

FCC PART 15.247  
EMI MEASUREMENT AND TEST REPORT  
For

Shenzhen Rikomagic Tech Corp.,Ltd  
2F, Liangshi Building, Qi'an Road 6#, Shajing street, Bao'an, Shenzhen, China, 518125

**FCC ID: PV2MK802IIIS**

December 25, 2012

|                                              |                                                                                                                                                                                                                       |
|----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| This Report Concerns:<br>Original Report     | Equipment Type:<br>Android 4.1 mini pc                                                                                                                                                                                |
| Test Engineer:                               | Anna Lv <i>Anna Lv</i>                                                                                                                                                                                                |
| Test Engineer<br>of performing<br>the tests: | Hans Hu <i>Hans.Hu</i>                                                                                                                                                                                                |
| Report No.:                                  | BST 12122101Y-1ER-3                                                                                                                                                                                                   |
| Receive EUT<br>Date/Test Date:               | December 11, 2012 / December 11-25, 2012                                                                                                                                                                              |
| Reviewed By:                                 | Mike Moo <i>Mike Moo</i>                                                                                                                                                                                              |
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## 1. GENERAL INFORMATION

### 1.1. Report information

1.1.1.This report is not a certificate of quality; it only applies to the sample of the specific product/equipment given at the time of its testing. The results are not used to indicate or imply that they are application to the similar items. In addition, such results must not be used to indicate or imply that BST approves recommends or endorses the manufacture, supplier or use of such product/equipment, or that BST in any way guarantees the later performance of the product/equipment.

1.1.2.The sample/s mentioned in this report is/are supplied by Applicant, BST therefore assumes no responsibility for the accuracy of information on the brand name, model number, origin of manufacture or any information supplied.

Additional copies of the report are available to the Applicant at an additional fee. No third part can obtain a copy of this report through BST, unless the applicant has authorized BST in writing to do so.

Test Facility -

The test site used to collect the data is located on the address of

Global United Technology Service Co., Ltd

(FCC Registered Test Site Number: 600491) on

2nd Floor, Block No.2, Laodong Industrial Zone, Xixiang Road Baoan District,  
Shenzhen, China 518102

The Test Site is constructed and calibrated to meet the FCC requirements.

### 1.2. Measurement Uncertainty

The reported uncertainty of measurement  $y \pm U$ , where expanded uncertainty  $U$  is based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately 95 %.

| No. | Item                          | Uncertainty               |
|-----|-------------------------------|---------------------------|
| 1   | Conducted Emission Test       | $\pm 1.38\text{dB}$       |
| 2   | RF power, conducted           | $\pm 0.16\text{dB}$       |
| 3   | Spurious emissions, conducted | $\pm 0.21\text{dB}$       |
| 4   | All emissions, radiated(<1G)  | $\pm 4.68\text{dB}$       |
| 5   | All emissions, radiated(>1G)  | $\pm 4.89\text{dB}$       |
| 6   | Temperature                   | $\pm 0.5^{\circ}\text{C}$ |
| 7   | Humidity                      | $\pm 2\%$                 |

## 2. PRODUCT DESCRIPTION

### 2.1. EUT Description

|                      |   |                                                                                                  |
|----------------------|---|--------------------------------------------------------------------------------------------------|
| Applicant            | : | Shenzhen Rikomagic Tech Corp.,Ltd                                                                |
| Address              | : | 2F, Liangshi Building, Qi'an Road 6#, Shajing street, Bao'an, Shenzhen, China, 518125            |
| Manufacturer         | : | Shenzhen Rikomagic Tech Corp.,Ltd                                                                |
| Address              | : | 2F, Liangshi Building, Qi'an Road 6#, Shajing street, Bao'an, Shenzhen, China, 518125            |
| EUT Description      | : | Android 4.1 mini pc                                                                              |
| Trade Name           | : | rikomagic                                                                                        |
| Modulation type      | : | 802.11b: DSSS (BPSK / QPSK / CCK)<br>802.11g/n: OFDM (BPSK / QPSK / 16QAM / 64QAM)               |
| Data rate            | : | 802.11b: 11/5.5/2/1 Mbps<br>802.11g: 54/48/36/24/18/12/9/6 Mbps<br>802.11n: Up to 135Mbps        |
| Wi-fi Frequency Band | : | IEEE 802.11b/g: 2412-2462MHz<br>IEEE802.11n HT20: 2412-2462MHz<br>IEEE802.11n HT40: 2422-2452MHz |
| Number of Channels   | : | IEEE 802.11b/g: 11 Channels<br>IEEE802.11n HT20: 11 Channels<br>IEEE802.11n HT40: 7 Channels     |
| Model Number         | : | MK802IIIS, MK802III                                                                              |
| Power Supply         | : | DC 5V (From the PC or Adapter of 120V/60Hz)                                                      |
| Antenna gain         | : | 0.21dBi                                                                                          |

The MK802IIIS, MK802III products have the same circuit diagram, PCB layout, software, RF Module, Features and functionality. The differences are the model name, so, we select MK802IIIS to test.

## 2.2. Block Diagram of EUT Configuration

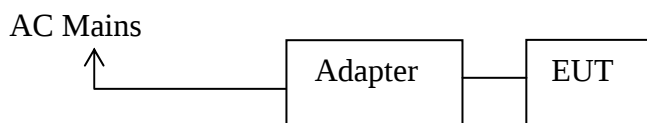


Figure 1 EUT SETUP

## 2.3. Support Equipment List

Table 2 Ancillary Equipment

| Name    | Model No          | S/N | Manufacturer | Used<br>“Yes/No” |
|---------|-------------------|-----|--------------|------------------|
| Adapter | CYSL05-05010<br>0 | --  | YULONG       | Yes              |

## 2.4. Test Conditions

| Items                      | Required (IEC 68-1) | Actual   |
|----------------------------|---------------------|----------|
| Temperature (°C)           | 15-35               | 20-25    |
| Humidity (%RH)             | 25-75               | 50-63    |
| Barometric pressure (mbar) | 860-1060            | 950-1000 |

After the preliminary test, we found to emit the worst emissions and therefore had been tested under operating condition.

IEEE 802.11b:

Channel Low (2412MHz), Channel Mid (2437MHz) and Channel High (2462MHz) with 1Mbps data rate were chosen for full testing.

IEEE 802.11g:

Channel Low (2412MHz), Channel Mid (2437MHz) and Channel High (2462MHz) with 6Mbps data rate were chosen for full testing.

IEEE 802.11n HT20:

Channel Low (2412MHz), Channel Mid (2437MHz) and Channel High (2462MHz) with 6.5Mbps data rate were chosen for full testing.

IEEE 802.11n HT40:

Channel Low (2422MHz), Channel Mid 2437MHz) and Channel High (2452MHz) with 13.5Mbps data rate were chosen for full testing.

### 3. TEST RESULTS SUMMARY

#### FCC 15 Subpart C, Paragraph 15.247

| FCC RULES                    | DESCRIPTION OF TEST                | RESULT |
|------------------------------|------------------------------------|--------|
| §15.203                      | Antenna Requirement                | PASS   |
| §15.207 (a)                  | Conducted Emissions                | PASS   |
| §15.247(d)                   | Spurious Emissions at Antenna Port | PASS   |
| §15.205                      | Restricted Bands                   | PASS   |
| §15.209, §15.205, §15.247(d) | Spurious Emissions                 | PASS   |
| §15.247 (a)(2)               | 6 dB Bandwidth                     | PASS   |
| §15.247(b)(3)                | Maximum Peak Output Power          | PASS   |
| §15.247(d)                   | Bandwidth of Frequency Band Edge   | PASS   |
| §15.247(e)                   | Power Spectral Density             | PASS   |

Statement: The EUT was setup according to ANSI C63.4-2003 and tested according to tested according to DTS test procedure of KDB558074 D01 DTS Meas Guidance v02 for compliance to FCC 47CFR 15.247 requirements

#### Modifications

No modification was made.

#### 4. TEST EQUIPMENT USED

| Equipment/Facilities     | Manufacturer      | Model                       | Serial no.   | Date of Cal.  | Cal. Interval |
|--------------------------|-------------------|-----------------------------|--------------|---------------|---------------|
| 3m Semi-Anechoic Chamber | Changzhou Chengyu | EC3048                      | N/A          | May 5, 2012   | 1 Year        |
| Broadband antenna        | SCHWARZBECK       | VULB 9168                   | VULB9168-438 | Aug. 14, 2012 | 1 Year        |
| Horn antenna             | R&S               | HF906                       | 10027        | Aug. 14, 2012 | 1 Year        |
| ETS Horn Antenna         | ETS               | 3160                        | SEL0076      | May 8, 2012   | 1 Year        |
| Loop Antenna             | SCHWARZECK        | HFRA 5165                   | 9365         | Feb. 25, 2012 | 1 Year        |
| Active Loop Antenna      | Beijing Daze      | ZN30900A                    | SEL0097      | Apr. 6, 2012  | 1 Year        |
| Spectrum analyzer        | Agilent           | E4443A                      | MY46185649   | Apr. 6, 2012  | 1 Year        |
| Spectrum analyzer        | Agilent           | E4440A                      | MY46187335   | Apr. 6, 2012  | 1 Year        |
| Test receiver            | R&S               | ESCI                        | 100492       | Apr. 6, 2012  | 1 Year        |
| Test receiver            | R&S               | ESCI                        | 101202       | Apr. 6, 2012  | 1 Year        |
| Power Meter              | Anritsu           | ML2487A                     | 6K00001491   | Mar.19, 2012  | 1 Year        |
| Power Sensor             | Anritsu           | MA2491A                     | 30619        | Mar.19, 2012  | 1 Year        |
| L.I.S.N.                 | SCHWARZBECK       | NSLK8126                    | 8126466      | Apr. 6, 2012  | 1 Year        |
| L.I.S.N.                 | SCHWARZBECK       | NSLK8126                    | 8126487      | Apr. 6, 2012  | 1 Year        |
| Cable                    | Resenberger       | N/A                         | NO.1         | Apr. 6, 2012  | 1 Year        |
| Cable                    | SCHWARZBECK       | N/A                         | NO.2         | Apr. 6, 2012  | 1 Year        |
| Cable                    | SCHWARZBECK       | N/A                         | NO.3         | Apr. 6, 2012  | 1 Year        |
| Pre-amplifier            | SCHWARZBECK       | BBV9743                     | 9743-019     | Apr. 6, 2012  | 1 Year        |
| Pre-amplifier            | R&S               | AFS33-1800<br>2650-30-8P-44 | SEL0080      | Apr. 6, 2012  | 1 Year        |

## **5. §15.203 - ANTENNA REQUIREMENT**

### **5.1. Standard Applicable**

According to § 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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the user of a standard antenna jack or electrical connector is prohibited. The structure and application of the EUT were analyzed to determine compliance with section §15.203 of the rules. §15.203 state that the subject device must meet the following criteria:

- a. Antenna must be permanently attached to the unit.
- b. Antenna must use a unique type of connector to attach to the EUT.

Unit must be professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.

And according to FCC 47 CFR section 15.247 (b), if the 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 6 dBi.

### **5.2. Antenna Connector Construction**

The antenna used for this product is a PIFA antenna. The antenna is permanently attached. Refer to the product photo.

## 6. §15.207 - CONDUCTED EMISSIONS

### 6.1. Applicable Standard

The specification used was with the FCC Part 15.207 limits.

### 6.2. Test Procedure

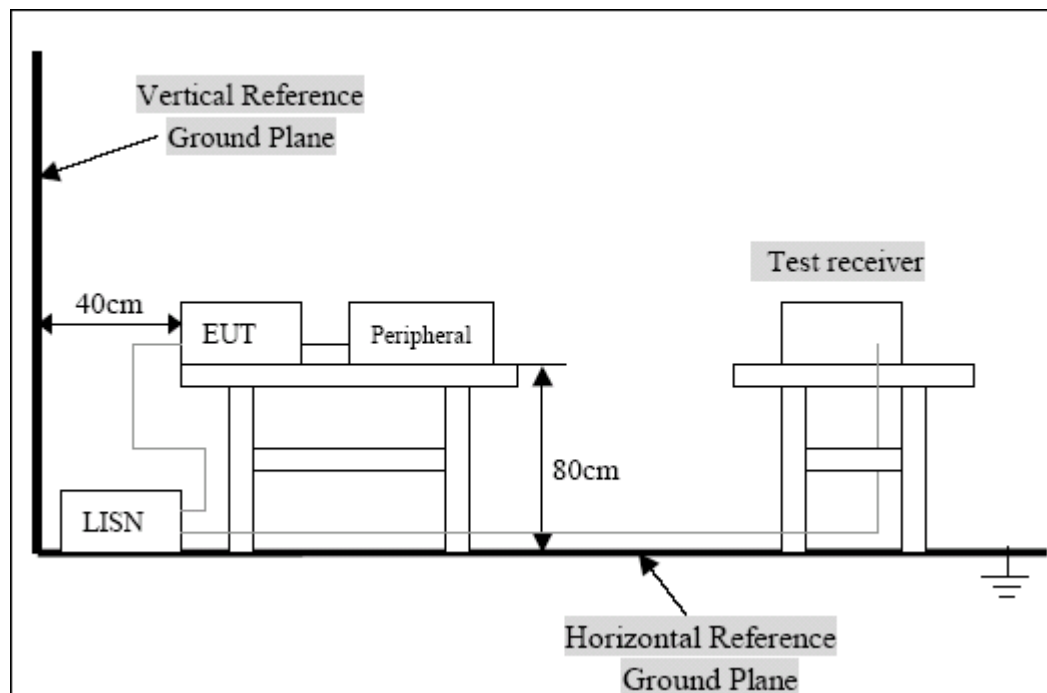
During the conducted emission test, the EUT was connected to the outlet of the LISN. Maximizing procedure was performed on the six (6) highest emissions of the EUT. All data was recorded in the Quasi-peak and average detection mode.

### 6.3. Conducted Power line Emission Limits

| FCC Part 15 Paragraph 15.207 (dBuV) |               |               |
|-------------------------------------|---------------|---------------|
| Frequency Range (MHz)               | Class A QP/AV | Class B QP/AV |
| 0.15-0.5                            | 79/66         | 65-56/56-46   |
| 0.5-5.0                             | 73/60         | 56-46         |
| 5.0-3.0                             | 73/60         | 60-50         |

Note: In the above table, the tighter limit applies at the band edges.

### 6.4. Block Diagram of Test Setup



## 6.5. Conducted Power Line Test Result

**Pass.**

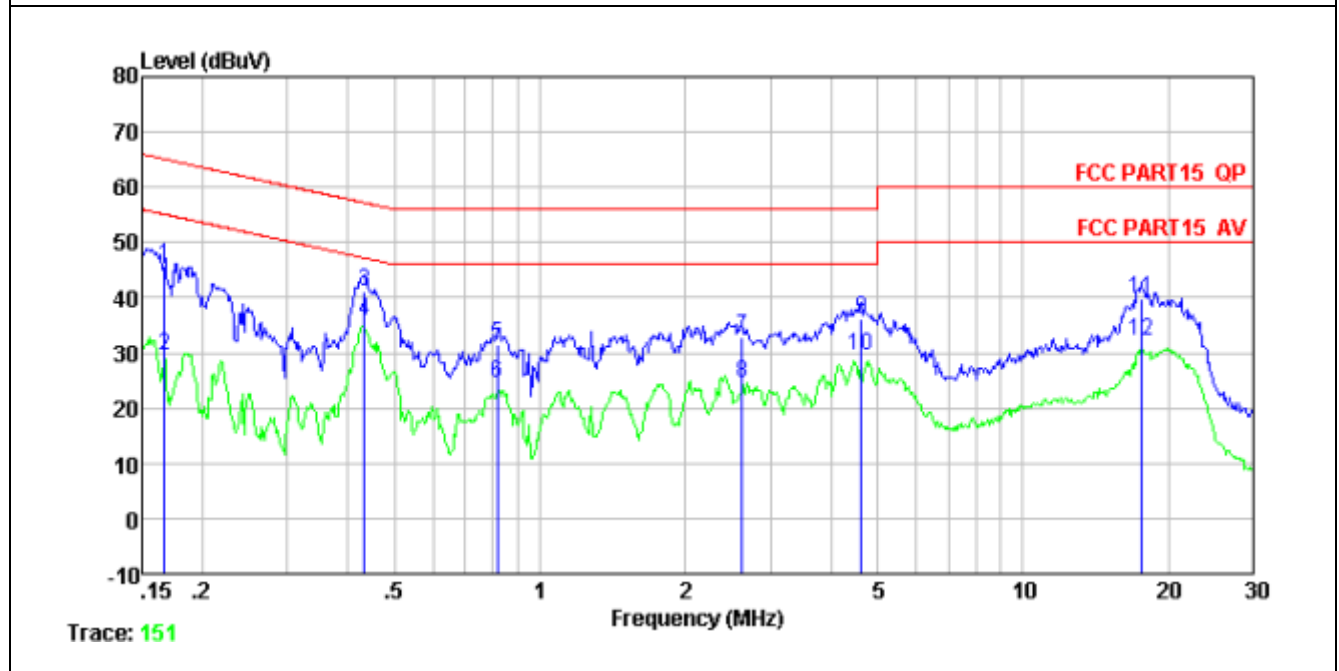
The worst test mode: Wi-Fi TX 802.11g 2437MHz

L line

| Frequency<br>(MHz) | Meter Reading<br>(dBμV) | Factor<br>(dB) | Emission Level<br>(dBμV) | Limits<br>(dBμV) | Margin<br>(dB) | Detector Type |
|--------------------|-------------------------|----------------|--------------------------|------------------|----------------|---------------|
| 0.167              | 46.53                   | 0.67           | 45.86                    | 65.12            | -19.26         | QP            |
| 0.167              | 30.25                   | 0.67           | 29.58                    | 55.12            | -25.54         | AVG           |
| 0.433              | 41.7                    | 0.64           | 41.06                    | 57.20            | -16.14         | QP            |
| 0.433              | 36.36                   | 0.64           | 35.72                    | 47.20            | -11.48         | AVG           |
| 0.817              | 32.27                   | 0.60           | 31.67                    | 56.00            | -24.33         | QP            |
| 0.817              | 25.02                   | 0.60           | 24.42                    | 46.00            | -21.58         | AVG           |
| 2.622              | 33.26                   | 0.46           | 32.80                    | 56.00            | -23.2          | QP            |
| 2.622              | 24.94                   | 0.46           | 24.48                    | 46.00            | -21.52         | AVG           |
| 4.622              | 36.54                   | 0.34           | 36.20                    | 56.00            | -19.8          | QP            |
| 4.622              | 29.88                   | 0.34           | 29.54                    | 46.00            | -16.46         | AVG           |
| 17.568             | 39.9                    | 0.18           | 39.72                    | 60.00            | -20.28         | QP            |
| 17.568             | 32.48                   | 0.18           | 32.30                    | 50.00            | -17.7          | AVG           |

Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.

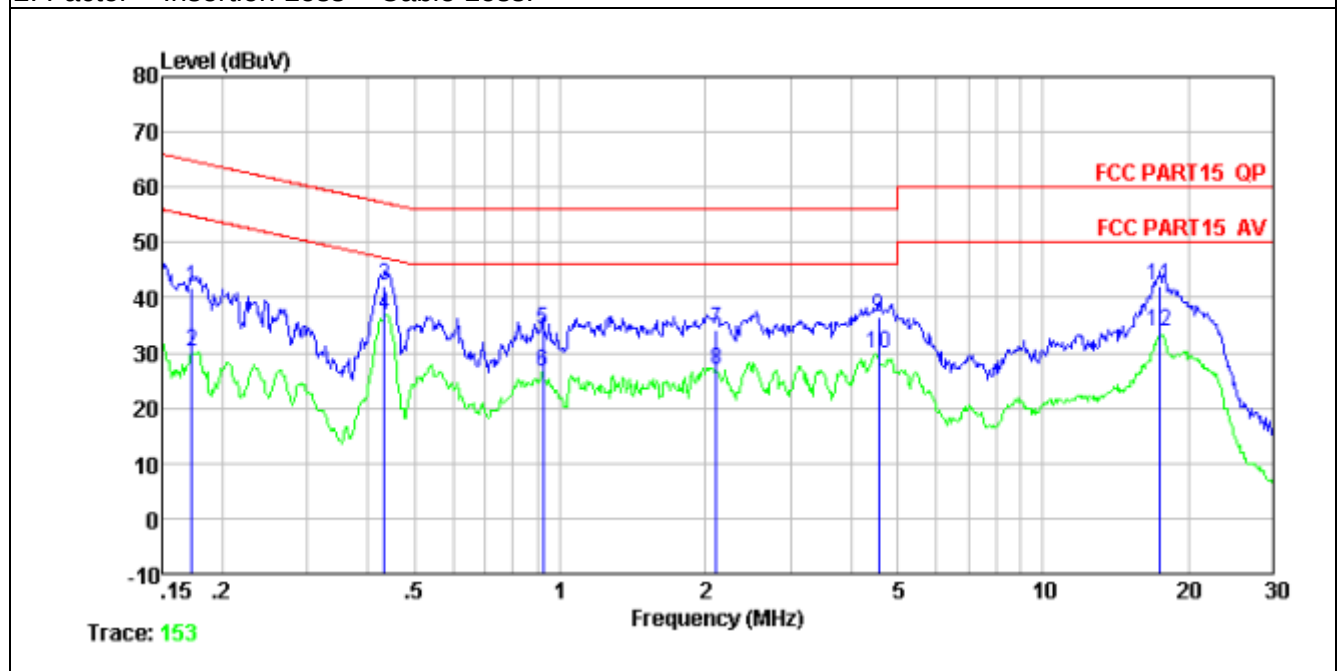


## N line

| Frequency | Meter Reading | Factor | Emission Level | Limits | Margin | Detector Type |
|-----------|---------------|--------|----------------|--------|--------|---------------|
| (MHz)     | (dBμV)        | (dB)   | (dBμV)         | (dBμV) | (dB)   |               |
| 0.173     | 42.63         | 0.67   | 41.96          | 64.81  | -22.85 | QP            |
| 0.173     | 30.91         | 0.67   | 30.24          | 54.81  | -24.57 | AVG           |
| 0.433     | 42.87         | 0.64   | 42.23          | 57.20  | -14.97 | QP            |
| 0.433     | 37.5          | 0.64   | 36.86          | 47.20  | -10.34 | AVG           |
| 0.923     | 34.76         | 0.60   | 34.16          | 56.00  | -21.84 | QP            |
| 0.923     | 27.12         | 0.60   | 26.52          | 46.00  | -19.48 | AVG           |
| 2.110     | 34.58         | 0.46   | 34.12          | 56.00  | -21.88 | QP            |
| 2.110     | 27.21         | 0.46   | 26.75          | 46.00  | -19.25 | AVG           |
| 4.574     | 36.99         | 0.34   | 36.65          | 56.00  | -19.35 | QP            |
| 4.574     | 30.06         | 0.34   | 29.72          | 46.00  | -16.28 | AVG           |
| 17.475    | 42.19         | 0.18   | 42.01          | 60.00  | -17.99 | QP            |
| 17.475    | 33.92         | 0.18   | 33.74          | 50.00  | -16.26 | AVG           |

## Remark:

1. All readings are Quasi-Peak and Average values.
2. Factor = Insertion Loss + Cable Loss.



## 7. §15.209, §15.205, §15.247(D) - Spurious Emissions

### 7.1. Test Equipment

Please refer to section 2 this report.

### 7.2. Test Procedure

The EUT and its simulators are placed on a turntable, which is 0.8 meter high above ground. The turntable can rotate 360 degrees to determine the position of the maximum emission level. EUT is set 3.0 meters away from the receiving antenna, which is mounted on an antenna tower. The antenna can be moved up and down between 1.0 meter and 4 meters to find out the maximum emission level.

Calibrated Loop antenna is used as receiving antenna for frequencies below 30MHz, Calibrated Bilog antenna is used as receiving antenna for frequencies between 30 MHz and 1 GHz, Calibrated Horn antenna is used as receiving antenna for frequencies above 1000MHz. Both horizontal and vertical polarizations of the antenna are set on measurement. In order to find the maximum emission levels, all of the interface cables must be manipulated according to ANSI C63.4: 2003 on radiated emission measurement.

The bandwidth of test receiver is set at 9kHz in below 30MHz. and set at 120kHz in 30-1000MHz, and 1MHz in above 1000MHz.

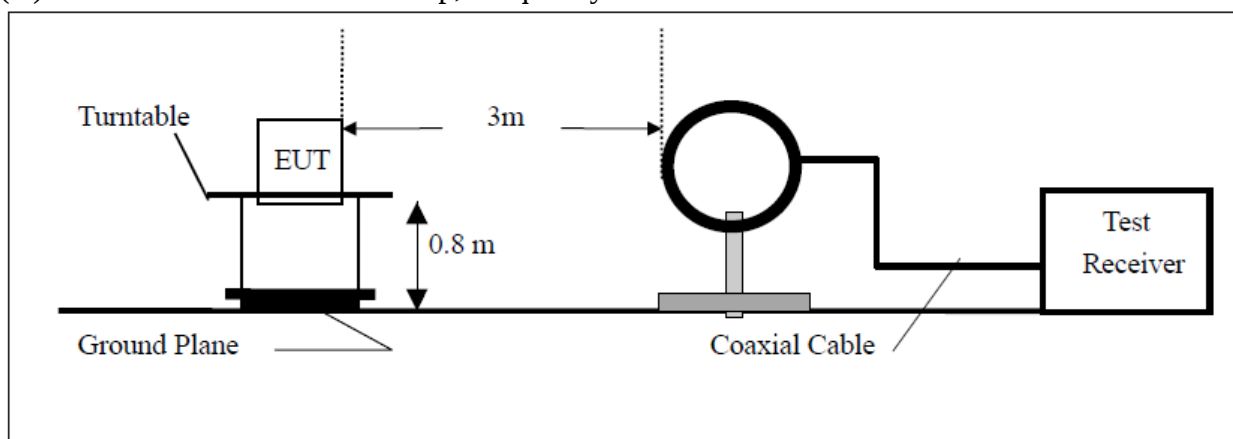
The frequency range from 9kHz to 25GHz is checked.

