

FCC Part 15C (Wi-Fi Portion) Measurement and Test Report

For

Verykool USA Inc

4350 Executive Dr. #100, San Diego

FCC ID: WA6S757

| | |
|--|--|
| Report Concerns: Original Report | Equipment Type: 3G Mobile Phone |
| Model: | <u>S757</u> |
| Report No.: | <u>STR12058081I-2</u> |
| Test Date: | <u>2012-05-09 to 2012-05-26</u> |
| Issue Date: | <u>2012-06-01</u> |
| Tested By: | <u>Seven Song / Engineer</u> <i>Seven Song</i> |
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Note: This test report is limited to the above client company and the product model only. It may not be duplicated without prior permitted by SEM.Test Compliance Service Co., Ltd.

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1. GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

Client Information

Applicant: Verykool USA Inc
 Address of applicant: 4350 Executive Dr. #100, San Diego

Manufacturer: Verykool Wireless Technology Ltd.
 Address of manufacturer: Room 1701, Reward Building C, No.203, 2nd Section of WangJing, Li Ze Zhong Yuan, ChaoYang District, Beijing, P.R. of China 100102

General Description of E.U.T

| Items | Description |
|---------------------|---|
| EUT Description: | 3G Mobile Phone |
| Trade Name: | verykool |
| Model No.: | S757 |
| Power Supply: | Input 100-240V/50/60Hz Output 5V DC Adaptor DC 3.7V Battery Inside |
| RF Output Power | Max. 15.17dBm (Conducted) |
| Frequency range: | 802.11b/g/n-HT20: 2412MHz~2462MHz 802.11n-HT40: 2422MHz~2452MHz |
| Number of channels: | 802.11b/g/n-HT20: 11 802.11n-HT40: 7 |
| Channel Separation: | 5MHz |
| Antenna Gain: | 1.0 dBi |
| Type of Antenna: | Integral Antenna |

Note: The test data is gathered from a production sample, provided by the manufacture.

1.2 Test Standards

The following report is prepared on behalf of the Verykool USA Inc in accordance with FCC Part 15, Subpart C, and section 15.203, 15.205, 15.207, 15.209 and 15.247 of the Federal Communication Commissions rules.

The objective is to determine compliance with FCC Part 15, Subpart C, and section 15.203, 15.205, 15.207, 15.209 and 15.247 of the Federal Communication Commissions rules.

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product, which result in lowering the emission, should be checked to ensure compliance has been maintained.

1.3 Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2003, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

The equipment under test (EUT) was configured to measure its highest possible emission level. The test modes were adapted with Low Channel, Middle Channel and High Channel, accordingly in reference to the Operating Instructions.

1.4 Test Facility

- **FCC – Registration No.: 994117**
SEM.Test Compliance Services Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files and the Registration is 994117.
- **Industry Canada (IC) Registration No.: 7673A**
The 3m Semi-anechoic chamber of SEM.Test Compliance Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 7673A.
- **CNAS Registration No.: L4062**
Shenzhen SEM.Test Electronics Service Co., Ltd. is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L4062. All measurement facilities used to collect the measurement data are located at 3/F, Jinbao Commerce Building, Xin'an Fanshen Road, Bao'an District, Shenzhen, P.R.C (518101)

1.5 EUT Exercise Software

The EUT exercise program used during radiated and conducted testing was designed to exercise the system components. The test software, provided by the customer, is started while the EUT is on to simulate the normal work. under the Windows XP terminal.

1.6 Accessories Equipment List and Details

| Description | Manufacturer | Model | Serial Number |
|-------------|--------------|-------|---------------|
| / | / | / | / |

1.7 EUT Cable List and Details

| Cable Description | Length (m) | Shielded/Unshielded | With Core/Without Core |
|-------------------|------------|---------------------|------------------------|
| USB Cable | 1.0 | Shielded | Without Core |
| Earphone Cable | 1.1 | Unshielded | Without Core |

2. SUMMARY OF TEST RESULTS

| FCC RULES | DESCRIPTION OF TEST | RESULT |
|-----------------------------|------------------------|-----------|
| § 15.203; § 15.247(c)(1)(i) | Antenna Requirement | Compliant |
| § 15.247(e) | Power Spectral Density | Compliant |
| § 15.247(a)(2) | 6 dB Bandwidth | Compliant |
| § 15.247(b)(3) | Power Output | Compliant |
| § 15.209(a)(d) | Radiated Emission | Compliant |
| § 15.247(d) | Band edge | Compliant |

3. ANTENNA REQUIREMENT

3.1 Standard Applicable

According to FCC 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.

3.2 Test Result

This product has a integral antenna, fulfill the requirement of this section.

4. POWER SPECTRAL DENSITY

4.1 Standard Applicable

According to 15.247(a)(1)(iii), For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

4.2 Test Equipment List and Details

| Description | Manufacturer | Model | Serial Number | Cal. Date | Due. Date |
|-------------------|--------------|-------------|---------------|------------|------------|
| Spectrum Analyzer | Agilent | E4402B | US41192821 | 2012-03-28 | 2013-03-27 |
| Attenuator | ATTEN | ATS100-4-20 | / | 2012-03-28 | 2013-03-27 |

Statement of Traceability: All calibrations have been performed per the NVLAP requirements traceable to the NIST.

4.3 Test Procedure

1. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
2. Set center frequency of spectrum analyzer = operating frequency.
3. Set the spectrum analyzer as RBW, VBW=3KHz, Span = 20MHz.
4. Repeat above procedures until all frequency measured was complete.

4.4 Environmental Conditions

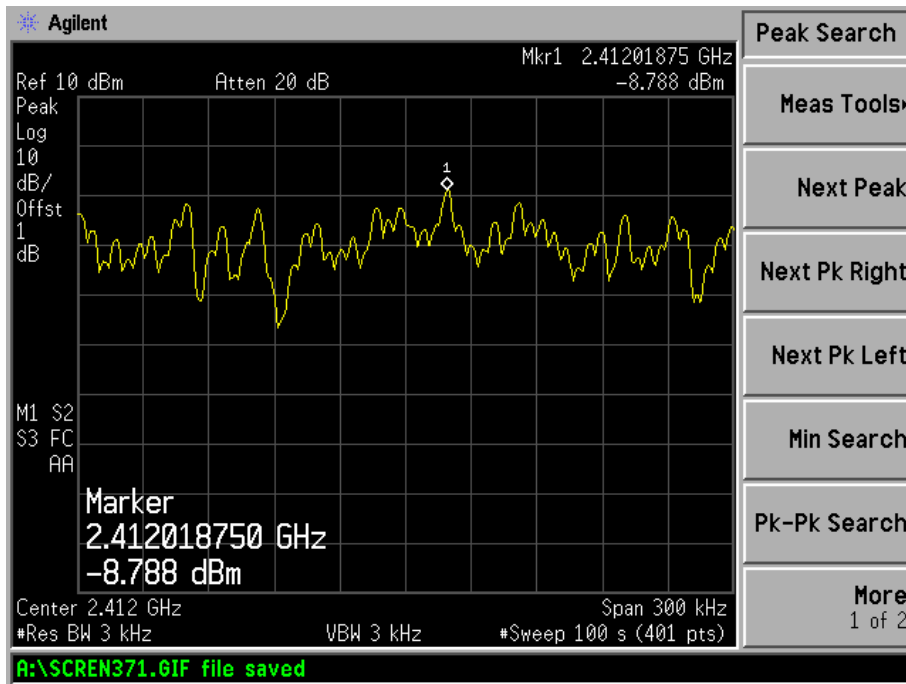
| | |
|--------------------|-----------|
| Temperature: | 20° C |
| Relative Humidity: | 54% |
| ATM Pressure: | 1011 mbar |

4.5 Summary of Test Results/Plots

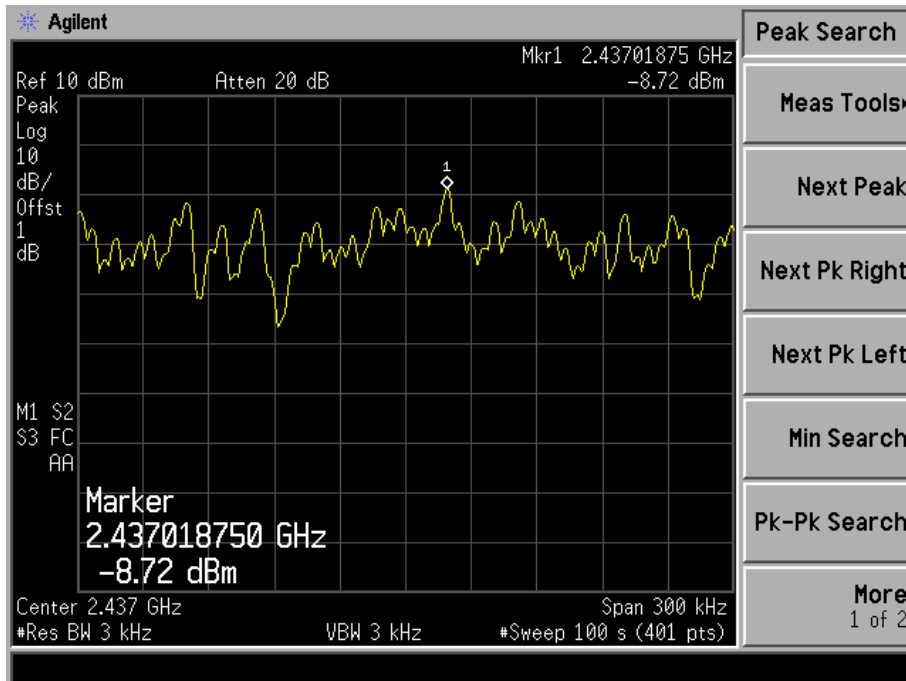
| Test mode | Test channel | Reading dBm/3kHz | Limit dBm/3kHz |
|--------------|-----------------------------|---------------------|-------------------|
| 802.11b | Low channel (2412MHz) | -8.79 | 8 |
| | Middle channel (2437MHz) | -8.72 | 8 |
| | High channel (2462MHz) | -8.21 | 8 |
| 802.11g | Low channel (2412MHz) | -16.27 | 8 |
| | Middle channel (2437MHz) | -17.57 | 8 |
| | High channel (2462MHz) | -16.10 | 8 |
| 802.11n-HT20 | Low channel (2412MHz) | -16.28 | 8 |
| | Middle channel (2437MHz) | -16.63 | 8 |
| | High channel (2462MHz) | -16.77 | 8 |
| 802.11n-HT40 | Low channel (2422MHz) | -21.49 | 8 |
| | Middle channel (2437MHz) | -22.38 | 8 |
| | High channel (2452MHz) | -21.62 | 8 |

For 802.11b

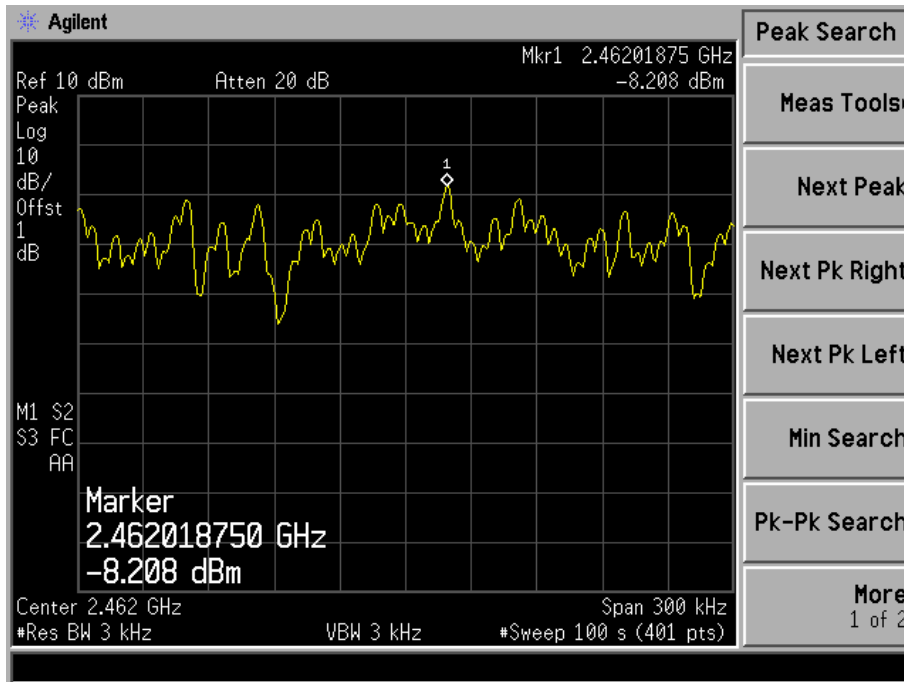
Low Channel:



Middle Channel:

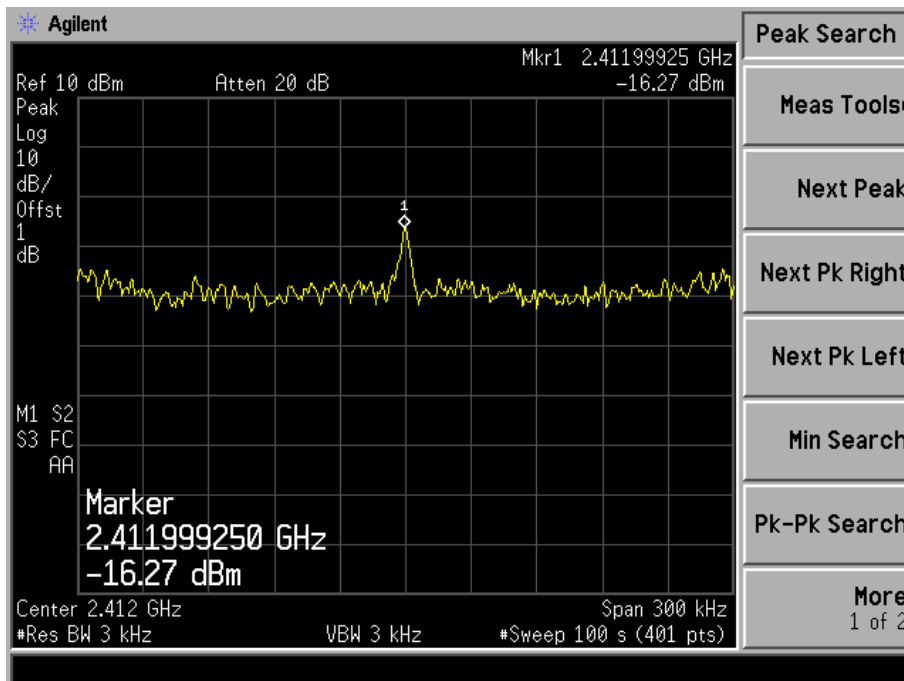


High Channel:

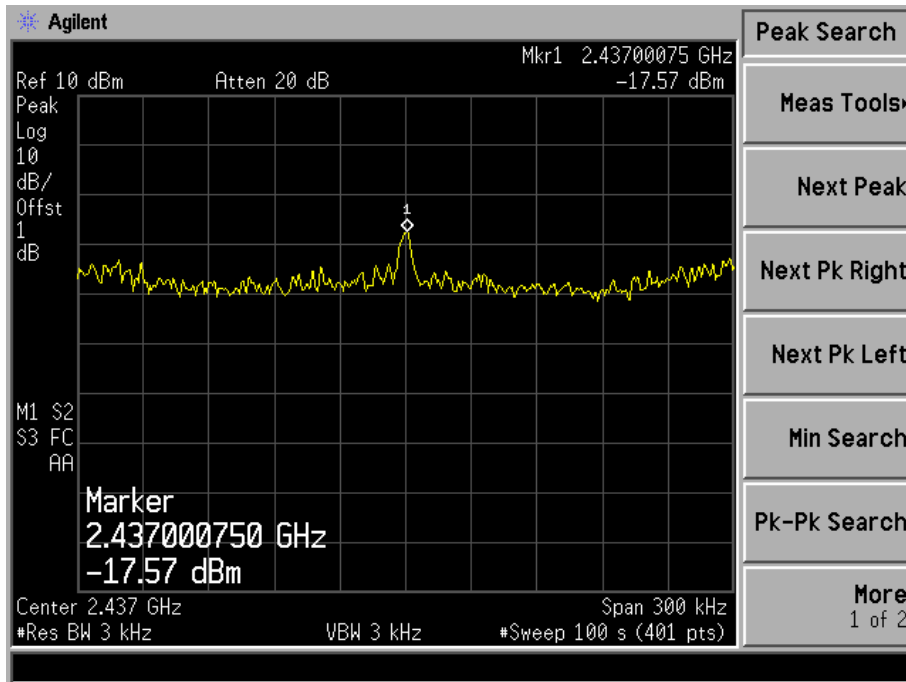


For 802.11g

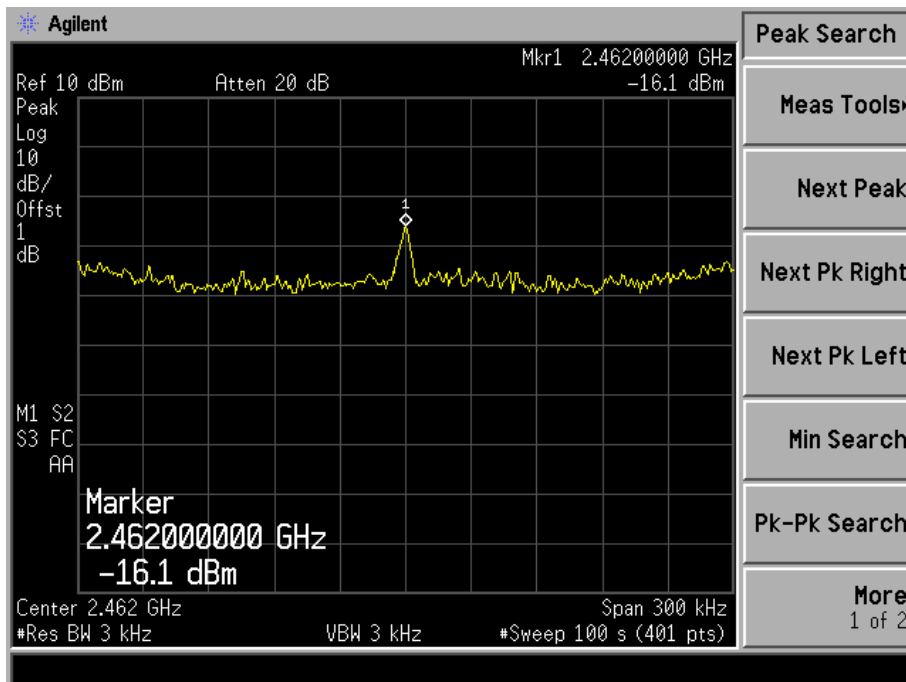
Low Channel:



Middle Channel:

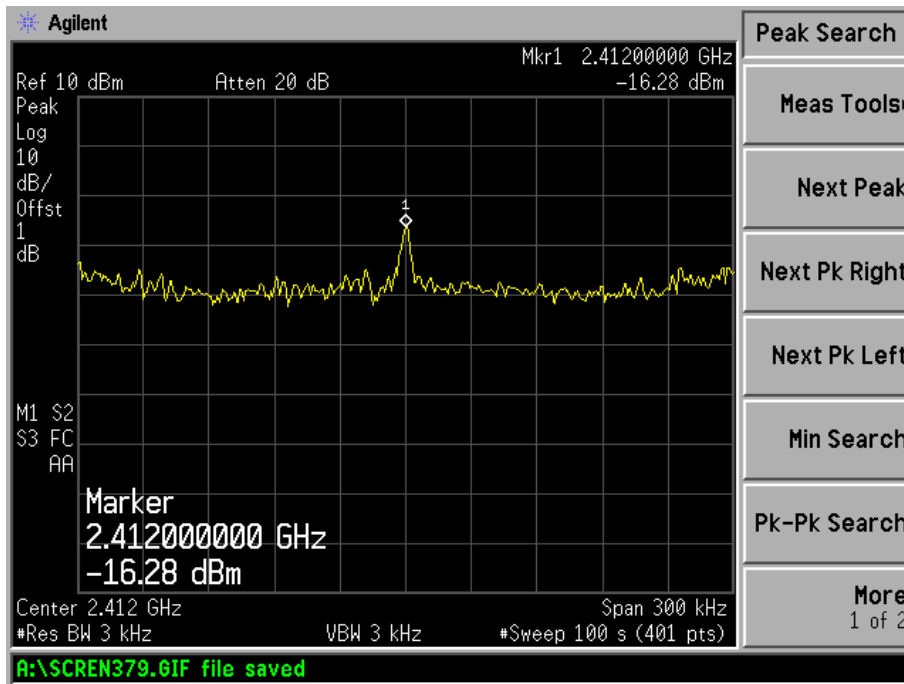


High Channel:

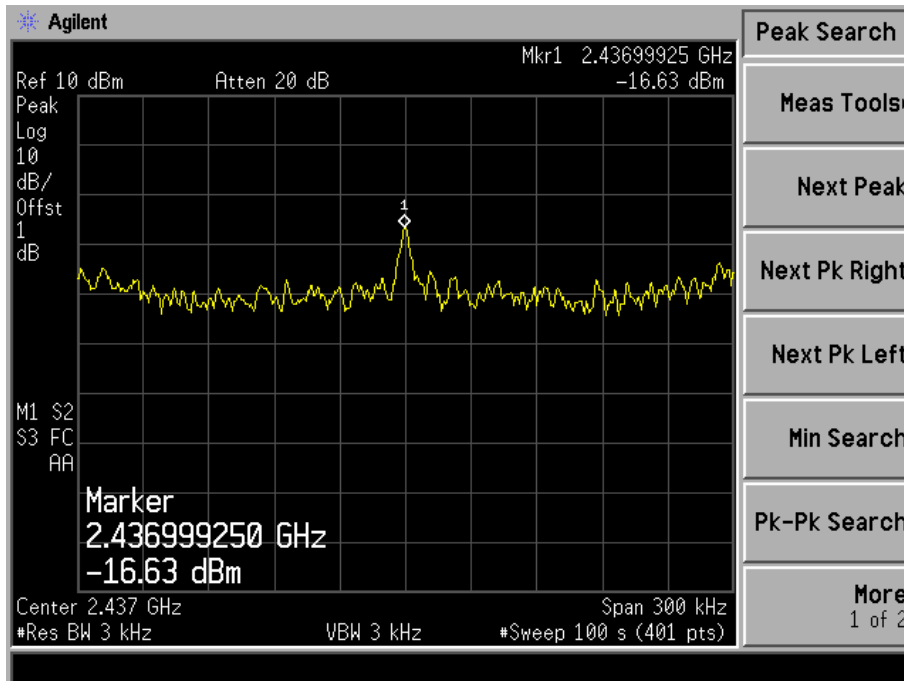


For 802.11n-HT20

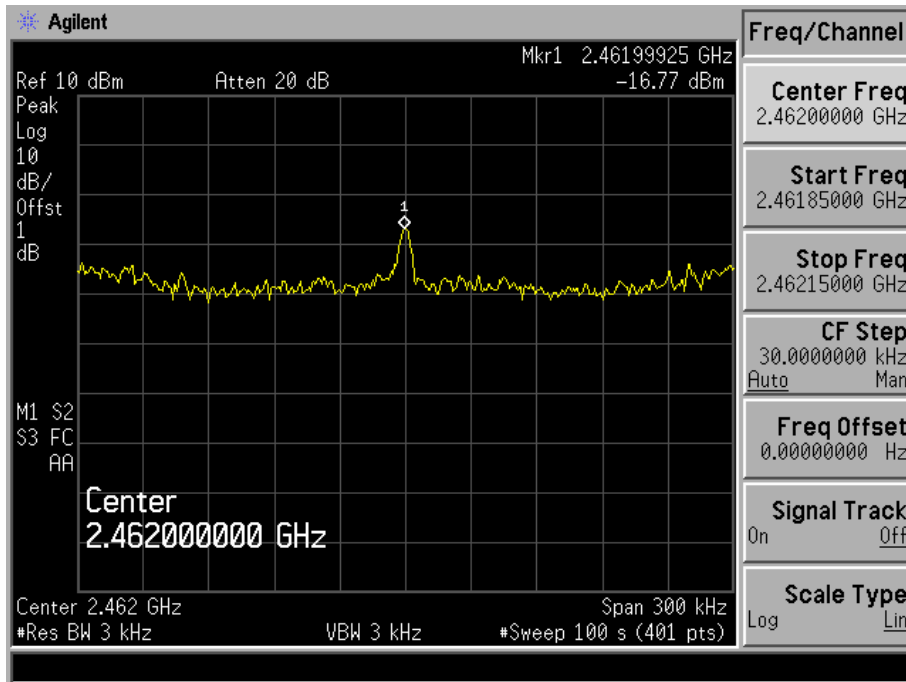
Low Channel:



Middle Channel:

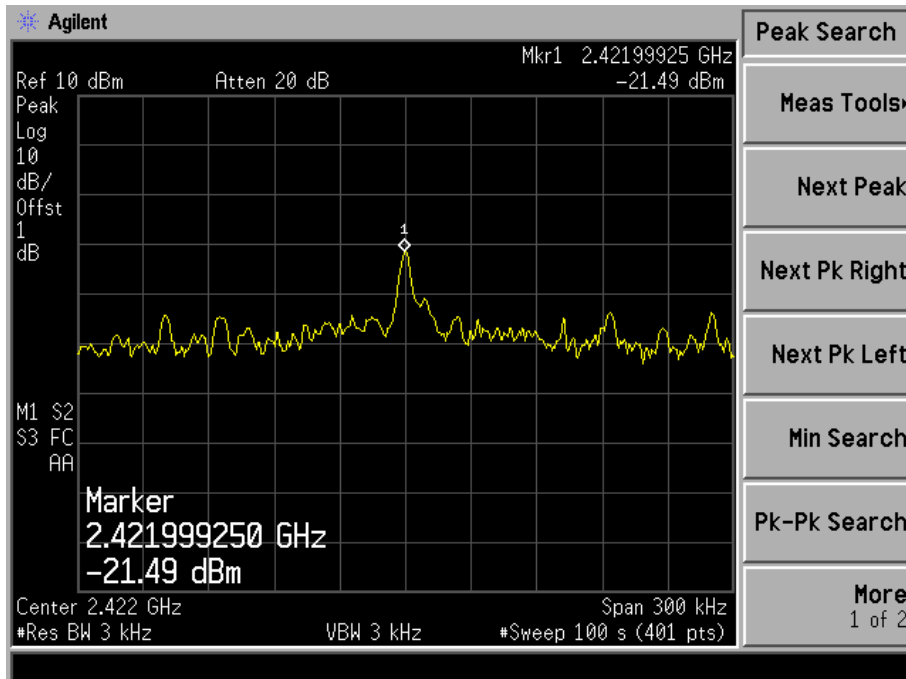


High Channel:

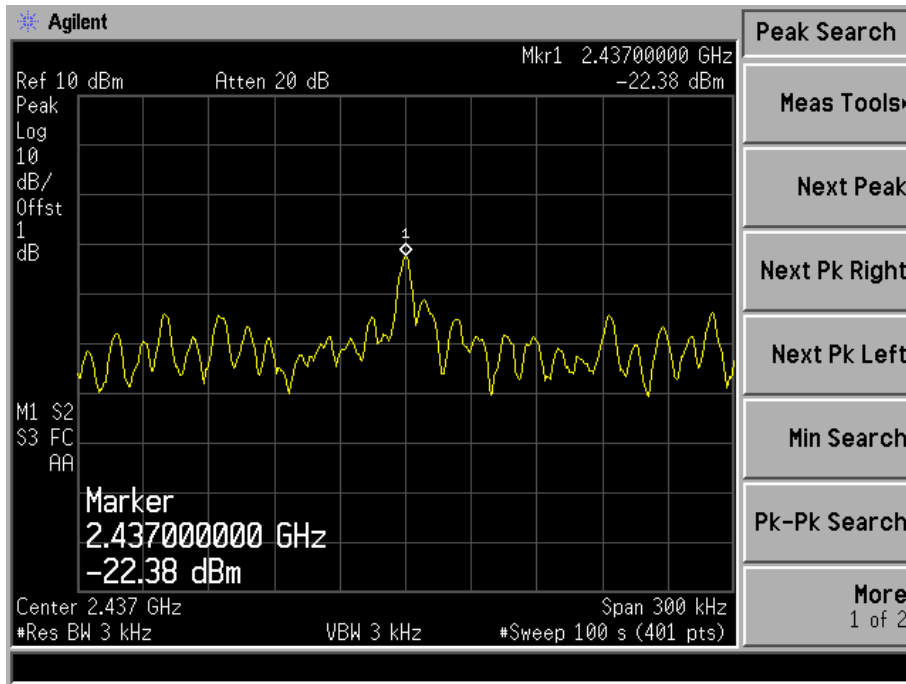


For 802.11n-HT40

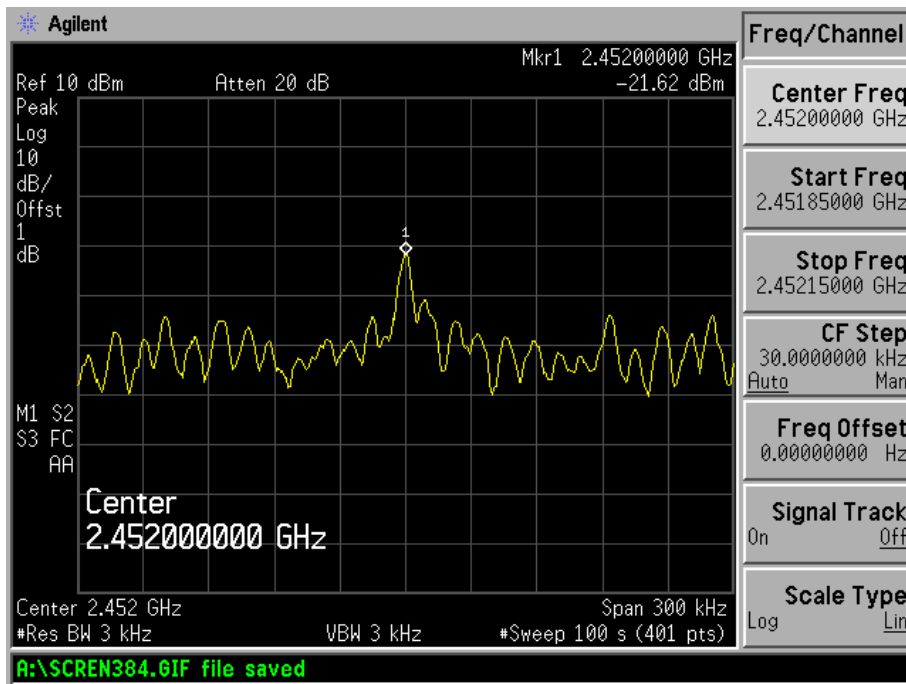
Low Channel:



Middle Channel:



High Channel:



5. 6-dB BANDWIDTH

5.1 Standard Applicable

According to 15.247(a)(2). Systems using digital modulation techniques may operate in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

5.2 Test Equipment List and Details

| Description | Manufacturer | Model | Serial Number | Cal. Date | Due. Date |
|-------------------|--------------|-------------|---------------|------------|------------|
| Spectrum Analyzer | Agilent | E4402B | US41192821 | 2012-03-28 | 2013-03-27 |
| Attenuator | ATTEN | ATS100-4-20 | / | 2012-03-28 | 2013-03-27 |

5.3 Test Procedure

1. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
2. Set center frequency of spectrum analyzer = operating frequency.
3. The spectrum analyzer as RBW=300KHz (1 % of Bandwidth.), Sweep=auto
4. Mark the peak frequency and –6dB (upper and lower) frequency.

