



# FCC / ISED Test Report

For:  
Garmin International, Inc.

Model Name:  
GMN-02245

Product Description:  
LTE/Wi-Fi Datalink and Data Storage System

FCC ID: IPH-03788  
IC ID: 1792A-03788

Applied Rules and Standards:  
47 CFR Part 15.247 (DTS)  
RSS-247 Issue 2 (DTSS) & RSS-Gen Issue 5

REPORT #: EMC\_GARMI-086-20001\_15.247\_WLAN

DATE: 2021-11-16



A2LA Accredited

IC recognized #  
3462B-1

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## 1 Assessment

The following device was evaluated against the applicable criteria specified in FCC rules Parts 15.247 of Title 47 of the Code of Federal Regulations and the relevant ISED Canada standard RSS-247.

No deviations were ascertained.

| Company                   | Description                                | Model Name |
|---------------------------|--------------------------------------------|------------|
| Garmin International, Inc | LTE/Wi-Fi Datalink and Data Storage System | GMN-02245  |

### Responsible for Testing Laboratory:

| 2021-11-16 | Compliance | Kevin Wang<br>(EMC Lab Manager) | Kevin.<br>wang@cetecom.com<br><br>ecom.com                                     |
|------------|------------|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|            |            |                                 | Digitally signed by:<br>Kevin Wang<br>DN: CN = Kevin Wang,<br>O = Cetecom Inc., OU = EMC,<br>Email = Kevin.Wang@cetecom.com,<br>Date: 2021.11.16 17:13:27 -08'00' |
| Date       | Section    | Name                            | Signature                                                                                                                                                         |

### Responsible for the Report:

| 2021-11-16 | Compliance | Yuchan Lu<br>(EMC Engineer) | Yuchan<br>Lu<br>                                                                    |
|------------|------------|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|            |            |                             | Digitally signed by:<br>Yuchan Lu<br>DN: CN = Yuchan Lu email =<br>Yuchan.Lu@cetecom.com C =<br>US O = CETECOM Inc. OU =<br>EMC<br>Date: 2021.11.16 15:16:54 -<br>08'00' |
| Date       | Section    | Name                        | Signature                                                                                                                                                                |

The test results of this test report relate exclusively to the test item specified in Section 3.

CETECOM Inc. USA does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of CETECOM Inc. USA.

## 2 Administrative Data

### 2.1 Identification of the Testing Laboratory Issuing the EMC Test Report

|                                    |                        |
|------------------------------------|------------------------|
| <b>Company Name:</b>               | CETECOM Inc.           |
| <b>Department:</b>                 | Compliance             |
| <b>Street Address:</b>             | 411 Dixon Landing Road |
| <b>City/Zip Code</b>               | Milpitas, CA 95035     |
| <b>Country</b>                     | USA                    |
| <b>Telephone:</b>                  | +1 (408) 586 6200      |
| <b>Fax:</b>                        | +1 (408) 586 6299      |
| <b>EMC Lab Manager:</b>            | Kevin Wang             |
| <b>Responsible Project Leader:</b> | Sangeetha Sivaraman    |

### 2.2 Identification of the Client

|                        |                            |
|------------------------|----------------------------|
| <b>Client's Name:</b>  | Garmin International, Inc. |
| <b>Street Address:</b> | 1200 East 151st Street     |
| <b>City/Zip Code</b>   | Olathe, KS / 66062         |
| <b>Country</b>         | USA                        |

### 2.3 Identification of the Manufacturer

|                               |                |
|-------------------------------|----------------|
| <b>Manufacturer's Name:</b>   | Same as Client |
| <b>Manufacturers Address:</b> | -----          |
| <b>City/Zip Code</b>          | -----          |
| <b>Country</b>                | -----          |

### 3 Equipment Under Test (EUT)

#### 3.1 EUT Specifications

|                                                     |                                                                                                                                                                                                                                                                      |
|-----------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Model Name:</b>                                  | GMN-02245                                                                                                                                                                                                                                                            |
| <b>Marketing Name:</b>                              | GDL 60                                                                                                                                                                                                                                                               |
| <b>HW Version :</b>                                 | Ver 6                                                                                                                                                                                                                                                                |
| <b>SW Version :</b>                                 | 1.32-004                                                                                                                                                                                                                                                             |
| <b>FCC-ID :</b>                                     | IPH-03788                                                                                                                                                                                                                                                            |
| <b>IC-ID:</b>                                       | 1792A-03788                                                                                                                                                                                                                                                          |
| <b>FWIN:</b>                                        | 1.32-004                                                                                                                                                                                                                                                             |
| <b>HVIN:</b>                                        | GMN-02245                                                                                                                                                                                                                                                            |
| <b>PMN:</b>                                         | GDL 60                                                                                                                                                                                                                                                               |
| <b>Product Description:</b>                         | LTE/Wi-Fi Datalink and Data Storage System                                                                                                                                                                                                                           |
| <b>Frequency Range / number of channels:</b>        | Nominal band: 2400 MHz – 2483.5 MHz;<br>Center to center: 2412 MHz (ch 1) – 2462 MHz (ch 11), 11 channels                                                                                                                                                            |
| <b>Radio Information:</b>                           | <u>2 x WLAN (WiFi):</u> <ul style="list-style-type: none"> <li>• Module Name: Texas Instruments</li> <li>• Module Number: WiLink WL1807MOD</li> <li>• Modes of Operation: 802.11a,b,g,n</li> <li>• FCC ID: Z64-WL18DBMOD</li> <li>• IC ID: 4511-WL18DBMOD</li> </ul> |
| <b>Antenna Information as declared:</b>             | <u>WiFi Antenna:</u> <ul style="list-style-type: none"> <li>• P/N: HG2400RDR90-RSP</li> <li>• Location: External</li> <li>• Maximum Gain: 5 dBi</li> </ul> Frequency Range: 2400 – 2500 MHz                                                                          |
| <b>Max. Conducted Output Power:</b>                 | Peak measurement: 23.86 dBm                                                                                                                                                                                                                                          |
| <b>Power Supply/ Rated Operating Voltage Range:</b> | Vmin: 9 VDC/ Vnom: 24 VDC / Vmax: 32 VDC                                                                                                                                                                                                                             |
| <b>Operating Temperature Range</b>                  | -40°C to 70 °C                                                                                                                                                                                                                                                       |
| <b>Other Radios included in the device:</b>         | Cellular                                                                                                                                                                                                                                                             |
| <b>Sample Revision</b>                              | <input type="checkbox"/> Prototype Unit; <input type="checkbox"/> Production Unit; <input checked="" type="checkbox"/> Pre-Production                                                                                                                                |

### 3.2 EUT Sample details

| EUT # | Serial Number | HW Version | SW Version | Notes/Comments |
|-------|---------------|------------|------------|----------------|
| 1     | 67H00230      | Ver 6      | 1.32-004   | Radiated       |

### 3.3 Accessory Equipment (AE) details

N/A

### 3.4 Test Sample Configuration

| EUT Set-up # | Combination of AE used for test set up | Comments                                                                                                                                                                                                                                                                                                                                                                                                           |
|--------------|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1            | EUT#1                                  | <p>The WiFi Module #1 and Module #2 radio of the EUT was configured to a fixed channel transmission with highest possible duty cycle using software that is not available to the end user.</p> <p>LTE Band 4 mid Channel (1732.5 MHz) is co-transmitting simultaneously using command window to configure provided by client that is not available to the end user.</p> <p>The external antenna was connected.</p> |

### 3.5 Justification for Worst Case Mode of Operation

During the testing process, the EUT was tested with transmitter sets on low, mid and high channels, and highest possible duty cycle. For radiated measurements, all data in this report show the worst case between horizontal and vertical antenna polarizations and for all orientations of the EUT.

The channels and modulation schemes of the EUT were set with highest Duty Cycle possible using diagnostic software (not available to the end user).

#### 4 Subject of Investigation

The objective of the measurements done by CETECOM Inc. was to assess the performance of the EUT according to the relevant requirements specified in FCC rules Part 15.247 of Title 47 of the Code of Federal Regulations and Radio Standard Specification RSS-247 of ISED Canada.

This test report is to support a request for new equipment authorization under

FCC ID: IPH-03788

IC ID: 1792A-03788

Testing procedures are based on 558074 D01 15.247 Meas Guidance v05r02 – “GUIDANCE FOR COMPLIANCE MEASUREMENTS ON DIGITAL TRANSMISSION SYSTEM, FREQUENCY HOPPING SPREAD SPECTRUM SYSTEM, AND HYBRID SYSTEM DEVICES OPERATING UNDER SECTION 15.247 OF THE FCC RULES” - April 2, 2019, by the Federal Communications Commission, Office of Engineering and Technology, Laboratory Division.

#### 5 Measurement Results Summary

| Test Specification                           | Test Case                                       | Temperature and Voltage Conditions | Mode    | Pass                                | NA                       | NP                                  | Result   |
|----------------------------------------------|-------------------------------------------------|------------------------------------|---------|-------------------------------------|--------------------------|-------------------------------------|----------|
| §15.247(a)(1)<br>RSS-247 5.2(a)              | Emission Bandwidth                              | Nominal                            | -       | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Note1    |
| §15.247(e)<br>RSS-247 5.2(b)                 | Power Spectral Density                          | Nominal                            | -       | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Note1    |
| §15.247(b)(1)<br>RSS-247 5.4(d)              | Maximum Conducted Output Power and EIRP         | Nominal                            | -       | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Note1    |
| §15.247(d)<br>RSS-247 5.5                    | Band edge compliance<br>Unrestricted Band Edges | Nominal                            | -       | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Note1    |
| §15.247; 15.209; 15.205<br>RSS-Gen 8.9; 8.10 | Band edge compliance<br>Restricted Band Edges   | Nominal                            | -       | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Note1    |
| §15.247(d); §15.209<br>RSS-Gen 6.13          | TX Spurious emissions-<br>Radiated              | Nominal                            | 802.11g | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | Complies |
| §15.207(a)<br>RSS Gen 8.8                    | AC Conducted Emissions                          | Nominal                            | -       | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> | Note1    |

**Note:** NA= Not Applicable; NP= Not Performed.

Note1: Leveraged from module certification Texas Instruments WiLink WL1807MOD (FCC ID: Z64-WL18DBMOD, IC ID: 4511-WL18DBMOD)

## 6 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus, with 95% confidence interval (in dB delta to result), based on a coverage factor  $k=1$ .

### Radiated measurement

|                    |                                      |
|--------------------|--------------------------------------|
| 9 kHz to 30 MHz    | $\pm 2.5$ dB (Magnetic Loop Antenna) |
| 30 MHz to 1000 MHz | $\pm 2.0$ dB (Biconilog Antenna)     |
| 1 GHz to 40 GHz    | $\pm 2.3$ dB (Horn Antenna)          |

### Conducted measurement

|                   |                     |
|-------------------|---------------------|
| 150 kHz to 30 MHz | $\pm 0.7$ dB (LISN) |
|-------------------|---------------------|

|                          |              |
|--------------------------|--------------|
| RF conducted measurement | $\pm 0.5$ dB |
|--------------------------|--------------|

According to TR 102 273 a multiplicative propagation of error is assumed for RF measurement systems. For this reason the RMS method is applied to dB values and not to linear values as appropriate for additive propagation of error. Also used: <http://physics.nist.gov/cuu/Uncertainty/typeb.html>. The above calculated uncertainties apply to direct application of the Substitution method. The Substitution method is always used when the EUT comes closer than 3 dB to the limit.

