# FCC Part 15C Test Report

# FCC ID: 2AH4KFW6X

| | |
|---|---|
| Product Name: | Mini Pc |
| Trademark: | N/A |
| Model Name : | FW6A-0 |
| Prepared For :<br><br>Address : | Protectli<br><br>6353 Corte del Abeto Suite 104 Carlsbad, CA 92011 |
| Prepared By :<br><br>Address : | Shenzhen BCTC Testing Co., Ltd.<br><br>BCTC Building & 1-2F, East of B Building, Pengzhou Industrial, Fuyuan 1st Road, Qiaotou Community, Fuyong Street, Bao'an District, Shenzhen, China |
| Test Date: | Oct. 24– Oct. 31, 2017 |
| Date of Report : | Oct. 31, 2017 |
| Report No.: | BCTC-FY170805564E |

# TEST RESULT CERTIFICATION

| | |
|---|---|
| **Applicant's name**..... : | Protectli |
| Address..... : | 6353 Corte del Abeto Suite 104 Carlsbad, CA 92011 |
| **Manufacture's Name**..... : | SHENZHEN XINSAIKE TECHNOLOGY Co.,Ltd |
| Address..... : | No. 46 Workshop, The Fourth Industry Zone of Shuitian, Shiyan , Baoan, Shenzhen, Guangdong, China. |
| **Product description** | |
| Product name.....: | Mini Pc |
| Model and/or type reference : | FW6A-0 |
| **Standards**..... : | FCC Part15.247<br>KDB 558074 D01 DTS Meas Guidance v04<br>KDB 662911 D01 Multiple Transmitter Output v02r01<br>ANSI C63.10:2013 |

This device described above has been tested by BCTC, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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| | | |
|---|---|---|
| Prepared by(Engineer): | Eric Yang | Eric Yang |
| Reviewer(Supervisor): | Jade Yang | Jade Yang |
| Approved(Manager): | Carson Zhang | Carson Zhang |

**Table of Contents**

**Page**


**1 . SUMMARY OF TEST RESULTS 6**

**1.1 TEST FACILITY 7**

**1.2 MEASUREMENT UNCERTAINTY 7**

**2 . GENERAL INFORMATION 8**

**2.1 GENERAL DESCRIPTION OF EUT 8**

**2.2 DESCRIPTION OF TEST MODES 9**

**2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED 10**

**2.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE) 10**

**2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS 11**

**3 . EMC EMISSION TEST 12**

**3.1 CONDUCTED EMISSION MEASUREMENT 12**

**3.1.1 POWER LINE CONDUCTED EMISSION LIMITS 12**

**3.1.2 TEST PROCEDURE 12**

**3.1.3 DEVIATION FROM TEST STANDARD 12**

**3.1.4 TEST SETUP 13**

**3.1.5 EUT OPERATING CONDITIONS 13**

**3.1.6 TEST RESULTS 14**

**3.2 RADIATED EMISSION MEASUREMENT 16**

**3.2.1 RADIATED EMISSION LIMITS 16**

**3.2.2 TEST PROCEDURE 17**

**3.2.3 DEVIATION FROM TEST STANDARD 17**

**3.2.4 TEST SETUP 17**

**3.2.5 EUT OPERATING CONDITIONS 19**

**3.2.6 TEST RESULTS (BETWEEN 9KHZ – 30 MHZ) 20**

**3.2.7 TEST RESULTS (BETWEEN 30MHZ – 1GHZ) 21**

**3.2.8 TEST RESULTS (1GHZ~25GHZ) 23**

**3.3 RADIATED BAND EMISSION MEASUREMENT 31**

**3.3.1 TEST REQUIREMENT: 31**

**3.3.2 TEST PROCEDURE 31**

**3.3.3 DEVIATION FROM TEST STANDARD 32**

**3.3.4 TEST SETUP 32**

**Table of Contents**

**Page**


3.3.5 EUT OPERATING CONDITIONS 32

4 . POWER SPECTRAL DENSITY TEST 35

4.1 APPLIED PROCEDURES / LIMIT 35
4.1.1 TEST PROCEDURE 35
4.1.2 DEVIATION FROM STANDARD 35
4.1.3 TEST SETUP 36
4.1.4 EUT OPERATION CONDITIONS 36
4.1.5 TEST RESULTS 37

5 . BANDWIDTH TEST 53

5.1 APPLIED PROCEDURES / LIMIT 53
5.1.1 TEST PROCEDURE 53
5.1.2 DEVIATION FROM STANDARD 53
5.1.3 TEST SETUP 53
5.1.4 EUT OPERATION CONDITIONS 53
5.1.5 TEST RESULTS 54

6 . PEAK OUTPUT POWER TEST 70

6.1 APPLIED PROCEDURES / LIMIT 70

6.1.1 TEST PROCEDURE 70
6.1.2 DEVIATION FROM STANDARD 70
6.1.3 TEST SETUP 70
6.1.4 EUT OPERATION CONDITIONS 70
6.1.5 TEST RESULTS 71

7 . 100 KHZ BANDWIDTH OF FREQUENCY BAND EDGE 72
7.1 APPLICABLE STANDARD 72
7.2 TEST PROCEDURE 72
7.3 DEVIATION FROM STANDARD 72
7.4 TEST SETUP 72
7.5 EUT OPERATION CONDITIONS 73
7.1 TEST RESULTS 73

8 . DUTY CYCLE OF TEST SIGNAL 90

8.1 STANDARD REQUIREMENT 90

8.2 FORMULA: 90

9 . ANTENNA REQUIREMENT 93

9.1 STANDARD REQUIREMENT 93

**Table of Contents**

**Page**

**9.2 EUT ANTENNA** **93**

**10 . EUT TEST PHOTO** **94**

**11 . EUT PHOTO** **96**

**APPENDIX-PHOTOGRAPHS OF EUT CONSTRUCTIONAL DETAILS**

## 1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

| FCC Part15 (15.247) , Subpart C | | | |
|---|---|---|---|
| Standard Section | Test Item | Judgment | Remark |
| 15.207 | Conducted Emission | PASS | |
| 15.247 (a)(2) | 6dB Bandwidth | PASS | |
| 15.247 (b) | Peak Output Power | PASS | |
| 15.247 (c) | Radiated Spurious Emission | PASS | |
| 15.247 (d) | Power Spectral Density | PASS | |
| 15.205 | Band Edge Emission | PASS | |
| 15.203 | Antenna Requirement | PASS | |

NOTE:

(1)" N/A" denotes test is not applicable in this Test Report

## 1.1 TEST FACILITY

Shenzhen BCTC Testing Co., Ltd.
Add. : BCTC Building & 1-2F, East of B Building, Pengzhou Industrial, Fuyuan 1st Road, Qiaotou Community, Fuyong Street, Bao'an District, Shenzhen, China
Test Firm Registration Number: 712850

## 1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement **y ± U**，where expended 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 | ±1.38dB |
| 2 | RF power,conducted | ±0.16dB |
| 3 | Spurious emissions,conducted | ±0.21dB |
| 4 | All emissions,radiated(<1G) | ±4.68dB |
| 5 | All emissions,radiated(>1G) | ±4.89dB |
| 6 | Temperature | ±0.5°C |
| 7 | Humidity | ±2% |

# 2. GENERAL INFORMATION

## 2.1 GENERAL DESCRIPTION OF EUT

| | |
|---|---|
| Equipment | Mini Pc |
| Trade Name | N/A |
| Model Name | FW6A-0 |
| Model Difference | N/A |
| Product Description | Operation Frequency: 802.11b/g/n20MHz:2412~2462 MHz<br>802.11n40MHz:2422~2452 MHz<br>Modulation Type: WIFI: OFDM/DSSS<br>Bit Rate of Transmitter 802.11b:11/5.5/2/1 Mbps<br>802.11g:54/48/36/24/18/12/9/6Mbps<br>802.11n Up to 300Mbps<br>Number Of Channel 802.11b/g/n20MHz:11 CH<br>802.11n40MHz: 7 CH<br>Antenna Designation: Please see Note 3.<br>Based on the application, features, or specification exhibited in User's Manual, the EUT is considered as an ITE/Computing Device. More details of EUT technical specification, please refer to the User's Manual. |
| Channel List | Please refer to the Note 2. |
| Power Source | Main unit: DC 12V 3.33A<br>External adaptor:<br>Input: AC100-240V 50/60Hz 1.7A<br>Output: DC 12V 3.33A 40W |
| hardware version | -- |
| Software version | -- |
| Serial number | -- |
| Connecting I/O Port(s) | Please refer to the User's Manual |

Note:

1. For a more detailed features description, please refer to the manufacturer’s specifications or the User's Manual.

2.

| Channel List for 802.11b/g/n(20) | | | | | | | |
|---|---|---|---|---|---|---|---|
| Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
| 01 | 2412 | 04 | 2427 | 07 | 2442 | 10 | 2457 |
| 02 | 2417 | 05 | 2432 | 08 | 2447 | 11 | 2462 |
| 03 | 2422 | 06 | 2437 | 09 | 2452 | | |

| Channel List for 802.11n(40) | | | | | | | |
|---|---|---|---|---|---|---|---|
| Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
| 03 | 2422 | 05 | 2432 | 07 | 2442 | 09 | 2452 |
| 04 | 2427 | 06 | 2437 | 08 | 2447 | | |

3.

Table for Filed Antenna

| Ant. | Brand | Model Name | Antenna Type | Connector | Gain (dBi) | NOTE |
|---|---|---|---|---|---|---|
| 1 | N/A | N/A | SMA Antenna | N/A | 1.2 | |
| 2 | N/A | N/A | SMA Antenna | N/A | 1.2 | |

Note1: Directional Gain=1.2dBi+10log(2)=4.21dBi

Note2: The EUT 802.11n (20) and 802.11n(40) is support MIMO mode.

## 2.2 DESCRIPTION OF TEST MODES

| Pretest Mode | Description |
|---|---|
| Mode 1 | 802.11b CH1/ CH6/ CH11 |
| Mode 2 | 802.11g CH1/ CH6/ CH11 |
| Mode 3 | 802.11n20 CH1/ CH6/ CH11 |
| Mode 4 | 802.11n40 CH3/ CH6/ CH9 |
| Mode 5 | Link Mode |

| **Conducted Emission** | |
|---|---|
| Final Test Mode | Description |
| Mode 5 | Link Mode |

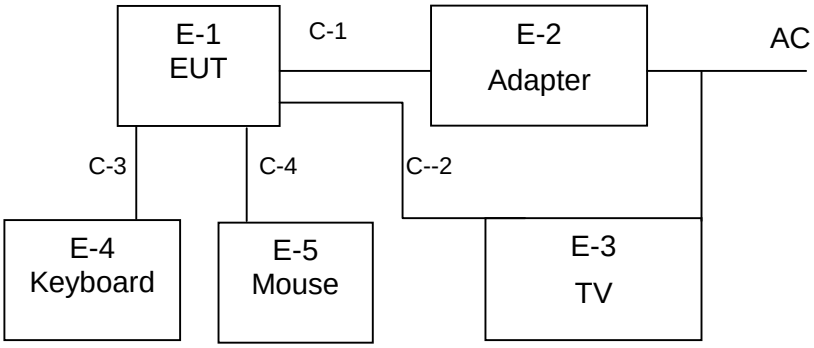
| **For Radiated Emission** | |
|---|---|
| Final Test Mode | Description |
| Mode 1 | 802.11b CH1/ CH6/ CH11 |
| Mode 2 | 802.11g CH1/ CH6/ CH11 |
| Mode 3 | 802.11n20 CH1/ CH6/ CH11 |
| Mode 4 | 802.11n40 CH3/ CH6/ CH9 |

Note:

(1) The measurements are performed at all Bit Rate of Transmitter, the worst data was reported.

## 2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Radiated Spurious Emission / Conducted Emission Test




## 2.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

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

| Item | Equipment | Mfr/Brand | Model/Type No. | Series No. | Note |
|---|---|---|---|---|---|
| E-1 | Mini Pc | N/A | FW6A-0 | N/A | EUT |
| E-2 | Adapter | N/A | KPL-040F-VI | N/A | |
| E-3 | TV | PHILIPS | 24PFL3543/T3 | WJ3C1528000141 | Lab Provide |
| E-4 | Keyboard | Minggaun | MG-020 | N/A | |
| E-5 | Mouse | Minggaun | MG-K50 | N/A | |

| Item | Shielded Type | Ferrite Core | Length | Note |
|---|---|---|---|---|
| C-1 | NO | NO | 1.2M | DC cable unshielded |
| C-2 | NO | NO | 1.0M | HDMI cable unshielded |
| C-3 | NO | NO | 1.5M | USB cable unshielded |
| C-4 | NO | NO | 1.5M | USB cable unshielded |

Note:

(1) The support equipment was authorized by Declaration of Confirmation.

(2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.

## 2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS

Radiation Test equipment

| Item | Equipment | Manufacturer | Type No. | Serial No. | Last calibration | Calibrated until |
|---|---|---|---|---|---|---|
| 1 | Spectrum Analyzer (9kHz-26.5GHz) | Agilent | E4407B | MY45108040 | 2017.08.27 | 2018.08.26 |
| 2 | Test Receiver (9kHz-7GHz) | R&S | ESPI | 101318 | 2017.08.27 | 2018.08.26 |
| 3 | Bilog Antenna (30MHz-1GHz) | R&S | VULB 9168 | VULB91 68-438 | 2017.08.27 | 2018.08.26 |
| 4 | Horn Antenna (1GHz-18GHz) | SCHWARZBECK | BBHA9120D | 1201 | 2017.09.03 | 2018.09.02 |
| 5 | Horn Antenna (14GHz-40GHz) | SCHWARZBECK | BBHA 9170 | 9170-181 | 2017.09.03 | 2018.09.02 |
| 6 | Amplifier (9KHz-6GHz) | SCHWARZBECK | BBV9744 | 9744-0037 | 2017.08.27 | 2018.08.26 |
| 7 | Amplifier (1GHz-18GHz) | SCHWARZBECK | BBV9718 | 9718-309 | 2017.08.27 | 2018.08.26 |
| 8 | Amplifier (18GHz-40GHz) | SCHWARZBECK | BBV 9721 | 9721-205 | 2017.08.27 | 2018.08.26 |
| 9 | Loop Antenna (9KHz-30MHz) | SCHWARZBECK | FMZB1519B | 00014 | 2017.09.03 | 2018.09.02 |
| 10 | RF cables1 (9kHz-1GHz) | R&S | R203 | R20X | 2017.08.27 | 2018.08.26 |
| 11 | RF cables2 (1GHz-40GHz) | R&S | R204 | R21X | 2017.08.27 | 2018.08.26 |
| 12 | Antenna connector | Florida RF Labs | N/A | RF 01# | 2017.08.27 | 2018.08.26 |
| 13 | Power Metter | ANRITSU | ML2487A | 6K00001568 | 2017.08.27 | 2018.08.26 |
| 14 | Power Sensor (AV) | ANRITSU | ML2491A | 030989 | 2017.08.27 | 2018.08.26 |
| 15 | Signal Analyzer 9kHz-26.5GHz | Agilent | N9010A | MY48030494 | 2017.08.27 | 2018.08.26 |
| 16 | Test Receiver 20kHz-40GHz | R&S | ESU 40 | 100376 | 2017.08.27 | 2018.08.26 |
| 17 | D.C. Power Supply | LongWei | PS-305D | 010964729 | 2017.08.27 | 2018.08.26 |

Conduction Test equipment

| Item | Equipment | Manufacturer | Type No. | Serial No. | Last calibration | Calibrated until |
|---|---|---|---|---|---|---|
| 1 | Test Receiver | R&S | ESCI | 1166.5950K03-101165-ha | 2017.08.27 | 2018.08.26 |
| 2 | LISN | SCHWARZBECK | NSLK8127 | 8127739 | 2017.08.27 | 2018.08.26 |
| 3 | LISN | R&S | NSLK8126 | 8126487 | 2017.08.27 | 2018.08.26 |
| 4 | RF cables | R&S | R204 | R20X | 2017.08.27 | 2018.08.26 |
| 5 | Attenuator | R&S | ESH3-Z2 | 143206 | 2017.08.27 | 2018.08.26 |

# 3. EMC EMISSION TEST

## 3.1 CONDUCTED EMISSION MEASUREMENT

### 3.1.1 POWER LINE CONDUCTED EMISSION Limits (Frequency Range 150KHz-30MHz)

| FREQUENCY (MHz) | Limit (dBuV) | | Standard |
|---|---|---|---|
| | Quasi-peak | Average | |
| 0.15 -0.5 | 66 - 56 * | 56 - 46 * | FCC |
| 0.50 -5.0 | 56.00 | 46.00 | FCC |
| 5.0 -30.0 | 60.00 | 50.00 | FCC |

Note:

(1) The tighter limit applies at the band edges.

(2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver

| Receiver Parameters | Setting |
|---|---|
| Attenuation | 10 dB |
| Start Frequency | 0.15 MHz |
| Stop Frequency | 30 MHz |
| IF Bandwidth | 9 kHz |

### 3.1.2 TEST PROCEDURE

a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.

b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.

c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.

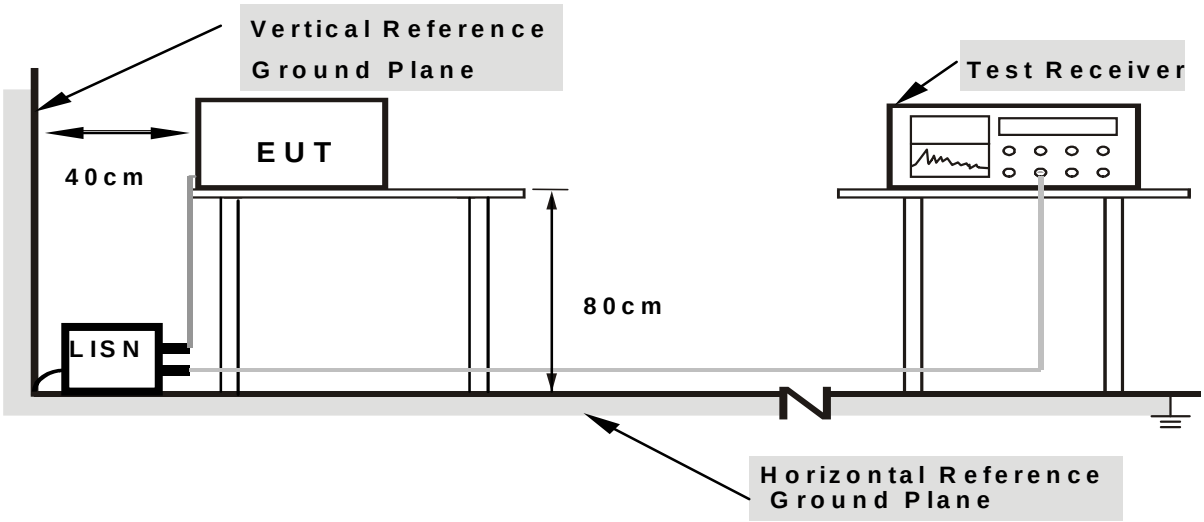
d. LISN at least 80 cm from nearest part of EUT chassis.

e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

### 3.1.3 DEVIATION FROM TEST STANDARD

No deviation

### 3.1.4 TEST SETUP




Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

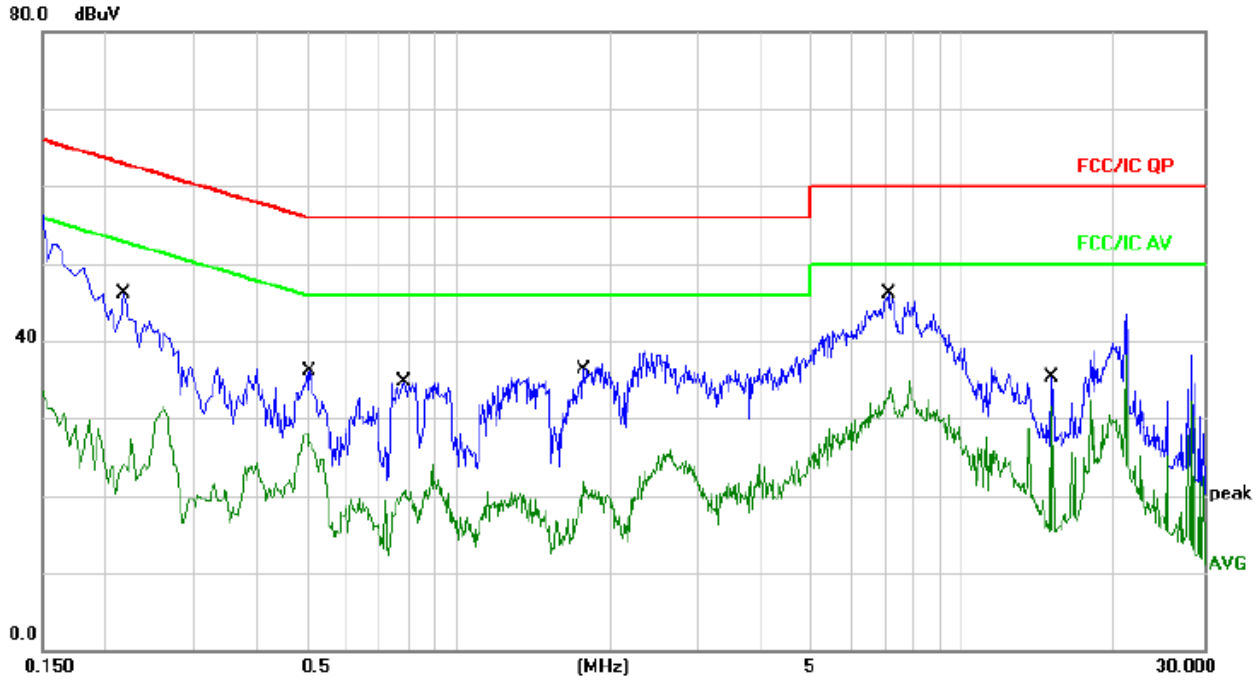
### 3.1.5 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

We pretest AC 120V and AC 240V, the worst voltage was AC 120V and the data recording in the report.

### 3.1.6 TEST RESULTS

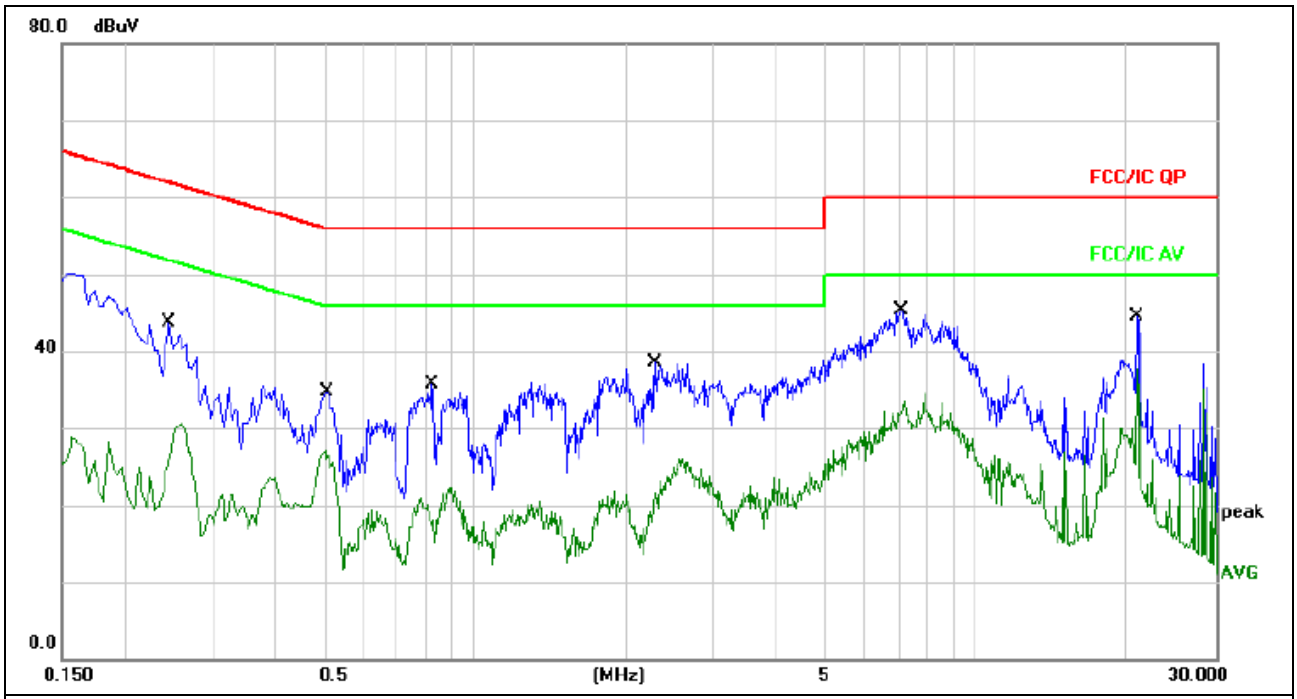
| | | | |
|---|---|---|---|
| Temperature : | 26℃ | Relative Humidity : | 54% |
| Pressure : | 1010hPa | Phase : | L |
| Test Voltage : | DC 12V from Adapter | Test Mode : | Mode 5 |




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

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | Detector | Comment |
| 1 | | 0.2180 | 36.39 | 9.65 | 46.04 | 62.89 | -16.85 | QP | |
| 2 | | 0.2180 | 17.65 | 9.65 | 27.30 | 52.89 | -25.59 | AVG | |
| 3 | | 0.5020 | 26.44 | 9.68 | 36.12 | 56.00 | -19.88 | QP | |
| 4 | | 0.5020 | 18.50 | 9.68 | 28.18 | 46.00 | -17.82 | AVG | |
| 5 | | 0.7820 | 25.12 | 9.68 | 34.80 | 56.00 | -21.20 | QP | |
| 6 | | 0.7820 | 11.05 | 9.68 | 20.73 | 46.00 | -25.27 | AVG | |
| 7 | | 1.7780 | 26.63 | 9.71 | 36.34 | 56.00 | -19.66 | QP | |
| 8 | | 1.7780 | 12.23 | 9.71 | 21.94 | 46.00 | -24.06 | AVG | |
| 9 | * | 7.1139 | 36.26 | 9.80 | 46.06 | 60.00 | -13.94 | QP | |
| 10 | | 7.1139 | 24.15 | 9.80 | 33.95 | 50.00 | -16.05 | AVG | |
| 11 | | 14.9499 | 25.44 | 9.86 | 35.30 | 60.00 | -24.70 | QP | |
| 12 | | 14.9499 | 21.60 | 9.86 | 31.46 | 50.00 | -18.54 | AVG | |

| | | | |
|---|---|---|---|
| Temperature : | 26℃ | Relative Humidity : | 54% |
| Pressure : | 1010hPa | Phase : | N |
| Test Voltage : | DC 12V from Adapter | Test Mode : | Mode 5 |




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

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | | |
|---|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV | dBuV | dB | Detector | Comment |
| 1 | | 0.2460 | 34.11 | 9.65 | 43.76 | 61.89 | -18.13 | QP | |
| 2 | | 0.2460 | 21.14 | 9.65 | 30.79 | 51.89 | -21.10 | AVG | |
| 3 | | 0.5020 | 25.04 | 9.68 | 34.72 | 56.00 | -21.28 | QP | |
| 4 | | 0.5020 | 17.36 | 9.68 | 27.04 | 46.00 | -18.96 | AVG | |
| 5 | | 0.8260 | 25.95 | 9.69 | 35.64 | 56.00 | -20.36 | QP | |
| 6 | | 0.8260 | 12.64 | 9.69 | 22.33 | 46.00 | -23.67 | AVG | |
| 7 | | 2.2860 | 28.74 | 9.72 | 38.46 | 56.00 | -17.54 | QP | |
| 8 | | 2.2860 | 16.42 | 9.72 | 26.14 | 46.00 | -19.86 | AVG | |
| 9 | | 7.0939 | 35.45 | 9.80 | 45.25 | 60.00 | -14.75 | QP | |
| 10 | | 7.0939 | 24.62 | 9.80 | 34.42 | 50.00 | -15.58 | AVG | |
| 11 | | 20.9220 | 34.66 | 9.85 | 44.51 | 60.00 | -15.49 | QP | |
| 12 | * | 20.9220 | 27.77 | 9.85 | 37.62 | 50.00 | -12.38 | AVG | |

## 3.2 RADIATED EMISSION MEASUREMENT

### 3.2.1 RADIATED EMISSION LIMITS (Frequency Range 9kHz-1000MHz)

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

| Frequencies (MHz) | Field Strength (micorvolts/meter) | Measurement Distance (meters) |
|---|---|---|
| 0.009~0.490 | 2400/F(KHz) | 300 |
| 0.490~1.705 | 24000/F(KHz) | 30 |
| 1.705~30.0 | 30 | 30 |
| 30~88 | 100 | 3 |
| 88~216 | 150 | 3 |
| 216~960 | 200 | 3 |
| Above 960 | 500 | 3 |

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

| FREQUENCY (MHz) | Limit (dBuV/m) (at 3M) | |
|---|---|---|
| | PEAK | AVERAGE |
| Above 1000 | 74 | 54 |

Notes:

(1) The limit for radiated test was performed according to FCC PART 15C.

(2) The tighter limit applies at the band edges.

(3) Emission level (dBuV/m)=20log Emission level (uV/m).

| Spectrum Parameter | Setting |
|---|---|
| Attenuation | Auto |
| Start Frequency | 1000 MHz |
| Stop Frequency | 25GHz |
| RB / VB (emission in restricted band) | 1 MHz / 1 MHz for Peak, 1 MHz / *10Hz* for Average |

| Receiver Parameter | Setting |
|---|---|
| Attenuation | Auto |
| Start ~ Stop Frequency | 9kHz~150kHz / RB 200Hz for QP |
| Start ~ Stop Frequency | 150kHz~30MHz / RB 9kHz for QP |
| Start ~ Stop Frequency | 30MHz~1000MHz / RB 120kHz for QP |

### 3.2.2 TEST PROCEDURE

Below 1GHz test procedure as below:

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.
b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

Above 1GHz test procedure as below:

g. Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 metre to 1.5 metre( Above 18GHz the distance is 1 meter and table is 1.5 metre).
h. Test the EUT in the lowest channel ,the middle channel ,the Highest channel

   Note:

   Both horizontal and vertical antenna polarities were tested
   and performed pretest to three orthogonal axis. The worst case emissions were reported

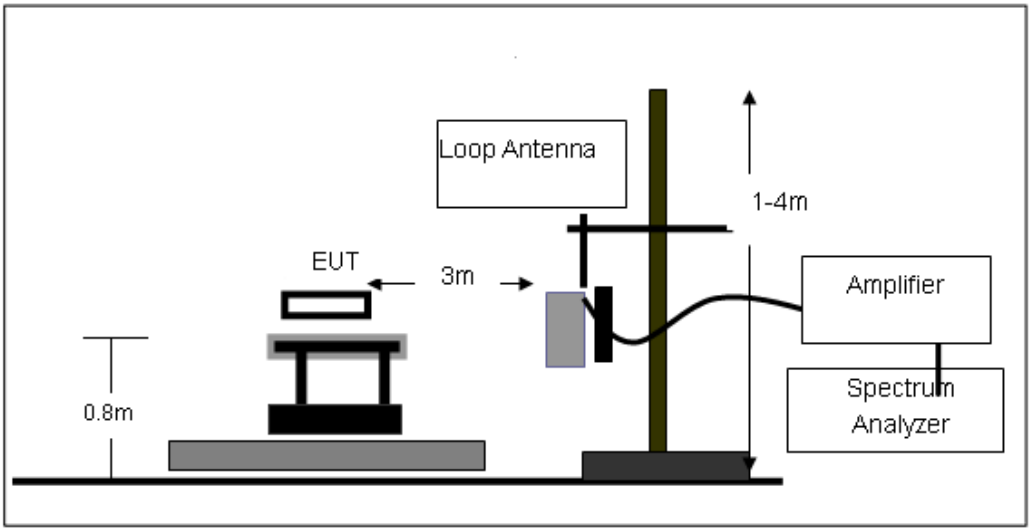
   We pretest AC 120V and AC 240V, the worst voltage was AC 120V and the data recording in t he report.

### 3.2.3 DEVIATION FROM TEST STANDARD

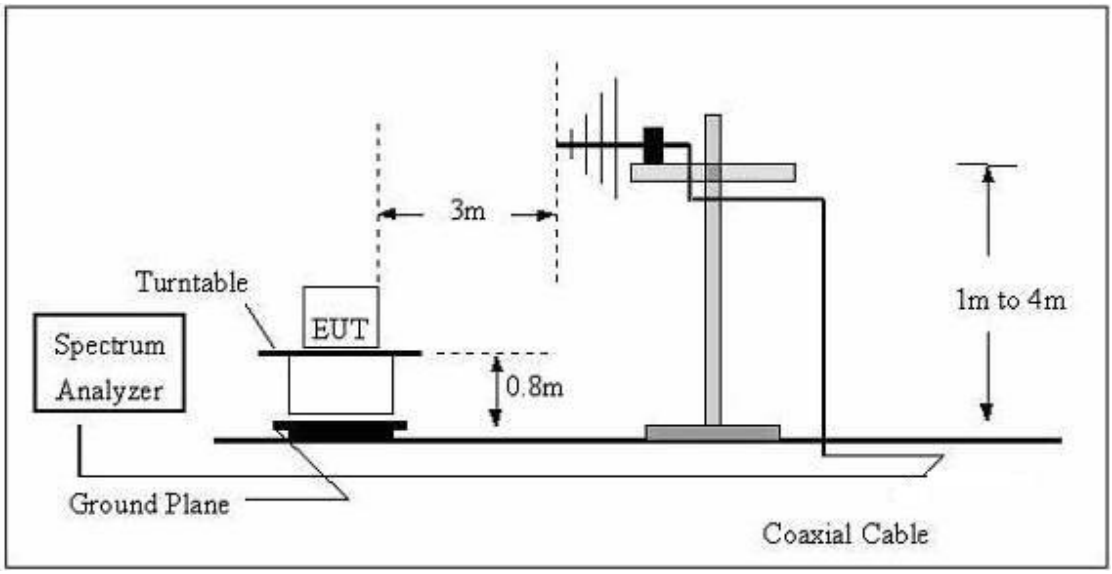
No deviation

### 3.2.4 TEST SETUP

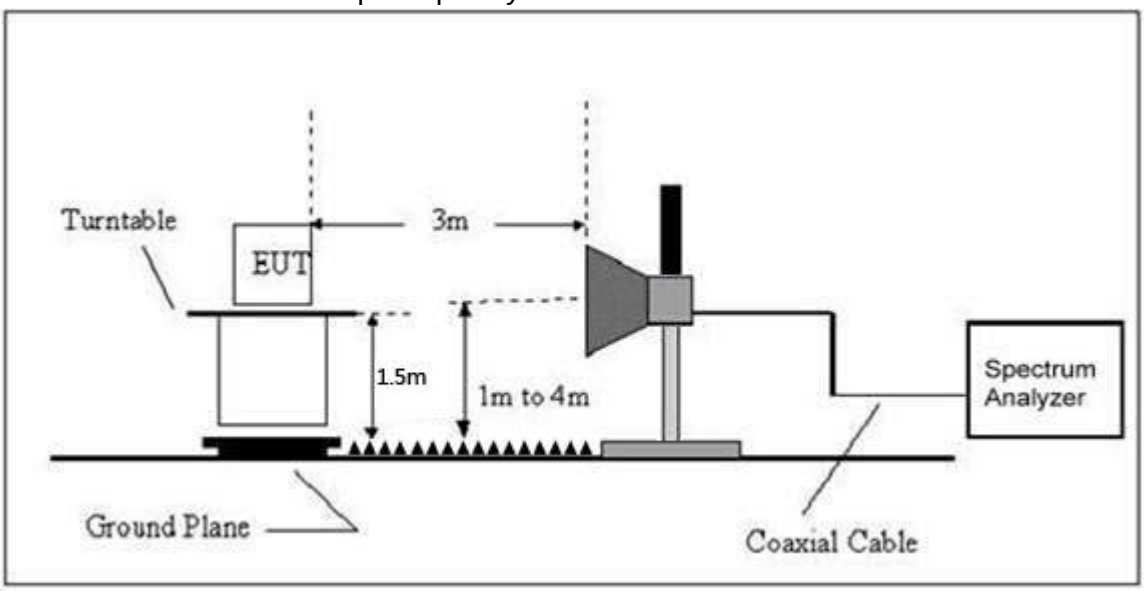
（A）Radiated Emission Test-Up Frequency Below 30MHz



（B）Radiated Emission Test-Up Frequency 30MHz~1GHz




（C）Radiated Emission Test-Up Frequency Above 1GHz




### 3.2.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

### 3.2.6 TEST RESULTS (BETWEEN 9KHZ – 30 MHZ)

| | | | |
|---|---|---|---|
| Temperature: | 20℃ | Relative Humidtity: | 48% |
| Pressure: | 1010 hPa | Test Voltage : | DC 12V from Adapter |
| Test Mode : | Mode 5 | Polarization : | -- |

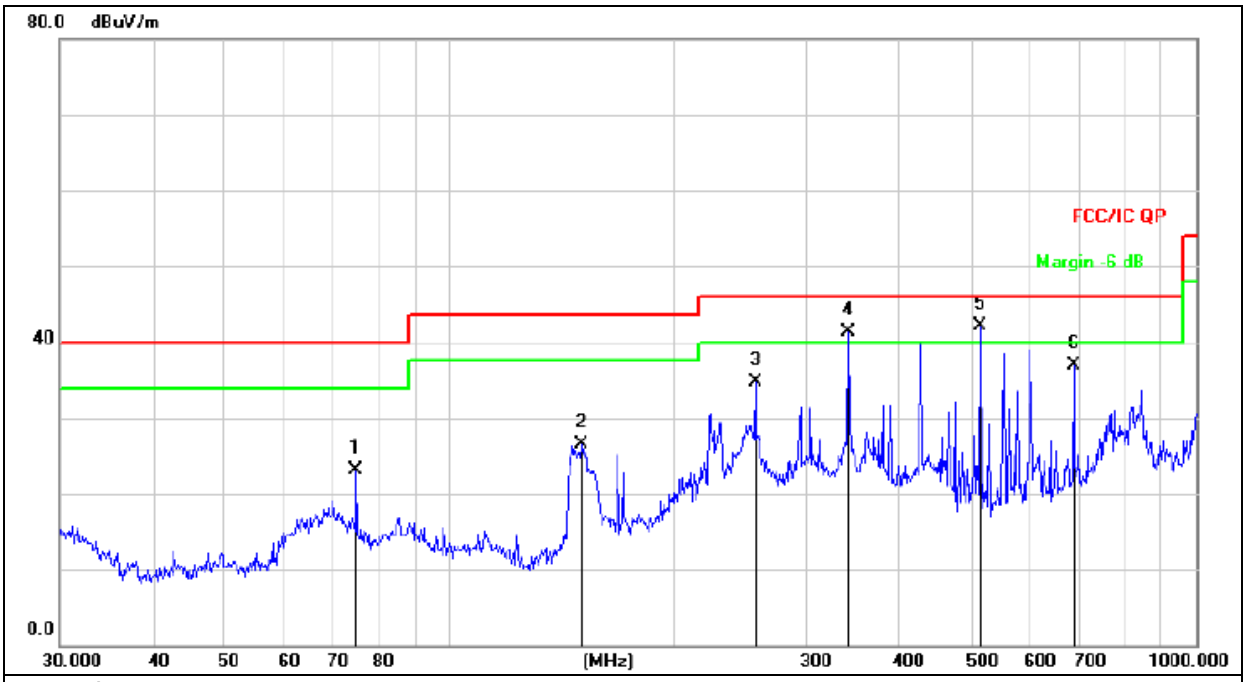
| Freq. | Reading | Limit | Margin | State |
|---|---|---|---|---|
| (MHz) | (dBuV/m) | (dBuV/m) | (dB) | P/F |
| -- | -- | -- | -- | PASS |
| -- | -- | -- | -- | PASS |

**NOTE:**

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
Distance extrapolation factor =40 log (specific distance/test distance)(dB);
Limit line = specific limits(dBuv) + distance extrapolation factor.

