



**MET Laboratories, Inc.** *Safety Certification - EMI - Telecom Environmental Simulation*

914 WEST PATAPSCO AVENUE • BALTIMORE, MARYLAND 21230-3432 • PHONE (410) 354-3300 • FAX (410) 354-3313  
33439 WESTERN AVENUE • UNION CITY, CALIFORNIA 94587 • PHONE (510) 489-6300 • FAX (510) 489-6372  
3162 BELICK STREET • SANTA CLARA, CA 95054 • PHONE (408) 748-3585 • FAX (510) 489-6372  
13301 MCCALLEN PASS • AUSTIN, TX 78753 • PHONE (512) 287-2500 • FAX (512) 287-2513

January 9, 2014

Meru Networks, Inc.  
894 Ross Dr.  
Sunnyvale, CA 94089

Dear Rajendran Chary,

Enclosed is the EMC Wireless test report for compliance testing of the Meru Networks, Inc., AP832e and AP822e as tested to the requirements of Title 47 of the CFR, Ch. 1 (10-1-06 ed.), Part 15, Subpart B and ICES-003, Issue 5 August 2012 for a Class B Digital Device, and FCC Part 15 Subpart C and RSS-210, Issue 8, Dec. 2010 for Intentional Radiators.

Thank you for using the services of MET Laboratories, Inc. If you have any questions regarding these results or if MET can be of further service to you, please feel free to contact me.

Sincerely yours,  
MET LABORATORIES, INC.

Jennifer Warnell  
Documentation Department

Reference: (\Meru Networks, Inc.\EMCS37430A-FCC247 Rev. 6)

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## **Electromagnetic Compatibility Criteria Test Report**

for the

**Meru Networks, Inc.  
AP832e and AP822e**

**Tested under**  
the FCC Certification Rules  
contained in  
Title 47 of the CFR, Parts 15 Subpart B & ICES-003  
for Class B Digital Devices  
&  
15.247 Subpart C & RSS-210, Issue 8, Dec. 2010  
for Intentional Radiators

**MET Report: EMCS37430A-FCC247 Rev. 6**

January 9, 2014

**Prepared For:**

**Meru Networks, Inc.  
894 Ross Dr.  
Sunnyvale, CA 94089**

**Prepared By:**  
**MET Laboratories, Inc.**  
3162 Belick St.  
Santa Clara, CA 95054

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&  
15.247 Subpart C & RSS-210, Issue 8, Dec. 2010  
for Intentional Radiators



Jonathan Chao, Project Engineer  
Electromagnetic Compatibility Lab



Jennifer Warnell  
Documentation Department

**Engineering Statement:** The measurements shown in this report were made in accordance with the procedures indicated, and the emissions from this equipment were found to be within the limits applicable. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them. It is further stated that upon the basis of the measurements made, the equipment tested is capable of operation in accordance with the requirements of the FCC Rules Parts 15B, 15.247 and Industry Canada standards ICES-003, Issue 5 August 2012, RSS-210, Issue 8, Dec. 2010 under normal use and maintenance.



Asad Bajwa,  
Director, Electromagnetic Compatibility Lab

## Report Status Sheet

| Revision | Report Date     | Reason for Revision                                      |
|----------|-----------------|----------------------------------------------------------|
| Ø        | March 4, 2013   | Initial Issue.                                           |
| 1        | March 15, 2013  | Revised to reflect editorial corrections.                |
| 2        | April 3, 2013   | Revised to reflect engineer corrections.                 |
| 3        | April 16, 2013  | Revised to reflect engineer corrections.                 |
| 4        | April 17, 2013  | Revised to add a note to the Radiated Emissions section. |
| 5        | July 1, 2013    | Revised to add an appendix.                              |
| 6        | January 9, 2014 | Revised to add additional model.                         |

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## List of Terms and Abbreviations

|                              |                                                             |
|------------------------------|-------------------------------------------------------------|
| <b>AC</b>                    | <b>Alternating Current</b>                                  |
| <b>ACF</b>                   | <b>Antenna Correction Factor</b>                            |
| <b>Cal</b>                   | <b>Calibration</b>                                          |
| <b><i>d</i></b>              | <b>Measurement Distance</b>                                 |
| <b>dB</b>                    | <b>Decibels</b>                                             |
| <b>dB<math>\mu</math>A</b>   | <b>Decibels above one <b>micro</b>amp</b>                   |
| <b>dB<math>\mu</math>V</b>   | <b>Decibels above one <b>micro</b>volt</b>                  |
| <b>dB<math>\mu</math>A/m</b> | <b>Decibels above one <b>micro</b>amp <b>per</b> meter</b>  |
| <b>dB<math>\mu</math>V/m</b> | <b>Decibels above one <b>micro</b>volt <b>per</b> meter</b> |
| <b>DC</b>                    | <b>Direct Current</b>                                       |
| <b>E</b>                     | <b>Electric Field</b>                                       |
| <b>DSL</b>                   | <b>Digital Subscriber Line</b>                              |
| <b>ESD</b>                   | <b>Electrostatic Discharge</b>                              |
| <b>EUT</b>                   | <b>Equipment Under Test</b>                                 |
| <b><i>f</i></b>              | <b>Frequency</b>                                            |
| <b>FCC</b>                   | <b>Federal Communications Commission</b>                    |
| <b>GRP</b>                   | <b>Ground Reference Plane</b>                               |
| <b>H</b>                     | <b>Magnetic Field</b>                                       |
| <b>HCP</b>                   | <b>Horizontal Coupling Plane</b>                            |
| <b>Hz</b>                    | <b>Hertz</b>                                                |
| <b>IEC</b>                   | <b>International Electrotechnical Commission</b>            |
| <b>kHz</b>                   | <b>kilohertz</b>                                            |
| <b>kPa</b>                   | <b>kilopascal</b>                                           |
| <b>kV</b>                    | <b>kilovolt</b>                                             |
| <b>LISN</b>                  | <b>Line Impedance Stabilization Network</b>                 |
| <b>MHz</b>                   | <b>Megahertz</b>                                            |
| <b><math>\mu</math>H</b>     | <b><b>micro</b>henry</b>                                    |
| <b><math>\mu</math></b>      | <b><b>micro</b>farad</b>                                    |
| <b><math>\mu</math>s</b>     | <b><b>micro</b>seconds</b>                                  |
| <b>NEBS</b>                  | <b>Network Equipment-Building System</b>                    |
| <b>PRF</b>                   | <b>Pulse Repetition Frequency</b>                           |
| <b>RF</b>                    | <b>Radio Frequency</b>                                      |
| <b>RMS</b>                   | <b>Root-Mean-Square</b>                                     |
| <b>TWT</b>                   | <b>Traveling Wave Tube</b>                                  |
| <b>V/m</b>                   | <b>Volts <b>per</b> meter</b>                               |
| <b>VCP</b>                   | <b>Vertical Coupling Plane</b>                              |

# **I. Executive Summary**

## A. Purpose of Test

An EMC evaluation was performed to determine compliance of the Meru Networks, Inc. AP832e and AP822e, with the requirements of Part 15, §15.247. All references are to the most current version of Title 47 of the Code of Federal Regulations in effect. In accordance with §2.1033, the following data is presented in support of the Certification of the AP832e and AP822e. Meru Networks, Inc. should retain a copy of this document which should be kept on file for at least two years after the manufacturing of the AP832e and AP822e, has been **permanently** discontinued.

## B. Executive Summary

The following tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with Part 15, §15.247, in accordance with Meru Networks, Inc., purchase order number 104838. All tests were conducted using measurement procedure ANSI C63.4-2003.

| FCC Reference<br>47 CFR Part 15.247:2005                  | IC Reference<br>RSS-210 Issue 8: 2010;<br>RSS-GEN Issue 3: 2010 | Description                                            | Compliance |
|-----------------------------------------------------------|-----------------------------------------------------------------|--------------------------------------------------------|------------|
| 47 CFR Part 15.107 (a)                                    | ICES-003 Issue 5 August 2012                                    | Conducted Emission Limits for a Class B Digital Device | Compliant  |
| 47 CFR Part 15.109 (a)                                    | ICES-003 Issue 5 August 2012                                    | Radiated Emission Limits for a Class B Digital Device  | Compliant  |
| Title 47 of the CFR, Part 15 §15.203                      | N/A                                                             | Antenna Requirement                                    | Compliant  |
| Title 47 of the CFR, Part 15 §15.207(a)                   | RSS-GEN (7.2.4)                                                 | Conducted Emission Limits                              | Compliant  |
| Title 47 of the CFR, Part 15 §15.247(a)(2)                | RSS-Gen(4.6)                                                    | 6dB Occupied Bandwidth                                 | Compliant  |
|                                                           |                                                                 | 99% Occupied Bandwidth                                 | Compliant  |
| Title 47 of the CFR, Part 15 §15.247(b)                   | RSS-210(A8.4)                                                   | Peak Power Output                                      | Compliant  |
| Title 47 of the CFR, Part 15 §15.247(d); §15.209; §15.205 | RSS-210(A8.5)                                                   | Radiated Spurious Emissions Requirements               | Compliant  |
| Title 47 of the CFR, Part 15 §15.247(d)                   | RSS-210(A8.5)                                                   | RF Conducted Spurious Emissions Requirements           | Compliant  |
| Title 47 of the CFR, Part 15 §15.247(d)                   | RSS-210(A8.5)                                                   | RF Conducted Band Edge                                 | Compliant  |
| Title 47 of the CFR, Part 15; §15.247(e)                  | RSS-210(A8.2)                                                   | Peak Power Spectral Density                            | Compliant  |
| Title 47 of the CFR, Part 15 §15.247(i)                   | RSS-Gen(5.6)                                                    | Maximum Permissible Exposure (MPE)                     | Compliant  |
| N/A                                                       | RSS-Gen(4.10)                                                   | Receiver Spurious Emissions                            | Compliant  |

**Table 1. Executive Summary of EMC Part 15.247 Compliance Testing**

## II. Equipment Configuration

## A. Overview

MET Laboratories, Inc. was contracted by Meru Networks, Inc. to perform testing on the AP832e and AP822e, under Meru Networks, Inc.'s purchase order number 104838.

This document describes the test setups, test methods, required test equipment, and the test limit criteria used to perform compliance testing of the Meru Networks, Inc., AP832e and AP822e.

The results obtained relate only to the item(s) tested.

|                                       |                                                         |                                                                                             |
|---------------------------------------|---------------------------------------------------------|---------------------------------------------------------------------------------------------|
| <b>Model(s) Tested:</b>               | AP832e and AP822e                                       |                                                                                             |
| <b>Model(s) Covered:</b>              | AP832e and AP822e                                       |                                                                                             |
| <b>EUT Specifications:</b>            | Primary Power: 120 VAC, 60 Hz                           |                                                                                             |
|                                       | FCC ID: RE7-AP832E<br>IC: 6749A-AP832E                  |                                                                                             |
|                                       | Type of Modulations:                                    | DSSS/OFDM                                                                                   |
|                                       | Equipment Code:                                         | DTS                                                                                         |
|                                       | Peak RF Output Power:                                   | 28.56dBm                                                                                    |
|                                       | EUT Frequency Ranges:                                   | 20MHz – 2412-2462MHz, 5745-5825MHz<br>40MHz – 2422-2452MHz, 5755-5795MHz<br>80MHz – 5775MHz |
| <b>Analysis:</b>                      | The results obtained relate only to the item(s) tested. |                                                                                             |
| <b>Environmental Test Conditions:</b> | Temperature: 15-35° C                                   |                                                                                             |
|                                       | Relative Humidity: 30-60%                               |                                                                                             |
|                                       | Barometric Pressure: 860-1060 mbar                      |                                                                                             |
| <b>Evaluated by:</b>                  | Jonathan Chao                                           |                                                                                             |
| <b>Report Date(s):</b>                | January 9, 2014                                         |                                                                                             |

**Table 2. EUT Summary Table**

## B. References

|                                      |                                                                                                                                                                       |
|--------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>CFR 47, Part 15, Subpart C</b>    | Federal Communication Commission, Code of Federal Regulations, Title 47, Part 15: General Rules and Regulations, Allocation, Assignment, and Use of Radio Frequencies |
| <b>CFR 47, Part 15, Subpart B</b>    | Electromagnetic Compatibility: Criteria for Radio Frequency Devices                                                                                                   |
| <b>RSS-210, Issue 8, Dec. 2010</b>   | Low-power Licence-exempt Radiocommunications Devices (All Frequency Bands): Category I Equipment                                                                      |
| <b>RSS-GEN, Issue 3, Dec. 2010</b>   | General Requirements and Information for the Certification of Radio Apparatus                                                                                         |
| <b>ICES-003, Issue 5 August 2012</b> | Information Technology Equipment (ITE) — Limits and methods of measurement                                                                                            |
| <b>ANSI C63.4:2003</b>               | Methods and Measurements of Radio-Noise Emissions from Low-Voltage Electrical And Electronic Equipment in the Range of 9 kHz to 40 GHz                                |
| <b>ISO/IEC 17025:2005</b>            | General Requirements for the Competence of Testing and Calibration Laboratories                                                                                       |
| <b>ANSI C63.10-2009</b>              | American National Standard for Testing Unlicensed Wireless Devices                                                                                                    |

**Table 3. References**

## C. Test Site

All testing was performed at MET Laboratories, Inc., 3162 Belick St., Santa Clara, CA 95054. All equipment used in making physical determinations is accurate and bears recent traceability to the National Institute of Standards and Technology.

Radiated Emissions measurements were performed in a 10 meter semi-anechoic chamber (equivalent to an Open Area Test Site). In accordance with §2.948(a)(3), a complete site description is contained at MET Laboratories.

## D. Description of Test Sample

The Meru Networks, Inc. AP832e and AP822e, Equipment Under Test (EUT), is an 802.11AC wireless access point (WAP) that allows wireless devices to connect to a wired network using Wi-Fi, standard. The WAP usually connects to a router (via a wired network), and can relay data between the wireless devices (such as computers or printers) and wired devices on the network.

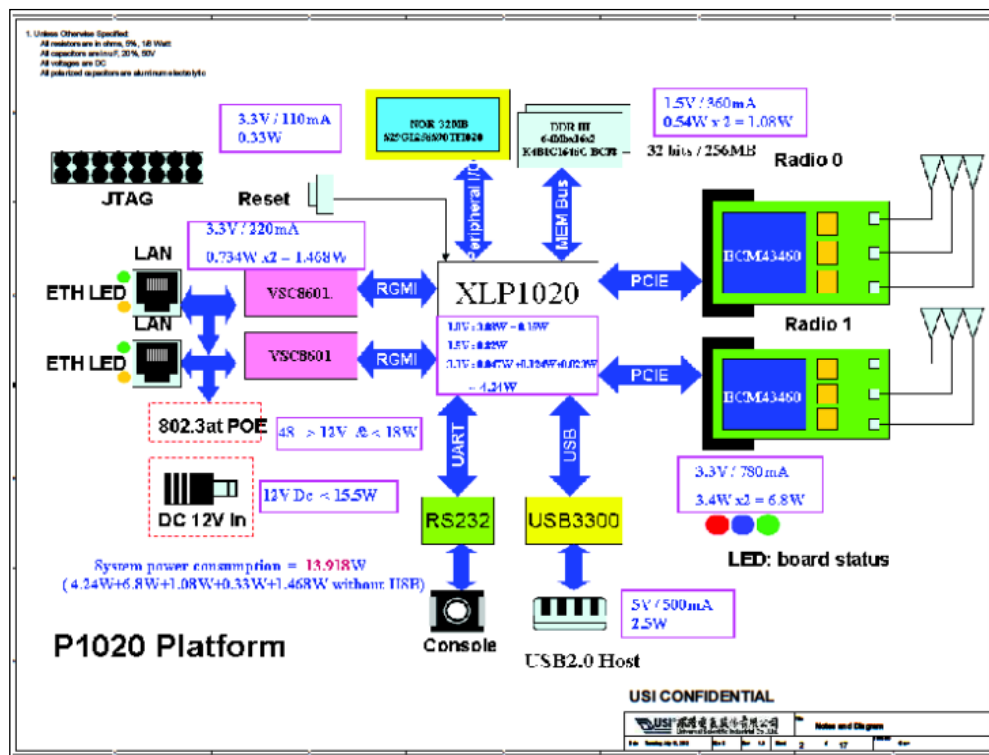


Figure 1. Block Diagram of Test Configuration

## E. Equipment Configuration

The EUT was set up as outlined in Figure 1, Block Diagram of Test Setup. All cards, racks, etc., incorporated as part of the EUT is included in the following list.

| Ref. ID | Name / Description      | Model Number | Serial Number   |
|---------|-------------------------|--------------|-----------------|
| 3       | Dual Radio Access Point | AP832e       | 4812A832e11252F |
| 4       | Dual Radio Access Point | AP832e       | 4812A832e112529 |

**Table 4. Equipment Configuration**

## F. Support Equipment

Support equipment necessary for the operation and testing of the EUT is included in the following list.

| Type    | Model and Serial Number                                   |
|---------|-----------------------------------------------------------|
| Antenna | ANT-ABGN23O-W Omni directional rubber duct Dual-Band      |
| Antenna | ANT-I3ABGN-0304-O Ceiling mount Omni Dual-Band 3 x 3 MIMO |
| Antenna | ANT-O6ABGN-0606-O Outdoor Omi Dual-Band 3X3 MIMO          |
| Antenna | ANT-O6ABGN-0607-PT Wall mount Dual-Band 3 X 3 MIMO        |
| PoE     | PD-9001GR/AC                                              |
| AC/DC   | DC Adapter - GS18A12-P1J                                  |
| Cable   | Serial cable                                              |
| Cable   | Shielded Ethernet cable                                   |

**Table 5. Support Equipment**

## G. Ports and Cabling Information

The EUT did not require any support equipment for operation or monitoring.

## **H. Mode of Operation**

During the normal operation the configuration is controlled by the Meru controller which sets the country code, ESSID, Operating frequency band and Channel etc.

## **I. Method of Monitoring EUT Operation**

During the normal operation with controller Green or Blue LED indication on the Access point indicate the normal operation of the Access point. A Red LED indicates a failure of hardware or software settings.

## **J. Modifications**

### **a) Modifications to EUT**

No modifications were made to the EUT.

### **b) Modifications to Test Standard**

No modifications were made to the test standard.

## **K. Disposition of EUT**

The test sample including all support equipment submitted to the Electro-Magnetic Compatibility Lab for testing was returned to Meru Networks, Inc. upon completion of testing.



### **III. Electromagnetic Compatibility Criteria for Unintentional Radiators**

## Electromagnetic Compatibility Criteria

### § 15.107 Conducted Emissions Limits

**Test Requirement(s):** **15.107 (a)** Except for Class A digital devices, for equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in Table 6. Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminals.

**15.107 (b)** For a Class A digital device that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in Table 6. Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminals. The lower limit applies at the band edges.

| Frequency range<br>(MHz)                                                                                                                                                           | Class A Conducted Limits<br>(dB $\mu$ V) |         | *Class B Conducted<br>Limits (dB $\mu$ V) |         |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|---------|-------------------------------------------|---------|
|                                                                                                                                                                                    | Quasi-Peak                               | Average | Quasi-Peak                                | Average |
| * 0.15- 0.45                                                                                                                                                                       | 79                                       | 66      | 66 - 56                                   | 56 - 46 |
| 0.45 - 0.5                                                                                                                                                                         | 79                                       | 66      | 56                                        | 46      |
| 0.5 - 30                                                                                                                                                                           | 73                                       | 60      | 60                                        | 50      |
| Note 1 — The lower limit shall apply at the transition frequencies.<br>Note 2 — The limit decreases linearly with the logarithm if the frequency in the range 0.15 MHz to 0.5 MHz. |                                          |         |                                           |         |

**Table 6. Conducted Limits for Radio Frequency Devices calculated from FCC Part 15 Subsections 15.107(a) (b)**

**Test Procedures:** The EUT was placed on a non-metallic table, 80 cm above the ground plane inside a screen room. The method of testing, test conditions, and test procedures of ANSI C63.4 were used. The EUT was powered through a 50 $\Omega$ /50 $\mu$ H LISN. An EMI receiver, connected to the measurement port of the LISN, scanned the frequency range from 150 kHz to 30 MHz in order to find the peak conducted emissions. All peak emissions within 6 dB of the limit were re-measured using a quasi-peak and/or average detector as appropriate.

**Test Results:** The EUT was compliant with the Class B requirement(s) of this section. Measured emissions were below applicable limits.

**Test Engineer(s):** Joseph Dizon

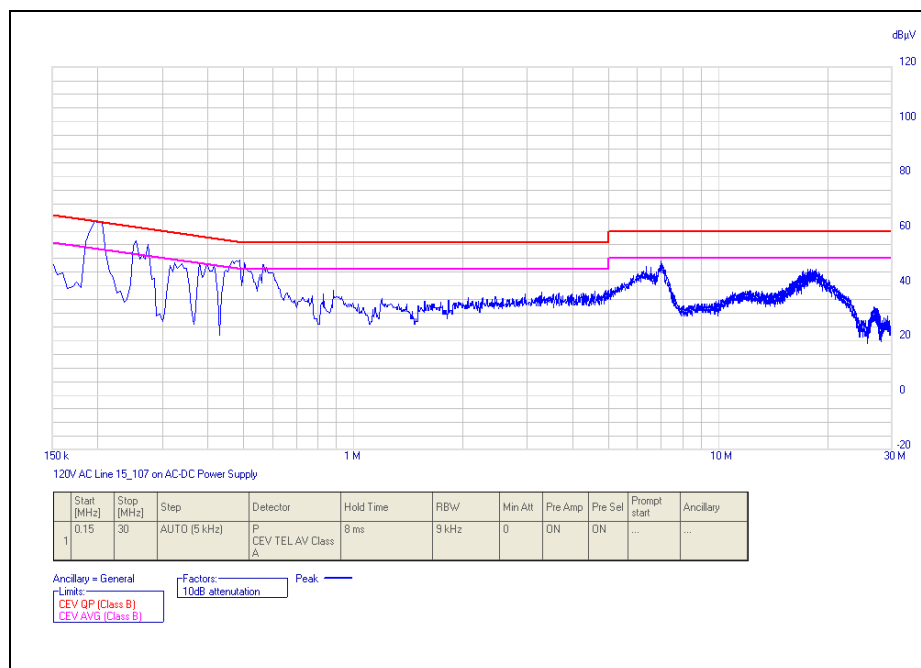
**Test Date(s):** 01/31/13 & 02/01/13



## Conducted Emissions - Voltage, AC Power, Phase Line (120 VAC, 60 Hz), AC-DC Power Supply

| Line                | Freq. (MHz) | QP Amplitude | QP Limit | Delta  | Pass | Average Amplitude | Average Limit | Delta   | Pass |
|---------------------|-------------|--------------|----------|--------|------|-------------------|---------------|---------|------|
| 120V AC Line 15.107 | 0.195       | 63.56        | 63.827   | -0.267 | Pass | 42.56             | 53.827        | -11.267 | Pass |
| 120V AC Line 15.107 | 0.255       | 55.66        | 61.605   | -5.945 | Pass | 33.14             | 51.605        | -18.465 | Pass |
| 120V AC Line 15.107 | 0.275       | 54.34        | 60.979   | -6.639 | Pass | 32.31             | 50.979        | -18.669 | Pass |

Table 7. Conducted Emissions - Voltage, AC Power, Phase Line (120 VAC, 60 Hz), AC-DC Power Supply



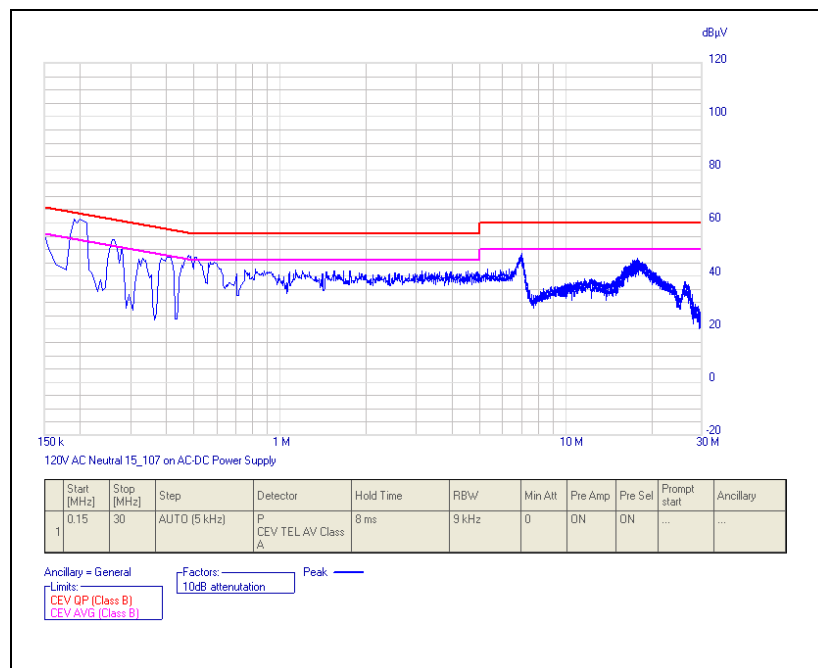
Plot 1. Conducted Emission, Phase Line Plot, AC-DC Power Supply



## Conducted Emissions - Voltage, AC Power, Neutral Line (120 VAC, 60 Hz), AC-DC Power Supply

| Line                   | Freq. (MHz) | QP Amplitude | QP Limit | Delta   | Pass | Average Amplitude | Average Limit | Delta   | Pass |
|------------------------|-------------|--------------|----------|---------|------|-------------------|---------------|---------|------|
| 120V AC Neutral 15.107 | 0.15        | 53.23        | 66       | -12.77  | Pass | 23.71             | 56            | -32.29  | Pass |
| 120V AC Neutral 15.107 | 0.2         | 57.39        | 63.617   | -6.227  | Pass | 38.46             | 53.617        | -15.157 | Pass |
| 120V AC Neutral 15.107 | 0.265       | 48.4         | 61.286   | -12.886 | Pass | 33.07             | 51.286        | -18.216 | Pass |

Table 8. Conducted Emissions - Voltage, AC Power, Neutral Line (120 VAC, 60 Hz), AC-DC Power Supply

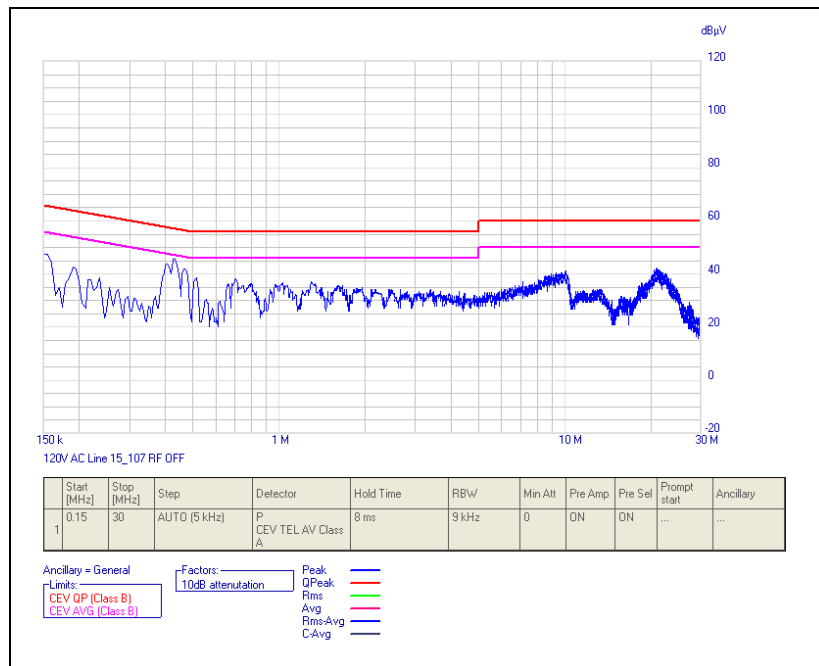


Plot 2. Conducted Emission, Neutral Line Plot, AC-DC Power Supply

### Conducted Emissions - Voltage, AC Power, Phase Line (120 VAC, 60 Hz), PoE

| Line                | Freq. (MHz) | QP Amplitude | QP Limit | Delta   | Pass | Average Amplitude | Average Limit | Delta   | Pass |
|---------------------|-------------|--------------|----------|---------|------|-------------------|---------------|---------|------|
| 120V AC Line 15.107 | 0.155       | 51.05        | 65.728   | -14.678 | Pass | 34.3              | 55.728        | -21.428 | Pass |
| 120V AC Line 15.107 | 0.405       | 44           | 57.773   | -13.773 | Pass | 34.78             | 47.773        | -12.993 | Pass |
| 120V AC Line 15.107 | 0.43        | 46.68        | 57.277   | -10.597 | Pass | 39                | 47.277        | -8.277  | Pass |

**Table 9. Conducted Emissions - Voltage, AC Power, Phase Line (120 VAC, 60 Hz), PoE**



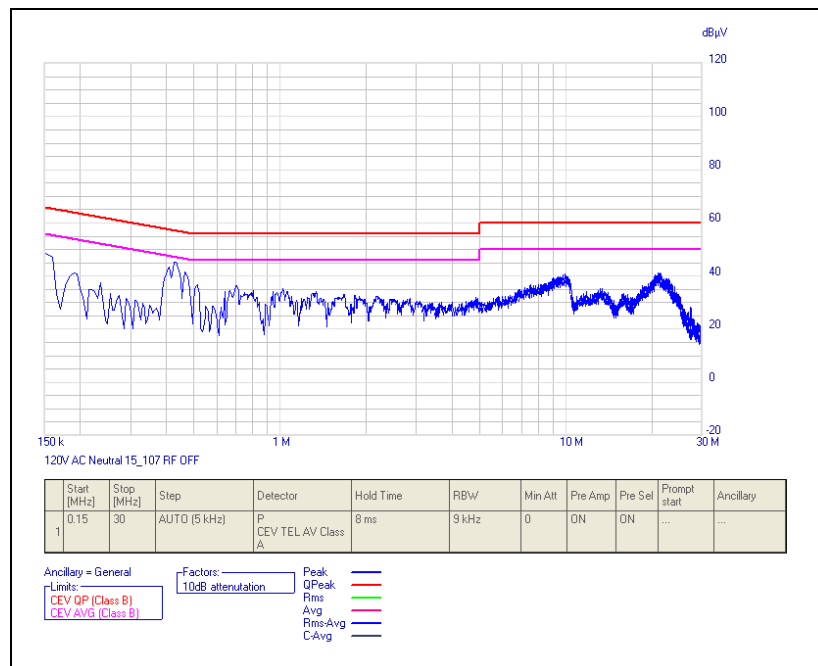
**Plot 3. Conducted Emission, Phase Line Plot, PoE**



## Conducted Emissions - Voltage, AC Power, Neutral Line (120 VAC, 60 Hz), PoE

| Line                   | Freq. (MHz) | QP Amplitude | QP Limit | Delta   | Pass | Average Amplitude | Average Limit | Delta   | Pass |
|------------------------|-------------|--------------|----------|---------|------|-------------------|---------------|---------|------|
| 120V AC Neutral 15.107 | 0.15        | 53.73        | 66       | -12.27  | Pass | 31.84             | 56            | -24.16  | Pass |
| 120V AC Neutral 15.107 | 0.41        | 43.5         | 57.671   | -14.171 | Pass | 28.96             | 47.671        | -18.711 | Pass |
| 120V AC Neutral 15.107 | 0.43        | 46.04        | 57.277   | -11.237 | Pass | 38.26             | 47.277        | -9.017  | Pass |

Table 10. Conducted Emissions - Voltage, AC Power, Neutral Line (120 VAC, 60 Hz), PoE



Plot 4. Conducted Emission, Neutral Line Plot, PoE

## Radiated Emission Limits

### § 15.109 Radiated Emissions Limits

**Test Requirement(s):** **15.109 (a)** Except for Class A digital devices, the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the Class B limits expressed in Table 11.

**15.109 (b)** The field strength of radiated emissions from a Class A digital device, as determined at a distance of 10 meters, shall not exceed the Class A limits expressed in Table 11.

| Frequency (MHz) | Field Strength (dB $\mu$ V/m)                    |                                                 |
|-----------------|--------------------------------------------------|-------------------------------------------------|
|                 | §15.109 (b), Class A Limit<br>(dB $\mu$ V) @ 10m | §15.109 (a), Class B Limit<br>(dB $\mu$ V) @ 3m |
| 30 - 88         | 39.00                                            | 40.00                                           |
| 88 - 216        | 43.50                                            | 43.50                                           |
| 216 - 960       | 46.40                                            | 46.00                                           |
| Above 960       | 49.50                                            | 54.00                                           |

**Table 11. Radiated Emissions Limits calculated from FCC Part 15, §15.109 (a) (b)**

**Test Procedures:** The EUT was placed on a non-metallic table, 80 cm above the ground plane inside a semi-anechoic chamber. The method of testing and test conditions of ANSI C63.4 were used. An antenna was located 10m from the EUT on an adjustable mast. A pre-scan was first performed in order to find prominent radiated emissions. For final emissions measurements at each frequency of interest, the EUT was rotated and the antenna height was varied between 1 m and 4 m in order to maximize the emission. Measurements in both horizontal and vertical polarities were made and the data was recorded. Unless otherwise specified, measurements were made using a quasi-peak detector with a 120 kHz bandwidth.

**Test Results:** The EUT was compliant with the Class B requirement(s) of this section. Measured emissions were below applicable limits.

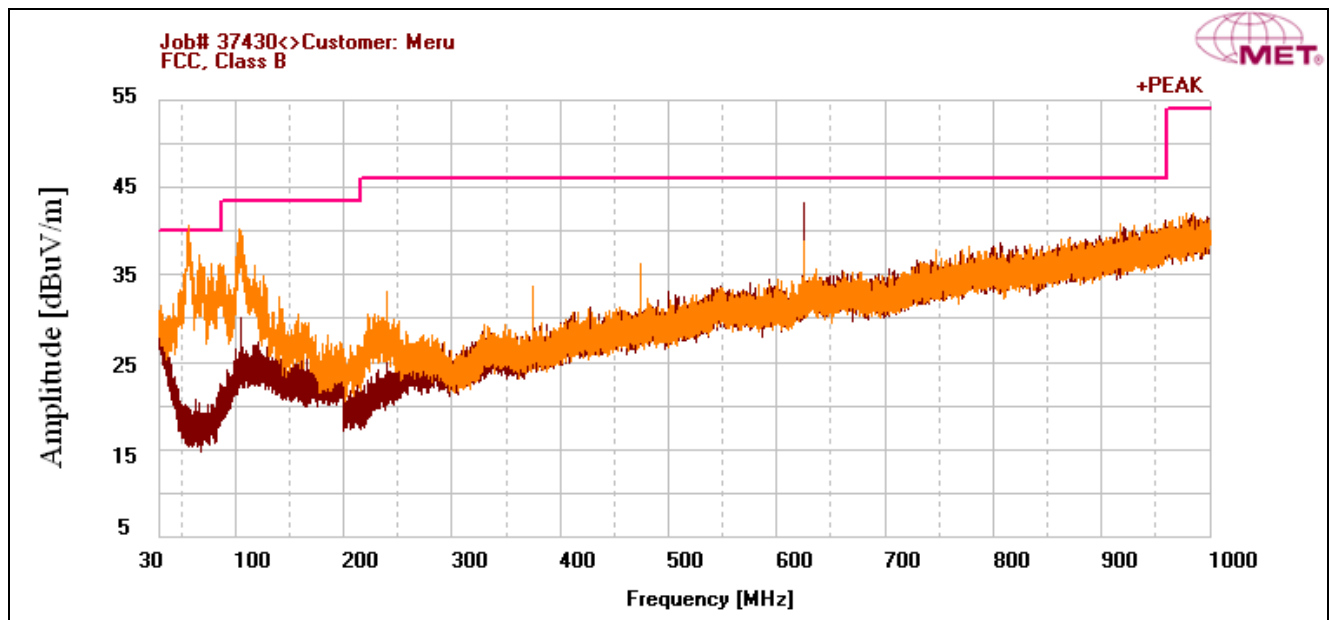
**Test Engineer(s):** John Frank & Joseph Dizon

**Test Date(s):** 01/18/13

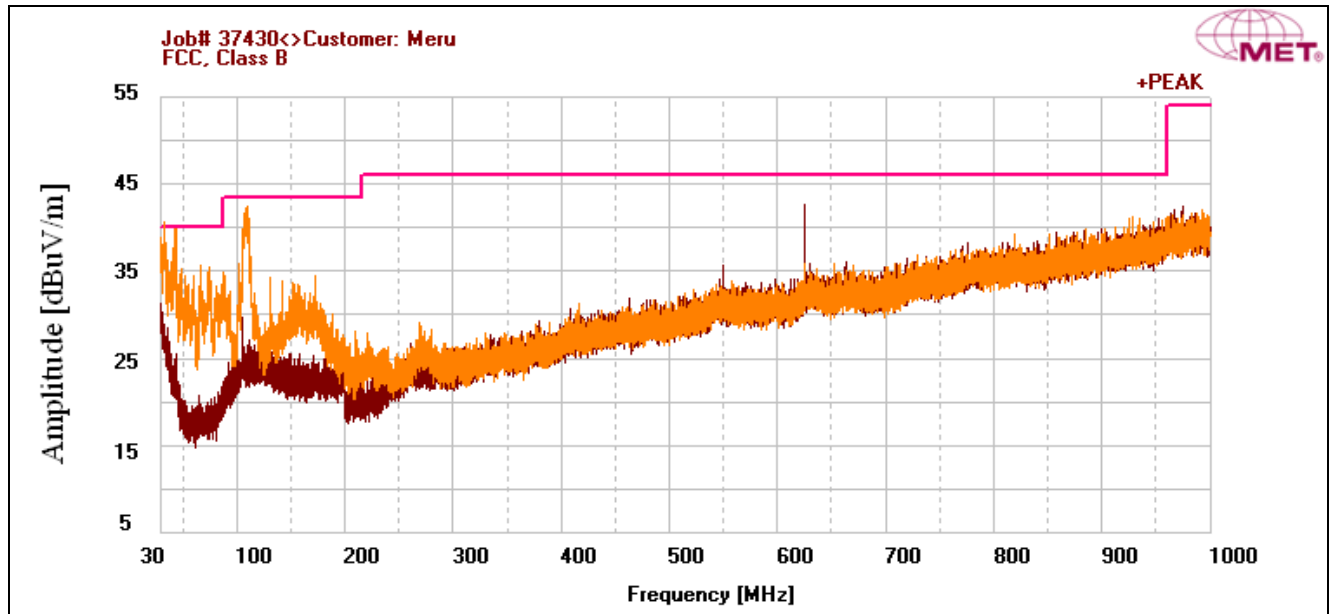
## Radiated Emissions Limits Test Results, Class B

| Frequency (MHz) | Antenna Polarity | EUT Azimuth (Degrees) | Antenna Height (cm) | Uncorrected Amplitude (dBuV) | ACF (dB/m) | Pre Amp Gain (dB) | CBL (dB) | DCF (dB) | Corrected Amplitude (dBuV) | Limit (dBuV) | Margin (dB) |
|-----------------|------------------|-----------------------|---------------------|------------------------------|------------|-------------------|----------|----------|----------------------------|--------------|-------------|
| 57.095          | V                | 46.6                  | 100                 | 50.03                        | 6.4        | 30.203            | 0        | 10.46    | 36.687                     | 40           | -3.313      |
| 104.045         | V                | 139                   | 100                 | 44.742                       | 11.609     | 29.59             | 0        | 10.46    | 37.221                     | 43.5         | -6.279      |
| 239.995         | V                | 181                   | 100                 | 39.522                       | 11.3       | 28.398            | 0        | 10.46    | 32.884                     | 46           | -13.116     |
| 374.982         | V                | 315                   | 100                 | 34.538                       | 15.198     | 27.623            | 0        | 10.46    | 32.573                     | 46           | -13.427     |
| 475.008         | V                | 167                   | 100                 | 34.619                       | 16.801     | 27.167            | 0        | 10.46    | 34.713                     | 46           | -11.287     |
| 624.988         | H                | 131                   | 100                 | 38.62                        | 19.199     | 26.613            | 0        | 10.46    | 41.666                     | 46           | -4.334      |

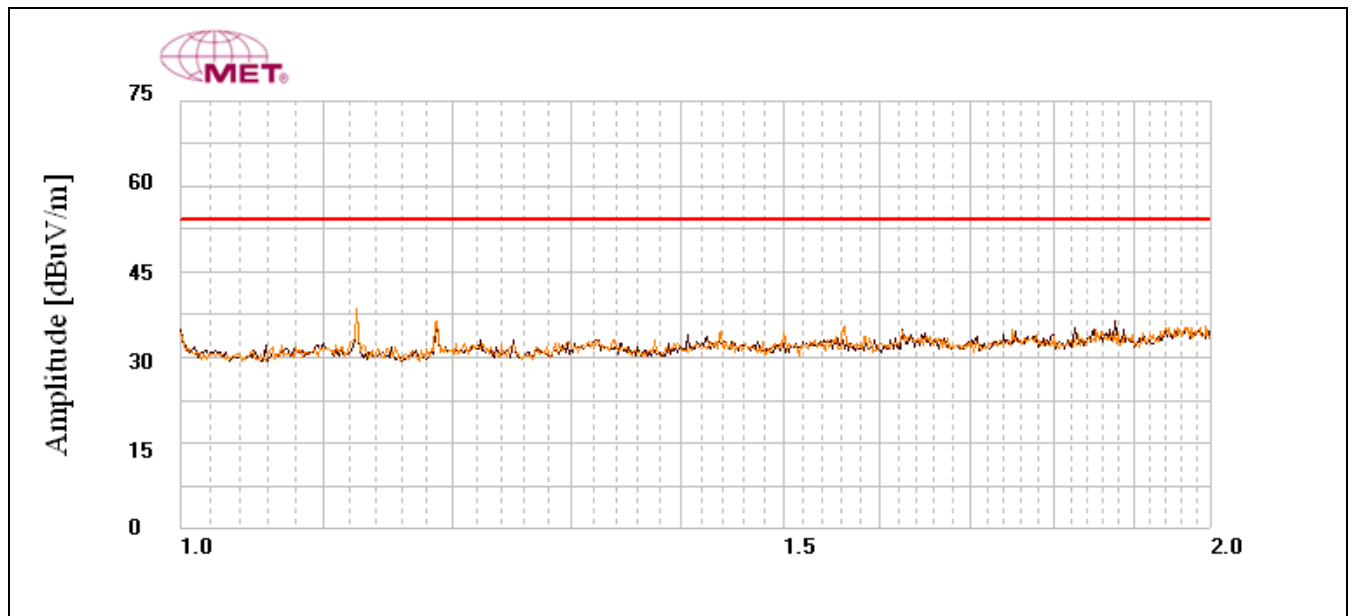
Table 12. Radiated Emissions Limits, Test Results, 30 MHz – 1 GHz, FCC Limits



Plot 5. Radiated Emissions, 30 MHz - 1 GHz, FCC Limits, AC-DC Power Supply



Plot 6. Radiated Emissions, 30 MHz - 1 GHz, FCC Limits, PoE

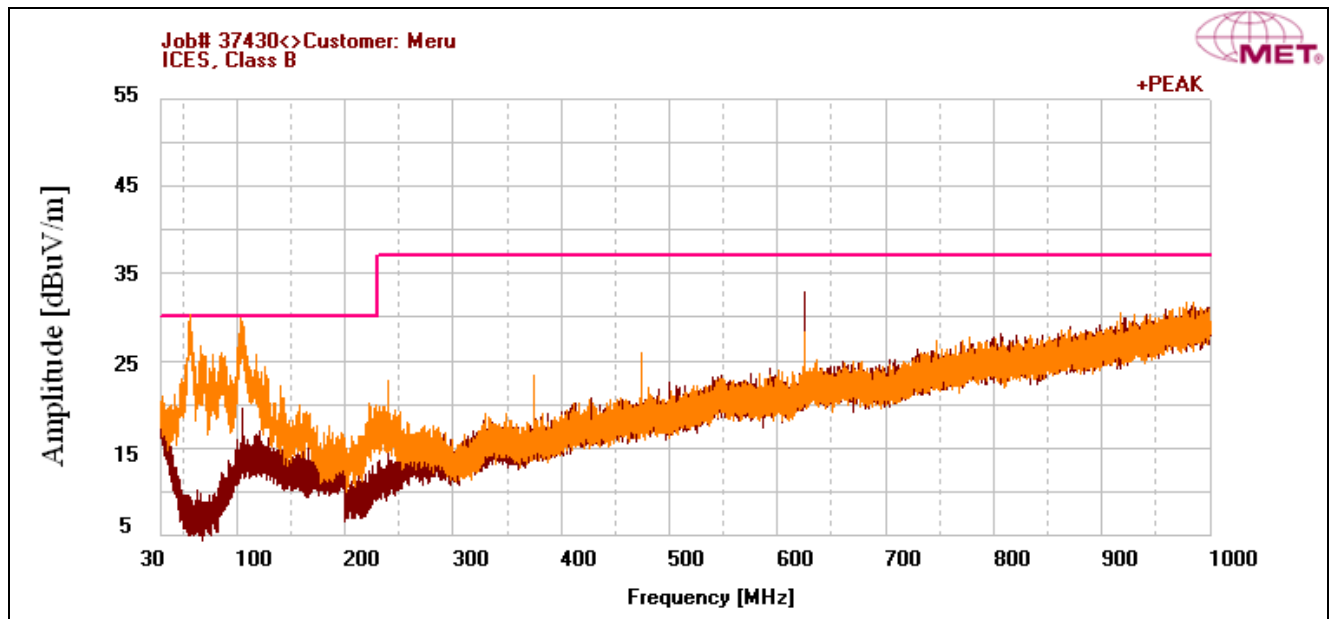


Plot 7. Radiated Emissions, Above 1 GHz, FCC Limits

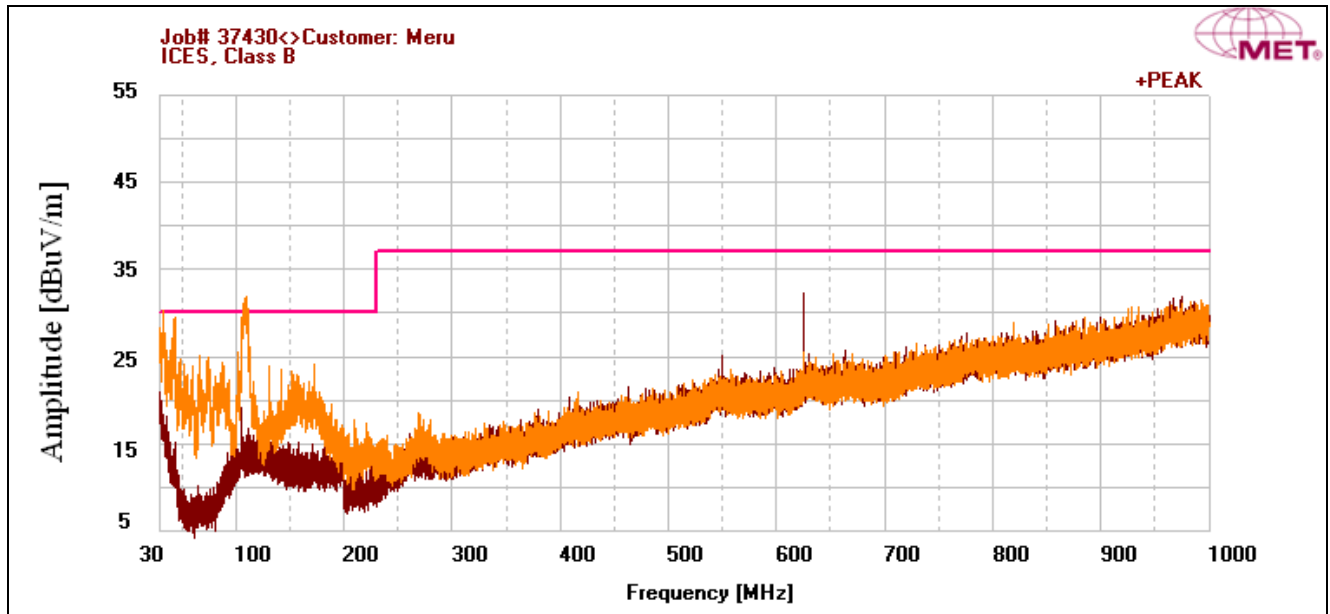
## Radiated Emissions Limits Test Results, Class B

| Frequency (MHz) | Antenna Polarity | EUT Azimuth (Degrees) | Antenna Height (cm) | Uncorrected Amplitude (dBuV) | ACF (dB/m) | Pre Amp Gain (dB) | CBL (dB) | DCF (dB) | Corrected Amplitude (dBuV) | Limit (dBuV) | Margin (dB) |
|-----------------|------------------|-----------------------|---------------------|------------------------------|------------|-------------------|----------|----------|----------------------------|--------------|-------------|
| 57.095          | V                | 46.6                  | 100                 | 50.03                        | 6.4        | 30.203            | 0        | 0        | 26.227                     | 30           | -3.773      |
| 104.045         | V                | 139                   | 100                 | 44.742                       | 11.609     | 29.59             | 0        | 0        | 26.761                     | 30           | -3.239      |
| 239.995         | V                | 181                   | 100                 | 39.522                       | 11.3       | 28.398            | 0        | 0        | 22.424                     | 37           | -14.576     |
| 374.982         | V                | 315                   | 100                 | 34.538                       | 15.198     | 27.623            | 0        | 0        | 22.113                     | 37           | -14.887     |
| 475.008         | V                | 167                   | 100                 | 34.619                       | 16.801     | 27.167            | 0        | 0        | 24.253                     | 37           | -12.747     |
| 624.988         | H                | 131                   | 100                 | 38.62                        | 19.199     | 26.613            | 0        | 0        | 31.206                     | 37           | -5.794      |

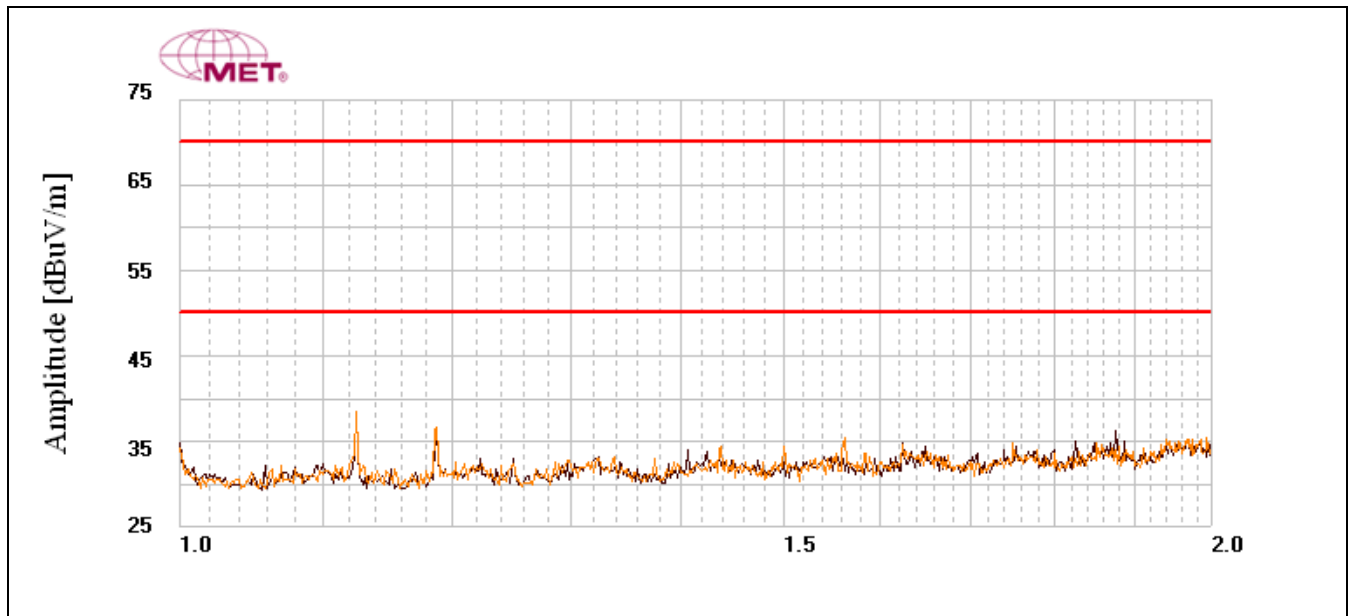
Table 13. Radiated Emissions Limits, Test Results, ICES-003 Limits



Plot 8. Radiated Emissions, ICES-003 Limits, AC-DC Power Supply, 30 MHz – 1 GHz



Plot 9. Radiated Emissions, ICES-003 Limits, PoE, 30 MHz – 1 GHz



Plot 10. Radiated Emissions, Above 1 GHz, ICES-003 Limits

## **IV. Electromagnetic Compatibility Criteria for Intentional Radiators**

## Electromagnetic Compatibility Criteria for Intentional Radiators

### § 15.203 Antenna Requirement

#### Test Requirement:

**§ 15.203:** An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

The structure and application of the EUT were analyzed to determine compliance with Section 15.203 of the Rules. Section 15.203 states that the subject device must meet at least one of the following criteria:

- a.) Antenna must be permanently attached to the unit.
- b.) Antenna must use a unique type of connector to attach to the EUT.
- c.) Unit must be professionally installed. Installer shall be responsible for verifying that the correct antenna is employed with the unit.

#### Results:

The EUT as tested is compliant the criteria of §15.203. EUT employs a unique reverse SMA connector and are professionally installed. Table 14 contains the antennas tested with the EUT. Table 15 contains lower gain antennas that were not tested but customer would like to sell with his product.

**Test Engineer(s):** Jonathan Chao

**Test Date(s):** 02/18/13

| Gain (dBi) |       | Antenna Type | Antenna Description                                 | Manufacturer        | Model Number       |
|------------|-------|--------------|-----------------------------------------------------|---------------------|--------------------|
| 2.4 GHz    | 5 GHz |              |                                                     |                     |                    |
| 2          | 2     | Dipole       | Omni Directional Rubber Duct Dual-Band              | SOCAA               | ANT-ABGN-0304-W    |
| 3          | 4     | Dipole       | Omni Directional Ceiling Mount Dual-Band 3 x 3 MIMO | Terrawave Solutions | ANT-I3ABGN-0304-O  |
| 6          | 6     | Dipole       | Omni Directional Cane Dual-Band 3 x 3 MIMO          | Terrawave Solutions | ANT-06ABGN-0606-O  |
| 6          | 7     | Patch        | Directional Wall Mount Dual-Band 3 x 3 MIMO         | Terrawave Solutions | ANT-06ABGN-0607-PT |

**Table 14. Antenna List**

| Meru Part Number   | Manufacturer P/N  | Manufacturer       | Description                                            | Gain        |
|--------------------|-------------------|--------------------|--------------------------------------------------------|-------------|
| ANT-ABGN230-W      | --                | SOCAA              | Dual band omnidirectional dipole antenna               | 2/3 dBi     |
| ANT-ABGN-23        | S24493TS          | Laird Technologies | Dual band ceiling mount omnidirectional 3-lead antenna | 3/4 dBi     |
| ANT-6ABGN-24       | M6025040MO1D3620P | Terrawave          | Dual band ceiling mount omnidirectional 6-lead antenna | 2.5/4 dBi   |
| ANT-ABGN470        | ANT-DB1-RAF-RPS   | Linx Technologies  | Dual band high gain dipole omnidirectional antenna     | 4.7/4.7 dBi |
| ANT-O6ABGN-0606-O  | M6060060MO1D3620O | Terrawave          | Dual band omnidirectional 6-lead antenna               | 6/6 dBi     |
| ANT-I2ABGN-0304-O  | M6030040O1D3620DP | Terrawave          | Dual band ceiling mount omnidirectional 2-lead antenna | 3/4 dBi     |
| ANT-I3ABGN-0304-O  | M6030040O1D1820MP | Terrawave          | Dual band ceiling mount omnidirectional 3-lead antenna | 3/4 dBi     |
| ANT-O4ABGN-0607-PT | M6060070P23620    | Terrawave          | Dual band wall mount patch 4-lead antenna              | 6/7 dBi     |
| ANT-O6ABGN-0607-PT | M6060070MP13620   | Terrawave          | Dual band wall mount patch 6-lead antenna              | 6/7 dBi     |

**Table 15. Additional Antennas**

## Electromagnetic Compatibility Criteria for Intentional Radiators

### § 15.207(a) Conducted Emissions Limits

**Test Requirement(s):** § 15.207 (a): For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30MHz, shall not exceed the limits in the following table, as measured using a 50  $\mu$ H/50  $\Sigma$  line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

| Frequency range<br>(MHz) | § 15.207(a), Conducted Limit (dB $\mu$ V) |         |
|--------------------------|-------------------------------------------|---------|
|                          | Quasi-Peak                                | Average |
| * 0.15- 0.45             | 66 - 56                                   | 56 - 46 |
| 0.45 - 0.5               | 56                                        | 46      |
| 0.5 - 30                 | 60                                        | 50      |

**Table 16. Conducted Limits for Intentional Radiators from FCC Part 15 § 15.207(a)**

**Test Procedure:** The EUT was placed on a 0.8 m-high wooden table inside a screen room. The EUT was situated such that the back of the EUT was 0.4 m from one wall of the vertical ground plane, and the remaining sides of the EUT were no closer than 0.8 m from any other conductive surface. The EUT was powered from a 50  $\Omega$ /50  $\mu$ H Line Impedance Stabilization Network (LISN). The EMC receiver scanned the frequency range from 150 kHz to 30 MHz. Conducted Emissions measurements were made in accordance with ANSI C63.4-2003 "Methods and Measurements of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9kHz to 40 GHz". The measurements were performed over the frequency range of 0.15 MHz to 30 MHz using a 50  $\Omega$ /50  $\mu$ H LISN as the input transducer to an EMC/field intensity meter. For the purpose of this testing, the transmitter was turned on. Scans were performed with the transmitter on.

