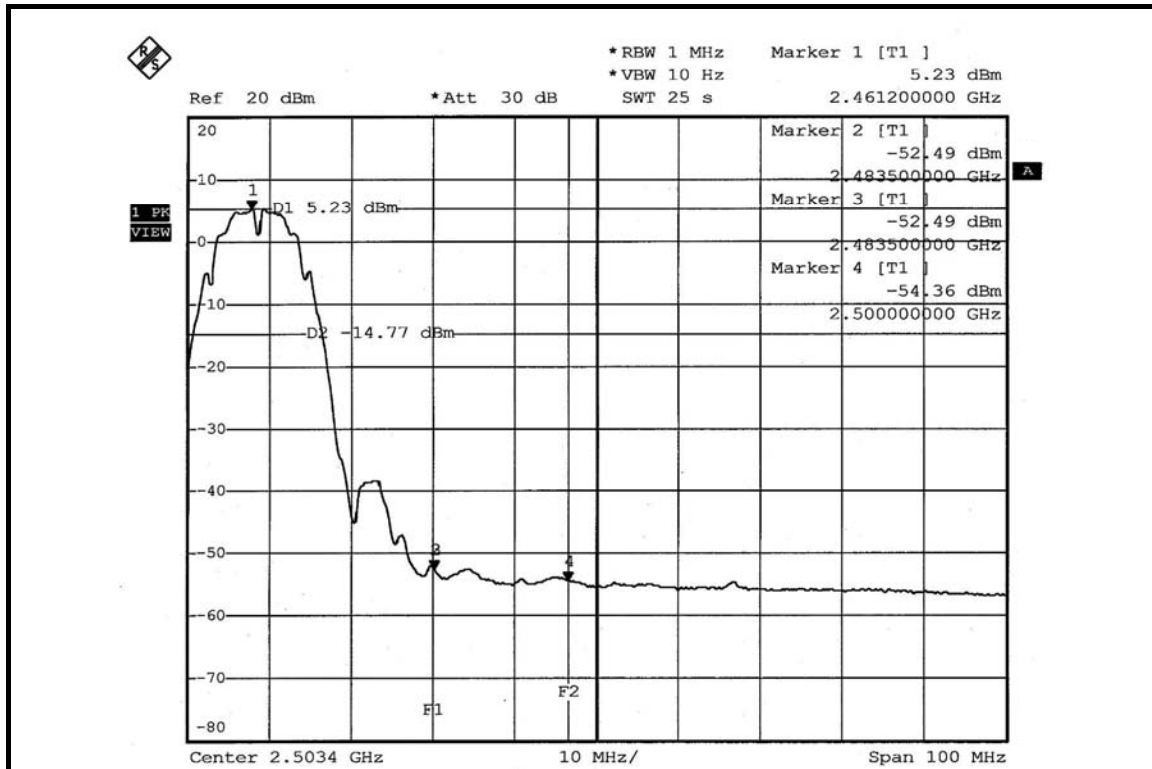
##### **NOTE 2:**

The band edge emission plot of DSSS technique on the next second page shows 51.54dBc between carrier maximum power and local maximum emission in restrict band (2.48770GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 107.19dBuV/m (Peak), so the maximum field strength in restrict band is  $107.19 - 51.54 = 55.65$ dBuV/m which is under 74dBuV/m limit.

The band edge emission plot of DSSS technique on the next third page shows 57.72dBc 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 103.52dBuV/m (Average), so the maximum field strength in restrict band is  $103.52 - 57.72 = 45.80$ dBuV/m which is under 54dBuV/m limit.







## 802.11g OFDM MODULATION:

### NOTE 1:

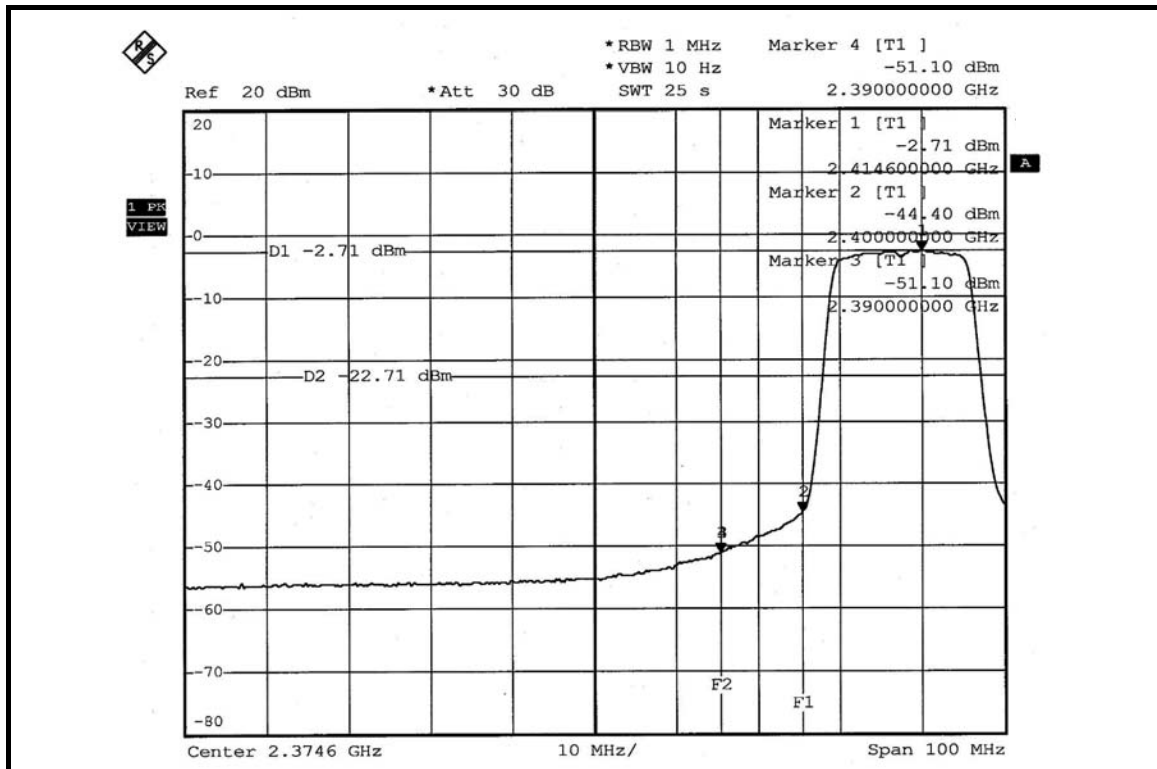
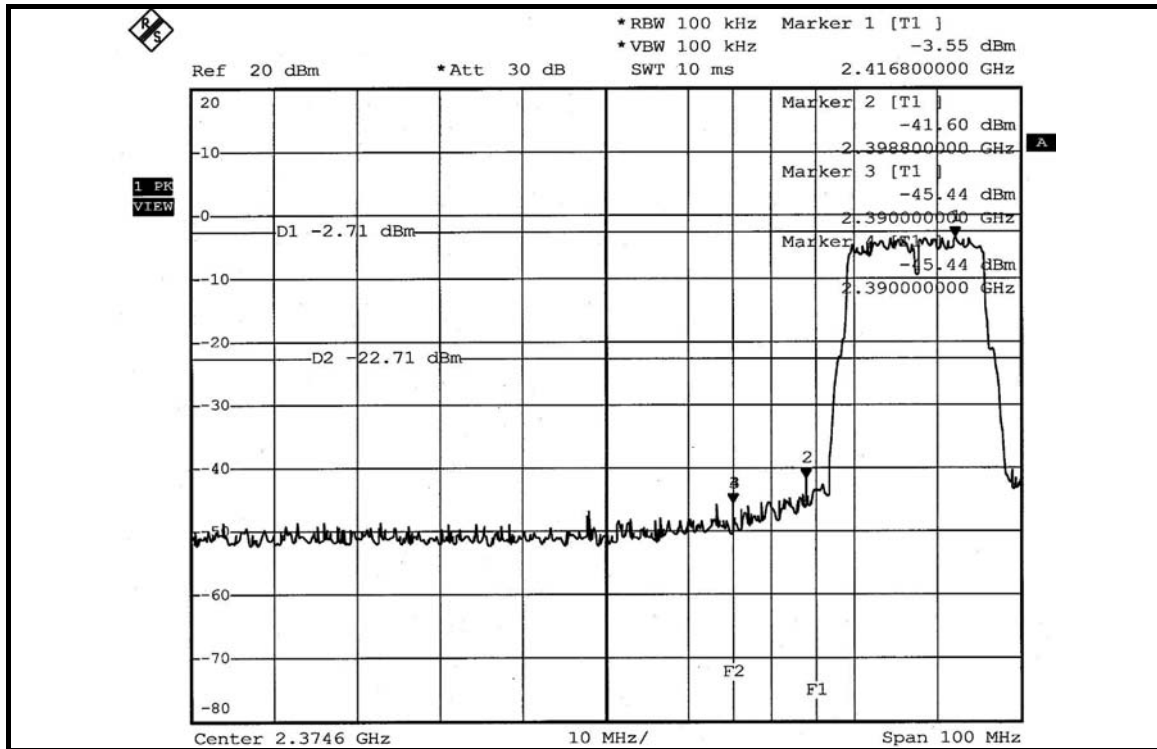
The band edge emission plot of OFDM technique on the next page shows 41.89dBc between carrier maximum power and local maximum emission in restrict band (2.39000GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 106.31dBuV/m (Peak), so the maximum field strength in restrict band is  $106.31 - 41.89 = 64.42$ dBuV/m which is under 74dBuV/m limit.

