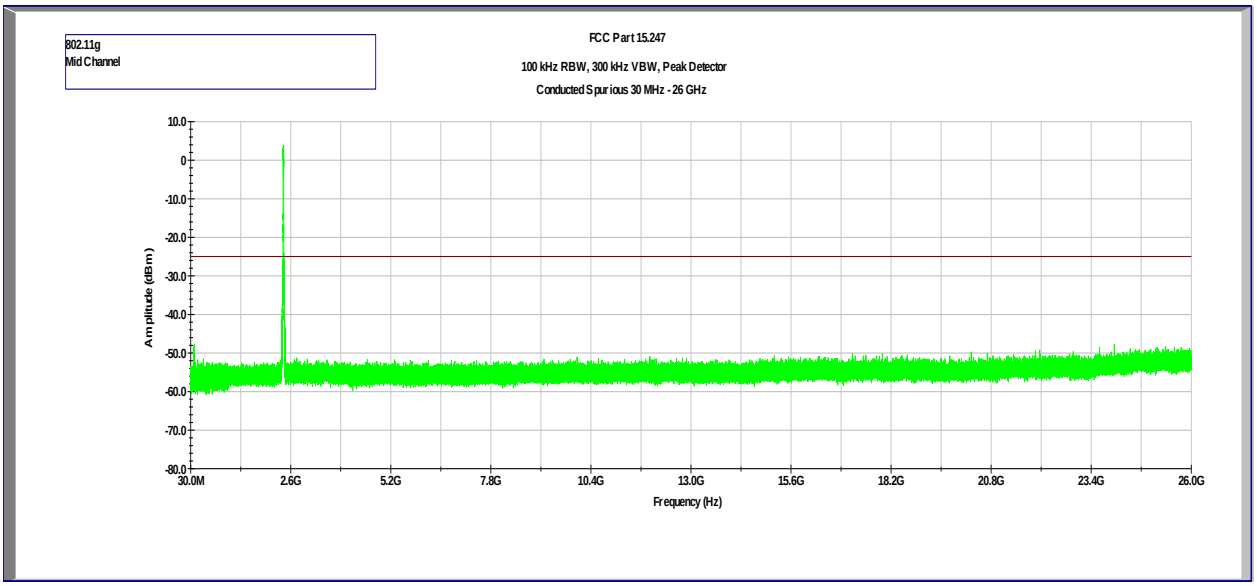
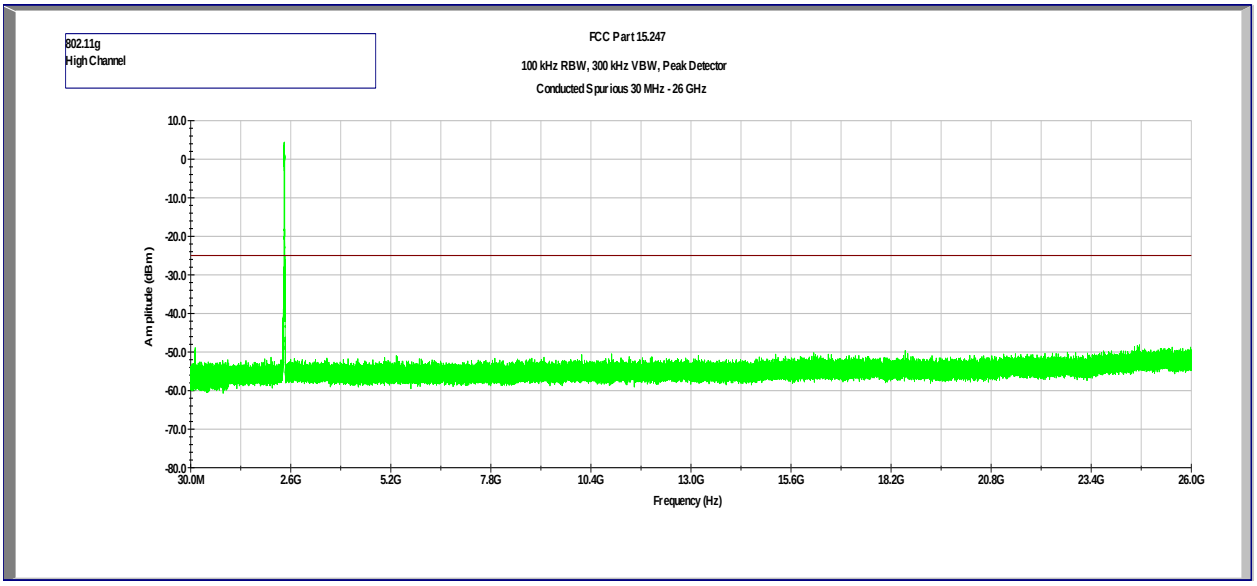
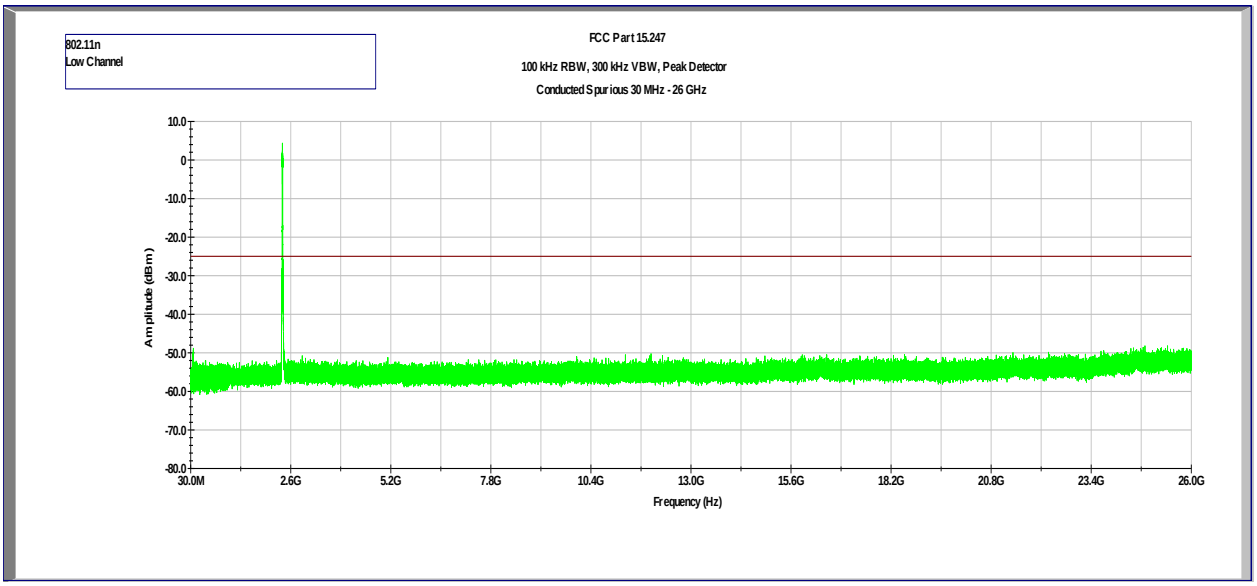
Plot 4.5
**Tx @ 2437MHz 802.11g**



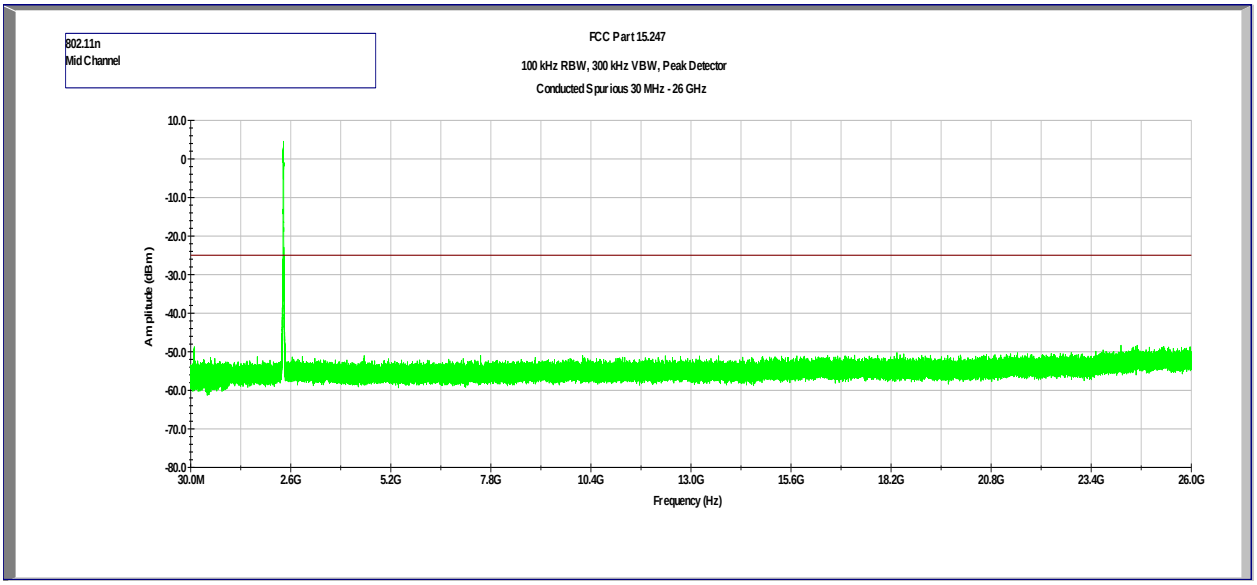

Plot 4.6
**Tx @ 2462MHz 802.11g**



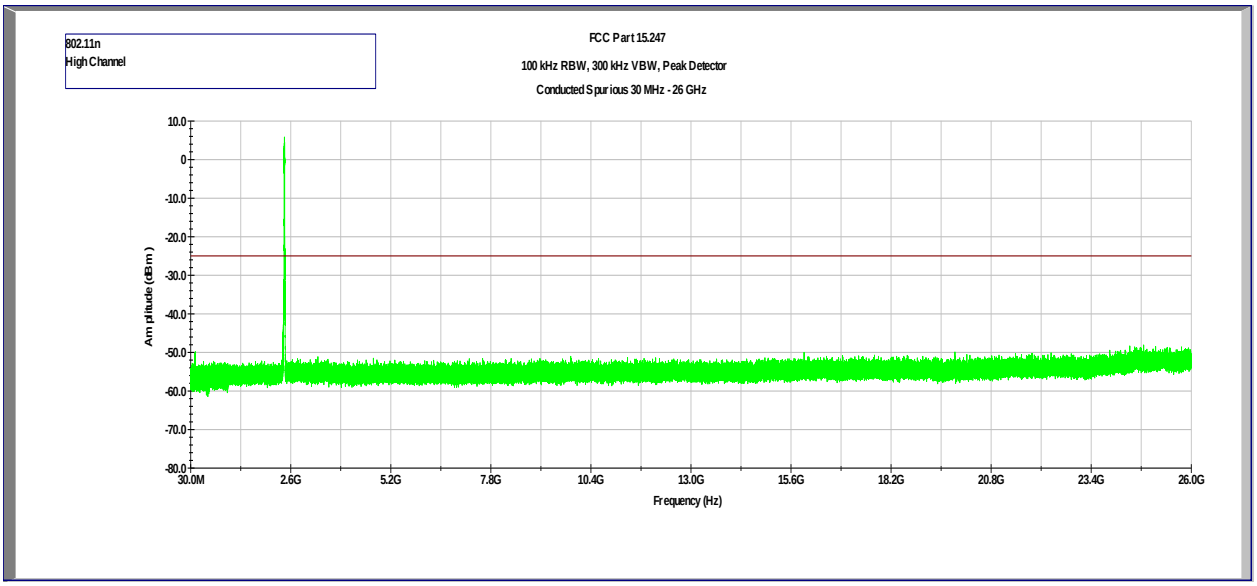
Plot 4.7
**Tx @ 2412MHz 802.11n**



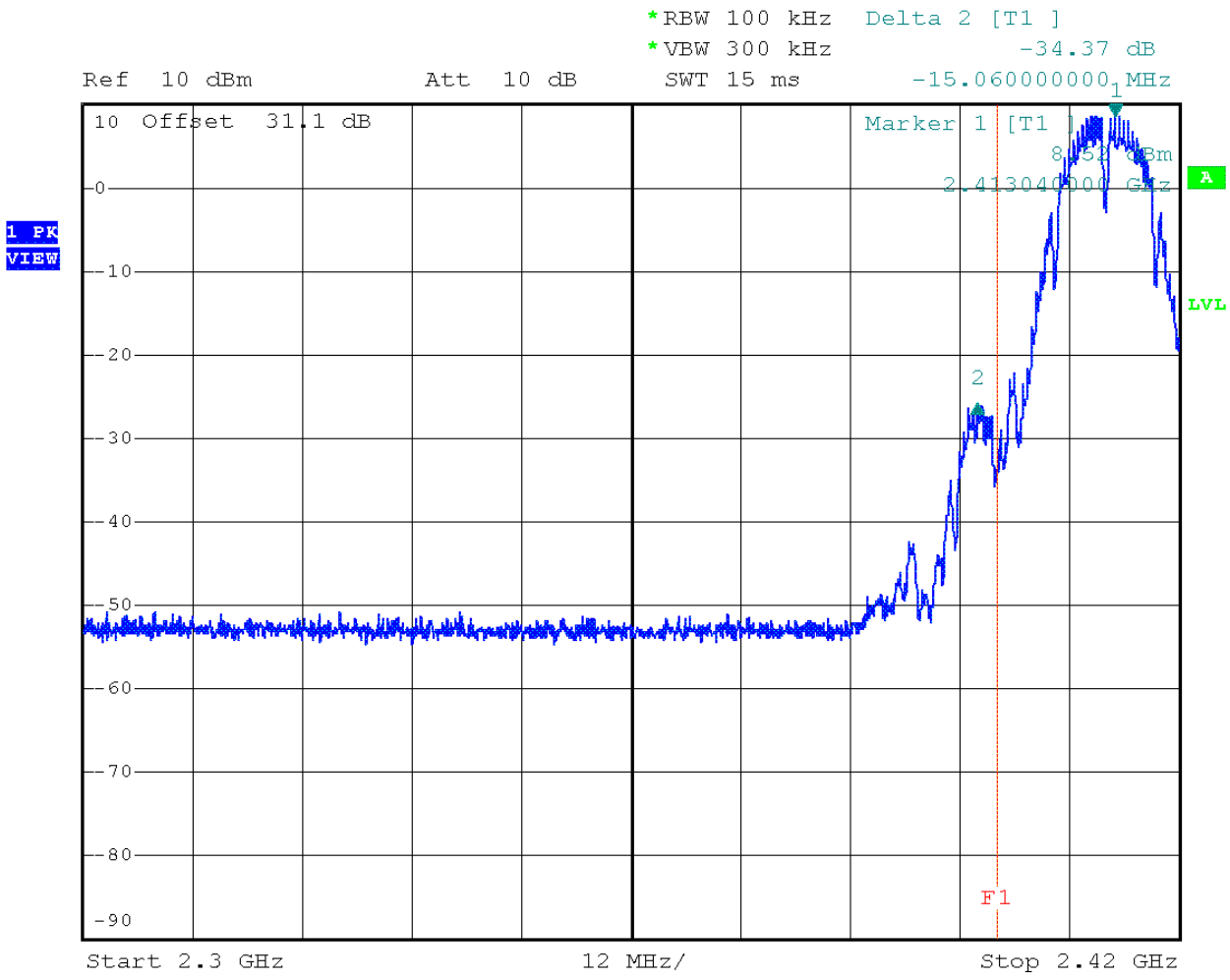

Plot 4.8
**Tx @ 2437MHz 802.11n**



Plot 4.9
**Tx @ 2462MHz 802.11n**



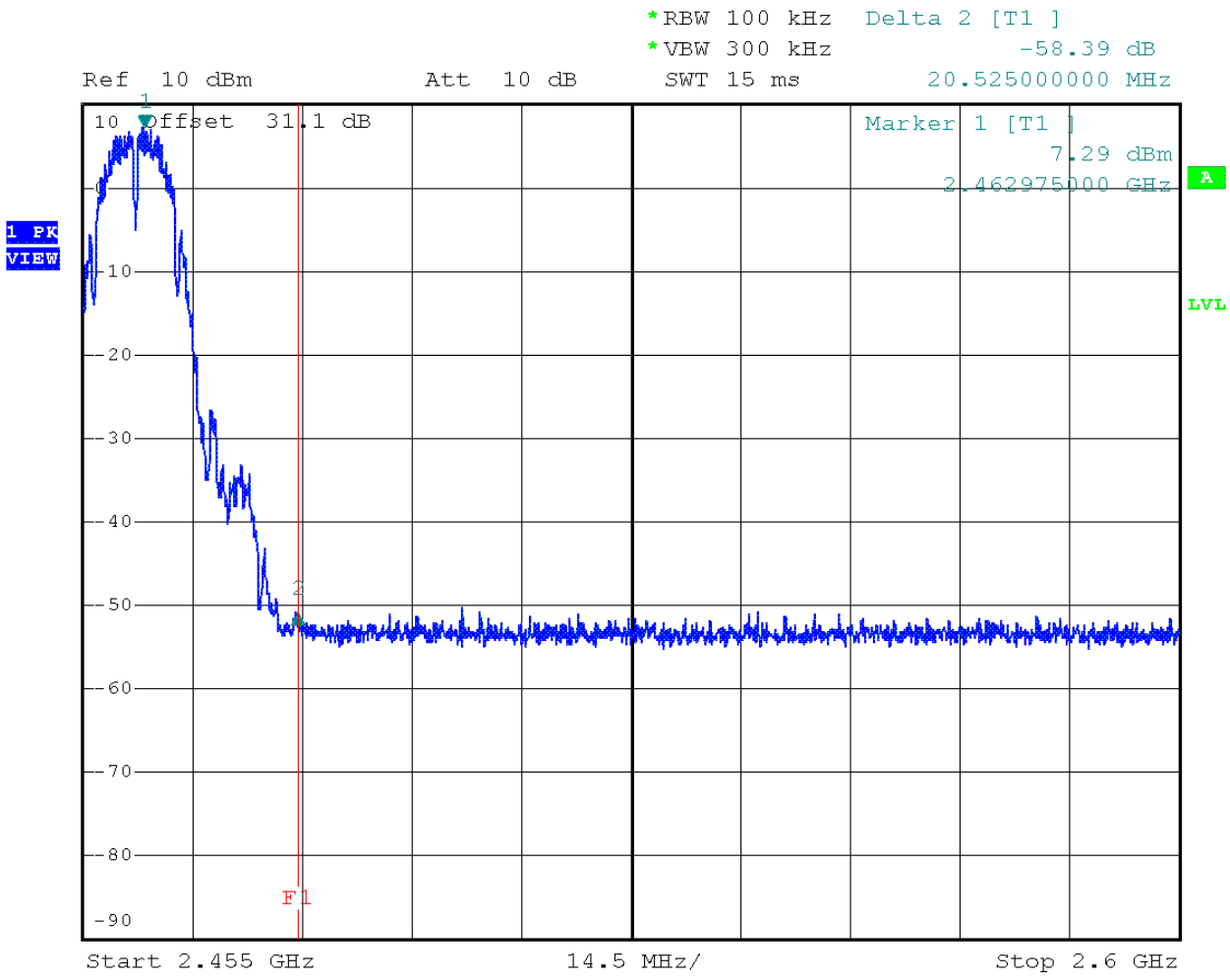
Plot 4.10
**Conducted Band Edge, Tx @ 2412MHz 802.11b**




Date: 18.SEP.2018 14:29:02

Plot 4.11

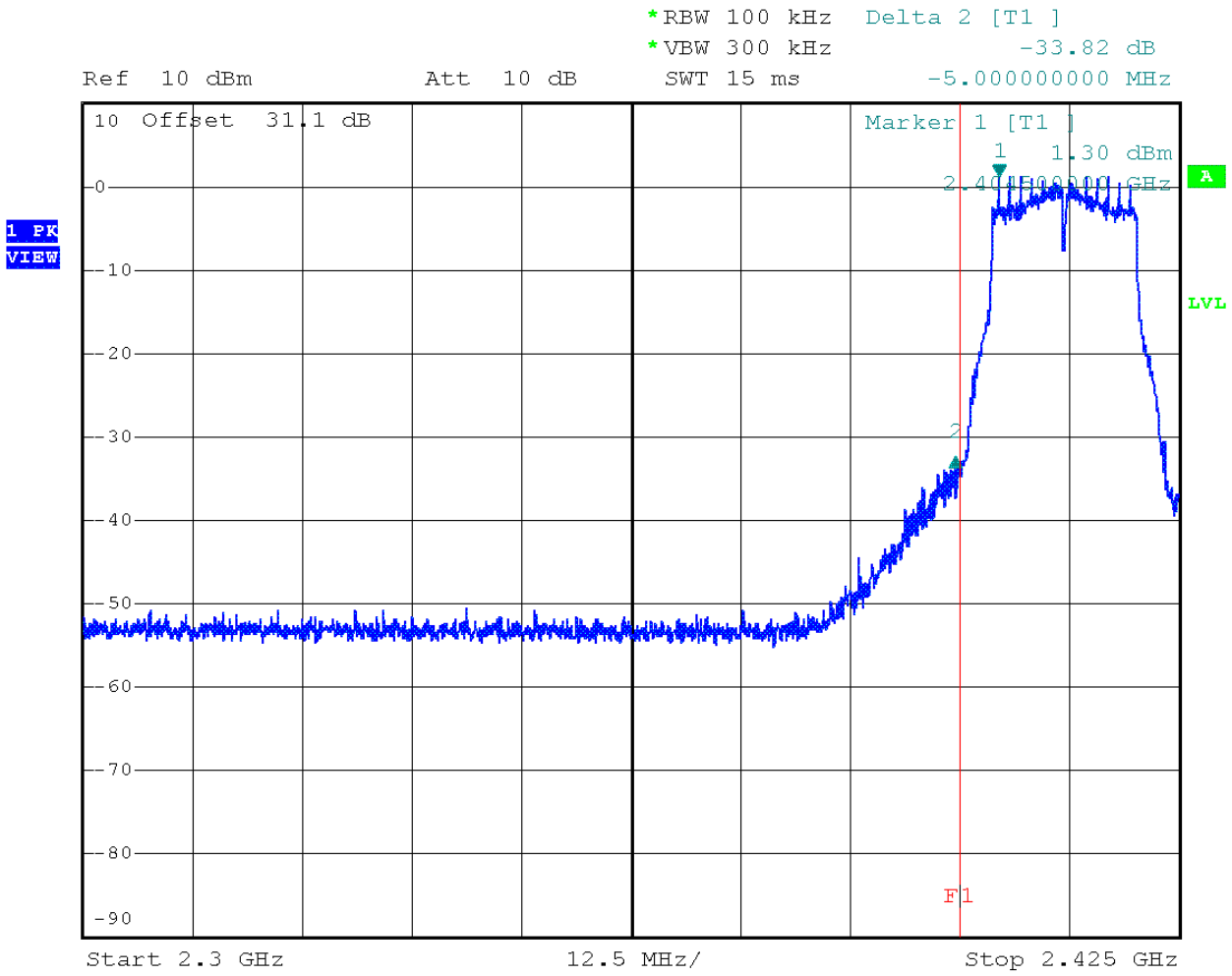
**Conducted Band Edge, Tx @ 2462MHz 802.11b**