5.4 Environmental Conditions

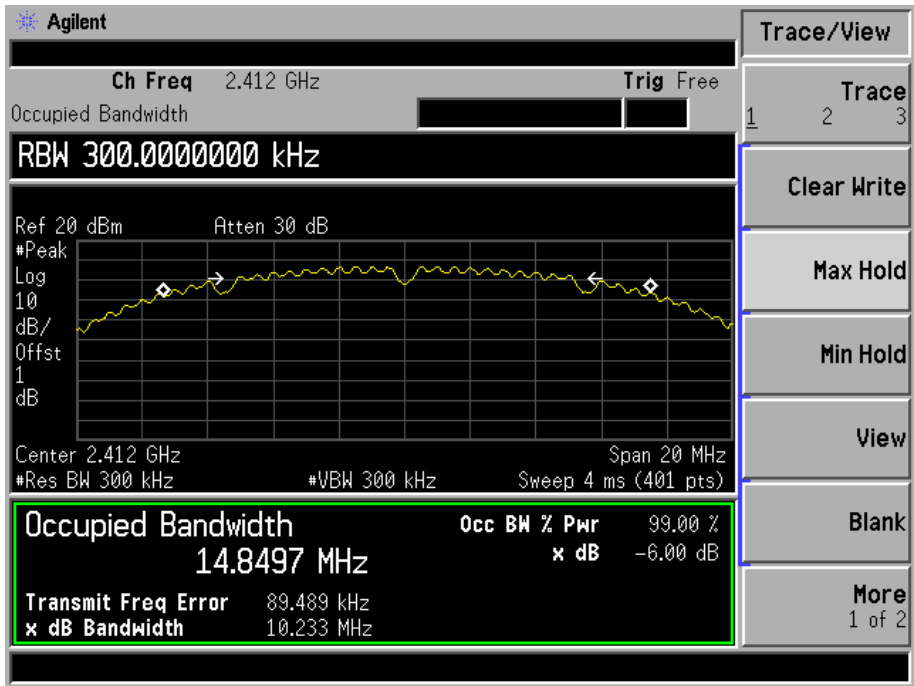
| | |
|--------------------|-----------|
| Temperature: | 24° C |
| Relative Humidity: | 53% |
| ATM Pressure: | 1018 mbar |

5.5 Summary of Test Results/Plots

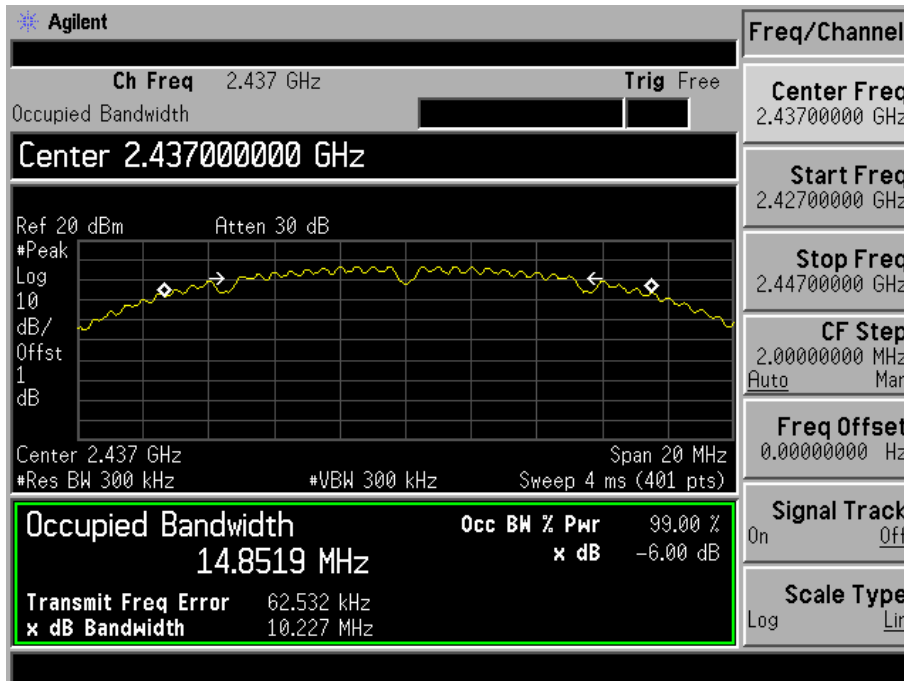
| Test mode | Frequency MHz | 6 dB Bandwidth kHz | Limit kHz |
|--------------|------------------|-----------------------|--------------|
| 802.11b | 2412 | 10233 | 500 |
| | 2437 | 10227 | 500 |
| | 2462 | 10222 | 500 |
| 802.11g | 2412 | 16623 | 500 |
| | 2437 | 16636 | 500 |
| | 2462 | 16723 | 500 |
| 802.11n-HT20 | 2412 | 17854 | 500 |
| | 2437 | 17877 | 500 |
| | 2462 | 17863 | 500 |
| 802.11n-HT40 | 2422 | 36679 | 500 |
| | 2437 | 36617 | 500 |
| | 2452 | 36646 | 500 |

For 802.11b

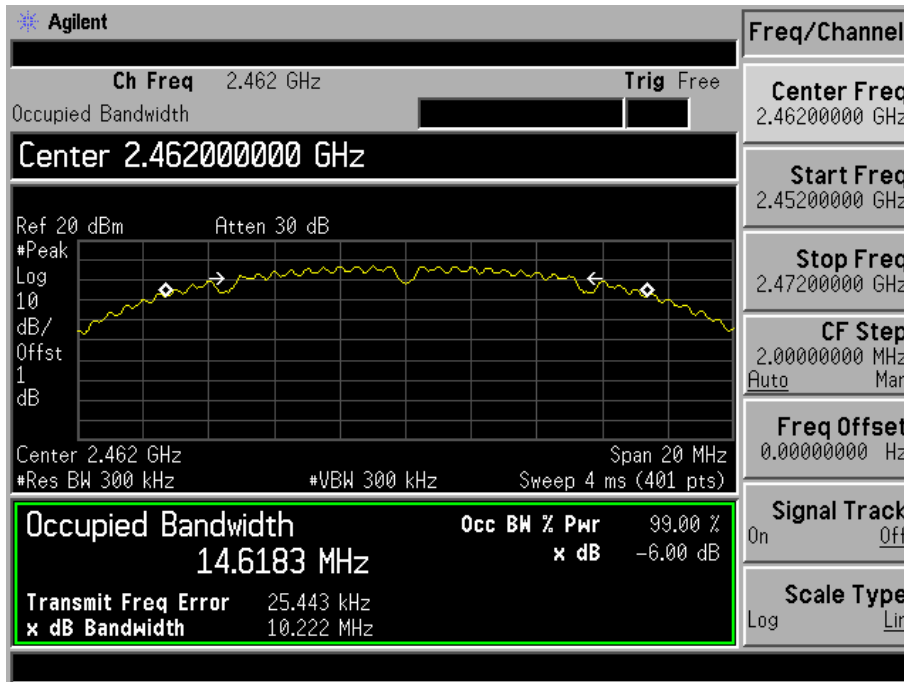
Low Channel:



Mid Channel:

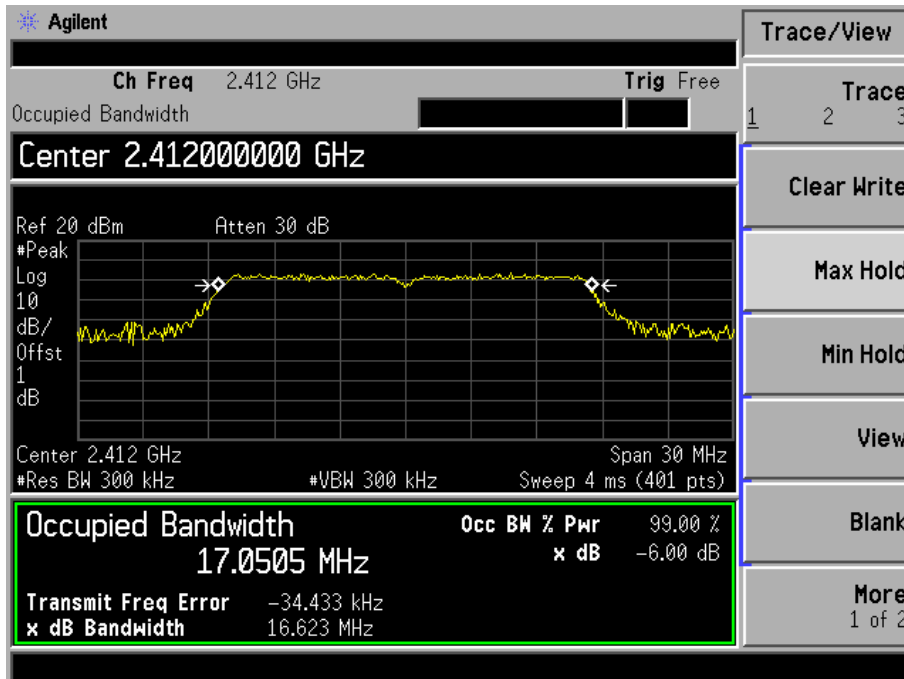


High Channel:

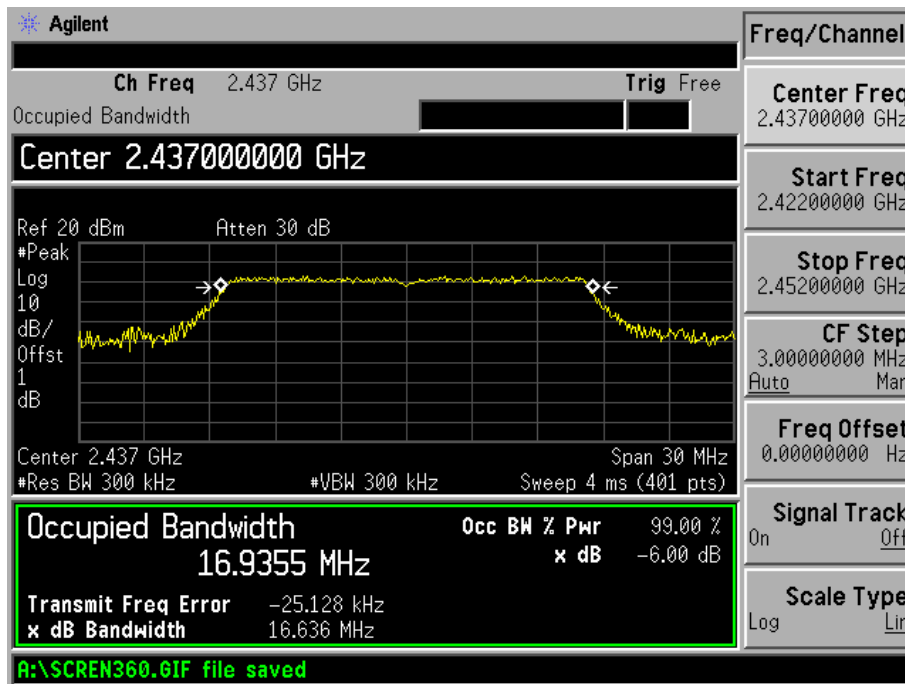


For 802.11g

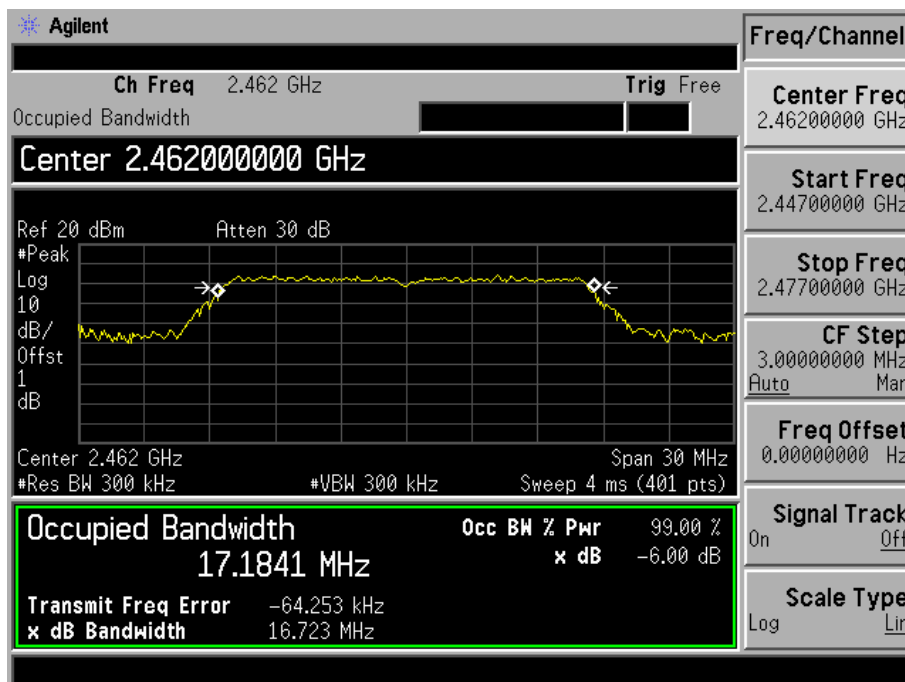
Low Channel:



Mid Channel:

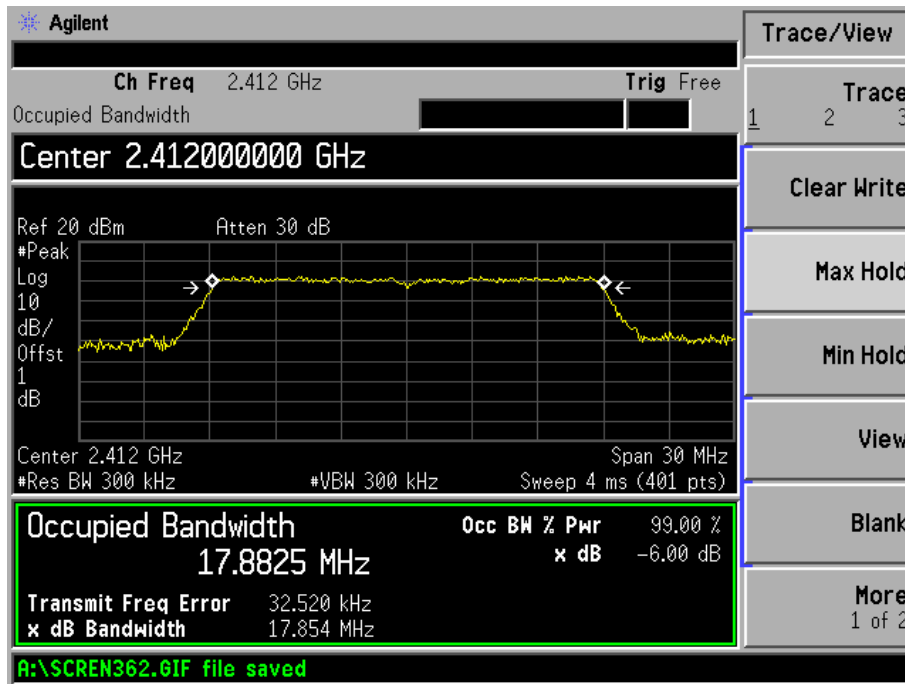


High Channel:

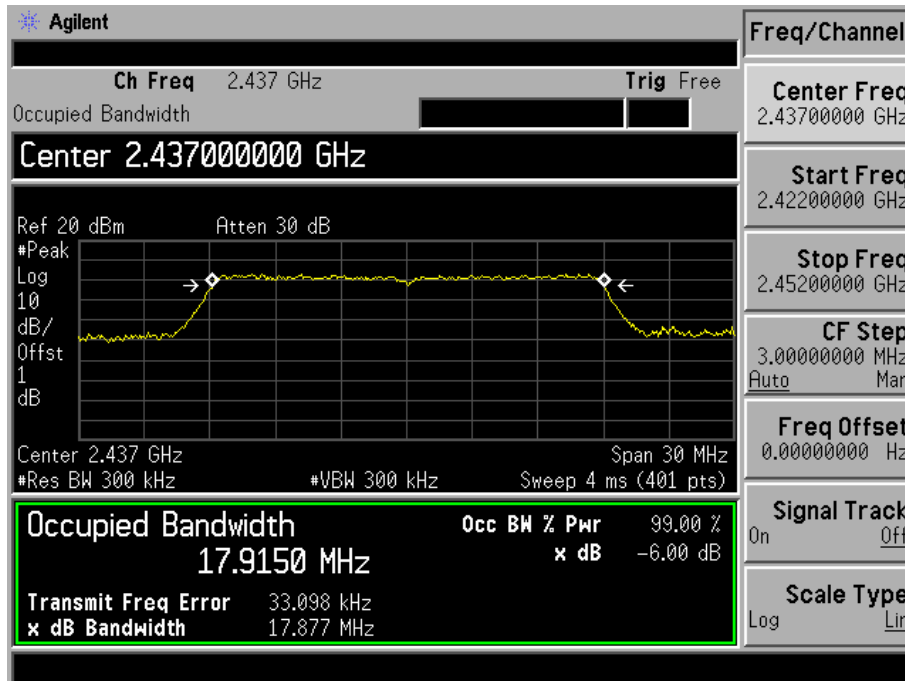


For 802.11n-HT20

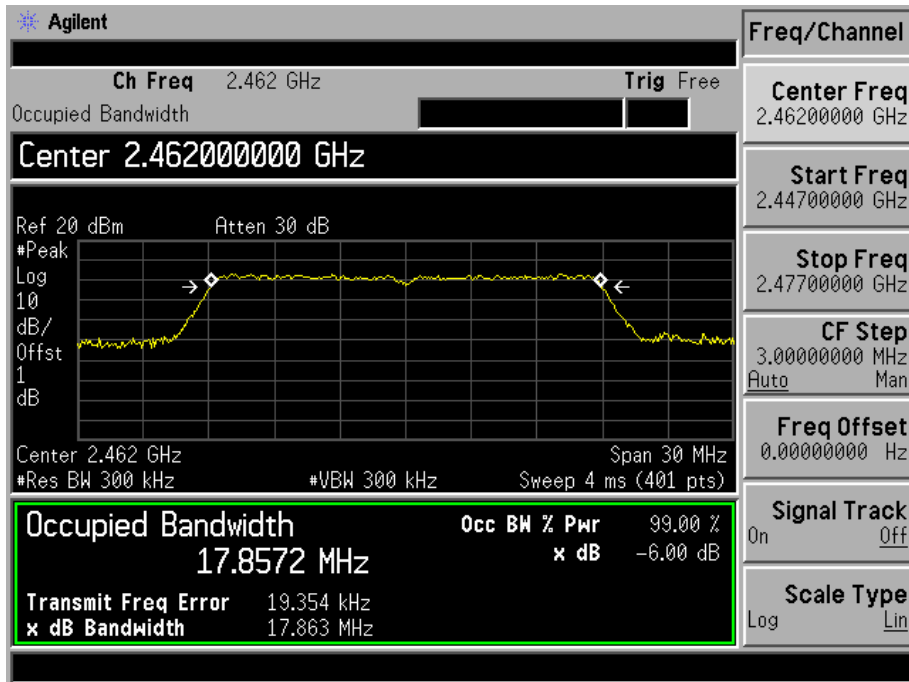
Low Channel:



Mid Channel:

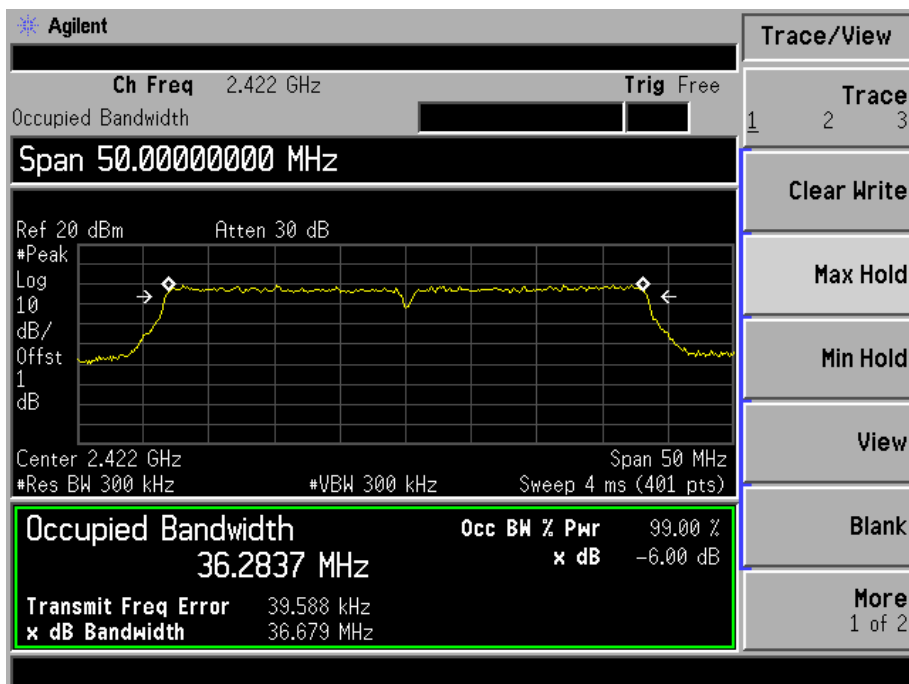


High Channel:

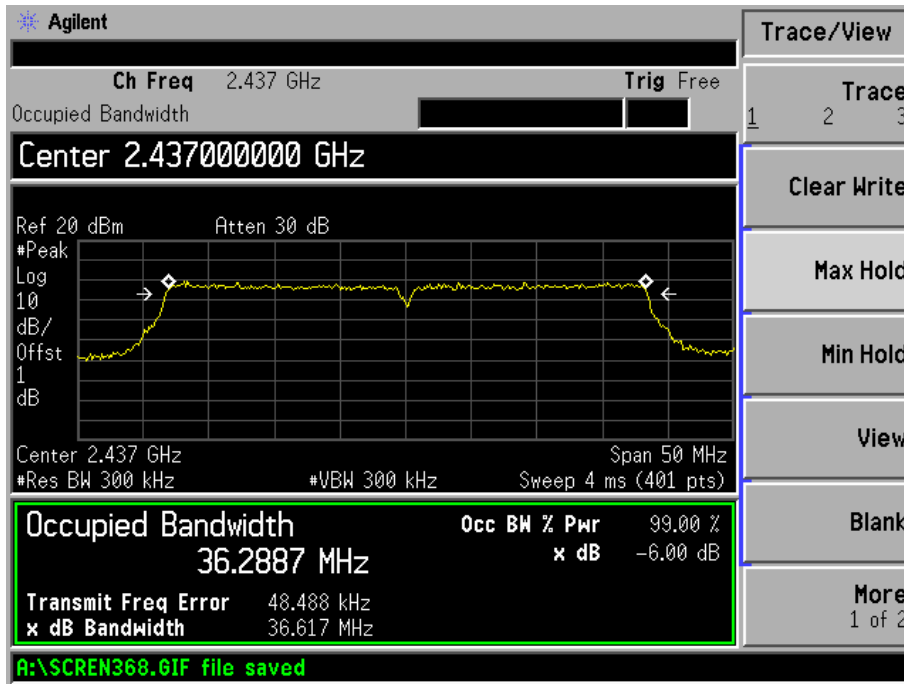


For 802.11n-HT40

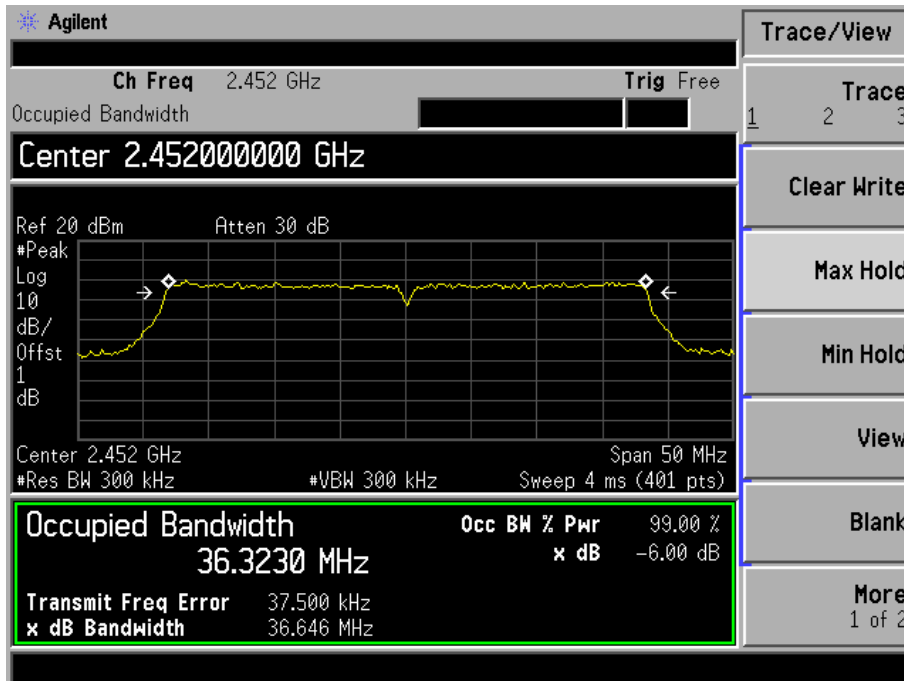
Low Channel:



Mid Channel:



High Channel:



6. POWER OUTPUT

6.1 Standard Applicable

According to 15.247(b)(3). For systems using digital modulation in the 902–928 MHz, 2400–2483.5 MHz, and 5725–5850 MHz bands: 1 Watt.

6.2 Test Equipment List and Details

| Description | Manufacturer | Model | Serial Number | Cal. Date | Due. Date |
|-------------------|--------------|-------------|---------------|------------|------------|
| Spectrum Analyzer | Agilent | E4402B | US41192821 | 2012-03-28 | 2013-03-27 |
| Attenuator | ATTEN | ATS100-4-20 | / | 2012-03-28 | 2013-03-27 |

Statement of Traceability: All calibrations have been performed per the NVLAP requirements traceable to the NIST.

6.3 Test Procedure

According to section 15.247(b)-power output of the KDB-558074 (2005), the method #1 of the power output option2 was used, the following is the measurement procedure.

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW = 1 MHz, Set VBW \geq 3 MHz.
4. Use sample detector mode if bin width (i.e., span/number of points in spectrum display) $<$ 0.5 RBW. Otherwise use peak detector mode.
5. Use a video trigger with the trigger level set to enable triggering only on full power pulses. Transmitter must operate at full control power for entire sweep of every sweep. If the device transmits continuously, with no off intervals or reduced power intervals, the trigger may be set to “free run”.
6. Trace average 100 traces in power averaging mode.
7. Compute power by integrating the spectrum across the 26 dB EBW of the signal. The integration can be performed using the spectrum analyzer’s band power measurement function with band limits set equal to the EBW band edges.

6.4 Environmental Conditions

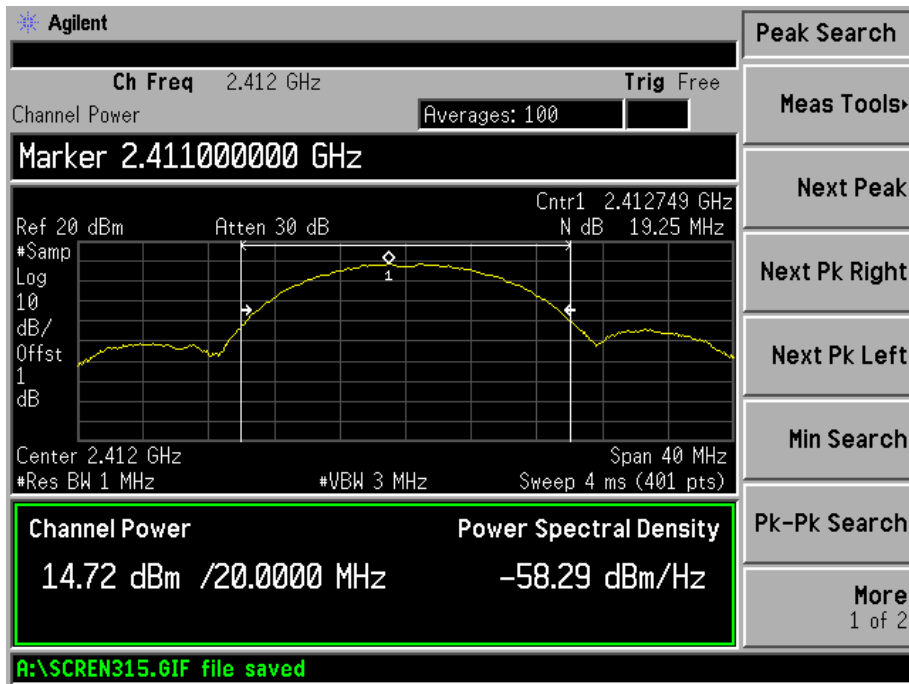
| | |
|--------------------|-----------|
| Temperature: | 26° C |
| Relative Humidity: | 57% |
| ATM Pressure: | 1011 mbar |

6.5 Summary of Test Results/Plots

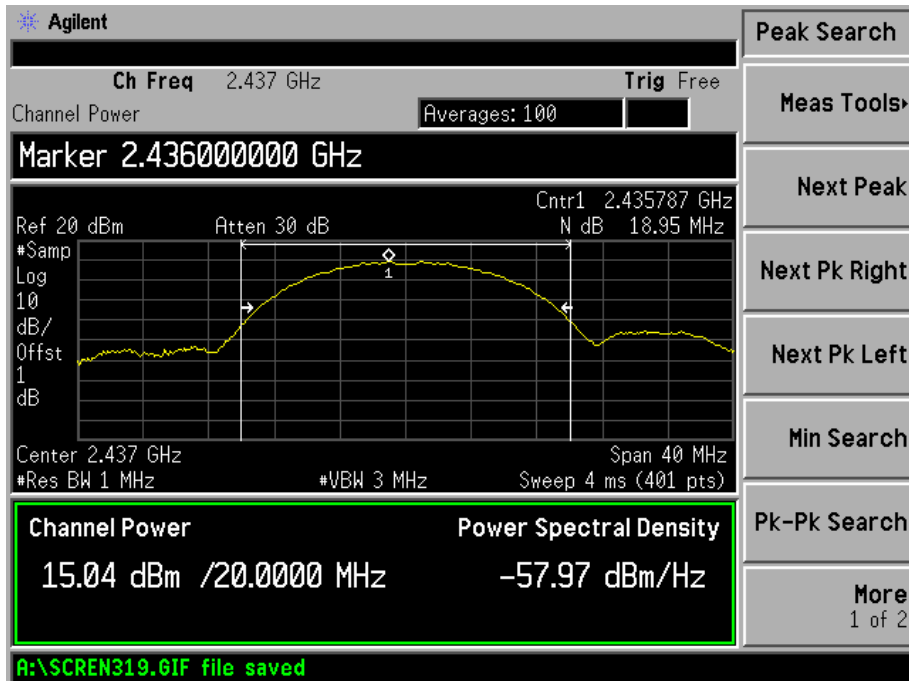
| Test mode | Frequency MHz | Reading dBm | Output power W | Limit W |
|---------------------|---------------|-------------|----------------|---------|
| 802.11b (1M Short) | 2412 | 14.72 | 0.0296 | 1 |
| | 2437 | 15.04 | 0.0319 | 1 |
| | 2462 | 15.07 | 0.0321 | 1 |
| 802.11b (11M Short) | 2412 | 15.17 | 0.0329 | 1 |
| | 2437 | 15.01 | 0.0317 | 1 |
| | 2462 | 15.03 | 0.0318 | 1 |
| 802.11b (1M Long) | 2412 | 14.96 | 0.0313 | 1 |
| | 2437 | 15.03 | 0.0318 | 1 |
| | 2462 | 15.04 | 0.0319 | 1 |
| 802.11b (11M Long) | 2412 | 14.80 | 0.0302 | 1 |
| | 2437 | 15.14 | 0.0327 | 1 |
| | 2462 | 15.07 | 0.0321 | 1 |
| 802.11g (6M) | 2412 | 12.69 | 0.0186 | 1 |
| | 2437 | 12.24 | 0.0167 | 1 |
| | 2462 | 12.33 | 0.0171 | 1 |
| 802.11g (54M) | 2412 | 12.76 | 0.0189 | 1 |
| | 2437 | 12.20 | 0.0166 | 1 |
| | 2462 | 12.16 | 0.0164 | 1 |
| 802.11n-HT20 | 2422 | 12.54 | 0.0179 | 1 |
| | 2437 | 12.26 | 0.0168 | 1 |
| | 2452 | 11.68 | 0.0147 | 1 |
| 802.11n-HT40 | 2422 | 10.65 | 0.0116 | 1 |
| | 2437 | 10.59 | 0.0115 | 1 |
| | 2452 | 10.62 | 0.0115 | 1 |