The final measurement in band 9-90kHz, 110-490kHz and above 1000MHz is performed with Peak detector and Average detector. Except those frequency bands mention above, the final measurement for frequencies below 1000MHz is performed with Quasi Peak detector.

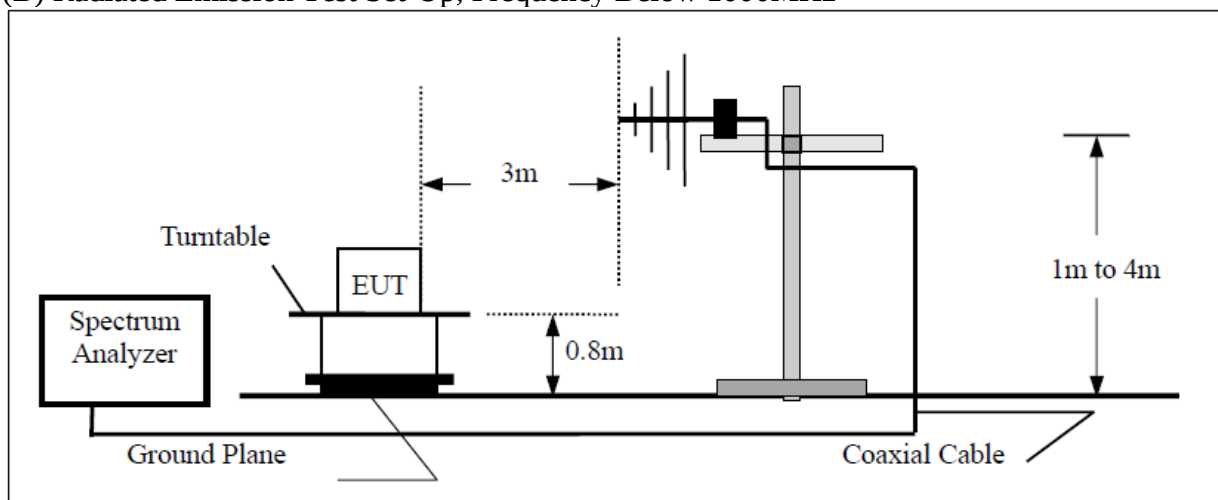
Through three orthogonal axes to determine which attitude and equipment arrangement produces the highest emission relative to the limit. Pretest x, y, z position of EUT, final, select the worst case z position test and record the test results in the report.

### 7.3. Radiated Test Setup

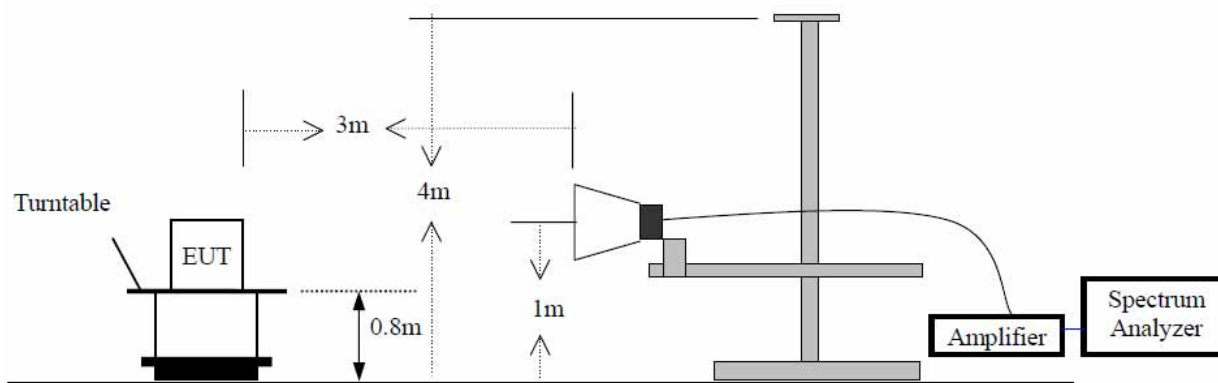
#### (A) Radiated Emission Test Set-Up, Frequency Below 30MHz



(B) Radiated Emission Test Set-Up, Frequency Below 1000MHz



(C) Radiated Emission Test Set-Up, Frequency above 1000MHz



#### 7.4. Radiated Emission Limit

| Frequency<br>(MHz) | Limit                                                   |                                                         |                             | The final<br>measurement in band<br>9-90kHz,<br>110-490kHz and<br>above 1000MHz is<br>performed with<br>Average detector.<br>Except those<br>frequency bands<br>mention above, the<br>final measurement<br>for frequencies<br>below 1000MHz is<br>performed with<br>Quasi Peak detector. |
|--------------------|---------------------------------------------------------|---------------------------------------------------------|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                    | Field Strength of<br>Quasi-peak Value<br>(microvolts/m) | Field Strength of<br>Quasi-peak Value<br>(dB $\mu$ V/m) | Measurement<br>distance (m) |                                                                                                                                                                                                                                                                                          |
| 0.009 - 0.490      | 2400/F(kHz)                                             | /                                                       | 300                         |                                                                                                                                                                                                                                                                                          |
| 0.490 - 1.705      | 24000/F(kHz)                                            | /                                                       | 30                          |                                                                                                                                                                                                                                                                                          |
| 1.705-30           | 30                                                      | 29.5                                                    | 30                          |                                                                                                                                                                                                                                                                                          |
| 30 - 88            | 100                                                     | 40                                                      | 3                           |                                                                                                                                                                                                                                                                                          |
| 88 - 216           | 150                                                     | 43.5                                                    | 3                           |                                                                                                                                                                                                                                                                                          |
| 216 - 960          | 200                                                     | 46                                                      | 3                           |                                                                                                                                                                                                                                                                                          |
| Above 960          | 500                                                     | 54                                                      | 3                           |                                                                                                                                                                                                                                                                                          |

Note: (1) RF Voltage (dBuV)=20 log Voltage(uV)

(2) In the Above Table,the tighter limit applies at the band edges.

(3) Distagnce refers to the distance in meters between the measuring instrument antenna and the closed point of any part of the device or system.

## 7.5. Radiated Emission Test Result

### Pass.

According to the data below, the FCC Part 15.205, 15.209 and 15.247 standards, and had the worst margin of:

-4.00dB at 906.88MHz in the Vertical polarization, with 9KHz to 25 GHz, 3Meters Note: this EUT was tested in 3 orthogonal positions and the worst case position data was reported.

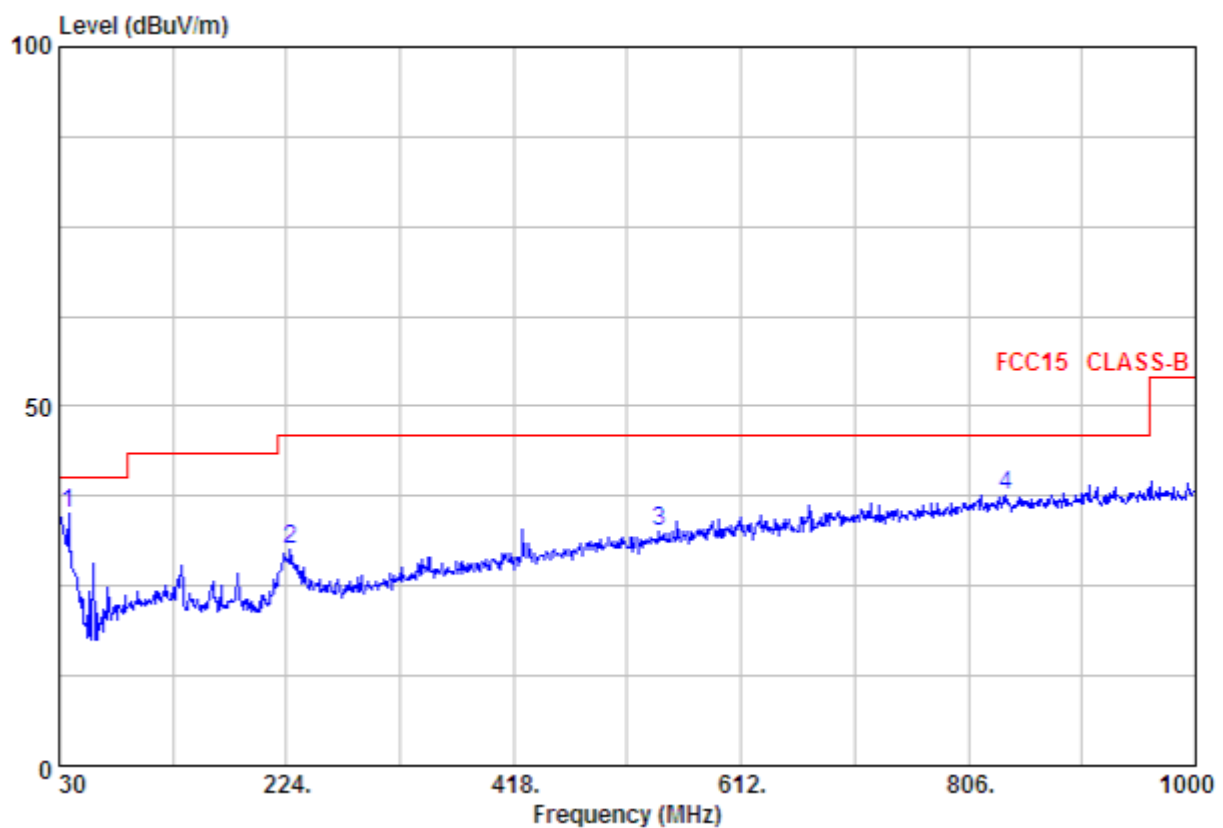
From 9KHz to 30MHz: Conclusion: PASS

Note: The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

### For below 1000MHz

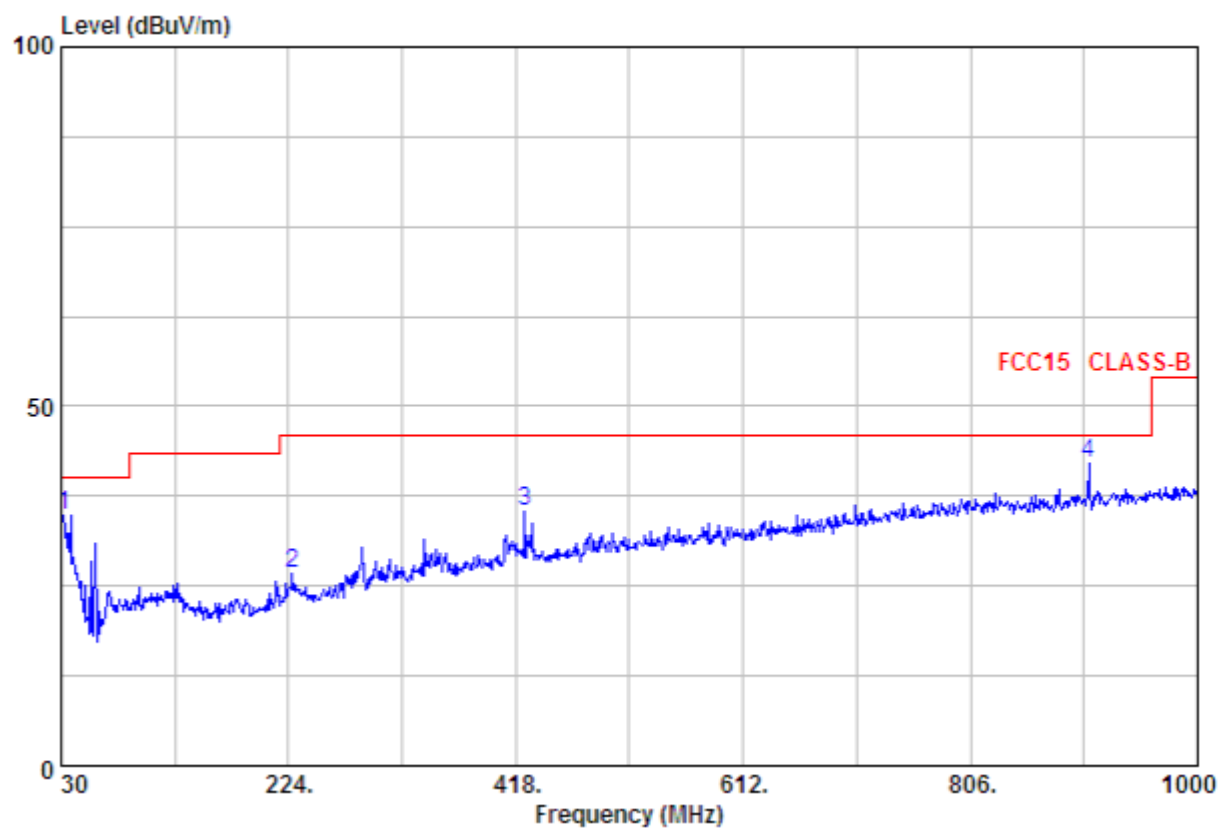
Corrected Factor = Antenna Factor + Cable Loss – Amplifier Gain

Horizontal



| Frequency (MHz) | Meter Reading (dBμV) | Factor (dB) | Emission Level (dBμV/m) | Limit (dBμV) | Margin (dB) | Detector |
|-----------------|----------------------|-------------|-------------------------|--------------|-------------|----------|
| 37.76           | 24.87                | 10.24       | 35.11                   | 40.00        | -4.89       | QP       |
| 226.91          | 18.77                | 11.26       | 30.03                   | 46.00        | -15.97      | QP       |
| 542.16          | 16.98                | 15.58       | 32.56                   | 46.00        | -13.44      | QP       |
| 838.01          | 14.25                | 23.45       | 37.70                   | 46.00        | -8.30       | QP       |

Vertical



| Frequency (MHz) | Meter Reading (dBμV) | Factor (dB) | Emission Level (dBμV/m) | Limit (dBμV) | Margin (dB) | Detector |
|-----------------|----------------------|-------------|-------------------------|--------------|-------------|----------|
| 31.94           | 24.49                | 10.24       | 34.73                   | 40.00        | -5.27       | QP       |
| 226.91          | 15.41                | 11.26       | 26.67                   | 46.00        | -19.33      | QP       |
| 425.76          | 19.78                | 15.58       | 35.36                   | 46.00        | -10.64      | QP       |
| 906.88          | 18.55                | 23.45       | 42.00                   | 46.00        | -4.00       | QP       |

**Test mode 802.11b**  
**Above 1GHz**

| Frequency MHz            | Detector | Meter Reading dBuV | Polar H / V | Antenna Loss dB | Cable loss dB | Amplifier dB | Correction Amplitude dBuV/m | Limit dBuV/m | Margin dB |
|--------------------------|----------|--------------------|-------------|-----------------|---------------|--------------|-----------------------------|--------------|-----------|
| Low Channel (2412MHz)    |          |                    |             |                 |               |              |                             |              |           |
| 4824                     | PK       | 50.45              | V           | 34.1            | 5.2           | 33.0         | 56.75                       | 74.00        | -17.25    |
| 4824                     | PK       | 51.05              | H           | 34.1            | 5.2           | 33.0         | 57.35                       | 74.00        | -16.65    |
| 7236                     | PK       | 40.53              | V           | 37.4            | 6.1           | 33.5         | 50.53                       | 74.00        | -23.47    |
| 7236                     | PK       | 43.43              | H           | 37.4            | 6.1           | 33.5         | 53.43                       | 74.00        | -20.57    |
| 4824                     | AV       | 30.97              | V           | 34.1            | 5.2           | 33.0         | 37.27                       | 54.00        | -16.73    |
| 4824                     | AV       | 32.30              | H           | 34.1            | 5.2           | 33.0         | 38.6                        | 54.00        | -15.4     |
| 7236                     | AV       | 26.88              | V           | 37.4            | 6.1           | 33.5         | 36.88                       | 54.00        | -17.12    |
| 7236                     | AV       | 27.88              | H           | 37.4            | 6.1           | 33.5         | 37.88                       | 54.00        | -16.12    |
| Middle Channel (2437MHz) |          |                    |             |                 |               |              |                             |              |           |
| 4874                     | PK       | 50.37              | V           | 34.1            | 5.2           | 33.0         | 56.67                       | 74.00        | -17.33    |
| 4874                     | PK       | 50.01              | H           | 34.1            | 5.2           | 33.0         | 56.31                       | 74.00        | -17.69    |
| 7311                     | PK       | 43.22              | V           | 37.4            | 6.1           | 33.5         | 53.22                       | 74.00        | -20.78    |
| 7311                     | PK       | 42.57              | H           | 37.4            | 6.1           | 33.5         | 52.57                       | 74.00        | -21.43    |
| 4874                     | AV       | 32.18              | V           | 34.1            | 5.2           | 33.0         | 38.48                       | 54.00        | -15.52    |
| 4874                     | AV       | 33.00              | H           | 34.1            | 5.2           | 33.0         | 39.3                        | 54.00        | -14.7     |
| 7311                     | AV       | 28.13              | V           | 37.4            | 6.1           | 33.5         | 38.13                       | 54.00        | -15.87    |
| 7311                     | AV       | 29.98              | H           | 37.4            | 6.1           | 33.5         | 39.98                       | 54.00        | -14.02    |
| HighChannel (2462MHz)    |          |                    |             |                 |               |              |                             |              |           |
| 4924                     | PK       | 49.72              | V           | 34.1            | 5.2           | 33.0         | 56.02                       | 74.00        | -17.98    |
| 4924                     | PK       | 51.20              | H           | 34.1            | 5.2           | 33.0         | 57.5                        | 74.00        | -16.5     |
| 7386                     | PK       | 42.62              | V           | 37.4            | 6.1           | 33.5         | 52.62                       | 74.00        | -21.38    |
| 7386                     | PK       | 43.07              | H           | 37.4            | 6.1           | 33.5         | 53.07                       | 74.00        | -20.93    |
| 4924                     | AV       | 31.74              | V           | 34.1            | 5.2           | 33.0         | 38.04                       | 54.00        | -15.96    |
| 4924                     | AV       | 33.25              | H           | 34.1            | 5.2           | 33.0         | 39.55                       | 54.00        | -14.45    |
| 7386                     | AV       | 27.76              | V           | 37.4            | 6.1           | 33.5         | 37.76                       | 54.00        | -16.24    |
| 7386                     | AV       | 28.90              | H           | 37.4            | 6.1           | 33.5         | 38.9                        | 54.00        | -15.1     |

Note: 1. Emissions attenuated more than 20 dB below the permissible value are not reported.  
 2. Level = Meter Reading + Antenna Loss + Cable loss - Amplifier.  
 3. The average measurement was not performed when the peak measured data under the limit of average detection.

Test mode 802.11g  
Above 1GHz

| Frequency MHz            | Detector | Meter Reading dBuV | Polar H / V | Antenna Loss dB | Cable loss dB | Amplifier dB | Correction Amplitude dBuV/m | Limit dBuV/m | Margin dB |
|--------------------------|----------|--------------------|-------------|-----------------|---------------|--------------|-----------------------------|--------------|-----------|
| Low Channel (2412MHz)    |          |                    |             |                 |               |              |                             |              |           |
| 4824                     | PK       | 47.21              | V           | 34.1            | 5.2           | 33.0         | 53.51                       | 74.00        | -20.49    |
| 4824                     | PK       | 46.78              | H           | 34.1            | 5.2           | 33.0         | 53.08                       | 74.00        | -20.92    |
| 7236                     | PK       | 41.00              | V           | 37.4            | 6.1           | 33.5         | 51                          | 74.00        | -23       |
| 7236                     | PK       | 41.05              | H           | 37.4            | 6.1           | 33.5         | 51.05                       | 74.00        | -22.95    |
| 4824                     | AV       | 31.30              | V           | 34.1            | 5.2           | 33.0         | 37.6                        | 54.00        | -16.4     |
| 4824                     | AV       | 30.86              | H           | 34.1            | 5.2           | 33.0         | 37.16                       | 54.00        | -16.84    |
| 7236                     | AV       | 28.17              | V           | 37.4            | 6.1           | 33.5         | 38.17                       | 54.00        | -15.83    |
| 7236                     | AV       | 28.32              | H           | 37.4            | 6.1           | 33.5         | 38.32                       | 54.00        | -15.68    |
| Middle Channel (2437MHz) |          |                    |             |                 |               |              |                             |              |           |
| 4874                     | PK       | 49.05              | V           | 34.1            | 5.2           | 33.0         | 55.35                       | 74.00        | -18.65    |
| 4874                     | PK       | 47.95              | H           | 34.1            | 5.2           | 33.0         | 54.25                       | 74.00        | -19.75    |
| 7311                     | PK       | 43.10              | V           | 37.4            | 6.1           | 33.5         | 53.1                        | 74.00        | -20.9     |
| 7311                     | PK       | 41.57              | H           | 37.4            | 6.1           | 33.5         | 51.57                       | 74.00        | -22.43    |
| 4874                     | AV       | 32.48              | V           | 34.1            | 5.2           | 33.0         | 38.78                       | 54.00        | -15.22    |
| 4874                     | AV       | 30.01              | H           | 34.1            | 5.2           | 33.0         | 36.31                       | 54.00        | -17.69    |
| 7311                     | AV       | 28.87              | V           | 37.4            | 6.1           | 33.5         | 38.87                       | 54.00        | -15.13    |
| 7311                     | AV       | 26.80              | H           | 37.4            | 6.1           | 33.5         | 36.8                        | 54.00        | -17.2     |
| HighChannel (2462MHz)    |          |                    |             |                 |               |              |                             |              |           |
| 4924                     | PK       | 48.07              | V           | 34.1            | 5.2           | 33.0         | 54.37                       | 74.00        | -19.63    |
| 4924                     | PK       | 48.50              | H           | 34.1            | 5.2           | 33.0         | 54.8                        | 74.00        | -19.2     |
| 7386                     | PK       | 41.53              | V           | 37.4            | 6.1           | 33.5         | 51.53                       | 74.00        | -22.47    |
| 7386                     | PK       | 43.10              | H           | 37.4            | 6.1           | 33.5         | 53.1                        | 74.00        | -20.9     |
| 4924                     | AV       | 32.50              | V           | 34.1            | 5.2           | 33.0         | 38.8                        | 54.00        | -15.2     |
| 4924                     | AV       | 32.82              | H           | 34.1            | 5.2           | 33.0         | 39.12                       | 54.00        | -14.88    |
| 7386                     | AV       | 28.63              | V           | 37.4            | 6.1           | 33.5         | 38.63                       | 54.00        | -15.37    |
| 7386                     | AV       | 29.90              | H           | 37.4            | 6.1           | 33.5         | 39.9                        | 54.00        | -14.1     |

Note: 1. Emissions attenuated more than 20 dB below the permissible value are not reported.  
 2. Level = Meter Reading + Antenna Loss + Cable loss - Amplifier.  
 3. The average measurement was not performed when the peak measured data under the limit of average detection.

Test mode 802.11n(H20)

**Above 1GHz**

| Frequency MHz            | Detector | Meter Reading dBuV | Polar H / V | Antenna Loss dB | Cable loss dB | Amplifier dB | Correction Amplitude dBuV/m | Limit dBuV/m | Margin dB |
|--------------------------|----------|--------------------|-------------|-----------------|---------------|--------------|-----------------------------|--------------|-----------|
| Low Channel (2412MHz)    |          |                    |             |                 |               |              |                             |              |           |
| 4824                     | PK       | 47.11              | V           | 34.1            | 5.2           | 33.0         | 53.41                       | 74.00        | -20.59    |
| 4824                     | PK       | 48.25              | H           | 34.1            | 5.2           | 33.0         | 54.55                       | 74.00        | -19.45    |
| 7236                     | PK       | 42.36              | V           | 37.4            | 6.1           | 33.5         | 52.36                       | 74.00        | -21.64    |
| 7236                     | PK       | 41.58              | H           | 37.4            | 6.1           | 33.5         | 51.58                       | 74.00        | -22.42    |
| 4824                     | AV       | 31.80              | V           | 34.1            | 5.2           | 33.0         | 38.1                        | 54.00        | -15.9     |
| 4824                     | AV       | 33.21              | H           | 34.1            | 5.2           | 33.0         | 39.51                       | 54.00        | -14.49    |
| 7236                     | AV       | 21.96              | V           | 37.4            | 6.1           | 33.5         | 31.96                       | 54.00        | -22.04    |
| 7236                     | AV       | 29.35              | H           | 37.4            | 6.1           | 33.5         | 39.35                       | 54.00        | -14.65    |
| Middle Channel (2437MHz) |          |                    |             |                 |               |              |                             |              |           |
| 4874                     | PK       | 48.03              | V           | 34.1            | 5.2           | 33.0         | 54.33                       | 74.00        | -19.67    |
| 4874                     | PK       | 48.53              | H           | 34.1            | 5.2           | 33.0         | 54.83                       | 74.00        | -19.17    |
| 7311                     | PK       | 42.16              | V           | 37.4            | 6.1           | 33.5         | 52.16                       | 74.00        | -21.84    |
| 7311                     | PK       | 41.61              | H           | 37.4            | 6.1           | 33.5         | 51.61                       | 74.00        | -22.39    |
| 4874                     | AV       | 31.26              | V           | 34.1            | 5.2           | 33.0         | 37.56                       | 54.00        | -16.44    |
| 4874                     | AV       | 30.85              | H           | 34.1            | 5.2           | 33.0         | 37.15                       | 54.00        | -16.85    |
| 7311                     | AV       | 27.67              | V           | 37.4            | 6.1           | 33.5         | 37.67                       | 54.00        | -16.33    |
| 7311                     | AV       | 27.26              | H           | 37.4            | 6.1           | 33.5         | 37.26                       | 54.00        | -16.74    |
| HighChannel (2462MHz)    |          |                    |             |                 |               |              |                             |              |           |
| 4924                     | PK       | 49.01              | V           | 34.1            | 5.2           | 33.0         | 55.31                       | 74.00        | -18.69    |
| 4924                     | PK       | 49.34              | H           | 34.1            | 5.2           | 33.0         | 55.64                       | 74.00        | -18.36    |
| 7386                     | PK       | 43.51              | V           | 37.4            | 6.1           | 33.5         | 53.51                       | 74.00        | -20.49    |
| 7386                     | PK       | 41.61              | H           | 37.4            | 6.1           | 33.5         | 51.61                       | 74.00        | -22.39    |
| 4924                     | AV       | 32.00              | V           | 34.1            | 5.2           | 33.0         | 38.3                        | 54.00        | -15.7     |
| 4924                     | AV       | 31.28              | H           | 34.1            | 5.2           | 33.0         | 37.58                       | 54.00        | -16.42    |
| 7386                     | AV       | 27.75              | V           | 37.4            | 6.1           | 33.5         | 37.75                       | 54.00        | -16.25    |
| 7386                     | AV       | 28.23              | H           | 37.4            | 6.1           | 33.5         | 38.23                       | 54.00        | -15.77    |

Note: 1. Emissions attenuated more than 20 dB below the permissible value are not reported.  
 2. Level = Meter Reading + Antenna Loss + Cable loss - Amplifier.  
 3. The average measurement was not performed when the peak measured data under the limit of average detection.