Date: 18.SEP.2018 14:31:11

Plot 4.12

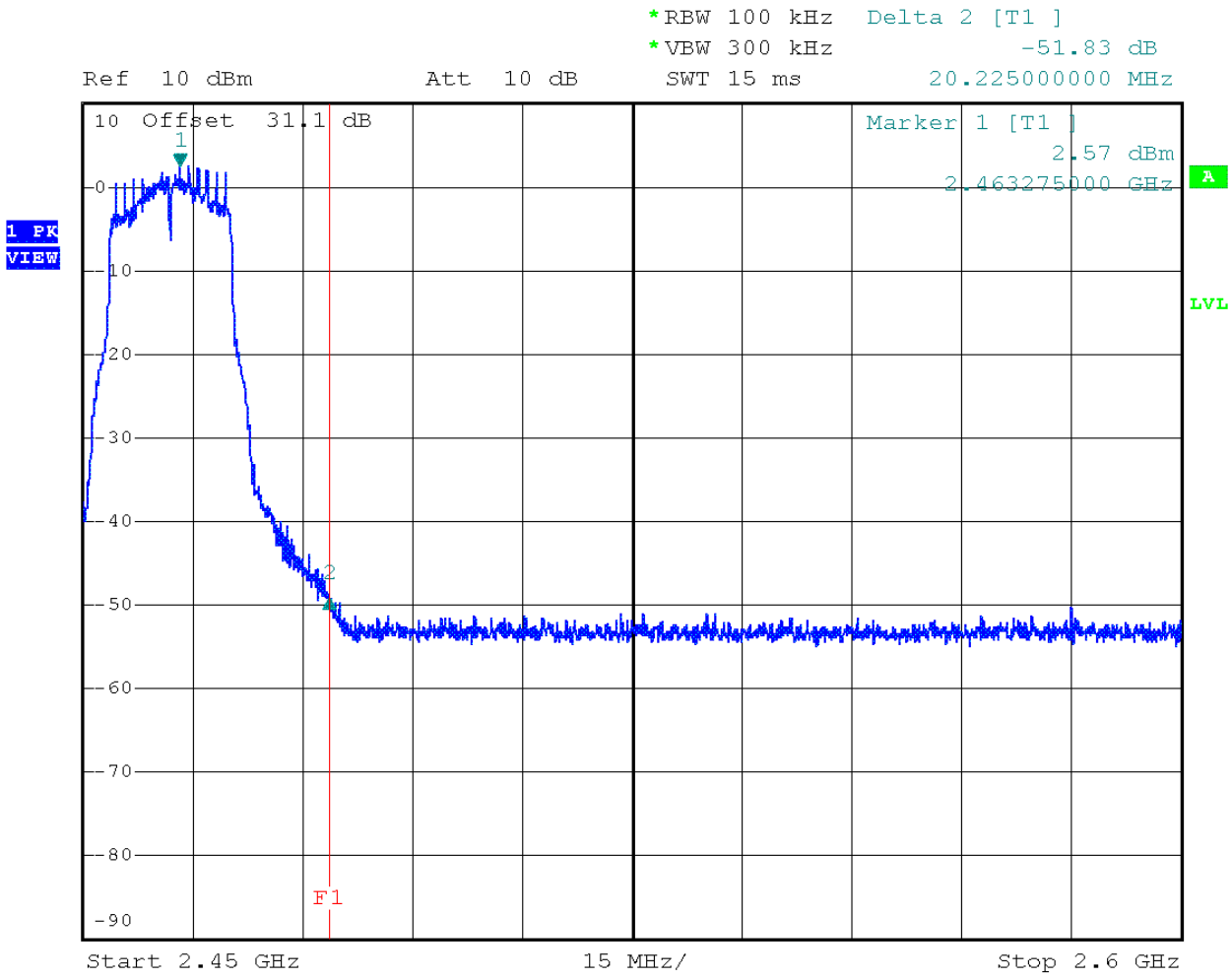
**Conducted Band Edge, Tx @ 2412MHz 802.11g**




Date: 20.SEP.2018 14:24:08

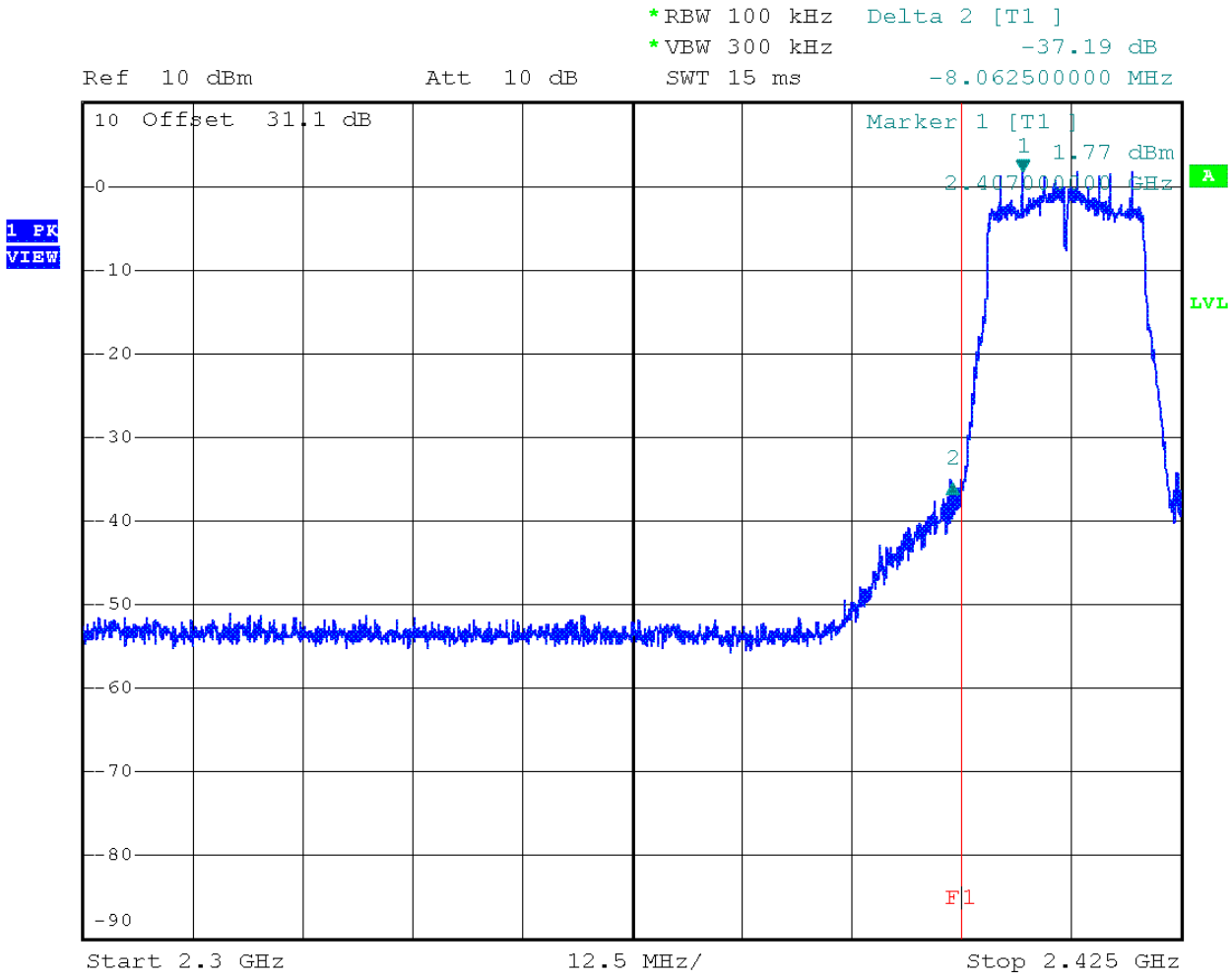
Plot 4.13

**Conducted Band Edge, Tx @ 2462MHz 802.11g**



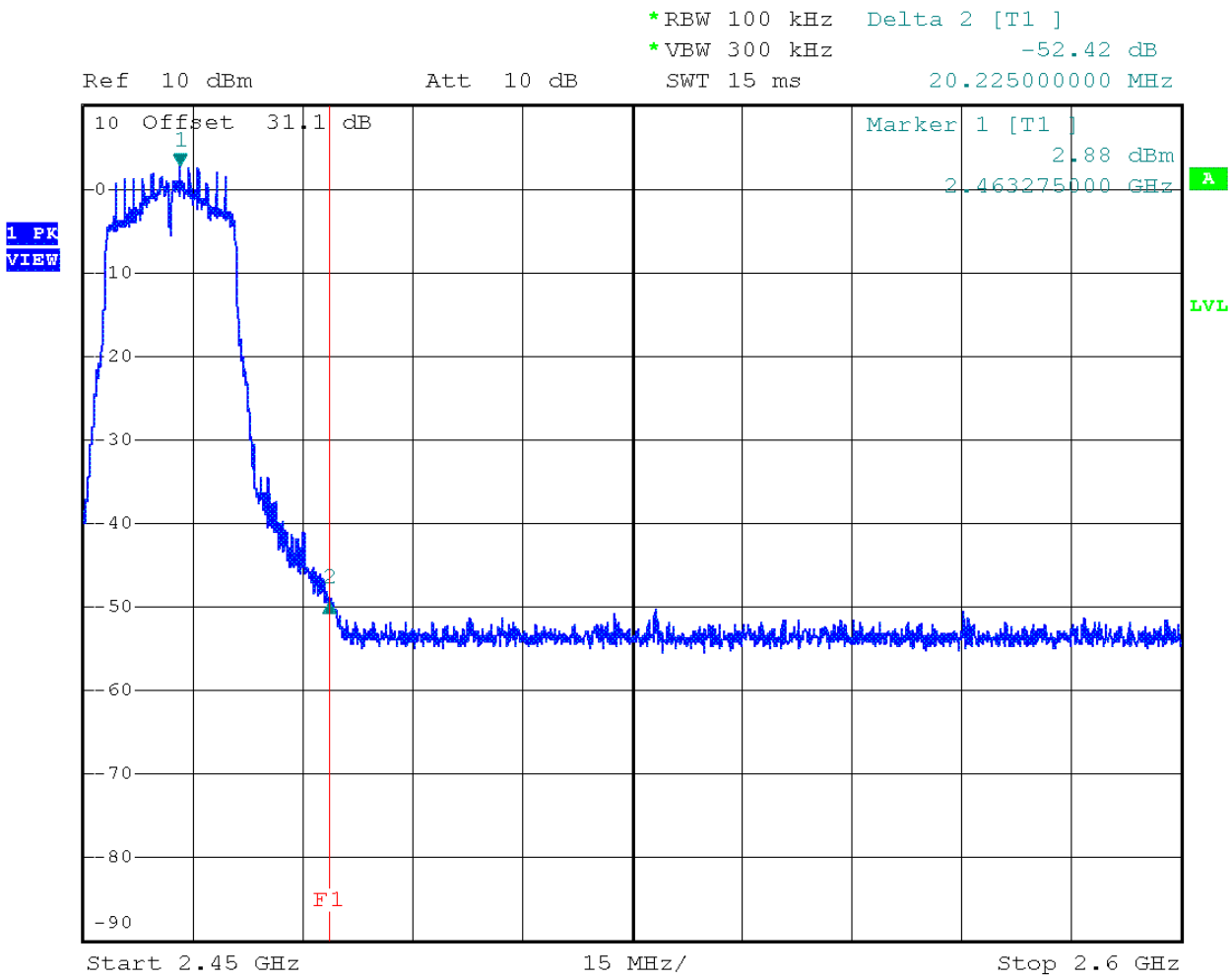

Date: 20.SEP.2018 14:26:35

Plot 4.14
**Conducted Band Edge, Tx @ 2412MHz 802.11n**




Date: 19.SEP.2018 13:18:52

Plot 4.15
**Conducted Band Edge, Tx @ 2462MHz 802.11n**




Date: 19.SEP.2018 13:20:57

## 4.5 Transmitter Radiated Emissions & Antenna Port Emissions
FCC Rule 15.247(d), 15.209, 15.205; RSS-247

### 4.5.1 Requirement

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)).

For out of band radiated emissions (except for frequencies in restricted bands), in any 100 kHz bandwidths outside the EUT pass-band, the RF power shall be at least 20dB (peak) or 30 dB (average) below that of the maximum in-band 100 kHz emissions.

### 4.5.2 Procedure – Radiated Emissions

Radiated emission measurements were performed from 30 MHz to 25 GHz according to the procedure described in ANSI C64.10. Spectrum Analyzer Resolution Bandwidth is 100 kHz or greater for frequencies 30 MHz to 1000 MHz, 1 MHz for frequencies above 1000 MHz. Above 1000 MHz Peak and Average measurements were performed.

The EUT is placed on a plastic turntable that is 80 cm in height for below 1000MHz and 1.5m in height for above 1GHz. If the EUT attaches to peripherals, they are connected and operational (as typical as possible). During testing, all cables were manipulated to produce worst-case emissions. The signal is maximized through rotation. The antenna height and polarization are varied during the search for maximum signal level. The antenna height is varied from 1 to 4 meters.

Radiated emissions are taken at 3 meters for frequencies above 1 GHz and at 10 meters for frequencies below 1 GHz.

Measurements made from 1 GHz to 18GHz had a 2.4-2.5GHz notch filter in place. A preamp was used from 30MHz to 26GHz.

All measurements were made with a Peak Detector and compared to QP limits for 30MHz – 1GHz and Average limits for 1GHz – 26GHz.

Data is included of the worst-case configuration (the configuration which resulted in the highest emission levels).

### 4.5.3 Field Strength Calculation

Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CF – AG; if measurement is performed at a distance other than specified in the rule, a Distance Correction Factor (DCF) shall be added.

Where FS = Field Strength in dB(μV/m)
RA = Receiver Amplitude (including preamplifier) in dB(μV); AF = Antenna Factor in dB(1/m)
CF = Cable Attenuation Factor in dB; AG = Amplifier Gain in dB

Assume a receiver reading of 52.0 dB(μV) is obtained. The antennas factor of 7.4 dB(1/m) and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted, giving field strength of 32 dB(μV/m). This value in dB(μV/m) was converted to its corresponding level in μV/m.
RA = 52.0 dB(μV)
AF = 7.4 dB(1/m)
CF = 1.6 dB
AG = 29.0 dB
FS = 52.0+7.4+1.6-29.0 = 32 dB(μV/m).
Level in μV/m = Com
mon Antilogarithm [(32 dBμV/m)/20] = 39.8 μV/m.

| Tested By | Test Date |
|---|---|
| Anderson Soungpanya | September 18 – 24, 2018 |

### 4.5.4 Antenna-port conducted measurements

Antenna-port conducted measurements may also be used as an alternative to radiated measurements for demonstrating compliance in the restricted frequency bands. If conducted measurements are performed, then proper impedance matching must be ensured and an additional radiated test for cabinet/case spurious emissions is required.

### 4.5.6 General Procedure for conducted measurements in restricted bands

a) Measure the conducted output power (in dBm) using the detector specified for determining quasi-peak, peak, and average conducted output power, respectively.

b) Add the maximum transmit antenna gain (in dBi) to the measured output power level to determine the EIRP level (see 12.2.5 for guidance on determining the applicable antenna gain)

c) Add the appropriate maximum ground reflection factor to the EIRP level (6 dB for frequencies ≤ 30 MHz, 4.7 dB for frequencies between 30 MHz and 1000 MHz, inclusive and 0 dB for frequencies > 1000 MHz).

d) For devices with multiple antenna-ports, measure the power of each individual chain and sum the EIRP of all chains in linear terms (*e.g.*, Watts, mW).

e) Convert the resultant EIRP level to an equivalent electric field strength using the following relationship:
E = EIRP – 20log D + 104.8+DCF (DCF for Average measurements)
where:
E = electric field strength in dBμV/m,
EIRP = equivalent isotropic radiated power in dBm
D = specified measurement distance in meters.
DCF = Duty Cycle Correction Factor
f) Compare the resultant electric field strength level to the applicable limit.
g) Perform radiated spurious emission test

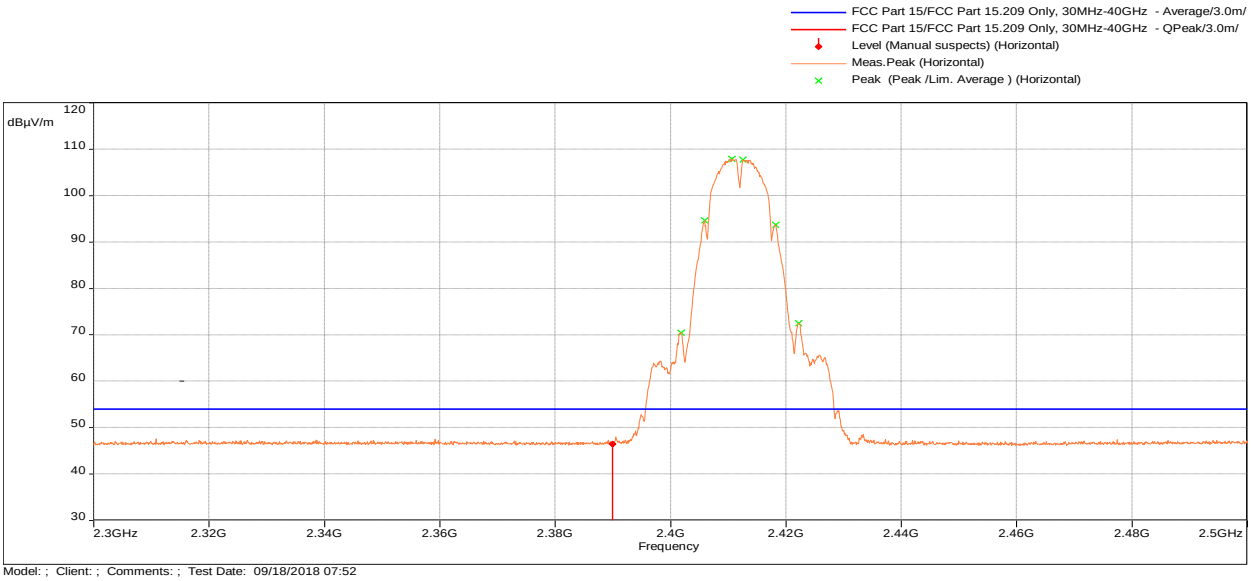
### 4.5.7 Test Results

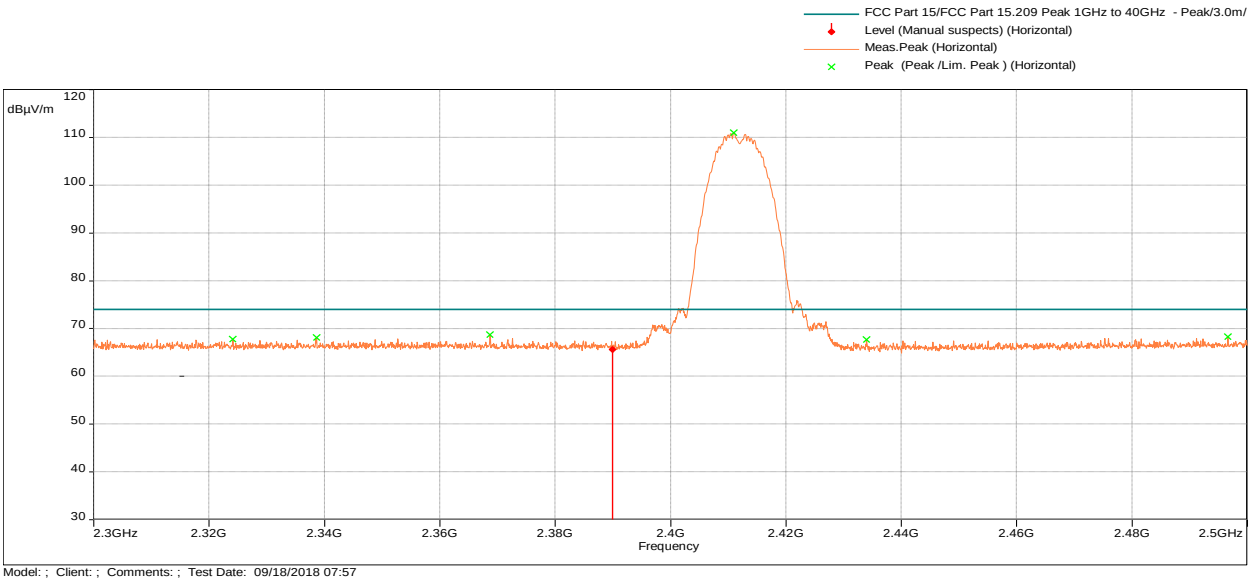
The data on the following pages list the significant emission frequencies, the limit and the margin of compliance.

Radiated emission measurements were performed up to 25GHz. No Emissions were identified when scanned from 18-25 GHz.