For 802.11b_1M Short rate

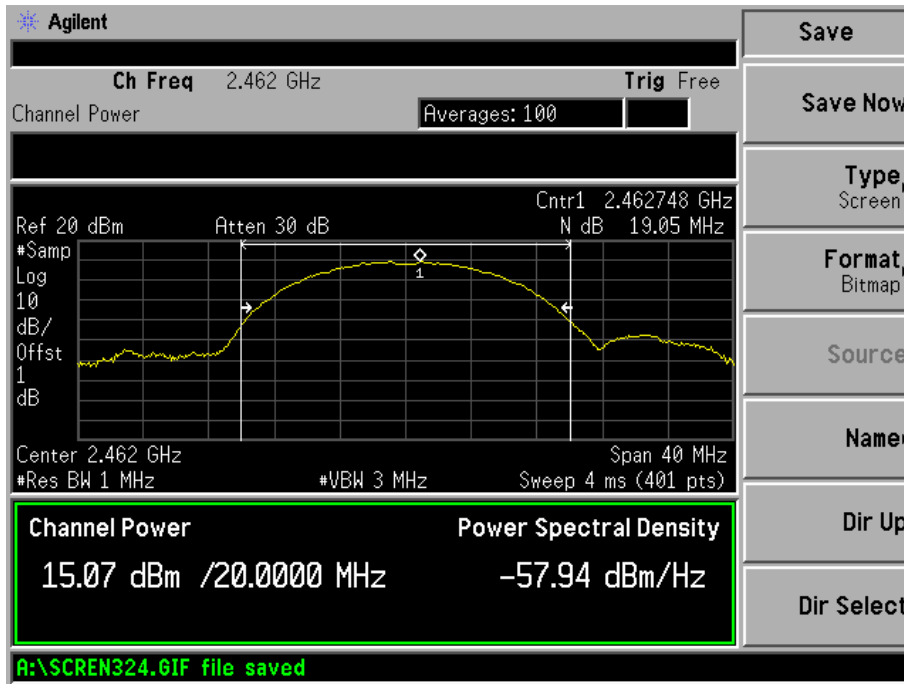
Low Channel:



Middle Channel:

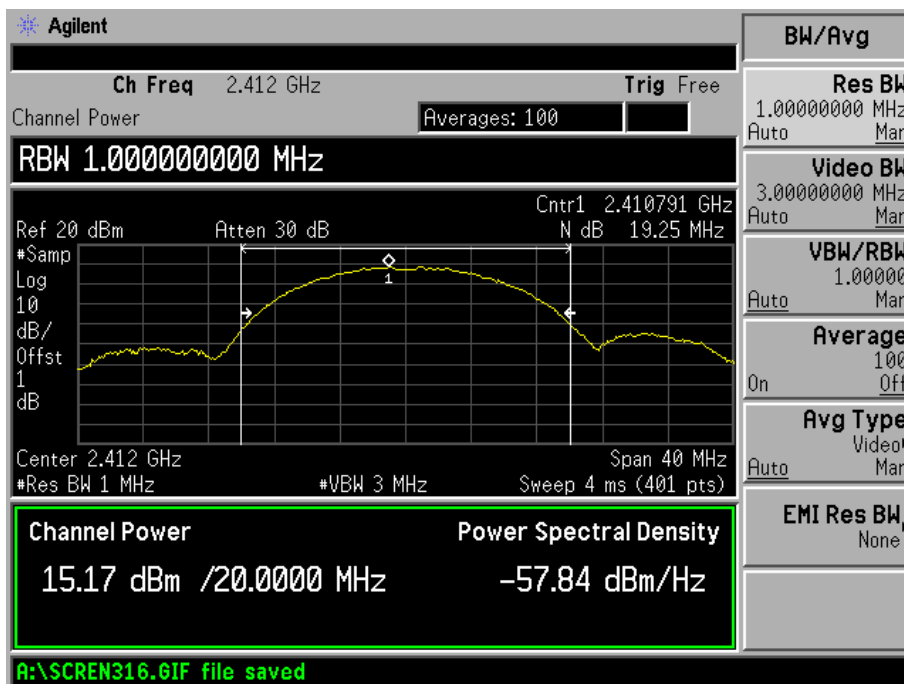


High Channel:

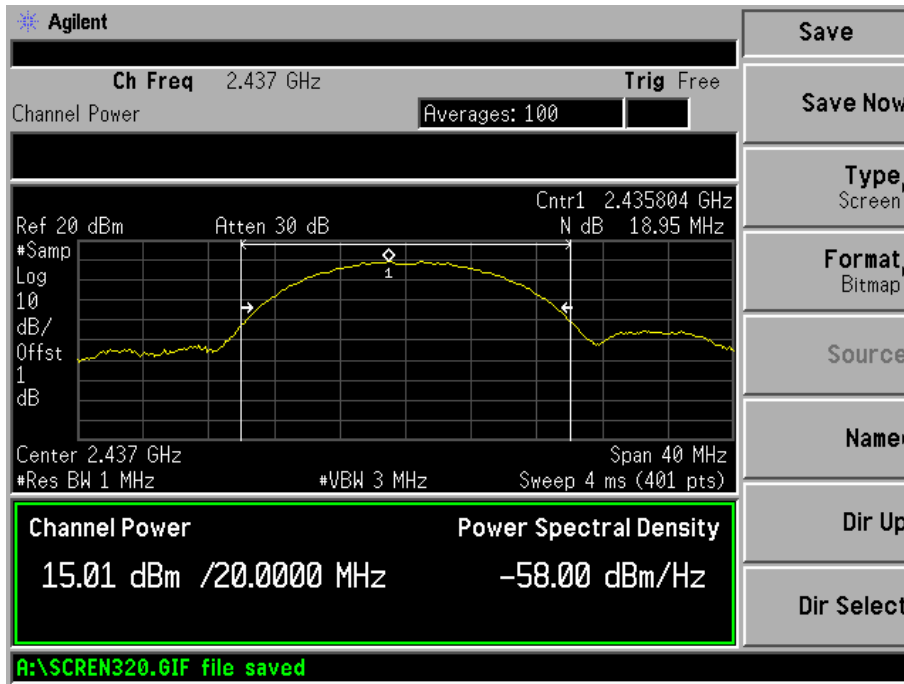


For 802.11b_11M Short rate

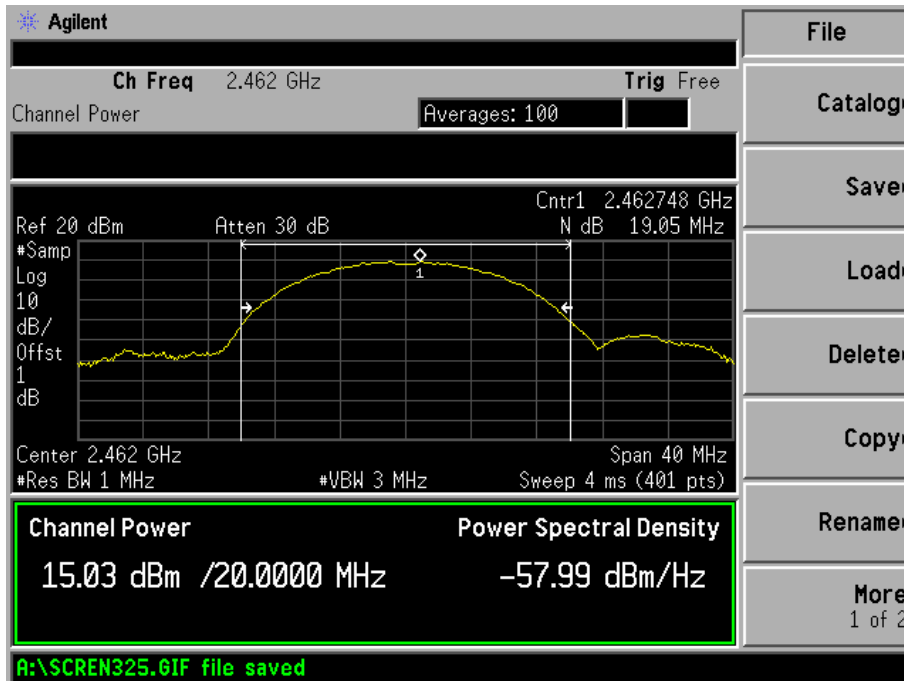
Low Channel:



Middle Channel:

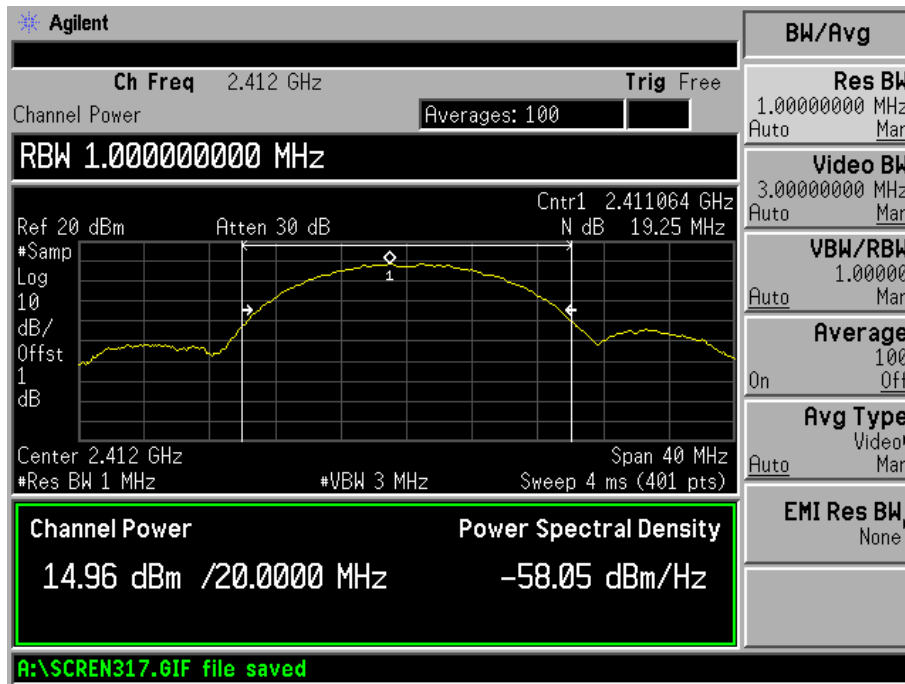


High Channel:

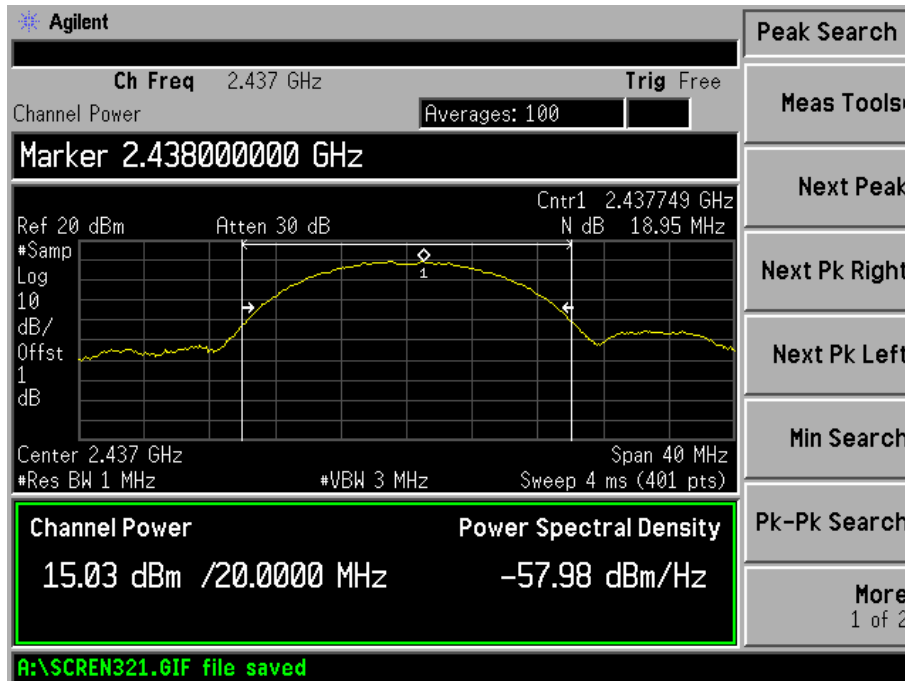


For 802.11b_1M Long rate

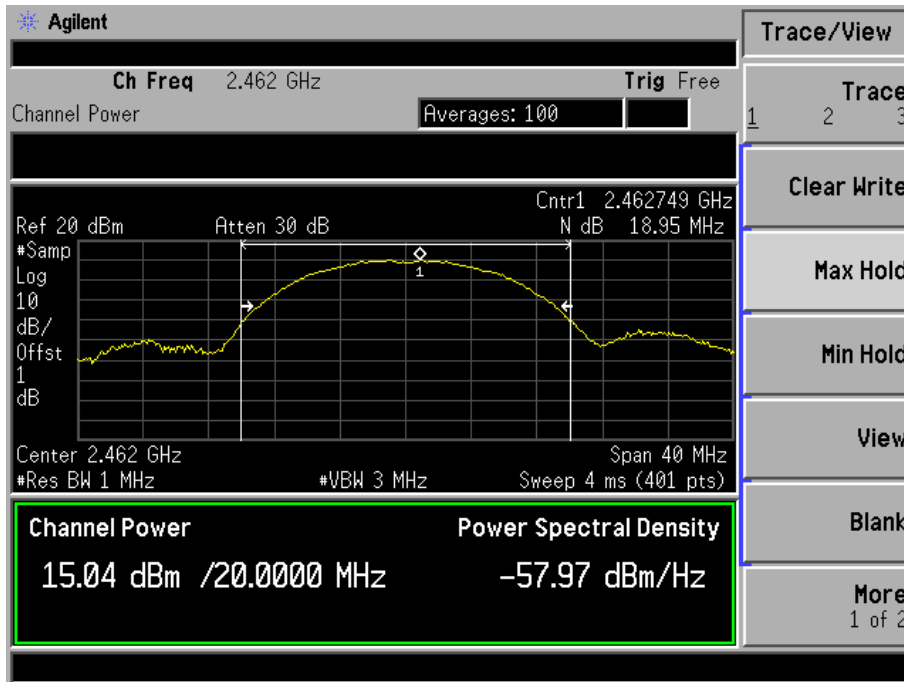
Low Channel:



Middle Channel:

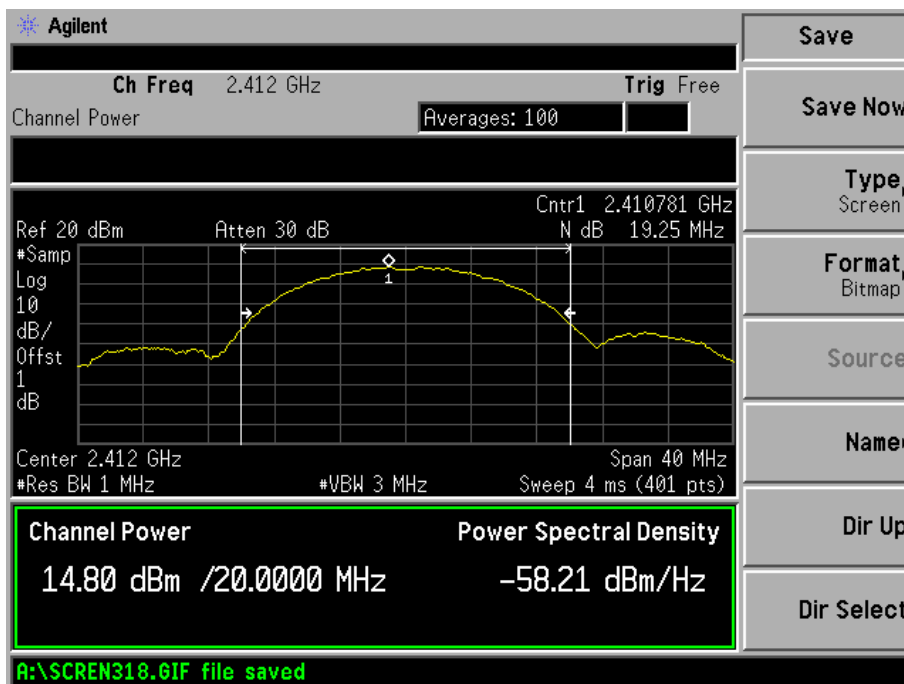


High Channel:

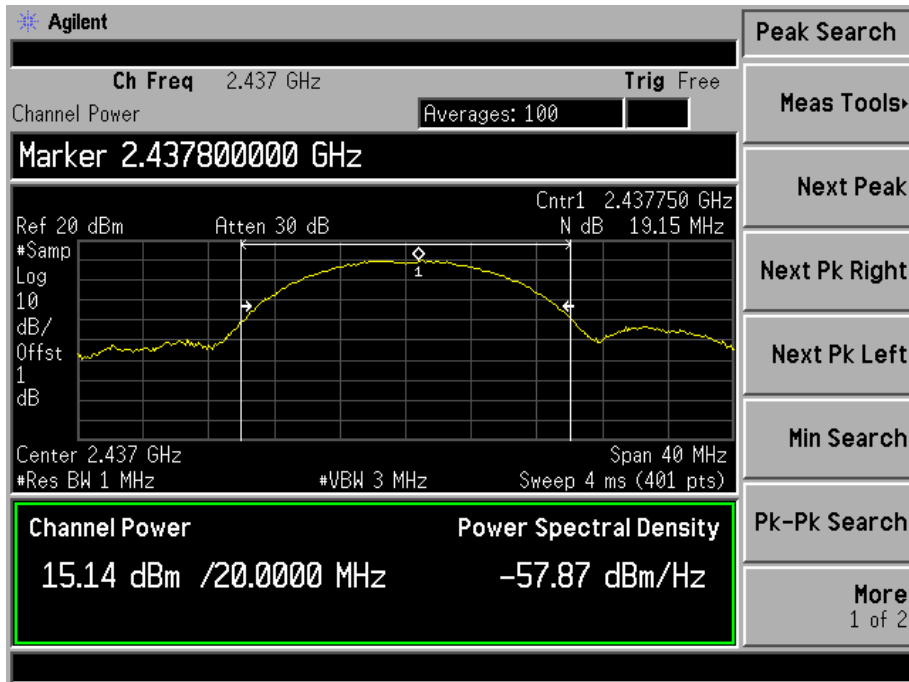


For 802.11b_11M Long rate

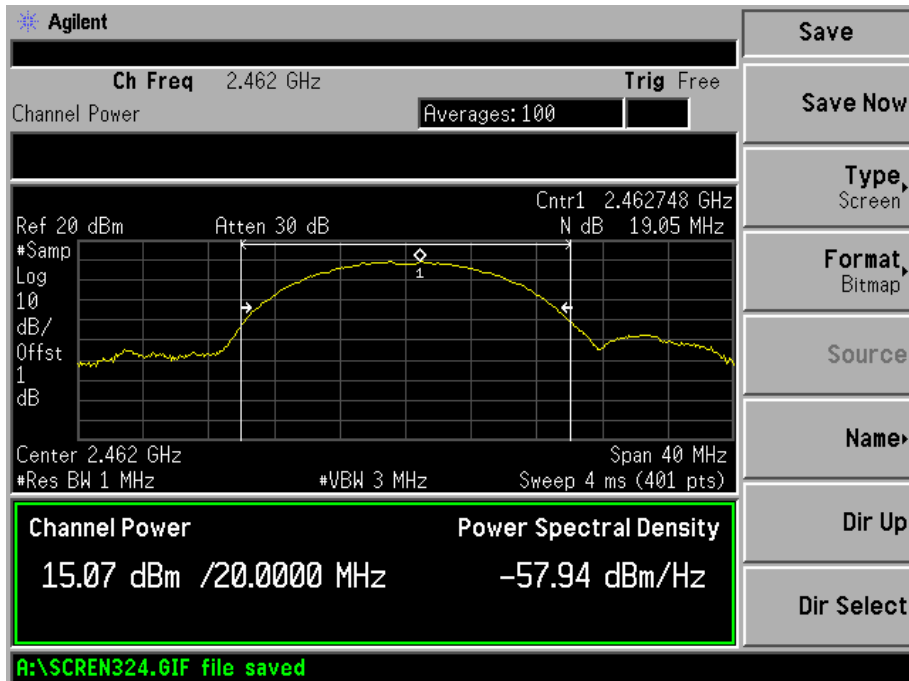
Low Channel:



Middle Channel:

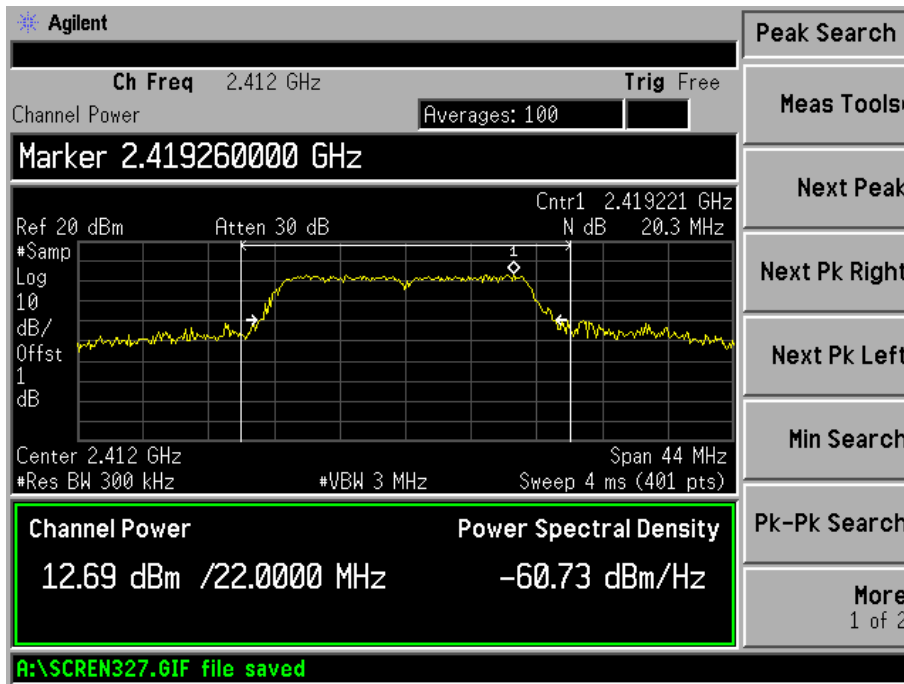


High Channel:

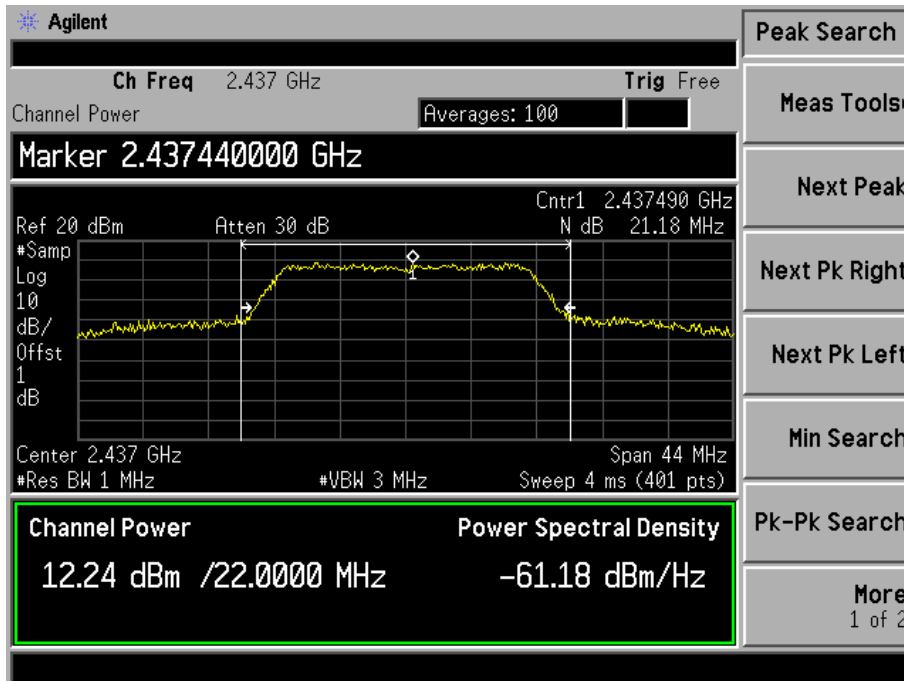


For 802.11g_6M rate

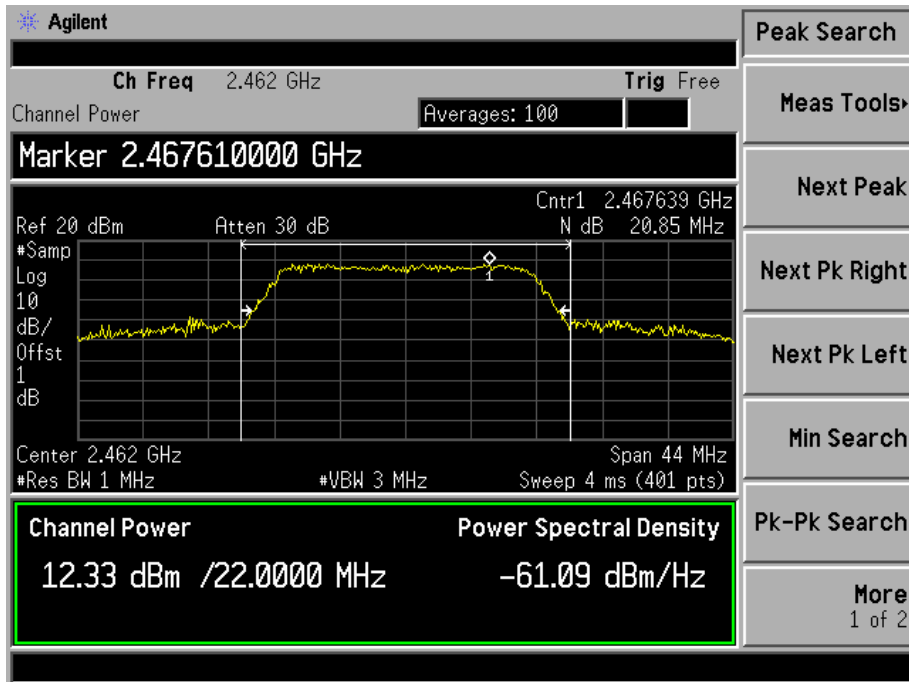
Low Channel:



Middle Channel:

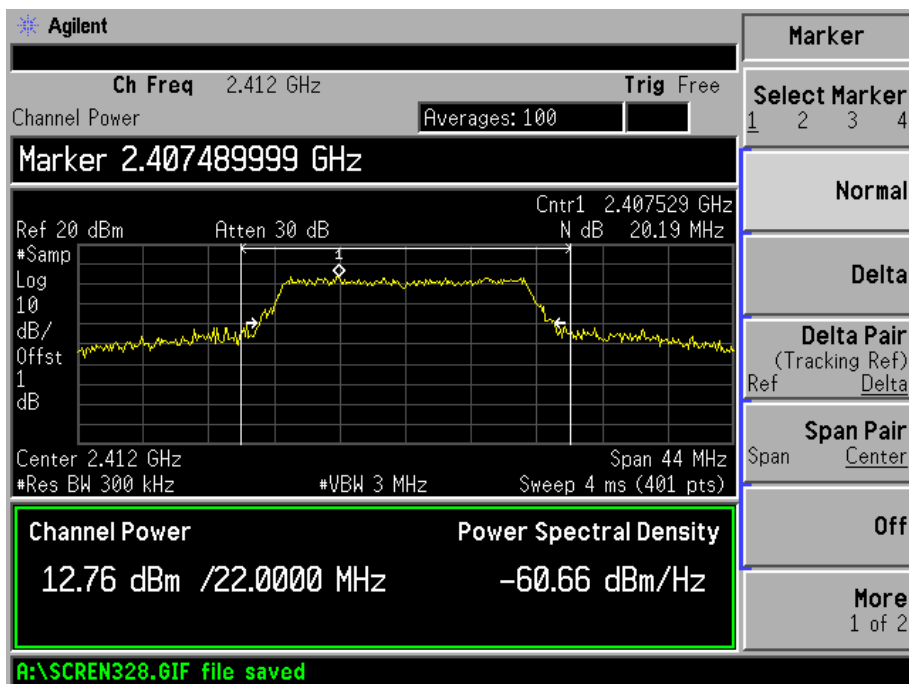


High Channel:

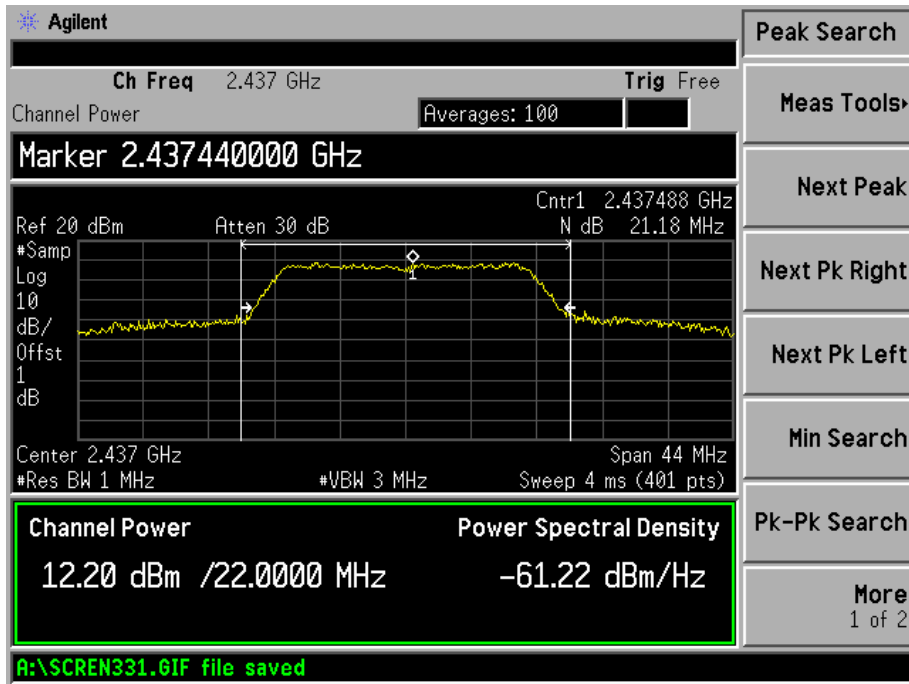


For 802.11g_54M rate

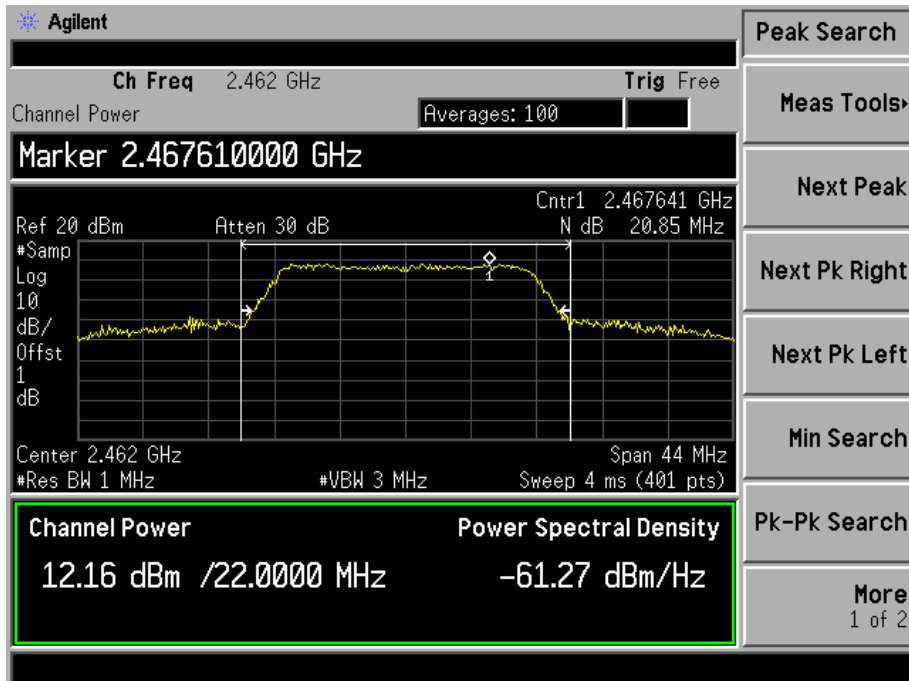
Low Channel:



Middle Channel:

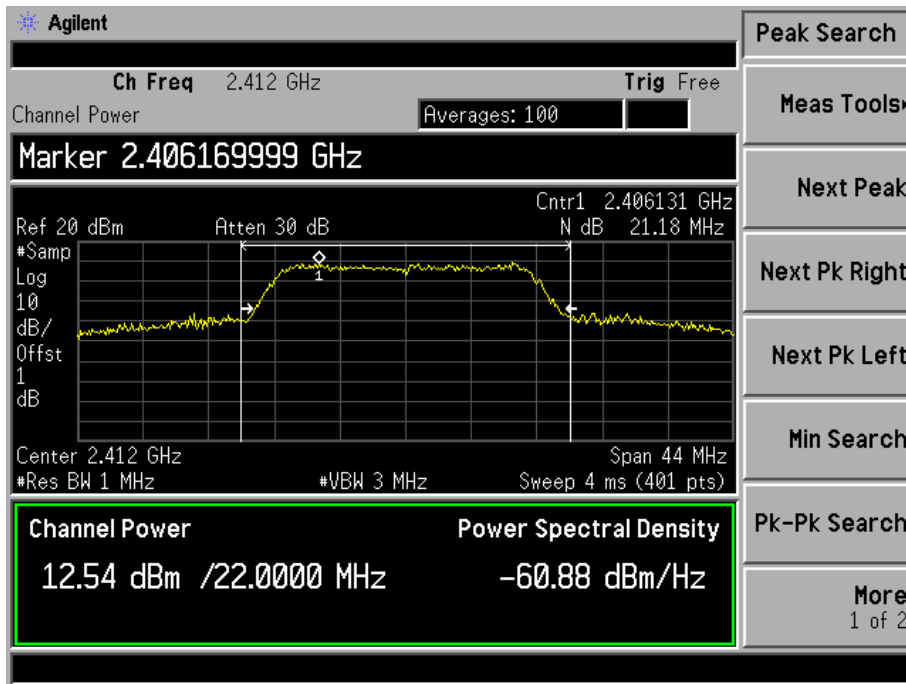


High Channel:

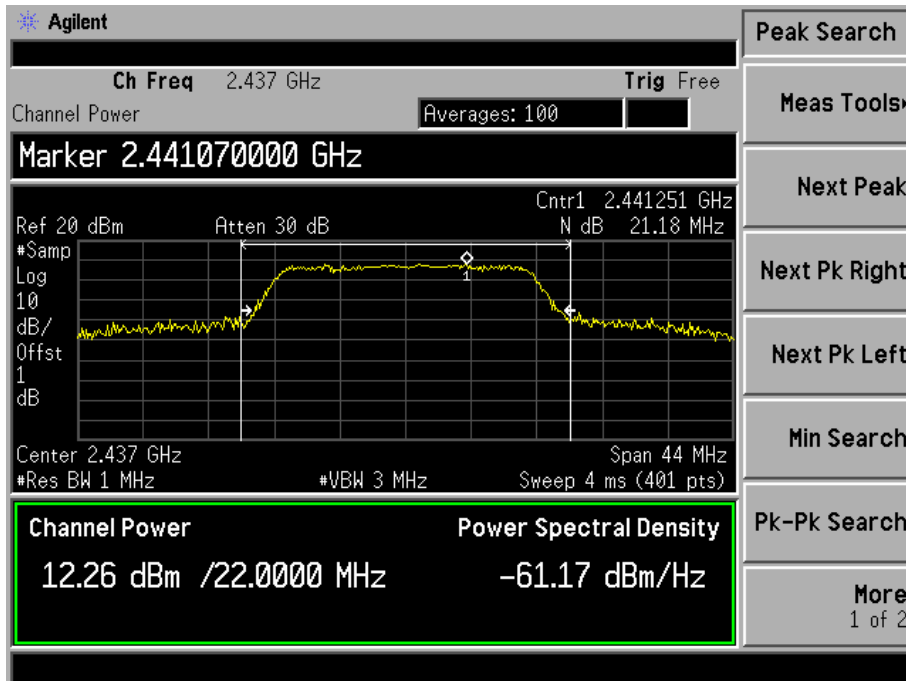


For 802.11n-HT20 rate

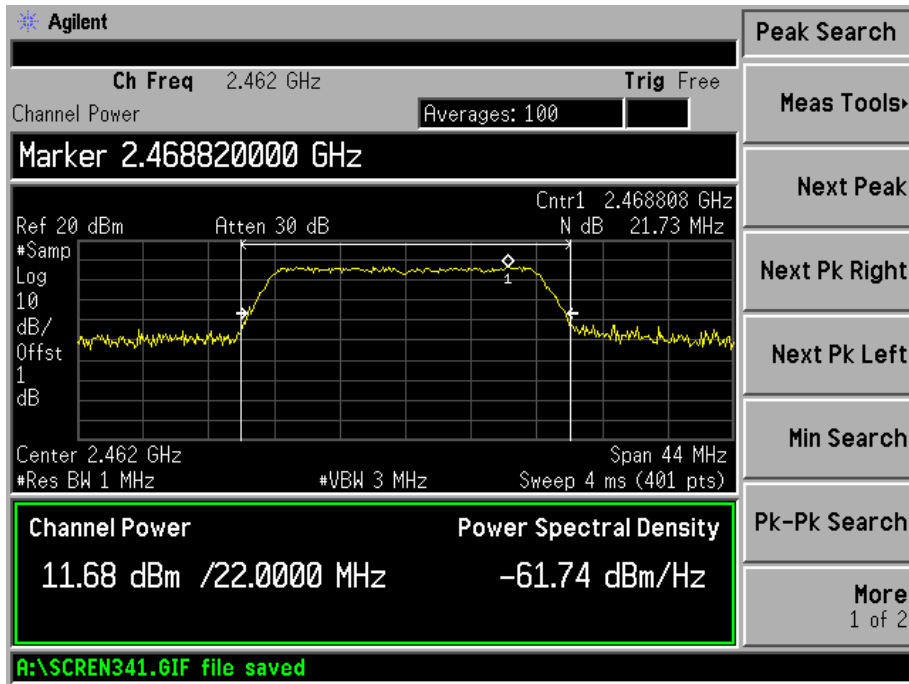
Low Channel:



Middle Channel:

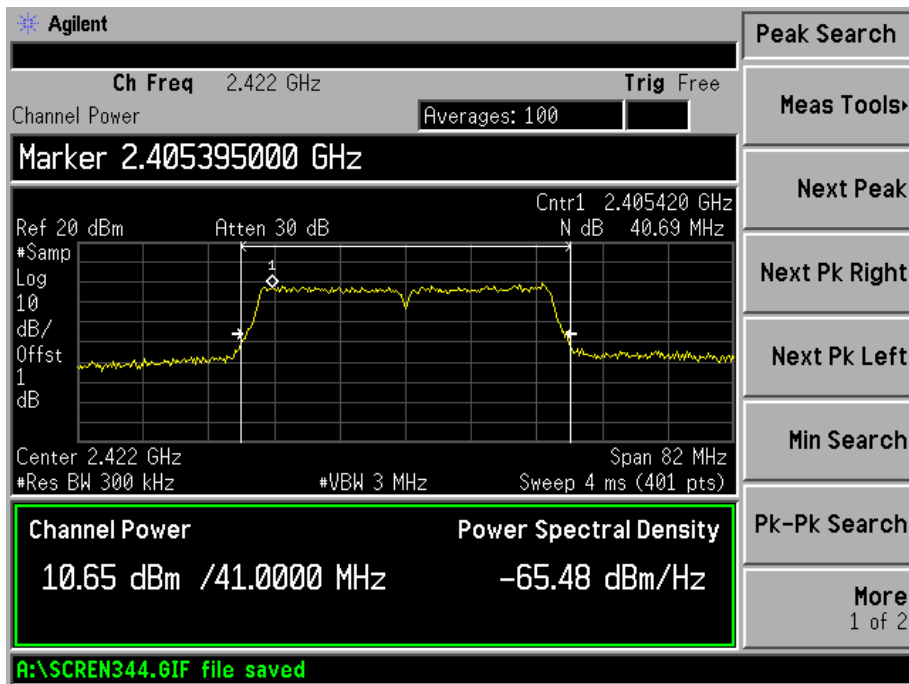


High Channel:

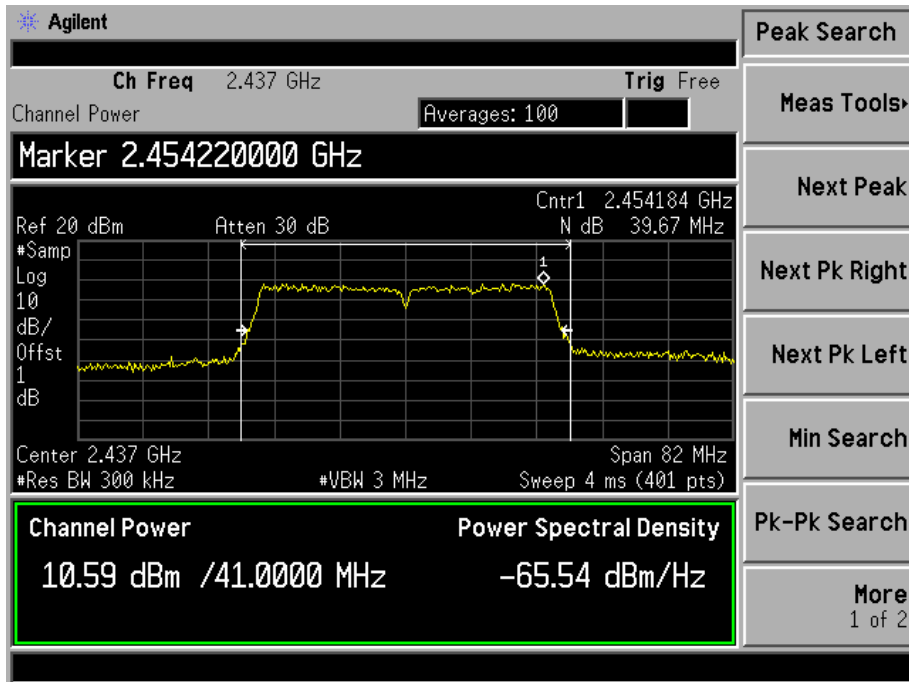


For 802.11n-HT40 rate

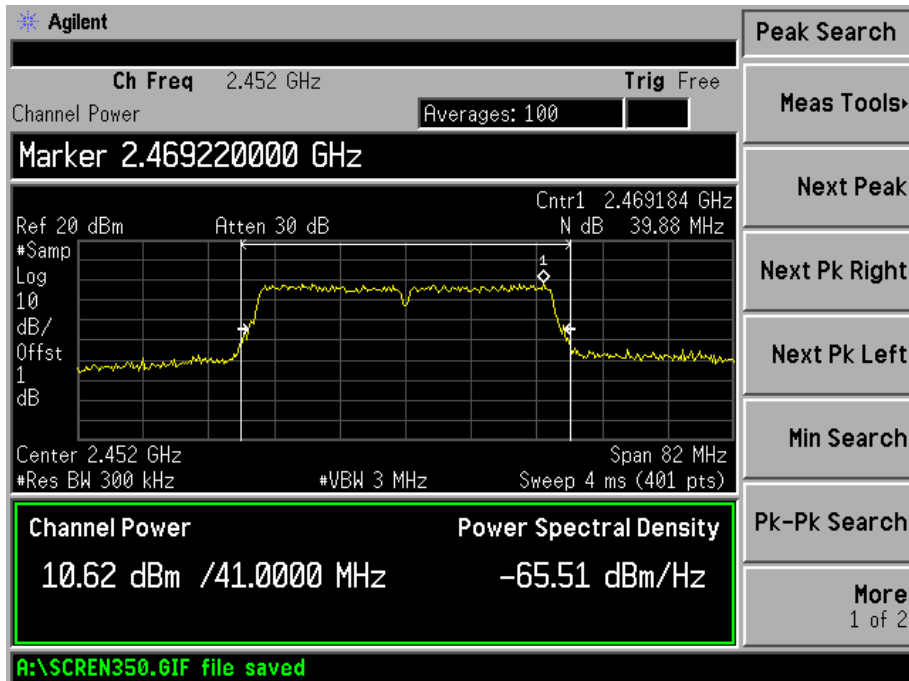
Low Channel:



Middle Channel:



High Channel:



7. FIELD STRENGTH OF SPURIOUS EMISSIONS

7.1 Measurement Uncertainty

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement is ± 5.10 dB.

7.2 Standard Applicable

According to §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, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a).

The emission limit in this paragraph is based on measurement instrumentation employing an average detector. The provisions in §15.35 for limiting peak emissions apply. Spurious Radiated Emissions measurements starting below or at the lowest crystal frequency.

7.3 Test Equipment List and Details

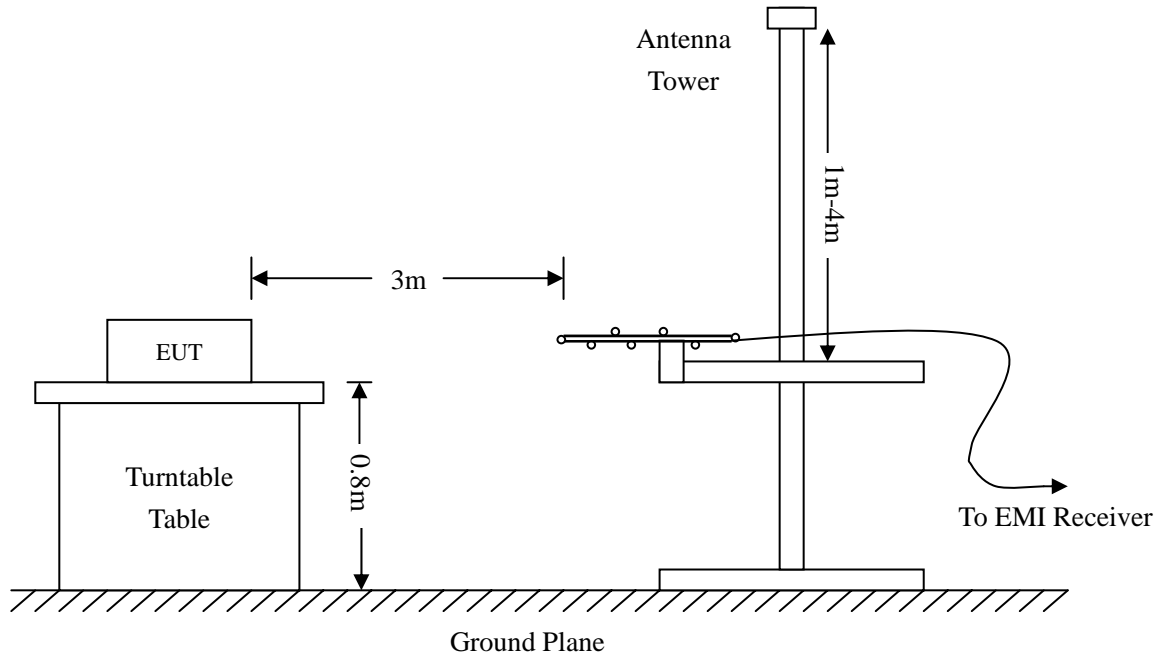
| Description | Manufacturer | Model | Serial Number | Cal. Date | Due. Date |
|--------------------------|----------------------|-----------|---------------|------------|------------|
| Spectrum Analyzer | R&S | FSP | 836079/035 | 2012-03-28 | 2013-03-27 |
| EMI Test Receiver | R&S | ESVB | 825471/005 | 2012-03-28 | 2013-03-27 |
| Positioning Controller | C&C | CC-C-1F | N/A | 2012-03-28 | 2013-03-27 |
| RF Switch | EM | EMSW18 | SW060023 | 2012-03-28 | 2013-03-27 |
| Pre-amplifier | Agilent | 8447F | 3113A06717 | 2012-03-28 | 2013-03-27 |
| Pre-amplifier | Compliance Direction | PAP-0118 | 24002 | 2012-03-28 | 2013-03-27 |
| Trilog Broadband Antenna | SCHWARZBECK | VULB9163 | 9163-333 | 2012-02-25 | 2013-02-24 |
| Horn Antenna | ETS | 3117 | 00086197 | 2012-02-25 | 2013-02-24 |
| Horn Antenna | ETS | 3116B | 00088203 | 2012-02-25 | 2013-02-24 |
| Loop Antenna | SCHWARZECK | HFRA 5165 | 9365 | 2012-02-25 | 2013-02-24 |

7.4 Test Procedure

The setup of EUT is according with per ANSI C63.4-2003 measurement procedure. The specification used was with the FCC Part 15.205 15.247(a) and FCC Part 15.209 Limit.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.



7.5 Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated adding the Antenna Factor and the Cable Factor, and subtracting the Amplifier Gain from the Amplitude reading. The basic equation is as follows:

$$\text{Corr. Ampl.} = \text{Indicated Reading} + \text{Ant. Factor} + \text{Cable Loss} - \text{Ampl. Gain}$$

The “Margin” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -6dBμV means the emission is 6dBμV below the maximum limit for Class B. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Corr. Ampl.} - \text{FCC Part 15 Limit}$$

7.6 Environmental Conditions

| | |
|--------------------|-----------|
| Temperature: | 22° C |
| Relative Humidity: | 52% |
| ATM Pressure: | 1012 mbar |

7.7 Summary of Test Results/Plots

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

-4.4dB μ V at 4924.0MHz in the Vertical polarization, Transmitting 802.11b High Channel test mode with in 9 kHz to 25 GHz, 3Meters

Note: this EUT was tested in 3 orthogonal positions and the worst case position data was reported.

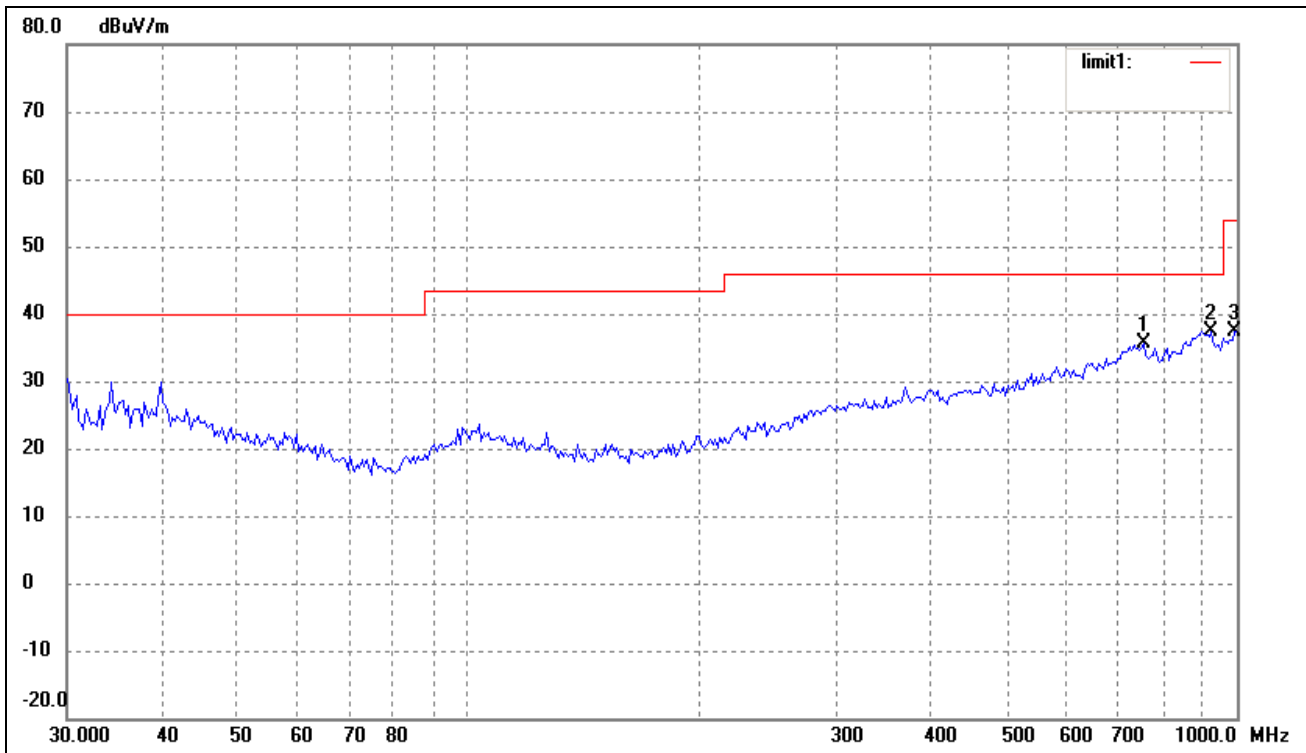
Test Result/Plots:

Spurious Emission From 30 MHz to 1 GHz

Test mode: Transmitting (802.11b) Low Channel (2412MHz)

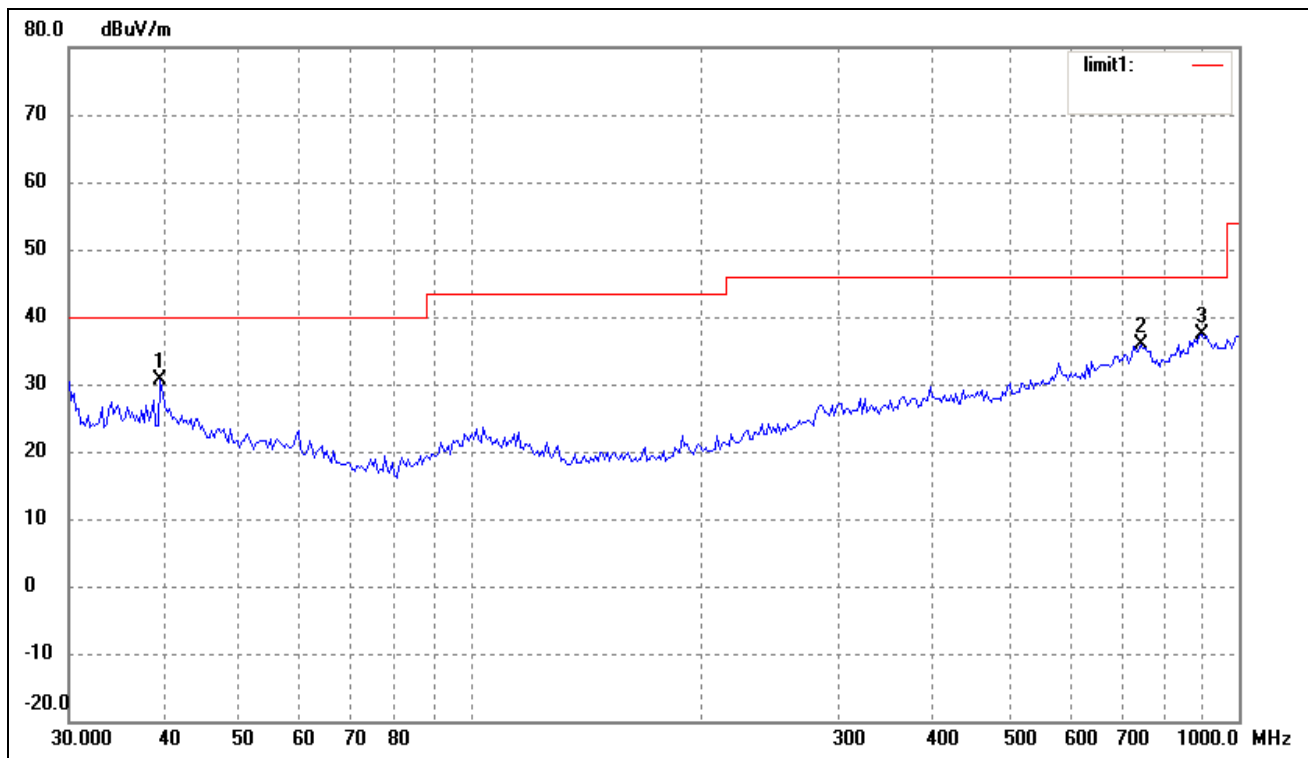
Comment:

Horizontal



| No. | Frequency (MHz) | Reading (dBuV/m) | Correct (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Degree (°) | Height (cm) | Remark |
|-----|-----------------|------------------|----------------|-----------------|----------------|-------------|------------|-------------|--------|
| 1 | 755.3873 | 18.18 | 17.48 | 35.66 | 46.00 | -10.34 | 262 | 100 | peak |
| 2 | 925.7563 | 18.86 | 18.49 | 37.35 | 46.00 | -8.65 | 332 | 100 | peak |
| 3 | 993.0114 | 17.95 | 19.53 | 37.48 | 54.00 | -16.52 | 103 | 200 | peak |

Vertical



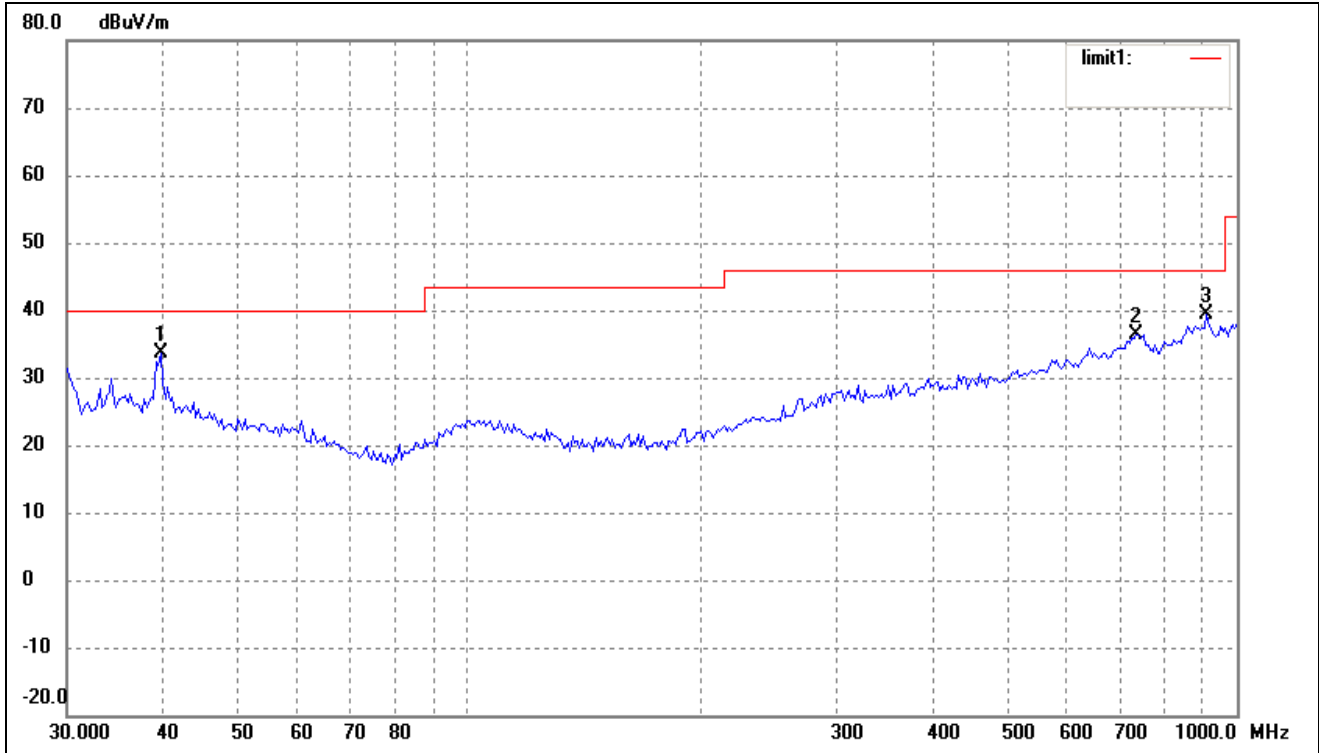
| No. | Frequency (MHz) | Reading (dBuV/m) | Correct (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Degree (°) | Height (cm) | Remark |
|-----|-----------------|------------------|----------------|-----------------|----------------|-------------|------------|-------------|--------|
| 1 | 39.4372 | 20.95 | 9.60 | 30.55 | 40.00 | -9.45 | 65 | 100 | peak |
| 2 | 744.8661 | 18.00 | 17.95 | 35.95 | 46.00 | -10.05 | 49 | 100 | peak |
| 3 | 893.8567 | 17.99 | 19.27 | 37.26 | 46.00 | -8.74 | 115 | 100 | peak |

Spurious Emission From 30 MHz to 1 GHz

Test mode: Transmitting (802.11b) Middle Channel (2437MHz)

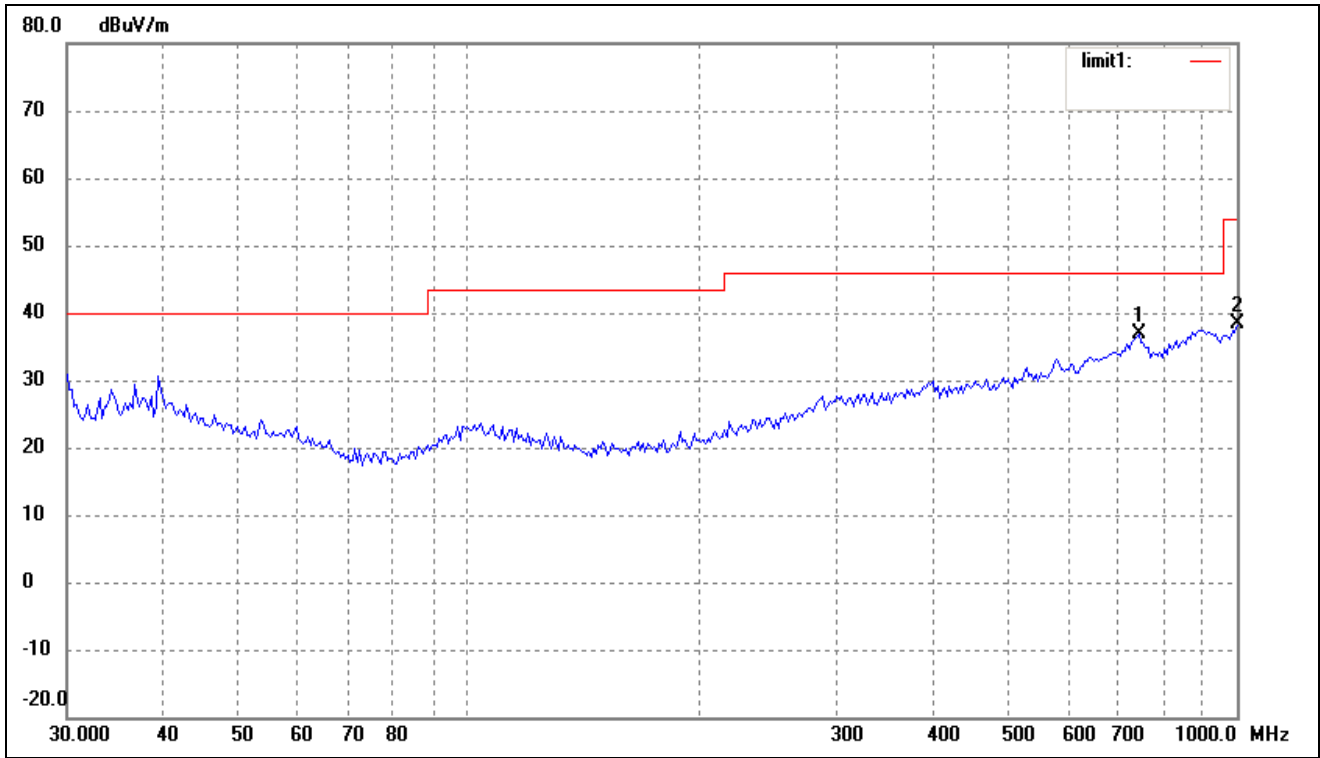
Comment:

Horizontal



| No. | Frequency (MHz) | Reading (dBuV/m) | Correct (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Degree (°) | Height (cm) | Remark |
|-----|-----------------|------------------|----------------|-----------------|----------------|-------------|------------|-------------|--------|
| 1 | 39.7147 | 24.04 | 9.64 | 33.68 | 40.00 | -6.32 | 236 | 100 | peak |
| 2 | 739.6605 | 18.42 | 18.07 | 36.49 | 46.00 | -9.51 | 270 | 200 | peak |
| 3 | 912.8620 | 20.43 | 18.93 | 39.36 | 46.00 | -6.64 | 64 | 200 | peak |