Test mode 802.11n(H40)

**Above 1GHz**

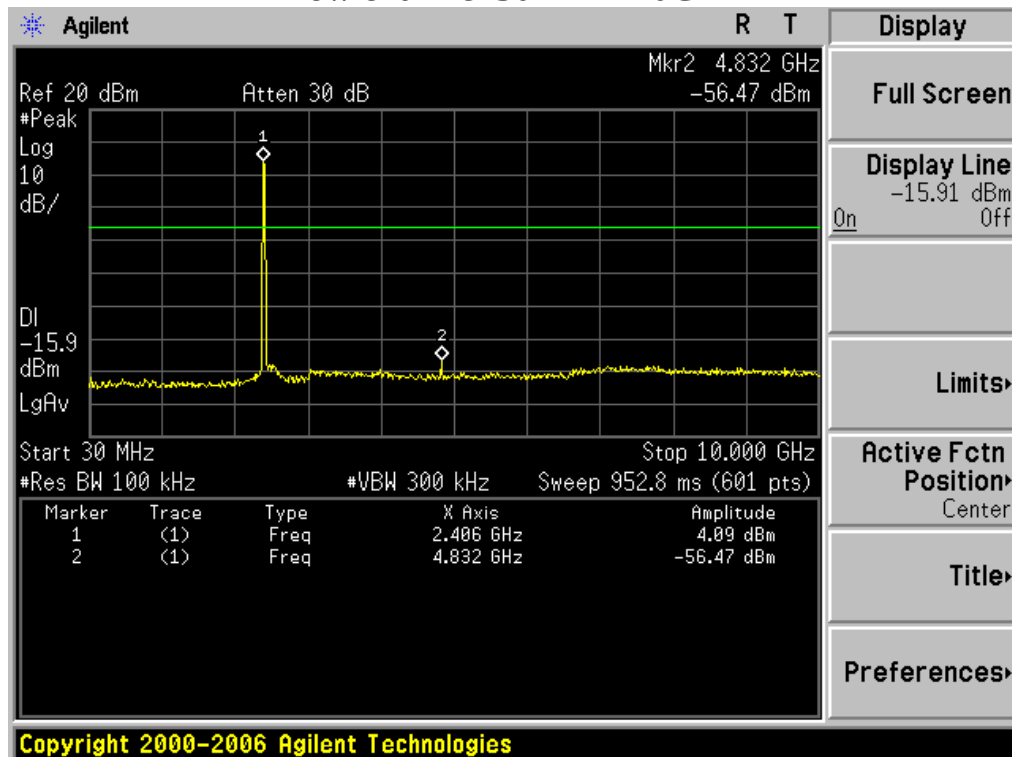
| Frequency MHz            | Detector | Meter Reading dBuV | Polar H / V | Antenna Loss dB | Cable loss dB | Amplifier dB | Correction Amplitude dBuV/m | Limit dBuV/m | Margin dB |
|--------------------------|----------|--------------------|-------------|-----------------|---------------|--------------|-----------------------------|--------------|-----------|
| Low Channel (2422MHz)    |          |                    |             |                 |               |              |                             |              |           |
| 4844                     | PK       | 46.35              | V           | 34.1            | 5.2           | 33.0         | 52.65                       | 74.00        | -21.35    |
| 4844                     | PK       | 46.97              | H           | 34.1            | 5.2           | 33.0         | 53.27                       | 74.00        | -20.73    |
| 7266                     | PK       | 41.16              | V           | 37.4            | 6.1           | 33.5         | 51.16                       | 74.00        | -22.84    |
| 7266                     | PK       | 41.02              | H           | 37.4            | 6.1           | 33.5         | 51.02                       | 74.00        | -22.98    |
| 4844                     | AV       | 31.66              | V           | 34.1            | 5.2           | 33.0         | 37.96                       | 54.00        | -16.04    |
| 4844                     | AV       | 32.26              | H           | 34.1            | 5.2           | 33.0         | 38.56                       | 54.00        | -15.44    |
| 7266                     | AV       | 28.91              | V           | 37.4            | 6.1           | 33.5         | 38.91                       | 54.00        | -15.09    |
| 7236                     | AV       | 29.35              | H           | 37.4            | 6.1           | 33.5         | 39.35                       | 54.00        | -14.65    |
| Middle Channel (2437MHz) |          |                    |             |                 |               |              |                             |              |           |
| 4874                     | PK       | 47.47              | V           | 34.1            | 5.2           | 33.0         | 53.77                       | 74.00        | -20.23    |
| 4874                     | PK       | 46.98              | H           | 34.1            | 5.2           | 33.0         | 53.28                       | 74.00        | -20.72    |
| 7311                     | PK       | 41.03              | V           | 37.4            | 6.1           | 33.5         | 51.03                       | 74.00        | -22.97    |
| 7311                     | PK       | 41.22              | H           | 37.4            | 6.1           | 33.5         | 51.22                       | 74.00        | -22.78    |
| 4874                     | AV       | 32.62              | V           | 34.1            | 5.2           | 33.0         | 38.92                       | 54.00        | -15.08    |
| 4874                     | AV       | 31.73              | H           | 34.1            | 5.2           | 33.0         | 38.03                       | 54.00        | -15.97    |
| 7311                     | AV       | 28.77              | V           | 37.4            | 6.1           | 33.5         | 38.77                       | 54.00        | -15.23    |
| 7311                     | AV       | 28.98              | H           | 37.4            | 6.1           | 33.5         | 38.98                       | 54.00        | -15.02    |
| HighChannel (2452MHz)    |          |                    |             |                 |               |              |                             |              |           |
| 4904                     | PK       | 47.57              | V           | 34.1            | 5.2           | 33.0         | 53.87                       | 74.00        | -20.13    |
| 4904                     | PK       | 47.45              | H           | 34.1            | 5.2           | 33.0         | 53.75                       | 74.00        | -20.25    |
| 7356                     | PK       | 41.16              | V           | 37.4            | 6.1           | 33.5         | 51.16                       | 74.00        | -22.84    |
| 7356                     | PK       | 40.88              | H           | 37.4            | 6.1           | 33.5         | 50.88                       | 74.00        | -23.12    |
| 4904                     | AV       | 32.30              | V           | 34.1            | 5.2           | 33.0         | 38.6                        | 54.00        | -15.4     |
| 4904                     | AV       | 32.03              | H           | 34.1            | 5.2           | 33.0         | 38.33                       | 54.00        | -15.67    |
| 7356                     | AV       | 28.42              | V           | 37.4            | 6.1           | 33.5         | 38.42                       | 54.00        | -15.58    |
| 7356                     | AV       | 29.07              | H           | 37.4            | 6.1           | 33.5         | 39.07                       | 54.00        | -14.93    |

- Note: 1. Emissions attenuated more than 20 dB below the permissible value are not reported.  
 2. Level = Meter Reading + Antenna Loss + Cable loss - Amplifier.  
 3. The average measurement was not performed when the peak measured data under the limit of average detection.

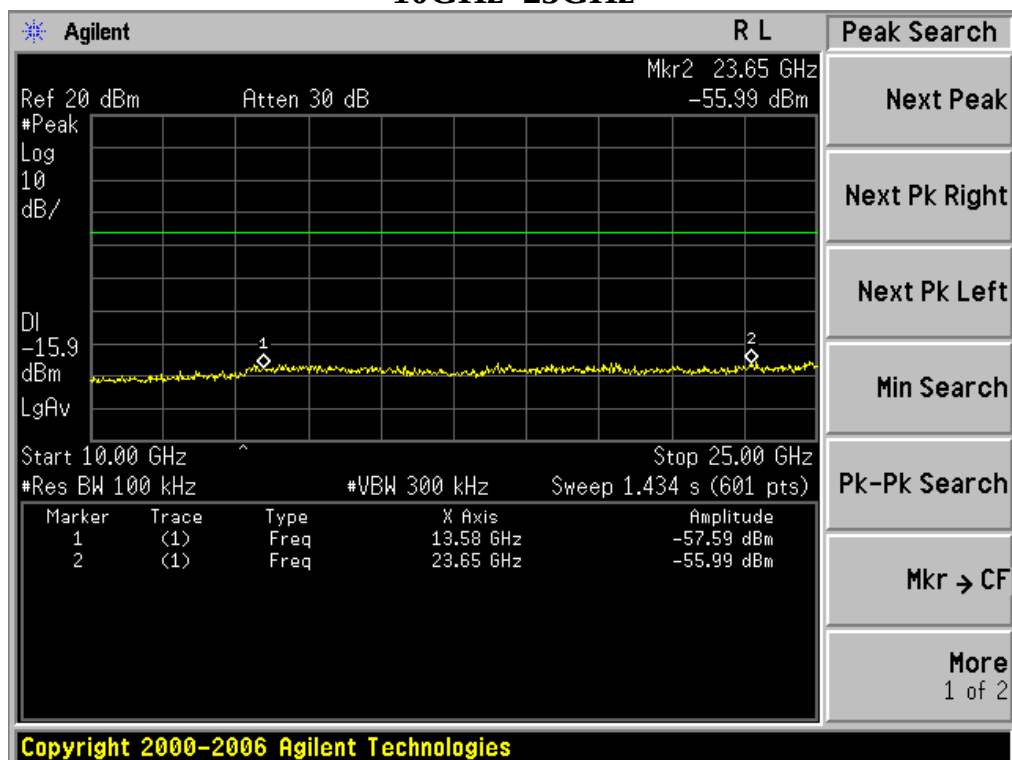
## Antenna port conducted spurious emissions

802.11b mode:

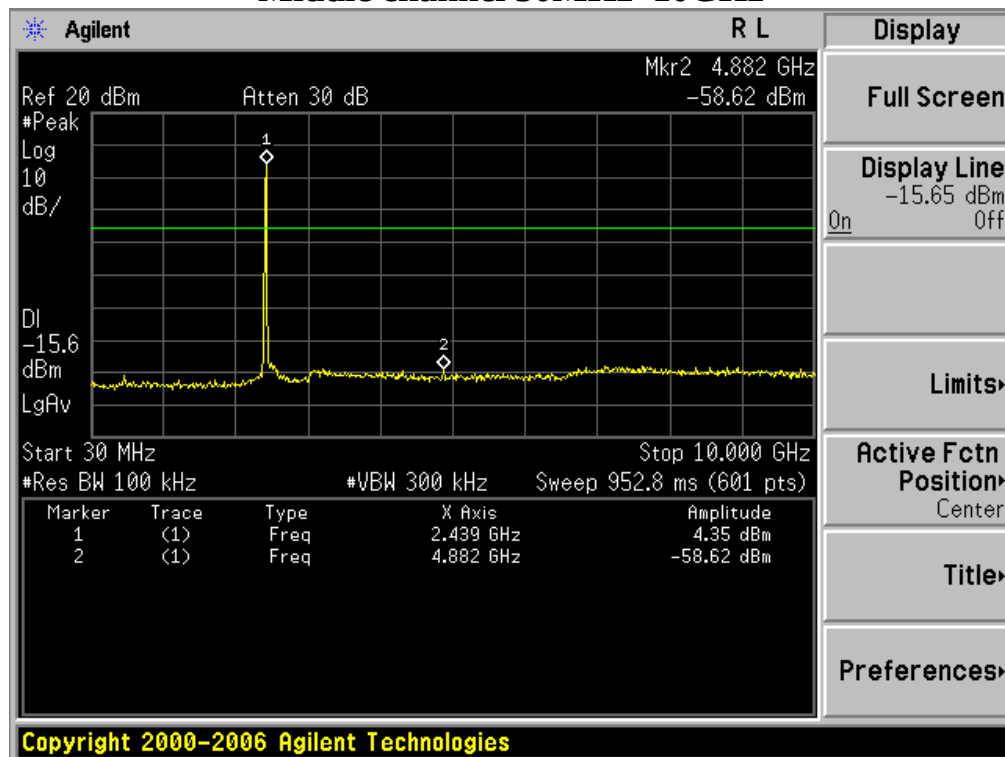
## Low channel 30MHz~10GHz



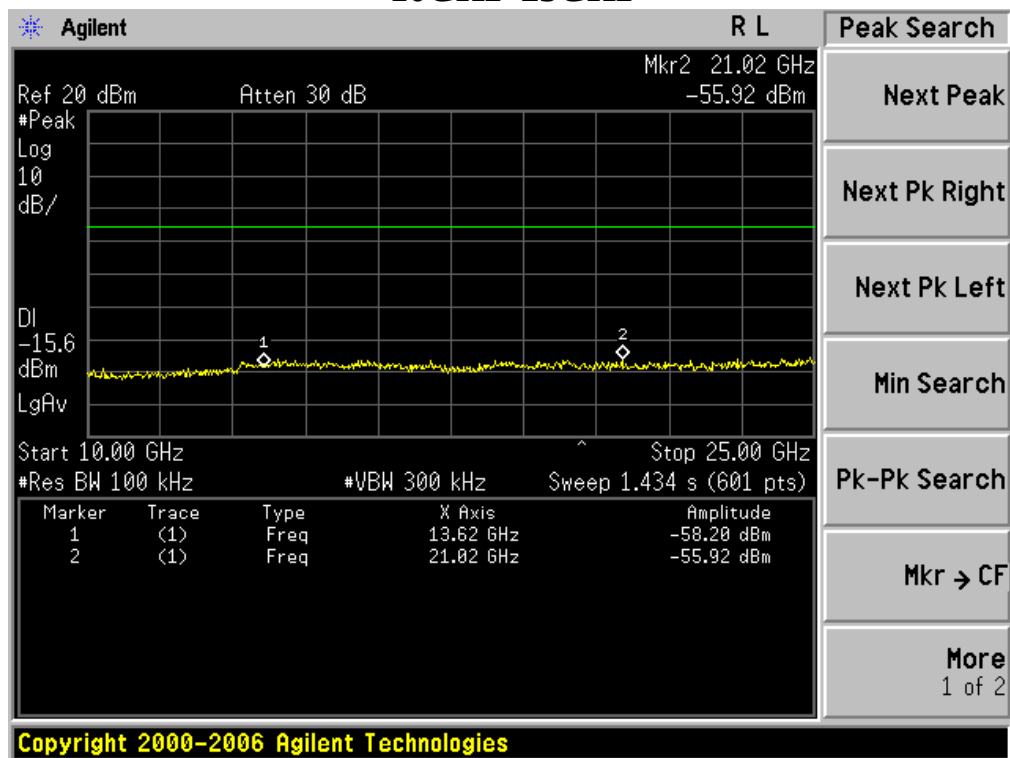
## 10GHz~25GHz



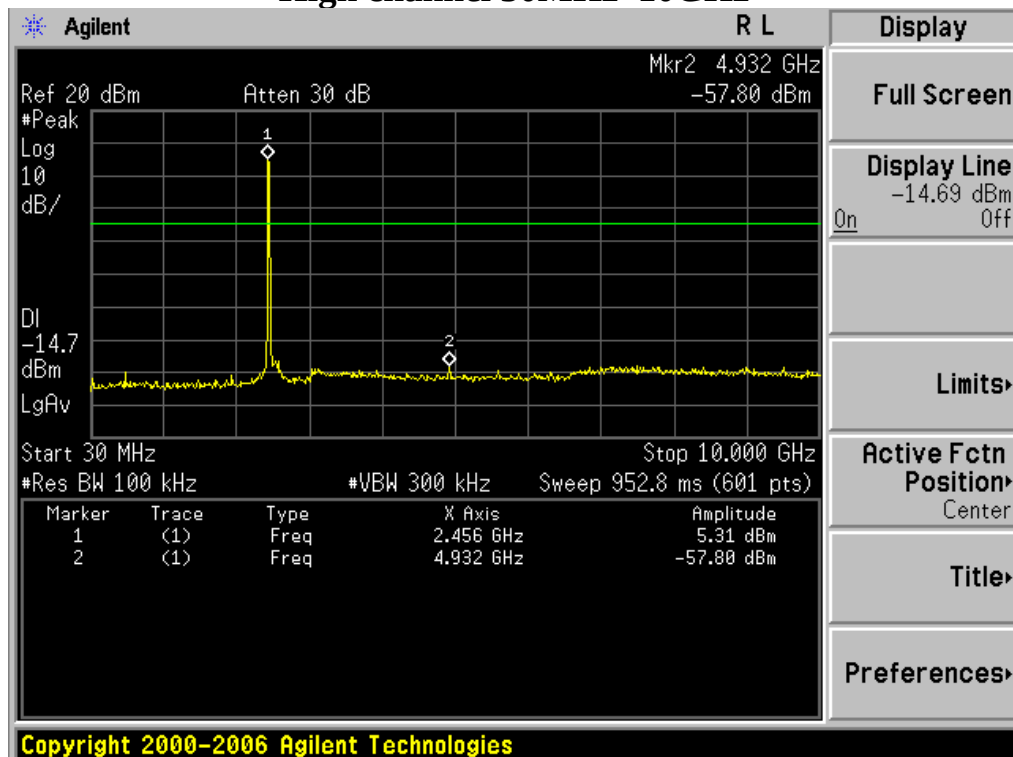
### Middle channel 30MHz~10GHz



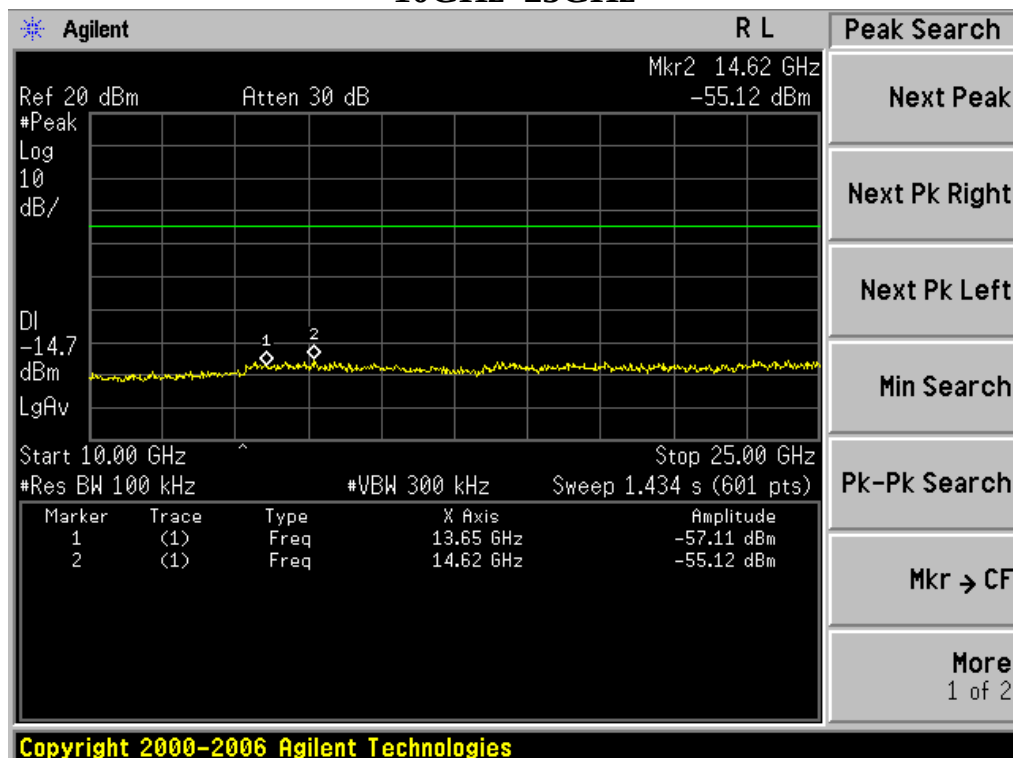
### 10GHz~25GHz



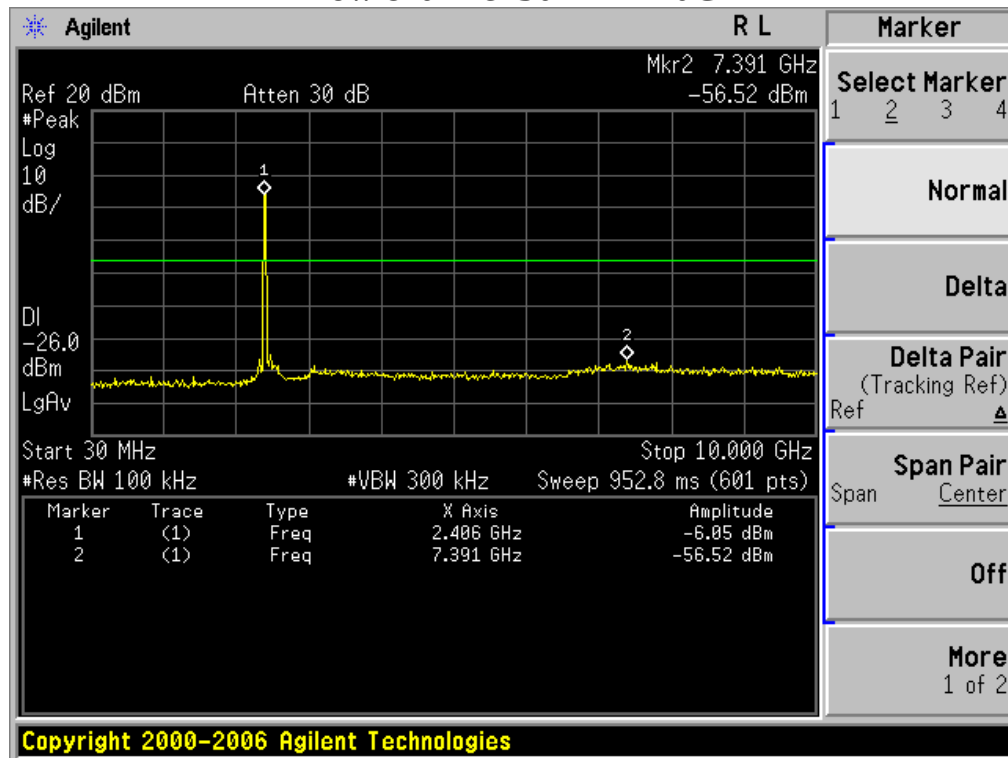
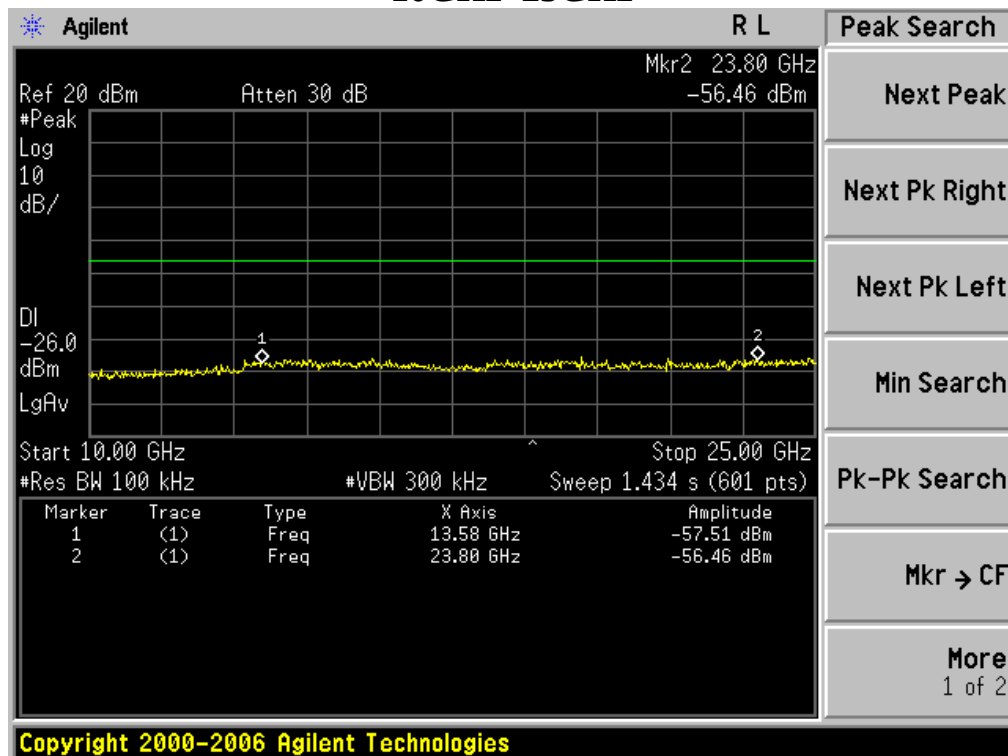
## High channel 30MHz~10GHz