### 3.2.7 TEST RESULTS (BETWEEN 30MHZ – 1GHZ)

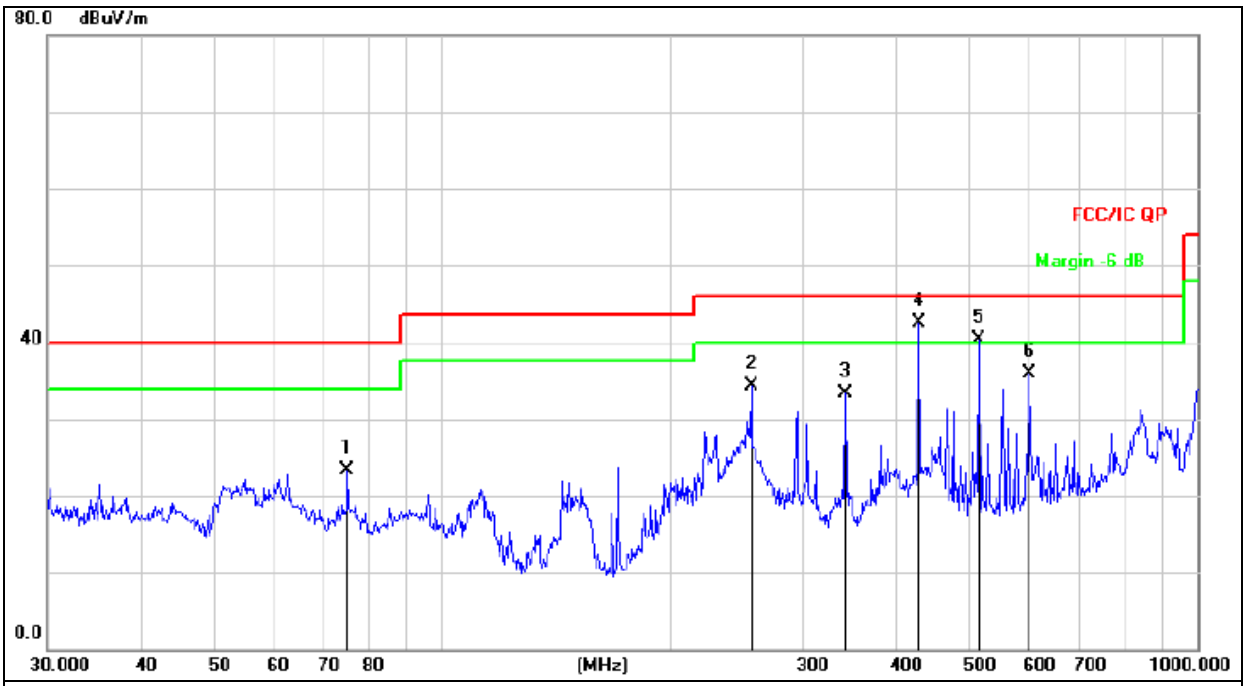
| | | | |
|---|---|---|---|
| Temperature : | 26℃ | Relative Humidity : | 54% |
| Pressure : | 1010 hPa | Polarization : | Horizontal |
| Test Voltage : | DC 12V from Adapter | | |
| Test Mode : | Mode 5 | | |




Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | |
|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV/m | dB/m | dB | Detector |
| 1 | | 74.9191 | 43.65 | -20.46 | 23.19 | 40.00 | -16.81 | QP |
| 2 | | 150.0107 | 46.19 | -19.64 | 26.55 | 43.50 | -16.95 | QP |
| 3 | | 256.5210 | 48.25 | -13.52 | 34.73 | 46.00 | -11.27 | QP |
| 4 | ! | 341.9786 | 52.05 | -10.67 | 41.38 | 46.00 | -4.62 | QP |
| 5 | * | 513.6331 | 49.04 | -6.85 | 42.19 | 46.00 | -3.81 | QP |
| 6 | | 684.7454 | 40.19 | -3.24 | 36.95 | 46.00 | -9.05 | QP |

| | | | |
|---|---|---|---|
| Temperature : | 26℃ | Relative Humidity : | 54% |
| Pressure : | 1010 hPa | Polarization : | Vertical |
| Test Voltage : | DC 12V from Adapter | | |
| Test Mode : | Mode 5 | | |




Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.

| No. | Mk. | Freq. | Reading Level | Correct Factor | Measure-ment | Limit | Over | |
|---|---|---|---|---|---|---|---|---|
| | | MHz | dBuV | dB | dBuV/m | dB/m | dB | Detector |
| 1 | | 74.9191 | 43.74 | -20.46 | 23.28 | 40.00 | -16.72 | QP |
| 2 | | 256.5210 | 47.83 | -13.52 | 34.31 | 46.00 | -11.69 | QP |
| 3 | | 341.9786 | 43.93 | -10.67 | 33.26 | 46.00 | -12.74 | QP |
| 4 | * | 428.0192 | 51.22 | -8.70 | 42.52 | 46.00 | -3.48 | QP |
| 5 | ! | 513.6331 | 47.21 | -6.85 | 40.36 | 46.00 | -5.64 | QP |
| 6 | | 599.3212 | 40.42 | -4.50 | 35.92 | 46.00 | -10.08 | QP |

### 3.2.8 TEST RESULTS (1GHZ~25GHZ)

**Ant. 1**

**802.11b**

| Polar (H/V) | Frequency (MHz) | Meter Reading (dBuV) | Pre-amplifier (dB) | Cable Loss (dB) | Antenna Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Detector Type |
|---|---|---|---|---|---|---|---|---|---|
| | | operation frequency:2412 | | | | | | | |
| V | 4824.00 | 65.56 | 39.55 | 7.85 | 25.66 | 59.52 | 74.00 | -14.48 | PK |
| V | 4824.00 | 49.47 | 39.55 | 7.85 | 25.66 | 43.43 | 54.00 | -10.57 | AV |
| V | 7236.00 | 66.09 | 38.33 | 7.52 | 24.55 | 59.83 | 74.00 | -14.17 | PK |
| V | 7236.00 | 47.43 | 38.33 | 7.52 | 24.55 | 41.17 | 54.00 | -12.83 | AV |
| V | 15450.00 | 51.22 | 35.23 | 6.75 | 26.59 | 49.33 | 74.00 | -24.67 | PK |
| H | 4824.00 | 62.73 | 39.55 | 7.85 | 25.66 | 56.69 | 74.00 | -17.31 | PK |
| H | 4824.00 | 49.48 | 39.55 | 7.85 | 25.66 | 43.44 | 54.00 | -10.56 | AV |
| H | 7236.00 | 69.92 | 38.33 | 7.52 | 23.55 | 62.66 | 74.00 | -11.34 | PK |
| H | 7236.00 | 49.25 | 38.33 | 7.52 | 23.22 | 41.66 | 54.00 | -12.34 | AV |
| H | 15450.00 | 45.14 | 35.45 | 6.75 | 27.88 | 44.32 | 74.00 | -29.68 | PK |

| Polar (H/V) | Frequency (MHz) | Meter Reading (dBuV) | Pre-amplifier (dB) | Cable Loss (dB) | Antenna Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Detector Type |
|---|---|---|---|---|---|---|---|---|---|
| | | operation frequency:2437 | | | | | | | |
| V | 4874.00 | 66.09 | 38.89 | 7.57 | 25.45 | 60.22 | 74.00 | -13.78 | PK |
| V | 4874.00 | 49.14 | 38.89 | 7.57 | 25.45 | 43.27 | 54.00 | -10.73 | AV |
| V | 7311.00 | 65.92 | 38.78 | 7.35 | 24.78 | 59.27 | 74.00 | -14.73 | PK |
| V | 7311.00 | 47.67 | 38.78 | 7.35 | 24.78 | 41.02 | 54.00 | -12.98 | AV |
| V | 15450.00 | 51.89 | 35.89 | 6.42 | 26.47 | 48.89 | 74.00 | -25.11 | PK |
| H | 4874.00 | 64.23 | 38.89 | 7.57 | 25.45 | 58.36 | 74.00 | -15.64 | PK |
| H | 4874.00 | 48.58 | 38.89 | 7.57 | 25.45 | 42.71 | 54.00 | -11.29 | AV |
| H | 7311.00 | 69.49 | 38.78 | 7.35 | 24.78 | 62.84 | 74.00 | -11.16 | PK |
| H | 7311.00 | 48.24 | 38.78 | 7.35 | 24.78 | 41.59 | 54.00 | -12.41 | AV |
| H | 15450.00 | 48.14 | 36.68 | 6.42 | 26.65 | 44.53 | 74.00 | -29.47 | PK |

| Polar (H/V) | Frequency (MHz) | Meter Reading (dBuV) | Pre-amplifier (dB) | Cable Loss (dB) | Antenna Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Detector Type |
|---|---|---|---|---|---|---|---|---|---|
| | | operation frequency:2462 | | | | | | | |
| V | 4924.00 | 67.37 | 38.75 | 7.46 | 25.45 | 61.53 | 74.00 | -12.47 | PK |
| V | 4924.00 | 49.39 | 38.75 | 7.46 | 25.45 | 43.55 | 54.00 | -10.45 | AV |
| V | 7386.00 | 68.32 | 38.65 | 7.22 | 24.78 | 61.67 | 74.00 | -12.33 | PK |
| V | 7386.00 | 49.38 | 38.65 | 7.22 | 24.78 | 42.73 | 54.00 | -11.27 | AV |
| V | 15450.00 | 50.49 | 35.58 | 6.35 | 26.47 | 47.73 | 74.00 | -26.27 | PK |
| H | 4924.00 | 65.92 | 38.75 | 7.46 | 25.45 | 60.08 | 74.00 | -13.92 | PK |
| H | 4924.00 | 49.06 | 38.75 | 7.46 | 25.45 | 43.22 | 54.00 | -10.78 | AV |
| H | 7386.00 | 70.17 | 38.65 | 7.22 | 24.78 | 63.52 | 74.00 | -10.48 | PK |
| H | 7386.00 | 48.23 | 38.65 | 7.22 | 24.78 | 41.58 | 54.00 | -12.42 | AV |
| H | 15450.00 | 46.14 | 36.42 | 6.32 | 26.65 | 42.69 | 74.00 | -31.31 | PK |

**Remark:**

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,
   Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

**802.11g**

| Polar (H/V) | Frequency (MHz) | Meter Reading (dBuV) | Pre-amplifier (dB) | Cable Loss (dB) | Antenna Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Detector Type |
|---|---|---|---|---|---|---|---|---|---|
| | | operation frequency:2412 | | | | | | | |
| V | 4824.00 | 65.95 | 39.55 | 7.85 | 25.66 | 59.91 | 74.00 | -14.09 | PK |
| V | 4824.00 | 49.70 | 39.55 | 7.85 | 25.66 | 43.66 | 54.00 | -10.34 | AV |
| V | 7236.00 | 66.22 | 38.33 | 7.52 | 24.55 | 59.96 | 74.00 | -14.04 | PK |
| V | 7236.00 | 47.99 | 38.33 | 7.52 | 24.55 | 41.73 | 54.00 | -12.27 | AV |
| V | 15450.00 | 51.16 | 35.23 | 6.75 | 26.59 | 49.27 | 74.00 | -24.73 | PK |
| H | 4824.00 | 66.87 | 39.55 | 7.85 | 25.66 | 60.83 | 74.00 | -13.17 | PK |
| H | 4824.00 | 50.18 | 39.55 | 7.85 | 25.66 | 44.14 | 54.00 | -9.86 | AV |
| H | 7236.00 | 68.86 | 38.33 | 7.52 | 23.55 | 61.60 | 74.00 | -12.40 | PK |
| H | 7236.00 | 50.58 | 38.33 | 7.52 | 23.22 | 42.99 | 54.00 | -11.01 | AV |
| H | 15450.00 | 45.65 | 35.45 | 6.75 | 27.88 | 44.83 | 74.00 | -29.17 | PK |

| Polar (H/V) | Frequency (MHz) | Meter Reading (dBuV) | Pre-amplifier (dB) | Cable Loss (dB) | Antenna Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Detector Type |
|---|---|---|---|---|---|---|---|---|---|
| | | operation frequency:2437 | | | | | | | |
| V | 4874.00 | 65.56 | 38.89 | 7.57 | 25.45 | 59.69 | 74.00 | -14.31 | PK |
| V | 4874.00 | 49.03 | 38.89 | 7.57 | 25.45 | 43.16 | 54.00 | -10.84 | AV |
| V | 7311.00 | 66.34 | 38.78 | 7.35 | 24.78 | 59.69 | 74.00 | -14.31 | PK |
| V | 7311.00 | 48.57 | 38.78 | 7.35 | 24.78 | 41.92 | 54.00 | -12.08 | AV |
| V | 15450.00 | 52.78 | 35.89 | 6.42 | 26.47 | 49.78 | 74.00 | -24.22 | PK |
| H | 4874.00 | 63.99 | 38.89 | 7.57 | 25.45 | 58.12 | 74.00 | -15.88 | PK |
| H | 4874.00 | 49.94 | 38.89 | 7.57 | 25.45 | 44.07 | 54.00 | -9.93 | AV |
| H | 7311.00 | 67.73 | 38.78 | 7.35 | 24.78 | 61.08 | 74.00 | -12.92 | PK |
| H | 7311.00 | 49.21 | 38.78 | 7.35 | 24.78 | 42.56 | 54.00 | -11.44 | AV |
| H | 15450.00 | 48.16 | 36.68 | 6.42 | 26.65 | 44.55 | 74.00 | -29.45 | PK |

| Polar (H/V) | Frequency (MHz) | Meter Reading (dBuV) | Pre-amplifier (dB) | Cable Loss (dB) | Antenna Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Detector Type |
|---|---|---|---|---|---|---|---|---|---|
| | | operation frequency:2462 | | | | | | | |
| V | 4924.00 | 67.67 | 38.75 | 7.46 | 25.45 | 61.83 | 74.00 | -12.17 | PK |
| V | 4924.00 | 48.69 | 38.75 | 7.46 | 25.45 | 42.85 | 54.00 | -11.15 | AV |
| V | 7386.00 | 68.28 | 38.65 | 7.22 | 24.78 | 61.63 | 74.00 | -12.37 | PK |
| V | 7386.00 | 49.62 | 38.65 | 7.22 | 24.78 | 42.97 | 54.00 | -11.03 | AV |
| V | 15450.00 | 47.72 | 35.58 | 6.35 | 26.47 | 44.96 | 74.00 | -29.04 | PK |
| H | 4924.00 | 66.49 | 38.75 | 7.46 | 25.45 | 60.65 | 74.00 | -13.35 | PK |
| H | 4924.00 | 49.64 | 38.75 | 7.46 | 25.45 | 43.80 | 54.00 | -10.20 | AV |
| H | 7386.00 | 68.20 | 38.65 | 7.22 | 24.78 | 61.55 | 74.00 | -12.45 | PK |
| H | 7386.00 | 48.69 | 38.65 | 7.22 | 24.78 | 42.04 | 54.00 | -11.96 | AV |
| H | 15450.00 | 47.16 | 36.42 | 6.32 | 26.65 | 43.71 | 74.00 | -30.29 | PK |

**Remark:**

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,
   Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

**802.11n(20MHz)**

| Polar (H/V) | Frequency (MHz) | Meter Reading (dBuV) | Pre-amplifier (dB) | Cable Loss (dB) | Antenna Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Detector Type |
|---|---|---|---|---|---|---|---|---|---|
| | | operation frequency:2412 | | | | | | | |
| V | 4824.00 | 67.55 | 39.55 | 7.85 | 25.66 | 61.51 | 74.00 | -12.49 | PK |
| V | 4824.00 | 48.65 | 39.55 | 7.85 | 25.66 | 42.61 | 54.00 | -11.39 | AV |
| V | 7236.00 | 66.81 | 38.33 | 7.52 | 24.55 | 60.55 | 74.00 | -13.45 | PK |
| V | 7236.00 | 48.63 | 38.33 | 7.52 | 24.55 | 42.37 | 54.00 | -11.63 | AV |
| V | 15450.00 | 50.26 | 35.23 | 6.75 | 26.59 | 48.37 | 74.00 | -25.63 | PK |
| H | 4824.00 | 67.35 | 39.55 | 7.85 | 25.66 | 61.31 | 74.00 | -12.69 | PK |
| H | 4824.00 | 49.32 | 39.55 | 7.85 | 25.66 | 43.28 | 54.00 | -10.72 | AV |
| H | 7236.00 | 69.05 | 38.33 | 7.52 | 23.55 | 61.79 | 74.00 | -12.21 | PK |
| H | 7236.00 | 49.23 | 38.33 | 7.52 | 23.22 | 41.64 | 54.00 | -12.36 | AV |
| H | 15450.00 | 47.10 | 35.45 | 6.75 | 27.88 | 46.28 | 74.00 | -27.72 | PK |

| Polar (H/V) | Frequency (MHz) | Meter Reading (dBuV) | Pre-amplifier (dB) | Cable Loss (dB) | Antenna Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Detector Type |
|---|---|---|---|---|---|---|---|---|---|
| | | operation frequency:2437 | | | | | | | |
| V | 4874.00 | 66.46 | 38.89 | 7.57 | 25.45 | 60.59 | 74.00 | -13.41 | PK |
| V | 4874.00 | 49.28 | 38.89 | 7.57 | 25.45 | 43.41 | 54.00 | -10.59 | AV |
| V | 7311.00 | 67.11 | 38.78 | 7.35 | 24.78 | 60.46 | 74.00 | -13.54 | PK |
| V | 7311.00 | 47.03 | 38.78 | 7.35 | 24.78 | 40.38 | 54.00 | -13.62 | AV |
| V | 15450.00 | 46.65 | 35.89 | 6.42 | 26.47 | 43.65 | 74.00 | -30.35 | PK |
| H | 4874.00 | 65.31 | 38.89 | 7.57 | 25.45 | 59.44 | 74.00 | -14.56 | PK |
| H | 4874.00 | 49.54 | 38.89 | 7.57 | 25.45 | 43.67 | 54.00 | -10.33 | AV |
| H | 7311.00 | 69.41 | 38.78 | 7.35 | 24.78 | 62.76 | 74.00 | -11.24 | PK |
| H | 7311.00 | 48.43 | 38.78 | 7.35 | 24.78 | 41.78 | 54.00 | -12.22 | AV |
| H | 15450.00 | 49.21 | 36.68 | 6.42 | 26.65 | 45.60 | 74.00 | -28.40 | PK |

| Polar (H/V) | Frequency (MHz) | Meter Reading (dBuV) | Pre-amplifier (dB) | Cable Loss (dB) | Antenna Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Detector Type |
|---|---|---|---|---|---|---|---|---|---|
| | | operation frequency:2462 | | | | | | | |
| V | 4924.00 | 68.54 | 38.75 | 7.46 | 25.45 | 62.70 | 74.00 | -11.30 | PK |
| V | 4924.00 | 46.27 | 38.75 | 7.46 | 25.45 | 40.43 | 54.00 | -13.57 | AV |
| V | 7386.00 | 66.91 | 38.65 | 7.22 | 24.78 | 60.26 | 74.00 | -13.74 | PK |
| V | 7386.00 | 49.27 | 38.65 | 7.22 | 24.78 | 42.62 | 54.00 | -11.38 | AV |
| V | 15450.00 | 46.06 | 35.58 | 6.35 | 26.47 | 43.30 | 74.00 | -30.70 | PK |
| H | 4924.00 | 65.52 | 38.75 | 7.46 | 25.45 | 59.68 | 74.00 | -14.32 | PK |
| H | 4924.00 | 50.31 | 38.75 | 7.46 | 25.45 | 44.47 | 54.00 | -9.53 | AV |
| H | 7386.00 | 67.49 | 38.65 | 7.22 | 24.78 | 60.84 | 74.00 | -13.16 | PK |
| H | 7386.00 | 49.55 | 38.65 | 7.22 | 24.78 | 42.90 | 54.00 | -11.10 | AV |
| H | 15450.00 | 47.14 | 36.42 | 6.32 | 26.65 | 43.69 | 74.00 | -30.31 | PK |

**Remark:**

**1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,**

**Margin= Emission Level - Limit**

**2. If peak below the average limit, the average emission was no test.**

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

**802.11n(40MHz)**

| Polar (H/V) | Frequency (MHz) | Meter Reading (dBuV) | Pre-amplifier (dB) | Cable Loss (dB) | Antenna Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Detector Type |
|---|---|---|---|---|---|---|---|---|---|
| | | operation frequency:2422 | | | | | | | |
| V | 4844.000 | 68.35 | 39.55 | 7.77 | 25.66 | 62.23 | 74.00 | -11.77 | PK |
| V | 4844.000 | 48.23 | 39.55 | 7.77 | 25.66 | 42.11 | 54.00 | -11.89 | AV |
| V | 7266.000 | 66.39 | 38.33 | 7.30 | 24.55 | 59.91 | 74.00 | -14.09 | PK |
| V | 7266.000 | 48.54 | 38.33 | 7.30 | 24.55 | 42.06 | 54.00 | -11.94 | AV |
| V | 15450.00 | 46.69 | 35.23 | 6.60 | 26.59 | 44.65 | 74.00 | -29.35 | PK |
| H | 4844.000 | 67.05 | 39.55 | 7.77 | 25.66 | 60.93 | 74.00 | -13.07 | PK |
| H | 4844.000 | 49.63 | 39.55 | 7.77 | 25.66 | 43.51 | 54.00 | -10.49 | AV |
| H | 7266.000 | 68.42 | 38.33 | 7.30 | 23.55 | 60.94 | 74.00 | -13.06 | PK |
| H | 7266.000 | 48.74 | 38.33 | 7.30 | 23.22 | 40.93 | 54.00 | -13.07 | AV |
| H | 15450.00 | 48.21 | 35.45 | 6.60 | 27.88 | 47.24 | 74.00 | -26.76 | PK |

| Polar (H/V) | Frequency (MHz) | Meter Reading (dBuV) | Pre-amplifier (dB) | Cable Loss (dB) | Antenna Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Detector Type |
|---|---|---|---|---|---|---|---|---|---|
| | | operation frequency:2437 | | | | | | | |
| V | 4874.00 | 67.05 | 38.89 | 7.57 | 25.45 | 61.18 | 74.00 | -12.82 | PK |
| V | 4874.00 | 49.23 | 38.89 | 7.57 | 25.45 | 43.36 | 54.00 | -10.64 | AV |
| V | 7311.00 | 66.18 | 38.78 | 7.35 | 24.78 | 59.53 | 74.00 | -14.47 | PK |
| V | 7311.00 | 47.01 | 38.78 | 7.35 | 24.78 | 40.36 | 54.00 | -13.64 | AV |
| V | 15450.00 | 46.22 | 35.89 | 6.42 | 26.47 | 43.22 | 74.00 | -30.78 | PK |
| H | 4874.00 | 64.94 | 38.89 | 7.57 | 25.45 | 59.07 | 74.00 | -14.93 | PK |
| H | 4874.00 | 48.56 | 38.89 | 7.57 | 25.45 | 42.69 | 54.00 | -11.31 | AV |
| H | 7311.00 | 68.54 | 38.78 | 7.35 | 24.78 | 61.89 | 74.00 | -12.11 | PK |
| H | 7311.00 | 47.79 | 38.78 | 7.35 | 24.78 | 41.14 | 54.00 | -12.86 | AV |
| H | 15450.00 | 46.56 | 36.68 | 6.42 | 26.65 | 42.95 | 74.00 | -31.05 | PK |

| Polar (H/V) | Frequency (MHz) | Meter Reading (dBuV) | Pre-amplifier (dB) | Cable Loss (dB) | Antenna Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Detector Type |
|---|---|---|---|---|---|---|---|---|---|
| | | operation frequency:2452 | | | | | | | |
| V | 4904.00 | 67.64 | 38.75 | 7.38 | 25.45 | 61.72 | 74.00 | -12.28 | PK |
| V | 4904.00 | 50.01 | 38.75 | 7.38 | 25.45 | 44.09 | 54.00 | -9.91 | AV |
| V | 7356.00 | 66.14 | 38.65 | 7.15 | 24.78 | 59.42 | 74.00 | -14.58 | PK |
| V | 7356.00 | 49.11 | 38.65 | 7.15 | 24.78 | 42.39 | 54.00 | -11.61 | AV |
| V | 15450.00 | 53.20 | 35.58 | 6.25 | 26.47 | 50.34 | 74.00 | -23.66 | PK |
| H | 4904.00 | 65.70 | 38.75 | 7.38 | 25.45 | 59.78 | 74.00 | -14.22 | PK |
| H | 4904.00 | 47.01 | 38.75 | 7.38 | 25.45 | 41.09 | 54.00 | -12.91 | AV |
| H | 7356.00 | 67.47 | 38.65 | 7.15 | 24.78 | 60.75 | 74.00 | -13.25 | PK |
| H | 7356.00 | 48.85 | 38.65 | 7.15 | 24.78 | 42.13 | 54.00 | -11.87 | AV |
| H | 15450.00 | 45.98 | 36.42 | 6.25 | 26.65 | 42.46 | 74.00 | -31.54 | PK |

**Remark:**

**1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,**
**Margin= Emission Level - Limit**

**2. If peak below the average limit, the average emission was no test.**

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

## Ant. 2

**802.11b**

| Polar (H/V) | Frequency (MHz) | Meter Reading (dBuV) | Pre-amplifier (dB) | Cable Loss (dB) | Antenna Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Detector Type |
|---|---|---|---|---|---|---|---|---|---|
| | | operation frequency:2412 | | | | | | | |
| V | 4824.00 | 66.69 | 39.55 | 7.85 | 25.66 | 60.65 | 74.00 | -13.35 | PK |
| V | 4824.00 | 49.26 | 39.55 | 7.85 | 25.66 | 43.22 | 54.00 | -10.78 | AV |
| V | 7236.00 | 66.25 | 38.33 | 7.52 | 24.55 | 59.99 | 74.00 | -14.01 | PK |
| V | 7236.00 | 47.55 | 38.33 | 7.52 | 24.55 | 41.29 | 54.00 | -12.71 | AV |
| V | 15450.00 | 50.58 | 35.23 | 6.75 | 26.59 | 48.69 | 74.00 | -25.31 | PK |
| H | 4824.00 | 63.65 | 39.55 | 7.85 | 25.66 | 57.61 | 74.00 | -16.39 | PK |
| H | 4824.00 | 49.35 | 39.55 | 7.85 | 25.66 | 43.31 | 54.00 | -10.69 | AV |
| H | 7236.00 | 69.03 | 38.33 | 7.52 | 23.55 | 61.77 | 74.00 | -12.23 | PK |
| H | 7236.00 | 49.56 | 38.33 | 7.52 | 23.22 | 41.97 | 54.00 | -12.03 | AV |
| H | 15450.00 | 45.27 | 35.45 | 6.75 | 27.88 | 44.45 | 74.00 | -29.55 | PK |

| Polar (H/V) | Frequency (MHz) | Meter Reading (dBuV) | Pre-amplifier (dB) | Cable Loss (dB) | Antenna Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Detector Type |
|---|---|---|---|---|---|---|---|---|---|
| | | operation frequency:2437 | | | | | | | |
| V | 4874.00 | 67.29 | 38.89 | 7.57 | 25.45 | 61.42 | 74.00 | -12.58 | PK |
| V | 4874.00 | 49.42 | 38.89 | 7.57 | 25.45 | 43.55 | 54.00 | -10.45 | AV |
| V | 7311.00 | 66.06 | 38.78 | 7.35 | 24.78 | 59.41 | 74.00 | -14.59 | PK |
| V | 7311.00 | 48.19 | 38.78 | 7.35 | 24.78 | 41.54 | 54.00 | -12.46 | AV |
| V | 15450.00 | 52.28 | 35.89 | 6.42 | 26.47 | 49.28 | 74.00 | -24.72 | PK |
| H | 4874.00 | 65.87 | 38.89 | 7.57 | 25.45 | 60.00 | 74.00 | -14.00 | PK |
| H | 4874.00 | 48.95 | 38.89 | 7.57 | 25.45 | 43.08 | 54.00 | -10.92 | AV |
| H | 7311.00 | 69.63 | 38.78 | 7.35 | 24.78 | 62.98 | 74.00 | -11.02 | PK |
| H | 7311.00 | 48.75 | 38.78 | 7.35 | 24.78 | 42.10 | 54.00 | -11.90 | AV |
| H | 15450.00 | 48.54 | 36.68 | 6.42 | 26.65 | 44.93 | 74.00 | -29.07 | PK |

| Polar (H/V) | Frequency (MHz) | Meter Reading (dBuV) | Pre-amplifier (dB) | Cable Loss (dB) | Antenna Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Detector Type |
|---|---|---|---|---|---|---|---|---|---|
| | | operation frequency:2462 | | | | | | | |
| V | 4924.00 | 67.79 | 38.75 | 7.46 | 25.45 | 61.95 | 74.00 | -12.05 | PK |
| V | 4924.00 | 50.12 | 38.75 | 7.46 | 25.45 | 44.28 | 54.00 | -9.72 | AV |
| V | 7386.00 | 68.39 | 38.65 | 7.22 | 24.78 | 61.74 | 74.00 | -12.26 | PK |
| V | 7386.00 | 49.54 | 38.65 | 7.22 | 24.78 | 42.89 | 54.00 | -11.11 | AV |
| V | 15450.00 | 50.18 | 35.58 | 6.35 | 26.47 | 47.42 | 74.00 | -26.58 | PK |
| H | 4924.00 | 66.14 | 38.75 | 7.46 | 25.45 | 60.30 | 74.00 | -13.70 | PK |
| H | 4924.00 | 48.97 | 38.75 | 7.46 | 25.45 | 43.13 | 54.00 | -10.87 | AV |
| H | 7386.00 | 68.35 | 38.65 | 7.22 | 24.78 | 61.70 | 74.00 | -12.30 | PK |
| H | 7386.00 | 48.55 | 38.65 | 7.22 | 24.78 | 41.90 | 54.00 | -12.10 | AV |
| H | 15450.00 | 46.69 | 36.42 | 6.32 | 26.65 | 43.24 | 74.00 | -30.76 | PK |

**Remark:**

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,
   Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

**802.11g**

| Polar (H/V) | Frequency (MHz) | Meter Reading (dBuV) | Pre-amplifier (dB) | Cable Loss (dB) | Antenna Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Detector Type |
|---|---|---|---|---|---|---|---|---|---|
| | | operation frequency:2412 | | | | | | | |
| V | 4824.00 | 66.79 | 39.55 | 7.85 | 25.66 | 60.75 | 74.00 | -13.25 | PK |
| V | 4824.00 | 50.65 | 39.55 | 7.85 | 25.66 | 44.61 | 54.00 | -9.39 | AV |
| V | 7236.00 | 67.74 | 38.33 | 7.52 | 24.55 | 61.48 | 74.00 | -12.52 | PK |
| V | 7236.00 | 48.62 | 38.33 | 7.52 | 24.55 | 42.36 | 54.00 | -11.64 | AV |
| V | 15450.00 | 50.79 | 35.23 | 6.75 | 26.59 | 48.90 | 74.00 | -25.10 | PK |
| H | 4824.00 | 68.26 | 39.55 | 7.85 | 25.66 | 62.22 | 74.00 | -11.78 | PK |
| H | 4824.00 | 50.28 | 39.55 | 7.85 | 25.66 | 44.24 | 54.00 | -9.76 | AV |
| H | 7236.00 | 69.47 | 38.33 | 7.52 | 23.55 | 62.21 | 74.00 | -11.79 | PK |
| H | 7236.00 | 50.25 | 38.33 | 7.52 | 23.22 | 42.66 | 54.00 | -11.34 | AV |
| H | 15450.00 | 46.57 | 35.45 | 6.75 | 27.88 | 45.75 | 74.00 | -28.25 | PK |

| Polar (H/V) | Frequency (MHz) | Meter Reading (dBuV) | Pre-amplifier (dB) | Cable Loss (dB) | Antenna Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Detector Type |
|---|---|---|---|---|---|---|---|---|---|
| | | operation frequency:2437 | | | | | | | |
| V | 4874.00 | 67.24 | 38.89 | 7.57 | 25.45 | 61.37 | 74.00 | -12.63 | PK |
| V | 4874.00 | 49.35 | 38.89 | 7.57 | 25.45 | 43.48 | 54.00 | -10.52 | AV |
| V | 7311.00 | 65.81 | 38.78 | 7.35 | 24.78 | 59.16 | 74.00 | -14.84 | PK |
| V | 7311.00 | 48.76 | 38.78 | 7.35 | 24.78 | 42.11 | 54.00 | -11.89 | AV |
| V | 15450.00 | 50.47 | 35.89 | 6.42 | 26.47 | 47.47 | 74.00 | -26.53 | PK |
| H | 4874.00 | 65.36 | 38.89 | 7.57 | 25.45 | 59.49 | 74.00 | -14.51 | PK |
| H | 4874.00 | 51.24 | 38.89 | 7.57 | 25.45 | 45.37 | 54.00 | -8.63 | AV |
| H | 7311.00 | 67.27 | 38.78 | 7.35 | 24.78 | 60.62 | 74.00 | -13.38 | PK |
| H | 7311.00 | 48.45 | 38.78 | 7.35 | 24.78 | 41.80 | 54.00 | -12.20 | AV |
| H | 15450.00 | 47.12 | 36.68 | 6.42 | 26.65 | 43.51 | 74.00 | -30.49 | PK |

| Polar (H/V) | Frequency (MHz) | Meter Reading (dBuV) | Pre-amplifier (dB) | Cable Loss (dB) | Antenna Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Detector Type |
|---|---|---|---|---|---|---|---|---|---|
| | | operation frequency:2462 | | | | | | | |
| V | 4924.00 | 68.00 | 38.75 | 7.46 | 25.45 | 62.16 | 74.00 | -11.84 | PK |
| V | 4924.00 | 48.48 | 38.75 | 7.46 | 25.45 | 42.64 | 54.00 | -11.36 | AV |
| V | 7386.00 | 68.42 | 38.65 | 7.22 | 24.78 | 61.77 | 74.00 | -12.23 | PK |
| V | 7386.00 | 49.36 | 38.65 | 7.22 | 24.78 | 42.71 | 54.00 | -11.29 | AV |
| V | 15450.00 | 47.48 | 35.58 | 6.35 | 26.47 | 44.72 | 74.00 | -29.28 | PK |
| H | 4924.00 | 66.90 | 38.75 | 7.46 | 25.45 | 61.06 | 74.00 | -12.94 | PK |
| H | 4924.00 | 49.09 | 38.75 | 7.46 | 25.45 | 43.25 | 54.00 | -10.75 | AV |
| H | 7386.00 | 68.57 | 38.65 | 7.22 | 24.78 | 61.92 | 74.00 | -12.08 | PK |
| H | 7386.00 | 48.50 | 38.65 | 7.22 | 24.78 | 41.85 | 54.00 | -12.15 | AV |
| H | 15450.00 | 47.49 | 36.42 | 6.32 | 26.65 | 44.04 | 74.00 | -29.96 | PK |

**Remark:**

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,
   Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

**802.11n(20MHz)**

| Polar (H/V) | Frequency (MHz) | Meter Reading (dBuV) | Pre-amplifier (dB) | Cable Loss (dB) | Antenna Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Detector Type |
|---|---|---|---|---|---|---|---|---|---|
| | | operation frequency:2412 | | | | | | | |
| V | 4824.00 | 66.17 | 39.55 | 7.85 | 25.66 | 60.13 | 74.00 | -13.87 | PK |
| V | 4824.00 | 49.35 | 39.55 | 7.85 | 25.66 | 43.31 | 54.00 | -10.69 | AV |
| V | 7236.00 | 67.42 | 38.33 | 7.52 | 24.55 | 61.16 | 74.00 | -12.84 | PK |
| V | 7236.00 | 48.24 | 38.33 | 7.52 | 24.55 | 41.98 | 54.00 | -12.02 | AV |
| V | 15450.00 | 49.65 | 35.23 | 6.75 | 26.59 | 47.76 | 74.00 | -26.24 | PK |
| H | 4824.00 | 67.25 | 39.55 | 7.85 | 25.66 | 61.21 | 74.00 | -12.79 | PK |
| H | 4824.00 | 48.66 | 39.55 | 7.85 | 25.66 | 42.62 | 54.00 | -11.38 | AV |
| H | 7236.00 | 66.87 | 38.33 | 7.52 | 23.55 | 59.61 | 74.00 | -14.39 | PK |
| H | 7236.00 | 48.59 | 38.33 | 7.52 | 23.22 | 41.00 | 54.00 | -13.00 | AV |
| H | 15450.00 | 46.54 | 35.45 | 6.75 | 27.88 | 45.72 | 74.00 | -28.28 | PK |

| Polar (H/V) | Frequency (MHz) | Meter Reading (dBuV) | Pre-amplifier (dB) | Cable Loss (dB) | Antenna Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Detector Type |
|---|---|---|---|---|---|---|---|---|---|
| | | operation frequency:2437 | | | | | | | |
| V | 4874.00 | 66.24 | 38.89 | 7.57 | 25.45 | 60.37 | 74.00 | -13.63 | PK |
| V | 4874.00 | 49.74 | 38.89 | 7.57 | 25.45 | 43.87 | 54.00 | -10.13 | AV |
| V | 7311.00 | 67.25 | 38.78 | 7.35 | 24.78 | 60.60 | 74.00 | -13.40 | PK |
| V | 7311.00 | 46.63 | 38.78 | 7.35 | 24.78 | 39.98 | 54.00 | -14.02 | AV |
| V | 15450.00 | 47.18 | 35.89 | 6.42 | 26.47 | 44.18 | 74.00 | -29.82 | PK |
| H | 4874.00 | 67.69 | 38.89 | 7.57 | 25.45 | 61.82 | 74.00 | -12.18 | PK |
| H | 4874.00 | 48.62 | 38.89 | 7.57 | 25.45 | 42.75 | 54.00 | -11.25 | AV |
| H | 7311.00 | 65.58 | 38.78 | 7.35 | 24.78 | 58.93 | 74.00 | -15.07 | PK |
| H | 7311.00 | 47.58 | 38.78 | 7.35 | 24.78 | 40.93 | 54.00 | -13.07 | AV |
| H | 15450.00 | 47.56 | 36.68 | 6.42 | 26.65 | 43.95 | 74.00 | -30.05 | PK |

| Polar (H/V) | Frequency (MHz) | Meter Reading (dBuV) | Pre-amplifier (dB) | Cable Loss (dB) | Antenna Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Detector Type |
|---|---|---|---|---|---|---|---|---|---|
| | | operation frequency:2462 | | | | | | | |
| V | 4924.00 | 67.69 | 38.75 | 7.46 | 25.45 | 61.85 | 74.00 | -12.15 | PK |
| V | 4924.00 | 48.52 | 38.75 | 7.46 | 25.45 | 42.68 | 54.00 | -11.32 | AV |
| V | 7386.00 | 67.56 | 38.65 | 7.22 | 24.78 | 60.91 | 74.00 | -13.09 | PK |
| V | 7386.00 | 49.42 | 38.65 | 7.22 | 24.78 | 42.77 | 54.00 | -11.23 | AV |
| V | 15450.00 | 46.22 | 35.58 | 6.35 | 26.47 | 43.46 | 74.00 | -30.54 | PK |
| H | 4924.00 | 66.96 | 38.75 | 7.46 | 25.45 | 61.12 | 74.00 | -12.88 | PK |
| H | 4924.00 | 50.22 | 38.75 | 7.46 | 25.45 | 44.38 | 54.00 | -9.62 | AV |
| H | 7386.00 | 67.39 | 38.65 | 7.22 | 24.78 | 60.74 | 74.00 | -13.26 | PK |
| H | 7386.00 | 48.47 | 38.65 | 7.22 | 24.78 | 41.82 | 54.00 | -12.18 | AV |
| H | 15450.00 | 46.28 | 36.42 | 6.32 | 26.65 | 42.83 | 74.00 | -31.17 | PK |