Vertical



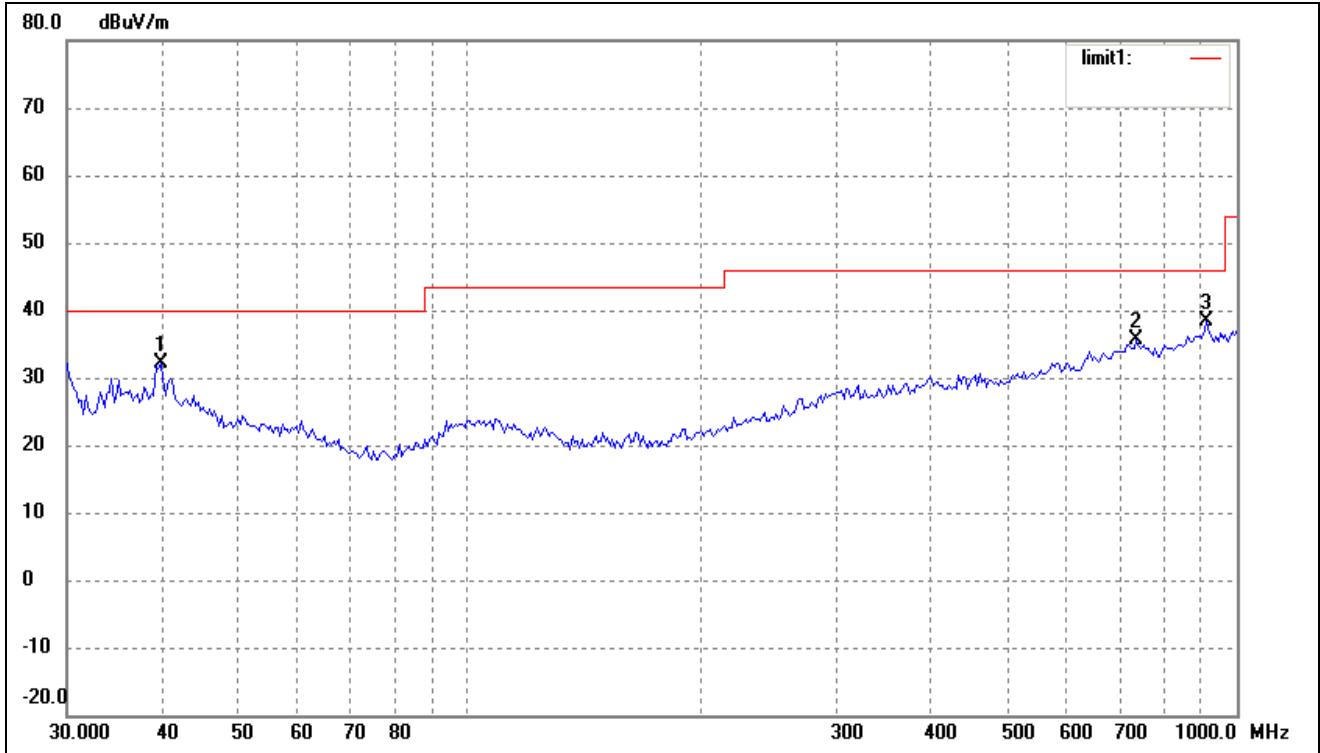
| No. | Frequency (MHz) | Reading (dBuV/m) | Correct dB/m | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Degree (°) | Height (cm) | Remark |
|-----|--------------------|---------------------|-----------------|--------------------|-------------------|----------------|----------------|----------------|--------|
| 1 | 744.8661 | 18.89 | 17.95 | 36.84 | 46.00 | -9.16 | 345 | 100 | peak |
| 2 | 1000.0000 | 18.37 | 19.90 | 38.27 | 54.00 | -15.73 | 113 | 100 | peak |

Spurious Emission From 30 MHz to 1 GHz

Test mode: Transmitting (802.11b) High Channel (2462MHz)

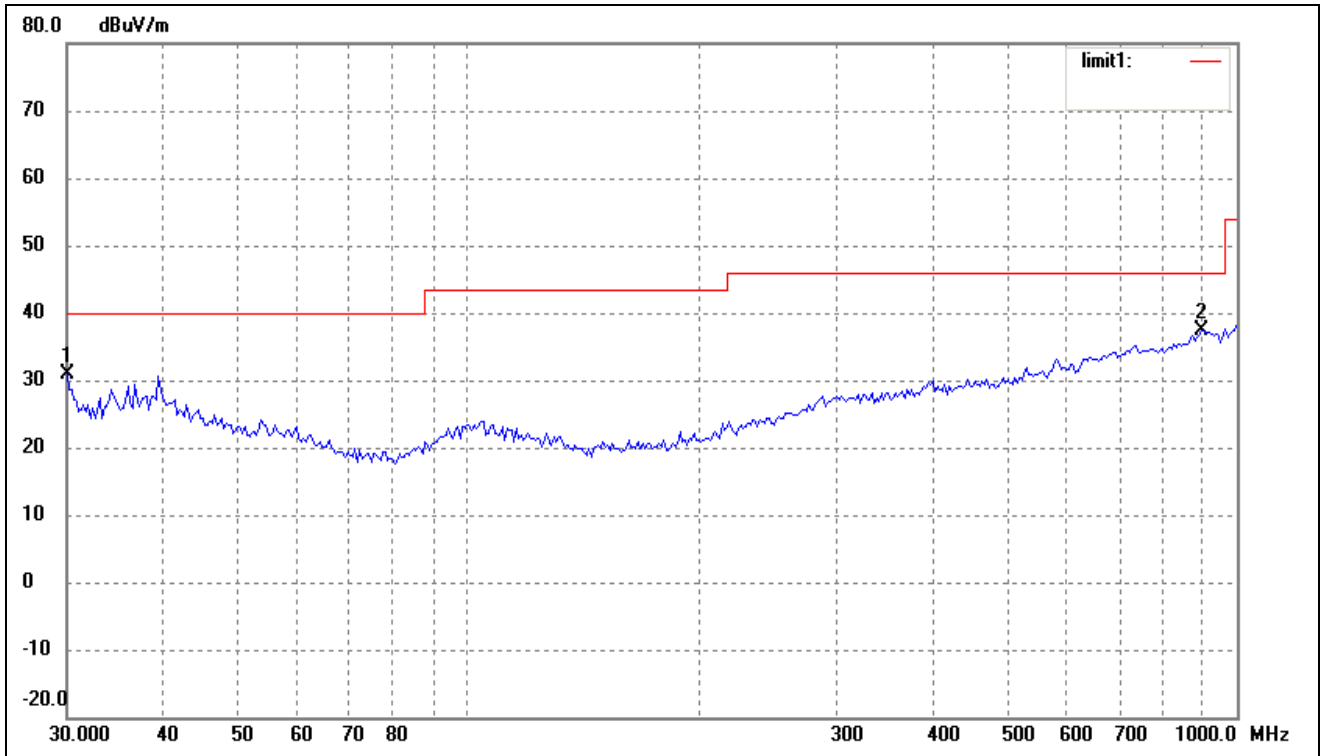
Comment:

Horizontal



| No. | Frequency (MHz) | Reading (dBuV/m) | Correct (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Degree (°) | Height (cm) | Remark |
|-----|-----------------|------------------|----------------|-----------------|----------------|-------------|------------|-------------|--------|
| 1 | 39.7147 | 22.54 | 9.64 | 32.18 | 40.00 | -7.82 | 264 | 100 | peak |
| 2 | 739.6605 | 17.65 | 18.07 | 35.72 | 46.00 | -10.28 | 330 | 100 | peak |
| 3 | 912.8620 | 19.43 | 18.93 | 38.36 | 46.00 | -7.64 | 197 | 100 | peak |

Vertical



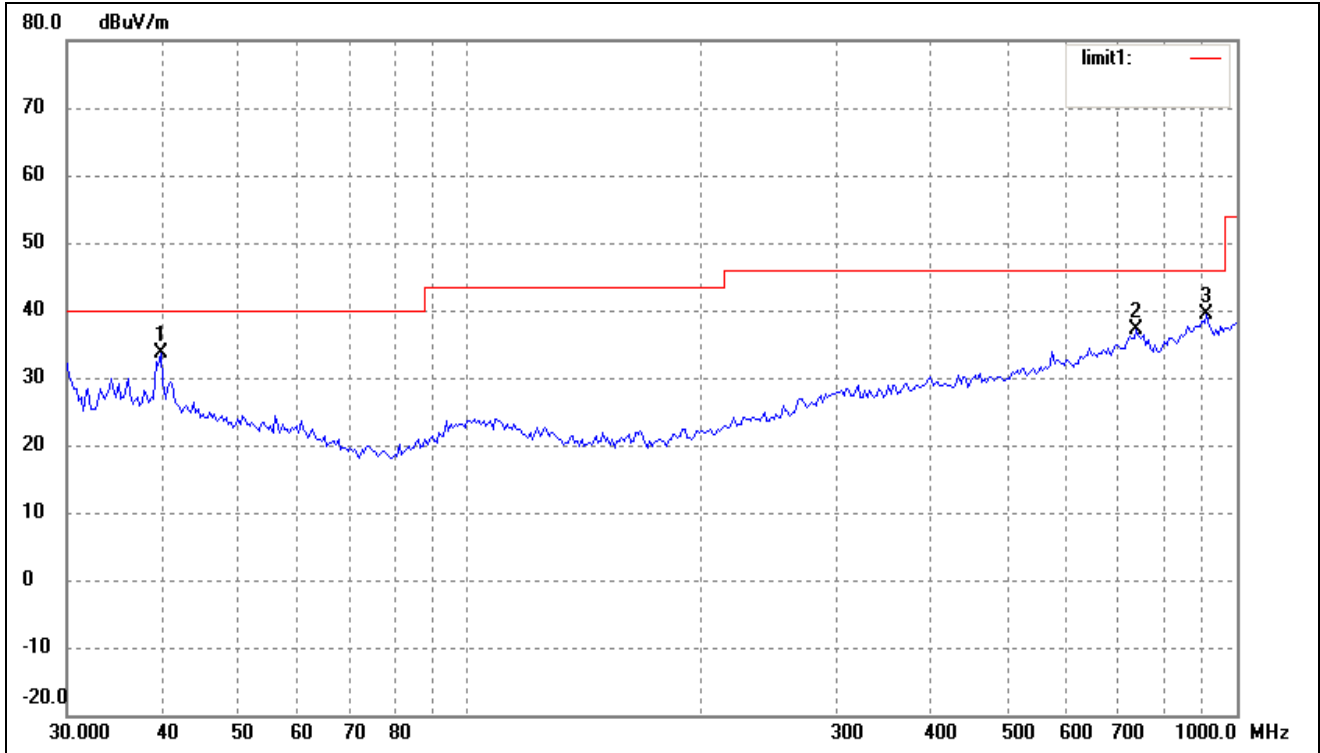
| No. | Frequency (MHz) | Reading (dBuV/m) | Correct dB/m | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Degree (°) | Height (cm) | Remark |
|-----|--------------------|---------------------|-----------------|--------------------|-------------------|----------------|----------------|----------------|--------|
| 1 | 30.0000 | 22.85 | 8.04 | 30.89 | 40.00 | -9.11 | 270 | 100 | peak |
| 2 | 900.1474 | 18.02 | 19.38 | 37.40 | 46.00 | -8.60 | 116 | 100 | peak |

Spurious Emission From 30 MHz to 1 GHz

Test mode: Transmitting (802.11g) Low Channel(2412MHz)

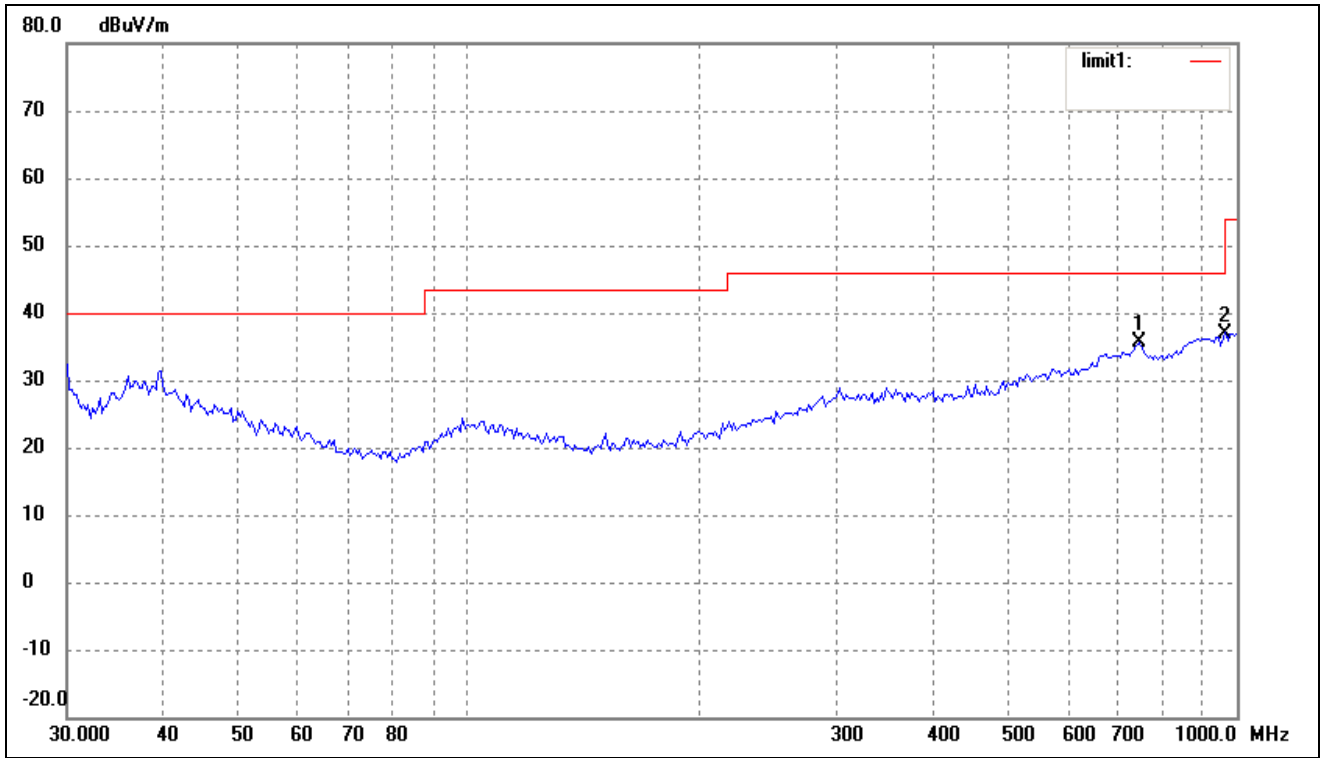
Comment:

Horizontal



| No. | Frequency (MHz) | Reading (dBuV/m) | Correct dB/m | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Degree (°) | Height (cm) | Remark |
|-----|--------------------|---------------------|-----------------|--------------------|-------------------|----------------|----------------|----------------|--------|
| 1 | 39.7147 | 24.04 | 9.64 | 33.68 | 40.00 | -6.32 | 274 | 100 | peak |
| 2 | 739.6605 | 19.15 | 18.07 | 37.22 | 46.00 | -8.78 | 120 | 200 | peak |
| 3 | 912.8620 | 20.43 | 18.93 | 39.36 | 46.00 | -6.64 | 87 | 200 | peak |

Vertical



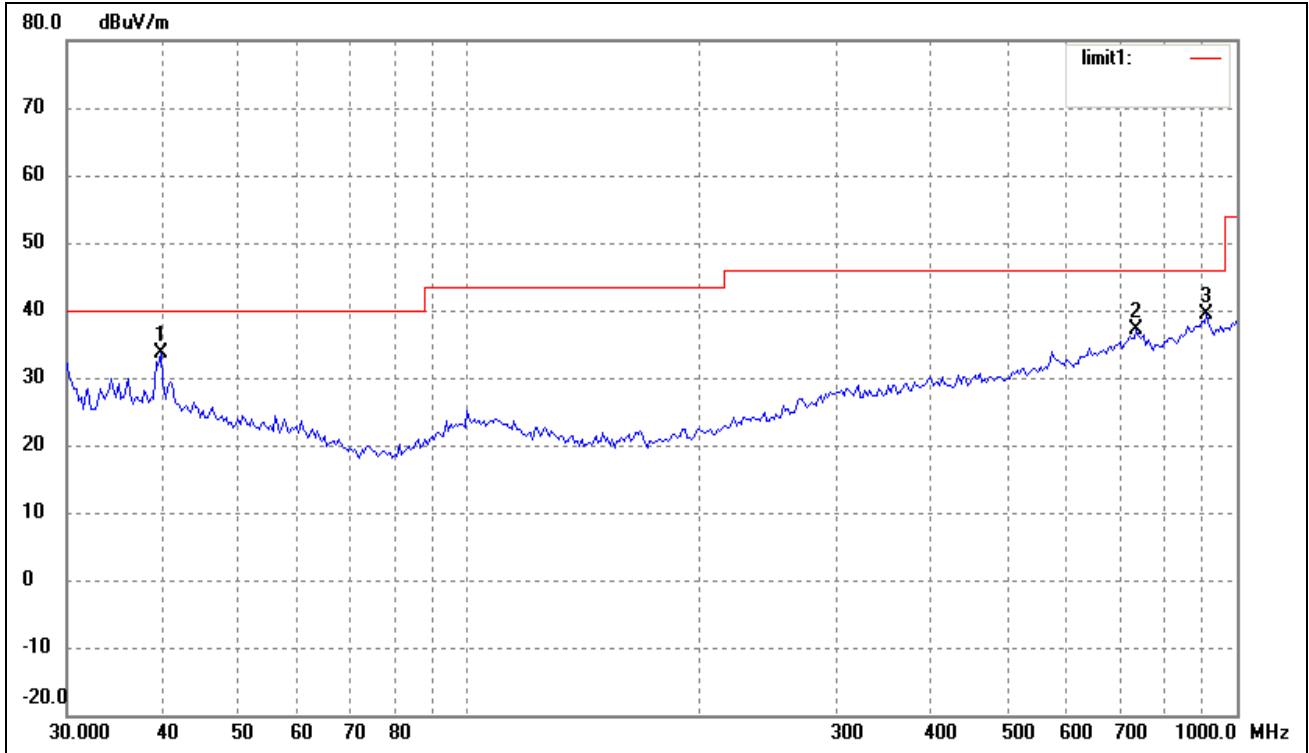
| No. | Frequency (MHz) | Reading (dBuV/m) | Correct dB/m | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Degree (°) | Height (cm) | Remark |
|-----|--------------------|---------------------|-----------------|--------------------|-------------------|----------------|----------------|----------------|--------|
| 1 | 744.8661 | 17.77 | 17.95 | 35.72 | 46.00 | -10.28 | 64 | 100 | peak |
| 2 | 965.5421 | 18.63 | 18.37 | 37.00 | 54.00 | -17.00 | 80 | 100 | peak |

Spurious Emission From 30 MHz to 1 GHz

Test mode: Transmitting (802.11g) Middle Channel (2437MHz)

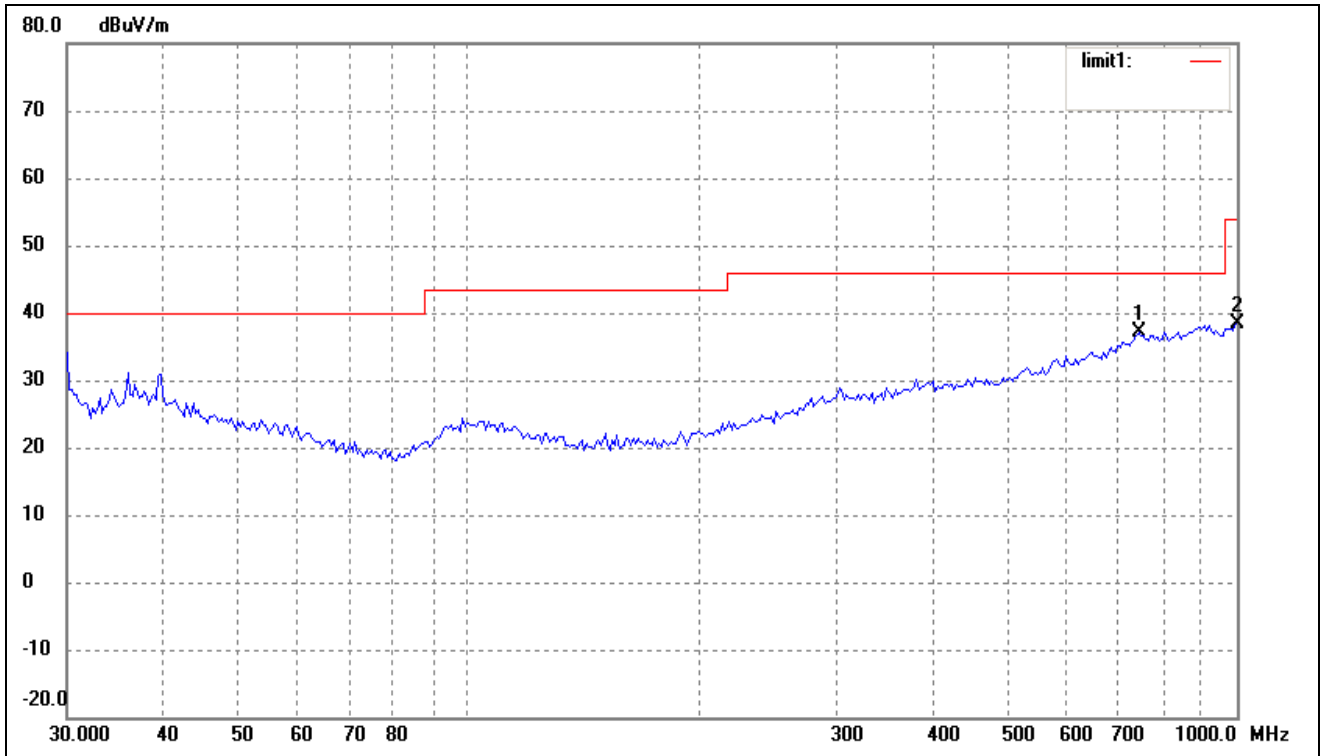
Comment:

Horizontal



| No. | Frequency (MHz) | Reading (dBuV/m) | Correct (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Degree (°) | Height (cm) | Remark |
|-----|-----------------|------------------|----------------|-----------------|----------------|-------------|------------|-------------|--------|
| 1 | 39.7147 | 24.04 | 9.64 | 33.68 | 40.00 | -6.32 | 164 | 100 | peak |
| 2 | 739.6605 | 19.15 | 18.07 | 37.22 | 46.00 | -8.78 | 227 | 100 | peak |
| 3 | 912.8620 | 20.43 | 18.93 | 39.36 | 46.00 | -6.64 | 89 | 100 | peak |

Vertical



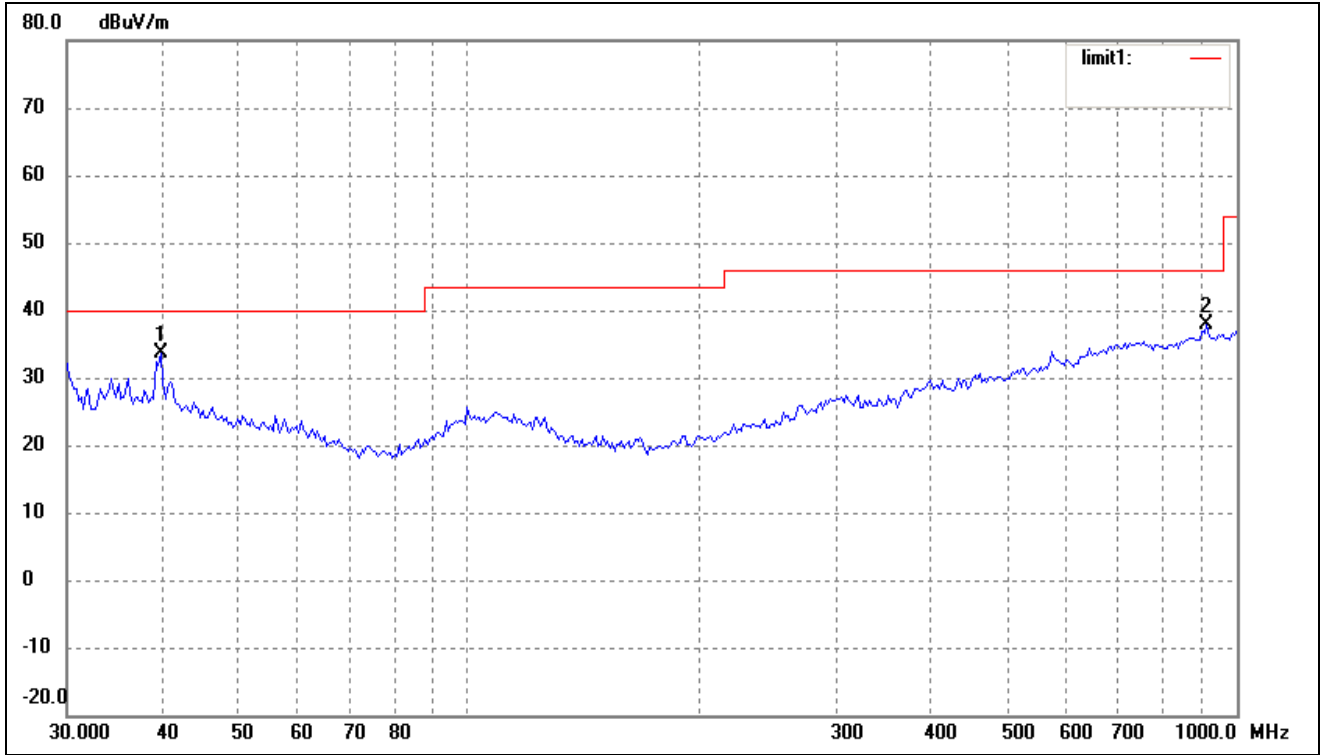
| No. | Frequency (MHz) | Reading (dBuV/m) | Correct (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Degree (°) | Height (cm) | Remark |
|-----|-----------------|------------------|----------------|-----------------|----------------|-------------|------------|-------------|--------|
| 1 | 744.8661 | 19.27 | 17.95 | 37.22 | 46.00 | -8.78 | 330 | 100 | peak |
| 2 | 1000.0000 | 18.37 | 19.90 | 38.27 | 54.00 | -15.73 | 138 | 100 | peak |

Spurious Emission From 30 MHz to 1 GHz

Test mode: Transmitting (802.11g) High Channel (2462MHz)

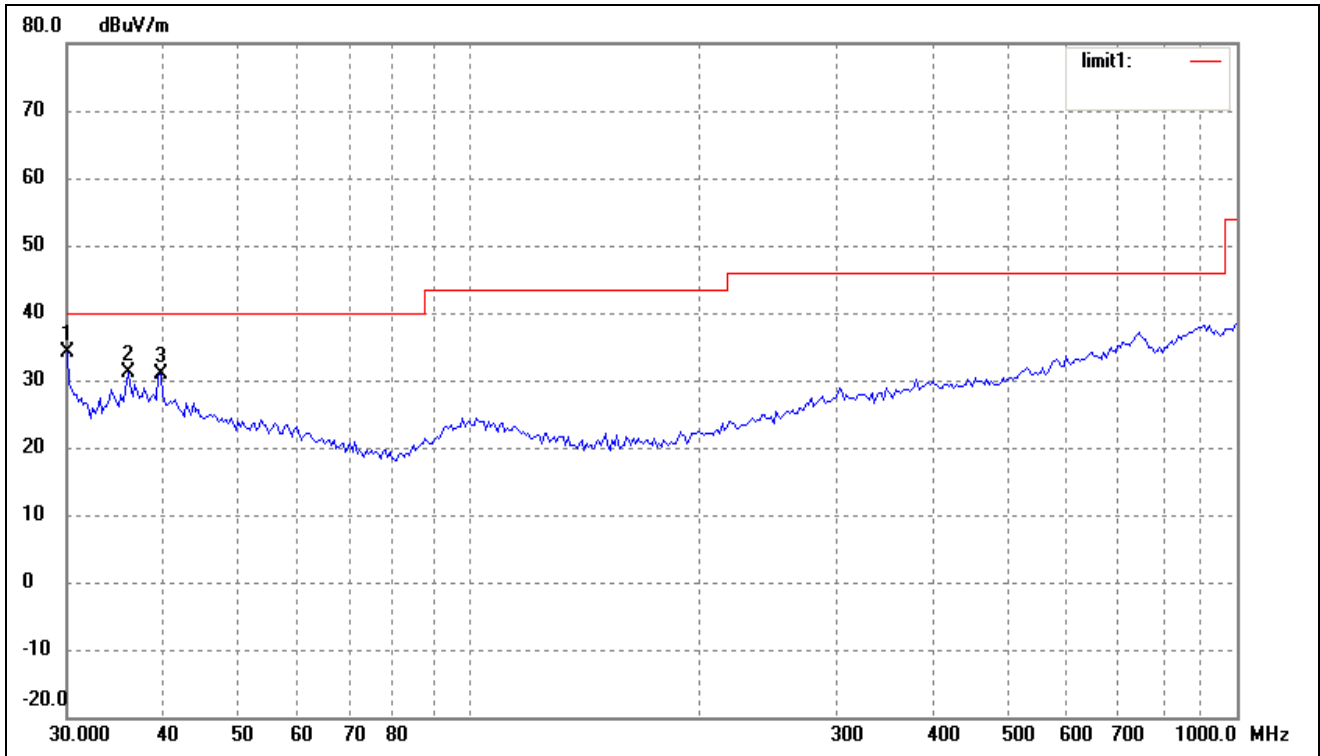
Comment:

Horizontal



| No. | Frequency (MHz) | Reading (dBuV/m) | Correct dB/m | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Degree (°) | Height (cm) | Remark |
|-----|--------------------|---------------------|-----------------|--------------------|-------------------|----------------|----------------|----------------|--------|
| 1 | 39.7147 | 24.04 | 9.64 | 33.68 | 40.00 | -6.32 | 270 | 100 | peak |
| 2 | 912.8620 | 18.93 | 18.93 | 37.86 | 46.00 | -8.14 | 306 | 100 | peak |