### 6.1 Environmental Conditions During Testing:

The following environmental conditions were maintained during the course of testing:

- Ambient Temperature: 20-25° C
- Relative humidity: 40-60%

### 6.2 Dates of Testing:

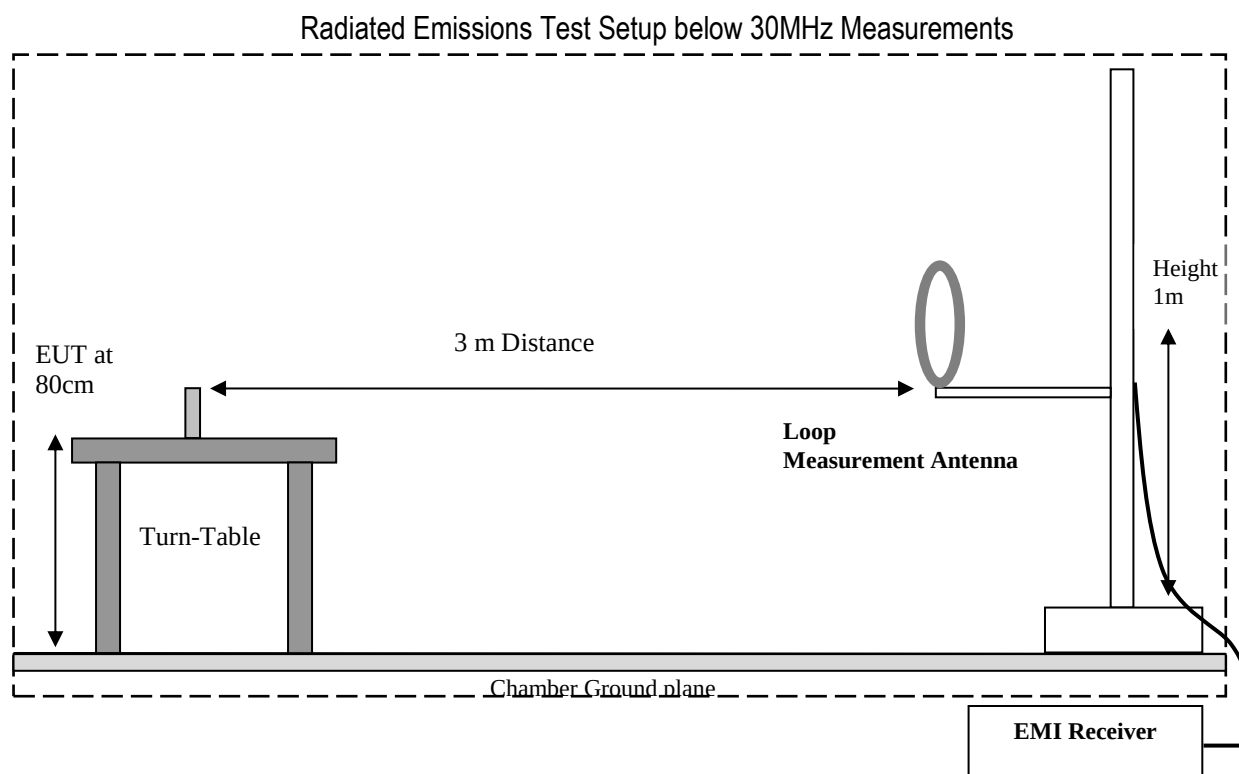
12/28/2020 – 12/30/2020

## 7 Measurement Procedures

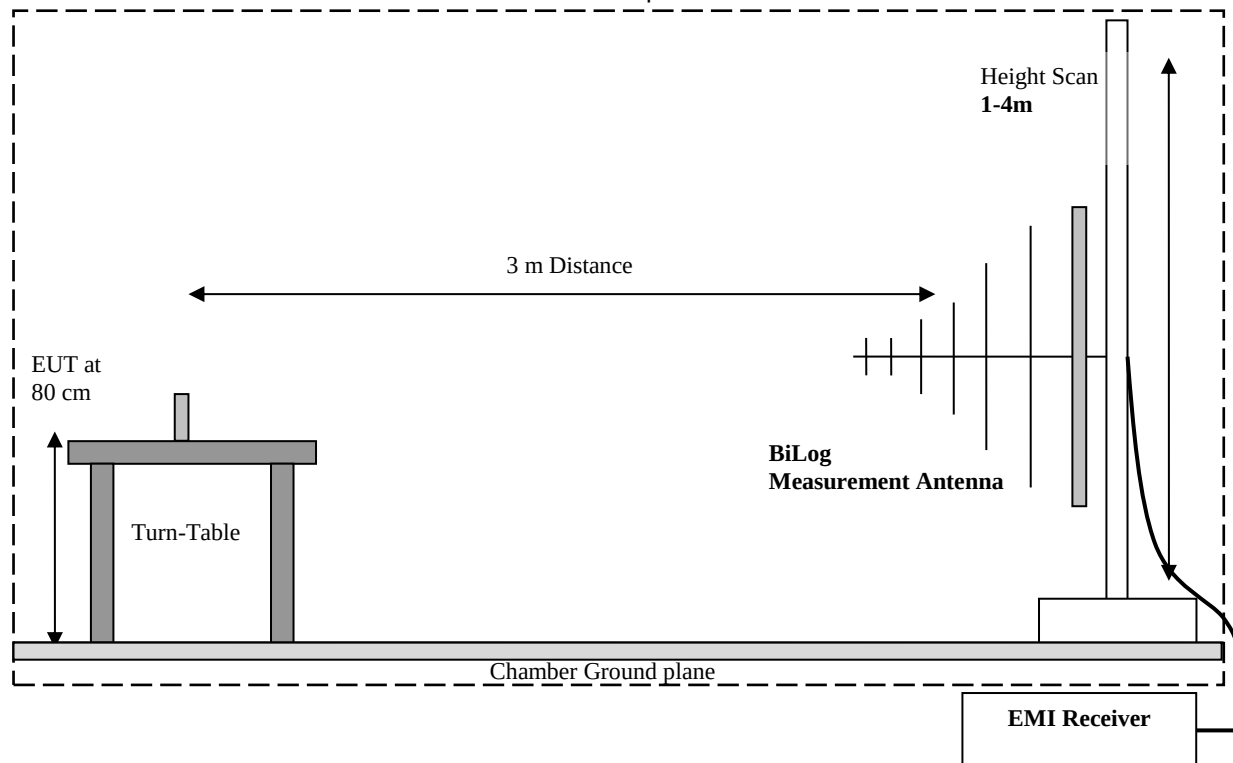
### 7.1 Radiated Measurement

The radiated measurement is performed according to ANSI C63.10 (2013)

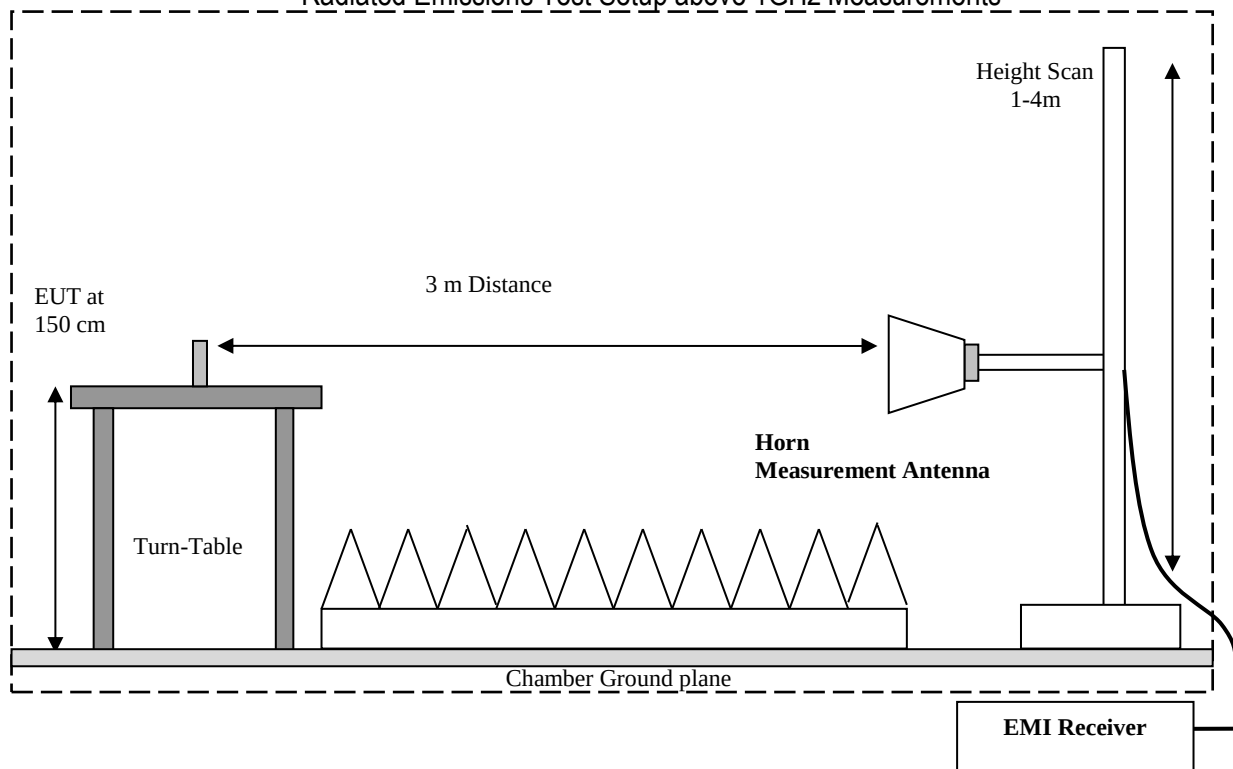
- The exploratory measurement is accomplished by running a matrix of 16 sweeps over the required frequency range with R&S Test-SW EMC32 for 4 positions of the turntable, two orthogonal positions of the EUT and both antenna polarizations. This procedure exceeds the requirement of the above standards to cover the 3 orthogonal axis of the EUT. A max peak detector is utilized during the exploratory measurement. The Test-SW creates an overall maximum trace for all 12 sweeps and saves the settings for each point of this trace. The maximum trace is part of the test report.
- The 10 highest emissions are selected with an automatic algorithm of EMC32 searching for peaks in the noise floor and ensuring that broadband signals are not selected multiple times.
- The maxima are then put through the final measurement and again maximized in a 90deg range of the turntable, fine search in frequency domain and height scan between 1m and 4m.
- The above procedure is repeated for all possible ways of power supply to EUT and for all supported modulations.
- In case there are no emissions above noise floor level only the maximum trace is reported as described above.
- The results are split up into up to 4 frequency ranges due to antenna bandwidth restrictions. A magnetic loop is used from 9 kHz to 30 MHz, a Biconilog antenna is used from 30 MHz to 1 GHz, and two different horn antennas are used to cover frequencies up to 40 GHz.