**Test Results:** The EUT was compliant with this requirement.

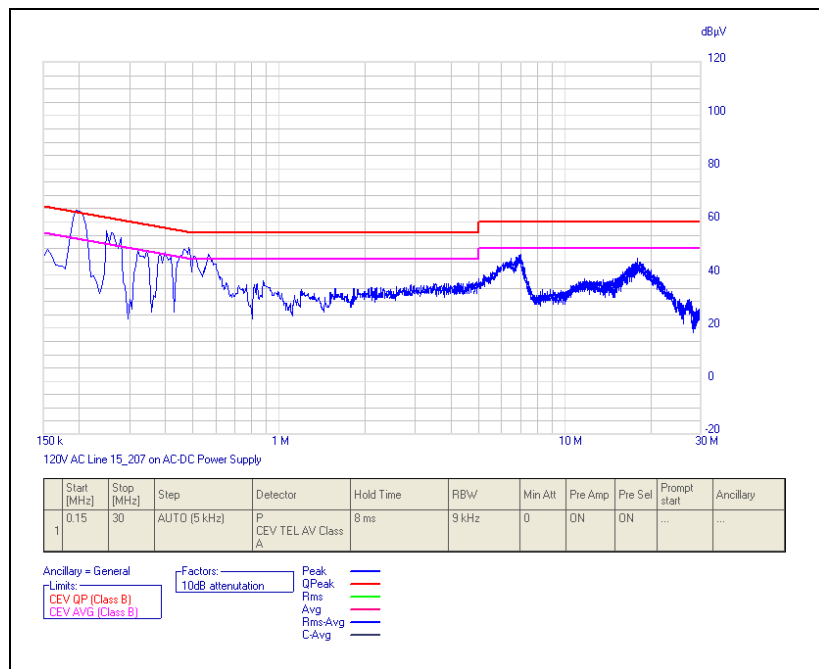
**Test Engineer(s):** Joseph Dizon

**Test Date(s):** 01/31/13 & 02/01/13

## 15.207(a) Conducted Emissions Test Results, AC-DC Power Supply

| Line                | Freq. (MHz) | QP Amplitude | QP Limit | Delta  | Pass | Average Amplitude | Average Limit | Delta   | Pass |
|---------------------|-------------|--------------|----------|--------|------|-------------------|---------------|---------|------|
| 120V AC Line 15.207 | 0.195       | 63.35        | 63.827   | -0.477 | Pass | 43.02             | 53.827        | -10.807 | Pass |
| 120V AC Line 15.207 | 0.25        | 55.66        | 61.769   | -6.109 | Pass | 30.01             | 51.769        | -21.759 | Pass |
| 120V AC Line 15.207 | 0.485       | 51.48        | 56.26    | -4.78  | Pass | 32.42             | 46.26         | -13.84  | Pass |

Table 17. Conducted Emissions, 15.207(a), Phase Line, Test Results, AC-DC Power Supply

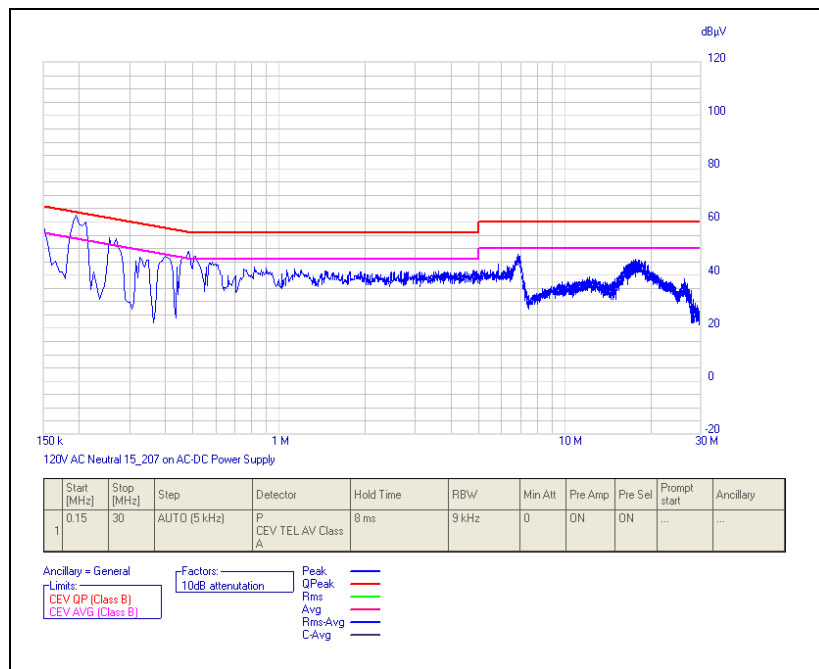


Plot 11. Conducted Emissions, 15.207(a), Phase Line, AC-DC Power Supply

### 15.207(a) Conducted Emissions Test Results, AC-DC Power Supply

| Line                   | Freq. (MHz) | QP Amplitude | QP Limit | Delta  | Pass | Average Amplitude | Average Limit | Delta   | Pass |
|------------------------|-------------|--------------|----------|--------|------|-------------------|---------------|---------|------|
| 120V AC Neutral 15.207 | 0.15        | 53.37        | 66       | -12.63 | Pass | 23.86             | 56            | -32.14  | Pass |
| 120V AC Neutral 15.207 | 0.195       | 62.75        | 63.827   | -1.077 | Pass | 39.32             | 53.827        | -14.507 | Pass |
| 120V AC Neutral 15.207 | 0.255       | 54.71        | 61.605   | -6.895 | Pass | 30.65             | 51.605        | -20.955 | Pass |

**Table 18. Conducted Emissions, 15.207(a), Neutral Line, Test Results, AC-DC Power Supply**

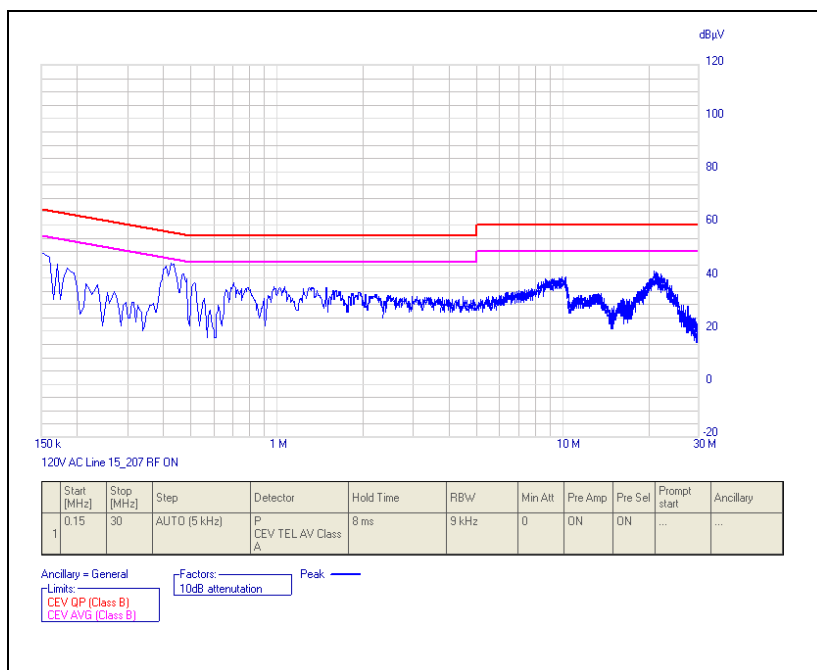


**Plot 12. Conducted Emissions, 15.207(a), Neutral Line, AC-DC Power Supply**

## 15.207(a) Conducted Emissions Test Results, PoE

| Line                | Freq. (MHz) | QP Amplitude | QP Limit | Delta   | Pass | Average Amplitude | Average Limit | Delta   | Pass |
|---------------------|-------------|--------------|----------|---------|------|-------------------|---------------|---------|------|
| 120V AC Line 15.207 | 0.15        | 62.57        | 66       | -3.43   | Pass | 45.33             | 56            | -10.67  | Pass |
| 120V AC Line 15.207 | 0.17        | 45.72        | 64.963   | -19.243 | Pass | 18.68             | 54.963        | -36.283 | Pass |
| 120V AC Line 15.207 | 0.425       | 46.58        | 57.373   | -10.793 | Pass | 33.82             | 47.373        | -13.553 | Pass |

Table 19. Conducted Emissions, 15.207(a), Phase Line, Test Results, PoE

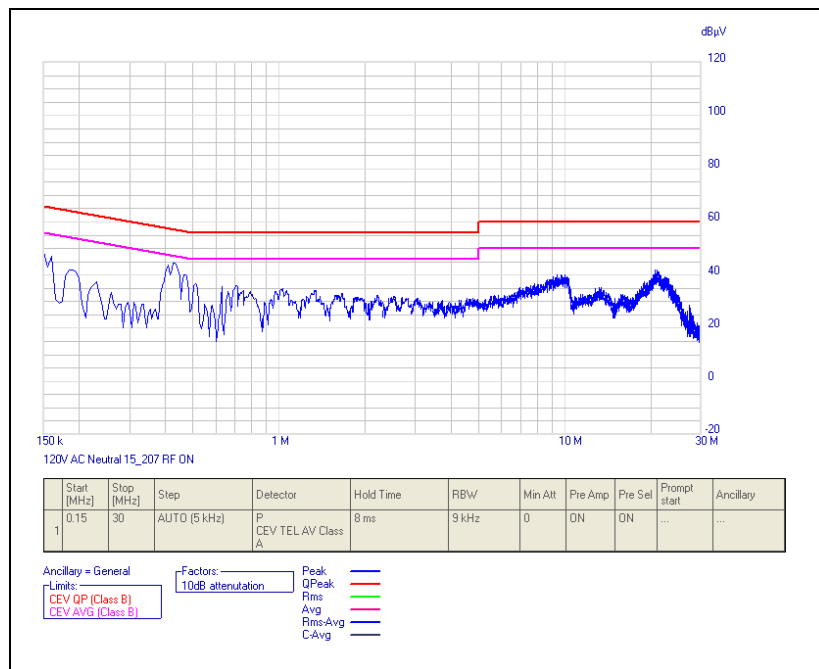


Plot 13. Conducted Emissions, 15.207(a), Phase Line, PoE

### 15.207(a) Conducted Emissions Test Results, PoE

| Line                   | Freq. (MHz) | QP Amplitude | QP Limit | Delta   | Pass | Average Amplitude | Average Limit | Delta  | Pass |
|------------------------|-------------|--------------|----------|---------|------|-------------------|---------------|--------|------|
| 120V AC Neutral 15.207 | 0.15        | 62.65        | 66       | -3.35   | Pass | 44.02             | 56            | -11.98 | Pass |
| 120V AC Neutral 15.207 | 0.43        | 43.2         | 57.277   | -14.077 | Pass | 38.2              | 47.277        | -9.077 | Pass |
| 120V AC Neutral 15.207 | 21.095      | 56.84        | 60       | -3.16   | Pass | 48.62             | 50            | -1.38  | Pass |

Table 20. Conducted Emissions, 15.207(a), Neutral Line, Test Results, PoE



Plot 14. Conducted Emissions, 15.207(a), Neutral Line, PoE

## Electromagnetic Compatibility Criteria for Intentional Radiators

### § 15.247(a)(2) 6 dB and 99% Bandwidth

**Test Requirements:** § 15.247(a)(2): Operation under the provisions of this section is limited to frequency hopping and digitally modulated intentional radiators that comply with the following provisions:

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

**Test Procedure:** The transmitter was on and transmitting at the highest output power. The bandwidth of the fundamental frequency was measured with the spectrum analyzer using a RBW approximately 1% of the total emission bandwidth, VBW > RBW. The 6 dB Bandwidth was measured and recorded. The measurements were performed on the low, mid and high channels.

**Test Results** The EUT was compliant with § 15.247 (a)(2).

The 6 dB and 99% Bandwidth was determined from the plots on the following pages.

**Test Engineer(s):** Anderson Soungpanya

**Test Date(s):** 01/29/13



**Figure 2. Block Diagram, Occupied Bandwidth Test Setup**

## Occupied Bandwidth Test Results

| Occupied Bandwidth    |                 |                 |                               |
|-----------------------|-----------------|-----------------|-------------------------------|
|                       | Carrier Channel | Frequency (MHz) | Measured 6 dB Bandwidth (MHz) |
| 802.11b               | Low             | 2412            | 10.876                        |
|                       | Mid             | 2437            | 11.066                        |
|                       | High            | 2462            | 10.802                        |
| 802.11g               | Low             | 2412            | 15.821                        |
|                       | Mid             | 2437            | 15.911                        |
|                       | High            | 2462            | 16.385                        |
| 802.11n 20 MHz Port 1 | Low             | 2412            | 17.668                        |
|                       | Mid             | 2437            | 17.455                        |
|                       | High            | 2462            | 17.733                        |
| 802.11n 20 MHz Port 2 | Low             | 2412            | 17.272                        |
|                       | Mid             | 2437            | 16.967                        |
|                       | High            | 2462            | 16.607                        |
| 802.11n 20 MHz Port 3 | Low             | 2412            | 16.402                        |
|                       | Mid             | 2437            | 17.063                        |
|                       | High            | 2462            | 15.178                        |
| 802.11n 40 MHz Port 1 | Low             | 2422            | 35.349                        |
|                       | Mid             | 2437            | 36.220                        |
|                       | High            | 2452            | 36.534                        |
| 802.11n 40 MHz Port 2 | Low             | 2422            | 35.222                        |
|                       | Mid             | 2437            | 35.321                        |
|                       | High            | 2452            | 36.524                        |
| 802.11n 40 MHz Port 3 | Low             | 2422            | 33.976                        |
|                       | Mid             | 2437            | 35.859                        |
|                       | High            | 2452            | 36.412                        |

**Table 21. 6 dB Occupied Bandwidth, Test Results, 2.4 GHz**

| Occupied Bandwidth    |                 |                 |                               |
|-----------------------|-----------------|-----------------|-------------------------------|
|                       | Carrier Channel | Frequency (MHz) | Measured 6 dB Bandwidth (MHz) |
| 802.11a 20 MHz Port 1 | Low             | 5745            | 16.381                        |
|                       | Mid             | 5785            | 16.400                        |
|                       | High            | 5825            | 16.417                        |
| 802.11n 20 MHz Port 1 | Low             | 5745            | 17.581                        |
|                       | Mid             | 5785            | 17.562                        |
|                       | High            | 5825            | 17.301                        |
| 802.11n 20 MHz Port 2 | Low             | 5745            | 17.632                        |
|                       | Mid             | 5785            | 17.630                        |
|                       | High            | 5825            | 17.608                        |
| 802.11n 20 MHz Port 3 | Low             | 5745            | 17.664                        |
|                       | Mid             | 5785            | 17.613                        |
|                       | High            | 5825            | 17.588                        |
| 802.11n 40 MHz Port 1 | Low             | 5755            | 36.392                        |
|                       | High            | 5795            | 36.334                        |
| 802.11n 40 MHz Port 2 | Low             | 5755            | 36.430                        |
|                       | High            | 5795            | 36.413                        |
| 802.11n 40 MHz Port 3 | Low             | 5755            | 36.458                        |
|                       | High            | 5795            | 36.403                        |
| 802.11n 80 MHz Port 1 | --              | 5775            | 75.902                        |
| 802.11n 80 MHz Port 2 | --              | 5775            | 75.906                        |
| 802.11n 80 MHz Port 3 | --              | 5775            | 75.351                        |

**Table 22. 6 dB Occupied Bandwidth, Test Results, 5 GHz**

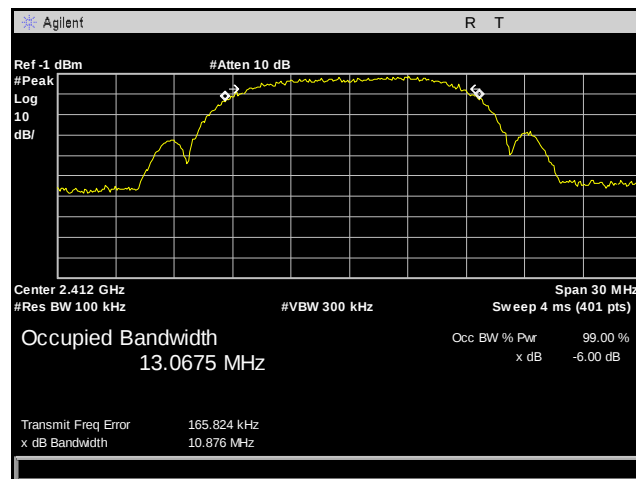
| Occupied Bandwidth    |                 |                 |                              |
|-----------------------|-----------------|-----------------|------------------------------|
|                       | Carrier Channel | Frequency (MHz) | Measured 99% Bandwidth (MHz) |
| 802.11b               | Low             | 2412            | 12.9191                      |
|                       | Mid             | 2437            | 13.2305                      |
|                       | High            | 2462            | 13.2037                      |
| 802.11g               | Low             | 2412            | 16.5514                      |
|                       | Mid             | 2437            | 16.5928                      |
|                       | High            | 2462            | 16.5990                      |
| 802.11n 20 MHz Port 1 | Low             | 2412            | 17.3189                      |
|                       | Mid             | 2437            | 17.4692                      |
|                       | High            | 2462            | 17.5905                      |
| 802.11n 20 MHz Port 2 | Low             | 2412            | 17.6307                      |
|                       | Mid             | 2437            | 17.5822                      |
|                       | High            | 2462            | 17.7461                      |
| 802.11n 20 MHz Port 3 | Low             | 2412            | 17.6929                      |
|                       | Mid             | 2437            | 17.6197                      |
|                       | High            | 2462            | 17.7379                      |
| 802.11n 40 MHz Port 1 | Low             | 2422            | 35.7562                      |
|                       | Mid             | 2437            | 36.2513                      |
|                       | High            | 2452            | 36.6387                      |
| 802.11n 40 MHz Port 2 | Low             | 2422            | 36.2491                      |
|                       | Mid             | 2437            | 36.5363                      |
|                       | High            | 2452            | 36.8075                      |
| 802.11n 40 MHz Port 3 | Low             | 2422            | 35.8107                      |
|                       | Mid             | 2437            | 36.5948                      |
|                       | High            | 2452            | 36.9918                      |

**Table 23. 99% Occupied Bandwidth, Test Results, 2.4 GHz**

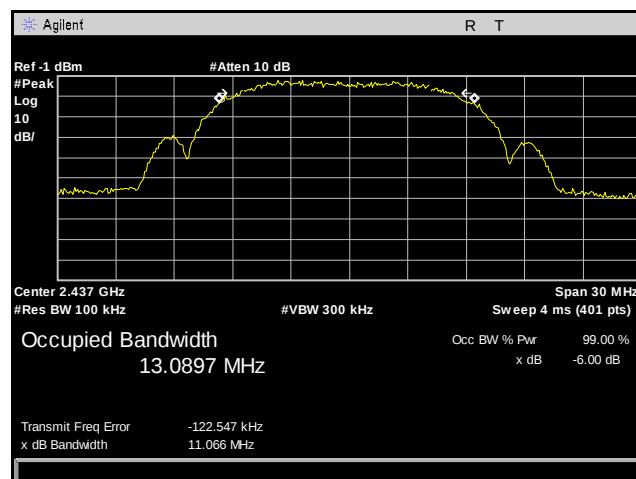
| Occupied Bandwidth    |                 |                 |                              |
|-----------------------|-----------------|-----------------|------------------------------|
|                       | Carrier Channel | Frequency (MHz) | Measured 99% Bandwidth (MHz) |
| 802.11a 20 MHz Port 1 | Low             | 5745            | 16.5588                      |
|                       | Mid             | 5785            | 16.5358                      |
|                       | High            | 5825            | 16.7396                      |
| 802.11n 20 MHz Port 1 | Low             | 5745            | 17.6860                      |
|                       | Mid             | 5785            | 17.6796                      |
|                       | High            | 5825            | 17.6917                      |
| 802.11n 20 MHz Port 2 | Low             | 5745            | 17.7002                      |
|                       | Mid             | 5785            | 17.6751                      |
|                       | High            | 5825            | 17.7840                      |
| 802.11n 20 MHz Port 3 | Low             | 5745            | 17.6622                      |
|                       | Mid             | 5785            | 17.5904                      |
|                       | High            | 5825            | 17.7076                      |
| 802.11n 40 MHz Port 1 | Low             | 5755            | 36.2874                      |
|                       | High            | 5795            | 36.2672                      |
| 802.11n 40 MHz Port 2 | Low             | 5755            | 36.2689                      |
|                       | High            | 5795            | 36.2832                      |
| 802.11n 40 MHz Port 3 | Low             | 5755            | 36.4097                      |
|                       | High            | 5795            | 36.3257                      |
| 802.11n 80 MHz Port 1 | --              | 5775            | 75.6760                      |
| 802.11n 80 MHz Port 2 | --              | 5775            | 75.8576                      |
| 802.11n 80 MHz Port 3 | --              | 5775            | 75.6937                      |

**Table 24. 99% Occupied Bandwidth, Test Results, 5 GHz**

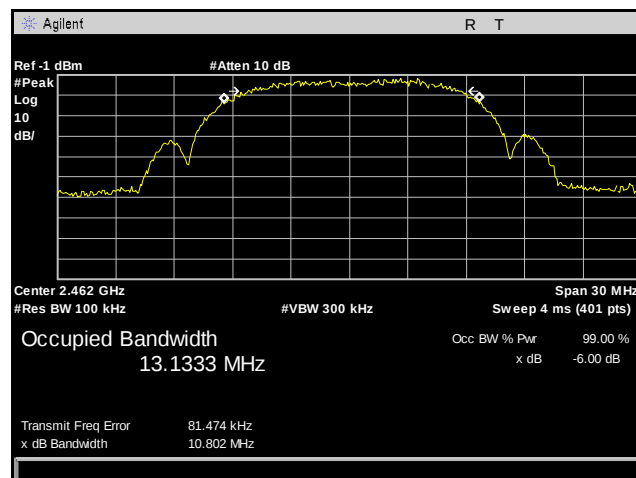
## 6 dB Occupied Bandwidth Test Results, 802.11b, 2.4 GHz



Plot 15. 6 dB Occupied Bandwidth, 802.11b, 2412 MHz, Low Channel

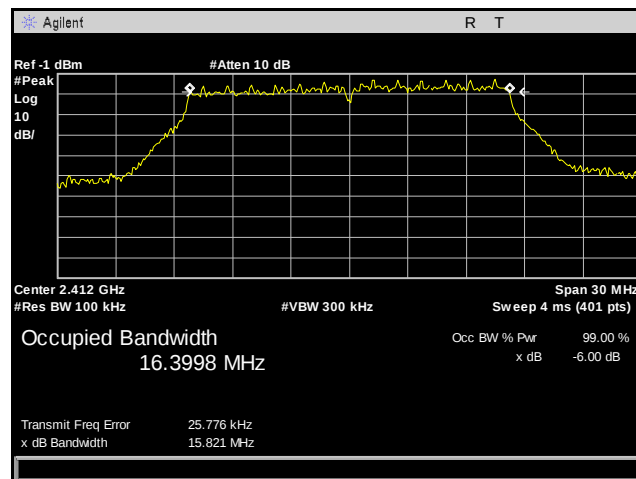


Plot 16. 6 dB Occupied Bandwidth, 802.11b, 2437 MHz, Mid Channel

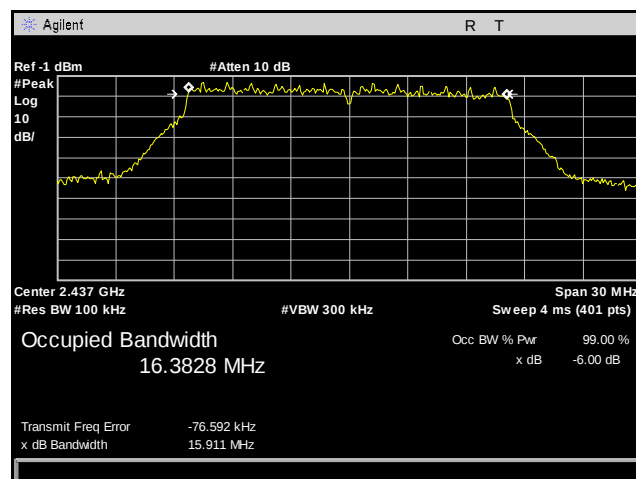


Plot 17. 6 dB Occupied Bandwidth, 802.11b, 2462 MHz, High Channel

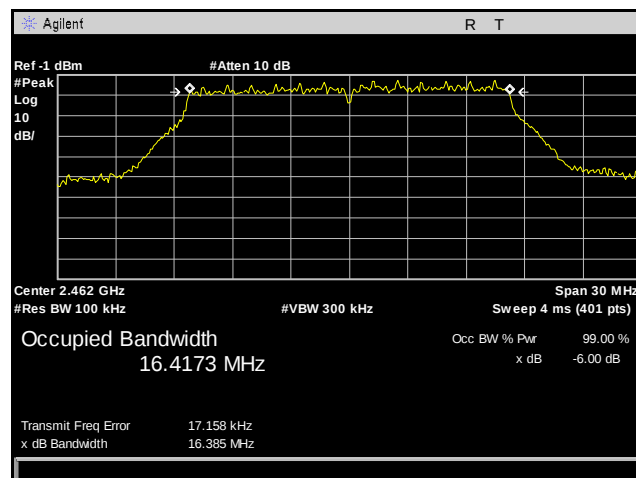
## 6 dB Occupied Bandwidth Test Results, 802.11g, 2.4 GHz



Plot 18. 6 dB Occupied Bandwidth, 802.11g, 2412 MHz, Low Channel

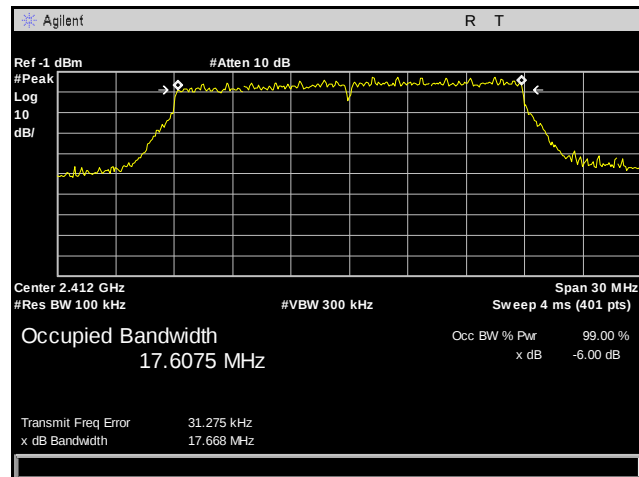


Plot 19. 6 dB Occupied Bandwidth, 802.11g, 2437 MHz, Mid Channel

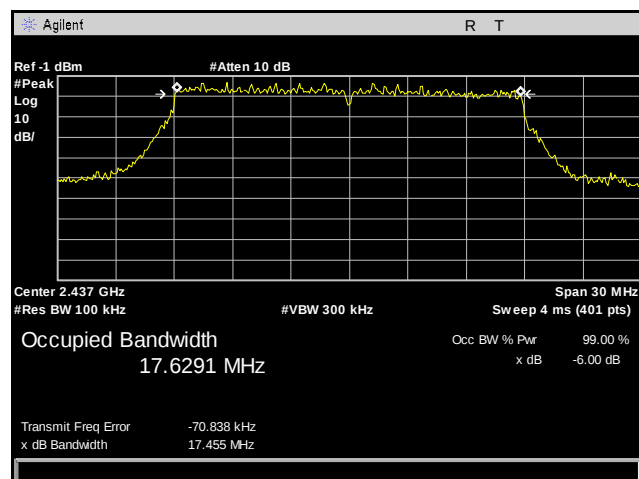


Plot 20. 6 dB Occupied Bandwidth, 802.11g, 2462 MHz, High Channel

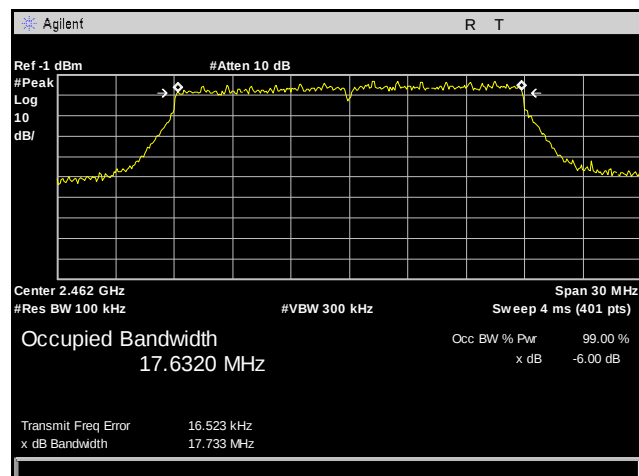
## 6 dB Occupied Bandwidth Test Results, 802.11n 20 MHz, Port 1, 2.4 GHz



Plot 21. 6 dB Occupied Bandwidth, 802.11n 20 MHz, 2412 MHz, Low Channel, Port 1

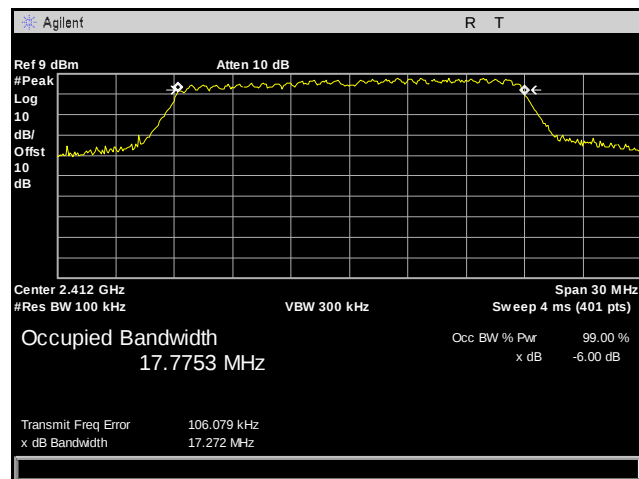


Plot 22. 6 dB Occupied Bandwidth, 802.11n 20 MHz, 2437 MHz, Mid Channel, Port 1

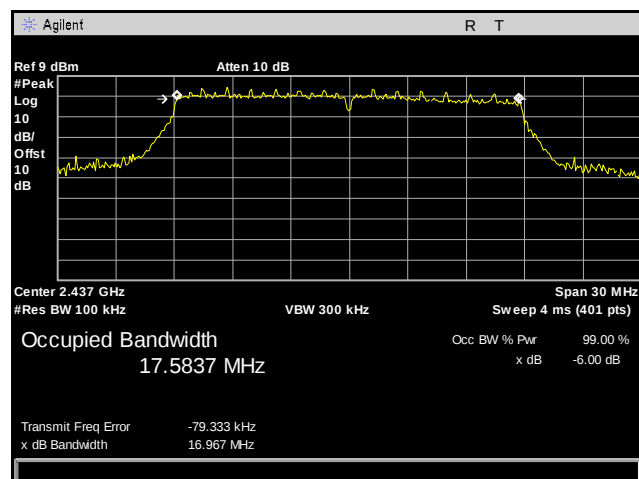


Plot 23. 6 dB Occupied Bandwidth, 802.11n 20 MHz, 2462 MHz, High Channel, Port 1

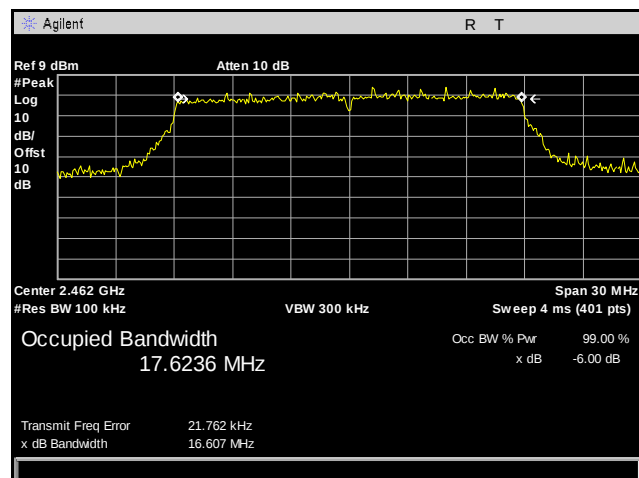
## 6 dB Occupied Bandwidth Test Results, 802.11n 20 MHz, Port 2, 2.4 GHz



Plot 24. 6 dB Occupied Bandwidth, 802.11n 20 MHz, 2412 MHz, Low Channel, Port 2

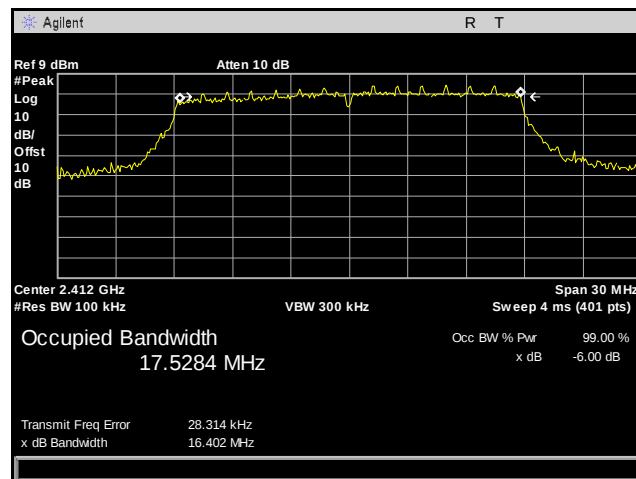


Plot 25. 6 dB Occupied Bandwidth, 802.11n 20 MHz, 2437 MHz, Mid Channel, Port 2

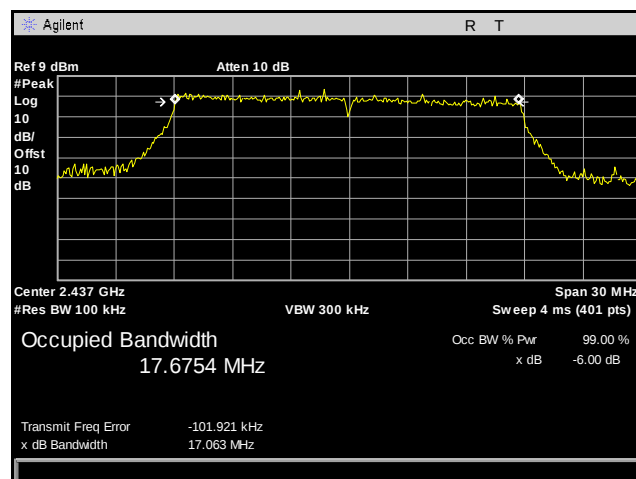


Plot 26. 6 dB Occupied Bandwidth, 802.11n 20 MHz, 2462 MHz, High Channel, Port 2

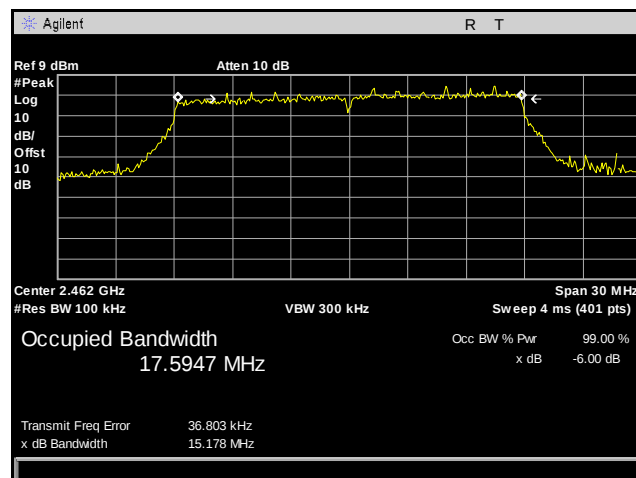
## 6 dB Occupied Bandwidth Test Results, 802.11n 20 MHz, Port 3, 2.4 GHz



Plot 27. 6 dB Occupied Bandwidth, 802.11n 20 MHz, 2412 MHz, Low Channel, Port 3

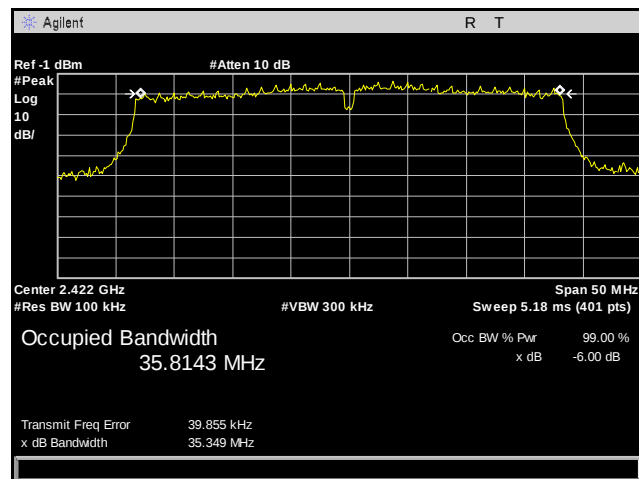


Plot 28. 6 dB Occupied Bandwidth, 802.11n 20 MHz, 2437 MHz, Mid Channel, Port 3

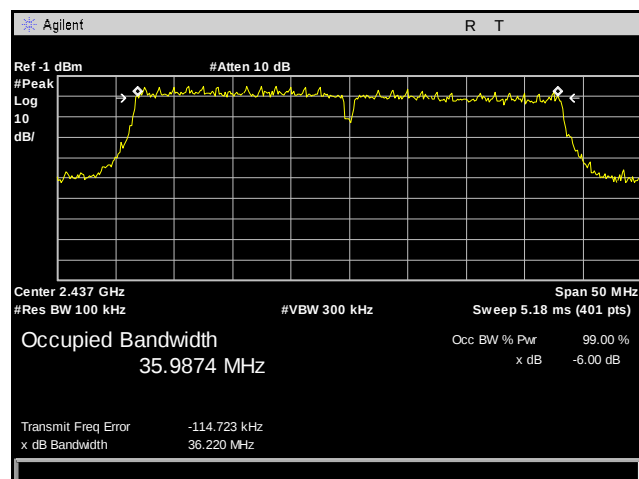


Plot 29. 6 dB Occupied Bandwidth, 802.11n 20 MHz, 2462 MHz, High Channel, Port 3

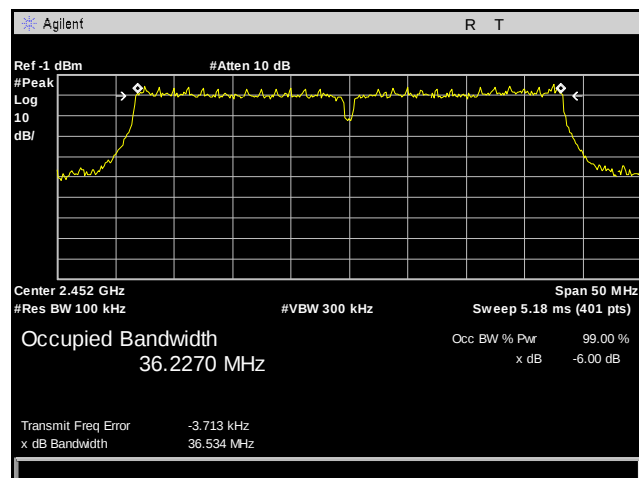
## 6 dB Occupied Bandwidth Test Results, 802.11n 40 MHz, Port 1, 2.4 GHz



Plot 30. 6 dB Occupied Bandwidth, 802.11n 40 MHz, 2422 MHz, Low Channel, Port 1

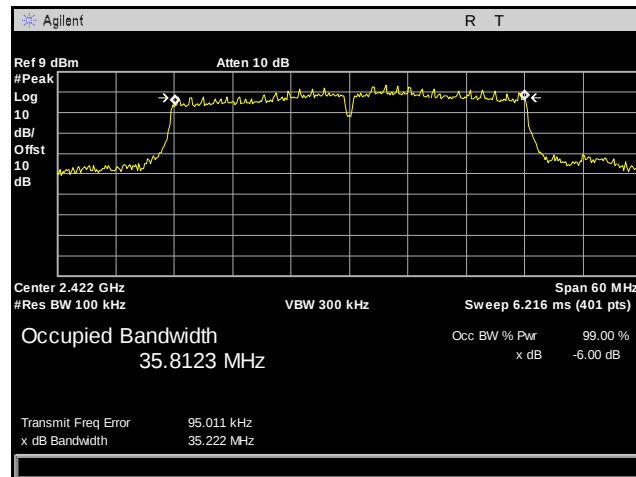


Plot 31. 6 dB Occupied Bandwidth, 802.11n 40 MHz, 2437 MHz, Mid Channel, Port 1

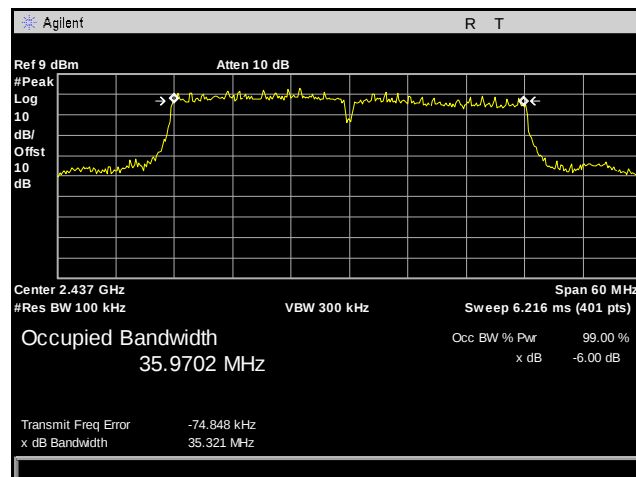


Plot 32. 6 dB Occupied Bandwidth, 802.11n 40 MHz, 2452 MHz, High Channel, Port 1

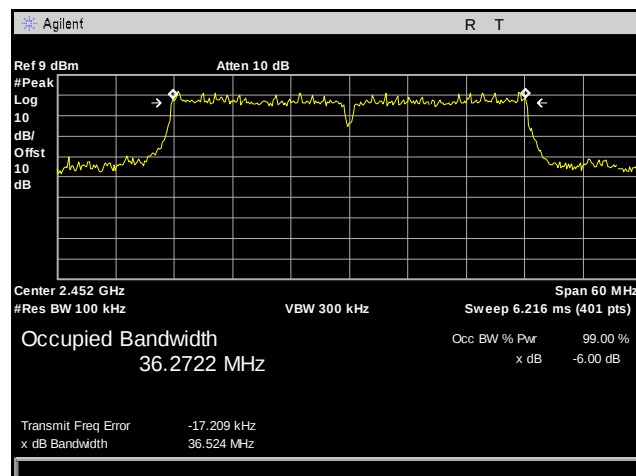
## 6 dB Occupied Bandwidth Test Results, 802.11n 40 MHz, Port 2, 2.4 GHz



Plot 33. 6 dB Occupied Bandwidth, 802.11n 40 MHz, 2422 MHz, Low Channel, Port 2

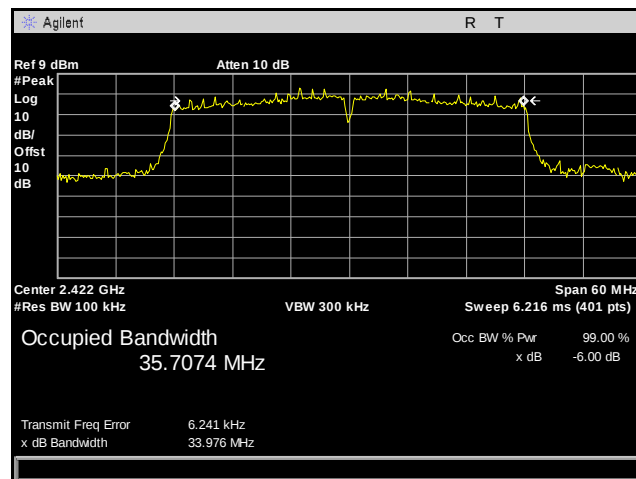


Plot 34. 6 dB Occupied Bandwidth, 802.11n 40 MHz, 2437 MHz, Mid Channel, Port 2

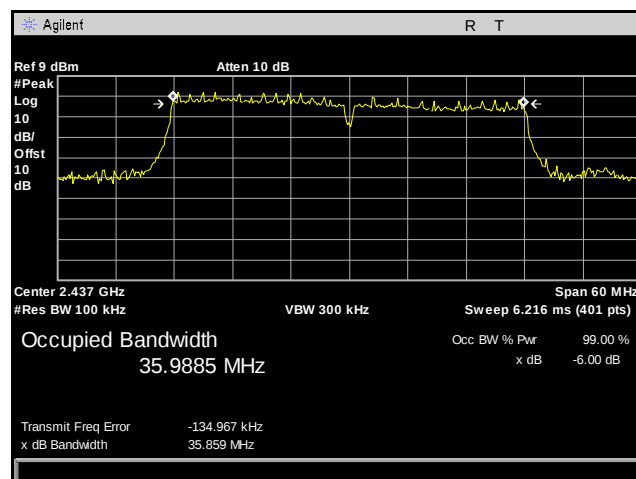


Plot 35. 6 dB Occupied Bandwidth, 802.11n 40 MHz, 2452 MHz, High Channel, Port 2

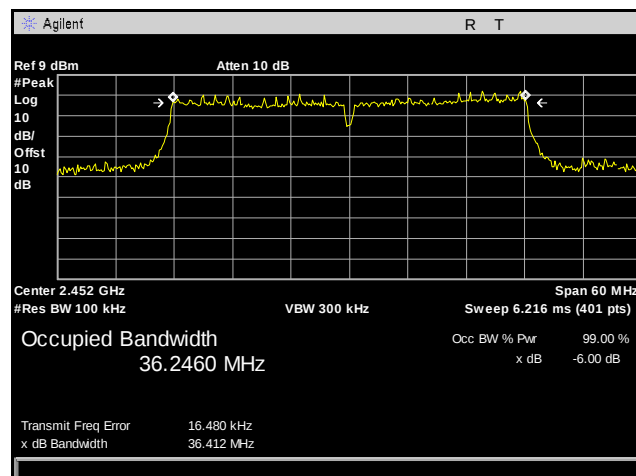
## 6 dB Occupied Bandwidth Test Results, 802.11n 40 MHz, Port 3, 2.4 GHz



Plot 36. 6 dB Occupied Bandwidth, 802.11n 40 MHz, 2422 MHz, Low Channel, Port 3

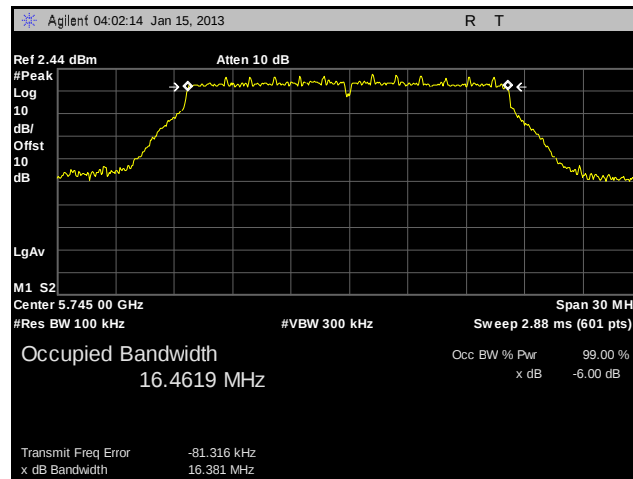


Plot 37. 6 dB Occupied Bandwidth, 802.11n 40 MHz, 2437 MHz, Mid Channel, Port 3

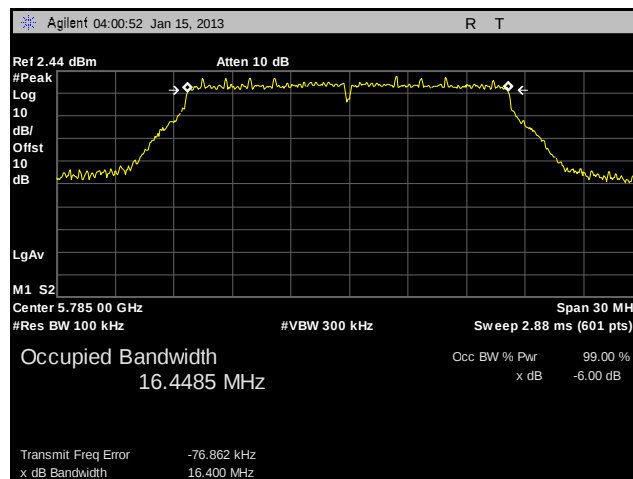


Plot 38. 6 dB Occupied Bandwidth, 802.11n 40 MHz, 2452 MHz, High Channel, Port 3

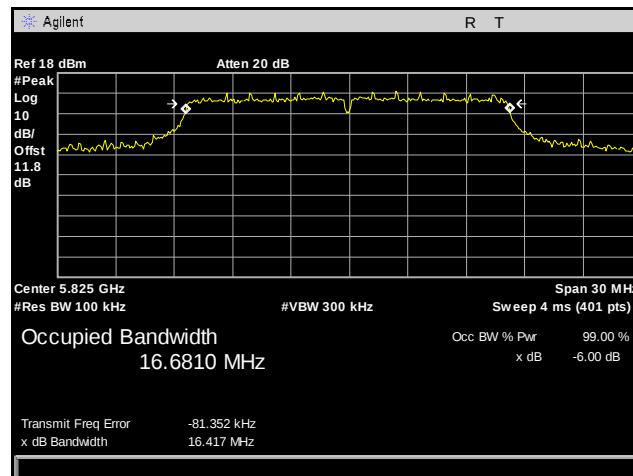
## 6 dB Occupied Bandwidth Test Results, 802.11a 20 MHz, Port 1, 5 GHz



Plot 39. 6 dB Occupied Bandwidth, 802.11a 20MHz, 5745 MHz, Low Channel, Port 1

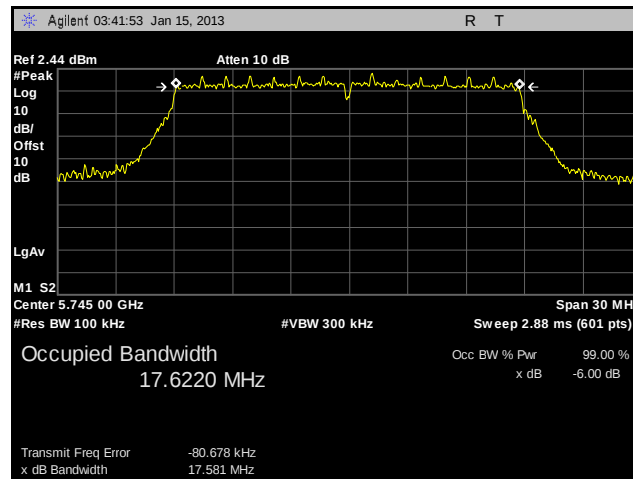


Plot 40. 6 dB Occupied Bandwidth, 802.11a 20MHz, 5785 MHz, Mid Channel, Port 1

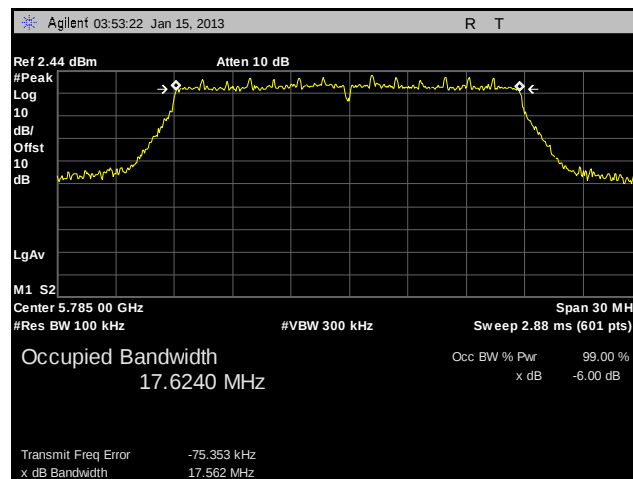


Plot 41. 6 dB Occupied Bandwidth, 802.11a 20MHz, 5825 MHz, High Channel, Port 1

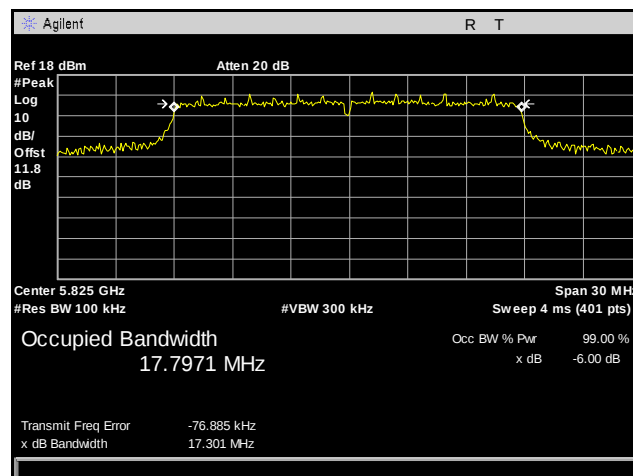
## 6 dB Occupied Bandwidth Test Results, 802.11n 20 MHz, Port 1, 5 GHz



Plot 42. 6 dB Occupied Bandwidth, 802.11n 20MHz, 5745 MHz, Low Channel, Port 1

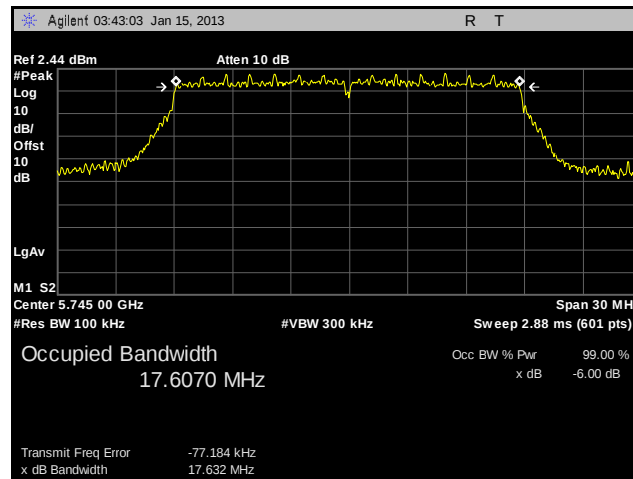


Plot 43. 6 dB Occupied Bandwidth, 802.11n 20MHz, 5785 MHz, Mid Channel, Port 1

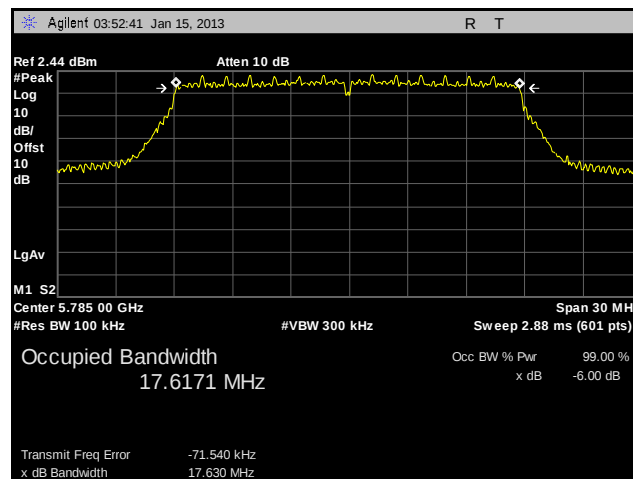


Plot 44. 6 dB Occupied Bandwidth, 802.11n 20MHz, 5825 MHz, High Channel, Port 1

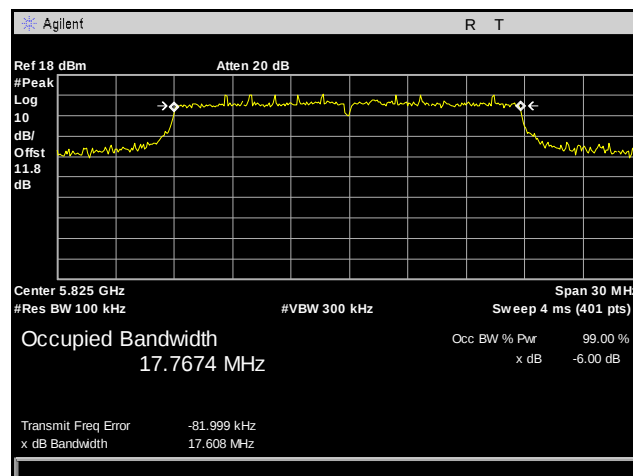
## 6 dB Occupied Bandwidth Test Results, 802.11n 20 MHz, Port 2, 5 GHz



Plot 45. 6 dB Occupied Bandwidth, 802.11n 20MHz, 5745 MHz, Low Channel, Port 2

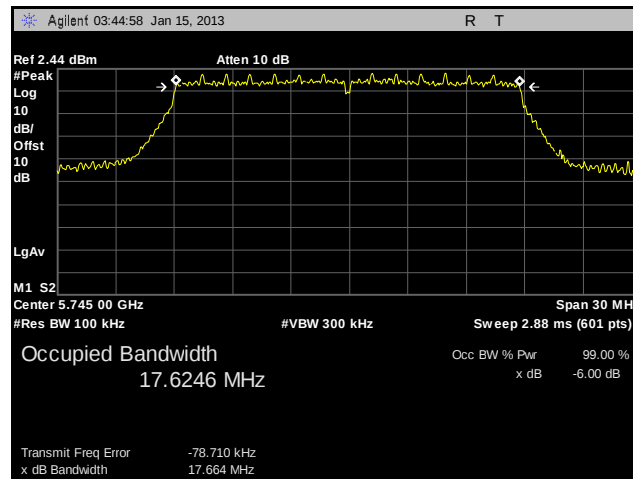


Plot 46. 6 dB Occupied Bandwidth, 802.11n 20MHz, 5785 MHz, Mid Channel, Port 2

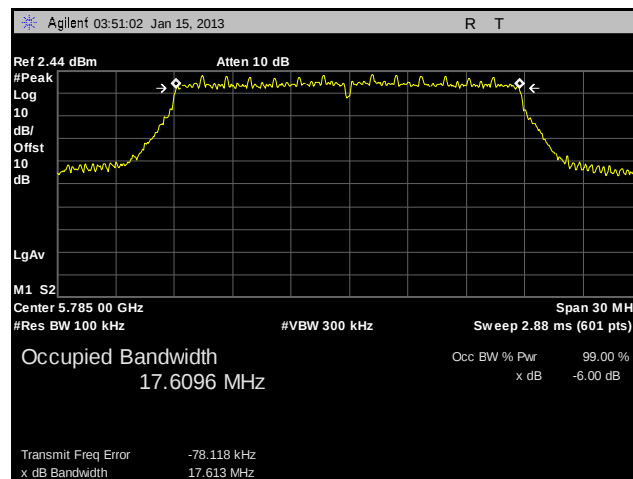


Plot 47. 6 dB Occupied Bandwidth, 802.11n 20MHz, 5825 MHz, High Channel, Port 2

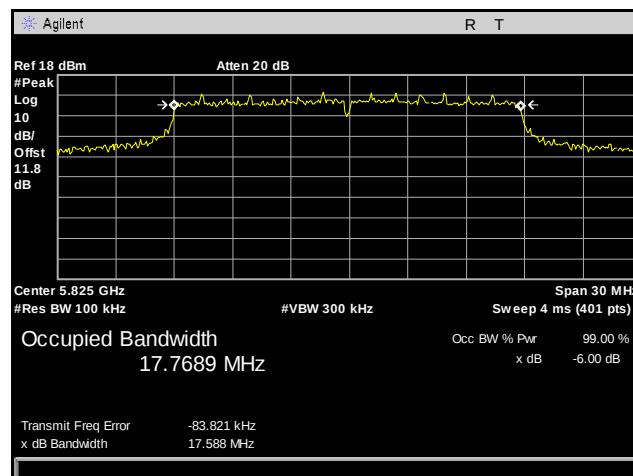
## 6 dB Occupied Bandwidth Test Results, 802.11n 20 MHz, Port 3, 5 GHz