## Test Results: 15.209/15.205 Radiated Restricted Band Emissions

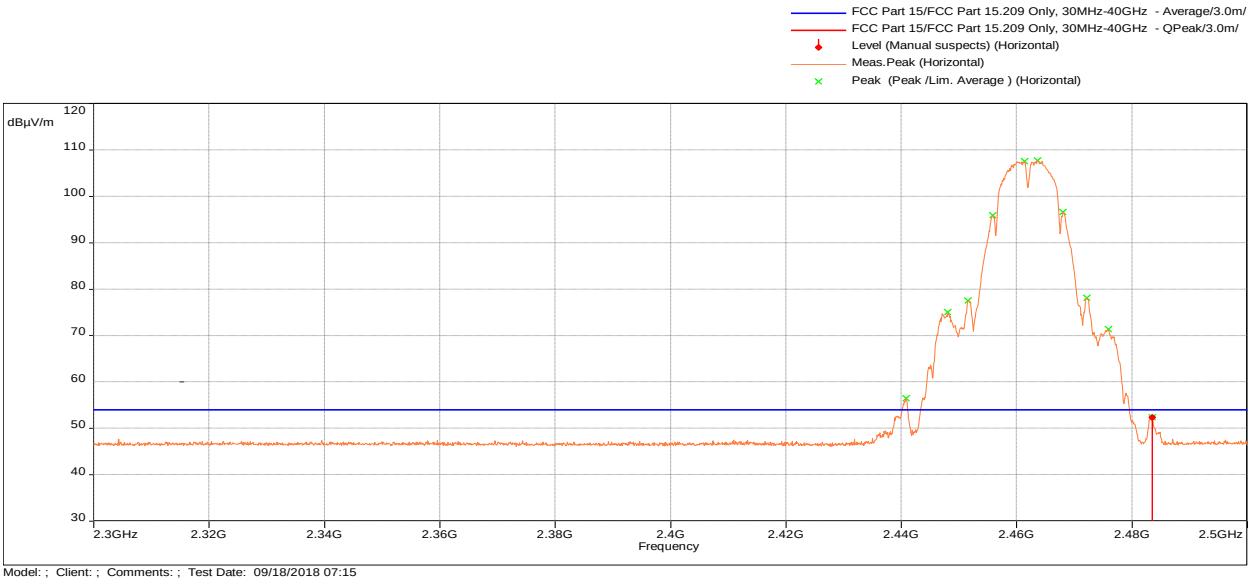
### Out-of-Band Spurious Emissions at the Band Edge - 802.11b, 2412 MHz



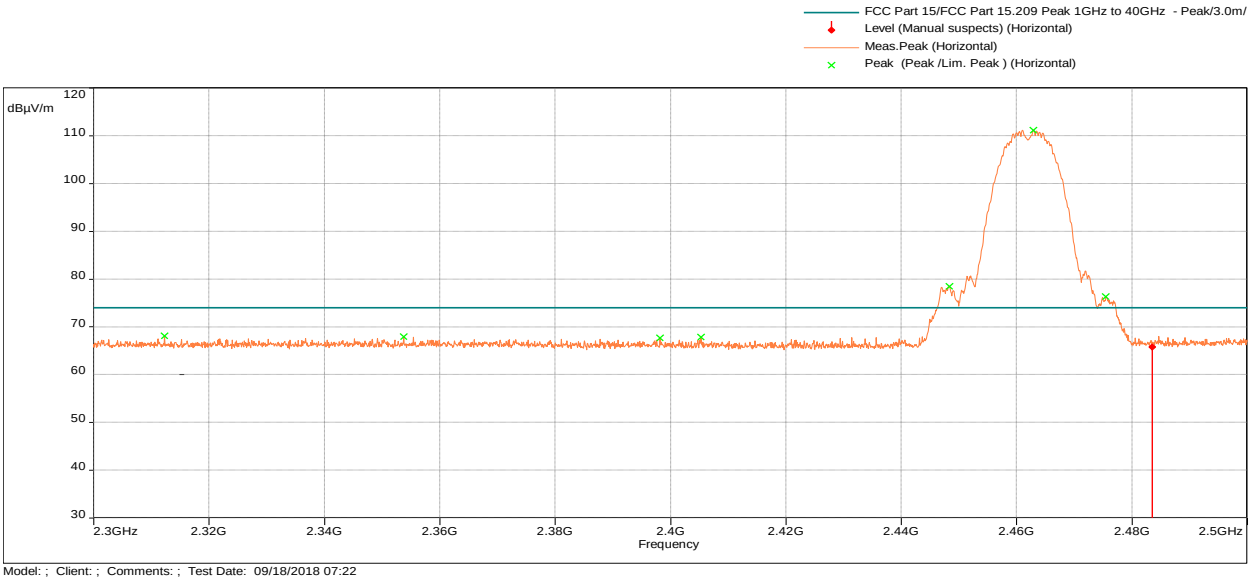




| Frequency (MHz) | Detector | Amplitude (dBµV/m) | Margin (dB) | Limit (dBµV/m) | Height (m) | Angle (°) |
|---|---|---|---|---|---|---|
| 2390.0 | Average | 46.40 | -7.60 | 54 | 1.27 | 296 |
| 2390.0 | Peak | 65.55 | -8.45 | 74 | | |

## Out-of-Band Spurious Emissions at the Band Edge - 802.11b, 2462 MHz



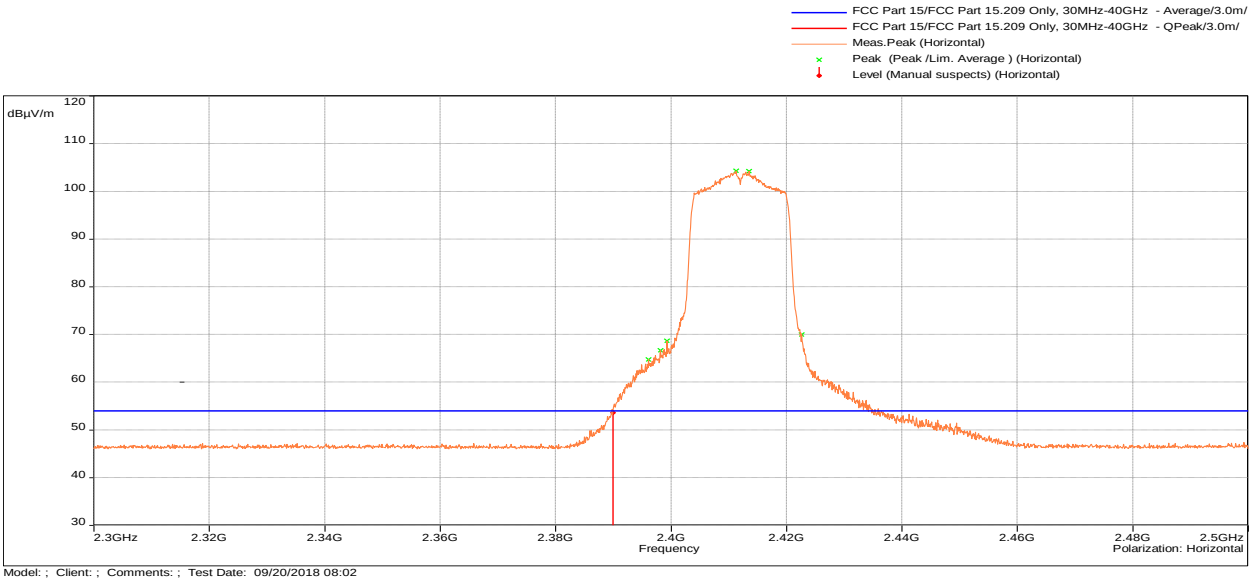

Model: ; Client: ; Comments: ; Test Date: 09/18/2018 07:15



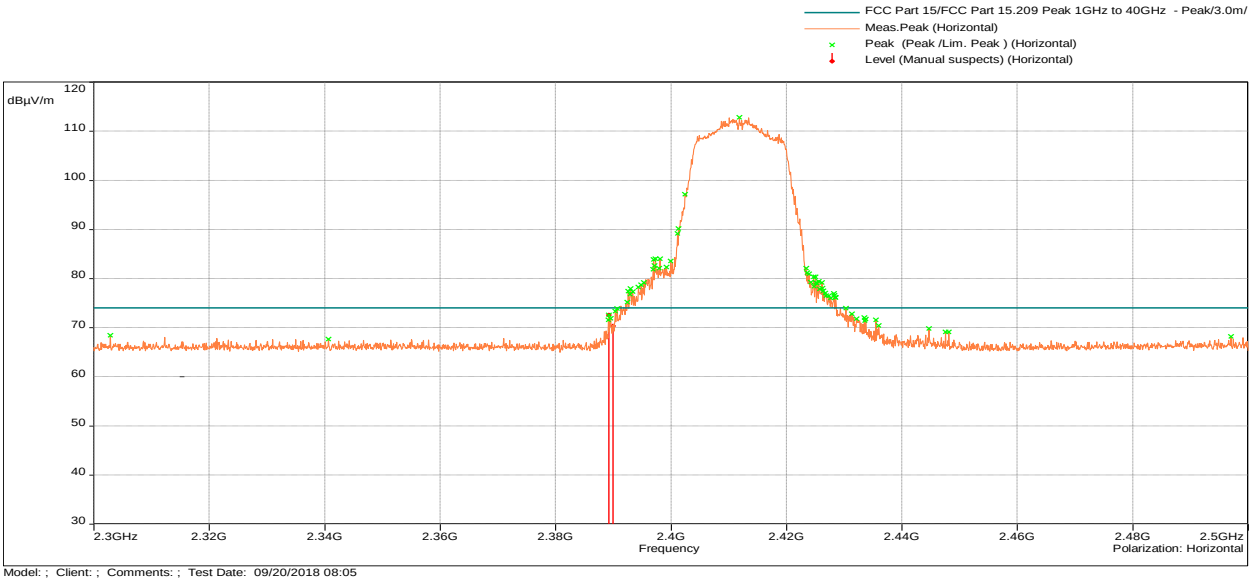

Model: ; Client: ; Comments: ; Test Date: 09/18/2018 07:22

| Frequency (MHz) | Detector | Amplitude (dBµV/m) | Margin (dB) | Limit (dBµV/m) | Height (m) | Angle (°) |
|---|---|---|---|---|---|---|
| 2483.5 | Average | 52.37 | -1.63 | 54 | 1.26 | 53 |
| 2483.5 | Peak | 65.76 | -8.24 | 74 | | |

## Out-of-Band Spurious Emissions at the Band Edge - 802.11g, 2412 MHz



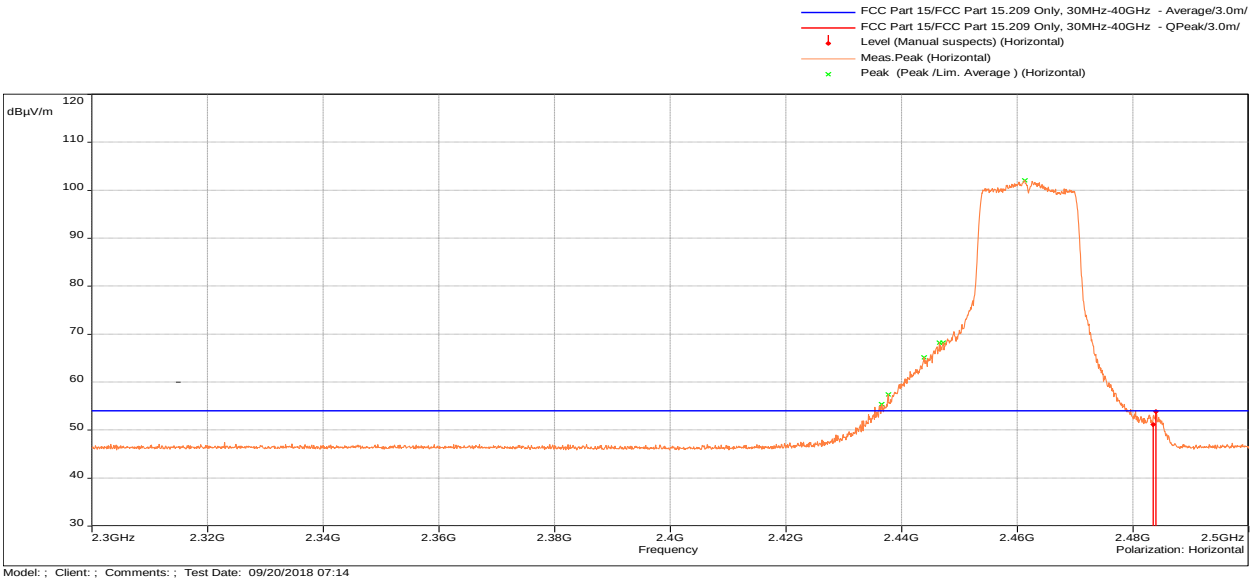

Model: ; Client: ; Comments: ; Test Date: 09/20/2018 08:02

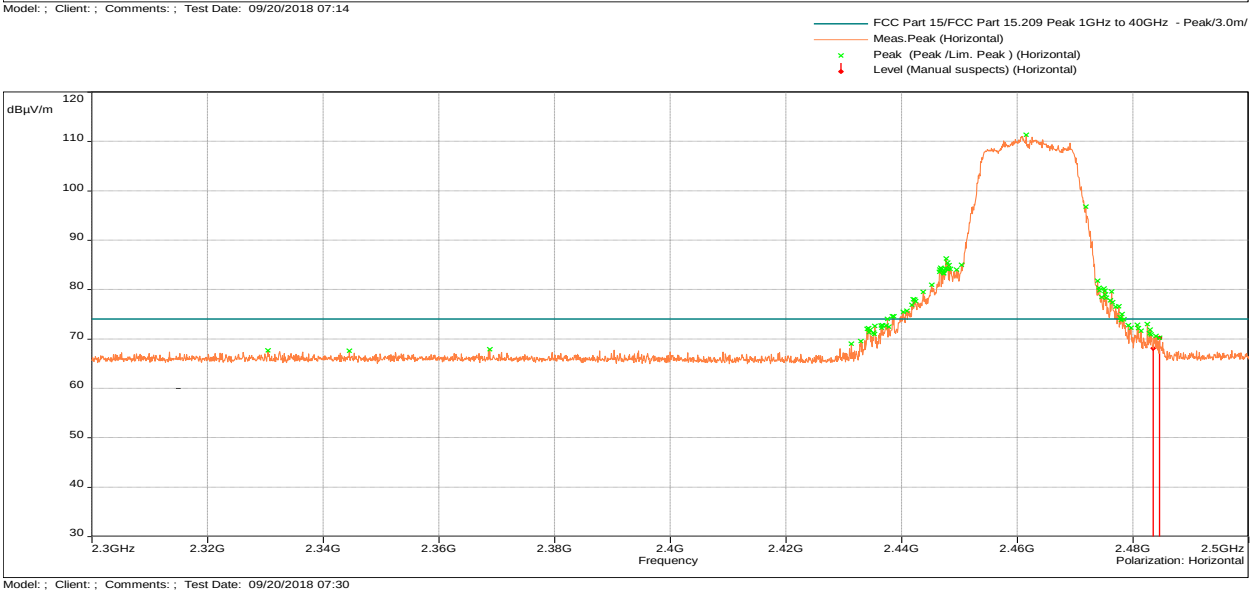



Model: ; Client: ; Comments: ; Test Date: 09/20/2018 08:05

| Frequency (MHz) | Detector | Amplitude (dBµV/m) | Margin (dB) | Limit (dBµV/m) | Height (m) | Angle (°) |
|---|---|---|---|---|---|---|
| 2390.0 | Average | 53.61 | -0.39 | 54 | 1.48 | 70 |
| 2390.0 | Peak | 70.34 | -3.66 | 74 | | |
| 2389.3 | Peak | 72.53 | -1.47 | 74 | | |

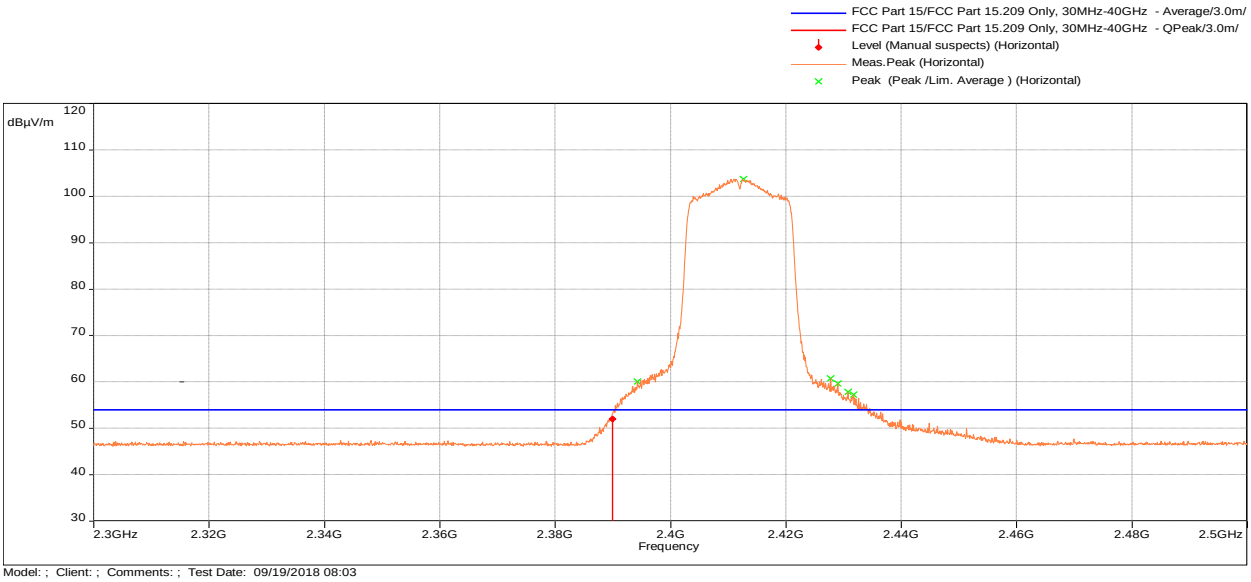
## Out-of-Band Spurious Emissions at the Band Edge - 802.11g, 2462 MHz



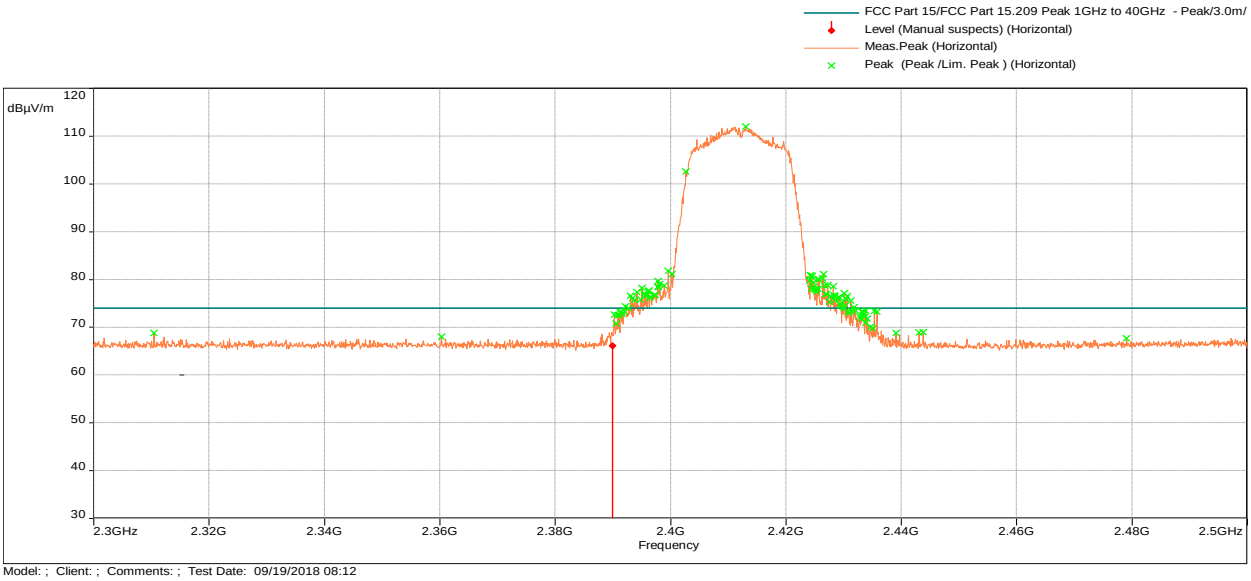




| Frequency (MHz) | Detector | Amplitude (dBµV/m) | Margin (dB) | Limit (dBµV/m) | Height (m) | Angle (°) |
|---|---|---|---|---|---|---|
| 2484.0 | Average | 53.84 | -0.16 | 54 | 1.42 | 100 |
| 2483.5 | Average | 51.14 | -2.86 | 54 | | |
| 2483.5 | Peak | 68.07 | -5.93 | 74 | | |
| 2484.6 | Peak | 70.19 | -3.87 | 74 | | |