## Radiated Emissions Test Setup 30MHz-1GHz Measurements



## Radiated Emissions Test Setup above 1GHz Measurements



### 7.1.1 Sample Calculations for Field Strength Measurements

Field Strength is calculated from the Spectrum Analyzer/ Receiver readings, taking into account the following parameters:

1. Measured reading in dB $\mu$ V
2. Cable Loss between the receiving antenna and SA in dB and
3. Antenna Factor in dB/m

All radiated measurement plots in this report are taken from a test SW that calculates the Field Strength based on the following equation:

$$FS \text{ (dB}\mu\text{V/m)} = \text{Measured Value on SA (dB}\mu\text{V)} + \text{Cable Loss (dB)} + \text{Antenna Factor (dB/m)}$$

Example:

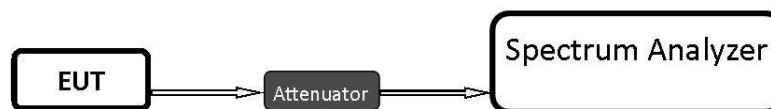
| Frequency (MHz) | Measured SA (dB $\mu$ V) | Cable Loss (dB) | Antenna Factor Correction (dB) | Field Strength Result (dB $\mu$ V/m) |
|-----------------|--------------------------|-----------------|--------------------------------|--------------------------------------|
| 1000            | 80.5                     | 3.5             | 14                             | 98.0                                 |

### 7.2 Power Line Conducted Measurement Procedure

AC Power Line conducted emissions measurements performed according to: ANSI C63.4 (2014)

### 7.3 RF Conducted Measurement Procedure

Testing procedures are based on 558074 D01 15.247 Meas Guidance v05r02 – “GUIDANCE FOR COMPLIANCE MEASUREMENTS ON DIGITAL TRANSMISSION SYSTEM, FREQUENCY HOPPING SPREAD SPECTRUM SYSTEM, AND HYBRID SYSTEM DEVICES OPERATING UNDER SECTION 15.247 OF THE FCC RULES” - April 2, 2019, by the Federal Communications Commission, Office of Engineering and Technology, Laboratory Division.



- Connect the equipment as shown in the above diagram.
- Adjust the settings of the SA (Rohde-Schwarz Spectrum Analyzer) to connect the EUT at the required mode of test.
- Measurements are to be performed with the EUT set to the low, middle and high channels and for worst case modulation schemes.

## 8 Test Result Data

### 8.1 Radiated Transmitter Spurious Emissions and Restricted Bands

#### 8.1.1 Measurement according to ANSI C63.10 (2013)

##### Spectrum Analyzer Settings:

- Frequency = 9 KHz – 30 MHz
- RBW = 9 KHz
- Detector: Peak
  
- Frequency = 30 MHz – 1 GHz
- Detector = Peak / Quasi-Peak
- RBW= 120 KHz (<1GHz)
  
- Frequency > 1 GHz
- Detector = Peak / Average
- RBW = 1 MHz
  
- Radiated spurious emissions shall be measured for the transmit frequencies, transmit power, and data rate for the lowest, middle and highest channel in each frequency band of operation and for the highest gain antenna for each antenna type, and using the appropriate parameters and test requirements.
- The highest (or worst-case) data rate shall be recorded for each measurement.
- For testing frequencies below 30 MHz at distance other than the specified in the standard, the limit conversion is calculated by using the FCC materials for the ANSI 63 committee issued on January, 27 1991.

#### 8.1.2 Limits:

##### FCC §15.247

- In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

## FCC §15.209 &amp; RSS-Gen 8.9

- Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

| Frequency of emission (MHz) | Field strength (μV/m) | Measurement Distance (m) | Field strength @ 3m (dBμV/m) |
|-----------------------------|-----------------------|--------------------------|------------------------------|
| 0.009–0.490                 | 2400/F(kHz) / -----   | 300                      | -                            |
| 0.490–1.705                 | 24000/F(kHz) / -----  | 30                       | -                            |
| 1.705–30.0                  | 30 / (29.5)           | 30                       | -                            |
| 30–88                       | 100                   | 3                        | 40 dBμV/m                    |
| 88–216                      | 150                   | 3                        | 43.5 dBμV/m                  |
| 216–960                     | 200                   | 3                        | 46 dBμV/m                    |
| Above 960                   | 500                   | 3                        | 54 dBμV/m                    |

## FCC §15.205 &amp; RSS-Gen 8.10

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

| MHz               | MHz                 | MHz           | GHz         |
|-------------------|---------------------|---------------|-------------|
| 0.090-0.110       | 16.42-16.423        | 399.9-410     | 4.5-5.15    |
| 10.495-0.505      | 16.69475-16.69525   | 608-614       | 5.35-5.46   |
| 2.1735-2.1905     | 16.80425-16.80475   | 960-1240      | 7.25-7.75   |
| 4.125-4.128       | 25.5-25.67          | 1300-1427     | 8.025-8.5   |
| 4.17725-4.17775   | 37.5-38.25          | 1435-1626.5   | 9.0-9.2     |
| 4.20725-4.20775   | 73-74.6             | 1645.5-1646.5 | 9.3-9.5     |
| 6.215-6.218       | 74.8-75.2           | 1660-1710     | 10.6-12.7   |
| 6.26775-6.26825   | 108-121.94          | 1718.8-1722.2 | 13.25-13.4  |
| 6.31175-6.31225   | 123-138             | 2200-2300     | 14.47-14.5  |
| 8.291-8.294       | 149.9-150.05        | 2310-2390     | 15.35-16.2  |
| 8.362-8.366       | 156.52475-156.52525 | 2483.5-2500   | 17.7-21.4   |
| 8.37625-8.38675   | 156.7-156.9         | 2690-2900     | 22.01-23.12 |
| 8.41425-8.41475   | 162.0125-167.17     | 3260-3267     | 23.6-24.0   |
| 12.29-12.293      | 167.72-173.2        | 3332-3339     | 31.2-31.8   |
| 12.51975-12.52025 | 240-285             | 3345.8-3358   | 36.43-36.5  |
| 12.57675-12.57725 | 322-335.4           | 3600-4400     | Above 38.6  |
| 13.36-13.41       |                     |               |             |

- 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)).

\*PEAK LIMIT= 74 dBμV/m

\*AVG. LIMIT= 54 dBμV/m

**8.1.3 Test conditions and setup:**

| Ambient Temperature | EUT Set-Up # | EUT operating mode | Power Input |
|---------------------|--------------|--------------------|-------------|
| 22.0° C             | 1            | 802.11g            | 14 VDC      |

**8.1.4 Measurement result:**

| Plot # | Channel # | WiFi Module# | Scan Frequency  | Limit             | Result |
|--------|-----------|--------------|-----------------|-------------------|--------|
| 1-3    | Low       | #1           | 30 MHz – 18 GHz | See section 8.6.2 | Pass   |
| 4-8    | Mid       | #1           | 9 kHz – 26 GHz  | See section 8.6.2 | Pass   |
| 9-11   | High      | #1           | 30 MHz – 18 GHz | See section 8.6.2 | Pass   |
| 12-14  | Low       | #2           | 30 MHz – 18 GHz | See section 8.6.2 | Pass   |
| 15-19  | Mid       | #2           | 9 kHz – 26 GHz  | See section 8.6.2 | Pass   |
| 20-22  | High      | #2           | 30 MHz – 18 GHz | See section 8.6.2 | Pass   |

