



## **Electromagnetic Compatibility Test Report**

**Test Report No: MOT 290414 Rev.4**  
**Issued on: April 19, 2015**

**Product Name**  
**VML750**  
**VSM LTE band 14 & WiFi Transmitter**  
**Model: F0025A (FLN0058A)**  
**&**  
**WiFi Transmitter**  
**Model: F0025A (FLN2058A)**

**Tested According to**  
**FCC 47 CFR, Part 15, Subpart C**  
**IC RSS-210, Issue 8**

**Tests Performed for**  
**Motorola Israel Ltd.**  
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Tel: (972) 03-565888

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## **Test Personnel**

A handwritten signature in blue ink, appearing to read 'Dmitry Isaev'.

**Tests Performed By:** -----

**Dmitry Isaev**

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**Report Prepared By:** -----

**Bina Talkar**

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**Report Reviewed By:** -----

**Rami Nataf  
EMC Lab. Manager  
QualiTech EMC Laboratory**

## Test Report details:

Test commencement date: 22.04.2014  
Test completion date: 24.04.2014  
Customer's representative: Moti Rachmilov  
Issued on: 19.04.2015

## Revision details:

| Version | Date       | Details/Reasons                                                                                                                                                                                                                                                 |
|---------|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Rev. 1  | 29.04.2014 | -                                                                                                                                                                                                                                                               |
| Rev. 2  | 12.01.2015 | Per customer's request additional model "F0025A (FLN2058A)" is included in the test report.<br>Per customer's declaration there is no change (from FCC point of view) between tested model number F0025A (FLN0058) and additional model number F0025 (FLN2058A) |
| Rev.3   | 03.02.2015 | Minor typographical errors/omissions corrected on page 6.<br>Industry Canada ICES-003, Issue 5 included in the test report                                                                                                                                      |
| Rev.4   | 19.04.2015 | Radiated emissions testing results in 9kHz -30MHz frequency range was added and correction per TCB's comments                                                                                                                                                   |

## Assessment information:

This report contains an assessment of the EUT against Electromagnetic Compatibility based upon tests carried out on the samples submitted. The results contained in this report relate only to the items tested. Manufactured products will not necessarily give identical results due to production and measurement tolerances. QualiTech, EMC Lab does not assume responsibility for any conclusion and generalization drawn from the test results with regards to other specimens or samples of type of the equipment represented by test item.

The EUT was set up and exercised using the configuration, modes of operation and arrangements defined in this report only.

## Modifications:

### Modifications made to the EUT

None

### Modifications made to the Test Standard

None

## Summary of Compliance Status

| Test Spec. Clause                                   | Test Case                                     | Remarks |
|-----------------------------------------------------|-----------------------------------------------|---------|
| 47 CFR §15.247 (a) (2) RSS-210 section A8.2 (a)     | 6 dB Bandwidth                                | Pass    |
| 47 CFR §15.247 (b) (3) & RSS-210 section A8.4 (4)   | Maximum Conducted (Average) Output Power      | Pass    |
| 47 CFR §15.247 (e) & RSS-210 Section A8.2 (b)       | Peak Power Spectral Density(peak PSD)         | Pass    |
| 47 CFR §15.247 (d) & RSS-210 Section A8.5           | Conducted Spurious Emissions                  | Pass    |
| 47 CFR §15.247 (d) & §15.205 & RSS-210 section A8.5 | Radiated Spurious Emissions, Restricted Bands | Pass    |
| 47 CFR §15.247 (d), & §15.205, & §15.209(a)         | Radiated Spurious Emissions                   | Pass    |

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## 1. General Description

### Description of the EUT system/test Item:

**Product name:** VML750

**1. Model:** F0025A (FLN0058A)

**FCC ID:** AZ492FT7060

**IC ID:** 109U-92FT7060

**Description:** The VML750 is router contained WiFi module, GPS module, 4G modem (band 13&14).

**Maximum Peak Output Power:** 50 mW

**Frequency range:** 2401-2473MHz

**Description:** The VML750 supports the following modulation/spectrum schemes:

- 700MHz LTE FDD (LTE Band 13/14)

- WLAN 802.11b/g/n

**2. Model:** F0025A (FLN2058A)

**FCC ID:** AZ492FT7058

**IC ID:** 109U-92FT7058

**Description:** The VML750 is router contained WiFi module.

**Maximum Peak Output Power:** 50 mW

**Frequency range:** 2401-2473MHz

The VML750 supports WLAN 802.11b/g/n.

### Transmit Data rate: Protocol

| Protocol | Rate [Mbps] |    |      |    |    |    |      |    |
|----------|-------------|----|------|----|----|----|------|----|
| 802.11b  | 1           | 2  | 5.5  | 11 | -  | -  | -    | -  |
| 802.11g  | 6           | 9  | 12   | 18 | 24 | 36 | 48   | 54 |
| 802.11n  | 6.50        | 13 | 19.5 | 26 | 39 | 52 | 58.5 | 65 |

### Antenna Specification:

Type: folded monopole for WLAN b/g/n

### Antenna Gain:

2401-2473 MHz – Max 10 dBi

## **2. Method of Measurements**

### **2.1. Conducted RF Measurements:**

The RF output of the transmitter under test was directly connected to the input of the Spectrum analyzer through a specialized antenna connector provided by the manufacturer, and an attenuator as specified. The external attenuator and cable loss were added to the reading. Worst-case results of the various modulation modes (where applicable) were reported.

For PSD, emission peak was zoomed within the pass band with spectrum analyzer's settings as reported (Sweep time=Span/3kHz). Transmitter outputs transmitting simultaneously were aggregated through a combiner.

For Maximum Conducted Output Power, the spectrum analyzer was set for free ran, and 100 traces were averaged in power averaging mode. The transmitter was continuously transmitting, at a duty cycle of about 99%, and power was integrated across a bandwidth of the 26dB EBW of the signal, using the spectrum analyzer's band power measurement function with band limits set equal to the EBW band edges. Alternatively, Peak Output Power was measured using a Peak Power Meter.

For spurious emissions measurement, the spectrum from 9 KHz to 40GHz was investigated with the transmitter set to the lowest, middle and highest channel frequencies.

### **2.2. Radiated Emissions Measurements in the restricted bands:**

For radiated emissions, which fall in the restricted bands the spectrum from 9kHz to 25GHz was investigated following the guidelines in ANSI C63.4-2003, with the transmitter set to the lowest, middle and highest channel frequencies. Measurements were performed with peak detector and repeated averaged with VBW=10Hz. Only Peak detection plots are presented.

### **2.3. Radiated Emission measurements:**

Measurements were performed at a 3-meter measurement distance in the semi-anechoic chamber in order to evaluate the radiated electromagnetic interference characteristics of the EUT. The EUT was placed on a non-metallic table/support, 0.8m above the turntable, was configured, arranged and operated in a manner consistent with typical application and load conditions. The test program of exercising the equipment ensured that various parts of the EUT were exercised to permit detection of all EUT disturbances.

An appropriate antenna depending upon the frequency range, per ANSI C63.4-2003 clause 4.1.5 was used. While the turntable was being rotated, the height of the antenna was varied from 1 to 4m for the frequency range of 30MHz to 1GHz. The highest radiated emission was detected by manipulating the system cables to the worst-case position. This process was repeated for both antenna polarizations. The spectrum up to 40GHz was investigated for spurious emissions, using a band-reject filter where appropriate.

The amplitudes of worst-case emission were measured with the detector modes and resolution bandwidths over various frequency ranges according to the requirements of ANSI C63.4-2003 clause 4.2.

### **2.4. Worst Case Results:**

Worst case result is determined as the channel with the highest output power. Pre-scan has been conducted to determine the worst-case. Worst-case results of various modulation modes/data rates were determined as the modulation with the highest output power, and that was reported.

### 3. Test Facility & Uncertainty of Measurement

#### 3.1. Accreditation/ Registration reference:

- A2LA Certificate Number: 1633.01
- Industry Canada File Number: IC4808

#### 3.2. Test Facility description

The tests were performed at the EMC Laboratory, QualiTech Division, ECI Telecom

**Address:** 30, Hasivim St., Petah Tikva, Israel.  
Tel: 972-3-926-6994

#### 3m Anechoic Chamber:

Two 3m-screened chambers are used in two configurations: the semi-anechoic chamber for Radiated Emission measurements and the full-anechoic chamber for Radiated Immunity tests.

#### Semi Anechoic Configuration:

|                                                           |                                                                                                                                                  |
|-----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| Measurement distance                                      | 3m                                                                                                                                               |
| Chamber dimensions                                        | 9.5m x 6.5m x 5.2m                                                                                                                               |
| Antenna height                                            | 1 - 4m                                                                                                                                           |
| Shielding Effectiveness                                   | Magnetic field $\geq 80$ dB at 15 kHz<br>$\geq 90$ dB at 100 kHz<br>Electric field $> 120$ dB from 1MHz to 1GHz<br>$> 110$ dB from 1GHz to 10GHz |
| Absorbing material                                        | Ferrite tiles on the walls and ceiling<br>Emerson and Cuming absorbing material in selected positions on the walls                               |
| Normalized Site Attenuation measured at 5 positions       | $\pm 3.9$ dB, 30MHz to 200MHz<br>$\pm 3$ dB, 200MHz to 1000MHz                                                                                   |
| Transmission Loss measured at 5 positions, at 1.5m height | $\pm 3$ dB, 1GHz to 18GHz                                                                                                                        |

#### Full-Anechoic Configuration:

|                                 |                                                                                                                                                  |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| Measurement distance            | 3m                                                                                                                                               |
| Chamber dimensions              | 7m x 4m x 3m                                                                                                                                     |
| Antenna height                  | 1.55m at Horizontal & Vertical polarizations                                                                                                     |
| Shielding Effectiveness         | Magnetic field $\geq 80$ dB at 15 kHz<br>$\geq 90$ dB at 100 kHz<br>Electric field $> 120$ dB from 1MHz to 1GHz<br>$> 110$ dB from 1GHz to 10GHz |
| Absorbing material              | Ferrite tiles on the walls and ceiling Frankonia hybrid absorbing material in selected positions on the walls and floor                          |
| Field Uniformity to EN61000-4-3 | $\pm 3$ dB 80MHz to 18GHz                                                                                                                        |

### 3.1. Uncertainty of Measurement:

| Test Name                 | Test Method & Range           | Uncertainty |       |
|---------------------------|-------------------------------|-------------|-------|
|                           |                               | Expanded U  | Ucisp |
| <b>Radiated Emission</b>  | 30MHz÷230MHz, Horiz. polar.   | [dB]        | [dB]  |
|                           | 30MHz÷230MHz, Ver. polar.     | 4.92        | 5.06  |
|                           | 230MHz÷1000MHz, Horiz. polar. | 5.06        | 5.07  |
|                           | 230MHz÷1000MHz, Vert. polar.  | 5.30        | 5.34  |
|                           | 1.0GHz -6.0GHz                | 5.30        | 5.34  |
|                           | 6.0GHz-18.0GHz                | 5.30        | 5.18  |
|                           |                               | 5.10        | 5.48  |
| <b>Conducted Emission</b> | 9 kHz÷150 kHz                 | [dB]        | [dB]  |
|                           | 150 kHz÷30MHz                 | 3.5         | 3.83  |
|                           |                               | 3.06        | 3.44  |

**Note:** Note: QualiTech EMC labs expanded measurement instrumentation has less uncertainty than the industry norm and compliance is deemed to occur as no measured disturbance exceeds the disturbance limit.

**Note:** The reported expanded uncertainty is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95%.

#### 4. WLAN 802.11b/g/n: Report of Measurements and Examinations

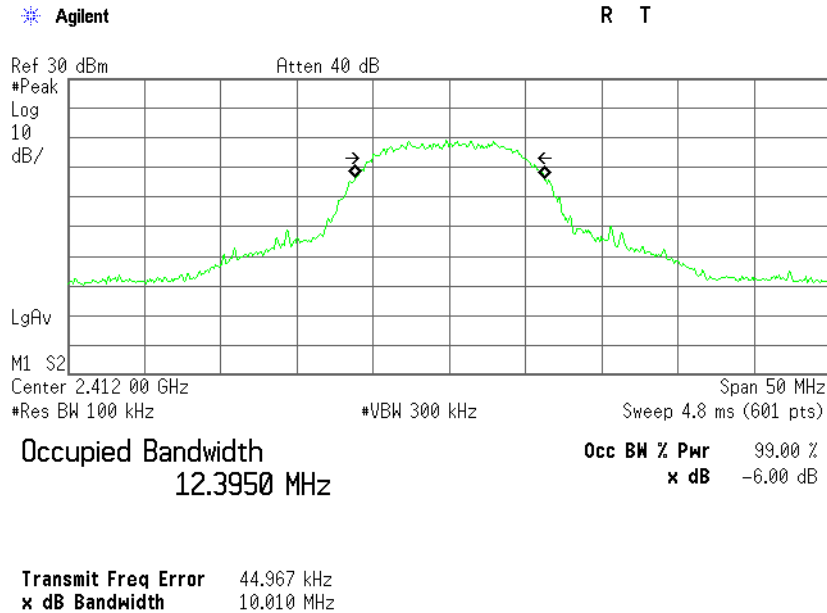
##### 4.1. 6 dB Bandwidth

|                         |                                                                                                                                                          |                             |                              |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|------------------------------|
| Reference document:     | <b>47 CFR §15.247 (a) (2)</b>                                                                                                                            |                             |                              |
| Test Requirements:      | Systems using digital modulation techniques may operate in 2400-2483.5 MHz and 5725–5850 MHz bands. The minimum 6dB bandwidth shall be at least 500 kHz. |                             |                              |
| Test setup:             | See sec 2.1                                                                                                                                              | <b>Pass</b>                 |                              |
| Method of testing:      | Conducted<br>KDB 558074 D01 v03r02, Sec.8,<br>option 2                                                                                                   |                             |                              |
| Operating conditions:   | Under normal test conditions                                                                                                                             |                             |                              |
| S.A. Settings:          | RBW: 100kHz, VBW: 300kHz                                                                                                                                 |                             |                              |
| Environment conditions: | Ambient Temperature: 22°C                                                                                                                                | Relative Humidity:<br>56%   | Atmospheric Pressure:<br>hPa |
| Test Result:            | See below                                                                                                                                                | See Plot 4.1.1 - Plot 4.1.9 |                              |

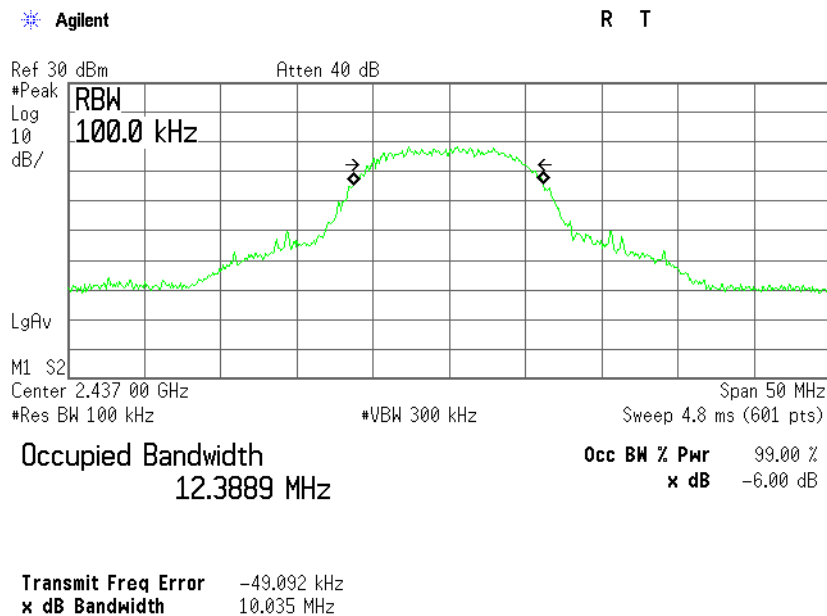
##### Test results

| Frequency<br>[MHz]          | Data Rate<br>[Mbps] | 6 dB Bandwidth<br>[kHz] | Limit<br>[kHz] |
|-----------------------------|---------------------|-------------------------|----------------|
| <b>802.11b Mode</b>         |                     |                         |                |
| 2412                        | 11                  | 10010                   | >500           |
| 2437                        | 11                  | 10035                   | >500           |
| 2462                        | 11                  | 10007                   | >500           |
| <b>802.11g Mode</b>         |                     |                         |                |
| 2412                        | 54                  | 16602                   | >500           |
| 2437                        | 54                  | 16610                   | >500           |
| 2462                        | 54                  | 16608                   | >500           |
| <b>802.11n -20 MHz Mode</b> |                     |                         |                |
| 2412                        | MCS7                | 17799                   | >500           |
| 2437                        | MCS7                | 17850                   | >500           |
| 2462                        | MCS7                | 17840                   | >500           |

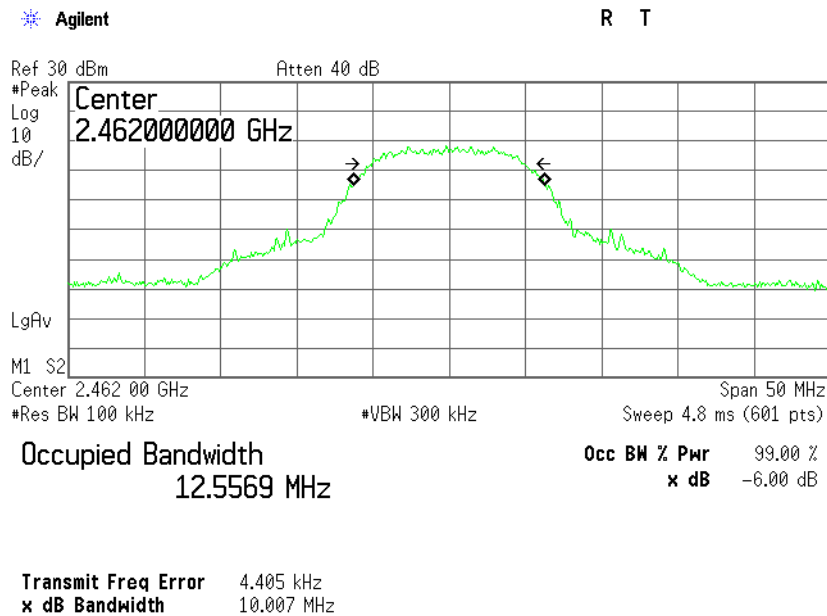
**Plot 4.1.1 6dB bandwidth test results, 802.11b Mode, Fc = 2412 MHz**



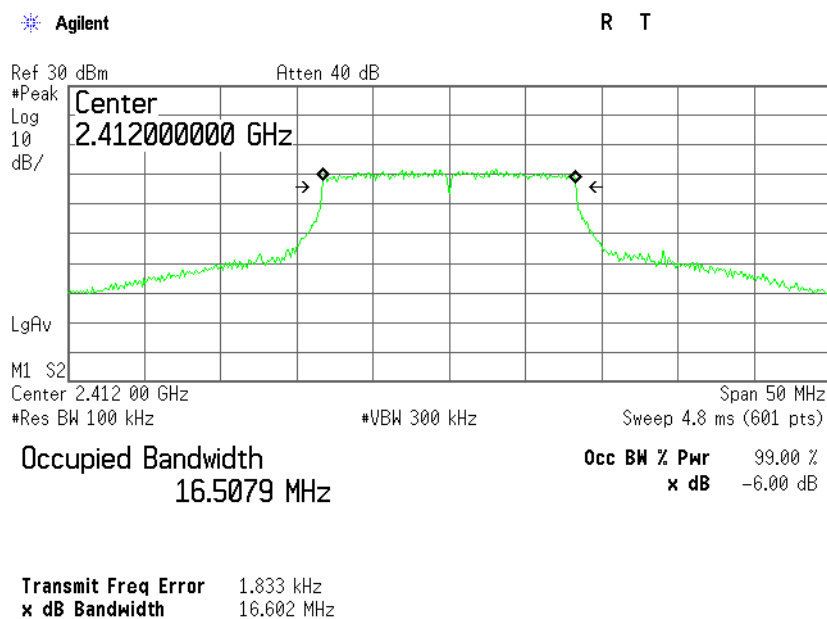
**Plot 4.1.2 6dB bandwidth test results, 802.11b Mode, Fc = 2437 MHz**



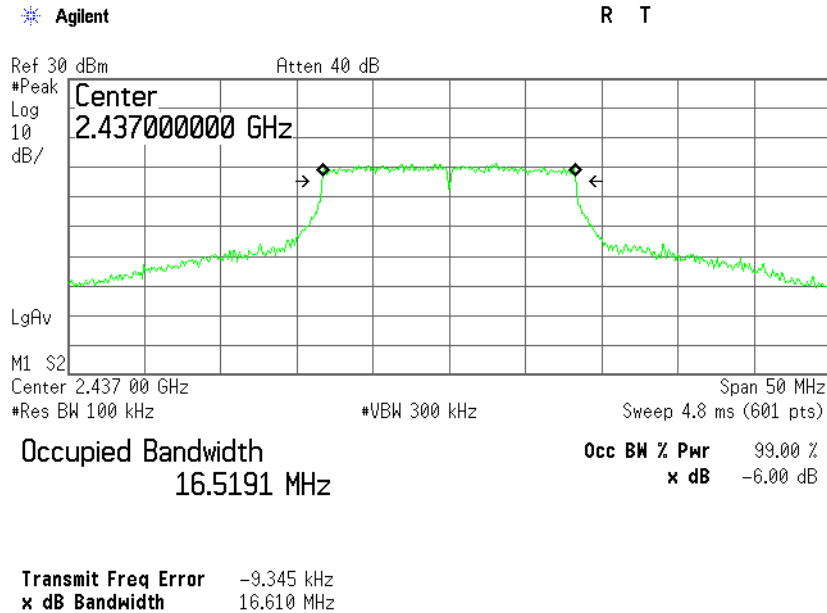
**Plot 4.1.3 6dB bandwidth test results, 802.11b Mode, Fc = 2462 MHz**



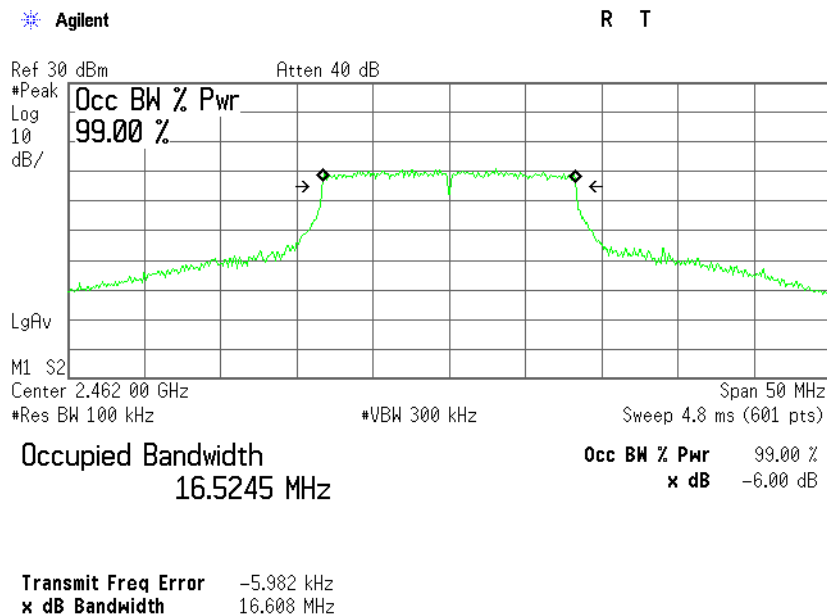
**Plot 4.1.4 6dB bandwidth test results, 802.11g Mode, Fc = 2412 MHz**



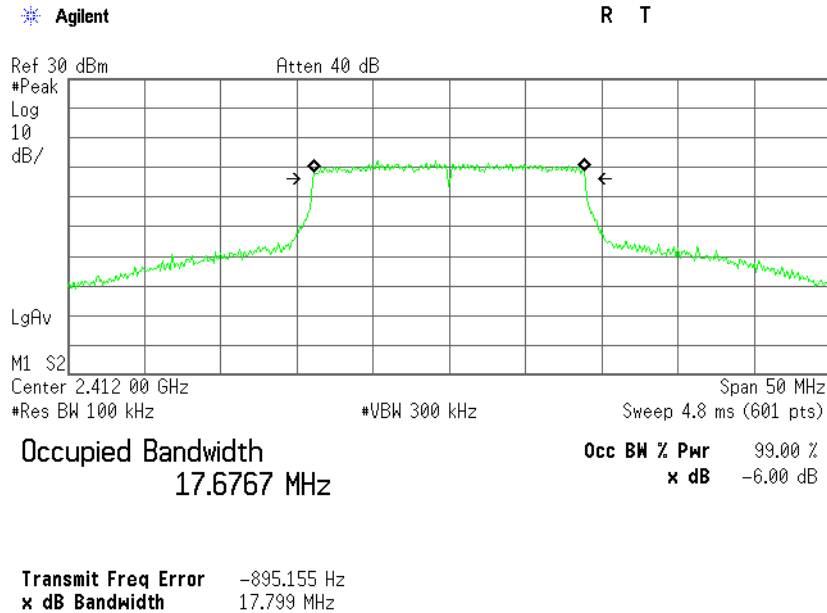
**Plot 4.1.5 6dB bandwidth test results, 802.11g Mode, Fc = 2437 MHz**



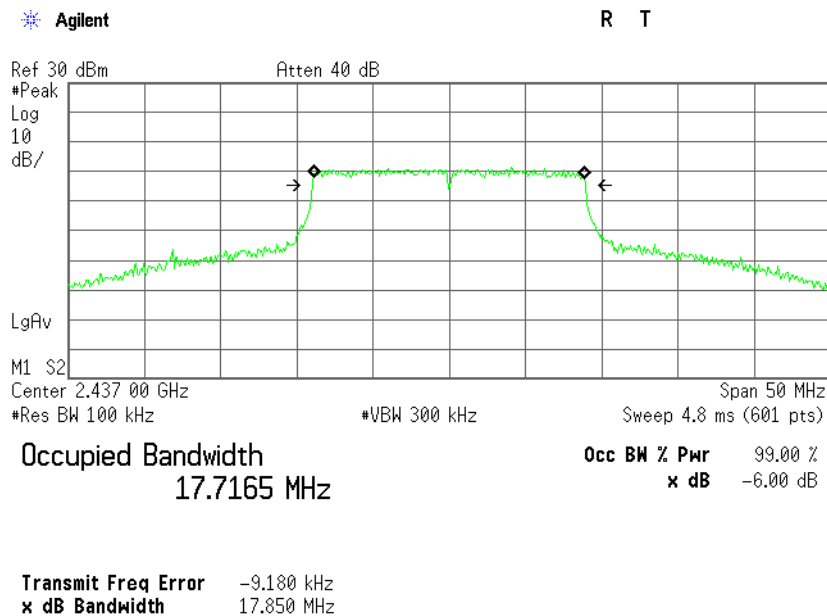
**Plot 4.1.6 6dB bandwidth test results, 802.11g Mode, Fc = 2462 MHz**