## Out-of-Band Spurious Emissions at the Band Edge - 802.11n, 2412 MHz



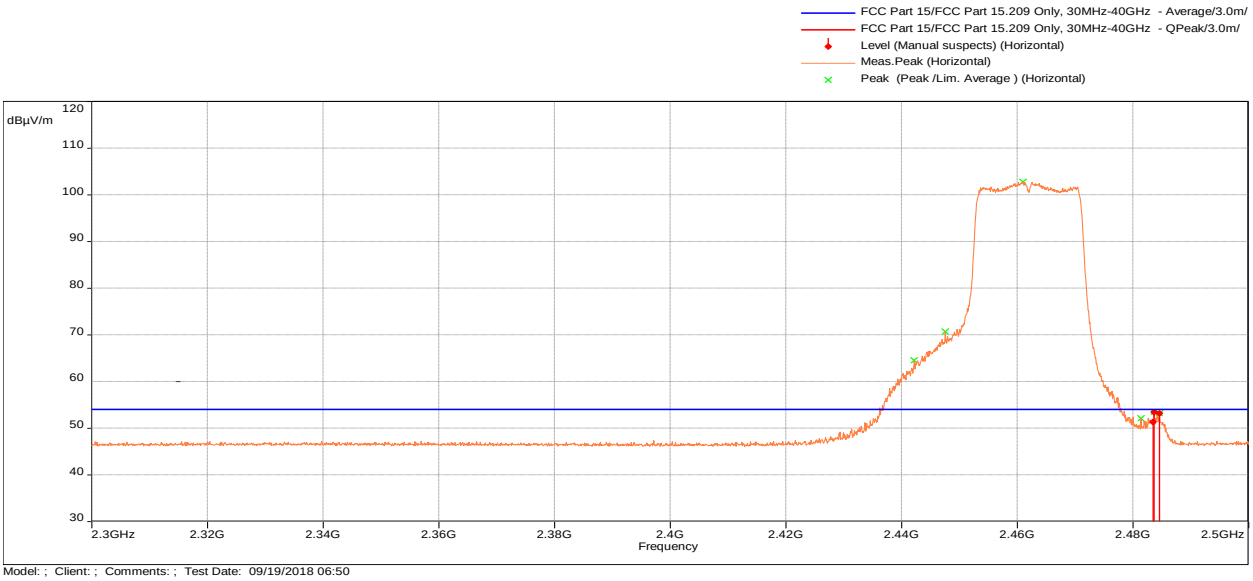

Model: ; Client: ; Comments: ; Test Date: 09/19/2018 08:03



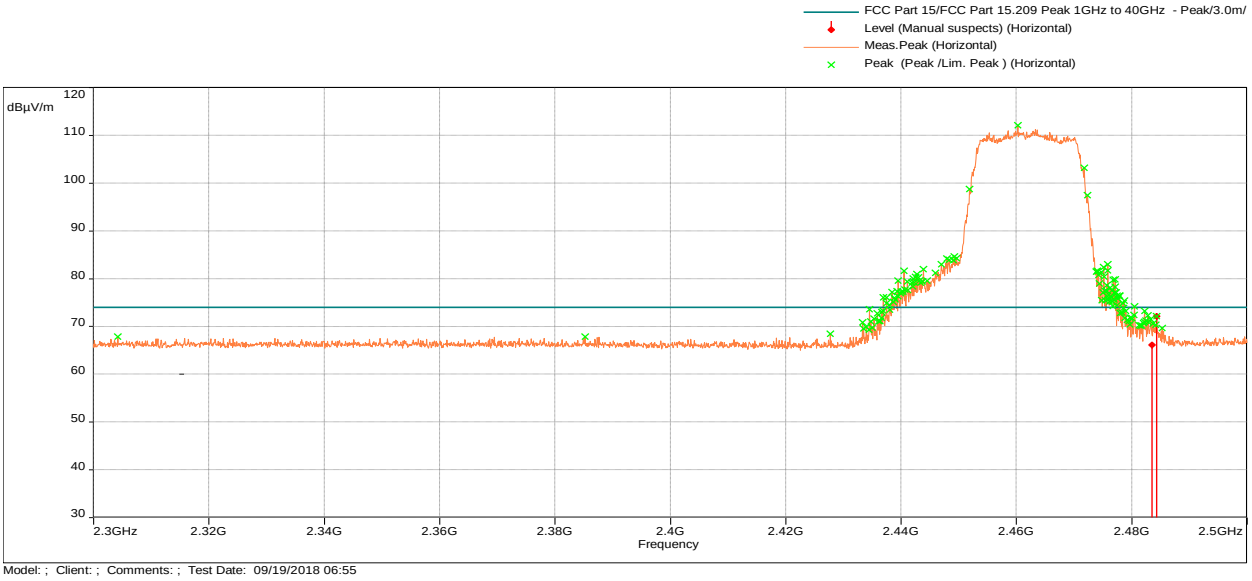

Model: ; Client: ; Comments: ; Test Date: 09/19/2018 08:12

| Frequency (MHz) | Detector | Amplitude (dBµV/m) | Margin (dB) | Limit (dBµV/m) | Height (m) | Angle (°) |
|---|---|---|---|---|---|---|
| 2390.0 | Average | 51.97 | -2.03 | 54 | 1.50 | 58 |
| 2390.0 | Peak | 66.12 | -7.88 | 74 | | |

## Out-of-Band Spurious Emissions at the Band Edge - 802.11n, 2462 MHz




Model: ; Client: ; Comments: ; Test Date: 09/19/2018 06:50



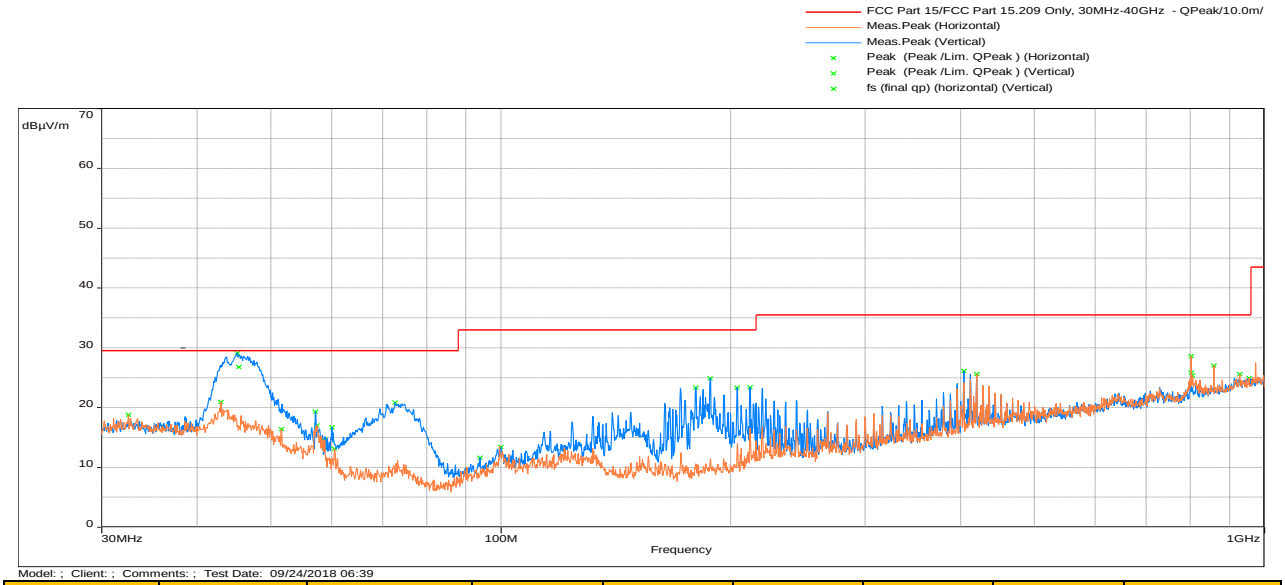

Model: ; Client: ; Comments: ; Test Date: 09/19/2018 06:55

| Frequency (MHz) | Detector | Amplitude (dBµV/m) | Margin (dB) | Limit (dBµV/m) | Height (m) | Angle (°) |
|---|---|---|---|---|---|---|
| 2483.6 | Average | 53.39 | -0.61 | 54 | 1.30 | 43 |
| 2483.7 | Average | 53.18 | -0.82 | 54 | | |
| 2483.5 | Average | 51.31 | -2.69 | 54 | | |
| 2483.5 | Peak | 66.09 | -7.91 | 74 | | |
| 2484.3 | Peak | 72.09 | -1.91 | 74 | | |

## Out-of-Band Radiated Spurious Emissions (Charge Mode)

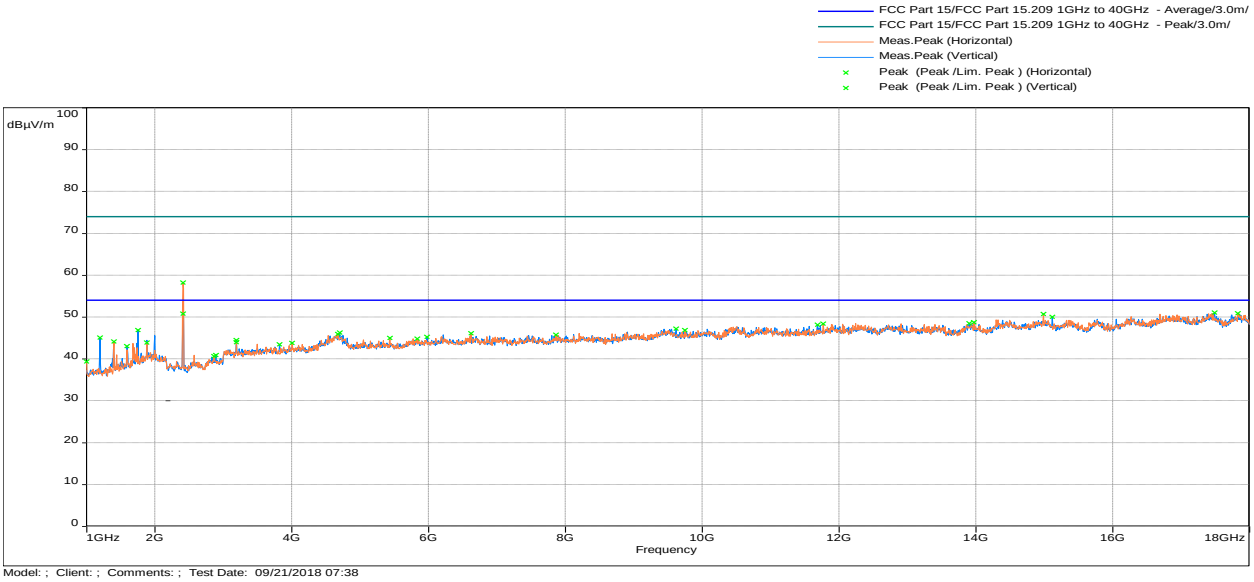
### Test Results: 15.209 Radiated Spurious Emissions Low Channel, Tx at 802.11b 2412MHz

Out-of-Band Radiated Spurious Emissions - 30 MHz to 1000 MHz



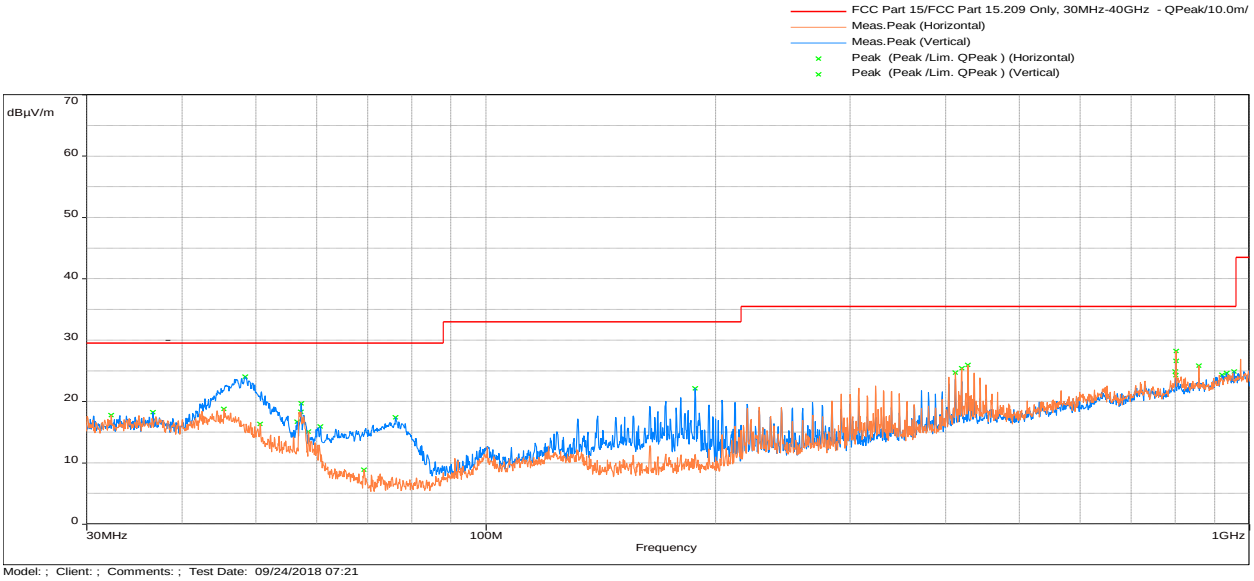

| Frequency (MHz) | FS@10m (dBµV/m) | Limit@10m (dB(uV/m)) | Margin (dB) | Azimuth (deg) | Height (m) | Polarity | RA (dBuV) | Correction (dB) |
|---|---|---|---|---|---|---|---|---|
| 45.380 | 26.79 | 29.5 | -2.71 | 99 | 1.45 | Vertical | 36.65 | -9.88 |

Radiated Spurious Emissions 1000 - 18000 MHz, Peak Scan vs Peak & Avg Limit



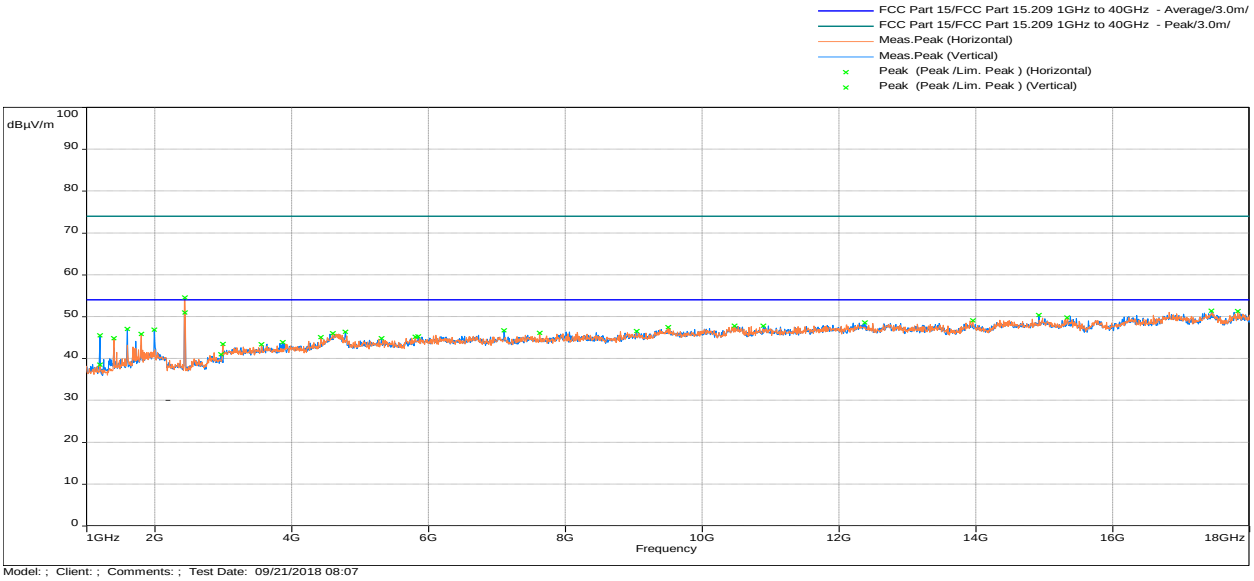
## Test Results: 15.209 Radiated Spurious Emissions Low Channel, Tx at 802.11b 2437MHz

Out-of-Band Radiated Spurious Emissions - 30 MHz to 1000 MHz




Model: ; Client: ; Comments: ; Test Date: 09/24/2018 07:21

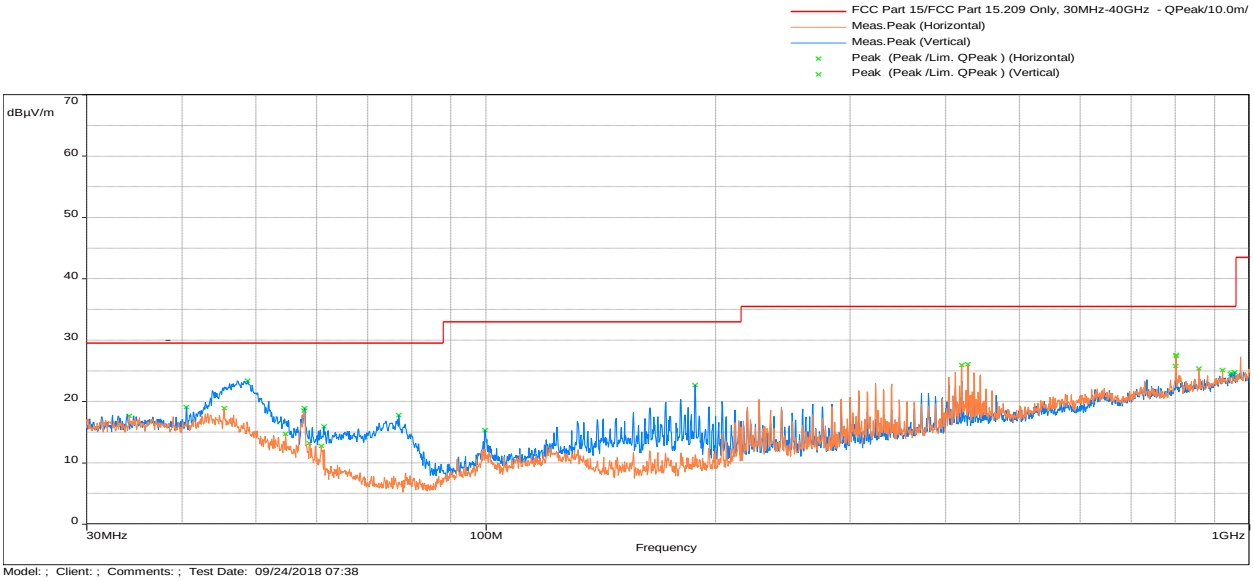
Radiated Spurious Emissions 1000 - 18000 MHz, Peak Scan vs Peak & Avg Limit




Model: ; Client: ; Comments: ; Test Date: 09/21/2018 08:07

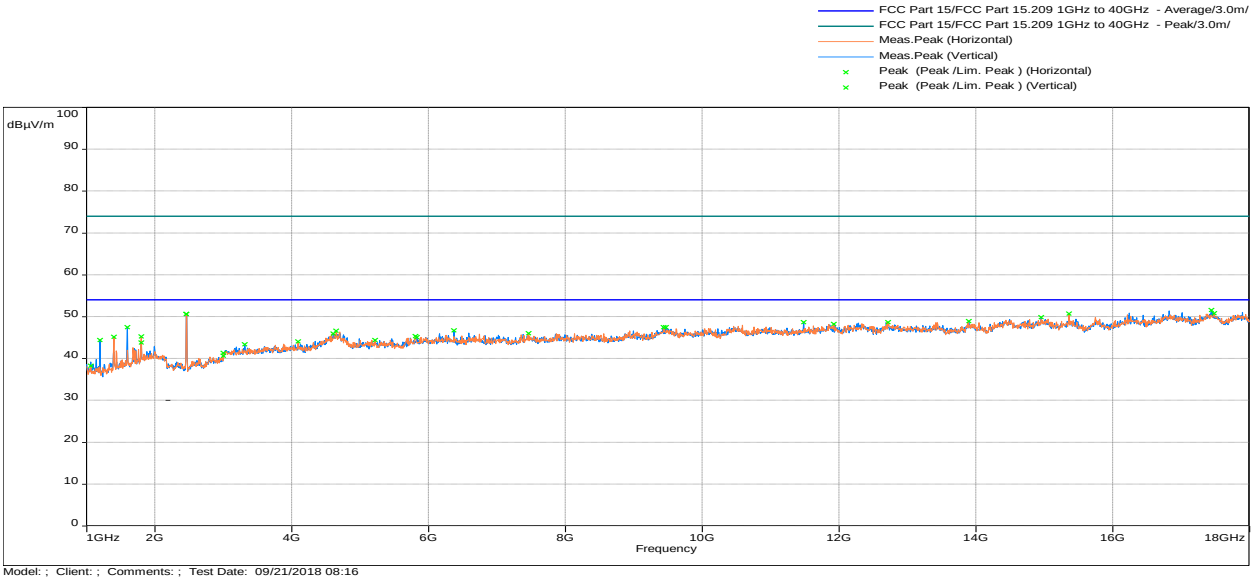
## Test Results: 15.209 Radiated Spurious Emissions Low Channel, Tx at 802.11b 2462MHz

Out-of-Band Radiated Spurious Emissions - 30 MHz to 1000 MHz




Model: ; Client: ; Comments: ; Test Date: 09/24/2018 07:38

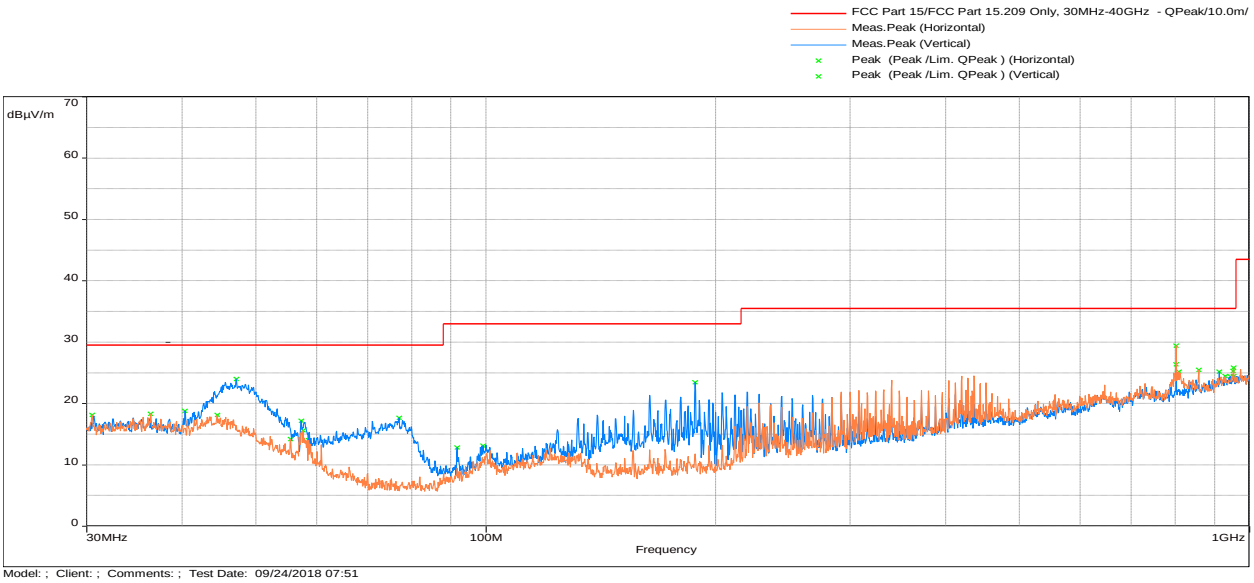
Radiated Spurious Emissions 1000 - 18000 MHz, Peak Scan vs Peak & Avg Limit