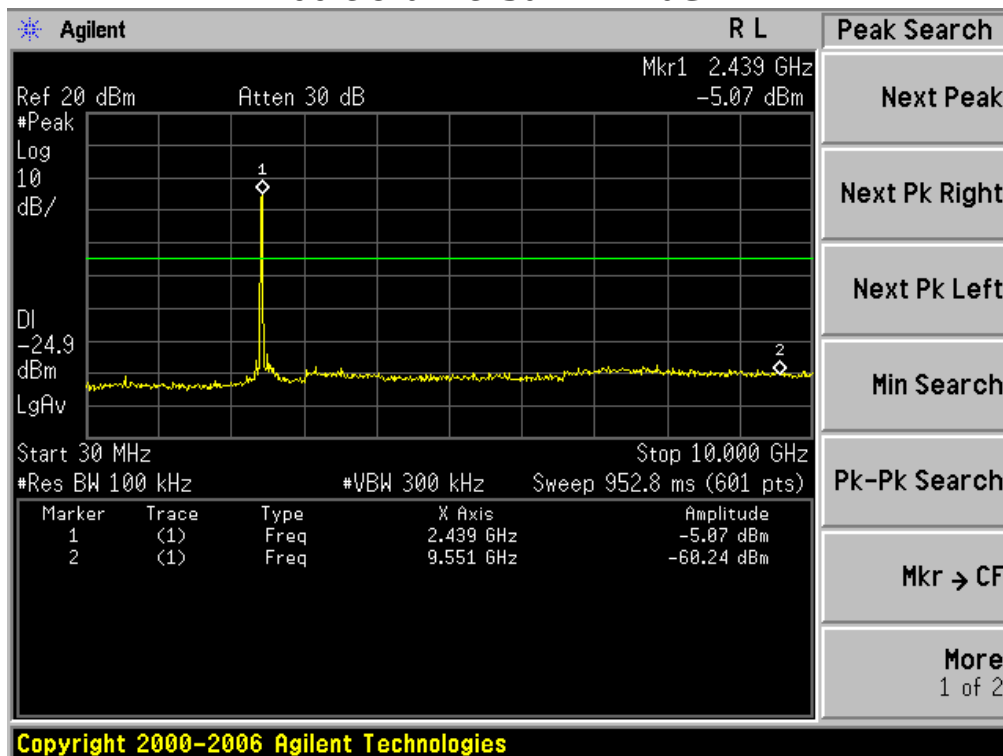
## 10GHz~25GHz



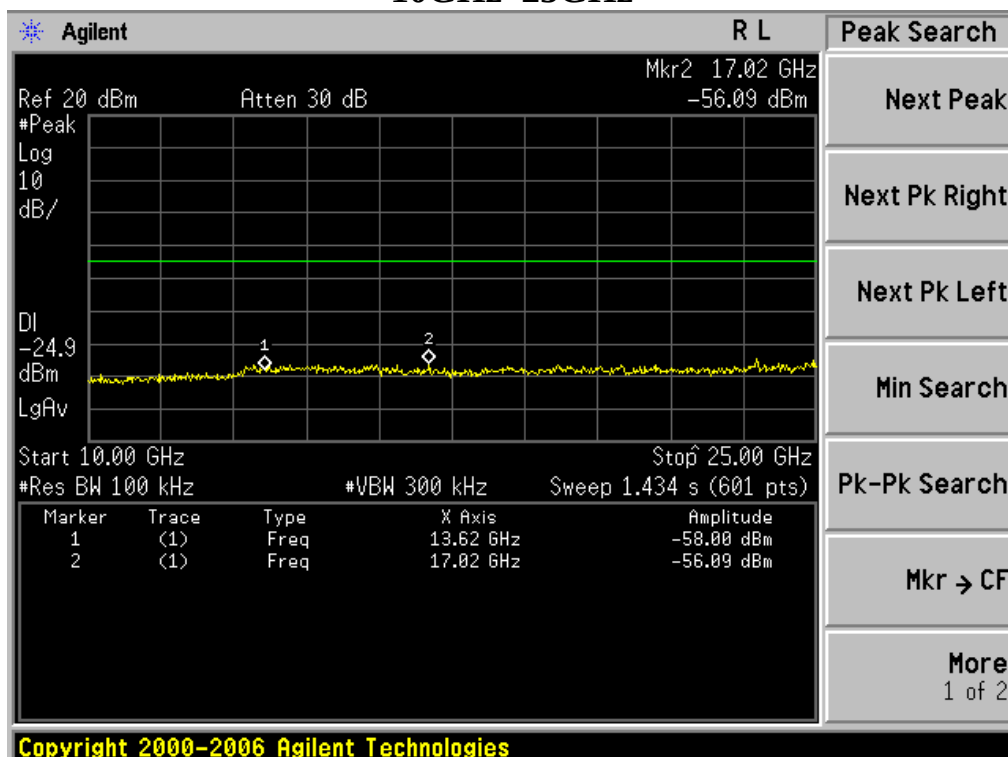
802.11g mode:

**Low channel 30MHz~10GHz****10GHz~25GHz**

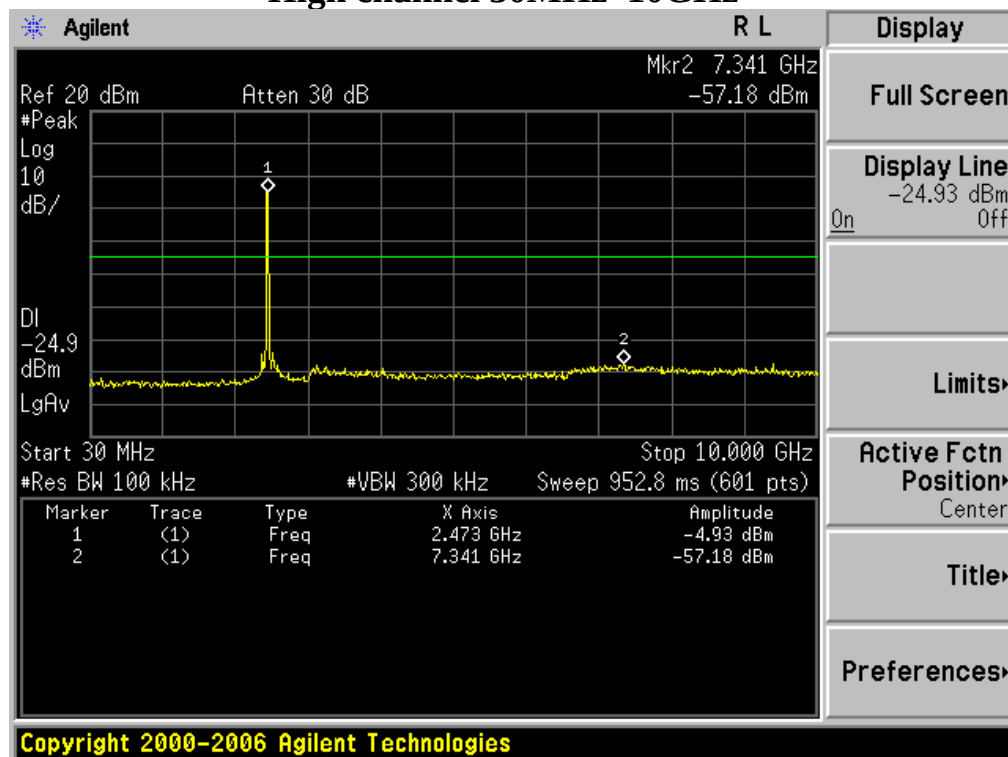
### Middle channel 30MHz~10GHz



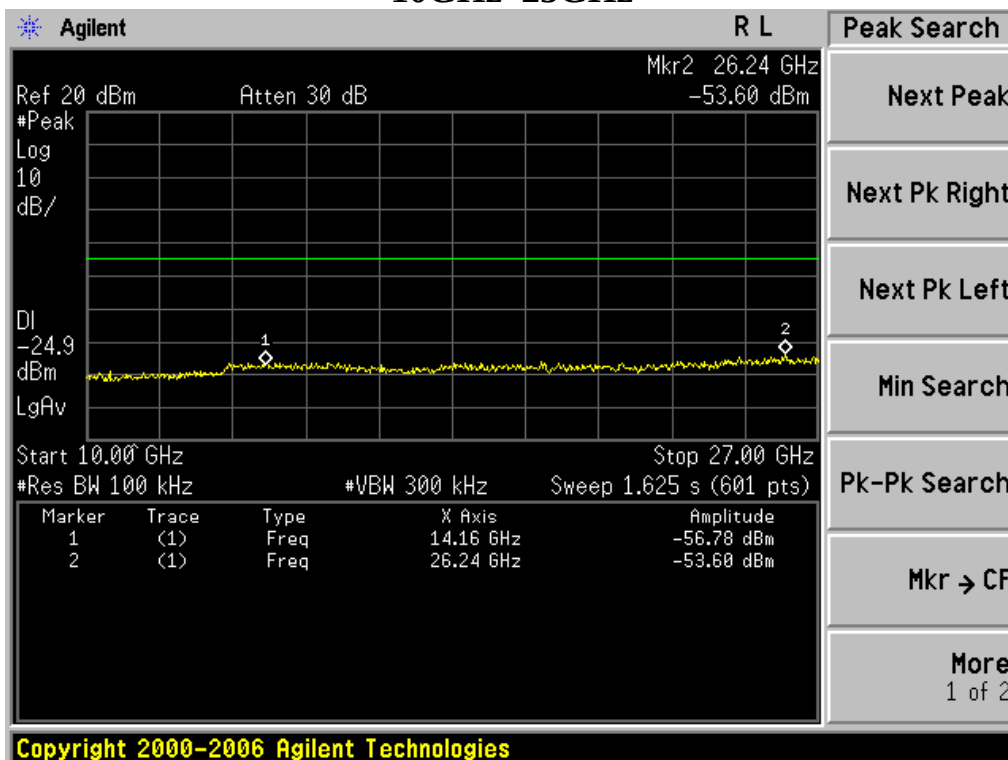
### 10GHz~25GHz



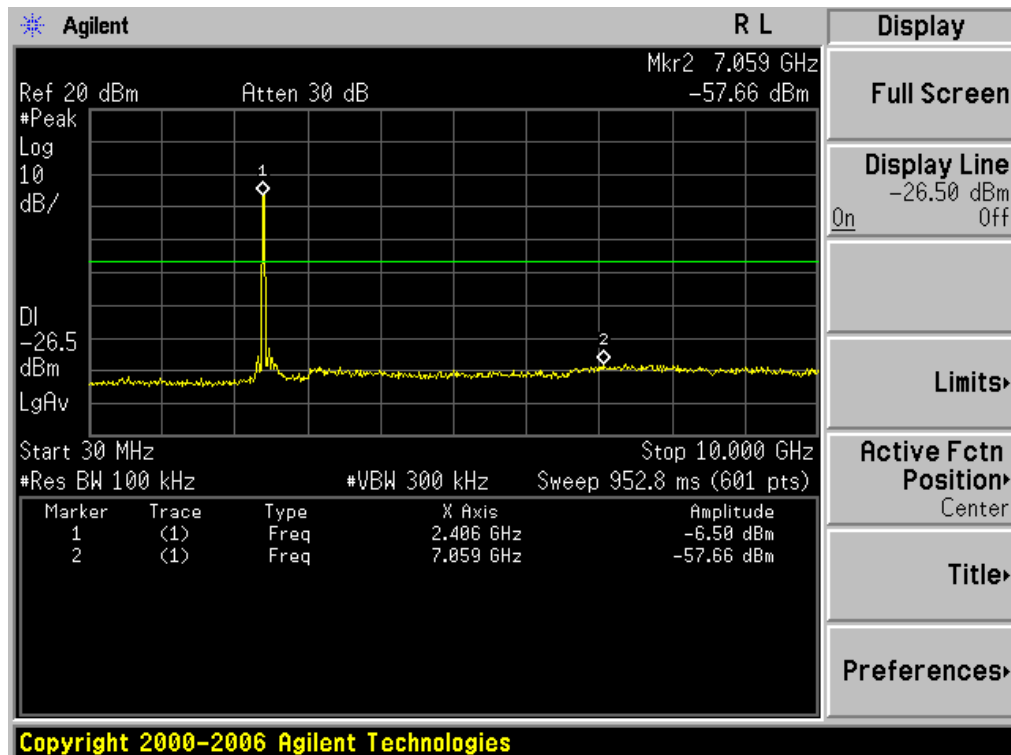
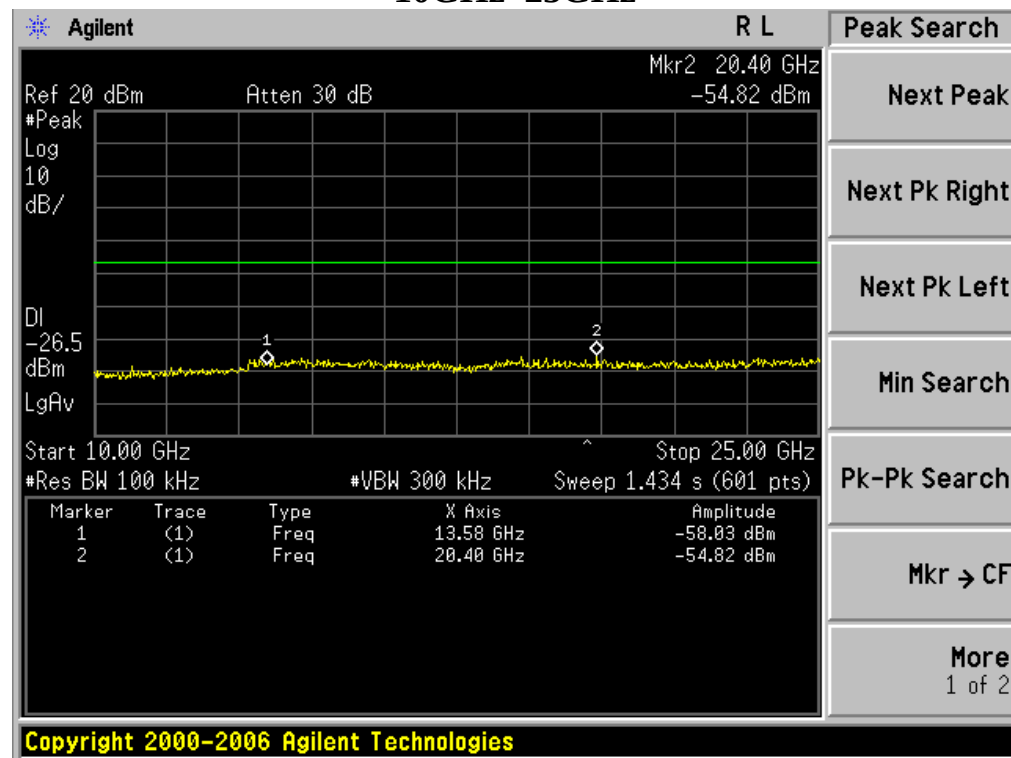
### High channel 30MHz~10GHz



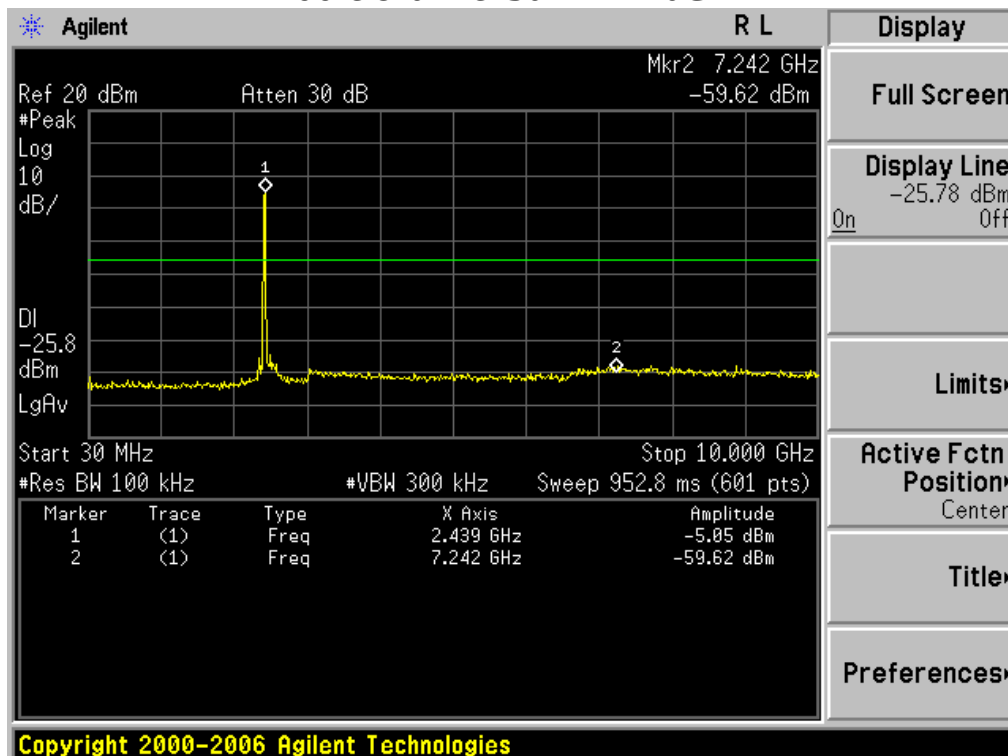
### 10GHz~25GHz



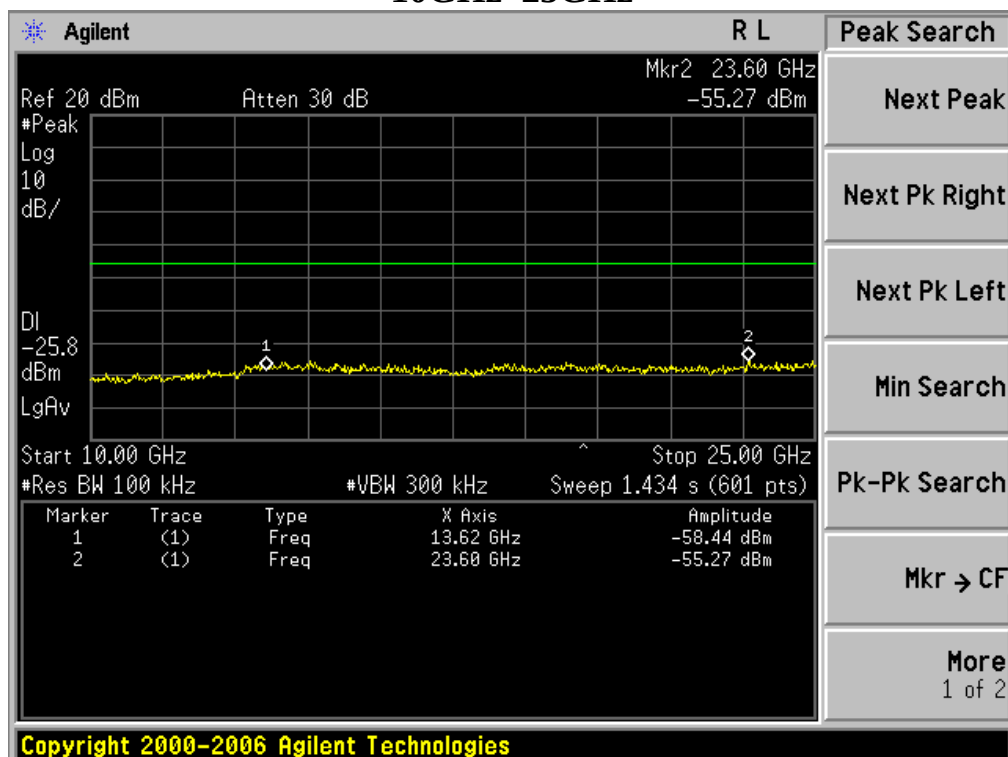
802.11n (20M) mode:

**Low channel 30MHz~10GHz****10GHz~25GHz**

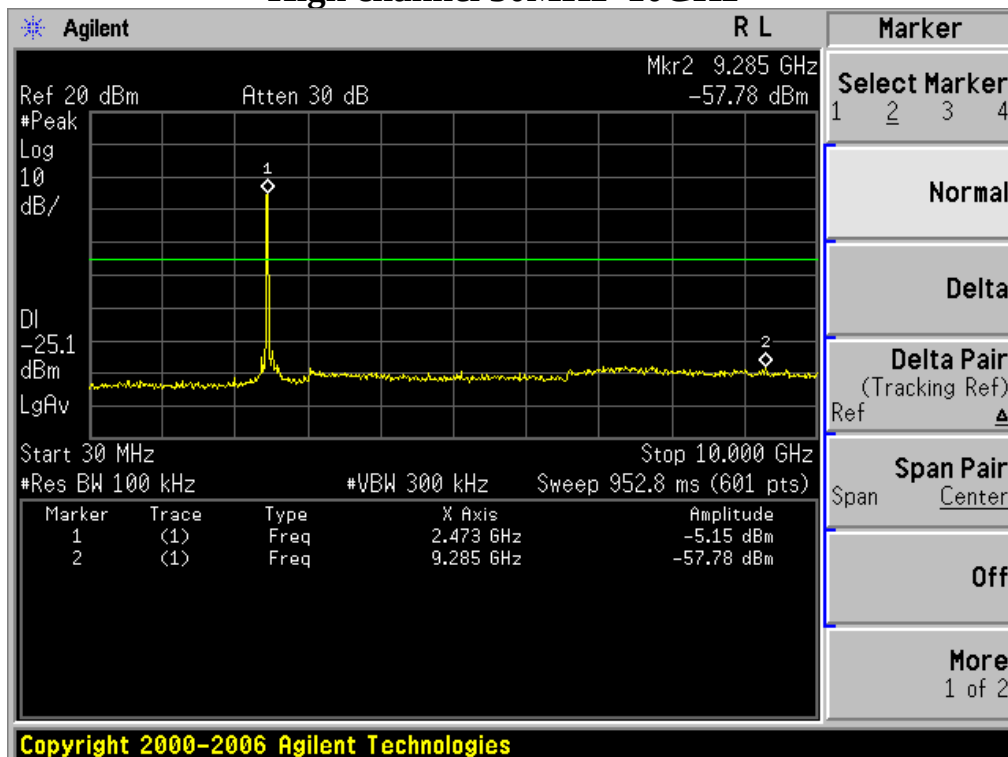
### Middle channel 30MHz~10GHz



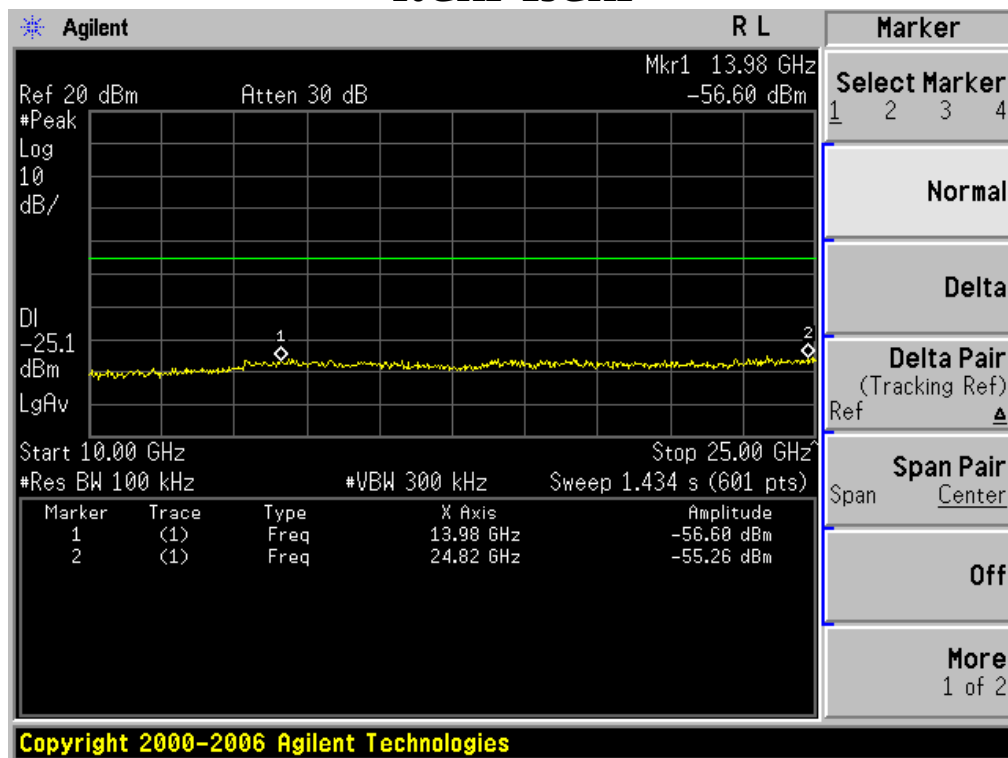
### 10GHz~25GHz



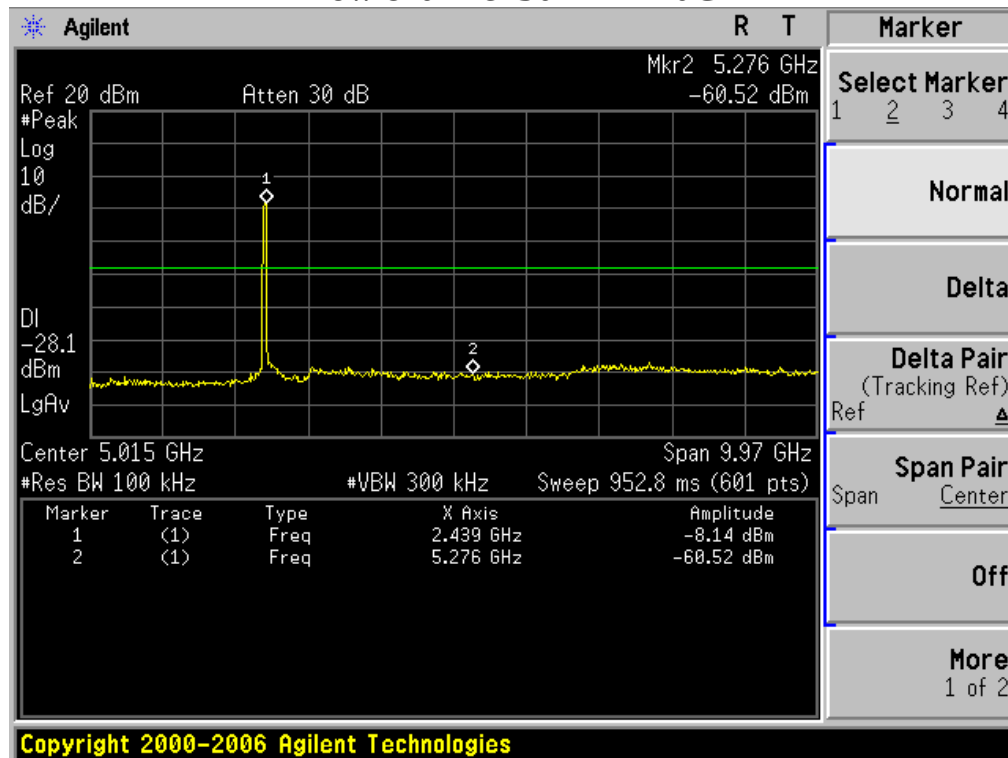
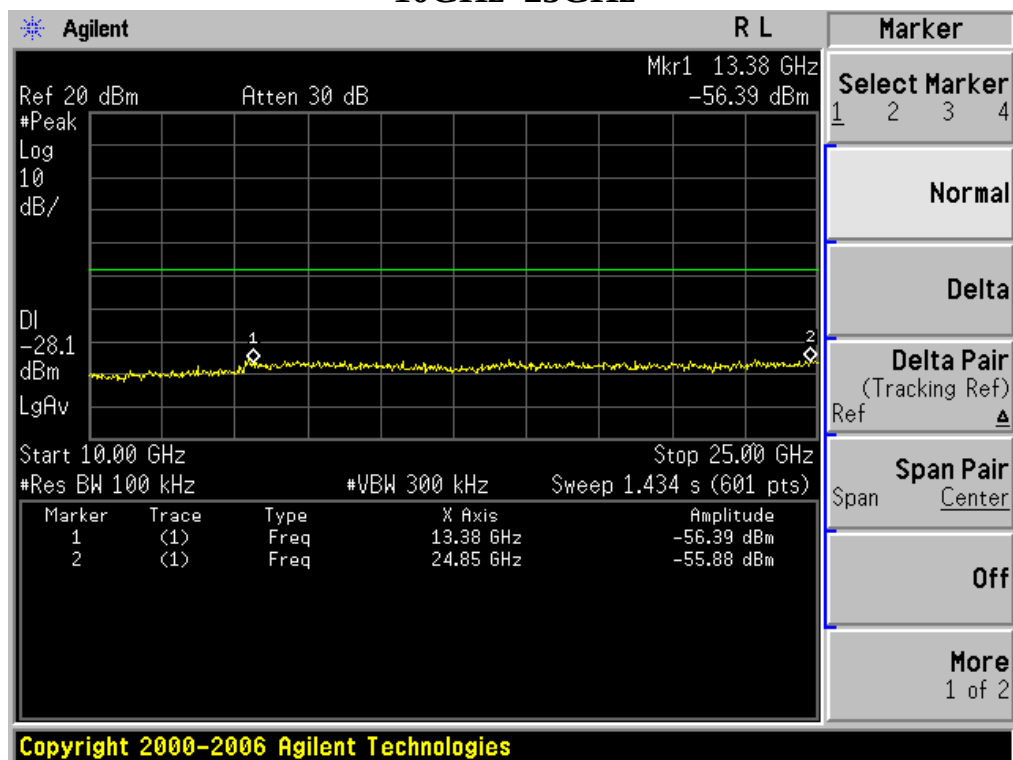
### High channel 30MHz~10GHz



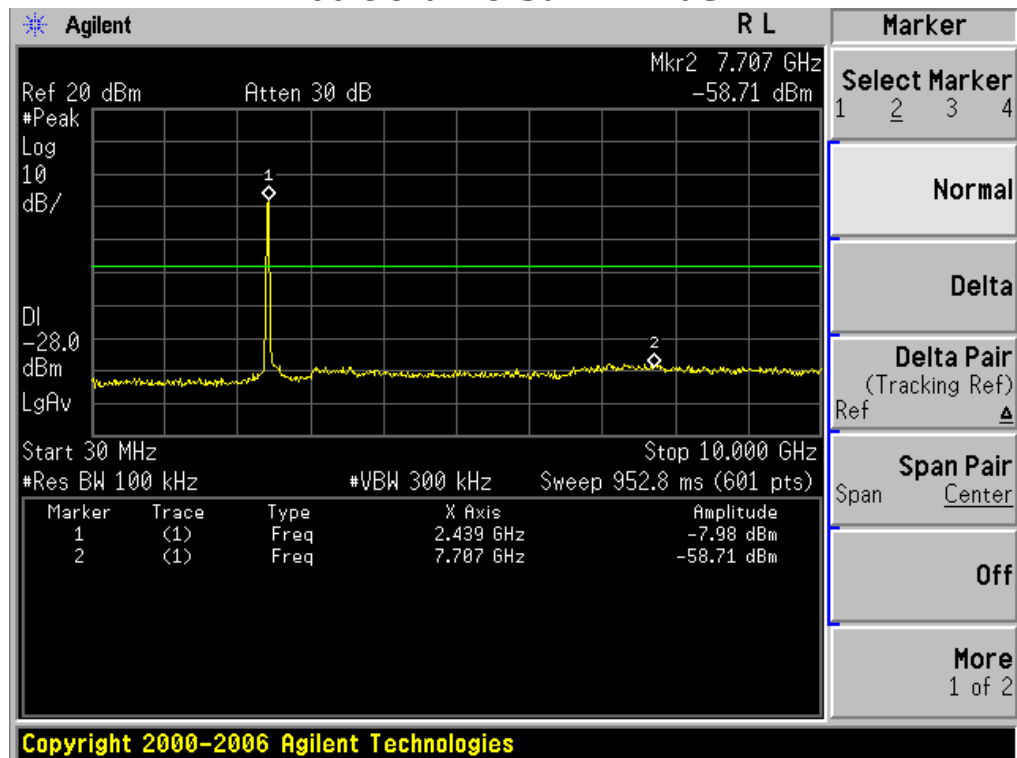
### 10GHz~25GHz



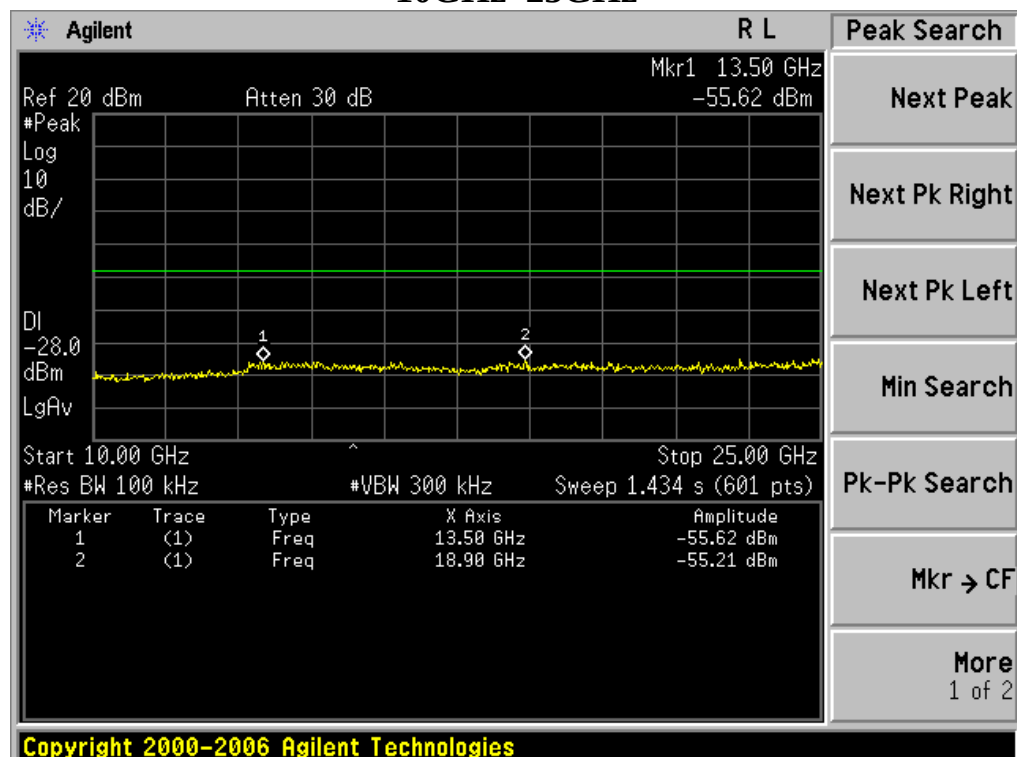
802.11n (40M) mode:

**Low channel 30MHz~10GHz****10GHz~25GHz**

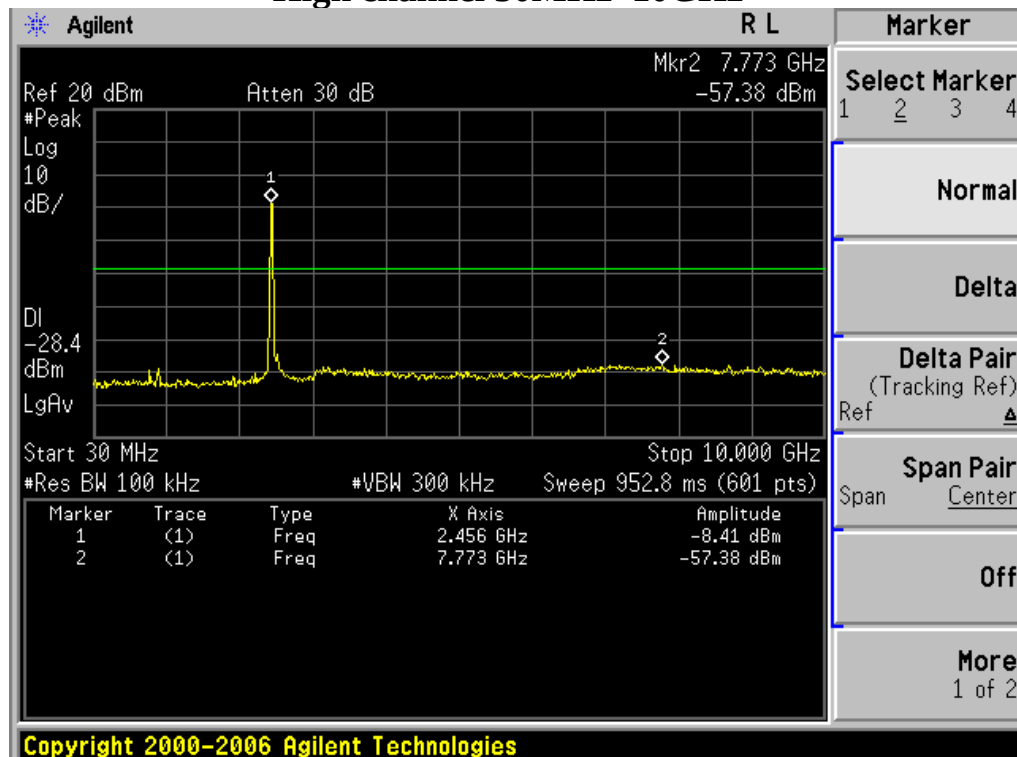
### Middle channel 30MHz~10GHz



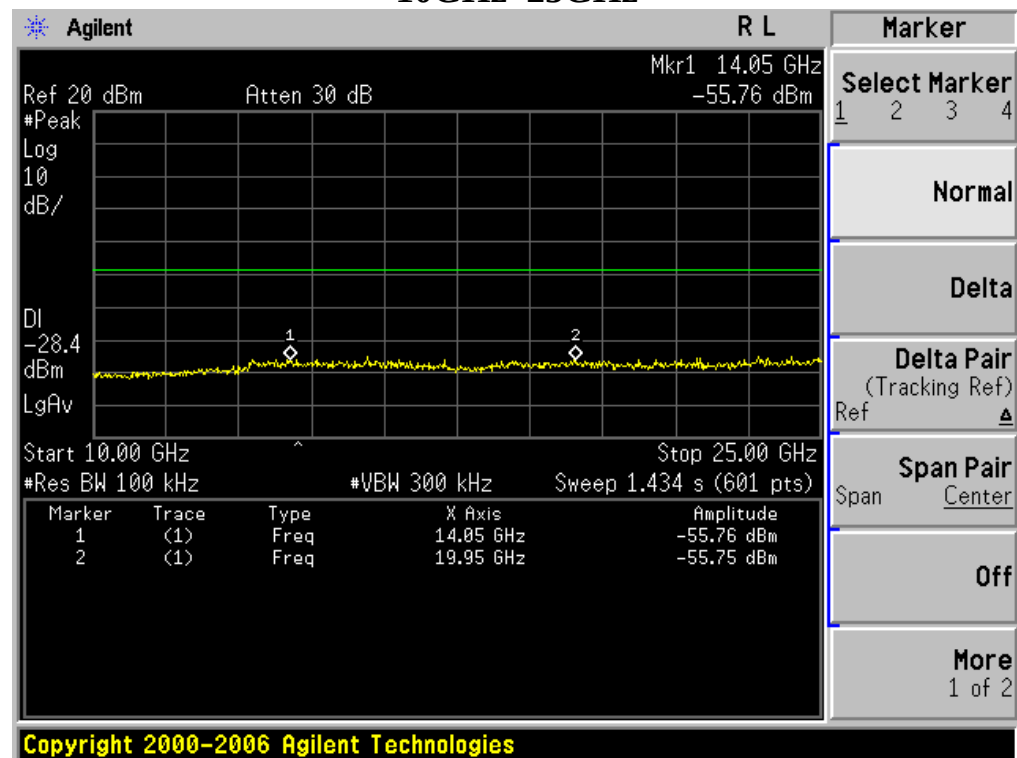
### 10GHz~25GHz



### High channel 30MHz~10GHz



### 10GHz~25GHz



## 8. §15.247(A) (2) – 6DB BANDWIDTH TESTING

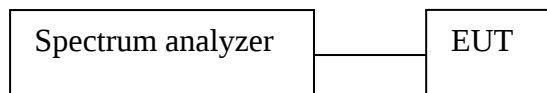
### 8.1. Test Equipment

Please refer to Section 4 this report.

### 8.2. Test Procedure

1. Set EUT in the transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as RBW=100KHz, VBW>=RBW, Span=50MHz, Sweep=auto.
4. Mark the peak frequency and -6dB(upper and lower)frequency.
5. Repeat until all the rest channels are investigated.

### 8.3. Test Setup



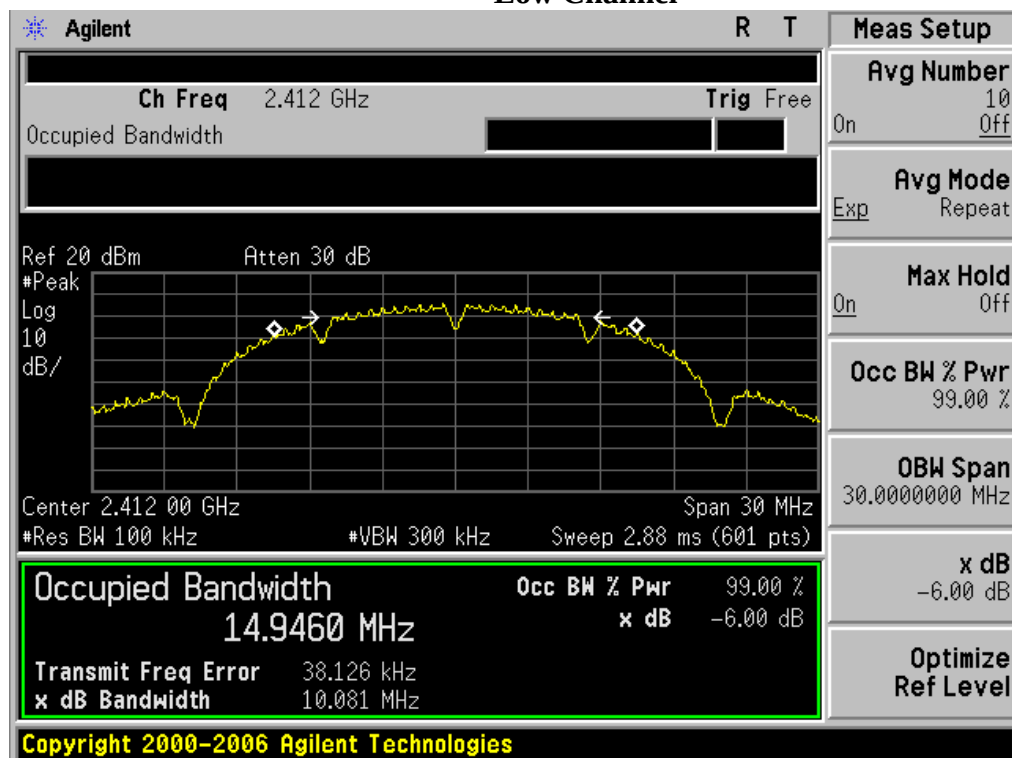
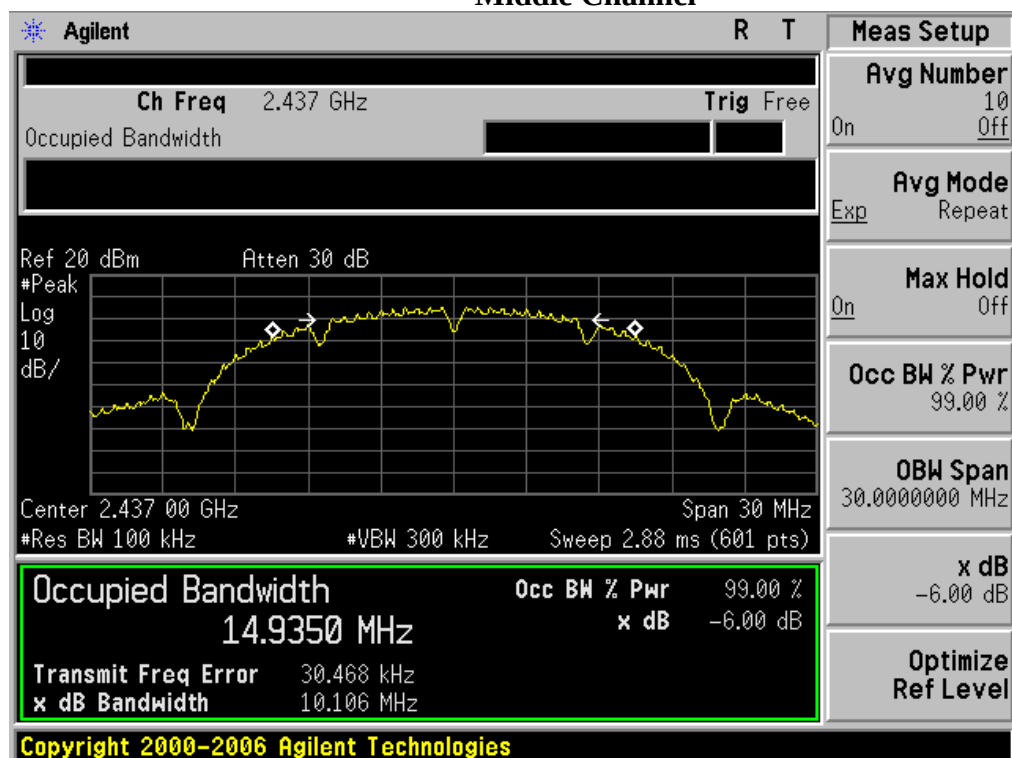
### 8.4. Applicable Standard

Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

**8.5. Test Result:Pass.**

Please refer to the following tables

| Channel Frequency (MHz)   | Data Rate (Mbps) | 6dB Bandwidth (kHz) | Limit (kHz) | Result |
|---------------------------|------------------|---------------------|-------------|--------|
| <b>802.11b Mode</b>       |                  |                     |             |        |
| 2412                      | 1                | 10081               | $\geq 500$  | Pass   |
| 2437                      | 1                | 10106               | $\geq 500$  | Pass   |
| 2462                      | 1                | 10102               | $\geq 500$  | Pass   |
| <b>802.11g Mode</b>       |                  |                     |             |        |
| 2412                      | 6                | 16601               | $\geq 500$  | Pass   |
| 2437                      | 6                | 16606               | $\geq 500$  | Pass   |
| 2462                      | 6                | 16615               | $\geq 500$  | Pass   |
| <b>802.11n (20M) Mode</b> |                  |                     |             |        |
| 2412                      | 6.5              | 17798               | $\geq 500$  | Pass   |
| 2437                      | 6.5              | 17843               | $\geq 500$  | Pass   |
| 2462                      | 6.5              | 17840               | $\geq 500$  | Pass   |
| <b>802.11n (40M) Mode</b> |                  |                     |             |        |
| 2422                      | 13.5             | 36475               | $\geq 500$  | Pass   |
| 2437                      | 13.5             | 36479               | $\geq 500$  | Pass   |
| 2452                      | 13.5             | 36472               | $\geq 500$  | Pass   |

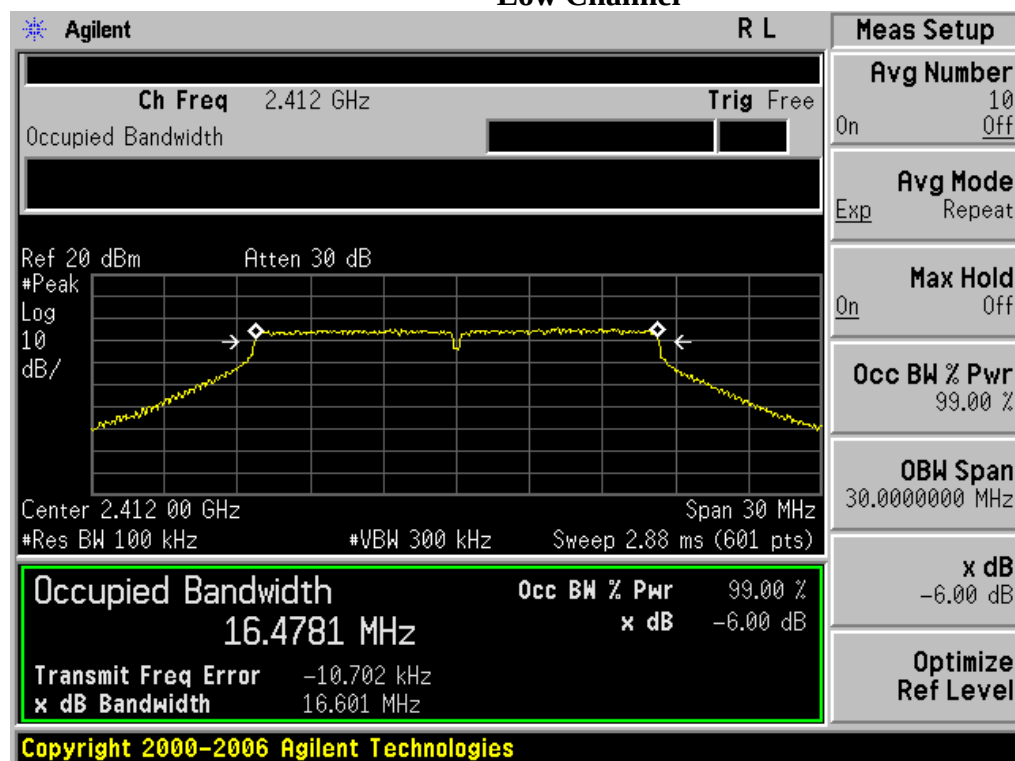
**802.11b Mode:****Low Channel****Middle Channel**