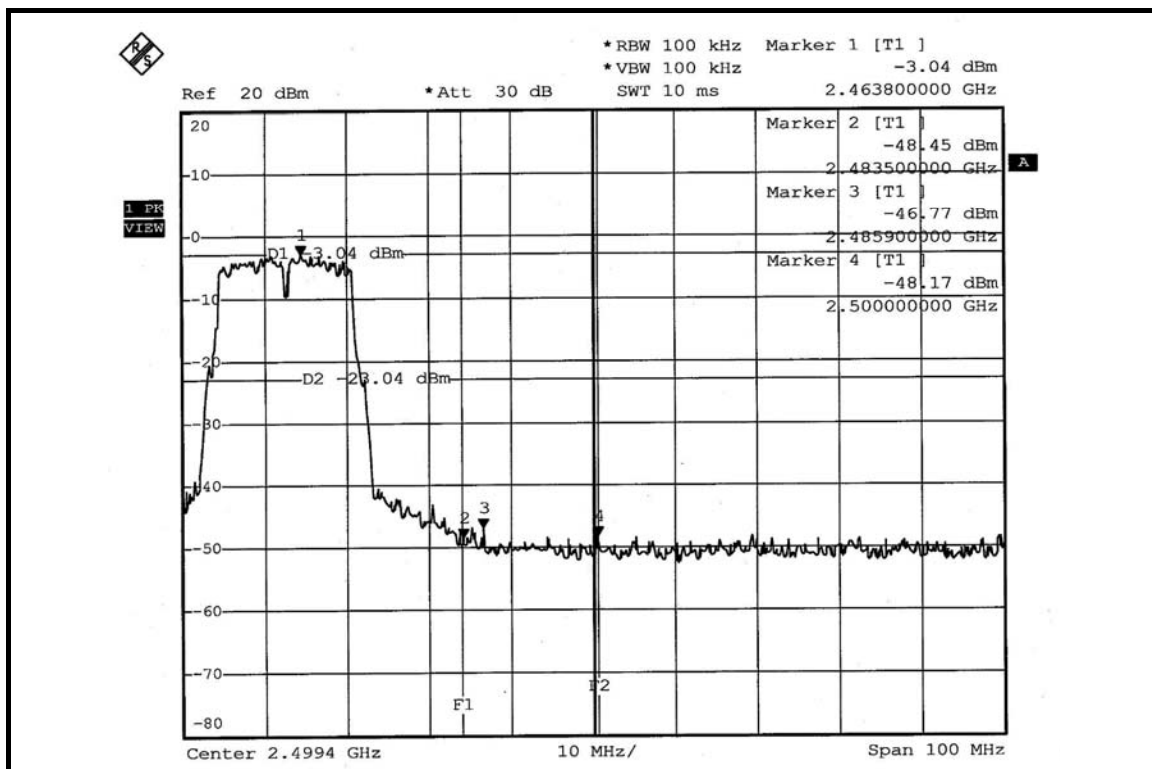
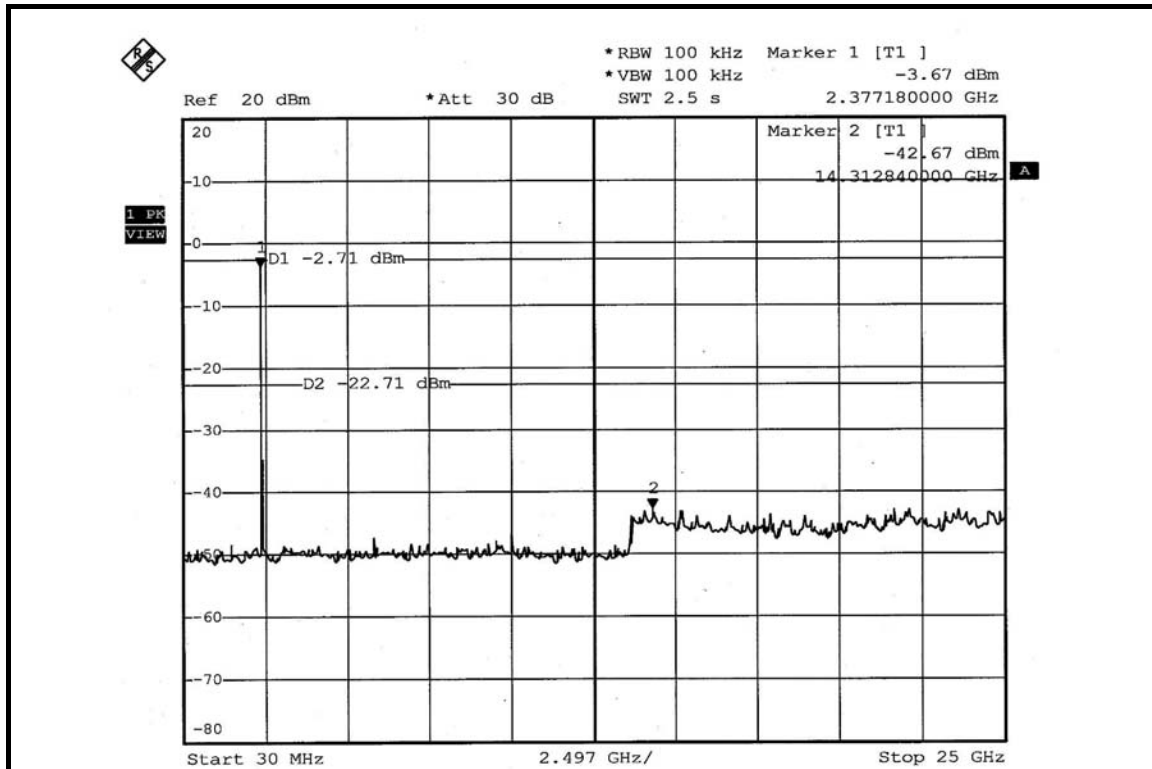
The band edge emission plot of OFDM technique on the next page shows 48.39dBc between carrier maximum power and local maximum emission in restrict band (2.39000GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 95.92dBuV/m (Average), so the maximum field strength in restrict band is  $95.92 - 48.39 = 47.53$ dBuV/m which is under 54dBuV/m limit.

### NOTE 2:

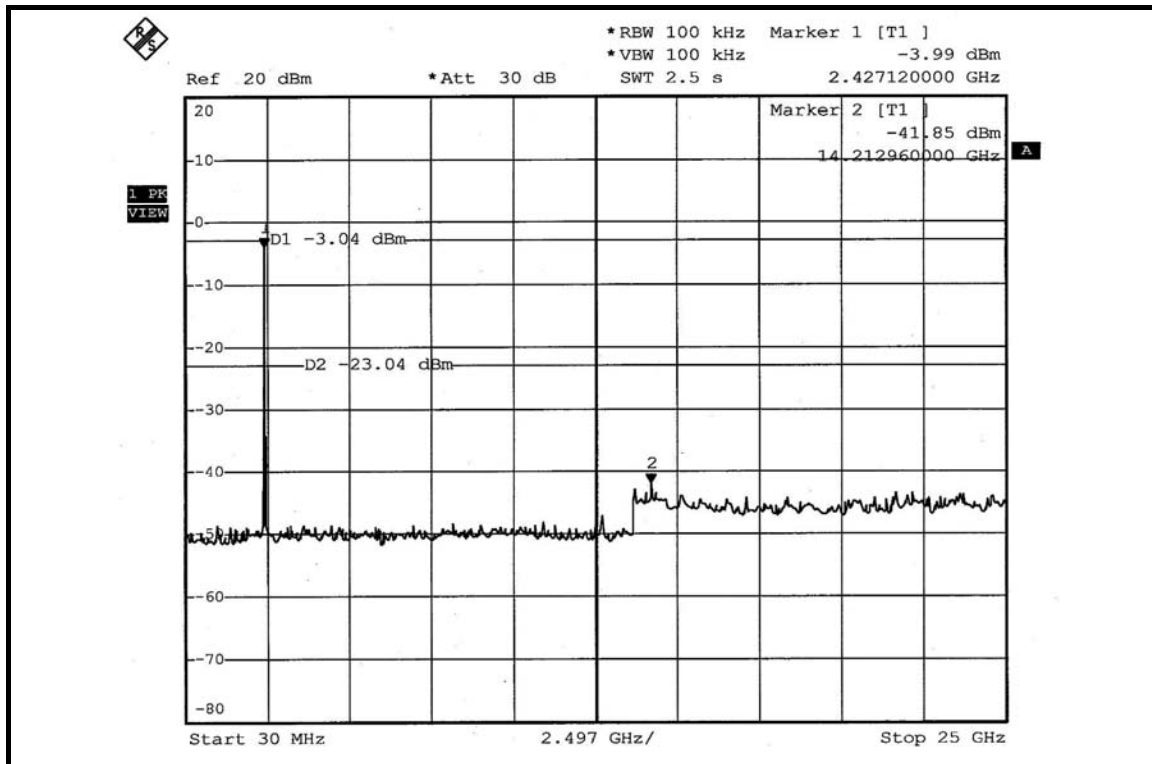
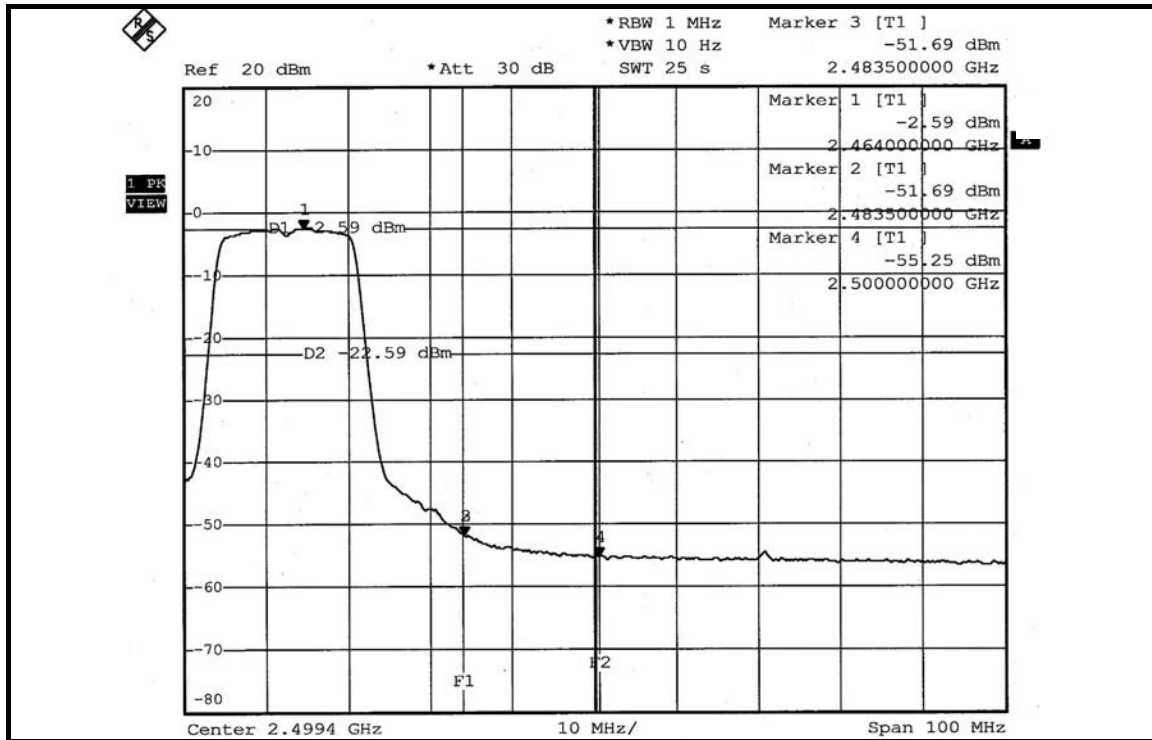
The band edge emission plot of OFDM technique on the next second page shows 43.73dBc between carrier maximum power and local maximum emission in restrict band (2.48590GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 106.22dBuV/m (Peak), so the maximum field strength in restrict band is  $106.22 - 43.73 = 62.49$ dBuV/m which is under 74dBuV/m limit.

The band edge emission plot of OFDM technique on the next third page shows 49.10dBc 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 95.93dBuV/m (Average), so the maximum field strength in restrict band is  $95.93 - 49.10 = 46.83$ dBuV/m which is under 54dBuV/m limit.