Model: ; Client: ; Comments: ; Test Date: 09/21/2018 08:16

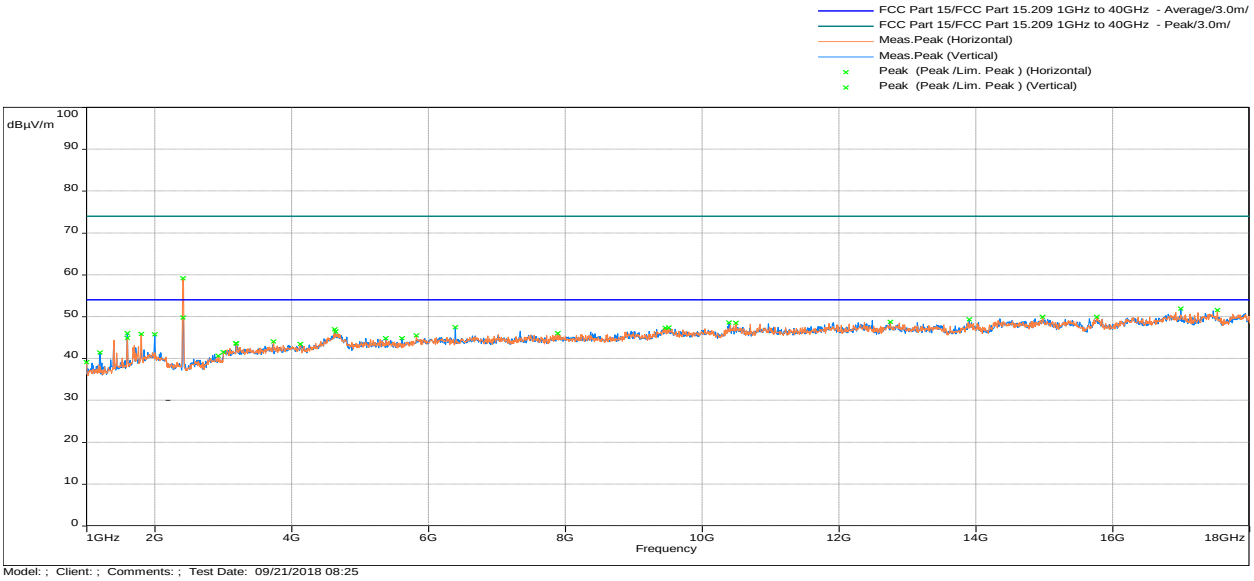
## Test Results: 15.209 Radiated Spurious Emissions Low Channel, Tx at 802.11g 2412MHz

Out-of-Band Radiated Spurious Emissions - 30 MHz to 1000 MHz




Model: ; Client: ; Comments: ; Test Date: 09/24/2018 07:51

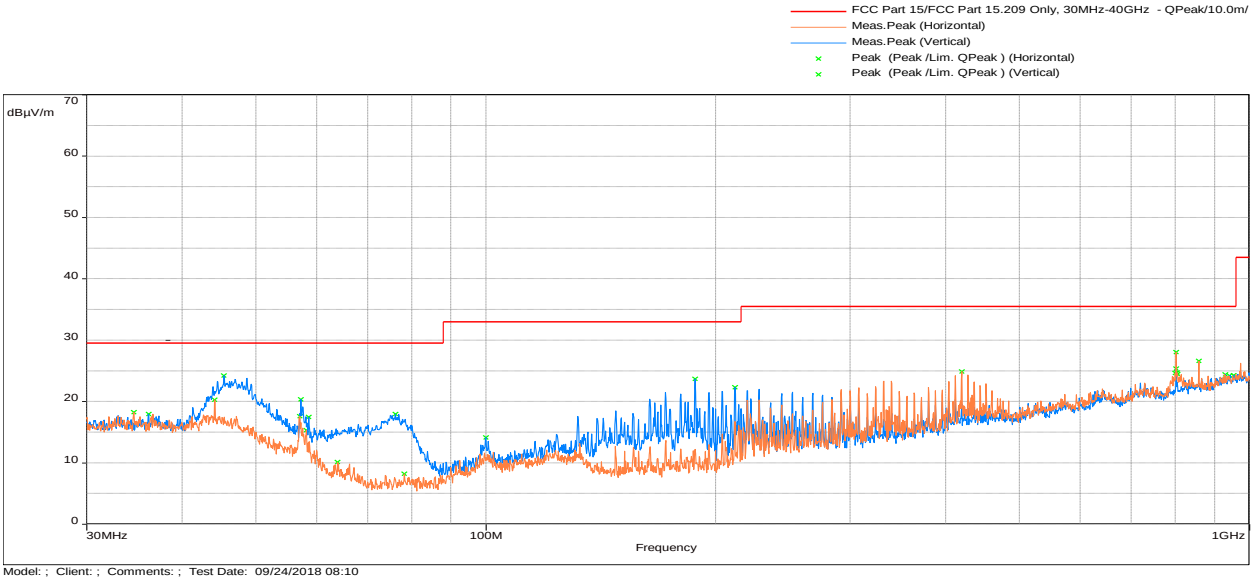
Radiated Spurious Emissions 1000 - 18000 MHz, Peak Scan vs Peak & Avg Limit




Model: ; Client: ; Comments: ; Test Date: 09/21/2018 08:25

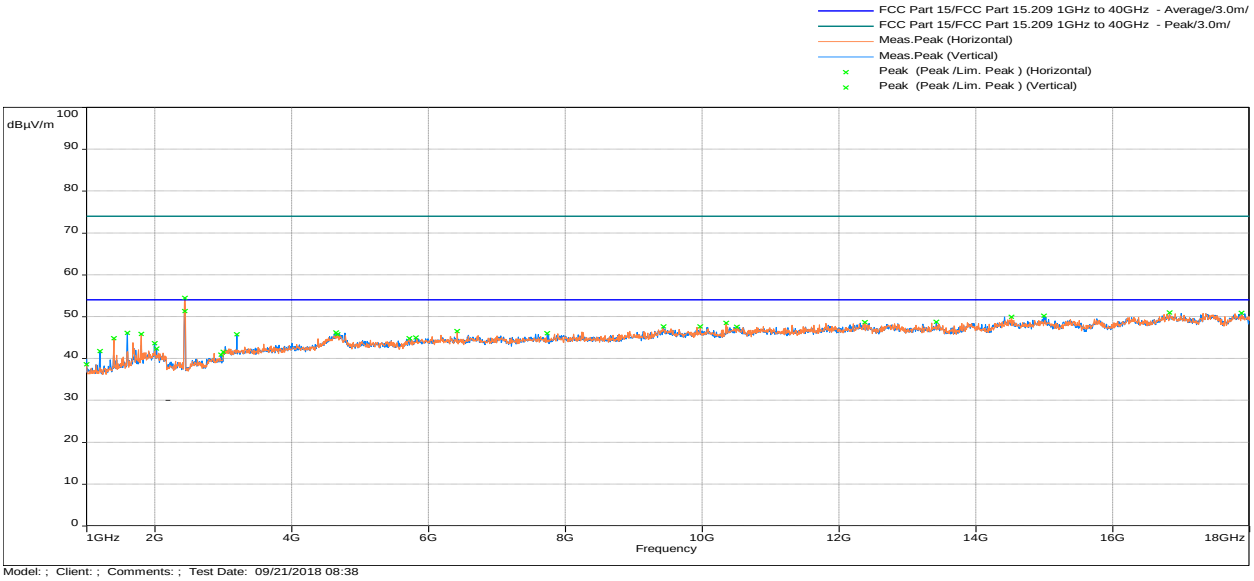
## Test Results: 15.209 Radiated Spurious Emissions Low Channel, Tx at 802.11g 2437MHz

Out-of-Band Radiated Spurious Emissions - 30 MHz to 1000 MHz




Model: ; Client: ; Comments: ; Test Date: 09/24/2018 08:10

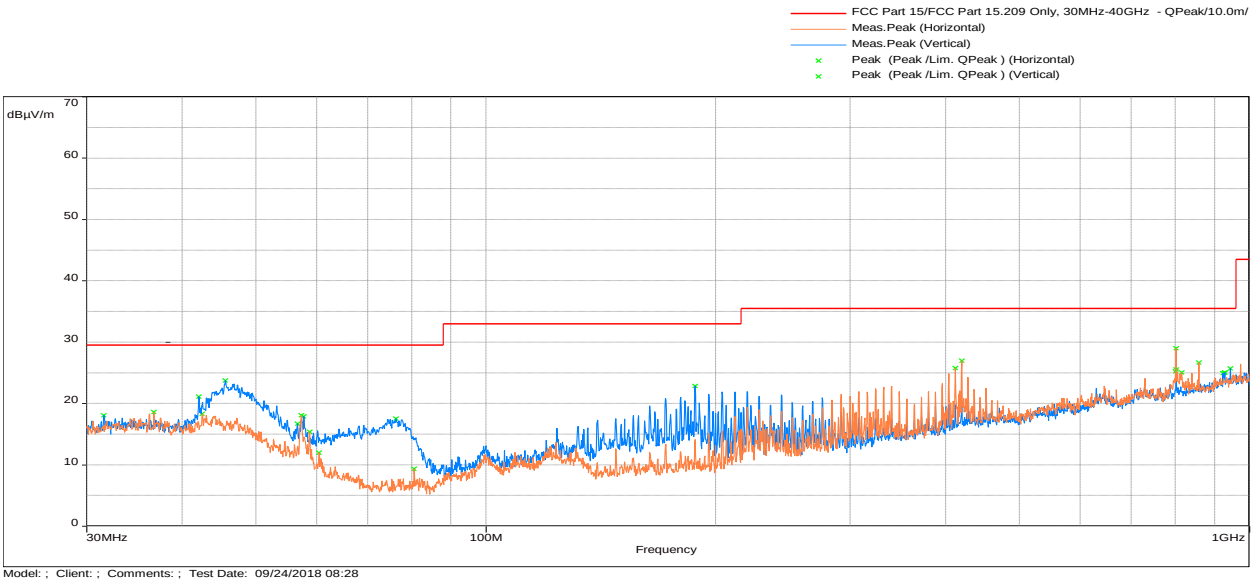
Radiated Spurious Emissions 1000 - 18000 MHz, Peak Scan vs Peak & Avg Limit



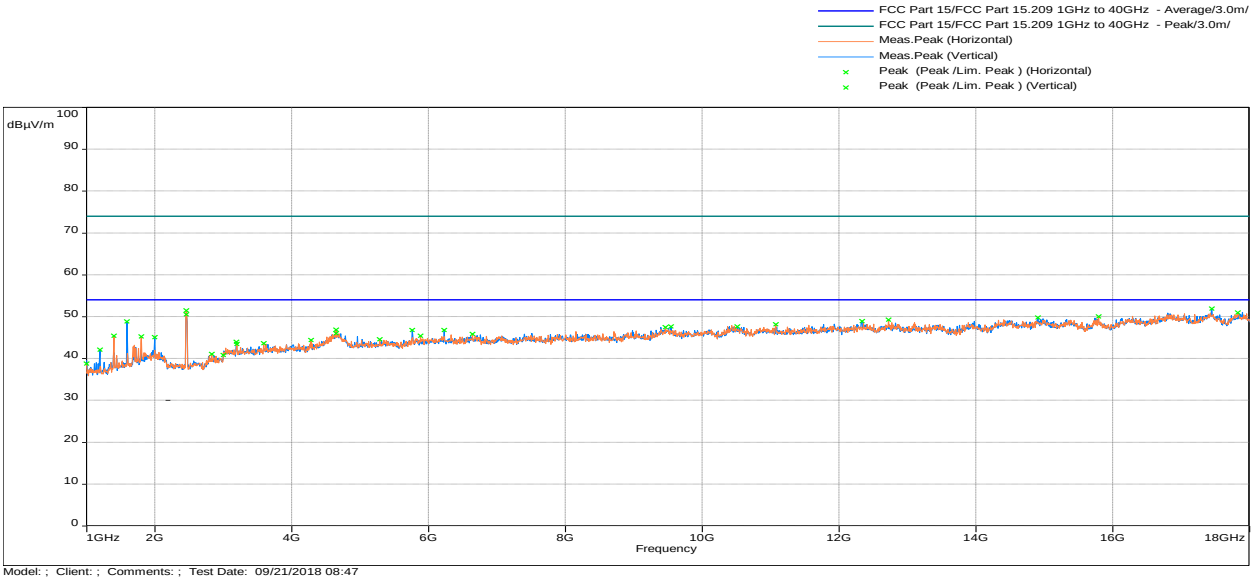

Model: ; Client: ; Comments: ; Test Date: 09/21/2018 08:38

## Test Results: 15.209 Radiated Spurious Emissions Low Channel, Tx at 802.11g 2462MHz

Out-of-Band Radiated Spurious Emissions - 30 MHz to 1000 MHz



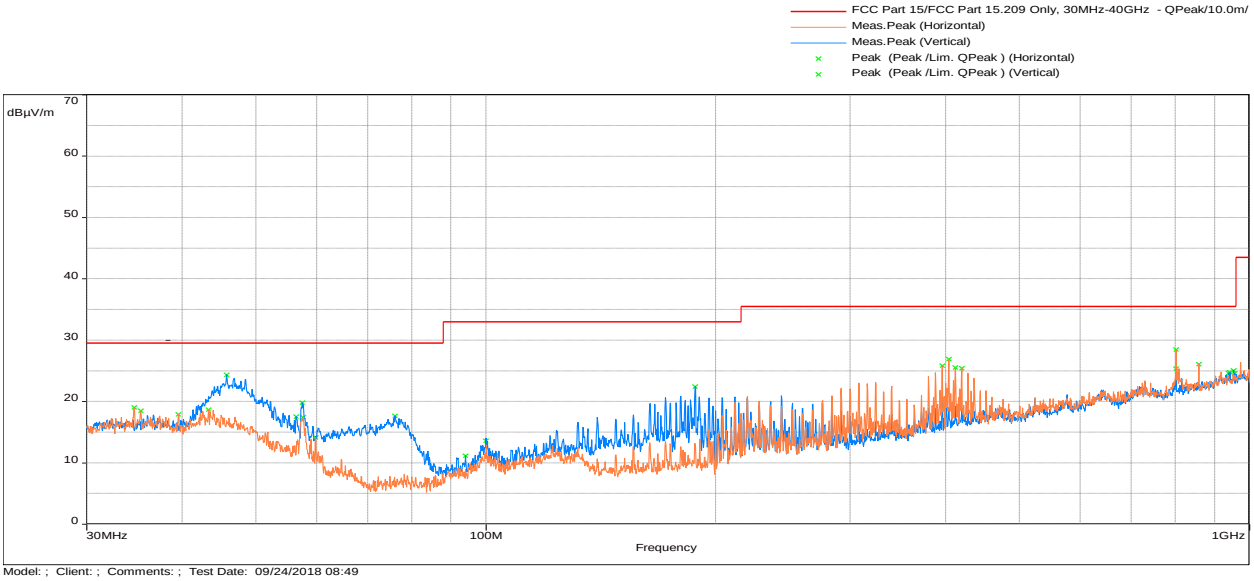

Radiated Spurious Emissions 1000 - 18000 MHz, Peak Scan vs Peak & Avg Limit




| Frequency | Detector | FS@3m | Limit@3m | Margin | Azimuth | Height | Polarity | Correction |
|---|---|---|---|---|---|---|---|---|
| MHz | | dBuV/m | dBuV/m | (dB) | (deg) | (m) | | dB |
| 17479.80 | Peak | 48.56 | 54 | -5.44 | 318 | 1.65 | Vertical | 4.45 |
| 17479.80 | Peak | 60.69 | 74 | -13.31 | 277 | 1.70 | Vertical | 4.45 |

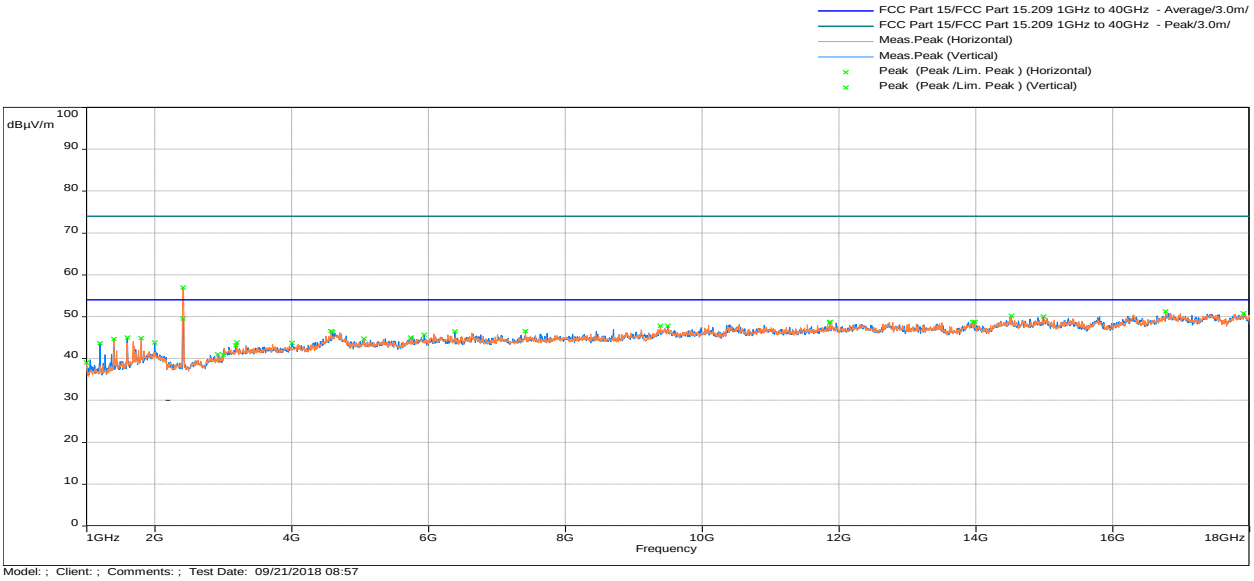
## Test Results: 15.209 Radiated Spurious Emissions Low Channel, Tx at 802.11n, 2412MHz

Out-of-Band Radiated Spurious Emissions - 30 MHz to 1000 MHz




Model: ; Client: ; Comments: ; Test Date: 09/24/2018 08:49

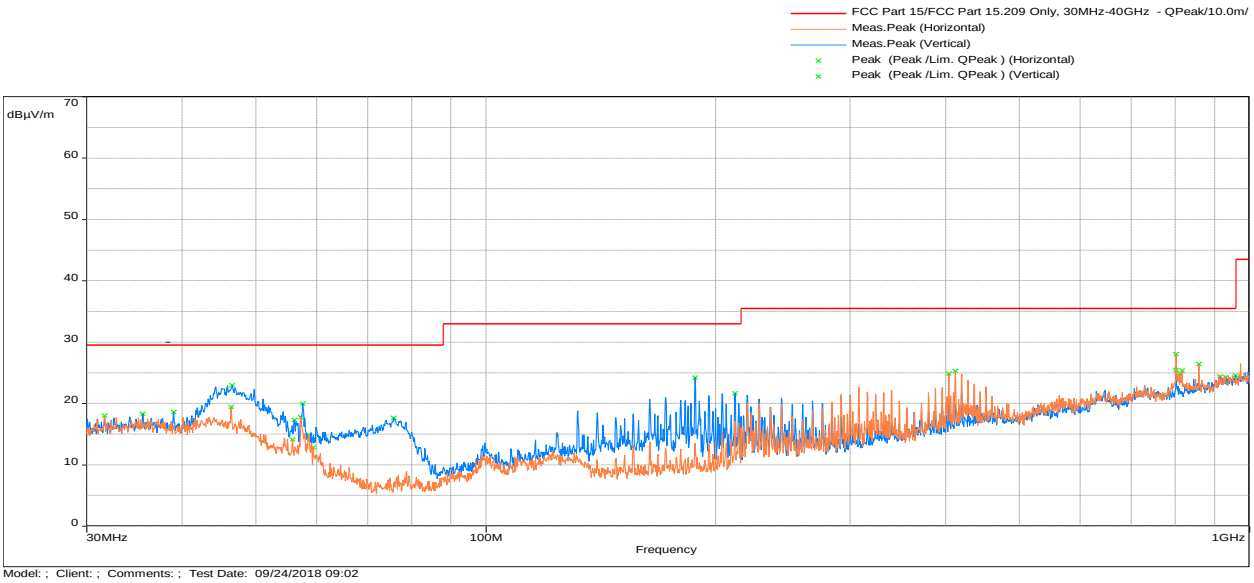
Radiated Spurious Emissions 1000 - 18000 MHz, Peak Scan vs Peak & Avg Limit




Model: ; Client: ; Comments: ; Test Date: 09/21/2018 08:57

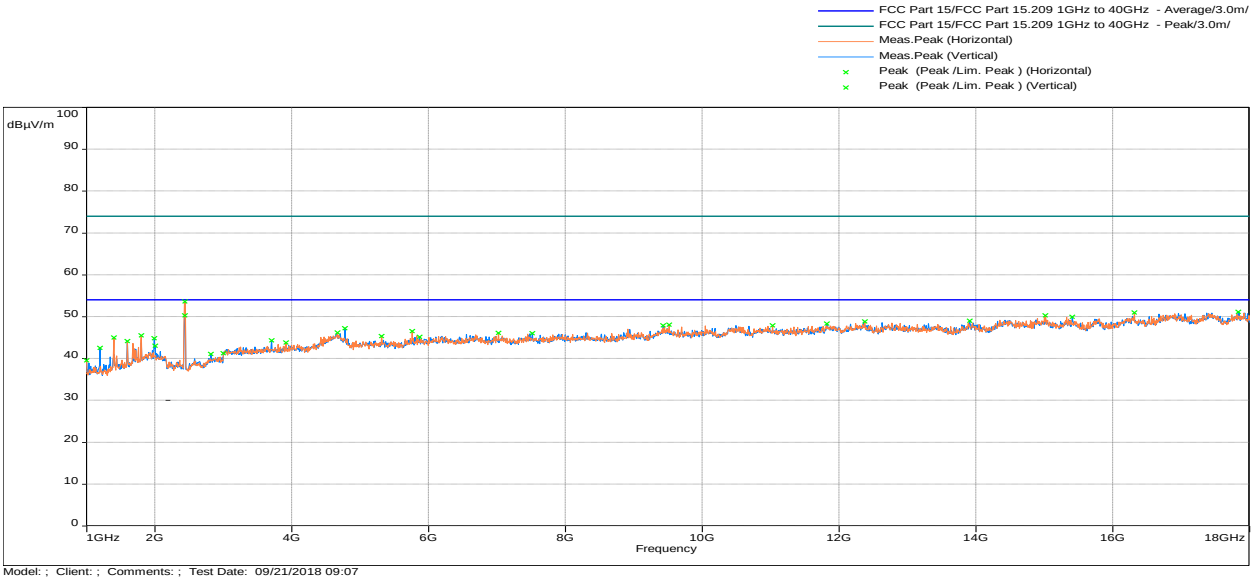
## Test Results: 15.209 Radiated Spurious Emissions Low Channel, Tx at 802.11n, 2437MHz