## High Channel

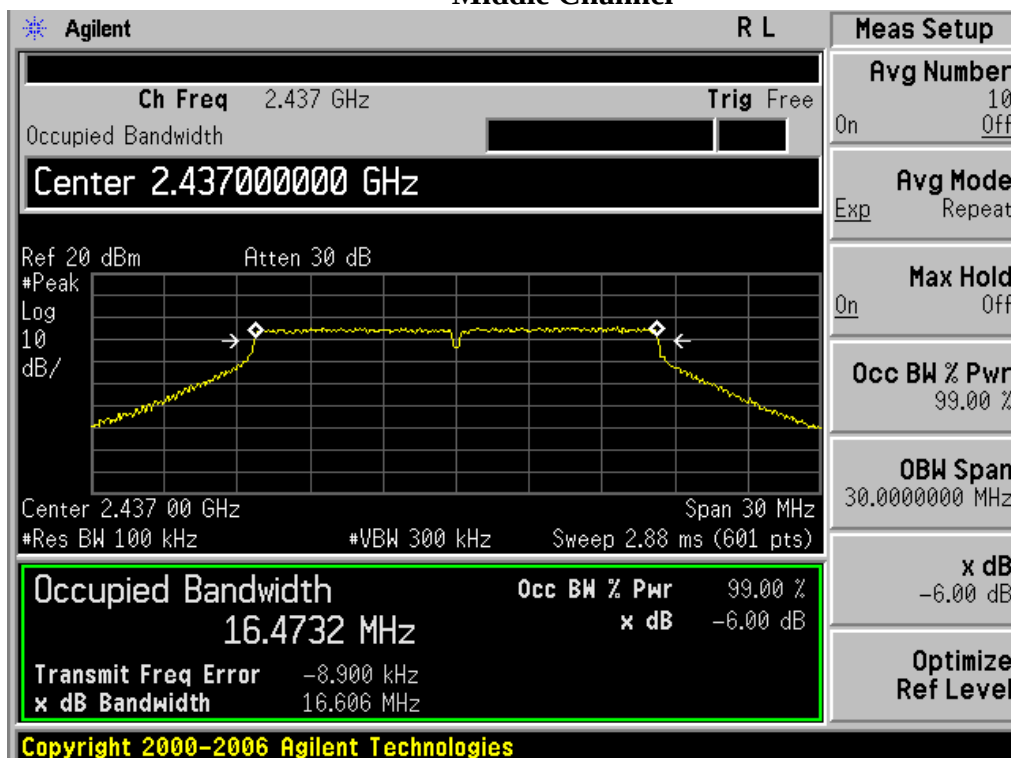


## 802.11g Mode:

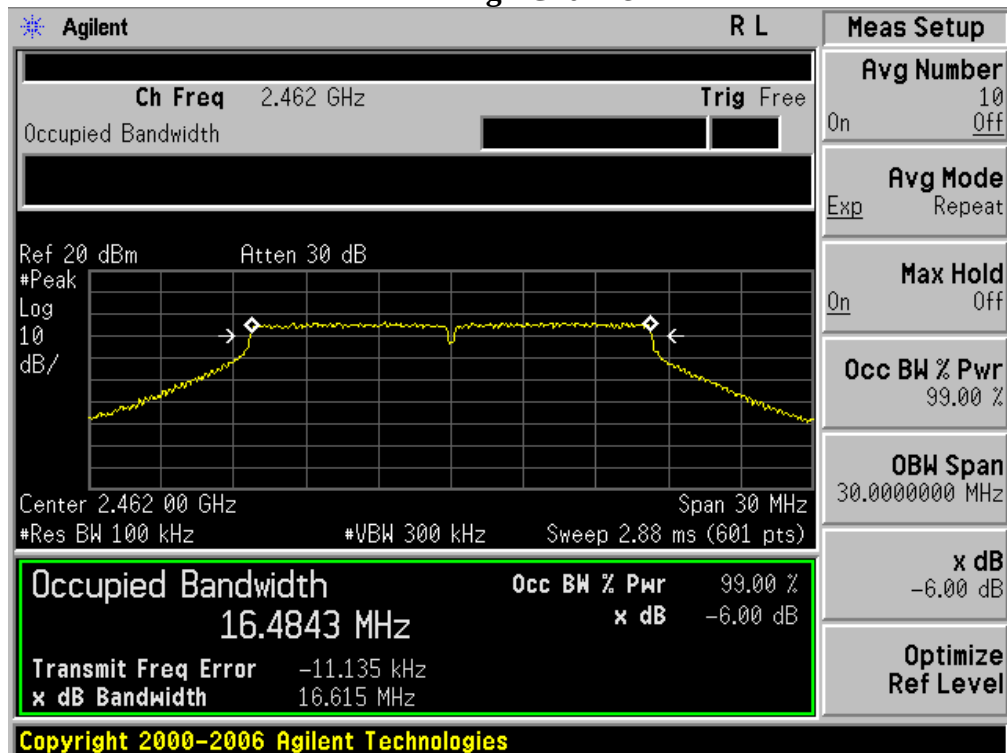
## Low Channel

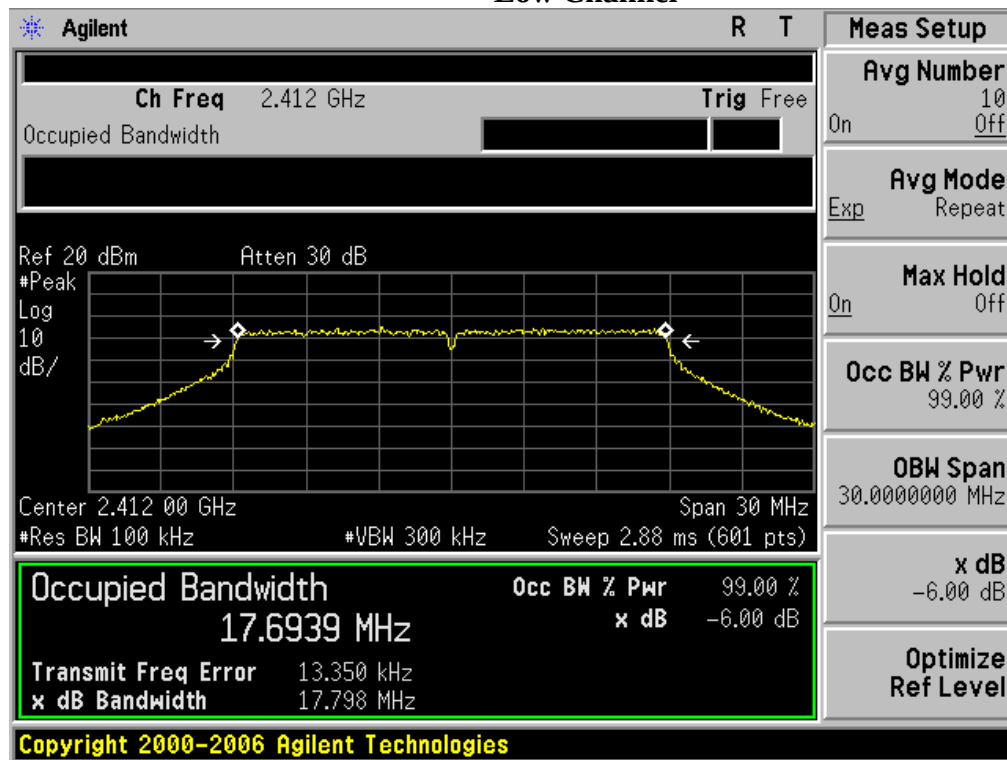
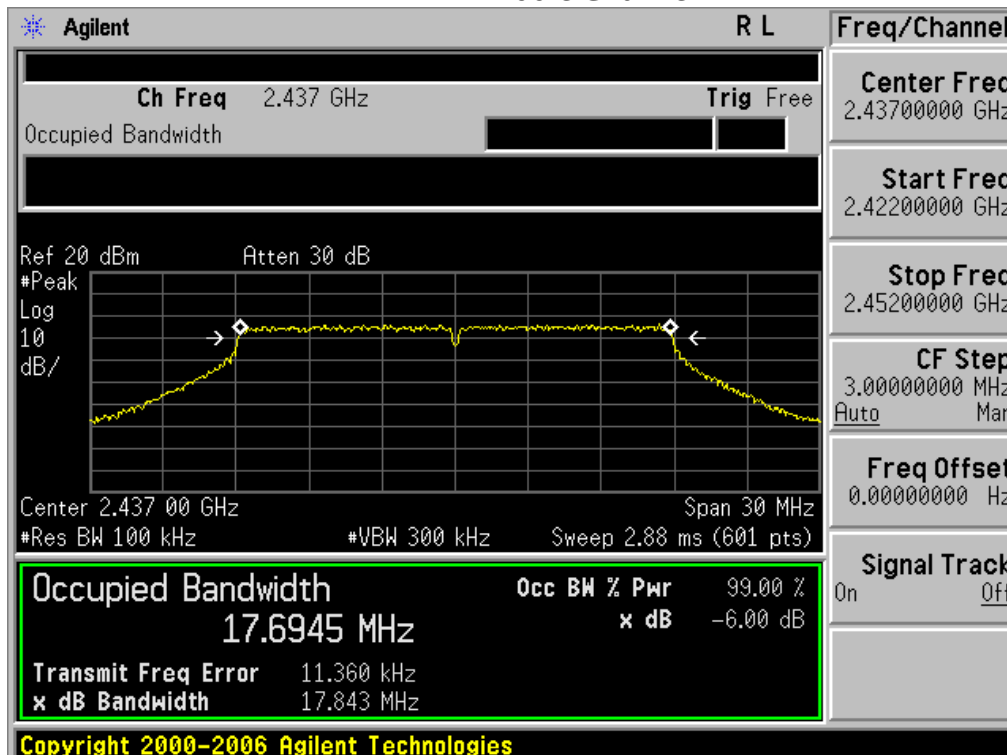


## Middle Channel

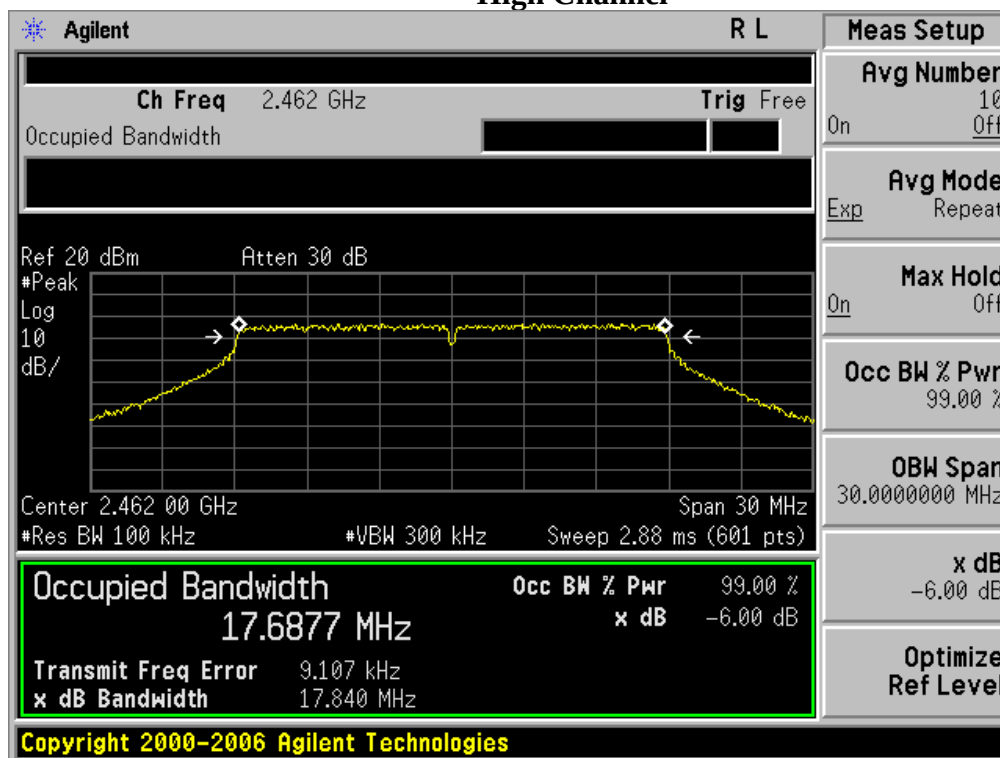


## High Channel



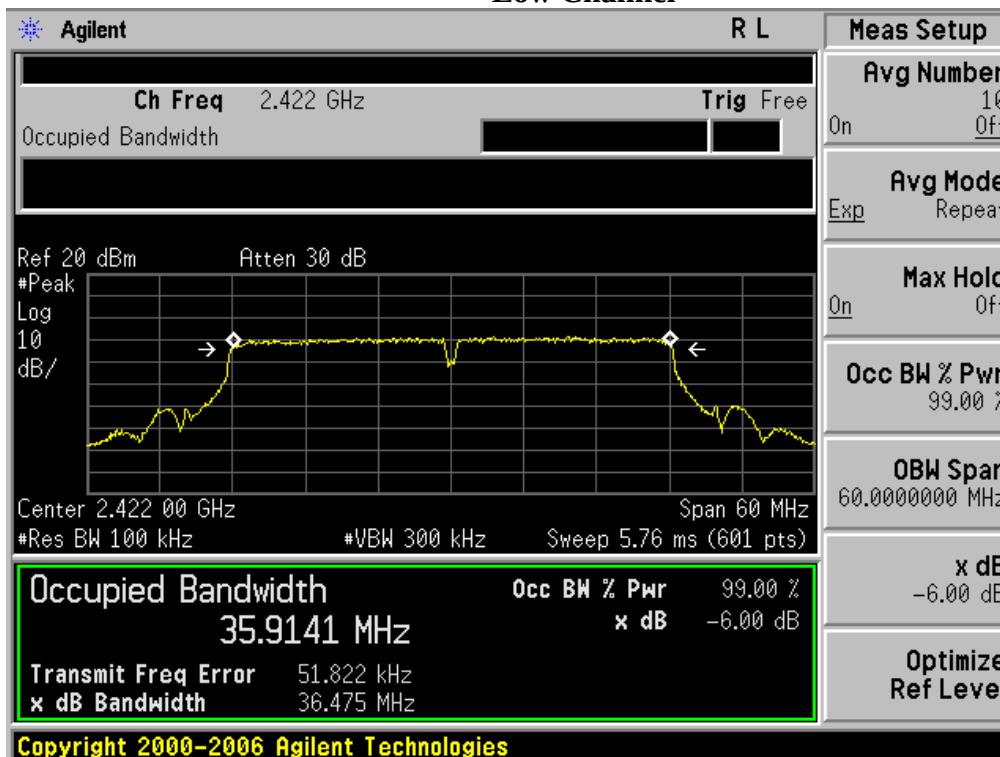
**802.11n (20M) Mode:****Low Channel****Middle Channel**

## High Channel

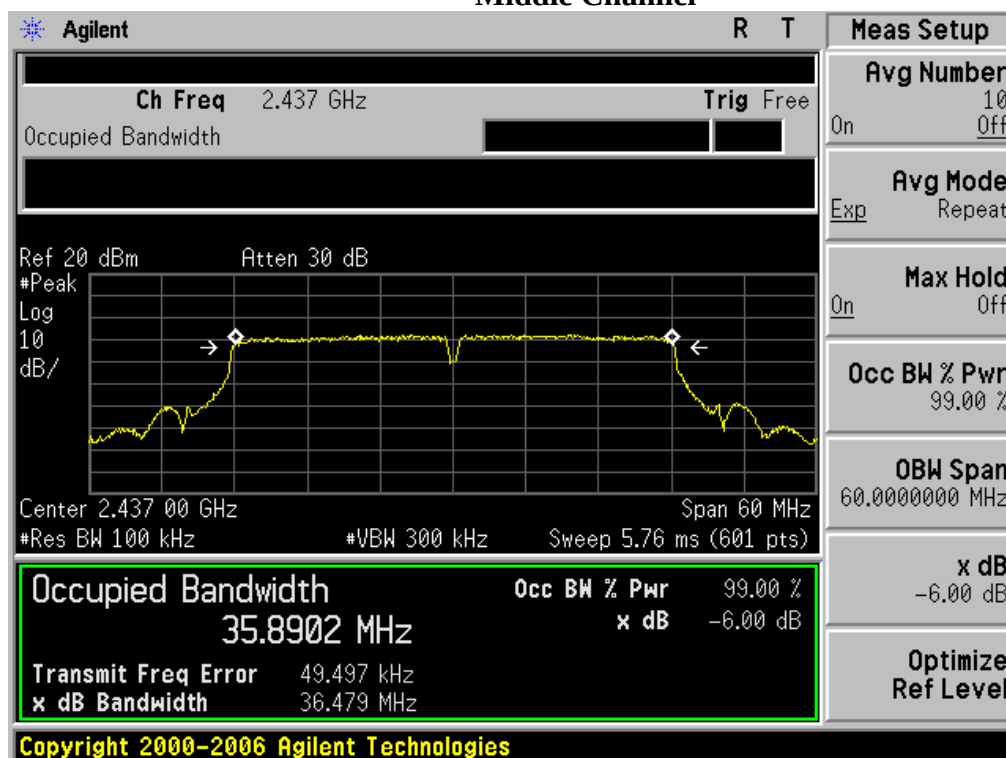


## 802.11n (40M) Mode:

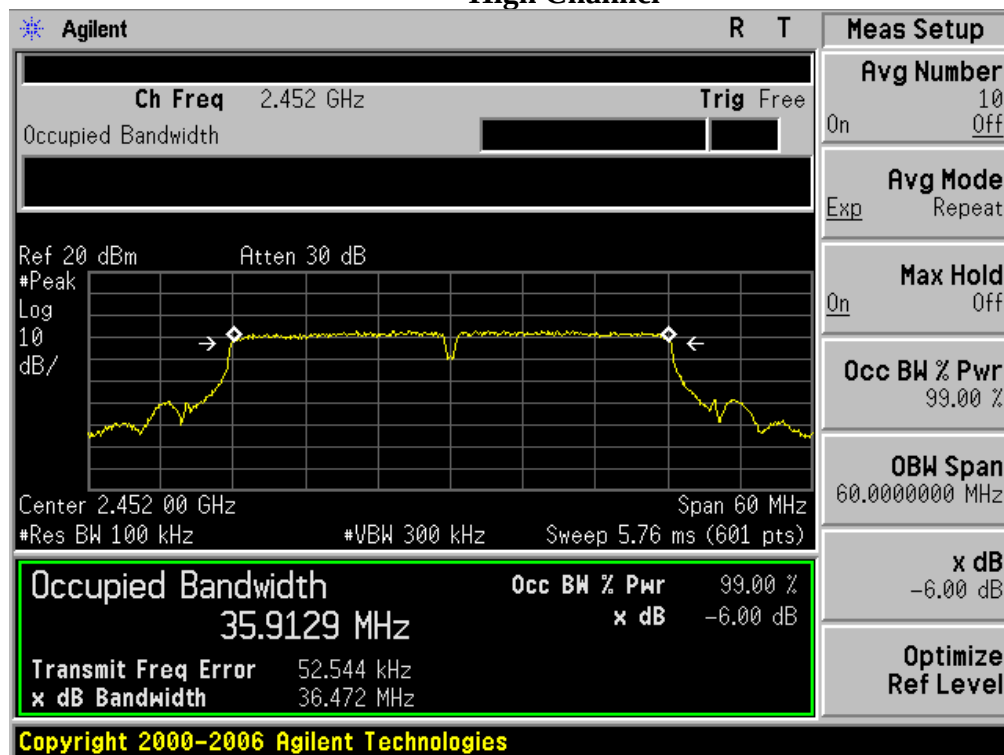
## Low Channel



## Middle Channel



## High Channel



## 9. §15.247(B) (3) - Maximum Peak Output Power

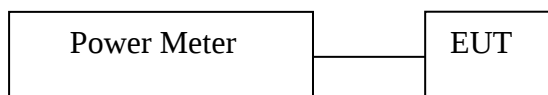
### 9.1. Test Equipment

Please refer to Section 4 this report.

### 9.2. Test Procedure

1. The testing follows FCC KDB558074 (Measurement Guidelines of DTS).
2. The RF output of EUT was connected to the power meter by a low loss cable.
3. Measure the power by power meter.

### 9.3. Test Setup



### 9.4. Applicable Standard

According to §15.247(b) (3), for systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

## 9.5. Test Result

Pass

### 802.11b Mode:

| Channel | Frequency (MHz) | Data Rate (Mbps) | Conducted Power (dBm) | Limit (dBm) |
|---------|-----------------|------------------|-----------------------|-------------|
| Low     | 2412            | 1                | 8.60                  | 30          |
| Mid     | 2437            | 1                | 8.32                  | 30          |
| High    | 2462            | 1                | 8.40                  | 30          |

### 802.11g Mode:

| Channel | Frequency (MHz) | Data Rate (Mbps) | Conducted Power (dBm) | Limit (dBm) |
|---------|-----------------|------------------|-----------------------|-------------|
| Low     | 2412            | 6                | 7.42                  | 30          |
| Mid     | 2437            | 6                | 7.33                  | 30          |
| High    | 2462            | 6                | 7.52                  | 30          |

### 802.11n (20M) Mode:

| Channel | Frequency (MHz) | Data Rate (Mbps) | Conducted Power (dBm) | Limit (dBm) |
|---------|-----------------|------------------|-----------------------|-------------|
| Low     | 2412            | 6.5              | 6.92                  | 30          |
| Mid     | 2437            | 6.5              | 6.83                  | 30          |
| High    | 2462            | 6.5              | 6.87                  | 30          |

### 802.11n (40M) Mode:

| Channel | Frequency (MHz) | Data Rate (Mbps) | Conducted Power (dBm) | Limit (dBm) |
|---------|-----------------|------------------|-----------------------|-------------|
| Low     | 2422            | 13.5             | 6.39                  | 30          |
| Mid     | 2437            | 13.5             | 6.54                  | 30          |
| High    | 2452            | 13.5             | 6.48                  | 30          |

## 10. §15.247(D) –Bandwidth of Frequency Band Edge

### 10.1.Test Equipment

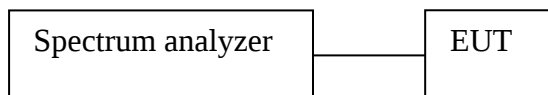
Please refer to Section 4 this report.

### 10.2.Test Procedure

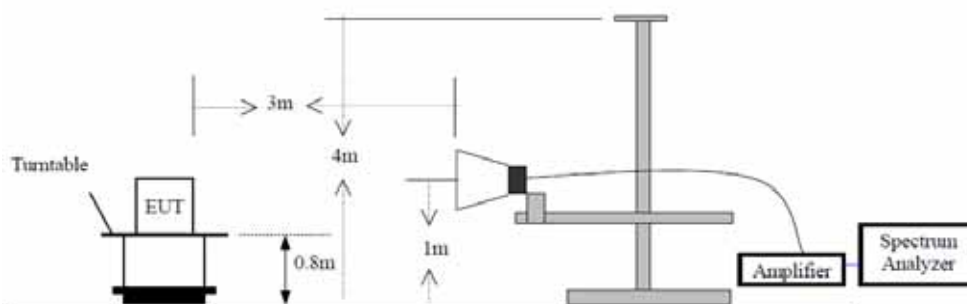
- 1, Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- 2, Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
- 3, Set RBW to 100 kHz and VBW of spectrum analyzer to 300 kHz with a convenient frequency span including 100 kHz bandwidth from band edge.  
Note: For Rdstricted Band  
RBW=1MHz  
VBW=1 MHz
- 4, Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
- 5, Repeat above procedures until all measured frequencies were complete.

### 10.3.Test Setup

#### 10.3.1 Conducted test:



#### 10.3.1 Radiated test:



## 10.4.Applicable Standard

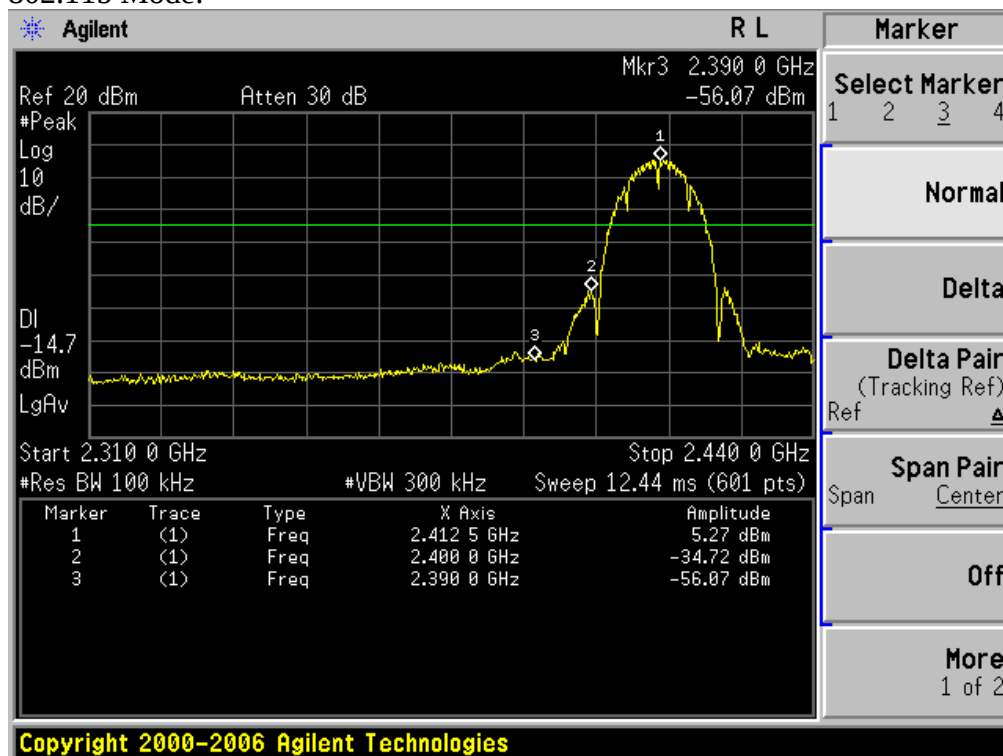
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

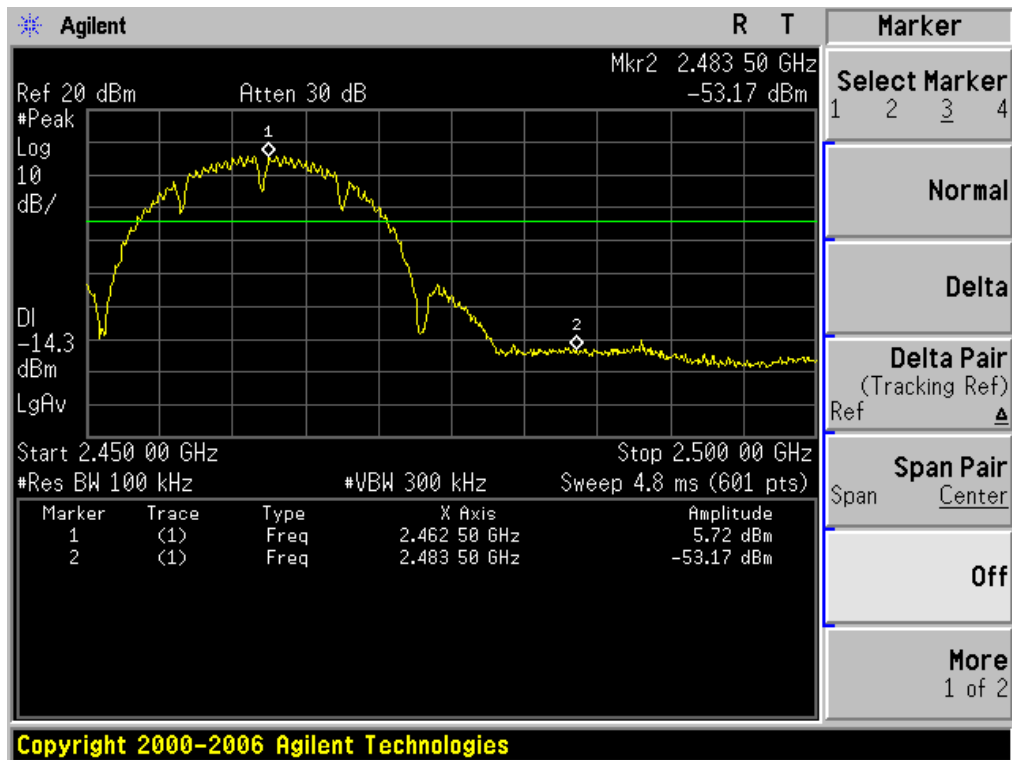
## 10.5.Test Result

Pass.