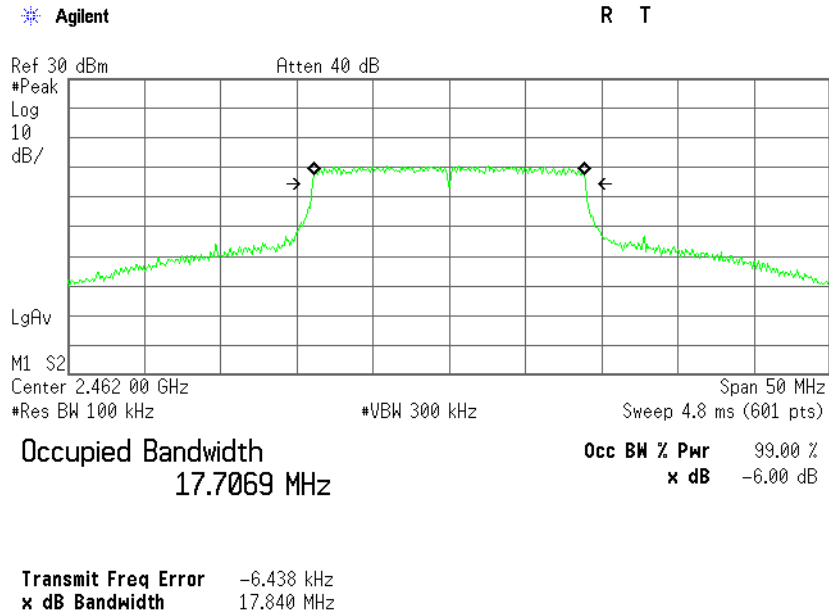
**Plot 4.1.7 6dB bandwidth test results, 802.11n 20MHz Mode, Fc = 2412 MHz**



**Plot 4.1.8 6dB bandwidth test results, 802.11n 20MHz Mode, Fc = 2437 MHz**



**Plot 4.1.9 6dB bandwidth test results, 802.11n 20MHz Mode, Fc = 2462 MHz**



#### 4.2. Maximum conducted (average) output power, 2400-2483.5 MHz

|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                           |                              |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|------------------------------|
| Reference document:     | <b>47 CFR §15.247 (b) (3)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                           |                              |
| Test Requirements:      | The maximum peak output power of the intentional radiator for systems using digital modulation in the 2400-2483.5 MHz & 5725-5850 MHz bands shall not exceed 1 Watt. Transmitters operating in the 2400-2483.5 & 5725-5850 MHz bands that emits multiple directional beams but does not emit multiple directional beams simultaneously, the total output power conducted to the arrays, i.e. the sum of the power supplied to the antenna elements, shall not exceed the limit calculated below. The total conducted output power shall be reduced by 1dB below the specified limit for each 3 dB that the directional gain of the antenna array exceeds 6dBi. |                           |                              |
| Test setup:             | See sec 2.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>Pass</b>               |                              |
| Method of testing:      | Conducted<br>KDB 558074 D01 v03r02,<br>Sec.9, 9.2.3.2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                           |                              |
| Operating conditions:   | Under normal test conditions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                           |                              |
| Environment conditions: | Ambient Temperature: 22 °C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Relative Humidity:<br>56% | Atmospheric Pressure:<br>hPa |
| Test Result:            | See below                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | ---                       |                              |

#### Test Results:

| Frequency, [MHz]    | Data Rate, [Mbps] | Measured Output (average) Power*, [dBm] | Measured Output (average) Power*, [mW] | Limit, [dBm] | Margin, [dB] | Pass/Fail |
|---------------------|-------------------|-----------------------------------------|----------------------------------------|--------------|--------------|-----------|
| <b>802.11b Mode</b> |                   |                                         |                                        |              |              |           |
| 2412                | 11                | 16.70                                   | 46.77                                  | 30.00        | -13.30       | Pass      |
| 2437                | 11                | 16.35                                   | 43.15                                  | 30.00        | -13.65       | Pass      |
| 2462                | 11                | 16.00                                   | 39.81                                  | 30.00        | -14.00       | Pass      |
| <b>802.11g Mode</b> |                   |                                         |                                        |              |              |           |
| 2412                | 54.00             | 13.61                                   | 22.96                                  | 30.00        | -16.39       | Pass      |
| 2437                | 54.00             | 14.36                                   | 27.29                                  | 30.00        | -15.64       | Pass      |
| 2462                | 54.00             | 14.06                                   | 25.47                                  | 30.00        | -15.94       | Pass      |
| <b>802.11n Mode</b> |                   |                                         |                                        |              |              |           |
| 2412                | MCS7              | 13.38                                   | 21.77                                  | 30.00        | -16.62       | Pass      |
| 2437                | MCS7              | 14.62                                   | 28.97                                  | 30.00        | -15.38       | Pass      |
| 2462                | MCS7              | 14.30                                   | 26.92                                  | 30.00        | -15.70       | Pass      |

\*Corrected for external attenuations.

#### 4.3. Peak power spectral density (peak PSD)

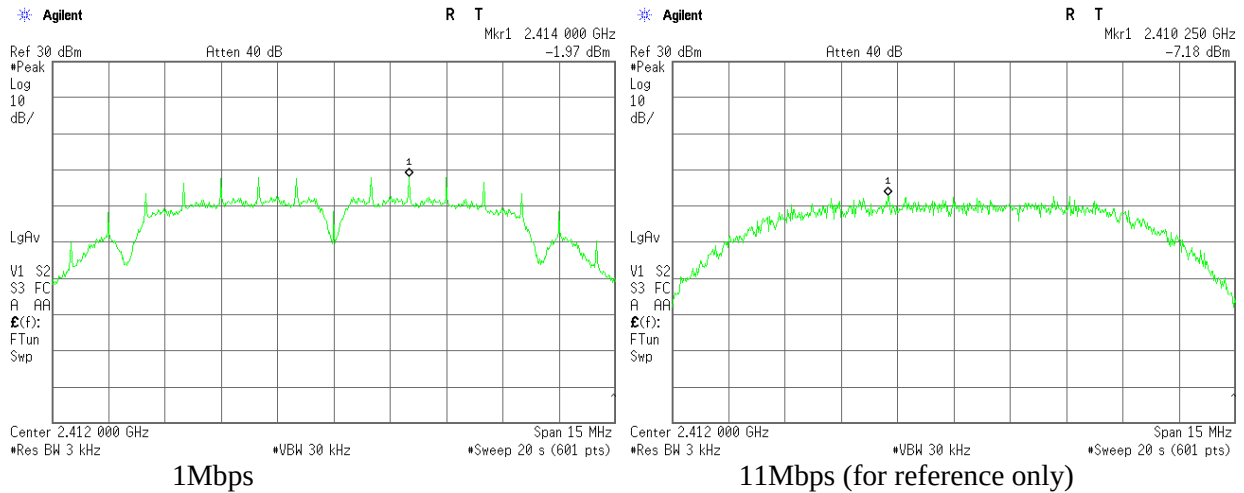
|                         |                                                                                                                                                                                                                          |                             |                           |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|---------------------------|
| Reference document:     | <b>47 CFR §15.247 (e)</b>                                                                                                                                                                                                |                             |                           |
| Test Requirements:      | For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3 kHz band during any time interval of continuous transmission. |                             |                           |
| Test setup:             | See sec 2.1                                                                                                                                                                                                              | <b>Pass</b>                 |                           |
| Method of testing:      | Conducted<br>KDB 558074 D01 v03r02, Sec.10.2                                                                                                                                                                             |                             |                           |
| Operating conditions:   | Under normal test conditions                                                                                                                                                                                             |                             |                           |
| S.A. Settings:          | RBW: 3 kHz, VBW: 10 kHz,<br>Sweep Time: Auto                                                                                                                                                                             |                             |                           |
| Environment conditions: | Ambient Temperature: 22 °C                                                                                                                                                                                               | Relative Humidity: 56%      | Atmospheric Pressure: hPa |
| Test Result:            | See below                                                                                                                                                                                                                | See Plot 4.3.1 - Plot 4.3.9 |                           |

#### Test Results:

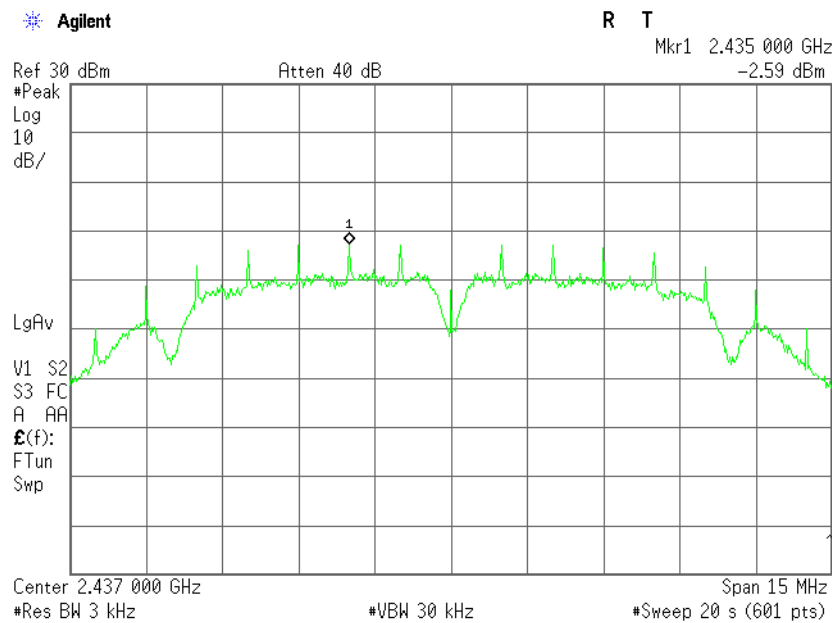
| Frequency, [MHz]          | Data Rate, [Mbps]* | Measured PSD, [dBm/3kHz] | Limit PSD, [dBm/3kHz] | Margin, [dB] | Pass/Fail |
|---------------------------|--------------------|--------------------------|-----------------------|--------------|-----------|
| <b>802.11b Mode</b>       |                    |                          |                       |              |           |
| 2412                      | 1                  | -1.97                    | 8.00                  | -9.97        | Pass      |
| 2437                      | 1                  | -2.59                    | 8.00                  | -10.59       | Pass      |
| 2462                      | 1                  | -2.98                    | 8.00                  | -10.98       | Pass      |
| <b>802.11g Mode</b>       |                    |                          |                       |              |           |
| 2412                      | 6                  | -11.67                   | 8.00                  | -19.67       | Pass      |
| 2437                      | 6                  | -12.30                   | 8.00                  | -20.3        | Pass      |
| 2462                      | 6                  | -12.44                   | 8.00                  | -20.44       | Pass      |
| <b>802.11n 20MHz Mode</b> |                    |                          |                       |              |           |
| 2412                      | MCS0               | -11.28                   | 8.00                  | -19.28       | Pass      |
| 2437                      | MCS0               | -12.43                   | 8.00                  | -20.43       | Pass      |
| 2462                      | MCS0               | -12.16                   | 8.00                  | -20.16       | Pass      |

\*The worst case of Data rate

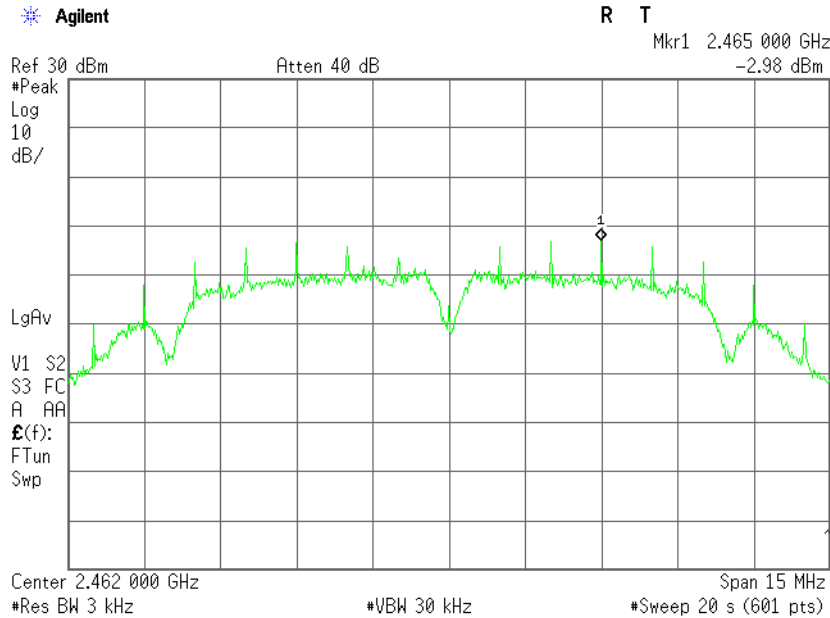
**Plot 4.3.1 Peak PSD test results, 802.11b Mode, Fc = 2412 MHz**



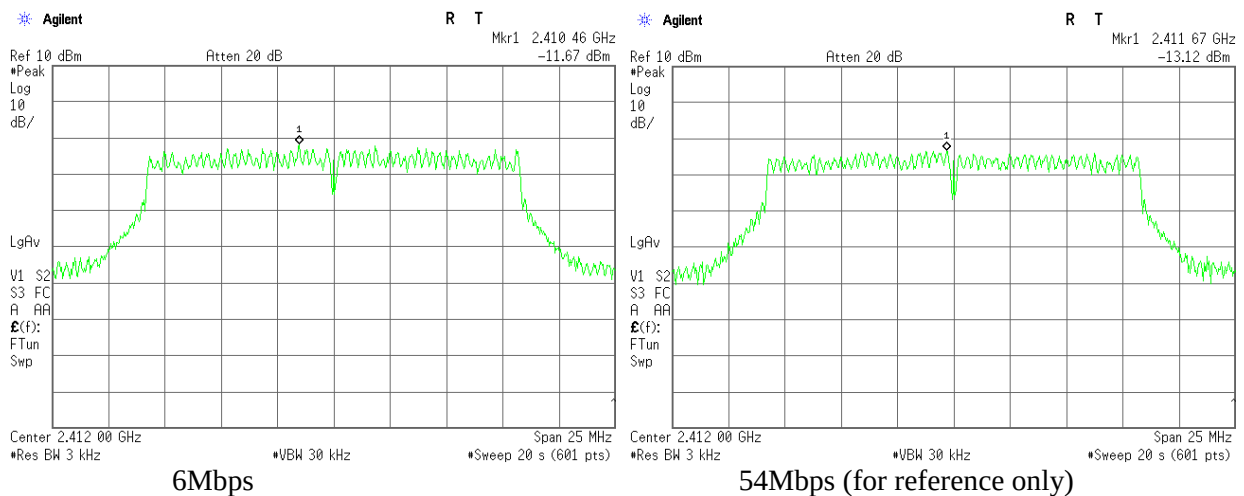
**Plot 4.3.2 Peak PSD test results, 802.11b Mode, Fc = 2437 MHz**



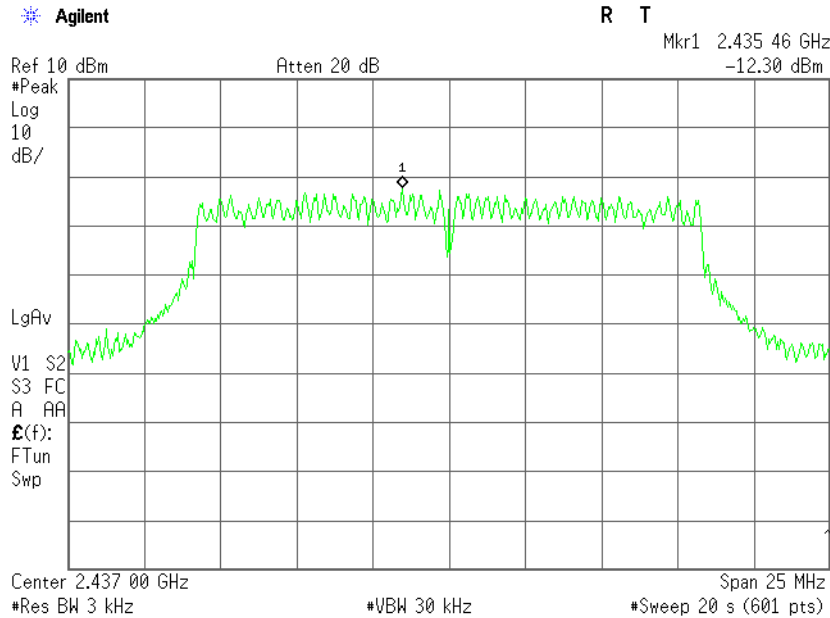
**Plot 4.3.3 Peak PSD test results, 802.11b Mode, Fc = 2462 MHz**



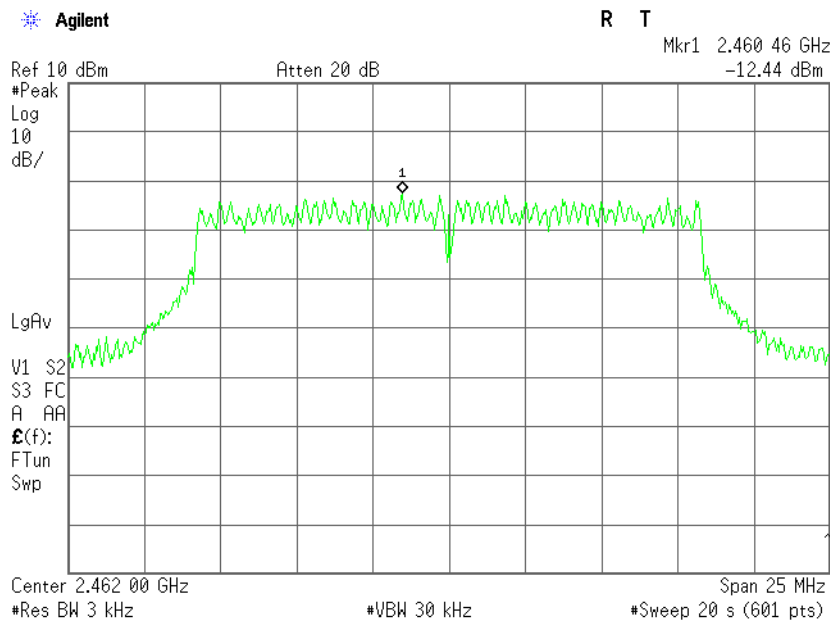
**Plot 4.3.4 Peak PSD test results, 802.11g Mode, Fc = 2412 MHz**



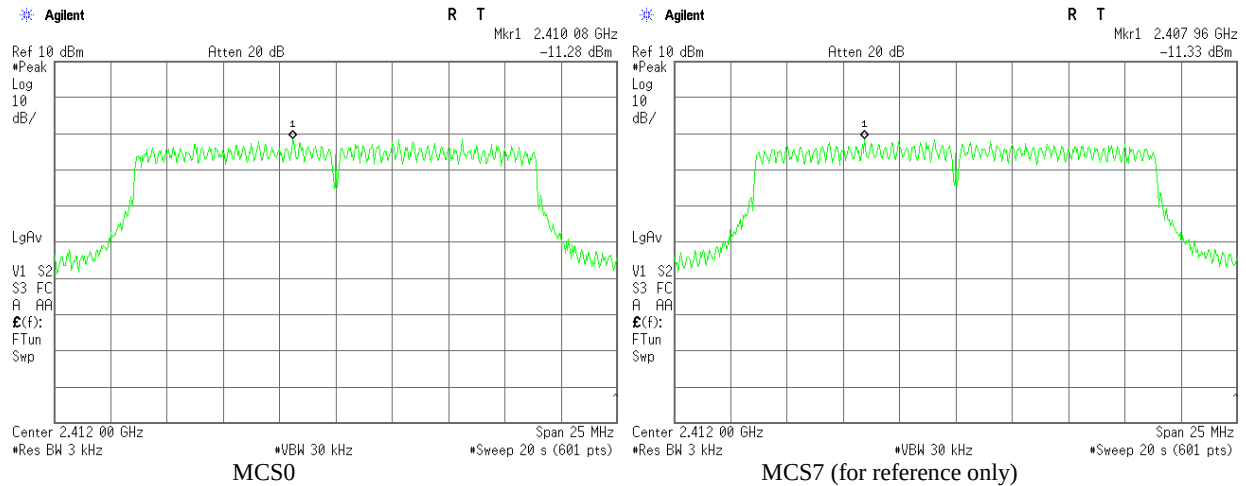
**Plot 4.3.5 Peak PSD test results, 802.11g Mode, Fc = 2437 MHz**



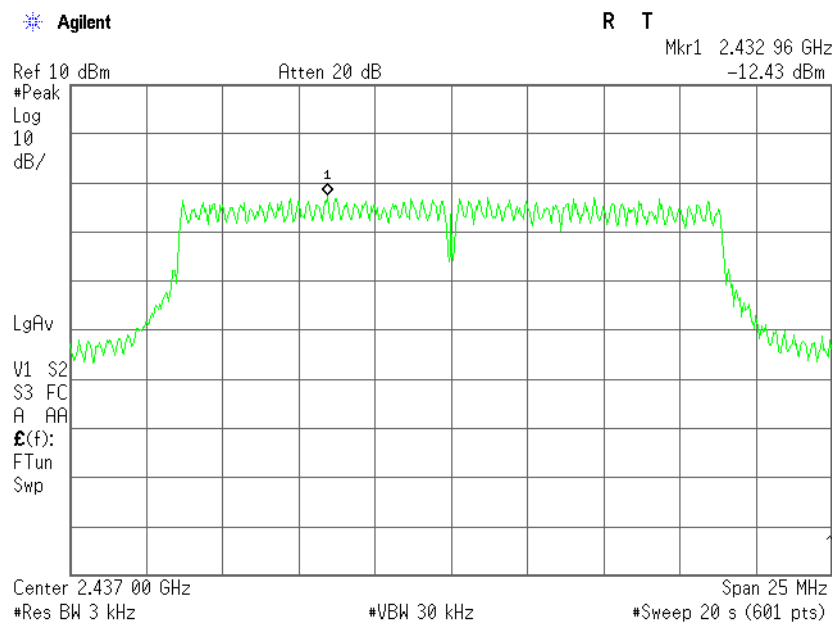
**Plot 4.3.6 Peak PSD test results, 802.11g Mode, Fc = 2462 MHz**



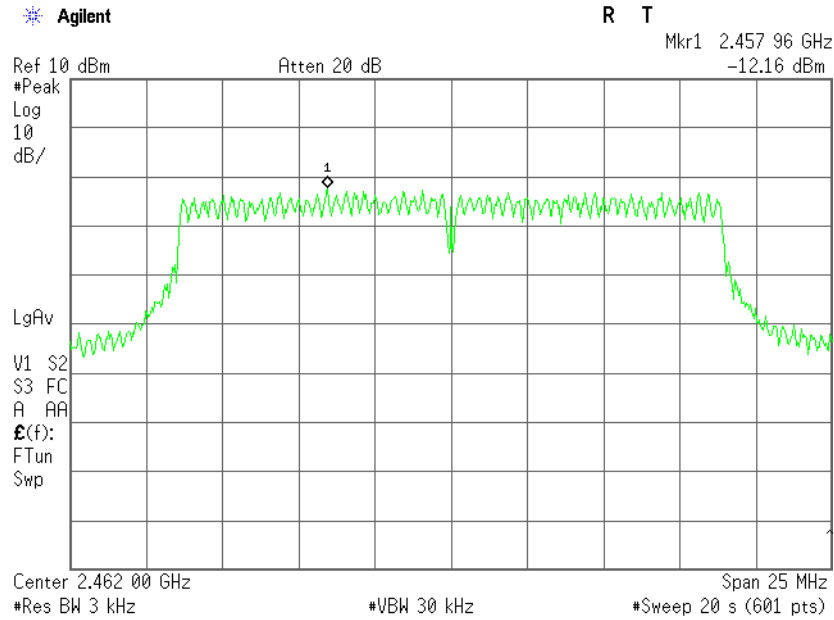
**Plot 4.3.7 Peak PSD test results, 802.11n 20MHz Mode, Fc = 2412 MHz**



**Plot 4.3.8 Peak PSD test results, 802.11n 20MHz Mode, Fc = 2437 MHz**



**Plot 4.3.9 Peak PSD test results, 802.11n 20MHz Mode, Fc = 2462 MHz**



#### 4.4. Conducted Spurious Emissions

|                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                             |                              |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|------------------------------|
| Reference document:     | <b>47 CFR §15.247 (d)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                             |                              |
| Test Requirements:      | In any 100 kHz bandwidth outside the frequency band in which the digitally modulated 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 30dB instead of 20dB. Attenuation below the general limits specified in Section §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (See §15.205(c). |                             |                              |
| Test setup:             | See sec 2.1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <b>Pass</b>                 |                              |
| Method of testing:      | Conducted<br>KDB 558074 D01 v03r02, Sec.11.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                             |                              |
| Operating conditions:   | Under normal test conditions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                             |                              |
| S.A. Settings:          | RBW: 100kHz, VBW:300kHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                             |                              |
| Environment conditions: | Ambient Temperature: 22 °C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Relative Humidity:<br>56%   | Atmospheric Pressure:<br>hPa |
| Test Result:            | See below                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | See Plot 4.4.1- Plot 4.4.33 |                              |