Out-of-Band Radiated Spurious Emissions - 30 MHz to 1000 MHz




Model: ; Client: ; Comments: ; Test Date: 09/24/2018 09:02

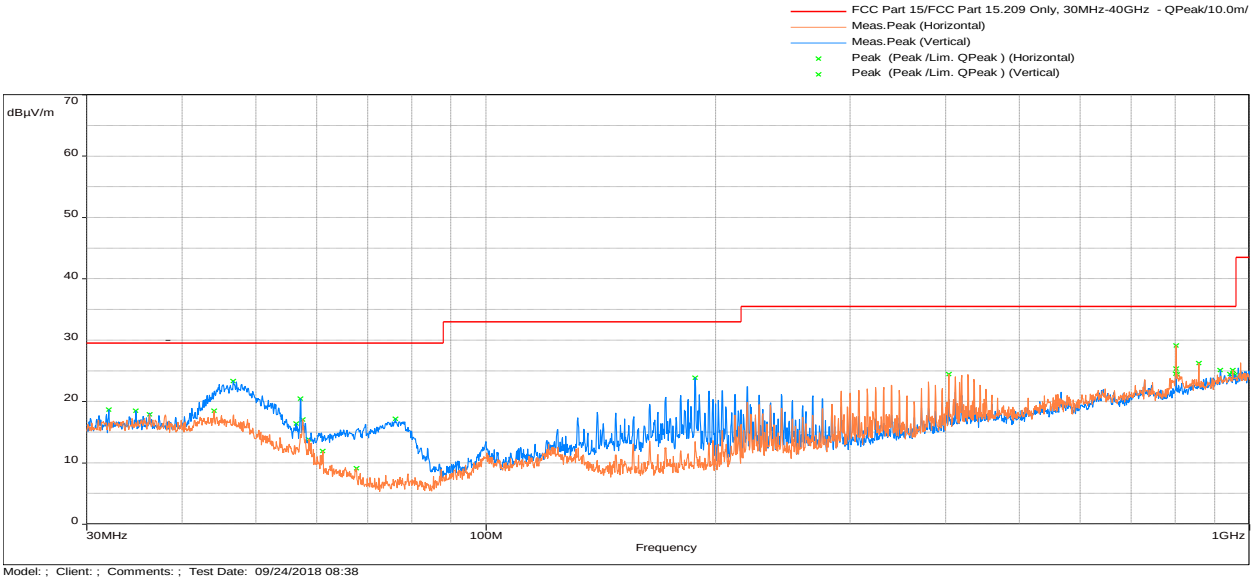
Radiated Spurious Emissions 1000 - 18000 MHz, Peak Scan vs Peak & Avg Limit




Model: ; Client: ; Comments: ; Test Date: 09/21/2018 09:07

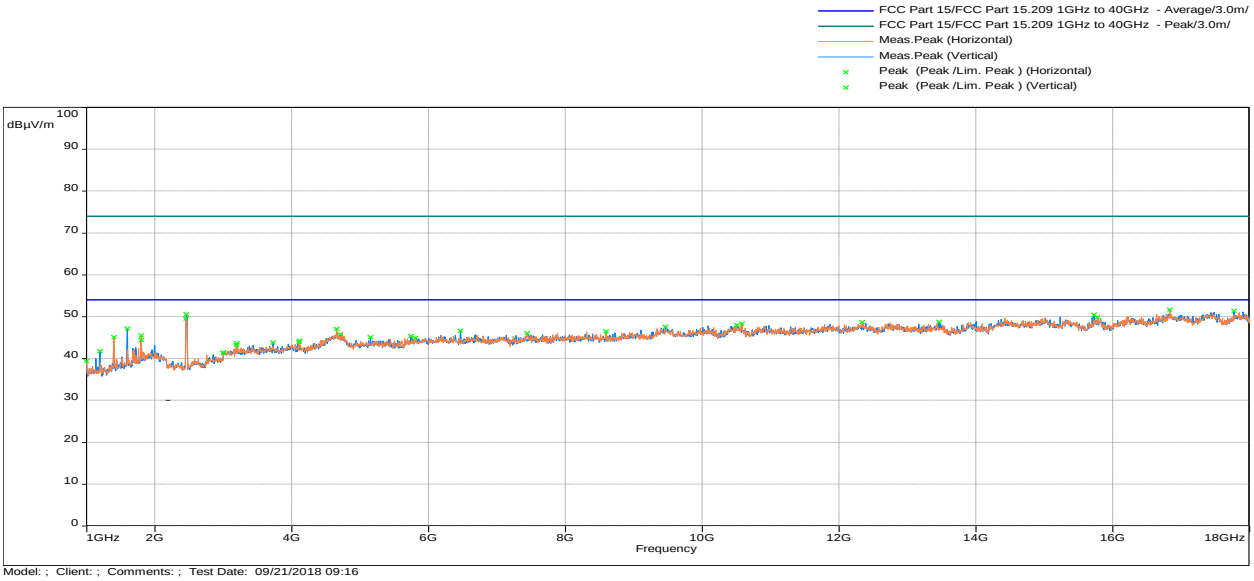
## Test Results: 15.209 Radiated Spurious Emissions Low Channel, Tx at 802.11n, 2462MHz

Out-of-Band Radiated Spurious Emissions - 30 MHz to 1000 MHz




Model: ; Client: ; Comments: ; Test Date: 09/24/2018 08:38

Radiated Spurious Emissions 1000 - 18000 MHz, Peak Scan vs Peak & Avg Limit

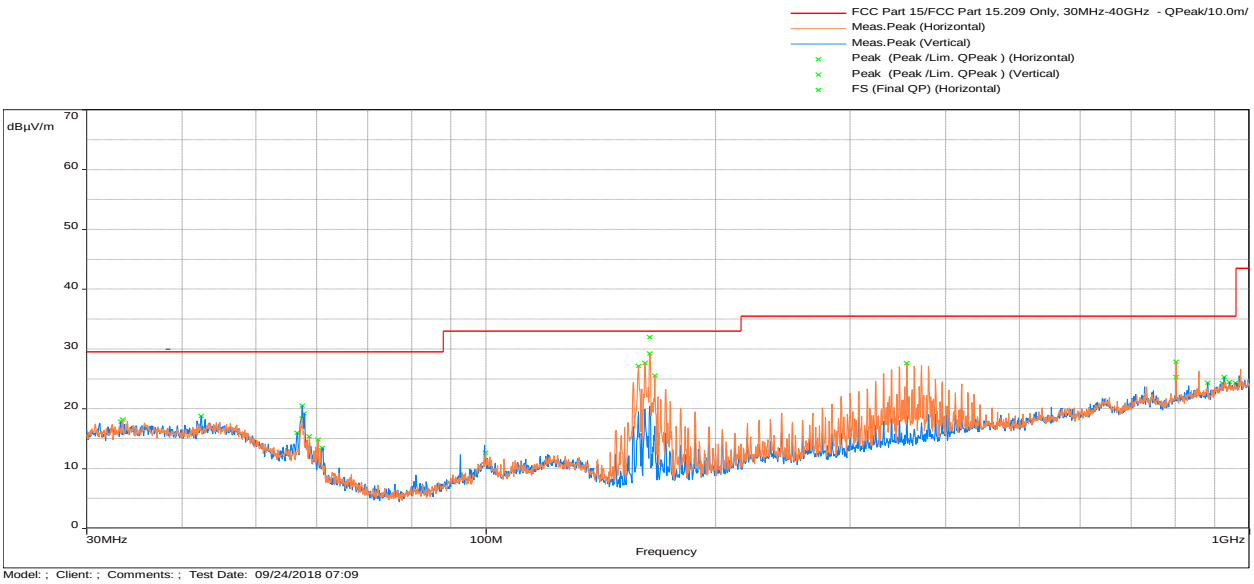



Model: ; Client: ; Comments: ; Test Date: 09/21/2018 09:16

## Out-of-Band Radiated Spurious Emissions (Normal Mode)

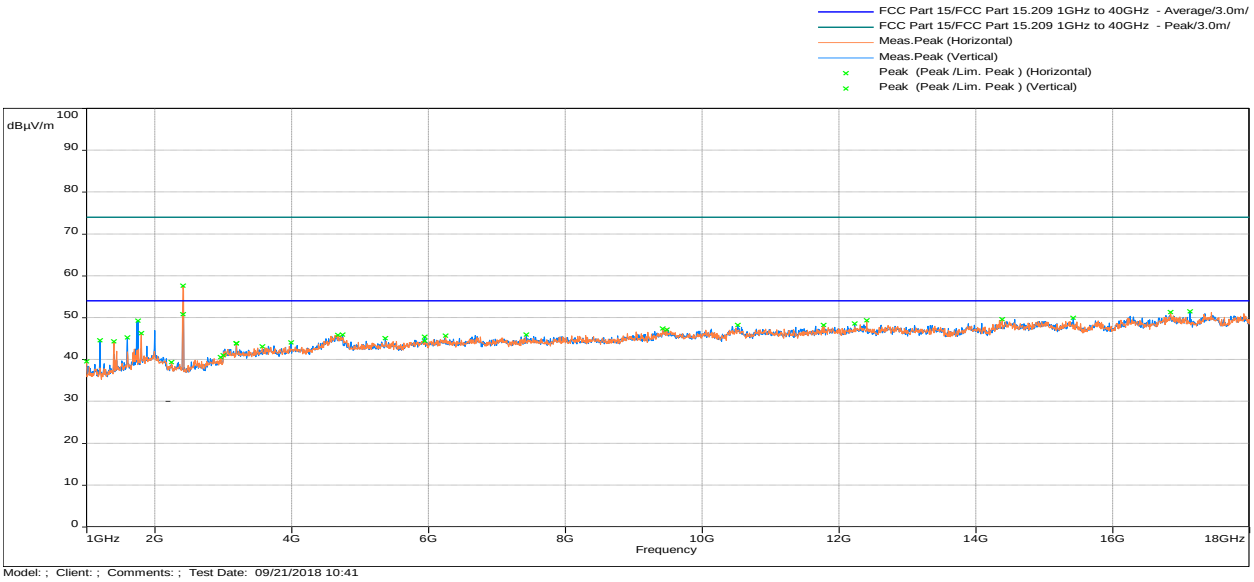
### Test Results: 15.209 Radiated Spurious Emissions Low Channel, Tx at 802.11b 2412MHz

Out-of-Band Radiated Spurious Emissions - 30 MHz to 1000 MHz



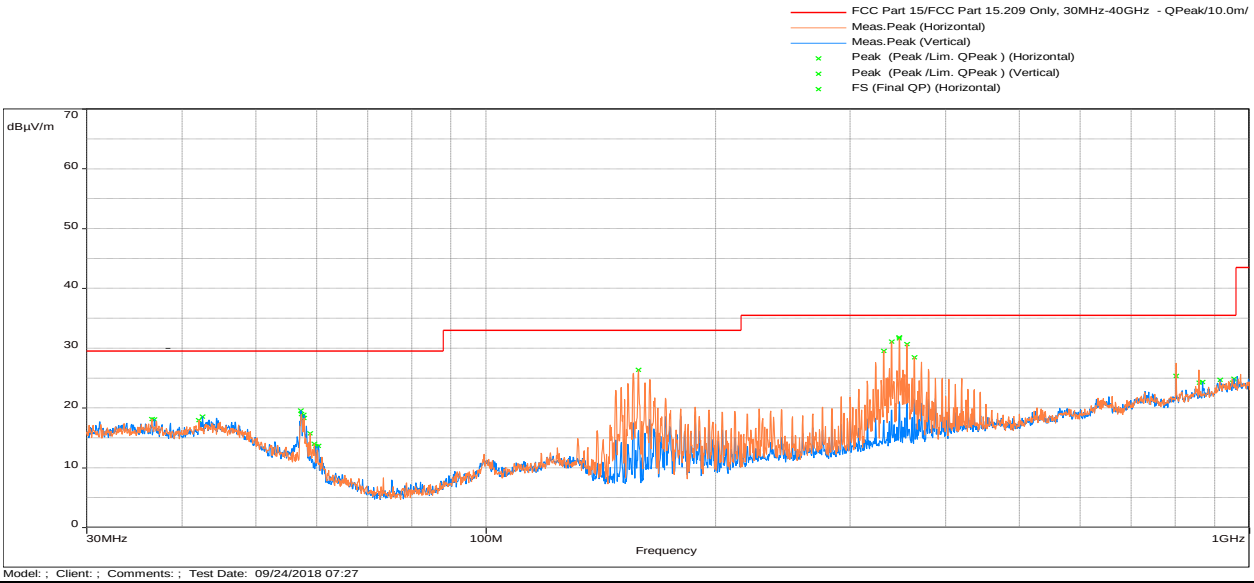

| Frequency (MHz) | FS@10m (dBµV/m) | Limit@10m (dB(uV/m)) | Margin (dB) | Azimuth (deg) | Height (m) | Polarity | RA (dBuV) | Correction (dB) |
|---|---|---|---|---|---|---|---|---|
| 163.965 | 31.96 | 33 | -1.04 | 310 | 4.0 | Horizontal | 49.66 | -17.71 |

Radiated Spurious Emissions 1000 - 18000 MHz, Peak Scan vs Peak & Avg Limit



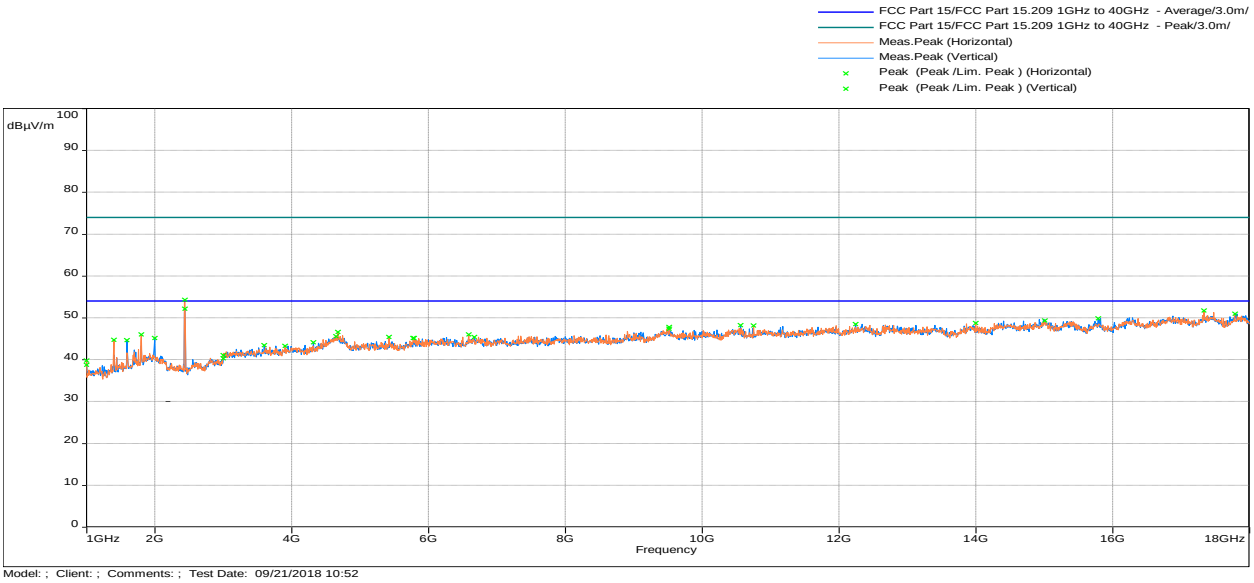
## Test Results: 15.209 Radiated Spurious Emissions Low Channel, Tx at 802.11b 2437MHz

Out-of-Band Radiated Spurious Emissions - 30 MHz to 1000 MHz



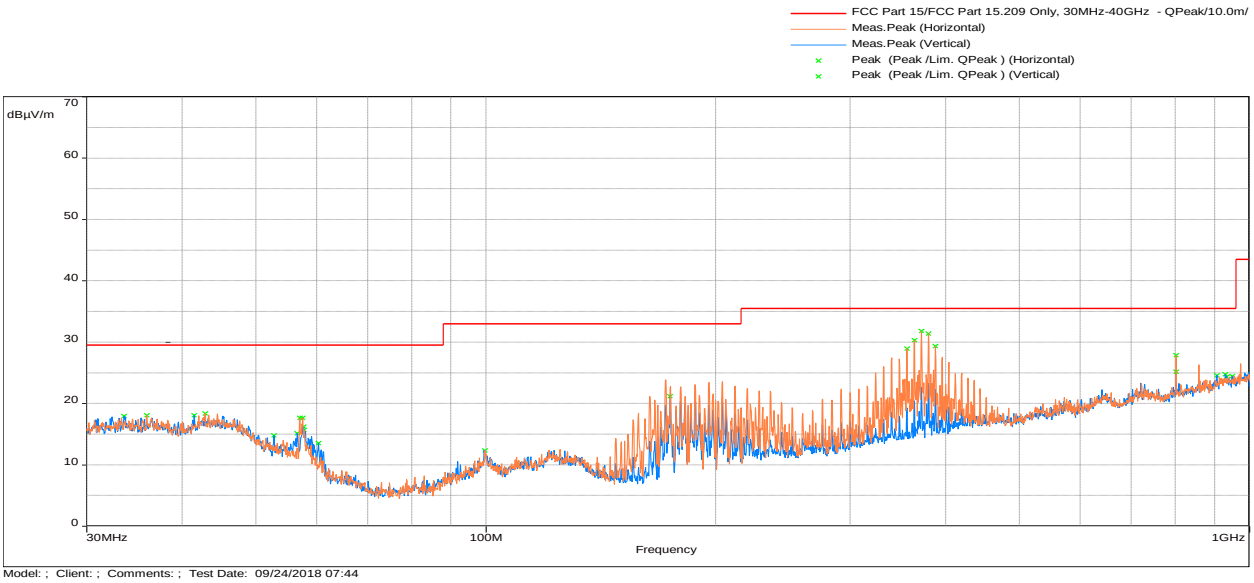

| Frequency (MHz) | FS@10m (dBµV/m) | Limit@10m (dB(uV/m)) | Margin (dB) | Azimuth (deg) | Height (m) | Polarity | RA (dBuV) | Correction (dB) |
|---|---|---|---|---|---|---|---|---|
| 347.960 | 31.8 | 35.5 | -3.7 | 338 | 2.43 | Horizontal | 43.05 | -11.24 |

Radiated Spurious Emissions 1000 - 18000 MHz, Peak Scan vs Peak & Avg Limit



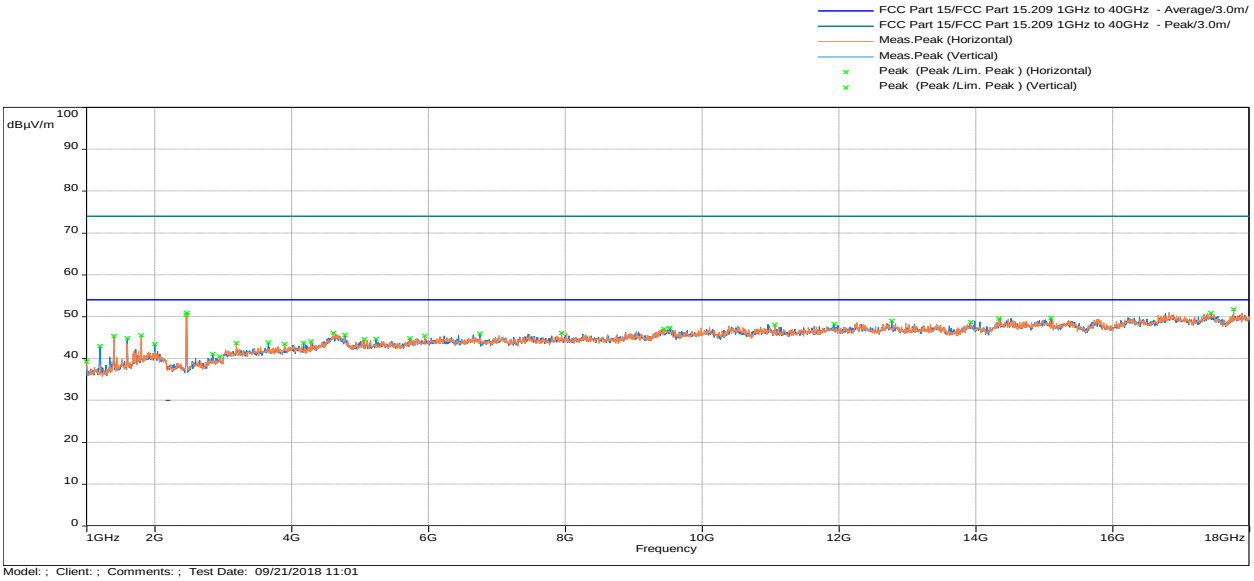
## Test Results: 15.209 Radiated Spurious Emissions Low Channel, Tx at 802.11b 2462MHz

Out-of-Band Radiated Spurious Emissions - 30 MHz to 1000 MHz




Model: ; Client: ; Comments: ; Test Date: 09/24/2018 07:44

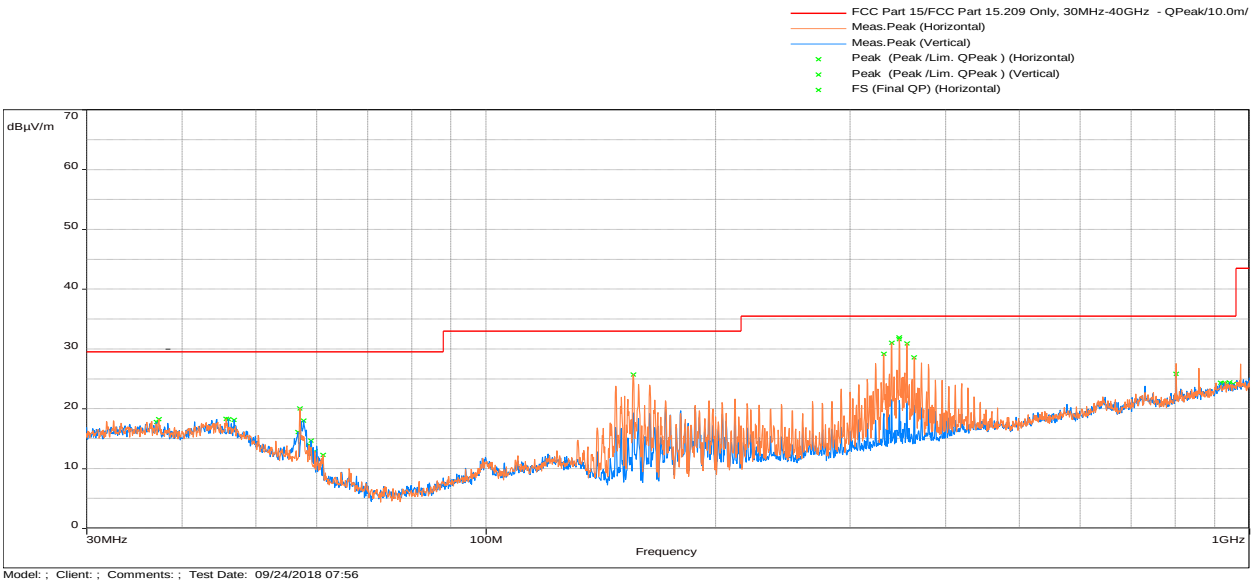
Radiated Spurious Emissions 1000 - 18000 MHz, Peak Scan vs Peak & Avg Limit