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

### **NOTE 1:**

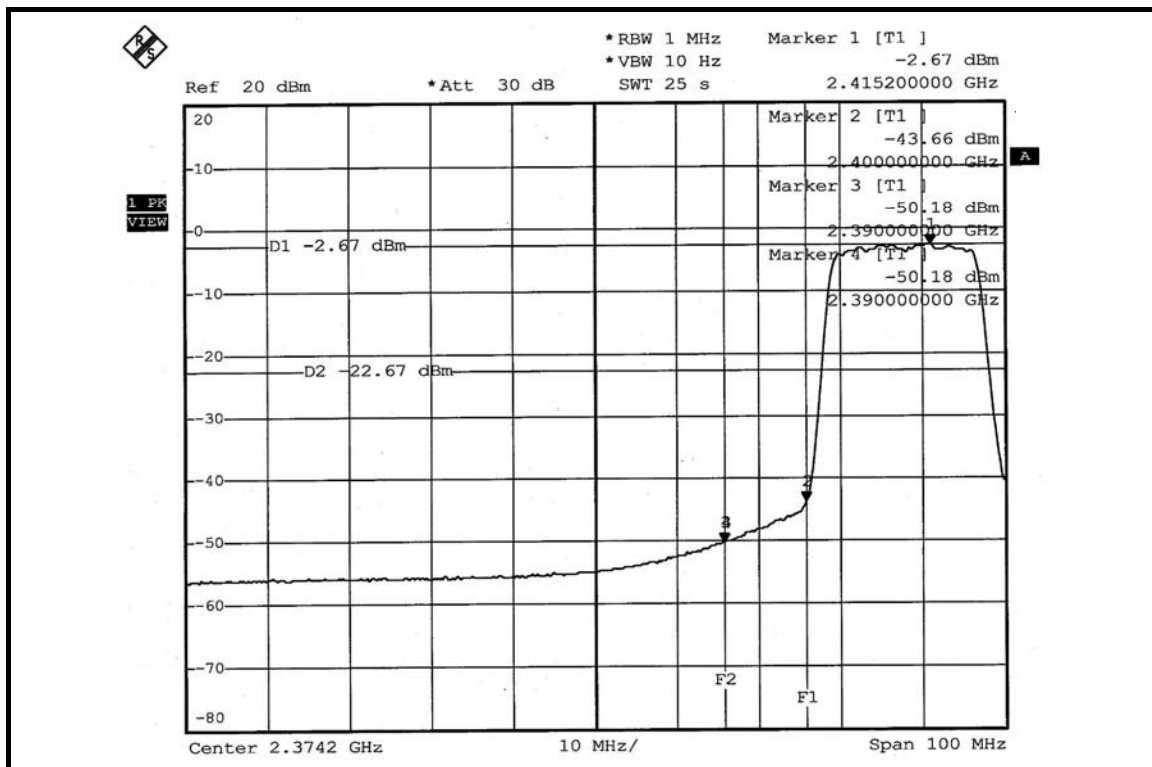
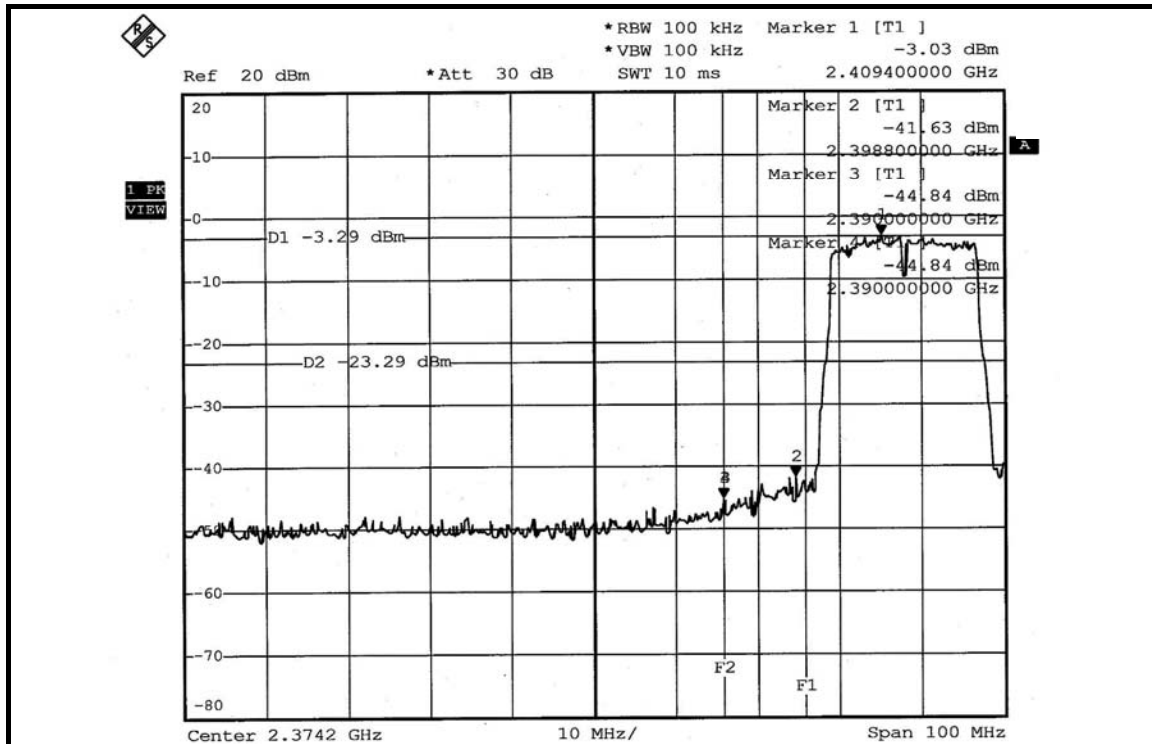
The band edge emission plot of OFDM technique on the next page shows 41.81dBc between carrier maximum power and local maximum emission in restrict band (2.39000GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 105.79dBuV/m (Peak), so the maximum field strength in restrict band is  $105.79 - 41.81 = 63.98$ dBuV/m which is under 74dBuV/m limit.

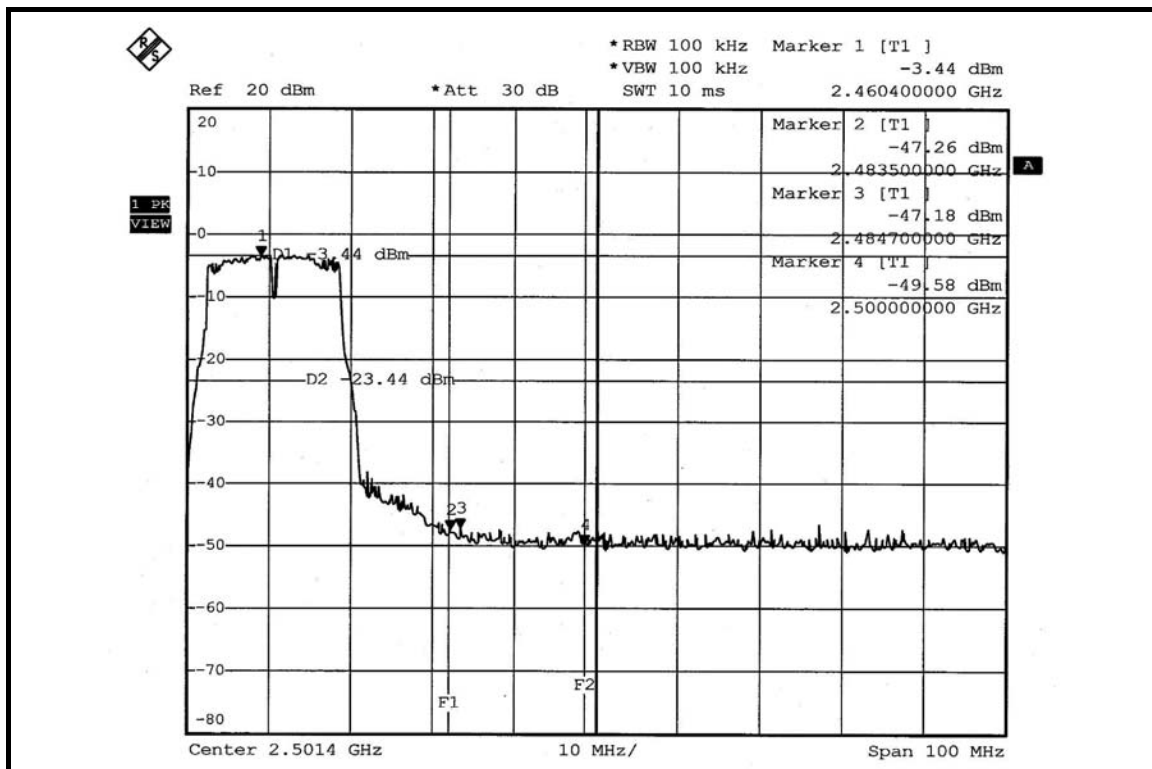
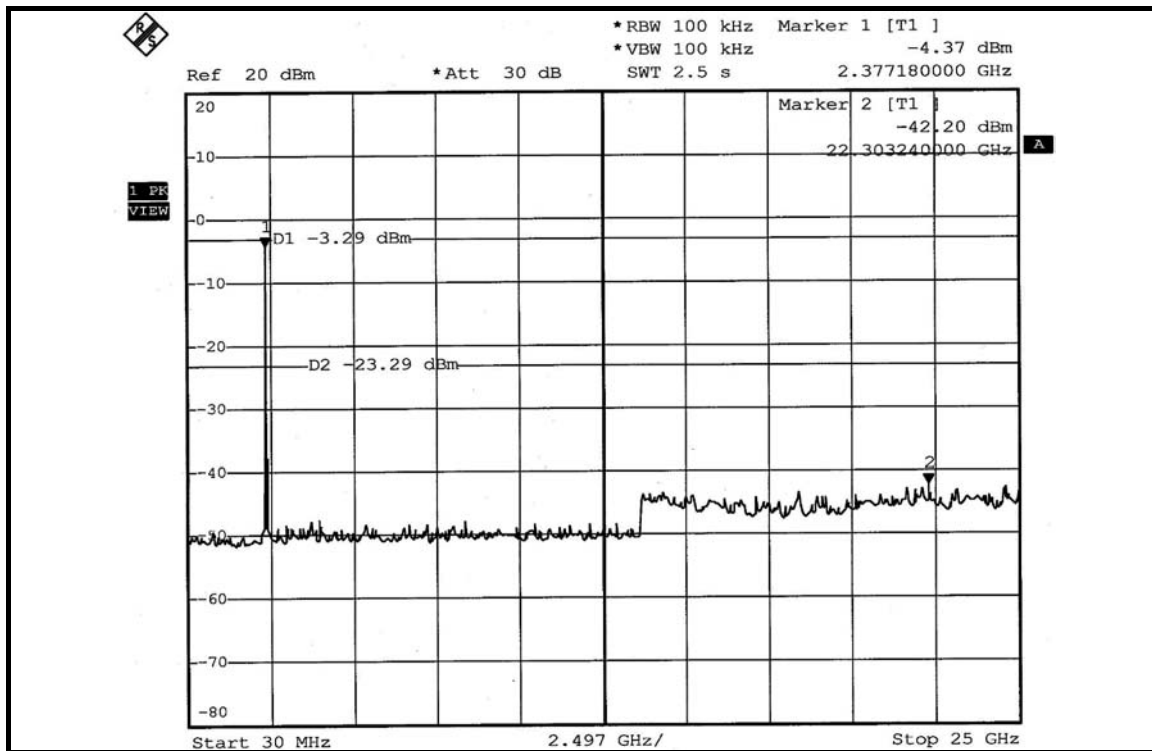
The band edge emission plot of OFDM technique on the next page shows 47.51dBc between carrier maximum power and local maximum emission in restrict band (2.39000GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 96.07dBuV/m (Average), so the maximum field strength in restrict band is  $96.07 - 47.51 = 48.56$ dBuV/m which is under 54dBuV/m limit.