**Remark:**

**1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,**

**Margin= Emission Level - Limit**

**2. If peak below the average limit, the average emission was no test.**

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

| Polar (H/V) | Frequency (MHz) | Meter Reading (dBuV) | Pre-amplifier (dB) | Cable Loss (dB) | Antenna Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Detector Type |
|---|---|---|---|---|---|---|---|---|---|
| | | operation frequency:2422 | | | | | | | |
| V | 4844.000 | 67.58 | 39.55 | 7.77 | 25.66 | 61.46 | 74.00 | -12.54 | PK |
| V | 4844.000 | 48.76 | 39.55 | 7.77 | 25.66 | 42.64 | 54.00 | -11.36 | AV |
| V | 7266.000 | 67.25 | 38.33 | 7.30 | 24.55 | 60.77 | 74.00 | -13.23 | PK |
| V | 7266.000 | 48.74 | 38.33 | 7.30 | 24.55 | 42.26 | 54.00 | -11.74 | AV |
| V | 15450.00 | 47.57 | 35.23 | 6.60 | 26.59 | 45.53 | 74.00 | -28.47 | PK |
| H | 4844.000 | 66.78 | 39.55 | 7.77 | 25.66 | 60.66 | 74.00 | -13.34 | PK |
| H | 4844.000 | 50.12 | 39.55 | 7.77 | 25.66 | 44.00 | 54.00 | -10.00 | AV |
| H | 7266.000 | 68.74 | 38.33 | 7.30 | 23.55 | 61.26 | 74.00 | -12.74 | PK |
| H | 7266.000 | 49.55 | 38.33 | 7.30 | 23.22 | 41.74 | 54.00 | -12.26 | AV |
| H | 15450.00 | 47.62 | 35.45 | 6.60 | 27.88 | 46.65 | 74.00 | -27.35 | PK |

| Polar (H/V) | Frequency (MHz) | Meter Reading (dBuV) | Pre-amplifier (dB) | Cable Loss (dB) | Antenna Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Detector Type |
|---|---|---|---|---|---|---|---|---|---|
| | | operation frequency:2437 | | | | | | | |
| V | 4874.00 | 67.32 | 38.89 | 7.57 | 25.45 | 61.45 | 74.00 | -12.55 | PK |
| V | 4874.00 | 49.10 | 38.89 | 7.57 | 25.45 | 43.23 | 54.00 | -10.77 | AV |
| V | 7311.00 | 65.8 | 38.78 | 7.35 | 24.78 | 59.15 | 74.00 | -14.85 | PK |
| V | 7311.00 | 46.49 | 38.78 | 7.35 | 24.78 | 39.84 | 54.00 | -14.16 | AV |
| V | 15450.00 | 45.78 | 35.89 | 6.42 | 26.47 | 42.78 | 74.00 | -31.22 | PK |
| H | 4874.00 | 64.58 | 38.89 | 7.57 | 25.45 | 58.71 | 74.00 | -15.29 | PK |
| H | 4874.00 | 48.75 | 38.89 | 7.57 | 25.45 | 42.88 | 54.00 | -11.12 | AV |
| H | 7311.00 | 67.82 | 38.78 | 7.35 | 24.78 | 61.17 | 74.00 | -12.83 | PK |
| H | 7311.00 | 48.15 | 38.78 | 7.35 | 24.78 | 41.50 | 54.00 | -12.50 | AV |
| H | 15450.00 | 46.98 | 36.68 | 6.42 | 26.65 | 43.37 | 74.00 | -30.63 | PK |

| Polar (H/V) | Frequency (MHz) | Meter Reading (dBuV) | Pre-amplifier (dB) | Cable Loss (dB) | Antenna Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Detector Type |
|---|---|---|---|---|---|---|---|---|---|
| | | operation frequency:2452 | | | | | | | |
| V | 4904.00 | 67.61 | 38.75 | 7.38 | 25.45 | 61.69 | 74.00 | -12.31 | PK |
| V | 4904.00 | 50.49 | 38.75 | 7.38 | 25.45 | 44.57 | 54.00 | -9.43 | AV |
| V | 7356.00 | 65.87 | 38.65 | 7.15 | 24.78 | 59.15 | 74.00 | -14.85 | PK |
| V | 7356.00 | 49.52 | 38.65 | 7.15 | 24.78 | 42.80 | 54.00 | -11.20 | AV |
| V | 15450.00 | 50.66 | 35.58 | 6.25 | 26.47 | 47.80 | 74.00 | -26.20 | PK |
| H | 4904.00 | 67.27 | 38.75 | 7.38 | 25.45 | 61.35 | 74.00 | -12.65 | PK |
| H | 4904.00 | 46.36 | 38.75 | 7.38 | 25.45 | 40.44 | 54.00 | -13.56 | AV |
| H | 7356.00 | 66.47 | 38.65 | 7.15 | 24.78 | 59.75 | 74.00 | -14.25 | PK |
| H | 7356.00 | 48.58 | 38.65 | 7.15 | 24.78 | 41.86 | 54.00 | -12.14 | AV |
| H | 15450.00 | 47.03 | 36.42 | 6.25 | 26.65 | 43.51 | 74.00 | -30.49 | PK |

**Remark:**

**1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,**
**Margin= Emission Level - Limit**

**2. If peak below the average limit, the average emission was no test.**

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

## 3.3 RADIATED BAND EMISSION MEASUREMENT

### 3.3.1 TEST REQUIREMENT:

FCC Part15 C Section 15.209 and 15.205

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

| FREQUENCY (MHz) | Limit (dBuV/m) (at 3M) | |
|---|---|---|
| | PEAK | AVERAGE |
| Above 1000 | 74 | 54 |

Notes:

(1) The limit for radiated test was performed according to FCC PART 15C.

(2) The tighter limit applies at the band edges.

(3) Emission level (dBuV/m)=20log Emission level (uV/m).

| Spectrum Parameter | Setting |
|---|---|
| Attenuation | Auto |
| Start Frequency | 2300MHz |
| Stop Frequency | 2520 |
| RB / VB (emission in restricted band) | 1 MHz / 1 MHz for Peak, 1 MHz / 10Hz for Average |

### 3.3.2 TEST PROCEDURE

Above 1GHz test procedure as below:

a. 1. The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

g. Test the EUT in the lowest channel,the Highest channel

Note:

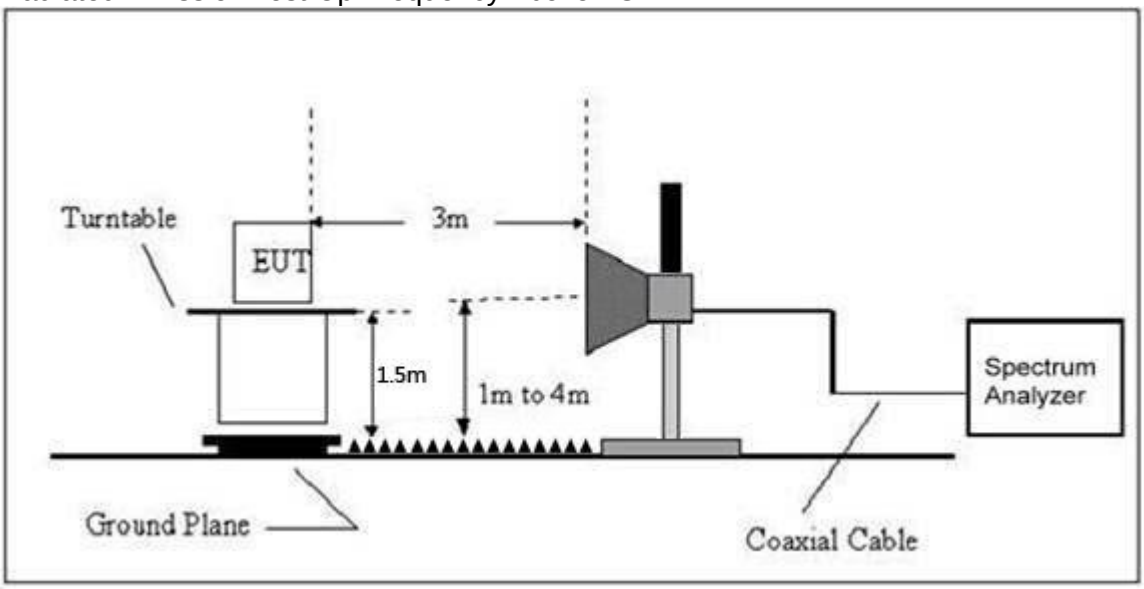
Both horizontal and vertical antenna polarities were tested
and performed pretest to three orthogonal axis. The worst case emissions were reported

### 3.3.3 DEVIATION FROM TEST STANDARD

No deviation

### 3.3.4 TEST SETUP

Radiated Emission Test-Up Frequency Above 1GHz




### 3.3.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

### 3.3.6 TEST RESULT

**Ant. 1**

| | Polar (H/V) | Frequency (MHz) | Meter Reading (dBuV) | Pre-amplifier (dB) | Cable Loss (dB) | Antenna Factor (dB/m) | Emission evel (dBuV/m) | Limits (dBuV/m) | | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | PK | PK | AV | |
| 802.11b | **Low Channel 2412MHz** | | | | | | | | | |
| | H | 2390.00 | 56.62 | 38.06 | 7.42 | 20.15 | 46.13 | 74.00 | 54.00 | PASS |
| | H | 2400.00 | 62.47 | 38.06 | 7.42 | 20.15 | 51.98 | 74.00 | 54.00 | PASS |
| | V | 2390.00 | 56.85 | 38.06 | 7.42 | 20.15 | 46.36 | 74.00 | 54.00 | PASS |
| | V | 2400.00 | 63.21 | 38.06 | 7.42 | 20.15 | 52.72 | 74.00 | 54.00 | PASS |
| | **High Channel 2462MHz** | | | | | | | | | |
| | H | 2483.50 | 59.86 | 38.17 | 7.45 | 20.54 | 49.68 | 74.00 | 54.00 | PASS |
| | H | 2485.50 | 59.24 | 38.17 | 7.45 | 20.54 | 49.06 | 74.00 | 54.00 | PASS |
| | V | 2483.50 | 60.42 | 38.20 | 7.45 | 20.54 | 50.21 | 74.00 | 54.00 | PASS |
| | V | 2485.50 | 58.36 | 38.20 | 7.45 | 20.54 | 48.15 | 74.00 | 54.00 | PASS |
| 802.11g | **Low Channel 2412MHz** | | | | | | | | | |
| | H | 2390.00 | 57.34 | 38.06 | 7.42 | 20.15 | 46.85 | 74.00 | 54.00 | PASS |
| | H | 2400.00 | 60.08 | 38.06 | 7.42 | 20.15 | 49.59 | 74.00 | 54.00 | PASS |
| | V | 2390.00 | 57.47 | 38.06 | 7.42 | 20.15 | 46.98 | 74.00 | 54.00 | PASS |
| | V | 2400.00 | 62.54 | 38.06 | 7.42 | 20.15 | 52.05 | 74.00 | 54.00 | PASS |
| | **High Channel 2462MHz** | | | | | | | | | |
| | H | 2483.50 | 61.06 | 38.17 | 7.45 | 20.54 | 50.88 | 74.00 | 54.00 | PASS |
| | H | 2485.50 | 58.67 | 38.17 | 7.45 | 20.54 | 48.49 | 74.00 | 54.00 | PASS |
| | V | 2483.50 | 60.17 | 38.20 | 7.45 | 20.54 | 49.96 | 74.00 | 54.00 | PASS |
| | V | 2485.50 | 59.58 | 38.20 | 7.45 | 20.54 | 49.37 | 74.00 | 54.00 | PASS |
| 802.11n20 | **Low Channel 2412MHz** | | | | | | | | | |
| | H | 2390.00 | 57.21 | 38.06 | 7.42 | 20.15 | 46.72 | 74.00 | 54.00 | PASS |
| | H | 2400.00 | 62.00 | 38.06 | 7.42 | 20.15 | 51.51 | 74.00 | 54.00 | PASS |
| | V | 2390.00 | 57.32 | 38.06 | 7.42 | 20.15 | 46.83 | 74.00 | 54.00 | PASS |
| | V | 2400.00 | 61.47 | 38.06 | 7.42 | 20.15 | 50.98 | 74.00 | 54.00 | PASS |
| | **High Channel 2462MHz** | | | | | | | | | |
| | H | 2483.50 | 60.86 | 38.17 | 7.45 | 20.54 | 50.68 | 74.00 | 54.00 | PASS |
| | H | 2485.50 | 58.13 | 38.17 | 7.45 | 20.54 | 47.95 | 74.00 | 54.00 | PASS |
| | V | 2483.50 | 60.22 | 38.20 | 7.45 | 20.54 | 50.01 | 74.00 | 54.00 | PASS |
| | V | 2485.50 | 59.03 | 38.20 | 7.45 | 20.54 | 48.82 | 74.00 | 54.00 | PASS |
| 802.11n40 | **Low Channel 2422MHz** | | | | | | | | | |
| | H | 2390.00 | 57.11 | 38.06 | 7.42 | 20.15 | 46.62 | 74.00 | 54.00 | PASS |
| | H | 2400.00 | 61.81 | 38.06 | 7.42 | 20.15 | 51.32 | 74.00 | 54.00 | PASS |
| | V | 2390.00 | 57.24 | 38.06 | 7.42 | 20.15 | 46.75 | 74.00 | 54.00 | PASS |
| | V | 2400.00 | 61.42 | 38.06 | 7.42 | 20.15 | 50.93 | 74.00 | 54.00 | PASS |
| | **High Channel 2452MHz** | | | | | | | | | |
| | H | 2483.50 | 60.56 | 38.17 | 7.45 | 20.54 | 50.38 | 74.00 | 54.00 | PASS |
| | H | 2485.50 | 58.43 | 38.17 | 7.45 | 20.54 | 48.25 | 74.00 | 54.00 | PASS |
| | V | 2483.50 | 60.57 | 38.20 | 7.45 | 20.54 | 50.36 | 74.00 | 54.00 | PASS |
| | V | 2485.50 | 59.15 | 38.20 | 7.45 | 20.54 | 48.94 | 74.00 | 54.00 | PASS |

**Remark:**

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier, Margin= Emission Level - Limit
2. If the PK measured levels comply with average limit, then the average level were deemed to comply with average limit.

**Ant. 2**

| | Polar (H/V) | Frequency (MHz) | Meter Reading (dBuV) | Pre-amplifier (dB) | Cable Loss (dB) | Antenna Factor (dB/m) | Emission evel (dBuV/m) | Limits (dBuV/m) | | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | PK | PK | AV | |
| 802.11b | **Low Channel 2412MHz** | | | | | | | | | |
| | H | 2390.00 | 56.87 | 38.06 | 7.42 | 20.15 | 46.38 | 74.00 | 54.00 | PASS |
| | H | 2400.00 | 62.68 | 38.06 | 7.42 | 20.15 | 52.19 | 74.00 | 54.00 | PASS |
| | V | 2390.00 | 56.68 | 38.06 | 7.42 | 20.15 | 46.19 | 74.00 | 54.00 | PASS |
| | V | 2400.00 | 63.37 | 38.06 | 7.42 | 20.15 | 52.88 | 74.00 | 54.00 | PASS |
| | **High Channel 2462MHz** | | | | | | | | | |
| | H | 2483.50 | 59.63 | 38.17 | 7.45 | 20.54 | 49.45 | 74.00 | 54.00 | PASS |
| | H | 2485.50 | 59.58 | 38.17 | 7.45 | 20.54 | 49.40 | 74.00 | 54.00 | PASS |
| | V | 2483.50 | 60.71 | 38.20 | 7.45 | 20.54 | 50.50 | 74.00 | 54.00 | PASS |
| | V | 2485.50 | 58.51 | 38.20 | 7.45 | 20.54 | 48.30 | 74.00 | 54.00 | PASS |
| 802.11g | **Low Channel 2412MHz** | | | | | | | | | |
| | H | 2390.00 | 57.67 | 38.06 | 7.42 | 20.15 | 47.18 | 74.00 | 54.00 | PASS |
| | H | 2400.00 | 59.86 | 38.06 | 7.42 | 20.15 | 49.37 | 74.00 | 54.00 | PASS |
| | V | 2390.00 | 58.05 | 38.06 | 7.42 | 20.15 | 47.56 | 74.00 | 54.00 | PASS |
| | V | 2400.00 | 61.59 | 38.06 | 7.42 | 20.15 | 51.10 | 74.00 | 54.00 | PASS |
| | **High Channel 2462MHz** | | | | | | | | | |
| | H | 2483.50 | 61.27 | 38.17 | 7.45 | 20.54 | 51.09 | 74.00 | 54.00 | PASS |
| | H | 2485.50 | 59.25 | 38.17 | 7.45 | 20.54 | 49.07 | 74.00 | 54.00 | PASS |
| | V | 2483.50 | 60.74 | 38.20 | 7.45 | 20.54 | 50.53 | 74.00 | 54.00 | PASS |
| | V | 2485.50 | 58.53 | 38.20 | 7.45 | 20.54 | 48.32 | 74.00 | 54.00 | PASS |
| 802.11n20 | **Low Channel 2412MHz** | | | | | | | | | |
| | H | 2390.00 | 58.45 | 38.06 | 7.42 | 20.15 | 47.96 | 74.00 | 54.00 | PASS |
| | H | 2400.00 | 61.44 | 38.06 | 7.42 | 20.15 | 50.95 | 74.00 | 54.00 | PASS |
| | V | 2390.00 | 57.15 | 38.06 | 7.42 | 20.15 | 46.66 | 74.00 | 54.00 | PASS |
| | V | 2400.00 | 60.78 | 38.06 | 7.42 | 20.15 | 50.29 | 74.00 | 54.00 | PASS |
| | **High Channel 2462MHz** | | | | | | | | | |
| | H | 2483.50 | 61.28 | 38.17 | 7.45 | 20.54 | 51.10 | 74.00 | 54.00 | PASS |
| | H | 2485.50 | 59.52 | 38.17 | 7.45 | 20.54 | 49.34 | 74.00 | 54.00 | PASS |
| | V | 2483.50 | 60.37 | 38.20 | 7.45 | 20.54 | 50.16 | 74.00 | 54.00 | PASS |
| | V | 2485.50 | 58.46 | 38.20 | 7.45 | 20.54 | 48.25 | 74.00 | 54.00 | PASS |
| 802.11n40 | **Low Channel 2422MHz** | | | | | | | | | |
| | H | 2390.00 | 58.75 | 38.06 | 7.42 | 20.15 | 48.26 | 74.00 | 54.00 | PASS |
| | H | 2400.00 | 62.14 | 38.06 | 7.42 | 20.15 | 51.65 | 74.00 | 54.00 | PASS |
| | V | 2390.00 | 58.03 | 38.06 | 7.42 | 20.15 | 47.54 | 74.00 | 54.00 | PASS |
| | V | 2400.00 | 62.57 | 38.06 | 7.42 | 20.15 | 52.08 | 74.00 | 54.00 | PASS |
| | **High Channel 2452MHz** | | | | | | | | | |
| | H | 2483.50 | 61.29 | 38.17 | 7.45 | 20.54 | 51.11 | 74.00 | 54.00 | PASS |
| | H | 2485.50 | 59.71 | 38.17 | 7.45 | 20.54 | 49.53 | 74.00 | 54.00 | PASS |
| | V | 2483.50 | 60.84 | 38.20 | 7.45 | 20.54 | 50.63 | 74.00 | 54.00 | PASS |
| | V | 2485.50 | 58.47 | 38.20 | 7.45 | 20.54 | 48.26 | 74.00 | 54.00 | PASS |

**Remark:**

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier, Margin= Emission Level - Limit
2. If the PK measured levels comply with average limit, then the average level were deemed to comply with average limit.

# 4. POWER SPECTRAL DENSITY TEST

## 4.1 APPLIED PROCEDURES / LIMIT

| FCC Part15 (15.247) , Subpart C | | | | |
|---|---|---|---|---|
| Section | Test Item | Limit | Frequency Range (MHz) | Result |
| 15.247 | Power Spectral Density | 8 dBm (in any 3KHz) | 2400-2483.5 | PASS |

### 4.1.1 TEST PROCEDURE

For Average Power (Duty cycle ≥ 98%)

a. Set instrument center frequency to DTS channel center frequency.
b. Set span to at least 1.5 times the OBW.
c. Set RBW to: 3 kHz ≤ RBW ≤ 100 kHz.
d. Set VBW ≥3 x RBW.
e. Detector = power averaging (RMS) or sample detector (when RMS not available).
f. Ensure that the number of measurement points in the sweep ≥ 2 x span/RBW.
g. Sweep time = auto couple.
h. Employ trace averaging (RMS) mode over a minimum of 100 traces.
i. Use the peak marker function to determine the maximum amplitude level.

For Average Power (Duty cycle < 98%)

a. Measure the duty cycle (x).
b. Set instrument center frequency to DTS channel center frequency.
c. Set span to at least 1.5 times the OBW.
d. Set RBW to: 3 kHz ≤ RBW ≤ 100 kHz.
e. Set VBW ≥3 x RBW.
f. Detector = power averaging (RMS) or sample detector (when RMS not available).
g. Ensure that the number of measurement points in the sweep ≥ 2 x span/RBW.
h. Sweep time = auto couple.
i. Do not use sweep triggering. Allow sweep to “free run”.
j. Employ trace averaging (RMS) mode over a minimum of 100 traces.
k. Use the peak marker function to determine the maximum amplitude level.
l. Add 10 log (1/x), where x is the duty cycle measured in step (a, to the measured PSD to compute the average PSD during the actual transmission time.

### 4.1.2 DEVIATION FROM STANDARD

No deviation.

### 4.1.3 TEST SETUP

### 4.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.1 Unless otherwise a special operating condition is specified in the follows during the testing.

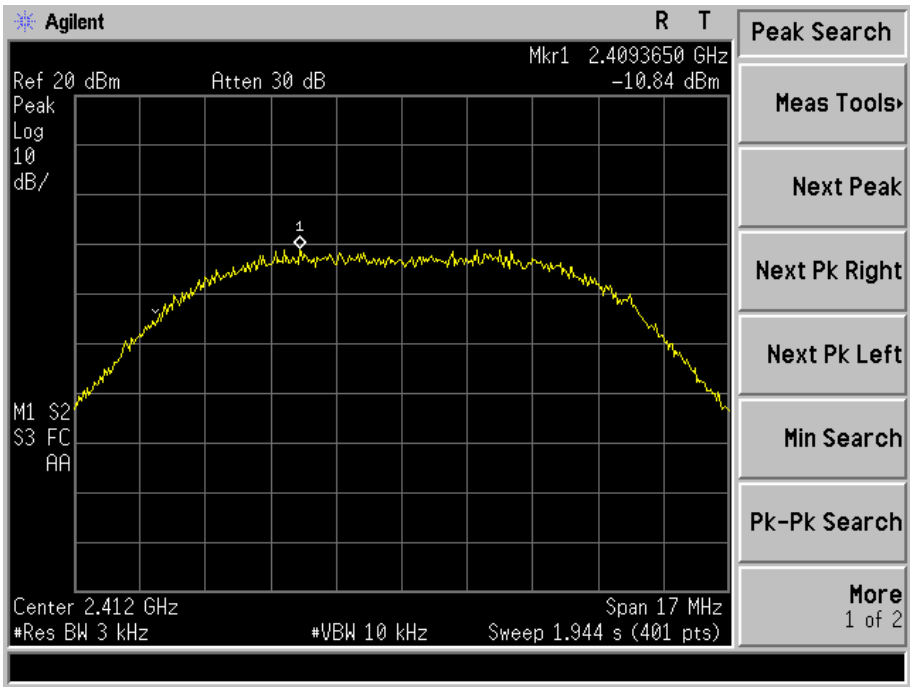
### 4.1.5 TEST RESULTS

| | | | |
|---|---|---|---|
| Temperature : | 25℃ | Relative Humidity : | 60% |
| Pressure : | 1015 hPa | Test Voltage : | DC 12V from Adapter |
| Test Mode : | TX b Mode | | |

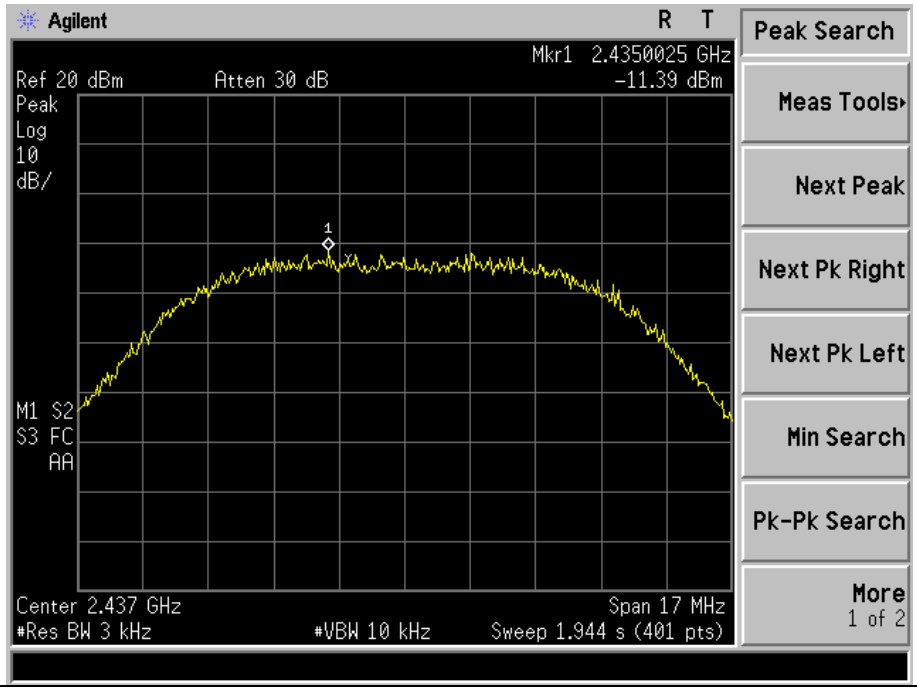
| Frequency | Read Level (dBm) | | Total Power Spectral Density(dBm) | Limit (dBm) | Result |
|---|---|---|---|---|---|
| 2412 MHz | Ant.1 | -10.84 | -7.67 | 8 | PASS |
| | Ant.2 | -10.52 | | | |
| 2437 MHz | Ant.1 | -11.39 | -8.75 | 8 | PASS |
| | Ant.2 | -12.16 | | | |
| 2462 MHz | Ant.1 | -11.42 | -8.44 | 8 | PASS |
| | Ant.2 | -11.48 | | | |
| Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer. | | | | | |

Ant. 1

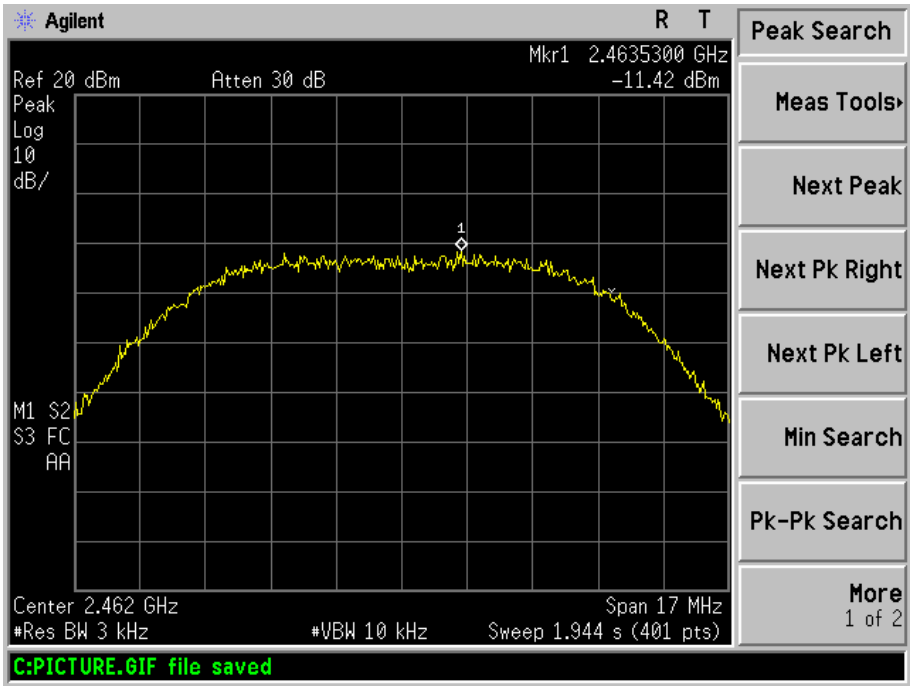
**TX CH01**



**TX CH06**

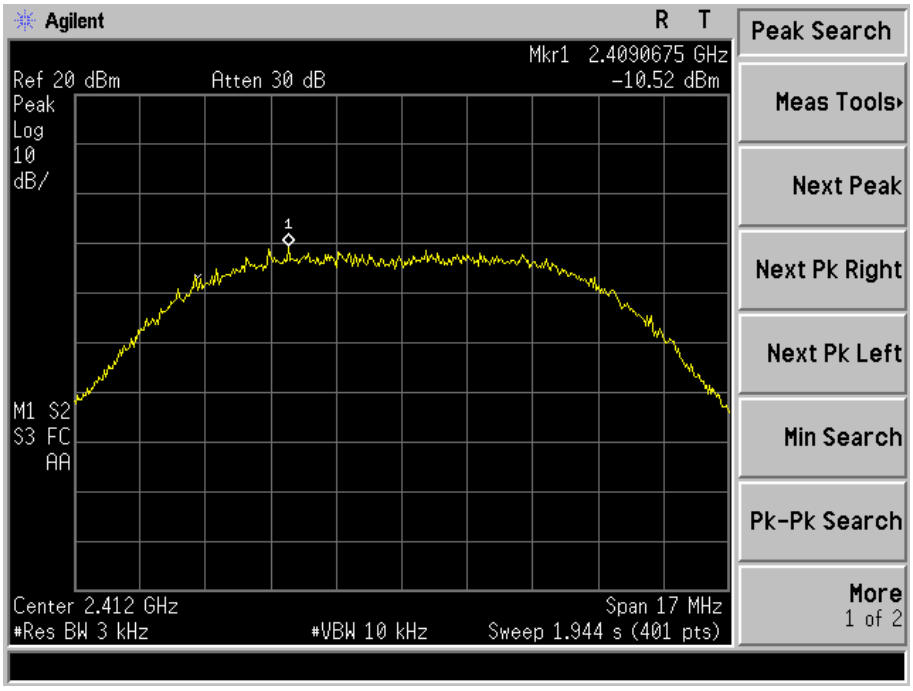



**TX CH11**

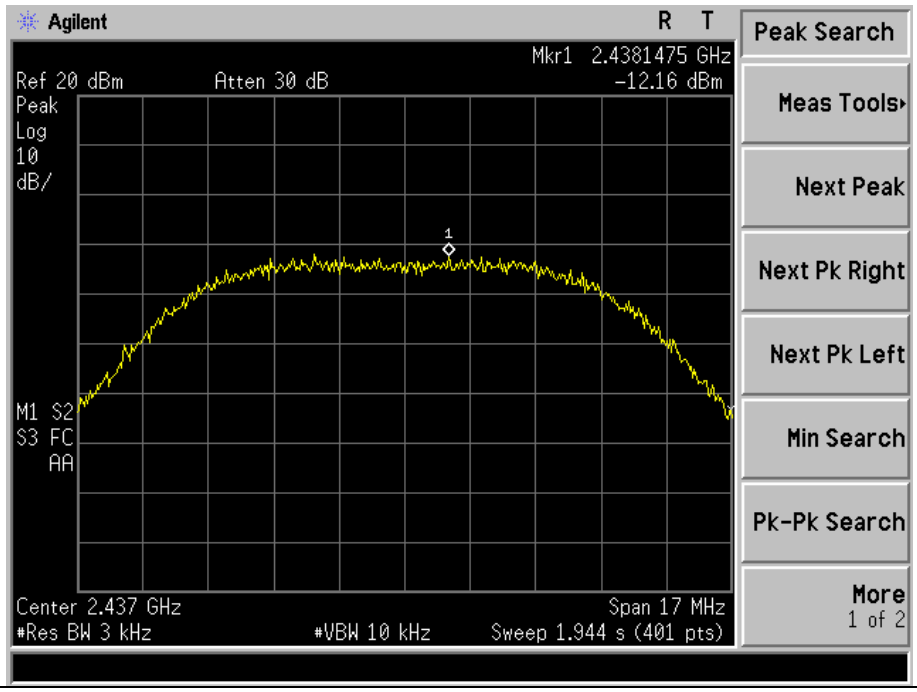


Ant. 2

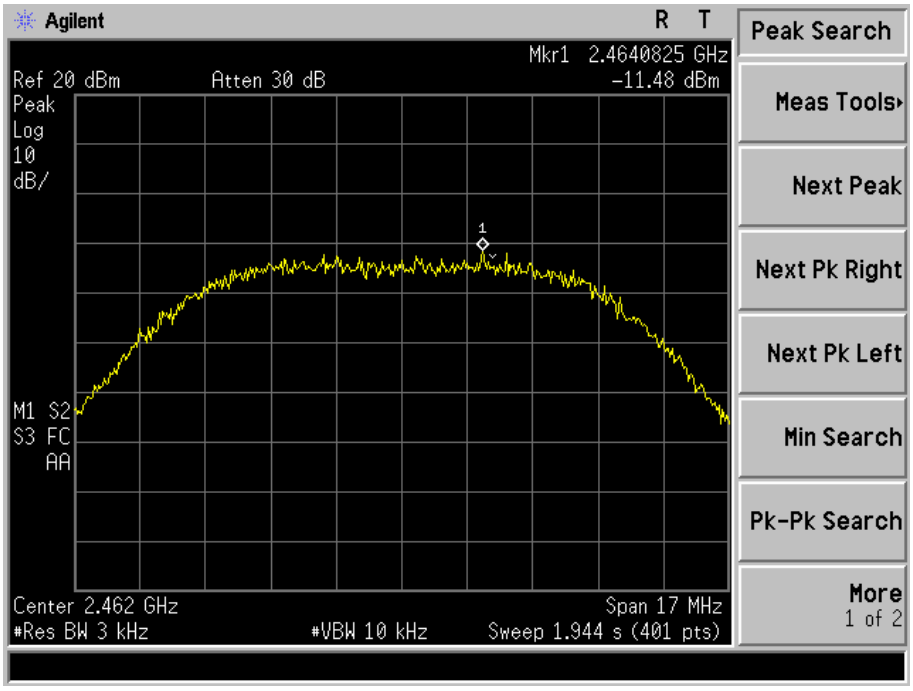
**TX CH01**




**TX CH06**



**TX CH11**

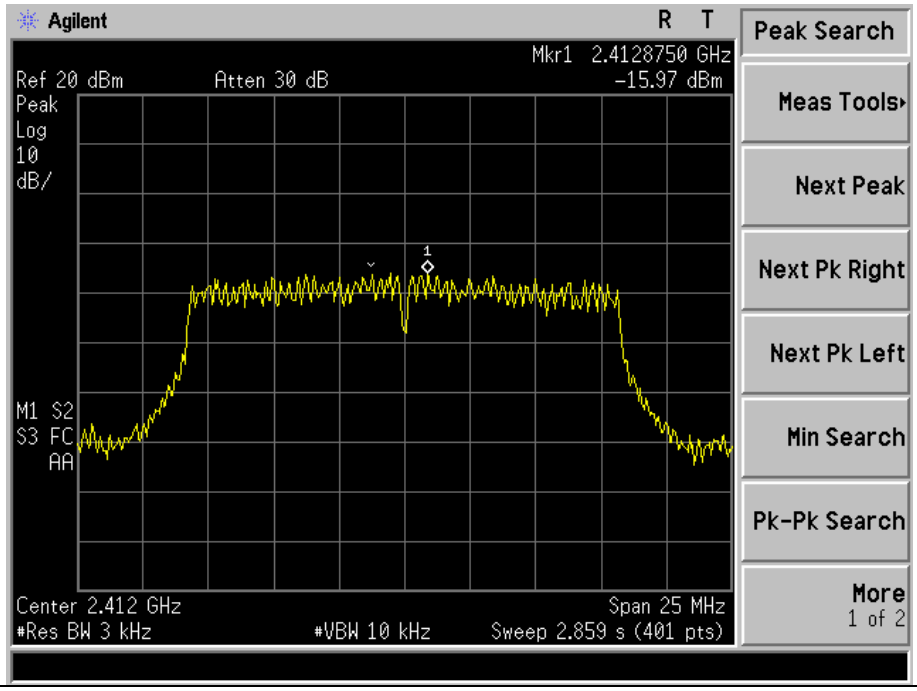

Agilent
R T
Mkr1 2.4640825 GHz
Ref 20 dBm
Atten 30 dB
-11.48 dBm
Peak
Log
10
dB/
1
M1 S2
S3 FC
AA
Center 2.462 GHz
Span 17 MHz
#Res BW 3 kHz
#VBW 10 kHz
Sweep 1.944 s (401 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

| | | | |
|---|---|---|---|
| Temperature : | 25℃ | Relative Humidity : | 60% |
| Pressure : | 1015 hPa | Test Voltage : | DC 12V from Adapter |
| Test Mode : | TX g Mode | | |