Vertical



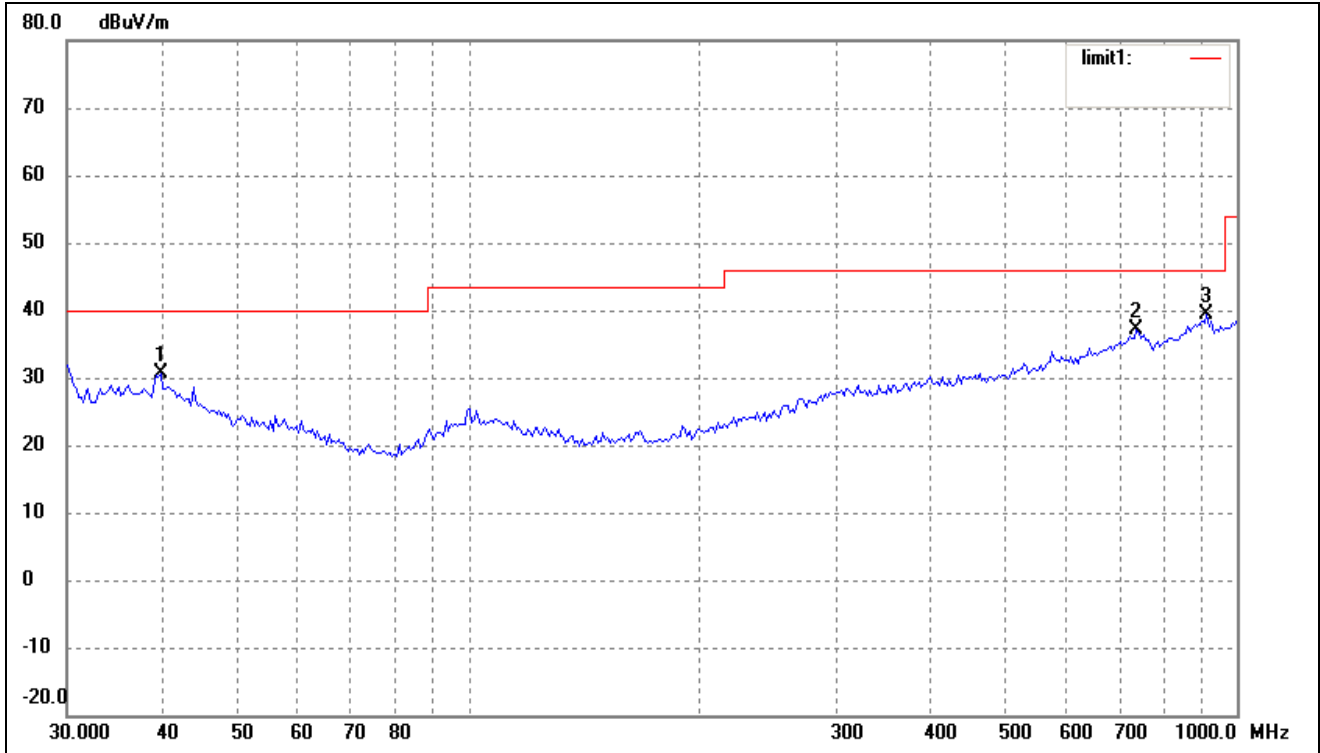
| No. | Frequency (MHz) | Reading (dBuV/m) | Correct dB/m | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Degree (°) | Height (cm) | Remark |
|-----|--------------------|---------------------|-----------------|--------------------|-------------------|----------------|----------------|----------------|--------|
| 1 | 30.0000 | 25.99 | 8.04 | 34.03 | 40.00 | -5.97 | 260 | 100 | peak |
| 2 | 36.0007 | 22.09 | 9.04 | 31.13 | 40.00 | -8.87 | 227 | 100 | peak |
| 3 | 39.7147 | 21.19 | 9.64 | 30.83 | 40.00 | -9.17 | 130 | 100 | peak |

Spurious Emission From 30 MHz to 1 GHz

Test mode: Transmitting (802.11n-HT20) Low Channel (2412MHz)

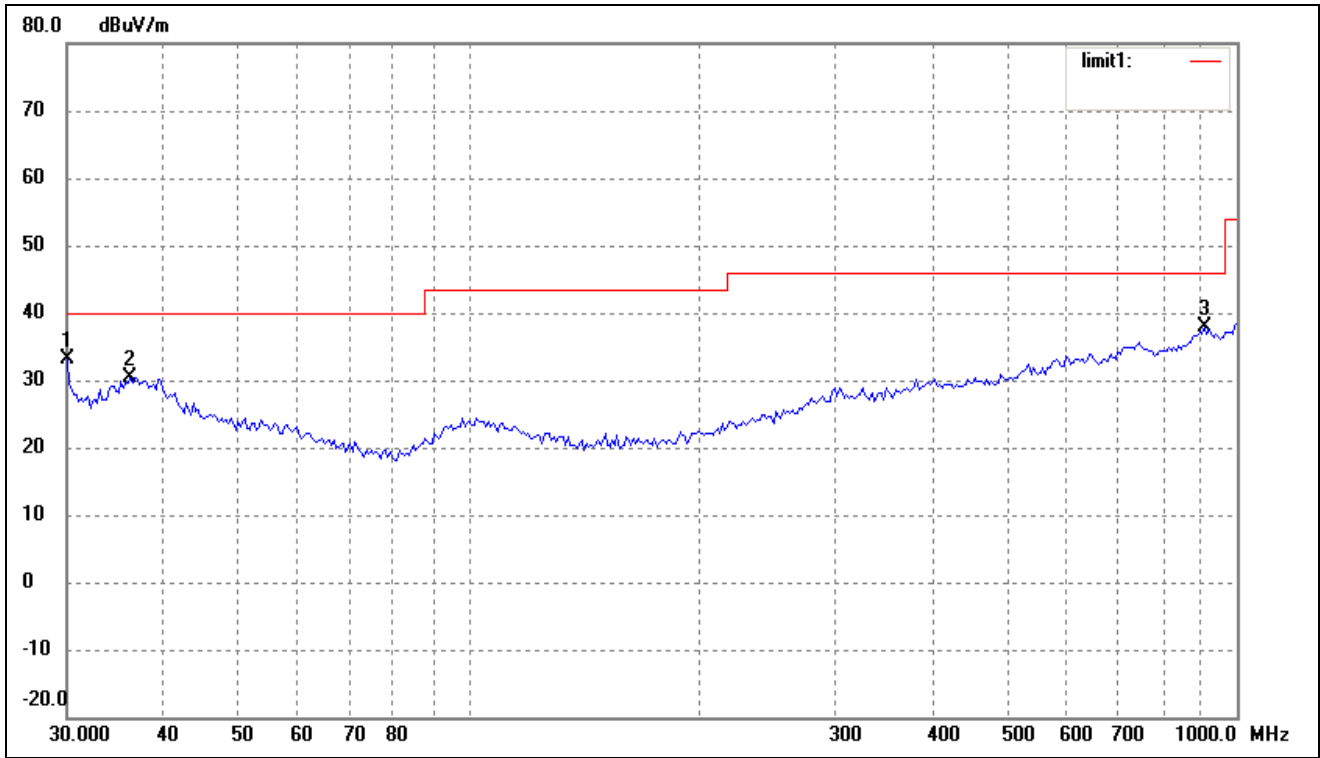
Comment:

Horizontal



| No. | Frequency (MHz) | Reading (dBuV/m) | Correct (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Degree (°) | Height (cm) | Remark |
|-----|-----------------|------------------|----------------|-----------------|----------------|-------------|------------|-------------|--------|
| 1 | 39.7147 | 21.04 | 9.64 | 30.68 | 40.00 | -9.32 | 287 | 100 | peak |
| 2 | 739.6605 | 19.15 | 18.07 | 37.22 | 46.00 | -8.78 | 113 | 100 | peak |
| 3 | 912.8620 | 20.43 | 18.93 | 39.36 | 46.00 | -6.64 | 50 | 100 | peak |

Vertical



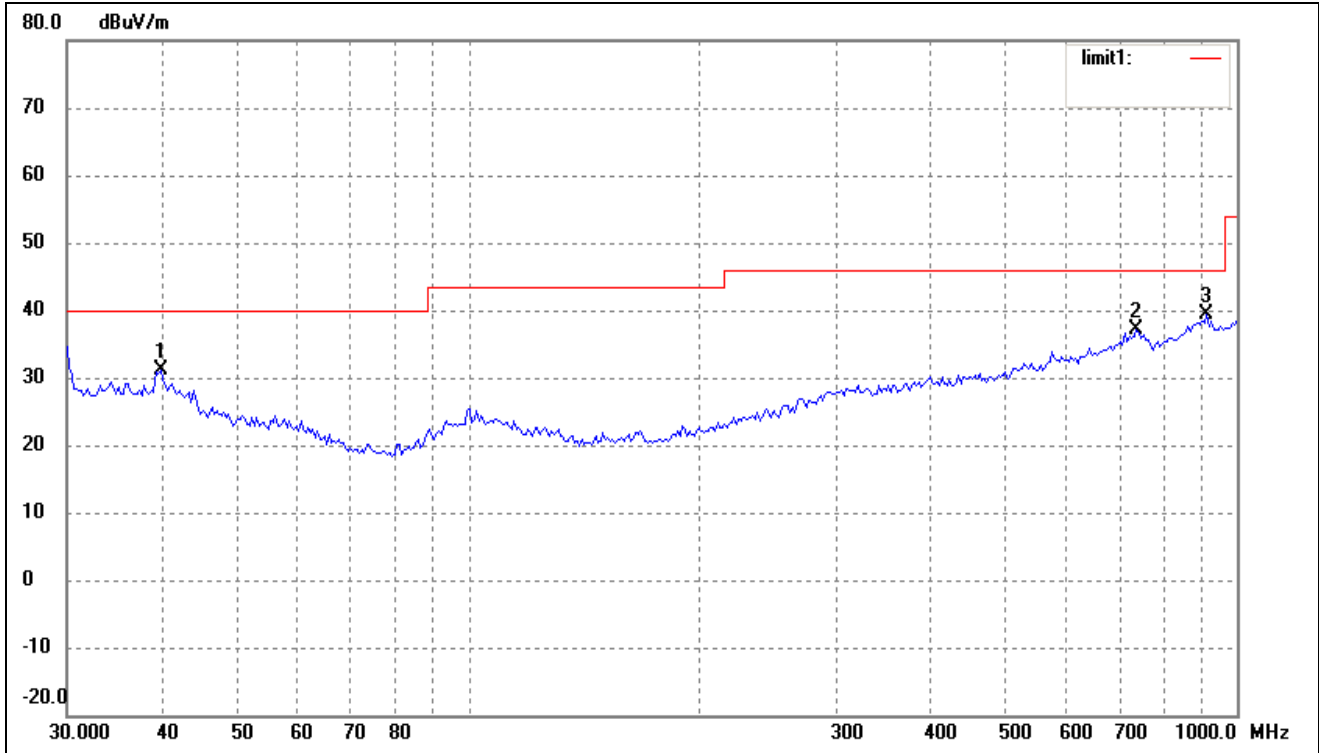
| No. | Frequency (MHz) | Reading (dBuV/m) | Correct (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Degree (°) | Height (cm) | Remark |
|-----|-----------------|------------------|----------------|-----------------|----------------|-------------|------------|-------------|--------|
| 1 | 30.0000 | 24.99 | 8.04 | 33.03 | 40.00 | -6.97 | 74 | 100 | peak |
| 2 | 36.2541 | 21.32 | 9.09 | 30.41 | 40.00 | -9.59 | 226 | 100 | peak |
| 3 | 906.4824 | 18.63 | 19.15 | 37.78 | 46.00 | -8.22 | 103 | 100 | peak |

Spurious Emission From 30 MHz to 1 GHz

Test mode: Transmitting (802.11n-HT20) Middle Channel (2437MHz)

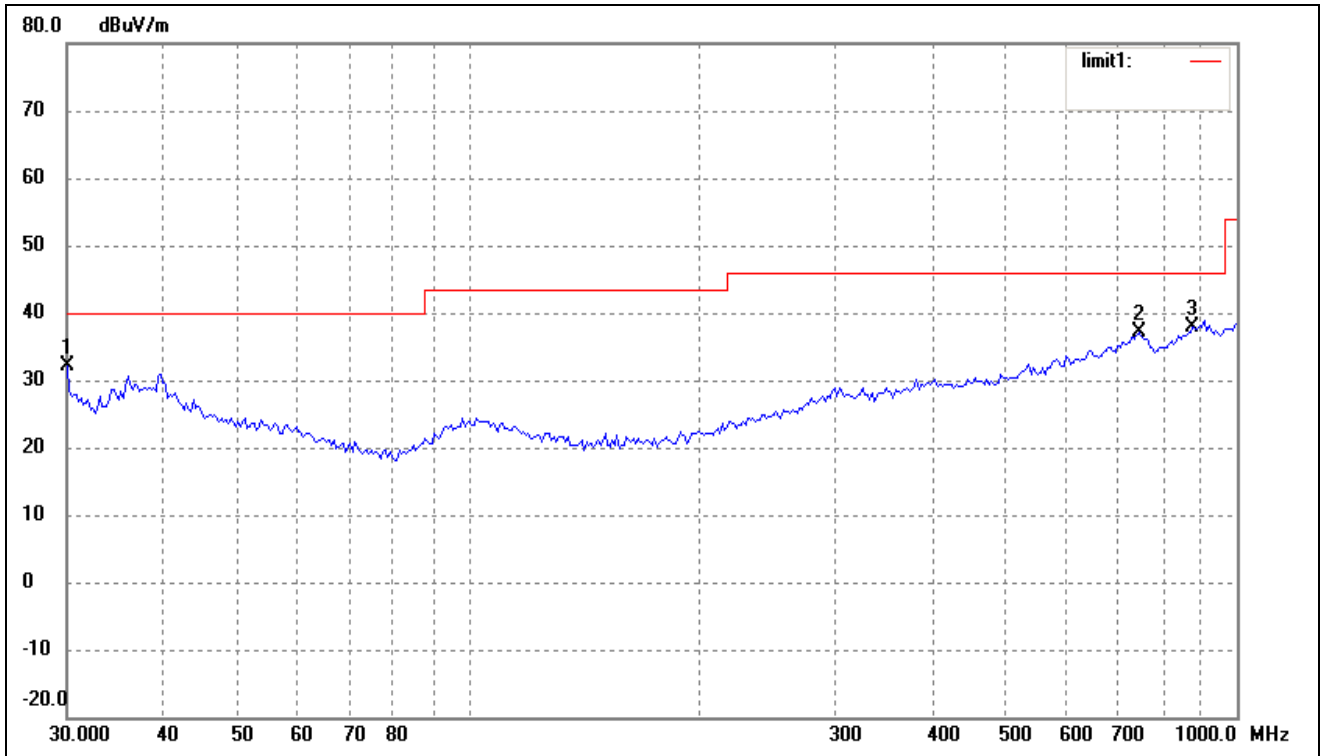
Comment:

Horizontal



| No. | Frequency (MHz) | Reading (dBuV/m) | Correct (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Degree (°) | Height (cm) | Remark |
|-----|-----------------|------------------|----------------|-----------------|----------------|-------------|------------|-------------|--------|
| 1 | 39.7147 | 21.54 | 9.64 | 31.18 | 40.00 | -8.82 | 116 | 100 | peak |
| 2 | 739.6605 | 19.15 | 18.07 | 37.22 | 46.00 | -8.78 | 229 | 100 | peak |
| 3 | 912.8620 | 20.43 | 18.93 | 39.36 | 46.00 | -6.64 | 130 | 100 | peak |

Vertical



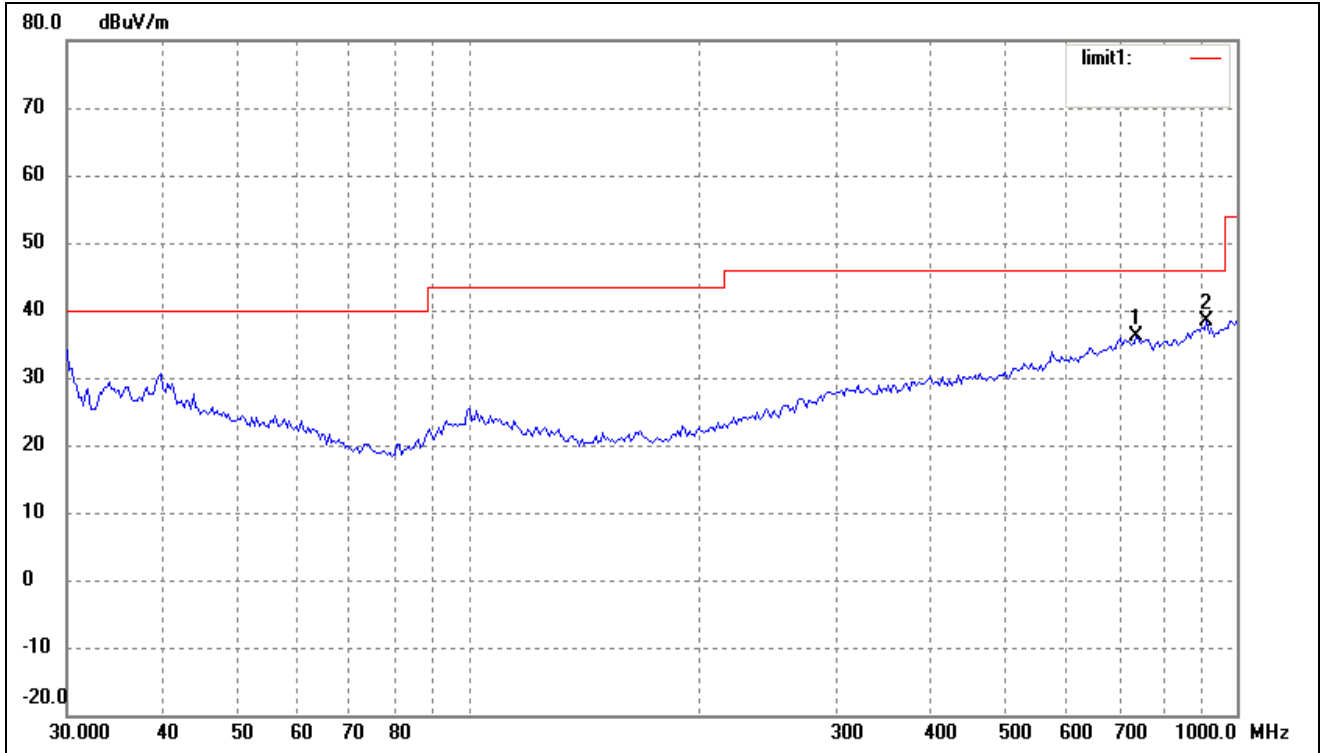
| No. | Frequency (MHz) | Reading (dBuV/m) | Correct dB/m | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Degree (°) | Height (cm) | Remark |
|-----|--------------------|---------------------|-----------------|--------------------|-------------------|----------------|----------------|----------------|--------|
| 1 | 30.0000 | 23.99 | 8.04 | 32.03 | 40.00 | -7.97 | 250 | 100 | peak |
| 2 | 744.8661 | 19.27 | 17.95 | 37.22 | 46.00 | -8.78 | 118 | 100 | peak |
| 3 | 875.2470 | 19.00 | 18.80 | 37.80 | 46.00 | -8.20 | 340 | 100 | peak |

Spurious Emission From 30 MHz to 1 GHz

Test mode: Transmitting (802.11n-HT20) High Channel (2462MHz)

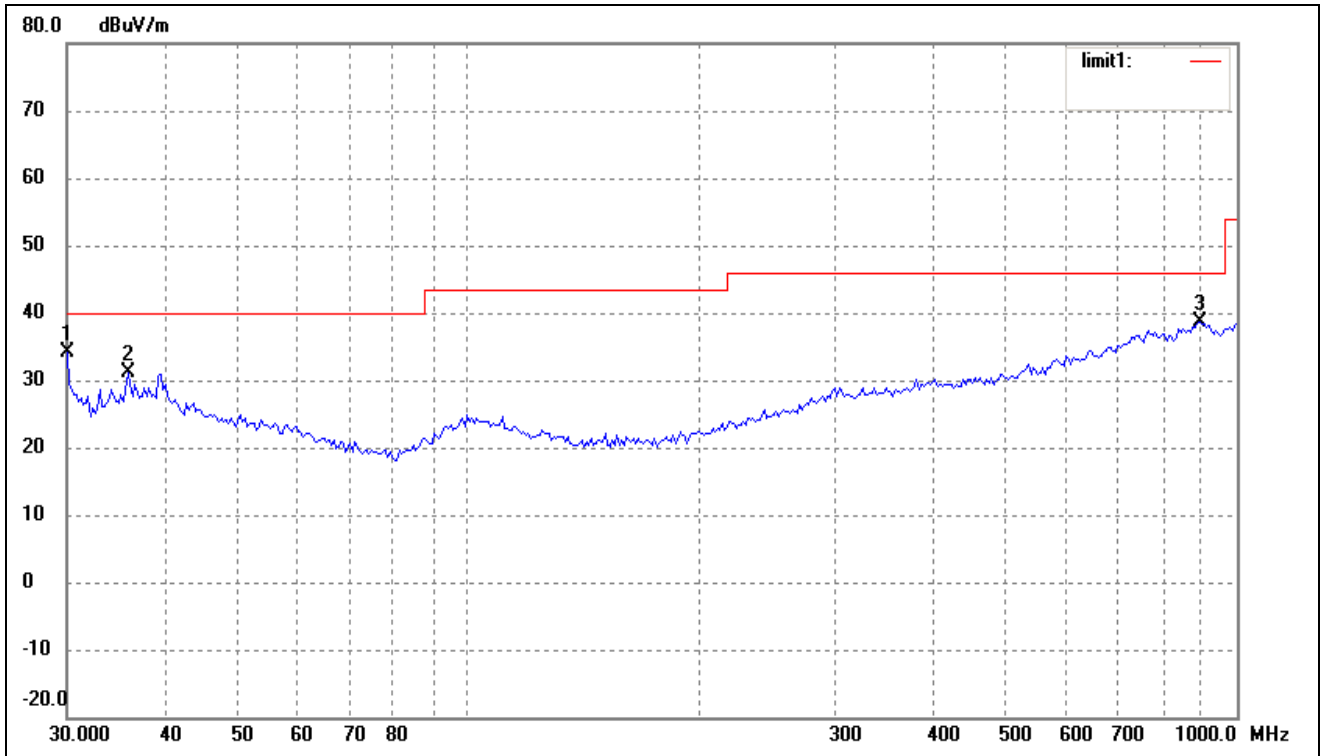
Comment:

Horizontal



| No. | Frequency (MHz) | Reading (dBuV/m) | Correct (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Degree (°) | Height (cm) | Remark |
|-----|-----------------|------------------|----------------|-----------------|----------------|-------------|------------|-------------|--------|
| 1 | 739.6605 | 18.15 | 18.07 | 36.22 | 46.00 | -9.78 | 67 | 100 | peak |
| 2 | 912.8620 | 19.43 | 18.93 | 38.36 | 46.00 | -7.64 | 240 | 100 | peak |

Vertical



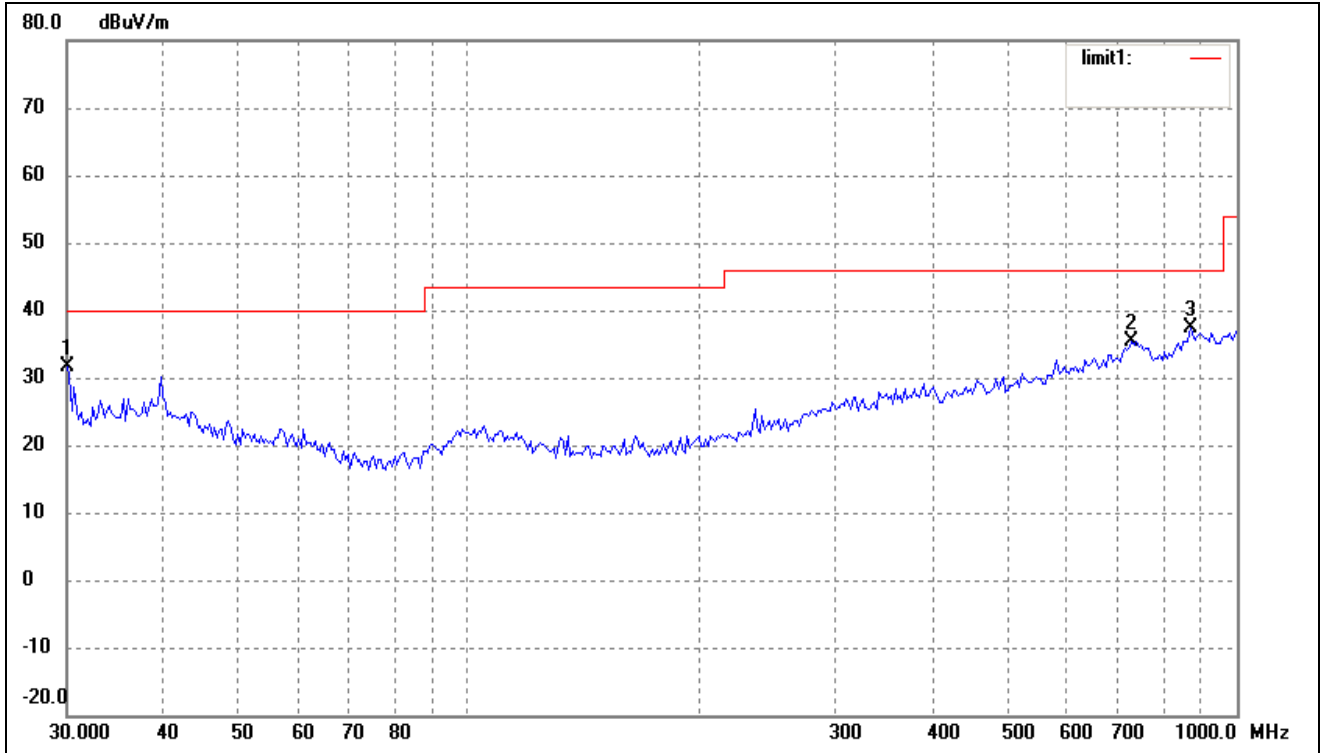
| No. | Frequency (MHz) | Reading (dBuV/m) | Correct (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Degree (°) | Height (cm) | Remark |
|-----|-----------------|------------------|----------------|-----------------|----------------|-------------|------------|-------------|--------|
| 1 | 30.0000 | 25.99 | 8.04 | 34.03 | 40.00 | -5.97 | 37 | 100 | peak |
| 2 | 36.0007 | 22.09 | 9.04 | 31.13 | 40.00 | -8.87 | 335 | 100 | peak |
| 3 | 893.8567 | 19.47 | 19.27 | 38.74 | 46.00 | -7.26 | 61 | 100 | peak |

Spurious Emission From 30 MHz to 1 GHz

Test mode: Transmitting (802.11n-HT40) Low Channel (2422MHz)

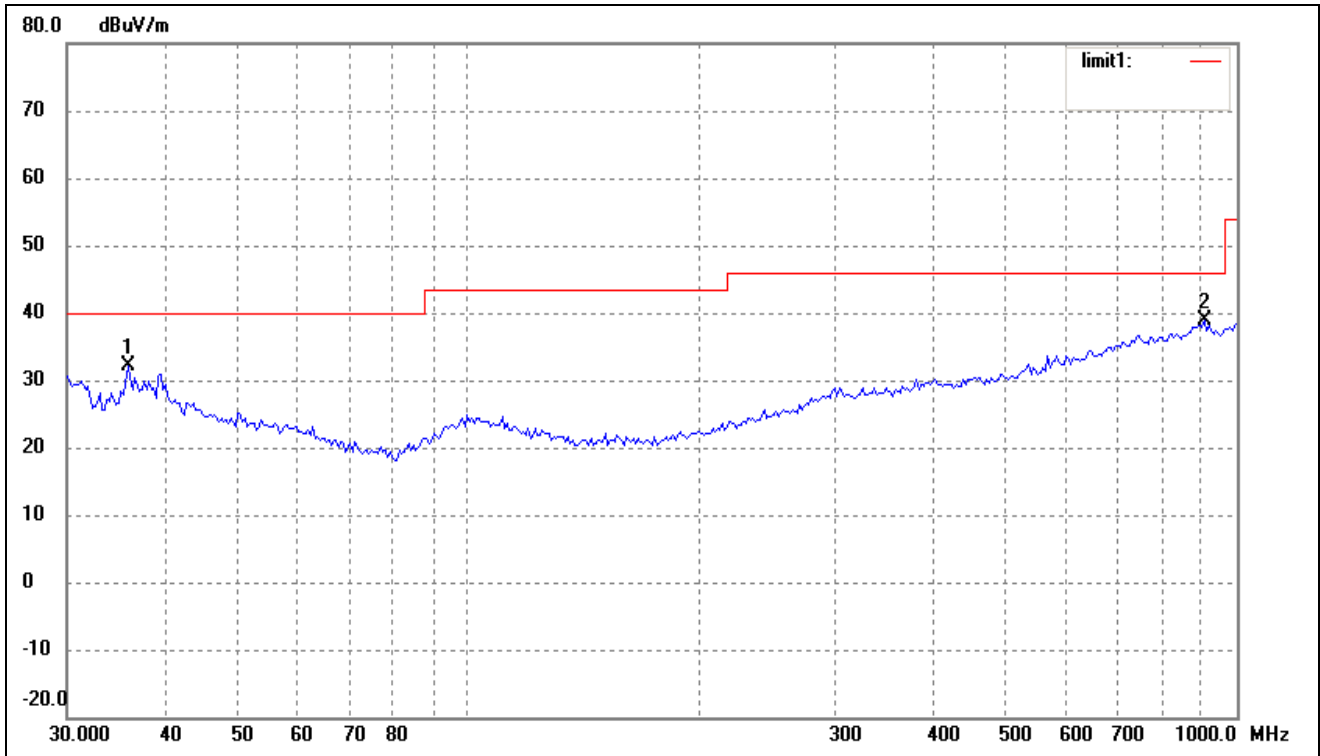
Comment:

Horizontal



| No. | Frequency (MHz) | Reading (dBuV/m) | Correct (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Degree (°) | Height (cm) | Remark |
|-----|-----------------|------------------|----------------|-----------------|----------------|-------------|------------|-------------|--------|
| 1 | 30.0000 | 23.60 | 8.04 | 31.64 | 40.00 | -8.36 | 58 | 100 | peak |
| 2 | 729.3583 | 17.98 | 17.31 | 35.29 | 46.00 | -10.71 | 164 | 100 | peak |
| 3 | 869.1302 | 18.88 | 18.54 | 37.42 | 46.00 | -8.58 | 224 | 100 | peak |

Vertical



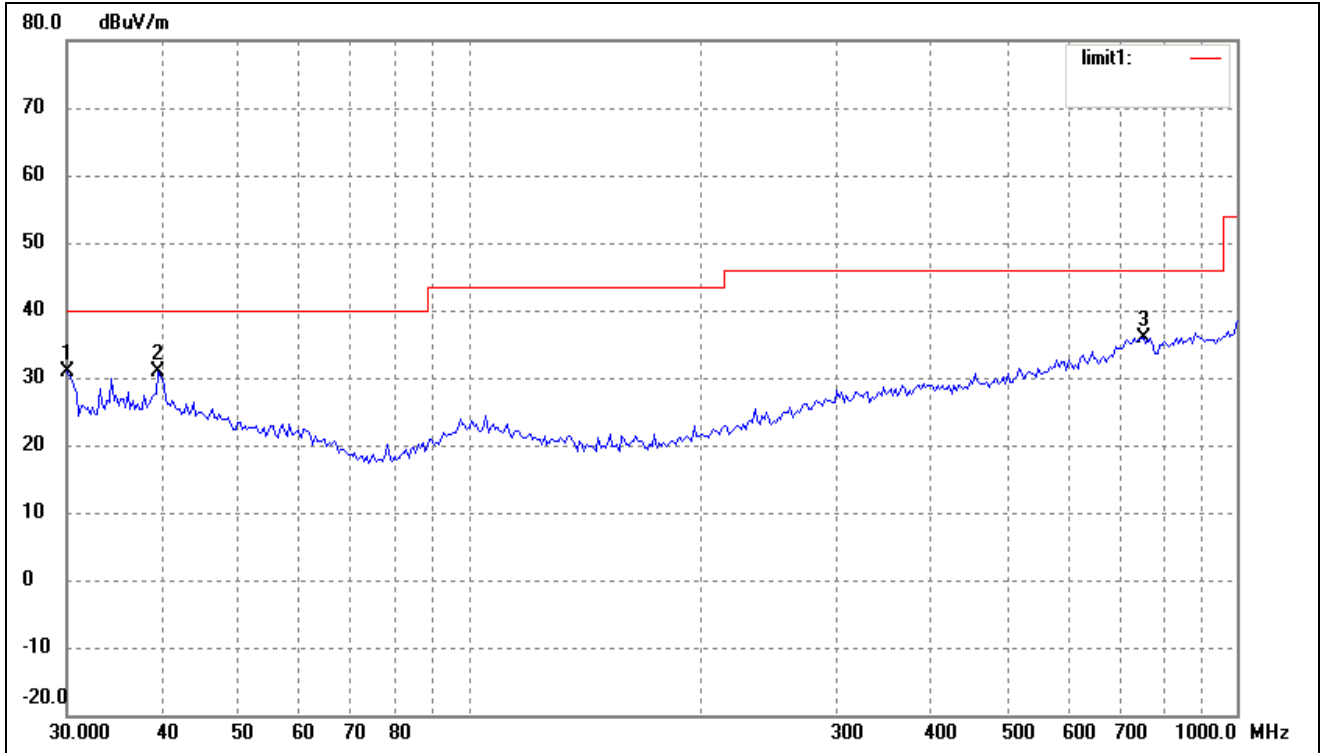
| No. | Frequency (MHz) | Reading (dBuV/m) | Correct dB/m | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Degree (°) | Height (cm) | Remark |
|-----|--------------------|---------------------|-----------------|--------------------|-------------------|----------------|----------------|----------------|--------|
| 1 | 36.0007 | 23.19 | 9.04 | 32.23 | 40.00 | -7.77 | 58 | 100 | peak |
| 2 | 906.4824 | 19.63 | 19.15 | 38.78 | 46.00 | -7.22 | 115 | 100 | peak |