#### Test Results:

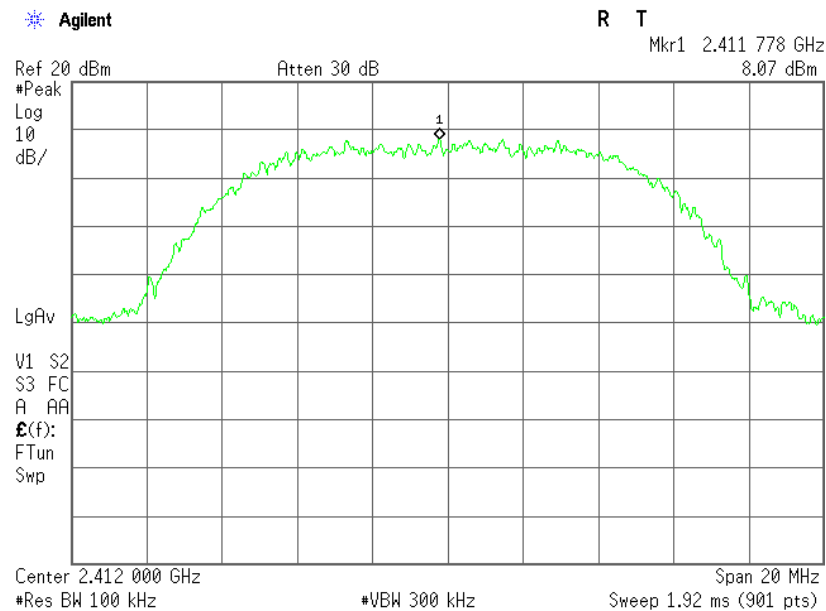
| Fundamental Frequency, [MHz] | Data Rate, [Mbps] | Fundamental Emission Reference Level, [dBm] | Unwanted Emissions Frequency, [MHz] | Unwanted Emissions Level, [dBm] | Attenuation below Reference Level, [dBc] | Limit, [dBc] | Margin [dB] |
|------------------------------|-------------------|---------------------------------------------|-------------------------------------|---------------------------------|------------------------------------------|--------------|-------------|
| <b>802.11b Mode</b>          |                   |                                             |                                     |                                 |                                          |              |             |
| 2412                         | 11                | 8.07                                        | *                                   | *                               | *                                        | ≥ 30         | > 15        |
| 2437                         | 11                | 7.62                                        | *                                   | *                               | *                                        | ≥ 30         | > 15        |
| 2462                         | 11                | 7.24                                        | *                                   | *                               | *                                        | ≥ 30         | > 15        |
| <b>802.11g Mode</b>          |                   |                                             |                                     |                                 |                                          |              |             |
| 2412                         | 54                | 1.14                                        | *                                   | *                               | *                                        | ≥ 30         | > 15        |
| 2437                         | 54                | 0.70                                        | *                                   | *                               | *                                        | ≥ 30         | > 15        |
| 2462                         | 54                | 0.61                                        | *                                   | *                               | *                                        | ≥ 30         | > 15        |
| <b>802.11n – 20MHz mode</b>  |                   |                                             |                                     |                                 |                                          |              |             |
| 2412                         | MCS7              | 1.73                                        | *                                   | *                               | *                                        | ≥ 30         | > 15        |
| 2437                         | MCS7              | 1.62                                        | *                                   | *                               | *                                        | ≥ 30         | > 15        |
| 2462                         | MCS7              | 0.63                                        | *                                   | *                               | *                                        | ≥ 30         | > 15        |

\*All emissions at least 20 dB below the limit

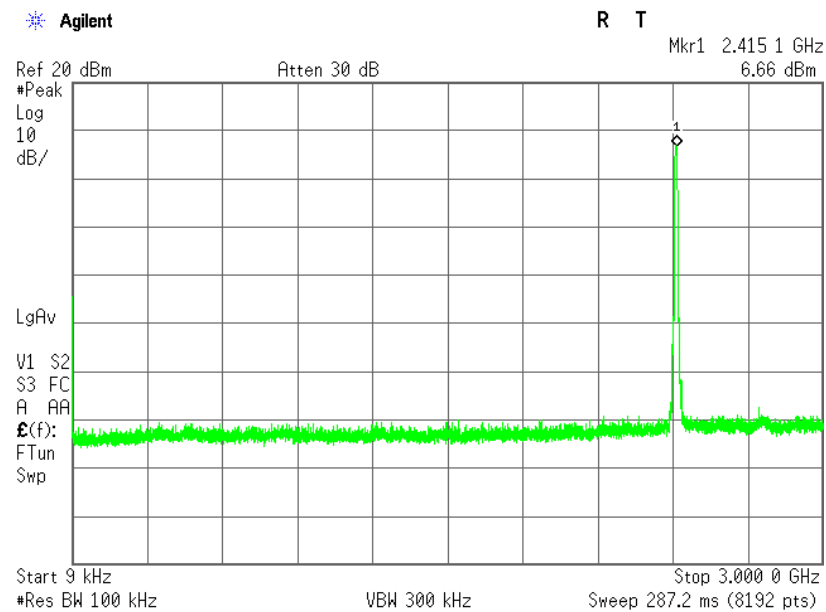
## Band Edge

| Frequency, [MHz]          | Data Rate, [Mbps] | Measured, [dBc] | Limit, [dBc] | Margin |
|---------------------------|-------------------|-----------------|--------------|--------|
| <b>802.11b Mode</b>       |                   |                 |              |        |
| 2412                      | 11                | -41.19          | -30.00       | -11.19 |
| 2462                      | 11                | -53.39          | -30.00       | -23.39 |
| <b>802.11g Mode</b>       |                   |                 |              |        |
| 2412                      | 54                | -41.96          | -30.00       | -11.96 |
| 2462                      | 54                | -56.01          | -30.00       | -26.01 |
| <b>802.11n 20MHz Mode</b> |                   |                 |              |        |
| 2412                      | MCS7              | -31.18          | -30.00       | -1.18  |
| 2462                      | MCS7              | -34.57          | -30.00       | -4.57  |

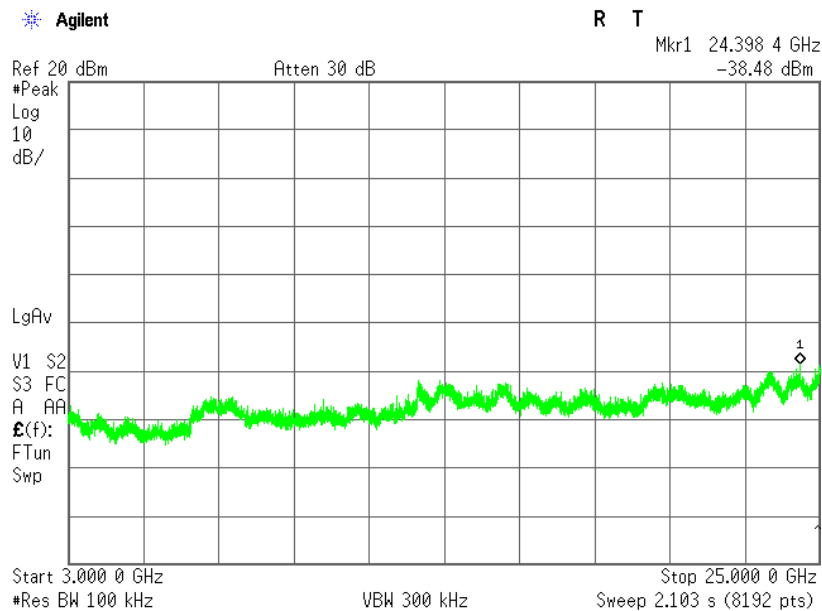
**Plot 4.4.1 Conducted Spurious Emissions test results, 802.11b Mode,  $F_c = 2412$  MHz, reference level**



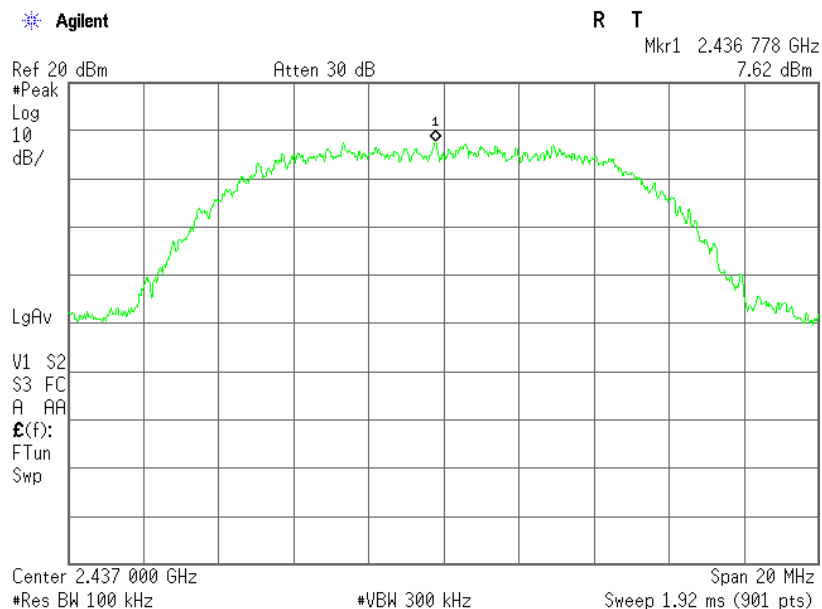
**Plot 4.4.2 Conducted Spurious Emissions test results, 802.11b Mode,  $F_c = 2412$  MHz, 9 kHz – 3 GHz range**



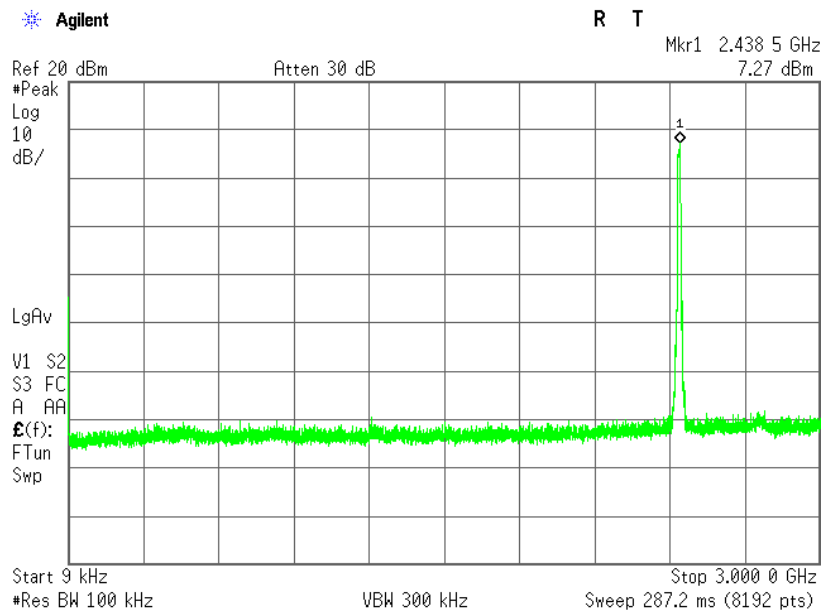
**Plot 4.4.3 Conducted Spurious Emissions test results, 802.11b Mode,  $F_c = 2412$  MHz, 3 GHz – 25 GHz range**



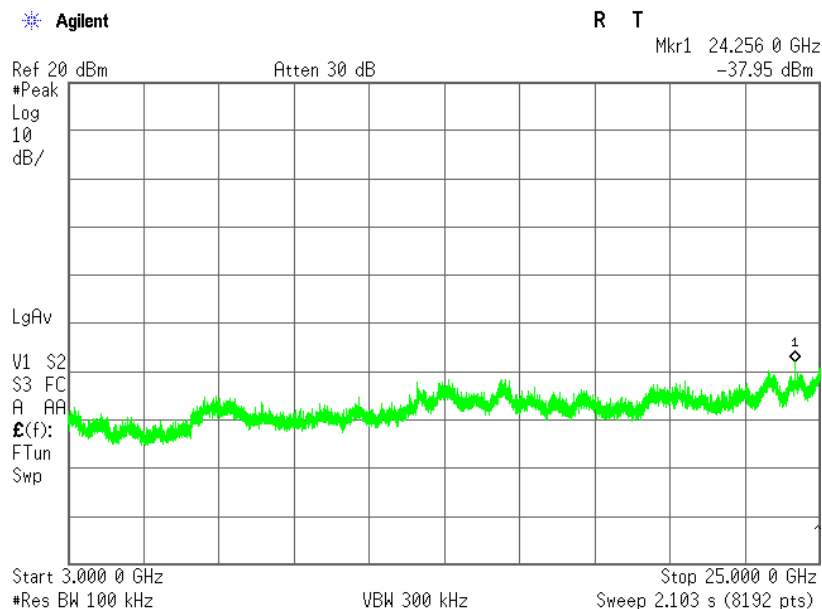
**Plot 4.4.4 Conducted Spurious Emissions test results, 802.11b Mode,  $F_c = 2437$  MHz, reference level**



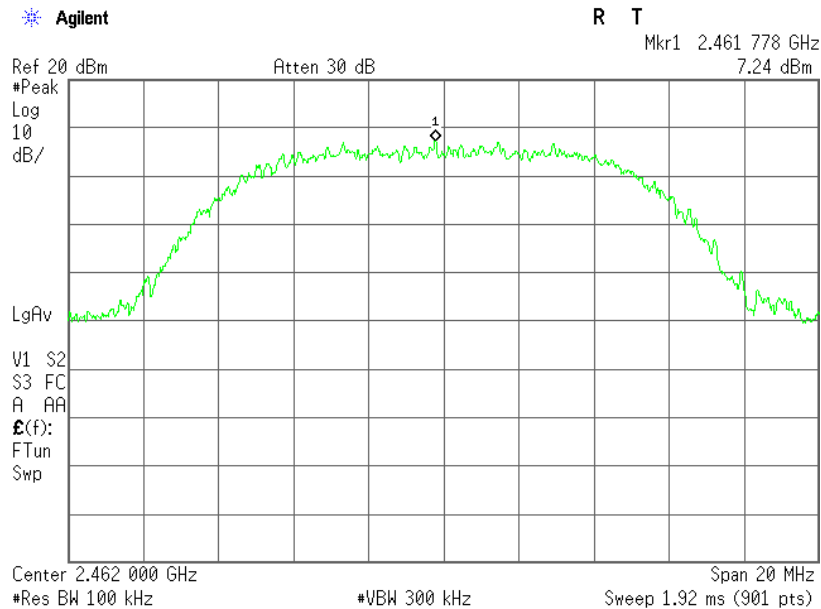
**Plot 4.4.5 Conducted Spurious Emissions test results, 802.11b Mode,  $F_c = 2437$  MHz, 9 kHz – 3 GHz range**



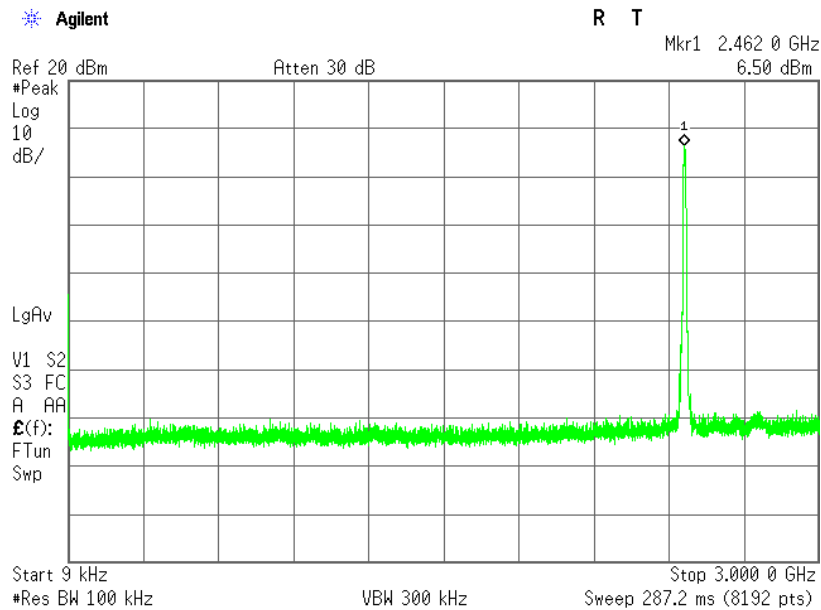
**Plot 4.4.6 Conducted Spurious Emissions test results, 802.11b Mode,  $F_c = 2437$  MHz, 3 GHz – 25 GHz range**



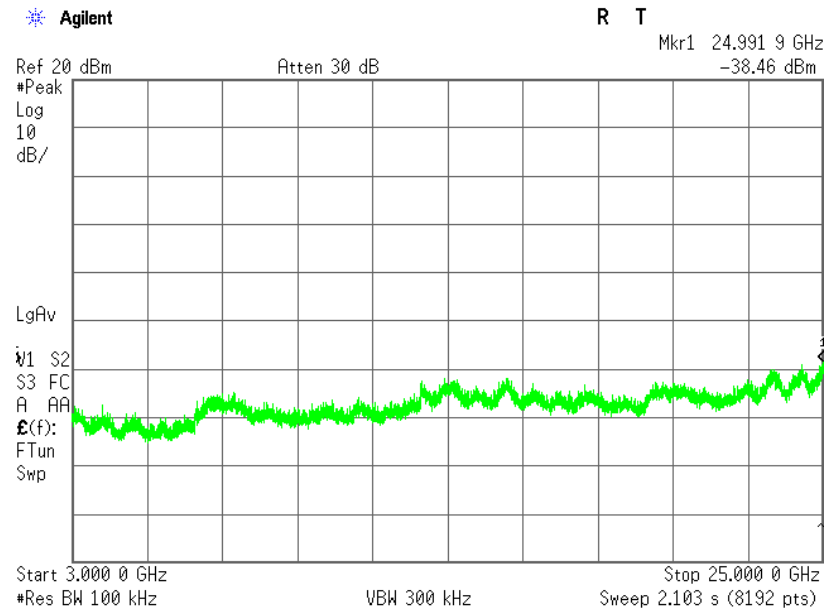
**Plot 4.4.7 Conducted Spurious Emissions test results, 802.11b Mode,  $F_c = 2462$  MHz, reference level**



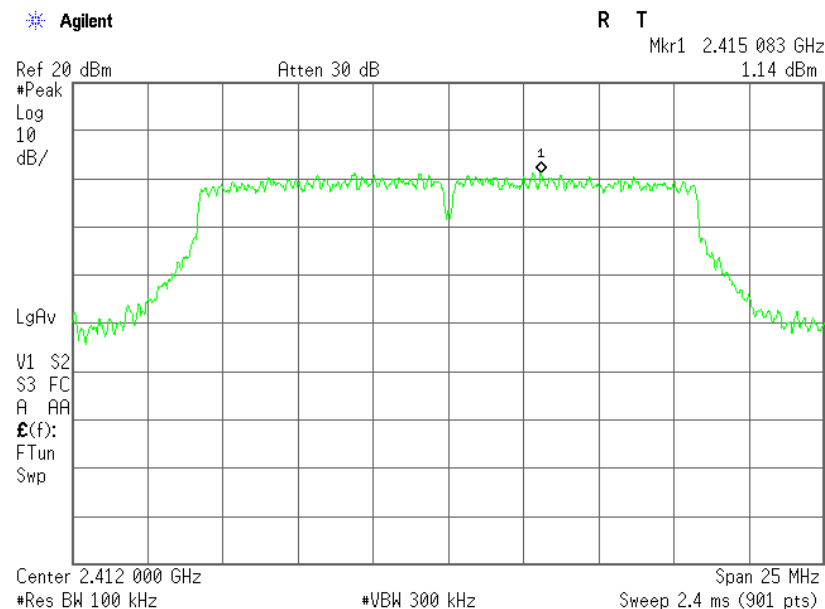
**Plot 4.4.8 Conducted Spurious Emissions test results, 802.11b Mode,  $F_c = 2462$  MHz, 9 kHz – 3 GHz range**



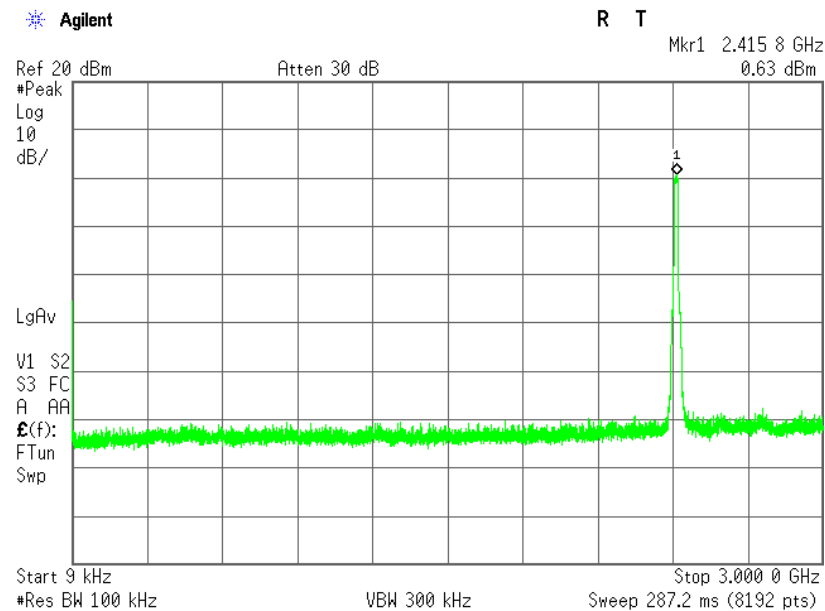
**Plot 4.4.9 Conducted Spurious Emissions test results, 802.11b Mode,  $F_c = 2462$  MHz, 3 GHz – 25 GHz range**



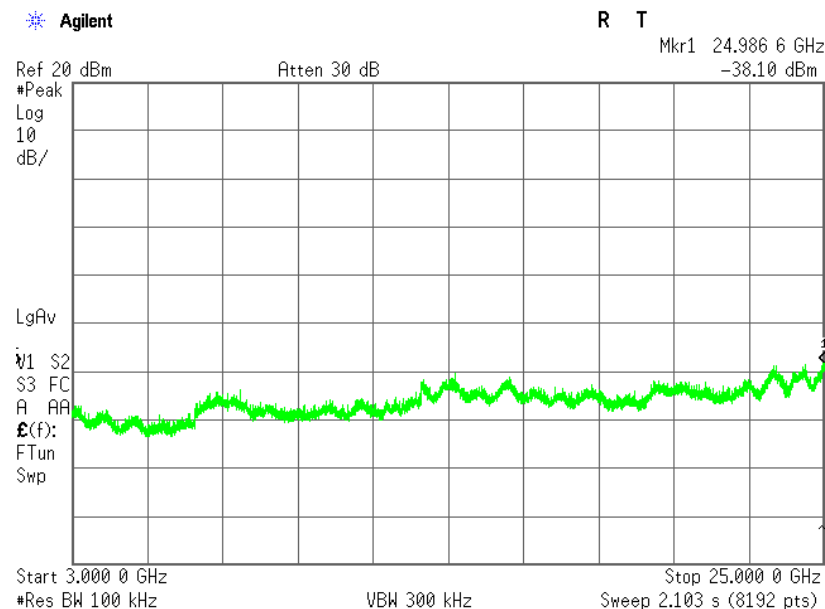
**Plot 4.4.10 Conducted Spurious Emissions test results, 802.11g Mode,  $F_c = 2412$  MHz, reference level**



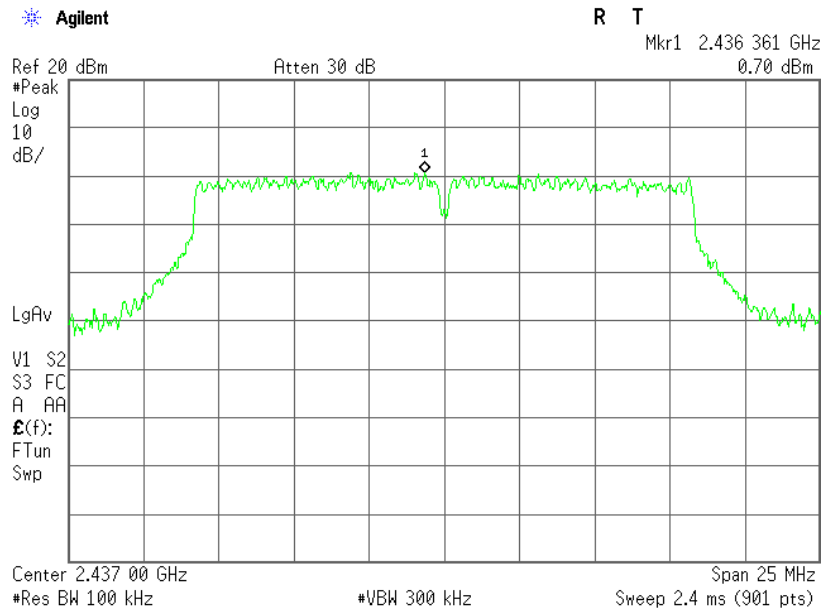
**Plot 4.4.11 Conducted Spurious Emissions test results, 802.11g Mode,  $F_c = 2412$  MHz, 9 kHz – 3 GHz range**



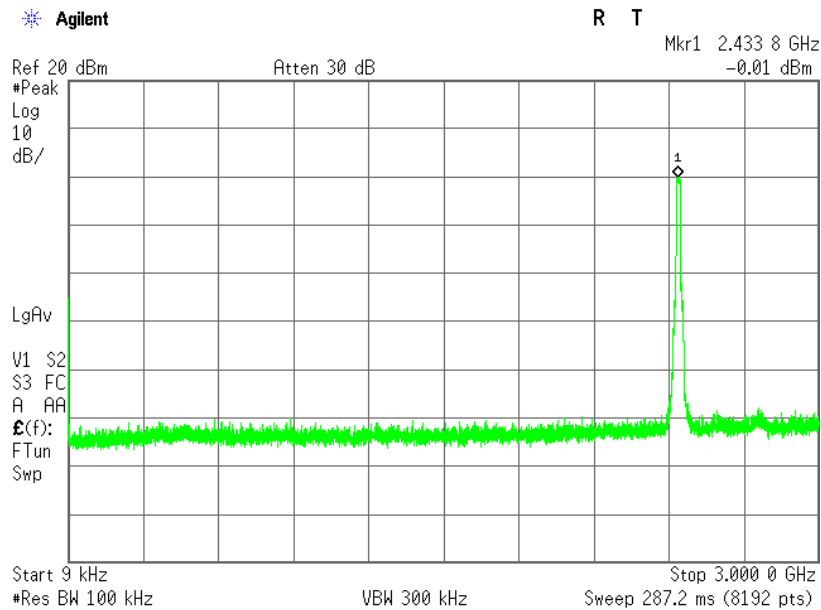
**Plot 4.4.12 Conducted Spurious Emissions test results, 802.11g Mode,  $F_c = 2412$  MHz, 3 GHz – 25 GHz range**



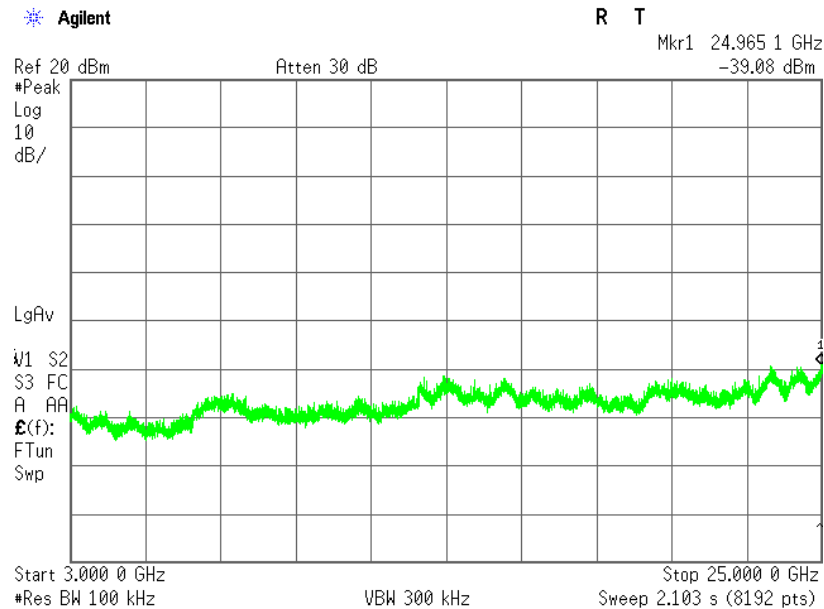
**Plot 4.4.13 Conducted Spurious Emissions test results, 802.11g Mode,  $F_c = 2437$  MHz, reference level**