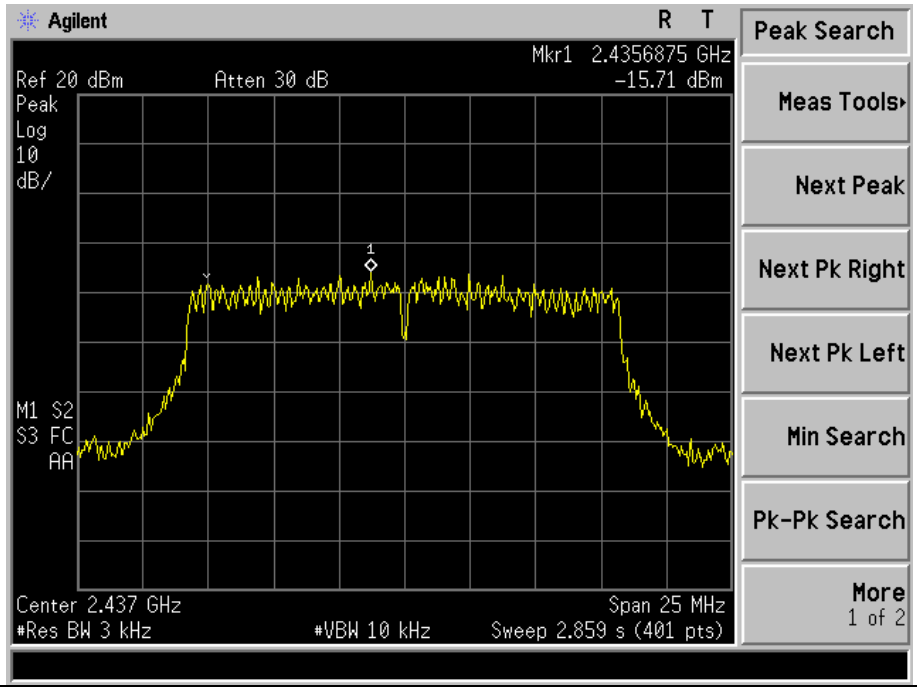
| Frequency | Read Level (dBm) | | Total Power Spectral Density(dBm) | Limit (dBm) | Result |
|---|---|---|---|---|---|
| 2412 MHz | Ant.1 | -15.97 | -12.17 | 8 | PASS |
| | Ant.2 | -14.52 | | | |
| 2437 MHz | Ant.1 | -15.71 | -13.18 | 8 | PASS |
| | Ant.2 | -16.72 | | | |
| 2462 MHz | Ant.1 | -16.70 | -13.45 | 8 | PASS |
| | Ant.2 | -16.24 | | | |
| Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer. | | | | | |

Ant.1

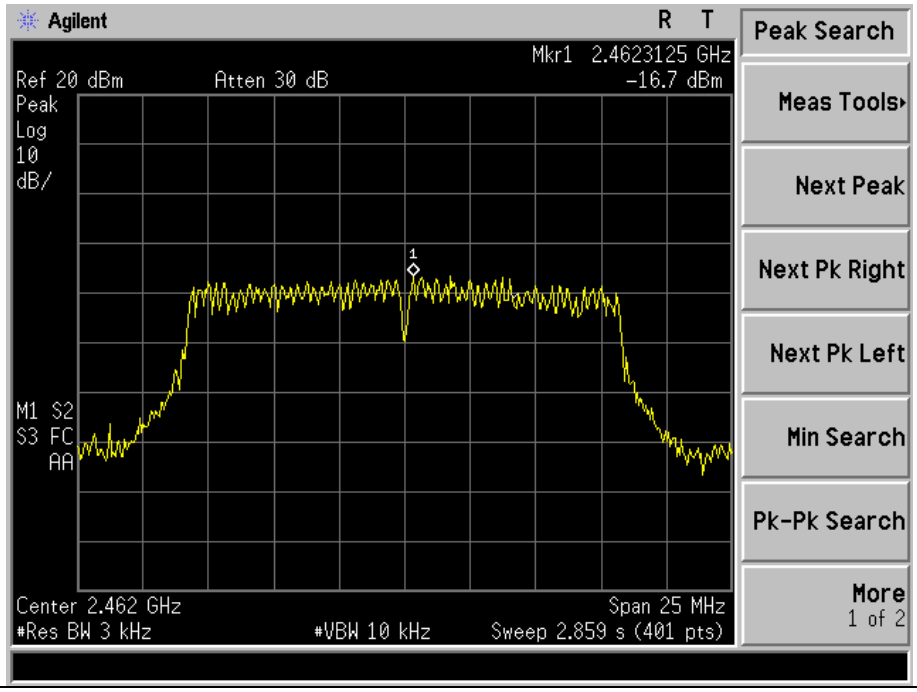
**TX CH01**



**TX CH06**

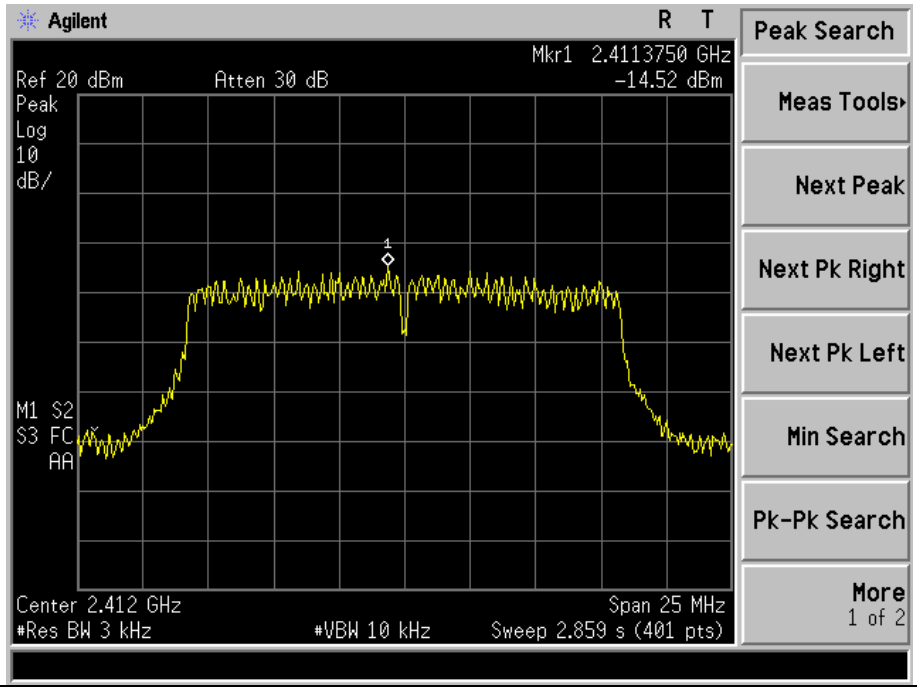



**TX CH11**

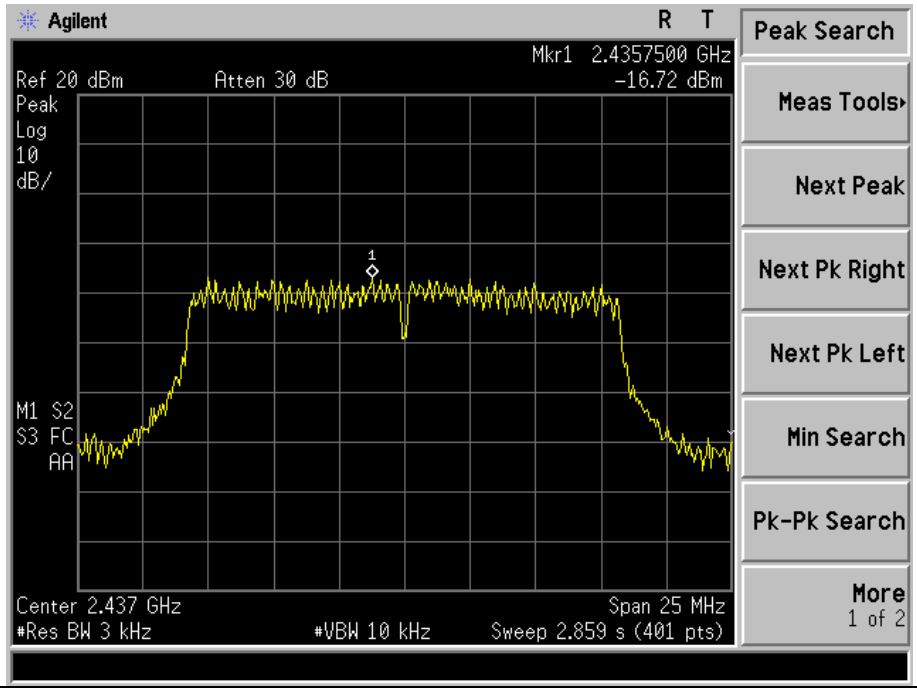


Ant.2

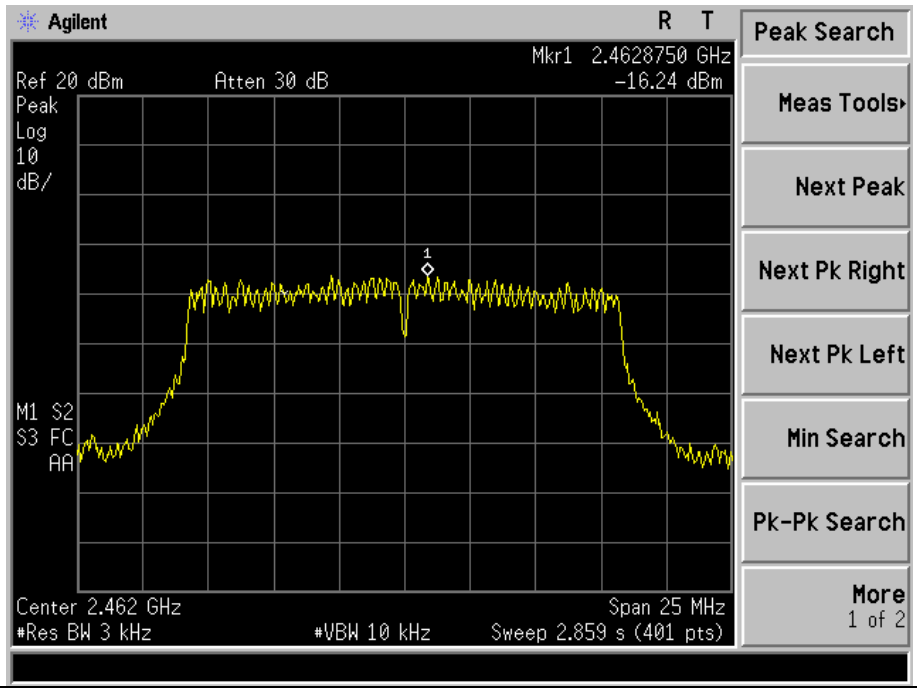
**TX CH01**




**TX CH06**



**TX CH11**

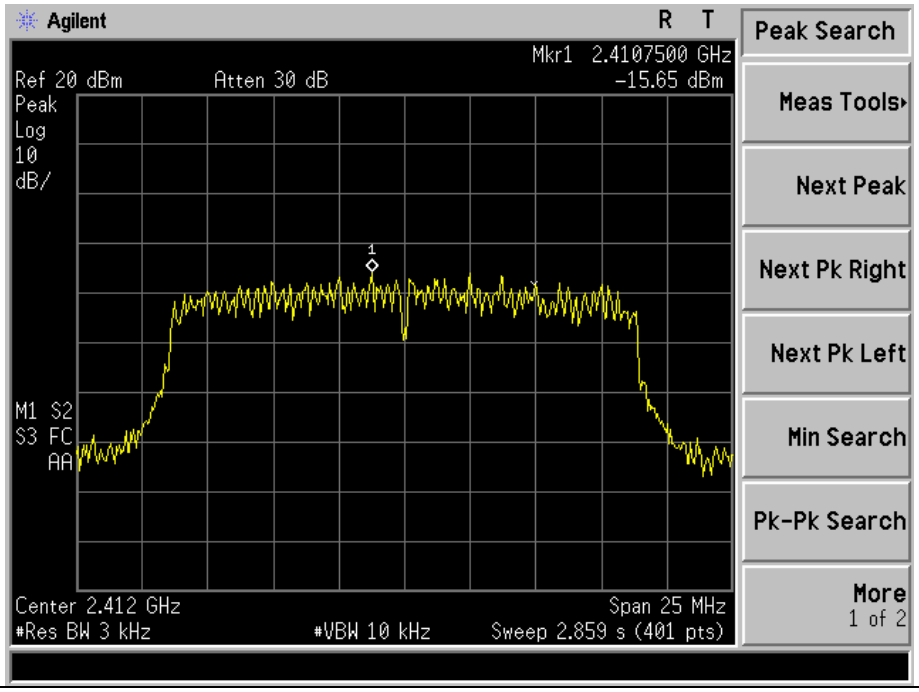

Agilent
R T
Mkr1 2.4628750 GHz
Ref 20 dBm
Atten 30 dB
-16.24 dBm
Peak
Log
10
dB/
M1 S2
S3 FC
AA
Center 2.462 GHz
Span 25 MHz
#Res BW 3 kHz
#VBW 10 kHz
Sweep 2.859 s (401 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

| | | | |
|---|---|---|---|
| Temperature : | 25℃ | Relative Humidity : | 60% |
| Pressure : | 1015 hPa | Test Voltage : | DC 12V from Adapter |
| Test Mode : | TX n Mode(20M) | | |

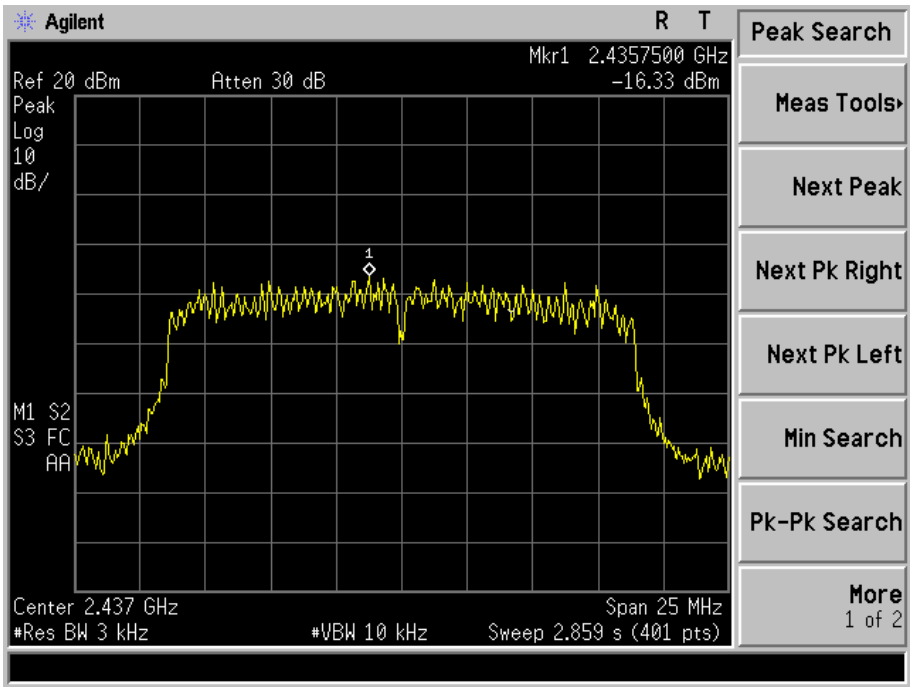
| Frequency | Read Level (dBm) | | Total Power Spectral Density(dBm) | Limit (dBm) | Result |
|---|---|---|---|---|---|
| 2412 MHz | Ant.1 | -15.65 | -12.82 | 8 | PASS |
| | Ant.2 | -16.02 | | | |
| 2437 MHz | Ant.1 | -16.33 | -13.36 | 8 | PASS |
| | Ant.2 | -16.42 | | | |
| 2462 MHz | Ant.1 | -15.10 | -12.82 | 8 | PASS |
| | Ant.2 | -16.70 | | | |
| Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer. | | | | | |

Ant.1

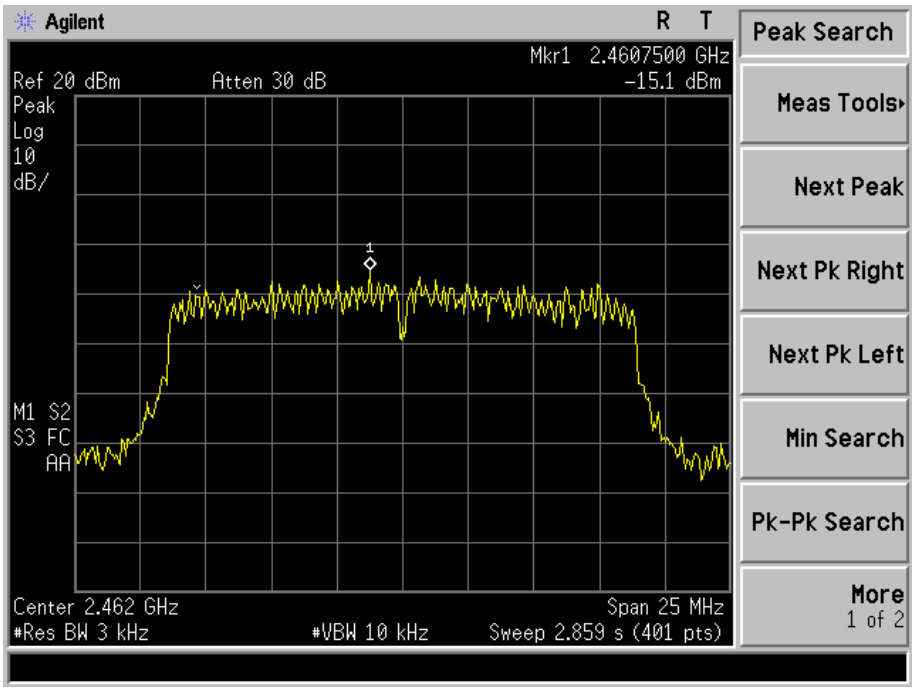
**TX CH01**



**TX CH06**

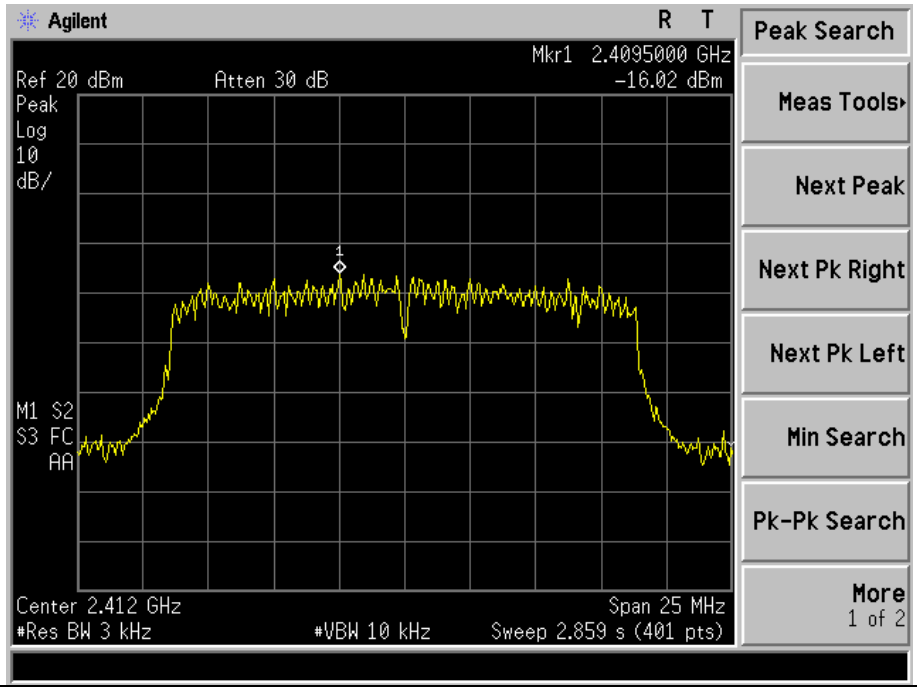



**TX CH11**

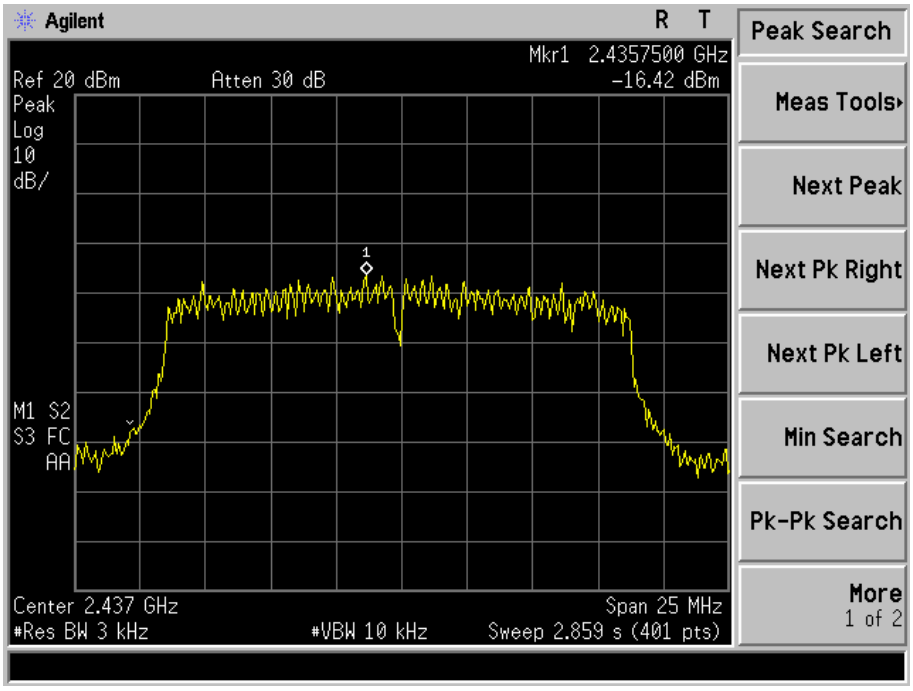


Ant.2

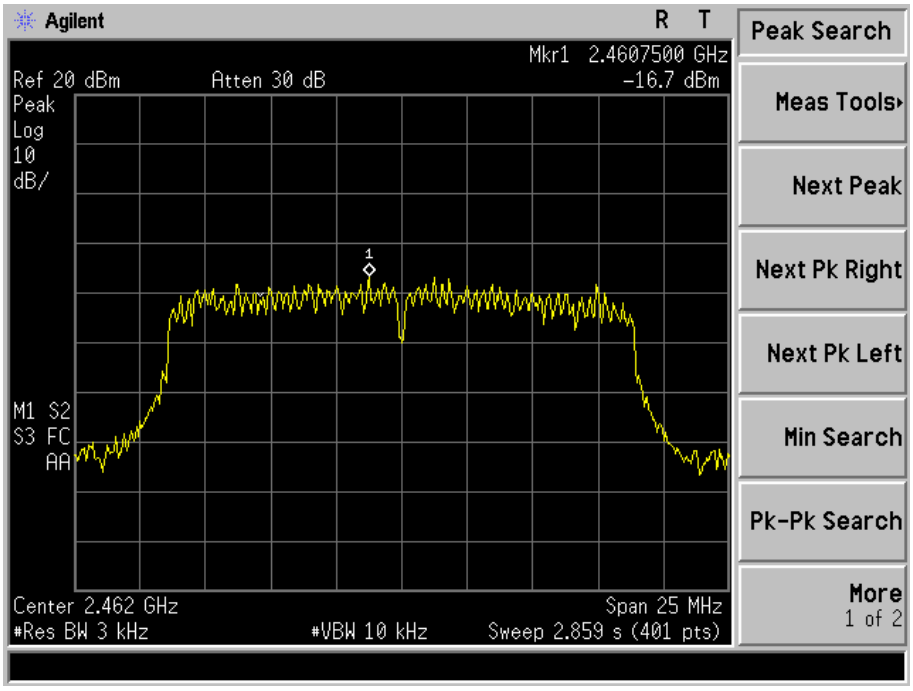
**TX CH01**




**TX CH06**



**TX CH11**

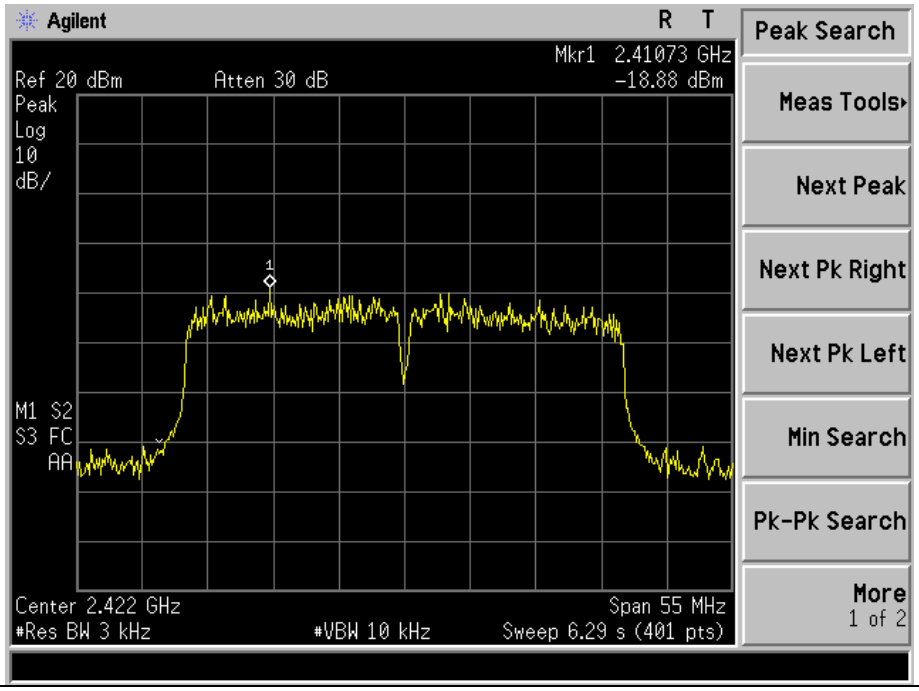

Agilent
R T
Mkr1 2.4607500 GHz
Ref 20 dBm
Atten 30 dB
-16.7 dBm
Peak
Log
10
dB/
1
M1 S2
S3 FC
AA
Center 2.462 GHz
Span 25 MHz
#Res BW 3 kHz
#VBW 10 kHz
Sweep 2.859 s (401 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

| | | | |
|---|---|---|---|
| Temperature : | 25℃ | Relative Humidity : | 60% |
| Pressure : | 1015 hPa | Test Voltage : | DC 12V from Adapter |
| Test Mode : | TX n Mode(40M) | | |

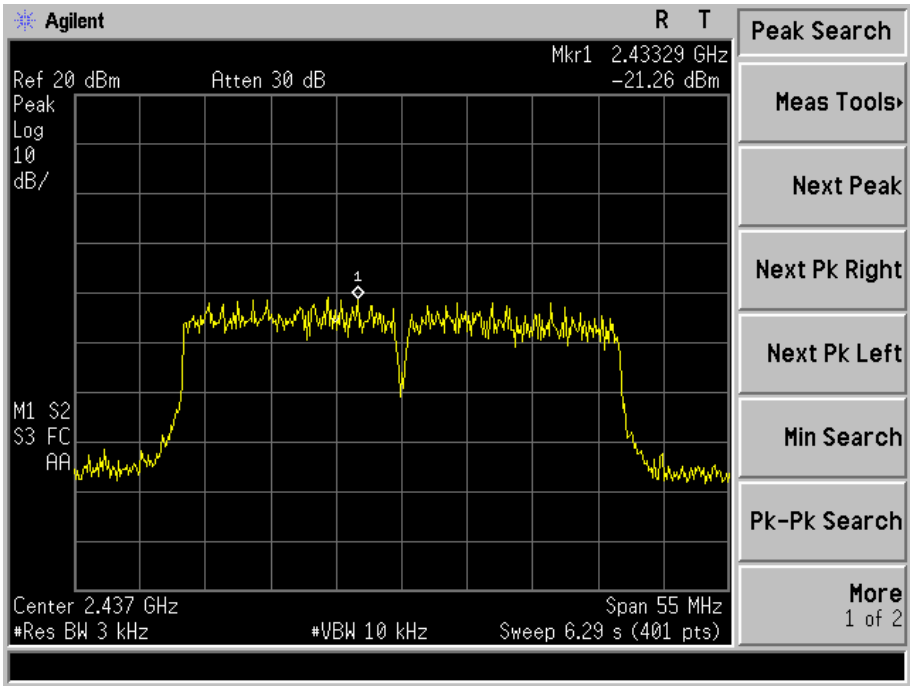
| Frequency | Read Level (dBm) | | Total Power Spectral Density(dBm) | Limit (dBm) | Result |
|---|---|---|---|---|---|
| 2422 MHz | Ant.1 | -18.88 | -16.12 | 8 | PASS |
| | Ant.2 | -19.39 | | | |
| 2437 MHz | Ant.1 | -21.26 | -18.05 | 8 | PASS |
| | Ant.2 | -20.87 | | | |
| 2452 MHz | Ant.1 | -20.07 | -17.27 | 8 | PASS |
| | Ant.2 | -20.51 | | | |
| Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer. | | | | | |

Ant.1

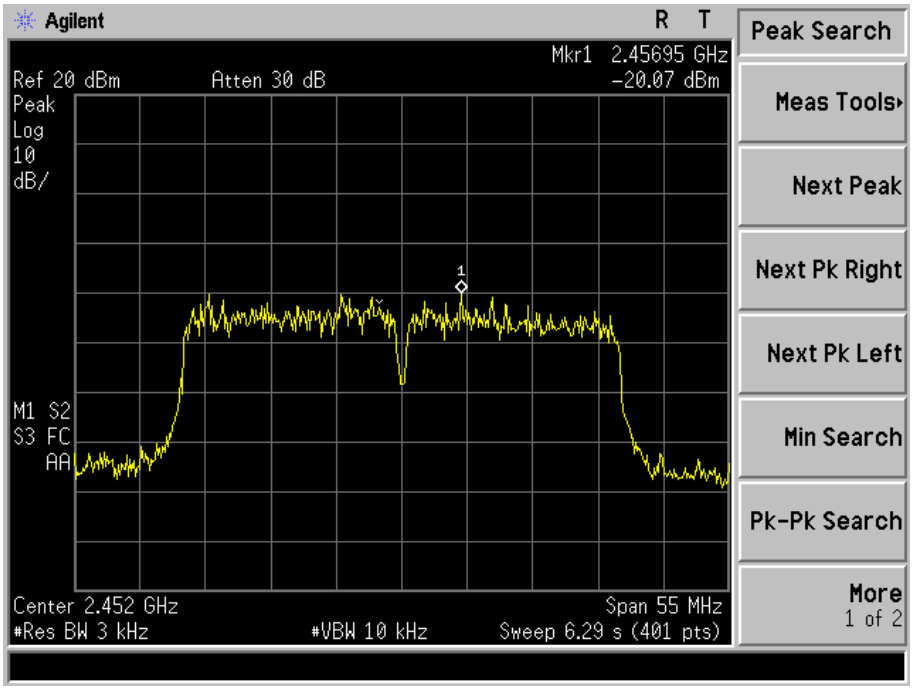
**TX CH03**



**TX CH06**

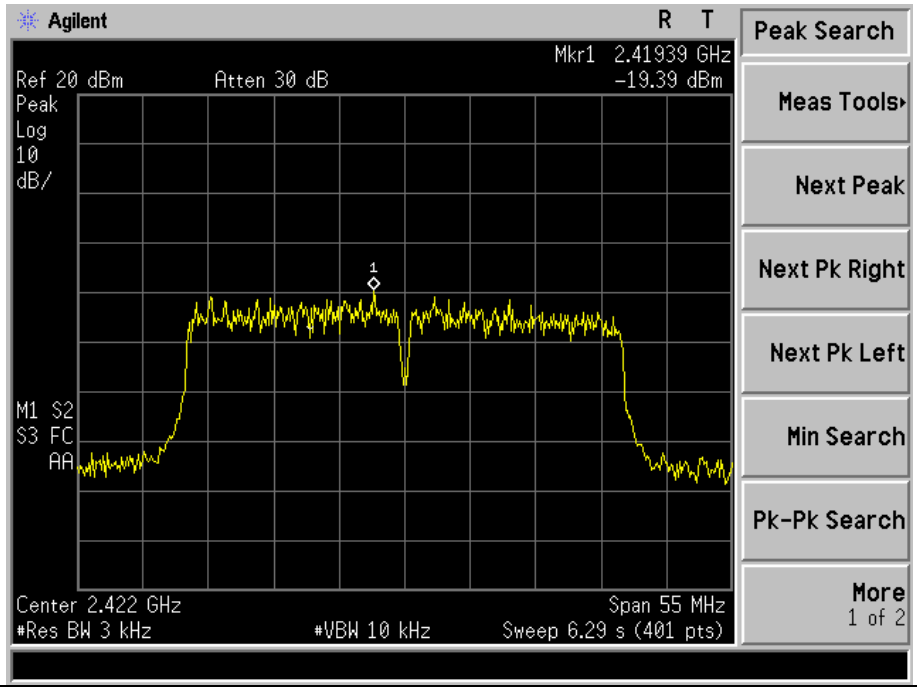



**TX CH09**

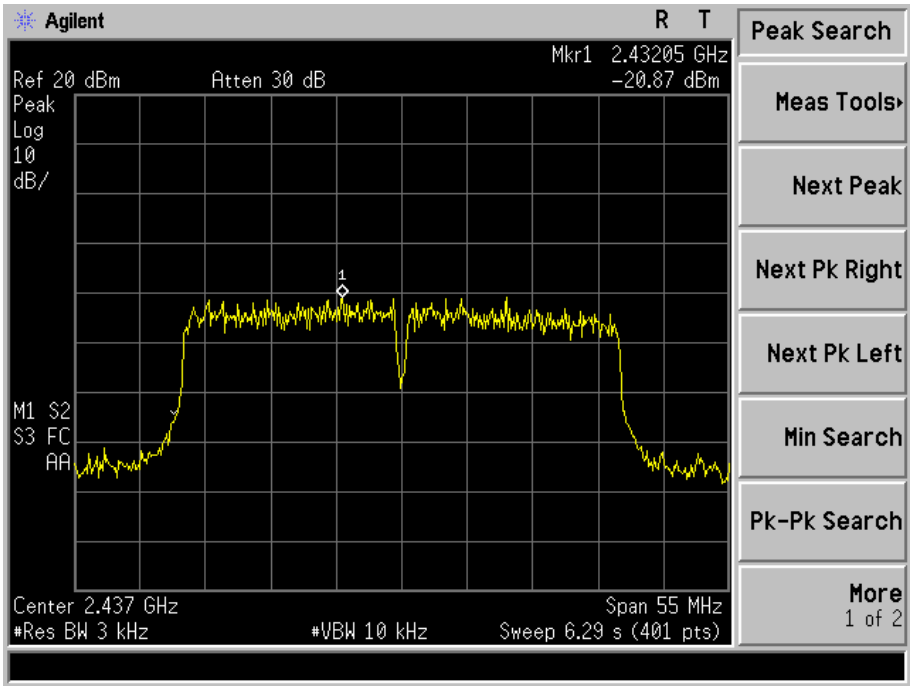


Ant.2

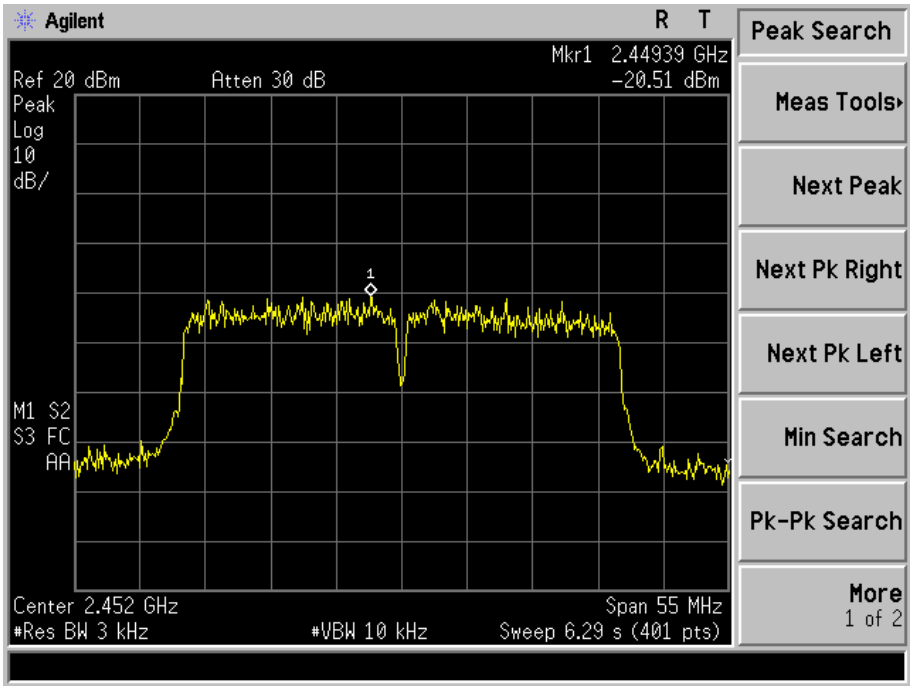
**TX CH03**




**TX CH06**



**TX CH09**


Agilent
R T
Mkr1 2.44939 GHz
Ref 20 dBm
Atten 30 dB
-20.51 dBm
Peak
Log
10
dB/
1
M1 S2
S3 FC
AA
Center 2.452 GHz
Span 55 MHz
#Res BW 3 kHz
#VBW 10 kHz
Sweep 6.29 s (401 pts)
Peak Search
Meas Tools
Next Peak
Next Pk Right
Next Pk Left
Min Search
Pk-Pk Search
More
1 of 2

# 5. BANDWIDTH TEST

## 5.1 APPLIED PROCEDURES / LIMIT

| FCC Part15 (15.247) , Subpart C | | | | |
|---|---|---|---|---|
| Section | Test Item | Limit | Frequency Range (MHz) | Result |
| 15.247(a)(2) | Bandwidth | >= 500KHz (6dB bandwidth) | 2400-2483.5 | PASS |

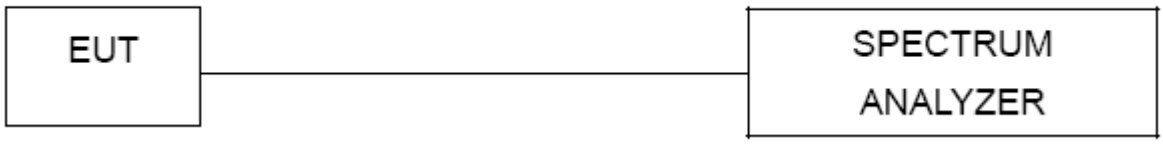
### 5.1.1 TEST PROCEDURE

1. Set RBW = 100 kHz.
2. Set the video bandwidth (VBW) ≥ 3 x RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

### 5.1.2 DEVIATION FROM STANDARD

No deviation.