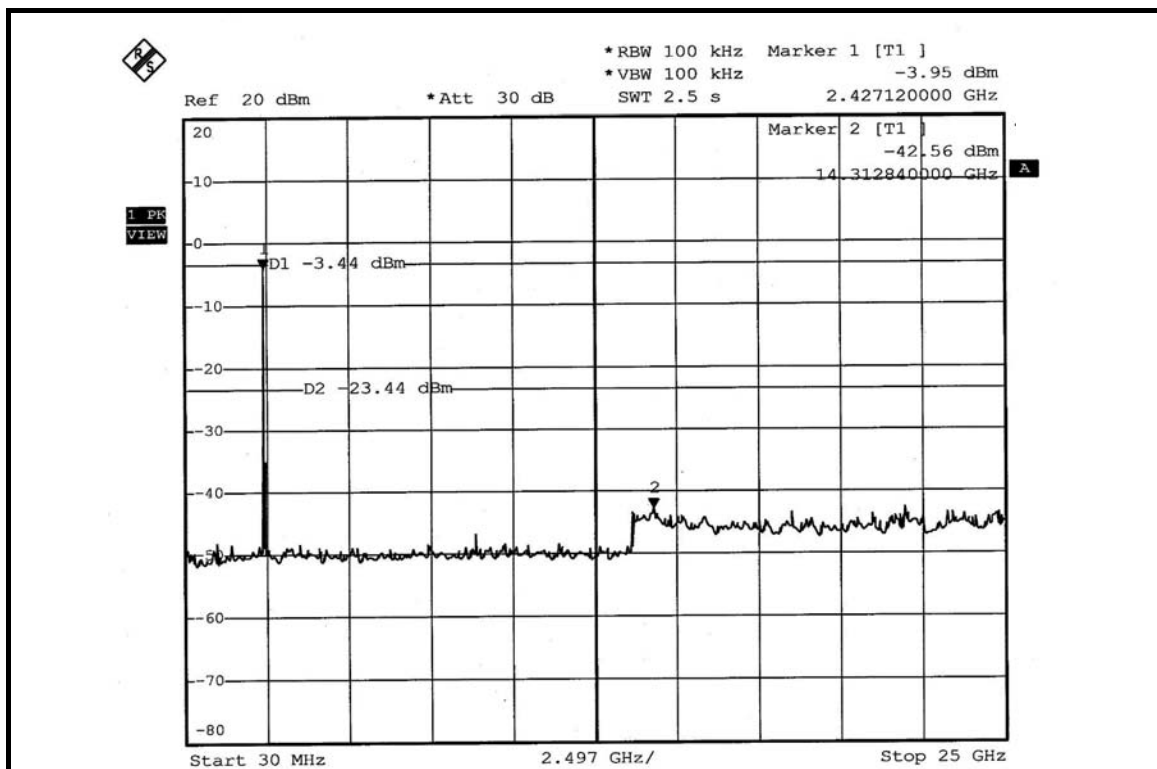
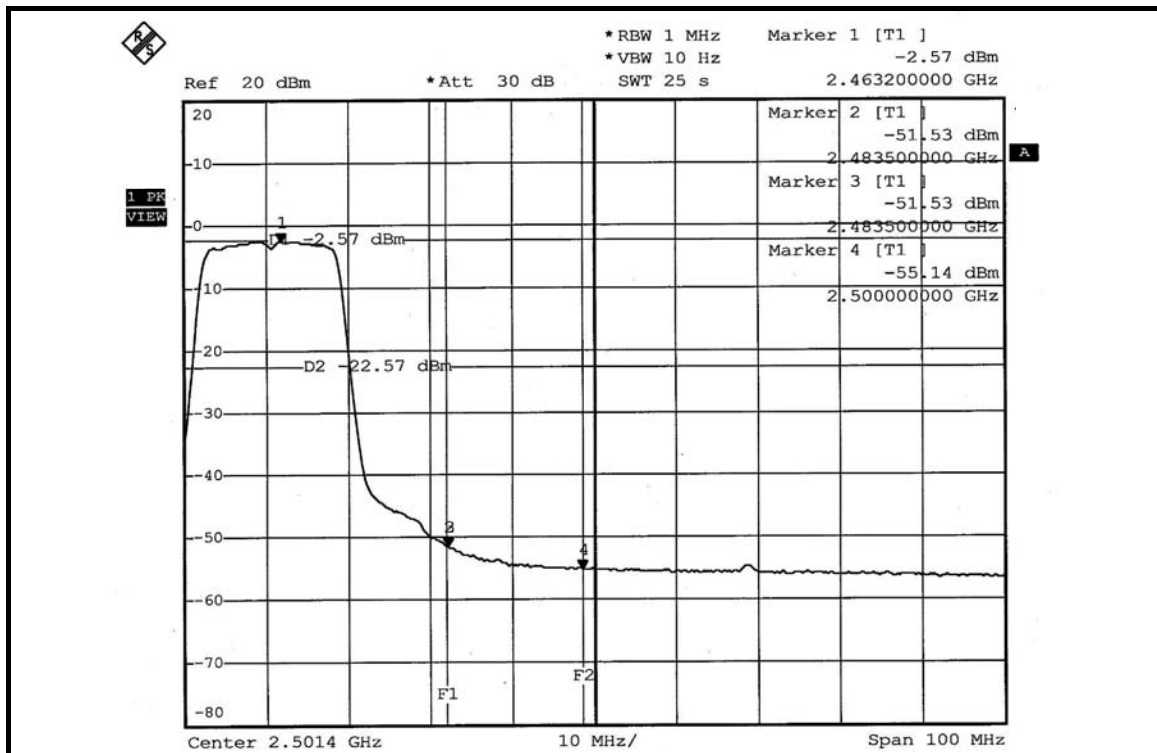
### **NOTE 2:**

The band edge emission plot of OFDM technique on the next second page shows 43.74dBc between carrier maximum power and local maximum emission in restrict band (2.48470GHz). The emission of carrier strength list in the test result of channel 11 at the item 4.2.7 is 106.22dBuV/m (Peak), so the maximum field strength in restrict band is  $106.22 - 43.74 = 62.48$ dBuV/m which is under 74dBuV/m limit.

The band edge emission plot of OFDM technique on the next third page shows 48.96dBc 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 96.75dBuV/m (Average), so the maximum field strength in restrict band is  $96.75 - 48.96 = 47.79$ dBuV/m which is under 54dBuV/m limit.







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

### **NOTE 1:**

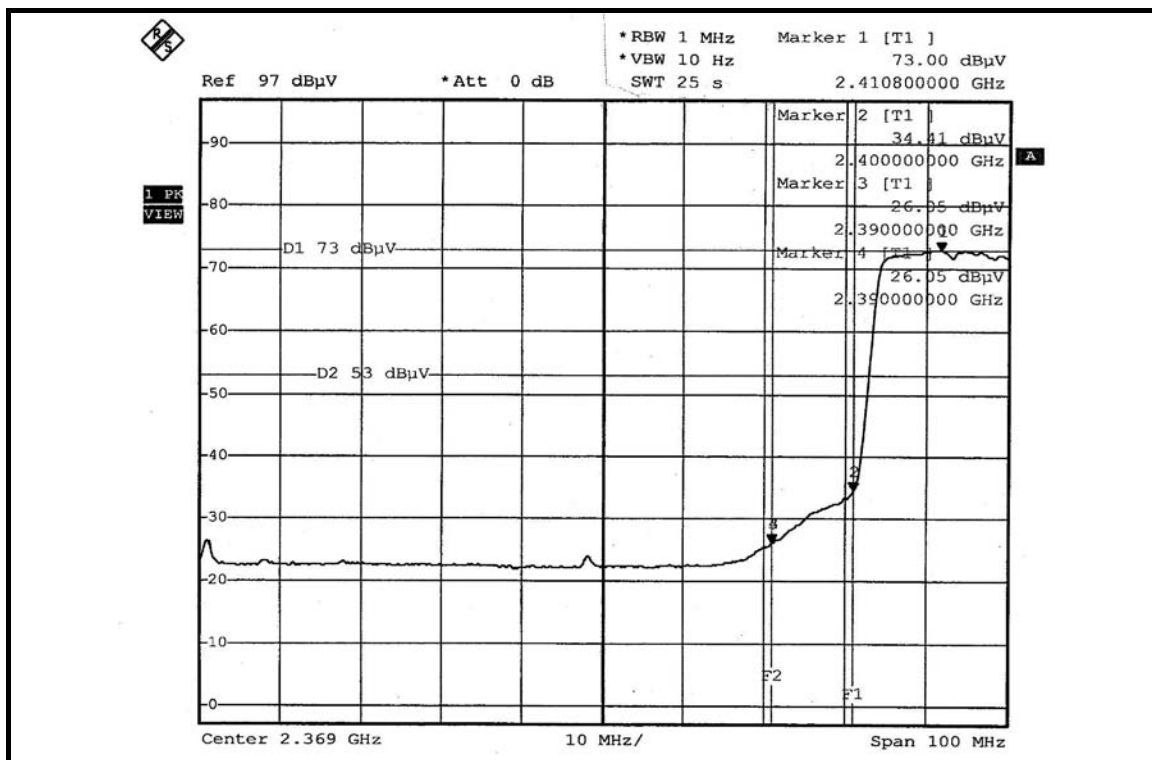
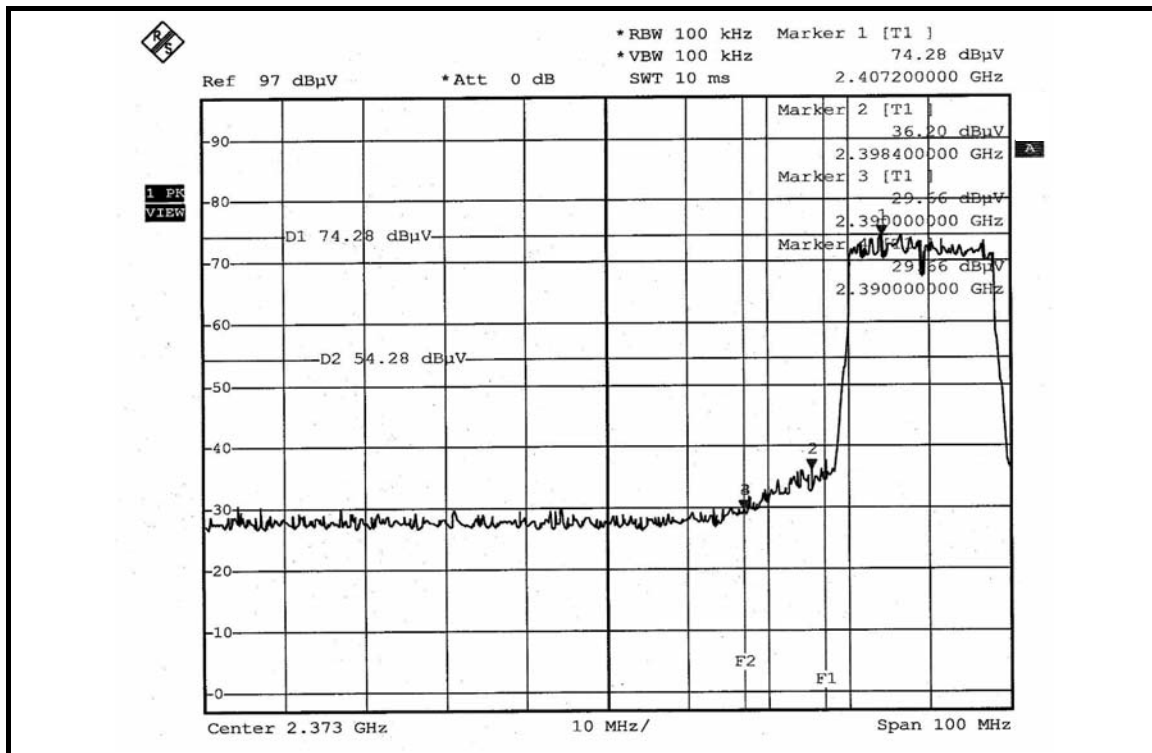
The band edge emission plot of OFDM technique on the next page shows 44.62dBc between carrier maximum power and local maximum emission in restrict band (2.39000GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 108.28dBuV/m (Peak), so the maximum field strength in restrict band is  $108.28 - 44.62 = 63.66$ dBuV/m which is under 74dBuV/m limit.