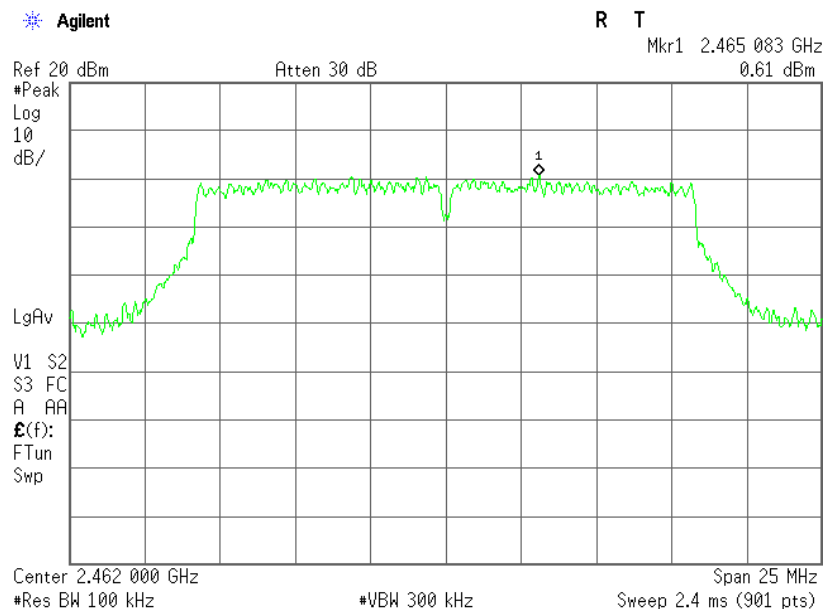
**Plot 4.4.14 Conducted Spurious Emissions test results, 802.11g Mode,  $F_c = 2437$  MHz, 9 kHz – 3 GHz range**



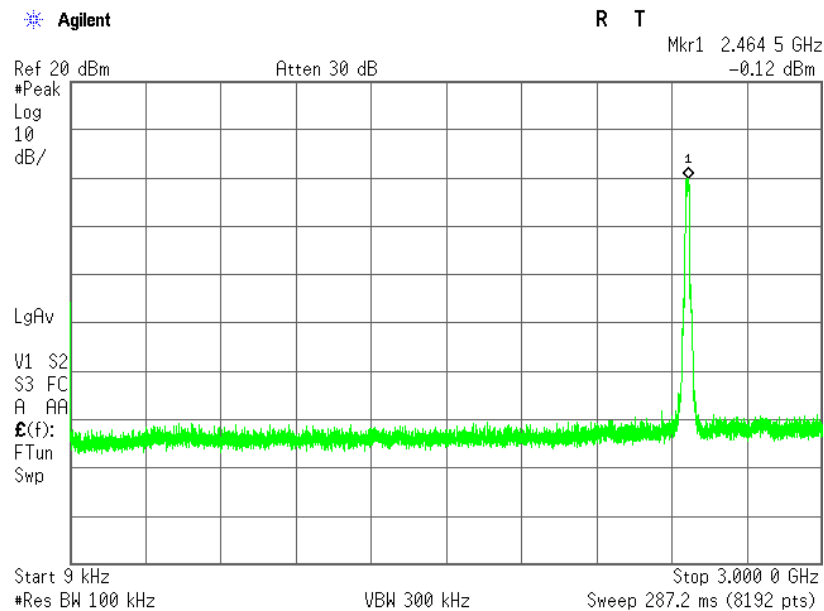
**Plot 4.4.15 Conducted Spurious Emissions test results, 802.11g Mode, Fc = 2437 MHz, 3 GHz – 25 GHz range**



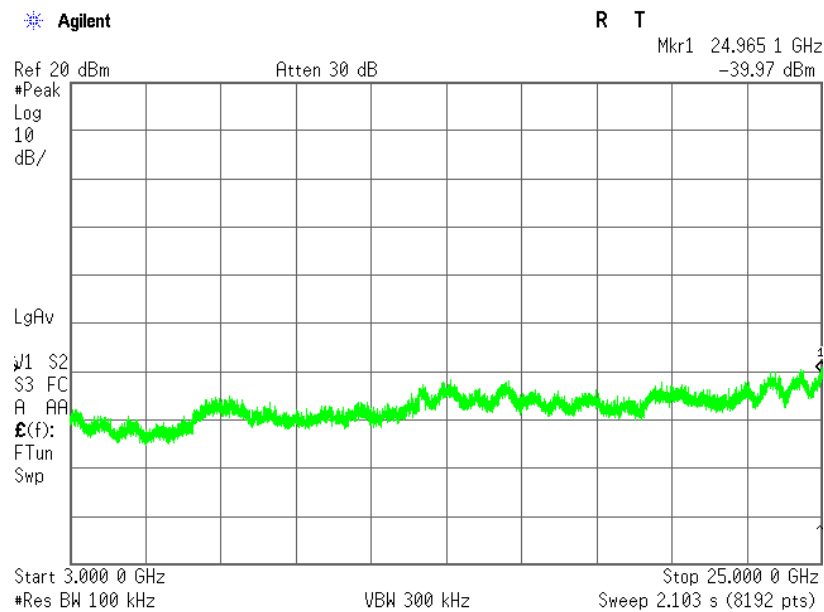
**Plot 4.4.16 Conducted Spurious Emissions test results, 802.11g Mode, Fc = 2462 MHz, reference level**



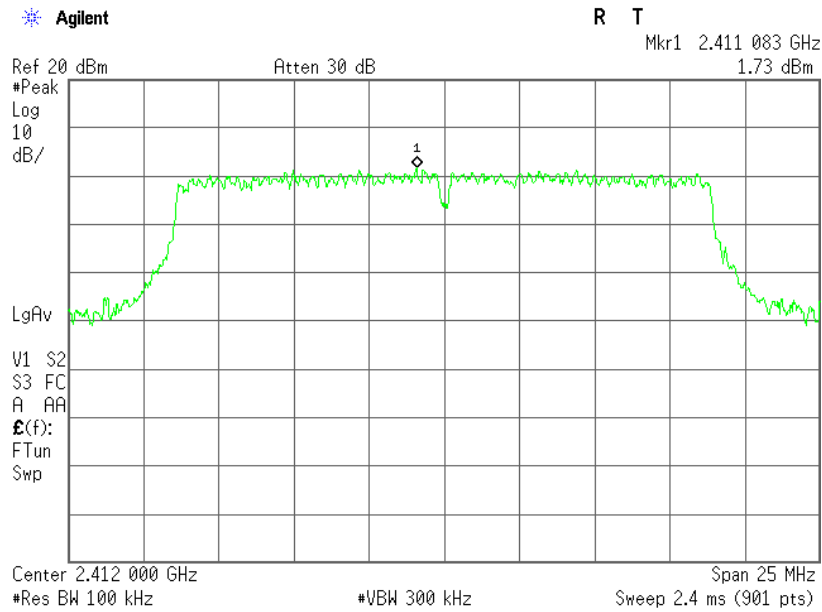
**Plot 4.4.17 Conducted Spurious Emissions test results, 802.11g Mode,  $F_c = 2462$  MHz, 9 kHz – 3 GHz range**



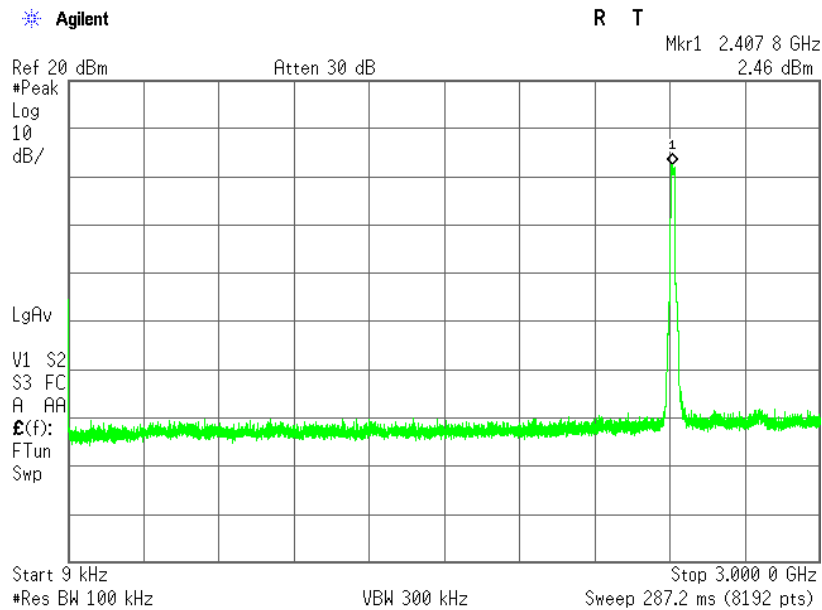
**Plot 4.4.18 Conducted Spurious Emissions test results, 802.11g Mode,  $F_c = 2462$  MHz, 3 GHz – 25 GHz range**



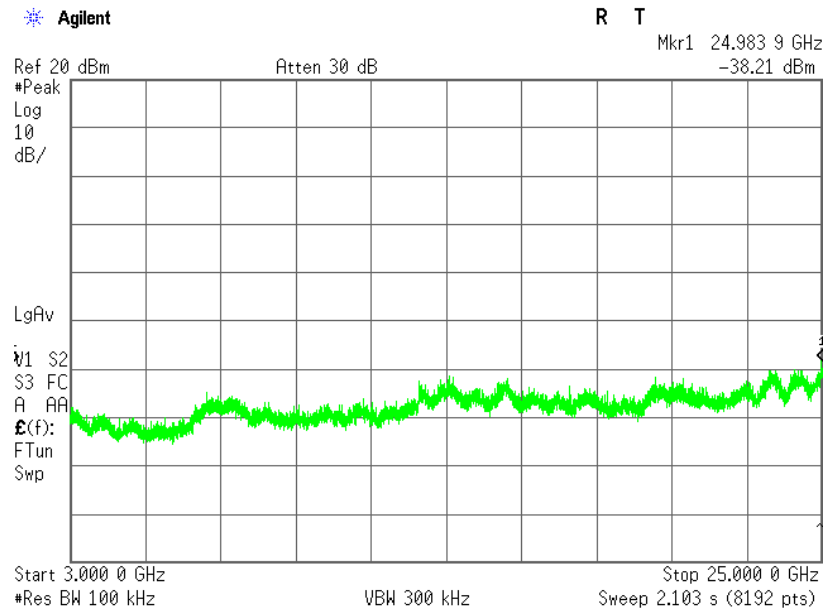
**Plot 4.4.19 Conducted Spurious Emissions test results, 802.11n 20MHz Mode, Fc = 2412 MHz, reference level**



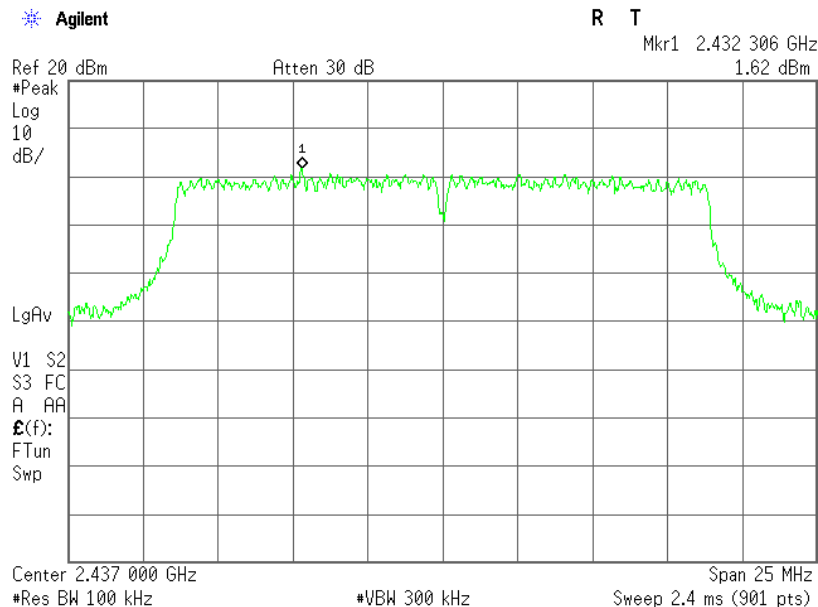
**Plot 4.4.20 Conducted Spurious Emissions test results, 802.11n 20MHz Mode, Fc = 2412 MHz, 9 kHz – 3 GHz range**



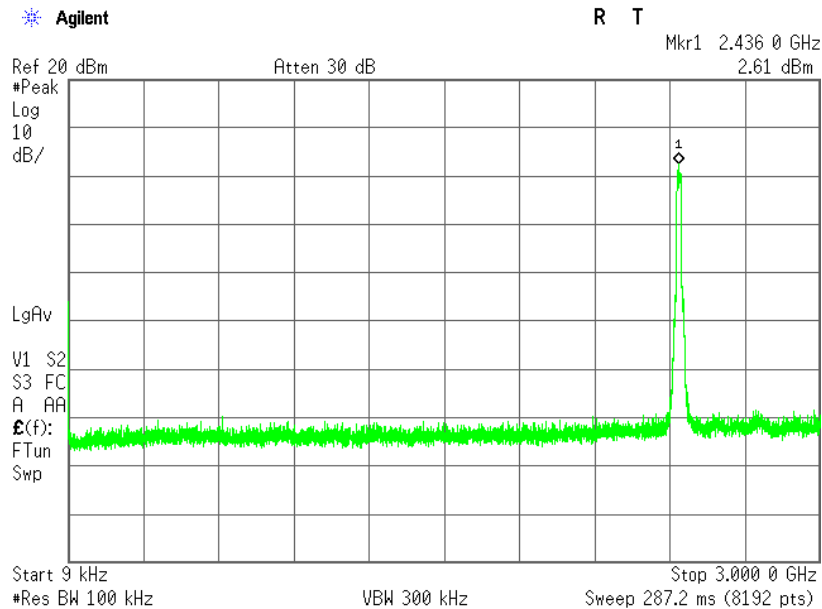
**Plot 4.4.21 Conducted Spurious Emissions test results, 802.11n 20MHz Mode, Fc = 2412 MHz, 3 GHz – 25 GHz range**



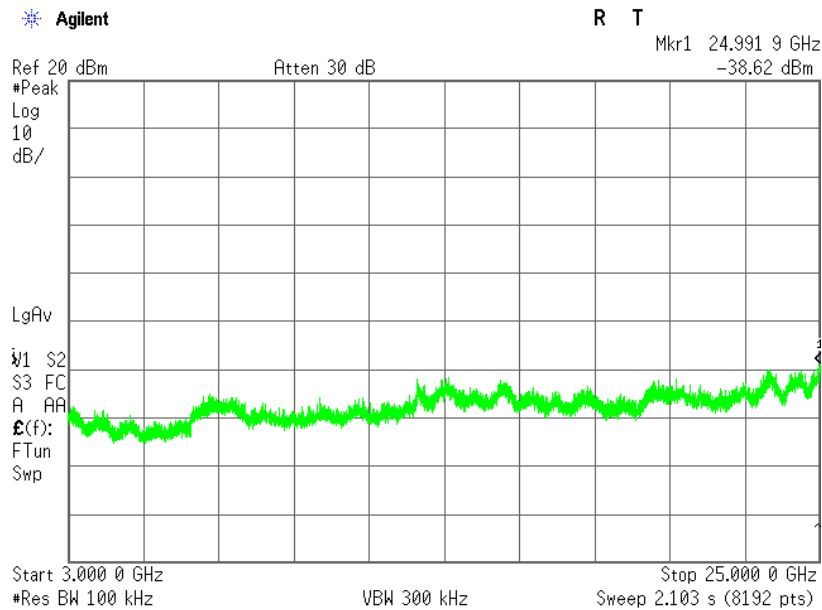
**Plot 4.4.22 Conducted Spurious Emissions test results, 802.11n 20MHz Mode, Fc = 2437 MHz, reference level**



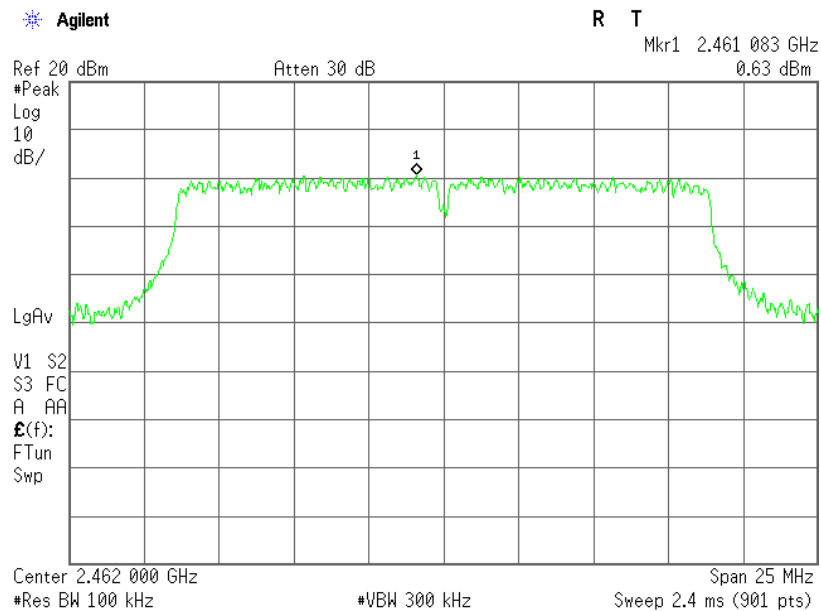
**Plot 4.4.23 Conducted Spurious Emissions test results, 802.11n 20MHz Mode, Fc = 2437 MHz, 9 kHz – 3 GHz range**



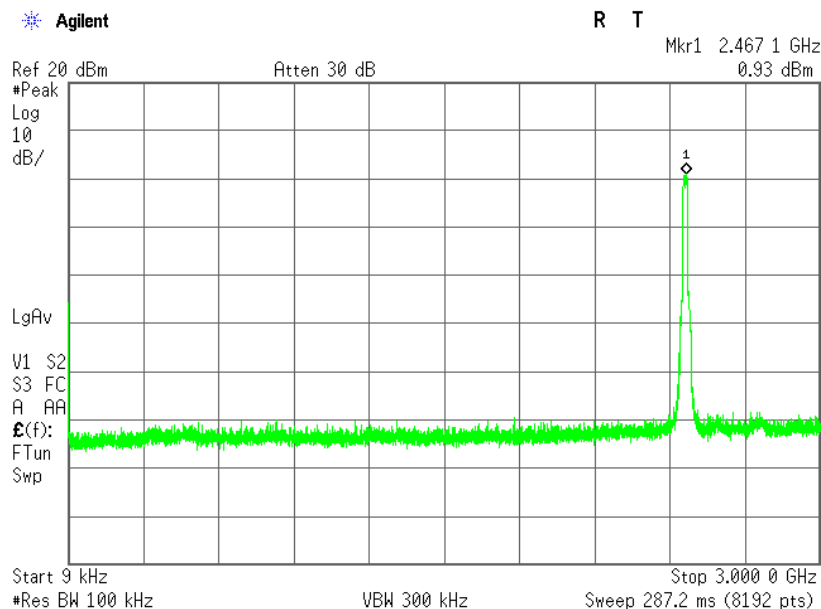
**Plot 4.4.24 Conducted Spurious Emissions test results, 802.11n 20MHz Mode, Fc = 2437 MHz, 3 GHz – 25 GHz range**



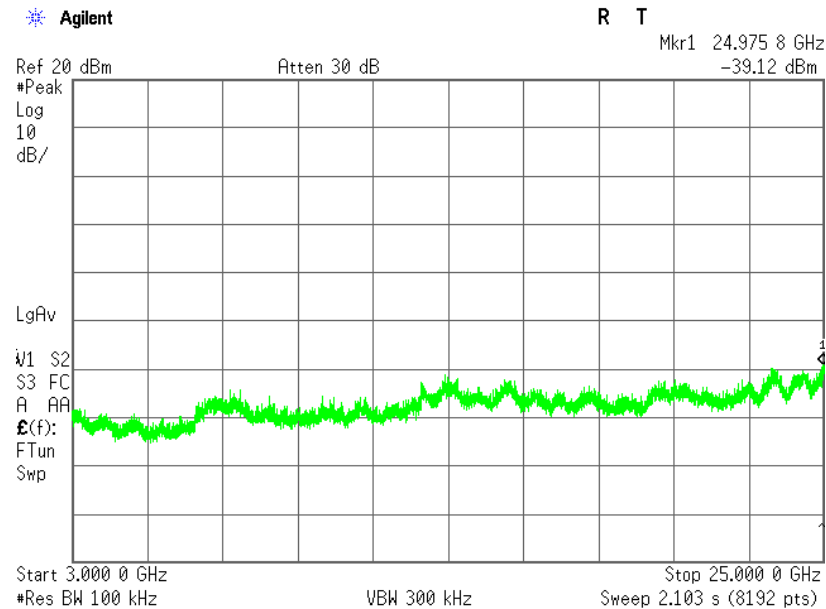
**Plot 4.4.25 Conducted Spurious Emissions test results, 802.11n 20MHz Mode, Fc = 2462 MHz, reference level**



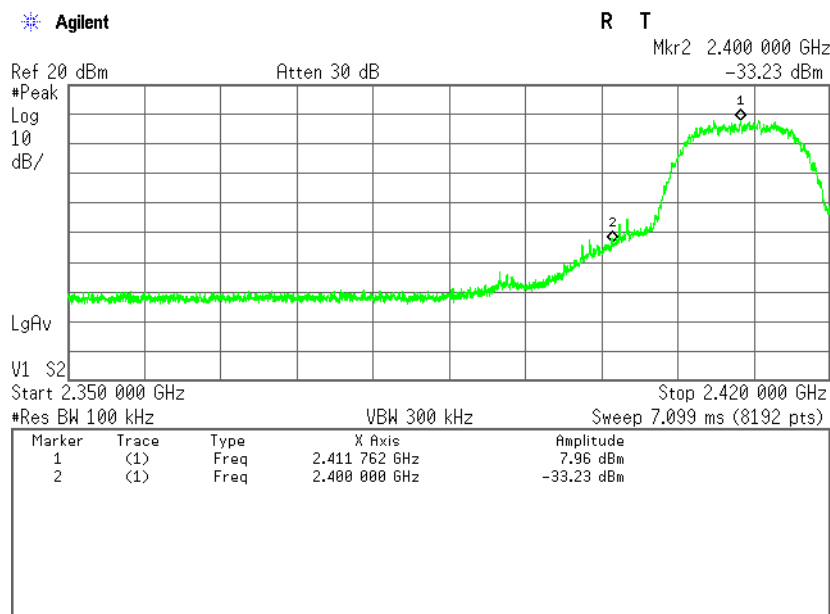
**Plot 4.4.26 Conducted Spurious Emissions test results, 802.11n 20MHz Mode, Fc = 2462 MHz, 9 kHz – 3 GHz range**



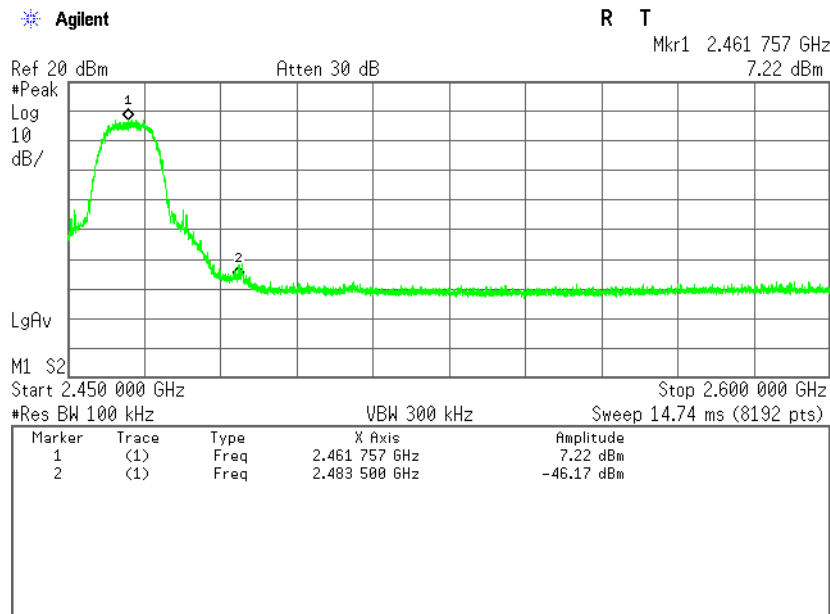
**Plot 4.4.27 Conducted Spurious Emissions test results, 802.11n 20MHz Mode, Fc = 2462 MHz, 3 GHz – 25 GHz range**



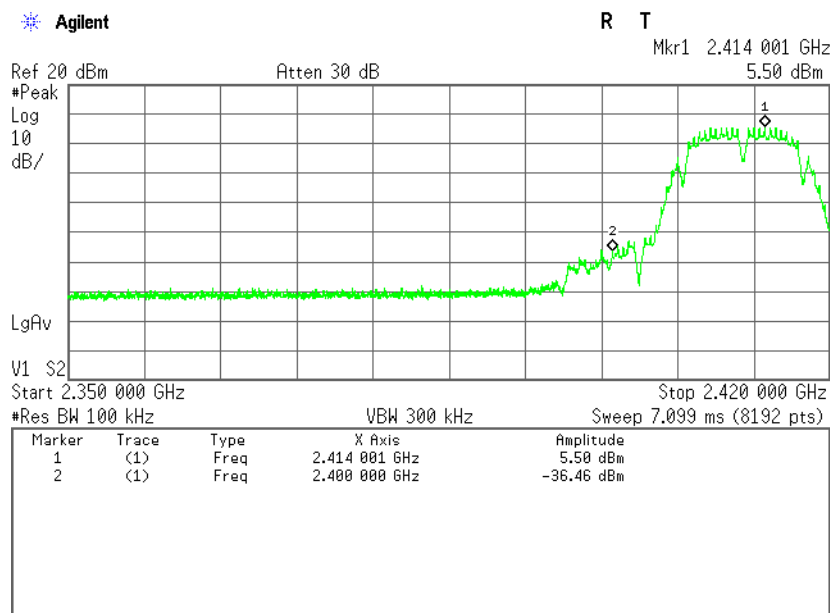
**Plot 4.4.28 Band Edge test results, 802.11b Mode, Fc = 2412 MHz**