Plot 48. 6 dB Occupied Bandwidth, 802.11n 20MHz, 5745 MHz, Low Channel, Port 3

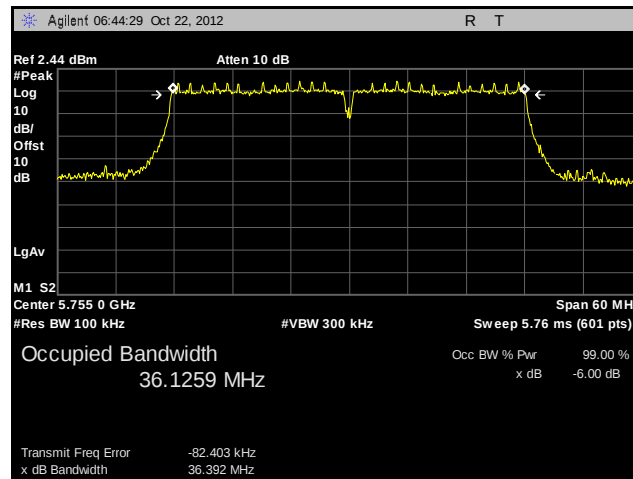


Plot 49. 6 dB Occupied Bandwidth, 802.11n 20MHz, 5785 MHz, Mid Channel, Port 3

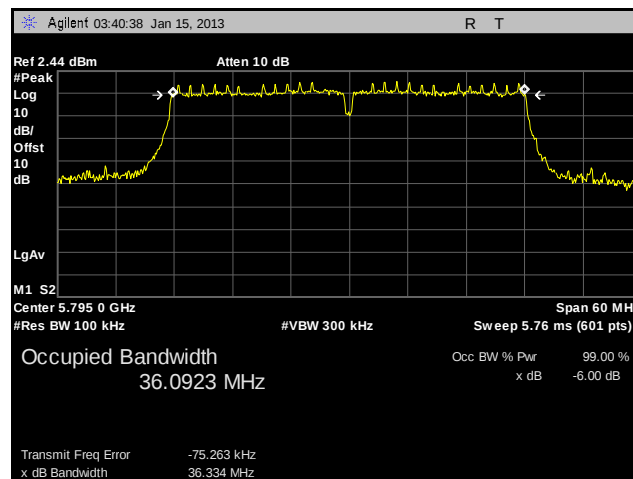


Plot 50. 6 dB Occupied Bandwidth, 802.11n 20MHz, 5825 MHz, High Channel, Port 3

## 6 dB Occupied Bandwidth Test Results, 802.11n 40 MHz, Port 1, 5 GHz

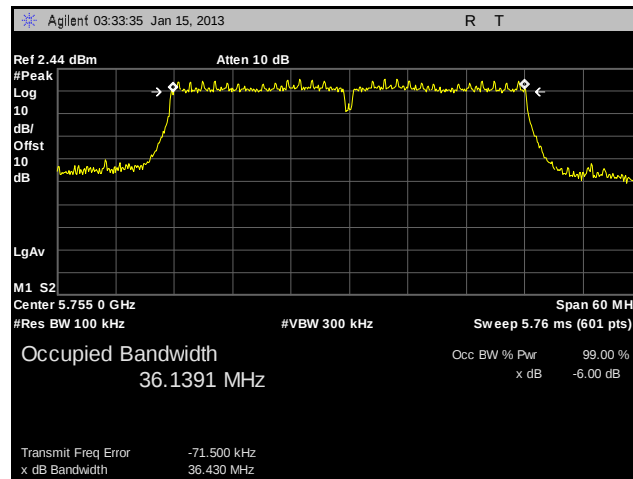


Plot 51. 6 dB Occupied Bandwidth, 802.11n 40MHz, 5755 MHz, Low Channel, Port 1

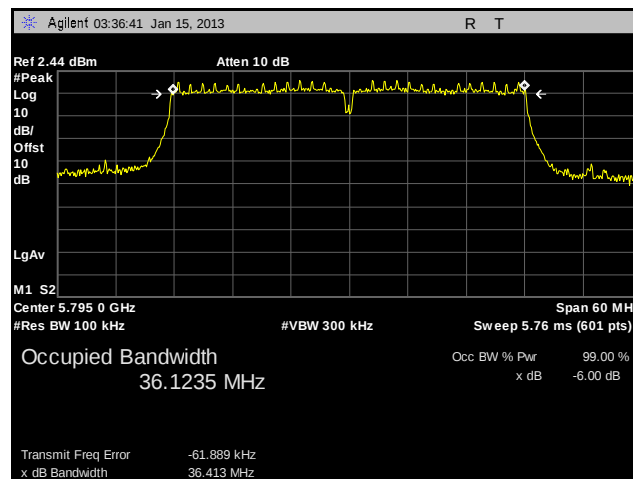


Plot 52. 6 dB Occupied Bandwidth, 802.11n 40MHz, 5795 MHz, High Channel, Port 1

## 6 dB Occupied Bandwidth Test Results, 802.11n 40 MHz, Port 2, 5 GHz

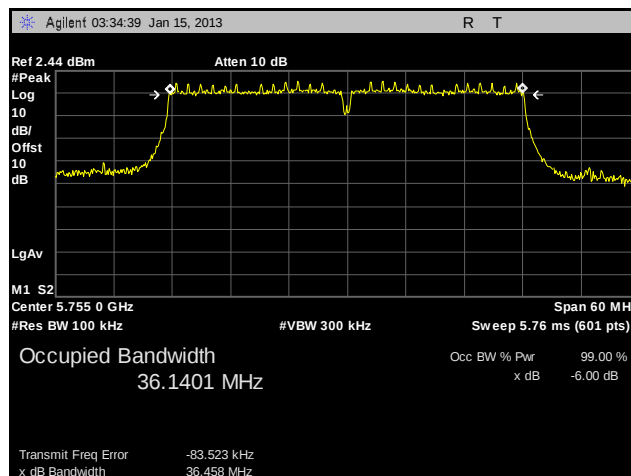


Plot 53. 6 dB Occupied Bandwidth, 802.11n 40MHz, 5755 MHz, Low Channel, Port 2

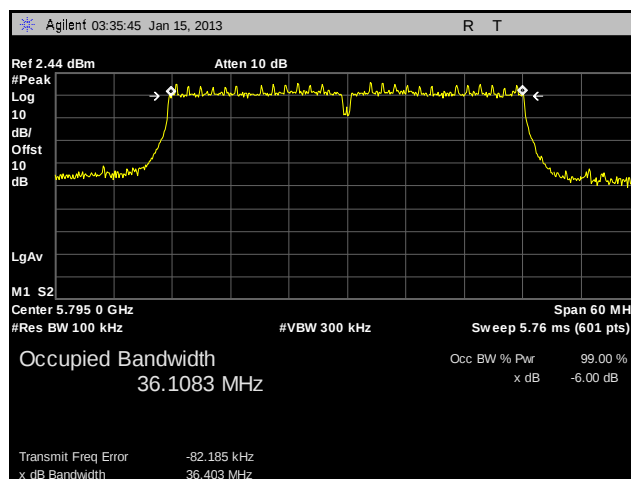


Plot 54. 6 dB Occupied Bandwidth, 802.11n 40MHz, 5795 MHz, High Channel, Port 2

## 6 dB Occupied Bandwidth Test Results, 802.11n 40 MHz, Port 3, 5 GHz

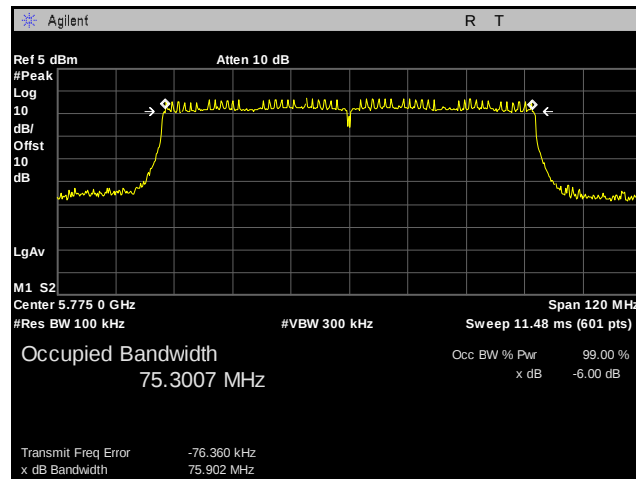


Plot 55. 6 dB Occupied Bandwidth, 802.11n 40MHz, 5755 MHz, Low Channel, Port 3

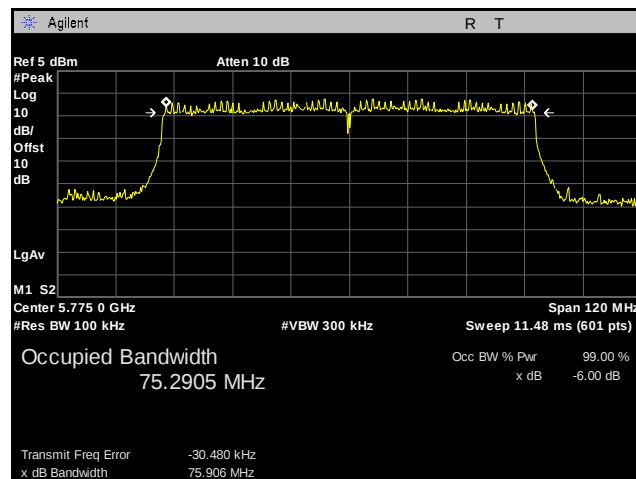


Plot 56. 6 dB Occupied Bandwidth, 802.11n 40MHz, 5795 MHz, High Channel, Port 3

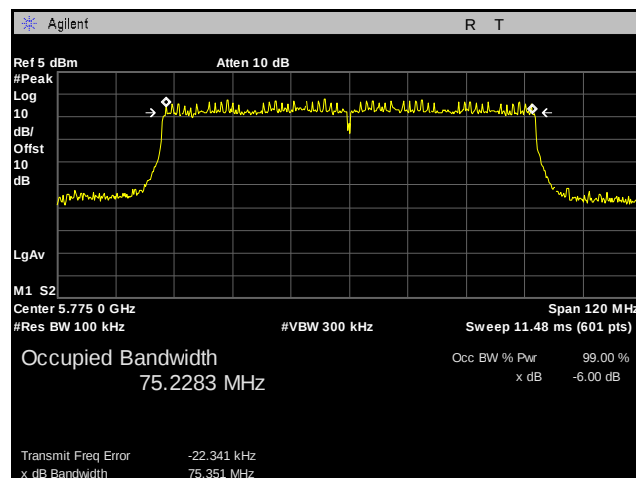
## 6 dB Occupied Bandwidth Test Results, 802.11n 80 MHz, 5 GHz



Plot 57. 6 dB Occupied Bandwidth, 802.11n 80 MHz, 5775 MHz, Port 1

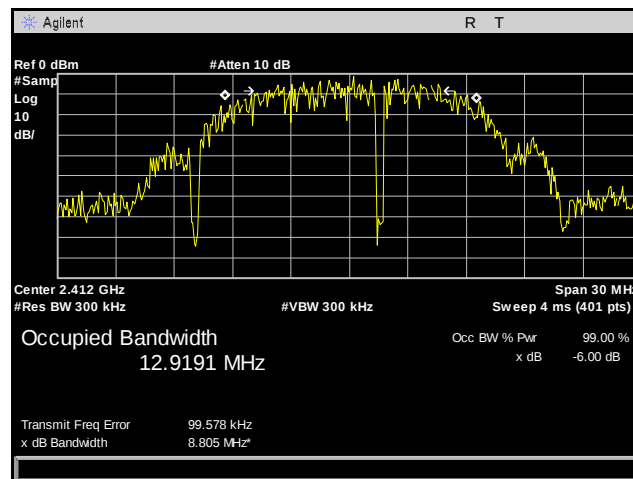


Plot 58. 6 dB Occupied Bandwidth, 802.11n 80 MHz, 5775 MHz, Port 2

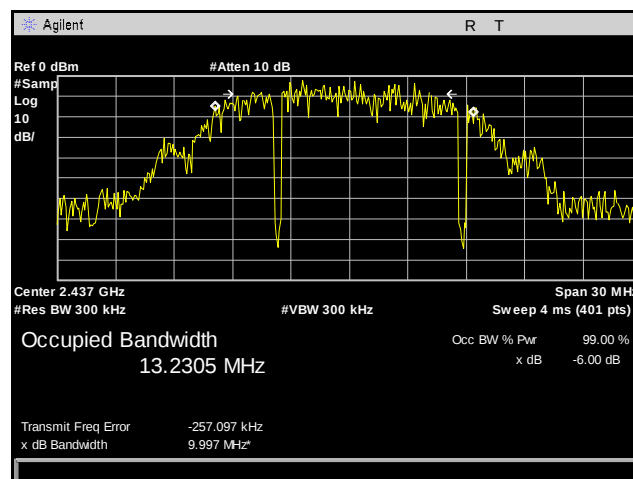


Plot 59. 6 dB Occupied Bandwidth, 802.11n 80 MHz, 5775 MHz, Port 3

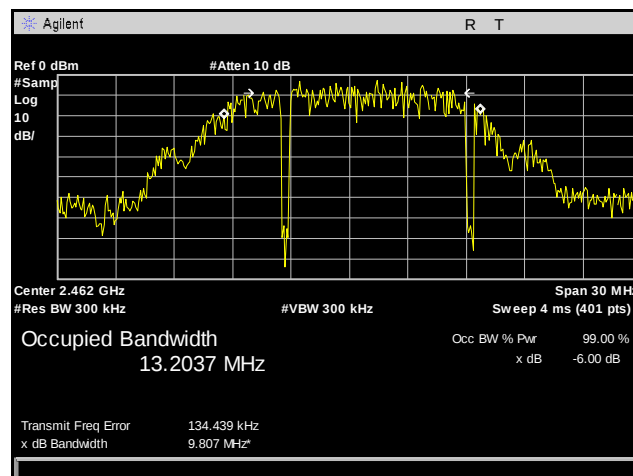
## 99% Occupied Bandwidth Test Results, 802.11b, 2.4 GHz



Plot 60. 99% Occupied Bandwidth, 802.11b, 2412 MHz, Low Channel

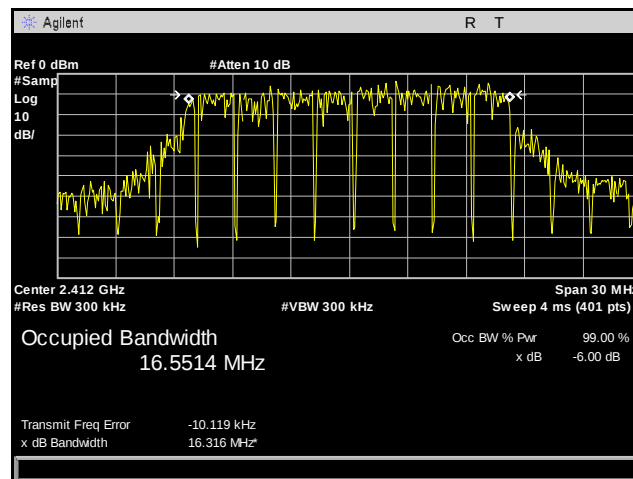


Plot 61. 99% Occupied Bandwidth, 802.11b, 2437 MHz, Mid Channel

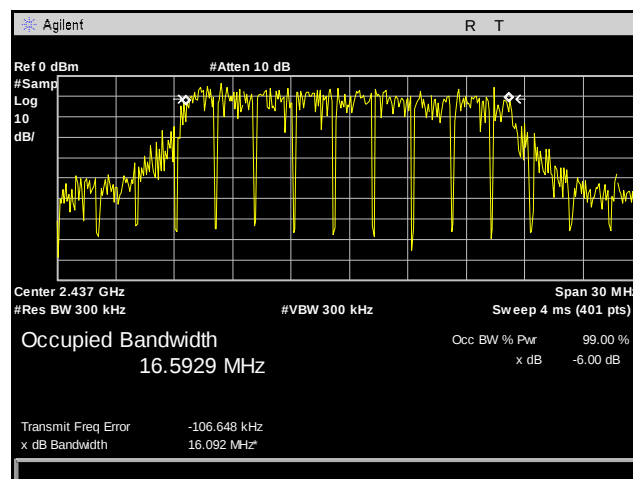


Plot 62. 99% Occupied Bandwidth, 802.11b, 2462 MHz, High Channel

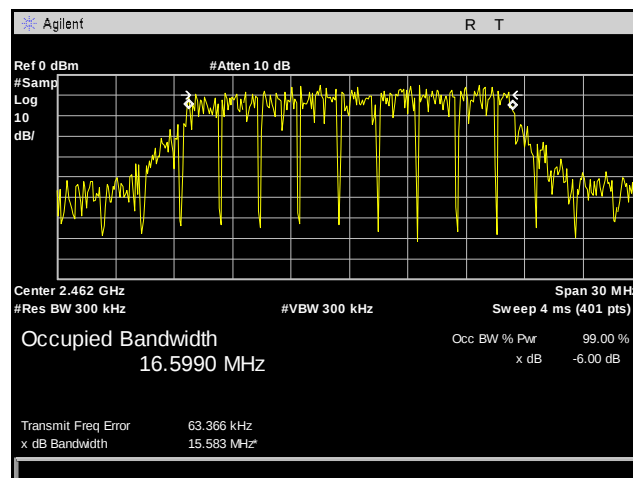
## 99% Occupied Bandwidth Test Results, 802.11g, 2.4 GHz



Plot 63. 99% Occupied Bandwidth, 802.11g, 2412 MHz, Low Channel

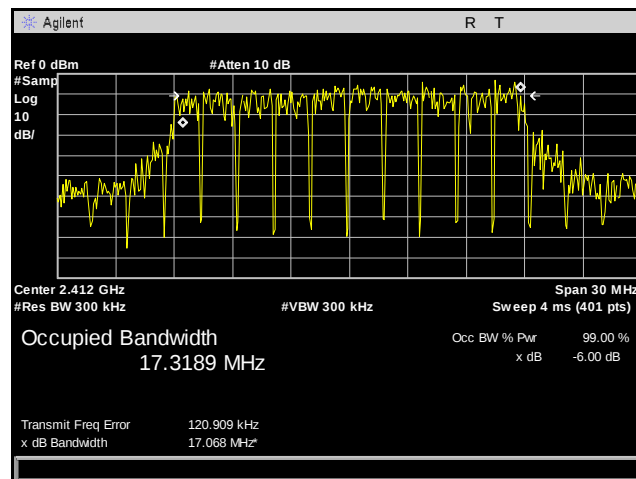


Plot 64. 99% Occupied Bandwidth, 802.11g, 2437 MHz, Mid Channel

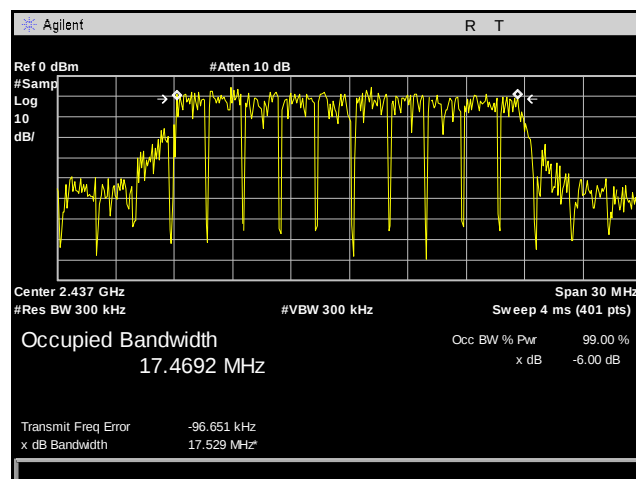


Plot 65. 99% Occupied Bandwidth, 802.11g, 2462 MHz, High Channel

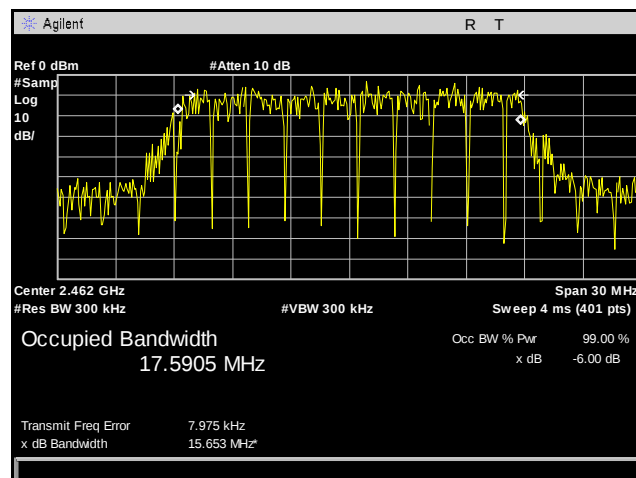
## 99% Occupied Bandwidth Test Results, 802.11n 20 MHz, Port 1, 2.4 GHz



Plot 66. 99% Occupied Bandwidth, 802.11n 20 MHz, 2412 MHz, Low Channel, Port 1

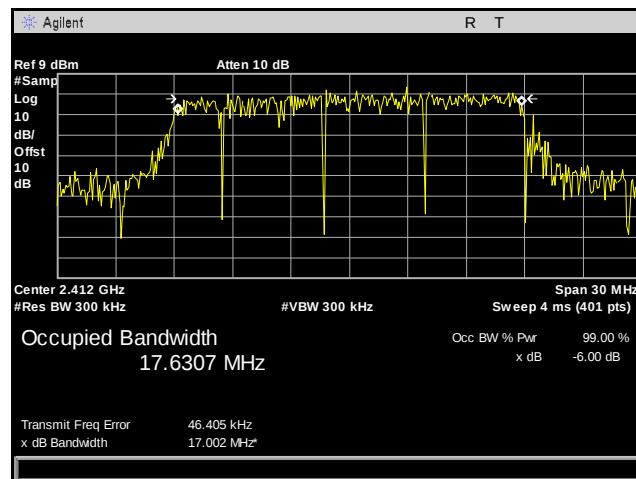


Plot 67. 99% Occupied Bandwidth, 802.11n 20 MHz, 2437 MHz, Mid Channel, Port 1

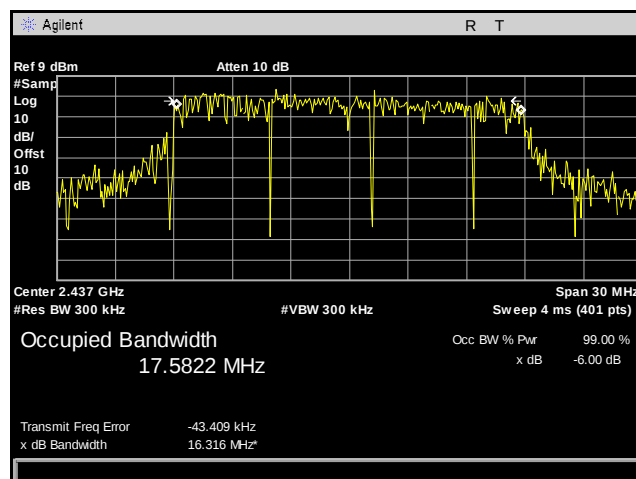


Plot 68. 99% Occupied Bandwidth, 802.11n 20 MHz, 2462 MHz, High Channel, Port 1

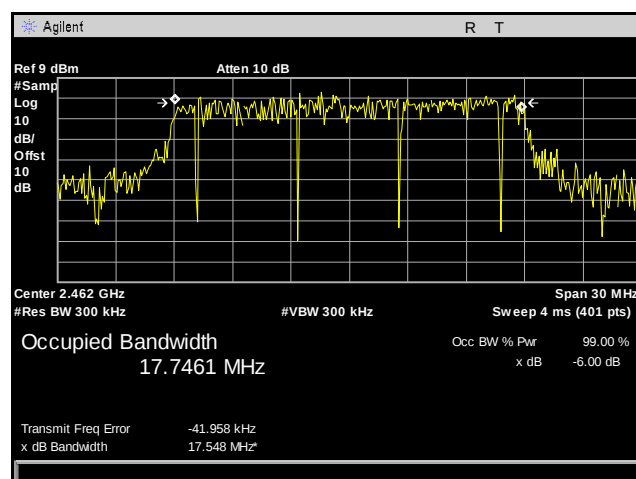
## 99% Occupied Bandwidth Test Results, 802.11n 20 MHz, Port 2, 2.4 GHz



Plot 69. 99% Occupied Bandwidth, 802.11n 20 MHz, 2412 MHz, Low Channel, Port 2

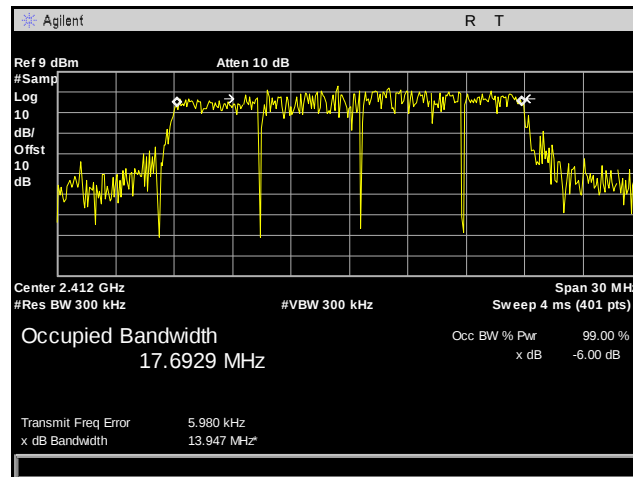


Plot 70. 99% Occupied Bandwidth, 802.11n 20 MHz, 2437 MHz, Mid Channel, Port 2

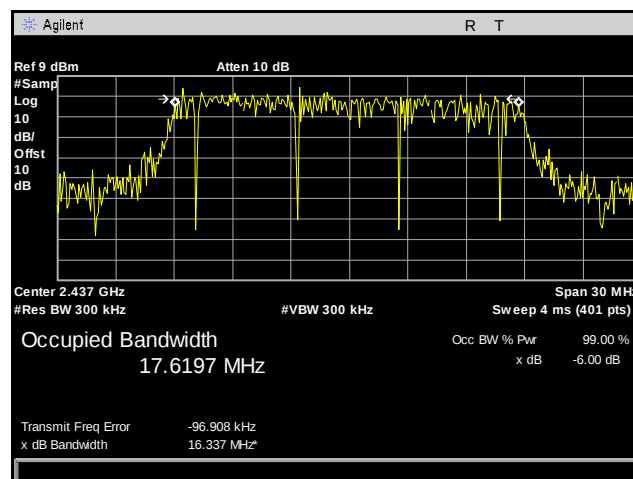


Plot 71. 99% Occupied Bandwidth, 802.11n 20 MHz, 2462 MHz, High Channel, Port 2

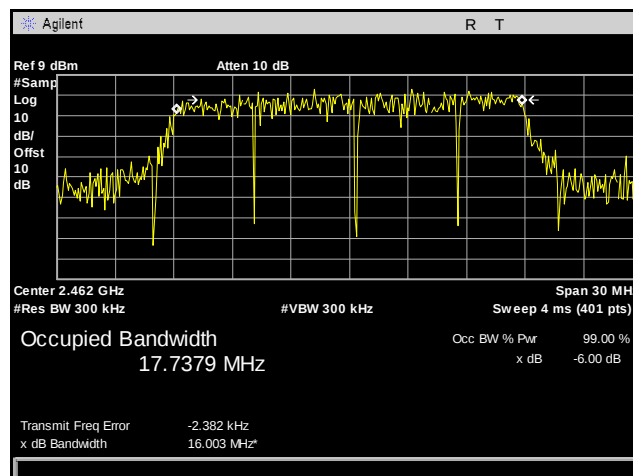
## 99% Occupied Bandwidth Test Results, 802.11n 20 MHz, Port 3, 2.4 GHz



Plot 72. 99% Occupied Bandwidth, 802.11n 20 MHz, 2412 MHz, Low Channel, Port 3

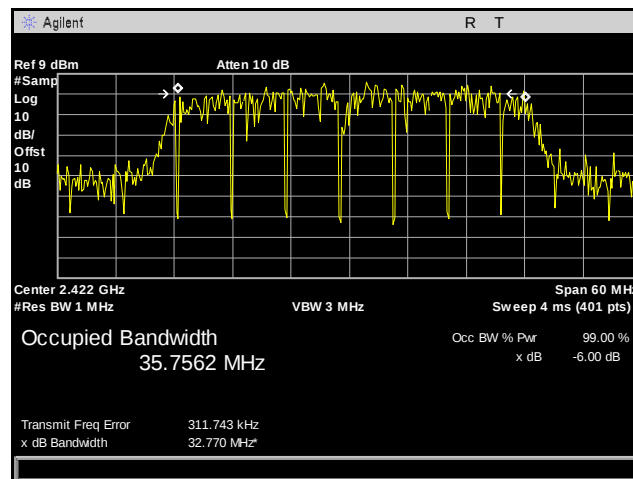


Plot 73. 99% Occupied Bandwidth, 802.11n 20 MHz, 2437 MHz, Mid Channel, Port 3

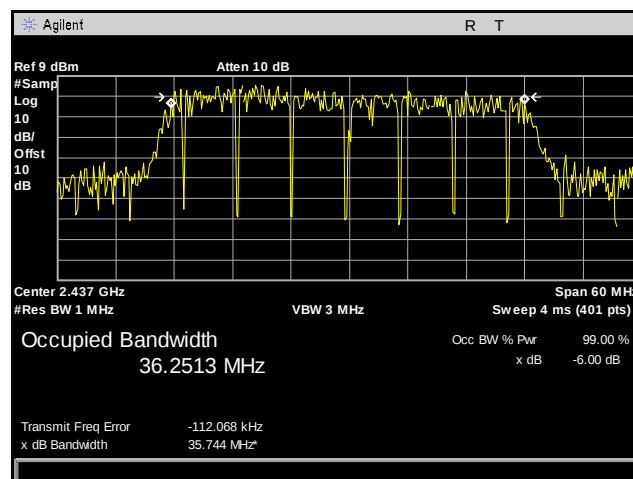


Plot 74. 99% Occupied Bandwidth, 802.11n 20 MHz, 2462 MHz, High Channel, Port 3

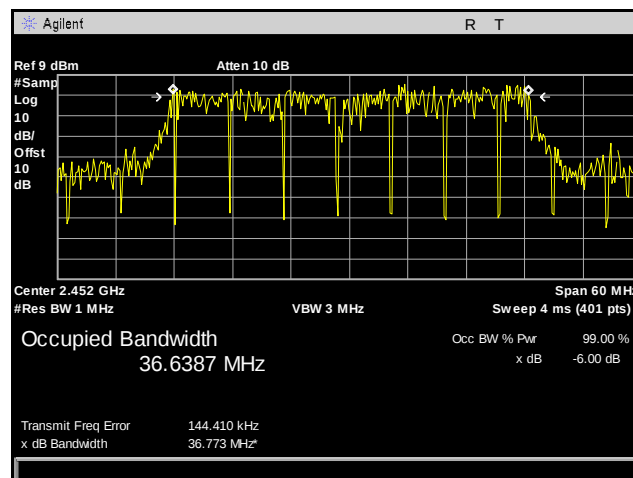
## 99% Occupied Bandwidth Test Results, 802.11n 40 MHz, Port 1, 2.4 GHz



Plot 75. 99% Occupied Bandwidth, 802.11n 40 MHz, 2422 MHz, Low Channel, Port 1

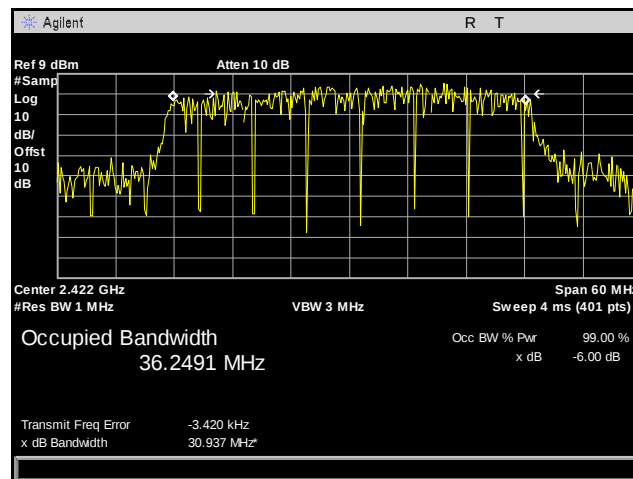


Plot 76. 99% Occupied Bandwidth, 802.11n 40 MHz, 2437 MHz, Mid Channel, Port 1

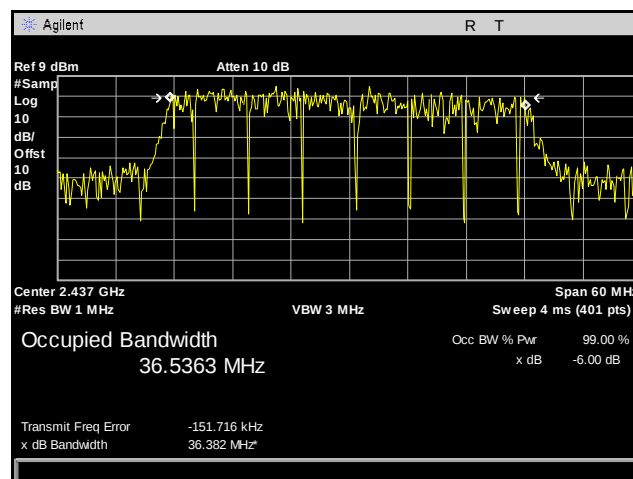


Plot 77. 99% Occupied Bandwidth, 802.11n 40 MHz, 2452 MHz, High Channel, Port 1

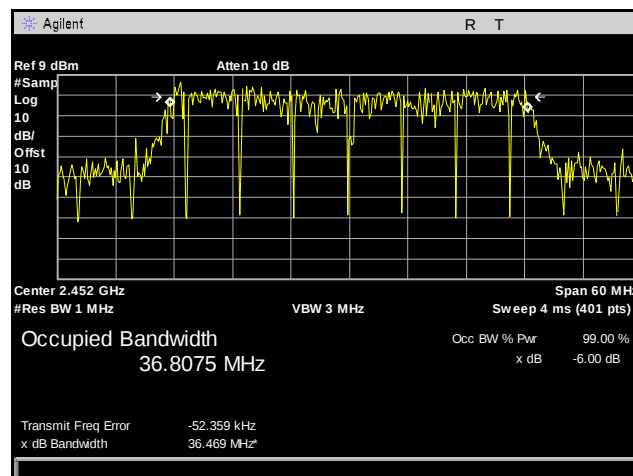
## 99% Occupied Bandwidth Test Results, 802.11n 40 MHz, Port 2, 2.4 GHz



Plot 78. 99% Occupied Bandwidth, 802.11n 40 MHz, 2422 MHz, Low Channel, Port 2

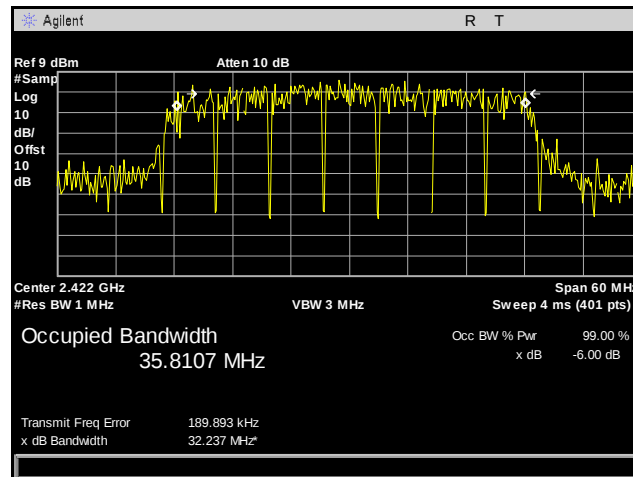


Plot 79. 99% Occupied Bandwidth, 802.11n 40 MHz, 2437 MHz, Mid Channel, Port 2

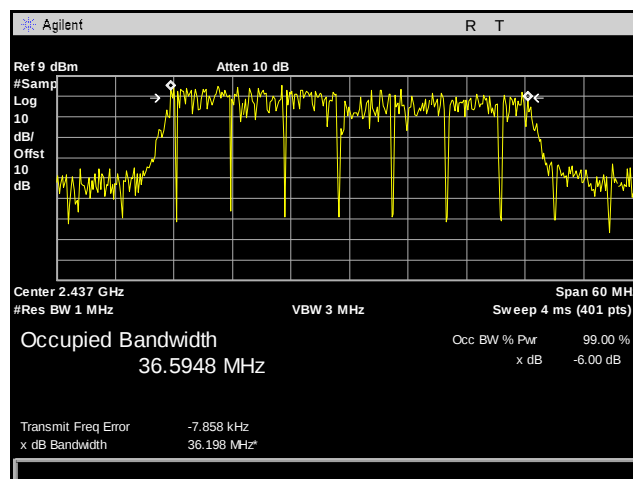


Plot 80. 99% Occupied Bandwidth, 802.11n 40 MHz, 2452 MHz, High Channel, Port 2

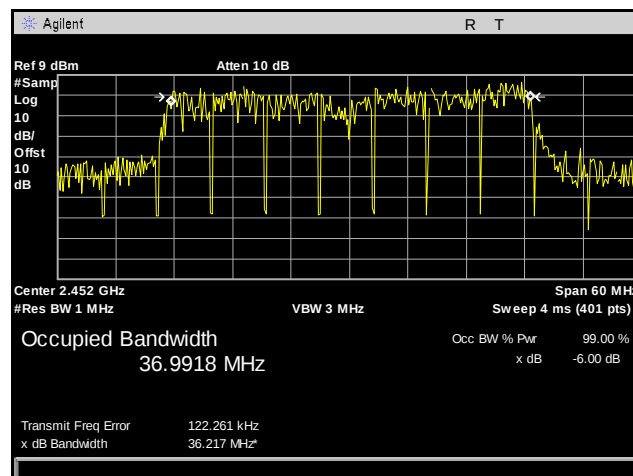
## 99% Occupied Bandwidth Test Results, 802.11n 40 MHz, Port 3, 2.4 GHz



Plot 81. 99% Occupied Bandwidth, 802.11n 40 MHz, 2422 MHz, Low Channel, Port 3

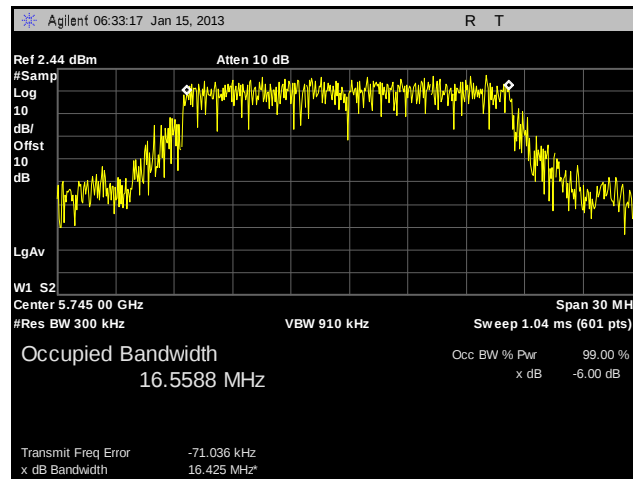


Plot 82. 99% Occupied Bandwidth, 802.11n 40 MHz, 2437 MHz, Mid Channel, Port 3

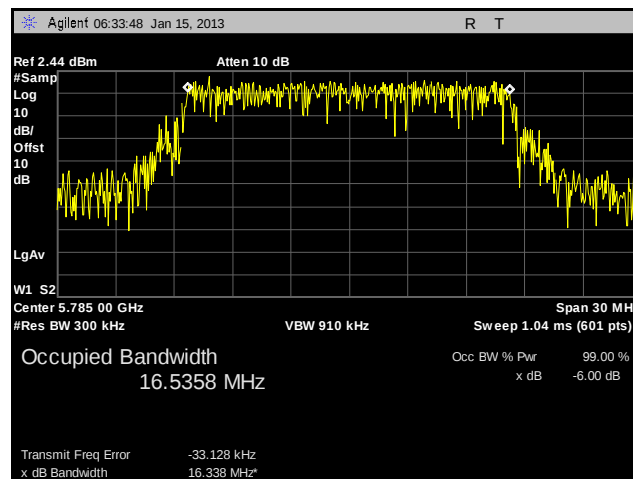


Plot 83. 99% Occupied Bandwidth, 802.11n 40 MHz, 2452 MHz, High Channel, Port 3

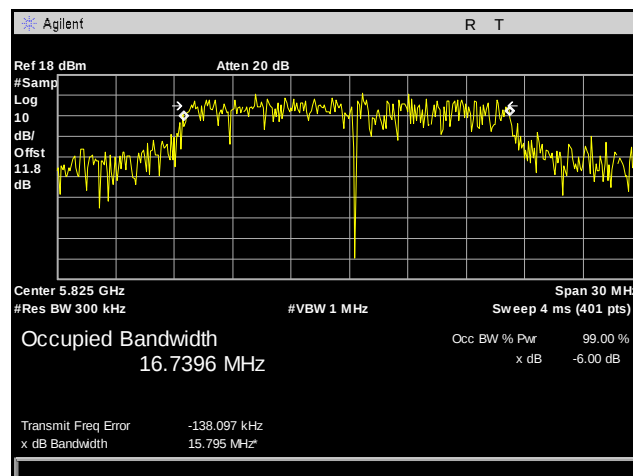
## 99% Occupied Bandwidth Test Results, 802.11a 20 MHz, Port 1, 5 GHz



Plot 84. 99% Occupied Bandwidth, 802.11a 20MHz, 5745 MHz, Low Channel, Port 1

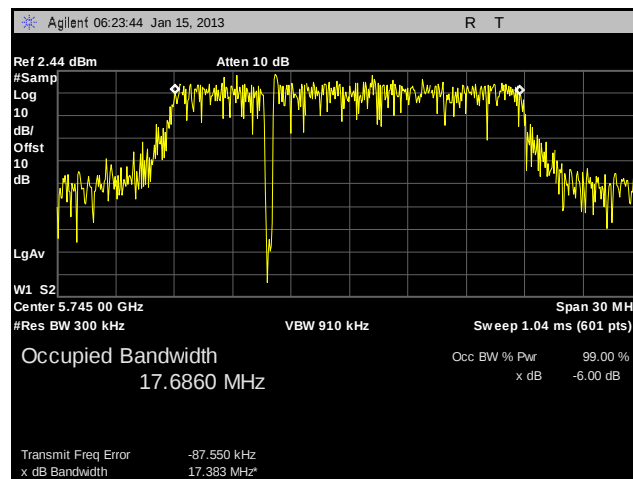


Plot 85. 99% Occupied Bandwidth, 802.11a 20MHz, 5785 MHz, Mid Channel, Port 1

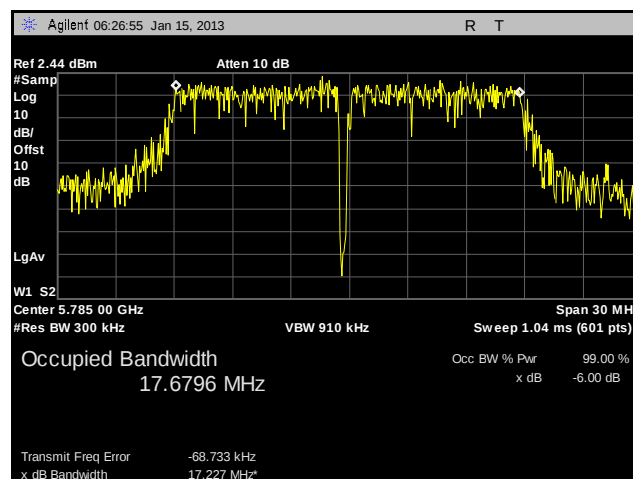


Plot 86. 99% Occupied Bandwidth, 802.11a 20MHz, 5825 MHz, High Channel, Port 1

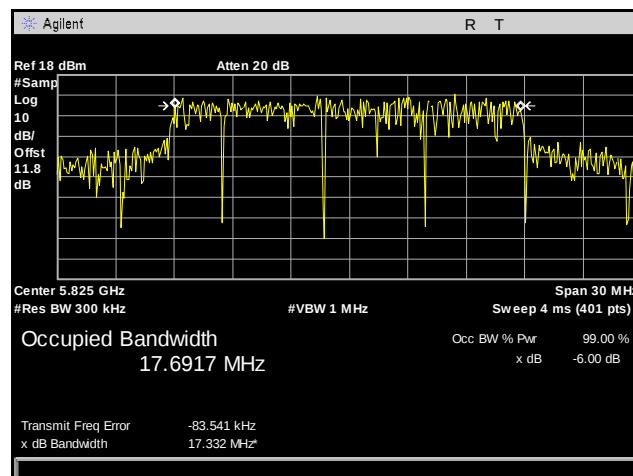
## 99% Occupied Bandwidth Test Results, 802.11n 20 MHz, Port 1, 5 GHz



Plot 87. 99% Occupied Bandwidth, 802.11n 20MHz, 5745 MHz, Low Channel, Port 1

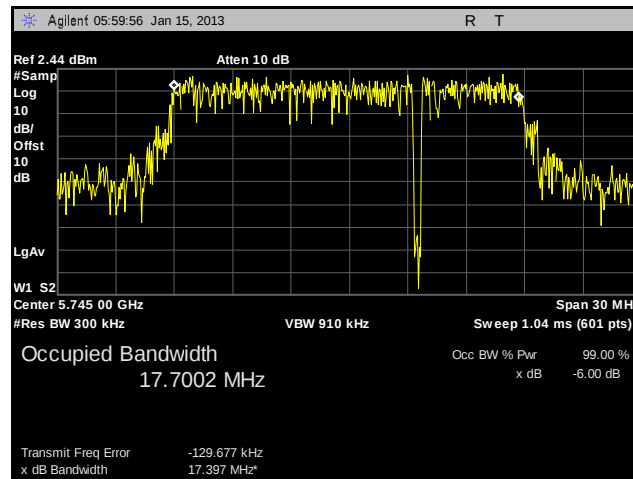


Plot 88. 99% Occupied Bandwidth, 802.11n 20MHz, 5785 MHz, Mid Channel, Port 1

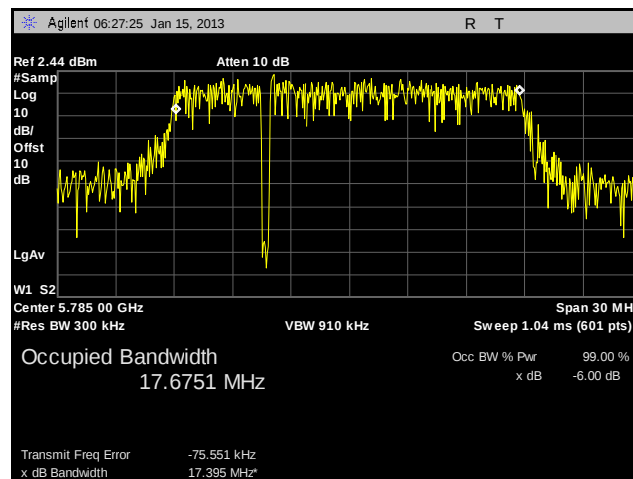


Plot 89. 99% Occupied Bandwidth, 802.11n 20MHz, 5825 MHz, High Channel, Port 1

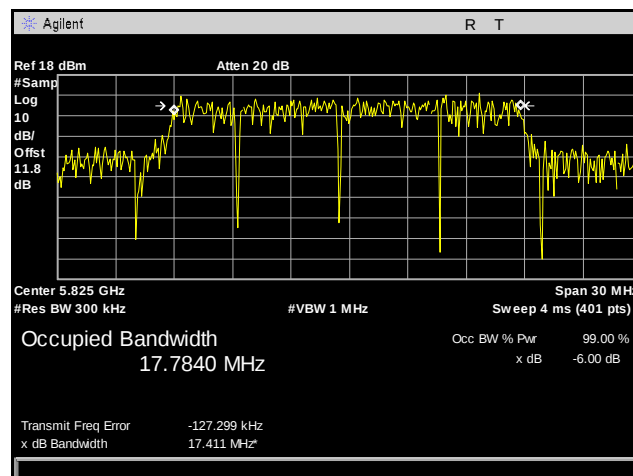
## 99% Occupied Bandwidth Test Results, 802.11n 20 MHz, Port 2, 5 GHz



Plot 90. 99% Occupied Bandwidth, 802.11n 20MHz, 5745 MHz, Low Channel, Port 2

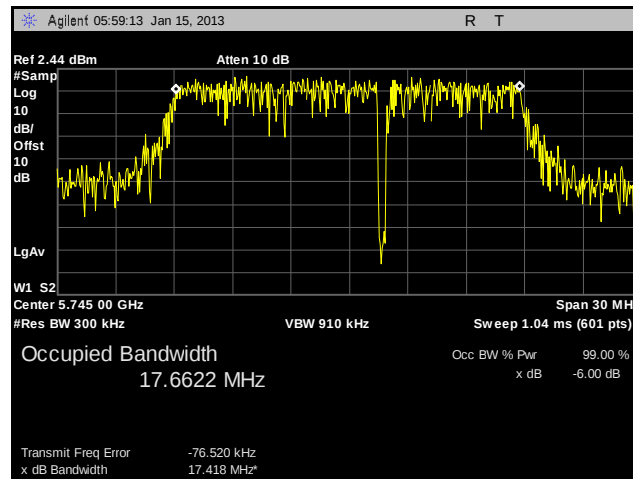


Plot 91. 99% Occupied Bandwidth, 802.11n 20MHz, 5785 MHz, Mid Channel, Port 2

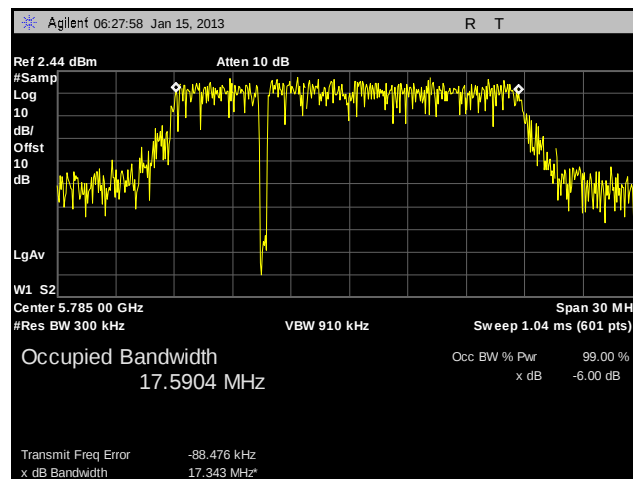


Plot 92. 99% Occupied Bandwidth, 802.11n 20MHz, 5825 MHz, High Channel, Port 2

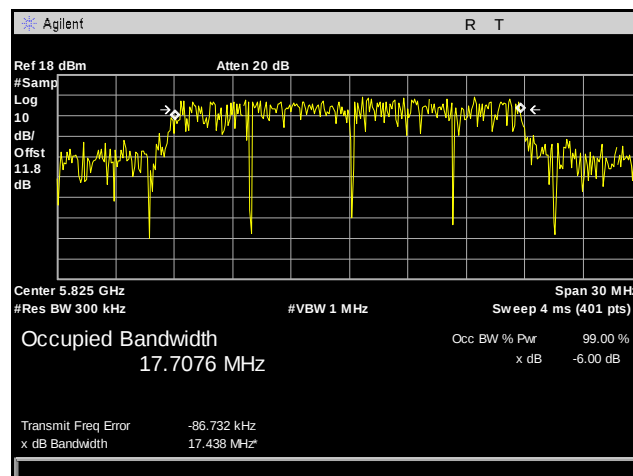
## 99% Occupied Bandwidth Test Results, 802.11n 20 MHz, Port 3, 5 GHz



Plot 93. 99% Occupied Bandwidth, 802.11n 20MHz, 5745 MHz, Low Channel, Port 3

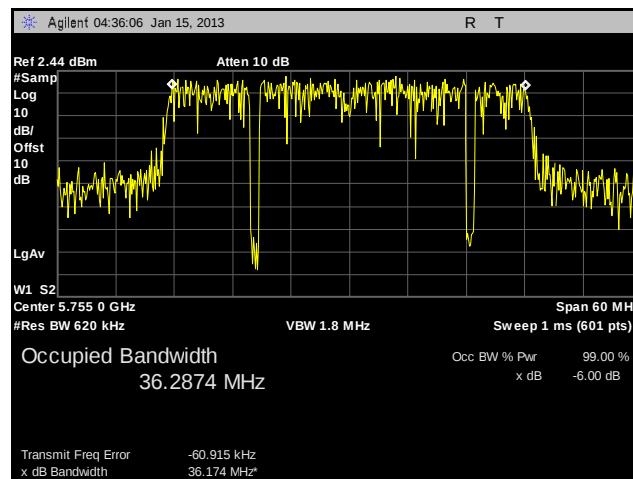


Plot 94. 99% Occupied Bandwidth, 802.11n 20MHz, 5785 MHz, Mid Channel, Port 3

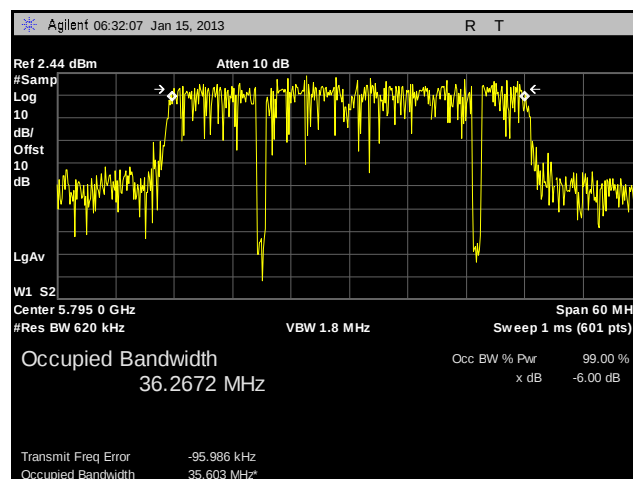


Plot 95. 99% Occupied Bandwidth, 802.11n 20MHz, 5825 MHz, High Channel, Port 3

## 99% Occupied Bandwidth Test Results, 802.11n 40 MHz, Port 1, 5 GHz

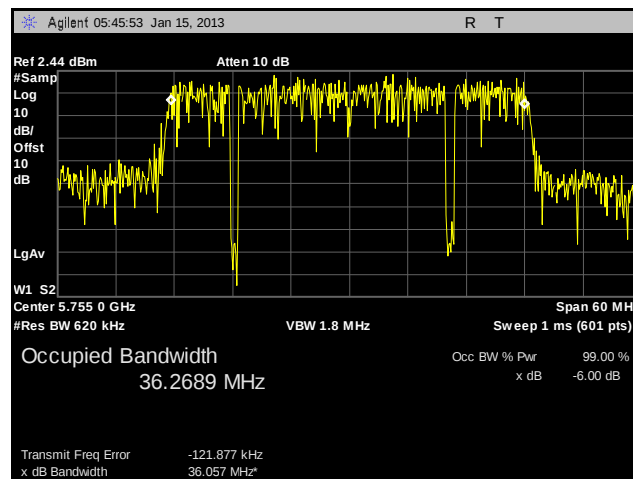


Plot 96. 99% Occupied Bandwidth, 802.11n 40MHz, 5755 MHz, Low Channel, Port 1

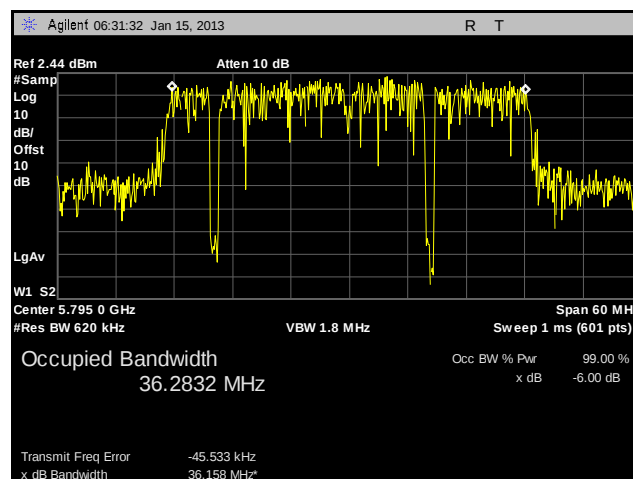


Plot 97. 99% Occupied Bandwidth, 802.11n 40MHz, 5795 MHz, High Channel, Port 1

## 99% Occupied Bandwidth Test Results, 802.11n 40 MHz, Port 2, 5 GHz

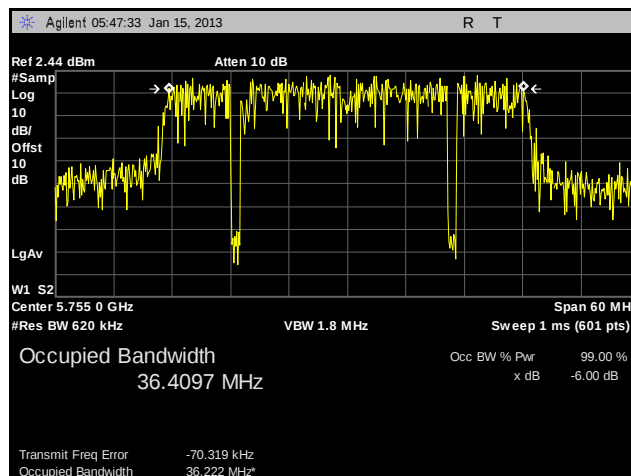


Plot 98. 99% Occupied Bandwidth, 802.11n 40MHz, 5755 MHz, Low Channel, Port 2

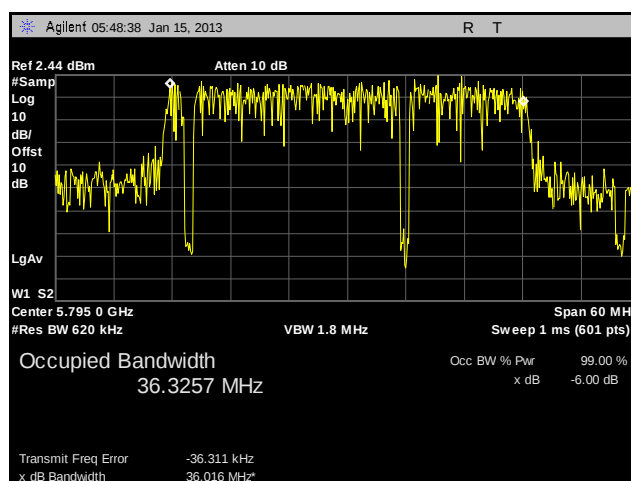


Plot 99. 99% Occupied Bandwidth, 802.11n 40MHz, 5795 MHz, High Channel, Port 2

## 99% Occupied Bandwidth Test Results, 802.11n 40 MHz, Port 3, 5 GHz

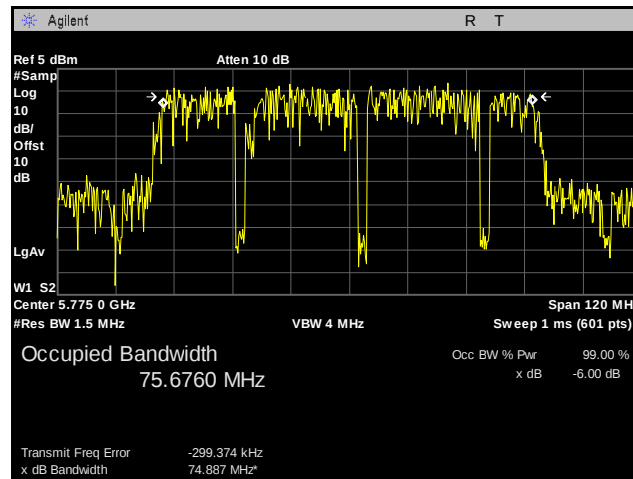


Plot 100. 99% Occupied Bandwidth, 802.11n 40MHz, 5755 MHz, Low Channel, Port 3

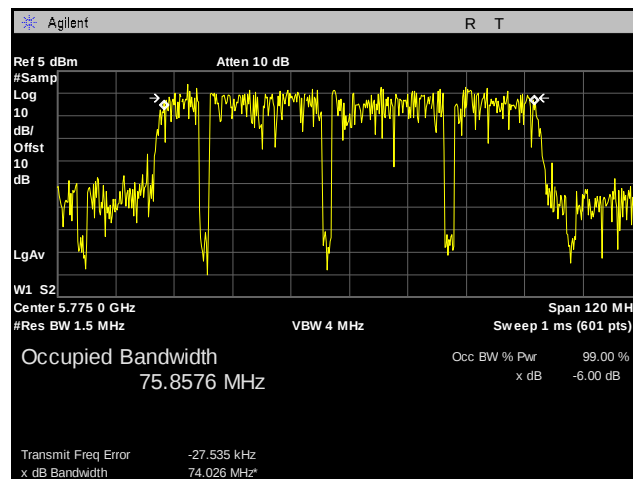


Plot 101. 99% Occupied Bandwidth, 802.11n 40MHz, 5795 MHz, High Channel, Port 3

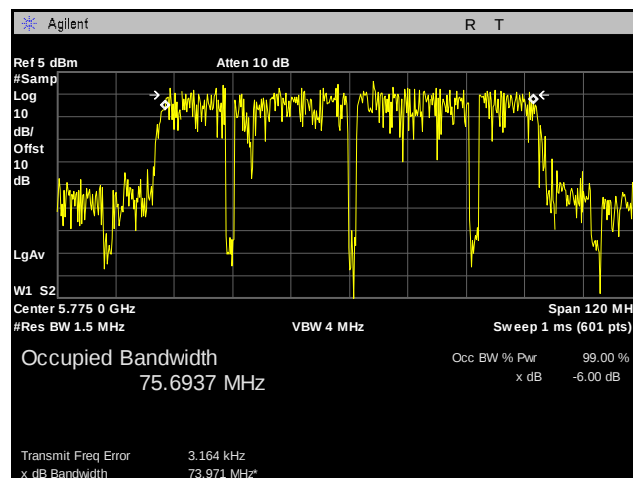
## 99% Occupied Bandwidth Test Results, 802.11n 80 MHz, 5 GHz



Plot 102. 99% Occupied Bandwidth, 802.11n 80 MHz, 5775 MHz, Port 1



Plot 103. 99% Occupied Bandwidth, 802.11n 80 MHz, 5775 MHz, Port 2



Plot 104. 99% Occupied Bandwidth, 802.11n 80 MHz, 5775 MHz, Port 3

## Electromagnetic Compatibility Criteria for Intentional Radiators

### § 15.247(b) Peak Power Output

**Test Requirements:** §15.247(b): The maximum peak output power of the intentional radiator shall not exceed the following:

| Digital Transmission Systems<br>(MHz) | Output Limit<br>(Watts) |
|---------------------------------------|-------------------------|
| 902-928                               | 1.000                   |
| 2400-2483.5                           | 1.000                   |
| 5725- 5850                            | 1.000                   |

**Table 25. Output Power Requirements from §15.247(b)**

§15.247(c): if transmitting antennas of directional gain greater than 6 dBi are used the peak output power from the intentional radiator shall be reduced below the stated values in the Table 25, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Systems operating in the 2400 – 2483.5 MHz band and using a point to point application may employ transmitting antennas with directional gain greater than 6 dBi provided the maximum peak output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

Systems operating in the 5725 – 5850 MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6 dBi without any corresponding reduction in transmitter peak output power.