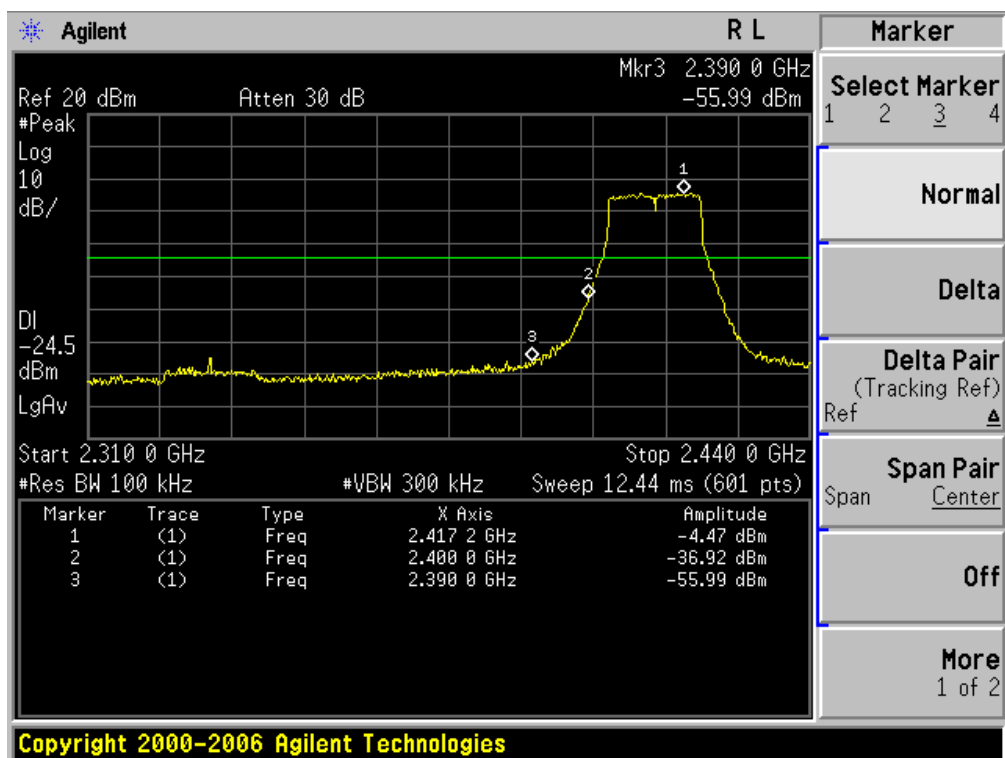
Conducted test

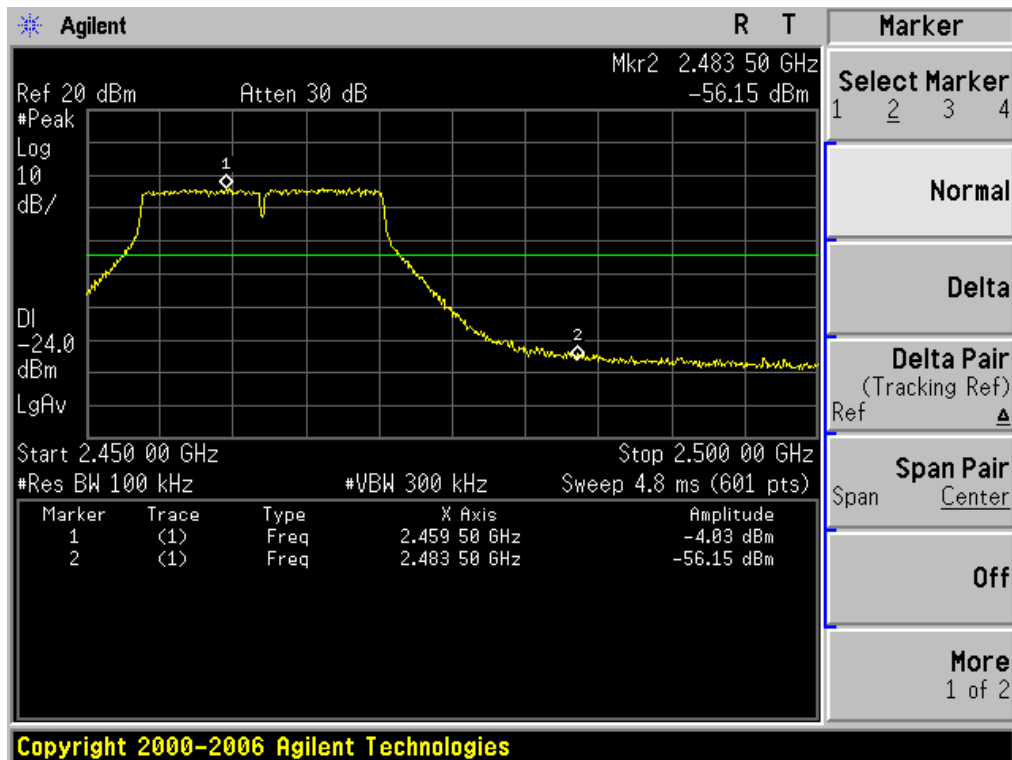
802.11b Mode:



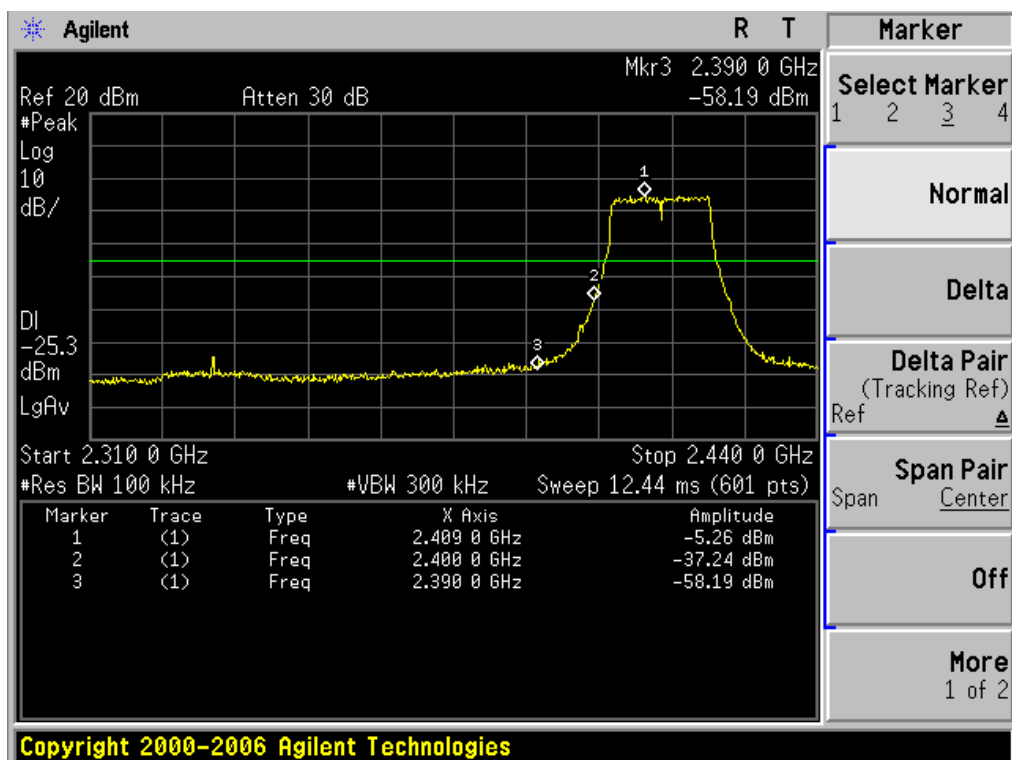


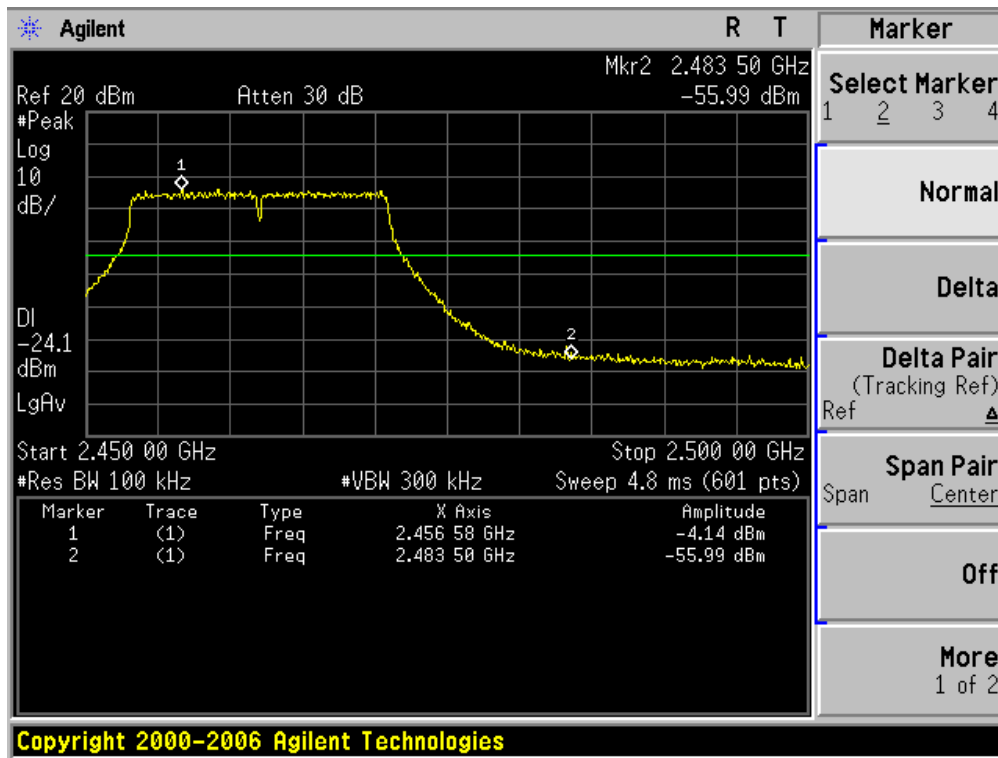
802.11g Mode:



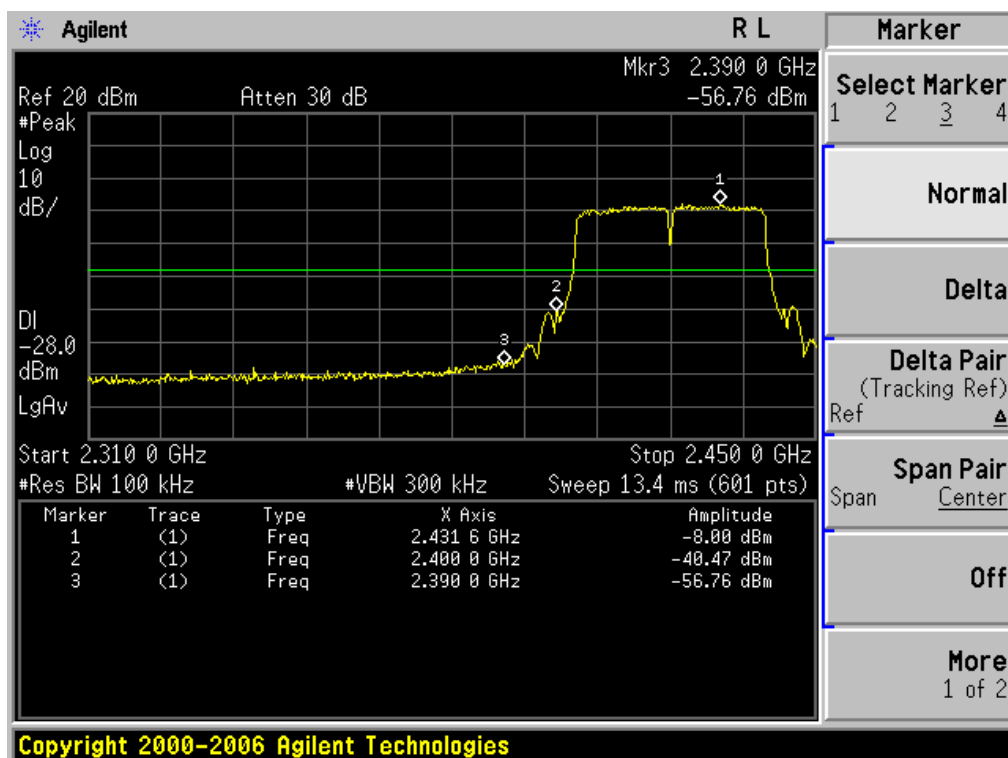


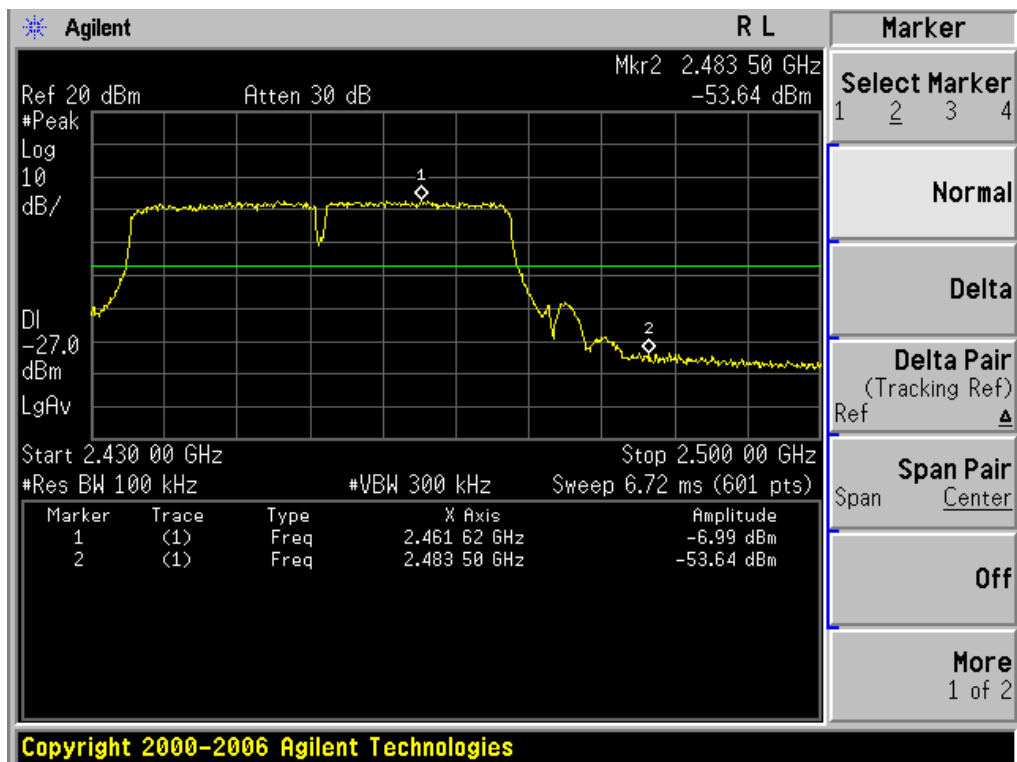
802.11n (20M) Mode:





802.11n (40M) Mode:





Radiated test  
802.11b Mode:

| Frequency (MHz) | Meter Reading (dBμV) | Factor (dB) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Polarization | Detector Type |
|-----------------|----------------------|-------------|-------------------------|-----------------|-------------|--------------|---------------|
| 2399.55         | 70.88                | -1.58       | 69.30                   | 74              | -4.7        | H/ V         | peak          |
| 2399.55         | 48.17                | -1.58       | 46.59                   | 54              | -7.41       | H/ V         | AVG           |
| 2474.62         | 69.43                | -1.54       | 67.89                   | 74              | -6.11       | H/ V         | peak          |
| 2474.62         | 47.5                 | -1.54       | 45.96                   | 54              | -8.04       | H/ V         | AVG           |

802.11g Mode:

| Frequency (MHz) | Meter Reading (dBμV) | Factor (dB) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Polarization | Detector Type |
|-----------------|----------------------|-------------|-------------------------|-----------------|-------------|--------------|---------------|
| 2397.45         | 70.68                | -1.58       | 69.10                   | 74              | -4.9        | H/ V         | peak          |
| 2397.45         | 48.77                | -1.58       | 47.19                   | 54              | -6.81       | H/ V         | AVG           |
| 2483.5          | 60.44                | -1.54       | 58.90                   | 74              | -15.1       | H/ V         | peak          |
| 2483.5          | 43.22                | -1.54       | 41.68                   | 54              | -12.32      | H/ V         | AVG           |

802.11n (20M) Mode:

| Frequency (MHz) | Meter Reading (dBμV) | Factor (dB) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Polarization | Detector Type |
|-----------------|----------------------|-------------|-------------------------|-----------------|-------------|--------------|---------------|
| 2390.00         | 71.08                | -1.58       | 69.50                   | 74              | -4.5        | H/ V         | peak          |
| 2390.00         | 45.4                 | -1.58       | 43.82                   | 54              | -10.18      | H/ V         | AVG           |
| 2483.5          | 54.14                | -1.54       | 52.60                   | 74              | -21.4       | H/ V         | peak          |
| 2483.5          | 44.44                | -1.54       | 42.90                   | 54              | -11.1       | H/ V         | AVG           |

## 802.11n (40M) Mode:

| Frequency (MHz) | Meter Reading (dBμV) | Factor (dB) | Emission Level (dBμV/m) | Limits (dBμV/m) | Margin (dB) | Polarization | Detector Type |
|-----------------|----------------------|-------------|-------------------------|-----------------|-------------|--------------|---------------|
| 2390.00         | 66.28                | -1.58       | 64.70                   | 74              | -9.3        | H/ V         | peak          |
| 2390.00         | 48.66                | -1.58       | 47.08                   | 54              | -6.92       | H/ V         | AVG           |
| 2483.5          | 68.68                | -1.54       | 67.14                   | 74              | -6.86       | H/ V         | peak          |
| 2483.5          | 49.26                | -1.54       | 47.72                   | 54              | -6.28       | H/ V         | AVG           |

## Remark:

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. Set the Lowest and Highest Transmitting Channel, observed the outside band of 2400MHz to 2438.5MHz, then mark the higher-level emission for comparing with the FCC rules.

## 11. §15.247(E) - Power Spectral Density

### 11.1. Test Equipment

Please refer to Section 4 this report.

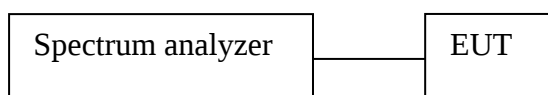
### 11.2. Test Procedure

The EUT was tested according to DTS test procedure of KDB558074 D01 DTS V02 Section 9.0 for compliance to FCC 47CFR 15.247 requirements.

1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS channel bandwidth.
3. Set the RBW = 100 kHz.
4. Set the VBW = 300 kHz.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

Observed power level to an equivalent value in 3 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where  $BWCF = 10\log(3\text{ kHz}/100\text{ kHz}) = -15.2\text{ dB}$ .

### 11.3. Test Setup



### 11.4. Applicable Standard

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

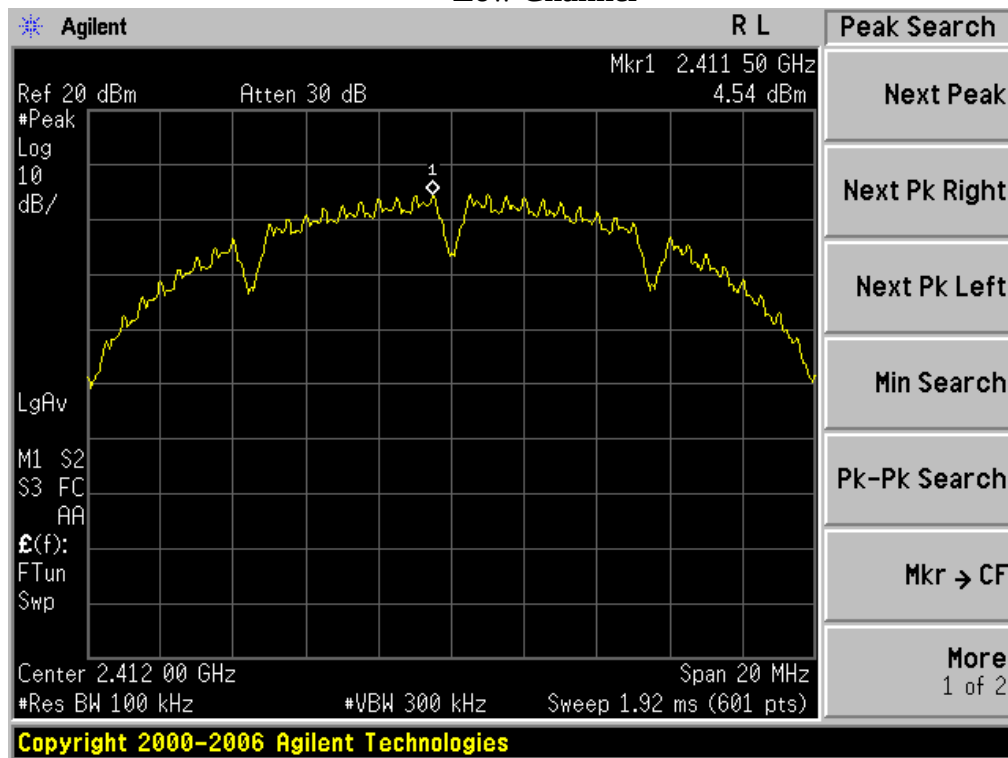
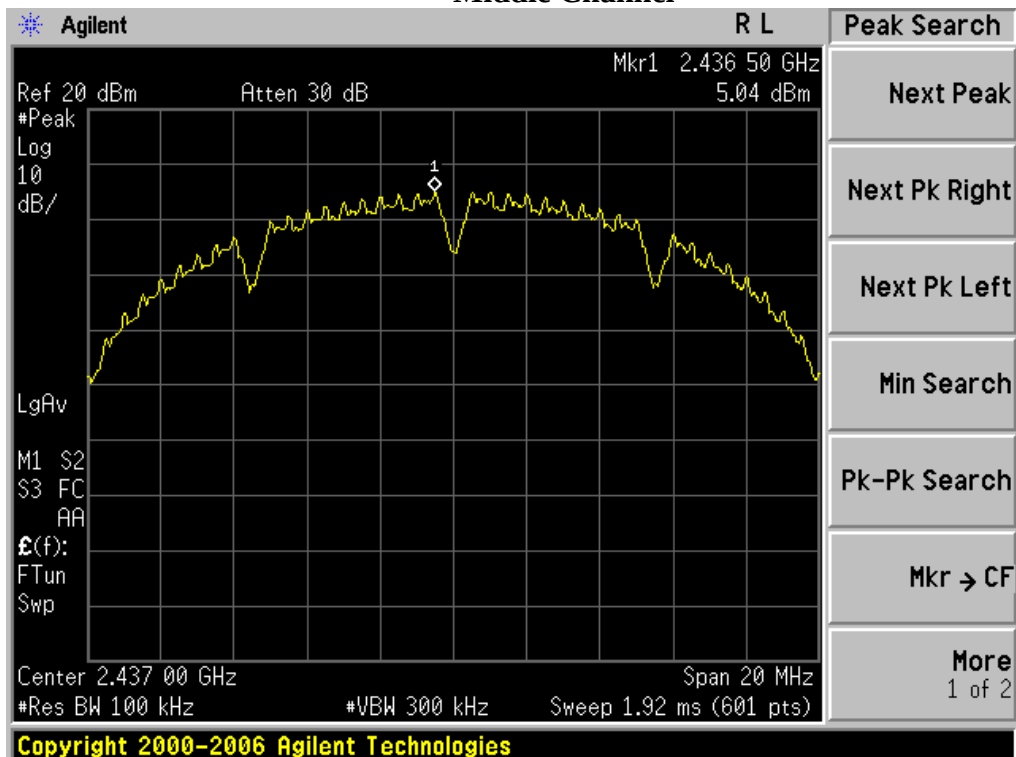
**11.5.Test Result****PASS**