**Note: Tested with LTE B2 Co-Transmission**

### 8.1.5 Measurement Plots:

Plot #1 Radiated Emissions: 30 MHz – 1GHz

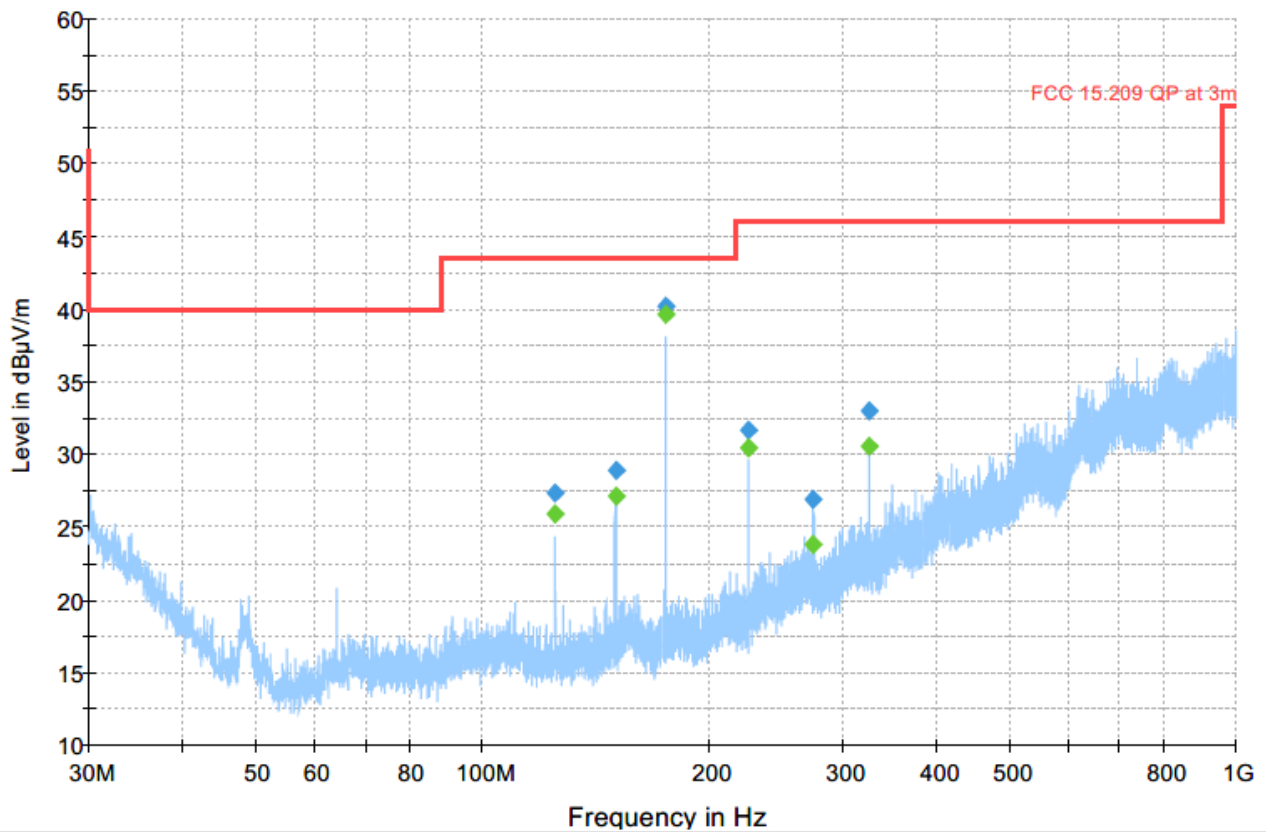
Modulation: 802.11g

Channel: Low

WiFi Module#1

#### Final Result

| Frequency (MHz) | MaxPeak (dBμV/m) | QuasiPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) | Comment |
|-----------------|------------------|--------------------|----------------|-------------|-----------------|-----------------|-------------|-----|---------------|--------------|---------|
| 124.995         | 27.35            | ---                | 43.50          | 16.15       | 500.0           | 120.000         | 283.0       | H   | 263.0         | 12.8         |         |
| 124.995         | ---              | 25.88              | ---            | ---         | 500.0           | 120.000         | 283.0       | H   | 263.0         | 12.8         |         |
| 149.989         | 28.95            | ---                | 43.50          | 14.55       | 500.0           | 120.000         | 230.0       | H   | 126.0         | 13.7         |         |
| 149.989         | ---              | 27.10              | ---            | ---         | 500.0           | 120.000         | 230.0       | H   | 126.0         | 13.7         |         |
| 174.983         | ---              | 39.62              | ---            | ---         | 500.0           | 120.000         | 199.0       | H   | 278.0         | 14.3         |         |
| 174.983         | 40.24            | ---                | 43.50          | 3.26        | 500.0           | 120.000         | 199.0       | H   | 278.0         | 14.3         |         |
| 225.002         | ---              | 30.49              | ---            | ---         | 500.0           | 120.000         | 140.0       | H   | 100.0         | 15.9         |         |
| 225.002         | 31.72            | ---                | 46.02          | 14.30       | 500.0           | 120.000         | 140.0       | H   | 100.0         | 15.9         |         |
| 274.990         | ---              | 23.83              | ---            | ---         | 500.0           | 120.000         | 140.0       | H   | 26.0          | 17.9         |         |
| 274.990         | 26.96            | ---                | 46.02          | 19.06       | 500.0           | 120.000         | 140.0       | H   | 26.0          | 17.9         |         |
| 324.977         | ---              | 30.56              | ---            | ---         | 500.0           | 120.000         | 152.0       | H   | 317.0         | 19.3         |         |
| 324.977         | 32.96            | ---                | 46.02          | 13.06       | 500.0           | 120.000         | 152.0       | H   | 317.0         | 19.3         |         |



Preview Result 2-QPK      Preview Result 1-PK+      FCC 15.209 QP at 3m  
Final Result PK+      Final Result QPK

## Plot #2 Radiated Emissions: 1-3 GHz

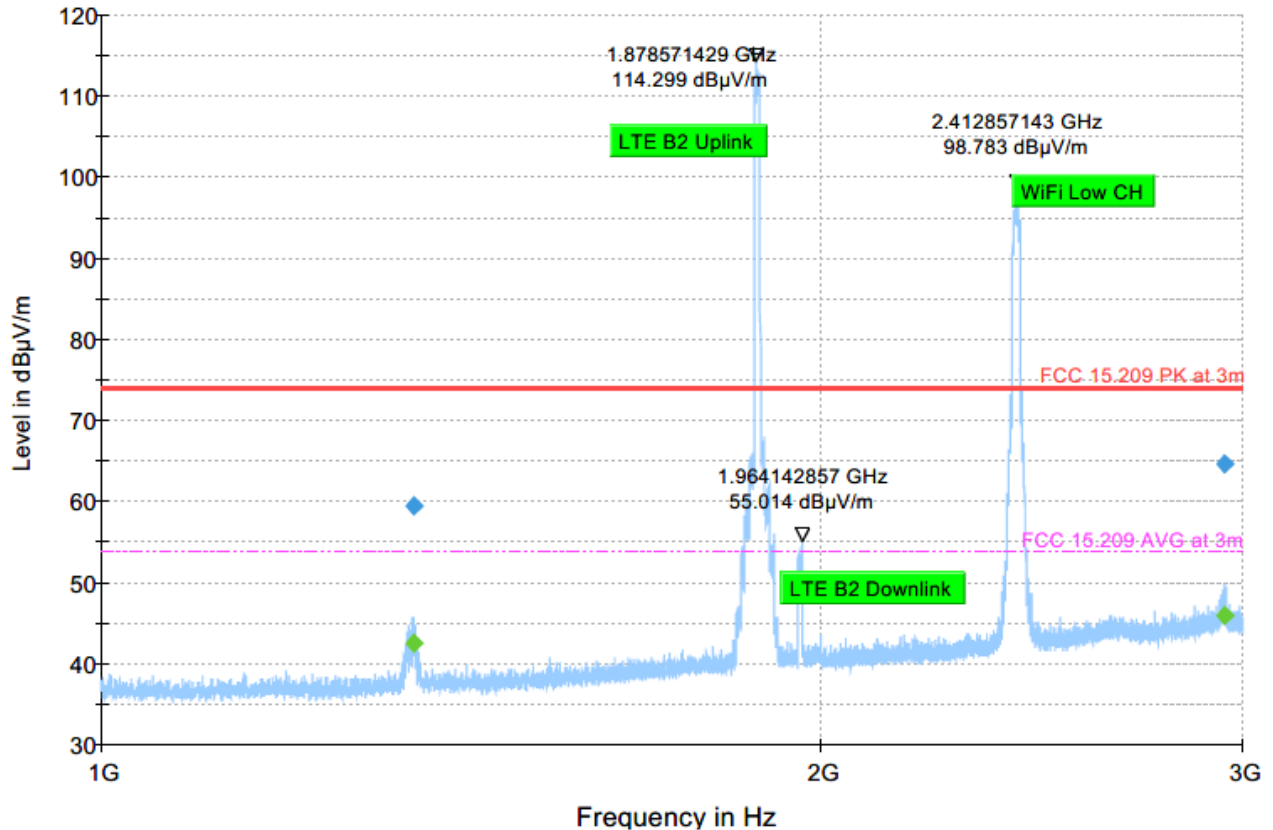
Modulation: 802.11g

Channel: Low

WiFi Module#1

## Final Result

| Frequency (MHz) | MaxPeak (dBμV/m) | CAverage (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) | Comment |
|-----------------|------------------|-------------------|----------------|-------------|-----------------|-----------------|-------------|-----|---------------|--------------|---------|
| 1350.429        | 59.38            | ---               | 73.98          | 14.60       | 500.0           | 1000.000        | 140.0       | H   | 303.0         | 5.1          |         |
| 1350.429        | ---              | 42.63             | 53.98          | 11.35       | 500.0           | 1000.000        | 140.0       | H   | 303.0         | 5.1          |         |
| 2947.571        | 64.72            | ---               | 73.98          | 9.26        | 500.0           | 1000.000        | 240.0       | H   | 299.0         | 11.6         |         |
| 2947.571        | ---              | 45.89             | 53.98          | 8.09        | 500.0           | 1000.000        | 240.0       | H   | 299.0         | 11.6         |         |



Preview Result 2-QPK    Preview Result 1-PK+    FCC 15.209 PK at 3m  
FCC 15.209 AVG at 3m    Final\_Result PK+    Final\_Result CAV

## Plot #3 Radiated Emissions: 3-18 GHz

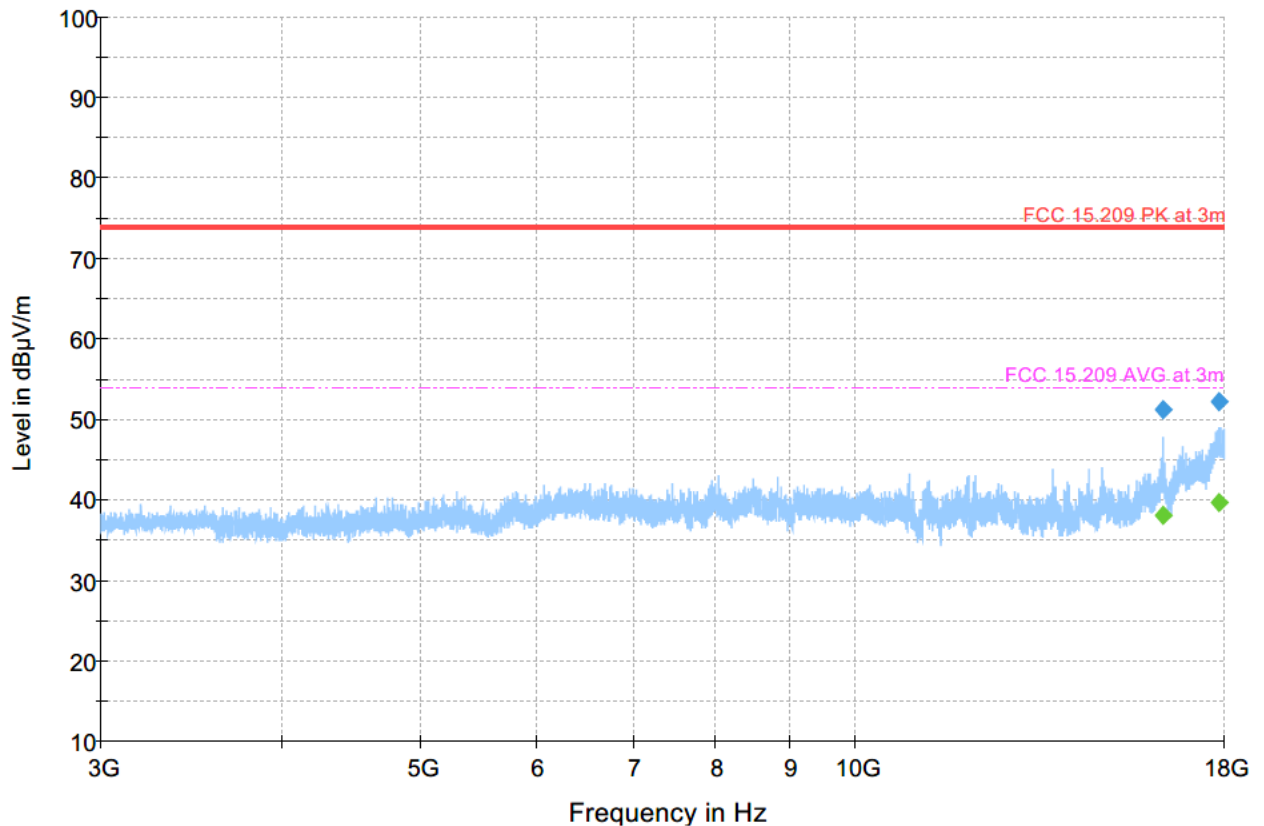
Modulation: 802.11g

Channel: Low

WiFi Module#1

## Final Result

| Frequency (MHz) | MaxPeak (dBµV/m) | CAverage (dBµV/m) | Limit (dBµV/m) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) | Comment |
|-----------------|------------------|-------------------|----------------|-------------|-----------------|-----------------|-------------|-----|---------------|--------------|---------|
| 16336.000       | ---              | 38.17             | 53.98          | 15.81       | 500.0           | 1000.000        | 218.0       | V   | 72.0          | 10.5         |         |
| 16336.000       | 51.14            | ---               | 73.98          | 22.84       | 500.0           | 1000.000        | 218.0       | V   | 72.0          | 10.5         |         |
| 17843.000       | ---              | 39.58             | 53.98          | 14.40       | 500.0           | 1000.000        | 252.0       | V   | 69.0          | 16.6         |         |
| 17843.000       | 52.19            | ---               | 73.98          | 21.79       | 500.0           | 1000.000        | 252.0       | V   | 69.0          | 16.6         |         |