**Test Procedure:** The transmitter was connected to a calibrated spectrum analyzer. The EUT was measured at the low, mid and high channels of each band at the maximum power level. In 5.8GHz band, the lowest gain antenna of 2dBi was used to measure the output power. Due to no restrictions in the 5.8GHz band that would lower the output power, a calculation was used to normalize the power for 4dBi, 6dBi, and 7dBi antenna per customer request. When both radios are operating simultaneously in the same band the output power will be reduced by 3 dB from what is shown in the following tables.

**Test Results:** The EUT was compliant with the Peak Power Output limits of §15.247(b).

**Test Engineer(s):** Anderson Soungpanya

**Test Date(s):** 01/29/13 – 01/30/13



**Figure 3. Peak Power Output Test Setup**

## Peak Power Output Test Results

| Peak Conducted Output Power – Ceiling Antenna |                 |                 |                                |
|-----------------------------------------------|-----------------|-----------------|--------------------------------|
|                                               | Carrier Channel | Frequency (MHz) | Measured Peak Output Power dBm |
| 802.11b                                       | Low             | 2412            | 23.06                          |
|                                               | Mid             | 2437            | 22.72                          |
|                                               | High            | 2462            | 22.73                          |
| 802.11g                                       | Low             | 2412            | 23.31                          |
|                                               | Mid             | 2437            | 24.43                          |
|                                               | High            | 2462            | 21.98                          |
| 802.11n 20 MHz Port 1                         | Low             | 2412            | 21.65                          |
|                                               | Mid             | 2437            | 23.35                          |
|                                               | High            | 2462            | 20.99                          |
| 802.11n 20 MHz Port 2                         | Low             | 2412            | 21.51                          |
|                                               | Mid             | 2437            | 23.37                          |
|                                               | High            | 2462            | 21.02                          |
| 802.11n 20 MHz Port 3                         | Low             | 2412            | 21.82                          |
|                                               | Mid             | 2437            | 23.11                          |
|                                               | High            | 2462            | 21.15                          |
| 802.11n 40 MHz Port 1                         | Low             | 2422            | 20.82                          |
|                                               | Mid             | 2437            | 22.48                          |
|                                               | High            | 2452            | 19.52                          |
| 802.11n 40 MHz Port 2                         | Low             | 2422            | 20.82                          |
|                                               | Mid             | 2437            | 22.64                          |
|                                               | High            | 2452            | 19.80                          |
| 802.11n 40 MHz Port 3                         | Low             | 2422            | 20.75                          |
|                                               | Mid             | 2437            | 22.52                          |
|                                               | High            | 2452            | 19.40                          |

**Table 26. Peak Power Output, Test Results, 3dBi Ceiling Antenna, 2.4 GHz**

| Summed Peak Conducted Output Power – Ceiling Antenna |                 |                 |                                |
|------------------------------------------------------|-----------------|-----------------|--------------------------------|
|                                                      | Carrier Channel | Frequency (MHz) | Measured Peak Output Power dBm |
| 802.11n 20 MHz Summed                                | Low             | 2412            | 26.43                          |
|                                                      | Mid             | 2437            | 28.05                          |
|                                                      | High            | 2462            | 25.83                          |
| 802.11n 40 MHz Summed                                | Low             | 2422            | 25.57                          |
|                                                      | Mid             | 2437            | 27.32                          |
|                                                      | High            | 2452            | 24.35                          |

**Table 27. Summed Peak Output Power, Test Results, 3dBi Ceiling Antenna**

| Peak Conducted Output Power – Omni/Patch Antenna |                 |                 |                                |
|--------------------------------------------------|-----------------|-----------------|--------------------------------|
|                                                  | Carrier Channel | Frequency (MHz) | Measured Peak Output Power dBm |
| 802.11b                                          | Low             | 2412            | 23.06                          |
|                                                  | Mid             | 2437            | 22.72                          |
|                                                  | High            | 2462            | 22.77                          |
| 802.11g                                          | Low             | 2412            | 22.30                          |
|                                                  | Mid             | 2437            | 24.44                          |
|                                                  | High            | 2462            | 21.27                          |
| 802.11n 20 MHz Port 1                            | Low             | 2412            | 19.29                          |
|                                                  | Mid             | 2437            | 19.37                          |
|                                                  | High            | 2462            | 19.20                          |
| 802.11n 20 MHz Port 2                            | Low             | 2412            | 19.30                          |
|                                                  | Mid             | 2437            | 19.39                          |
|                                                  | High            | 2462            | 19.41                          |
| 802.11n 20 MHz Port 3                            | Low             | 2412            | 19.12                          |
|                                                  | Mid             | 2437            | 19.31                          |
|                                                  | High            | 2462            | 19.38                          |
| 802.11n 40 MHz Port 1                            | Low             | 2422            | 19.15                          |
|                                                  | Mid             | 2437            | 19.21                          |
|                                                  | High            | 2452            | 18.96                          |
| 802.11n 40 MHz Port 2                            | Low             | 2422            | 19.00                          |
|                                                  | Mid             | 2437            | 19.11                          |
|                                                  | High            | 2452            | 19.10                          |
| 802.11n 40 MHz Port 3                            | Low             | 2422            | 19.14                          |
|                                                  | Mid             | 2437            | 19.11                          |
|                                                  | High            | 2452            | 19.20                          |

**Table 28. Peak Power Output, Test Results, 6dBi Omni/Patch Antenna, 2.4 GHz**

| Summed Conducted Output Power – Omni/Patch Antenna |                 |                 |                                |
|----------------------------------------------------|-----------------|-----------------|--------------------------------|
|                                                    | Carrier Channel | Frequency (MHz) | Measured Peak Output Power dBm |
| 802.11n 20 MHz Summed                              | Low             | 2412            | 24.01                          |
|                                                    | Mid             | 2437            | 24.13                          |
|                                                    | High            | 2462            | 24.10                          |
| 802.11n 40 MHz Summed                              | Low             | 2422            | 23.87                          |
|                                                    | Mid             | 2437            | 23.91                          |
|                                                    | High            | 2452            | 23.86                          |

**Table 29. Summed Peak Output Power, Test Results, 6dBi Omni/Patch Antenna**

| Peak Conducted Output Power – 2 dBi Antenna |                 |                 |                                |
|---------------------------------------------|-----------------|-----------------|--------------------------------|
|                                             | Carrier Channel | Frequency (MHz) | Measured Peak Output Power dBm |
| 802.11a                                     | Low             | 5745            | 23.57                          |
|                                             | Mid             | 5785            | 23.82                          |
|                                             | High            | 5825            | 23.93                          |
| 802.11n 20 MHz Port 1                       | Low             | 5745            | 23.72                          |
|                                             | Mid             | 5785            | 23.70                          |
|                                             | High            | 5825            | 23.71                          |
| 802.11n 20 MHz Port 2                       | Low             | 5745            | 23.75                          |
|                                             | Mid             | 5785            | 23.51                          |
|                                             | High            | 5825            | 23.64                          |
| 802.11n 20 MHz Port 3                       | Low             | 5745            | 23.65                          |
|                                             | Mid             | 5785            | 23.73                          |
|                                             | High            | 5825            | 24.00                          |
| 802.11n 40 MHz Port 1                       | Low             | 5755            | 23.67                          |
|                                             | High            | 5795            | 23.61                          |
| 802.11n 40 MHz Port 2                       | Low             | 5755            | 23.43                          |
|                                             | High            | 5795            | 23.33                          |
| 802.11n 40 MHz Port 3                       | Low             | 5755            | 23.58                          |
|                                             | High            | 5795            | 23.93                          |
| 802.11n 80 MHz Port 1                       | --              | 5775            | 23.31                          |
| 802.11n 80 MHz Port 2                       | --              | 5775            | 22.78                          |
| 802.11n 80 MHz Port 3                       | --              | 5775            | 23.14                          |

**Table 30. Peak Power Output, Test Results, 2 dBi Antenna, 5 GHz**

| Summed Conducted Output Power – 2 dBi Antenna |                 |                 |                                |
|-----------------------------------------------|-----------------|-----------------|--------------------------------|
|                                               | Carrier Channel | Frequency (MHz) | Measured Peak Output Power dBm |
| 802.11n 20 MHz Port                           | Low             | 5745            | 28.48                          |
|                                               | Mid             | 5785            | 28.42                          |
|                                               | High            | 5825            | 28.56                          |
| 802.11n 40 MHz Port                           | Low             | 5755            | 28.33                          |
|                                               | High            | 5795            | 28.40                          |
| 802.11n 80 MHz Port                           | --              | 5775            | 27.85                          |

**Table 31. Summed Peak Output Power, Test Results, 2 dBi Antenna**

| Peak Conducted Output Power – 4 dBi Ceiling Antenna |                 |                 |                                |
|-----------------------------------------------------|-----------------|-----------------|--------------------------------|
|                                                     | Carrier Channel | Frequency (MHz) | Measured Peak Output Power dBm |
| 802.11a                                             | Low             | 5745            | 21.57                          |
|                                                     | Mid             | 5785            | 21.82                          |
|                                                     | High            | 5825            | 21.93                          |
| 802.11n 20 MHz Port 1                               | Low             | 5745            | 21.72                          |
|                                                     | Mid             | 5785            | 21.7                           |
|                                                     | High            | 5825            | 21.71                          |
| 802.11n 20 MHz Port 2                               | Low             | 5745            | 21.75                          |
|                                                     | Mid             | 5785            | 21.51                          |
|                                                     | High            | 5825            | 21.64                          |
| 802.11n 20 MHz Port 3                               | Low             | 5745            | 21.65                          |
|                                                     | Mid             | 5785            | 21.73                          |
|                                                     | High            | 5825            | 22                             |
| 802.11n 40 MHz Port 1                               | Low             | 5755            | 21.67                          |
|                                                     | High            | 5795            | 21.61                          |
| 802.11n 40 MHz Port 2                               | Low             | 5755            | 21.43                          |
|                                                     | High            | 5795            | 21.33                          |
| 802.11n 40 MHz Port 3                               | Low             | 5755            | 21.58                          |
|                                                     | High            | 5795            | 21.93                          |
| 802.11n 80 MHz Port 1                               | --              | 5775            | 21.31                          |
| 802.11n 80 MHz Port 2                               | --              | 5775            | 20.78                          |
| 802.11n 80 MHz Port 3                               | --              | 5775            | 21.14                          |

**Table 32. Peak Power Output, Test Results, 4 Ceiling dBi Antenna, 5 GHz**

| Summed Conducted Output Power – 4 dBi Ceiling Antenna |                 |                 |                                |
|-------------------------------------------------------|-----------------|-----------------|--------------------------------|
|                                                       | Carrier Channel | Frequency (MHz) | Measured Peak Output Power dBm |
| 802.11n 20 MHz Port                                   | Low             | 5745            | 26.48                          |
|                                                       | Mid             | 5785            | 26.42                          |
|                                                       | High            | 5825            | 26.56                          |
| 802.11n 40 MHz Port                                   | Low             | 5755            | 26.33                          |
|                                                       | High            | 5795            | 26.4                           |
| 802.11n 80 MHz Port                                   | --              | 5775            | 25.85                          |

**Table 33. Summed Peak Output Power, Test Results, 4 dBi Ceiling Antenna**

| Peak Conducted Output Power – 6 dBi Omni Antenna |                 |                 |                                |
|--------------------------------------------------|-----------------|-----------------|--------------------------------|
|                                                  | Carrier Channel | Frequency (MHz) | Measured Peak Output Power dBm |
| 802.11a                                          | Low             | 5745            | 19.57                          |
|                                                  | Mid             | 5785            | 19.82                          |
|                                                  | High            | 5825            | 19.93                          |
| 802.11n 20 MHz Port 1                            | Low             | 5745            | 19.72                          |
|                                                  | Mid             | 5785            | 19.7                           |
|                                                  | High            | 5825            | 19.71                          |
| 802.11n 20 MHz Port 2                            | Low             | 5745            | 19.75                          |
|                                                  | Mid             | 5785            | 19.51                          |
|                                                  | High            | 5825            | 19.64                          |
| 802.11n 20 MHz Port 3                            | Low             | 5745            | 19.65                          |
|                                                  | Mid             | 5785            | 19.73                          |
|                                                  | High            | 5825            | 20                             |
| 802.11n 40 MHz Port 1                            | Low             | 5755            | 19.67                          |
|                                                  | High            | 5795            | 19.61                          |
| 802.11n 40 MHz Port 2                            | Low             | 5755            | 19.43                          |
|                                                  | High            | 5795            | 19.33                          |
| 802.11n 40 MHz Port 3                            | Low             | 5755            | 19.58                          |
|                                                  | High            | 5795            | 19.93                          |
| 802.11n 80 MHz Port 1                            | --              | 5775            | 19.31                          |
| 802.11n 80 MHz Port 2                            | --              | 5775            | 18.78                          |
| 802.11n 80 MHz Port 3                            | --              | 5775            | 19.14                          |

**Table 34. Peak Power Output, Test Results, 6 dBi Omni Antenna, 5 GHz**

| Summed Conducted Output Power – 6 dBi Omni Antenna |                 |                 |                                |
|----------------------------------------------------|-----------------|-----------------|--------------------------------|
|                                                    | Carrier Channel | Frequency (MHz) | Measured Peak Output Power dBm |
| 802.11n 20 MHz Port                                | Low             | 5745            | 24.48                          |
|                                                    | Mid             | 5785            | 24.42                          |
|                                                    | High            | 5825            | 24.56                          |
| 802.11n 40 MHz Port                                | Low             | 5755            | 24.33                          |
|                                                    | High            | 5795            | 24.4                           |
| 802.11n 80 MHz Port                                | --              | 5775            | 23.85                          |

**Table 35. Summed Peak Output Power, Test Results, 6 dBi Omni Antenna**

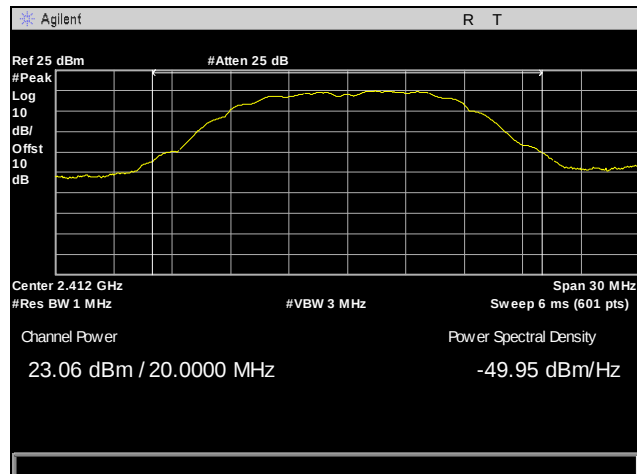
| Peak Conducted Output Power – 7 dBi Patch Antenna |                 |                 |                                |
|---------------------------------------------------|-----------------|-----------------|--------------------------------|
|                                                   | Carrier Channel | Frequency (MHz) | Measured Peak Output Power dBm |
| 802.11a                                           | Low             | 5745            | 18.57                          |
|                                                   | Mid             | 5785            | 18.82                          |
|                                                   | High            | 5825            | 18.93                          |
| 802.11n 20 MHz Port 1                             | Low             | 5745            | 18.72                          |
|                                                   | Mid             | 5785            | 18.7                           |
|                                                   | High            | 5825            | 18.71                          |
| 802.11n 20 MHz Port 2                             | Low             | 5745            | 18.75                          |
|                                                   | Mid             | 5785            | 18.51                          |
|                                                   | High            | 5825            | 18.64                          |
| 802.11n 20 MHz Port 3                             | Low             | 5745            | 18.65                          |
|                                                   | Mid             | 5785            | 18.73                          |
|                                                   | High            | 5825            | 19                             |
| 802.11n 40 MHz Port 1                             | Low             | 5755            | 18.67                          |
|                                                   | High            | 5795            | 18.61                          |
| 802.11n 40 MHz Port 2                             | Low             | 5755            | 18.43                          |
|                                                   | High            | 5795            | 18.33                          |
| 802.11n 40 MHz Port 3                             | Low             | 5755            | 18.58                          |
|                                                   | High            | 5795            | 18.93                          |
| 802.11n 80 MHz Port 1                             | --              | 5775            | 18.31                          |
| 802.11n 80 MHz Port 2                             | --              | 5775            | 17.78                          |
| 802.11n 80 MHz Port 3                             | --              | 5775            | 18.14                          |

**Table 36. Peak Power Output, Test Results, 7 dBi Patch Antenna, 5 GHz**

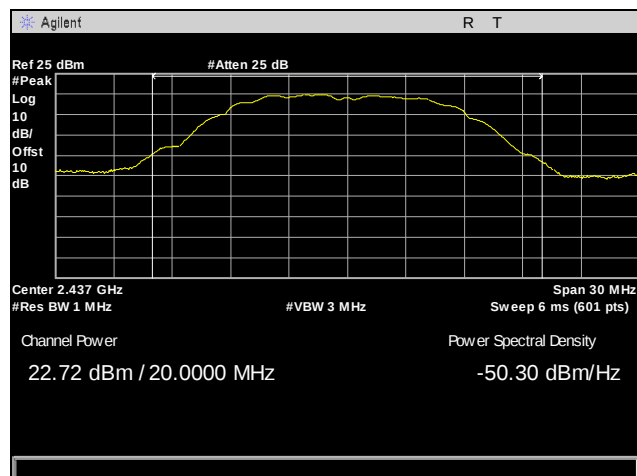
| Summed Conducted Output Power – 7 dBi Patch Antenna |         |           |                            |
|-----------------------------------------------------|---------|-----------|----------------------------|
|                                                     | Carrier | Frequency | Measured Peak Output Power |
|                                                     | Channel | (MHz)     | dBm                        |
| 802.11n 20 MHz Port                                 | Low     | 5745      | 23.48                      |
|                                                     | Mid     | 5785      | 23.42                      |
|                                                     | High    | 5825      | 23.56                      |
| 802.11n 40 MHz Port                                 | Low     | 5755      | 23.33                      |
|                                                     | High    | 5795      | 23.4                       |
| 802.11n 80 MHz Port                                 | --      | 5775      | 22.85                      |

**Table 37. Summed Peak Output Power, Test Results, 7 dBi Patch Antenna**

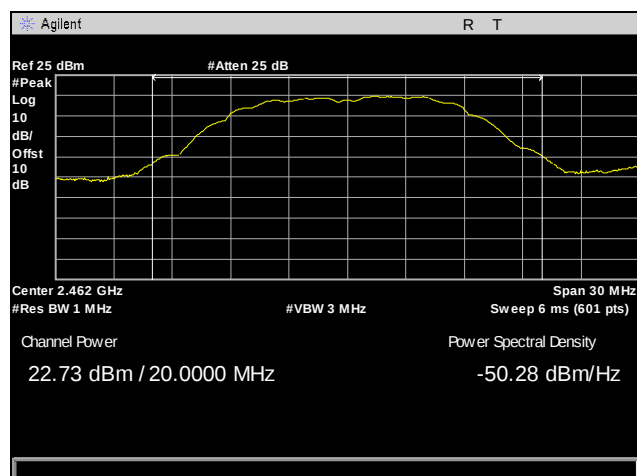
## Peak Power Output Test Results, Ceiling Antenna, 802.11b 20 MHz, 2.4 GHz



Plot 105. Output Power, Ceiling Antenna, 802.11b 20 MHz, 2412 MHz, Low Channel

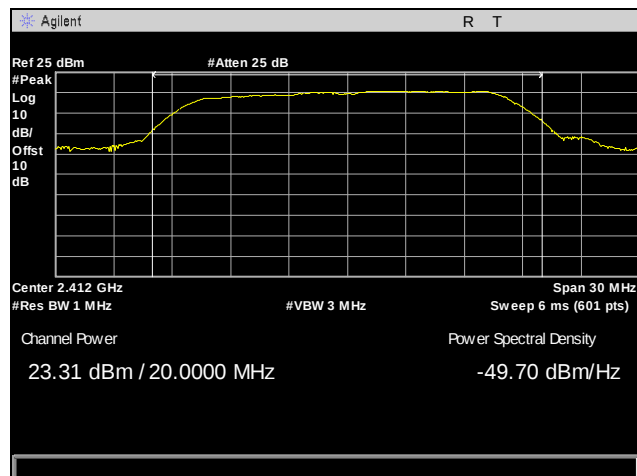


Plot 106. Output Power, Ceiling Antenna, 802.11b 20 MHz, 2437 MHz, Mid Channel

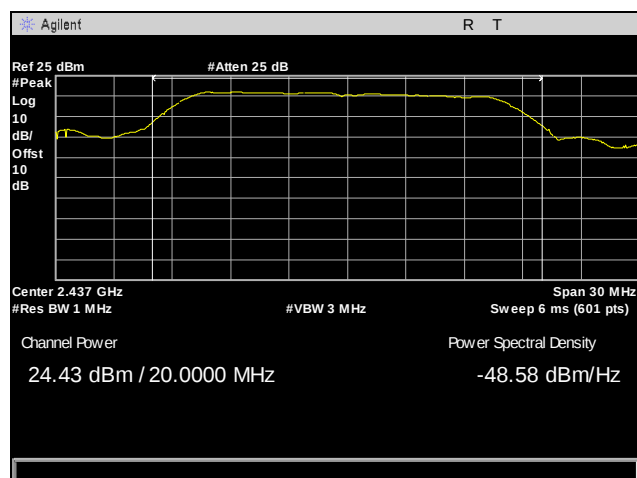


Plot 107. Output Power, Ceiling Antenna, 802.11b 20 MHz, 2462 MHz, High Channel

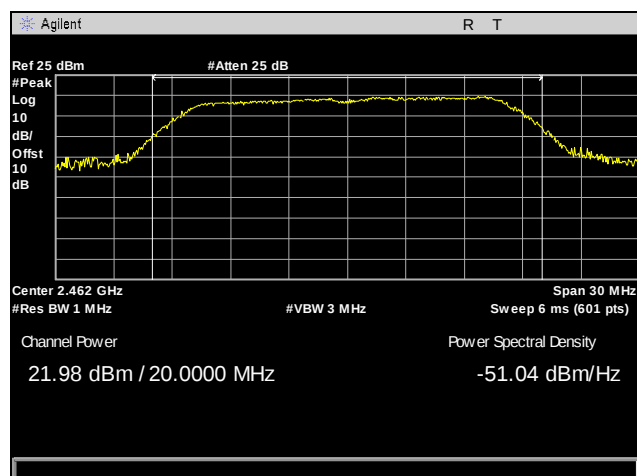
## Peak Power Output Test Results, Ceiling Antenna, 802.11g 20 MHz, 2.4 GHz



Plot 108. Output Power, Ceiling Antenna, 802.11g 20 MHz, 2412 MHz, Low Channel

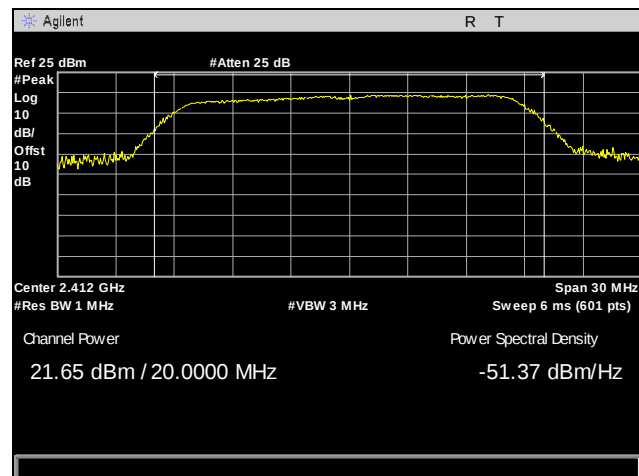


Plot 109. Output Power, Ceiling Antenna, 802.11g 20 MHz, 2437 MHz, Mid Channel

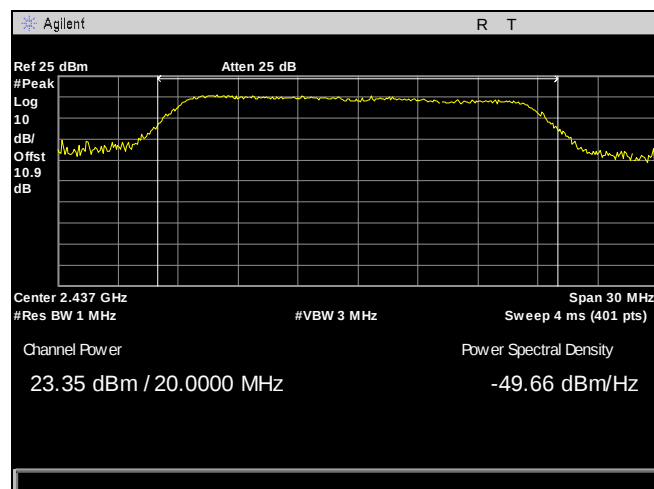


Plot 110. Output Power, Ceiling Antenna, 802.11g 20 MHz, 2462 MHz, High Channel

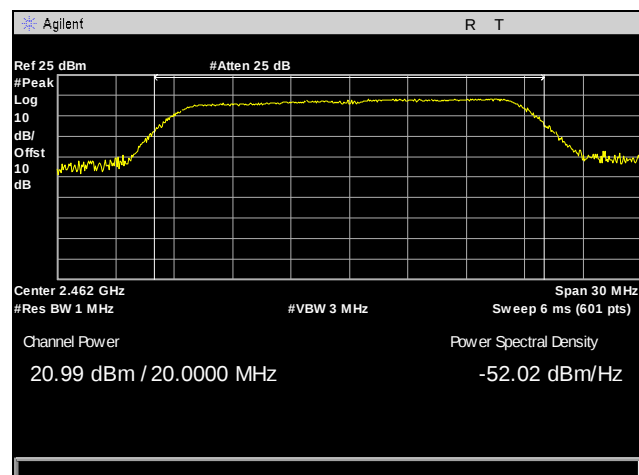
## Peak Power Output Test Results, Ceiling Antenna, 802.11n 20 MHz, Port 1, 2.4 GHz



Plot 111. Output Power, Ceiling Antenna, 802.11n 20 MHz, 2412 MHz, Low Channel, Port 1

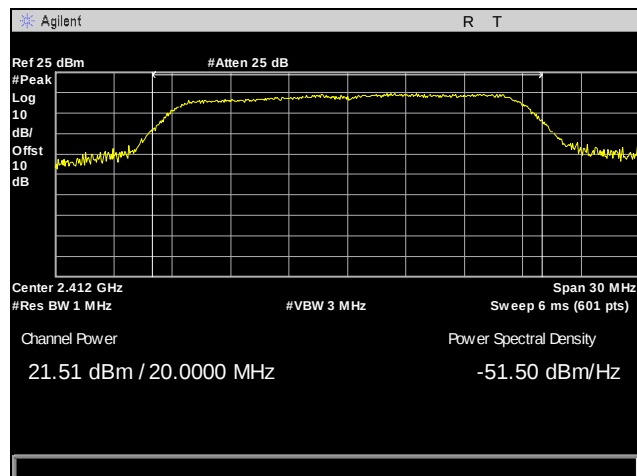


Plot 112. Output Power, Ceiling Antenna, 802.11n 20 MHz, 2437 MHz, Mid Channel, Port 1

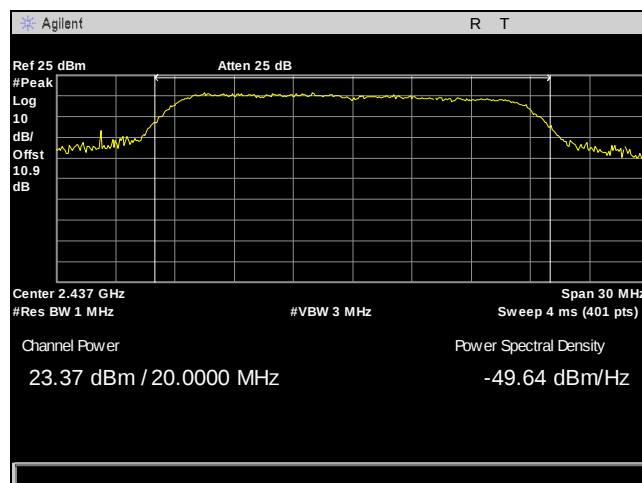


Plot 113. Output Power, Ceiling Antenna, 802.11n 20 MHz, 2462 MHz, High Channel, Port 1

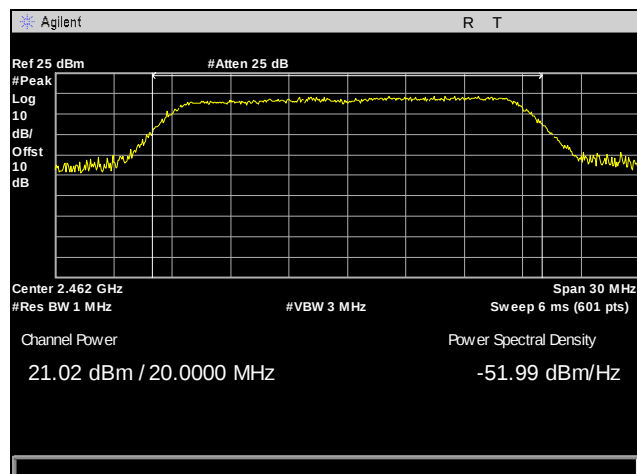
## Peak Power Output Test Results, Ceiling Antenna, 802.11n 20 MHz, Port 2, 2.4 GHz



Plot 114. Output Power, Ceiling Antenna, 802.11n 20 MHz, 2412 MHz, Low Channel, Port 2

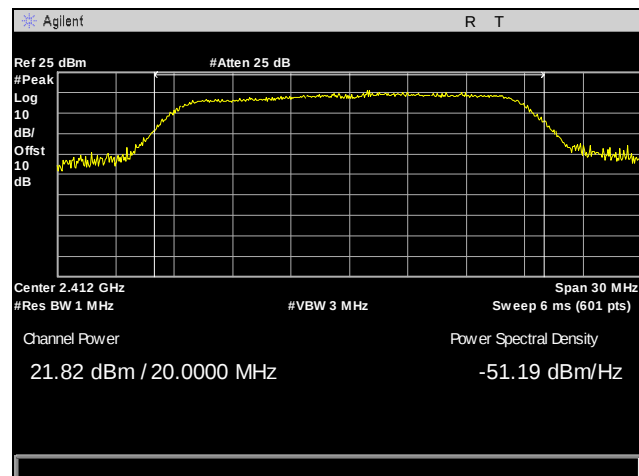


Plot 115. Output Power, Ceiling Antenna, 802.11n 20 MHz, 2437 MHz, Mid Channel, Port 2

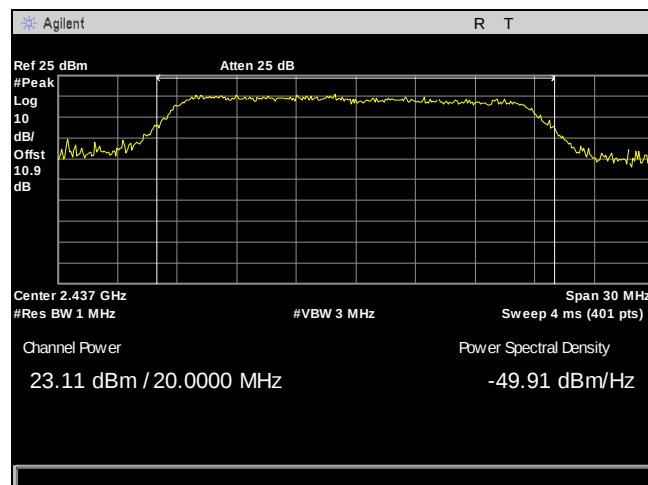


Plot 116. Output Power, Ceiling Antenna, 802.11n 20 MHz, 2462 MHz, High Channel, Port 2

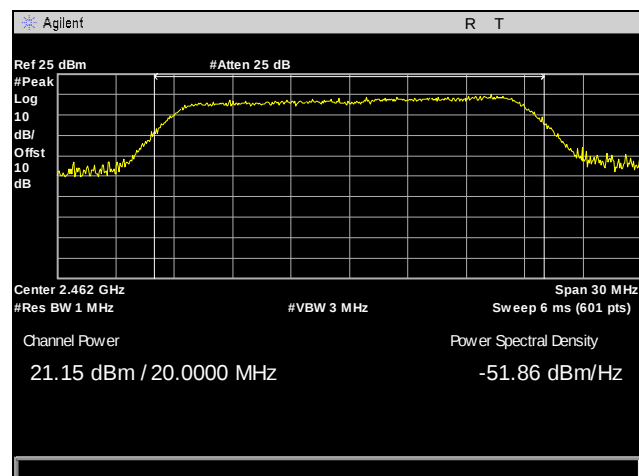
## Peak Power Output Test Results, Ceiling Antenna, 802.11n 20 MHz, Port 3, 2.4 GHz



Plot 117. Output Power, Ceiling Antenna, 802.11n 20 MHz, 2412 MHz, Low Channel, Port 3

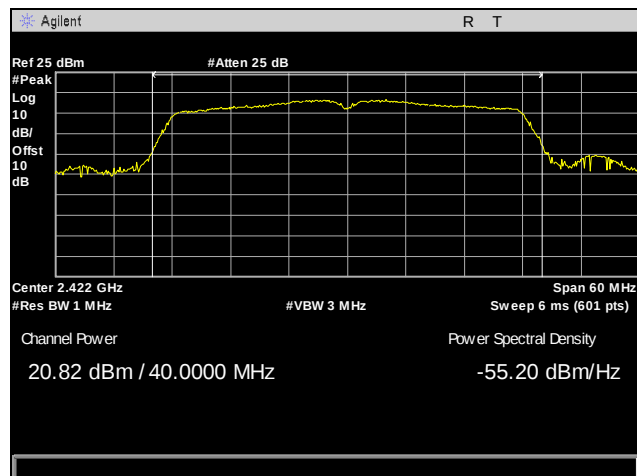


Plot 118. Output Power, Ceiling Antenna, 802.11n 20 MHz, 2437 MHz, Mid Channel, Port 3

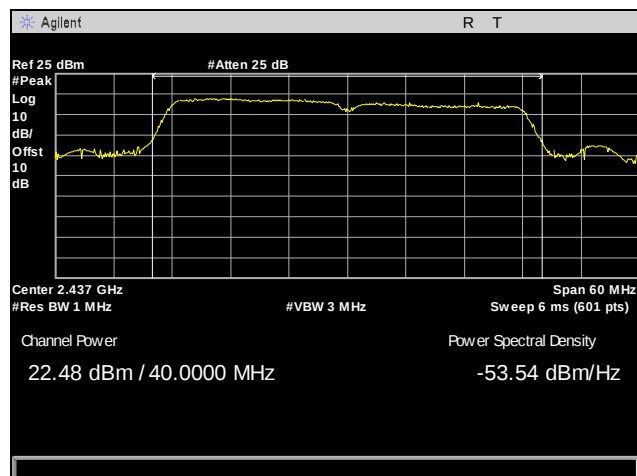


Plot 119. Output Power, Ceiling Antenna, 802.11n 20 MHz, 2462 MHz, High Channel, Port 3

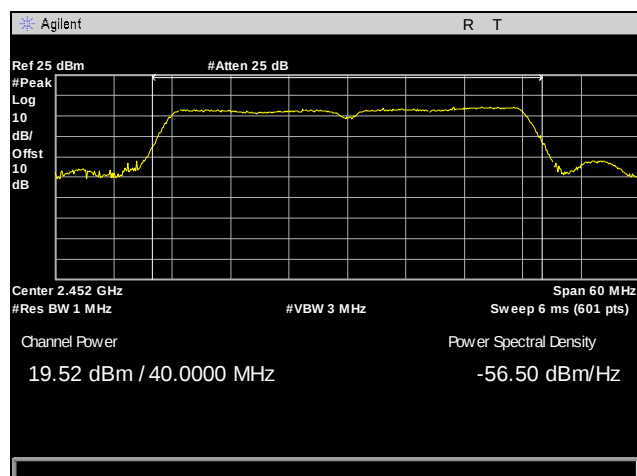
## Peak Power Output Test Results, Ceiling Antenna, 802.11n 40 MHz, Port 1, 2.4 GHz



Plot 120. Output Power, Ceiling Antenna, 802.11n 40 MHz, 2422 MHz, Low Channel, Port 1

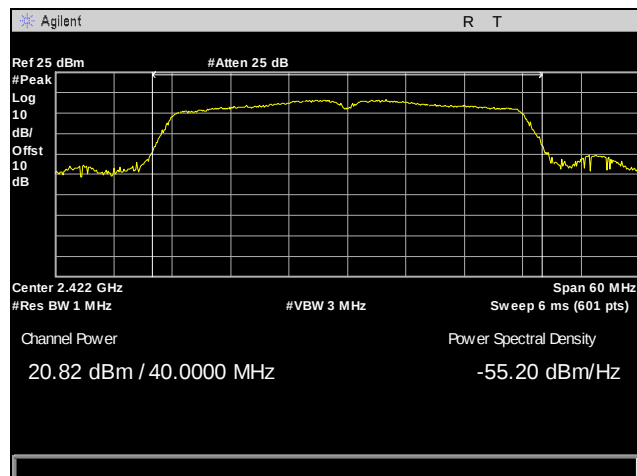


Plot 121. Output Power, Ceiling Antenna, 802.11n 40 MHz, 2437 MHz, Mid Channel, Port 1

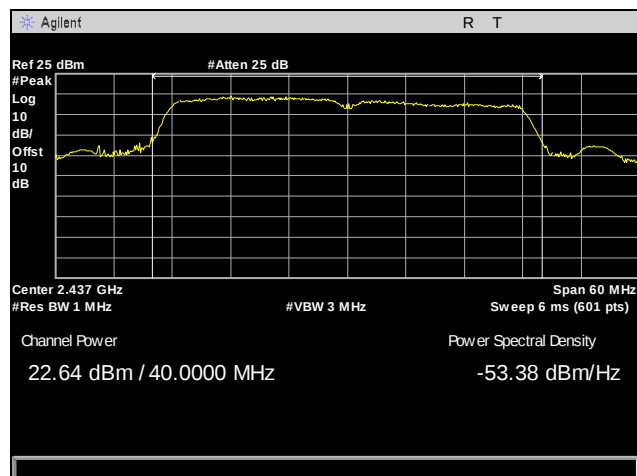


Plot 122. Output Power, Ceiling Antenna, 802.11n 40 MHz, 2452 MHz, High Channel, Port 1

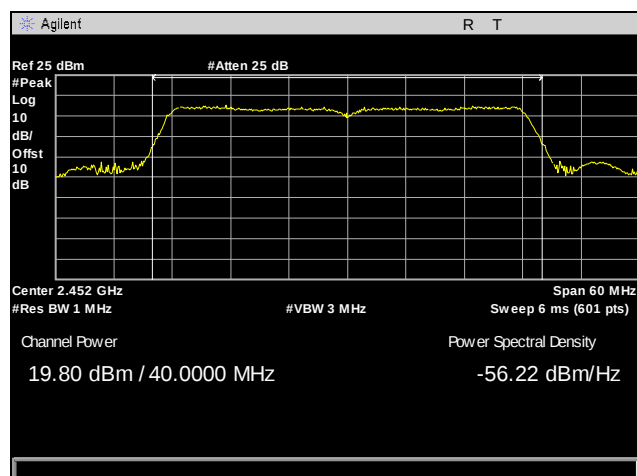
## Peak Power Output Test Results, Ceiling Antenna, 802.11n 40 MHz, Port 2, 2.4 GHz



Plot 123. Output Power, Ceiling Antenna, 802.11n 40 MHz, 2422 MHz, Low Channel, Port 2

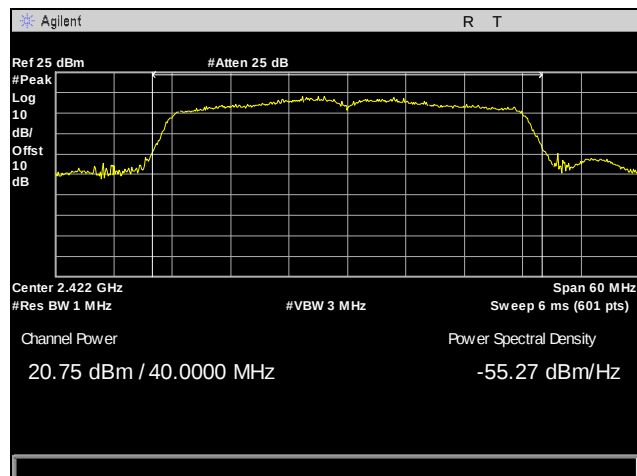


Plot 124. Output Power, Ceiling Antenna, 802.11n 40 MHz, 2437 MHz, Mid Channel, Port 2

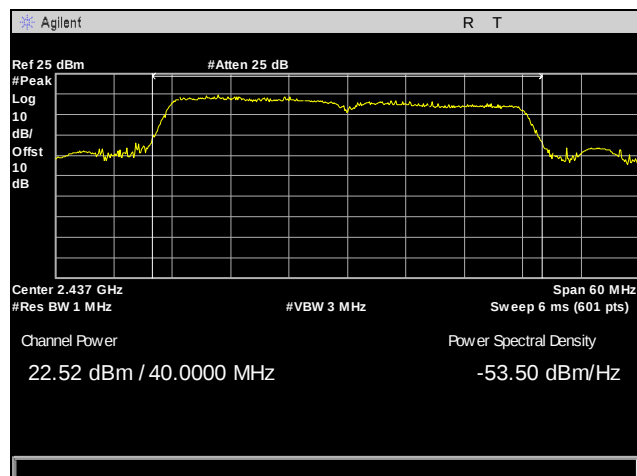


Plot 125. Output Power, Ceiling Antenna, 802.11n 40 MHz, 2452 MHz, High Channel, Port 2

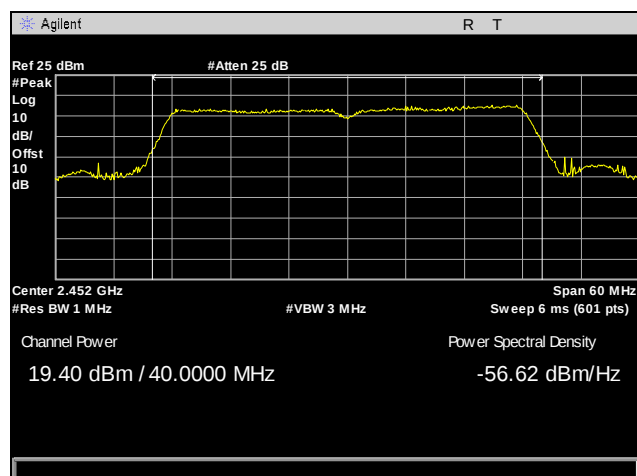
## Peak Power Output Test Results, Ceiling Antenna, 802.11n 40 MHz, Port 3, 2.4 GHz



Plot 126. Output Power, Ceiling Antenna, 802.11n 40 MHz, 2422 MHz, Low Channel, Port 3

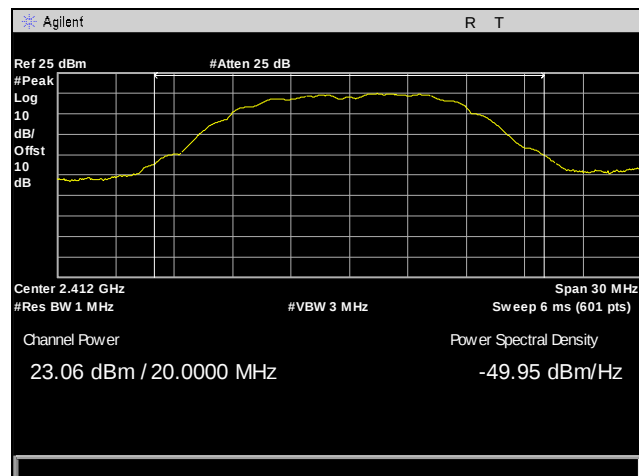


Plot 127. Output Power, Ceiling Antenna, 802.11n 40 MHz, 2437 MHz, Mid Channel, Port 3

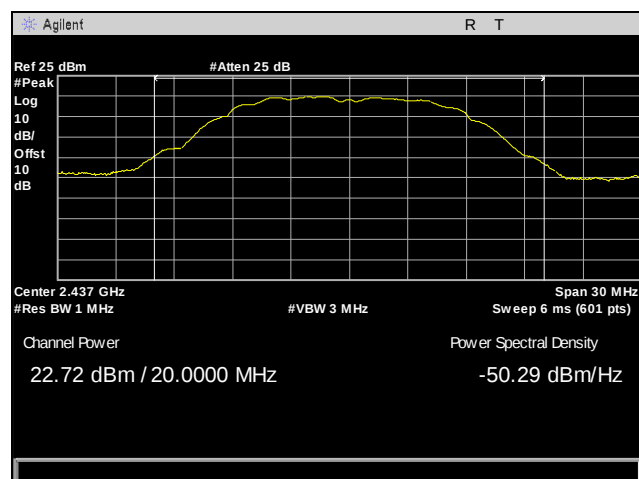


Plot 128. Output Power, Ceiling Antenna, 802.11n 40 MHz, 2452 MHz, High Channel, Port 3

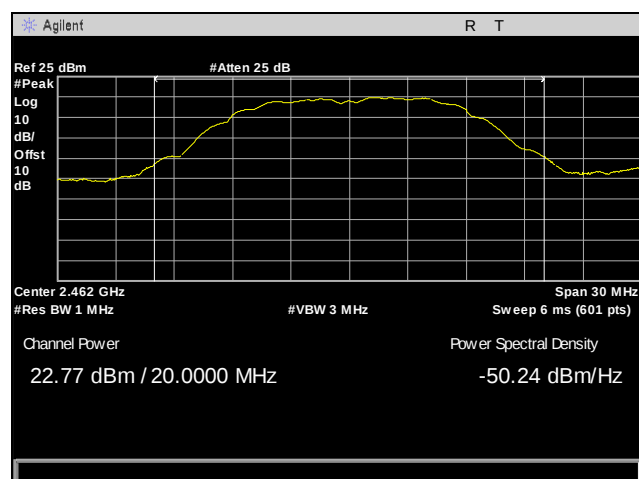
## Peak Power Output Test Results, 6 dBi Omni/Patch Antenna, 802.11b 20 MHz, 2.4 GHz



Plot 129. Output Power, Omni/Patch, 802.11b 20 MHz, 2412 MHz, Low Channel

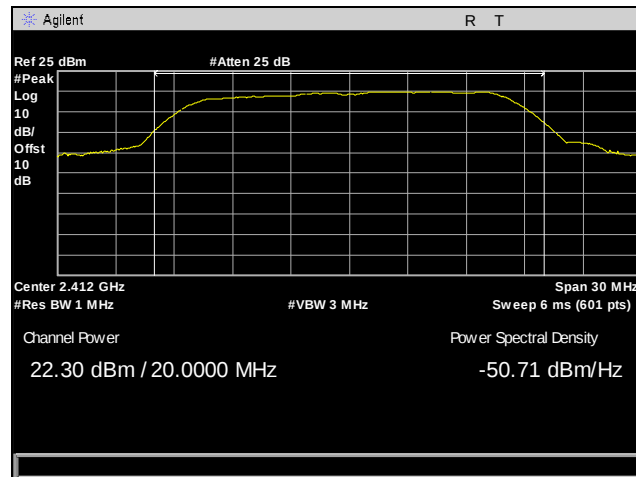


Plot 130. Output Power, Omni/Patch, 802.11b 20 MHz, 2437 MHz, Mid Channel

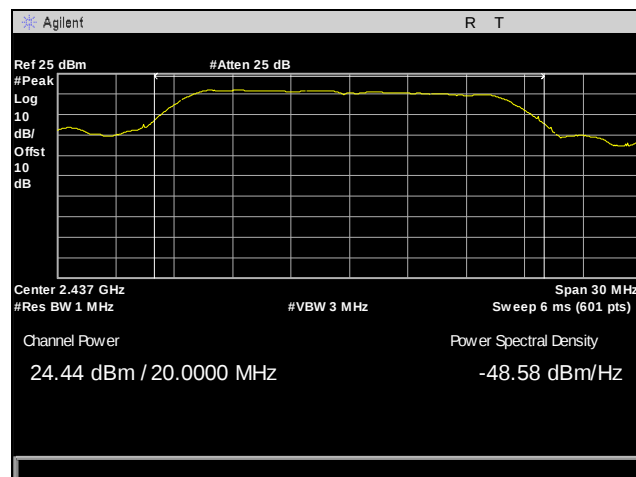


Plot 131. Output Power, Omni/Patch, 802.11b 20 MHz, 2462 MHz, High Channel

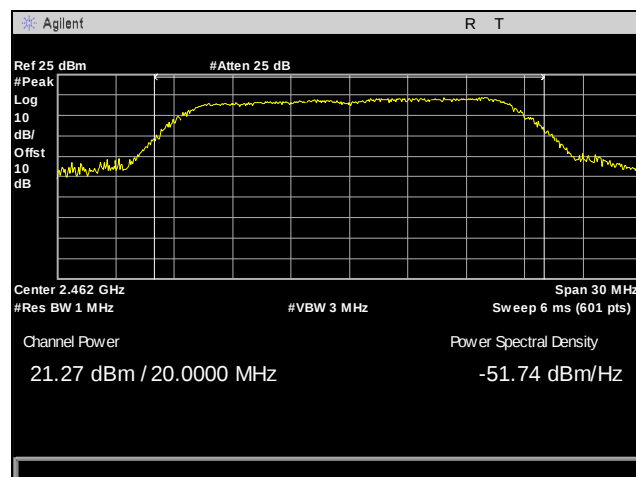
## Peak Power Output Test Results, 6 dBi Omni/Patch, 802.11g 20 MHz, 2.4 GHz



Plot 132. Output Power, Omni/Patch, 802.11g 20 MHz, 2412 MHz, Low Channel

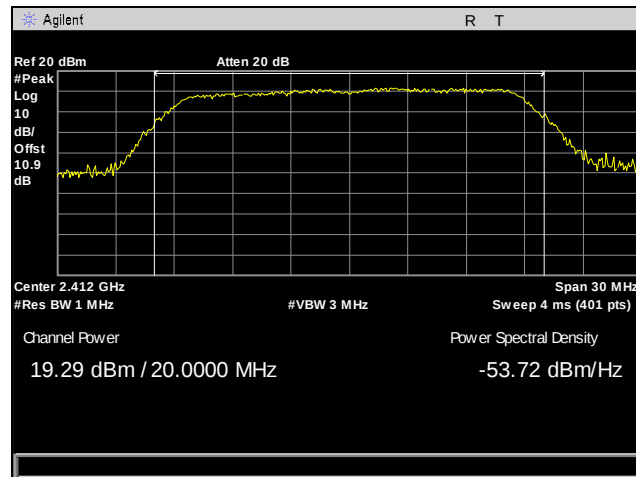


Plot 133. Output Power, Omni/Patch, 802.11g 20 MHz, 2437 MHz, Mid Channel

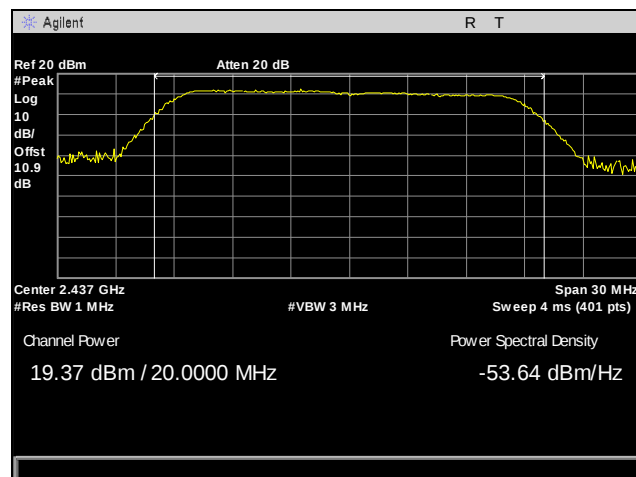


Plot 134. Output Power, Omni/Patch, 802.11g 20 MHz, 2462 MHz, High Channel

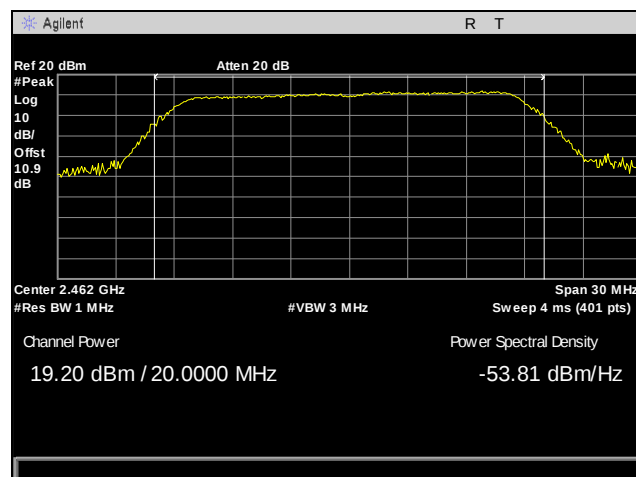
## Peak Power Output Test Results, 6 dBi Omni/Patch, 802.11n 20 MHz, Port 1, 2.4 GHz



Plot 135. Output Power, Omni/Patch, 802.11n 20 MHz, 2412 MHz, Low Channel, Port 1