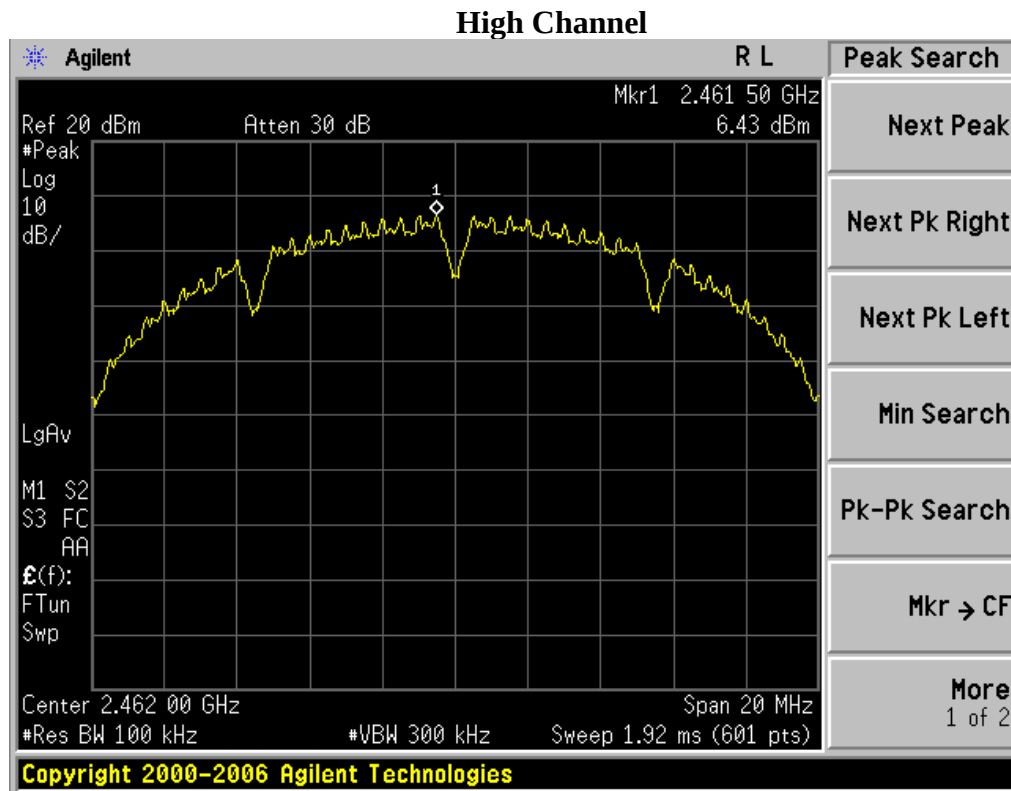
| Channel Frequency (MHz)   | Data Rate (Mbps) | Reading dBm/100kHz | Corrected dBm/3kHz | Limit (dBm/3kHz) | RESULT    |
|---------------------------|------------------|--------------------|--------------------|------------------|-----------|
| <b>802.11b Mode</b>       |                  |                    |                    |                  |           |
| 2412                      | 1                | 4.54               | -10.66             | 8                | Compliant |
| 2437                      | 1                | 5.04               | -10.16             | 8                | Compliant |
| 2462                      | 1                | 6.43               | -8.77              | 8                | Compliant |
| <b>802.11g Mode</b>       |                  |                    |                    |                  |           |
| 2412                      | 6                | -5.15              | -20.35             | 8                | Compliant |
| 2437                      | 6                | -4.47              | -19.67             | 8                | Compliant |
| 2462                      | 6                | -4.29              | -19.49             | 8                | Compliant |
| <b>802.11n (20M) Mode</b> |                  |                    |                    |                  |           |
| 2412                      | 6.5              | -6.10              | -21.3              | 8                | Compliant |
| 2437                      | 6.5              | -4.82              | -20.02             | 8                | Compliant |
| 2462                      | 6.5              | -5.15              | -20.35             | 8                | Compliant |
| <b>802.11n (40M) Mode</b> |                  |                    |                    |                  |           |
| 2422                      | 13.5             | -9.00              | -24.2              | 8                | Compliant |
| 2437                      | 13.5             | -7.59              | -22.79             | 8                | Compliant |
| 2452                      | 13.5             | -7.70              | -22.9              | 8                | Compliant |

Note:

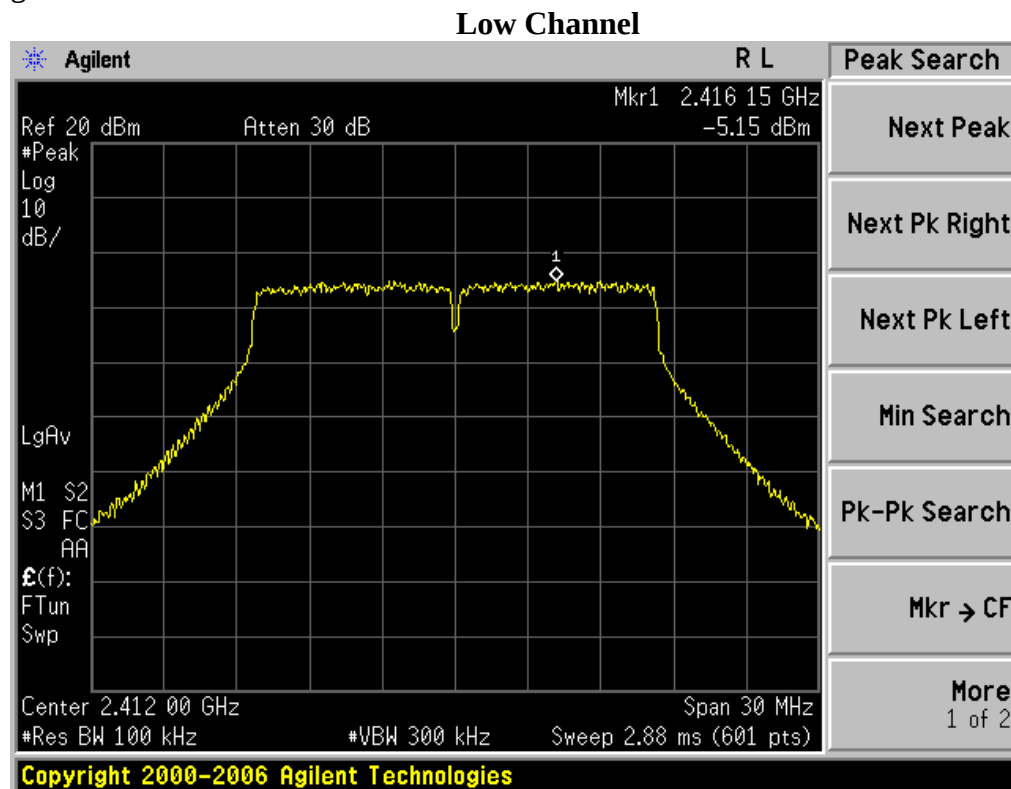
1. Scale the observed power level in 100 kHz to an equivalent value in 3 kHz by adjusting (reducing) the measured power by a bandwidth correction factor (BWCF) where  $BWCF = 10\log(3\text{ kHz}/100\text{ kHz} = -15.2\text{ dB})$ .
2. Above testing data has been considered with 0.5dB cable loss which between antenna port and spectrum.

802.11b Mode:

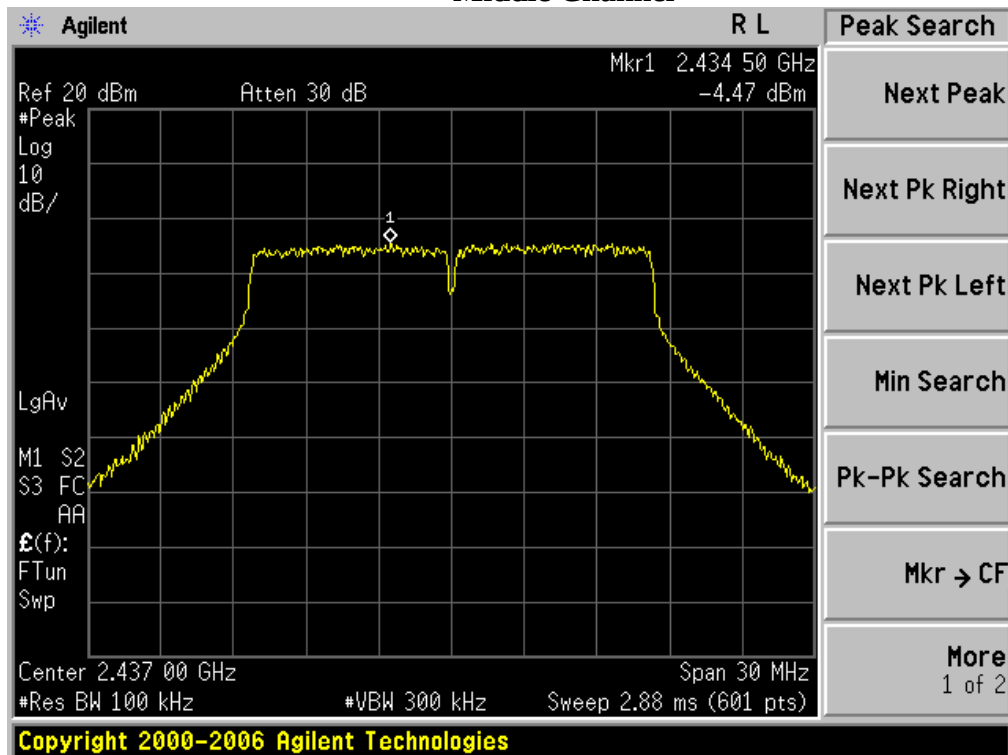
**Low Channel****Middle Channel**



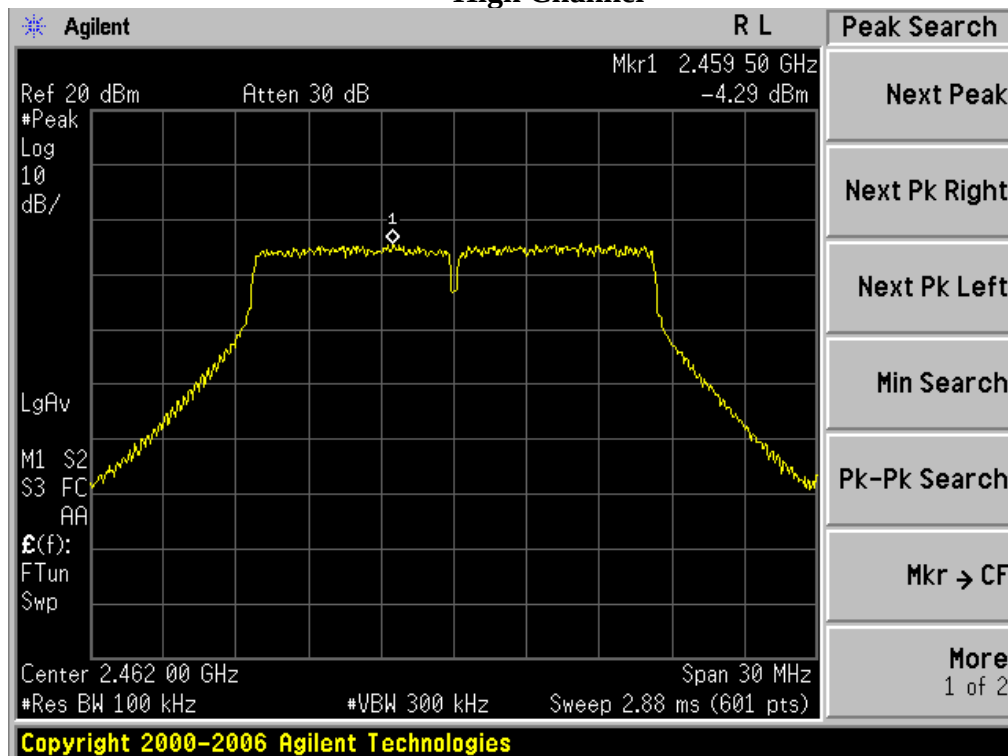
802.11g Mode:



## Middle Channel

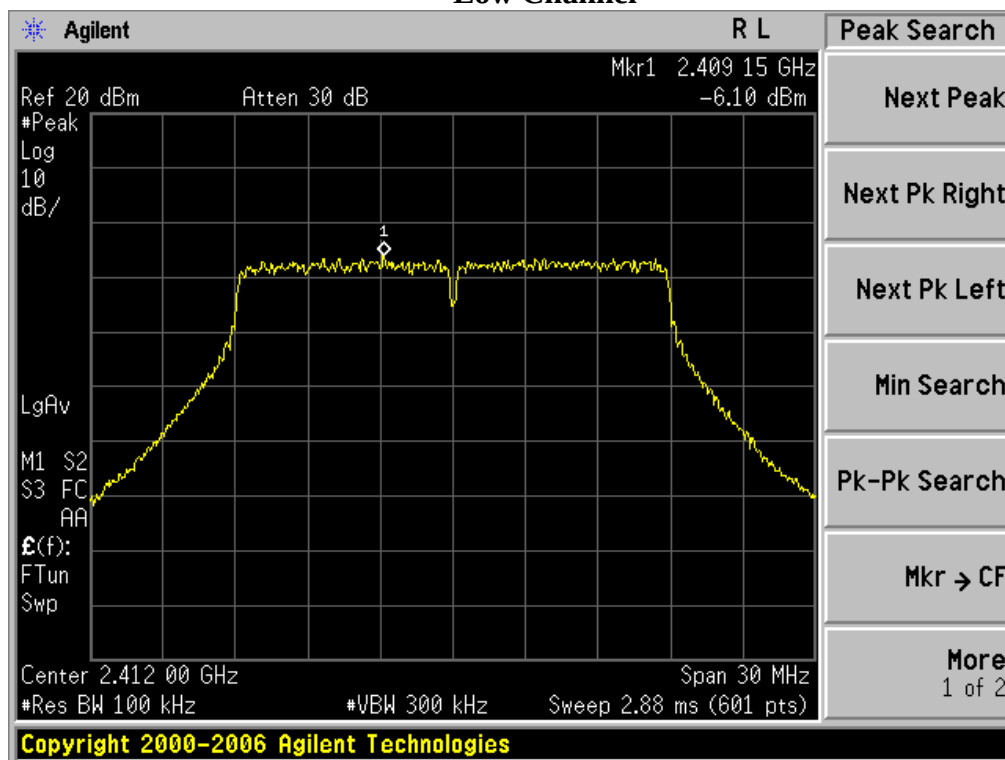


## High Channel

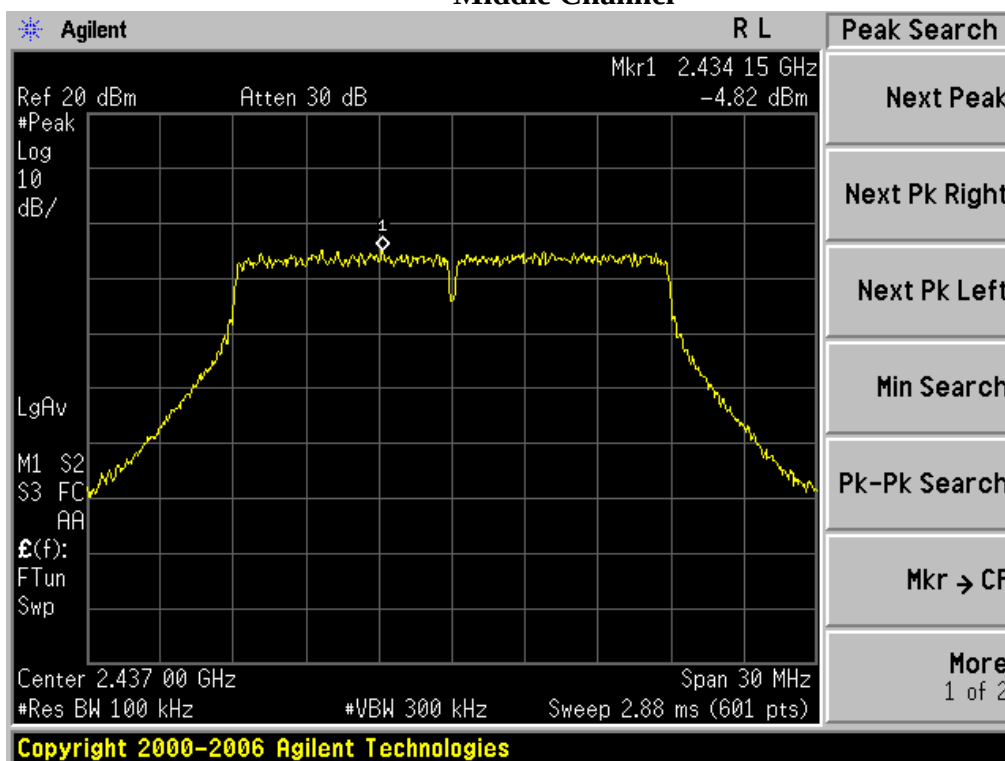


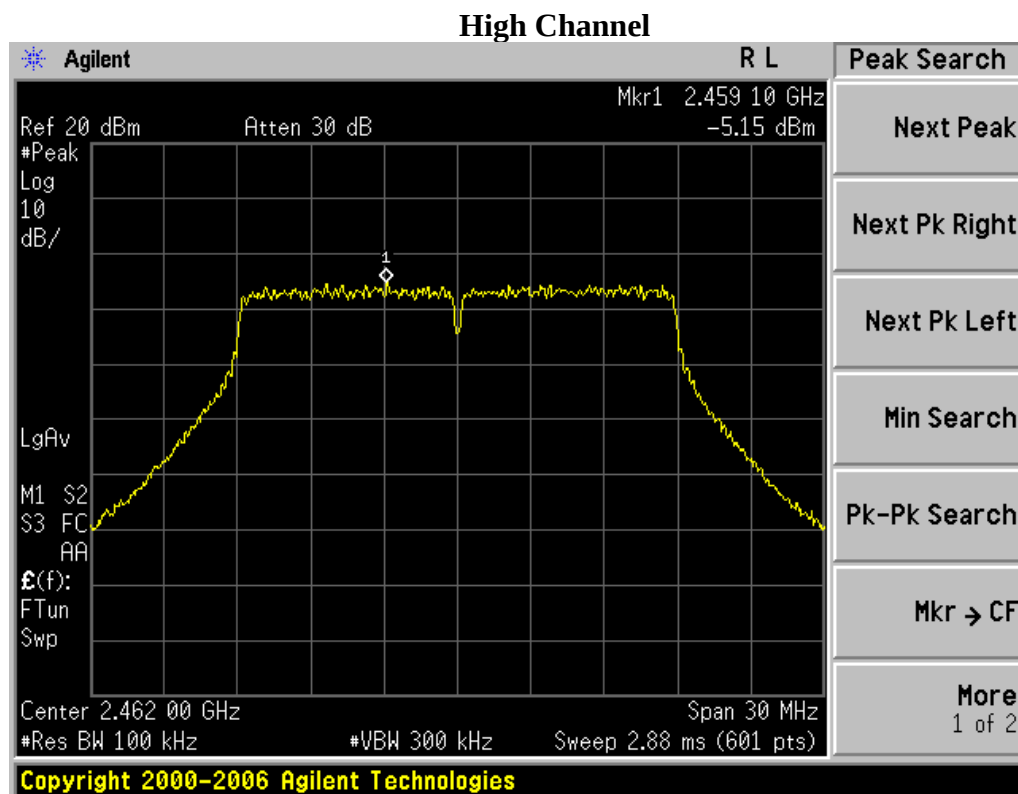
802.11n (20M) Mode:

## Low Channel

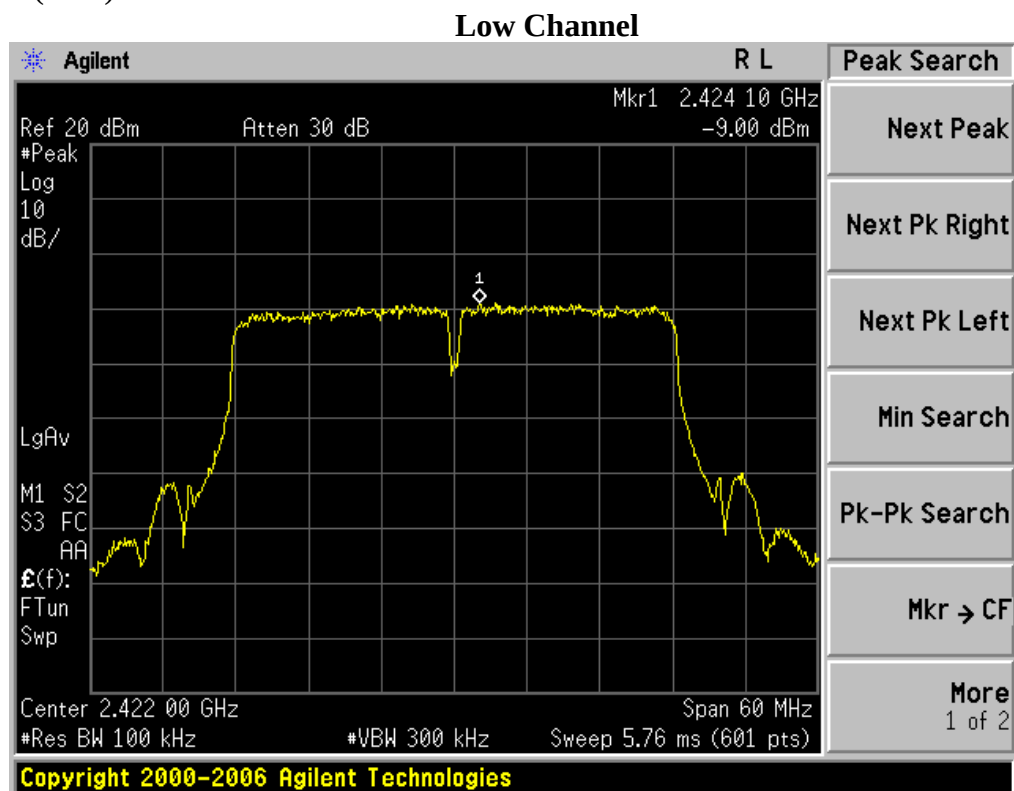


## Middle Channel

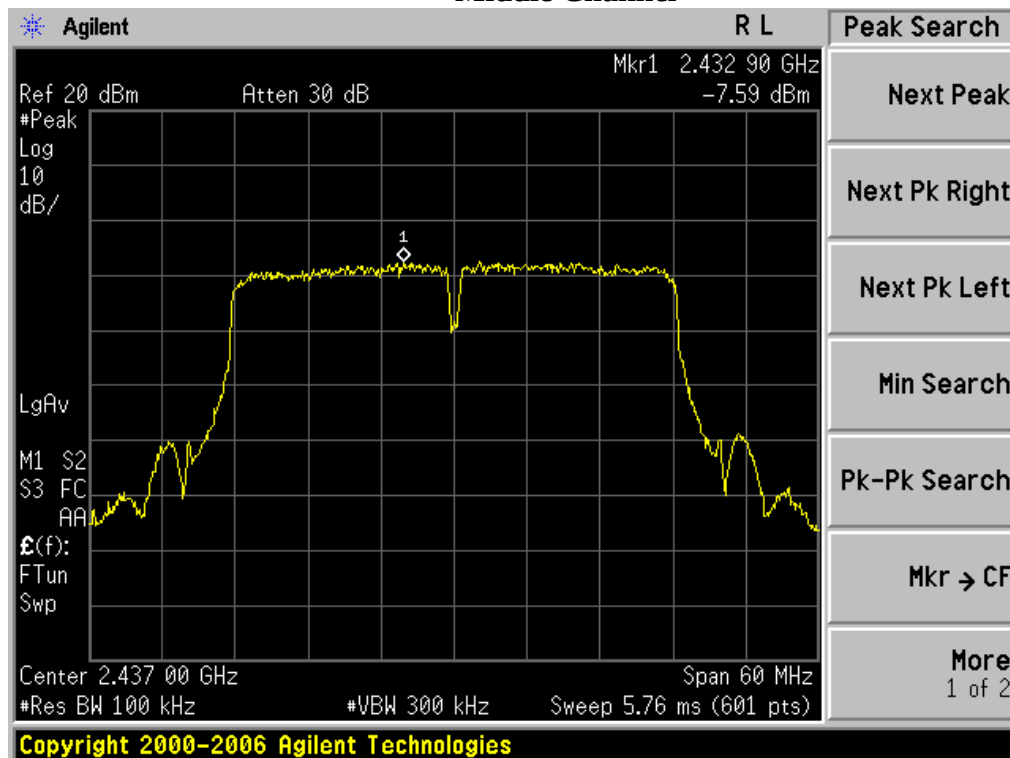




802.11n (40M) Mode:



## Middle Channel



## High Channel