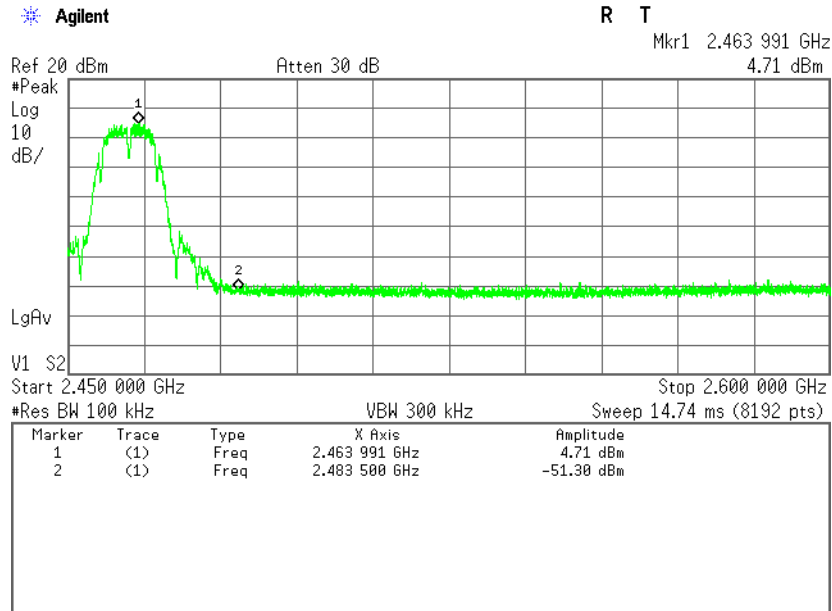
**Plot 4.4.29 Band Edge test results, 802.11b Mode, Fc = 2462 MHz**



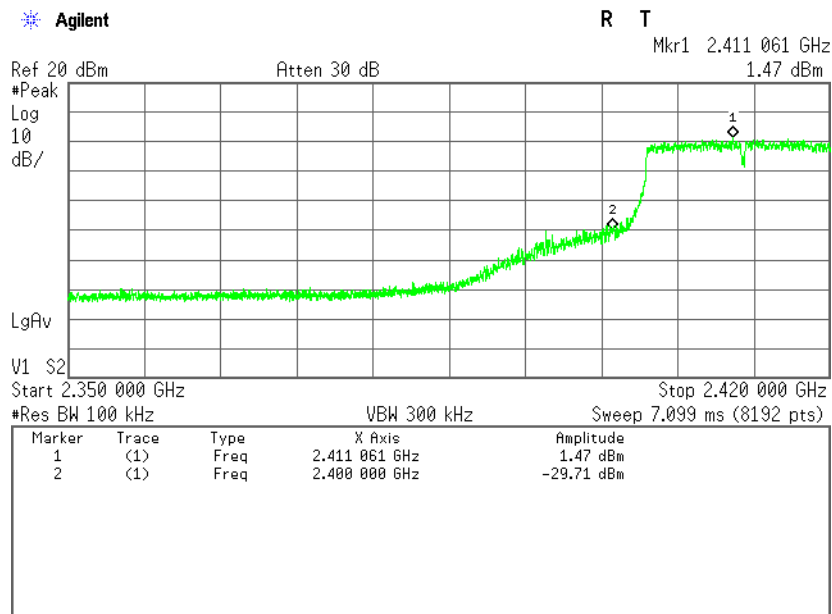
**Plot 4.4.30 Band Edge test results, 802.11g Mode, Fc = 2412 MHz**



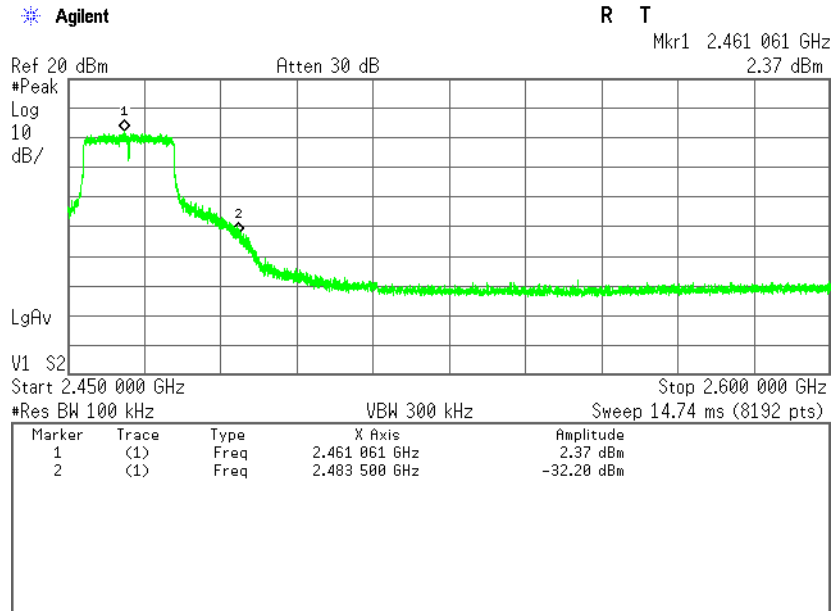
**Plot 4.4.31 Band Edge test results, 802.11g Mode, Fc = 2462 MHz**



**Plot 4.4.32 Band Edge test results, 802.11n 20MHz Mode, Fc = 2412 MHz**



**Plot 4.4.33 Band Edge test results, 802.11n 20MHz Mode, Fc = 2462 MHz**



#### 4.5. Radiated Spurious Emissions, Restricted Bands 2310-2390MHz & 2483.5-2500MHz

|                         |                                                                                                                                                                               |                               |                           |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------|
| Reference document:     | <b>47 CFR §15.247 (d) &amp; §15.205</b>                                                                                                                                       |                               |                           |
| Test Requirements:      | Radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (See §15.205(c)). |                               |                           |
| Test setup:             | See sec 2.2                                                                                                                                                                   | <b>Pass</b>                   |                           |
| Method of testing:      | Radiated                                                                                                                                                                      |                               |                           |
| Operating conditions:   | Under normal test conditions                                                                                                                                                  |                               |                           |
| S.A. Settings:          | Peak: RBW= 1MHz, VBW= 3MHz,<br>Average: VBW= 10 Hz                                                                                                                            |                               |                           |
| Environment conditions: | Ambient Temperature: 22 °c                                                                                                                                                    | Relative Humidity:48%         | Atmospheric Pressure: hPa |
| Test Result:            | See below                                                                                                                                                                     | See Plot 4.5.1 to Plot 4.5.12 |                           |

#### Test results:

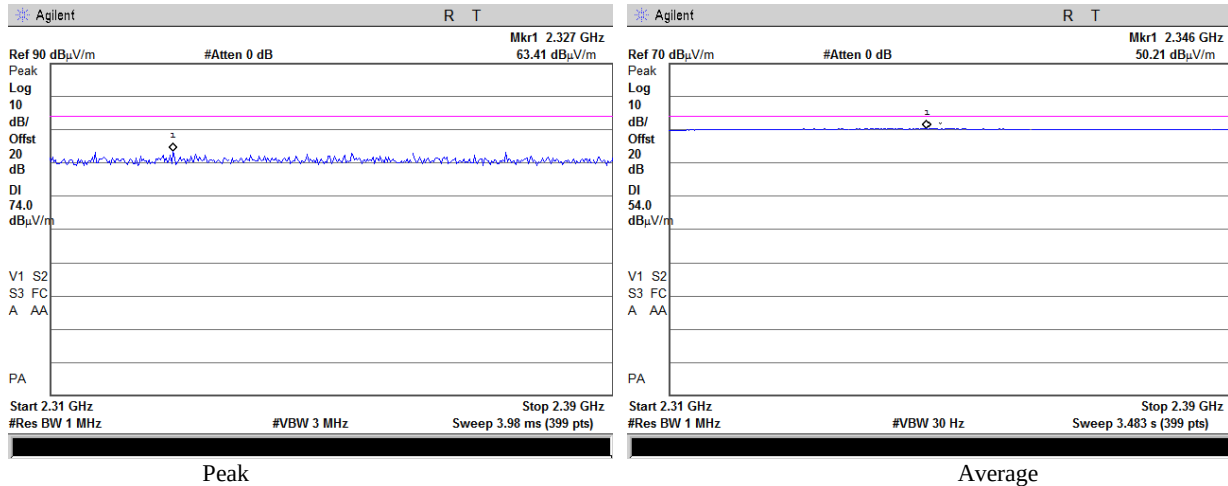
All measurements were performed in horizontal and vertical polarizations; the results show the worst case.

| Frequency, [MHz]    | Data Rate, [Mbps] | Emission Frequency, [MHz] | Detector Type | Antenna Polarization | Emission Level, [dBμV/m] | Limit, [dBμV/m] | Margin, [dB] |
|---------------------|-------------------|---------------------------|---------------|----------------------|--------------------------|-----------------|--------------|
| <b>802.11b Mode</b> |                   |                           |               |                      |                          |                 |              |
| 2412                | 11                | 2327                      | Peak          | H                    | 63.41                    | 74.00           | -10.59       |
| 2412                | 11                | 2346                      | Average       | H                    | 50.21                    | 54.00           | -3.79        |
| 2412                | 11                | 2342                      | Peak          | V                    | 63.16                    | 74.00           | -10.84       |
| 2412                | 11                | 2390                      | Average       | V                    | 50.23                    | 54.00           | -3.77        |
| 2462                | 11                | 2492                      | Peak          | H                    | 64.53                    | 74.00           | -9.47        |
| 2462                | 11                | 2500                      | Average       | H                    | 50.35                    | 54.00           | -3.65        |
| 2462                | 11                | 2485                      | Peak          | V                    | 64.34                    | 74.00           | -9.66        |
| 2462                | 11                | 2484                      | Average       | V                    | 50.47                    | 54.00           | -3.53        |
| <b>802.11g Mode</b> |                   |                           |               |                      |                          |                 |              |
| 2412                | 54                | 2330                      | Peak          | H                    | 64.92                    | 74.00           | -9.08        |
| 2412                | 54                | 2332                      | Average       | H                    | 50.27                    | 54.00           | -3.73        |
| 2412                | 54                | 2390                      | Peak          | V                    | 64.27                    | 74.00           | -9.73        |
| 2412                | 54                | 2390                      | Average       | V                    | 52.05                    | 54.00           | -1.95        |
| 2462                | 54                | 2494                      | Peak          | H                    | 64.06                    | 74.00           | -9.94        |
| 2462                | 54                | 2500                      | Average       | H                    | 50.31                    | 54.00           | -3.69        |
| 2462                | 54                | 2495                      | Peak          | V                    | 64.09                    | 74.00           | -9.91        |
| 2462                | 54                | 2484                      | Average       | V                    | 50.67                    | 54.00           | -3.33        |

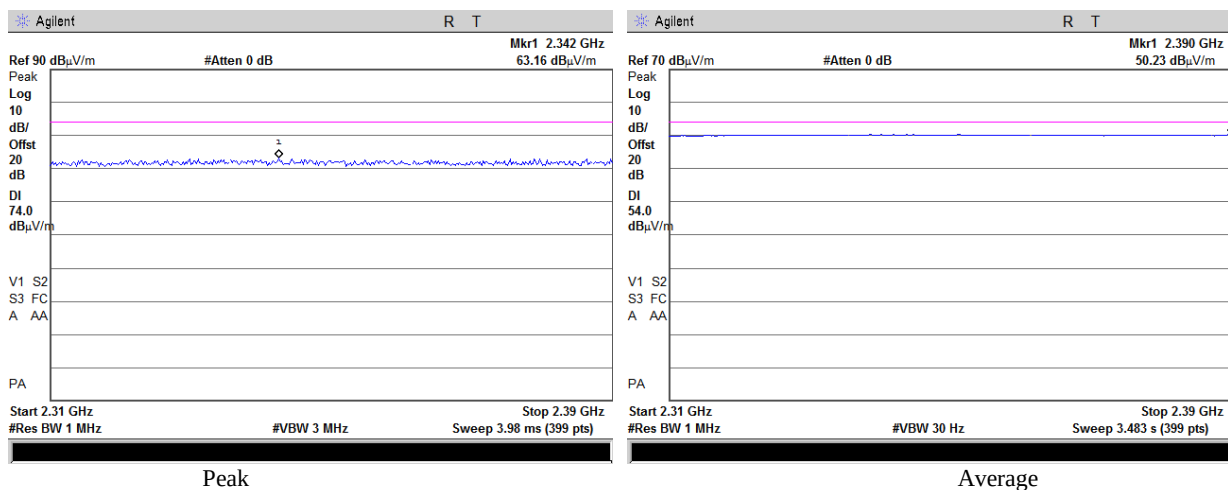
| Frequency,<br>[MHz]       | Data<br>Rate,<br>[Mbps] | Emission<br>Frequency,<br>[MHz] | Detector<br>Type | Antenna<br>Polarization | Emission<br>Level,<br>[dBμV/m] | Limit,<br>[dBμV/m] | Margin,<br>[dB] |
|---------------------------|-------------------------|---------------------------------|------------------|-------------------------|--------------------------------|--------------------|-----------------|
| <b>802.11n 20MHz Mode</b> |                         |                                 |                  |                         |                                |                    |                 |
| 2412                      | MCS7                    | 2357                            | Peak             | H                       | 63.54                          | 74.00              | -10.46          |
| 2412                      | MCS7                    | 2390                            | Average          | H                       | 50.46                          | 54.00              | -3.54           |
| 2412                      | MCS7                    | 2389                            | Peak             | V                       | 68.54                          | 74.00              | -5.46           |
| 2412                      | MCS7                    | 2390                            | Average          | V                       | 53.03                          | 54.00              | -0.97           |
| 2462                      | MCS7                    | 2489                            | Peak             | H                       | 64.05                          | 74.00              | -9.95           |
| 2462                      | MCS7                    | 2483                            | Average          | H                       | 50.43                          | 54.00              | -3.57           |
| 2462                      | MCS7                    | 2499                            | Peak             | V                       | 63.36                          | 74.00              | -10.64          |
| 2462                      | MCS7                    | 2500                            | Average          | V                       | 50.39                          | 54.00              | -3.61           |

**Note:** Spurious Emission [dBμV/m] = measured [dBμV] + Correction-factor [dB (1/m)]  
Correction Factor = Antenna factor + Cable Loss

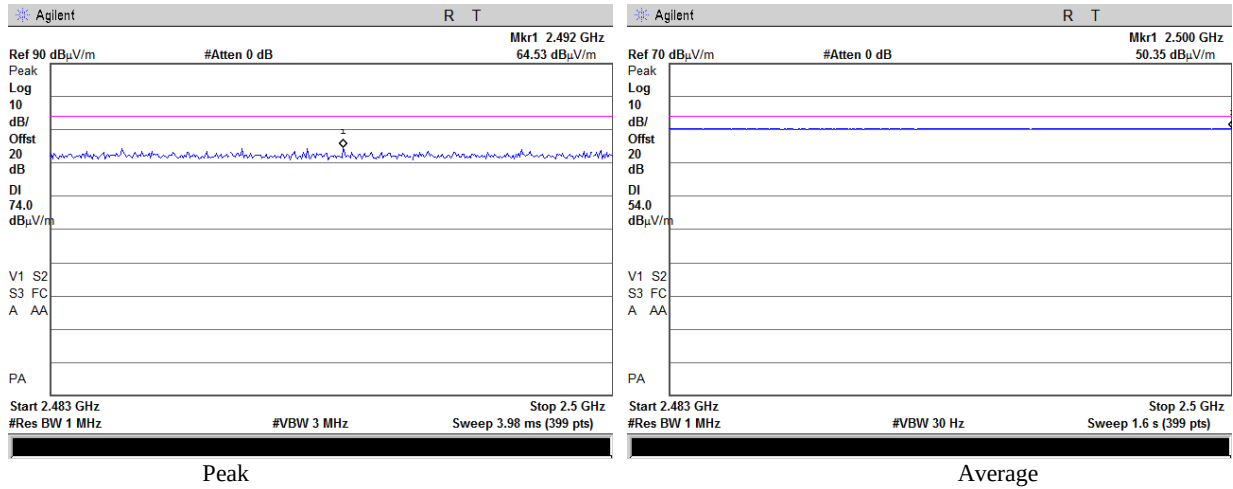
**Plot 4.5.1 Radiated Spurious Emission, 802.11b, Fc = 2412 MHz, 11Mbps, Horizontal**



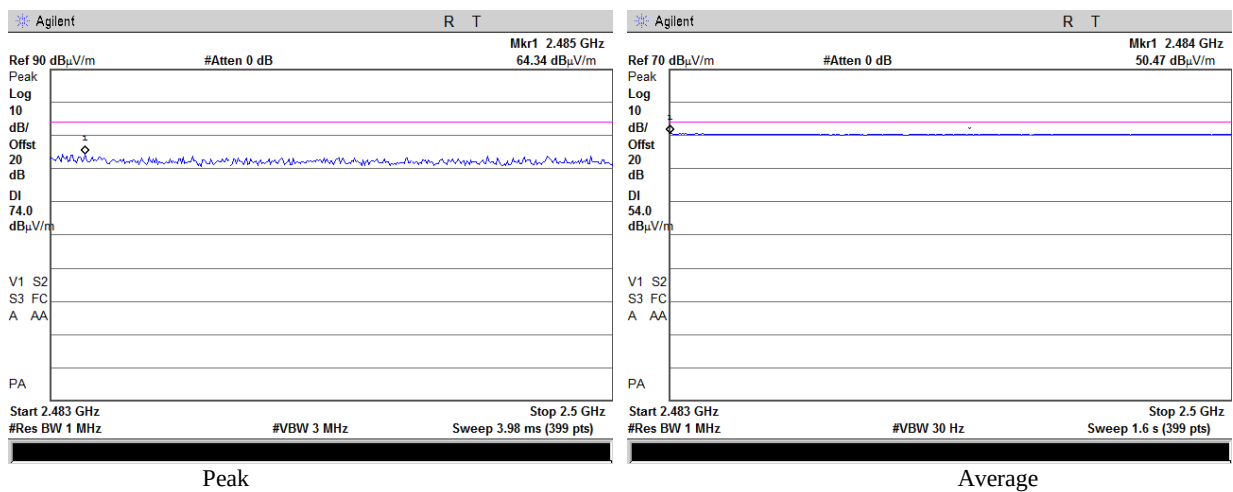
**Plot 4.5.2 Radiated Spurious Emission, 802.11b, Fc = 2412 MHz, 11Mbps, Vertical**



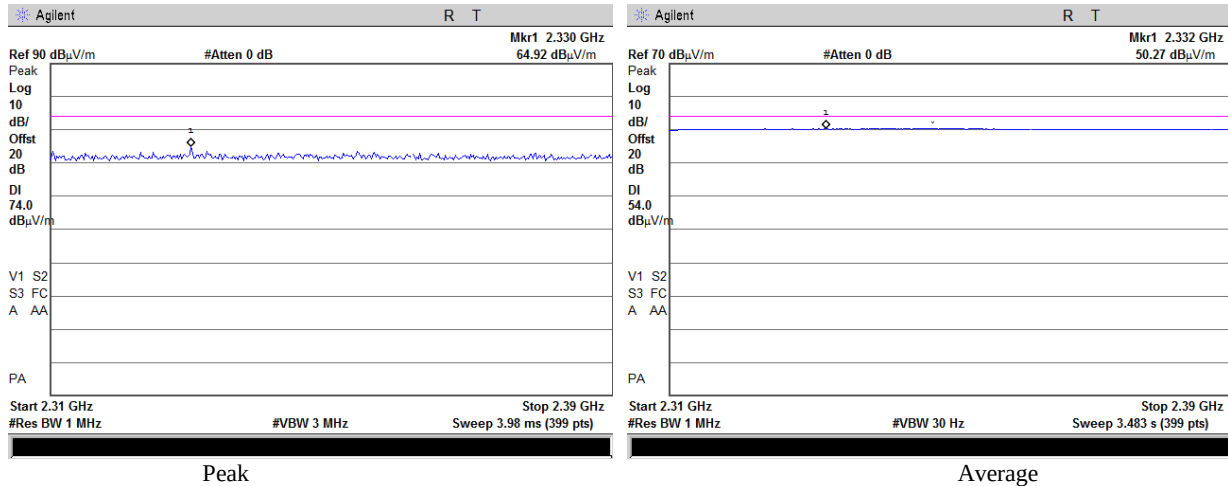
**Plot 4.5.3 Radiated Spurious Emission, 802.11b, Fc = 2462 MHz, 11Mbps, Horizontal**



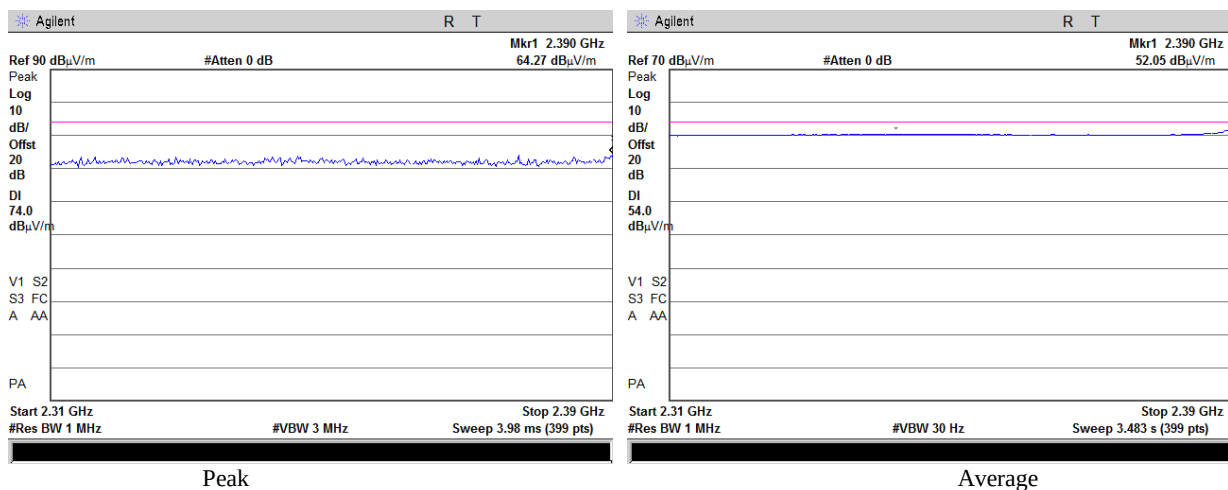
**Plot 4.5.4 Radiated Spurious Emission, 802.11b, Fc = 2462 MHz, 11Mbps, Vertical**



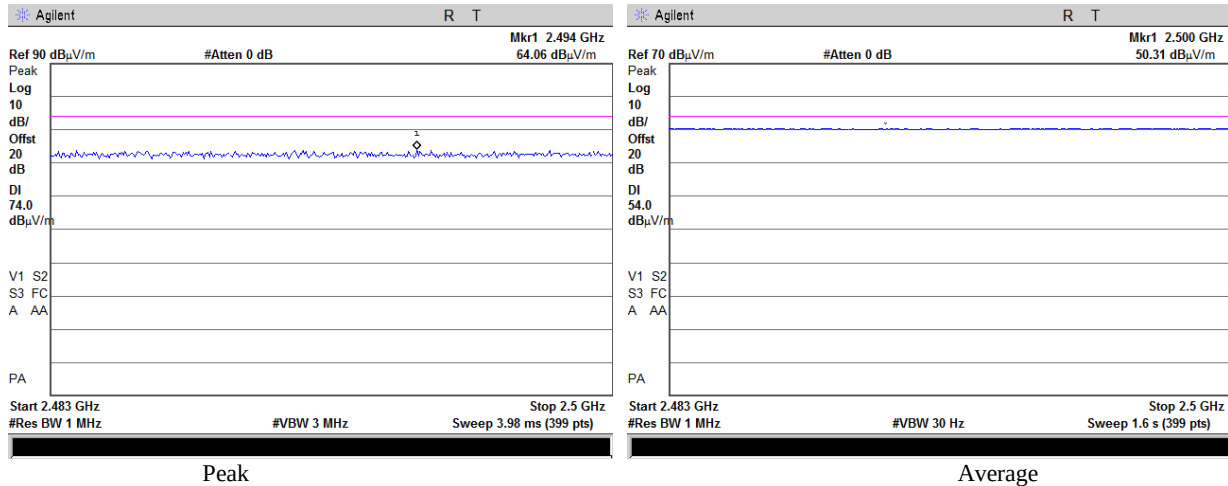
**Plot 4.5.5 Radiated Spurious Emission, 802.11g, Fc = 2412 MHz, 54Mbps, Horizontal**



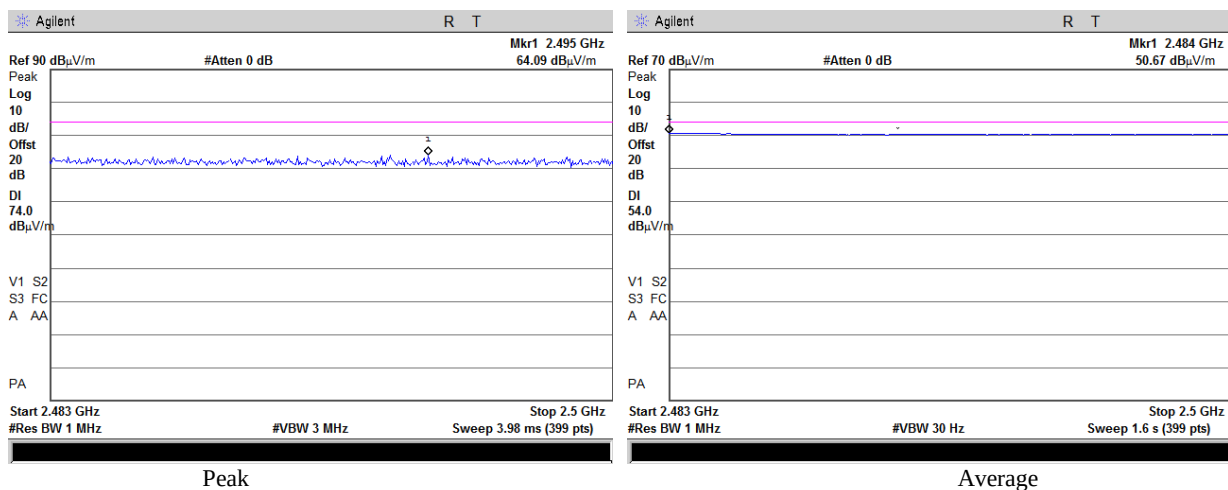
**Plot 4.5.6 Radiated Spurious Emission, 802.11g, Fc = 2412 MHz, 54Mbps, Vertical**