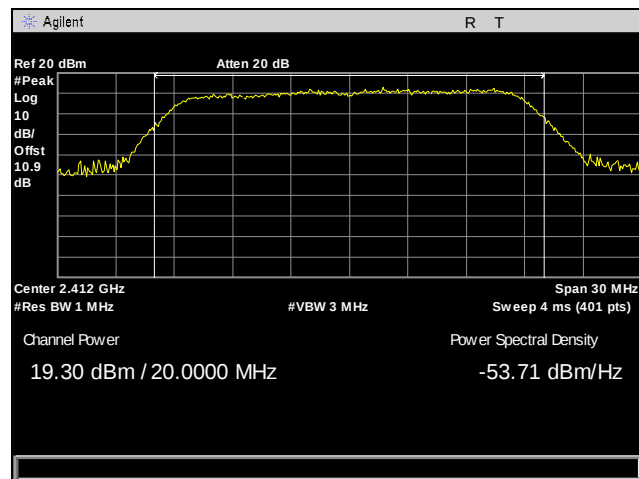


Plot 136. Output Power, Omni/Patch, 802.11n 20 MHz, 2437 MHz, Mid Channel, Port 1

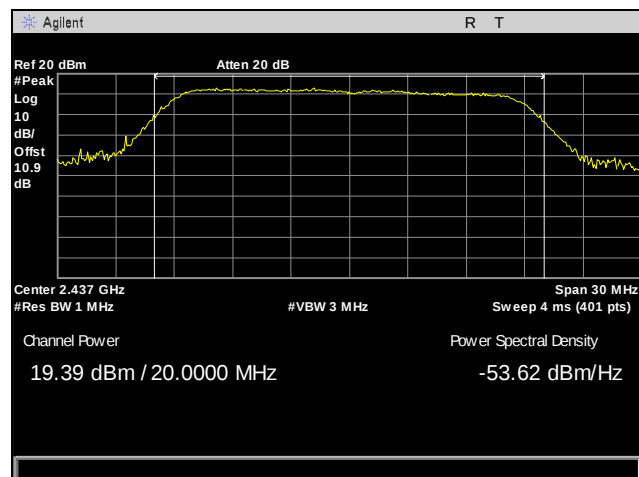


Plot 137. Output Power, Omni/Patch, 802.11n 20 MHz, 2462 MHz, High Channel, Port 1

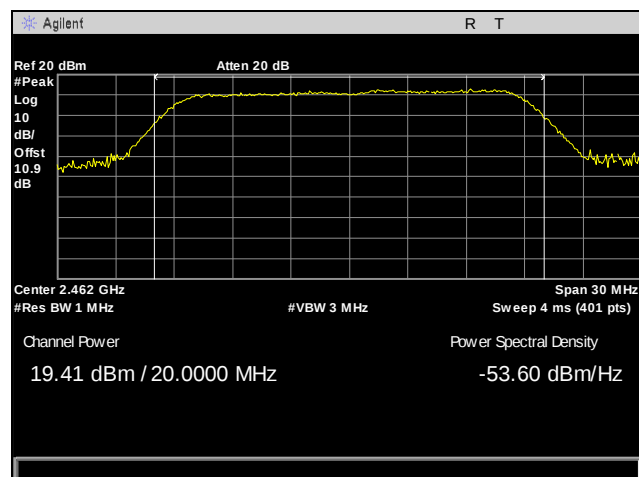
## Peak Power Output Test Results, 6 dBi Omni/Patch, 802.11n 20 MHz, Port 2, 2.4 GHz



Plot 138. Output Power, Omni/Patch, 802.11n 20 MHz, 2412 MHz, Low Channel, Port 2

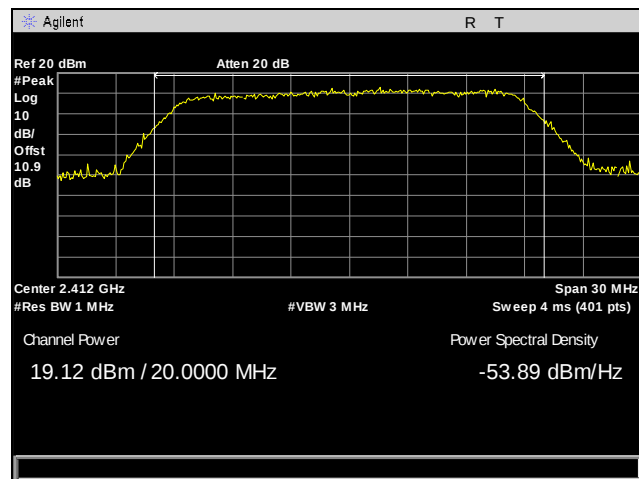


Plot 139. Output Power, Omni/Patch, 802.11n 20 MHz, 2437 MHz, Mid Channel, Port 2

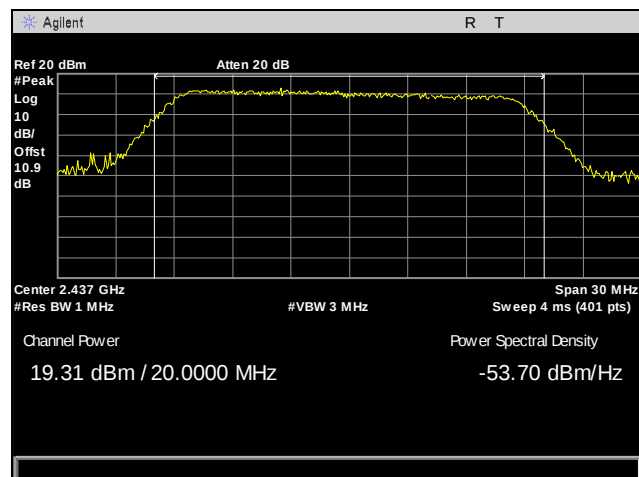


Plot 140. Output Power, Omni/Patch, 802.11n 20 MHz, 2462 MHz, High Channel, Port 2

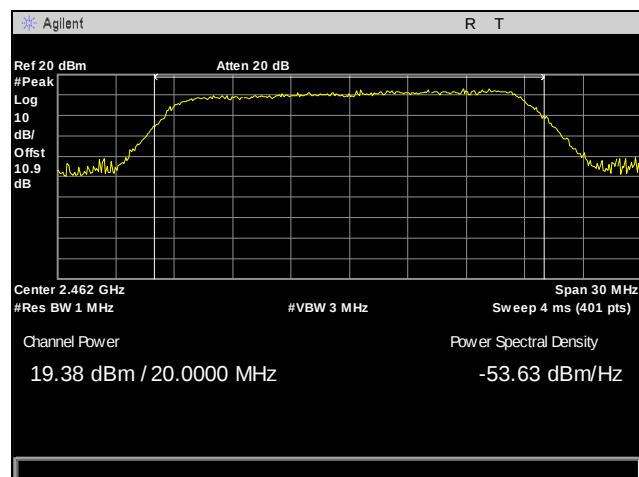
## Peak Power Output Test Results, 6 dBi Omni/Patch, 802.11n 20 MHz, Port 3, 2.4 GHz



Plot 141. Output Power, Omni/Patch, 802.11n 20 MHz, 2412 MHz, Low Channel, Port 3

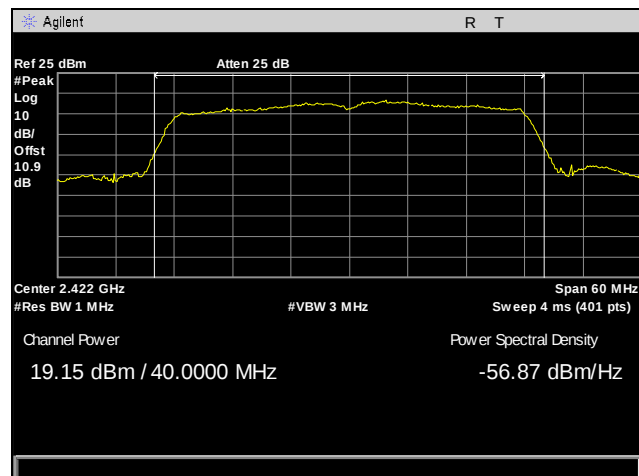


Plot 142. Output Power, Omni/Patch, 802.11n 20 MHz, 2437 MHz, Mid Channel, Port 3

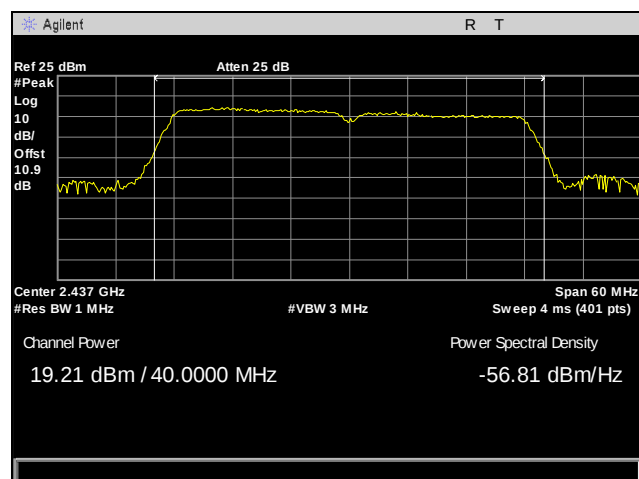


Plot 143. Output Power, Omni/Patch, 802.11n 20 MHz, 2462 MHz, High Channel, Port 3

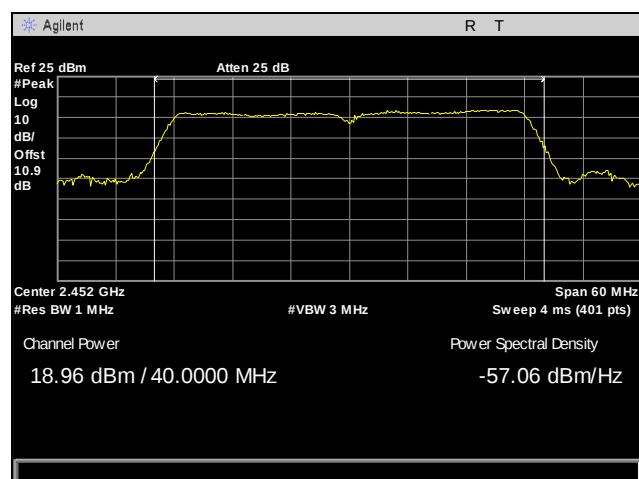
## Peak Power Output Test Results, 6 dBi Omni/Patch, 802.11n 40 MHz, Port 1, 2.4 GHz



Plot 144. Output Power, Omni/Patch, 802.11n 40 MHz, 2422 MHz, Low Channel, Port 1

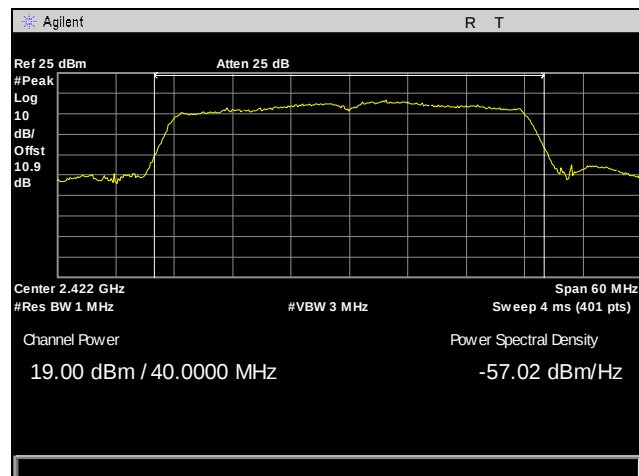


Plot 145. Output Power, Omni/Patch, 802.11n 40 MHz, 2437 MHz, Mid Channel, Port 1

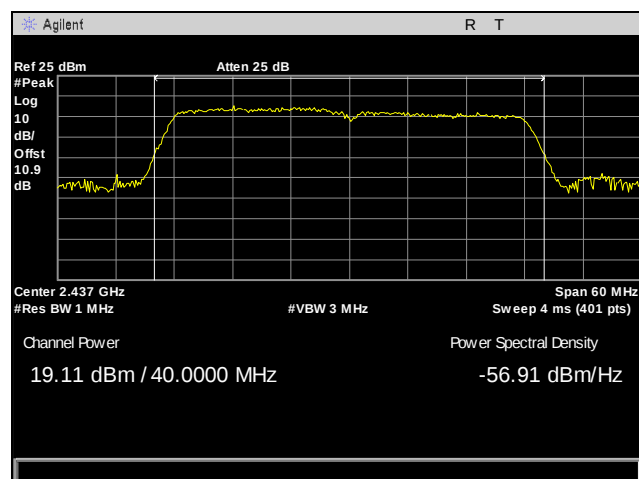


Plot 146. Output Power, Omni/Patch, 802.11n 40 MHz, 2452 MHz, High Channel, Port 1

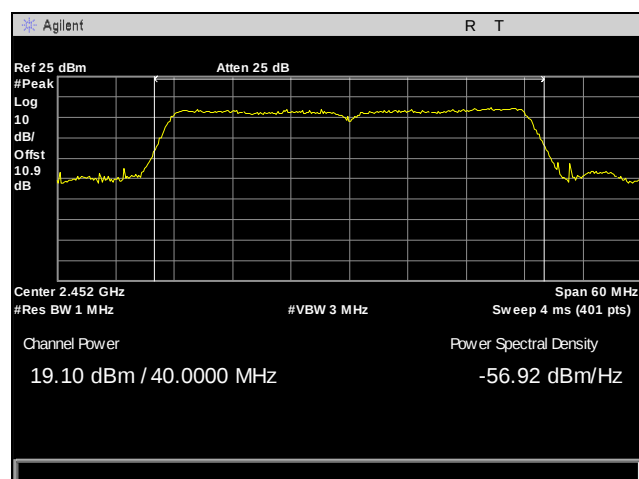
## Peak Power Output Test Results, 6 dBi Omni/Patch, 802.11n 40 MHz, Port 2, 2.4 GHz



Plot 147. Output Power, Omni/Patch, 802.11n 40 MHz, 2422 MHz, Low Channel, Port 2

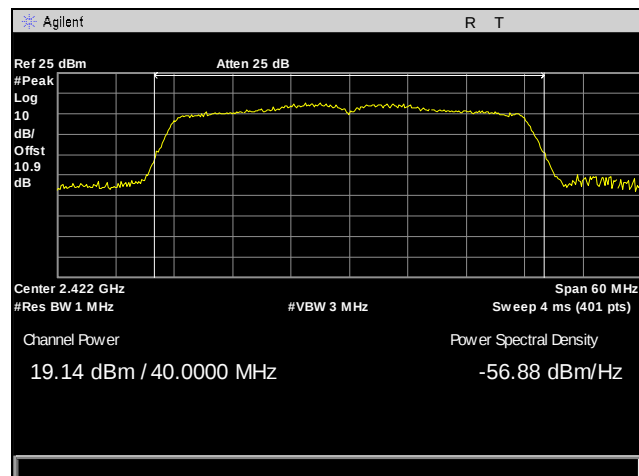


Plot 148. Output Power, Omni/Patch, 802.11n 40 MHz, 2437 MHz, Mid Channel, Port 2

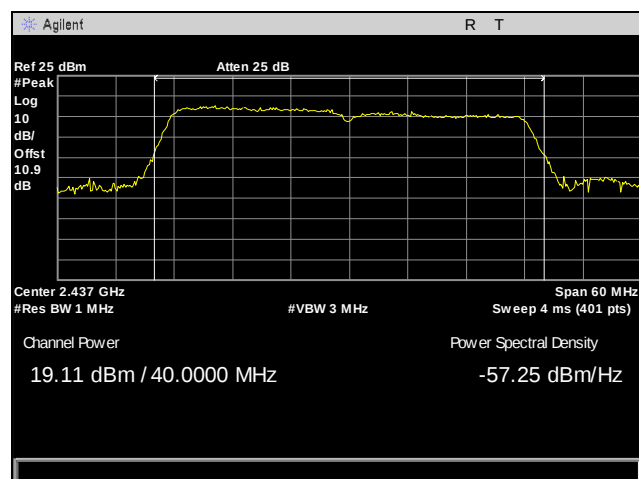


Plot 149. Output Power, Omni/Patch, 802.11n 40 MHz, 2452 MHz, High Channel, Port 2

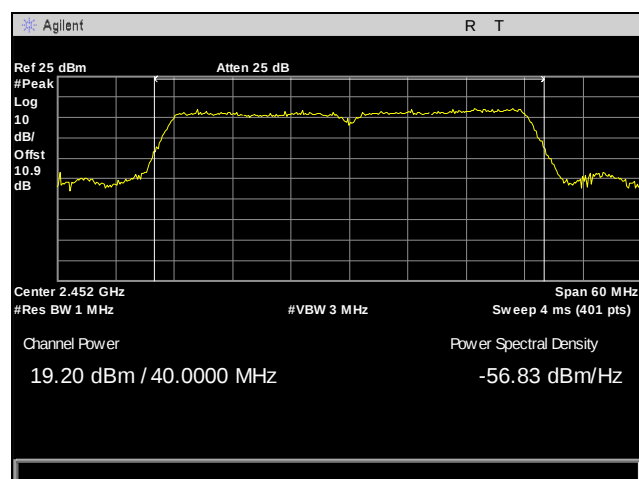
## Peak Power Output Test Results, 6 dBi Omni/Patch, 802.11n 40 MHz, Port 3, 2.4 GHz



Plot 150. Output Power, Omni/Patch, 802.11n 40 MHz, 2422 MHz, Low Channel, Port 3

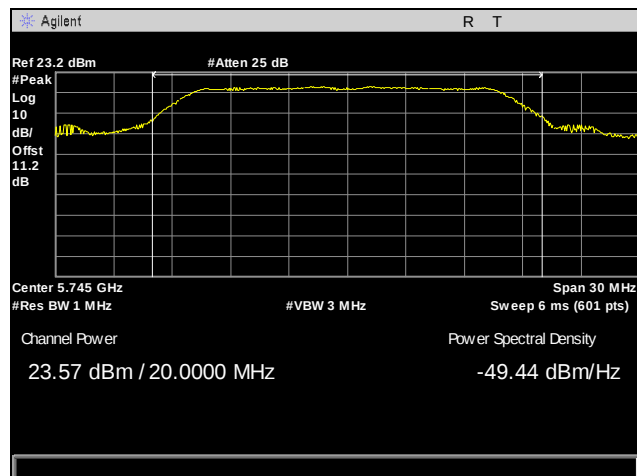


Plot 151. Output Power, Omni/Patch, 802.11n 40 MHz, 2437 MHz, Mid Channel, Port 3

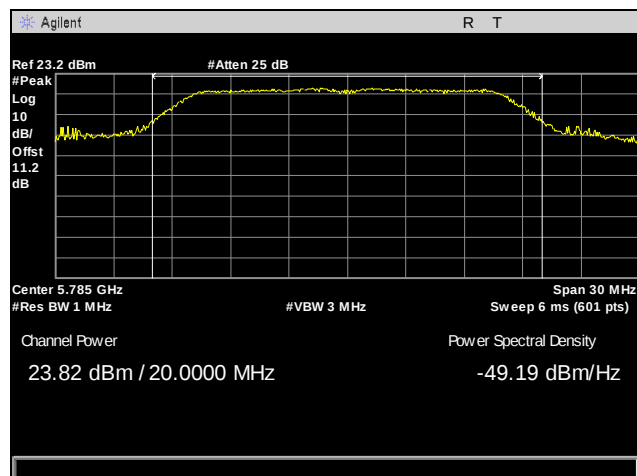


Plot 152. Output Power, Omni/Patch, 802.11n 40 MHz, 2452 MHz, High Channel, Port 3

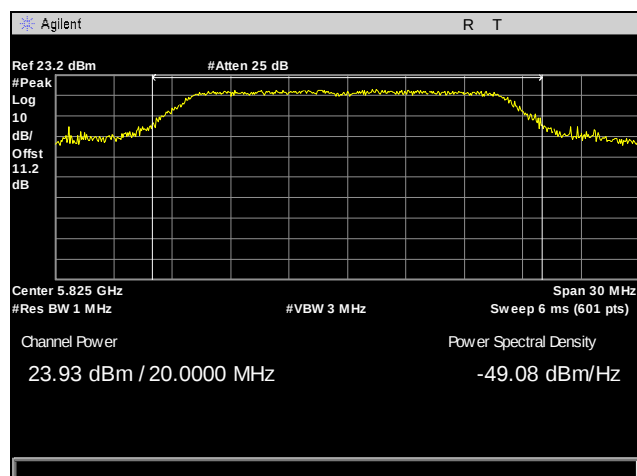
## Peak Power Output Test Results, 2 dBi Antenna, 802.11a 20 MHz, 5 GHz



Plot 153. Output Power, 2 dBi Antenna, 802.11a 20 MHz, 5745 MHz, Low Channel

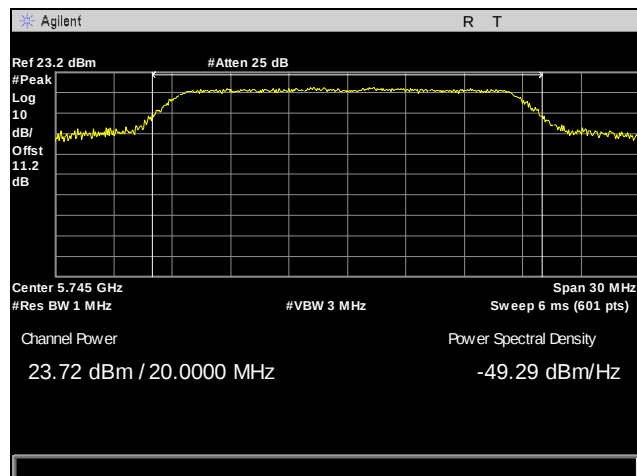


Plot 154. Output Power, 2 dBi Antenna, 802.11a 20 MHz, 5785 MHz, Mid Channel

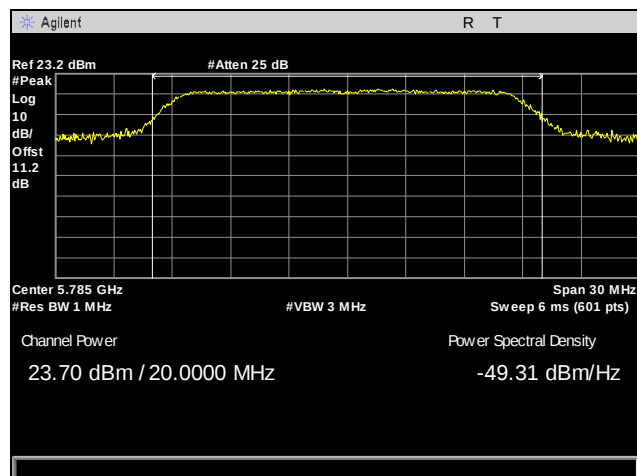


Plot 155. Output Power, 2 dBi Antenna, 802.11a 20 MHz, 5825 MHz, High Channel

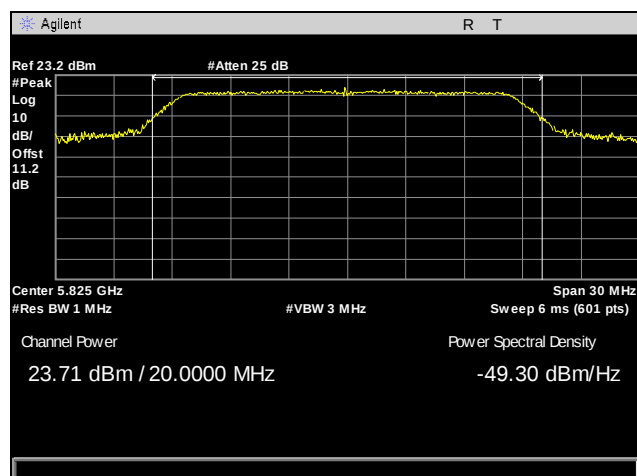
## Peak Power Output Test Results, 2 dBi Antenna, 802.11n 20 MHz, Port 1, 5 GHz



Plot 156. Output Power, 2 dBi Antenna, 802.11n 20 MHz, 5745 MHz, Low Channel, Port 1

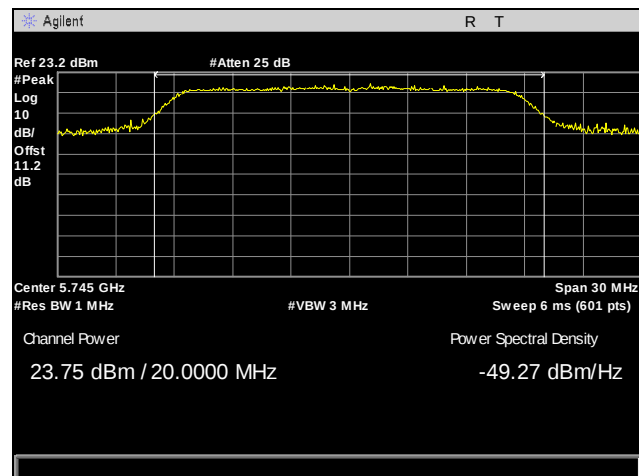


Plot 157. Output Power, 2 dBi Antenna, 802.11n 20 MHz, 5785 MHz, Mid Channel, Port 1

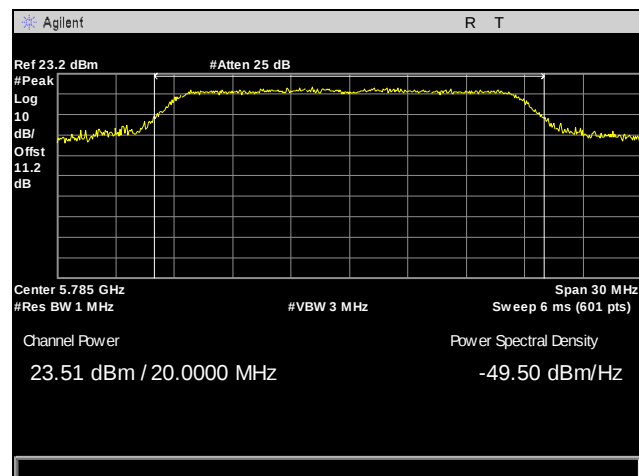


Plot 158. Output Power, 2 dBi Antenna, 802.11n 20 MHz, 5825 MHz, High Channel, Port 1

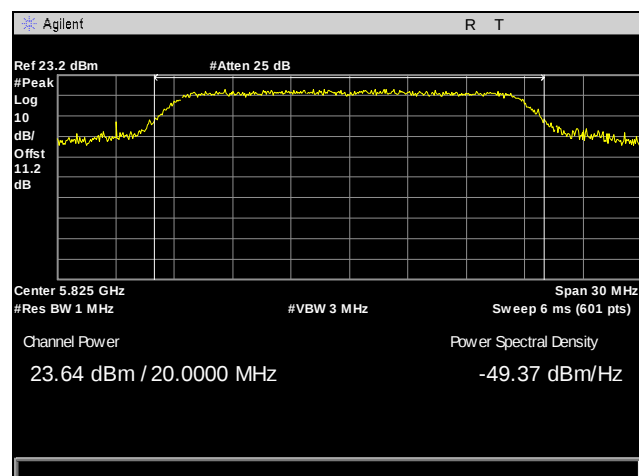
## Peak Power Output Test Results, 2 dBi Antenna, 802.11n 20 MHz, Port 2, 5 GHz



Plot 159. Output Power, 2 dBi Antenna, 802.11n 20 MHz, 5745 MHz, Low Channel, Port 2

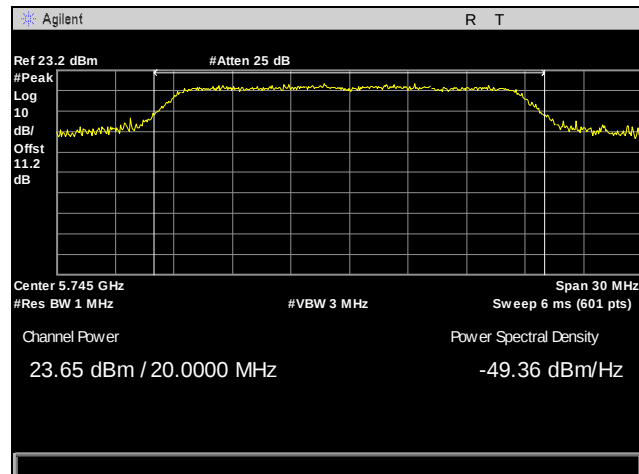


Plot 160. Output Power, 2 dBi Antenna, 802.11n 20 MHz, 5785 MHz, Mid Channel, Port 2

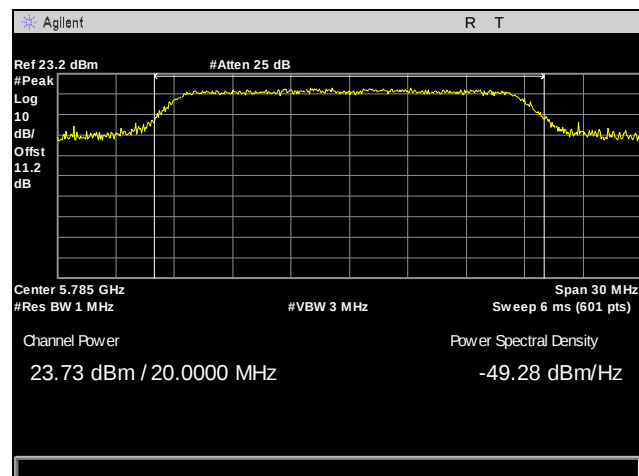


Plot 161. Output Power, 2 dBi Antenna, 802.11n 20 MHz, 5825 MHz, High Channel, Port 2

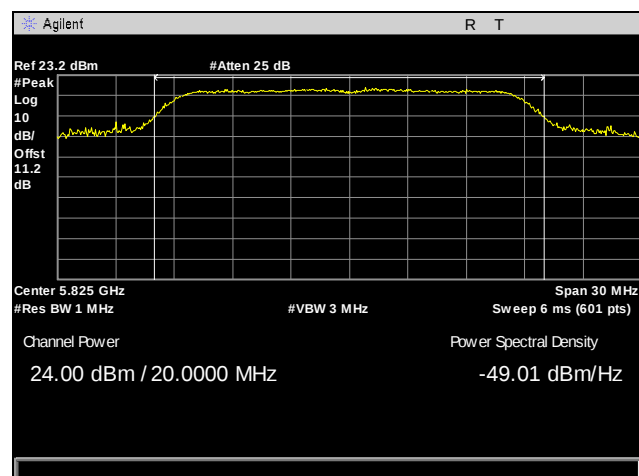
## Peak Power Output Test Results, 2 dBi Antenna, 802.11n 20 MHz, Port 3, 5 GHz



Plot 162. Output Power, 2 dBi Antenna, 802.11n 20 MHz, 5745 MHz, Low Channel, Port 3

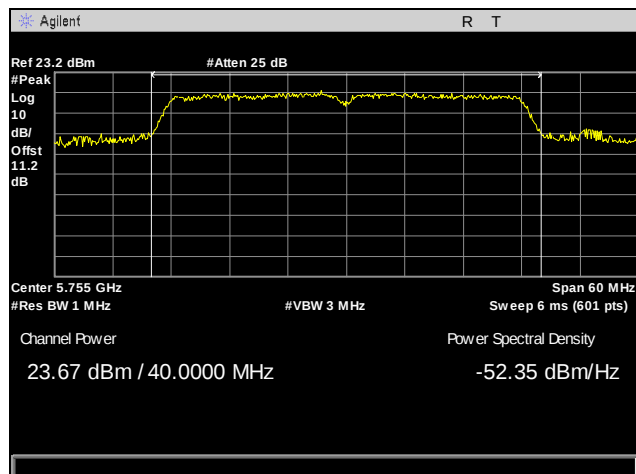


Plot 163. Output Power, 2 dBi Antenna, 802.11n 20 MHz, 5785 MHz, Mid Channel, Port 3

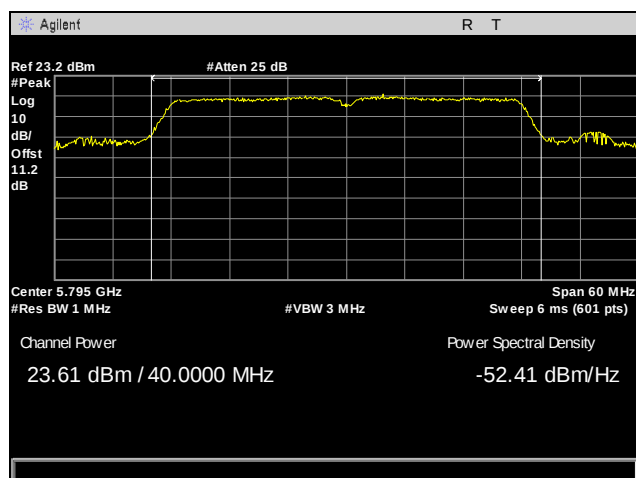


Plot 164. Output Power, 2 dBi Antenna, 802.11n 20 MHz, 5825 MHz, High Channel, Port 3

## Peak Power Output Test Results, 2 dBi Antenna, 802.11n 40 MHz, Port 1, 5 GHz

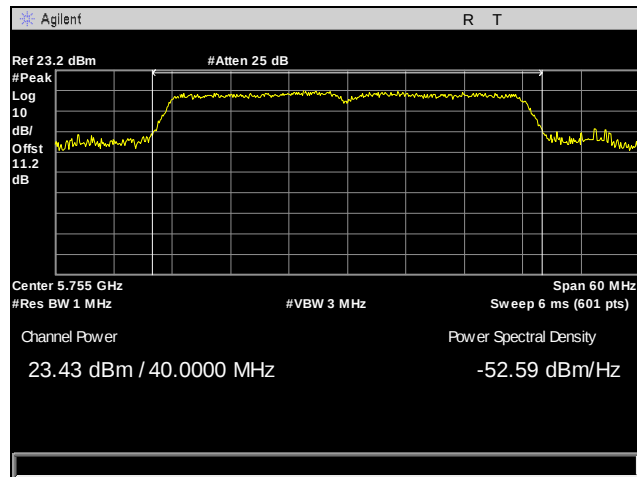


Plot 165. Output Power, 2 dBi Antenna, 802.11n 40 MHz, 5755 MHz, Low Channel, Port 1

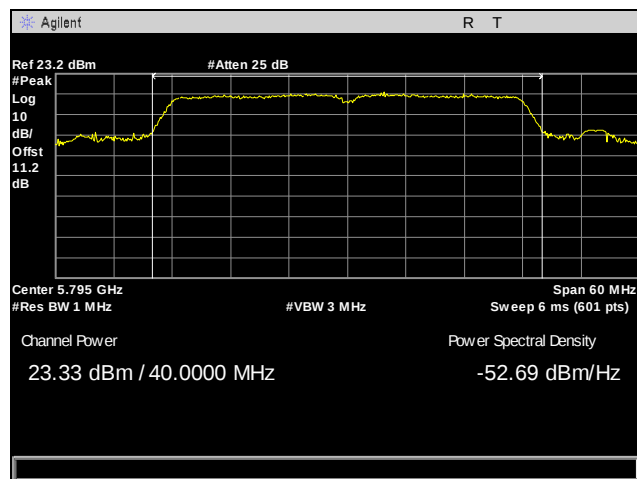


Plot 166. Output Power, 2 dBi Antenna, 802.11n 40 MHz, 5795 MHz, High Channel, Port 1

## Peak Power Output Test Results, 2 dBi Antenna, 802.11n 40 MHz, Port 2, 5 GHz

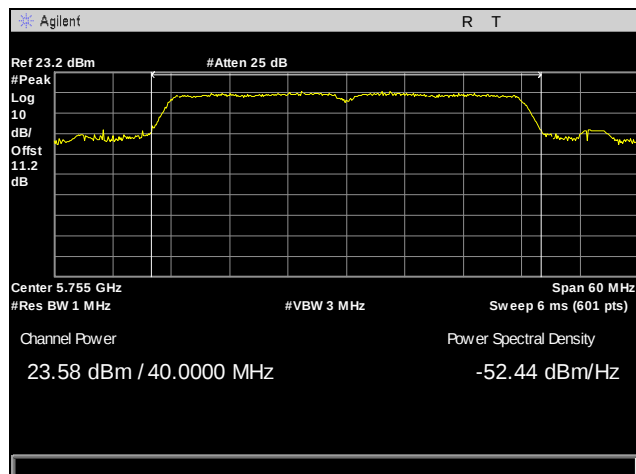


Plot 167. Output Power, 2 dBi Antenna, 802.11n 40 MHz, 5755 MHz, Low Channel, Port 2

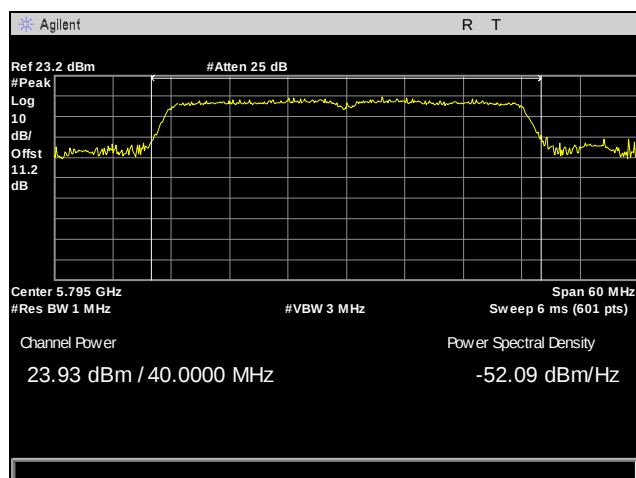


Plot 168. Output Power, 2 dBi Antenna, 802.11n 40 MHz, 5795 MHz, High Channel, Port 2

## Peak Power Output Test Results, 2 dBi Antenna, 802.11n 40 MHz, Port 3, 5 GHz

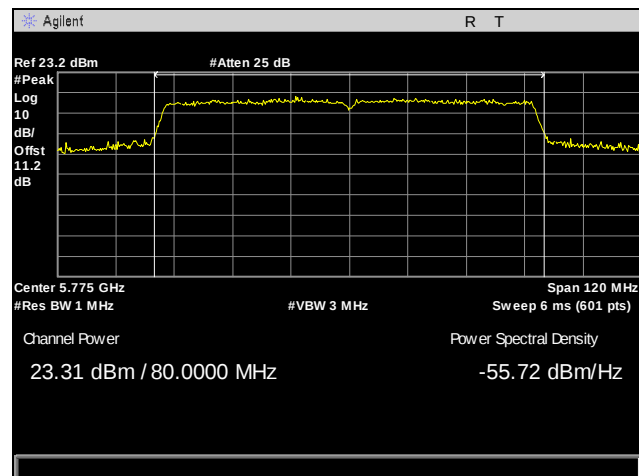


Plot 169. Output Power, 2 dBi Antenna, 802.11n 40 MHz, 5755 MHz, Low Channel, Port 3

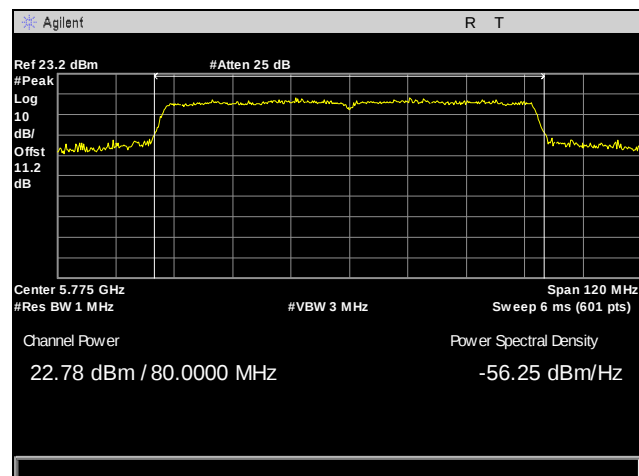


Plot 170. Output Power, 2 dBi Antenna, 802.11n 40 MHz, 5795 MHz, High Channel, Port 3

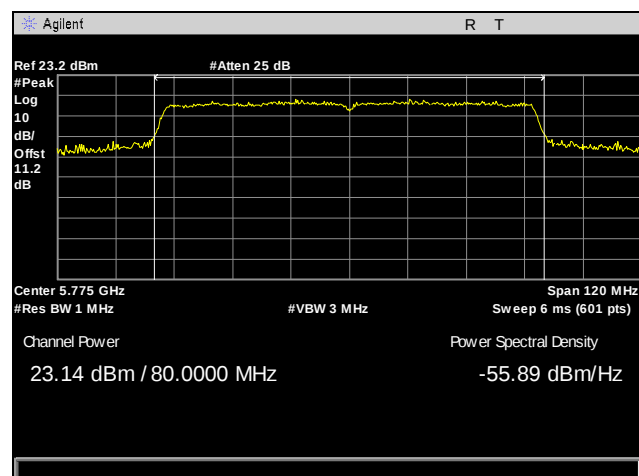
## Peak Power Output Test Results, 2 dBi Antenna, 802.11n 80 MHz, 5 GHz



Plot 171. Output Power, 2 dBi Antenna, 802.11n 80 MHz, 5775 MHz, Port 1



Plot 172. Output Power, 2 dBi Antenna, 802.11n 80 MHz, 5775 MHz, Port 2



Plot 173. Output Power, 2 dBi Antenna, 802.11n 80 MHz, 5775 MHz, Port 3

## Electromagnetic Compatibility Criteria for Intentional Radiators

### § 15.247(d) Radiated Spurious Emissions Requirements and Band Edge

**Test Requirements:** §15.247(d); §15.205: Emissions outside the frequency band.

**§15.247(d):** 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. 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).

**§15.205(a):** Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

| MHz                           | MHz                 | MHz             | GHz              |
|-------------------------------|---------------------|-----------------|------------------|
| 0.090–0.110-----              | 16.42–16.423        | 399.9–410       | 4.5–5.15         |
| <sup>1</sup> 0.495–0.505----- | 16.69475–16.69525   | 608–614         | 5.35–5.46        |
| 2.1735–2.1905-----            | 16.80425–16.80475   | 960–1240        | 7.25–7.75        |
| 4.125–4.128-----              | 25.5–25.67          | 1300–1427       | 8.025–8.5        |
| 4.17725–4.17775-----          | 37.5–38.25          | 1435–1626.5     | 9.0–9.2          |
| 4.20725–4.20775-----          | 73–74.6             | 1645.5–1646.5   | 9.3–9.5          |
| 6.215–6.218-----              | 74.8–75.2           | 1660–1710       | 10.6–12.7        |
| 6.26775–6.26825-----          | 108–121.94          | 1718.8–1722.2   | 13.25–13.4       |
| 6.31175–6.31225-----          | 123–138             | 2200–2300       | 14.47–14.5       |
| 8.291–8.294-----              | 149.9–150.05        | 2310–2390       | 15.35–16.2       |
| 8.362–8.366-----              | 156.52475–156.52525 | 2483.5–2500     | 17.7–21.4        |
| 8.37625–8.38675-----          | 156.7–156.9         | 2655–2900       | 22.01–23.12      |
| 8.41425–8.41475-----          | 162.0125–167.17     | 3260–3267       | 23.6–24.0        |
| 12.29–12.293-----             | 167.72–173.2        | 3332–3339       | 31.2–31.8        |
| 12.51975–12.52025-----        | 240–285             | 3345.8–3358 36. | 43–36.5          |
| 12.57675–12.57725-----        | 322–335.4           | 3600–4400       | ( <sup>2</sup> ) |

**Table 38. Restricted Bands of Operation**

<sup>1</sup> Until February 1, 1999, this restricted band shall be 0.490 – 0.510 MHz.

<sup>2</sup> Above 38.6

**Test Requirement(s):** § 15.209 (a): Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in Table 39.

| Frequency (MHz) | § 15.209(a), Radiated Emission Limits<br>(dBμV) @ 3m |
|-----------------|------------------------------------------------------|
| 30 - 88         | 40.00                                                |
| 88 - 216        | 43.50                                                |
| 216 - 960       | 46.00                                                |
| Above 960       | 54.00                                                |

**Table 39. Radiated Emissions Limits Calculated from FCC Part 15, § 15.209 (a)**

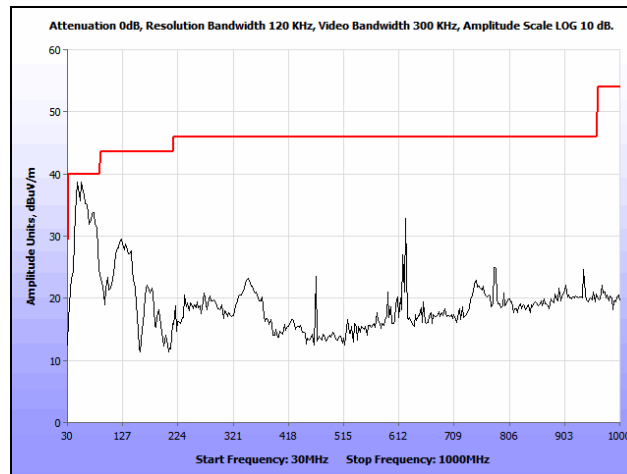
**Test Procedures:** The transmitter was turned on. Measurements were performed of the low, mid and high Channels. The EUT was rotated orthogonally through all three axes. Plots shown are corrected for both antenna correction factor, cable loss, preamp gain and distance and compared to a 3 m limit line. For 1-18GHz plots, a notch filter was used to notch out the fundamental frequency. Only noise floor was measured above 18 GHz.

**Test Results:** The EUT was compliant with the Radiated Spurious Emission limits of § 15.247(d). All emissions above 18 GHz were at the noise floor of the receiver.

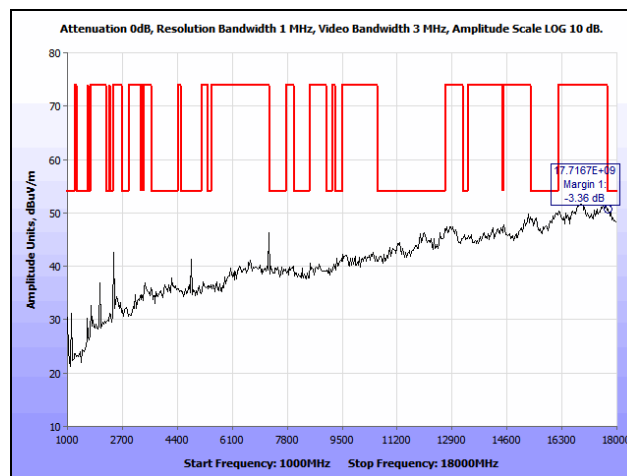
**Test Engineer(s):** Jonathan Chao

**Test Date(s):** 02/18/13

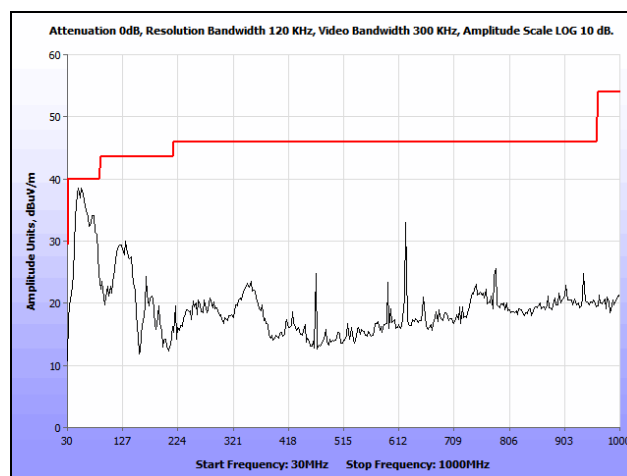
## Radiated Spurious Emissions Test Results, 3 dBi Ceiling Mount, 802.11 b, 2.4 GHz



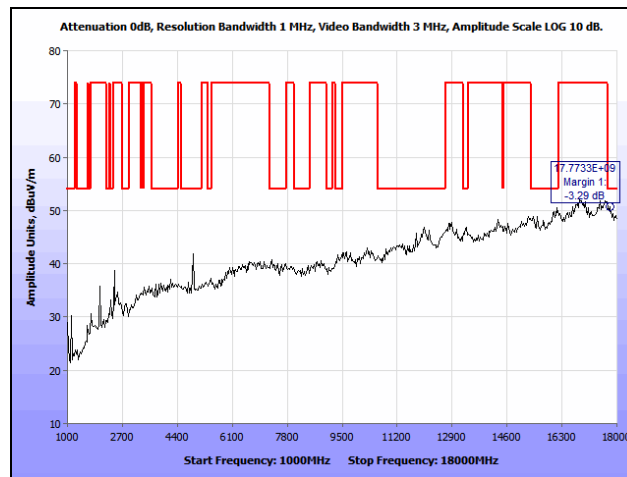
Plot 174. Radiated Spurious Emissions, 3 dBi Ceiling Mount, 802.11b, 2412 MHz, Low Channel, 30 MHz - 1 GHz



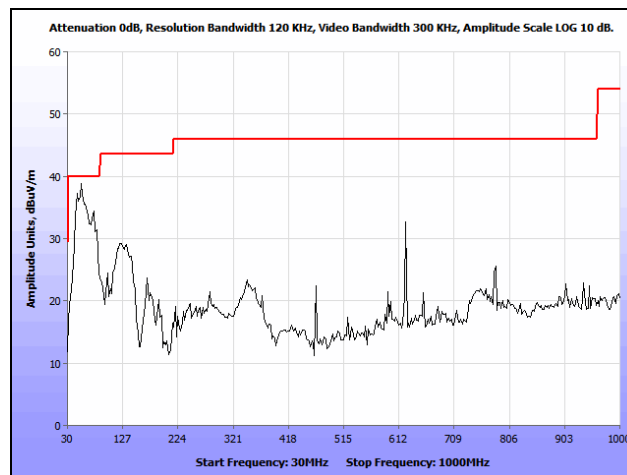
Plot 175. Radiated Spurious Emissions, 3 dBi Ceiling Mount, 802.11b, 2412 MHz, Low Channel, 1 GHz - 18 GHz



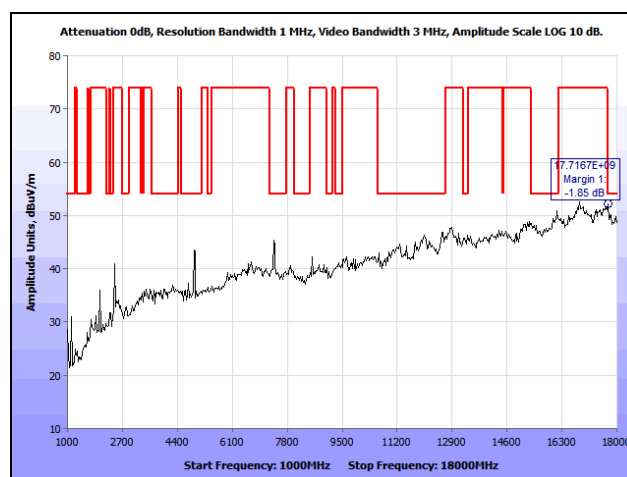
Plot 176. Radiated Spurious Emissions, 3 dBi Ceiling Mount, 802.11b, 2437 MHz, Mid Channel, 30 MHz - 1 GHz



Plot 177. Radiated Spurious Emissions, 3 dBi Ceiling Mount, 802.11b, 2437 MHz, Mid Channel, 1 GHz - 18 GHz

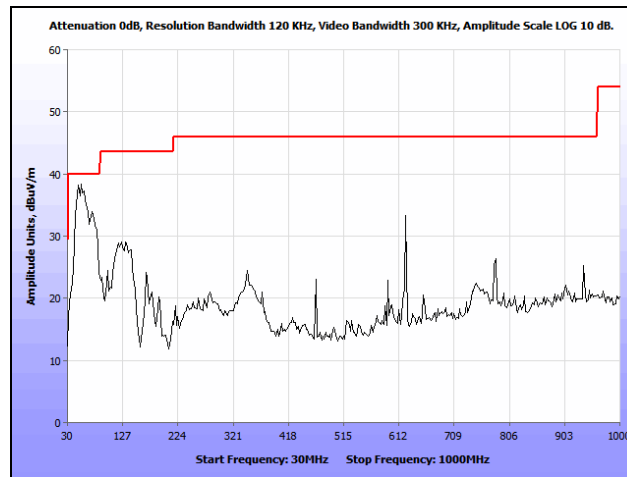


Plot 178. Radiated Spurious Emissions, 3 dBi Ceiling Mount, 802.11b, 2462 MHz, High Channel, 30 MHz - 1 GHz

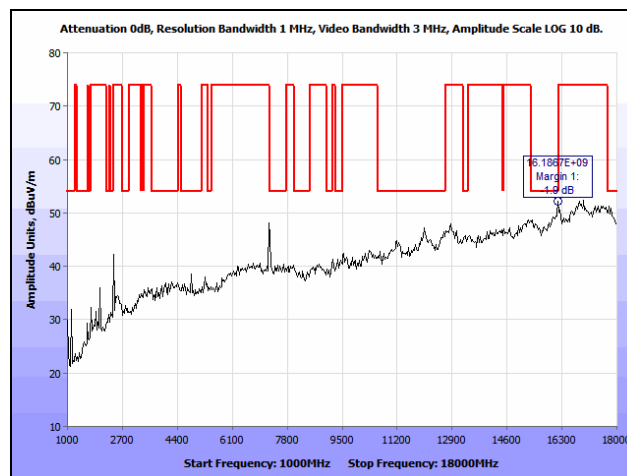


Plot 179. Radiated Spurious Emissions, 3 dBi Ceiling Mount, 802.11b, 2462 MHz, High Channel, 1 GHz - 18 GHz

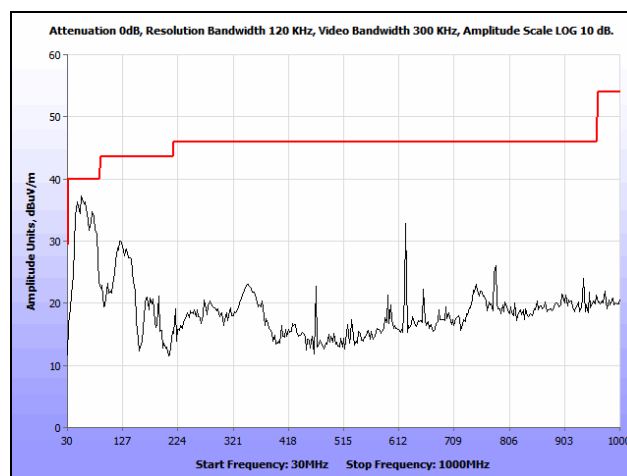
## Radiated Spurious Emissions Test Results, 3 dBi Ceiling Mount, 802.11 g, 2.4 GHz



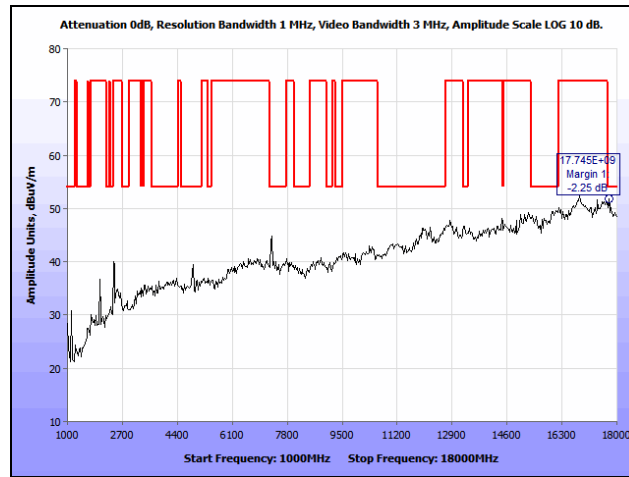
Plot 180. Radiated Spurious Emissions, 3 dBi Ceiling Mount, 802.11g, 2412 MHz, Low Channel, 30 MHz - 1 GHz



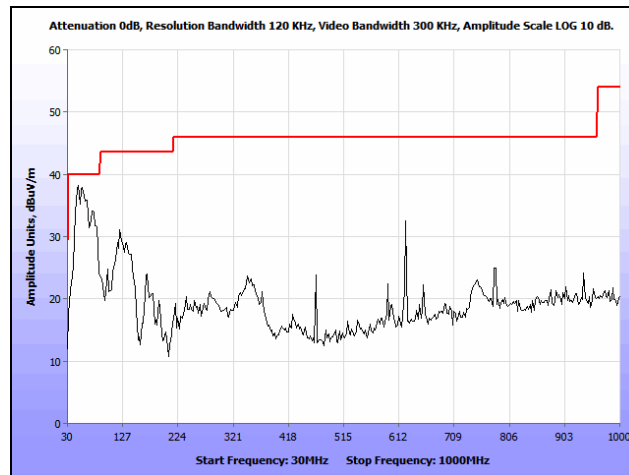
Plot 181. Radiated Spurious Emissions, 3 dBi Ceiling Mount, 802.11g, 2412 MHz, Low Channel, 1 GHz - 18 GHz



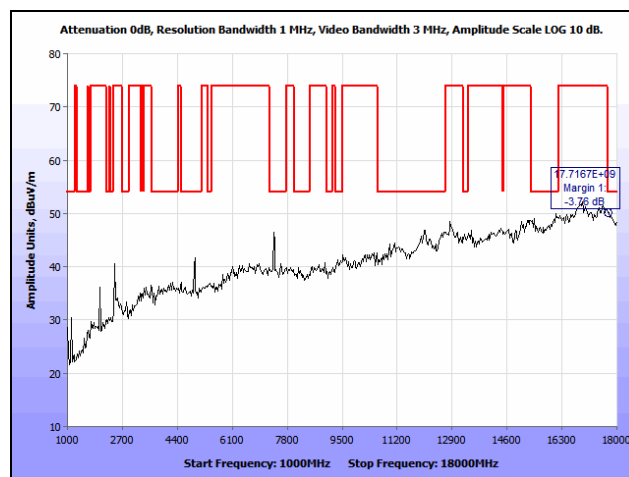
Plot 182. Radiated Spurious Emissions, 3 dBi Ceiling Mount, 802.11g, 2437 MHz, Mid Channel, 30 MHz - 1 GHz