The band edge emission plot of OFDM technique on the next page shows 46.95dBc 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 97.43dBuV/m (Average), so the maximum field strength in restrict band is  $97.43 - 46.95 = 50.48$ dBuV/m which is under 54dBuV/m limit.

### **NOTE 2:**

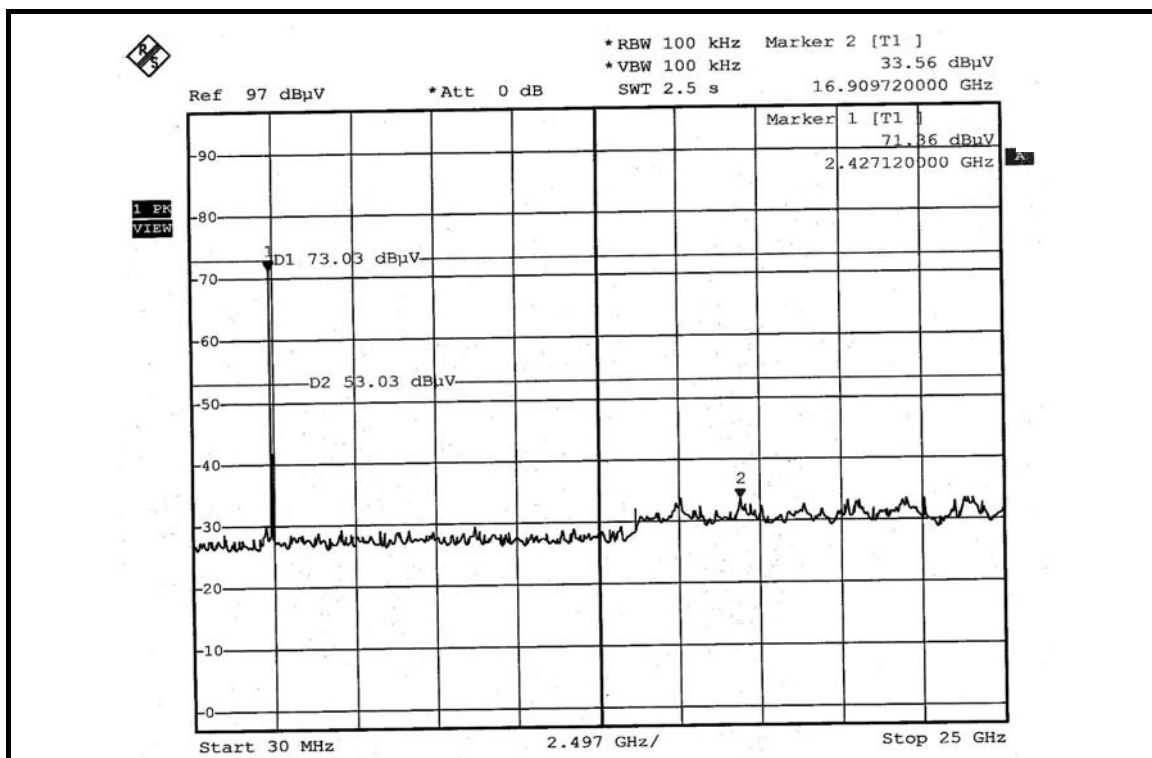
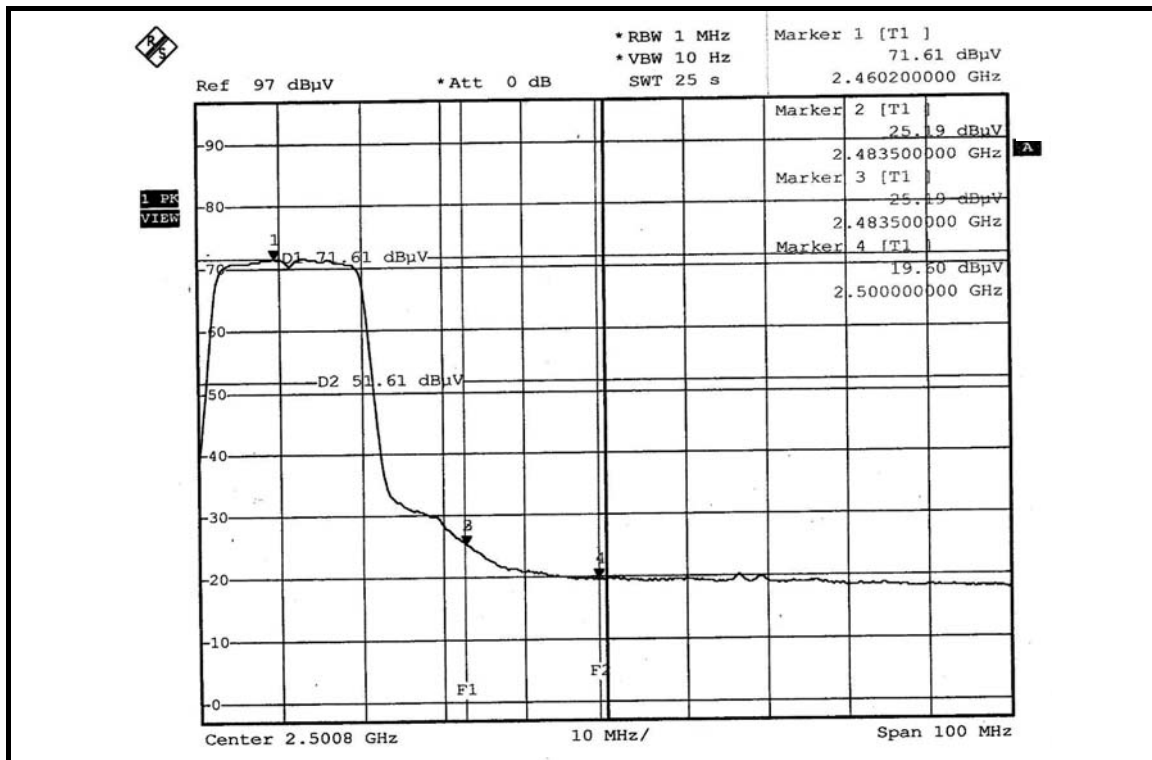
The band edge emission plot of OFDM technique on the next second page shows 41.87dBc between carrier maximum power and local maximum emission in restrict band (2.484748357 GHz) is 108.01dBuV/m (Peak), so the maximum field strength in restrict band is  $108.01 - 41.87 = 66.14$ dBuV/m which is under 74dBuV/m limit.

The band edge emission plot of OFDM technique on the next third page shows 46.42dBc 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 96.96dBuV/m (Average), so the maximum field strength in restrict band is  $96.96 - 46.42 = 50.54$ dBuV/m which is under 54dBuV/m limit.











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

### **NOTE 1:**

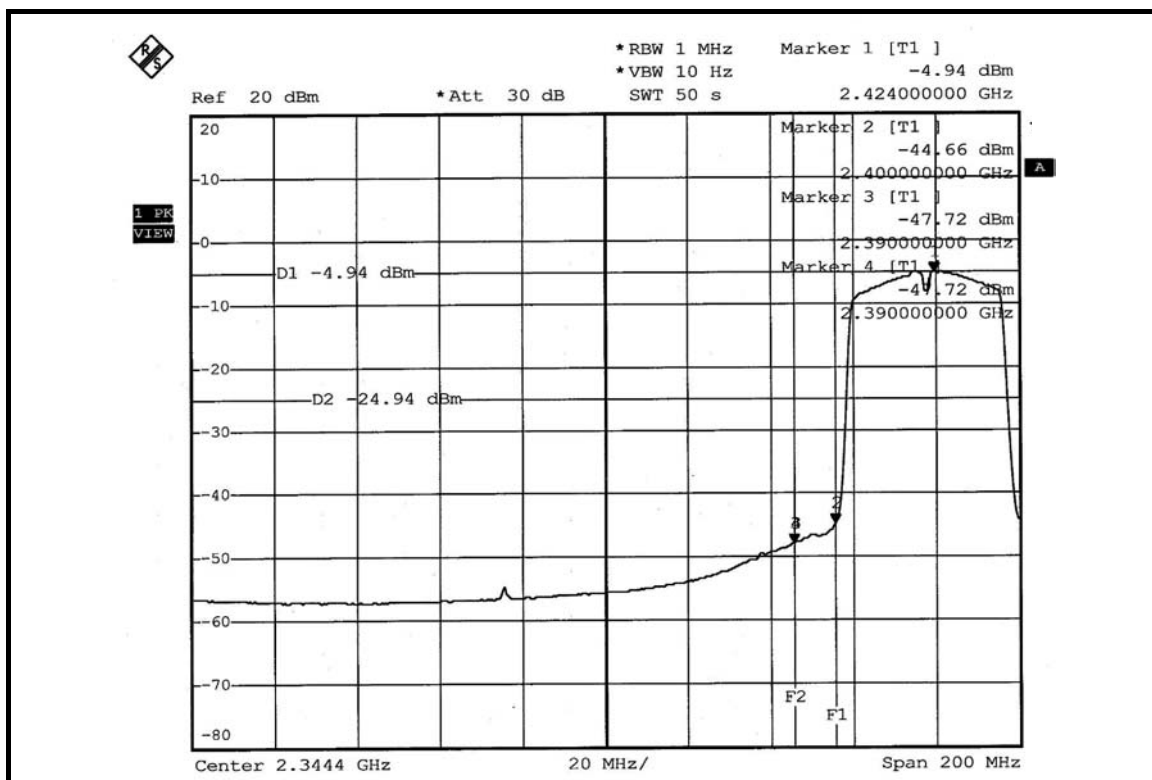
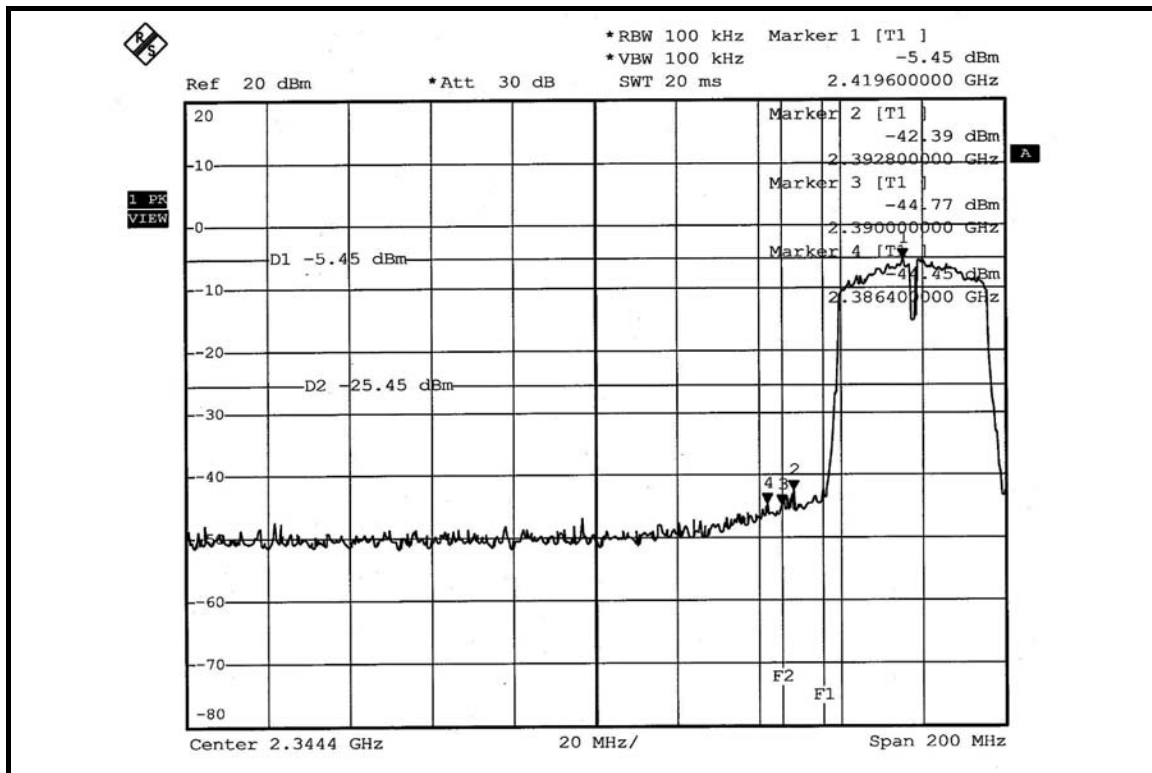
The band edge emission plot of OFDM technique on the next page shows 39.00dBc between carrier maximum power and local maximum emission in restrict band (2.38640GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 105.07dBuV/m (Peak), so the maximum field strength in restrict band is  $105.07 - 39.00 = 66.07$ dBuV/m which is under 74dBuV/m limit.