### 5.1.3 TEST SETUP




### 5.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

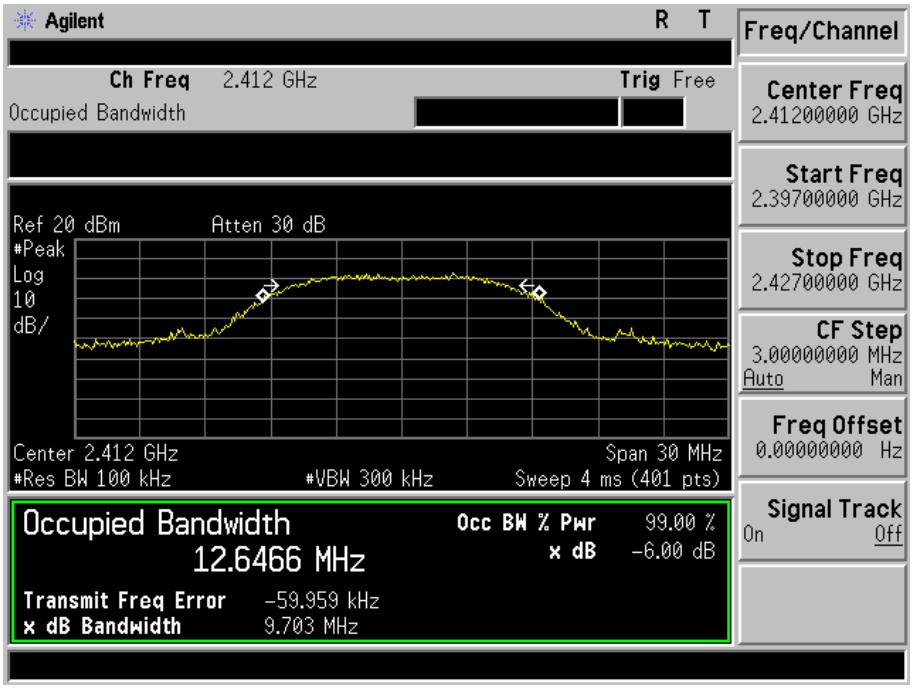
### 5.1.5 TEST RESULTS

| | | | |
|---|---|---|---|
| Temperature : | 25℃ | Relative Humidity : | 60% |
| Pressure : | 1012 hPa | Test Voltage : | DC 12V from Adapter |
| Test Mode : | TX b Mode | | |

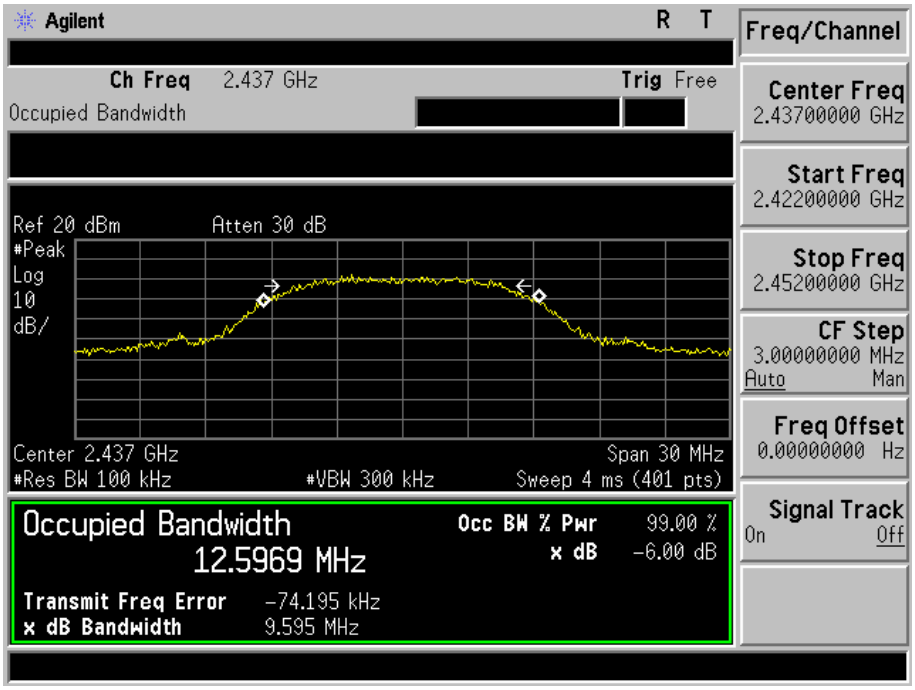
| Channel | Frequency (MHz) | 6dB bandwidth (MHz) | | Limit (kHz) | Result |
|---|---|---|---|---|---|
| Low | 2412 | Ant.1 | 9.703 | 500 | Pass |
| | | Ant.2 | 9.496 | 500 | Pass |
| Middle | 2437 | Ant.1 | 9.595 | 500 | Pass |
| | | Ant.2 | 9.790 | 500 | Pass |
| High | 2462 | Ant.1 | 9.459 | 500 | Pass |
| | | Ant.2 | 9.726 | 500 | Pass |

Ant.1

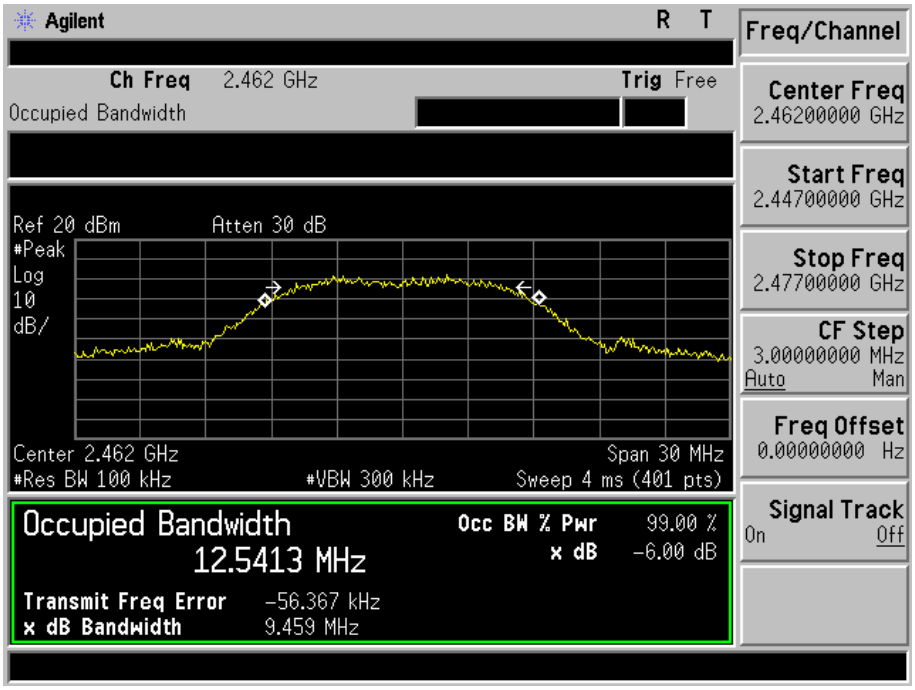
**TX CH 01**



**TX CH 06**

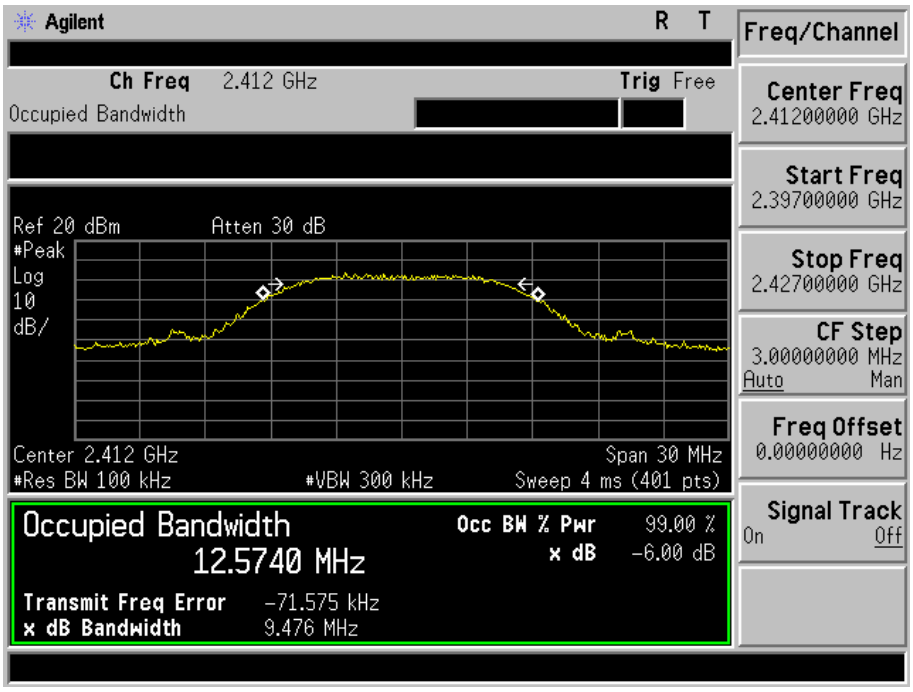



**TX CH 11**

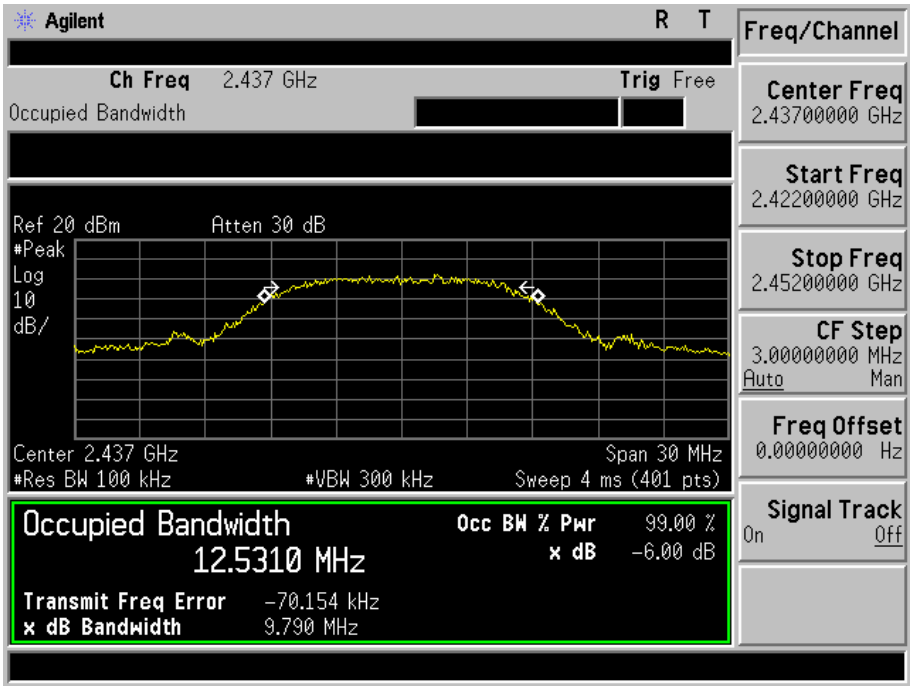


Ant.2

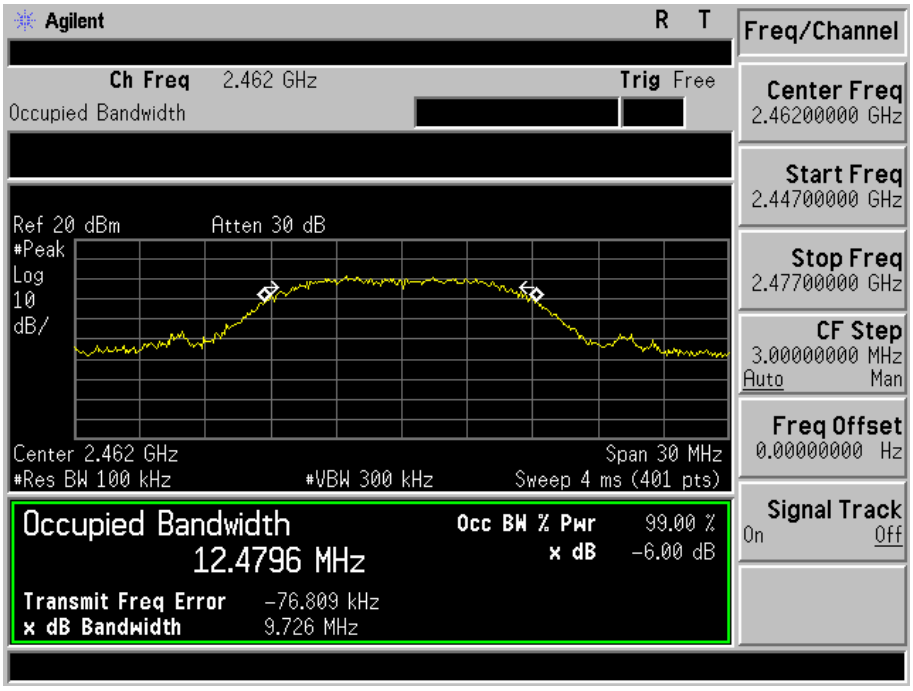
**TX CH 01**




**TX CH 06**



**TX CH 11**

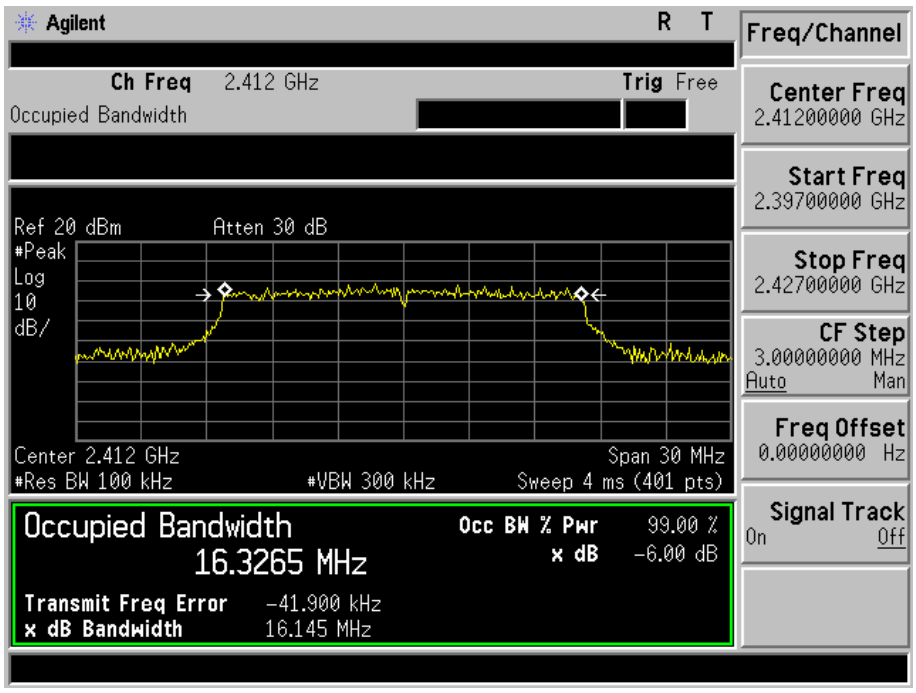

Agilent
R T
Freq/Channel
Ch Freq 2.462 GHz
Trig Free
Occupied Bandwidth
Center Freq
2.46200000 GHz
Start Freq
2.44700000 GHz
Stop Freq
2.47700000 GHz
CF Step
3.00000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off
Ref 20 dBm
Atten 30 dB
#Peak
Log
10
dB/
Center 2.462 GHz
Span 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 4 ms (401 pts)
Occupied Bandwidth
12.4796 MHz
Occ BW % Pwr 99.00 %
x dB -6.00 dB
Transmit Freq Error -76.809 kHz
x dB Bandwidth 9.726 MHz

| | | | |
|---|---|---|---|
| Temperature : | 25℃ | Relative Humidity : | 60% |
| Pressure : | 1012 hPa | Test Voltage : | DC 12V from Adapter |
| Test Mode : | TX g Mode | | |

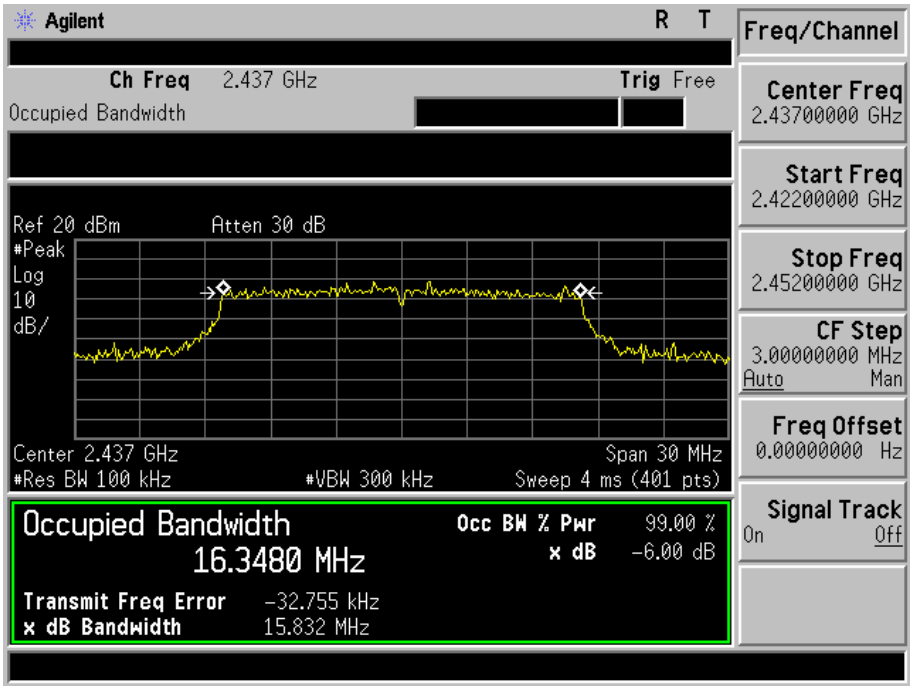
| Channel | Frequency (MHz) | 6dB bandwidth (MHz) | | Limit (kHz) | Result |
|---|---|---|---|---|---|
| Low | 2412 | Ant.1 | 16.145 | 500 | Pass |
| | | Ant.2 | 16.420 | 500 | Pass |
| Middle | 2437 | Ant.1 | 15.832 | 500 | Pass |
| | | Ant.2 | 15.709 | 500 | Pass |
| High | 2462 | Ant.1 | 16.395 | 500 | Pass |
| | | Ant.2 | 16.301 | 500 | Pass |

Ant.1

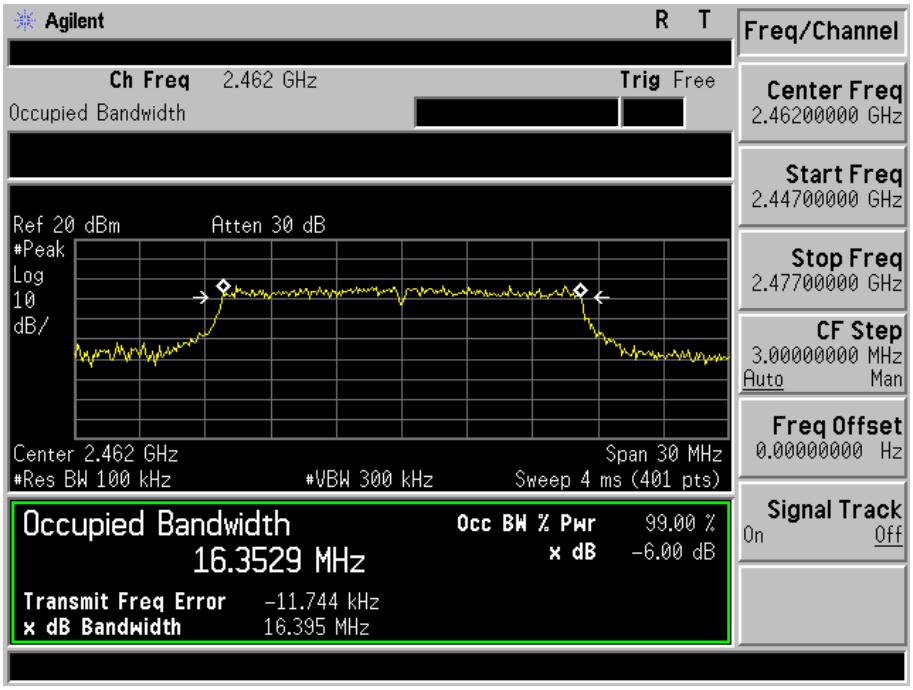
**TX CH 01**



**TX CH 06**

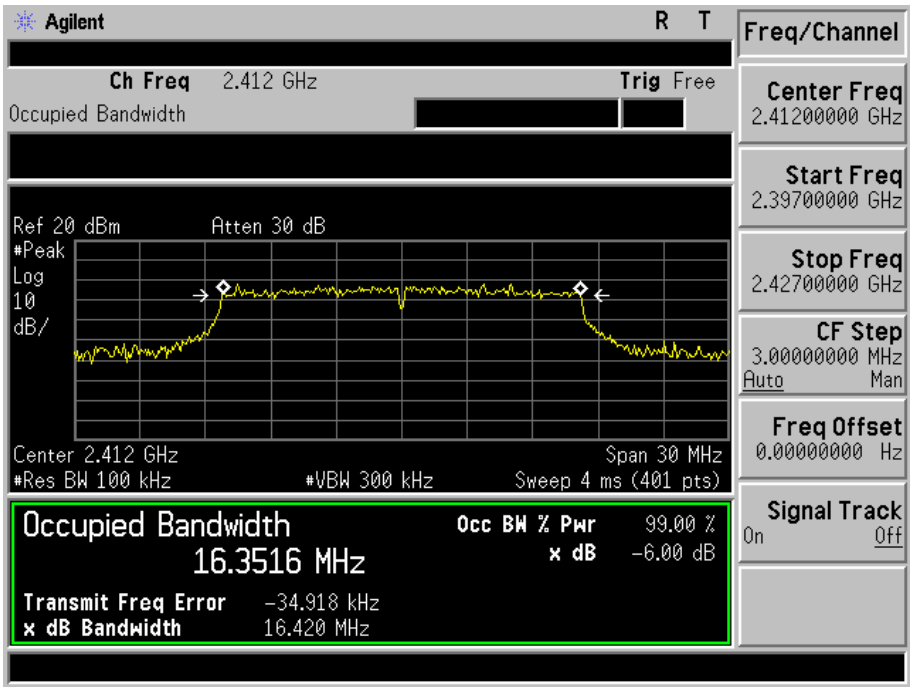



**TX CH 11**

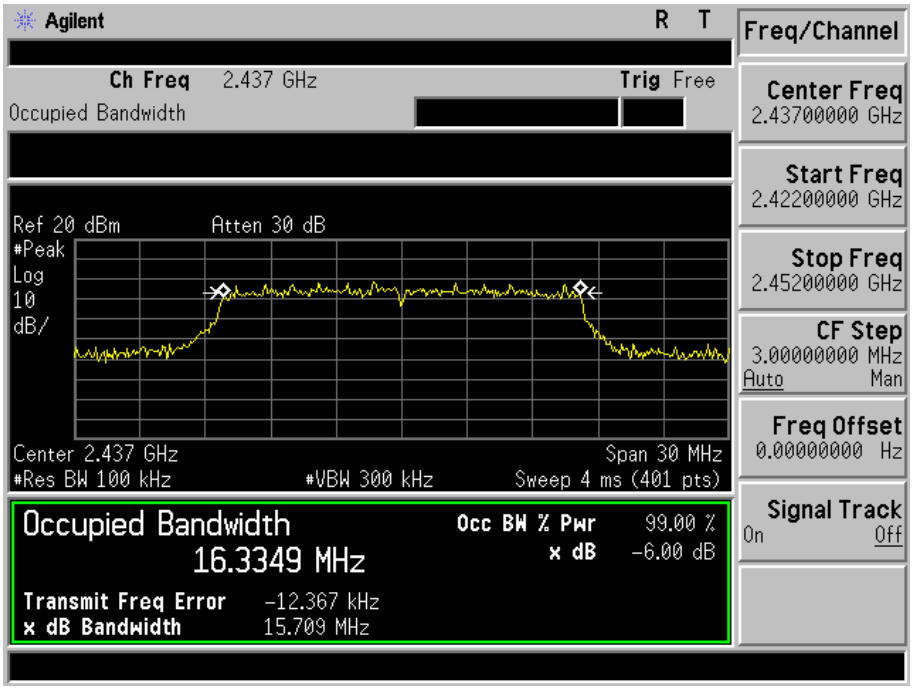


Ant.2

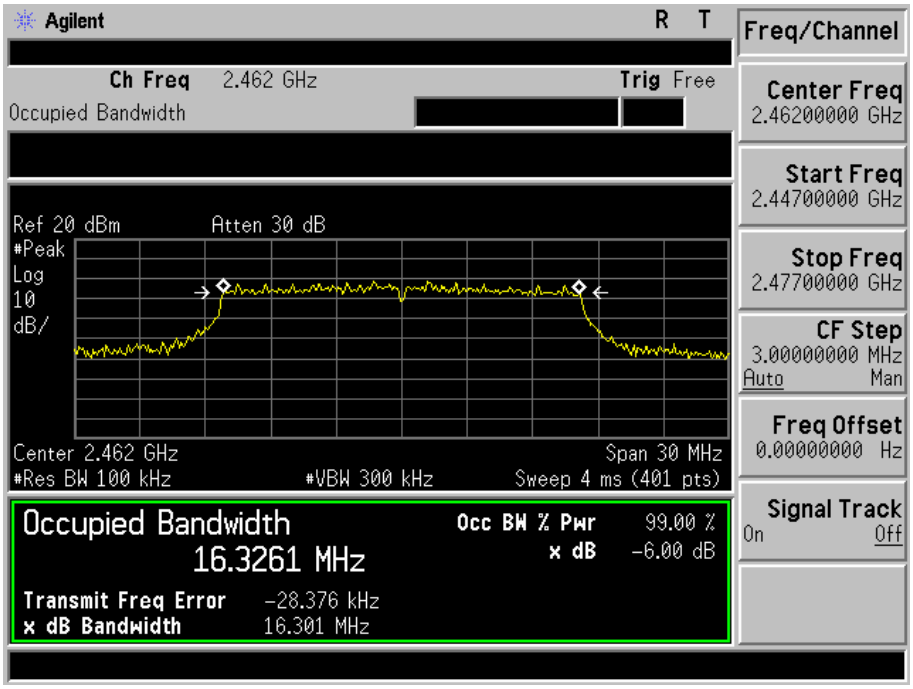
**TX CH 01**




**TX CH 06**



**TX CH 11**

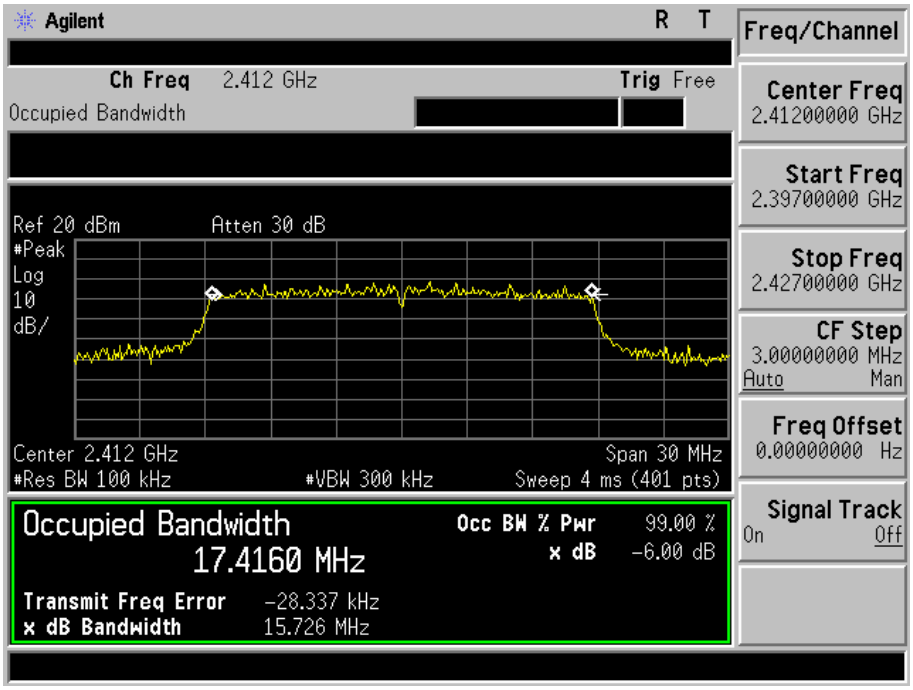

Agilent
R T
Ch Freq 2.462 GHz
Trig Free
Occupied Bandwidth
Ref 20 dBm
Atten 30 dB
#Peak
Log
10
dB/
Center 2.462 GHz
Span 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 4 ms (401 pts)
Occupied Bandwidth
16.3261 MHz
Occ BW % Pwr 99.00 %
x dB -6.00 dB
Transmit Freq Error -28.376 kHz
x dB Bandwidth 16.301 MHz
Freq/Channel
Center Freq
2.46200000 GHz
Start Freq
2.44700000 GHz
Stop Freq
2.47700000 GHz
CF Step
3.00000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off

| | | | |
|---|---|---|---|
| Temperature : | 25℃ | Relative Humidity : | 60% |
| Pressure : | 1012 hPa | Test Voltage : | DC 12V from Adapter |
| Test Mode : | TX n Mode(20M) | | |

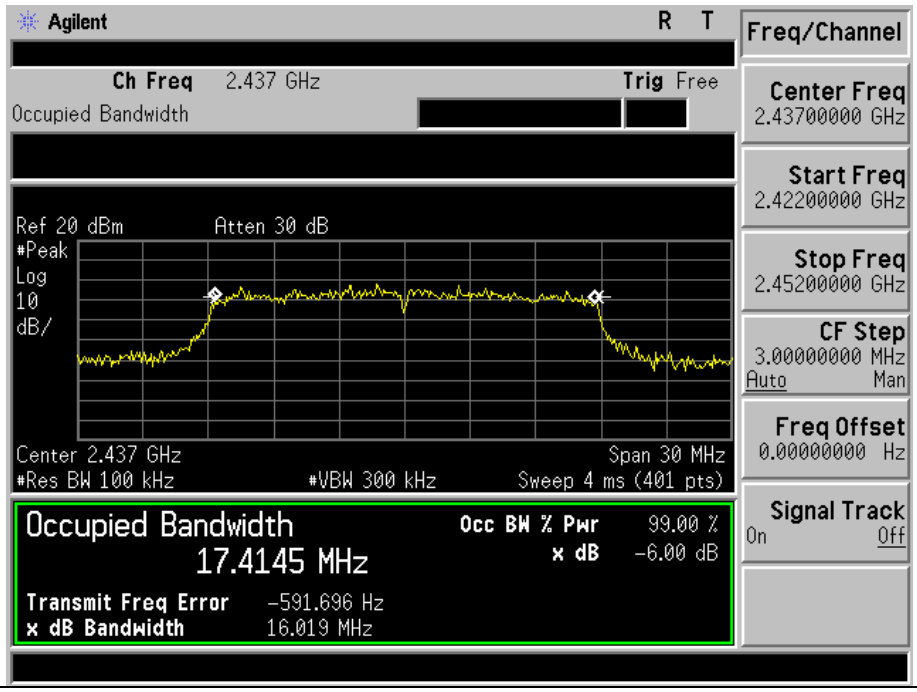
| Channel | Frequency (MHz) | 6dB bandwidth (MHz) | | Limit (kHz) | Result |
|---|---|---|---|---|---|
| Low | 2412 | Ant.1 | 15.726 | 500 | Pass |
| | | Ant.2 | 16.624 | 500 | Pass |
| Middle | 2437 | Ant.1 | 16.019 | 500 | Pass |
| | | Ant.2 | 16.059 | 500 | Pass |
| High | 2462 | Ant.1 | 15.666 | 500 | Pass |
| | | Ant.2 | 16.644 | 500 | Pass |

Ant.1

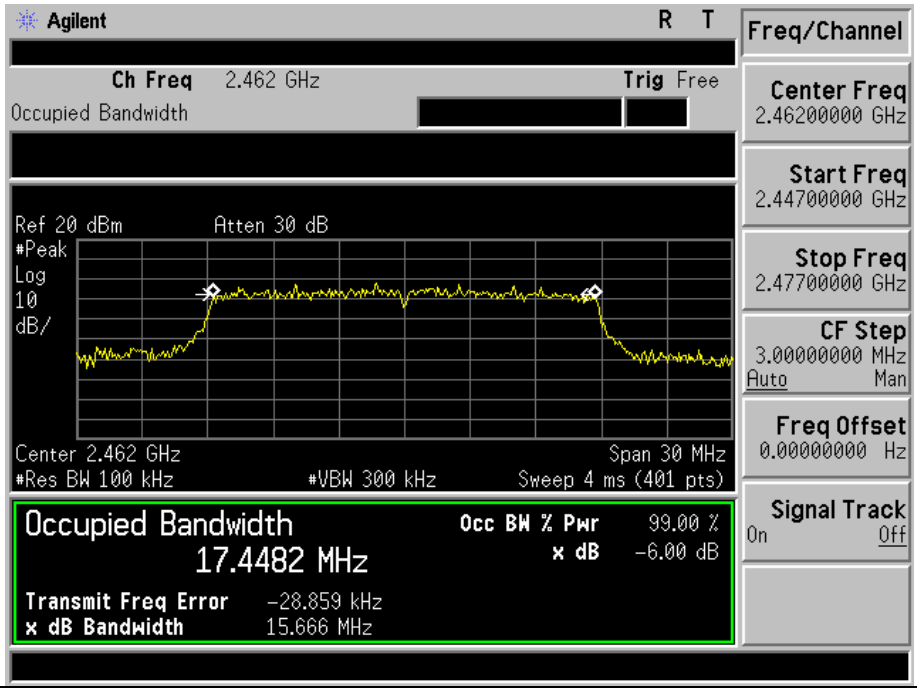
**TX CH 01**



**TX CH 06**

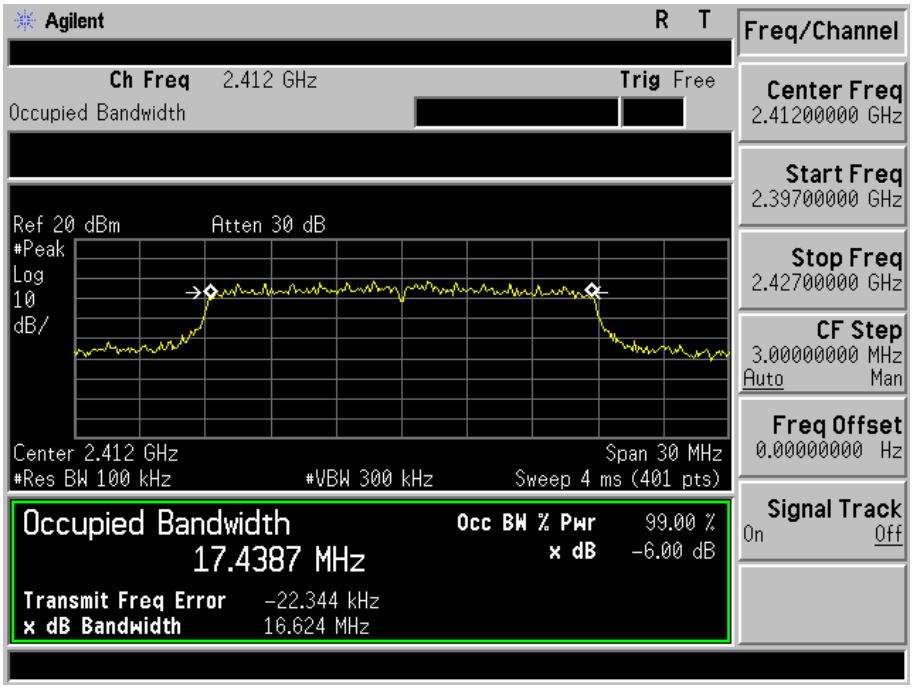



**TX CH 11**

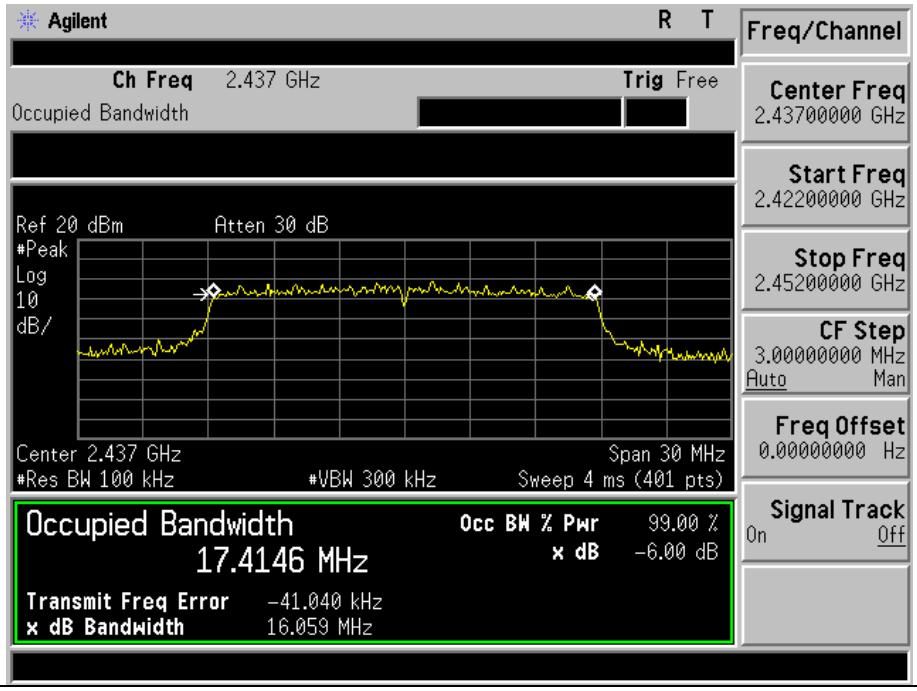


Ant.2

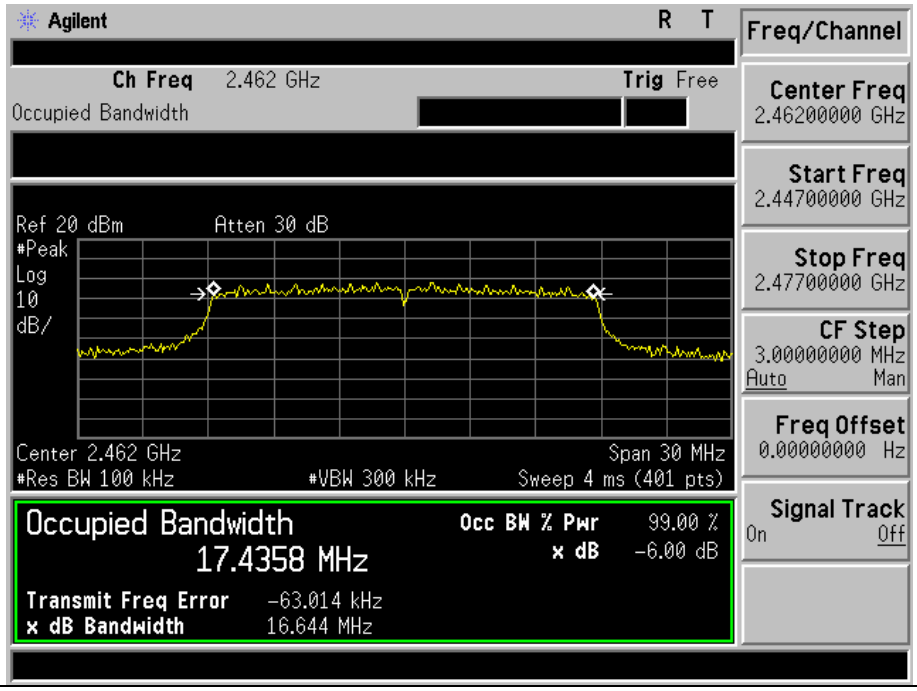
**TX CH 01**




**TX CH 06**



**TX CH 11**

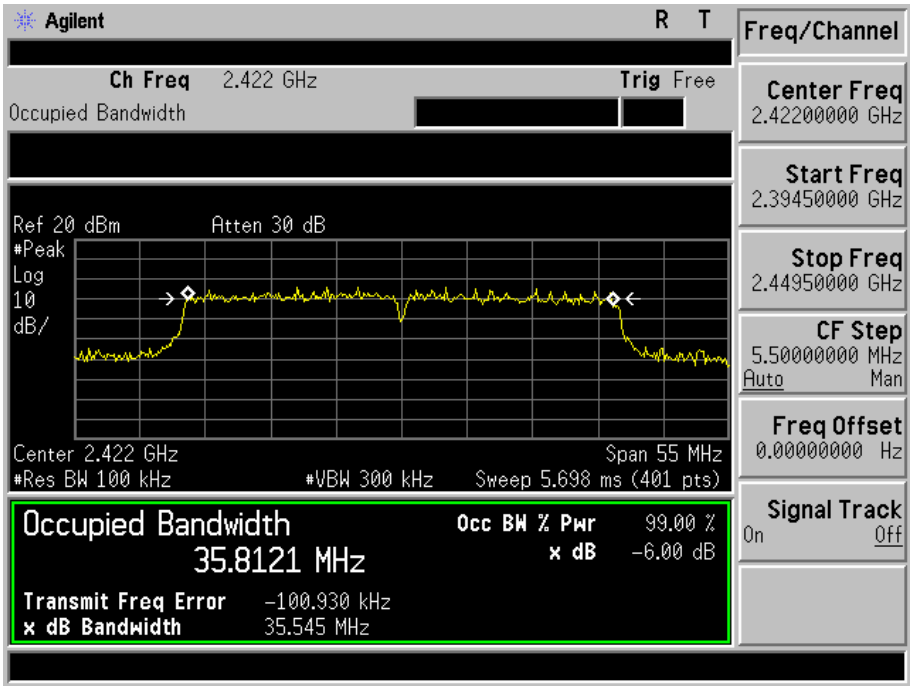

Agilent
R T
Ch Freq 2.462 GHz
Trig Free
Occupied Bandwidth
Ref 20 dBm
Atten 30 dB
#Peak
Log
10
dB/
Center 2.462 GHz
Span 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 4 ms (401 pts)
Occupied Bandwidth
17.4358 MHz
Occ BW % Pwr 99.00 %
x dB -6.00 dB
Transmit Freq Error -63.014 kHz
x dB Bandwidth 16.644 MHz
Freq/Channel
Center Freq
2.46200000 GHz
Start Freq
2.44700000 GHz
Stop Freq
2.47700000 GHz
CF Step
3.00000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off

| | | | |
|---|---|---|---|
| Temperature : | 25℃ | Relative Humidity : | 60% |
| Pressure : | 1012 hPa | Test Voltage : | DC 12V from Adapter |
| Test Mode : | TX n Mode(40M) | | |