Model: ; Client: ; Comments: ; Test Date: 09/21/2018 11:01

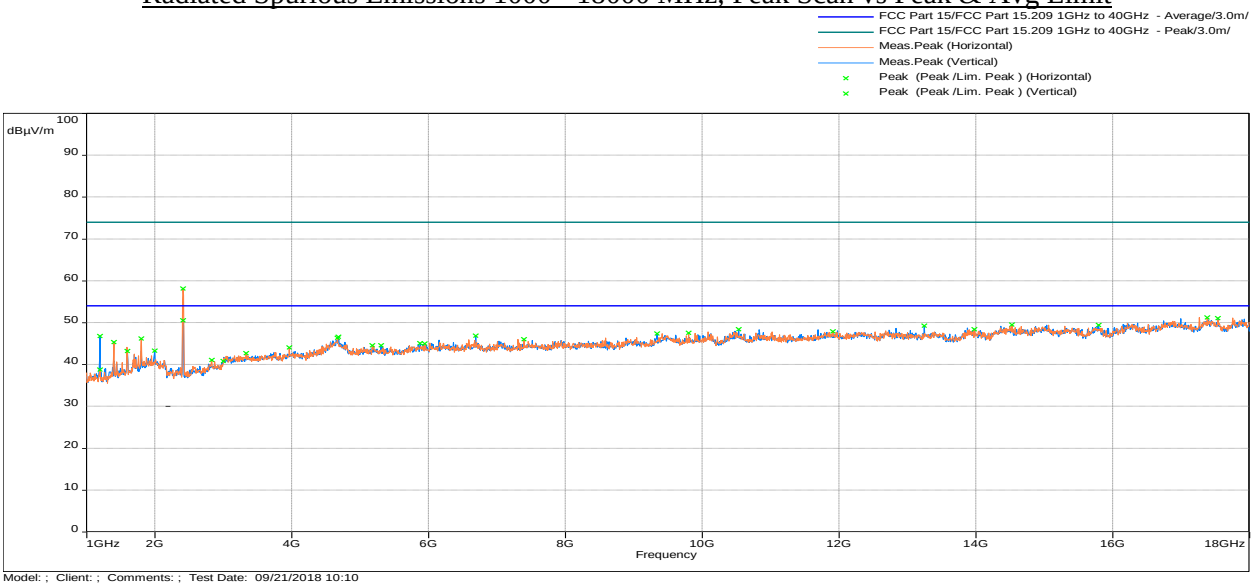
## Test Results: 15.209 Radiated Spurious Emissions Low Channel, Tx at 802.11g 2412MHz

Out-of-Band Radiated Spurious Emissions - 30 MHz to 1000 MHz



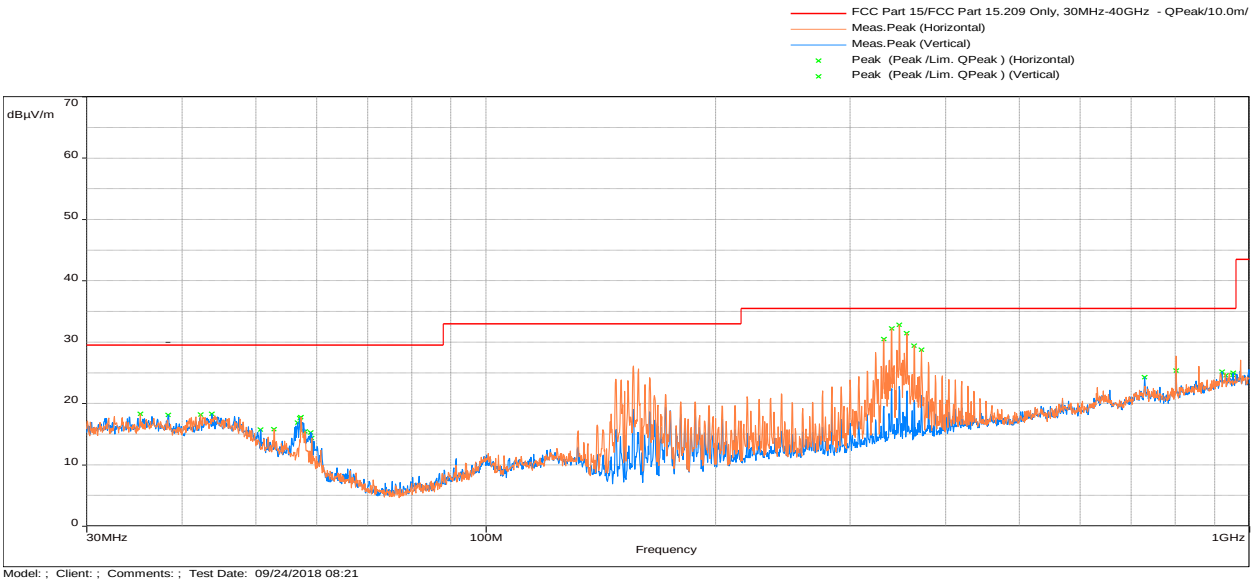

| Frequency (MHz) | FS@10m (dBµV/m) | Limit@10m (dB(uV/m)) | Margin (dB) | Azimuth (deg) | Height (m) | Polarity | RA (dBuV) | Correction (dB) |
|---|---|---|---|---|---|---|---|---|
| 347.962 | 31.87 | 35.5 | -3.63 | 344 | 2.45 | Horizontal | 43.11 | -11.24 |

Radiated Spurious Emissions 1000 - 18000 MHz, Peak Scan vs Peak & Avg Limit

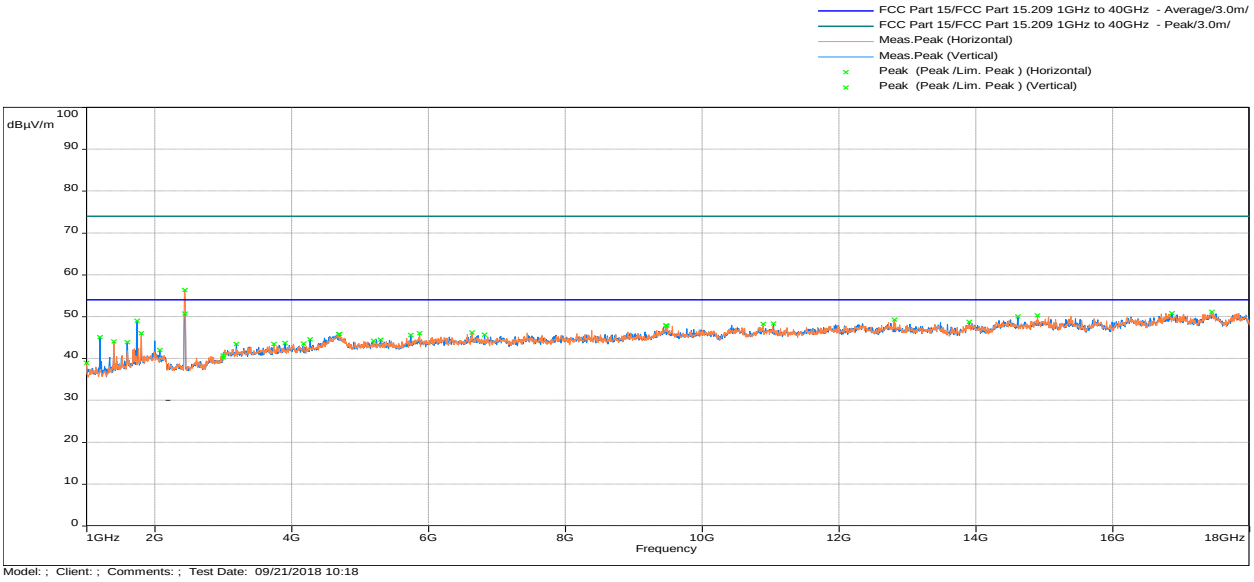


## Test Results: 15.209 Radiated Spurious Emissions Low Channel, Tx at 802.11g 2437MHz

Out-of-Band Radiated Spurious Emissions - 30 MHz to 1000 MHz



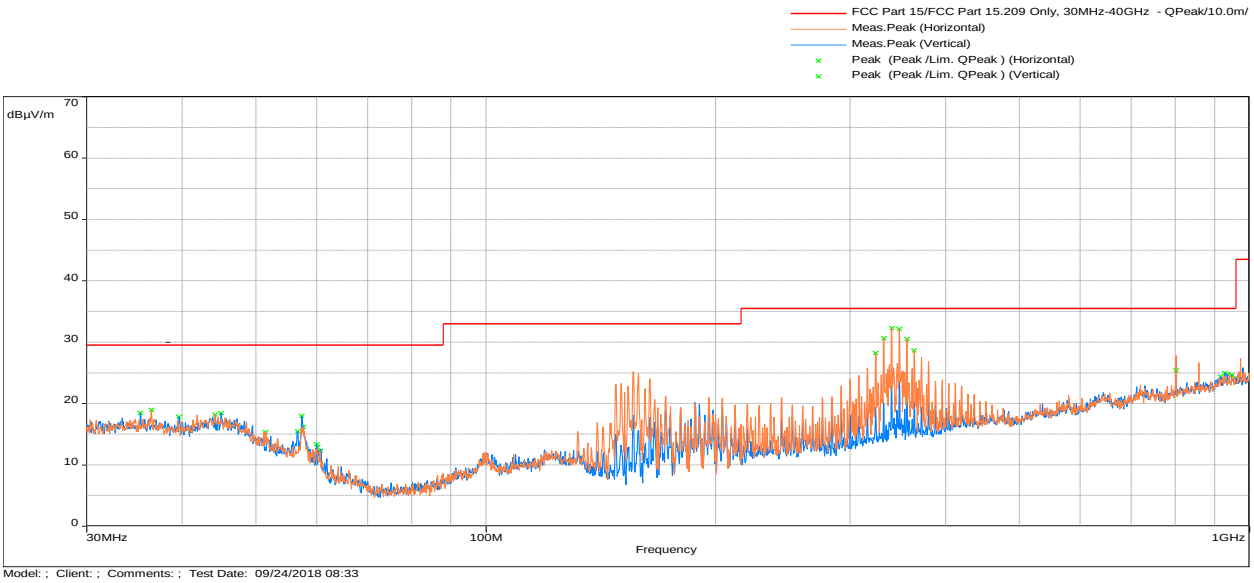

Radiated Spurious Emissions 1000 - 18000 MHz, Peak Scan vs Peak & Avg Limit




| Frequency MHz | Detector | FS@3m dBuV/m | Limit@3m dBuV/m | Margin (dB) | Azimuth (deg) | Height (m) | Polarity | Correction dB |
|---|---|---|---|---|---|---|---|---|
| 1736.10 | Peak | 48.95 | 54 | -5.44 | 0 | 1.26 | Vertical | -14.72 |
| 16866.10 | Peak | 50.8 | 54 | -3.20 | 29 | 1.32 | Vertical | 6.95 |

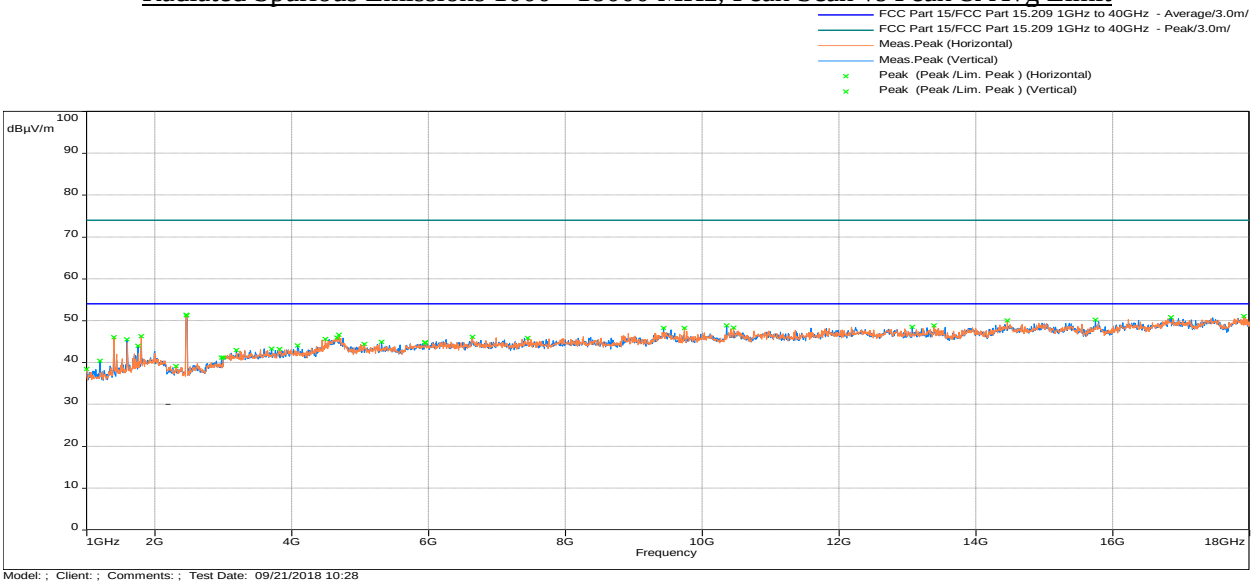
## Test Results: 15.209 Radiated Spurious Emissions Low Channel, Tx at 802.11g 2462MHz

Out-of-Band Radiated Spurious Emissions - 30 MHz to 1000 MHz




Model: ; Client: ; Comments: ; Test Date: 09/24/2018 08:33

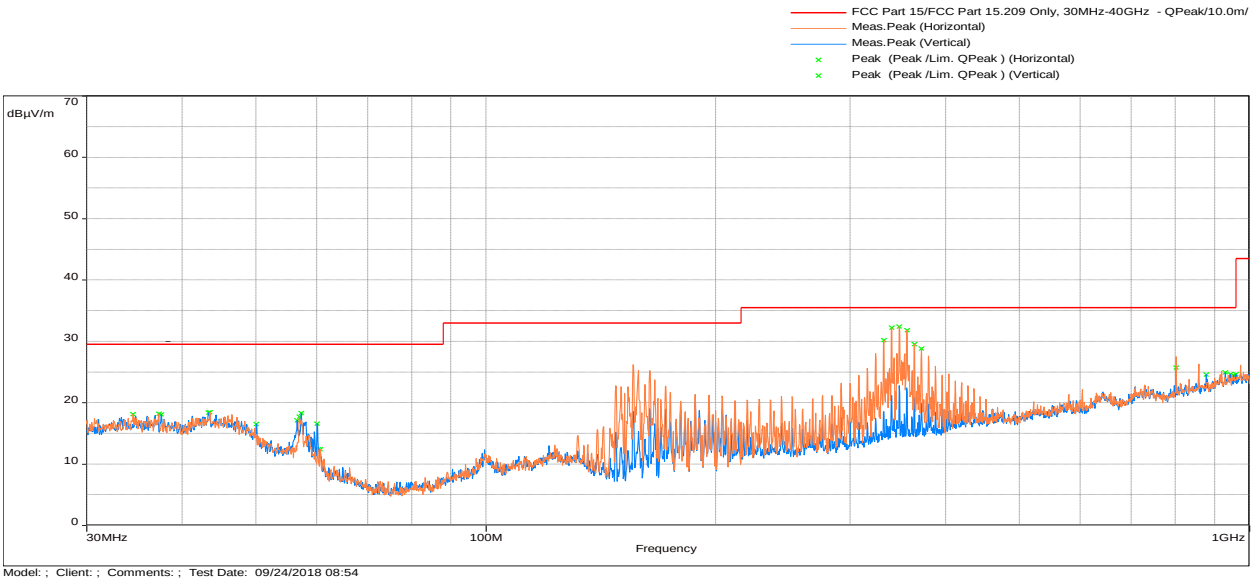
Radiated Spurious Emissions 1000 - 18000 MHz, Peak Scan vs Peak & Avg Limit




Model: ; Client: ; Comments: ; Test Date: 09/21/2018 10:28

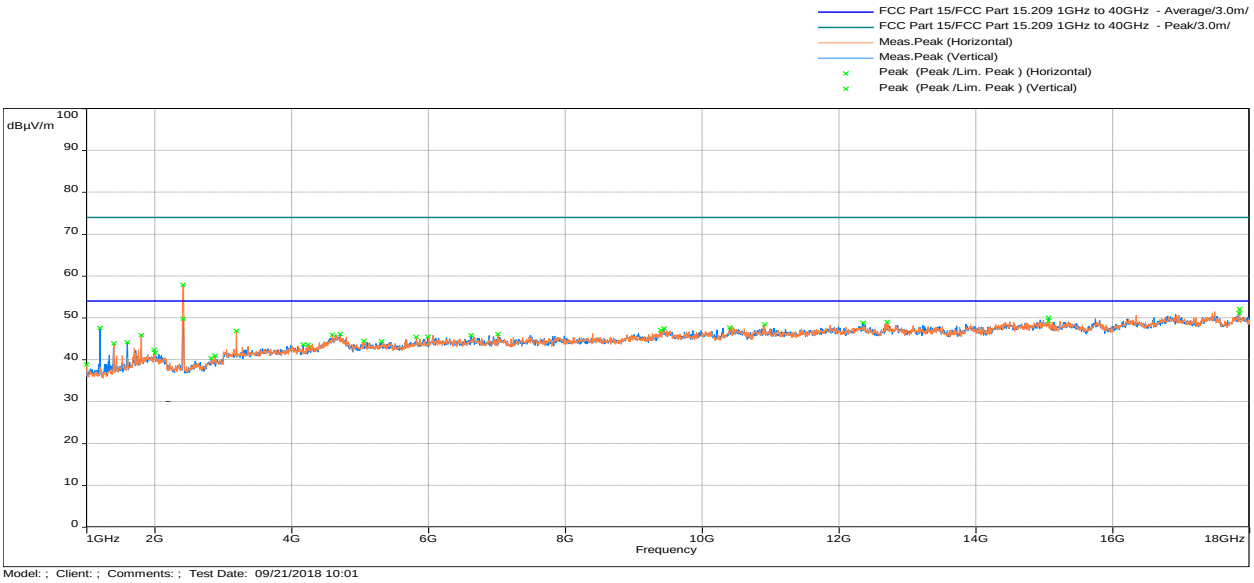
## Test Results: 15.209 Radiated Spurious Emissions Low Channel, Tx at 802.11n, 2412MHz

Out-of-Band Radiated Spurious Emissions - 30 MHz to 1000 MHz




Model: ; Client: ; Comments: ; Test Date: 09/24/2018 08:54

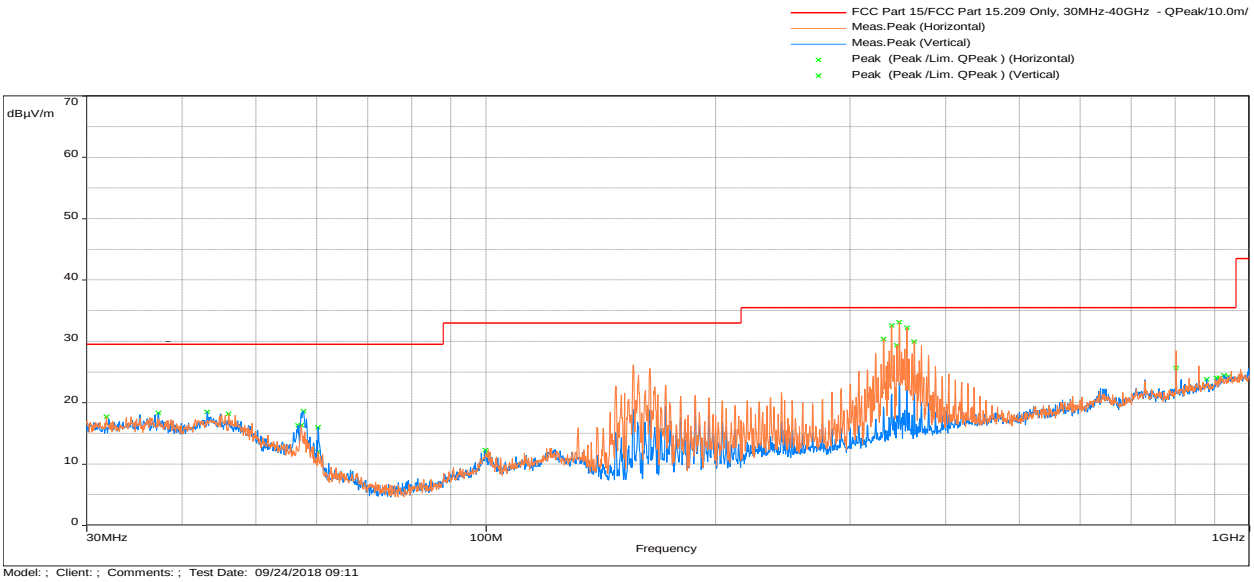
Radiated Spurious Emissions 1000 - 18000 MHz, Peak Scan vs Peak & Avg Limit