Preview Result 2-QPK      Preview Result 1-PK+      FCC 15.209 PK at 3m  
FCC 15.209 AVG at 3m      Final\_Result PK+      Final\_Result CAV

## Plot #4 Radiated Emissions: 9 KHz – 30 MHz

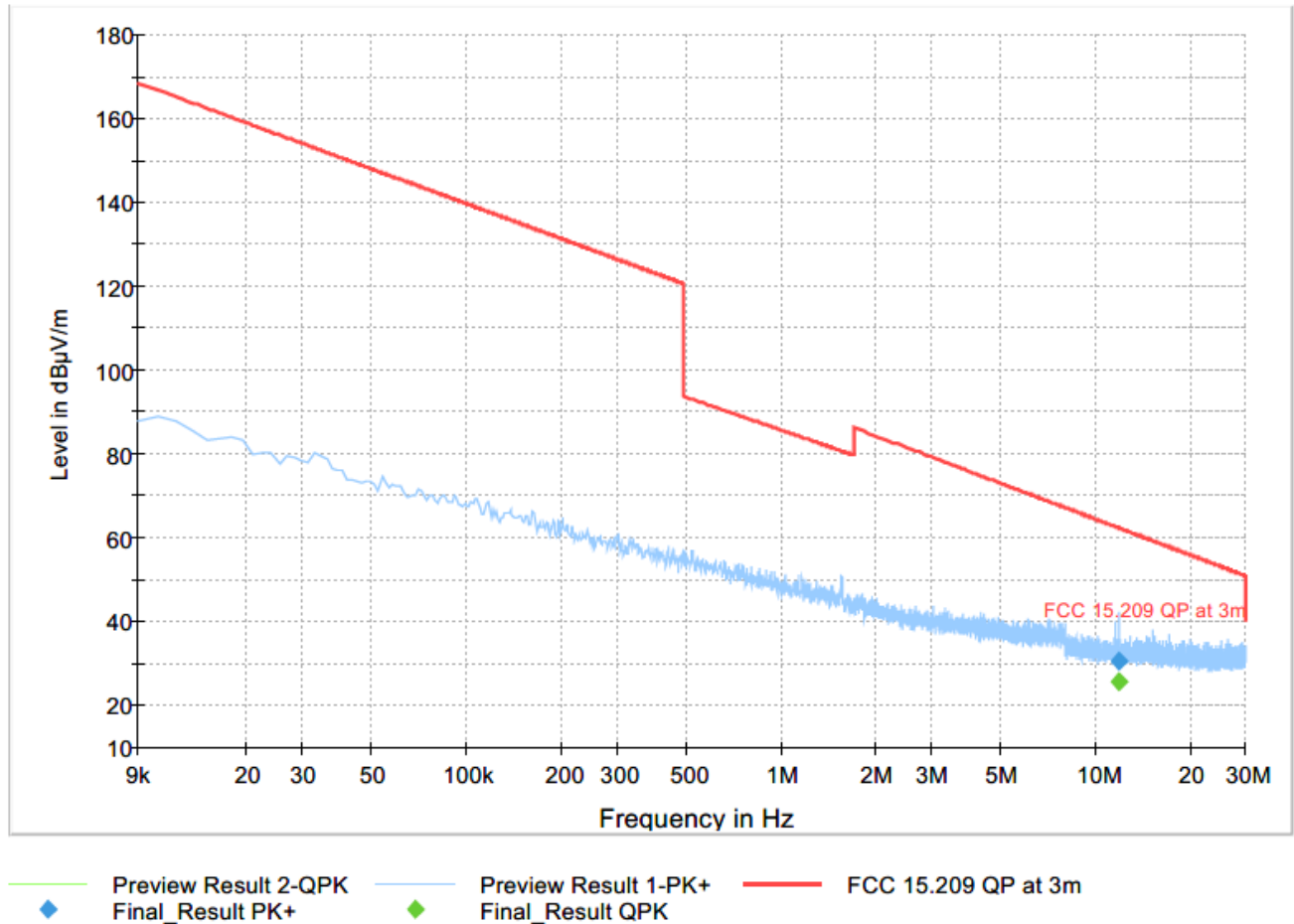
Modulation: 802.11g

Channel: Mid

WiFi Module#1

## Final Result

| Frequency (MHz) | MaxPeak (dBμV/m) | QuasiPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) | Comment |
|-----------------|------------------|--------------------|----------------|-------------|-----------------|-----------------|-------------|-----|---------------|--------------|---------|
| 11.906          | ---              | 25.85              | 62.42          | 36.57       | 500.0           | 9.000           | 248.0       | V   | 224.0         | 17.4         |         |
| 11.906          | 30.86            | ---                | 62.42          | 31.56       | 500.0           | 9.000           | 248.0       | V   | 224.0         | 17.4         |         |



## Plot #5 Radiated Emissions: 30 MHz – 1GHz

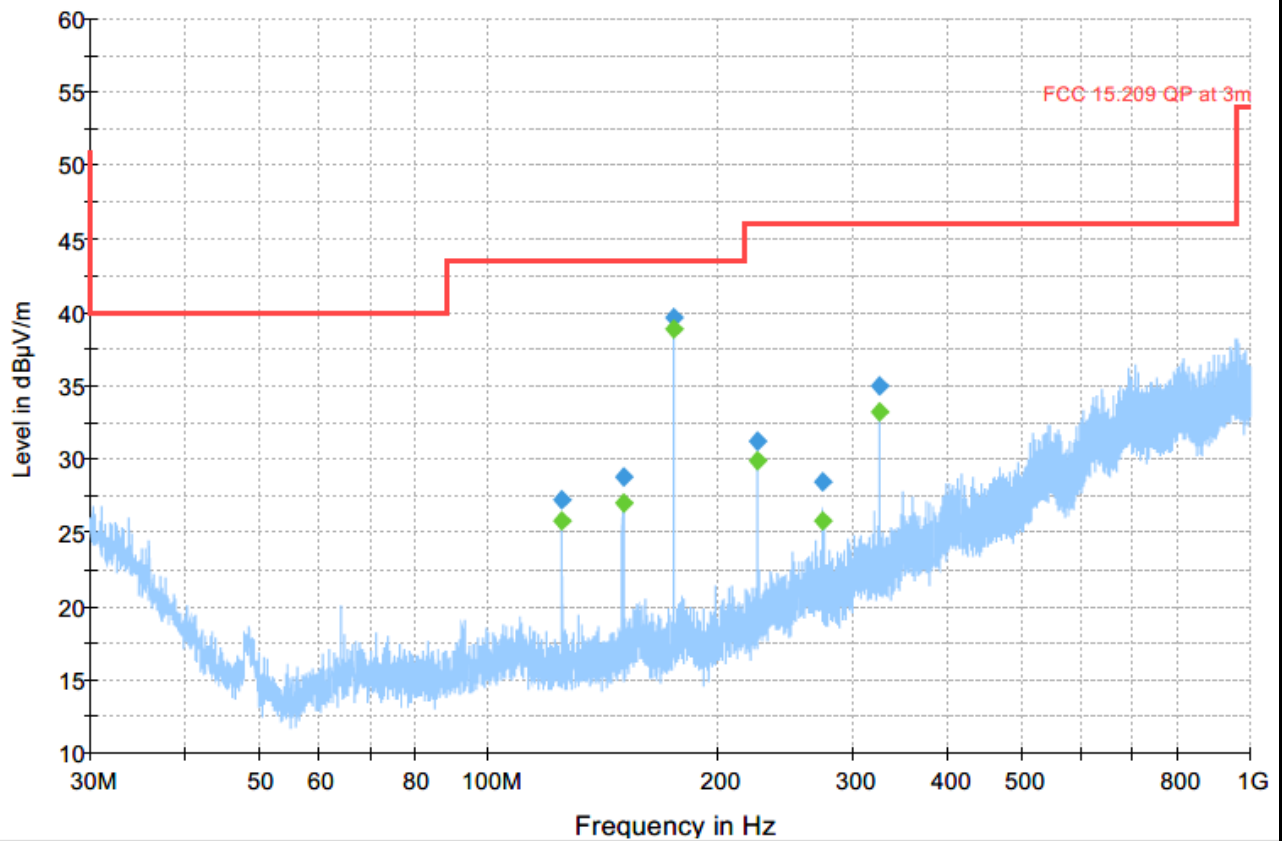
Modulation: 802.11g

Channel: Mid

WiFi Module#1

## Final Result

| Frequency (MHz) | MaxPeak (dBμV/m) | QuasiPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) | Comment |
|-----------------|------------------|--------------------|----------------|-------------|-----------------|-----------------|-------------|-----|---------------|--------------|---------|
| 124.995         | 27.25            | ---                | 43.50          | 16.25       | 500.0           | 120.000         | 272.0       | H   | 265.0         | 12.8         |         |
| 124.995         | ---              | 25.82              | ---            | ---         | 500.0           | 120.000         | 272.0       | H   | 265.0         | 12.8         |         |
| 149.989         | ---              | 26.99              | ---            | ---         | 500.0           | 120.000         | 186.0       | H   | 121.0         | 13.7         |         |
| 149.989         | 28.81            | ---                | 43.50          | 14.69       | 500.0           | 120.000         | 186.0       | H   | 121.0         | 13.7         |         |
| 174.983         | 39.70            | ---                | 43.50          | 3.80        | 500.0           | 120.000         | 186.0       | H   | 282.0         | 14.3         |         |
| 174.983         | ---              | 38.91              | ---            | ---         | 500.0           | 120.000         | 186.0       | H   | 282.0         | 14.3         |         |
| 225.002         | ---              | 29.92              | ---            | ---         | 500.0           | 120.000         | 140.0       | H   | 95.0          | 15.9         |         |
| 225.002         | 31.29            | ---                | 46.02          | 14.73       | 500.0           | 120.000         | 140.0       | H   | 95.0          | 15.9         |         |
| 274.990         | ---              | 25.78              | ---            | ---         | 500.0           | 120.000         | 196.0       | H   | 276.0         | 17.9         |         |
| 274.990         | 28.46            | ---                | 46.02          | 17.56       | 500.0           | 120.000         | 196.0       | H   | 276.0         | 17.9         |         |
| 325.009         | ---              | 33.24              | ---            | ---         | 500.0           | 120.000         | 140.0       | H   | 335.0         | 19.3         |         |
| 325.009         | 35.04            | ---                | 46.02          | 10.98       | 500.0           | 120.000         | 140.0       | H   | 335.0         | 19.3         |         |



◆ Preview Result 2-QPK      ◆ Preview Result 1-PK+      — FCC 15.209 QP at 3m  
◆ Final\_Result PK+      ◆ Final\_Result QPK