Spurious Emission From 30 MHz to 1 GHz

Test mode: Transmitting (802.11n-HT40) Middle Channel (2437MHz)

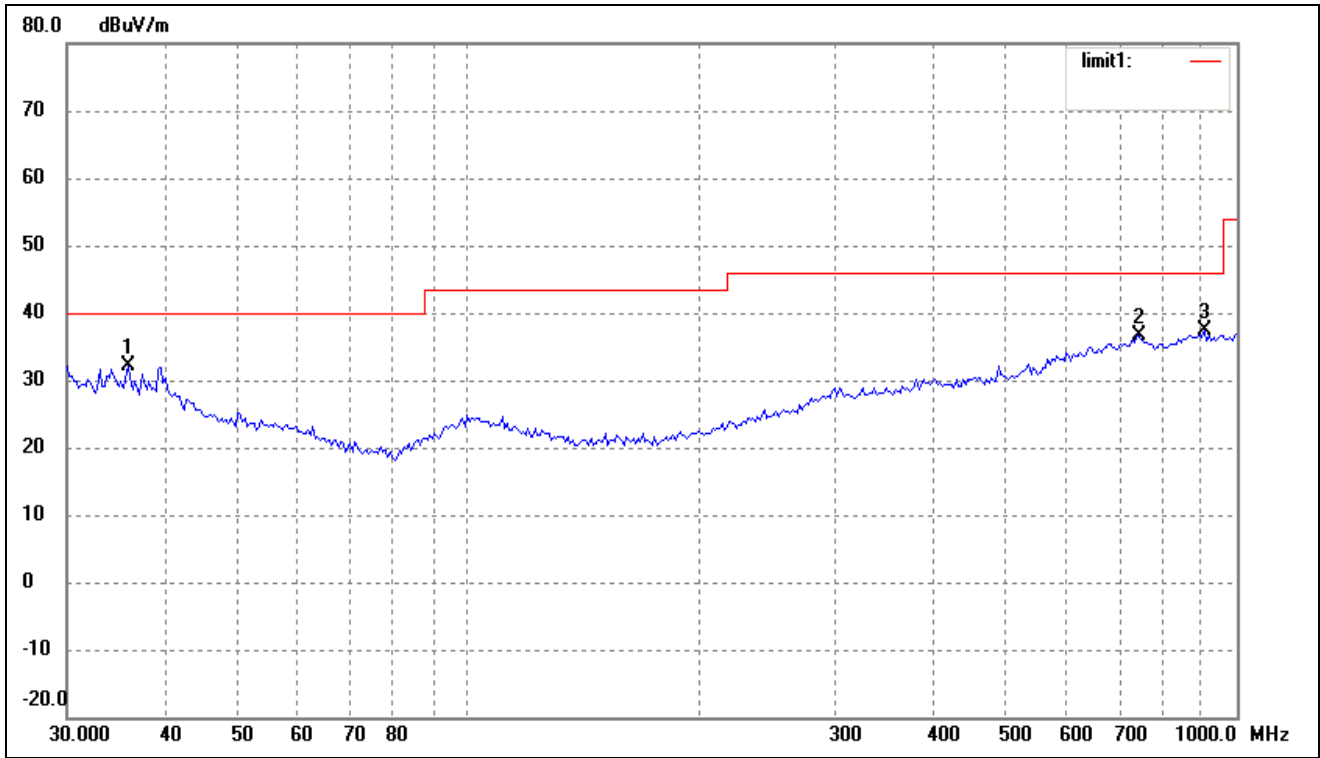
Comment:

Horizontal



| No. | Frequency (MHz) | Reading (dBuV/m) | Correct (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Degree (°) | Height (cm) | Remark |
|-----|-----------------|------------------|----------------|-----------------|----------------|-------------|------------|-------------|--------|
| 1 | 30.0000 | 22.76 | 8.04 | 30.80 | 40.00 | -9.20 | 67 | 100 | peak |
| 2 | 39.4372 | 21.34 | 9.60 | 30.94 | 40.00 | -9.06 | 300 | 100 | peak |
| 3 | 755.3873 | 18.46 | 17.48 | 35.94 | 46.00 | -10.06 | 257 | 100 | peak |

Vertical



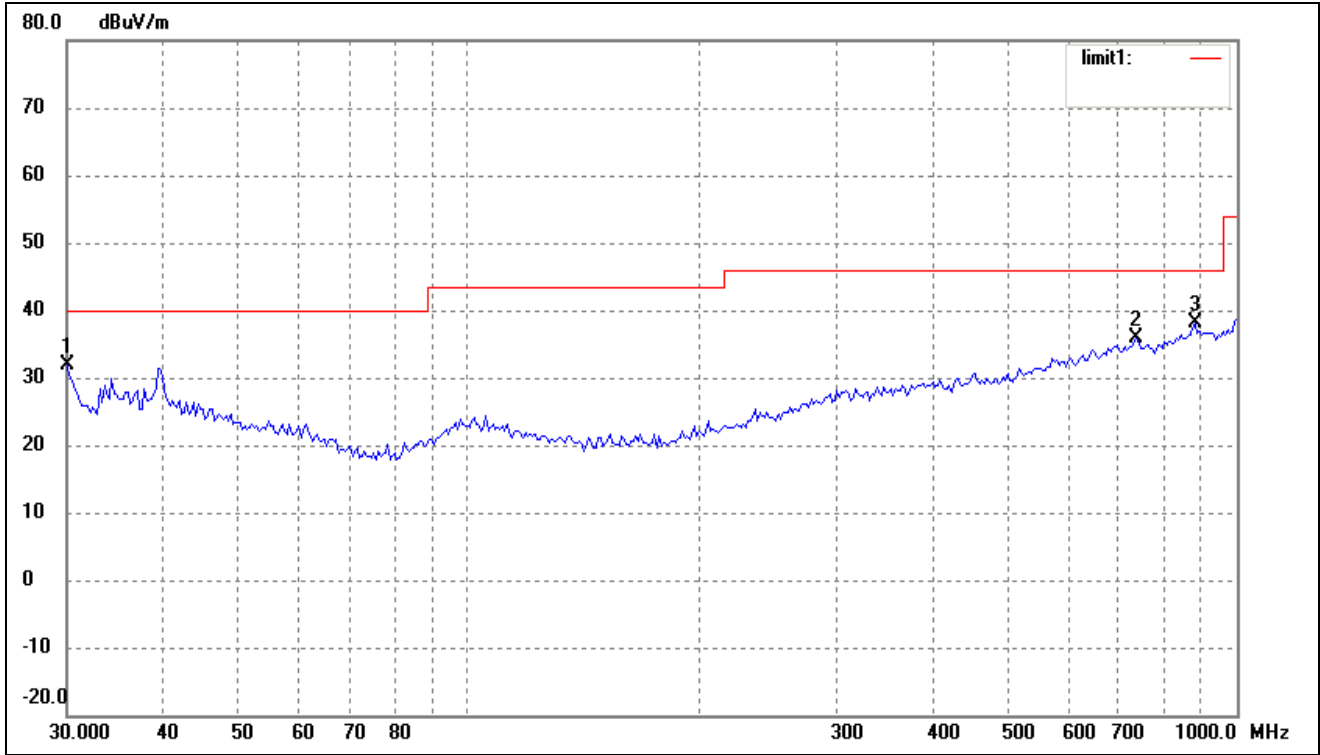
| No. | Frequency (MHz) | Reading (dBuV/m) | Correct dB/m | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Degree (°) | Height (cm) | Remark |
|-----|--------------------|---------------------|-----------------|--------------------|-------------------|----------------|----------------|----------------|--------|
| 1 | 36.0007 | 23.19 | 9.04 | 32.23 | 40.00 | -7.77 | 260 | 100 | peak |
| 2 | 744.8661 | 18.77 | 17.95 | 36.72 | 46.00 | -9.28 | 228 | 100 | peak |
| 3 | 906.4824 | 18.13 | 19.15 | 37.28 | 46.00 | -8.72 | 160 | 100 | peak |

Spurious Emission From 30 MHz to 1 GHz

Test mode: Transmitting (802.11n-HT40) High Channel (2452MHz)

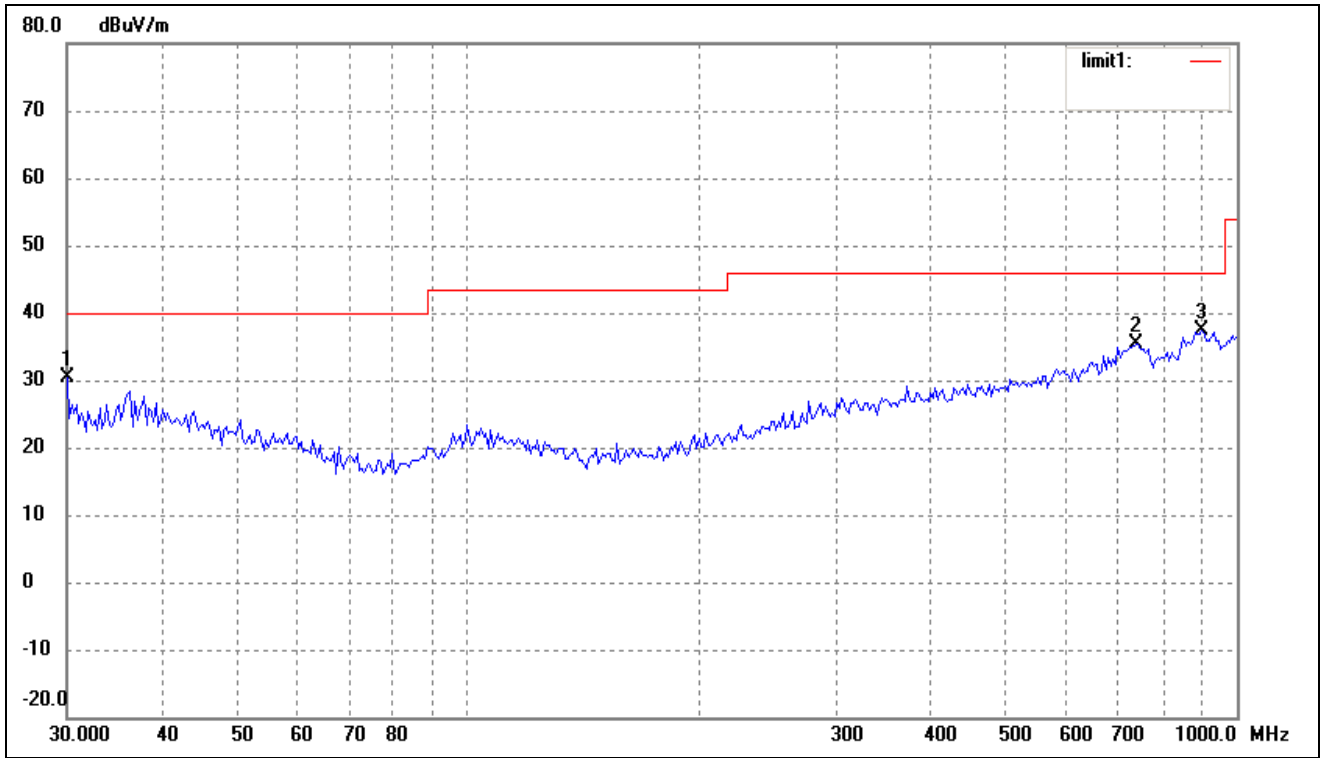
Comment:

Horizontal



| No. | Frequency (MHz) | Reading (dBuV/m) | Correct (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Degree (°) | Height (cm) | Remark |
|-----|-----------------|------------------|----------------|-----------------|----------------|-------------|------------|-------------|--------|
| 1 | 30.0000 | 23.94 | 8.04 | 31.98 | 40.00 | -8.02 | 67 | 100 | peak |
| 2 | 739.6605 | 17.90 | 18.07 | 35.97 | 46.00 | -10.03 | 335 | 100 | peak |
| 3 | 881.4067 | 19.02 | 19.03 | 38.05 | 46.00 | -7.95 | 190 | 100 | peak |

Vertical



| No. | Frequency (MHz) | Reading (dBuV/m) | Correct dB/m | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Degree (°) | Height (cm) | Remark |
|-----|--------------------|---------------------|-----------------|--------------------|-------------------|----------------|----------------|----------------|--------|
| 1 | 30.0000 | 22.22 | 8.04 | 30.26 | 40.00 | -9.74 | 302 | 100 | peak |
| 2 | 739.6605 | 17.34 | 18.07 | 35.41 | 46.00 | -10.59 | 276 | 100 | peak |
| 3 | 900.1474 | 17.93 | 19.38 | 37.31 | 46.00 | -8.69 | 119 | 100 | peak |

Spurious Emission above 1GHz

Test Mode: Transmitting (802.11b)

| Frequency MHz | Detector | Meter Reading dBuV | Direction Degree | Polar H / V | Antenna Loss dB | Cable loss dB | Amplifier dB | Correction Amplitude dBuV/m | Limit dBuV/m | Margin dB |
|------------------------------|----------|--------------------|------------------|-------------|-----------------|---------------|--------------|-----------------------------|--------------|-----------|
| Low Channel (1G to 25GHz) | | | | | | | | | | |
| 4824.0 | PK | 53.1 | 95 | V | 34.1 | 5.2 | 33.0 | 59.4 | 74 | -14.6 |
| 4824.0 | PK | 48.2 | 325 | H | 34.1 | 5.2 | 33.0 | 54.5 | 74 | -19.5 |
| 7236.0 | PK | 45.3 | 244 | V | 37.4 | 6.1 | 33.5 | 55.3 | 74 | -18.7 |
| 7236.0 | PK | 42.4 | 310 | H | 37.4 | 6.1 | 33.5 | 52.4 | 74 | -21.6 |
| 4824.0 | AV | 42.4 | 252 | V | 34.1 | 5.2 | 33.0 | 48.7 | 54 | -5.3 |
| 4824.0 | AV | 39.3 | 133 | H | 34.1 | 5.2 | 33.0 | 45.6 | 54 | -8.4 |
| 7236.0 | AV | 34.2 | 300 | V | 37.4 | 6.1 | 33.5 | 44.2 | 54 | -9.8 |
| 7236.0 | AV | 32.3 | 277 | H | 37.4 | 6.1 | 33.5 | 42.3 | 54 | -11.7 |
| Middle Channel (1G to 25GHz) | | | | | | | | | | |
| 4874.0 | PK | 53.5 | 321 | V | 34.1 | 5.2 | 33.0 | 59.8 | 74 | -14.2 |
| 4874.0 | PK | 49.0 | 252 | H | 34.1 | 5.2 | 33.0 | 55.3 | 74 | -18.7 |
| 7311.0 | PK | 40.2 | 162 | V | 37.4 | 6.1 | 33.5 | 50.2 | 74 | -23.8 |
| 7311.0 | PK | 38.7 | 174 | H | 37.4 | 6.1 | 33.5 | 48.7 | 74 | -25.3 |
| 4874.0 | AV | 42.6 | 99 | V | 34.1 | 5.2 | 33.0 | 48.9 | 54 | -5.1 |
| 4874.0 | AV | 39.4 | 68 | H | 34.1 | 5.2 | 33.0 | 45.7 | 54 | -8.3 |
| 7311.0 | AV | 33.5 | 273 | V | 37.4 | 6.1 | 33.5 | 43.5 | 54 | -10.5 |
| 7311.0 | AV | 32.2 | 142 | H | 37.4 | 6.1 | 33.5 | 42.2 | 54 | -11.8 |
| High Channel (1G to 25GHz) | | | | | | | | | | |
| 4924.0 | PK | 54.2 | 207 | V | 34.1 | 5.2 | 33.0 | 60.5 | 74 | -13.5 |
| 4924.0 | PK | 51.0 | 230 | H | 34.1 | 5.2 | 33.0 | 57.3 | 74 | -16.7 |
| 7386.0 | PK | 44.4 | 51 | V | 37.4 | 6.1 | 33.5 | 54.4 | 74 | -19.6 |
| 7386.0 | PK | 42.3 | 20 | H | 37.4 | 6.1 | 33.5 | 52.3 | 74 | -21.7 |
| 4924.0 | AV | 43.3 | 186 | V | 34.1 | 5.2 | 33.0 | 49.6 | 54 | -4.4 |
| 4924.0 | AV | 40.7 | 327 | H | 34.1 | 5.2 | 33.0 | 47.0 | 54 | -7.0 |
| 7386.0 | AV | 34.4 | 125 | V | 37.4 | 6.1 | 33.5 | 44.4 | 54 | -9.6 |
| 7386.0 | AV | 32.2 | 347 | H | 37.4 | 6.1 | 33.5 | 42.2 | 54 | -11.8 |

Spurious Emission Above 1GHz

Test Mode: Transmitting (802.11g)

| Frequency MHz | Detector | Meter Reading dBuV | Direction Degree | Polar H / V | Antenna Loss dB | Cable loss dB | Amplifier dB | Correction Amplitude dBuV/m | Limit dBuV/m | Margin dB |
|--------------------------|----------|--------------------|------------------|-------------|-----------------|---------------|--------------|-----------------------------|--------------|-----------|
| Low Channel (2412MHz) | | | | | | | | | | |
| 4824.0 | PK | 52.3 | 90 | V | 34.1 | 5.2 | 33.0 | 58.6 | 74 | -15.4 |
| 4824.0 | PK | 50.4 | 270 | H | 34.1 | 5.2 | 33.0 | 56.7 | 74 | -17.3 |
| 7236.0 | PK | 43.2 | 180 | V | 37.4 | 6.1 | 33.5 | 53.2 | 74 | -20.8 |
| 7236.0 | PK | 40.3 | 45 | H | 37.4 | 6.1 | 33.5 | 50.3 | 74 | -23.7 |
| 4824.0 | AV | 42.3 | 270 | V | 34.1 | 5.2 | 33.0 | 48.6 | 54 | -5.4 |
| 4824.0 | AV | 40.4 | 90 | H | 34.1 | 5.2 | 33.0 | 46.7 | 54 | -7.3 |
| 7236.0 | AV | 33.3 | 45 | V | 37.4 | 6.1 | 33.5 | 43.3 | 54 | -10.7 |
| 7236.0 | AV | 32.5 | 60 | H | 37.4 | 6.1 | 33.5 | 42.5 | 54 | -11.5 |
| Middle Channel (2437MHz) | | | | | | | | | | |
| 4874.0 | PK | 51.4 | 45 | V | 34.1 | 5.2 | 33.0 | 57.7 | 74 | -16.3 |
| 4874.0 | PK | 48.0 | 270 | H | 34.1 | 5.2 | 33.0 | 54.3 | 74 | -19.7 |
| 7311.0 | PK | 42.3 | 45 | V | 37.4 | 6.1 | 33.5 | 52.3 | 74 | -21.7 |
| 7311.0 | PK | 40.5 | 180 | H | 37.4 | 6.1 | 33.5 | 50.5 | 74 | -23.5 |
| 4874.0 | AV | 40.3 | 270 | V | 34.1 | 5.2 | 33.0 | 46.6 | 54 | -7.4 |
| 4874.0 | AV | 37.2 | 90 | H | 34.1 | 5.2 | 33.0 | 43.5 | 54 | -10.5 |
| 7311.0 | AV | 31.8 | 60 | V | 37.4 | 6.1 | 33.5 | 41.8 | 54 | -12.2 |
| 7311.0 | AV | 30.0 | 45 | H | 37.4 | 6.1 | 33.5 | 40.0 | 54 | -14.0 |
| High Channel (2462MHz) | | | | | | | | | | |
| 4924.0 | PK | 50.4 | 270 | V | 34.1 | 5.2 | 33.0 | 56.7 | 74 | -17.3 |
| 4924.0 | PK | 48.0 | 45 | H | 34.1 | 5.2 | 33.0 | 54.3 | 74 | -19.7 |
| 7386.0 | PK | 40.3 | 180 | V | 37.4 | 6.1 | 33.5 | 50.3 | 74 | -23.7 |
| 7386.0 | PK | 39.8 | 45 | H | 37.4 | 6.1 | 33.5 | 49.8 | 74 | -24.2 |
| 4924.0 | AV | 39.5 | 90 | V | 34.1 | 5.2 | 33.0 | 45.8 | 54 | -8.2 |
| 4924.0 | AV | 38.0 | 270 | H | 34.1 | 5.2 | 33.0 | 44.3 | 54 | -9.7 |
| 7386.0 | AV | 32.1 | 60 | V | 37.4 | 6.1 | 33.5 | 42.1 | 54 | -11.9 |
| 7386.0 | AV | 30.8 | 60 | H | 37.4 | 6.1 | 33.5 | 40.8 | 54 | -13.2 |

Spurious Emission above 1GHz

Test Mode: Transmitting (802.11n-HT20)

| Frequency MHz | Detector | Meter Reading dBuV | Direction Degree | Polar H / V | Antenna Loss dB | Cable loss dB | Amplifier dB | Correction Amplitude dBuV/m | Limit dBuV/m | Margin dB |
|------------------------------|----------|--------------------|------------------|-------------|-----------------|---------------|--------------|-----------------------------|--------------|-----------|
| Low Channel (1G to 25GHz) | | | | | | | | | | |
| 4824.0 | PK | 51.0 | 260 | V | 34.1 | 5.2 | 33.0 | 57.3 | 74 | -16.7 |
| 4824.0 | PK | 47.9 | 92 | H | 34.1 | 5.2 | 33.0 | 54.2 | 74 | -19.8 |
| 7236.0 | PK | 40.3 | 19 | V | 37.4 | 6.1 | 33.5 | 50.3 | 74 | -23.7 |
| 7236.0 | PK | 39.6 | 320 | H | 37.4 | 6.1 | 33.5 | 49.6 | 74 | -24.4 |
| 4824.0 | AV | 40.2 | 260 | V | 34.1 | 5.2 | 33.0 | 46.5 | 54 | -7.5 |
| 4824.0 | AV | 37.4 | 92 | H | 34.1 | 5.2 | 33.0 | 43.7 | 54 | -10.3 |
| 7236.0 | AV | 32.2 | 19 | V | 37.4 | 6.1 | 33.5 | 42.2 | 54 | -11.8 |
| 7236.0 | AV | 33.0 | 320 | H | 37.4 | 6.1 | 33.5 | 43.0 | 54 | -11.0 |
| Middle Channel (1G to 25GHz) | | | | | | | | | | |
| 4874.0 | PK | 50.4 | 335 | V | 34.1 | 5.2 | 33.0 | 56.7 | 74 | -17.3 |
| 4874.0 | PK | 47.2 | 40 | H | 34.1 | 5.2 | 33.0 | 53.5 | 74 | -20.5 |
| 7311.0 | PK | 40.8 | 237 | V | 37.4 | 6.1 | 33.5 | 50.8 | 74 | -23.2 |
| 7311.0 | PK | 39.7 | 249 | H | 37.4 | 6.1 | 33.5 | 49.7 | 74 | -24.3 |
| 4874.0 | AV | 39.9 | 217 | V | 34.1 | 5.2 | 33.0 | 46.2 | 54 | -7.8 |
| 4874.0 | AV | 36.5 | 340 | H | 34.1 | 5.2 | 33.0 | 42.8 | 54 | -11.2 |
| 7311.0 | AV | 33.5 | 193 | V | 37.4 | 6.1 | 33.5 | 43.5 | 54 | -10.5 |
| 7311.0 | AV | 32.8 | 309 | H | 37.4 | 6.1 | 33.5 | 42.8 | 54 | -11.2 |
| High Channel (1G to 25GHz) | | | | | | | | | | |
| 4924.0 | PK | 52.1 | 291 | V | 34.1 | 5.2 | 33.0 | 58.4 | 74 | -15.6 |
| 4924.0 | PK | 49.0 | 101 | H | 34.1 | 5.2 | 33.0 | 55.3 | 74 | -18.7 |
| 7386.0 | PK | 41.3 | 229 | V | 37.4 | 6.1 | 33.5 | 51.3 | 74 | -22.7 |
| 7386.0 | PK | 39.5 | 204 | H | 37.4 | 6.1 | 33.5 | 49.5 | 74 | -24.5 |
| 4924.0 | AV | 39.7 | 292 | V | 34.1 | 5.2 | 33.0 | 46.0 | 54 | -8.0 |
| 4924.0 | AV | 38.1 | 71 | H | 34.1 | 5.2 | 33.0 | 44.4 | 54 | -9.6 |
| 7386.0 | AV | 33.5 | 17 | V | 37.4 | 6.1 | 33.5 | 43.5 | 54 | -10.5 |
| 7386.0 | AV | 34.0 | 276 | H | 37.4 | 6.1 | 33.5 | 44.0 | 54 | -10.0 |

Spurious Emission Above 1GHz

Test Mode: Transmitting (802.11n-HT40)

| Frequency MHz | Detector | Meter Reading dBuV | Direction Degree | Polar H / V | Antenna Loss dB | Cable loss dB | Amplifier dB | Correction Amplitude dBuV/m | Limit dBuV/m | Margin dB |
|--------------------------|----------|--------------------|------------------|-------------|-----------------|---------------|--------------|-----------------------------|--------------|-----------|
| Low Channel (2422MHz) | | | | | | | | | | |
| 4844.0 | PK | 49.3 | 90 | V | 34.1 | 5.2 | 33.0 | 55.6 | 74 | -18.4 |
| 4844.0 | PK | 47.1 | 270 | H | 34.1 | 5.2 | 33.0 | 53.4 | 74 | -20.6 |
| 7246.0 | PK | 42.2 | 180 | V | 37.4 | 6.1 | 33.5 | 52.2 | 74 | -21.8 |
| 7246.0 | PK | 40.8 | 45 | H | 37.4 | 6.1 | 33.5 | 50.8 | 74 | -23.2 |
| 4844.0 | AV | 39.2 | 270 | V | 34.1 | 5.2 | 33.0 | 45.5 | 54 | -8.5 |
| 4844.0 | AV | 36.9 | 90 | H | 34.1 | 5.2 | 33.0 | 43.2 | 54 | -10.8 |
| 7246.0 | AV | 30.1 | 45 | V | 37.4 | 6.1 | 33.5 | 40.1 | 54 | -13.9 |
| 7246.0 | AV | 29.8 | 60 | H | 37.4 | 6.1 | 33.5 | 39.8 | 54 | -14.2 |
| Middle Channel (2437MHz) | | | | | | | | | | |
| 4874.0 | PK | 50.5 | 45 | V | 34.1 | 5.2 | 33.0 | 56.8 | 74 | -17.2 |
| 4874.0 | PK | 48.3 | 270 | H | 34.1 | 5.2 | 33.0 | 54.6 | 74 | -19.4 |
| 7311.0 | PK | 43.3 | 45 | V | 37.4 | 6.1 | 33.5 | 53.3 | 74 | -20.7 |
| 7311.0 | PK | 42.8 | 180 | H | 37.4 | 6.1 | 33.5 | 52.8 | 74 | -21.2 |
| 4874.0 | AV | 39.4 | 270 | V | 34.1 | 5.2 | 33.0 | 45.7 | 54 | -8.3 |
| 4874.0 | AV | 36.9 | 90 | H | 34.1 | 5.2 | 33.0 | 43.2 | 54 | -10.8 |
| 7311.0 | AV | 33.0 | 60 | V | 37.4 | 6.1 | 33.5 | 43.0 | 54 | -11.0 |
| 7311.0 | AV | 30.6 | 45 | H | 37.4 | 6.1 | 33.5 | 40.6 | 54 | -13.4 |
| High Channel (2452MHz) | | | | | | | | | | |
| 4904.0 | PK | 48.5 | 270 | V | 34.1 | 5.2 | 33.0 | 54.8 | 74 | -19.2 |
| 4904.0 | PK | 46.7 | 45 | H | 34.1 | 5.2 | 33.0 | 53.0 | 74 | -21.0 |
| 7356.0 | PK | 40.3 | 180 | V | 37.4 | 6.1 | 33.5 | 50.3 | 74 | -23.7 |
| 7356.0 | PK | 39.7 | 45 | H | 37.4 | 6.1 | 33.5 | 49.7 | 74 | -24.3 |
| 4904.0 | AV | 38.7 | 90 | V | 34.1 | 5.2 | 33.0 | 45.0 | 54 | -9.0 |
| 4904.0 | AV | 36.9 | 270 | H | 34.1 | 5.2 | 33.0 | 43.2 | 54 | -10.8 |
| 7356.0 | AV | 30.3 | 60 | V | 37.4 | 6.1 | 33.5 | 40.3 | 54 | -13.7 |
| 7356.0 | AV | 29.8 | 60 | H | 37.4 | 6.1 | 33.5 | 39.8 | 54 | -14.2 |

Note: Testing is carried out with frequency rang 9kHz to the tenth harmonics, which above 5th Harmonics are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured. The measurements greater than 20dB below the limit from 9kHz to 30MHz..

8. OUT OF BAND EMISSIONS

8.1 Standard Applicable

According to §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, provided the transmitter demonstrates compliance with the peak conducted power limits.

8.2 Test Equipment List and Details

| Description | Manufacturer | Model | Serial Number | Cal. Date | Due. Date |
|--------------------------|----------------------|----------|---------------|------------|------------|
| Spectrum Analyzer | R&S | FSP | 836079/035 | 2012-03-28 | 2013-03-27 |
| EMI Test Receiver | R&S | ESVB | 825471/005 | 2012-03-28 | 2013-03-27 |
| Positioning Controller | C&C | CC-C-1F | N/A | 2012-03-28 | 2013-03-27 |
| RF Switch | EM | EMSW18 | SW060023 | 2012-03-28 | 2013-03-27 |
| Pre-amplifier | Agilent | 8447F | 3113A06717 | 2012-03-28 | 2013-03-27 |
| Pre-amplifier | Compliance Direction | PAP-0118 | 24002 | 2012-03-28 | 2013-03-27 |
| Trilog Broadband Antenna | SCHWARZBECK | VULB9163 | 9163-333 | 2012-02-25 | 2013-02-24 |
| Horn Antenna | ETS | 3117 | 00086197 | 2012-02-25 | 2013-02-24 |

8.3 Test Procedure

According to the KDB 558074, the band-edge radiated test method as follows:

Set span = wide enough to capture the peak level of the emission operating on the channel closest to the bandedge, as well as any modulation products which fall outside of the authorized band of operation (2310MHz to 2420MHz for low bandedge, 2460MHz to 2500MHz for the high bandedge)

RBW = 1MHz, VBW = 1MHz for peak value measured

RBW = 1MHz, VBW = 10Hz for average value measured

Sweep = auto; Detector function = peak/average; Trace = max hold

All the trace to stabilize, set the marker on the emission at the bandedge, or on the highest modulation product outside of the band, if this level is greater than that at the bandedge. Enable the marker-delta function, then use the marker-to-peak function to move the marker to the peak of the in-band emission. Those emission must comply with the 15.209 limit for fall in the restricted bands listed in section 15.205.