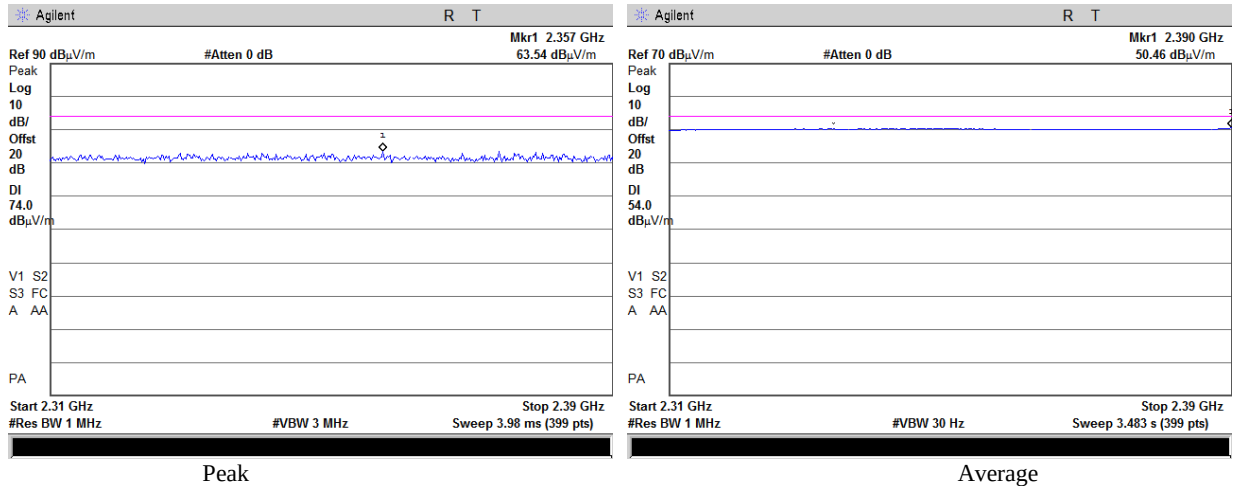
**Plot 4.5.7 Radiated Spurious Emission, 802.11g, Fc = 2462 MHz, 54Mbps, Horizontal**



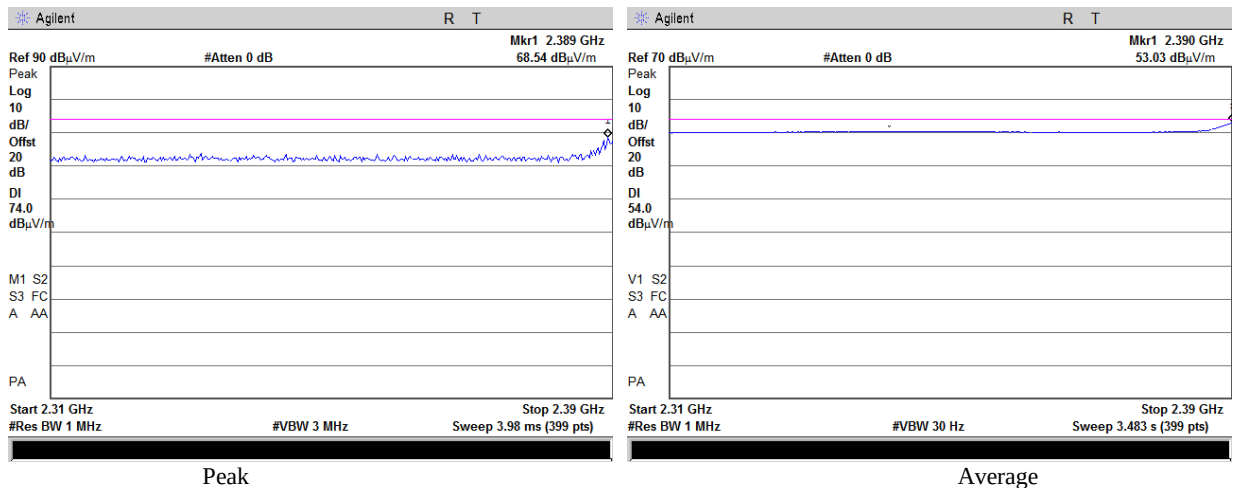
**Plot 4.5.8 Radiated Spurious Emission, 802.11g, Fc = 2462 MHz, 54Mbps, Vertical**



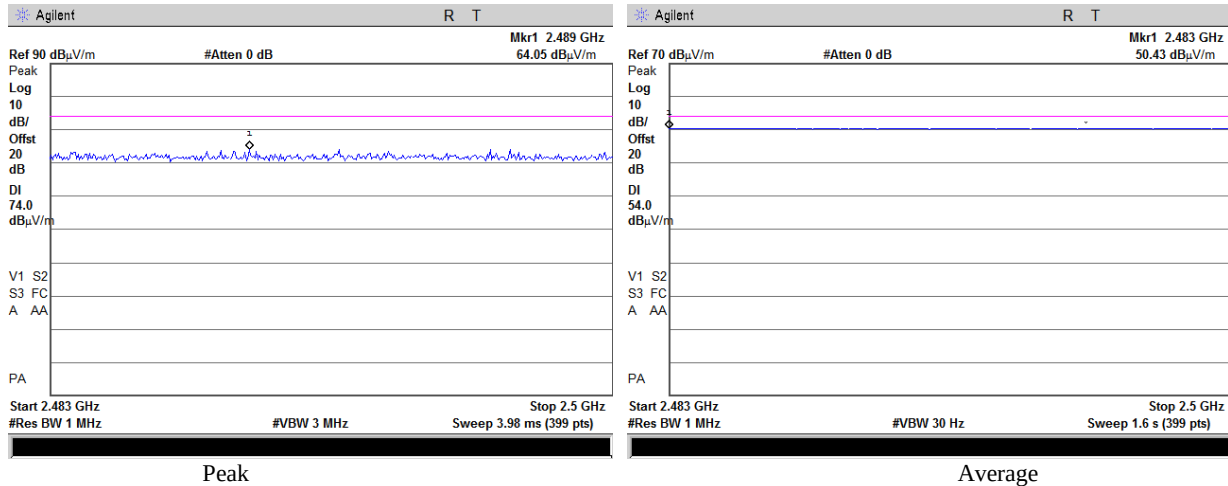
**Plot 4.5.9 Radiated Spurious Emission, 802.11n 20MHz, Fc = 2412 MHz, MCS7, Horizontal**



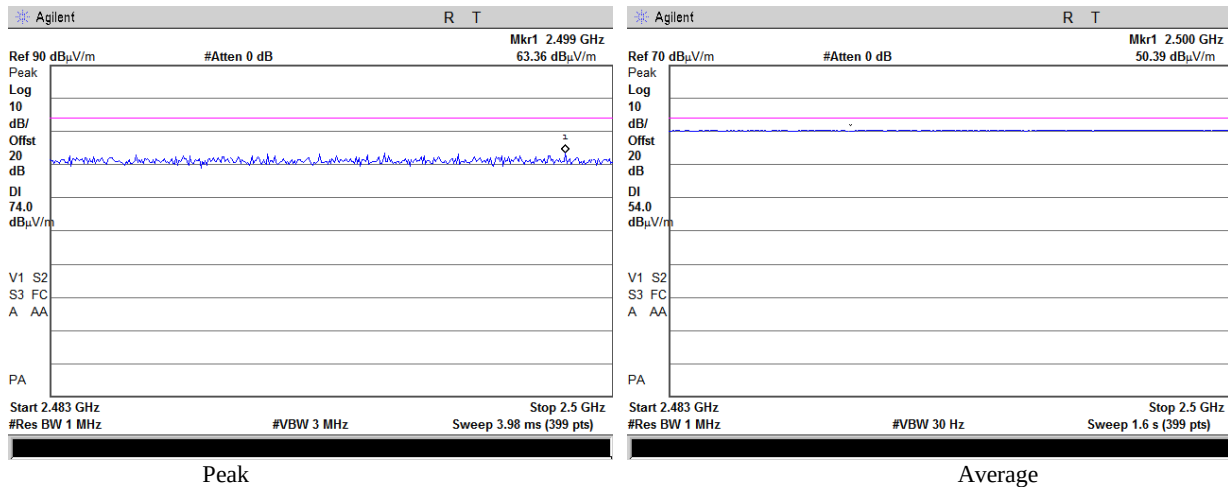
**Plot 4.5.10 Radiated Spurious Emission, 802.11n 20MHz, Fc = 2412 MHz, MCS7, Vertical**



**Plot 4.5.11 Radiated Spurious Emission, 802.11n 20MHz, Fc = 2462 MHz, MCS7, Horizontal**



**Plot 4.5.12 Radiated Spurious Emission, 802.11n 20MHz, Fc = 2462 MHz, MCS7, Vertical**



#### 4.6. Radiated Spurious Emissions

|                         |                                                                                                                                                                                         |                              |                           |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|---------------------------|
| Reference document:     | <b>47 CFR §15.247 (d), &amp; §15.205, &amp; §15.209(a)</b>                                                                                                                              |                              |                           |
| Test Requirements:      | The emissions from an intentional radiator shall not exceed the field strength levels specified in §15.209(a).                                                                          |                              |                           |
| Test setup:             | See sec 2.2, with Band Reject filter                                                                                                                                                    | <b>Pass</b>                  |                           |
| Method of testing:      | Radiated                                                                                                                                                                                |                              |                           |
| Operating conditions:   | Under normal test conditions                                                                                                                                                            |                              |                           |
| S.A. Settings:          | f >1GHz: Peak: RBW= 1MHz, VBW= 3MHz, Average: VBW= 10 Hz<br>f-30 MHz-1GHz: RBW: 120kHz, VBW: 300kHz<br>f- 9kHz-150kHz, RBW: 200Hz, VBW: 300Hz<br>f- 150kHz-30MHz, RBW: 9kHz, VBW: 30kHz |                              |                           |
| Environment conditions: | Ambient Temperature: 22 °c                                                                                                                                                              | Relative Humidity: 48%       | Atmospheric Pressure: hPa |
| Test Result:            | See below                                                                                                                                                                               | See Plot 4.6.1 - Plot 4.6.33 |                           |

#### Test results: 2.4 GHz Bands

All measurements were performed in horizontal and vertical polarizations; the results show the worst case.

| Channel Frequency [MHz] | Data Rate [Mbps] | Emission Frequency [MHz] | Detector Type | Antenna Polarization | Emission Level [dBμV/m] | Limit [dBμV/m] | Margin [dB] |
|-------------------------|------------------|--------------------------|---------------|----------------------|-------------------------|----------------|-------------|
| <b>802.11b</b>          |                  |                          |               |                      |                         |                |             |
| 2412.0                  | 11               | 17491.0                  | Peak          | V&H                  | 61.48                   | 74.00          | -12.52      |
| 2412.0                  | 11               | 17814.0                  | Average       | V&H                  | 52.40                   | 54.00          | -1.60       |
| 2437.0                  | 11               | 17853.0                  | Peak          | V&H                  | 61.71                   | 74.00          | -12.29      |
| 2437.0                  | 11               | 17814.0                  | Average       | V&H                  | 52.17                   | 54.00          | -1.83       |
| 2462.0                  | 11               | 17708.0                  | Peak          | V&H                  | 62.48                   | 74.00          | -11.52      |
| 2462.0                  | 11               | 17982.0                  | Average       | V&H                  | 52.03                   | 54.00          | -1.97       |
| <b>802.11g</b>          |                  |                          |               |                      |                         |                |             |
| 2412.0                  | 54               | 17635                    | Peak          | V&H                  | 62.83                   | 74.00          | -11.17      |
| 2412.0                  | 54               | 17814.0                  | Average       | V&H                  | 52.08                   | 54.00          | -1.92       |
| 2437.0                  | 54               | 18000                    | Peak          | V&H                  | 62.22                   | 74.00          | -11.78      |
| 2437.0                  | 54               | 17897.0                  | Average       | V&H                  | 52.41                   | 54.00          | -1.59       |
| 2462.0                  | 54               | 17563.0                  | Peak          | V&H                  | 62.13                   | 74.00          | -11.87      |
| 2462.0                  | 54               | 17979.0                  | Average       | V&H                  | 52.28                   | 54.00          | -1.72       |
| <b>802.11n 20MHz</b>    |                  |                          |               |                      |                         |                |             |
| 2412.0                  | MCS7             | 17853.0                  | Peak          | V&H                  | 63.07                   | 74.00          | -10.93      |
| 2412.0                  | MCS7             | 17814.0                  | Average       | V&H                  | 52.19                   | 54.00          | -1.81       |
| 2437.0                  | MCS7             | 18000.0                  | Peak          | V&H                  | 62.20                   | 74.00          | -11.80      |

|        |      |         |         |     |       |       |        |
|--------|------|---------|---------|-----|-------|-------|--------|
| 2437.0 | MCS7 | 17814.0 | Average | V&H | 52.20 | 54.00 | -1.80  |
| 2462.0 | MCS7 | 17635.0 | Peak    | V&H | 63.14 | 74.00 | -10.86 |
| 2462.0 | MCS7 | 17897.0 | Average | V&H | 52.16 | 54.00 | -1.84  |

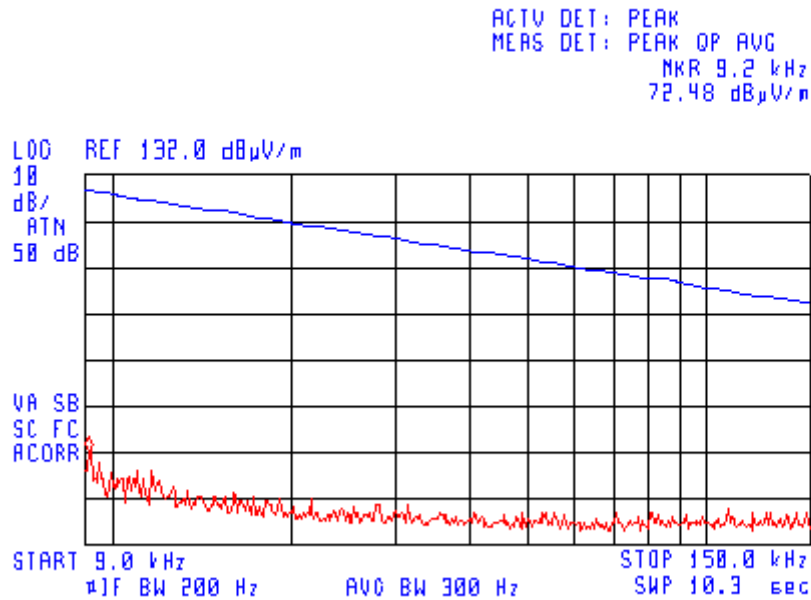
#### Test results- 9 kHz-1GHz:

All measurements were done in horizontal and vertical polarizations; the results show the worst case for all frequencies.

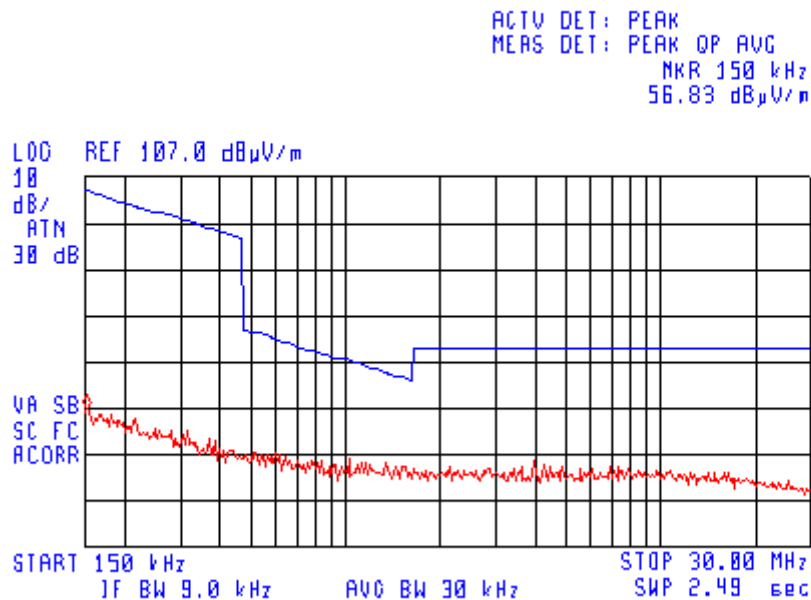
| Emission Frequency [MHz] | Detector Type | Polarization H/V | Emission Level [dBμV/m] | Limit [dBμV/m] | Margin [dB] |
|--------------------------|---------------|------------------|-------------------------|----------------|-------------|
| 77.200                   | QP            | V                | 35.87                   | 40.00          | -4.13       |
| 94.350                   | QP            | V                | 33.47                   | 43.00          | -9.53       |
| 848.000                  | QP            | V                | 32.78                   | 46.00          | -13.22      |

**Note:** Spurious Emission [dBμV/m] = measured [dBμV] + Correction-factor [dB (1/m)]  
Correction Factor = Antenna factor + Cable Loss + Filter I/L.

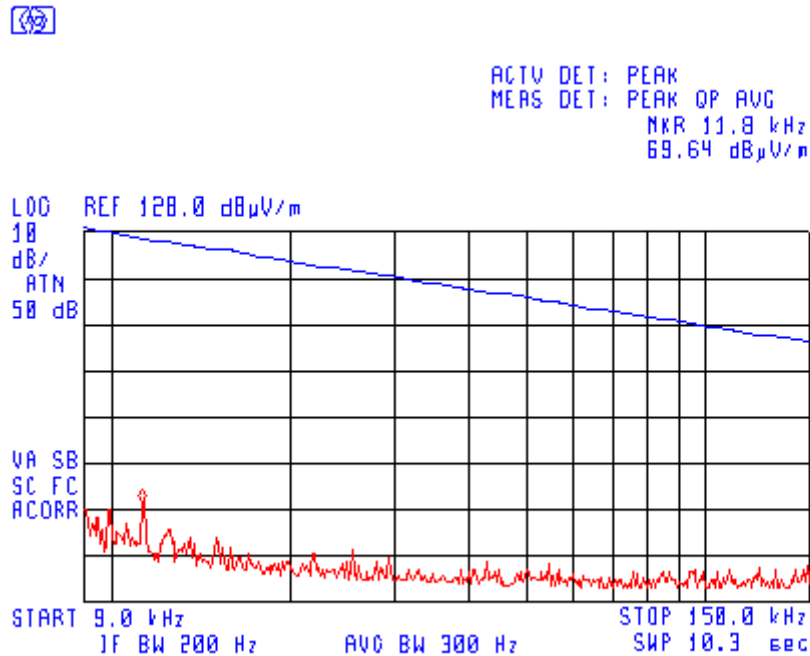
**Plot 4.6.1 Radiated Spurious Emission in 9 kHz-150 kHz range coaxial Polarization**



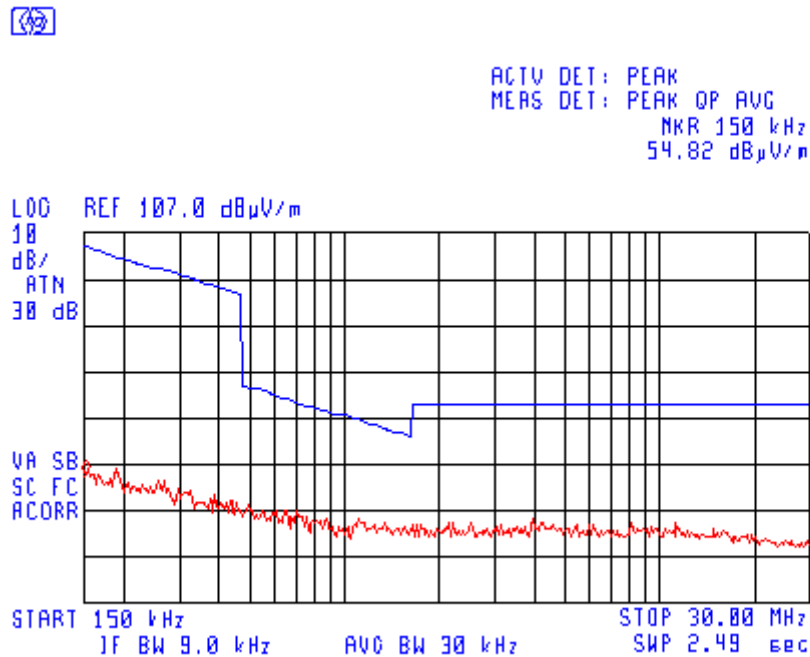
**Plot 4.6.2 Radiated Spurious Emission in 150 kHz-30 MHz range coaxial Polarization**



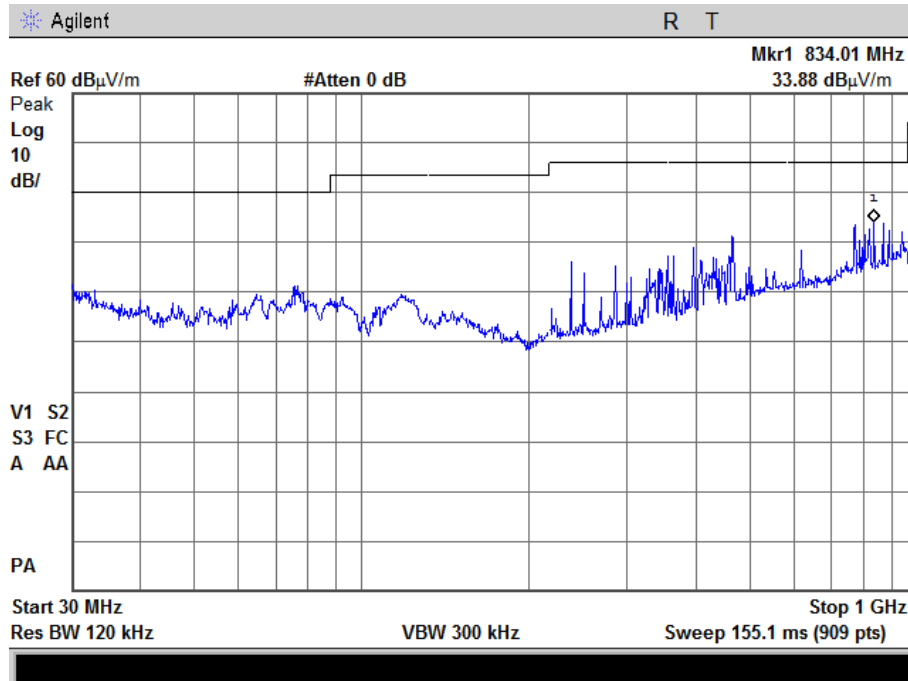
**Plot 4.6.3 Radiated Spurious Emission in 9 kHz-150 kHz range planar Polarization**



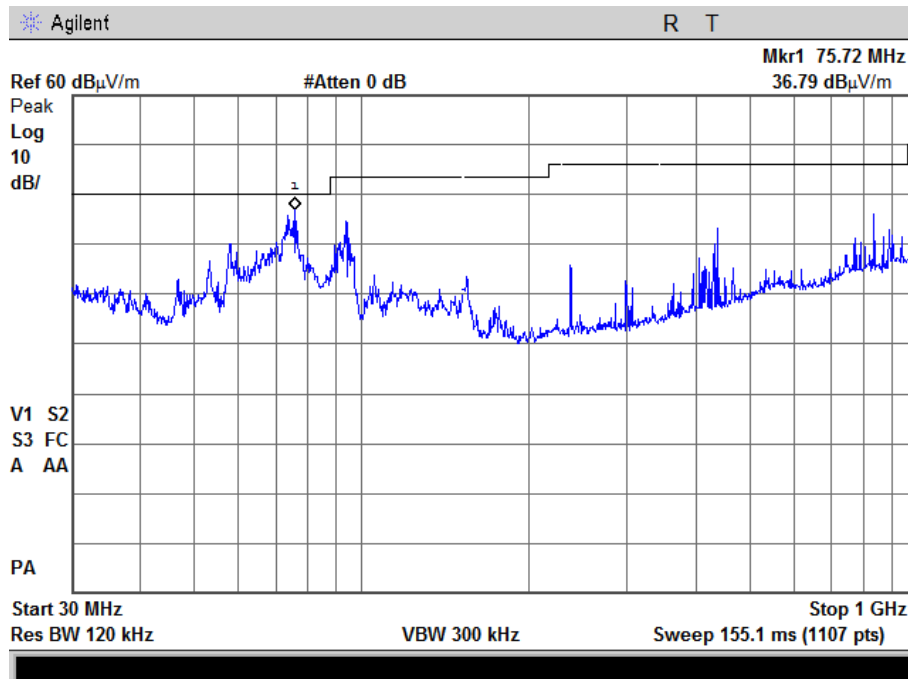
**Plot 4.6.4 Radiated Spurious Emission in 150 kHz-30 MHz range planar Polarization**



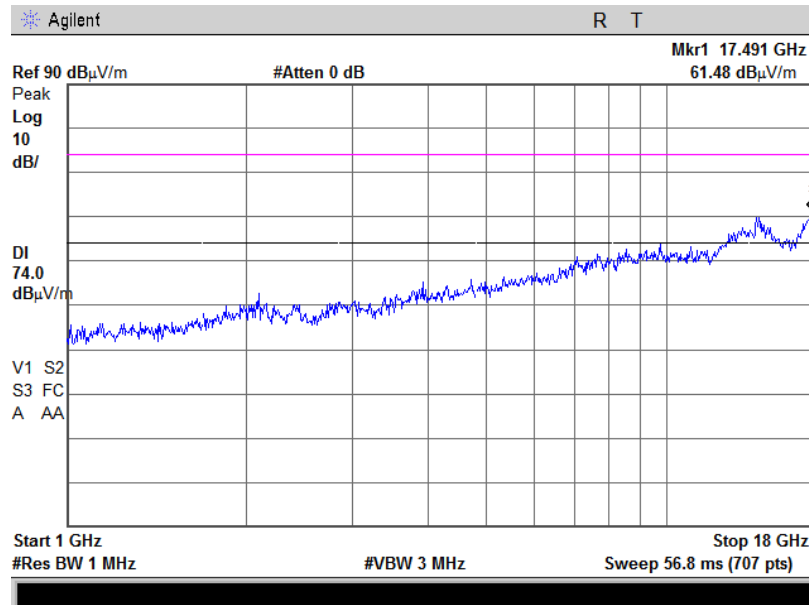
**Plot 4.6.5 Radiated Spurious Emission in 30MHz-1GHz range, Worst case for all modes and all frequencies, Horizontal**



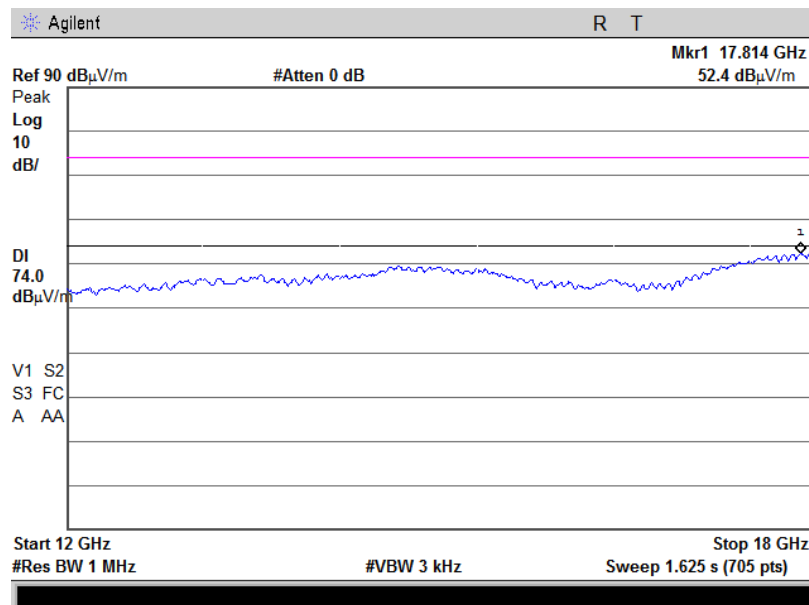
**Plot 4.6.6 Radiated Spurious Emission in 30MHz-1GHz range, Worst case for all modes and all frequencies, Vertical**