## Plot #6 Radiated Emissions: 1-3 GHz

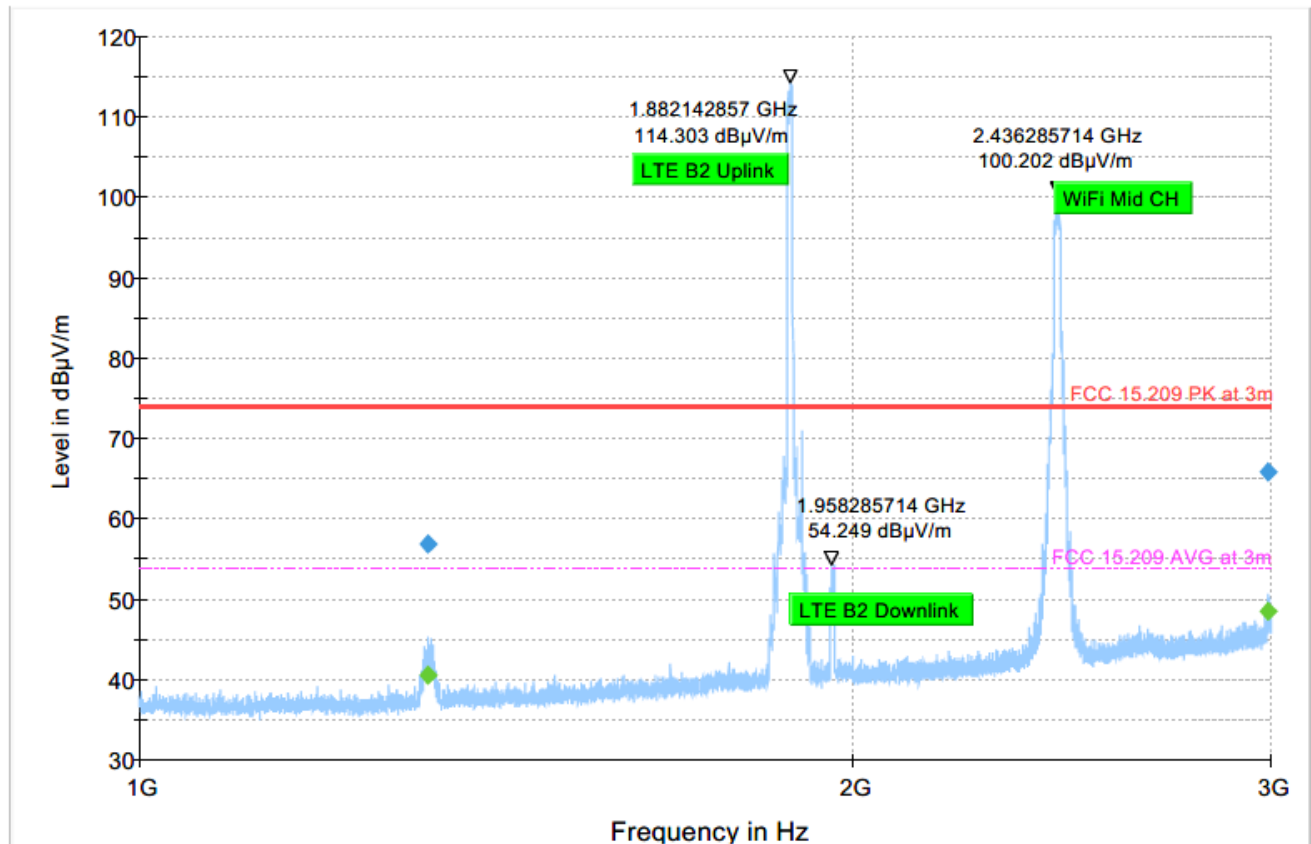
Modulation: 802.11g

Channel: Mid

WiFi Module#1

## Final Result

| Frequency (MHz) | MaxPeak (dBμV/m) | CAverage (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) | Comment |
|-----------------|------------------|-------------------|----------------|-------------|-----------------|-----------------|-------------|-----|---------------|--------------|---------|
| 1323.143        | 56.82            | ---               | 73.98          | 17.16       | 500.0           | 1000.000        | 176.0       | H   | 299.0         | 5.1          |         |
| 1323.143        | ---              | 40.65             | 53.98          | 13.33       | 500.0           | 1000.000        | 176.0       | H   | 299.0         | 5.1          |         |
| 2992.571        | 65.90            | ---               | 73.98          | 8.08        | 500.0           | 1000.000        | 174.0       | H   | 290.0         | 11.9         |         |
| 2992.571        | ---              | 48.52             | 53.98          | 5.46        | 500.0           | 1000.000        | 174.0       | H   | 290.0         | 11.9         |         |



Preview Result 2-QPK      Preview Result 1-PK+      FCC 15.209 PK at 3m  
FCC 15.209 AVG at 3m      Final\_Result PK+      Final\_Result CAV

## Plot #7 Radiated Emissions: 3-18 GHz

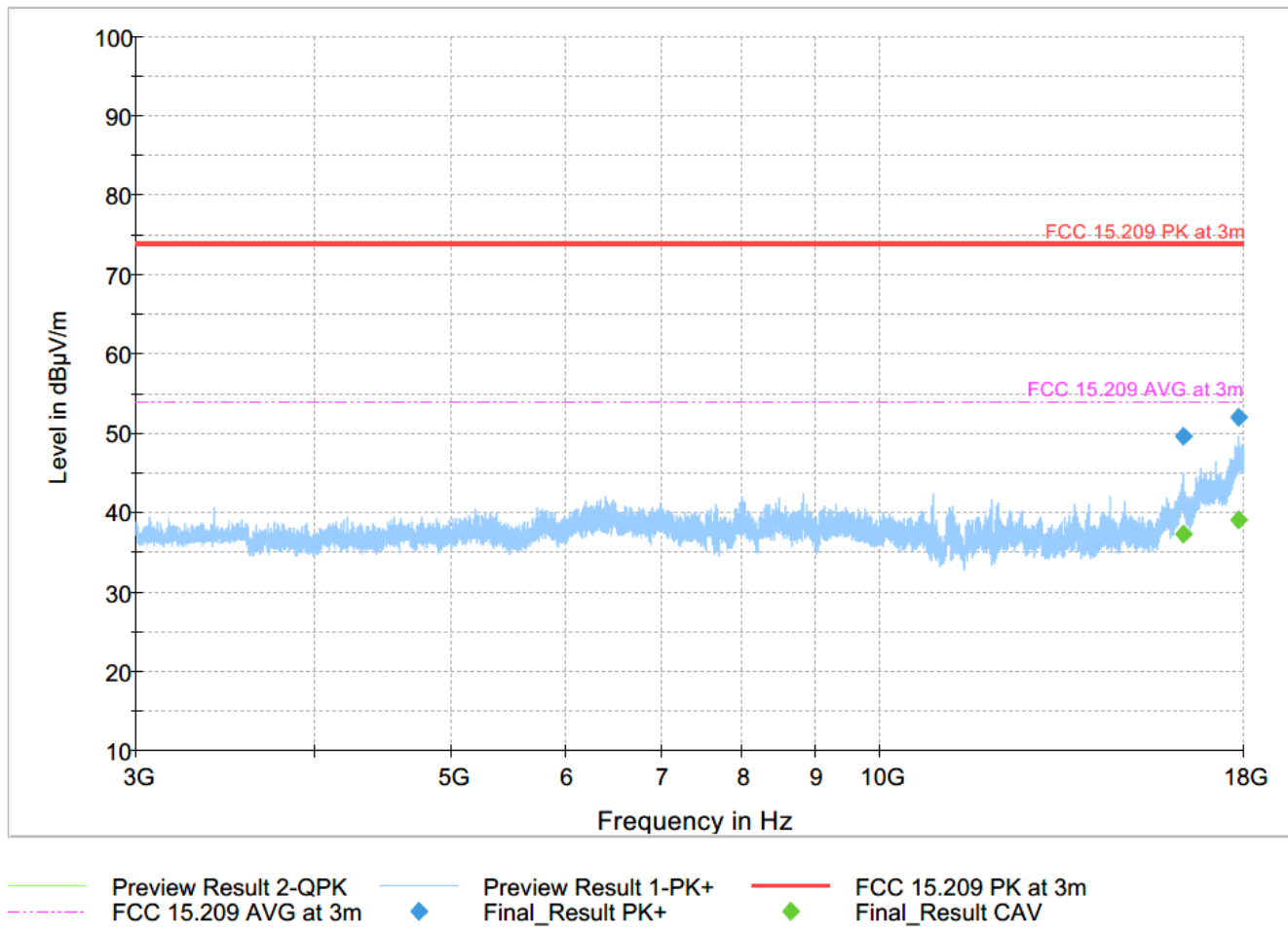
Modulation: 802.11g

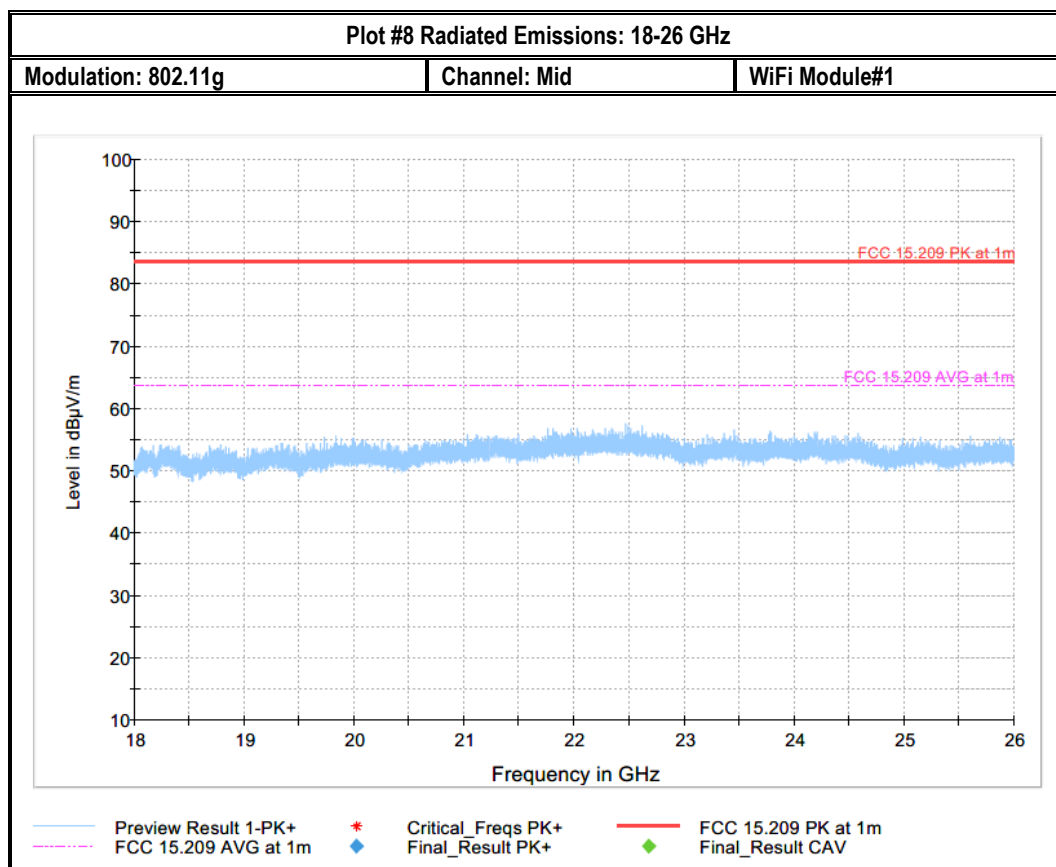
Channel: Mid

WiFi Module#1

## Final Result

| Frequency (MHz) | MaxPeak (dBμV/m) | CAverage (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) | Comment |
|-----------------|------------------|-------------------|----------------|-------------|-----------------|-----------------|-------------|-----|---------------|--------------|---------|
| 16346.000       | ---              | 37.28             | 53.98          | 16.70       | 500.0           | 1000.000        | 293.0       | H   | 178.0         | 10.4         |         |
| 16346.000       | 49.64            | ---               | 73.98          | 24.34       | 500.0           | 1000.000        | 293.0       | H   | 178.0         | 10.4         |         |
| 17872.500       | ---              | 39.15             | 53.98          | 14.83       | 500.0           | 1000.000        | 287.0       | V   | 27.0          | 16.7         |         |
| 17872.500       | 52.11            | ---               | 73.98          | 21.87       | 500.0           | 1000.000        | 287.0       | V   | 27.0          | 16.7         |         |