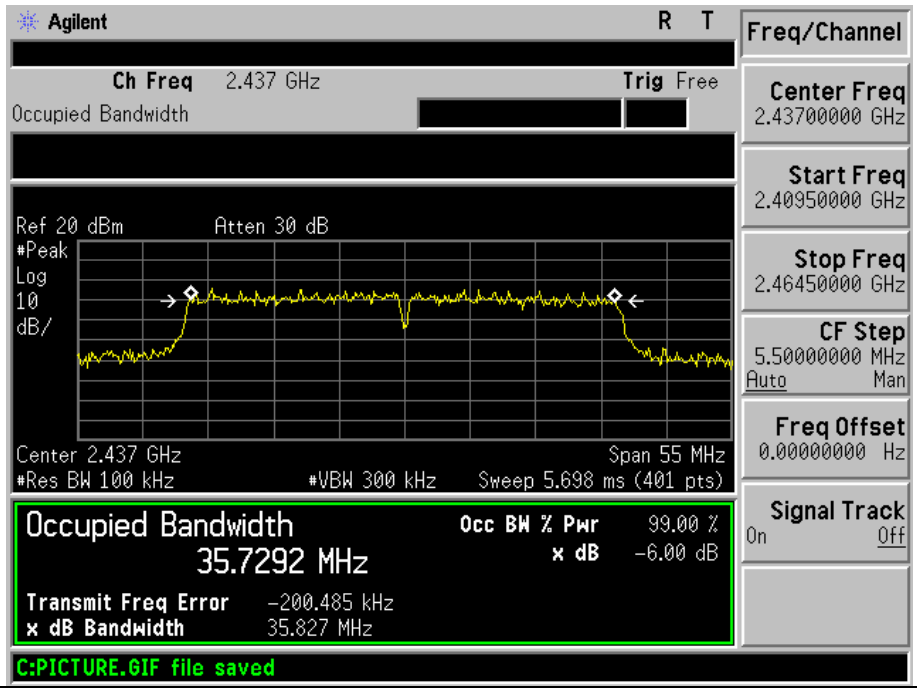
| Channel | Frequency (MHz) | 6dB bandwidth (MHz) | | Limit (kHz) | Result |
|---|---|---|---|---|---|
| Low | 2422 | Ant.1 | 35.545 | 500 | Pass |
| | | Ant.2 | 35.839 | 500 | Pass |
| Middle | 2437 | Ant.1 | 35.827 | 500 | Pass |
| | | Ant.2 | 35.823 | 500 | Pass |
| High | 2452 | Ant.1 | 35.588 | 500 | Pass |
| | | Ant.2 | 35.819 | 500 | Pass |

Ant.1

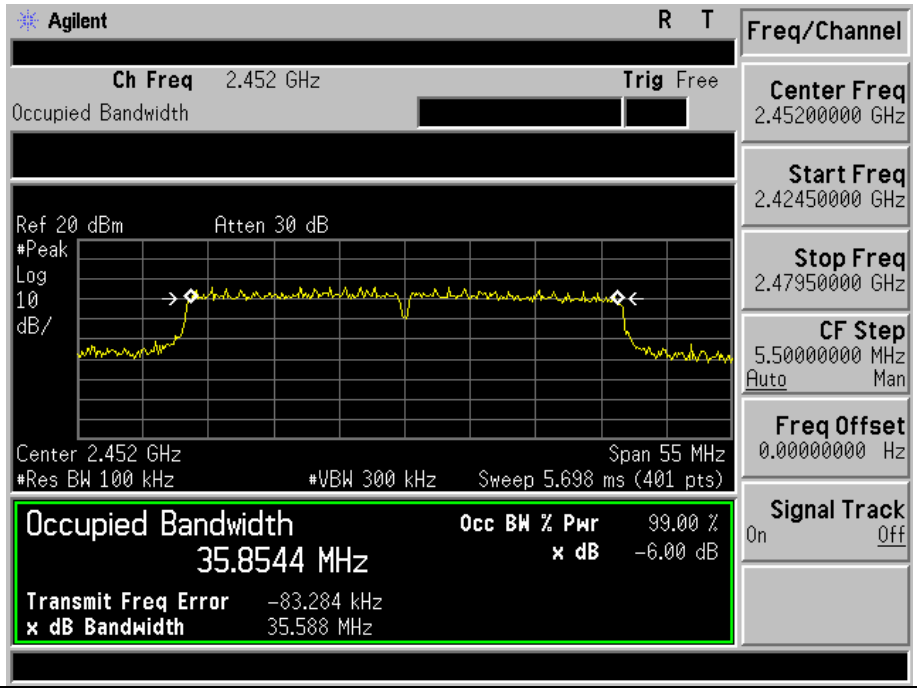
**TX CH 03**



**TX CH 06**

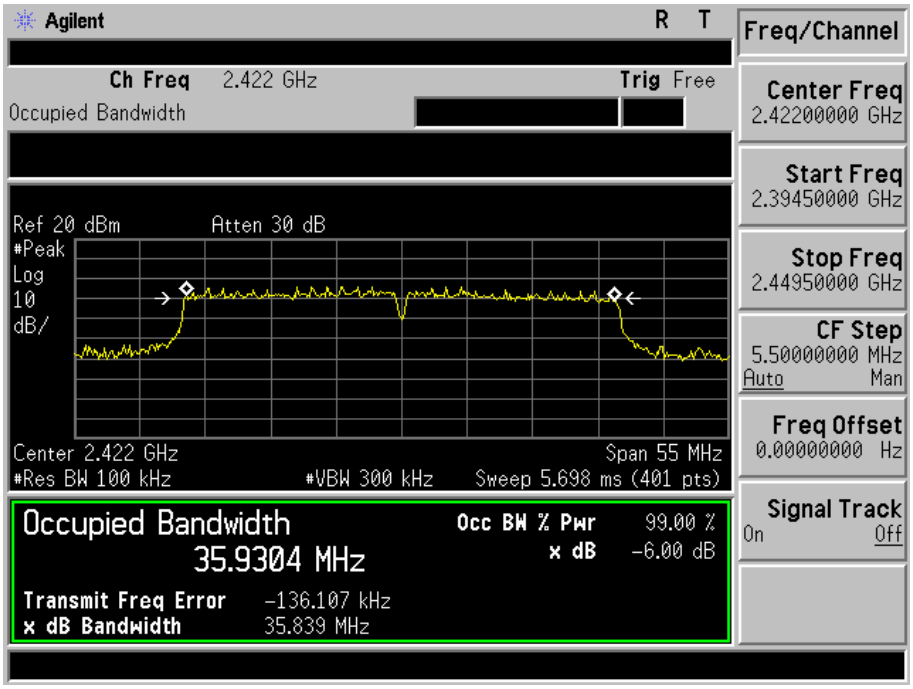



**TX CH 09**

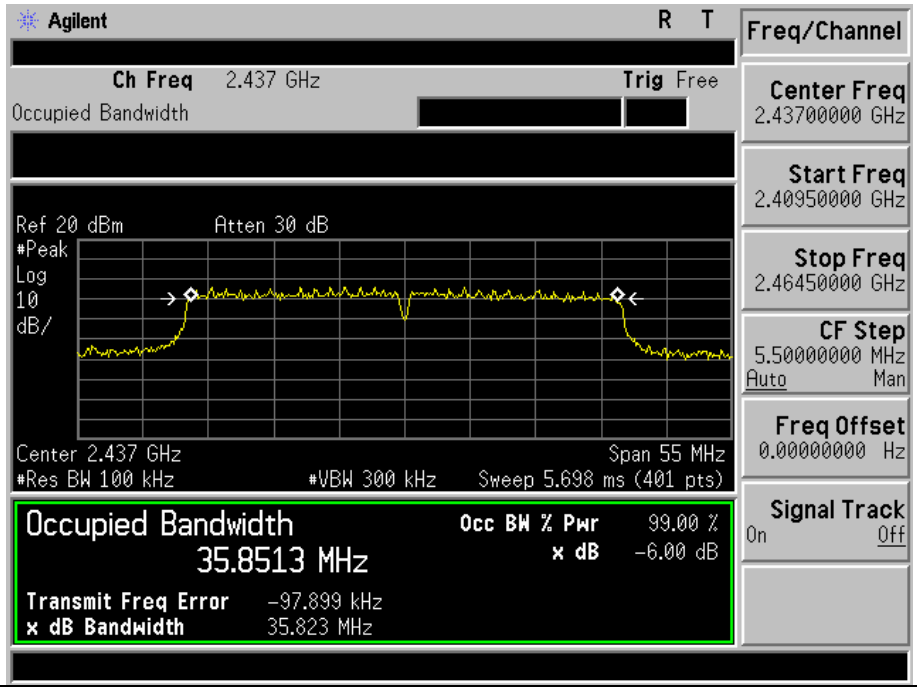


Ant.2

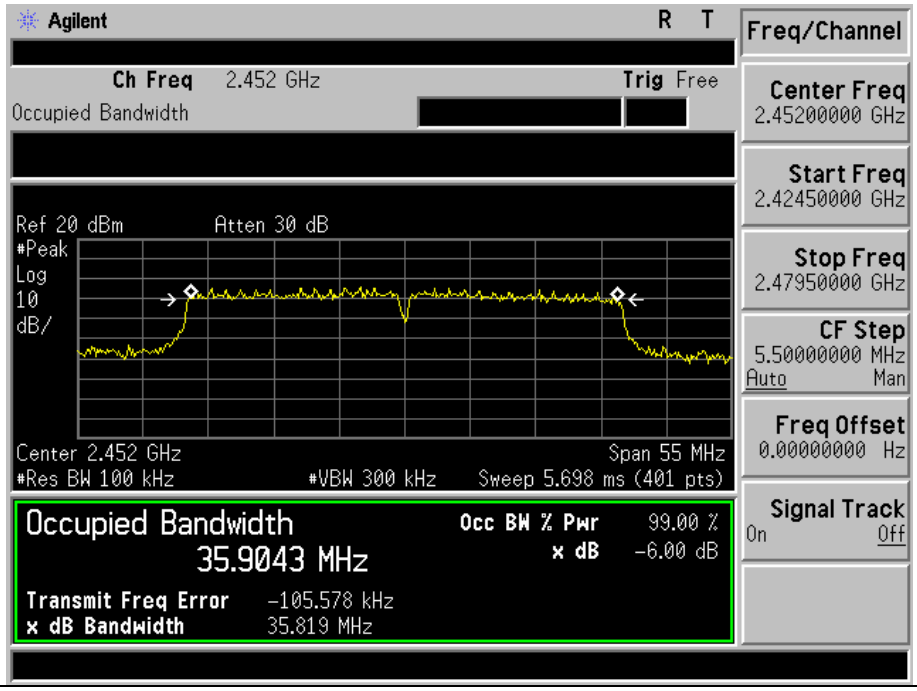
**TX CH 03**




**TX CH 06**



**TX CH 09**


Agilent
R T
Ch Freq 2.452 GHz
Trig Free
Occupied Bandwidth
Ref 20 dBm
Atten 30 dB
#Peak
Log
10
dB/
Center 2.452 GHz
Span 55 MHz
#Res BW 100 kHz
#VBW 300 kHz
Sweep 5.698 ms (401 pts)
Occupied Bandwidth
35.9043 MHz
Occ BW % Pwr 99.00 %
x dB -6.00 dB
Transmit Freq Error -105.578 kHz
x dB Bandwidth 35.819 MHz
Freq/Channel
Center Freq
2.45200000 GHz
Start Freq
2.42450000 GHz
Stop Freq
2.47950000 GHz
CF Step
5.50000000 MHz
Auto Man
Freq Offset
0.00000000 Hz
Signal Track
On Off

# 6. PEAK OUTPUT POWER TEST

## 6.1 APPLIED PROCEDURES / LIMIT

| FCC Part15 (15.247) , Subpart C | | | | |
|---|---|---|---|---|
| Section | Test Item | Limit | Frequency Range (MHz) | Result |
| 15.247(b)(3) | Peak Output Power | 1 watt or 30dBm | 2400-2483.5 | PASS |
| Per KDB 662911 D01 Multiple Transmitter Output Method of conducted output power measurement on IEEE 802.11 devices,<br>Array Gain = 0 dB (i.e., no array gain) for NANT ≤ 4;<br>Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any NANT;<br>Array Gain = 5 log(NANT/NSS) dB or 3 dB, whichever is less for 20-MHz channel widths with NANT ≥ 5.<br>For power measurements on all other devices: Array Gain = 10 log(NANT/NSS) dB. | | | | |

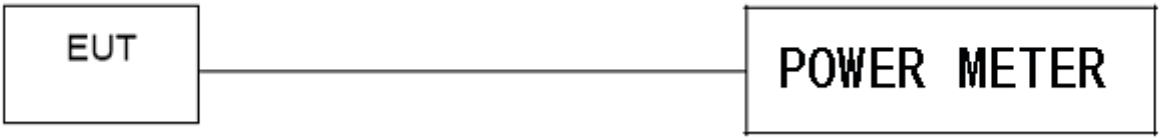
### 6.1.1 TEST PROCEDURE

a. The EUT was directly connected to the Power meter

### 6.1.2 DEVIATION FROM STANDARD

No deviation.

### 6.1.3 TEST SETUP




### 6.1.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

### 6.1.5 TEST RESULTS

| | | | |
|---|---|---|---|
| Temperature : | 25℃ | Relative Humidity : | 60% |
| Pressure : | 1012 hPa | Test Voltage : | DC 12V from Adapter |

| | Frequency | Antenna port | Maximum Conducted Output Power(PK) | Maximum Conducted Output Power(PK) | Total Conducted Output Power(PK) | Total Conducted Output Power(PK) | LIMIT |
|---|---|---|---|---|---|---|---|
| | (MHz) | | (dBm) | (mW) | (mW) | (dBm) | dBm |
| 802.11b | 2412 | Ant.1 | 15.56 | 35.97 | N/A | N/A | 30 |
| | | Ant.2 | 15.49 | 35.40 | | | |
| | 2437 | Ant.1 | 15.36 | 34.36 | N/A | N/A | 30 |
| | | Ant.2 | 15.28 | 33.73 | | | |
| | 2462 | Ant.1 | 15.52 | 35.65 | N/A | N/A | 30 |
| | | Ant.2 | 15.44 | 34.99 | | | |
| 802.11g | 2412 | Ant.1 | 14.62 | 28.97 | N/A | N/A | 30 |
| | | Ant.2 | 14.45 | 27.86 | | | |
| | 2437 | Ant.1 | 14.57 | 28.64 | N/A | N/A | 30 |
| | | Ant.2 | 14.41 | 27.61 | | | |
| | 2462 | Ant.1 | 14.36 | 27.29 | N/A | N/A | 30 |
| | | Ant.2 | 14.14 | 25.94 | | | |
| 802.11n20 | 2412 | Ant.1 | 12.32 | 17.06 | 34.72 | 15.41 | 30 |
| | | Ant.2 | 12.47 | 17.66 | | | |
| | 2437 | Ant.1 | 12.42 | 17.46 | 35.41 | 15.49 | 30 |
| | | Ant.2 | 12.54 | 17.95 | | | |
| | 2462 | Ant.1 | 12.37 | 17.26 | 34.84 | 15.42 | 30 |
| | | Ant.2 | 12.45 | 17.58 | | | |
| 802.11n40 | 2422 | Ant.1 | 10.65 | 11.61 | 22.93 | 13.60 | 30 |
| | | Ant.2 | 10.54 | 11.32 | | | |
| | 2437 | Ant.1 | 10.72 | 11.80 | 22.84 | 13.59 | 30 |
| | | Ant.2 | 10.43 | 11.04 | | | |
| | 2452 | Ant.1 | 10.69 | 11.72 | 22.86 | 13.59 | 30 |
| | | Ant.2 | 10.47 | 11.14 | | | |

# 7. 100 KHZ BANDWIDTH OF FREQUENCY BAND EDGE

## 7.1 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)).

## 7.2 TEST PROCEDURE

a) Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
b) 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.
c) 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.
d) 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.
e) Repeat above procedures until all measured frequencies were complete.

## 7.3 DEVIATION FROM STANDARD

No deviation.

## 7.4 TEST SETUP

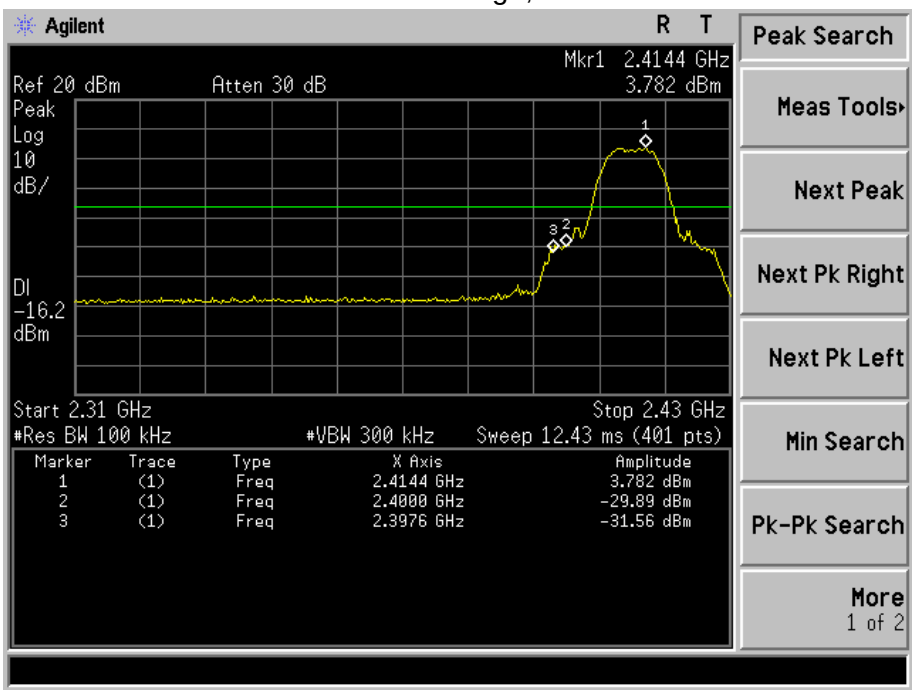
## 7.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