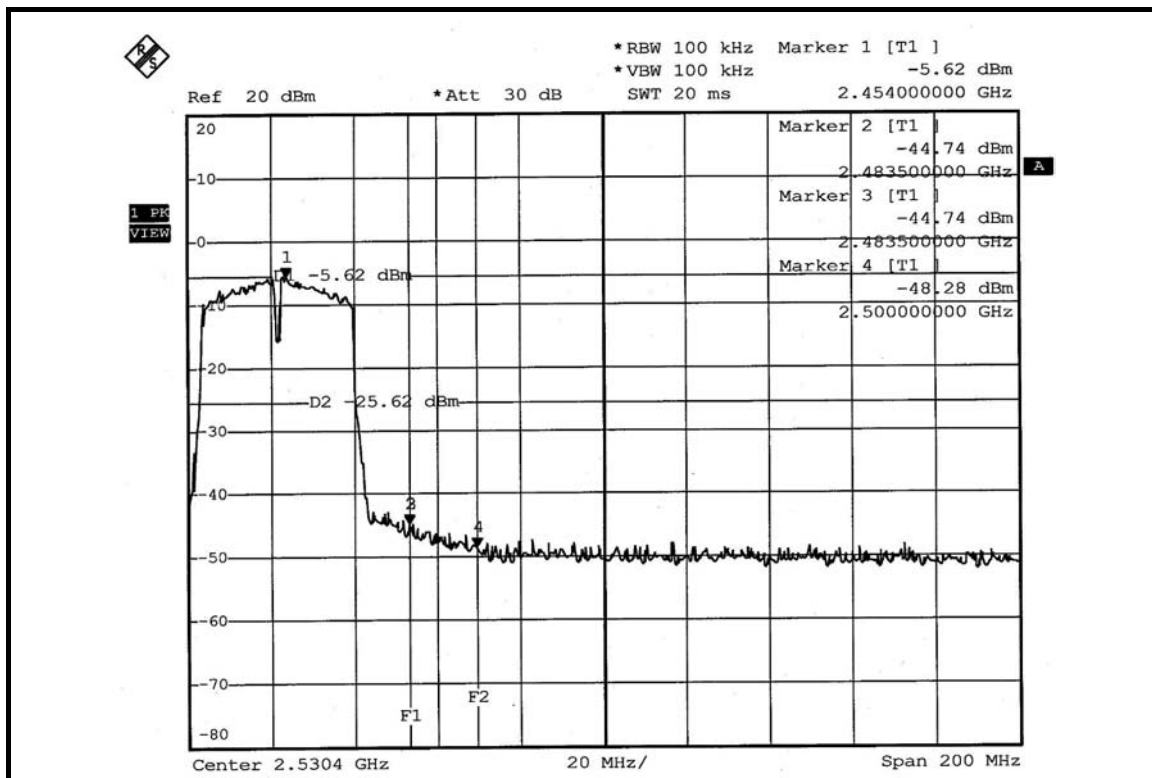
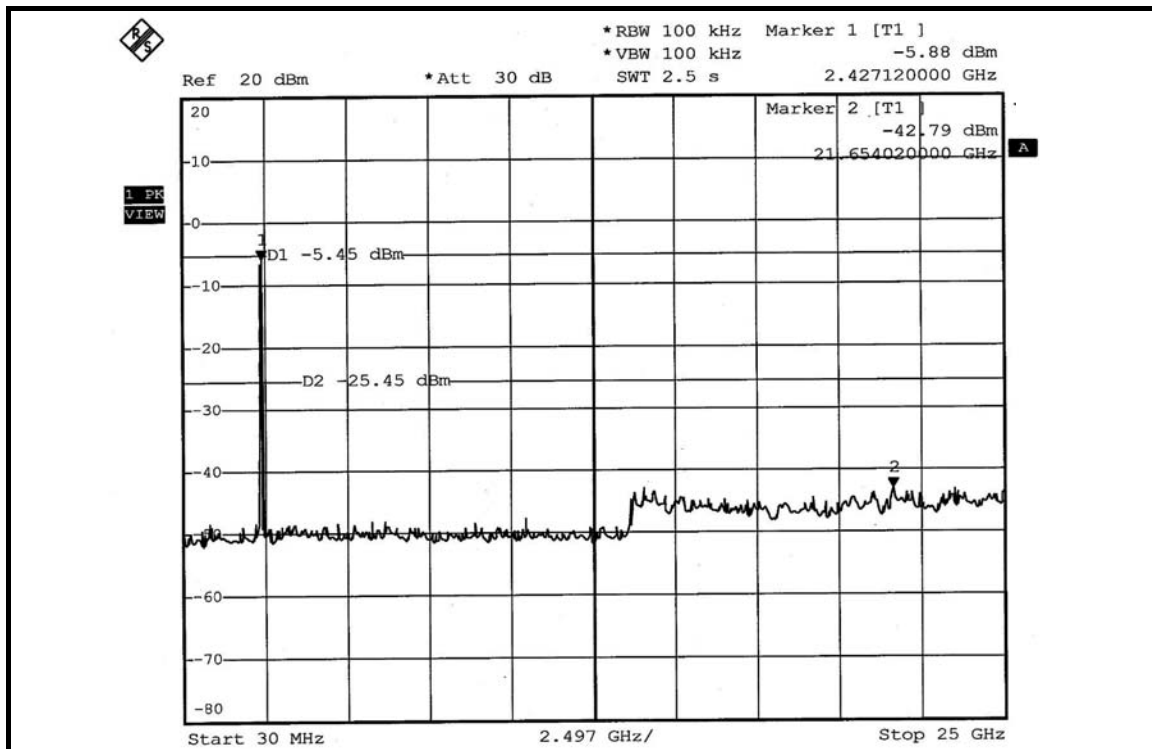
The band edge emission plot of OFDM technique on the next page shows 42.78dBc between carrier maximum power and local maximum emission in restrict band (2.39000GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 95.35dBuV/m (Average), so the maximum field strength in restrict band is  $95.35 - 42.78 = 52.57$ dBuV/m which is under 54dBuV/m limit.

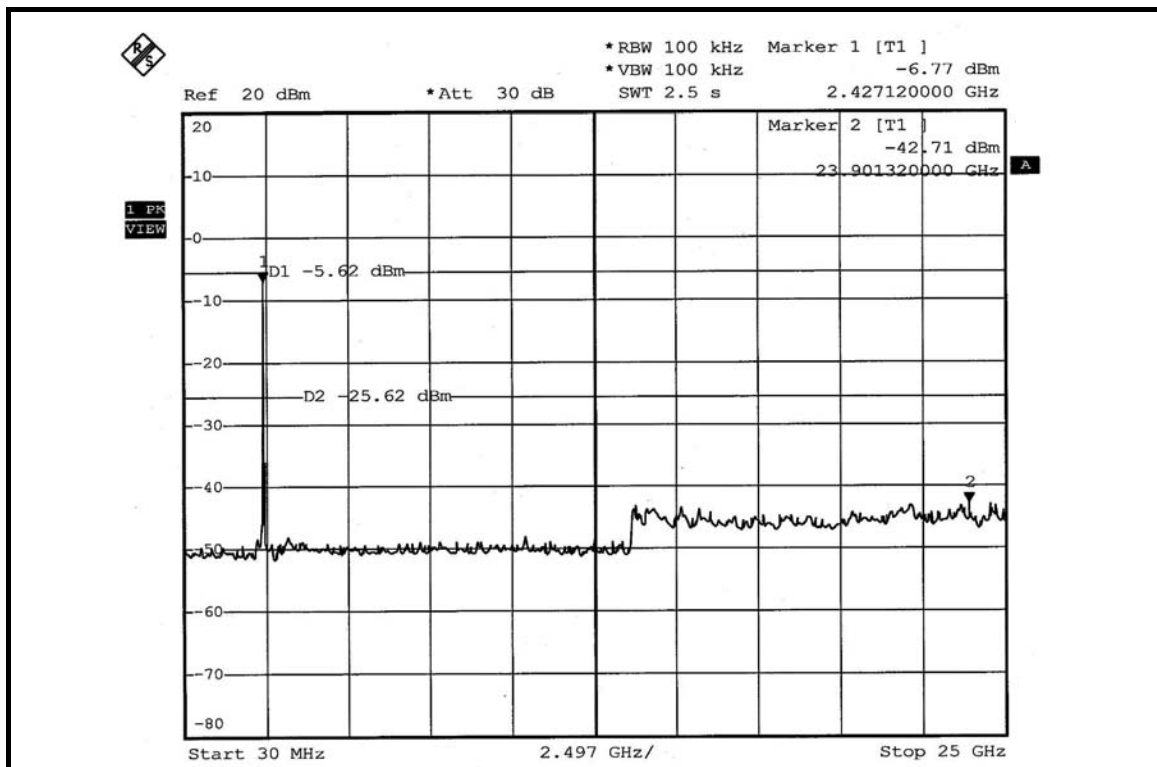
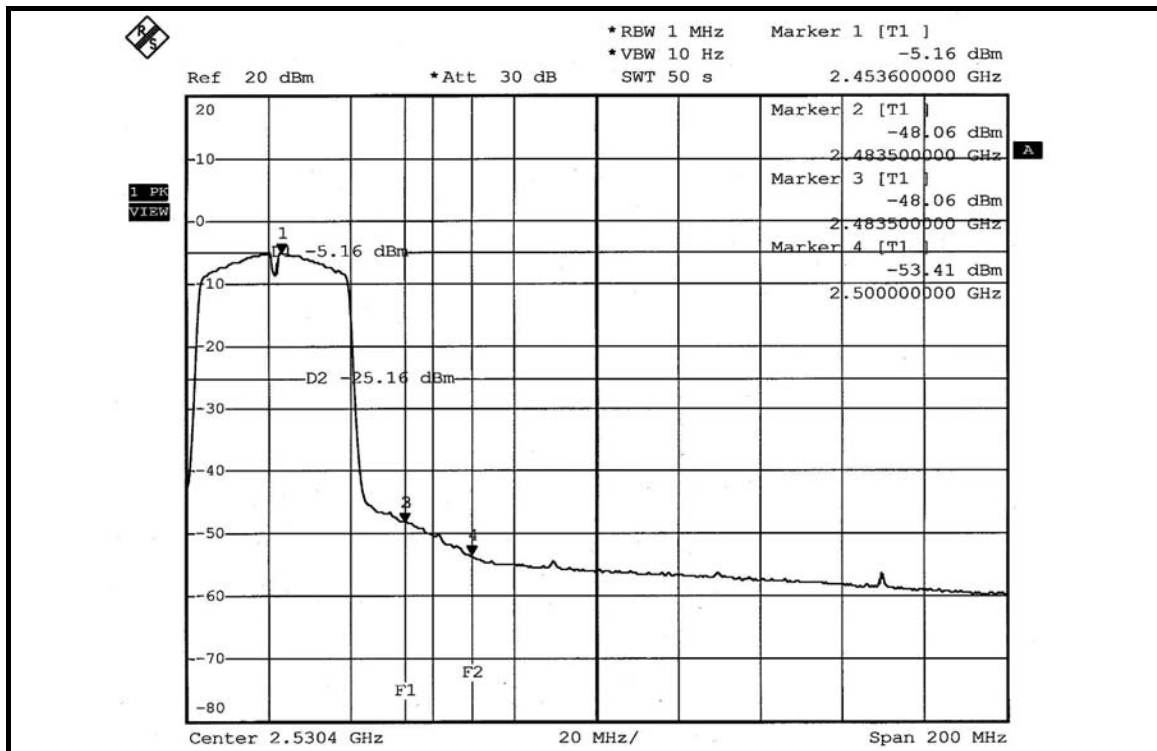
### **NOTE 2:**

The band edge emission plot of OFDM technique on the next second page shows 39.12dBc 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 105.38dBuV/m (Peak), so the maximum field strength in restrict band is  $105.38 - 39.12 = 66.26$ dBuV/m which is under 74dBuV/m limit.