## Plot #9 Radiated Emissions: 30 MHz – 1GHz

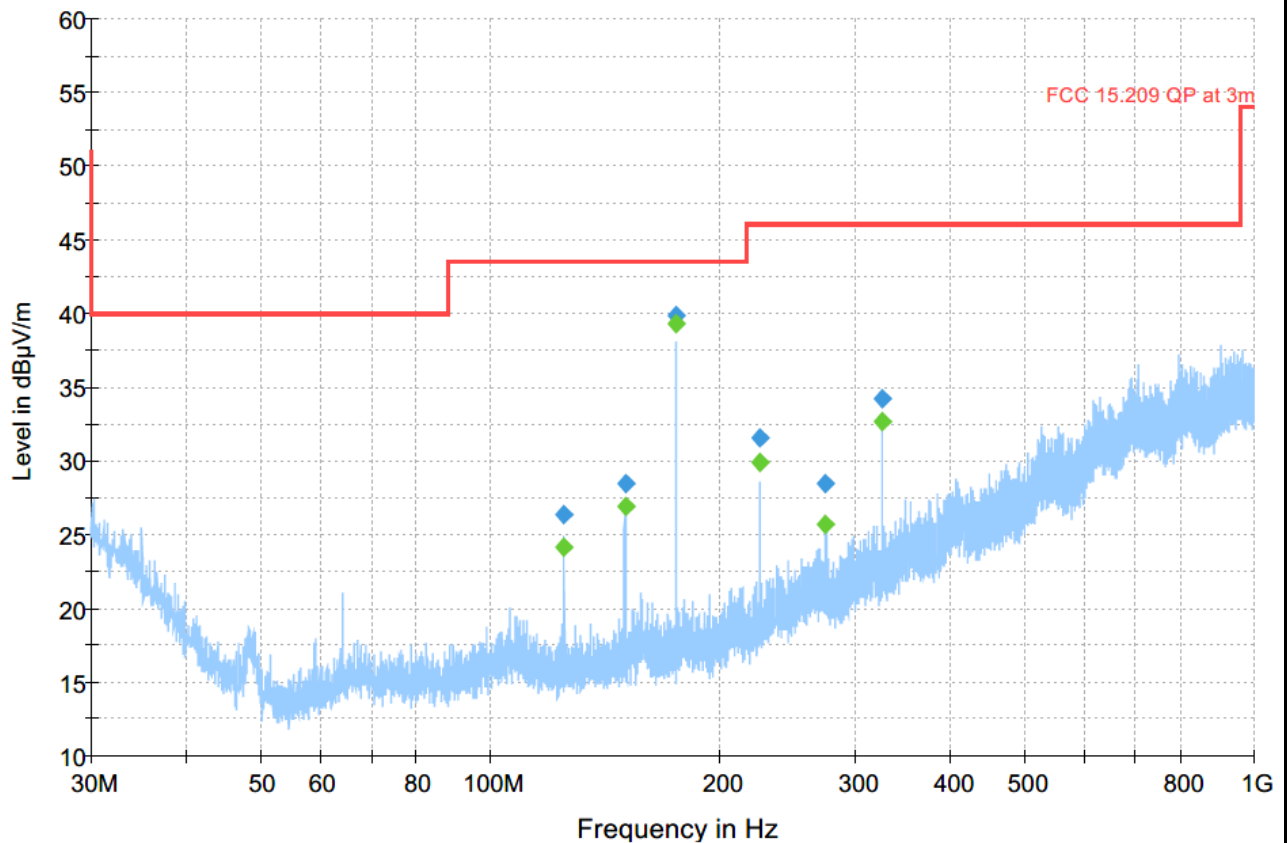
Modulation: 802.11g

Channel: High

WiFi Module#1

## Final Result

| Frequency (MHz) | MaxPeak (dBμV/m) | QuasiPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) | Comment |
|-----------------|------------------|--------------------|----------------|-------------|-----------------|-----------------|-------------|-----|---------------|--------------|---------|
| 124.995         | ---              | 24.11              | ---            | ---         | 500.0           | 120.000         | 315.0       | H   | 98.0          | 12.8         |         |
| 124.995         | 26.41            | ---                | 43.50          | 17.09       | 500.0           | 120.000         | 315.0       | H   | 98.0          | 12.8         |         |
| 149.989         | 28.48            | ---                | 43.50          | 15.02       | 500.0           | 120.000         | 229.0       | H   | 115.0         | 13.7         |         |
| 149.989         | ---              | 26.96              | ---            | ---         | 500.0           | 120.000         | 229.0       | H   | 115.0         | 13.7         |         |
| 174.983         | ---              | 39.30              | ---            | ---         | 500.0           | 120.000         | 208.0       | H   | 285.0         | 14.3         |         |
| 174.983         | 39.92            | ---                | 43.50          | 3.58        | 500.0           | 120.000         | 208.0       | H   | 285.0         | 14.3         |         |
| 225.002         | ---              | 29.94              | ---            | ---         | 500.0           | 120.000         | 151.0       | H   | 92.0          | 15.9         |         |
| 225.002         | 31.54            | ---                | 46.02          | 14.48       | 500.0           | 120.000         | 151.0       | H   | 92.0          | 15.9         |         |
| 274.990         | 28.50            | ---                | 46.02          | 17.52       | 500.0           | 120.000         | 228.0       | H   | 274.0         | 17.9         |         |
| 274.990         | ---              | 25.65              | ---            | ---         | 500.0           | 120.000         | 228.0       | H   | 274.0         | 17.9         |         |
| 325.009         | ---              | 32.63              | ---            | ---         | 500.0           | 120.000         | 140.0       | H   | 344.0         | 19.3         |         |
| 325.009         | 34.28            | ---                | 46.02          | 11.74       | 500.0           | 120.000         | 140.0       | H   | 344.0         | 19.3         |         |

Preview Result 2-QPK  
Final\_Result PK+Preview Result 1-PK+  
Final\_Result QPK

FCC 15.209 QP at 3m

## Plot #10 Radiated Emissions: 1-3 GHz

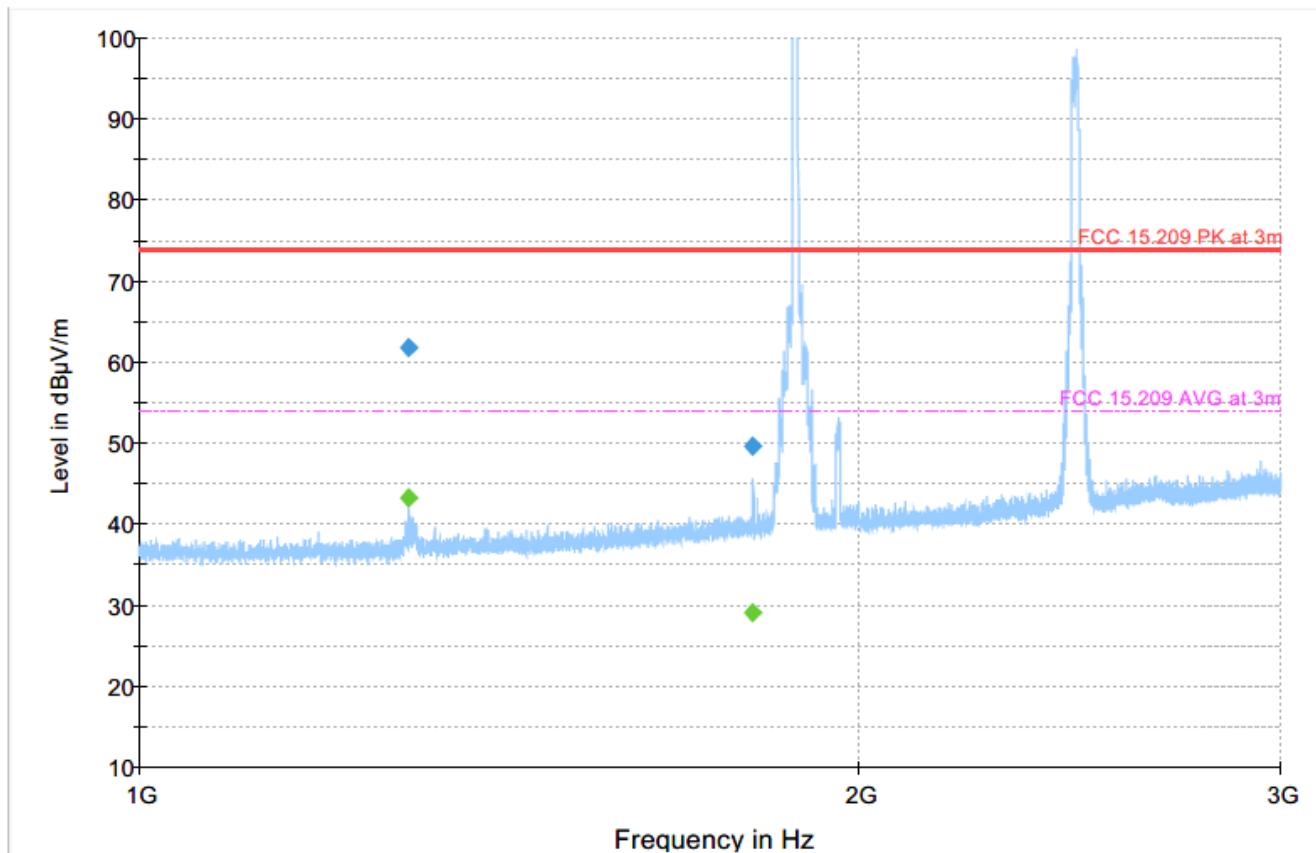
Modulation: 802.11g

Channel: High

WiFi Module#1

## Final Result

| Frequency (MHz) | MaxPeak (dBμV/m) | CAverage (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) | Comment |
|-----------------|------------------|-------------------|----------------|-------------|-----------------|-----------------|-------------|-----|---------------|--------------|---------|
| 1296.714        | ---              | 43.16             | 53.98          | 10.82       | 500.0           | 1000.000        | 175.0       | H   | 224.0         | 4.7          |         |
| 1296.714        | 61.81            | ---               | 73.98          | 12.17       | 500.0           | 1000.000        | 175.0       | H   | 224.0         | 4.7          |         |
| 1805.571        | ---              | 29.08             | 53.98          | 24.90       | 500.0           | 1000.000        | 315.0       | V   | 33.0          | 6.8          |         |
| 1805.571        | 49.55            | ---               | 73.98          | 24.43       | 500.0           | 1000.000        | 315.0       | V   | 33.0          | 6.8          |         |