Model: ; Client: ; Comments: ; Test Date: 09/21/2018 10:01

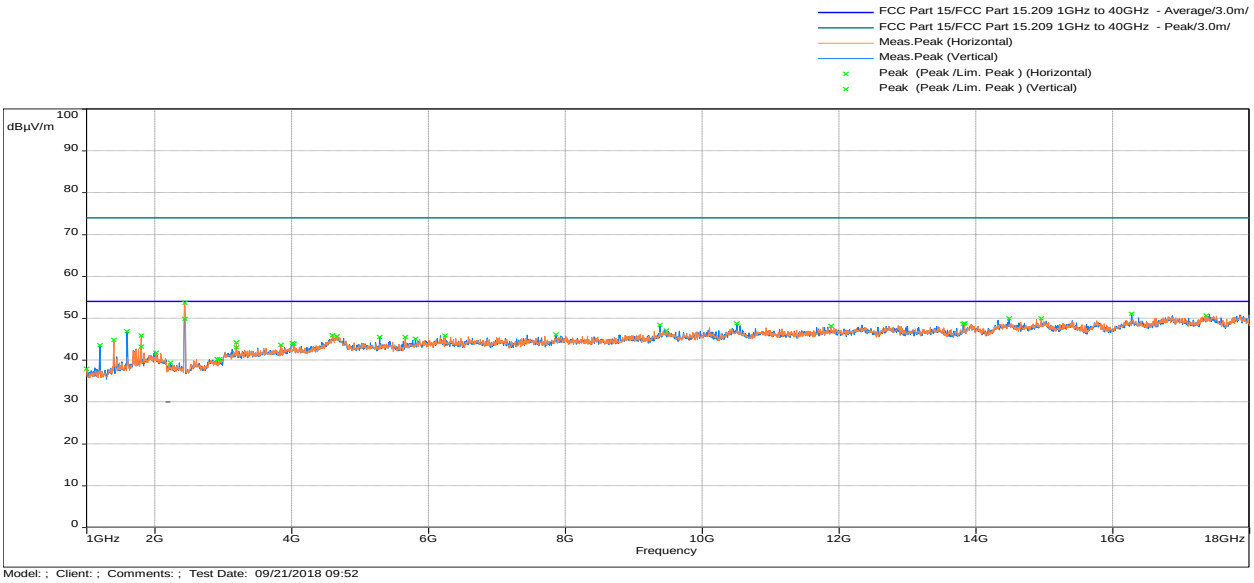
## Test Results: 15.209 Radiated Spurious Emissions Low Channel, Tx at 802.11n, 2437MHz

Out-of-Band Radiated Spurious Emissions - 30 MHz to 1000 MHz




Model: ; Client: ; Comments: ; Test Date: 09/24/2018 09:11

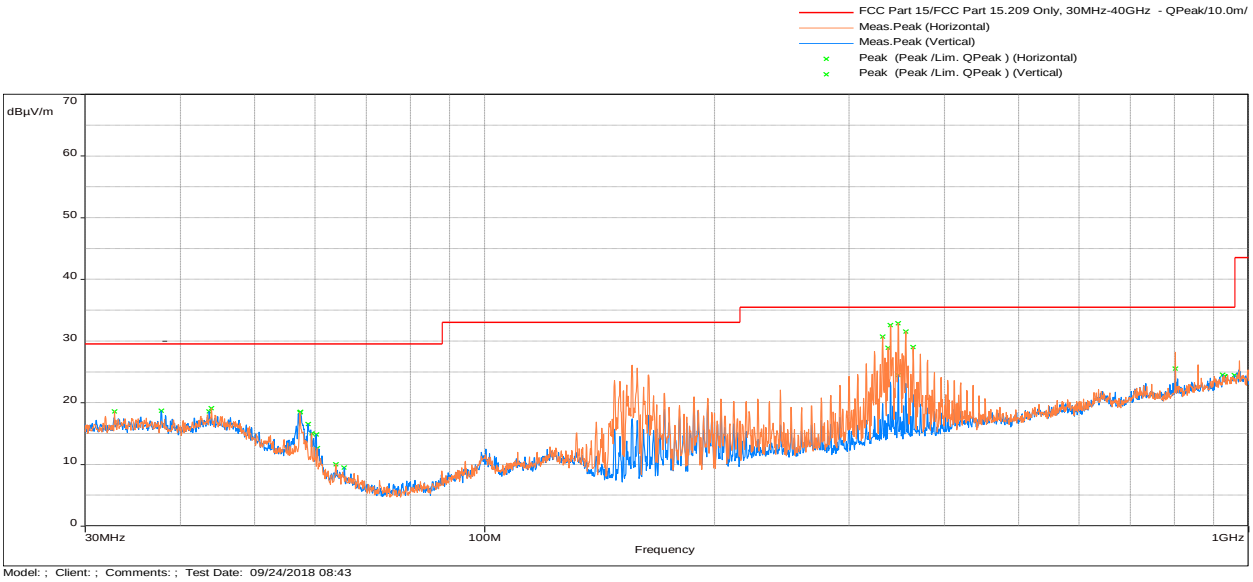
Radiated Spurious Emissions 1000 - 18000 MHz, Peak Scan vs Peak & Avg Limit



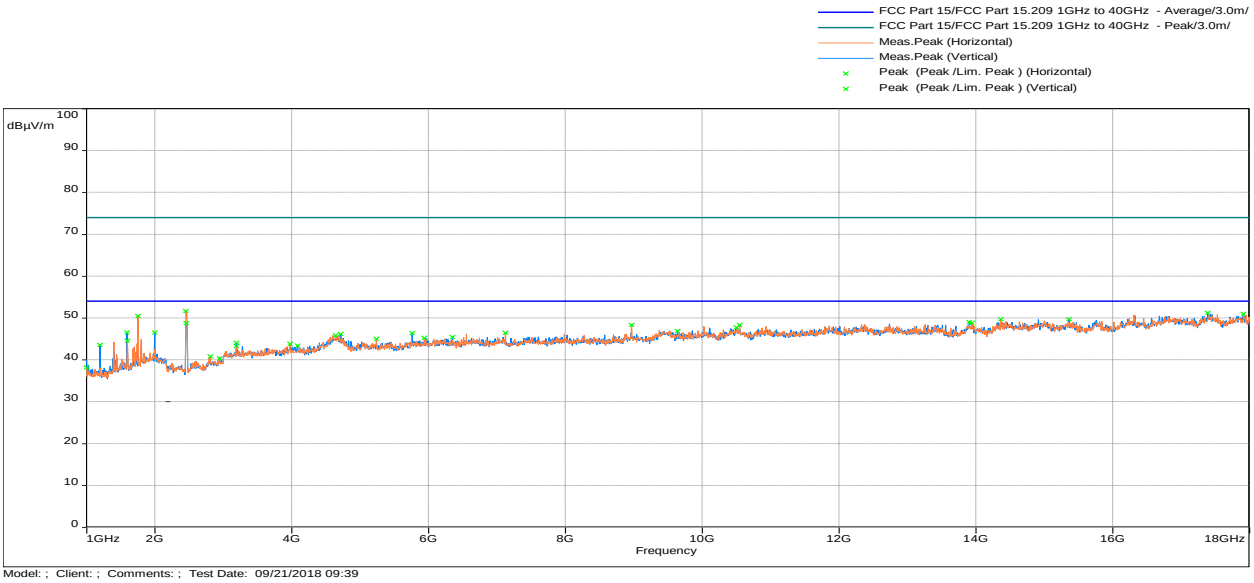

Model: ; Client: ; Comments: ; Test Date: 09/21/2018 09:52

## Test Results: 15.209 Radiated Spurious Emissions Low Channel, Tx at 802.11n, 2462MHz

Out-of-Band Radiated Spurious Emissions - 30 MHz to 1000 MHz



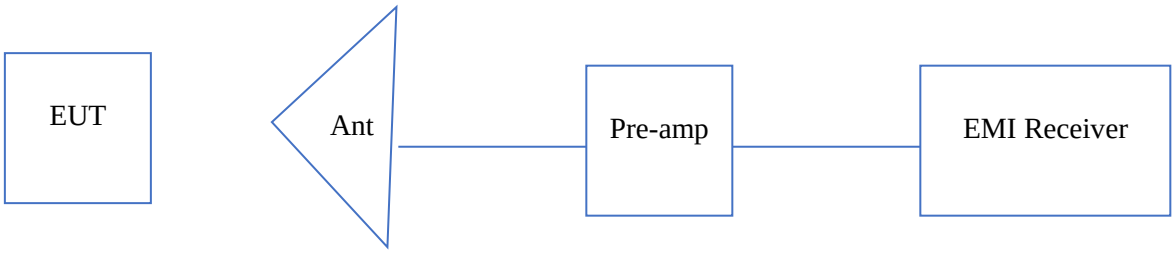

Radiated Spurious Emissions 1000 - 18000 MHz, Peak Scan vs Peak & Avg Limit




| Frequency | Detector | FS@3m | Limit@3m | Margin | Azimuth | Height | Polarity | Correction |
|---|---|---|---|---|---|---|---|---|
| MHz | | dBuV/m | dBuV/m | (dB) | (deg) | (m) | | dB |
| 1753.10 | Peak | 50.46 | 54 | -3.54 | 331 | 1.76 | Horizontal | -14.66 |

### 4.5.8 Test Setup Photographs

**The following photographs show the testing configurations used.**



## 4.6 AC Line Conducted Emission
FCC: 15.207; RSS-GEN

### 4.6.1 Requirement

| Frequency Band MHz | FCC Part 15.207 Limits | |
|---|---|---|
| | Quasi-Peak | Average |
| 0.15-0.50 | 66 to 56 * | 56 to 46 * |
| 0.50-5.00 | 56 | 46 |
| 5.00-30.00 | 60 | 50 |

*Note: *Decreases linearly with the logarithm of the frequency*
*At the transition frequency the lower limit applies.*

### 4.6.2 Procedure

Measurements are carried out using quasi-peak and average detector receivers in accordance with CISPR 16. An AMN is required to provide a defined impedance at high frequencies across the power feed at the point of measurement of terminal voltage and also to provide isolation of the circuit under test from the ambient noise on the power lines. An AMN as defined in CISPR 16 shall be used.

The EUT is located so that the distance between the boundary of the EUT and the closest surface of the AMN is 0.8m.

Where a flexible mains cord is provided by the manufacturer, this shall be 1m long or if in excess of 1m, the excess cable is folded back and forth as far as possible so as to form a bundle not exceeding 0.4m in length.

The EUT is arranged and connected with cables terminated in accordance with the product specification.

Conducted disturbance is measured between the phase lead and the reference ground, and between the neutral lead and the reference ground. Both measured values are reported.

The EUT, where intended for tabletop use, is placed on a table whose top is 0.8m above the ground plane. A vertical, metal reference plane is placed 0.4m from the EUT. The vertical metal reference-plane is at least 2m by 2m. The EUT shall be kept at least 0.8m from any other metal surface or other ground plane not being part of the EUT. The table is constructed of non-conductive materials. Its dimensions are 1m by 1.5m, but may be extended for larger EUT.

Floor standing EUT are placed on a horizontal metal ground plane and isolated from the ground plane by resting on an insulating material. The metal ground plane extends at least 0.5m beyond the boundaries of the EUT and has minimum dimensions of 2m by 2m.

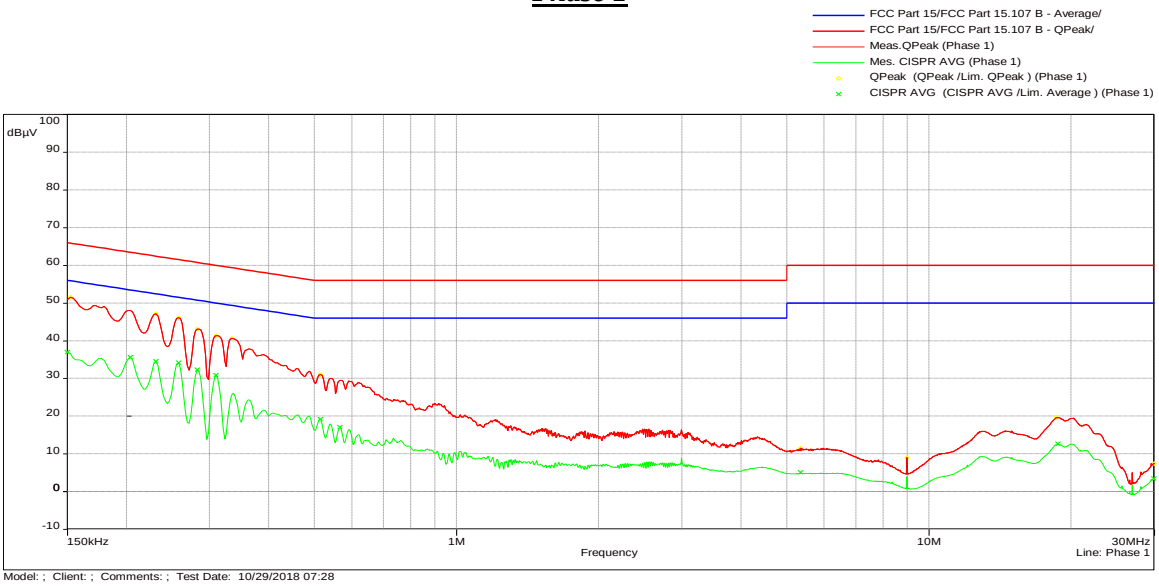
Equipment setup for conducted disturbance tests followed the guidelines of ANSI C63.4:2014.

| Tested By | Test Date |
|---|---|
| Anderson Soungpanya | October 29, 2018 |

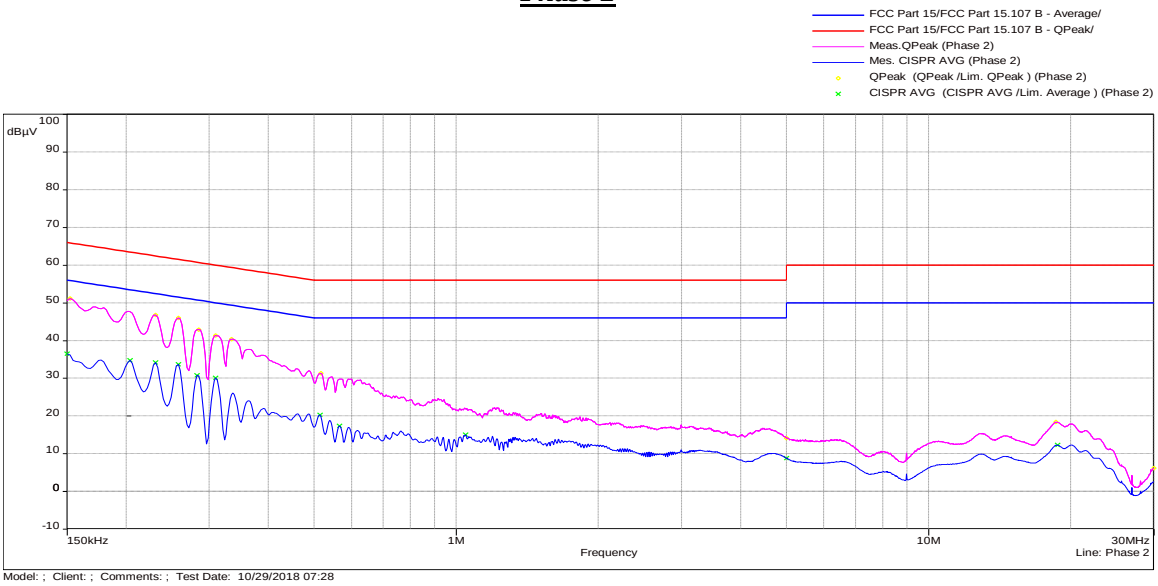
### 4.6.3 Test Results

15.207: Conducted Emissions 120VAC 60Hz

***Phase 1***




***Phase 2***



4.6.3 Test Results (Continued)

| Quasi Peak Table | | | | | |
|---|---|---|---|---|---|
| Frequency (MHz) | QPeak (dBµV) | Lim. QPeak (dBµV) | QPeak-Lim (dB) | Phase | Correction (dB) |
| 0.152 | 51.11 | 65.88 | -14.76 | Phase 2 | 1.05 |
| 0.152 | 51.52 | 65.88 | -14.36 | Phase 1 | 1.05 |
| 0.231 | 46.80 | 62.41 | -15.62 | Phase 2 | 1.06 |
| 0.231 | 47.10 | 62.41 | -15.32 | Phase 1 | 1.06 |
| 0.258 | 46.08 | 61.50 | -15.41 | Phase 1 | 1.08 |
| 0.258 | 45.93 | 61.50 | -15.56 | Phase 2 | 1.08 |
| 0.283 | 43.11 | 60.73 | -17.62 | Phase 1 | 1.07 |
| 0.285 | 42.89 | 60.67 | -17.78 | Phase 2 | 1.07 |
| 0.310 | 41.30 | 59.98 | -18.68 | Phase 2 | 1.09 |
| 0.310 | 41.33 | 59.98 | -18.64 | Phase 1 | 1.09 |
| 0.335 | 40.36 | 59.34 | -18.98 | Phase 2 | 1.07 |
| 0.335 | 40.59 | 59.34 | -18.75 | Phase 1 | 1.07 |
| 0.515 | 31.04 | 56.00 | -24.96 | Phase 1 | 1.10 |
| 0.517 | 31.30 | 56.00 | -24.70 | Phase 2 | 1.10 |
| 5.001 | 14.12 | 60.00 | -45.88 | Phase 2 | 1.33 |
| 5.348 | 11.52 | 60.00 | -48.48 | Phase 1 | 1.33 |
| 8.988 | 8.99 | 60.00 | -51.01 | Phase 1 | 1.43 |
| 18.598 | 18.38 | 60.00 | -41.62 | Phase 2 | 1.61 |
| 18.620 | 19.68 | 60.00 | -40.32 | Phase 1 | 1.61 |
| 29.974 | 7.44 | 60.00 | -52.56 | Phase 1 | 1.78 |
| 30.000 | 6.14 | 60.00 | -53.86 | Phase 2 | 1.78 |

4.6.3 Test Results (Continued)

| Average Table | | | | | |
|---|---|---|---|---|---|
| Frequency (MHz) | AVG (dBµV) | Lim. Average (dBµV) | AVG-Lim (dB) | Phase | Correction (dB) |
| 0.150 | 36.90 | 56.00 | -19.10 | Phase 1 | 1.05 |
| 0.150 | 36.48 | 56.00 | -19.52 | Phase 2 | 1.05 |
| 0.204 | 35.60 | 53.45 | -17.85 | Phase 1 | 1.05 |
| 0.204 | 34.70 | 53.45 | -18.75 | Phase 2 | 1.05 |
| 0.231 | 34.52 | 52.41 | -17.90 | Phase 1 | 1.06 |
| 0.231 | 34.17 | 52.41 | -18.25 | Phase 2 | 1.06 |
| 0.258 | 34.17 | 51.50 | -17.32 | Phase 1 | 1.08 |
| 0.258 | 33.67 | 51.50 | -17.83 | Phase 2 | 1.08 |
| 0.283 | 30.68 | 50.73 | -20.05 | Phase 2 | 1.07 |
| 0.283 | 32.24 | 50.73 | -18.50 | Phase 1 | 1.07 |
| 0.310 | 30.81 | 49.98 | -19.17 | Phase 1 | 1.09 |
| 0.310 | 30.06 | 49.98 | -19.92 | Phase 2 | 1.09 |
| 0.515 | 19.17 | 46.00 | -26.83 | Phase 1 | 1.10 |
| 0.515 | 20.22 | 46.00 | -25.78 | Phase 2 | 1.10 |
| 0.566 | 17.01 | 46.00 | -28.99 | Phase 1 | 1.10 |
| 0.566 | 17.31 | 46.00 | -28.69 | Phase 2 | 1.10 |
| 1.048 | 14.96 | 46.00 | -31.04 | Phase 2 | 1.15 |
| 5.006 | 8.77 | 50.00 | -41.23 | Phase 2 | 1.33 |
| 5.348 | 5.10 | 50.00 | -44.90 | Phase 1 | 1.33 |
| 18.751 | 12.25 | 50.00 | -37.75 | Phase 2 | 1.61 |
| 18.760 | 12.63 | 50.00 | -37.37 | Phase 1 | 1.61 |
| 29.967 | 3.44 | 50.00 | -46.56 | Phase 1 | 1.78 |

**Results:** **Complies** by 14.36 dB

## 5.0 List of Test Equipment

Measurement equipment used for emission compliance testing utilized the equipment on the following list:

| Equipment | Manufacturer | Model/Type | Asset # | Cal Int | Cal Due |
|---|---|---|---|---|---|
| Spectrum Analyzer | Rohde and Schwarz | FSU | ITS 00913 | 12 | 01/24/19 |
| Horn Antenna (10-40 GHz) | ETS-Lindgren | 3116C | ITS 01376 | 12 | 04/25/19 |
| Pre-Amplifier (18-40GHz) | Miteq | TTA1840-35-S-M | ITS 01393 | 12 | 01/19/19 |
| Active Horn Antenna (1-18GHz) | ETS-Lindgren | 3117-PA | ITS 00982 | 12 | 01/25/19 |
| Horn Antenna | ETS-Lindgren | 3115 | ITS 01325 | 12 | 02/08/19 |
| EMI Receiver | Rohde and Schwarz | ESR7 | ITS 01607 | 12 | 10/09/18 |
| LISN | FCC | FCC-LISN-50-50-M- | ITS 00551 | 12 | 10/04/19 |
| BI-Log Antenna | Antenna Research | LPB-2513 | ITS 00355 | 12 | 02/21/19 |
| Pre-Amplifier | Sonoma Instrument | 310N | ITS 01493 | 12 | 10/20/18 |
| Notch Filter | Micro-Tronics | BRM50702 | ITS 01166 | 12 | 03/10/19 |
| RF Cable | Megaphase | EMC1-K1K1-236 | ITS 01538 | 12 | 06/25/19 |
| RF Cable | Megaphase | TM40-K1K1-59 | ITS 01657 | 12 | 06/26/19 |
| RF Cable | TRU Corporation | TRU CORE 300 | ITS 01330 | 12 | 11/29/18 |
| RF Cable | TRU Corporation | TRU CORE 300 | ITS 01465 | 12 | 08/16/19 |
| RF Cable | TRU Corporation | TRU CORE 300 | ITS 01470 | 12 | 08/16/19 |
| Attenuator | Fairview | SA 18H-30 | ITS 01633 | 12 | # |

# Verify before use

Software used for emission compliance testing utilized the following:

| Name | Manufacturer | Version | Template/Profile |
|---|---|---|---|
| Tile | Quantum Change | 3.4.K.22 | Conducted Spurious_30M-26GHz |
| BAT-EMC | Nexio | 3.16.0.64 | 103615308_Vocera 2.4GWIFI.bpp |
| RS Commander | Rohde Schwarz | 1.6.4 | Not Applicable (Screen grabber) |

## 6.0 Document History

| Revision/ Job Number | Writer Initials | Reviewers Initials | Date | Change |
|---|---|---|---|---|
| 1.0 / G103615308 | AS | KV | October 30, 2018 | Original document |