**Plot 183. Radiated Spurious Emissions, 3 dBi Ceiling Mount, 802.11g, 2437 MHz, Mid Channel, 1 GHz - 18 GHz**

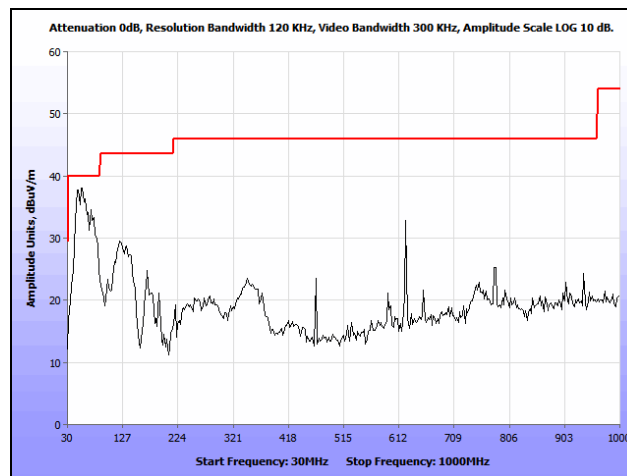


**Plot 184. Radiated Spurious Emissions, 3 dBi Ceiling Mount, 802.11g, 2462 MHz, High Channel, 30 MHz - 1 GHz**

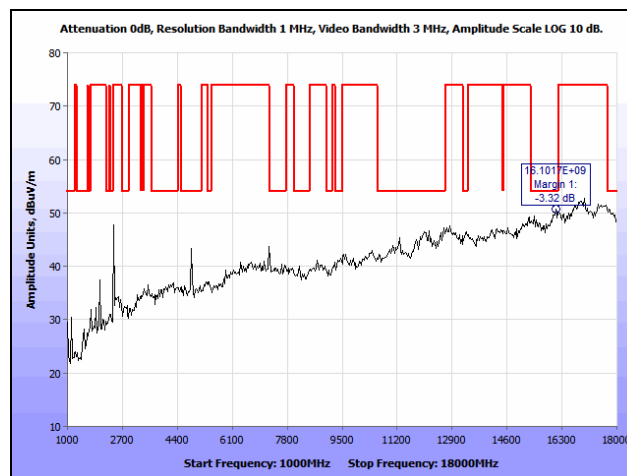


**Plot 185. Radiated Spurious Emissions, 3 dBi Ceiling Mount, 802.11g, 2462 MHz, High Channel, 1 GHz - 18 GHz**

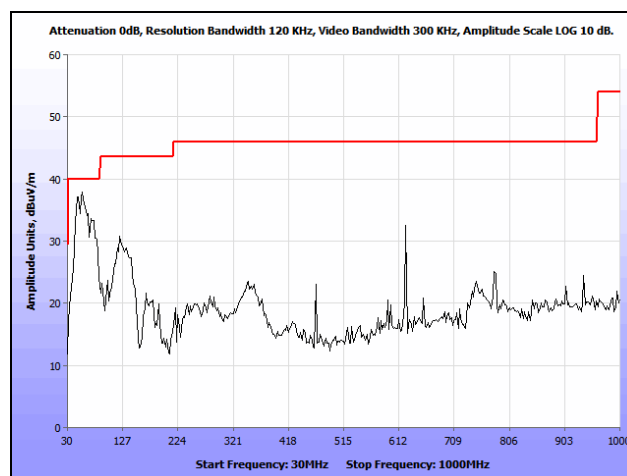
## Radiated Spurious Emissions Test Results, 3 dBi Ceiling Mount, 802.11n 20 MHz, 2.4 GHz



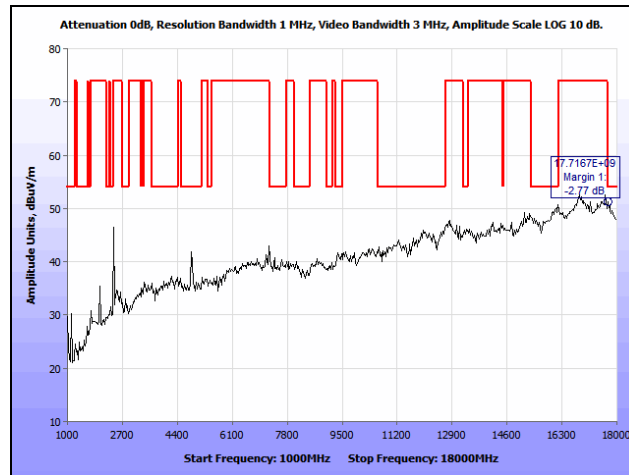
Plot 186. Radiated Spurious Emissions, 3 dBi Ceiling Mount, 802.11n 20 MHz, 2412 MHz, Low Channel, 30 MHz - 1 GHz



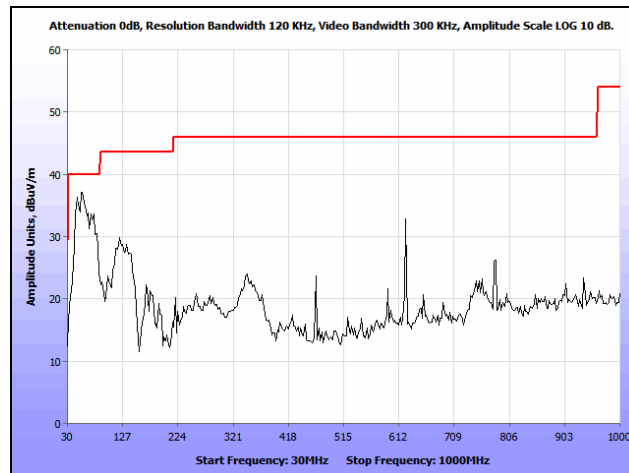
Plot 187. Radiated Spurious Emissions, 3 dBi Ceiling Mount, 802.11n 20 MHz, 2412 MHz, Low Channel, 1 GHz - 18 GHz



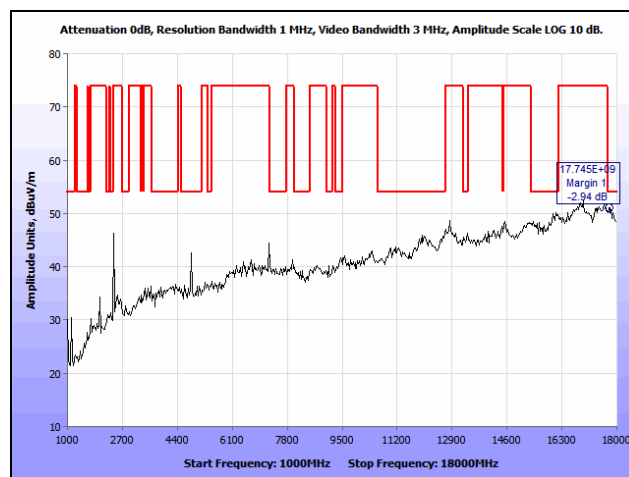
Plot 188. Radiated Spurious Emissions, 3 dBi Ceiling Mount, 802.11n 20 MHz, 2437 MHz, Mid Channel, 30 MHz - 1 GHz



Plot 189. Radiated Spurious Emissions, 3 dBm Ceiling Mount, 802.11n 20 MHz, 2437 MHz, Mid Channel, 1 GHz - 18 GHz

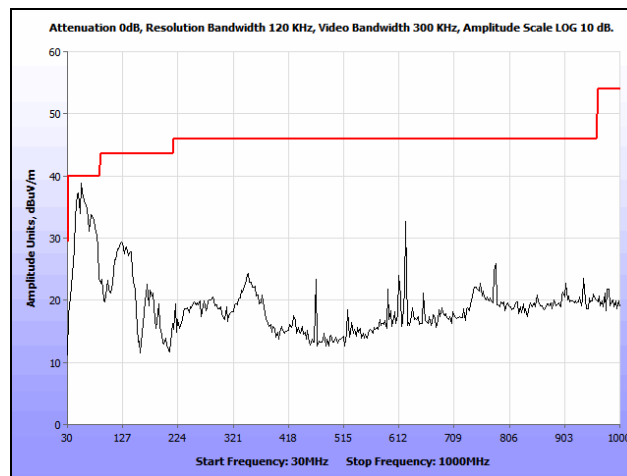


Plot 190. Radiated Spurious Emissions, 3 dBm Ceiling Mount, 802.11n 20 MHz, 2462 MHz, High Channel, 30 MHz - 1 GHz

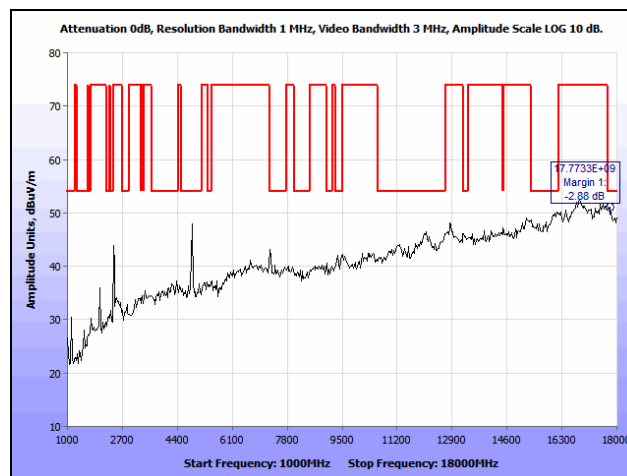


Plot 191. Radiated Spurious Emissions, 3 dBm Ceiling Mount, 802.11n 20 MHz, 2462 MHz, High Channel, 1 GHz - 18 GHz

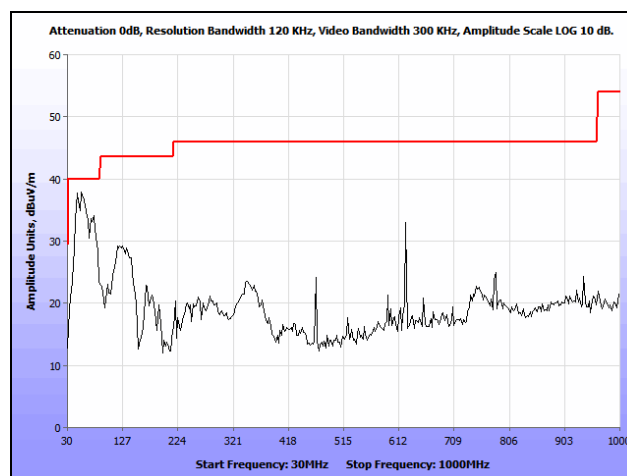
## Radiated Spurious Emissions Test Results, 3 dBi Ceiling Mount, 802.11n 40 MHz, 2.4 GHz



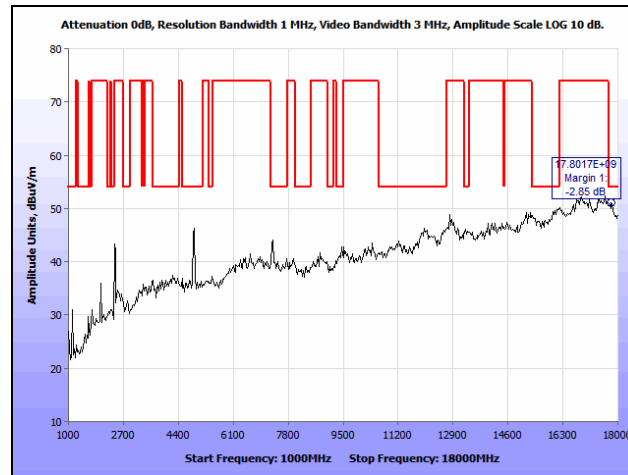
Plot 192. Radiated Spurious Emissions, 3 dBi Ceiling Mount, 802.11n 40 MHz, 2422 MHz, Low Channel, 30 MHz - 1 GHz



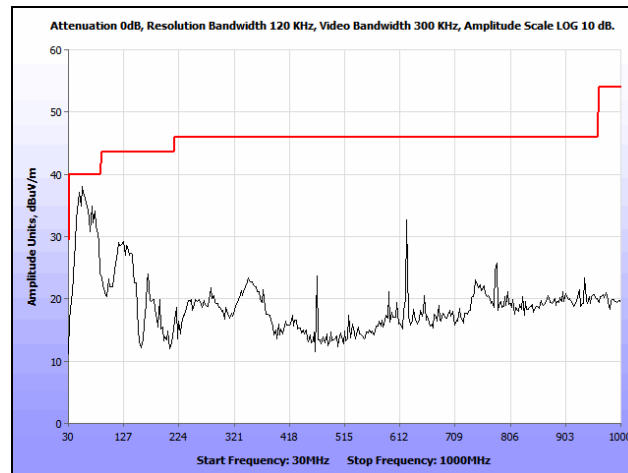
Plot 193. Radiated Spurious Emissions, 3 dBi Ceiling Mount, 802.11n 40 MHz, 2422 MHz, Low Channel, 1 GHz - 18 GHz



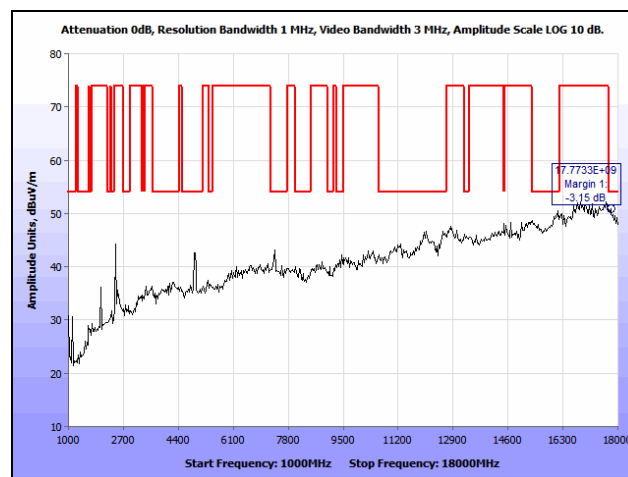
Plot 194. Radiated Spurious Emissions, 3 dBi Ceiling Mount, 802.11n 40 MHz, 2437 MHz, Mid Channel, 30 MHz - 1 GHz



Plot 195. Radiated Spurious Emissions, 3 dBi Ceiling Mount, 802.11n 40 MHz, 2437 MHz, Mid Channel, 1 GHz - 18 GHz

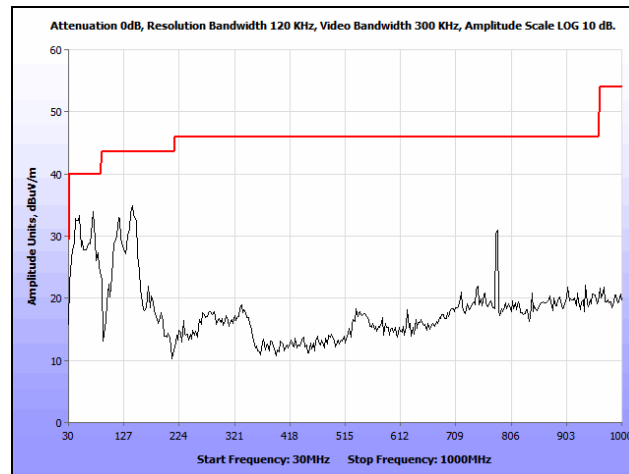


Plot 196. Radiated Spurious Emissions, 3 dBi Ceiling Mount, 802.11n 40 MHz, 2452 MHz, High Channel, 30 MHz - 1 GHz

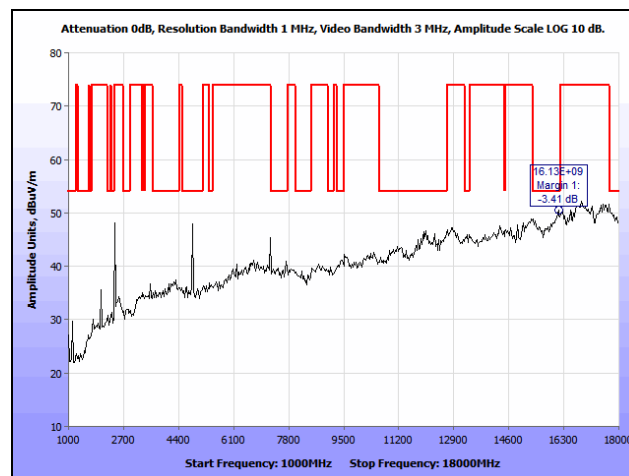


Plot 197. Radiated Spurious Emissions, 3 dBi Ceiling Mount, 802.11n 40 MHz, 2452 MHz, High Channel, 1 GHz - 18 GHz

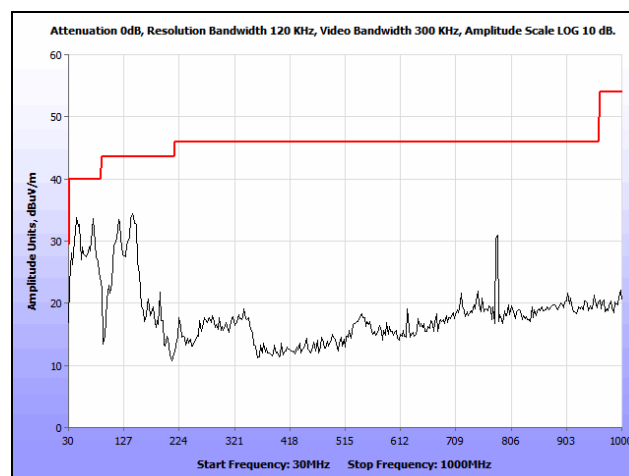
## Radiated Spurious Emissions Test Results, 6 dBi Omni, 802.11b, 2.4 GHz



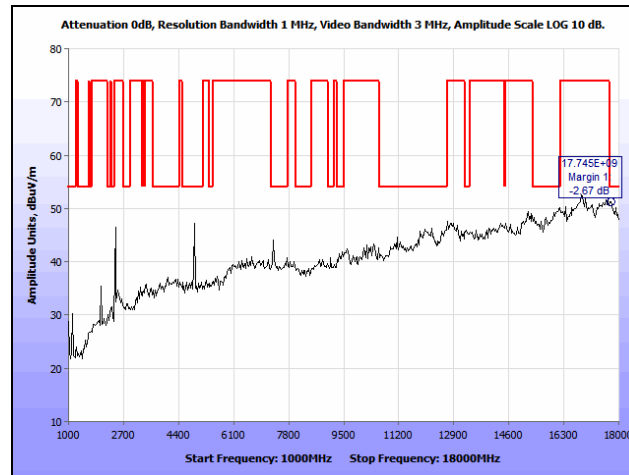
Plot 198. Radiated Spurious Emissions, 6 dBi Omni, 802.11b, 2412 MHz, Low Channel, 30 MHz - 1 GHz



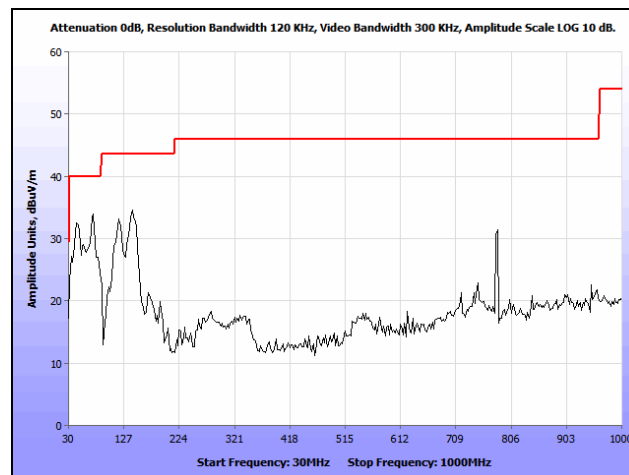
Plot 199. Radiated Spurious Emissions, 6 dBi Omni, 802.11b, 2412 MHz, Low Channel, 1 GHz - 18 GHz



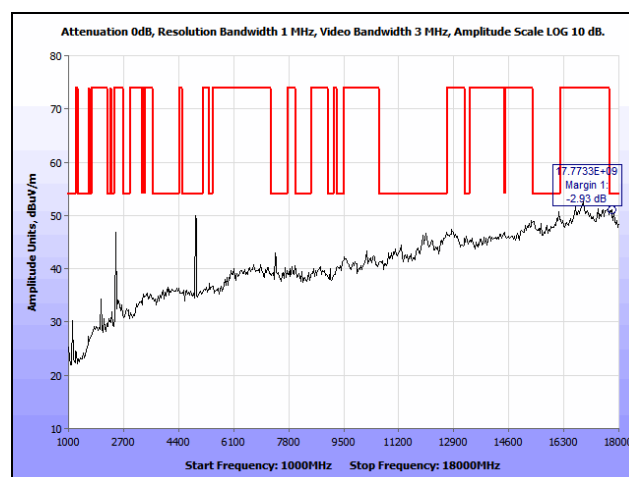
Plot 200. Radiated Spurious Emissions, 6 dBi Omni, 802.11b, 2437 MHz, Mid Channel, 30 MHz - 1 GHz



**Plot 201. Radiated Spurious Emissions, 6 dBi Omni, 802.11b, 2437 MHz, Mid Channel, 1 GHz - 18 GHz**

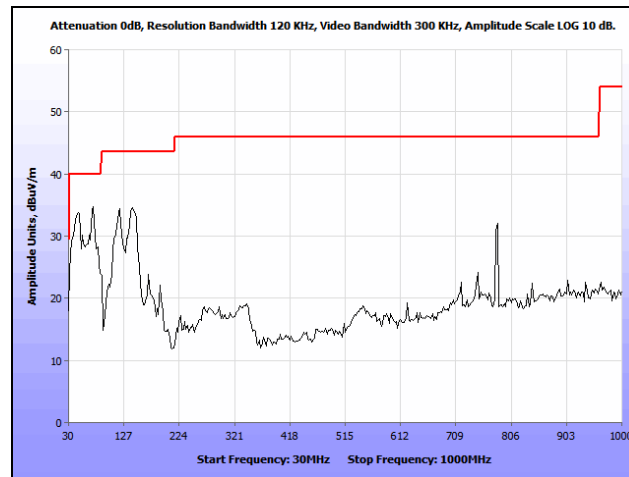


**Plot 202. Radiated Spurious Emissions, 6 dBi Omni, 802.11b, 2462 MHz, High Channel, 30 MHz - 1 GHz**

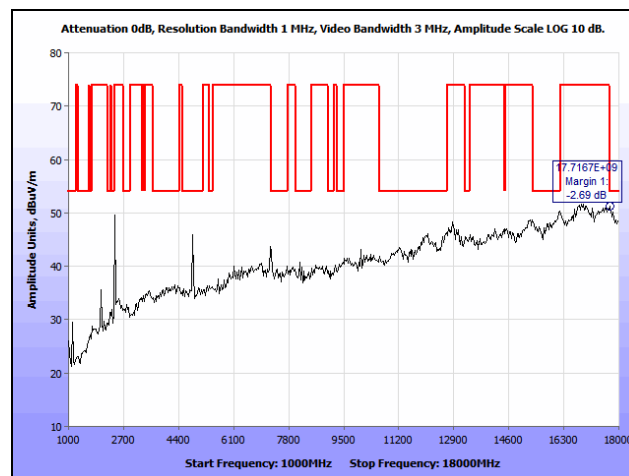


**Plot 203. Radiated Spurious Emissions, 6 dBi Omni, 802.11b, 2462 MHz, High Channel, 1 GHz - 18 GHz**

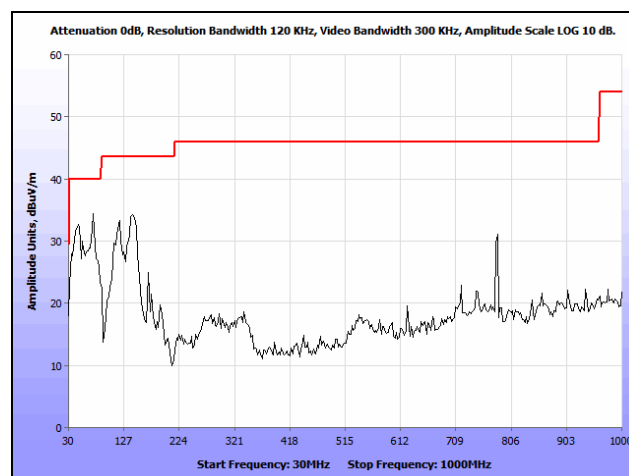
## Radiated Spurious Emissions Test Results, 6 dBi Omni, 802.11g, 2.4 GHz



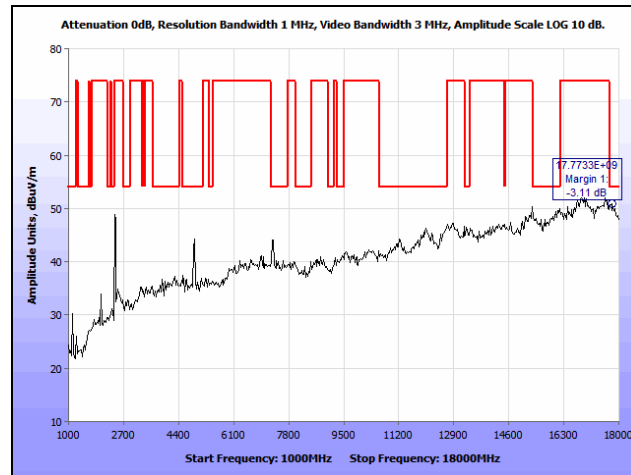
Plot 204. Radiated Spurious Emissions, 6 dBi Omni, 802.11g, 2412 MHz, Low Channel, 30 MHz - 1 GHz



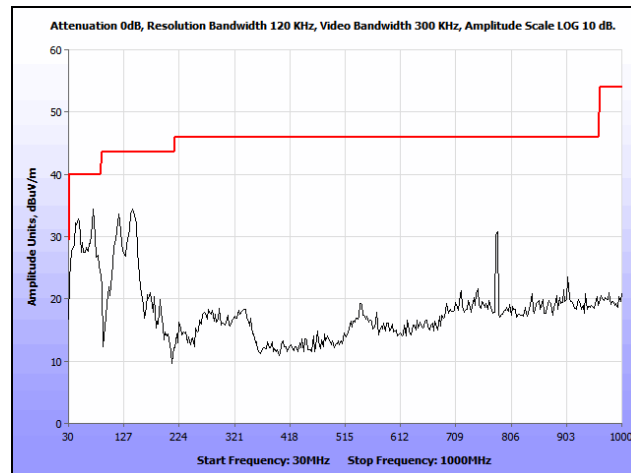
Plot 205. Radiated Spurious Emissions, 6 dBi Omni, 802.11g, 2412 MHz, Low Channel, 1 GHz - 18 GHz



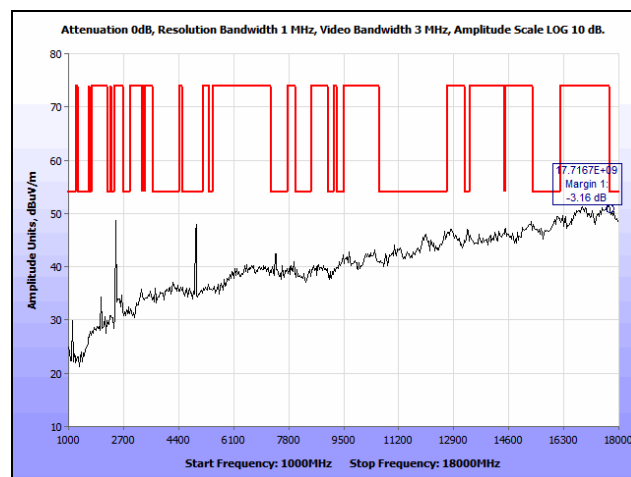
Plot 206. Radiated Spurious Emissions, 6 dBi Omni, 802.11g, 2437 MHz, Mid Channel, 30 MHz - 1 GHz



**Plot 207. Radiated Spurious Emissions, 6 dBi Omni, 802.11g, 2437 MHz, Mid Channel, 1 GHz - 18 GHz**

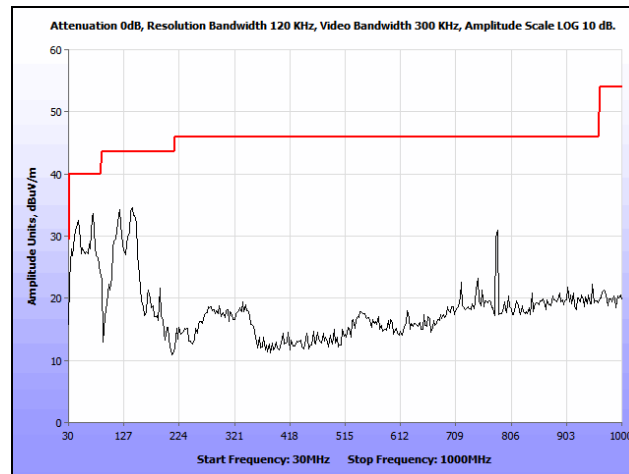


**Plot 208. Radiated Spurious Emissions, 6 dBi Omni, 802.11g, 2462 MHz, High Channel, 30 MHz - 1 GHz**

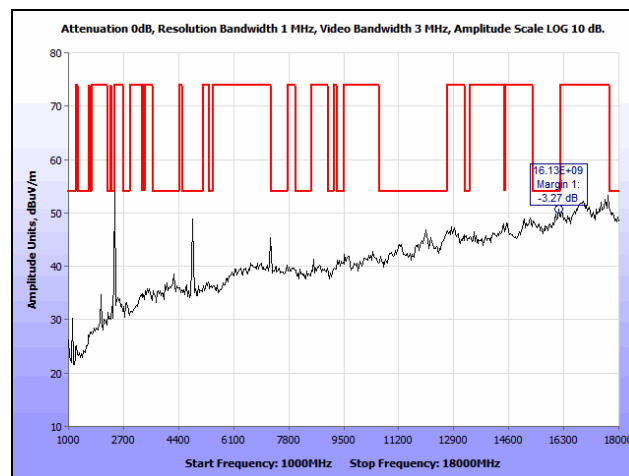


**Plot 209. Radiated Spurious Emissions, 6 dBi Omni, 802.11g, 2462 MHz, High Channel, 1 GHz - 18 GHz**

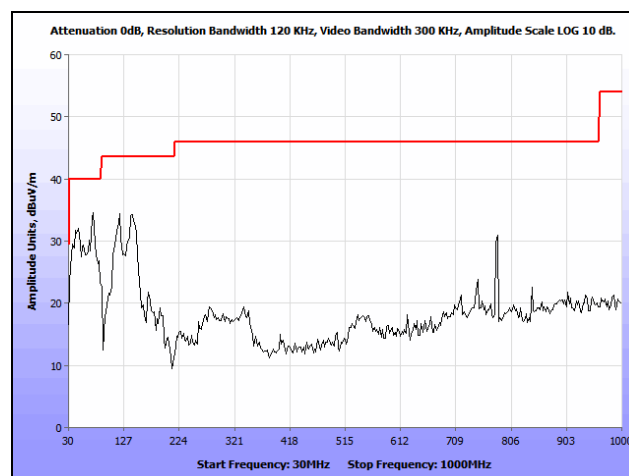
## Radiated Spurious Emissions Test Results, 6 dBi Omni, 802.11n 20 MHz, 2.4 GHz



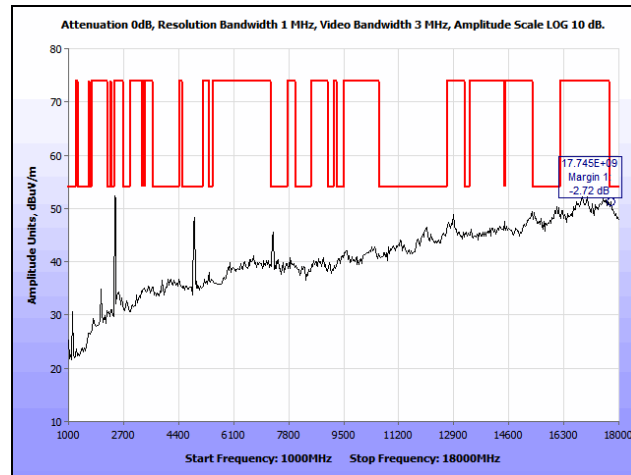
Plot 210. Radiated Spurious Emissions, 6 dBi Omni, 802.11n 20 MHz, 2412 MHz, Low Channel, 30 MHz - 1 GHz



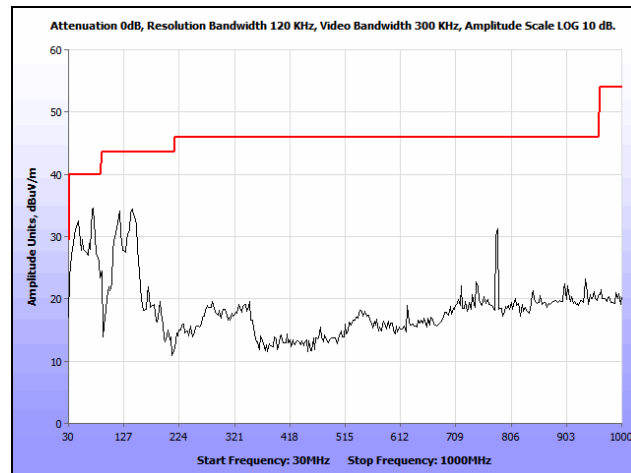
Plot 211. Radiated Spurious Emissions, 6 dBi Omni, 802.11n 20 MHz, 2412 MHz, Low Channel, 1 GHz - 18 GHz



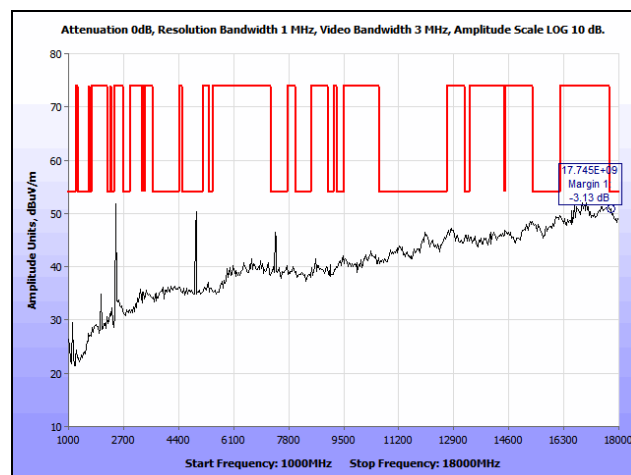
Plot 212. Radiated Spurious Emissions, 6 dBi Omni, 802.11n 20 MHz, 2437 MHz, Mid Channel, 30 MHz - 1 GHz



Plot 213. Radiated Spurious Emissions, 6 dBi Omni, 802.11n 20 MHz, 2437 MHz, Mid Channel, 1 GHz - 18 GHz

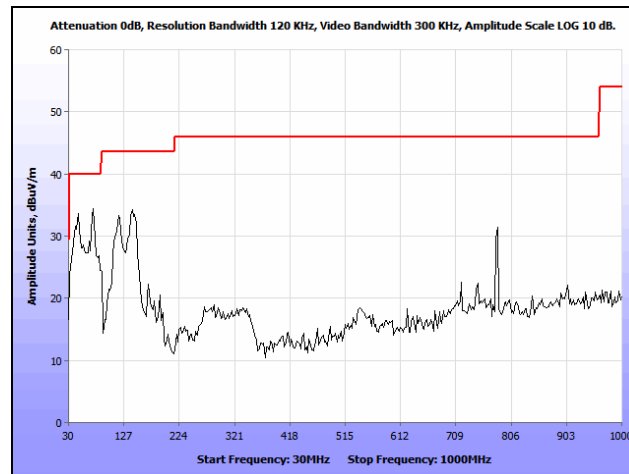


Plot 214. Radiated Spurious Emissions, 6 dBi Omni, 802.11n 20 MHz, 2462 MHz, High Channel, 30 MHz - 1 GHz

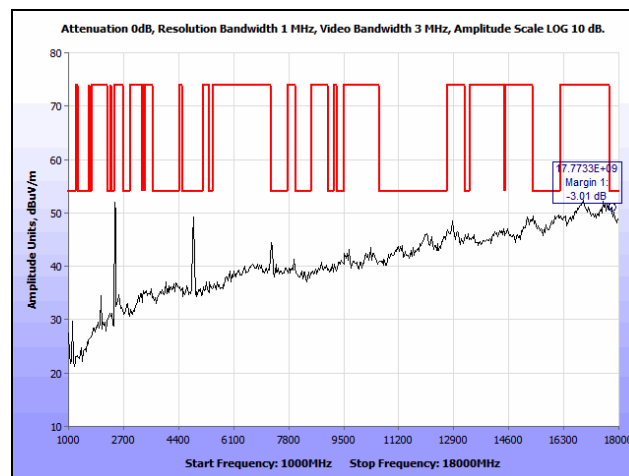


Plot 215. Radiated Spurious Emissions, 6 dBi Omni, 802.11n 20 MHz, 2462 MHz, High Channel, 1 GHz - 18 GHz

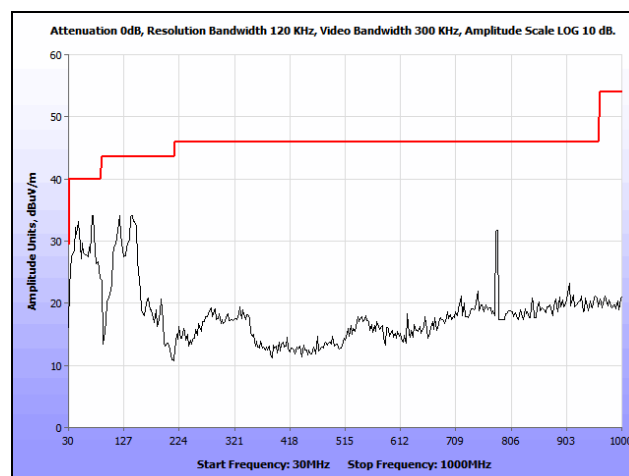
## Radiated Spurious Emissions Test Results, 6 dBi Omni, 802.11n 40 MHz, 2.4 GHz



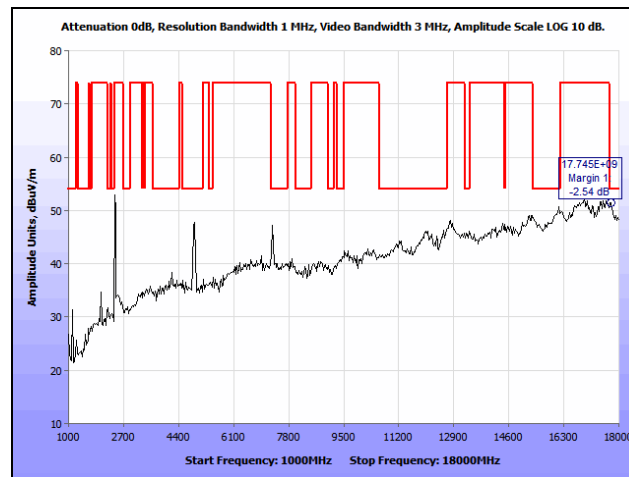
Plot 216. Radiated Spurious Emissions, 6 dBi Omni, 802.11n 40 MHz, 2422 MHz, Low Channel, 30 MHz - 1 GHz



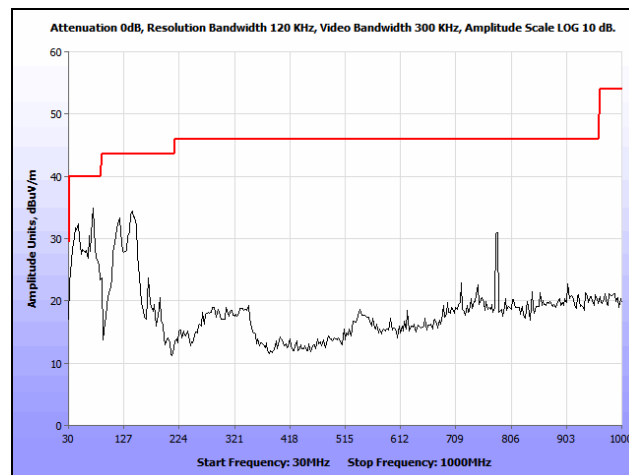
Plot 217. Radiated Spurious Emissions, 6 dBi Omni, 802.11n 40 MHz, 2422 MHz, Low Channel, 1 GHz - 18 GHz



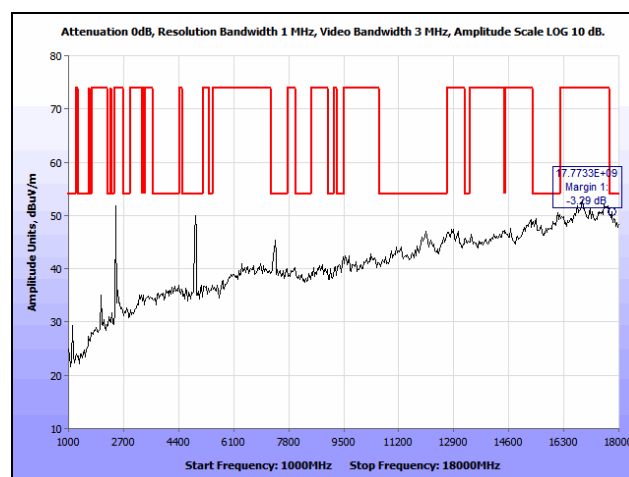
Plot 218. Radiated Spurious Emissions, 6 dBi Omni, 802.11n 40 MHz, 2437 MHz, Mid Channel, 30 MHz - 1 GHz



Plot 219. Radiated Spurious Emissions, 6 dBi Omni, 802.11n 40 MHz, 2437 MHz, Mid Channel, 1 GHz - 18 GHz

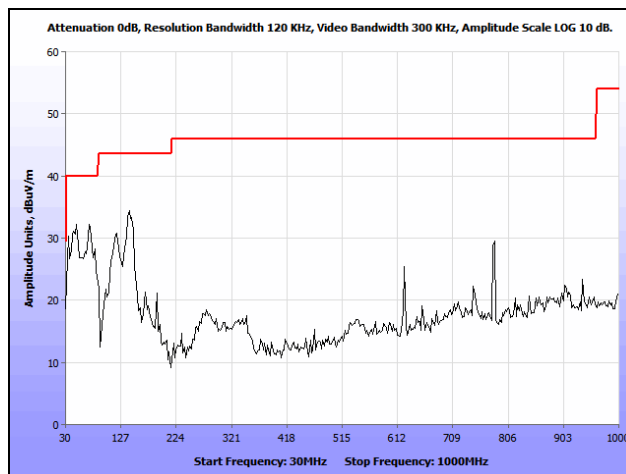


Plot 220. Radiated Spurious Emissions, 6 dBi Omni, 802.11n 40 MHz, 2452 MHz, High Channel, 30 MHz - 1 GHz

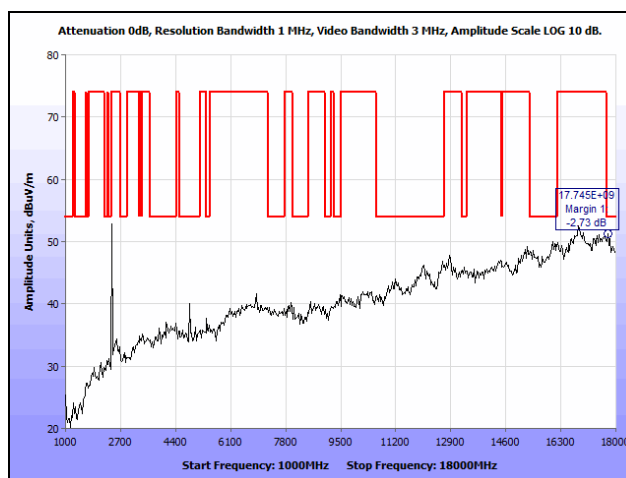


Plot 221. Radiated Spurious Emissions, 6 dBi Omni, 802.11n 40 MHz, 2452 MHz, High Channel, 1 GHz - 18 GHz

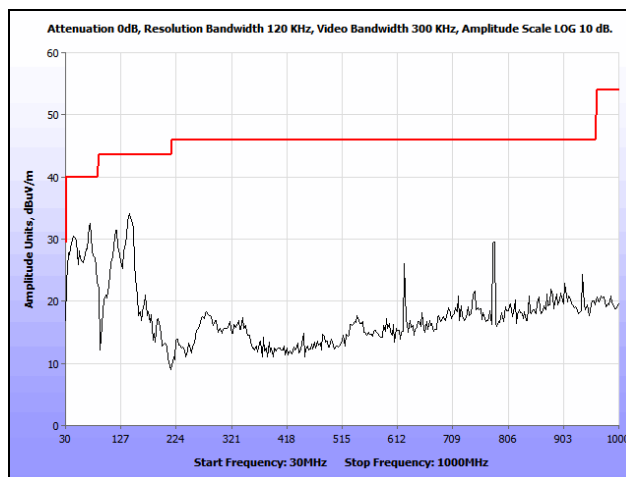
## Radiated Spurious Emissions Test Results, 6 dBi Patch, 802.11b, 2.4 GHz



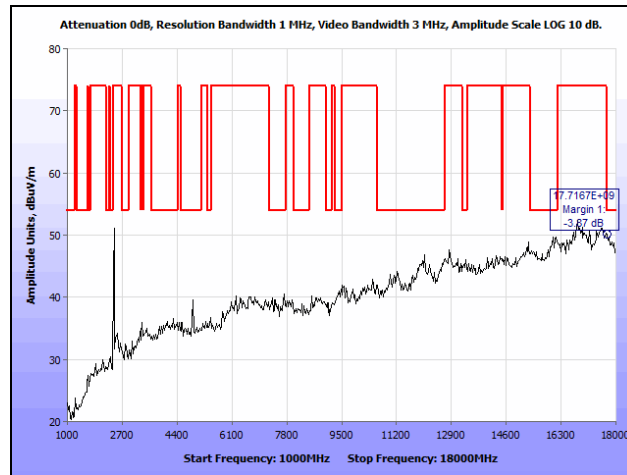
Plot 222. Radiated Spurious Emissions, 6 dBi Patch, 802.11b, 2412 MHz, 30 MHz - 1 GHz



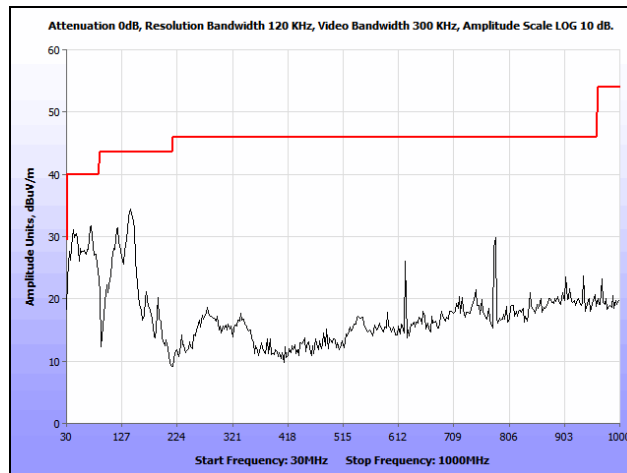
Plot 223. Radiated Spurious Emissions, 6 dBi Patch, 802.11b, 2412 MHz, 1 GHz - 18 GHz



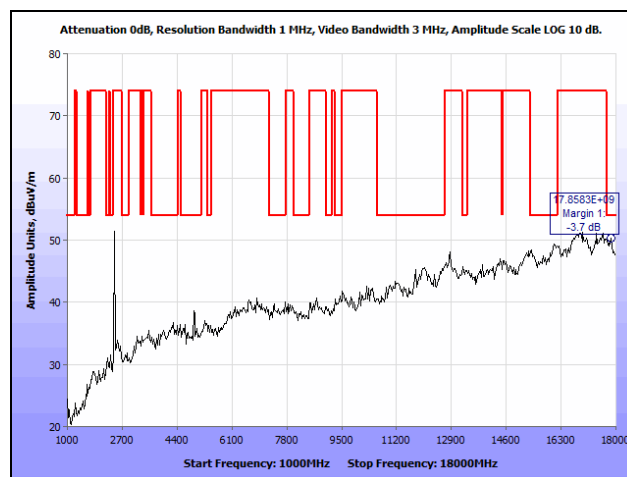
Plot 224. Radiated Spurious Emissions, 6 dBi Patch, 802.11b, 2437 MHz, 30 MHz - 1 GHz



Plot 225. Radiated Spurious Emissions, 6 dBi Patch, 802.11b, 2437 MHz, 1 GHz – 18 GHz

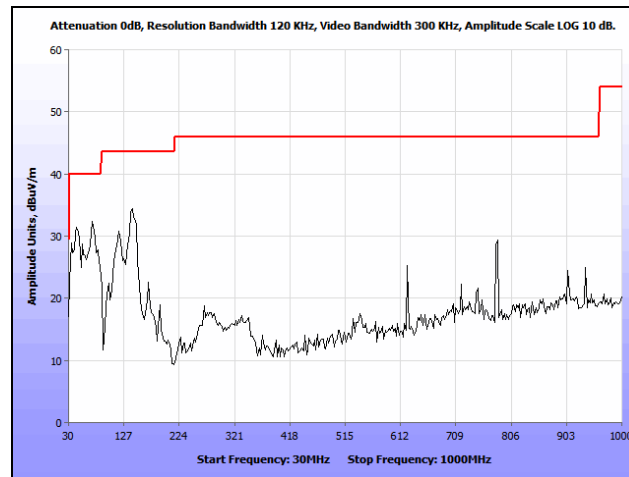


Plot 226. Radiated Spurious Emissions, 6 dBi Patch, 802.11b, 2462 MHz, 30 MHz - 1 GHz

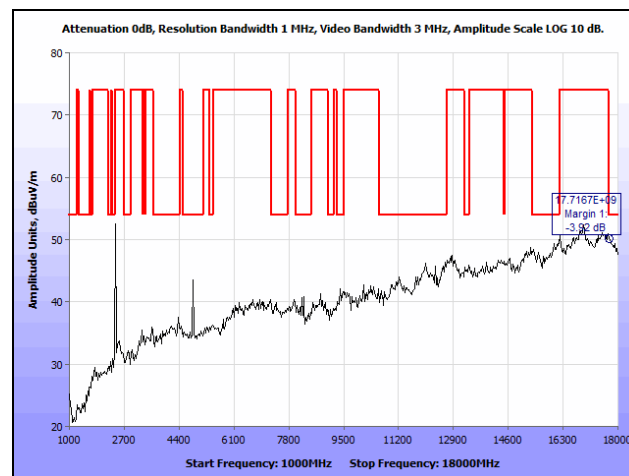


Plot 227. Radiated Spurious Emissions, 6 dBi Patch, 802.11b, 2462 MHz, 1 GHz – 18 GHz

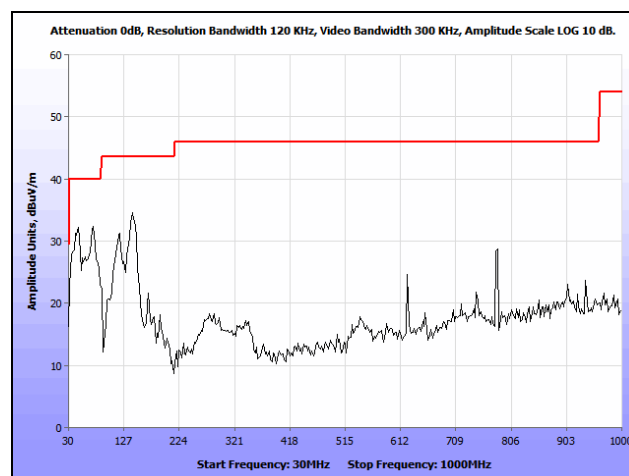
## Radiated Spurious Emissions Test Results, 6 dBi Patch, 802.11g, 2.4 GHz



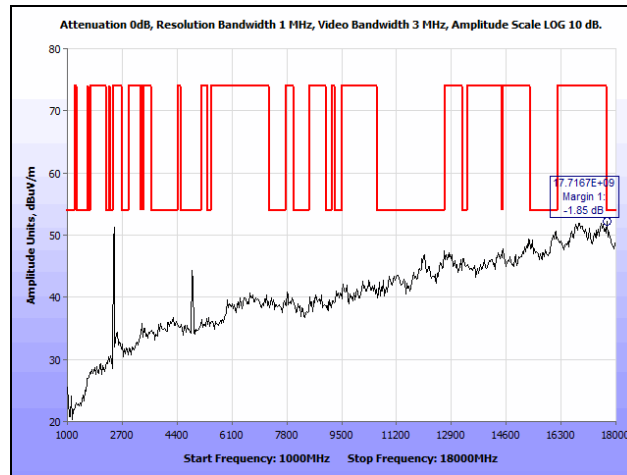
Plot 228. Radiated Spurious Emissions, 6 dBi Patch, 802.11g, 2412 MHz, 30 MHz - 1 GHz



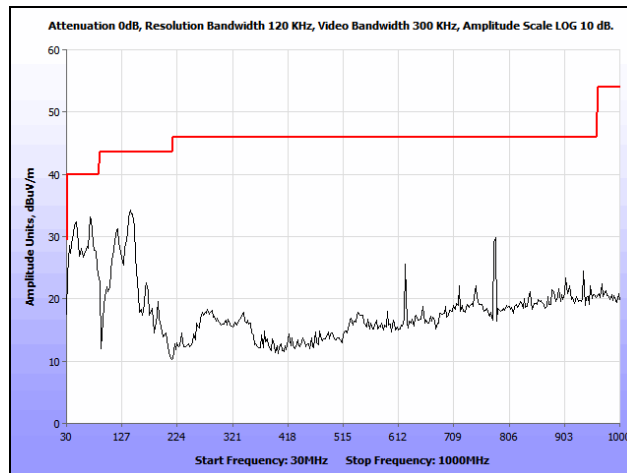
Plot 229. Radiated Spurious Emissions, 6 dBi Patch, 802.11g, 2412 MHz, 1 GHz - 18 GHz



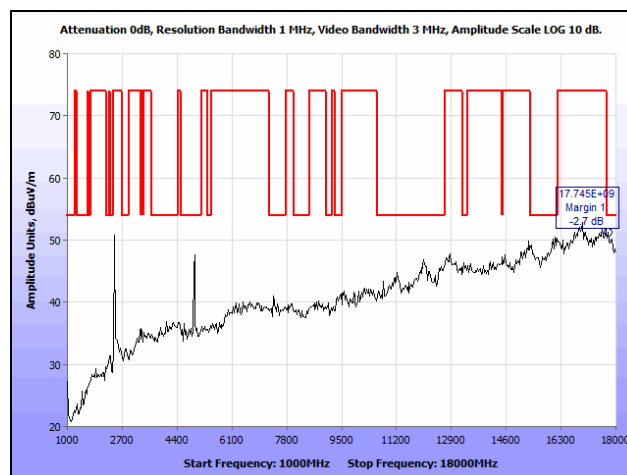
Plot 230. Radiated Spurious Emissions, 6 dBi Patch, 802.11g, 2437 MHz, 30 MHz - 1 GHz



Plot 231. Radiated Spurious Emissions, 6 dBi Patch, 802.11g, 2437 MHz, 1 GHz – 18 GHz

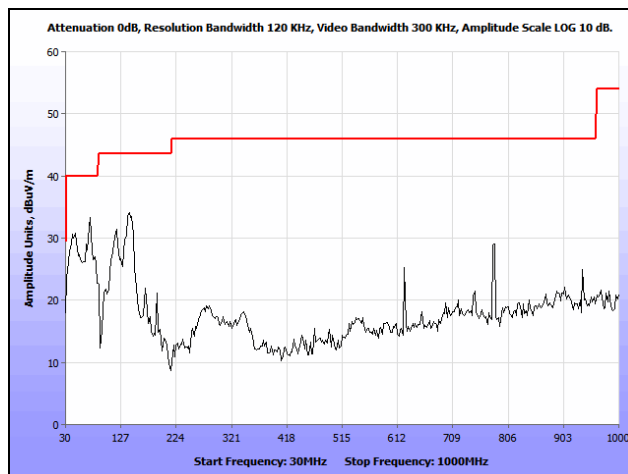


Plot 232. Radiated Spurious Emissions, 6 dBi Patch, 802.11g, 2462 MHz, 30 MHz - 1 GHz

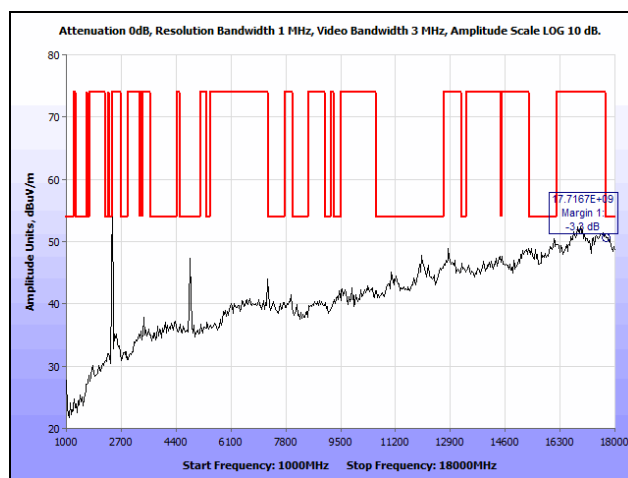


Plot 233. Radiated Spurious Emissions, 6 dBi Patch, 802.11g, 2462 MHz, 1 GHz – 18 GHz

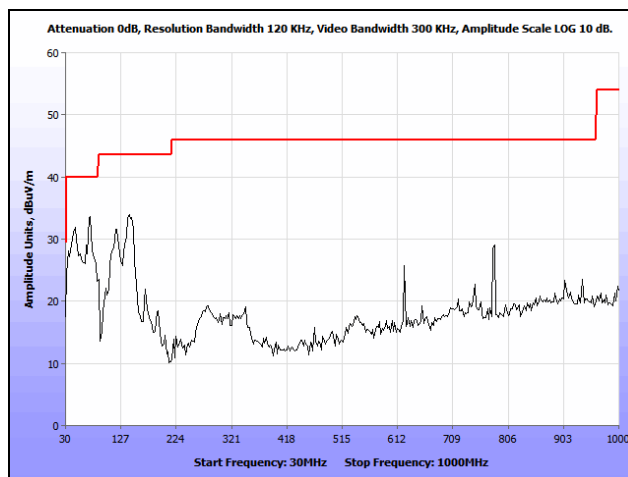
## Radiated Spurious Emissions Test Results, 6 dBi Patch, 802.11n 20 MHz, 2.4 GHz



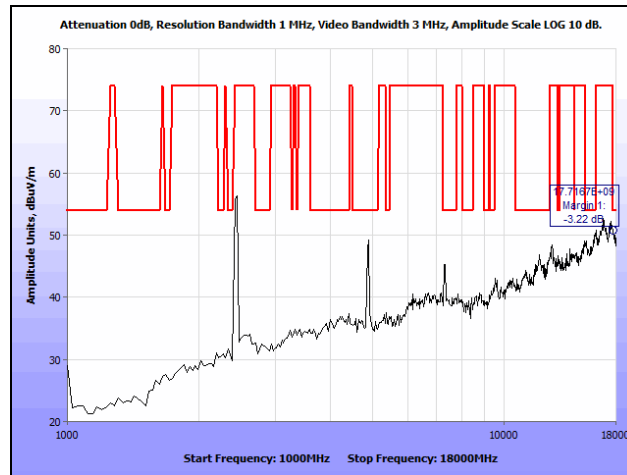
Plot 234. Radiated Spurious Emissions, 6 dBi Patch, 802.11n 20 MHz, 2412 MHz, 30 MHz - 1 GHz