8.4 Environmental Conditions

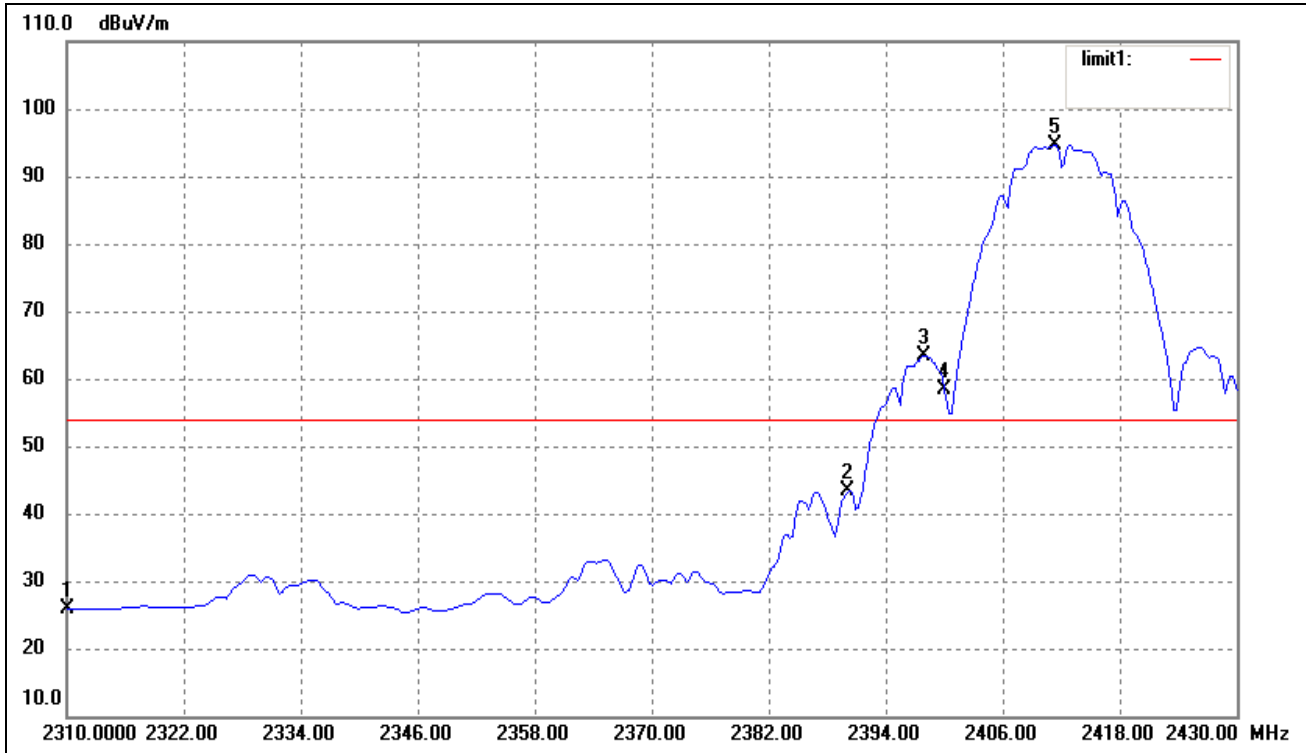
| | |
|--------------------|-----------|
| Temperature: | 21° C |
| Relative Humidity: | 54% |
| ATM Pressure: | 1011 mbar |

8.5 Summary of Test Results/Plots

| Test mode | Frequency MHz | Limit dBuV /dB | Result |
|--------------|---------------|----------------|--------|
| 802.11b | 2310.00 | <54dBuV | Pass |
| | 2390.00 | <54dBuV | Pass |
| | 2397.84 | >20dBc | Pass |
| | 2400.00 | >20dBc | Pass |
| | 2483.50 | <54dBuV | Pass |
| | 2500.00 | <54dBuV | Pass |
| 802.11g | 2310.00 | <54dBuV | Pass |
| | 2390.00 | <54dBuV | Pass |
| | 2400.00 | >20dBc | Pass |
| | 2483.50 | <54dBuV | Pass |
| | 2500.00 | <54dBuV | Pass |
| 802.11n-HT20 | 2310.00 | <54dBuV | Pass |
| | 2390.00 | <54dBuV | Pass |
| | 2400.00 | >20dBc | Pass |
| | 2483.50 | <54dBuV | Pass |
| | 2500.00 | <54dBuV | Pass |
| 802.11n-HT40 | 2310.00 | <54dBuV | Pass |
| | 2390.00 | <54dBuV | Pass |
| | 2400.00 | >20dBc | Pass |
| | 2483.50 | <54dBuV | Pass |
| | 2500.00 | <54dBuV | Pass |

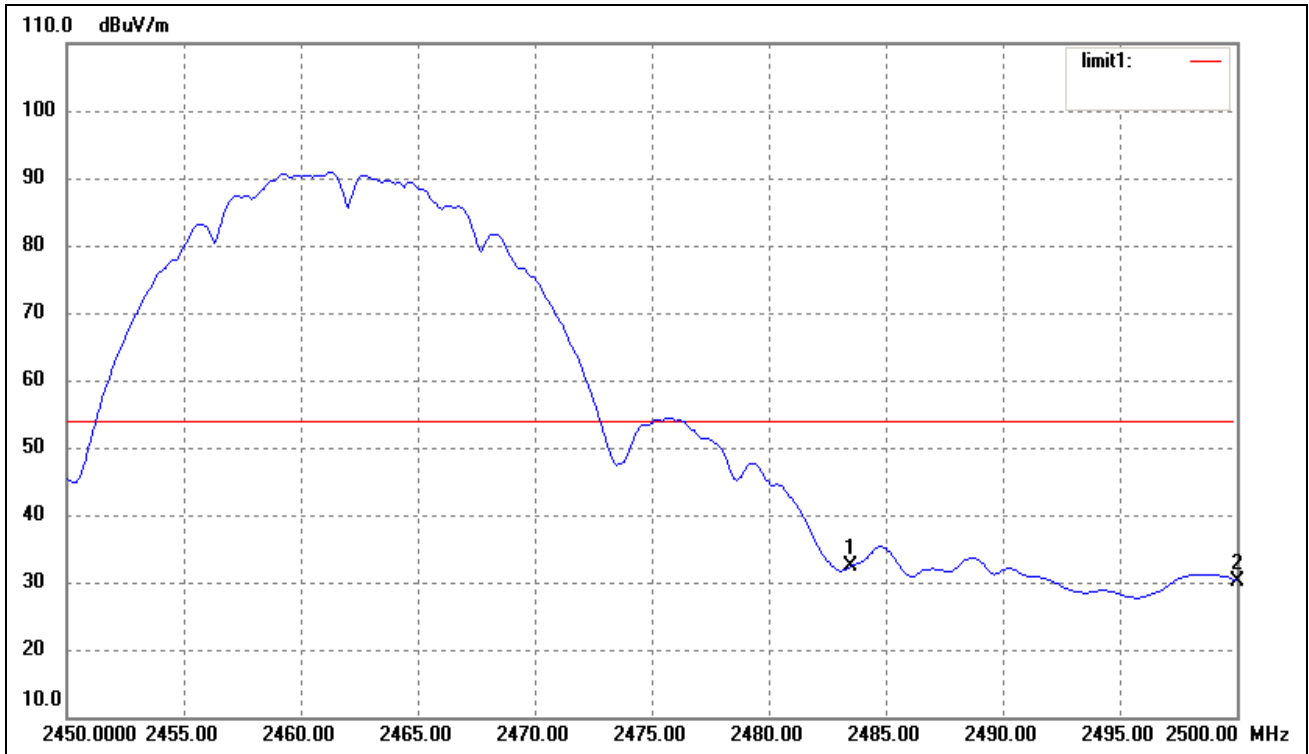
For 802.11b

Lowest Bandedge



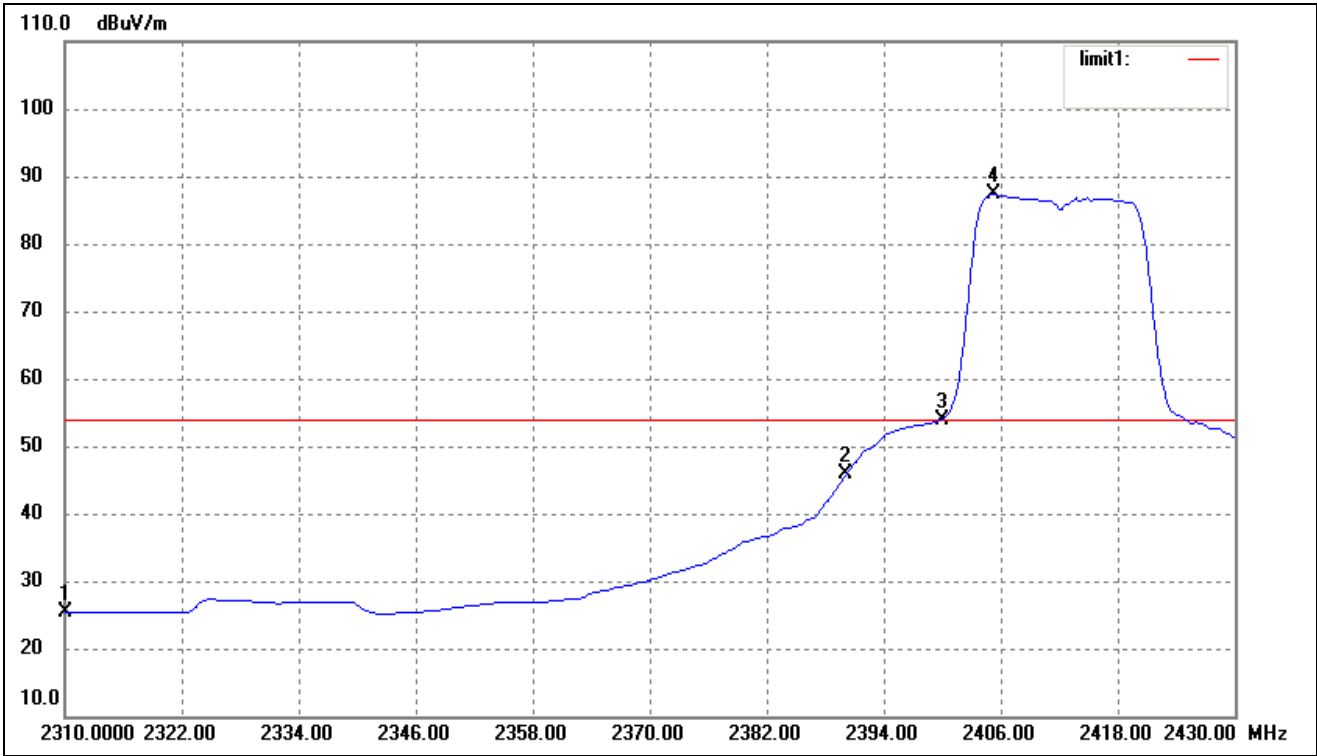
| No. | Frequency (MHz) | Reading (dBuV/m) | Correct (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----|-----------------|------------------|----------------|-----------------|----------------|-------------|------------------|
| 1 | 2310.000 | 37.51 | -11.72 | 25.79 | 54.00 | -28.21 | Average Detector |
| | 2310.000 | 47.95 | -11.72 | 36.23 | 74.00 | -37.77 | Peak Detector |
| 2 | 2390.000 | 55.16 | -11.75 | 43.41 | 54.00 | -10.59 | Average Detector |
| | 2390.000 | 67.07 | -11.75 | 55.32 | 74.00 | -18.68 | Peak Detector |
| 3 | 2397.840 | 75.09 | -11.75 | 63.34 | / | / | Average Detector |
| 4 | 2400.000 | 70.15 | -11.75 | 58.40 | / | / | Average Detector |
| 5 | 2411.280 | 106.45 | -11.75 | 94.70 | / | / | Average Detector |

For 802.11b
Highest Bandedge



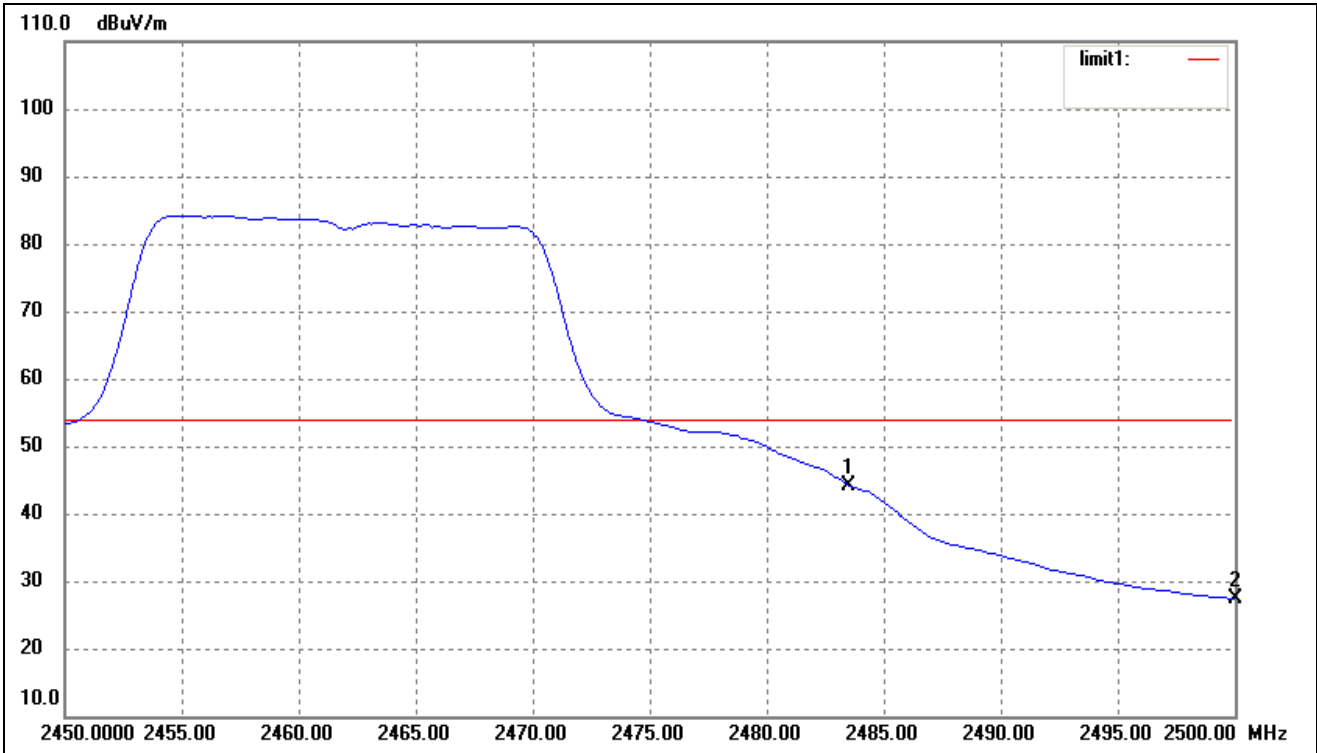
| No. | Frequency (MHz) | Reading (dBuV/m) | Correct (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----|-----------------|------------------|----------------|-----------------|----------------|-------------|------------------|
| 1 | 2483.500 | 44.15 | -11.78 | 32.37 | 54.00 | -21.63 | Average Detector |
| | 2483.500 | 55.13 | -11.78 | 43.35 | 74.00 | -30.65 | Peak Detector |
| 2 | 2500.000 | 41.86 | -11.78 | 30.08 | 54.00 | -23.92 | Average Detector |
| | 2500.000 | 53.90 | -11.78 | 42.12 | 74.00 | -31.88 | Peak Detector |

For 802.11g
Lowest Bandedge



| No. | Frequency (MHz) | Reading (dBuV/m) | Correct (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----|-----------------|------------------|----------------|-----------------|----------------|-------------|------------------|
| 1 | 2310.000 | 37.06 | -11.72 | 25.34 | 54.00 | -28.66 | Average Detector |
| | 2310.000 | 48.00 | -11.75 | 36.25 | 74.00 | -37.75 | Peak Detector |
| 2 | 2390.000 | 57.75 | -11.75 | 46.00 | 54.00 | -8.00 | Average Detector |
| | 2390.000 | 66.12 | -11.75 | 54.37 | 74.00 | -19.63 | Peak Detector |
| 3 | 2400.000 | 65.75 | -11.75 | 54.00 | / | / | Average Detector |
| 4 | 2405.280 | 99.06 | -11.75 | 87.31 | / | / | Average Detector |

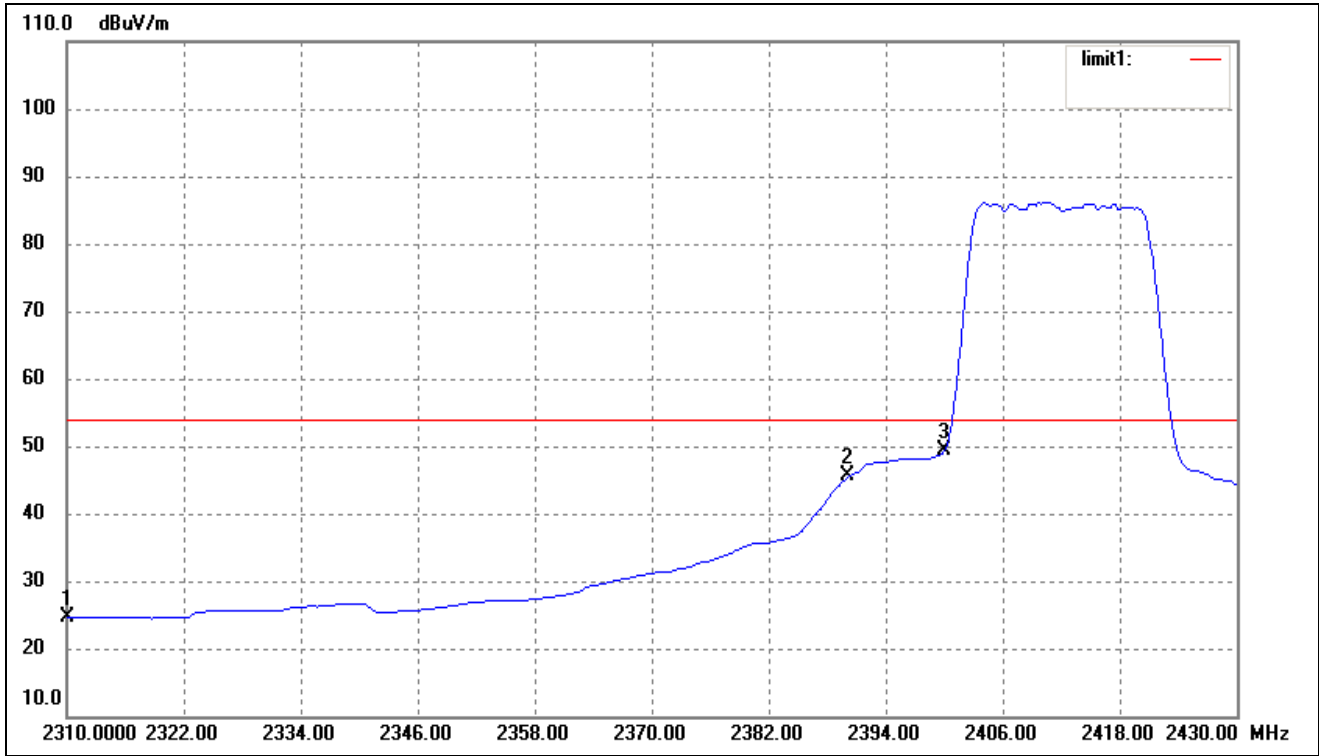
For 802.11g
Highest Bandedge



| No. | Frequency (MHz) | Reading (dBuV/m) | Correct (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----|-----------------|------------------|----------------|-----------------|----------------|-------------|------------------|
| 1 | 2483.500 | 55.97 | -11.78 | 44.19 | 54.00 | -9.81 | Average Detector |
| | 2483.500 | 67.15 | -11.78 | 55.37 | 74.00 | -18.63 | Peak Detector |
| 2 | 2500.000 | 39.12 | -11.78 | 27.34 | 54.00 | -26.66 | Average Detector |
| | 2500.000 | 50.32 | -11.78 | 38.54 | 74.00 | -35.46 | Peak Detector |

For 802.11n-HT20

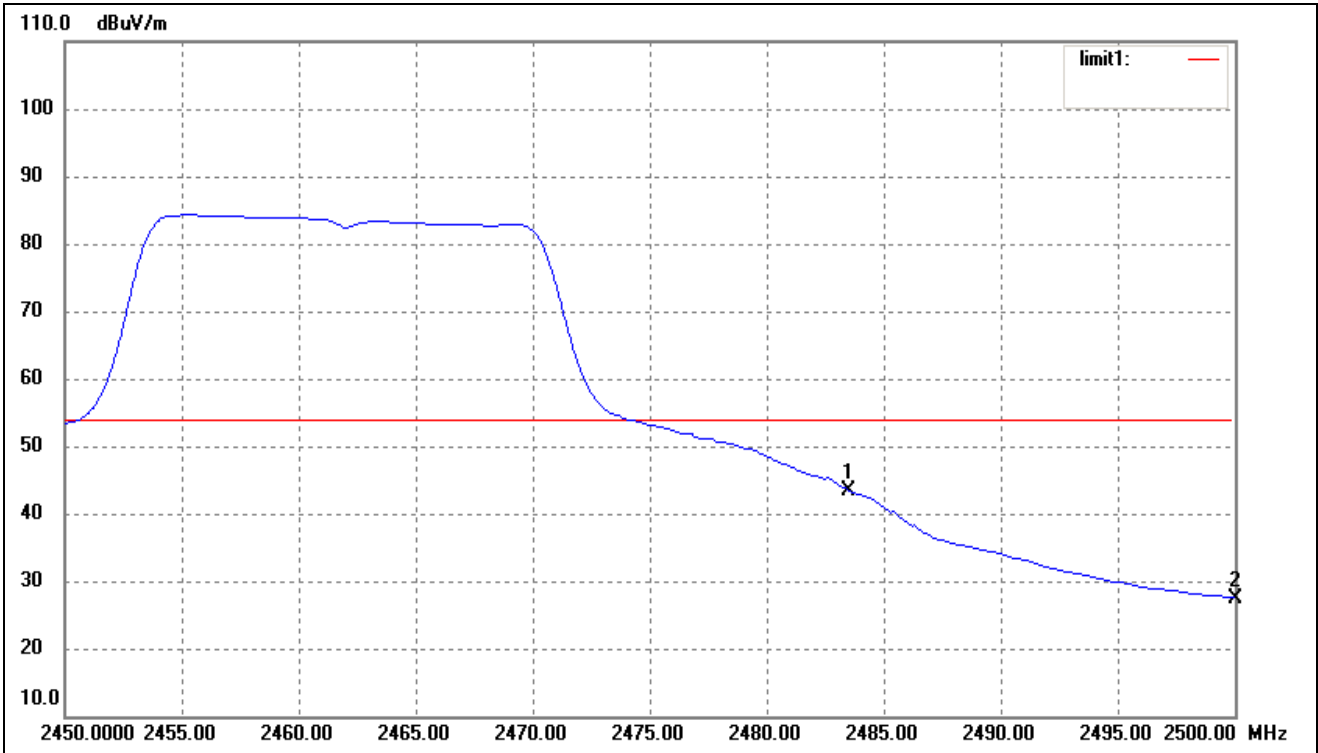
Lowest Bandedge



| No. | Frequency (MHz) | Reading (dBuV/m) | Correct (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----|-----------------|------------------|----------------|-----------------|----------------|-------------|------------------|
| 1 | 2310.000 | 36.35 | -11.72 | 24.63 | 54.00 | -29.37 | Average Detector |
| | 2310.000 | 47.34 | -11.72 | 35.62 | 74.00 | -38.38 | Peak Detector |
| 2 | 2390.000 | 57.26 | -11.75 | 45.51 | 54.00 | -8.49 | Average Detector |
| | 2390.000 | 66.12 | -11.75 | 54.37 | 74.00 | -19.63 | Peak Detector |
| 3 | 2400.000 | 61.10 | -11.75 | 49.35 | 54.00 | -4.65 | Average Detector |
| | 2400.000 | 70.39 | -11.75 | 58.64 | 74.00 | -15.36 | |

For 802.11n-HT20

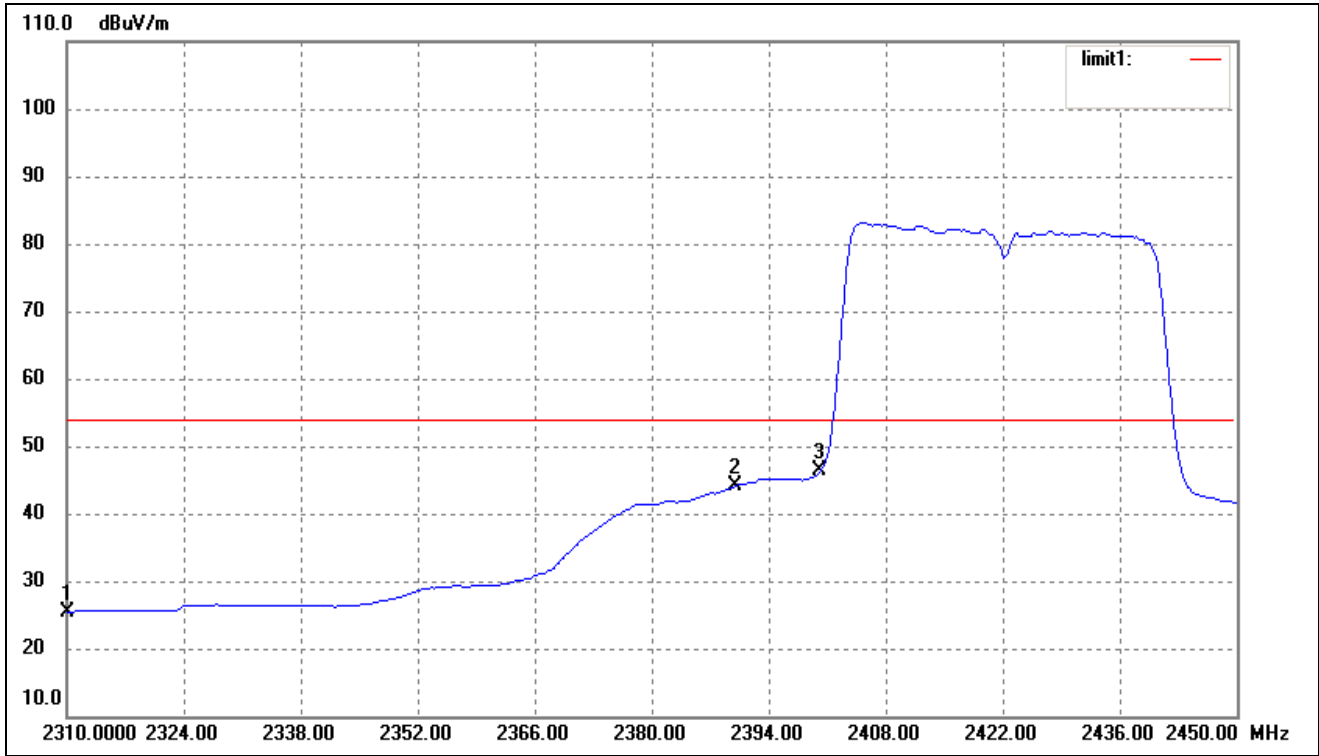
Highest Bandedge



| No. | Frequency (MHz) | Reading (dBuV/m) | Correct (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----|-----------------|------------------|----------------|-----------------|----------------|-------------|------------------|
| 1 | 2483.500 | 55.12 | -11.78 | 43.34 | 54.00 | -10.66 | Average Detector |
| | 2483.500 | 65.99 | -11.78 | 54.21 | 74.00 | -19.79 | Peak Detector |
| 2 | 2500.000 | 39.25 | -11.78 | 27.47 | 54.00 | -26.53 | Average Detector |
| | 2500.000 | 50.35 | -11.78 | 38.57 | 74.00 | -35.43 | Peak Detector |

For 802.11n-HT40

Lowest Bandedge

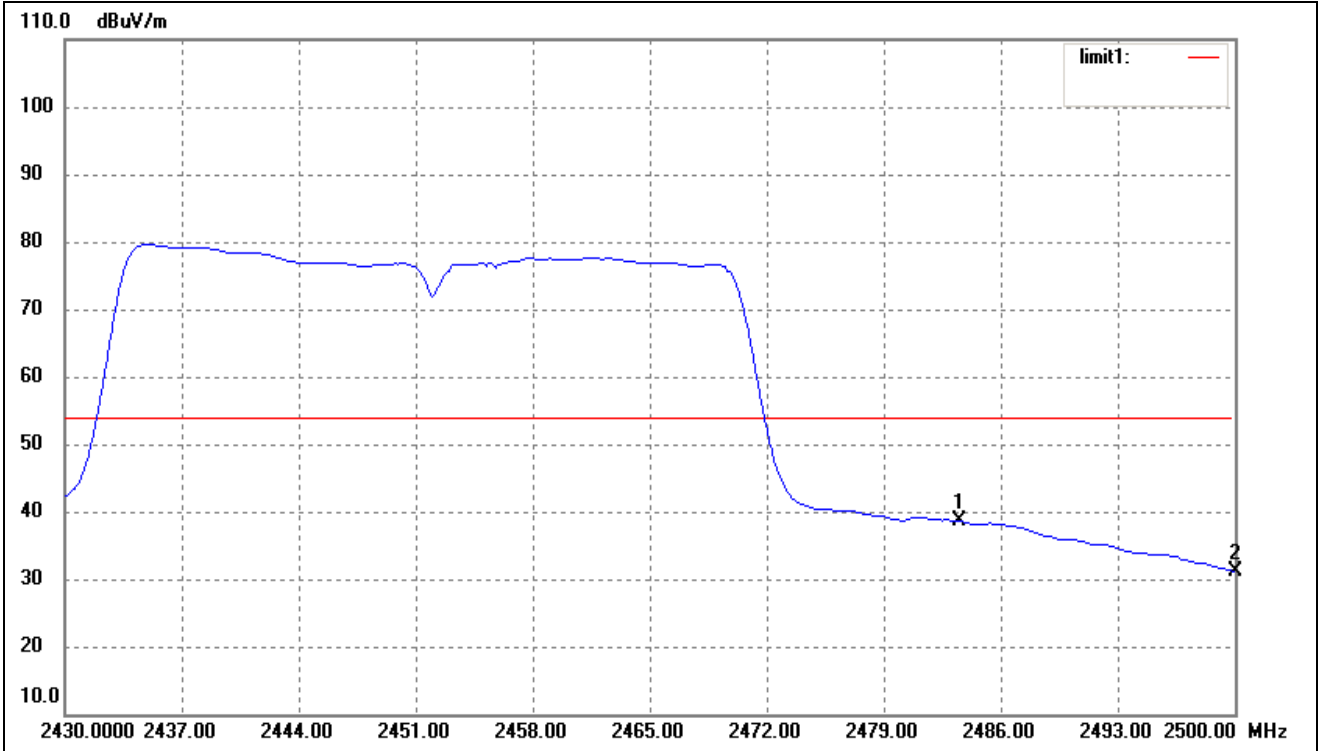


| No. | Frequency (MHz) | Reading (dBuV/m) | Correct (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Degree () | Height (cm) | Remark |
|-----|-----------------|------------------|----------------|-----------------|----------------|-------------|------------|-------------|--------|
| 1 | 2310.000 | 37.18 | -11.72 | 25.46 | 54.00 | -28.54 | | | peak |
| 2 | 2390.000 | 55.87 | -11.75 | 44.12 | 54.00 | -9.88 | | | peak |
| 3 | 2400.000 | 58.05 | -11.75 | 46.30 | 54.00 | -7.70 | | | peak |

| No. | Frequency (MHz) | Reading (dBuV/m) | Correct (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----|-----------------|------------------|----------------|-----------------|----------------|-------------|------------------|
| 1 | 2310.000 | 37.18 | -11.72 | 25.46 | 54.00 | -28.54 | Average Detector |
| | 2310.000 | 48.24 | -11.72 | 36.52 | 74.00 | -37.48 | Peak Detector |
| 2 | 2390.000 | 55.87 | -11.75 | 44.12 | 54.00 | -9.88 | Average Detector |
| | 2390.000 | 67.47 | -11.75 | 55.72 | 74.00 | -18.28 | Peak Detector |
| 3 | 2400.000 | 58.05 | -11.75 | 46.30 | 54.00 | -7.70 | Average Detector |
| | 2400.000 | 68.55 | -11.75 | 56.80 | 74.00 | -17.20 | Average Detector |

For 802.11n-HT40

Highest Bandedge



| No. | Frequency (MHz) | Reading (dBuV/m) | Correct (dB/m) | Result (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Remark |
|-----|-----------------|------------------|----------------|-----------------|----------------|-------------|------------------|
| 1 | 2483.500 | 50.32 | -11.78 | 38.54 | 54.00 | -15.46 | Average Detector |
| | 2483.500 | 60.40 | -11.78 | 48.62 | 74.00 | -25.38 | Peak Detector |
| 2 | 2500.000 | 42.94 | -11.78 | 31.16 | 54.00 | -22.84 | Average Detector |
| | 2500.000 | 54.29 | -11.78 | 42.51 | 74.00 | -31.49 | Peak Detector |

***** END OF REPORT *****