The band edge emission plot of OFDM technique on the next third page shows 42.90dBc 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 95.70dBuV/m (Average), so the maximum field strength in restrict band is  $95.70 - 42.90 = 52.80$ dBuV/m which is under 54dBuV/m limit.







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

### **NOTE 1:**

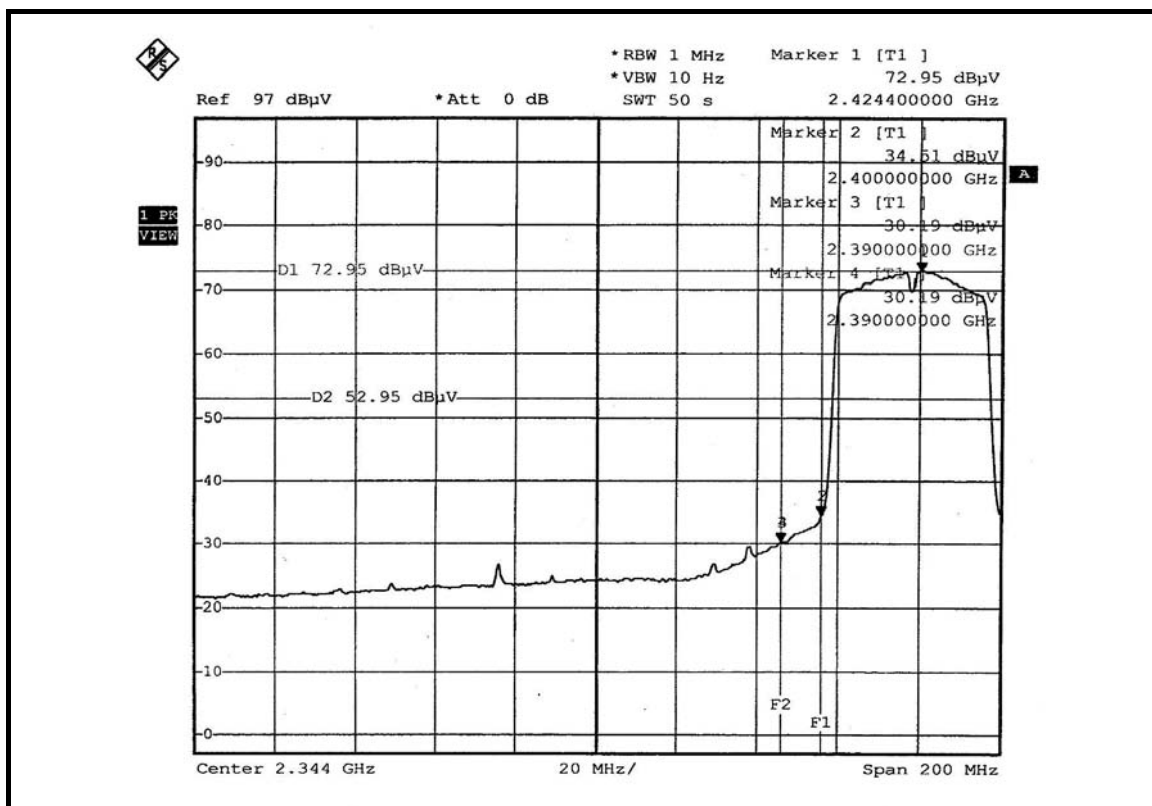
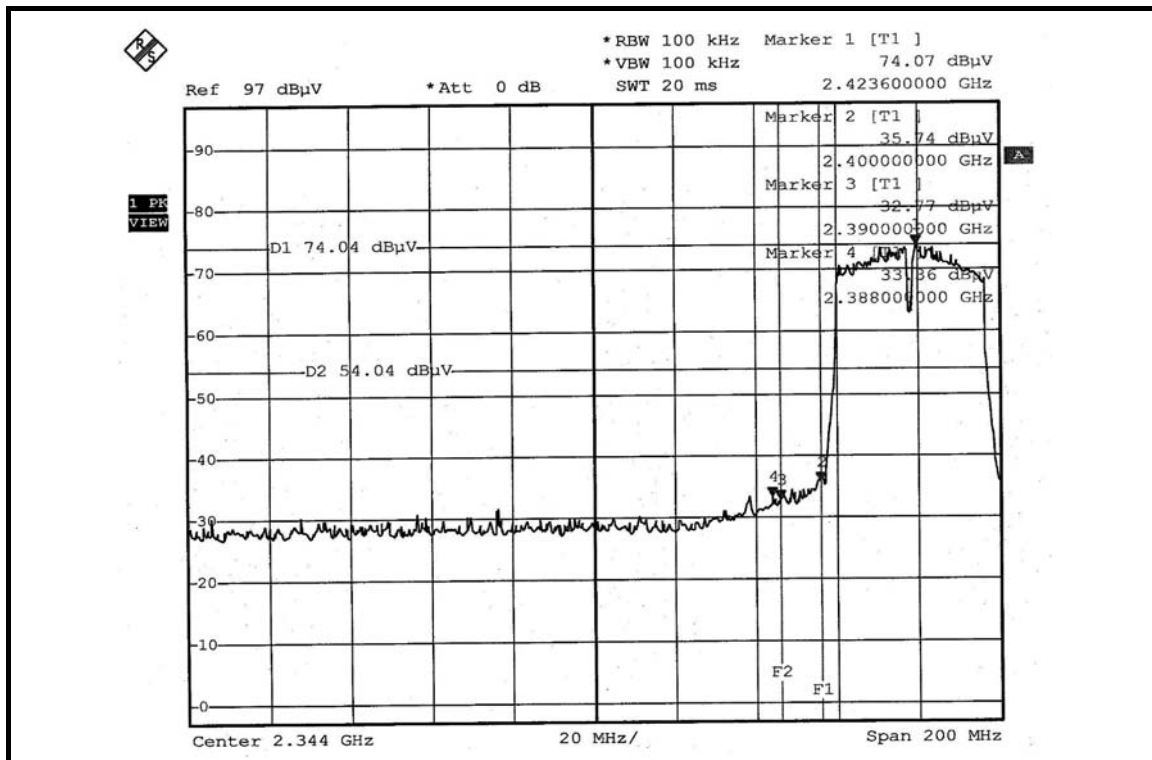
The band edge emission plot of OFDM technique on the next page shows 40.71dBc between carrier maximum power and local maximum emission in restrict band (2.38800GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 104.18dBuV/m (Peak), so the maximum field strength in restrict band is  $104.18 - 40.71 = 63.47$ dBuV/m which is under 74dBuV/m limit.

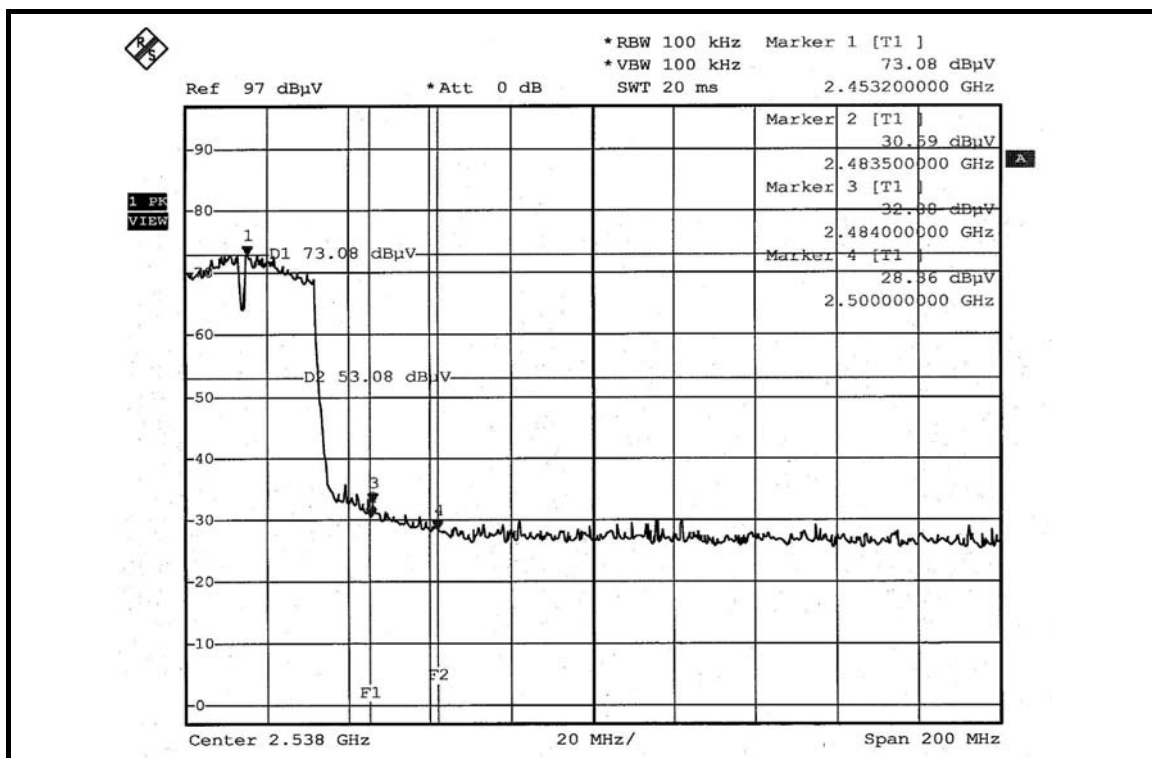
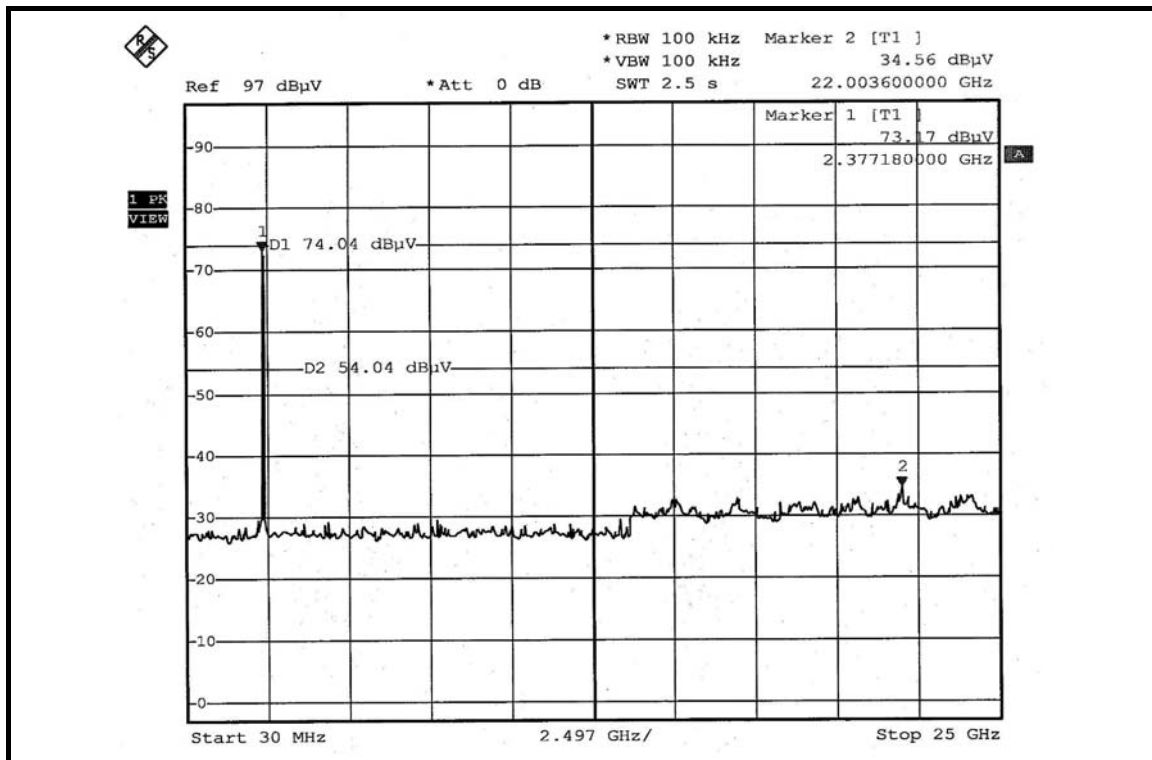
The band edge emission plot of OFDM technique on the next page shows 42.76dBc between carrier maximum power and local maximum emission in restrict band (2.39000GHz). The emission of carrier strength list in the test result of channel 1 at the item 4.2.7 is 93.98dBuV/m (Average), so the maximum field strength in restrict band is  $93.98 - 42.76 = 51.22$ dBuV/m which is under 54dBuV/m limit.