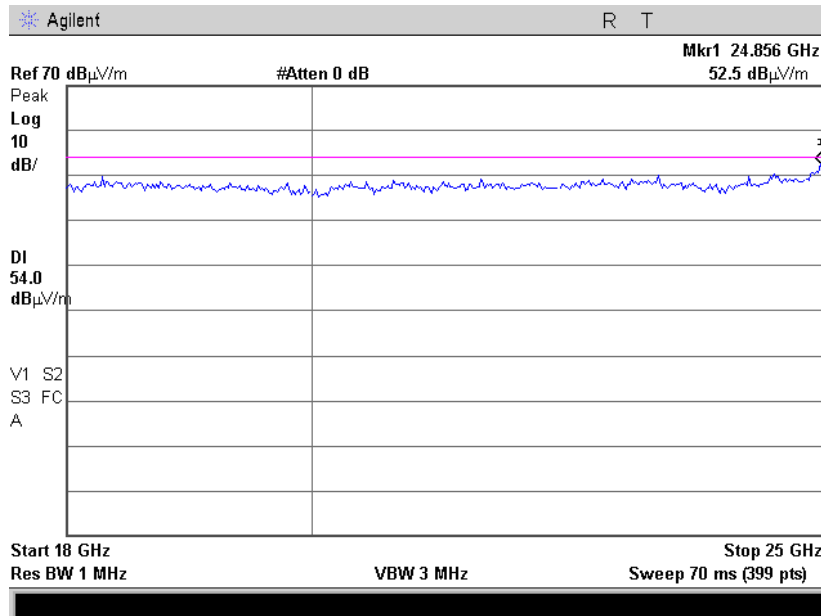
**Plot 4.6.7 Radiated Spurious Emission in 1-18GHz range, 802.11b, Fc = 2412 MHz, 11Mbps, Horizontal & Vertical, Peak**



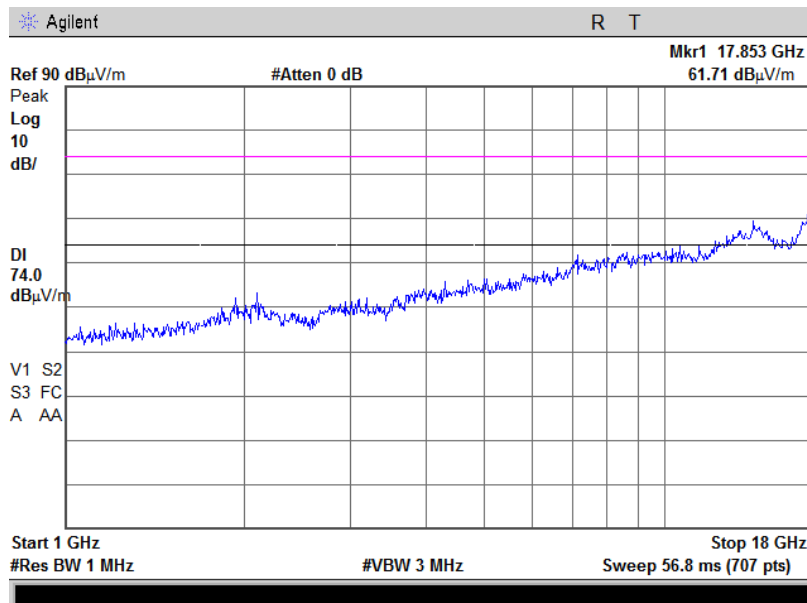
**Plot 4.6.8 Radiated Spurious Emission in 12-18GHz range, 802.11b, Fc = 2412 MHz, 11Mbps, Horizontal & Vertical, Average**



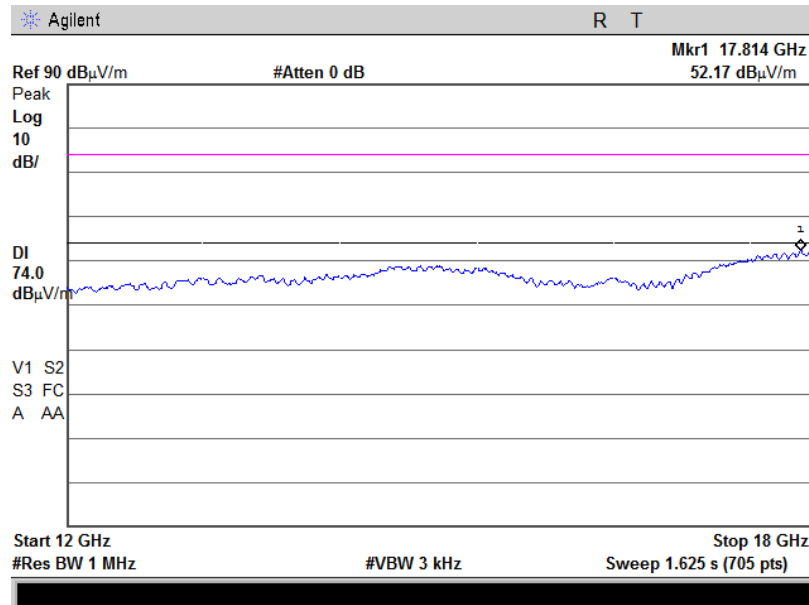
**Plot 4.6.9 Radiated Spurious Emission in 18-25GHz range, 802.11b, Fc = 2412 MHz, 11Mbps, Horizontal & Vertical, Peak**



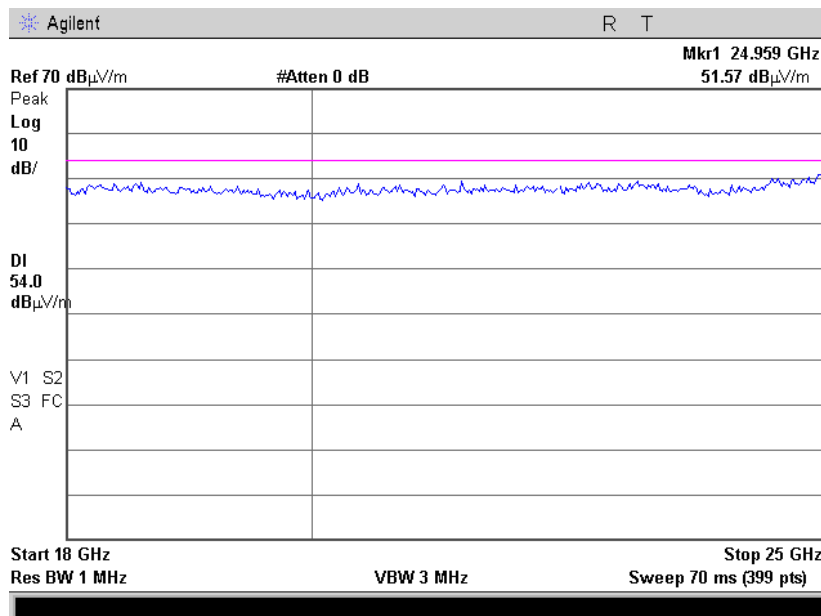
**Plot 4.6.10 Radiated Spurious Emission in 1-18GHz range, 802.11b, Fc = 2437 MHz, 11Mbps, Horizontal & Vertical, Peak**



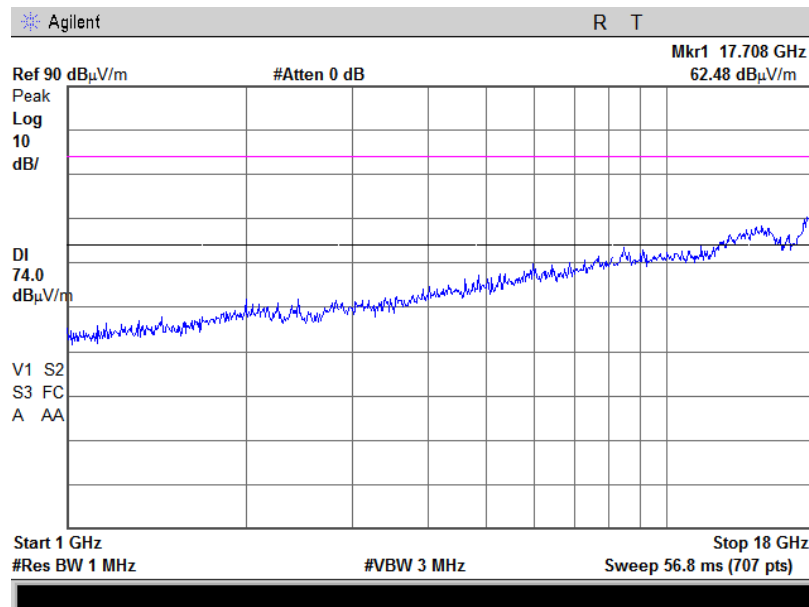
**Plot 4.6.11 Radiated Spurious Emission in 12-18GHz range, 802.11b, Fc = 2437 MHz, 11Mbps, Horizontal & Vertical, Average**



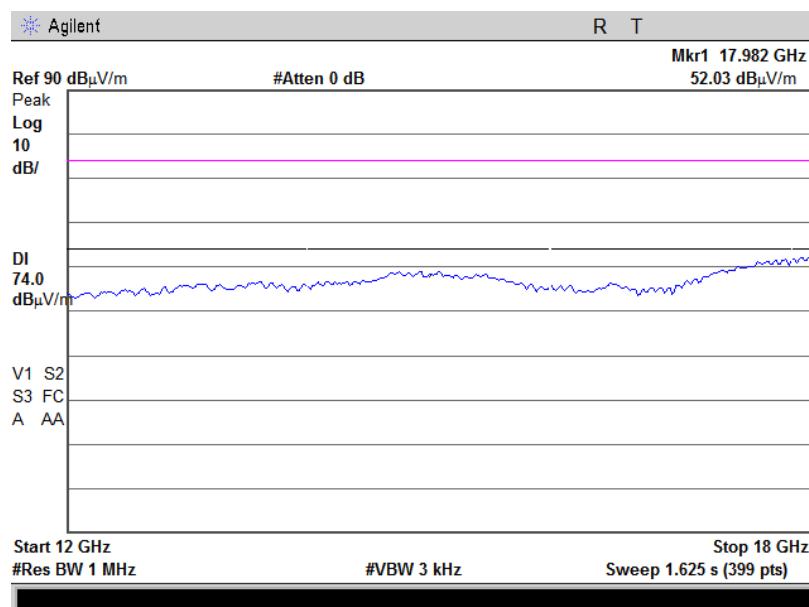
**Plot 4.6.12 Radiated Spurious Emission in 18-25GHz range, 802.11b, Fc = 2437 MHz, 11Mbps, Horizontal & Vertical, Peak**



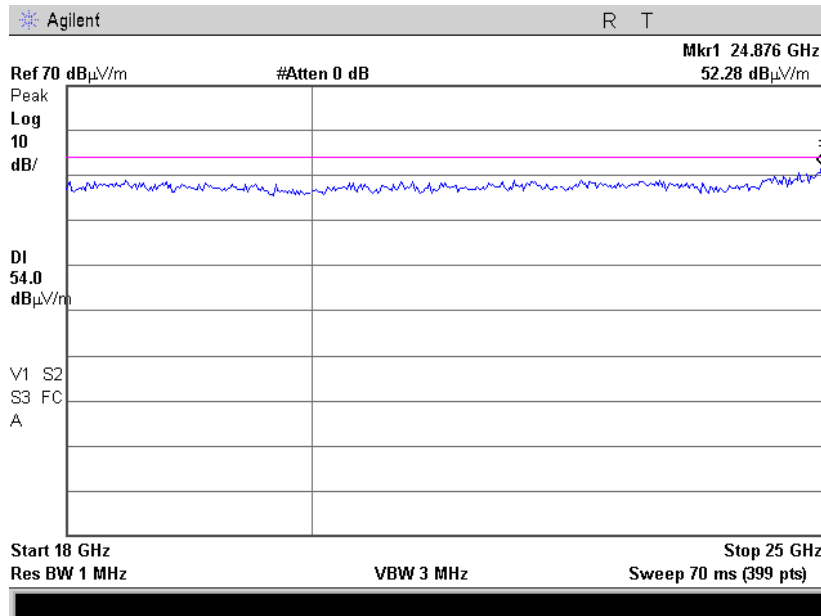
**Plot 4.6.13 Radiated Spurious Emission in 1-18GHz range, 802.11b, Fc = 2462 MHz, 11Mbps, Horizontal & Vertical, Peak**



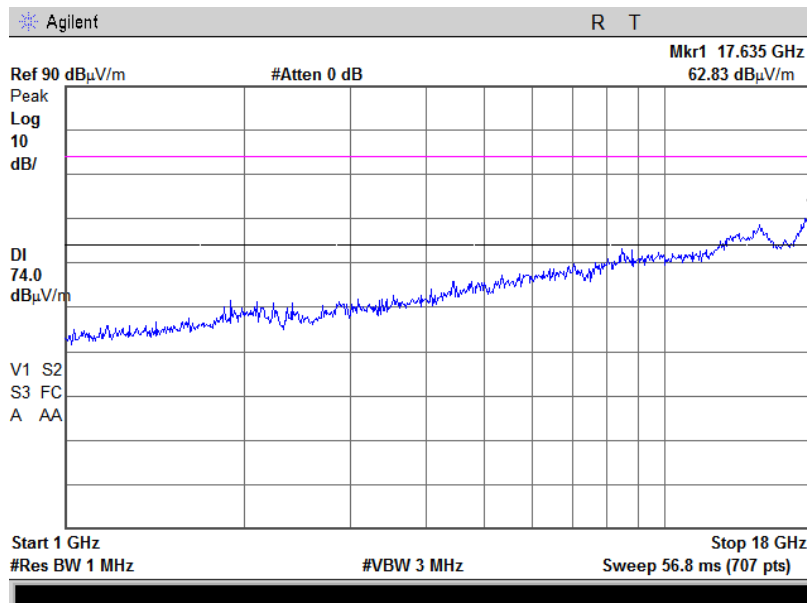
**Plot 4.6.14 Radiated Spurious Emission in 12-18GHz range, 802.11b, Fc = 2462 MHz, 11Mbps, Horizontal & Vertical, Average**



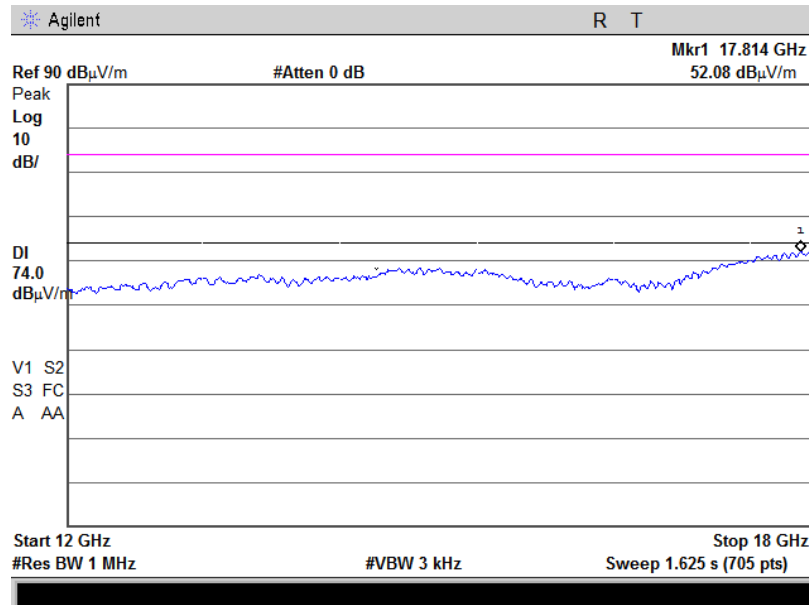
**Plot 4.6.15 Radiated Spurious Emission in 18-25GHz range, 802.11b, Fc = 2462 MHz, 11Mbps, Horizontal & Vertical, Peak**



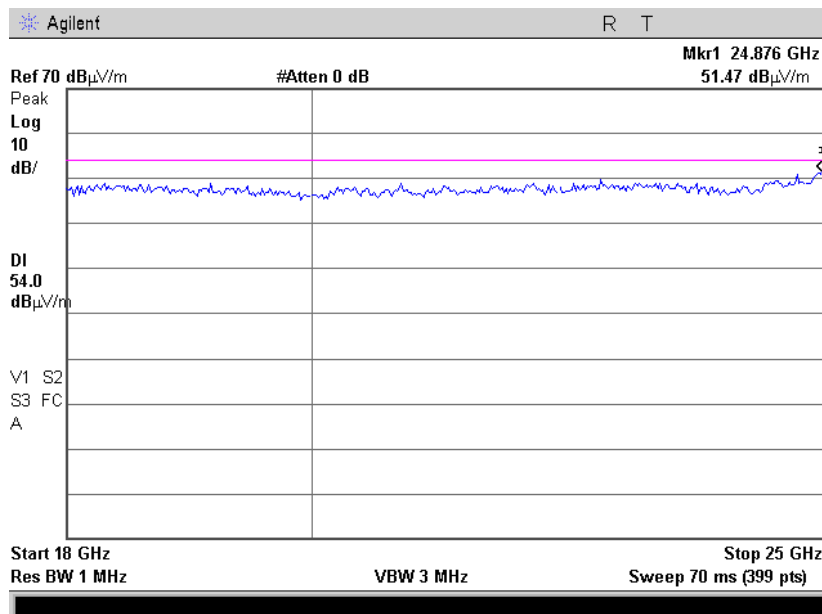
**Plot 4.6.16 Radiated Spurious Emission in 1-18GHz range, 802.11g, Fc = 2412 MHz, 54Mbps, Horizontal & Vertical, Peak**



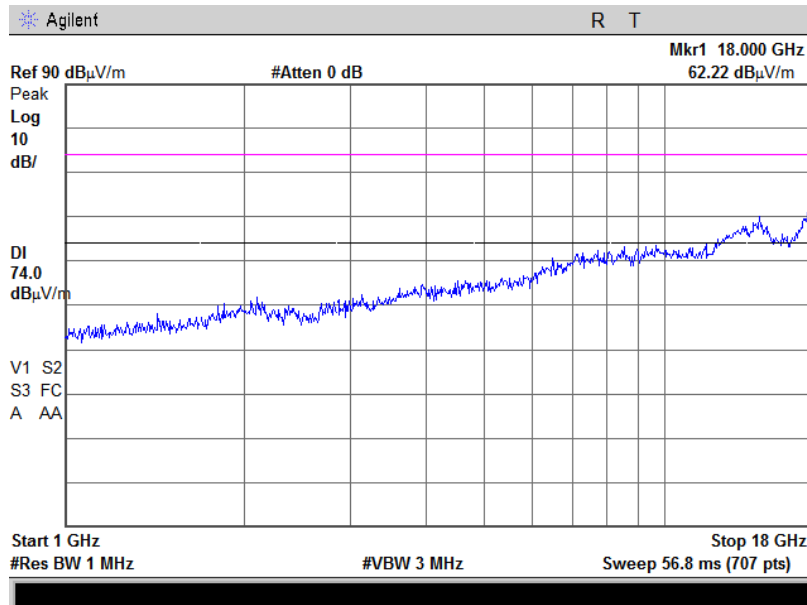
**Plot 4.6.17 Radiated Spurious Emission in 12-18GHz range, 802.11g, Fc = 2412 MHz, 54Mbps, Horizontal & Vertical, Average**



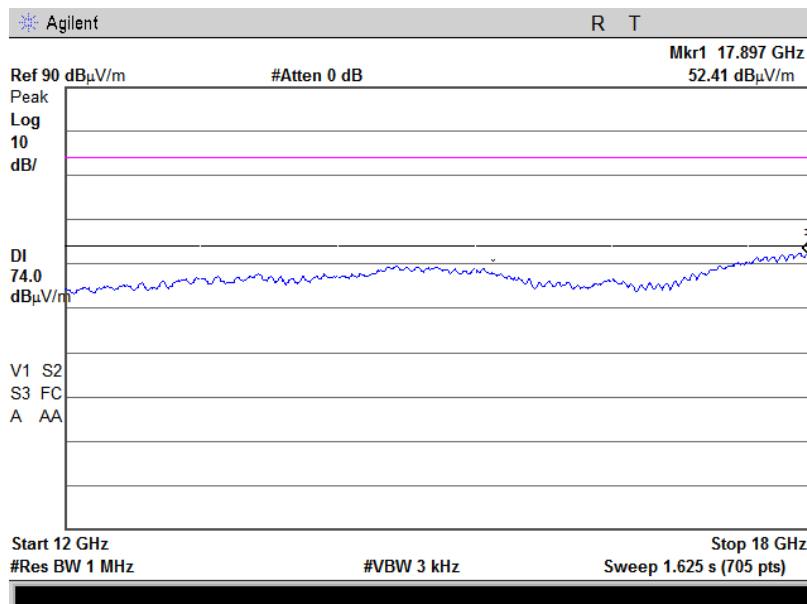
**Plot 4.6.18 Radiated Spurious Emission in 18-25GHz range, 802.11g, Fc = 2412 MHz, 54Mbps, Horizontal & Vertical, Peak**



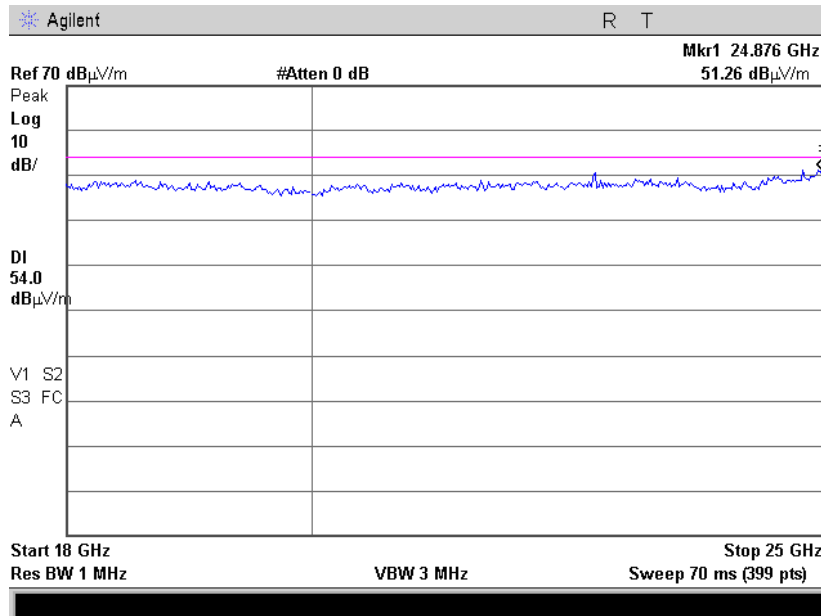
**Plot 4.6.19 Radiated Spurious Emission in 1-18GHz range, 802.11g, Fc = 2437 MHz, 54Mbps, Horizontal & Vertical, Peak**



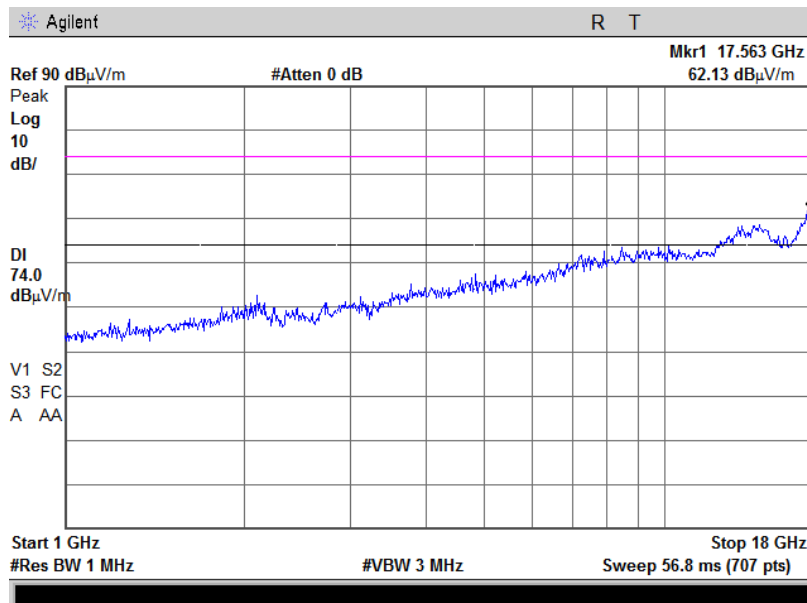
**Plot 4.6.20 Radiated Spurious Emission in 12-18GHz range, 802.11g, Fc = 2437 MHz, 54Mbps, Horizontal & Vertical, Average**



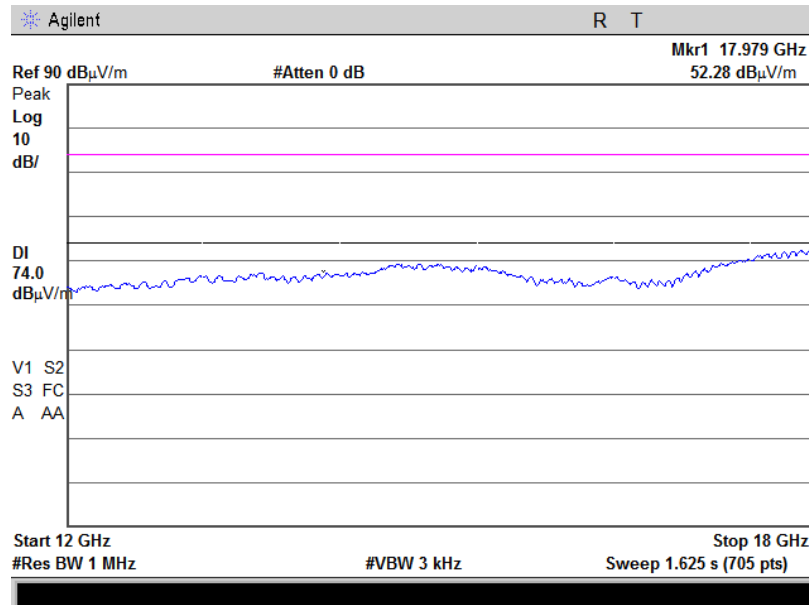
**Plot 4.6.21 Radiated Spurious Emission in 18-25GHz range, 802.11g, Fc = 2437 MHz, 54Mbps, Horizontal & Vertical, Peak**