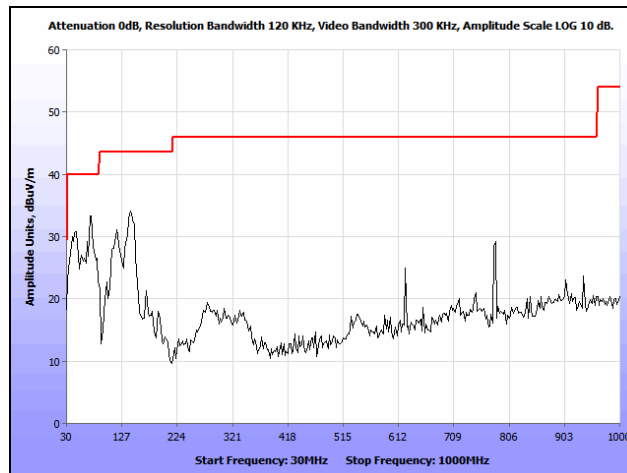
Plot 235. Radiated Spurious Emissions, 6 dBi Patch, 802.11n 20 MHz, 2412 MHz, 1 GHz - 18 GHz



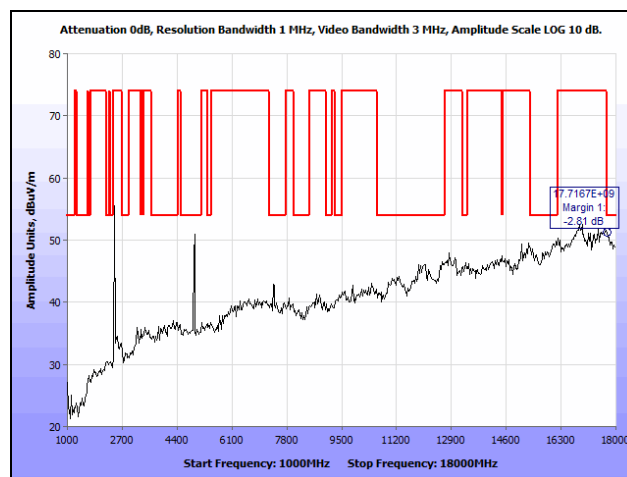
Plot 236. Radiated Spurious Emissions, 6 dBi Patch, 802.11n 20 MHz, 2437 MHz, 30 MHz - 1 GHz



**Plot 237. Radiated Spurious Emissions, 6 dBi Patch, 802.11n 20 MHz, 2437 MHz, 1 GHz – 18 GHz**

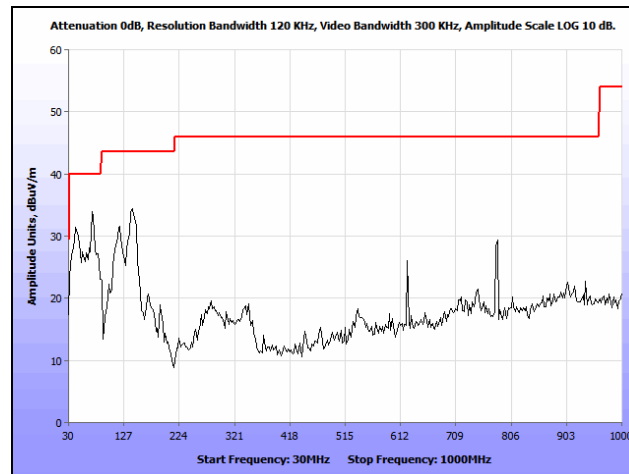


**Plot 238. Radiated Spurious Emissions, 6 dBi Patch, 802.11n 20 MHz, 2462 MHz, 30 MHz - 1 GHz**

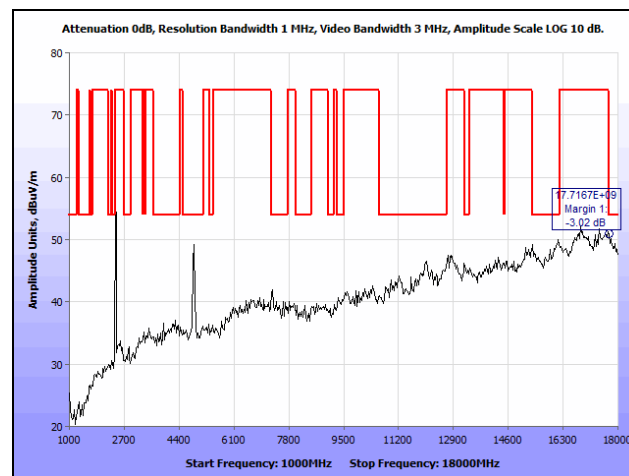


**Plot 239. Radiated Spurious Emissions, 6 dBi Patch, 802.11n 20 MHz, 2462 MHz, 1 GHz – 18 GHz**

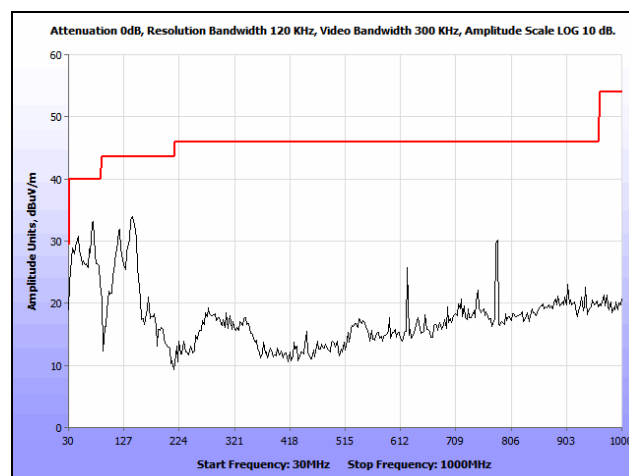
## Radiated Spurious Emissions Test Results, 6 dBi Patch, 802.11n 40 MHz, 2.4 GHz



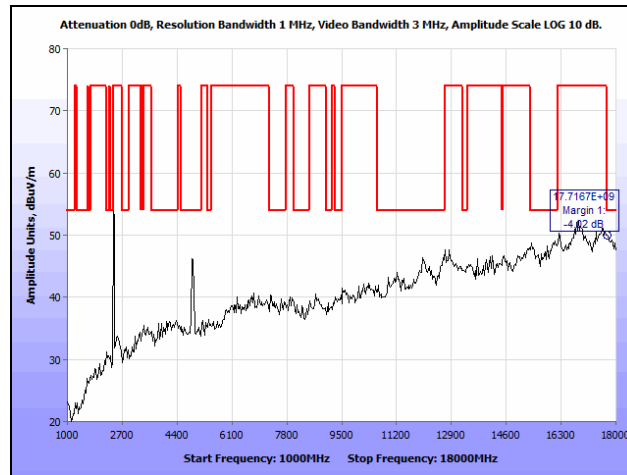
Plot 240. Radiated Spurious Emissions, 6 dBi Patch, 802.11n 40 MHz, 2422 MHz, 30 MHz - 1 GHz



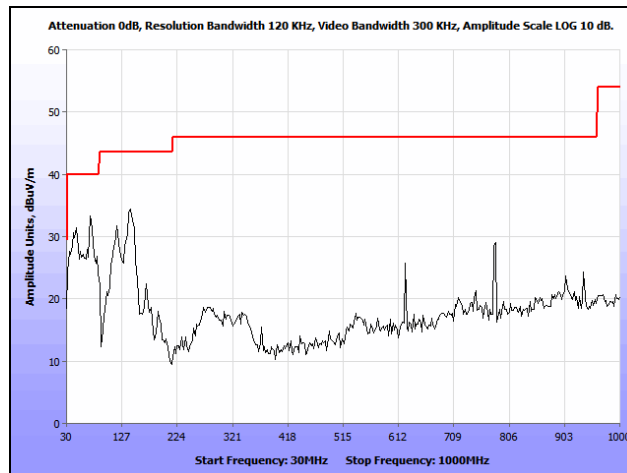
Plot 241. Radiated Spurious Emissions, 6 dBi Patch, 802.11n 40 MHz, 2422 MHz, 1 GHz - 18 GHz



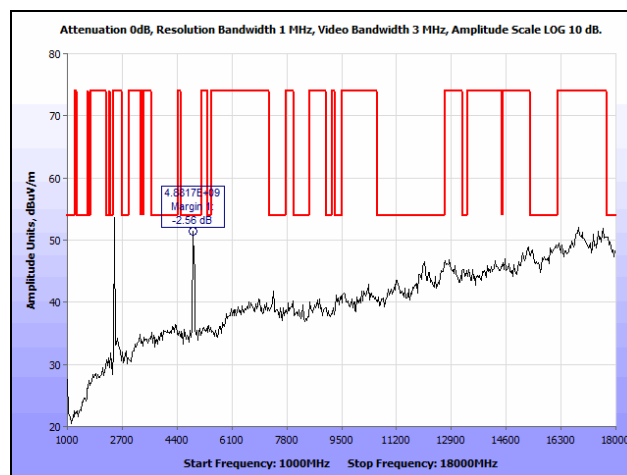
Plot 242. Radiated Spurious Emissions, 6 dBi Patch, 802.11n 40 MHz, 2437 MHz, 30 MHz - 1 GHz



Plot 243. Radiated Spurious Emissions, 6 dBi Patch, 802.11n 40 MHz, 2437 MHz, 1 GHz – 18 GHz

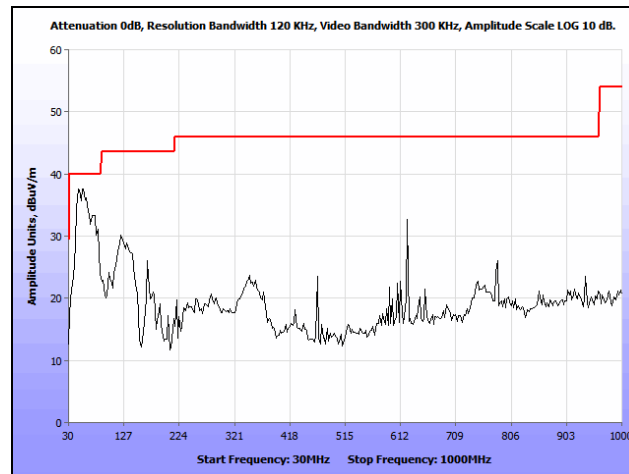


Plot 244. Radiated Spurious Emissions, 6 dBi Patch, 802.11n 40 MHz, 2452 MHz, 30 MHz - 1 GHz

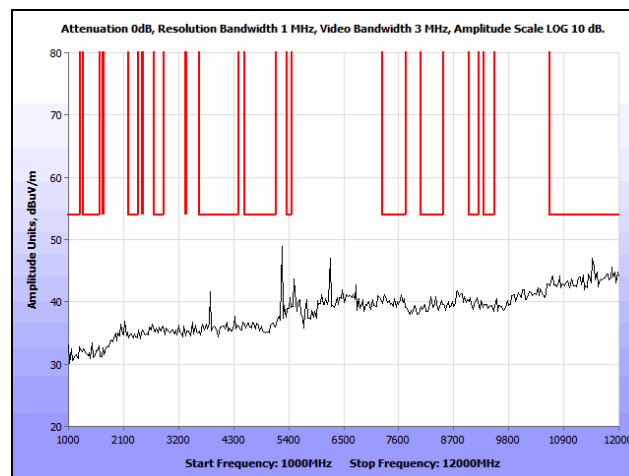


Plot 245. Radiated Spurious Emissions, 6 dBi Patch, 802.11n 40 MHz, 2452 MHz, 1 GHz – 18 GHz

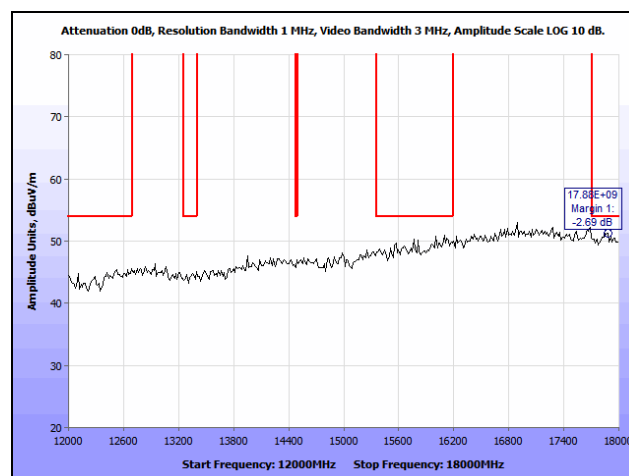
## Radiated Spurious Emissions Test Results, 4 dBi Ceiling Mount, 802.11a, 5 GHz



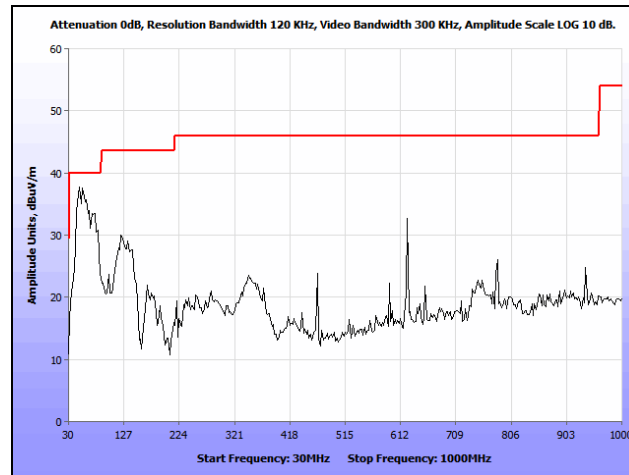
Plot 246. Radiated Spurious Emissions, 4 dBi Ceiling Mount, 802.11a, 5745, 30 MHz - 1 GHz



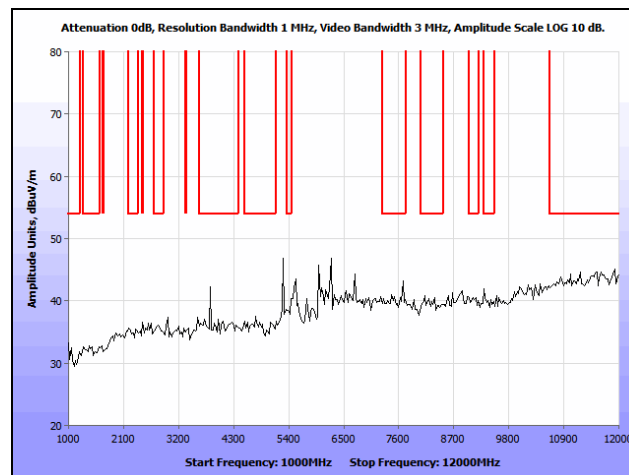
Plot 247. Radiated Spurious Emissions, 4 dBi Ceiling Mount, 802.11a, 5745 MHz, 1 GHz - 12 GHz



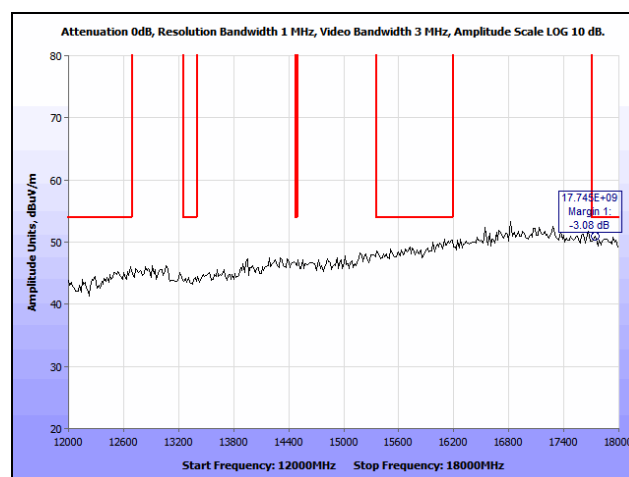
Plot 248. Radiated Spurious Emissions, 4 dBi Ceiling Mount, 802.11a, 5745 MHz, 12 GHz - 18 GHz



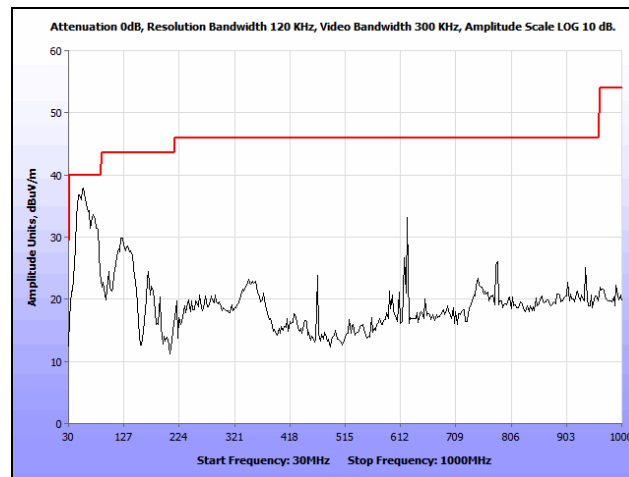
Plot 249. Radiated Spurious Emissions, 4 dBi Ceiling Mount, 802.11a, 5785 MHz, 30 MHz - 1 GHz



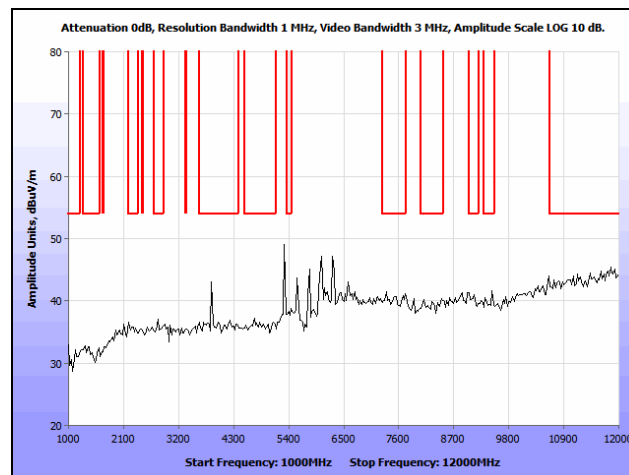
Plot 250. Radiated Spurious Emissions, 4 dBi Ceiling Mount, 802.11a, 5785 MHz, 1 GHz - 12 GHz



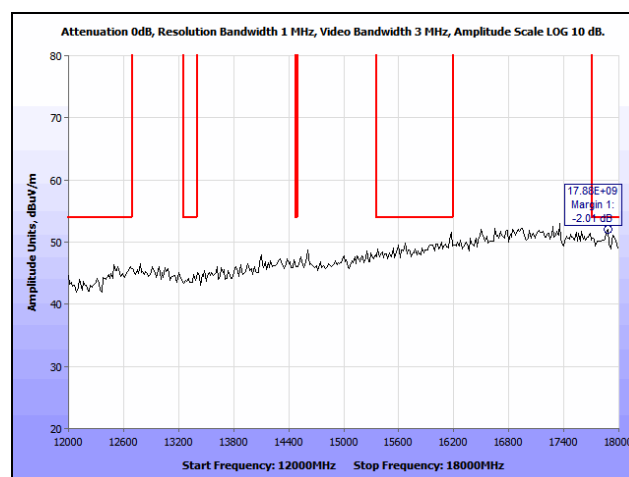
Plot 251. Radiated Spurious Emissions, 4 dBi Ceiling Mount, 802.11a, 5785 MHz, 12 GHz - 18 GHz



Plot 252. Radiated Spurious Emissions, 4 dBi Ceiling Mount, 802.11a, 5825 MHz, 30 MHz - 1 GHz

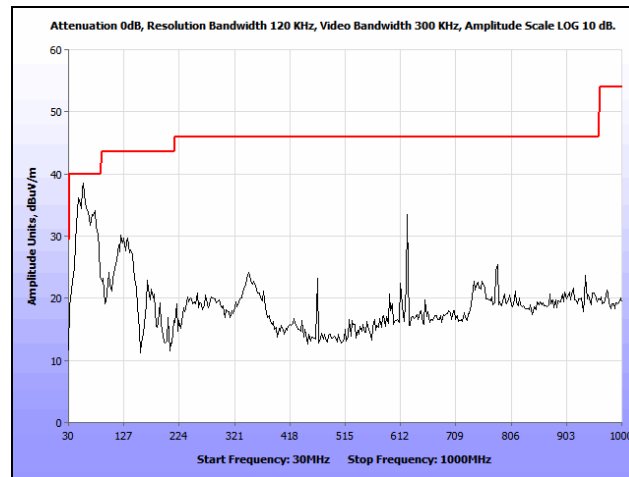


Plot 253. Radiated Spurious Emissions, 4 dBi Ceiling Mount, 802.11a, 5825 MHz, 1 GHz - 12 GHz

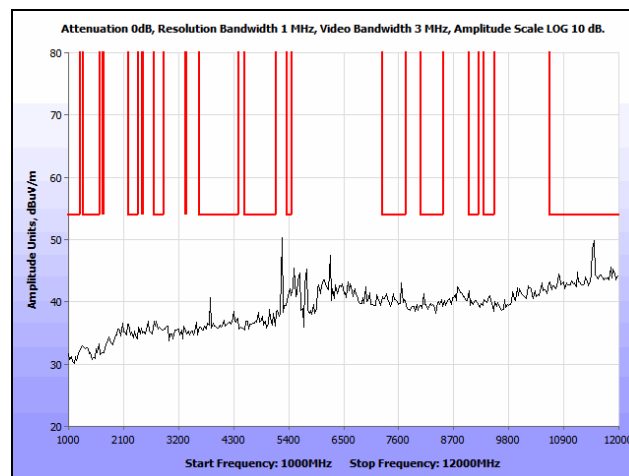


Plot 254. Radiated Spurious Emissions, 4 dBi Ceiling Mount, 802.11a, 5825 MHz, 12 GHz - 18 GHz

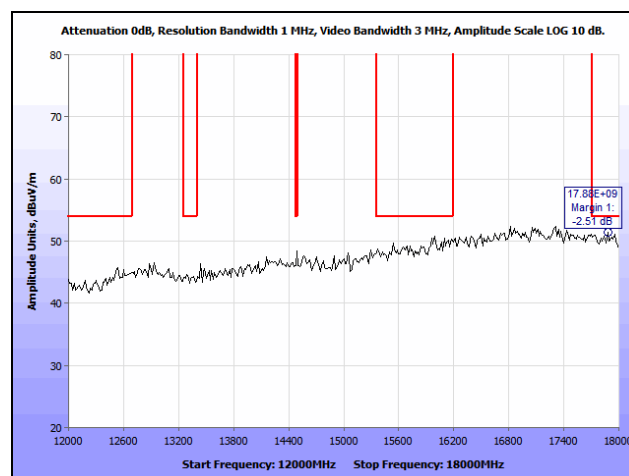
## Radiated Spurious Emissions Test Results, 4 dBi Ceiling Mount, 802.11n 20 MHz, 5 GHz



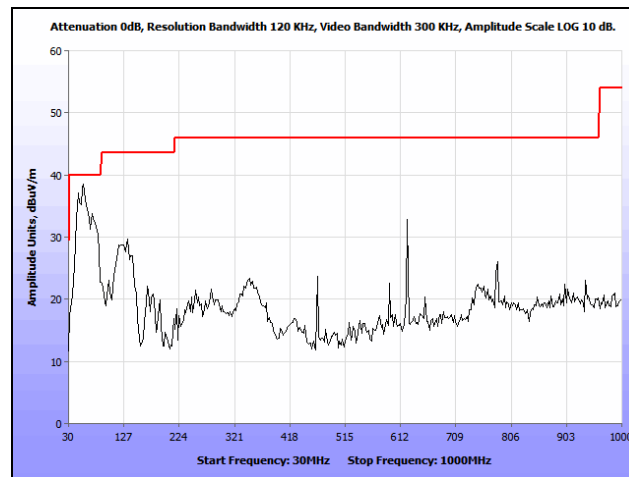
Plot 255. Radiated Spurious Emissions, 4 dBi Ceiling Mount, 802.11n 20 MHz, 5745, 30 MHz - 1 GHz



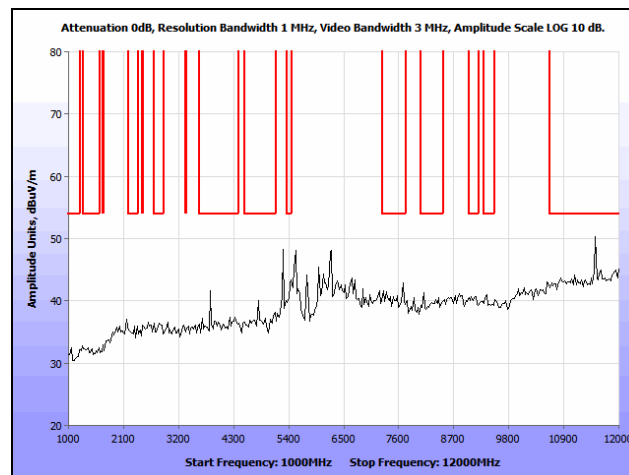
Plot 256. Radiated Spurious Emissions, 4 dBi Ceiling Mount, 802.11n 20 MHz, 5745 MHz, 1 GHz - 12 GHz



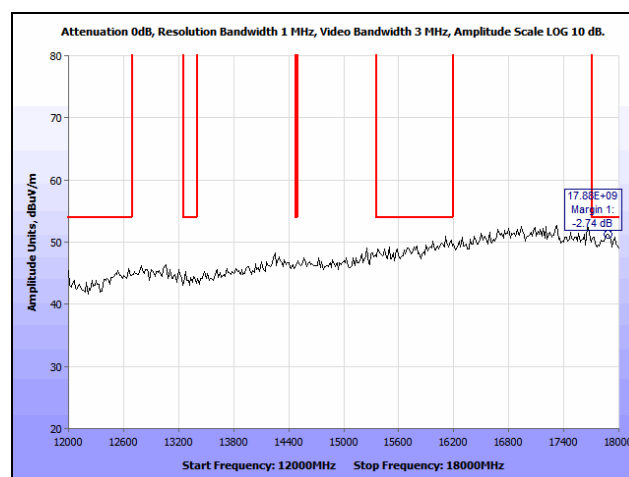
Plot 257. Radiated Spurious Emissions, 4 dBi Ceiling Mount, 802.11n 20 MHz, 5745 MHz, 12 GHz - 18 GHz



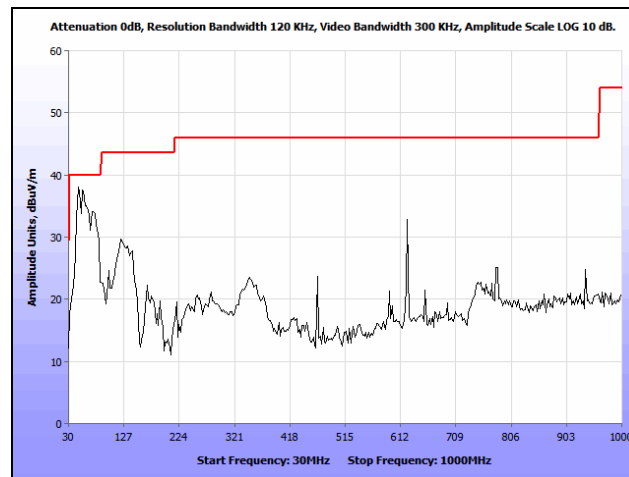
Plot 258. Radiated Spurious Emissions, 4 dBi Ceiling Mount, 802.11n 20 MHz, 5785 MHz, 30 MHz - 1 GHz



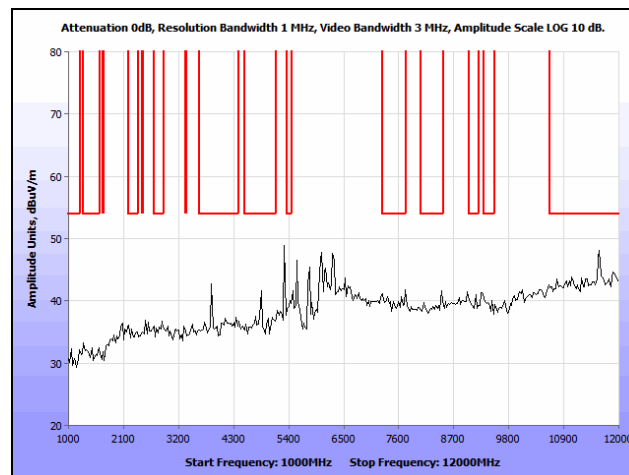
Plot 259. Radiated Spurious Emissions, 4 dBi Ceiling Mount, 802.11n 20 MHz, 5785 MHz, 1 GHz - 12 GHz



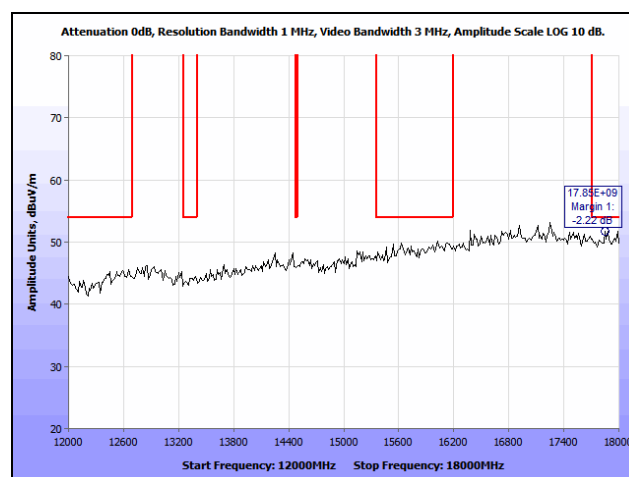
Plot 260. Radiated Spurious Emissions, 4 dBi Ceiling Mount, 802.11n 20 MHz, 5785 MHz, 12 GHz - 18 GHz



Plot 261. Radiated Spurious Emissions, 4 dBi Ceiling Mount, 802.11n 20 MHz, 5825 MHz, 30 MHz - 1 GHz

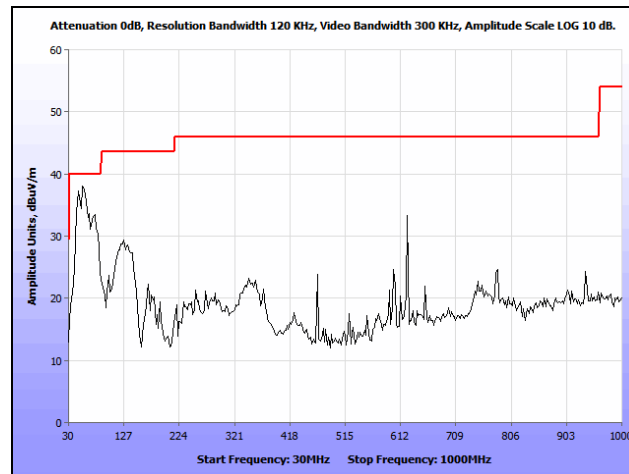


Plot 262. Radiated Spurious Emissions, 4 dBi Ceiling Mount, 802.11n 20 MHz, 5825 MHz, 1 GHz - 12 GHz

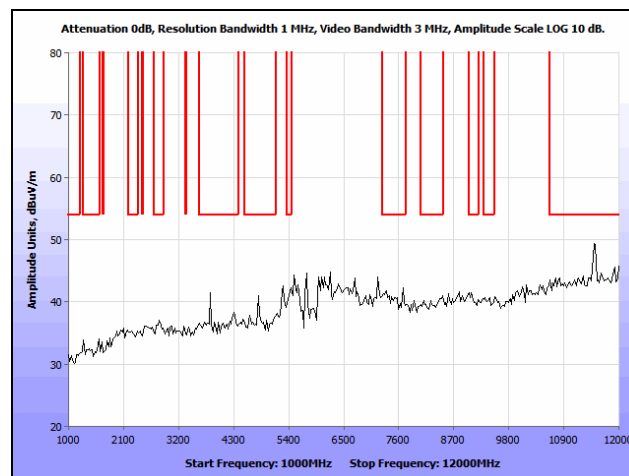


Plot 263. Radiated Spurious Emissions, 4 dBi Ceiling Mount, 802.11n 20 MHz, 5825 MHz, 12 GHz - 18 GHz

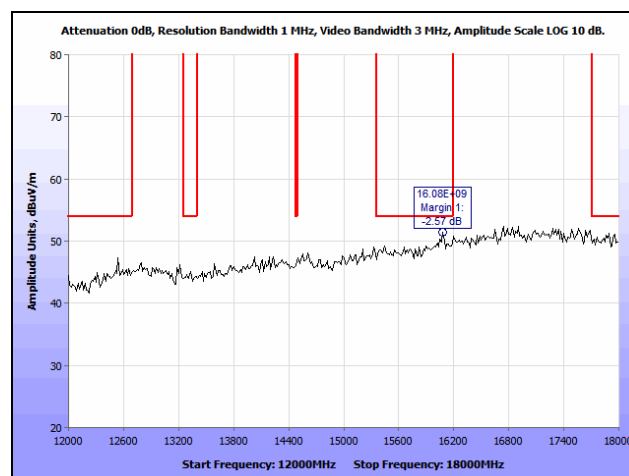
## Radiated Spurious Emissions Test Results, 4 dBi Ceiling Mount, 802.11n 40 MHz, 5 GHz



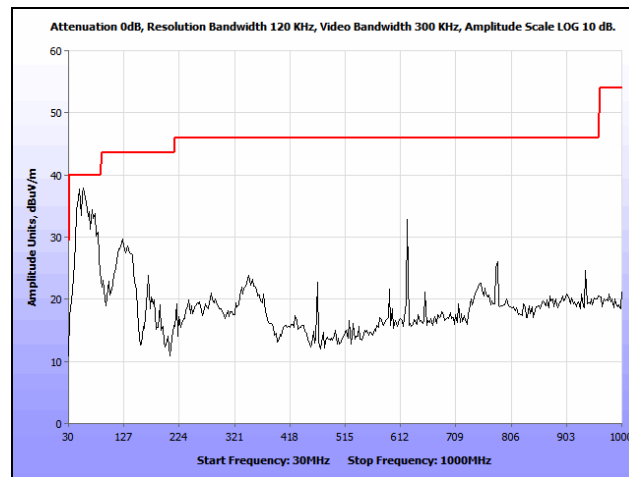
Plot 264. Radiated Spurious Emissions, 4 dBi Ceiling Mount, 802.11n 40 MHz, 5755 MHz, 30 MHz - 1 GHz



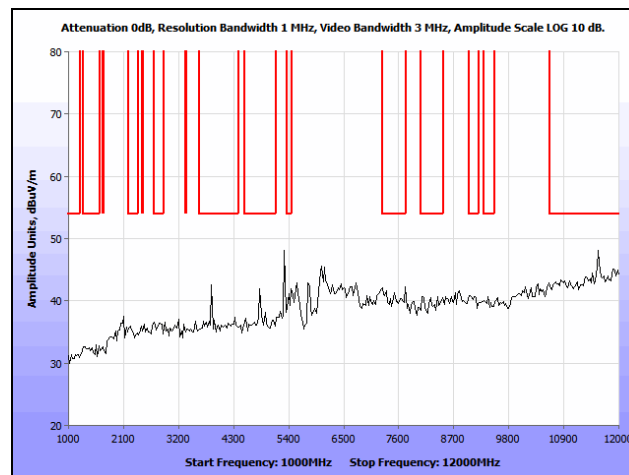
Plot 265. Radiated Spurious Emissions, 4 dBi Ceiling Mount, 802.11n 40 MHz, 5755 MHz, 1 GHz - 12 GHz



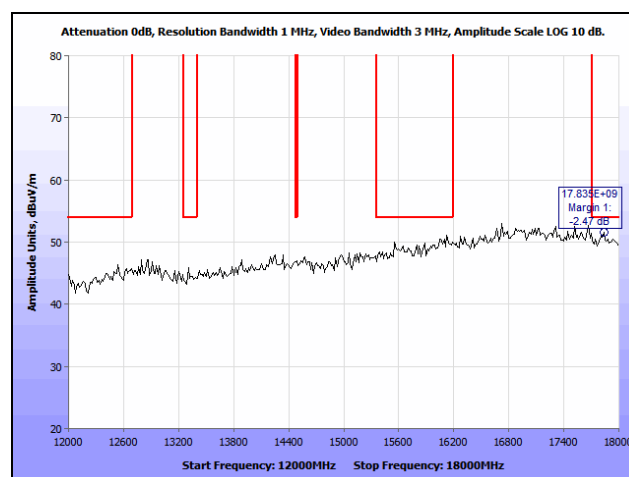
Plot 266. Radiated Spurious Emissions, 4 dBi Ceiling Mount, 802.11n 40 MHz, 5755 MHz, 12 GHz - 18 GHz



Plot 267. Radiated Spurious Emissions, 4 dBi Ceiling Mount, 802.11n 40 MHz, 5795 MHz, 30 MHz - 1 GHz

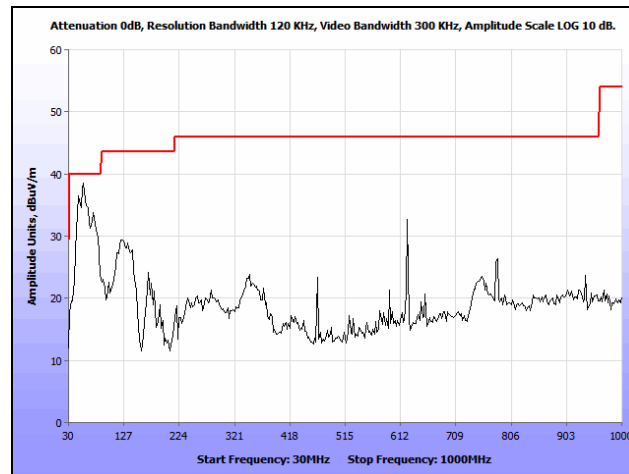


Plot 268. Radiated Spurious Emissions, 4 dBi Ceiling Mount, 802.11n 40 MHz, 5795 MHz, 1 GHz - 12 GHz

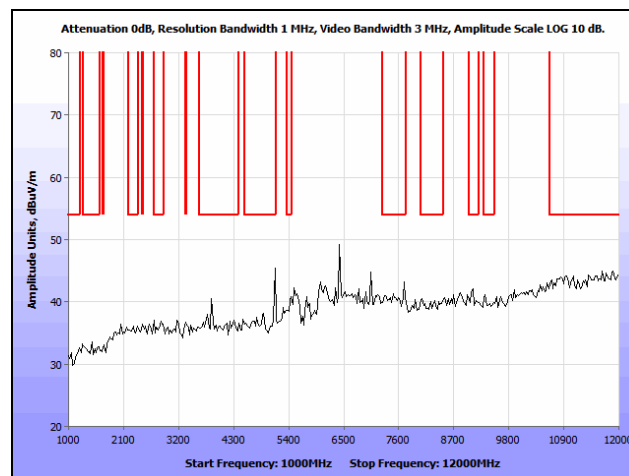


Plot 269. Radiated Spurious Emissions, 4 dBi Ceiling Mount, 802.11n 40 MHz, 5795 MHz, 12 GHz - 18 GHz

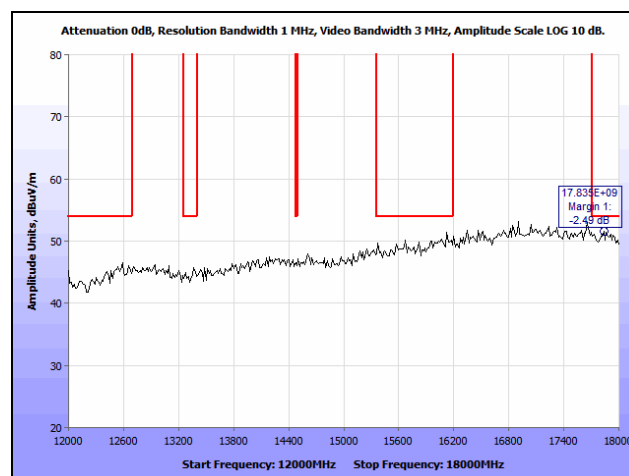
## Radiated Spurious Emissions Test Results, 4 dBi Ceiling Mount, 802.11n 80 MHz, 5 GHz



Plot 270. Radiated Spurious Emissions, 4 dBi Ceiling Mount, 802.11n 80 MHz, 5775 MHz, 30 MHz - 1 GHz

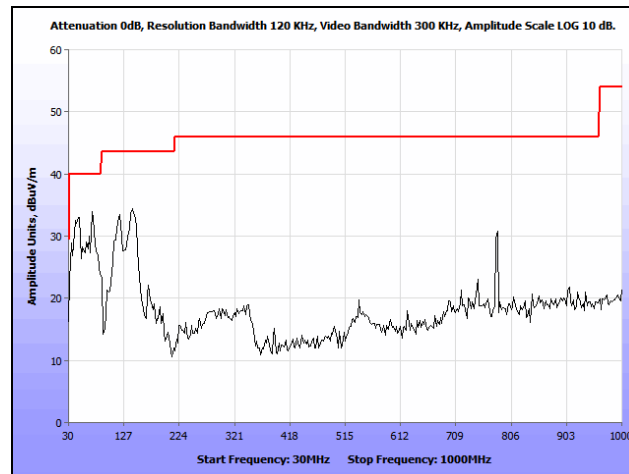


Plot 271. Radiated Spurious Emissions, 4 dBi Ceiling Mount, 802.11n 80 MHz, 5775 MHz, 1 GHz - 12 GHz

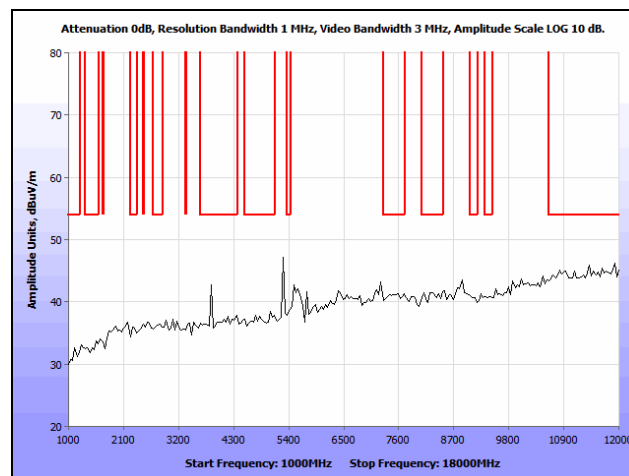


Plot 272. Radiated Spurious Emissions, 4 dBi Ceiling Mount, 802.11n 80 MHz, 5775 MHz, 12 GHz - 18 GHz

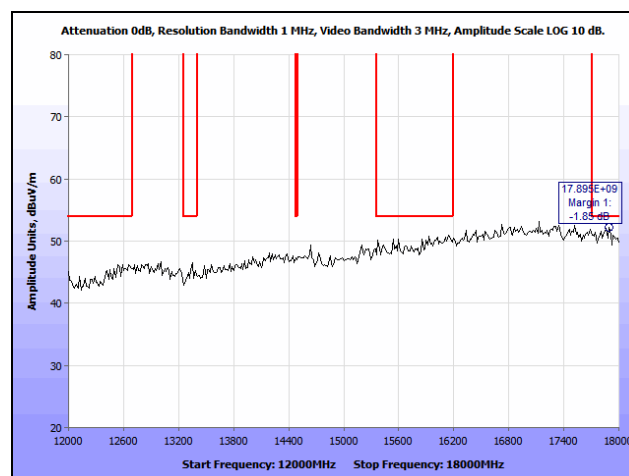
## Radiated Spurious Emissions Test Results, 7 dBi Omni, 802.11a, 5 GHz



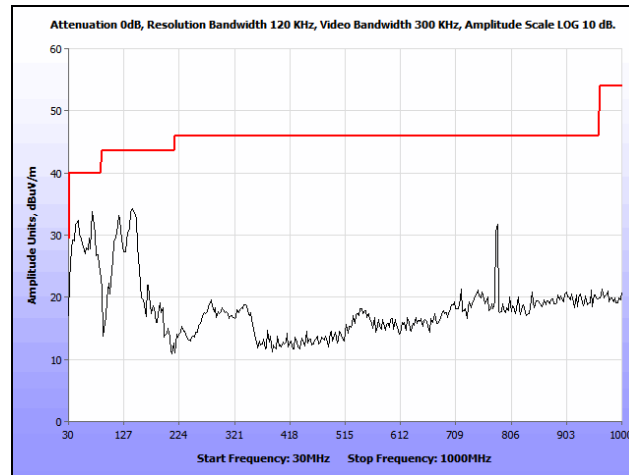
Plot 273. Radiated Spurious Emissions, 7 dBi Omni, 802.11a, 5745, 30 MHz - 1 GHz



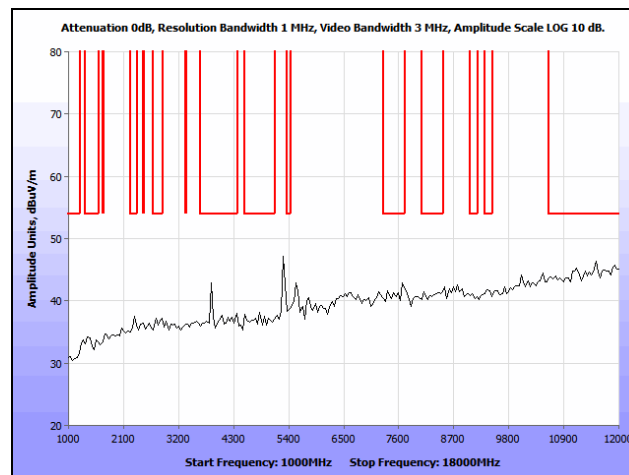
Plot 274. Radiated Spurious Emissions, 7 dBi Omni, 802.11a, 5745 MHz, 1 GHz - 12 GHz



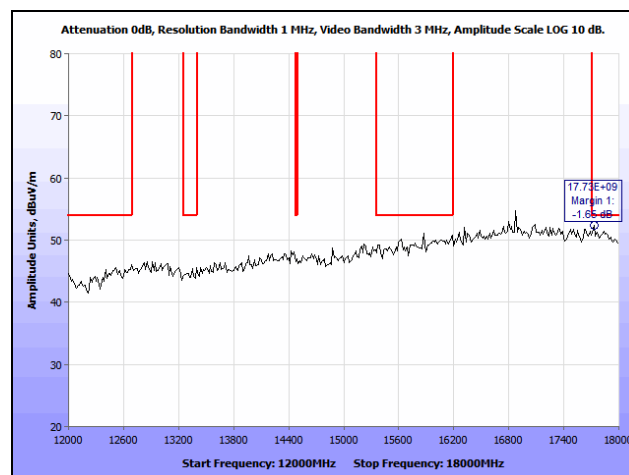
Plot 275. Radiated Spurious Emissions, 7 dBi Omni, 802.11a, 5745 MHz, 12 GHz - 18 GHz



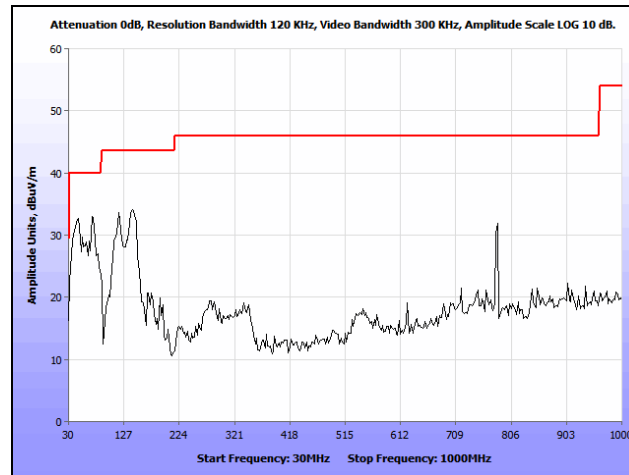
Plot 276. Radiated Spurious Emissions, 7 dBi Omni, 802.11a, 5785 MHz, 30 MHz - 1 GHz



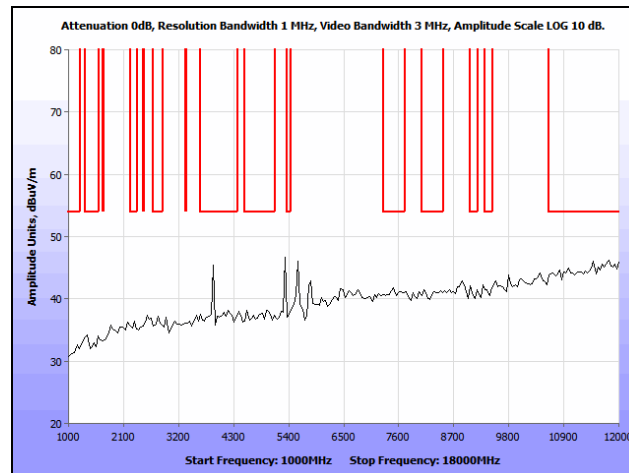
Plot 277. Radiated Spurious Emissions, 7 dBi Omni, 802.11a, 5785 MHz, 1 GHz - 12 GHz



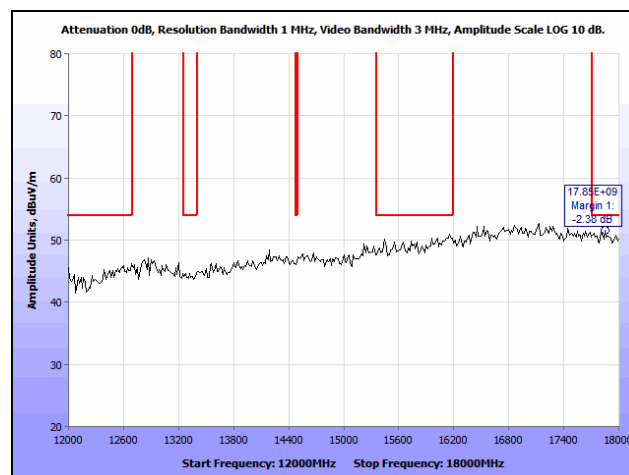
Plot 278. Radiated Spurious Emissions, 7 dBi Omni, 802.11a, 5785 MHz, 12 GHz - 18 GHz



Plot 279. Radiated Spurious Emissions, 7 dBi Omni, 802.11a, 5825 MHz, 30 MHz - 1 GHz

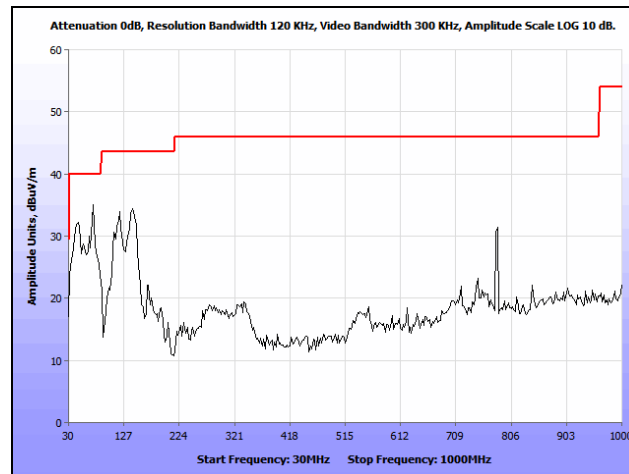


Plot 280. Radiated Spurious Emissions, 7 dBi Omni, 802.11a, 5825 MHz, 1 GHz - 12 GHz

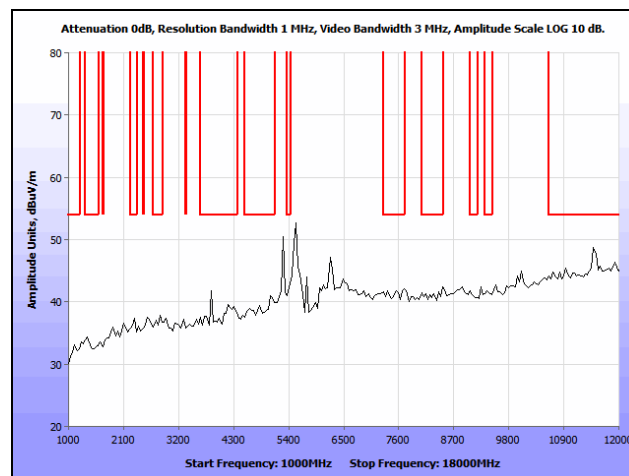


Plot 281. Radiated Spurious Emissions, 7 dBi Omni, 802.11a, 5825 MHz, 12 GHz - 18 GHz

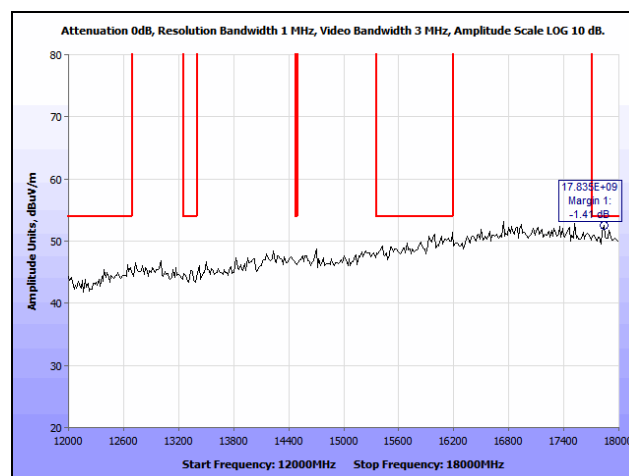
## Radiated Spurious Emissions Test Results, 7 dBi Omni, 802.11n 20 MHz, 5 GHz



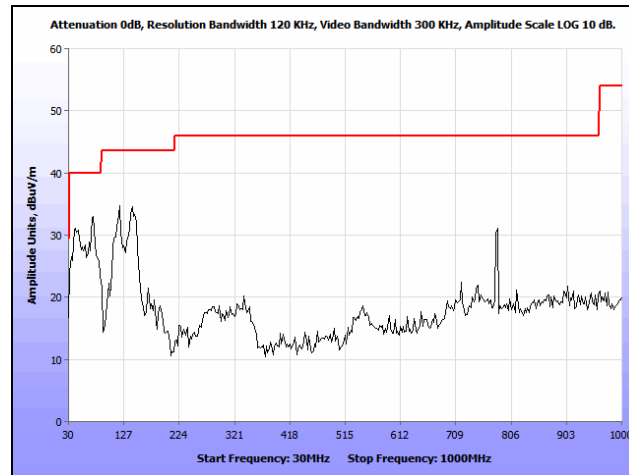
Plot 282. Radiated Spurious Emissions, 7 dBi Omni, 802.11n 20 MHz, 5745, 30 MHz - 1 GHz



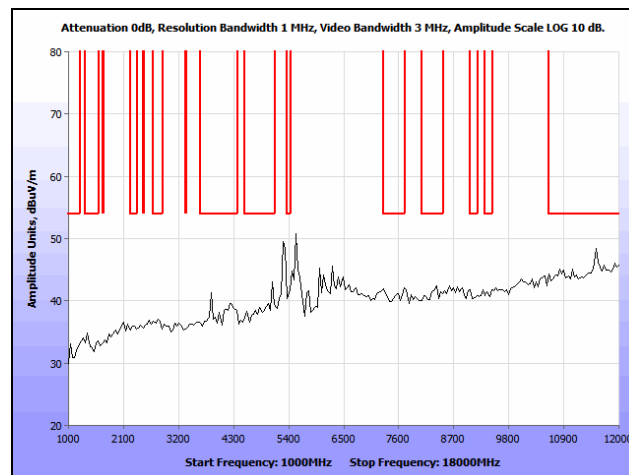
Plot 283. Radiated Spurious Emissions, 7 dBi Omni, 802.11n 20 MHz, 5745 MHz, 1 GHz - 12 GHz



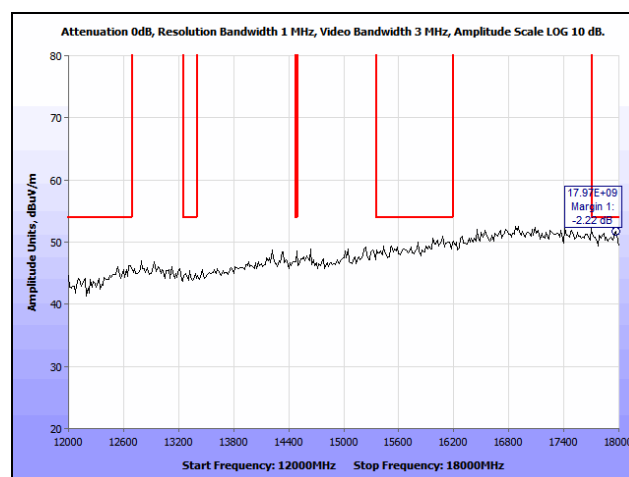
Plot 284. Radiated Spurious Emissions, 7 dBi Omni, 802.11n 20 MHz, 5745 MHz, 12 GHz - 18 GHz



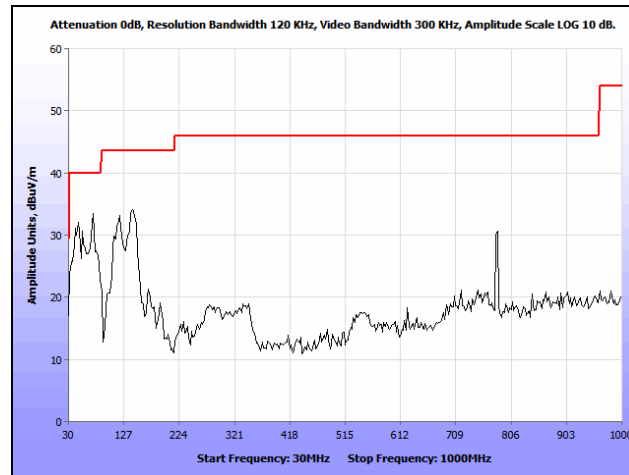
Plot 285. Radiated Spurious Emissions, 7 dBi Omni, 802.11n 20 MHz, 5785 MHz, 30 MHz - 1 GHz



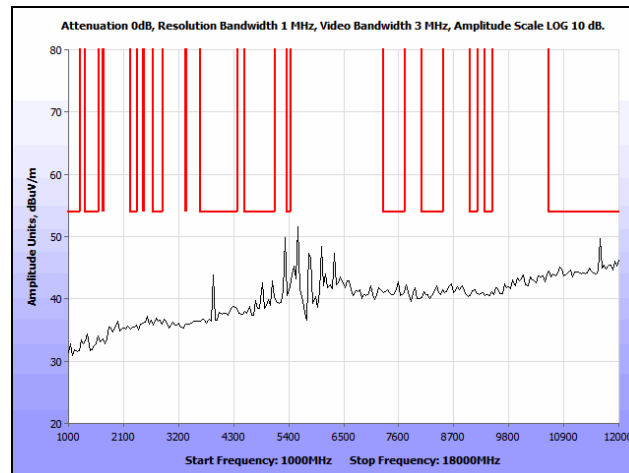
Plot 286. Radiated Spurious Emissions, 7 dBi Omni, 802.11n 20 MHz, 5785 MHz, 1 GHz - 12 GHz