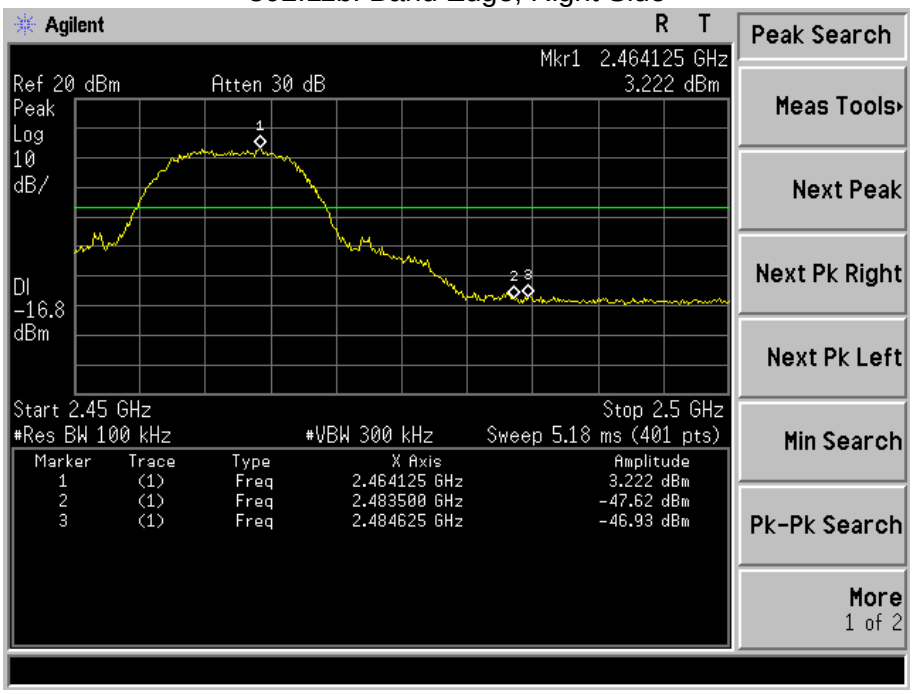
## 7.1 TEST RESULTS

Ant.1

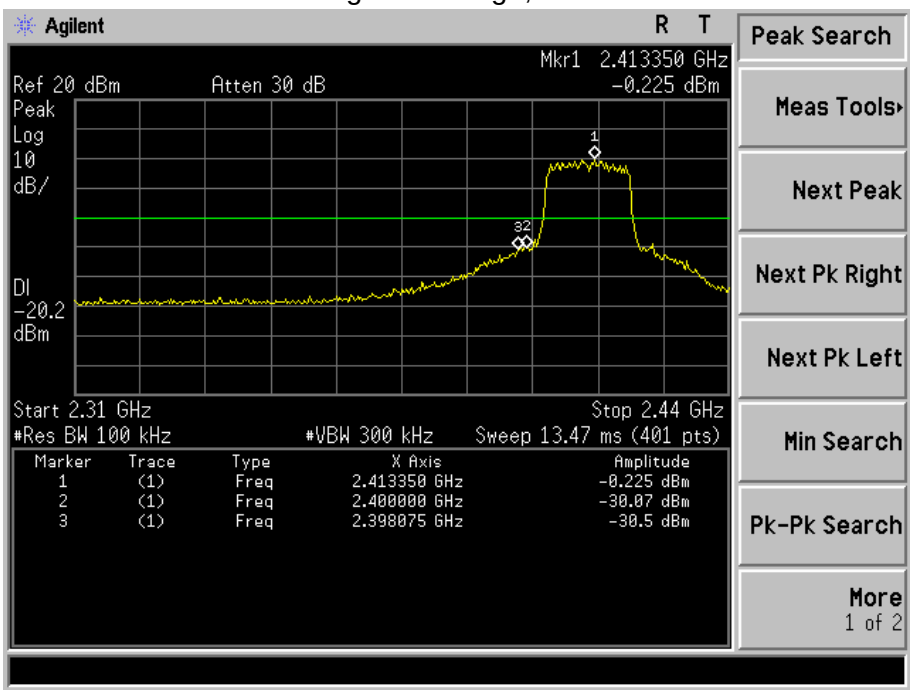
802.11b: Band Edge, Left Side



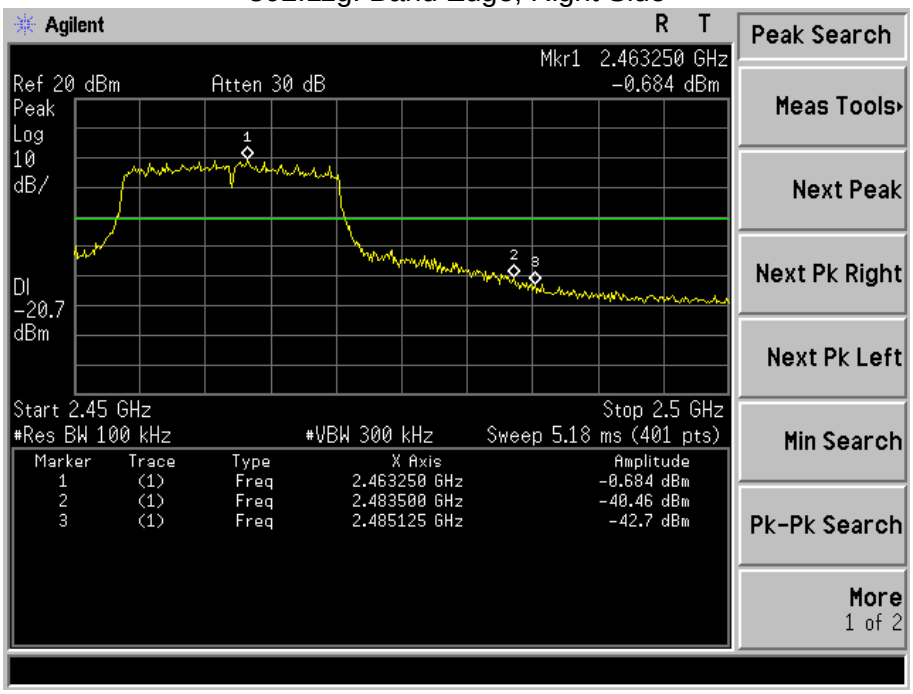

802.11b: Band Edge, Right Side



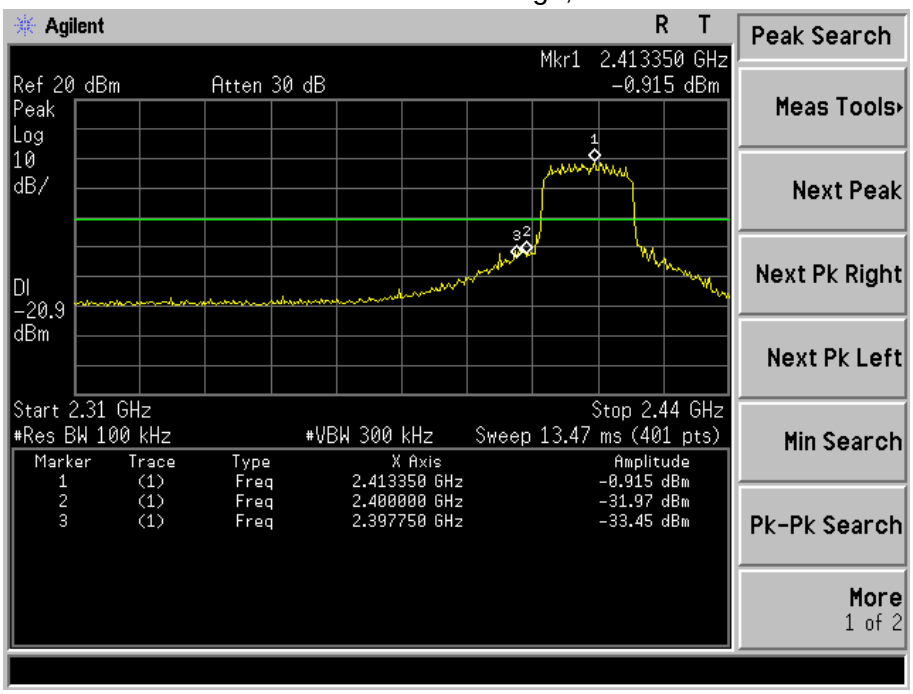
802.11g: Band Edge, Left Side



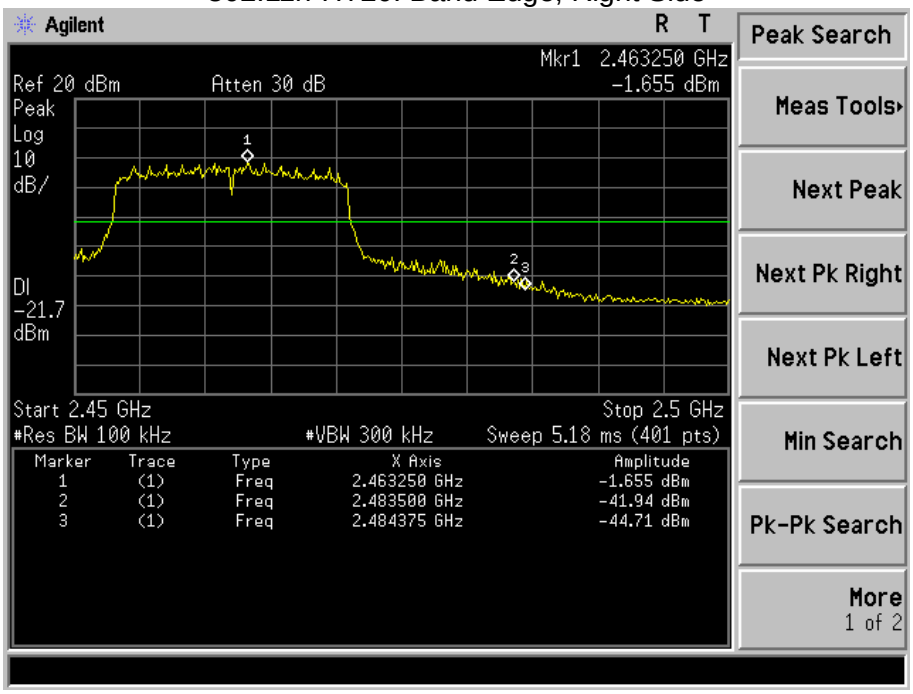

802.11g: Band Edge, Right Side



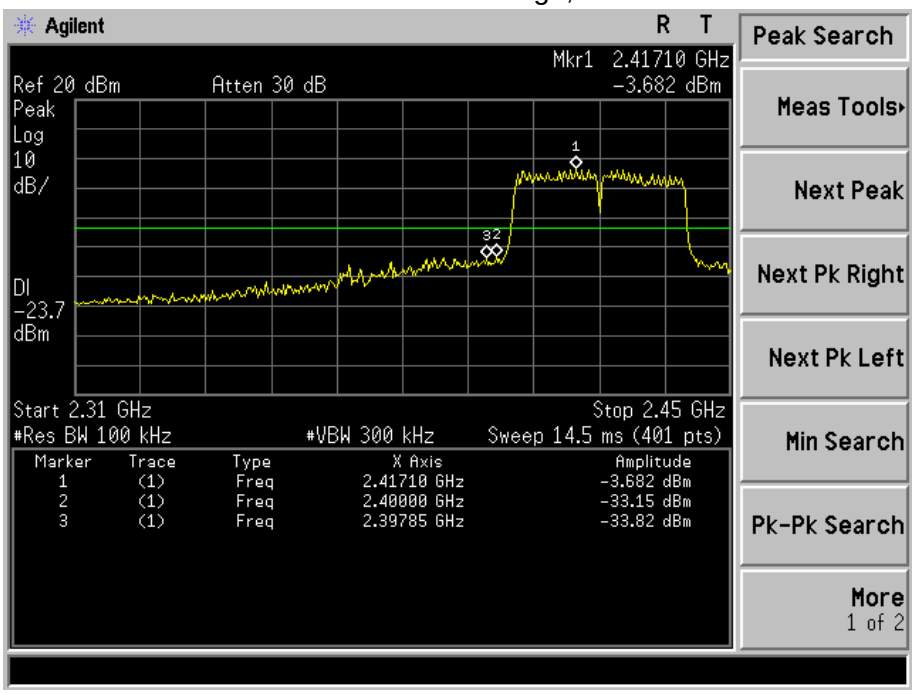
802.11n-HT20: Band Edge, Left Side



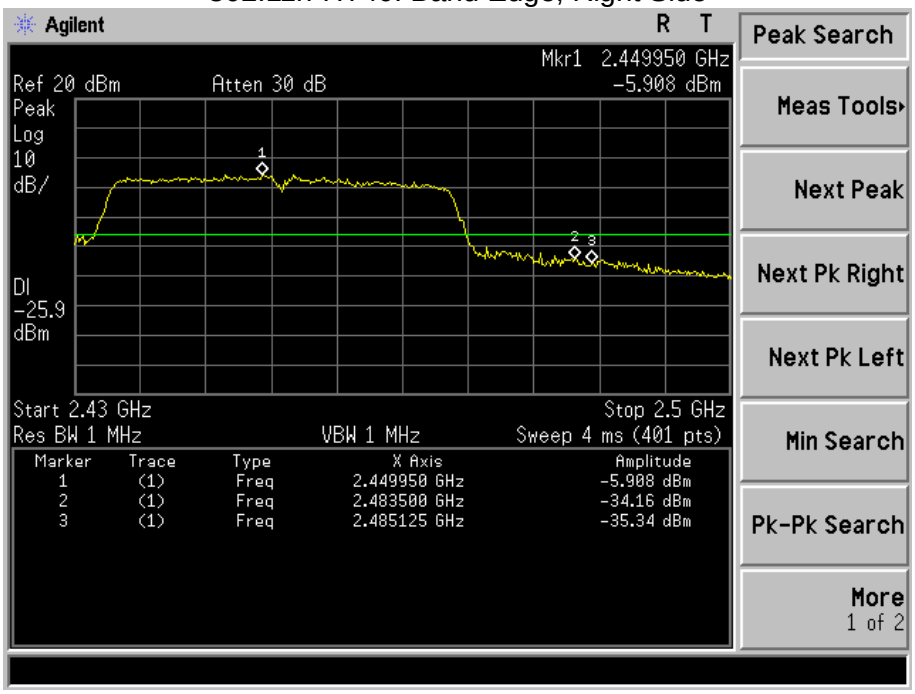

802.11n-HT20: Band Edge, Right Side



802.11n-HT40: Band Edge, Left Side

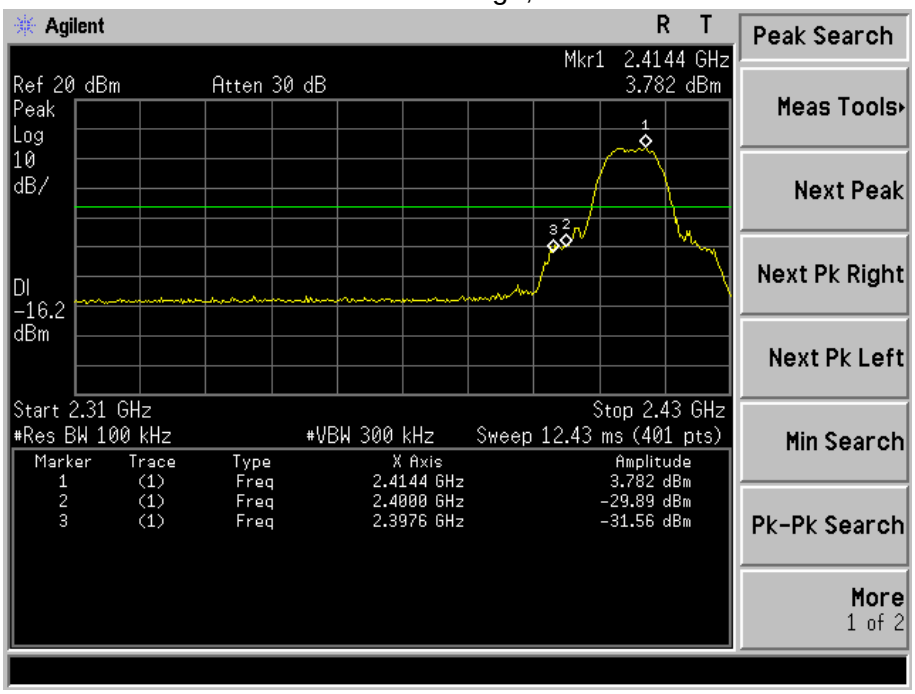



802.11n-HT40: Band Edge, Right Side

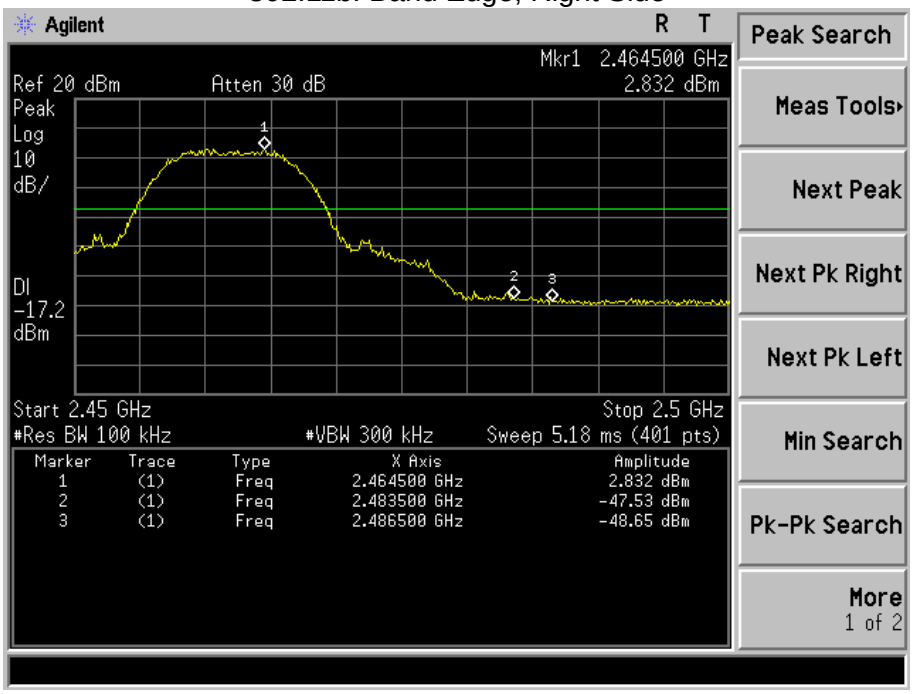


Ant.2

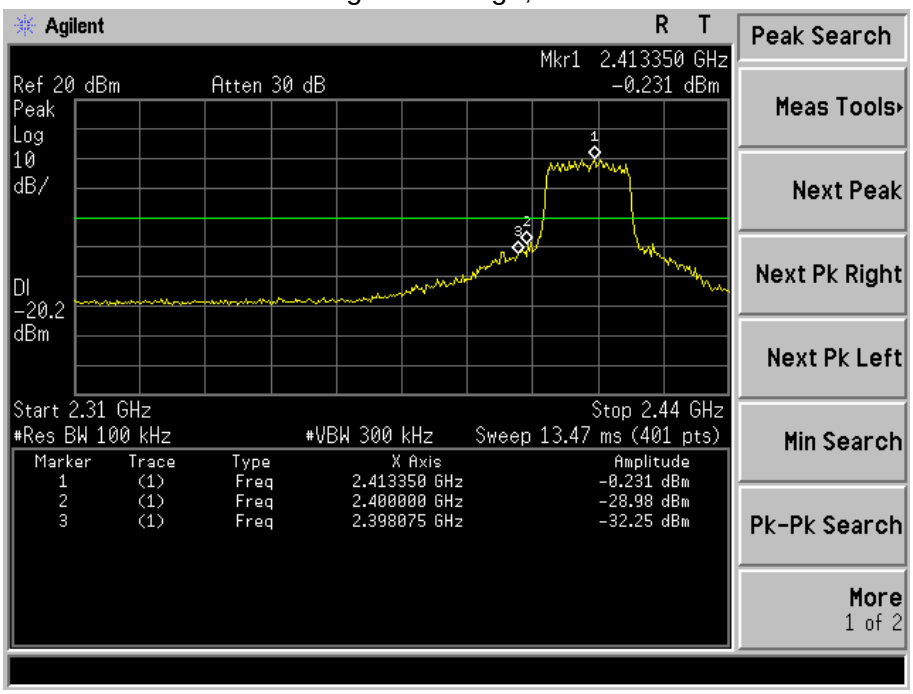
802.11b: Band Edge, Left Side



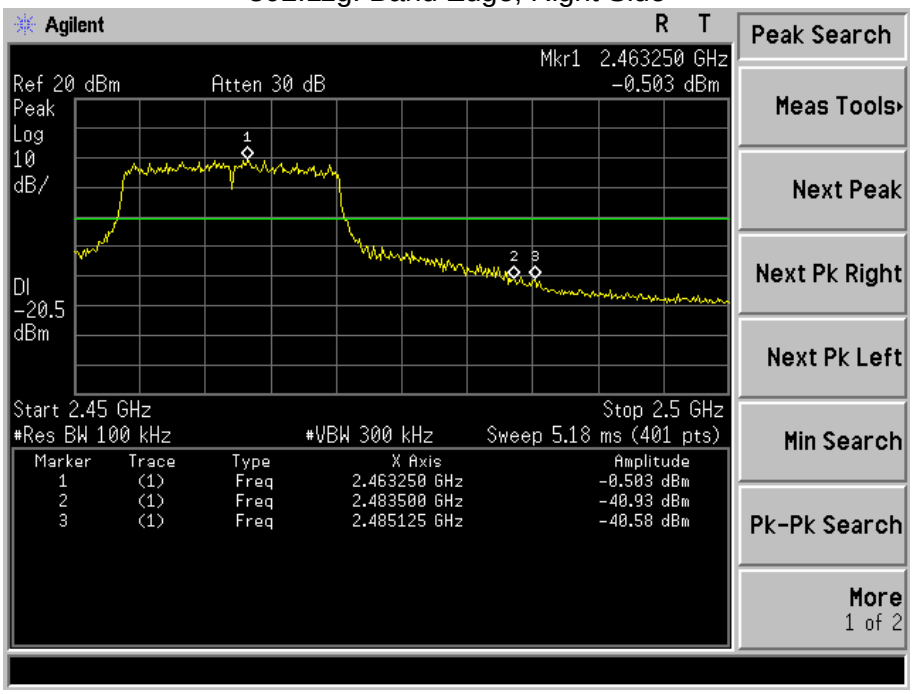

802.11b: Band Edge, Right Side



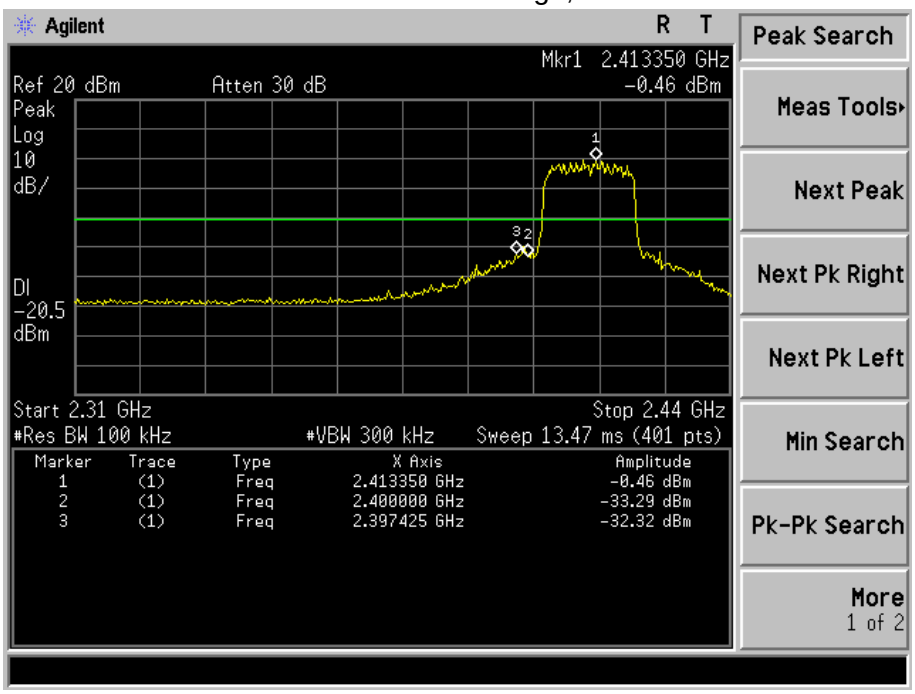
802.11g: Band Edge, Left Side



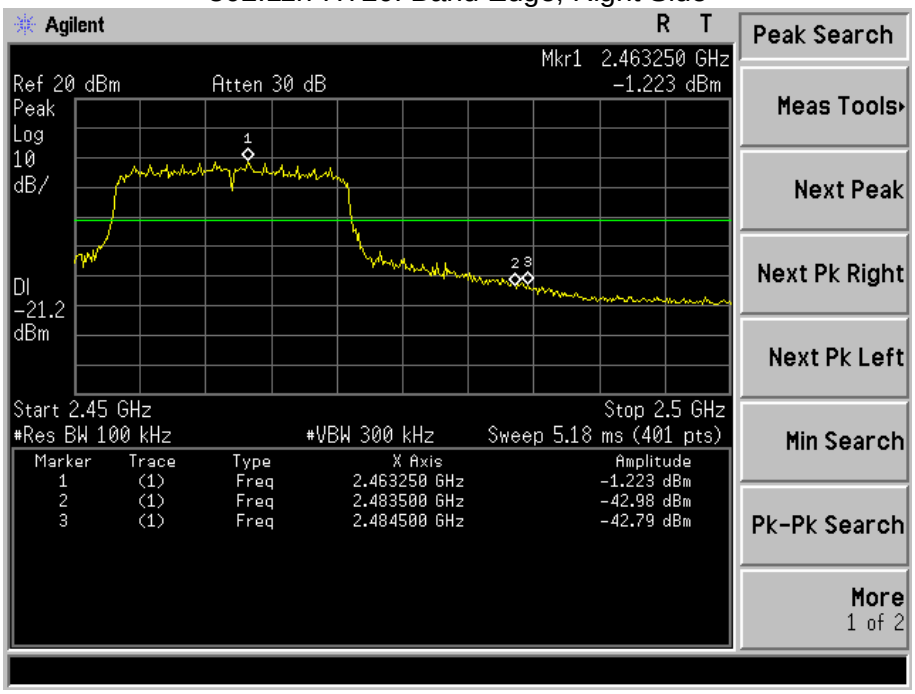

802.11g: Band Edge, Right Side



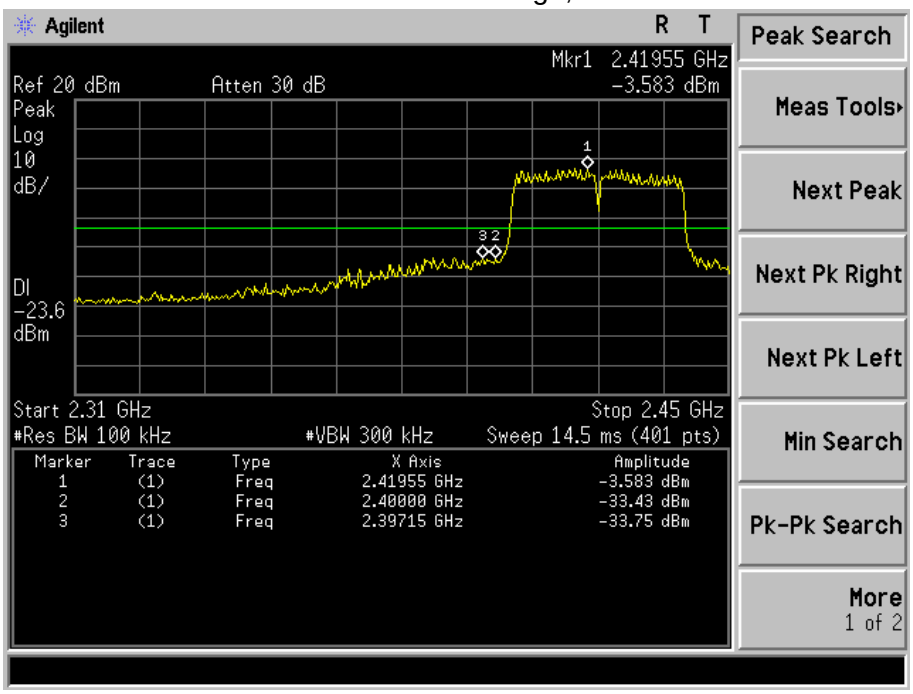
802.11n-HT20: Band Edge, Left Side



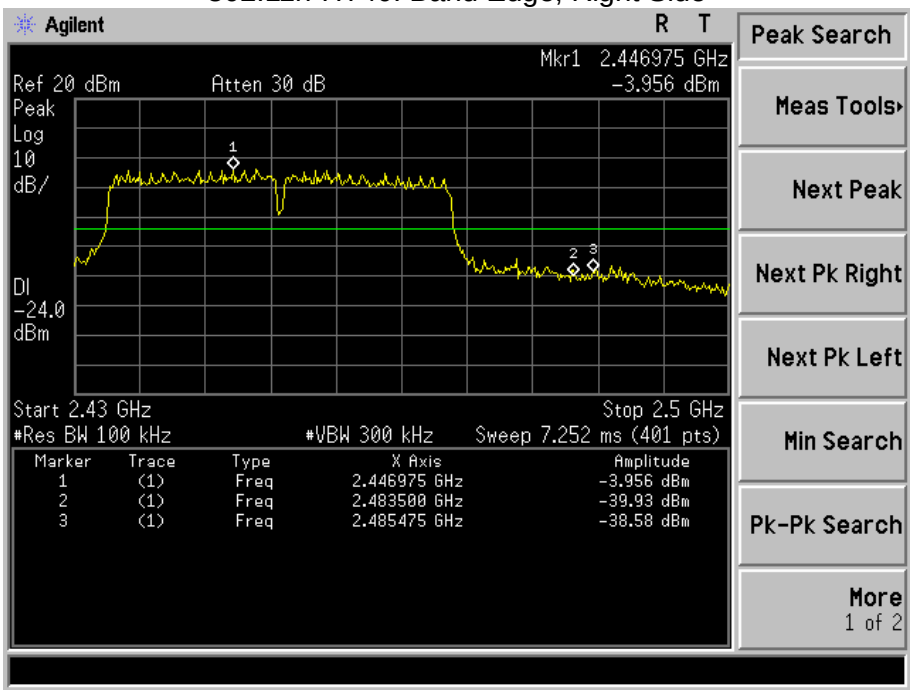

802.11n-HT20: Band Edge, Right Side



802.11n-HT40: Band Edge, Left Side



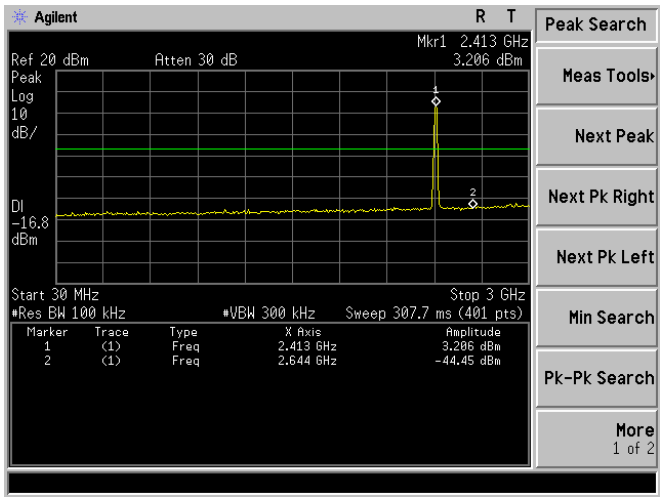

802.11n-HT40: Band Edge, Right Side

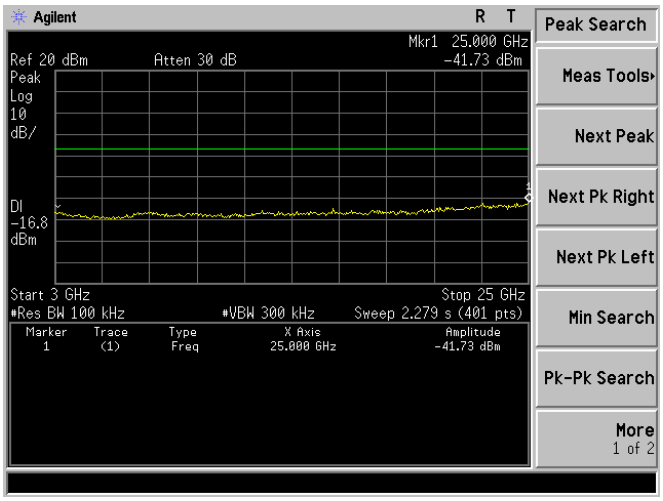


## CONDUCTED EMISSION MEASUREMENT

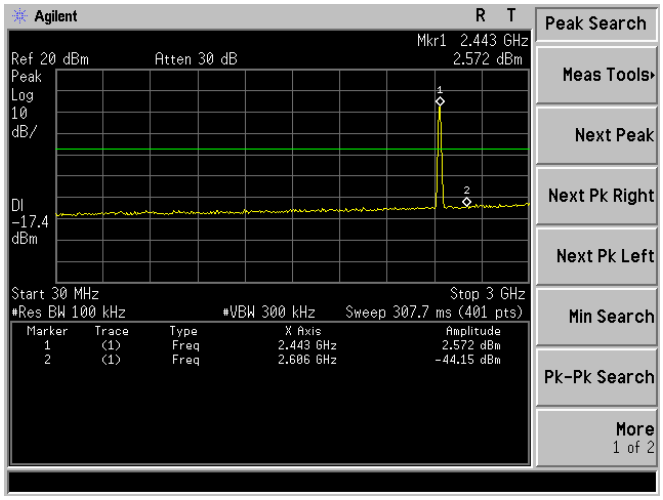
Ant.1 802.11b

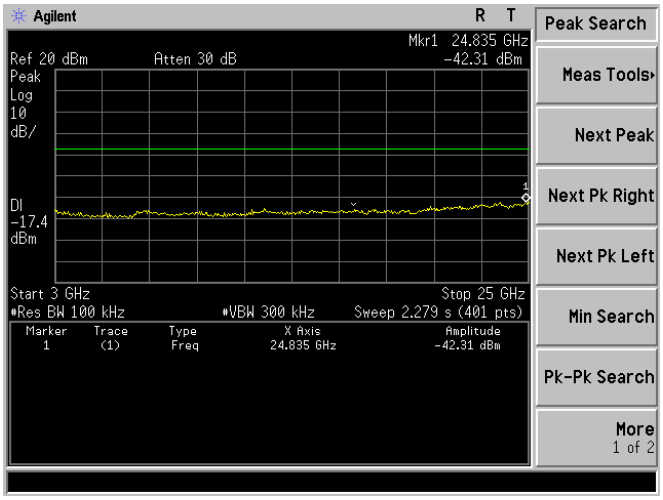
Low Channel 2412MHz



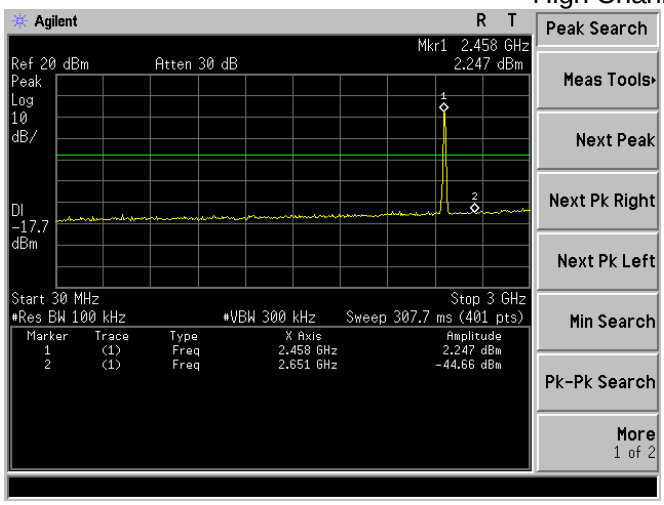



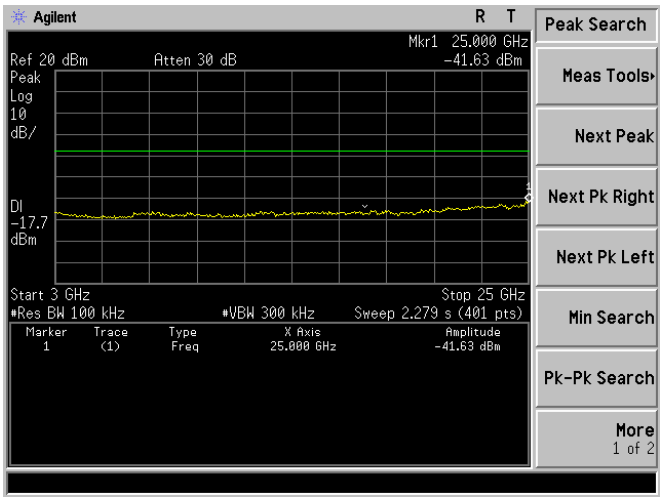

Middle Channel 2437MHz



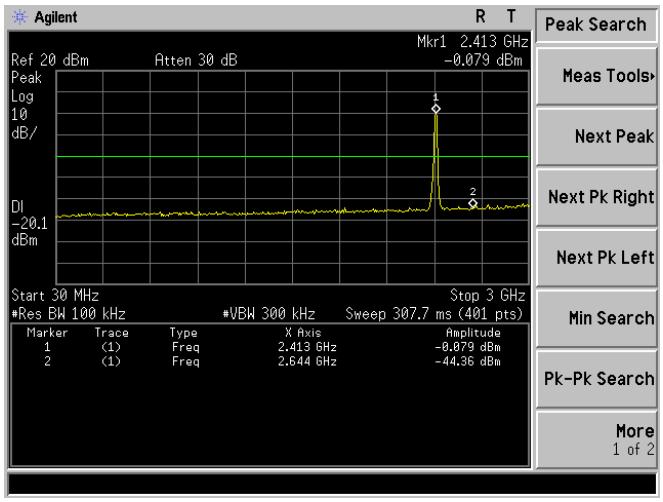

High Channel 2462MHz

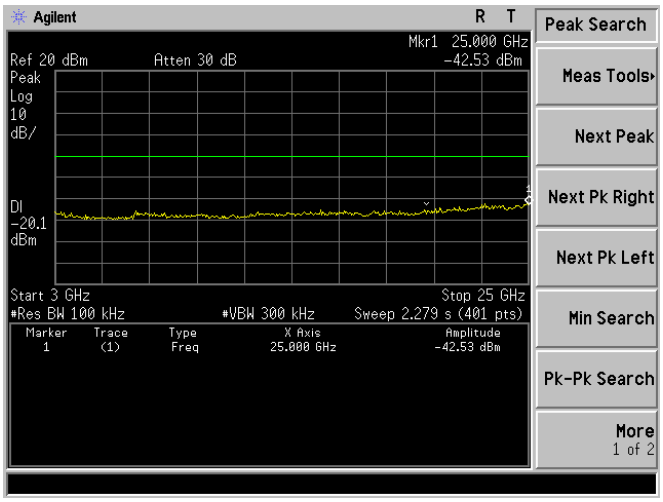


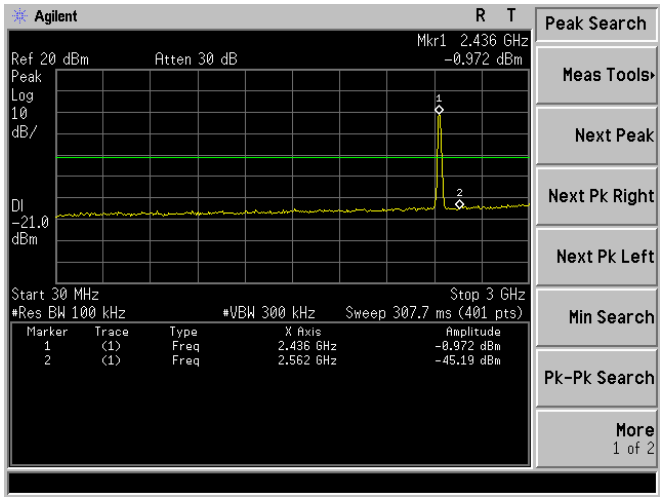
Ant.1 802.11g

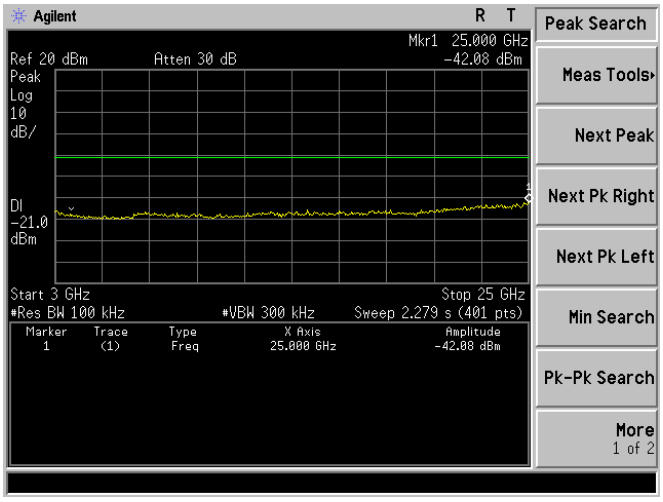
Low Channel 2412MHz



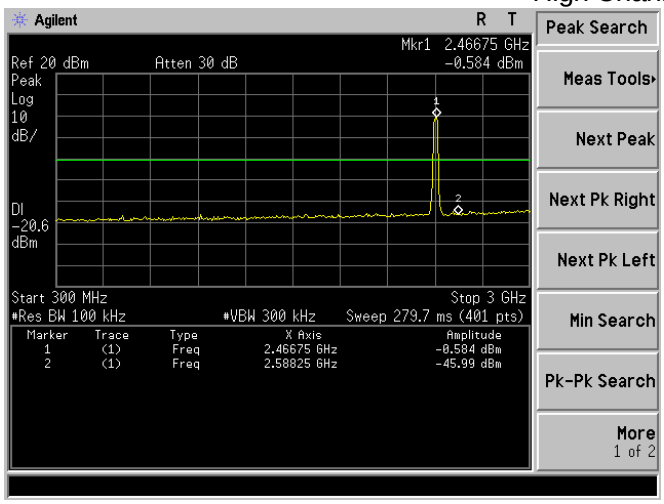



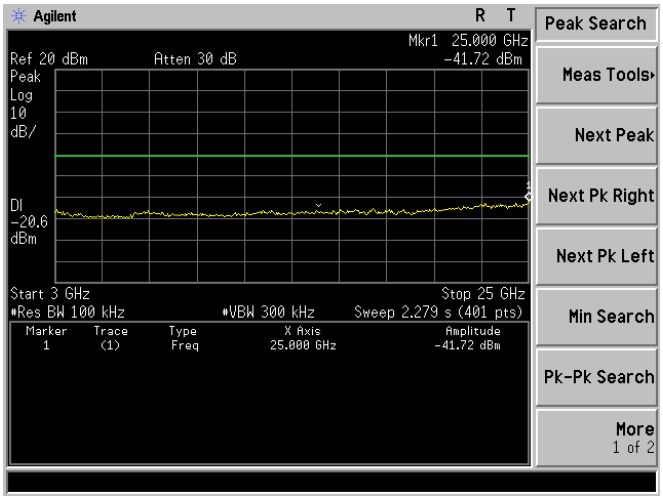

Middle Channel 2437MHz



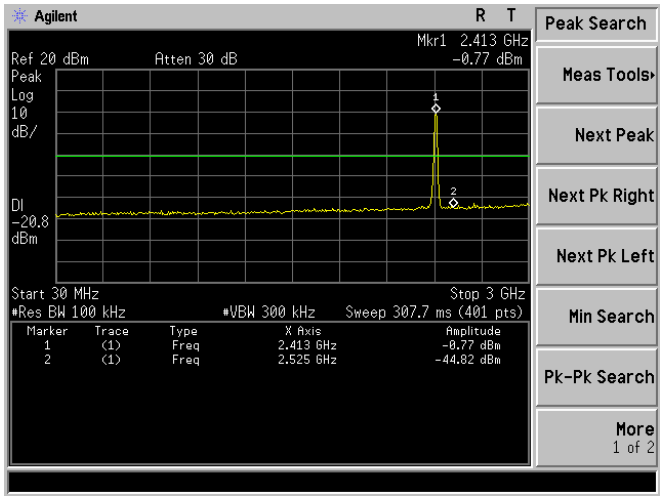

High Channel 2462MHz

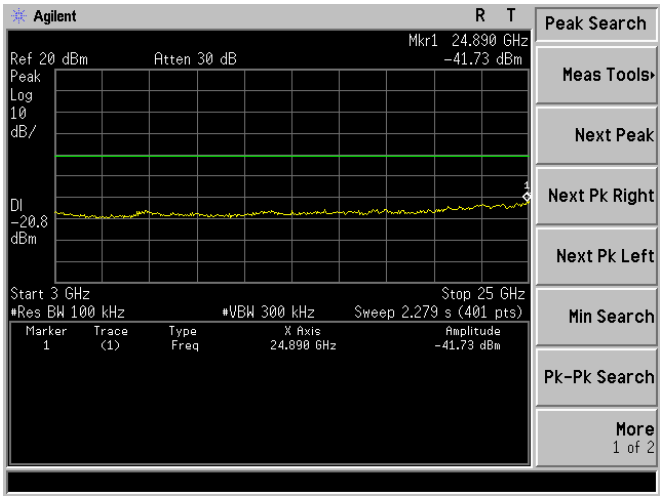


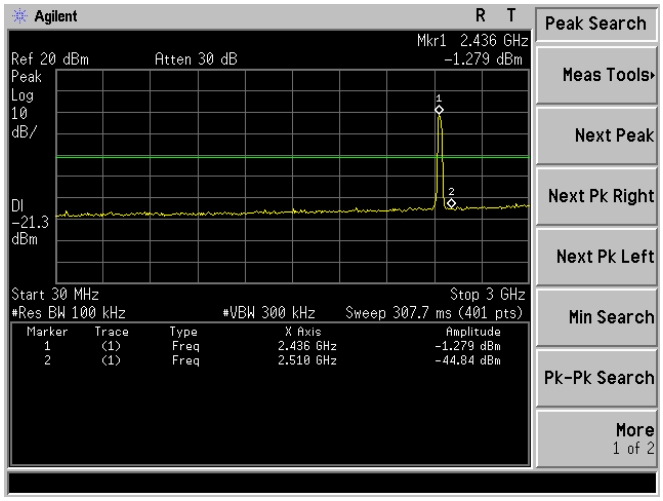
Ant.1 802.11n20

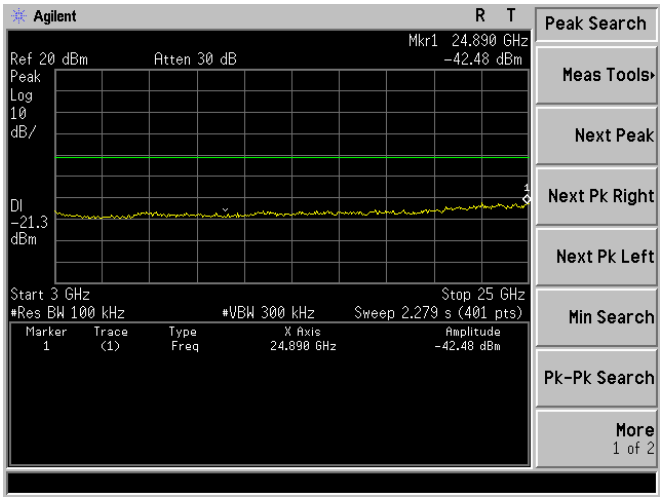
Low Channel 2412MHz



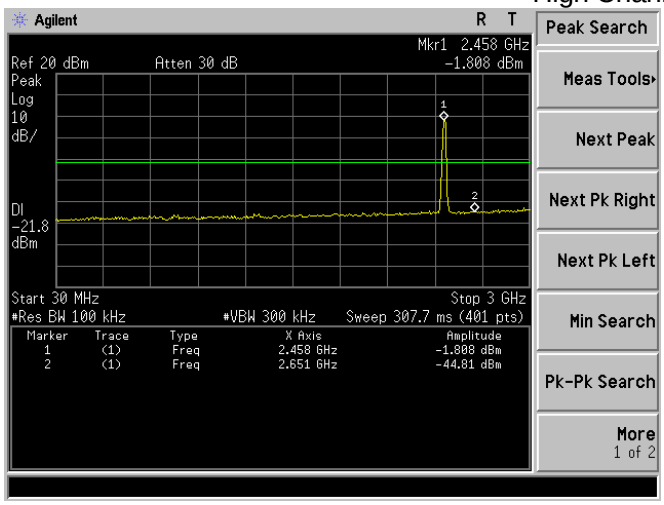



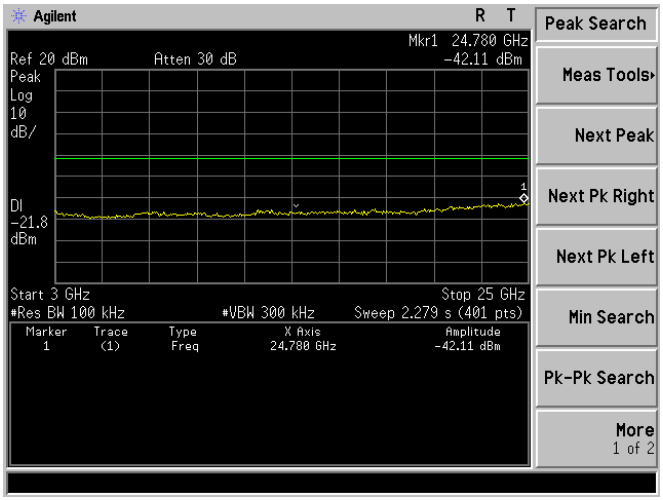

Middle Channel 2437MHz



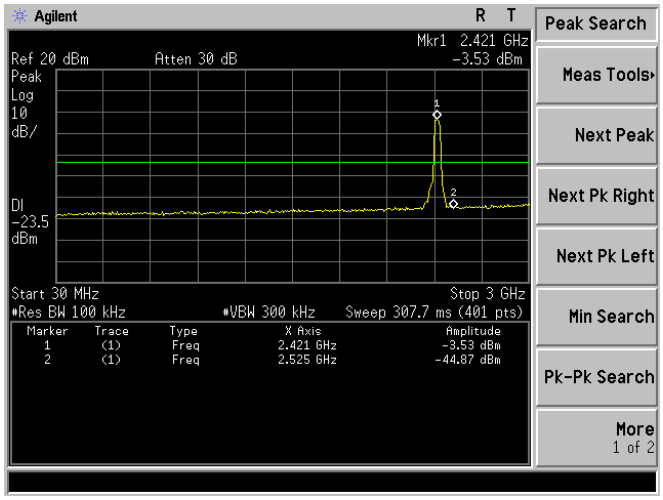

High Channel 2462MHz

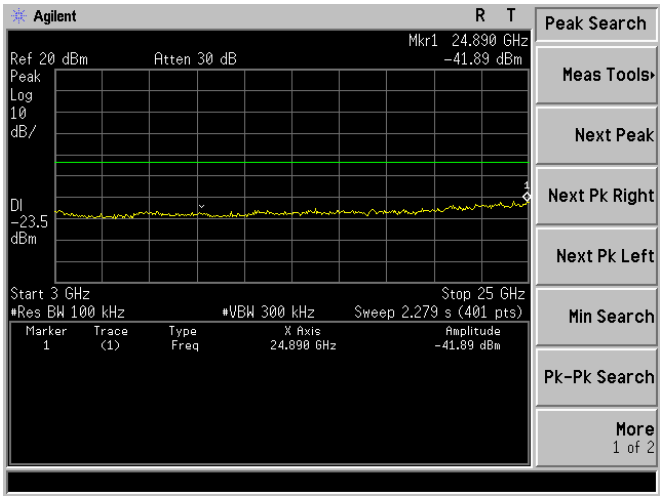


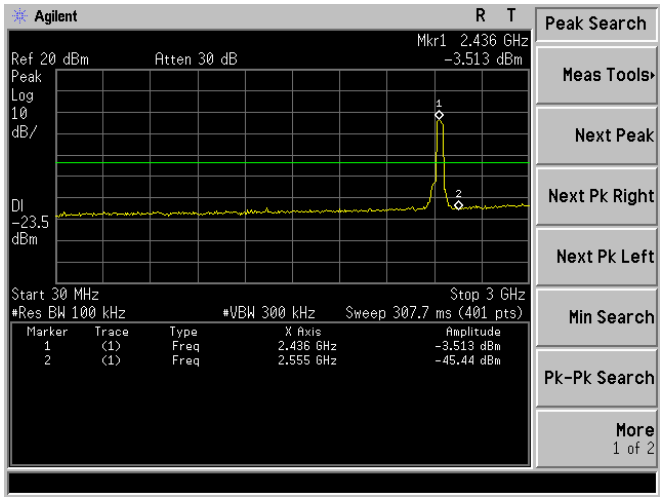
Ant.1 802.11n40

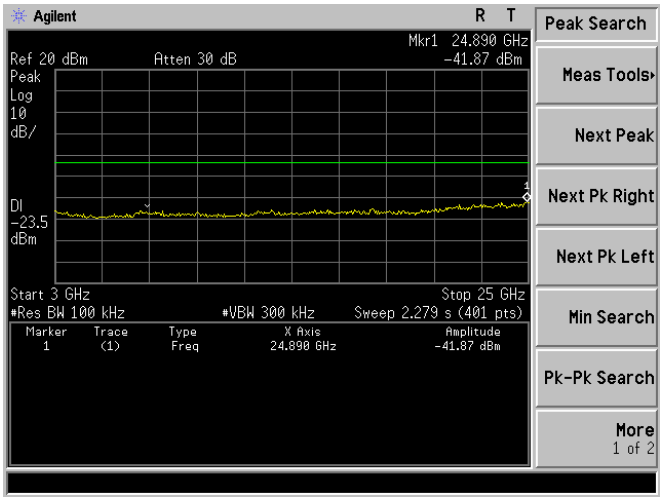
Low Channel 2422MHz



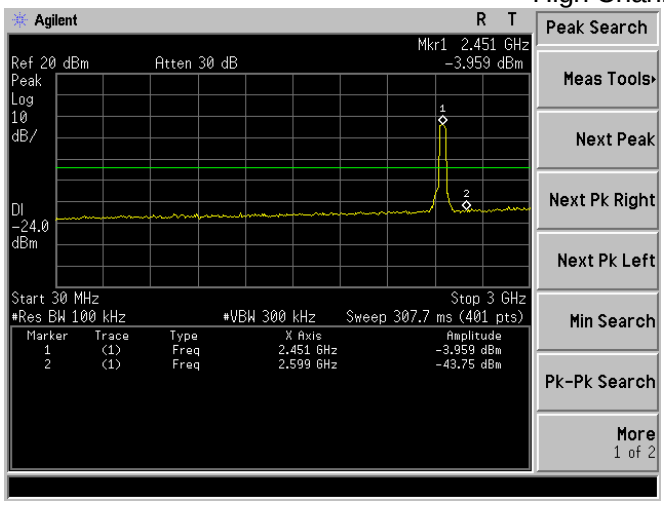



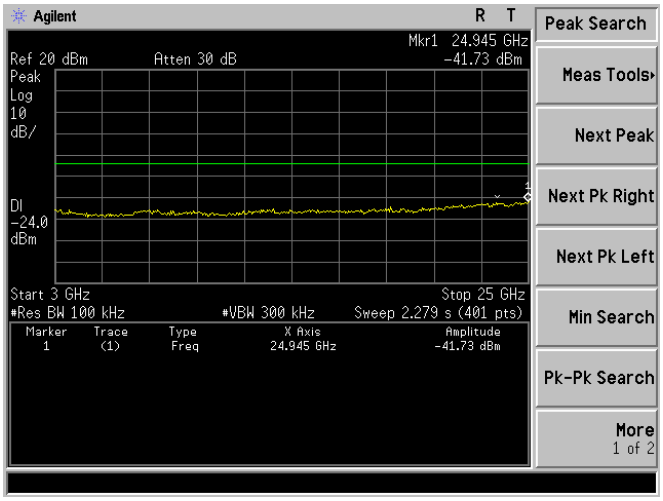

Middle Channel 2437MHz



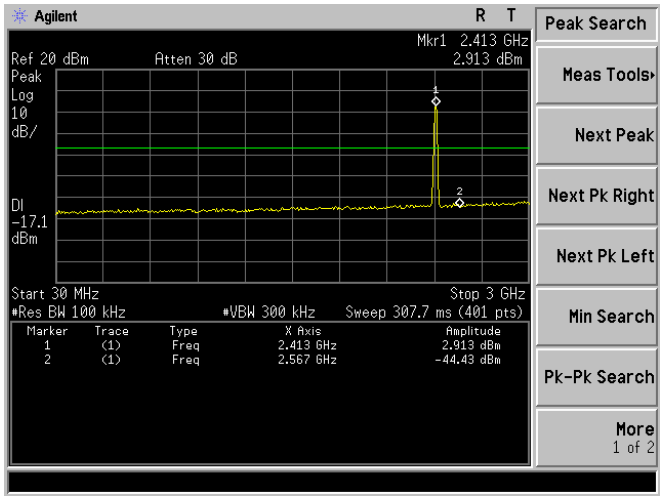

High Channel 2452MHz

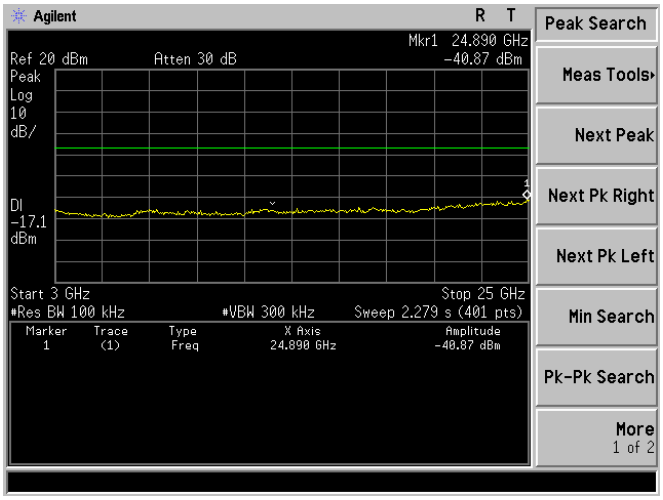


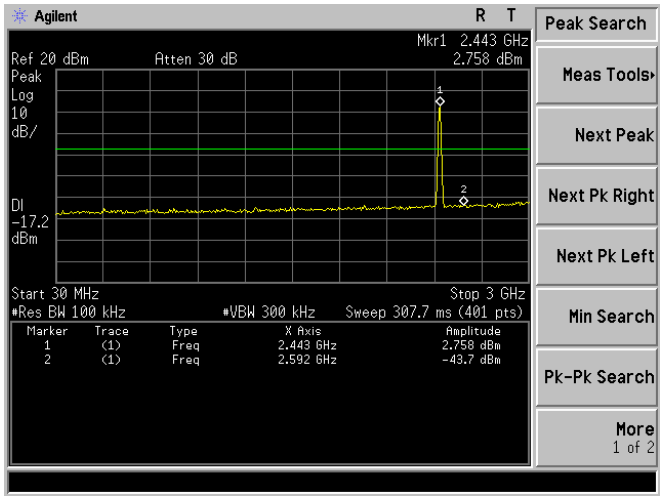
Ant.2 802.11b

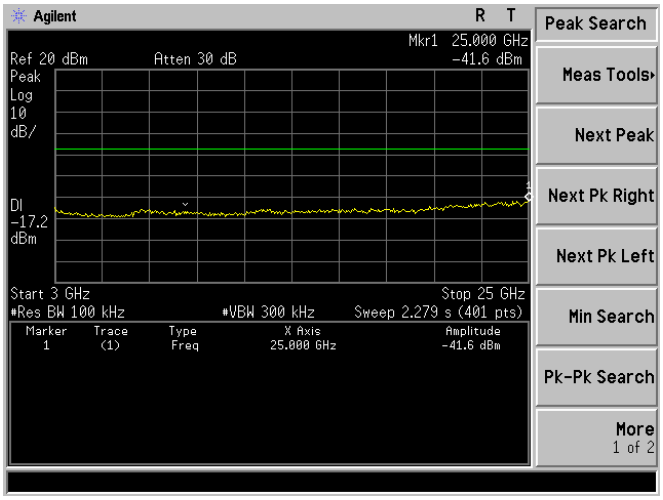
Low Channel 2412MHz



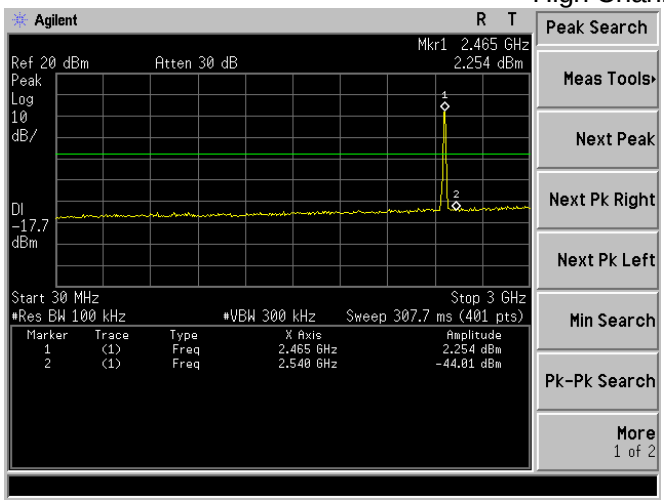



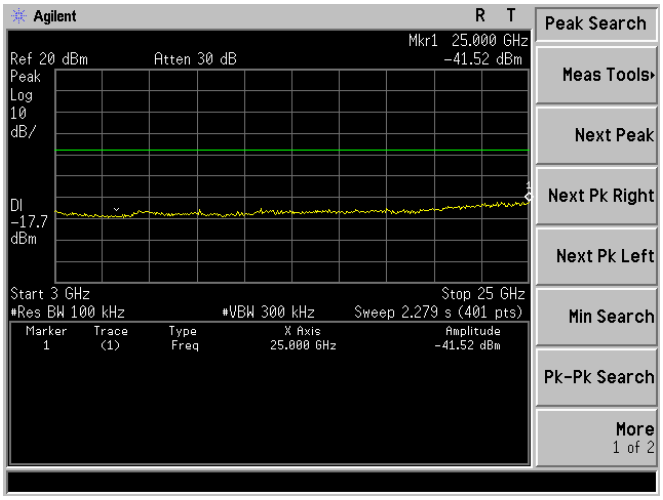