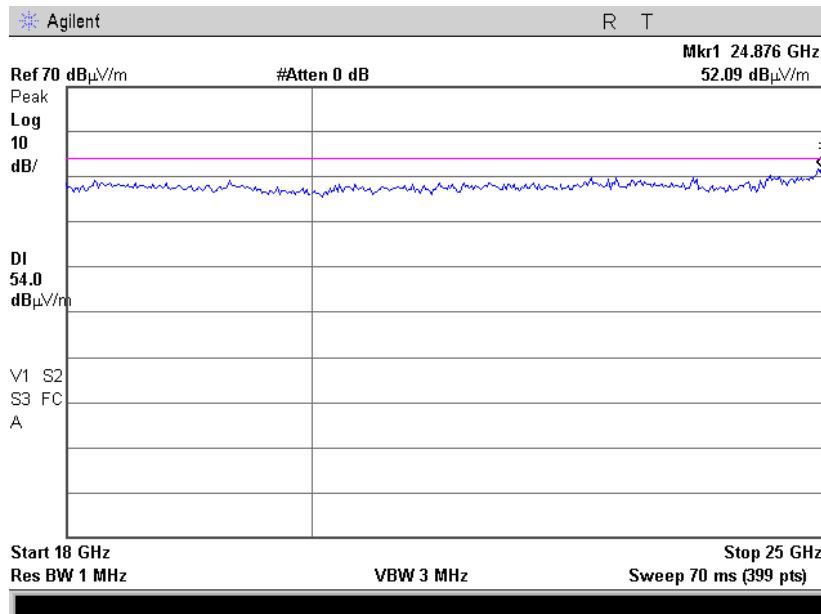
**Plot 4.6.22 Radiated Spurious Emission in 1-18GHz range, 802.11g, Fc = 2462 MHz, 54Mbps, Horizontal & Vertical, Peak**



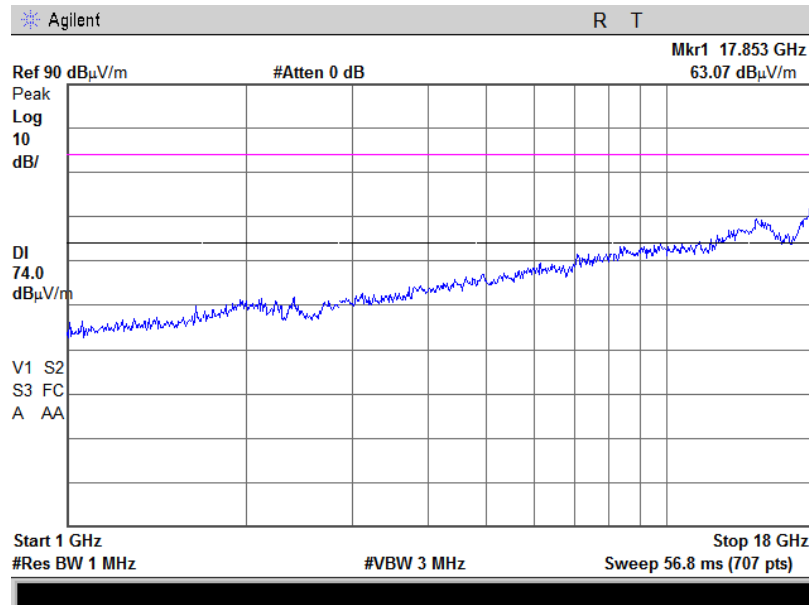
**Plot 4.6.23 Radiated Spurious Emission in 12-18GHz range, 802.11g, Fc = 2462 MHz, 54Mbps, Horizontal & Vertical, Average**



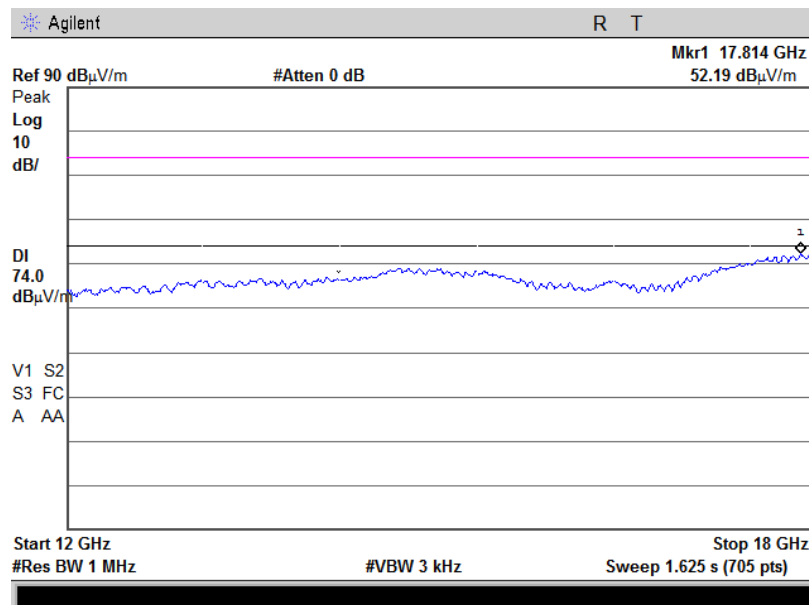
**Plot 4.6.24 Radiated Spurious Emission in 18-25GHz range, 802.11g, Fc = 2462 MHz, 54Mbps, Horizontal & Vertical, Peak**



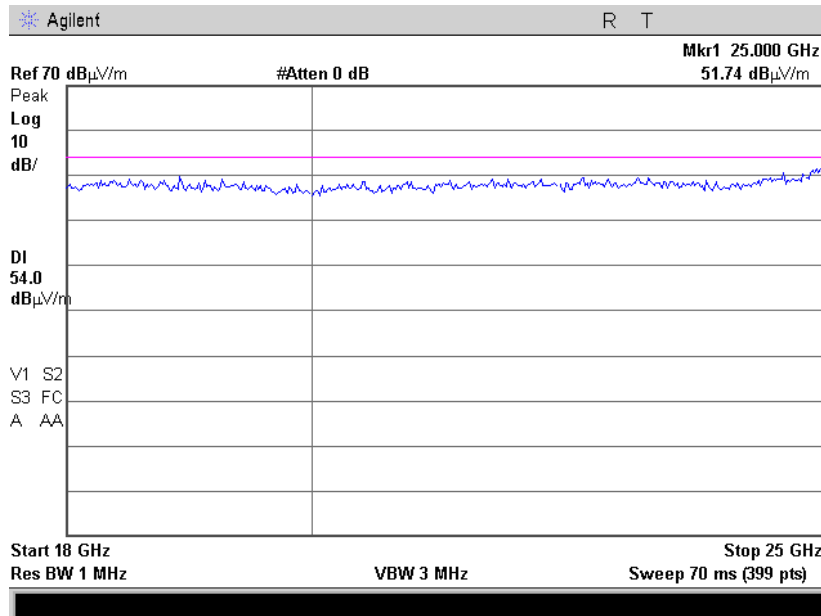
**Plot 4.6.25 Radiated Spurious Emission in 1-18GHz range, 802.11n 20MHz, Fc = 2412 MHz, MCS7, Horizontal & Vertical, Peak**



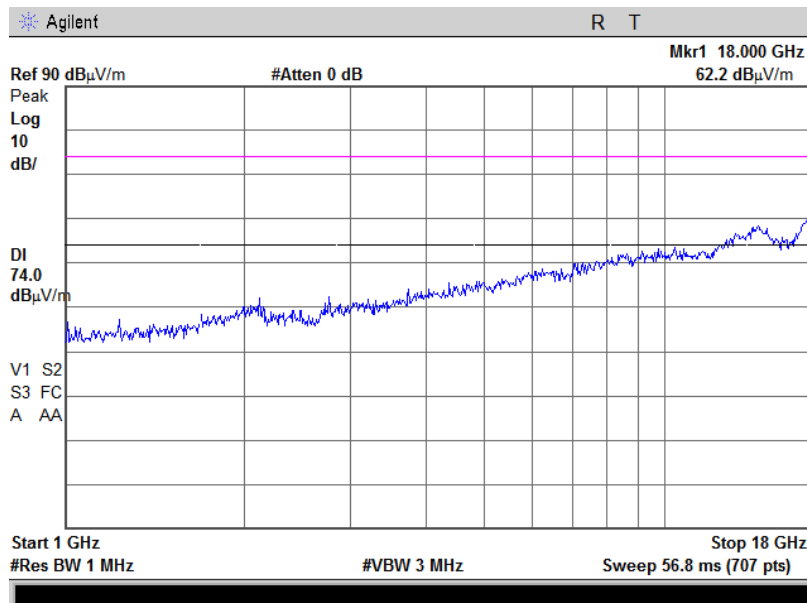
**Plot 4.6.26 Radiated Spurious Emission in 12-18GHz range, 802.11n 20MHz, Fc = 2412 MHz, MCS7, Horizontal & Vertical, Average**



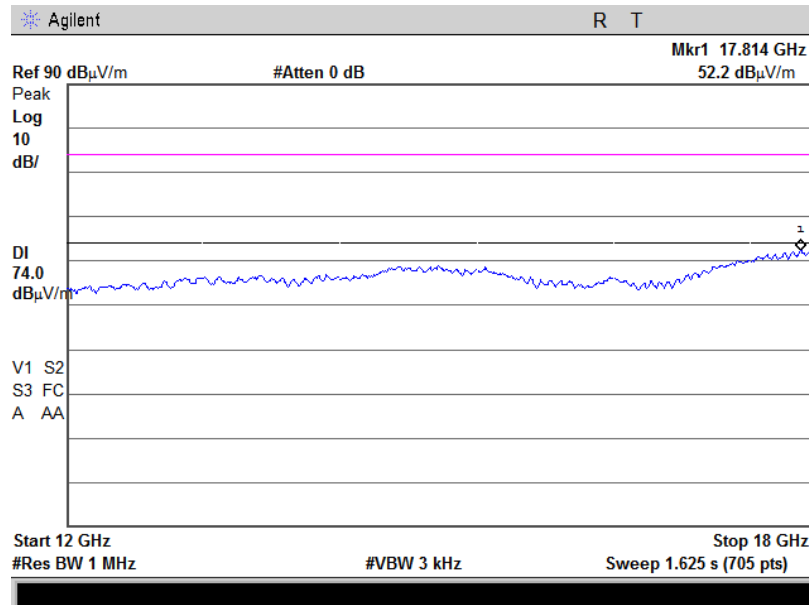
**Plot 4.6.27 Radiated Spurious Emission in 18-25GHz range, 802.11n 20MHz, Fc = 2412 MHz, MCS7, Horizontal & Vertical, Peak**



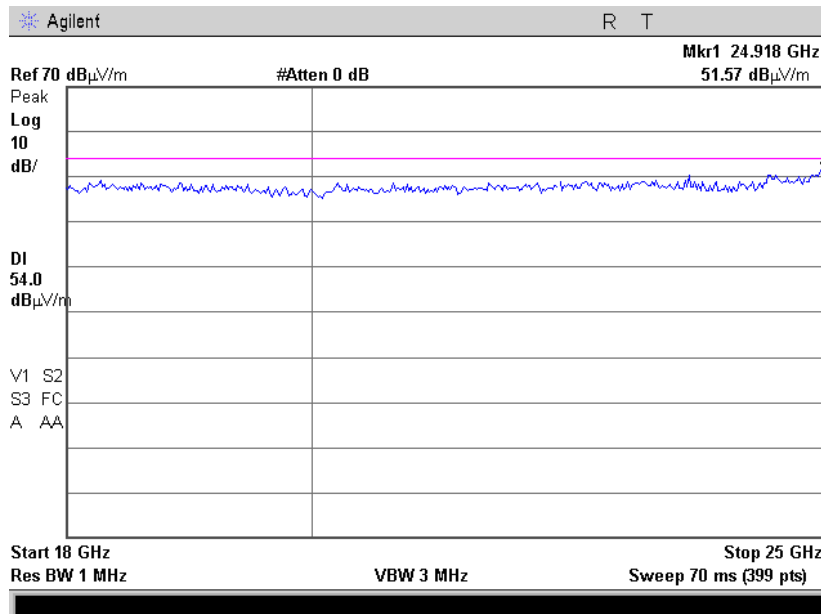
**Plot 4.6.28 Radiated Spurious Emission in 1-18GHz range, 802.11n 20MHz, Fc = 2437 MHz, MCS7, Horizontal & Vertical, Peak**



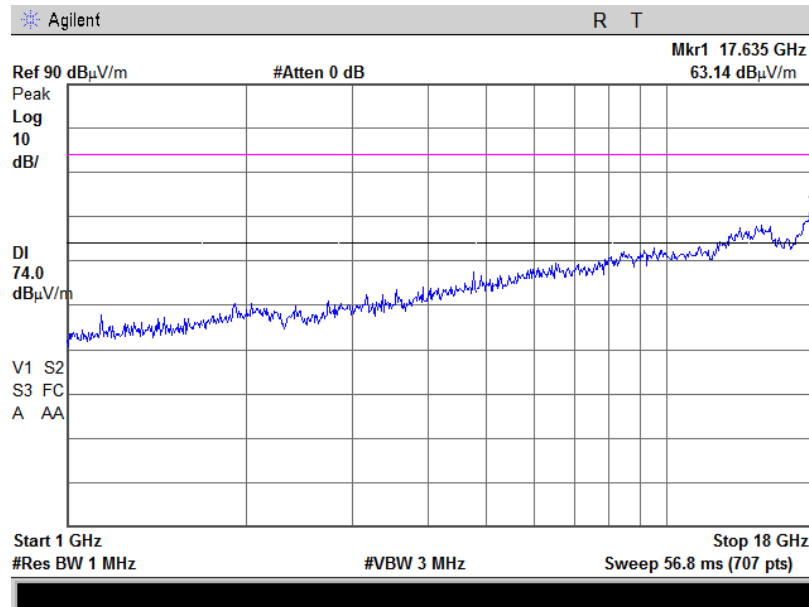
**Plot 4.6.29 Radiated Spurious Emission in 12-18GHz range, 802.11n 20MHz, Fc = 2437 MHz, MCS7, Horizontal & Vertical, Average**



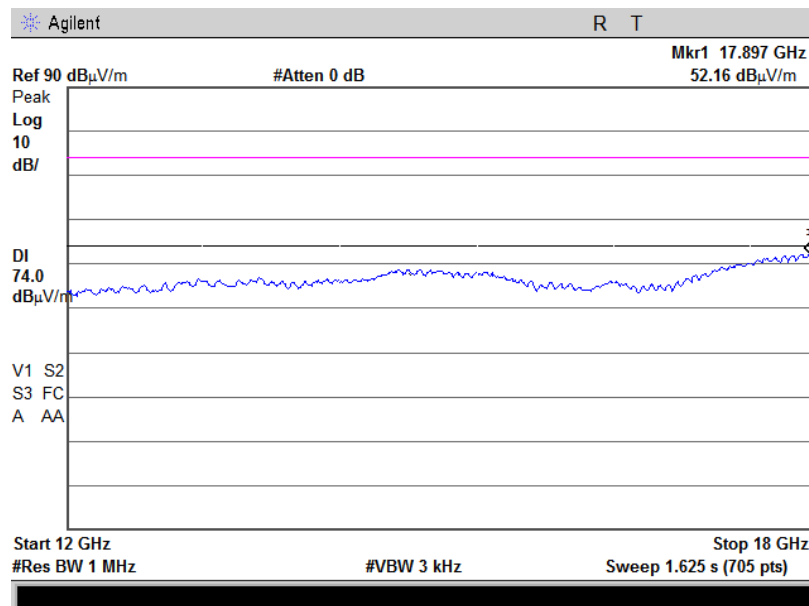
**Plot 4.6.30 Radiated Spurious Emission in 18-25GHz range, 802.11n 20MHz, Fc = 2437 MHz, MCS7, Horizontal & Vertical, Peak**



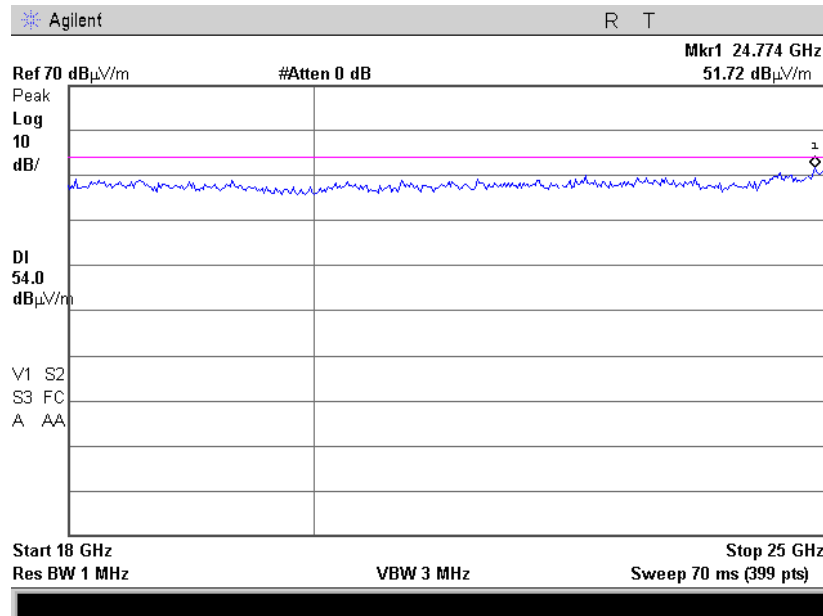
**Plot 4.6.31 Radiated Spurious Emission in 1-18GHz range, 802.11n 20MHz, Fc = 2462 MHz, MCS7, Horizontal & Vertical, Peak**



**Plot 4.6.32 Radiated Spurious Emission in 12-18GHz range, 802.11n 20MHz, Fc = 2462 MHz, MCS7, Horizontal & Vertical, Average**



**Plot 4.6.33 Radiated Spurious Emission in 18-25GHz range, 802.11n 20MHz, Fc = 2462 MHz, MCS7, Horizontal & Vertical, Peak**



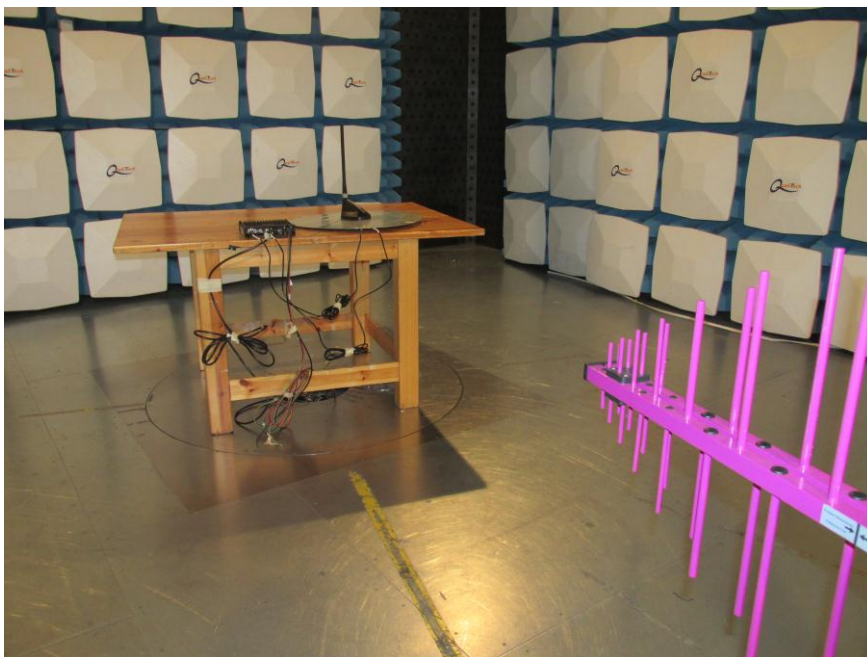
## 5. Appendix

### Appendix A: Test Photographs

**Photograph 1**



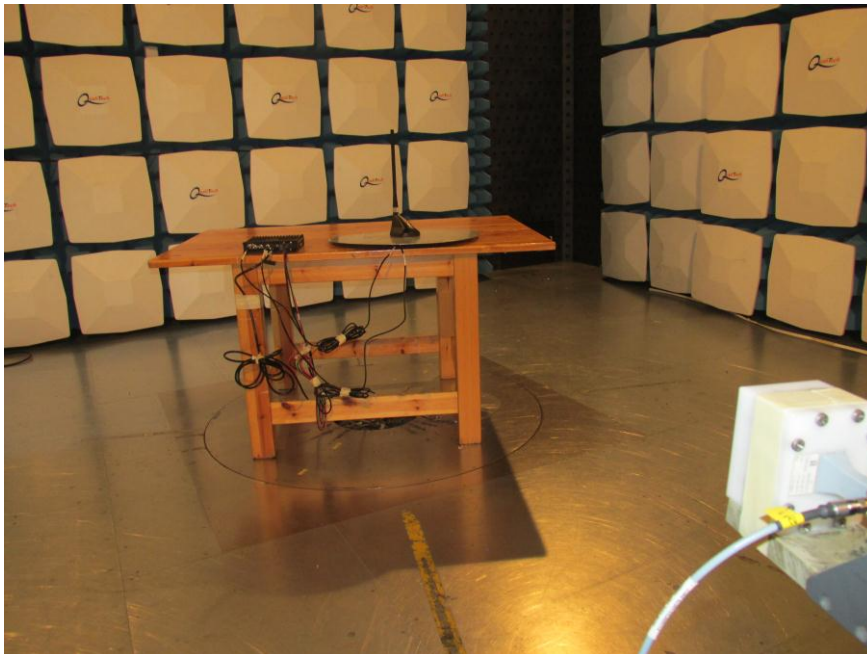
**Photograph 2**



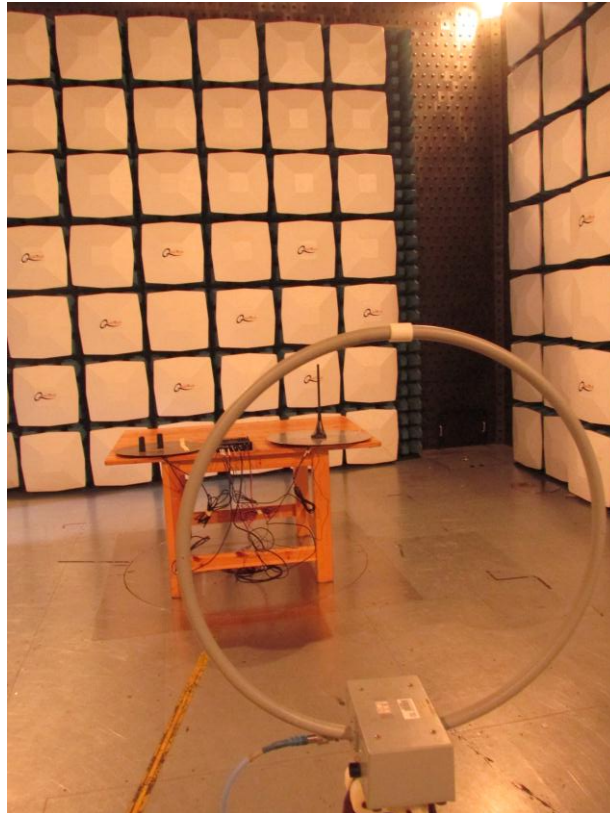
**Photograph 3**



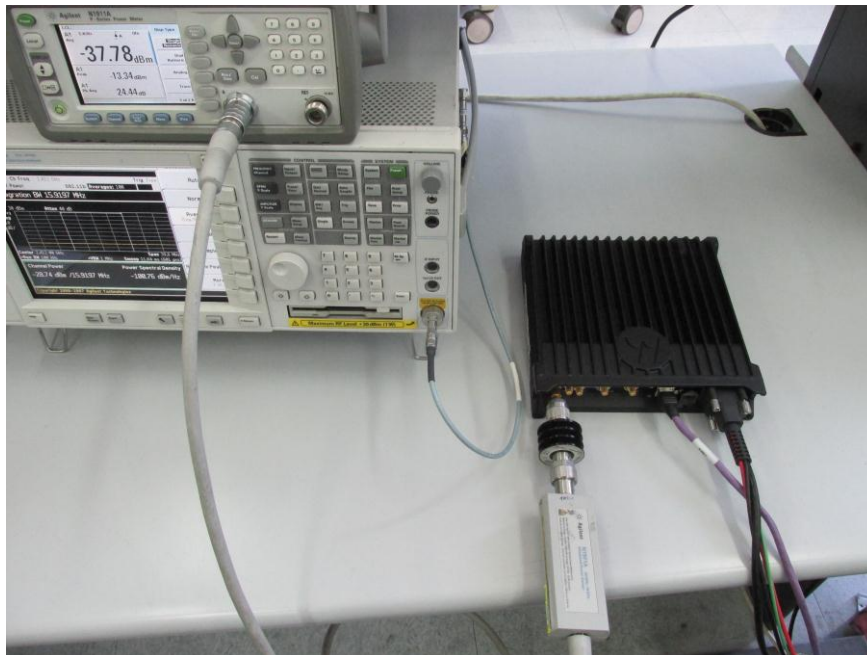
**Photograph 4**



**Photograph 5**



**Photograph 6**



**Appendix B: List of Measuring Equipment used:**

| Manufacturer | Model                          | Description                          | Serial No.  | Last Cal   | Cal Due    | Interval |
|--------------|--------------------------------|--------------------------------------|-------------|------------|------------|----------|
| Teseq        | CBL 6141B                      | Bilog Antenna                        | 34119       | 03/07/2012 | 03/07/2015 | 3        |
| HP           | 8593EM                         | Spectrum Analyzer<br>9KHz-22GHz      | 3536A00131  | 13/07/2014 | 13/07/2015 | 1        |
| HP           | 8546A                          | EMI Receiver<br>(6.5GHz)             | 3710A00392  | 29/12/2014 | 29/12/2015 | 1        |
| Agilent      | 11947A                         | RF Transient<br>Limiter              | 3107A04121  | 01/01/2015 | 01/01/2016 | 1        |
| FCC          | 50/250-25-2                    | LISN                                 | 9705        | 01/01/2015 | 01/01/2016 | 1        |
| Schwarzbeck  | NNBL 8226-2                    | LISN                                 | 8226120     | 01/01/2015 | 01/01/2016 | 1        |
| A.R.A        | DRG-118/A                      | Horn Antenna<br>(EMM)                | 17188       | 06/03/2015 | 06/03/2018 | 3        |
| Agilent      | E4446A                         | Spectrum Analyzer<br>3Hz-44GHz       | MY46180602  | 13/11/2014 | 13/11/2016 | 2        |
| Schwarzbeck  | BBHA 9170                      | Horn Antenna 15-40<br>GHz            | BBHA9170214 | 06/03/2015 | 06/03/2018 | 3        |
| EMCO         | 6502                           | Antenna, loop, 10<br>kHz to 30 MHz   | 3424        | 26/03/2014 | 26/03/2016 | 2        |
| Miteq        | AMF-5F-<br>18002650-30-<br>10P | Low-Noise Amplifier<br>18 - 26.5 GHz | 945372      | 07/07/2014 | 07/07/2015 | 1        |
| AMP          | 7D-010180-30-<br>10P-GW        | LNA Amplifier 1<br>GHz to 18 GHz     | 618653      | 05/03/2015 | 05/03/2016 | 1        |

## Appendix C: Accreditation Certificate



***End of the Test Report***