### **NOTE 2:**

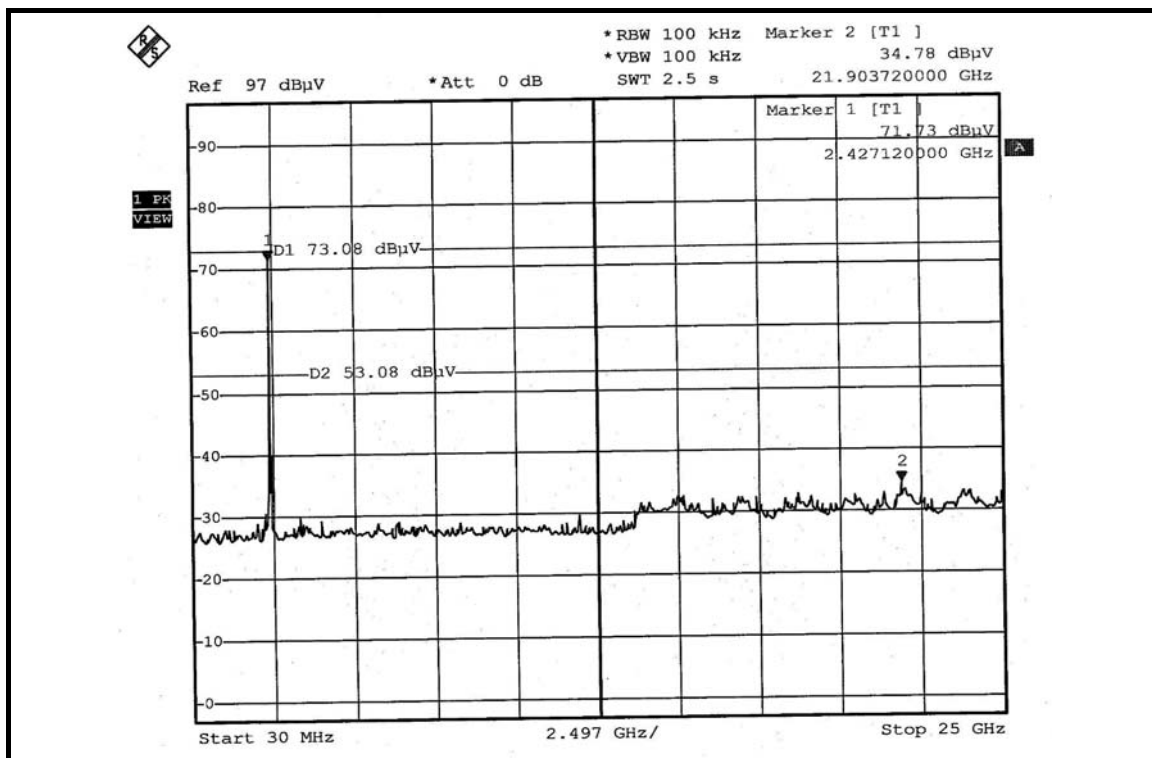
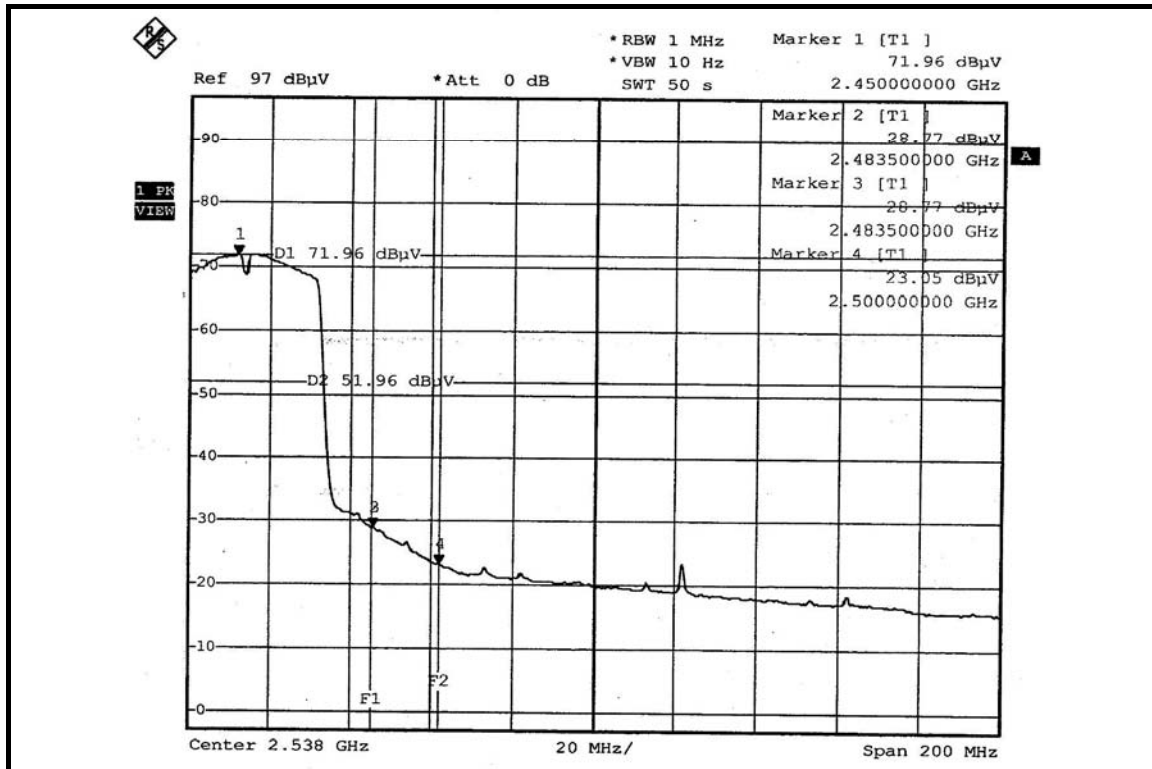
The band edge emission plot of OFDM technique on the next second page shows 40.20dBc between carrier maximum power and local maximum emission in restrict band (2.48400GHz). The emission of carrier strength list in the test result of channel 7 at the item 4.2.7 is 104.29dBuV/m (Peak), so the maximum field strength in restrict band is  $104.29 - 40.20 = 64.09$ dBuV/m which is under 74dBuV/m limit.

The band edge emission plot of OFDM technique on the next third page shows 43.19dBc 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 94.13dBuV/m (Average), so the maximum field strength in restrict band is  $94.13 - 43.19 = 50.94$ 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**

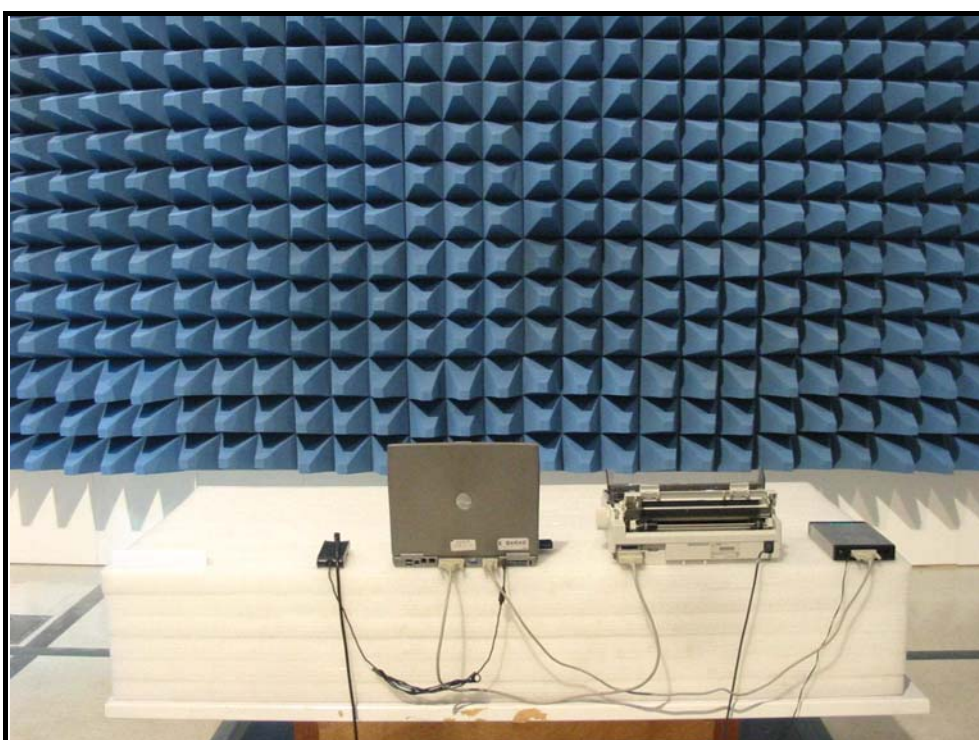
The antenna used in this product is printed antenna without connector. The maximum Gain of the antenna is 3.6dBi.

## 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:**

Tel: 886-3-3183232

Fax: 886-3-3185050

**Linko RF Lab.**

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.