Middle Channel 2437MHz



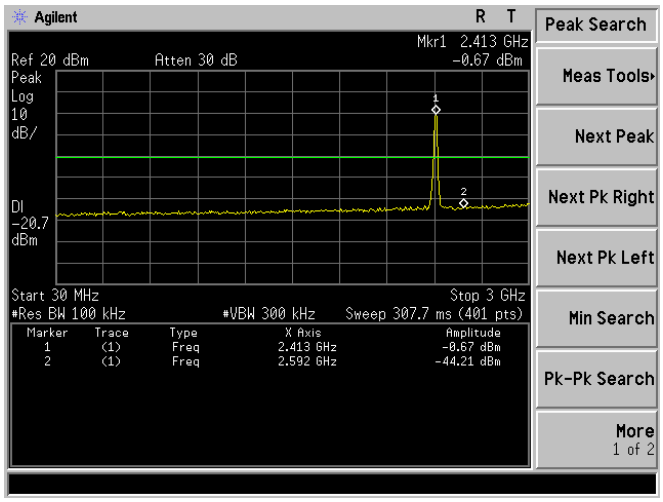

High Channel 2462MHz

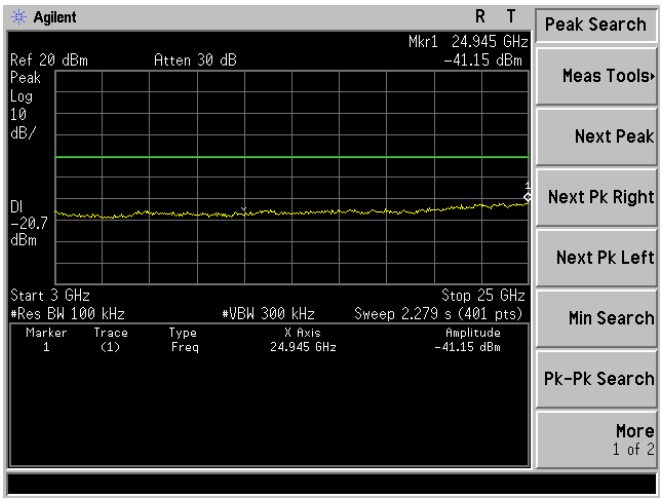


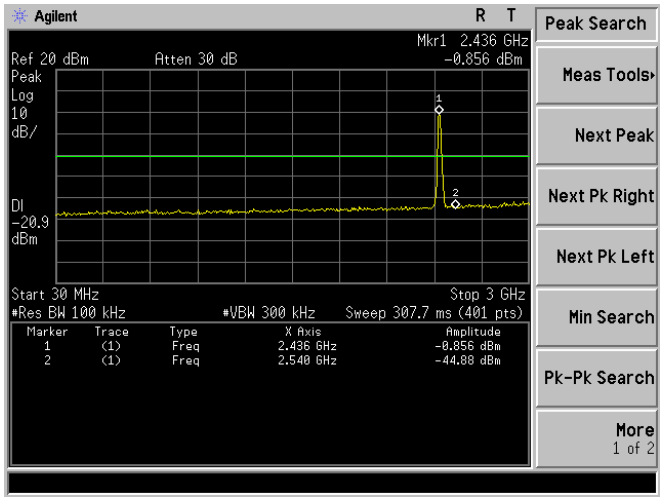
Ant.2 802.11g

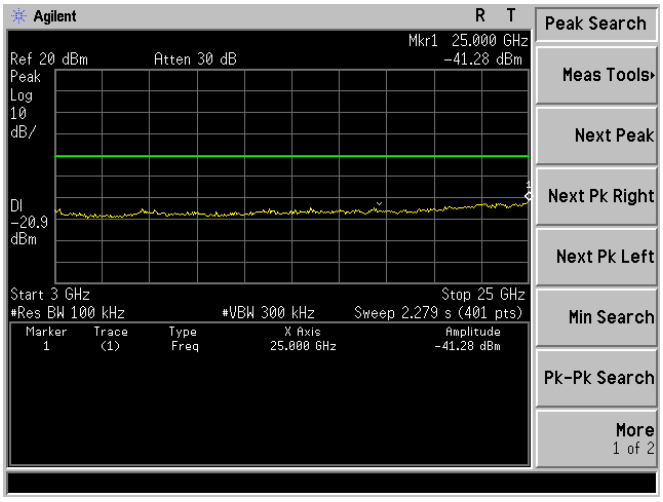
Low Channel 2412MHz



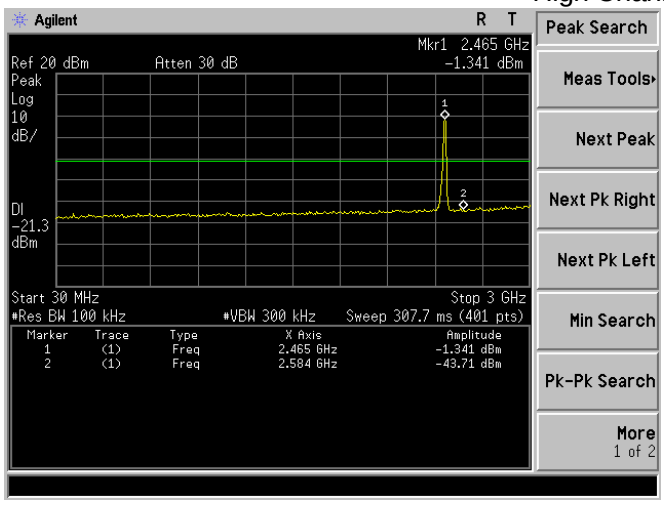



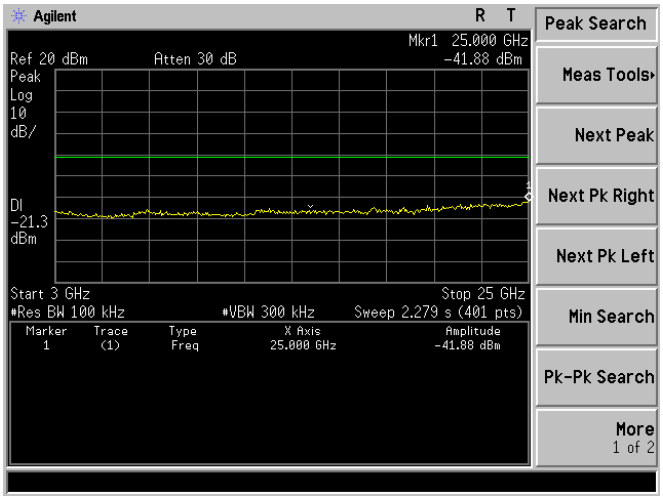

Middle Channel 2437MHz



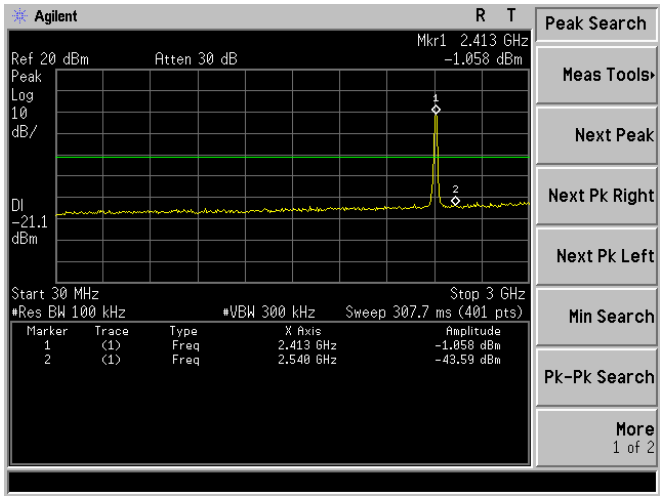

High Channel 2462MHz

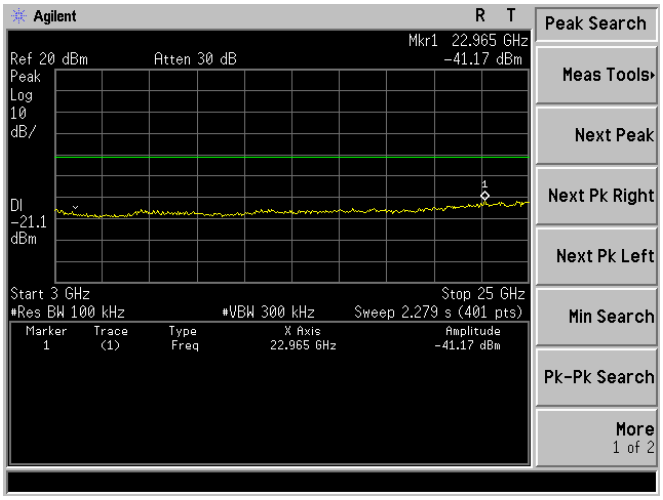


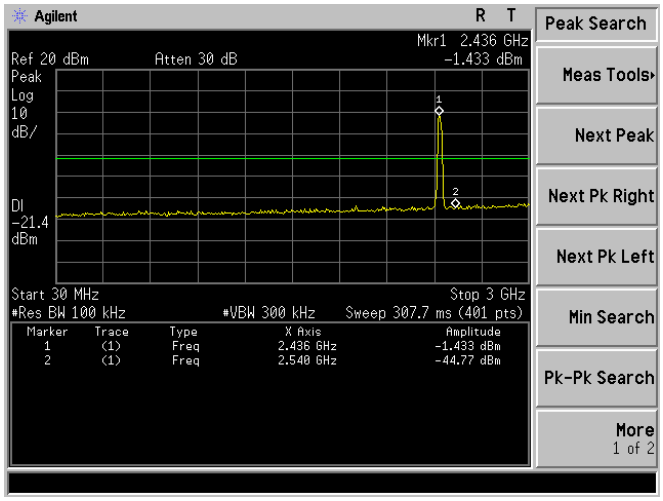
Ant.2 802.11n20

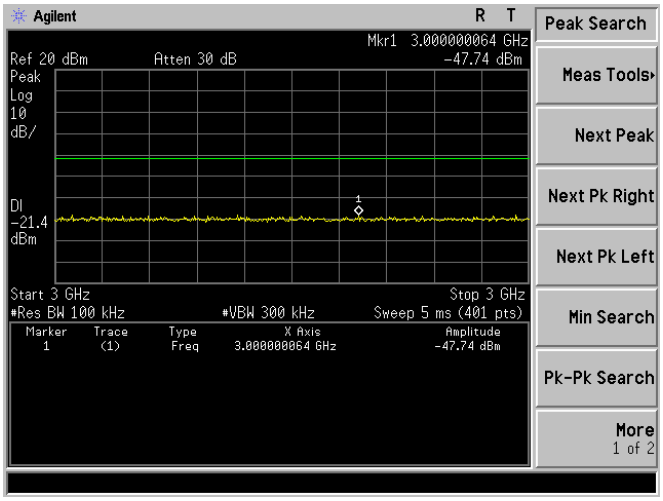
Low Channel 2412MHz



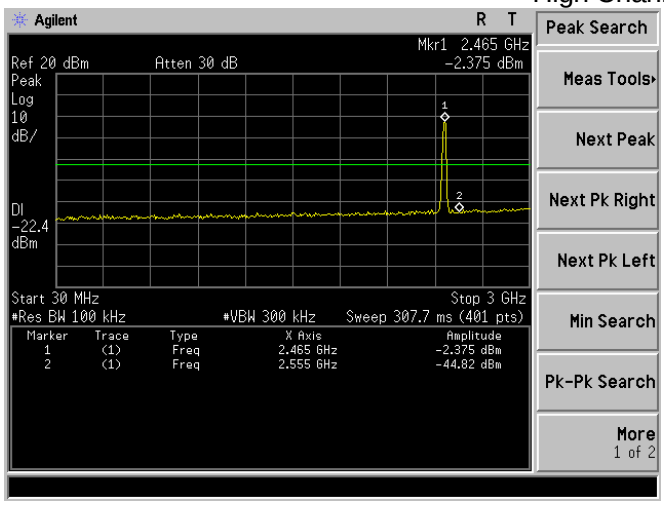



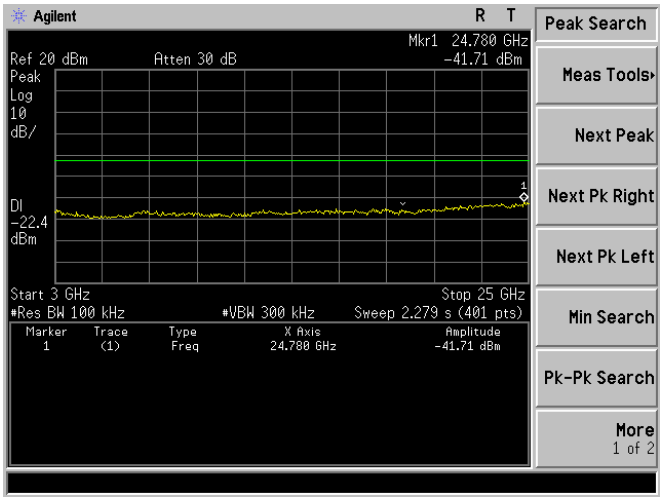

Middle Channel 2437MHz



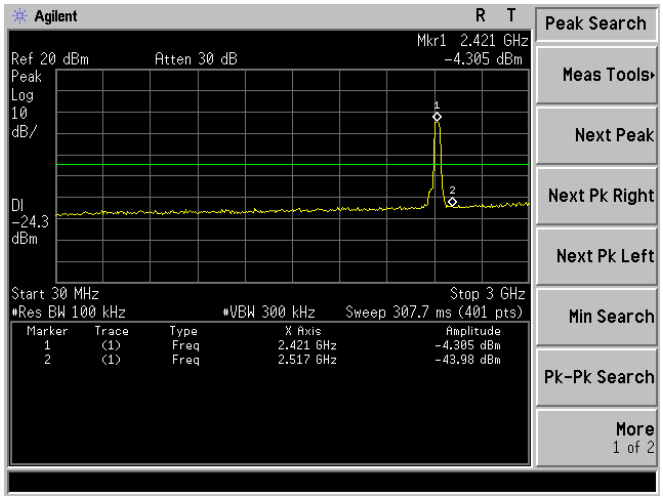

High Channel 2462MHz

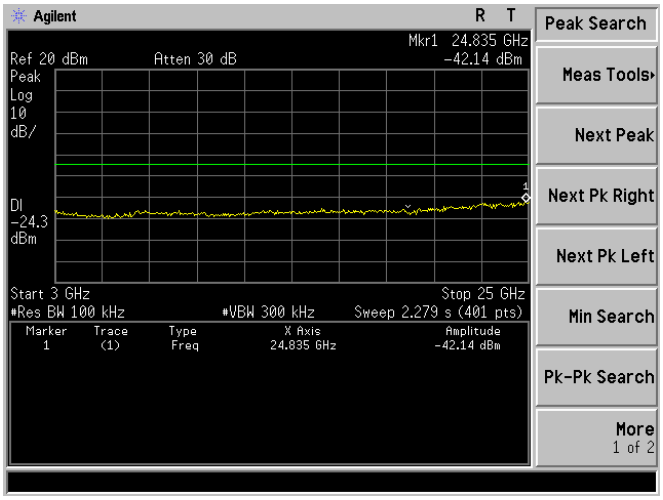


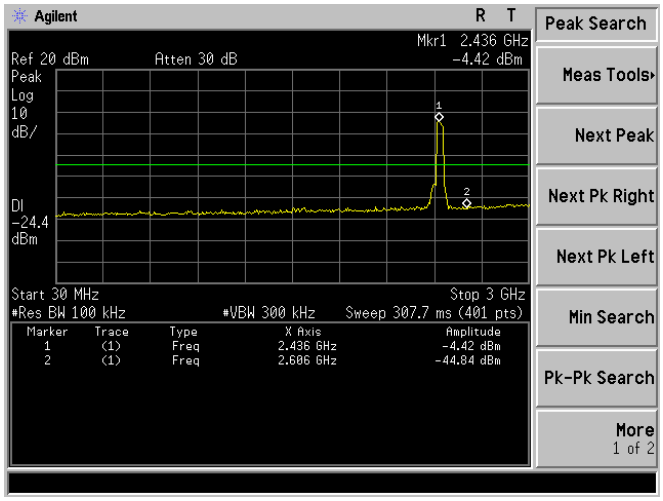
Ant.2 802.11n40

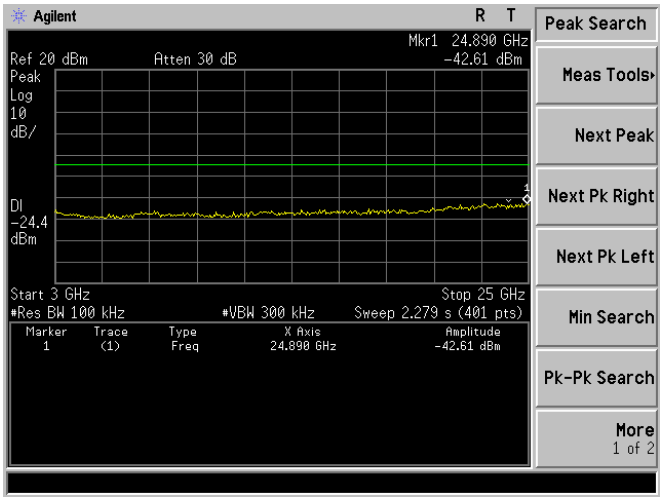
Low Channel 2422MHz



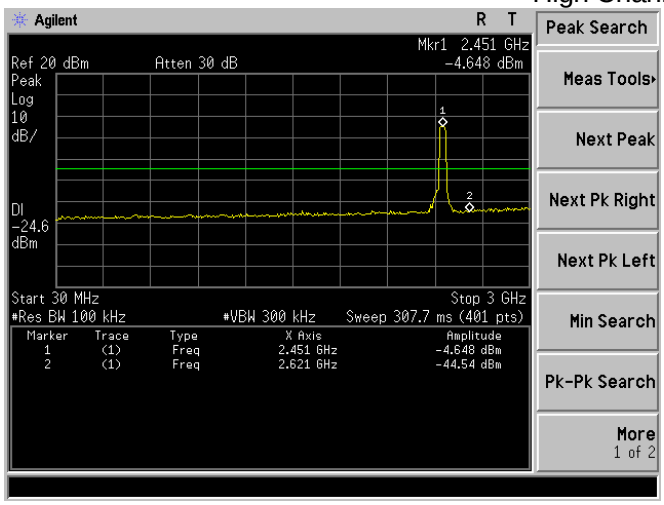



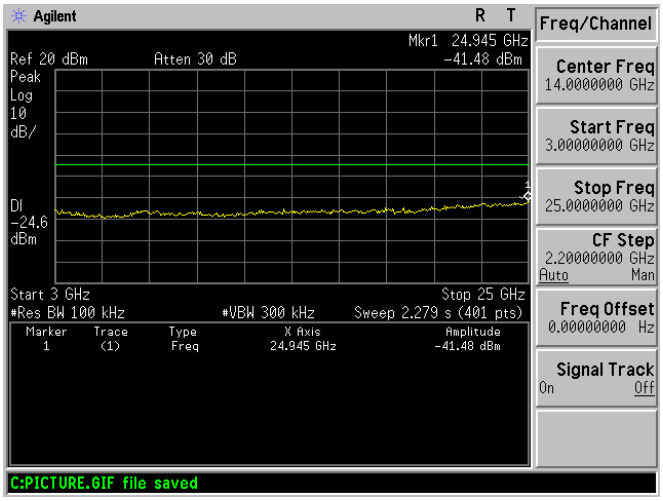

Middle Channel 2437MHz




High Channel 2452MHz



# 8. DUTY CYCLE OF TEST SIGNAL

## 8.1 STANDARD REQUIREMENT

Pre-analysis Check: While conducting average power measurement, duty cycle of each mode shall be checked to ensure its duty cycle in order to compensate for the loss due to insufficient ratio of duty cycle.

All duty cycle is pre-scanned, and result as obtained below shows only the most representative ones where duty cycle is conducted as the given transmission with given virtual operation that expresses the percentage.

## 8.2 FORMULA:

Duty Cycle = Ton / (Ton+Toff)

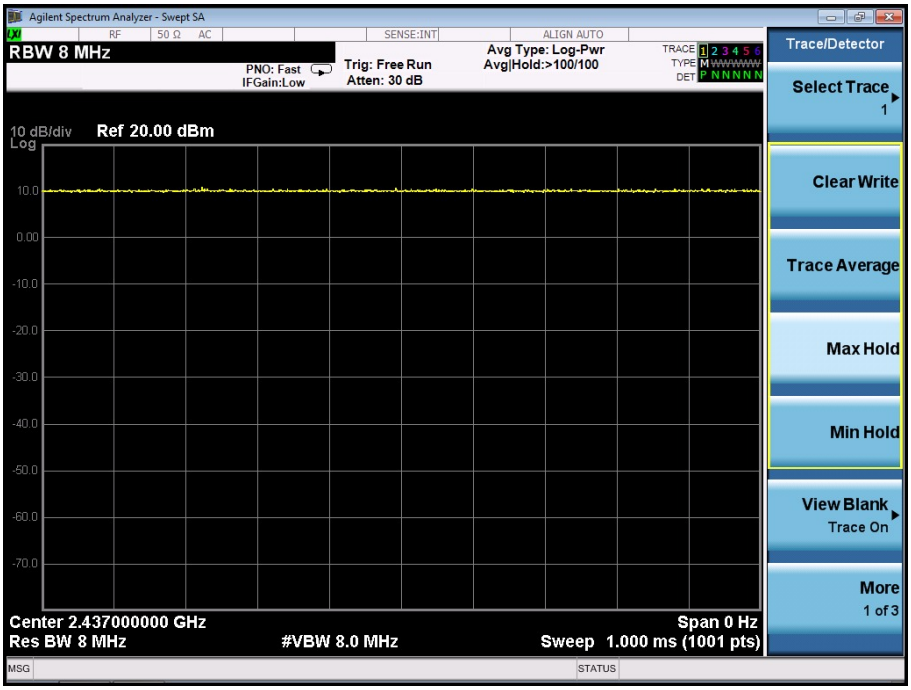
**Measurement Procedure:**

1. Set span = Zero
2. RBW = 8MHz
3. VBW = 8MHz,
4. Detector = Peak

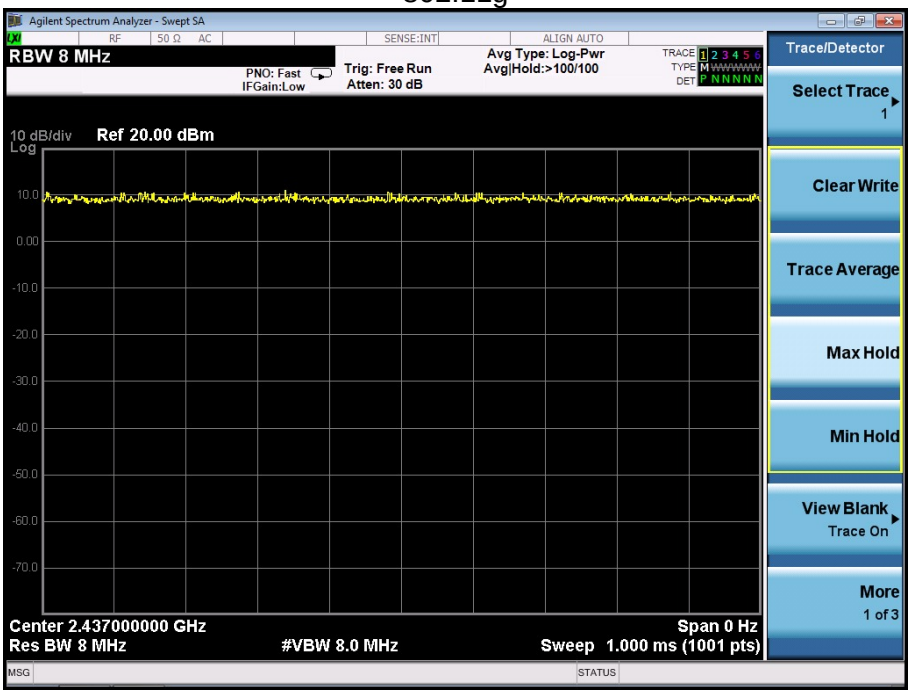
**Duty Cycle:**

| | Duty Cycle | Duty Fator (dB) |
|---|---|---|
| 802.11b | 1 | 0 |
| 802.11g | 1 | 0 |
| 802.11n(HT20) | 1 | 0 |
| 802.11n(HT40) | 1 | 0 |

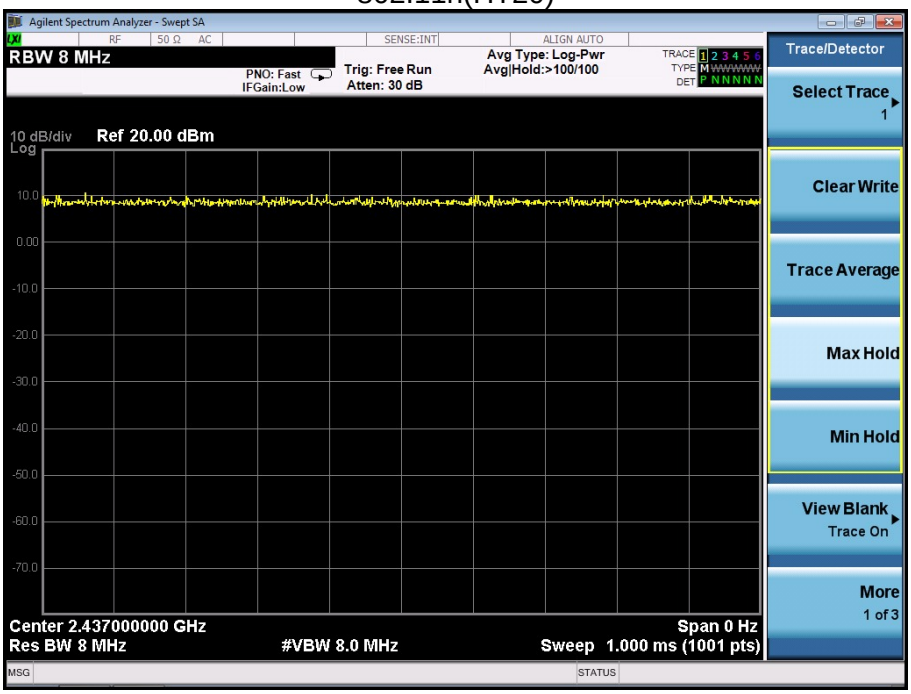
802.11b



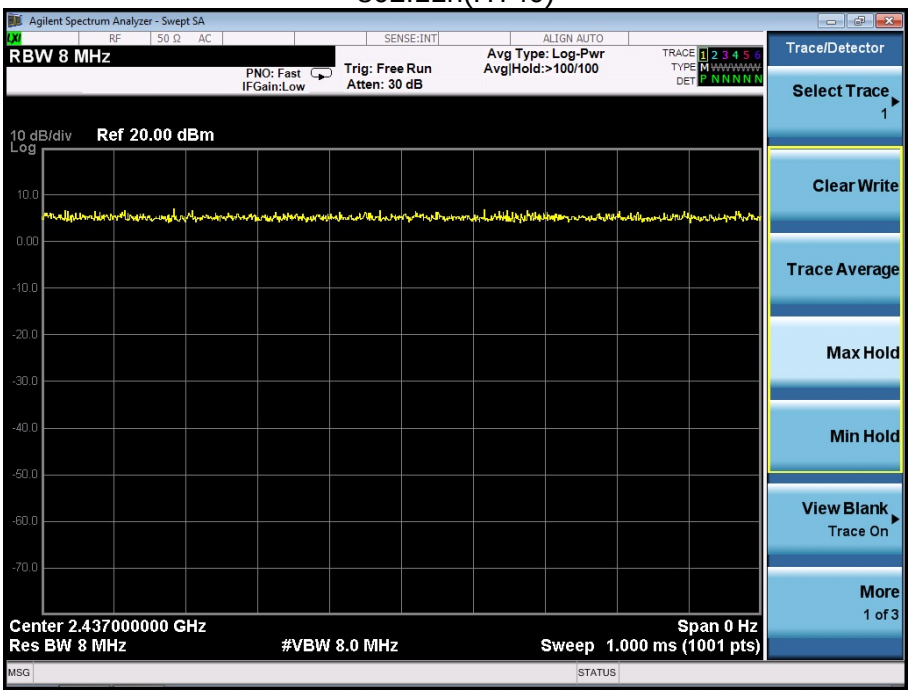
802.11g




802.11n(HT20)



802.11n(HT40)


Agilent Spectrum Analyzer - Swept SA
RBW 8 MHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold:>100/100
10 dB/div
Log
Ref 20.00 dBm
Center 2.437000000 GHz
Res BW 8 MHz
#VBW 8.0 MHz
Span 0 Hz
Sweep 1.000 ms (1001 pts)
Trace/Detector
Select Trace
1
Clear Write
Trace Average
Max Hold
Min Hold
View Blank
Trace On
More
1 of 3

# 9. ANTENNA REQUIREMENT

## 9.1 STANDARD REQUIREMENT

15.203 requirement: For intentional device, 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.

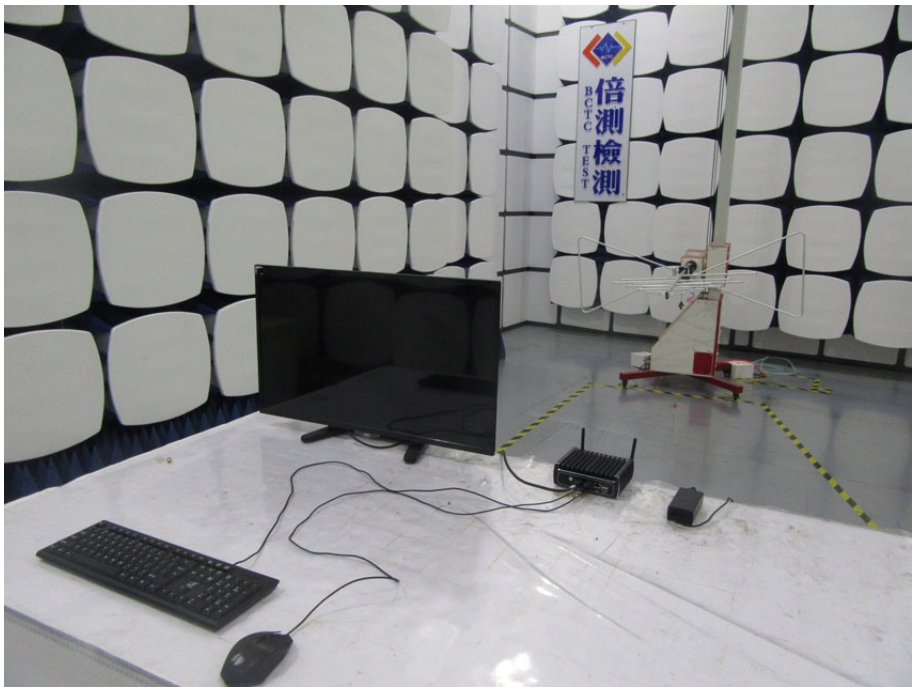
## 9.2 EUT ANTENNA

The EUT antenna is SMA Antenna. It complies with the standard requirement.

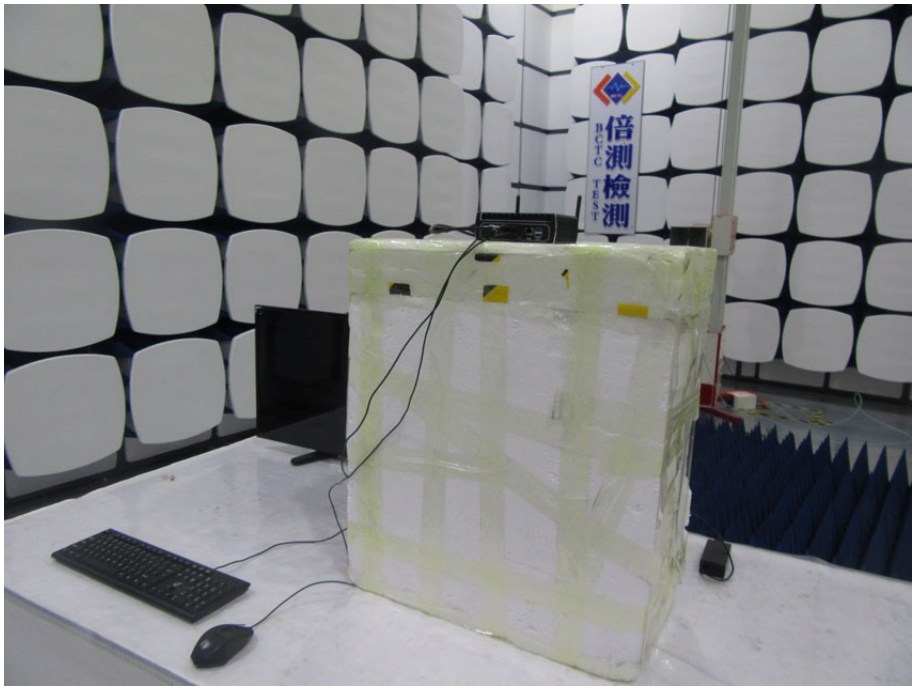
## 10. EUT TEST PHOTO

**Conducted Measurement Photos**

**Radiated Measurement Photos**




**Radiated Measurement Photos**



## 11. EUT PHOTO

※※※※※ **END OF REPORT** ※※※※※