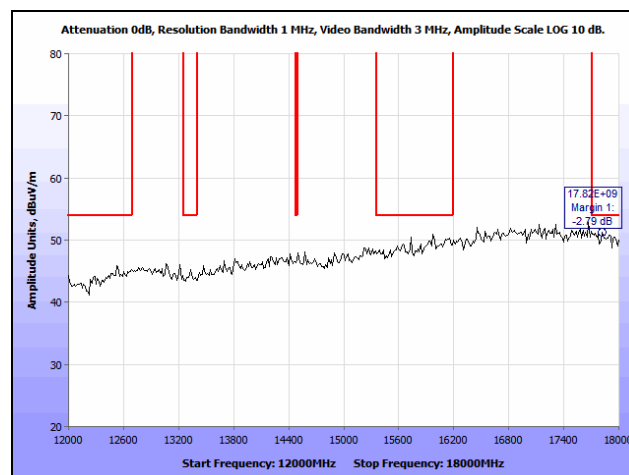
Plot 287. Radiated Spurious Emissions, 7 dBi Omni, 802.11n 20 MHz, 5785 MHz, 12 GHz - 18 GHz



Plot 288. Radiated Spurious Emissions, 7 dBi Omni, 802.11n 20 MHz, 5825 MHz, 30 MHz - 1 GHz

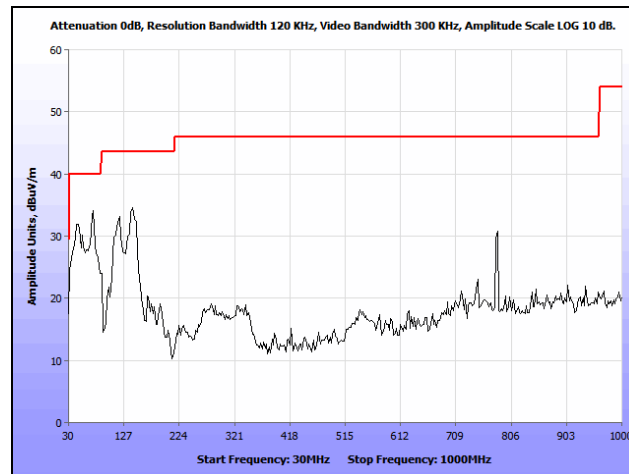


Plot 289. Radiated Spurious Emissions, 7 dBi Omni, 802.11n 20 MHz, 5825 MHz, 1 GHz - 12 GHz

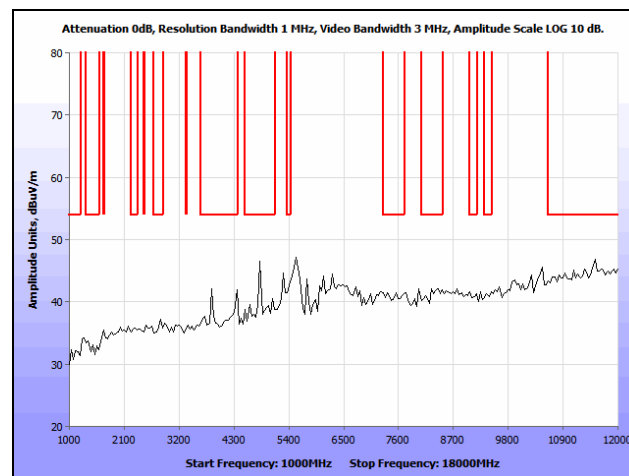


Plot 290. Radiated Spurious Emissions, 7 dBi Omni, 802.11n 20 MHz, 5825 MHz, 12 GHz - 18 GHz

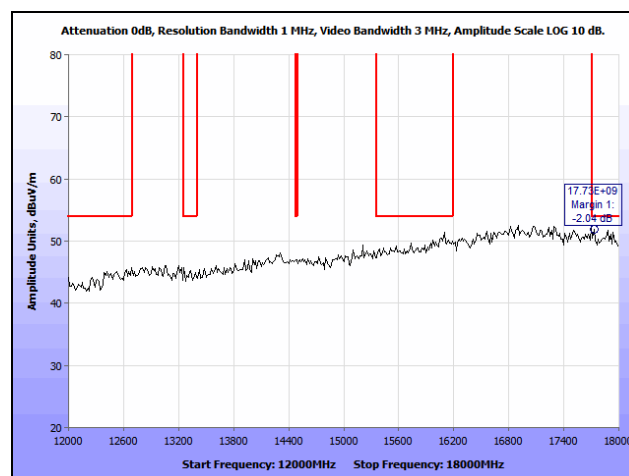
## Radiated Spurious Emissions Test Results, 7 dBi Omni, 802.11n 40 MHz, 5 GHz



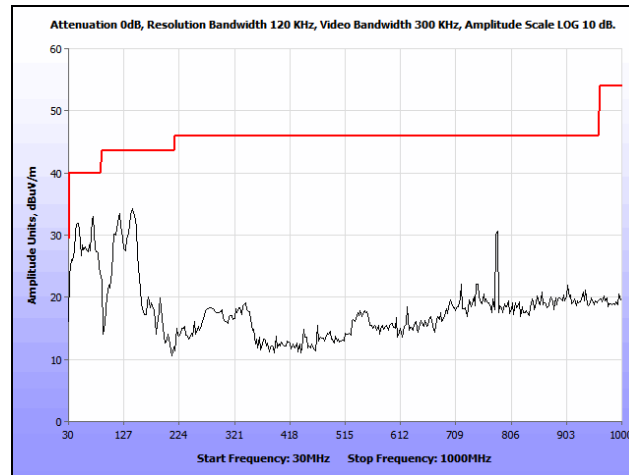
Plot 291. Radiated Spurious Emissions, 7 dBi Omni, 802.11n 40 MHz, 5755 MHz, 30 MHz - 1 GHz



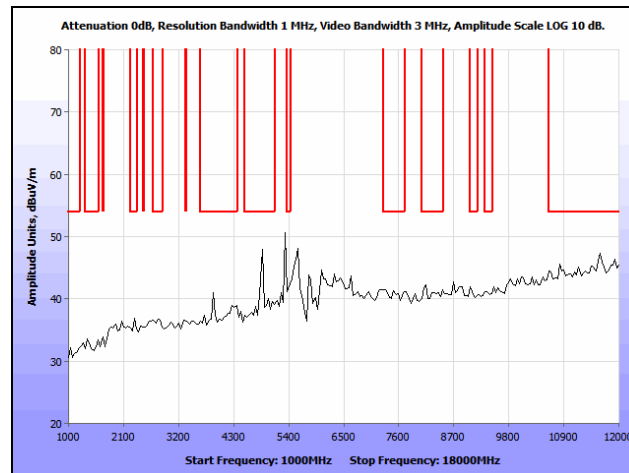
Plot 292. Radiated Spurious Emissions, 7 dBi Omni, 802.11n 40 MHz, 5755 MHz, 1 GHz - 12 GHz



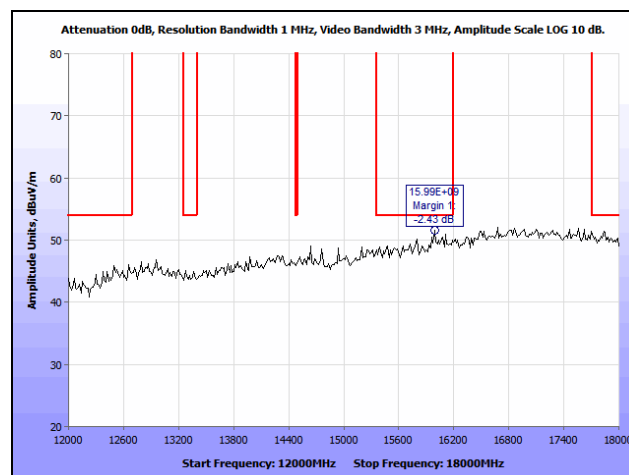
Plot 293. Radiated Spurious Emissions, 7 dBi Omni, 802.11n 40 MHz, 5755 MHz, 12 GHz - 18 GHz



Plot 294. Radiated Spurious Emissions, 7 dBi Omni, 802.11n 40 MHz, 5795 MHz, 30 MHz - 1 GHz

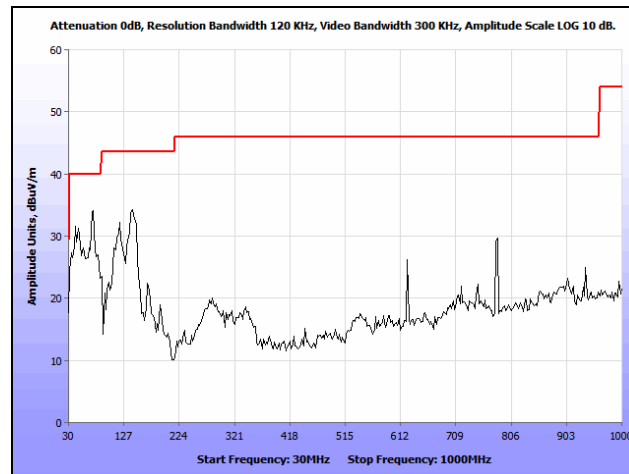


Plot 295. Radiated Spurious Emissions, 7 dBi Omni, 802.11n 40 MHz, 5795 MHz, 1 GHz - 12 GHz

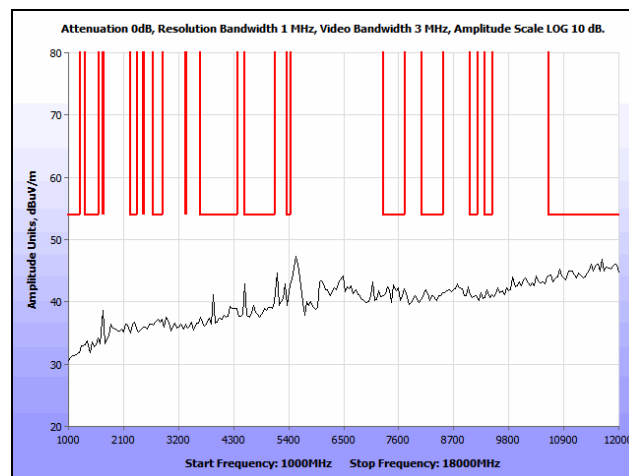


Plot 296. Radiated Spurious Emissions, 7 dBi Omni, 802.11n 40 MHz, 5795 MHz, 12 GHz - 18 GHz

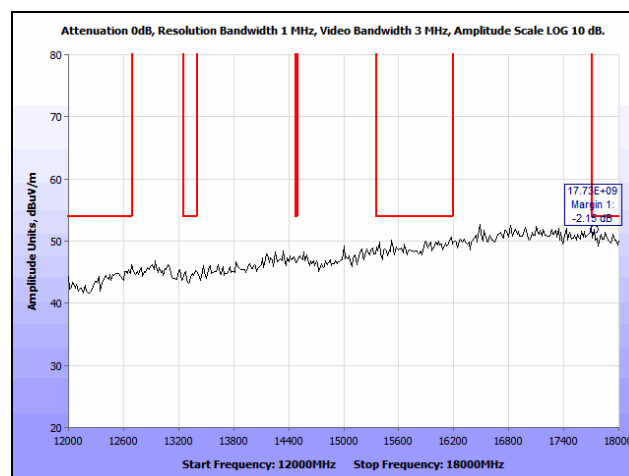
## Radiated Spurious Emissions Test Results, 7 dBi Omni, 802.11n 80 MHz, 5 GHz



Plot 297. Radiated Spurious Emissions, 7 dBi Omni, 802.11n 80 MHz, 5775 MHz, 30 MHz - 1 GHz

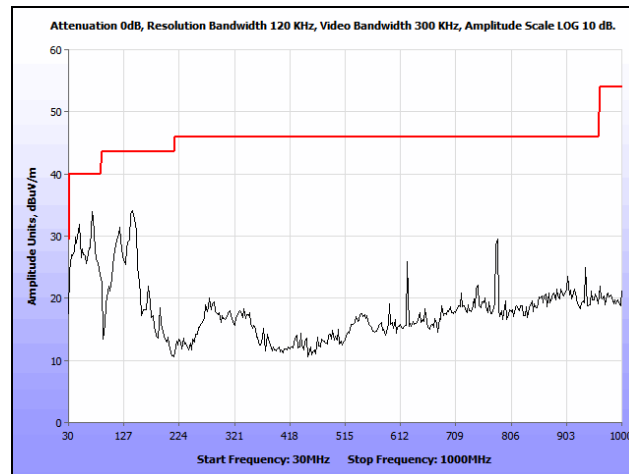


Plot 298. Radiated Spurious Emissions, 7 dBi Omni, 802.11n 80 MHz, 5775 MHz, 1 GHz - 12 GHz

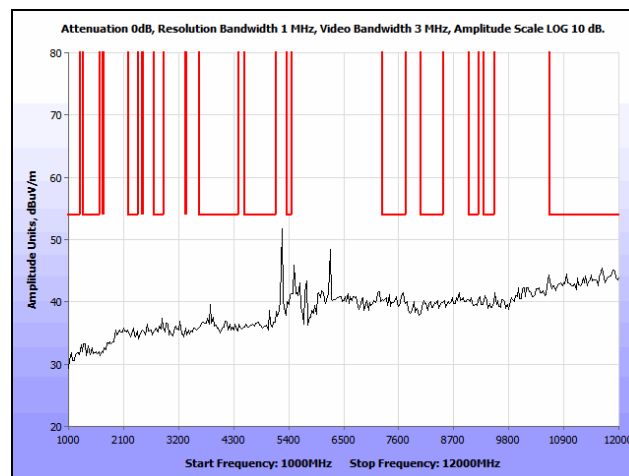


Plot 299. Radiated Spurious Emissions, 7 dBi Omni, 802.11n 80 MHz, 5775 MHz, 12 GHz - 18 GHz

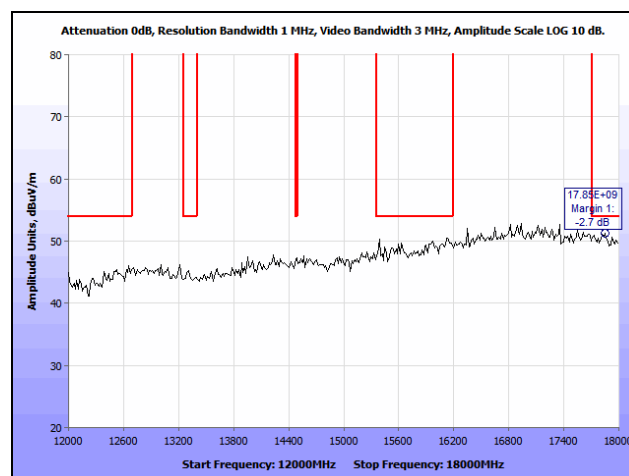
## Radiated Spurious Emissions Test Results, 7 dBi Patch, 802.11a, 5 GHz



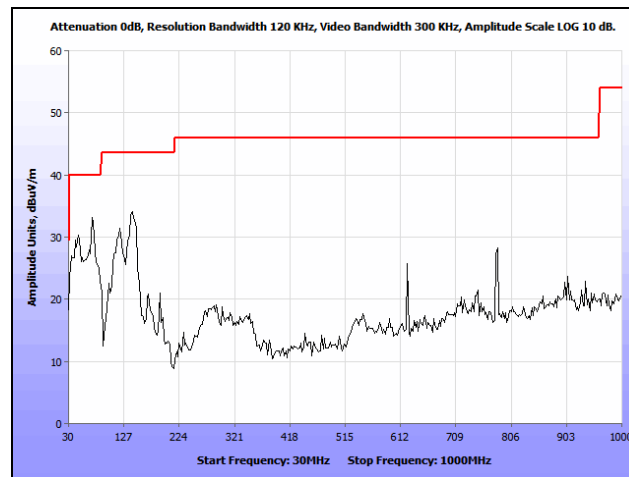
Plot 300. Radiated Spurious Emissions, 7 dBi Patch, 802.11a, 5745, 30 MHz - 1 GHz



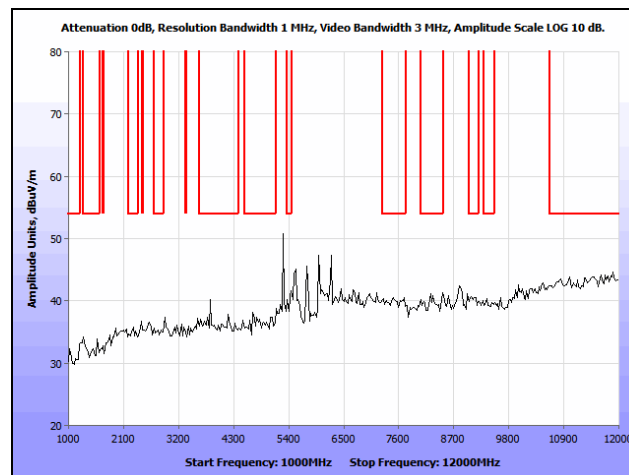
Plot 301. Radiated Spurious Emissions, 7 dBi Patch, 802.11a, 5745 MHz, 1 GHz - 12 GHz



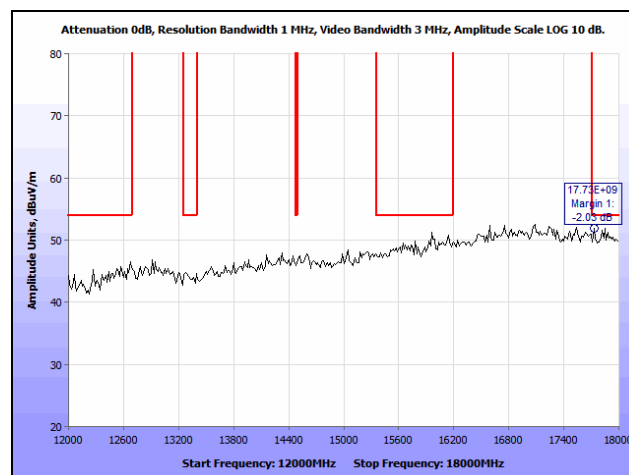
Plot 302. Radiated Spurious Emissions, 7 dBi Patch, 802.11a, 5745 MHz, 12 GHz - 18 GHz



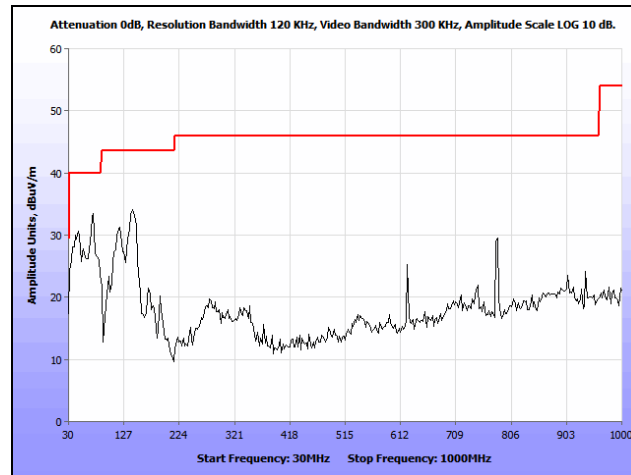
Plot 303. Radiated Spurious Emissions, 7 dBi Patch, 802.11a, 5785 MHz, 30 MHz - 1 GHz



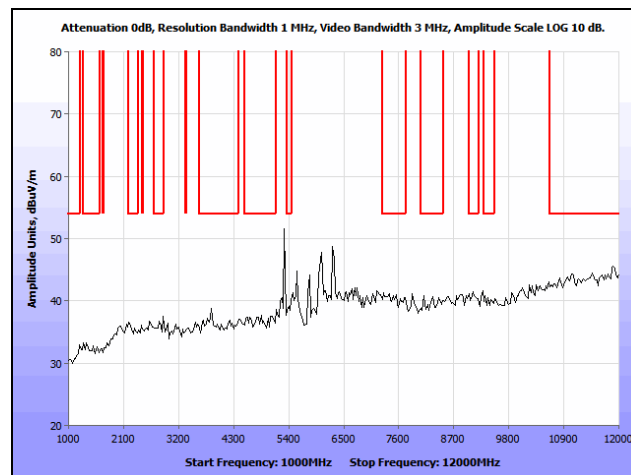
Plot 304. Radiated Spurious Emissions, 7 dBi Patch, 802.11a, 5785 MHz, 1 GHz - 12 GHz



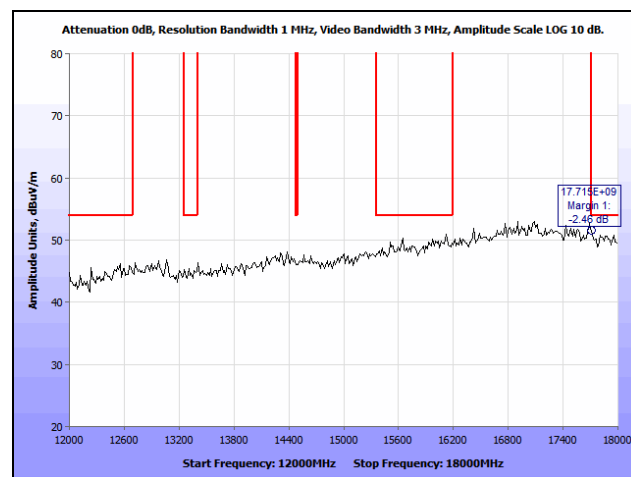
Plot 305. Radiated Spurious Emissions, 7 dBi Patch, 802.11a, 5785 MHz, 12 GHz - 18 GHz



**Plot 306. Radiated Spurious Emissions, 7 dBi Patch, 802.11a, 5825 MHz, 30 MHz - 1 GHz**

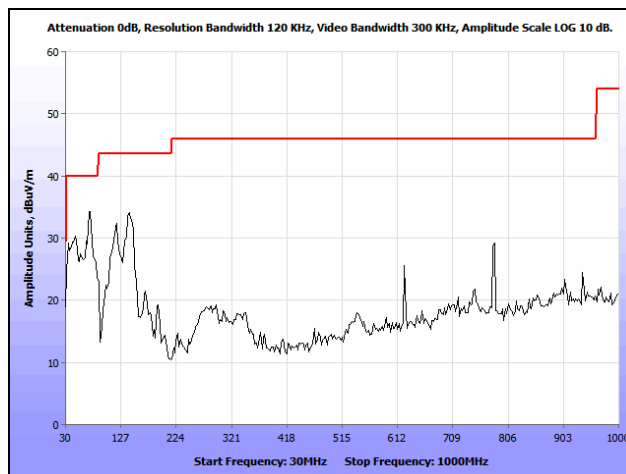


**Plot 307. Radiated Spurious Emissions, 7 dBi Patch, 802.11a, 5825 MHz, 1 GHz - 12 GHz**

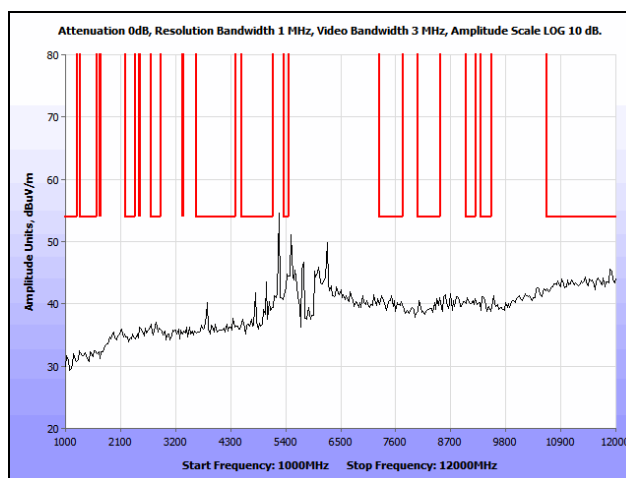


**Plot 308. Radiated Spurious Emissions, 7 dBi Patch, 802.11a, 5825 MHz, 12 GHz - 18 GHz**

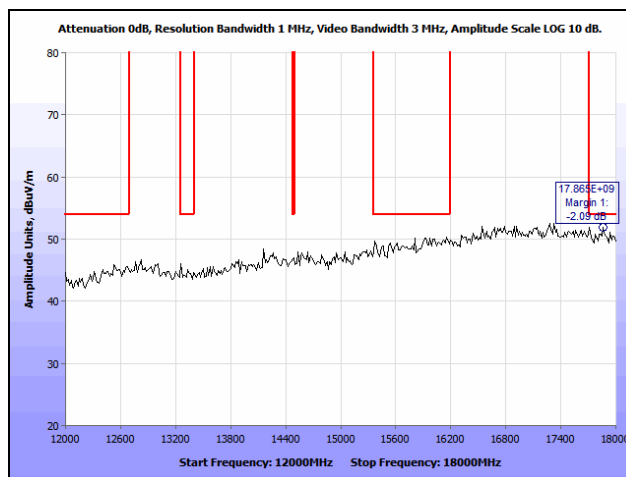
## Radiated Spurious Emissions Test Results, 7 dBi Patch, 802.11n 20 MHz, 5 GHz



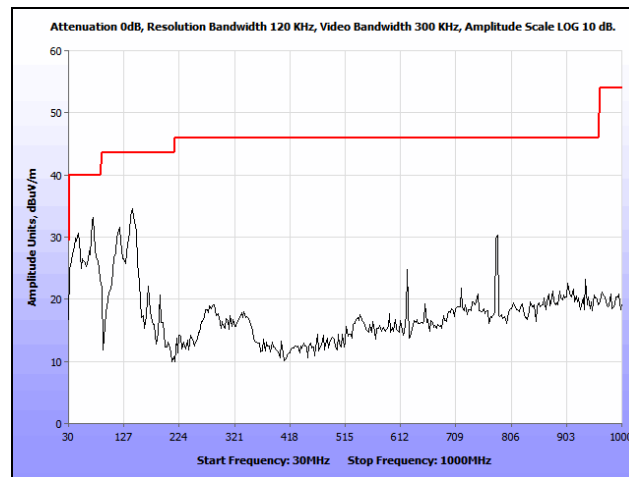
Plot 309. Radiated Spurious Emissions, 7 dBi Patch, 802.11n 20 MHz, 5745, 30 MHz - 1 GHz



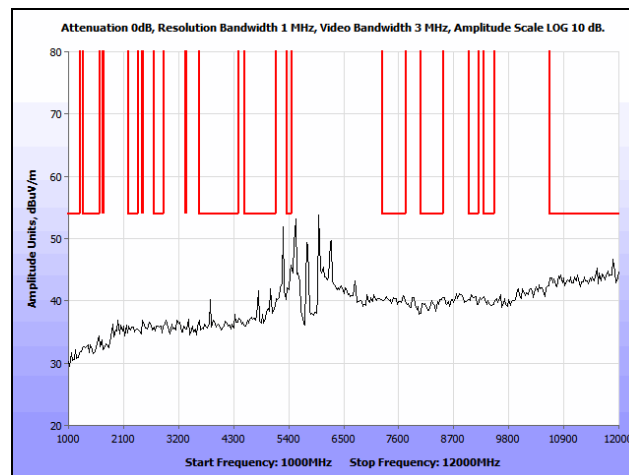
Plot 310. Radiated Spurious Emissions, 7 dBi Patch, 802.11n 20 MHz, 5745 MHz, 1 GHz - 12 GHz



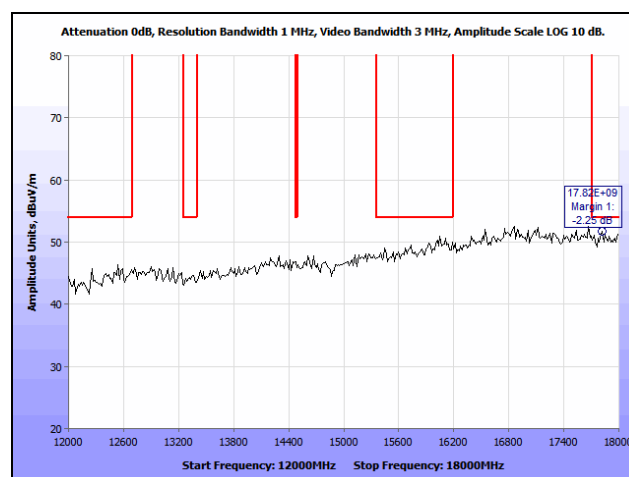
Plot 311. Radiated Spurious Emissions, 7 dBi Patch, 802.11n 20 MHz, 5745 MHz, 12 GHz - 18 GHz



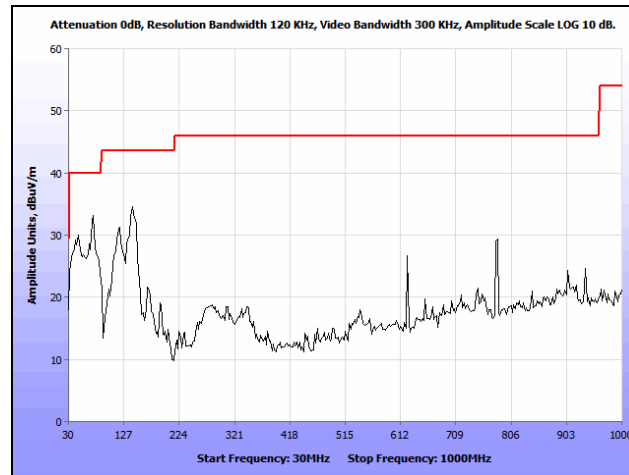
Plot 312. Radiated Spurious Emissions, 7 dBi Patch, 802.11n 20 MHz, 5785 MHz, 30 MHz - 1 GHz



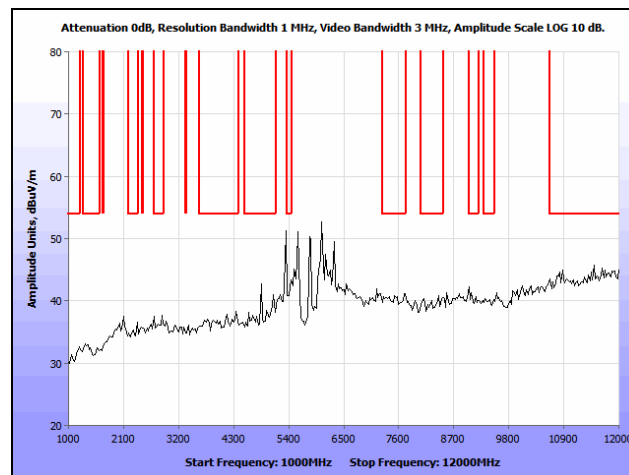
Plot 313. Radiated Spurious Emissions, 7 dBi Patch, 802.11n 20 MHz, 5785 MHz, 1 GHz - 12 GHz



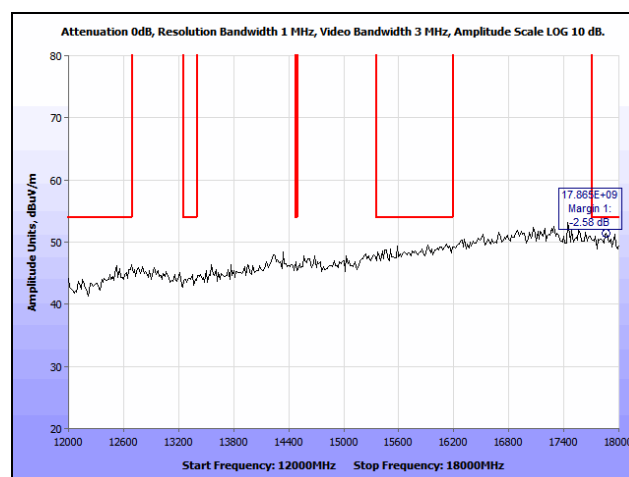
Plot 314. Radiated Spurious Emissions, 7 dBi Patch, 802.11n 20 MHz, 5785 MHz, 12 GHz - 18 GHz



Plot 315. Radiated Spurious Emissions, 7 dBi Patch, 802.11n 20 MHz, 5825 MHz, 30 MHz - 1 GHz

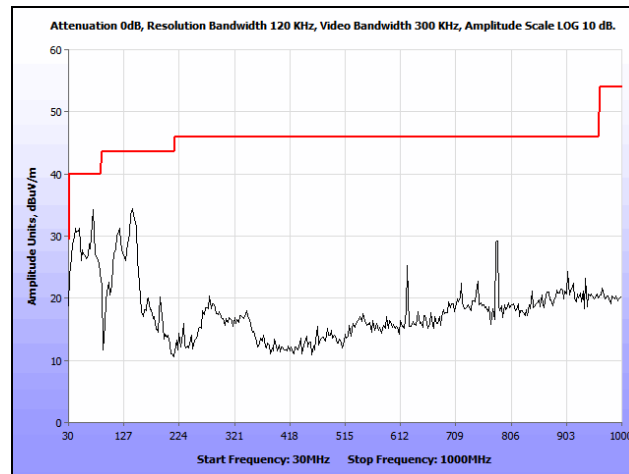


Plot 316. Radiated Spurious Emissions, 7 dBi Patch, 802.11n 20 MHz, 5825 MHz, 1 GHz - 12 GHz

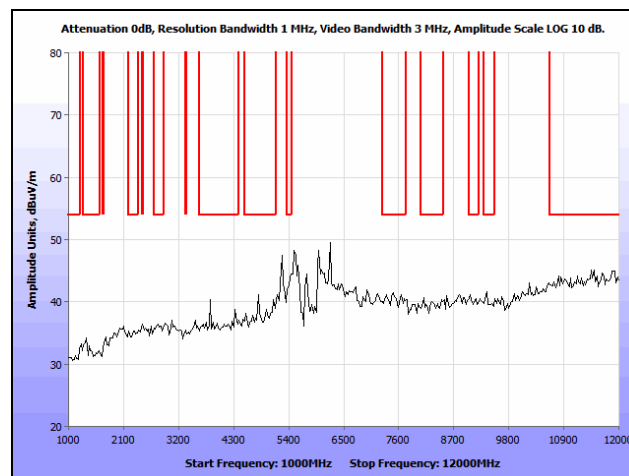


Plot 317. Radiated Spurious Emissions, 7 dBi Patch, 802.11n 20 MHz, 5825 MHz, 12 GHz - 18 GHz

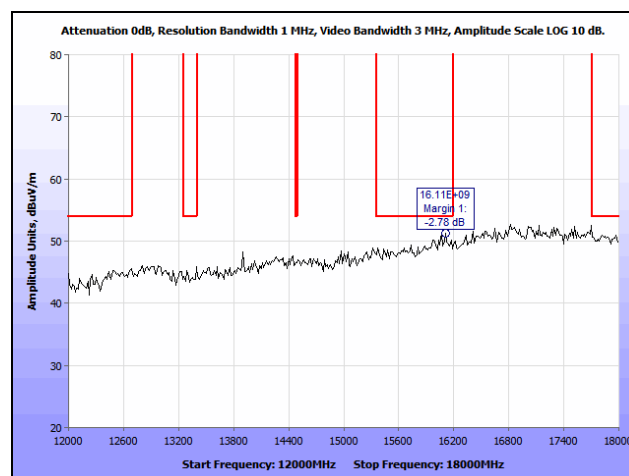
## Radiated Spurious Emissions Test Results, 7 dBi Patch, 802.11n 40 MHz, 5 GHz



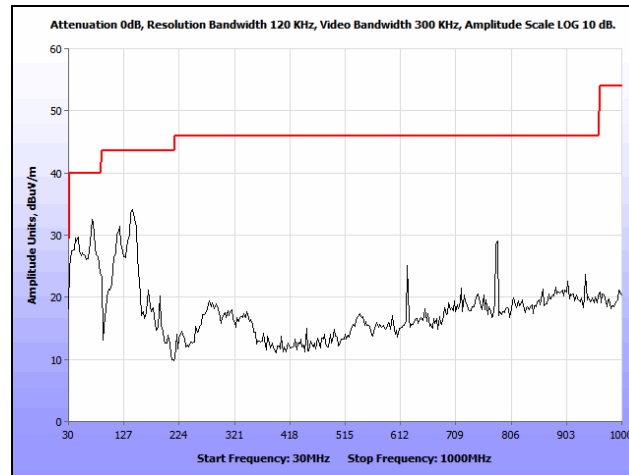
Plot 318. Radiated Spurious Emissions, 7 dBi Patch, 802.11n 40 MHz, 5755 MHz, 30 MHz - 1 GHz



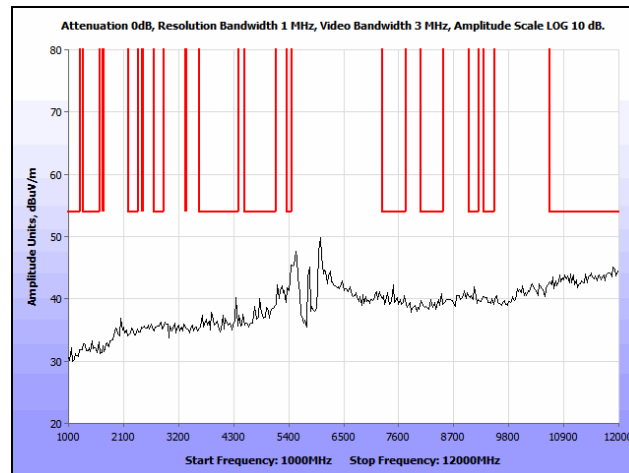
Plot 319. Radiated Spurious Emissions, 7 dBi Patch, 802.11n 40 MHz, 5755 MHz, 1 GHz - 12 GHz



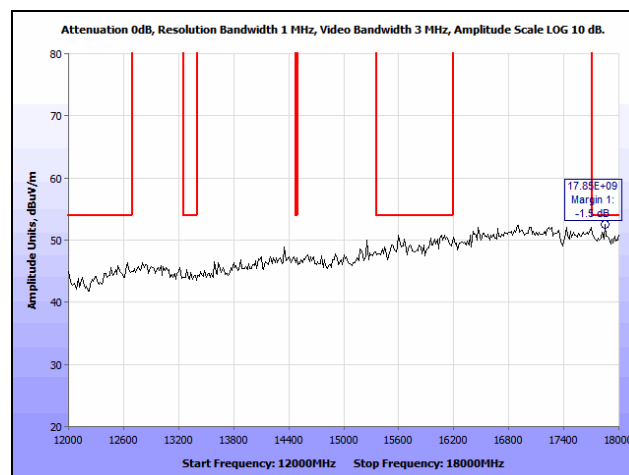
Plot 320. Radiated Spurious Emissions, 7 dBi Patch, 802.11n 40 MHz, 5755 MHz, 12 GHz - 18 GHz



Plot 321. Radiated Spurious Emissions, 7 dBi Patch, 802.11n 40 MHz, 5795 MHz, 30 MHz - 1 GHz

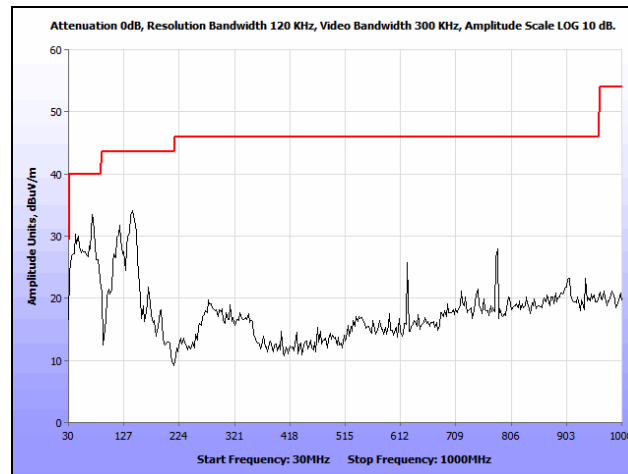


Plot 322. Radiated Spurious Emissions, 7 dBi Patch, 802.11n 40 MHz, 5795 MHz, 1 GHz - 12 GHz

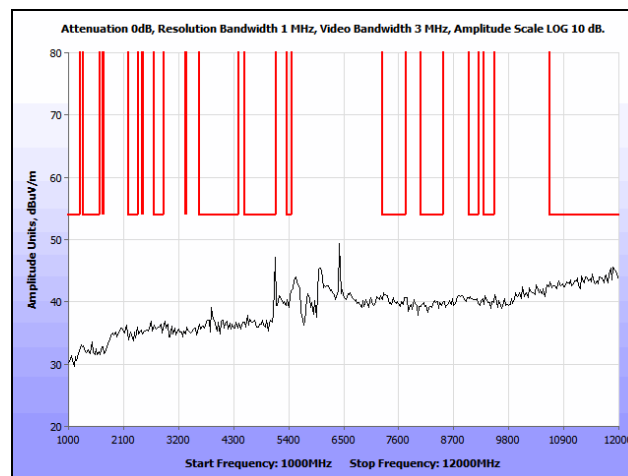


Plot 323. Radiated Spurious Emissions, 7 dBi Patch, 802.11n 40 MHz, 5795 MHz, 12 GHz - 18 GHz

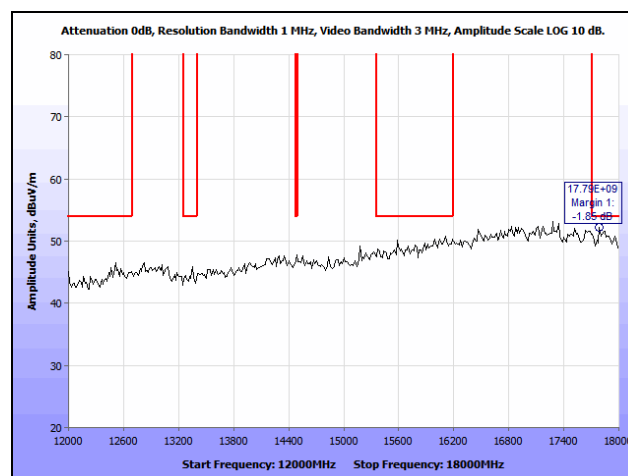
## Radiated Spurious Emissions Test Results, 7 dBi Patch, 802.11n 80 MHz, 5 GHz



Plot 324. Radiated Spurious Emissions, 7 dBi Patch, 802.11n 80 MHz, 5775 MHz, 30 MHz - 1 GHz



Plot 325. Radiated Spurious Emissions, 7 dBi Patch, 802.11n 80 MHz, 5775 MHz, 1 GHz - 12 GHz

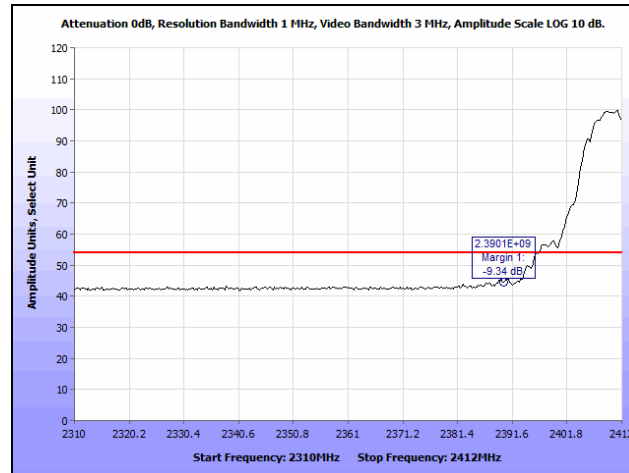


Plot 326. Radiated Spurious Emissions, 7 dBi Patch, 802.11n 80 MHz, 5775 MHz, 12 GHz - 18 GHz

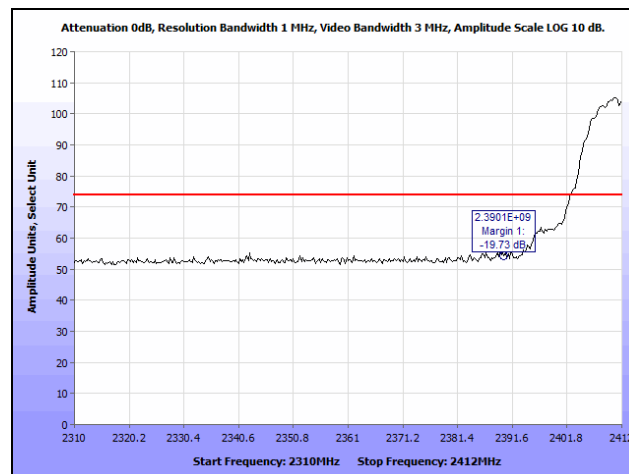
## Radiated Band Edge Measurements

**Test Procedures:** The transmitter was turned on. Measurements were performed of the low, mid and high Channels. The EUT was rotated orthogonally through all three axes. Plots shown are corrected for both antenna correction factor and distance and compared to a 3 m limit line. The number of points used was  $(2 \times (\text{frequency span}) / \text{RBW})$ .

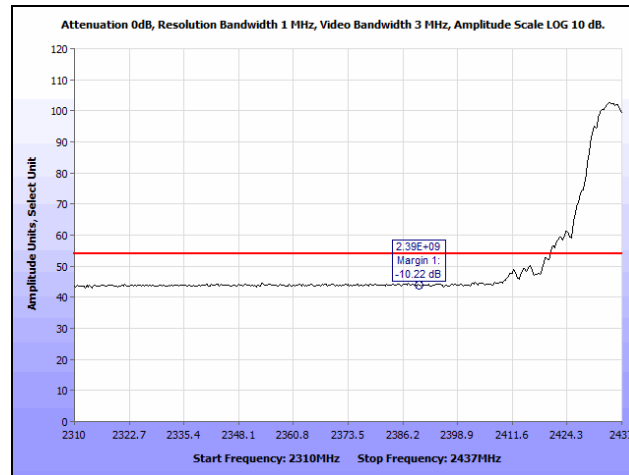
### Restricted Band Edge Test Results, Ceiling Mount, 802.11b 20 MHz, 2.4 GHz



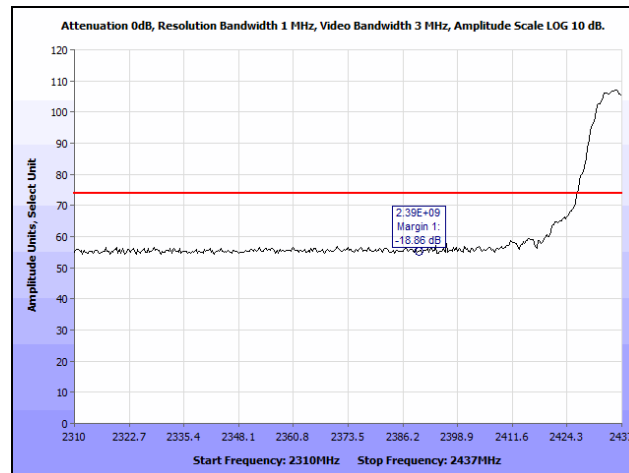
Plot 327. Restricted Band Edge, Ceiling Antenna, 802.11b 20 MHz, 2412 MHz @ 2390 MHz, Average



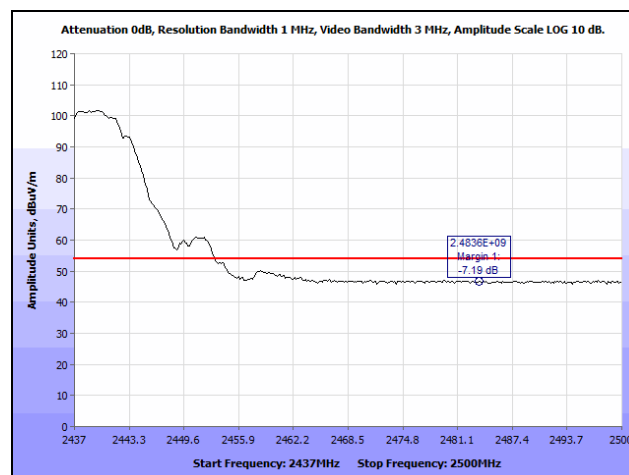
Plot 328. Restricted Band Edge, Ceiling Antenna, 802.11b 20 MHz, 2412 MHz @ 2390 MHz, Peak



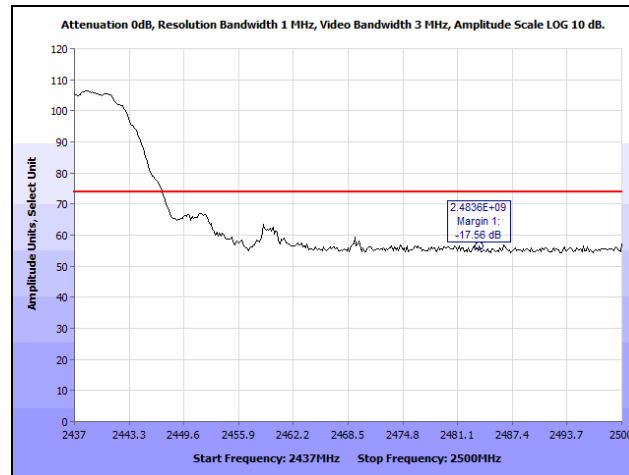
Plot 329. Restricted Band Edge, Ceiling Antenna, 802.11b 20 MHz, 2437 MHz, Channel 6 @ 2390 MHz, Average



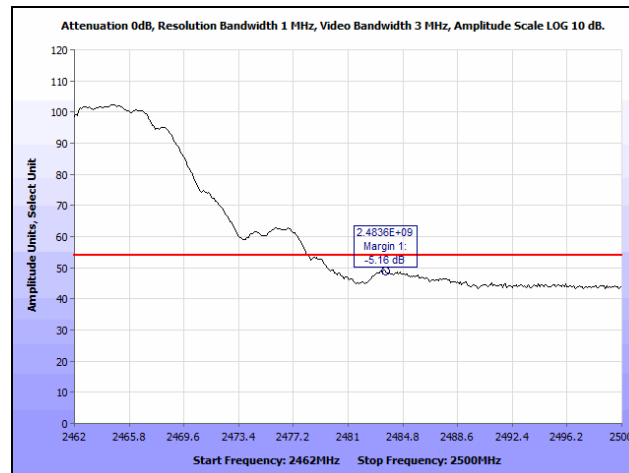
Plot 330. Restricted Band Edge, Ceiling Antenna, 802.11b 20 MHz, 2437 MHz, Channel 6 @ 2390 MHz, Peak



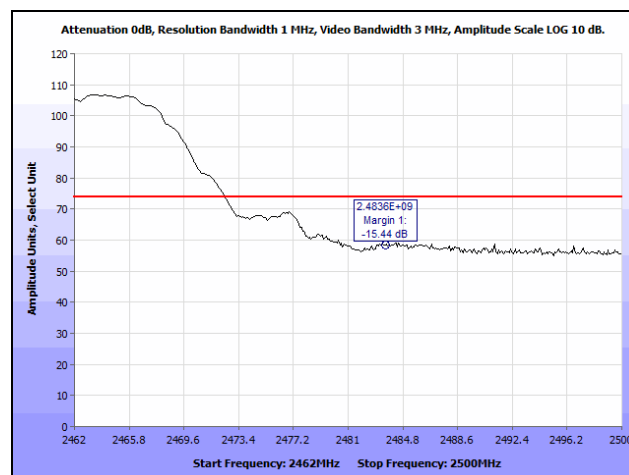
Plot 331. Restricted Band Edge, Ceiling Antenna, 802.11b 20 MHz, 2437 MHz, Channel 6 @ 2483.5 MHz, Average



**Plot 332. Restricted Band Edge, Ceiling Antenna, 802.11b 20 MHz, 2437 MHz, Channel 6 @ 2483.5 MHz, Peak**

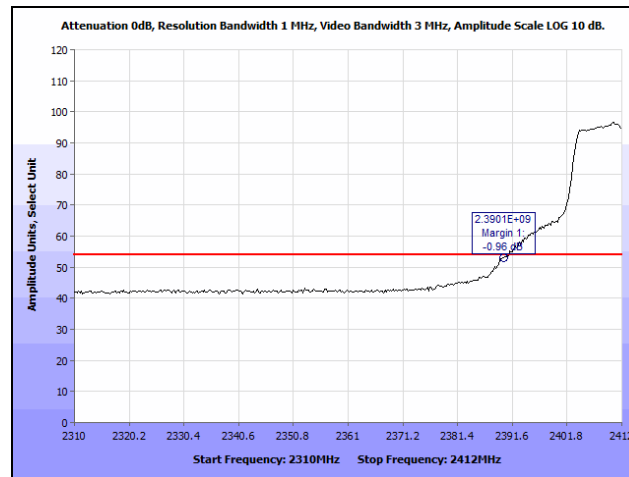


**Plot 333. Restricted Band Edge, Ceiling Antenna, 802.11b 20 MHz, 2462 MHz @ 2483.5 MHz, Average**

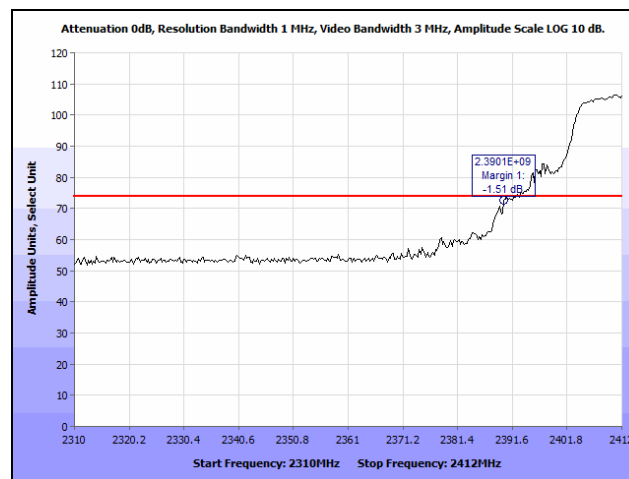


**Plot 334. Restricted Band Edge, Ceiling Antenna, 802.11b 20 MHz, 2462 MHz @ 2483.5 MHz, Peak**

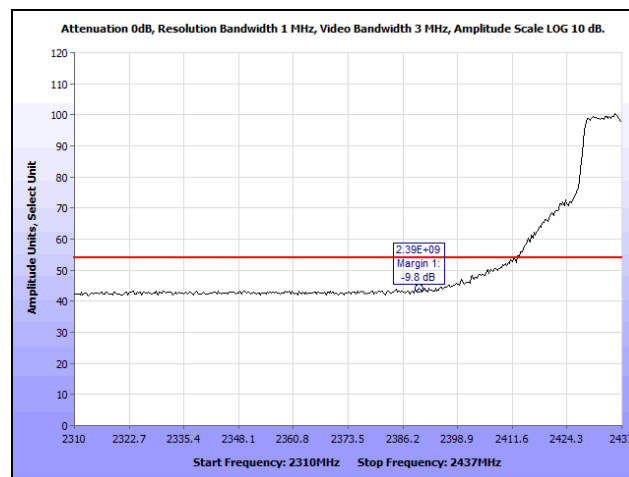
## Restricted Band Edge Test Results, Ceiling Mount, 802.11g 20 MHz, 2.4 GHz



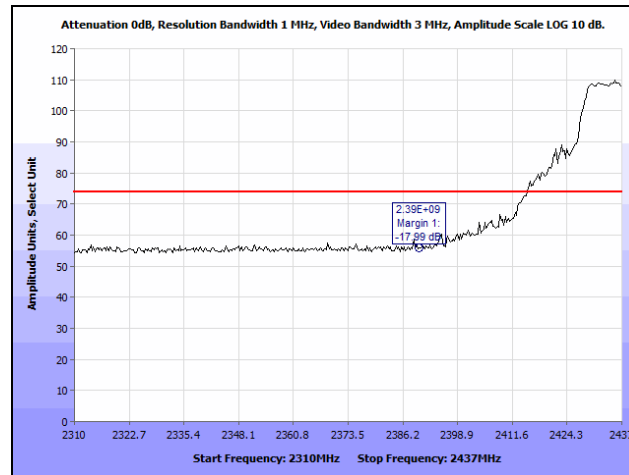
Plot 335. Restricted Band Edge, Ceiling Antenna, 802.11g 20 MHz, 2412 MHz @ 2390 MHz, Average



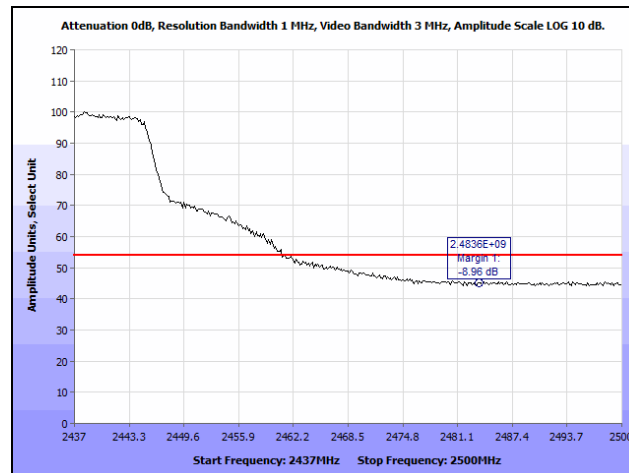
Plot 336. Restricted Band Edge, Ceiling Antenna, 802.11g 20 MHz, 2412 MHz @ 2390 MHz, Peak



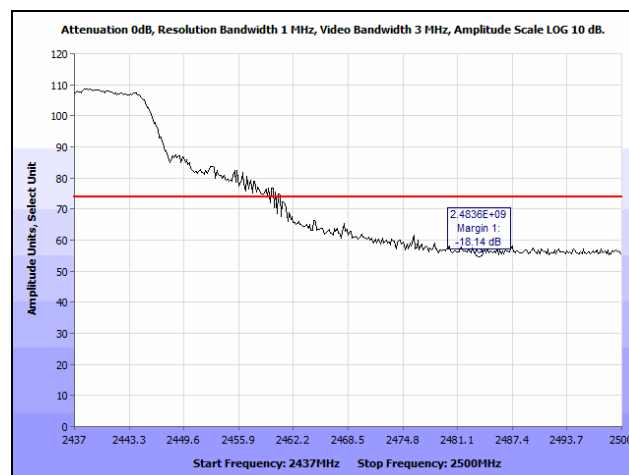
Plot 337. Restricted Band Edge, Ceiling Antenna, 802.11g 20 MHz, 2437 MHz, Channel 6 @ 2390 MHz, Average



**Plot 338. Restricted Band Edge, Ceiling Antenna, 802.11g 20 MHz, 2437 MHz, Channel 6 @ 2390 MHz, Peak**



**Plot 339. Restricted Band Edge, Ceiling Antenna, 802.11g 20 MHz, 2437 MHz, Channel 6 @ 2483.5 MHz, Average**



**Plot 340. Restricted Band Edge, Ceiling Antenna, 802.11g 20 MHz, 2437 MHz, Channel 6 @ 2483.5 MHz, Peak**