Preview Result 2-QPK  
FCC 15.209 AVG at 3m

Preview Result 1-PK+  
Final\_Result PK+

FCC 15.209 PK at 3m  
Final\_Result CAV

## Plot #11 Radiated Emissions: 3-18 GHz

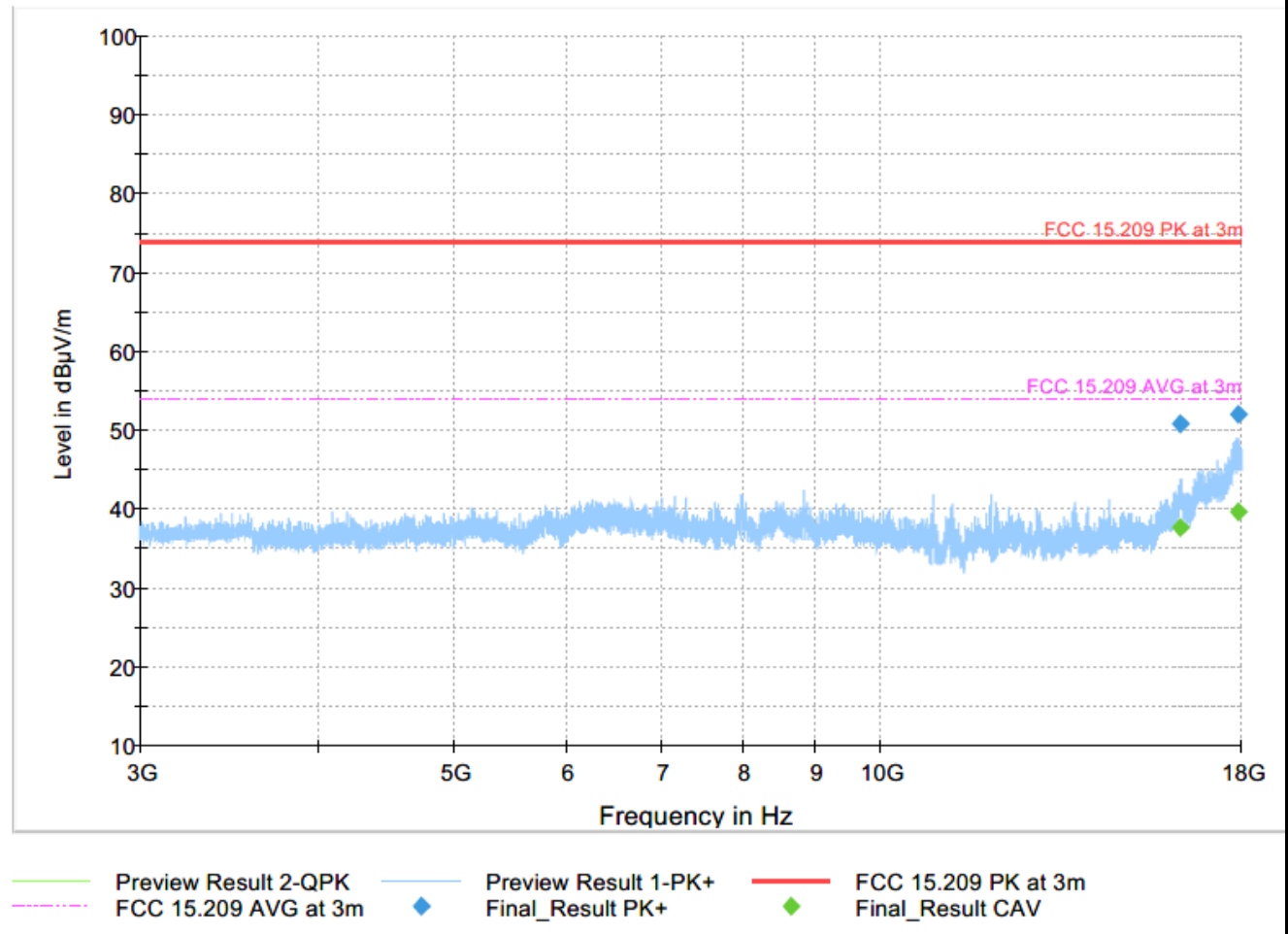
Modulation: 802.11g

Channel: High

WiFi Module#1

## Final Result

| Frequency (MHz) | MaxPeak (dBμV/m) | CAverage (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) | Comment |
|-----------------|------------------|-------------------|----------------|-------------|-----------------|-----------------|-------------|-----|---------------|--------------|---------|
| 16270.000       | ---              | 37.67             | 53.98          | 16.31       | 500.0           | 1000.000        | 315.0       | V   | 285.0         | 10.4         |         |
| 16270.000       | 50.81            | ---               | 73.98          | 23.17       | 500.0           | 1000.000        | 315.0       | V   | 285.0         | 10.4         |         |
| 17885.500       | ---              | 39.65             | 53.98          | 14.33       | 500.0           | 1000.000        | 174.0       | V   | 264.0         | 16.8         |         |
| 17885.500       | 52.05            | ---               | 73.98          | 21.93       | 500.0           | 1000.000        | 174.0       | V   | 264.0         | 16.8         |         |



## Plot #12 Radiated Emissions: 30 MHz – 1GHz

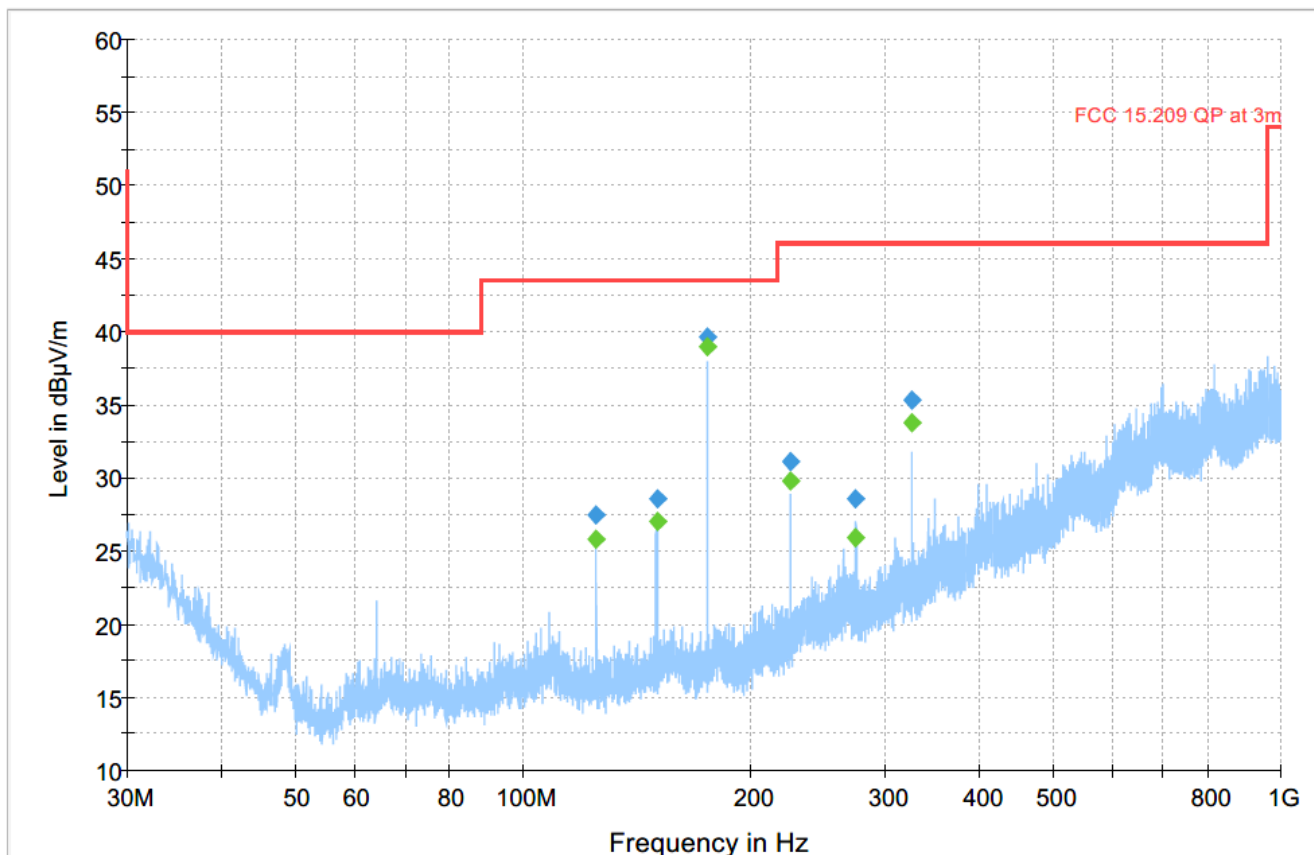
Modulation: 802.11g

Channel: Low

WiFi Module#2

## Final Result

| Frequency (MHz) | MaxPeak (dBμV/m) | QuasiPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) | Comment |
|-----------------|------------------|--------------------|----------------|-------------|-----------------|-----------------|-------------|-----|---------------|--------------|---------|
| 124.995         | 27.53            | ---                | 43.50          | 15.97       | 500.0           | 120.000         | 274.0       | H   | 265.0         | 12.8         |         |
| 124.995         | ---              | 25.86              | ---            | ---         | 500.0           | 120.000         | 274.0       | H   | 265.0         | 12.8         |         |
| 149.989         | ---              | 27.02              | ---            | ---         | 500.0           | 120.000         | 196.0       | H   | 116.0         | 13.7         |         |
| 149.989         | 28.63            | ---                | 43.50          | 14.87       | 500.0           | 120.000         | 196.0       | H   | 116.0         | 13.7         |         |
| 174.983         | ---              | 38.97              | ---            | ---         | 500.0           | 120.000         | 198.0       | H   | 288.0         | 14.3         |         |
| 174.983         | 39.59            | ---                | 43.50          | 3.91        | 500.0           | 120.000         | 198.0       | H   | 288.0         | 14.3         |         |
| 225.002         | ---              | 29.75              | ---            | ---         | 500.0           | 120.000         | 151.0       | H   | 94.0          | 15.9         |         |
| 225.002         | 31.16            | ---                | 46.02          | 14.86       | 500.0           | 120.000         | 151.0       | H   | 94.0          | 15.9         |         |
| 274.990         | 28.54            | ---                | 46.02          | 17.48       | 500.0           | 120.000         | 208.0       | H   | 276.0         | 17.9         |         |
| 274.990         | ---              | 25.91              | ---            | ---         | 500.0           | 120.000         | 208.0       | H   | 276.0         | 17.9         |         |
| 325.009         | ---              | 33.78              | ---            | ---         | 500.0           | 120.000         | 140.0       | H   | 330.0         | 19.3         |         |
| 325.009         | 35.34            | ---                | 46.02          | 10.69       | 500.0           | 120.000         | 140.0       | H   | 330.0         | 19.3         |         |

Preview Result 2-QPK  
Final\_Result PK+Preview Result 1-PK+  
Final\_Result QPK

FCC 15.209 QP at 3m

## Plot #13 Radiated Emissions: 1-3 GHz

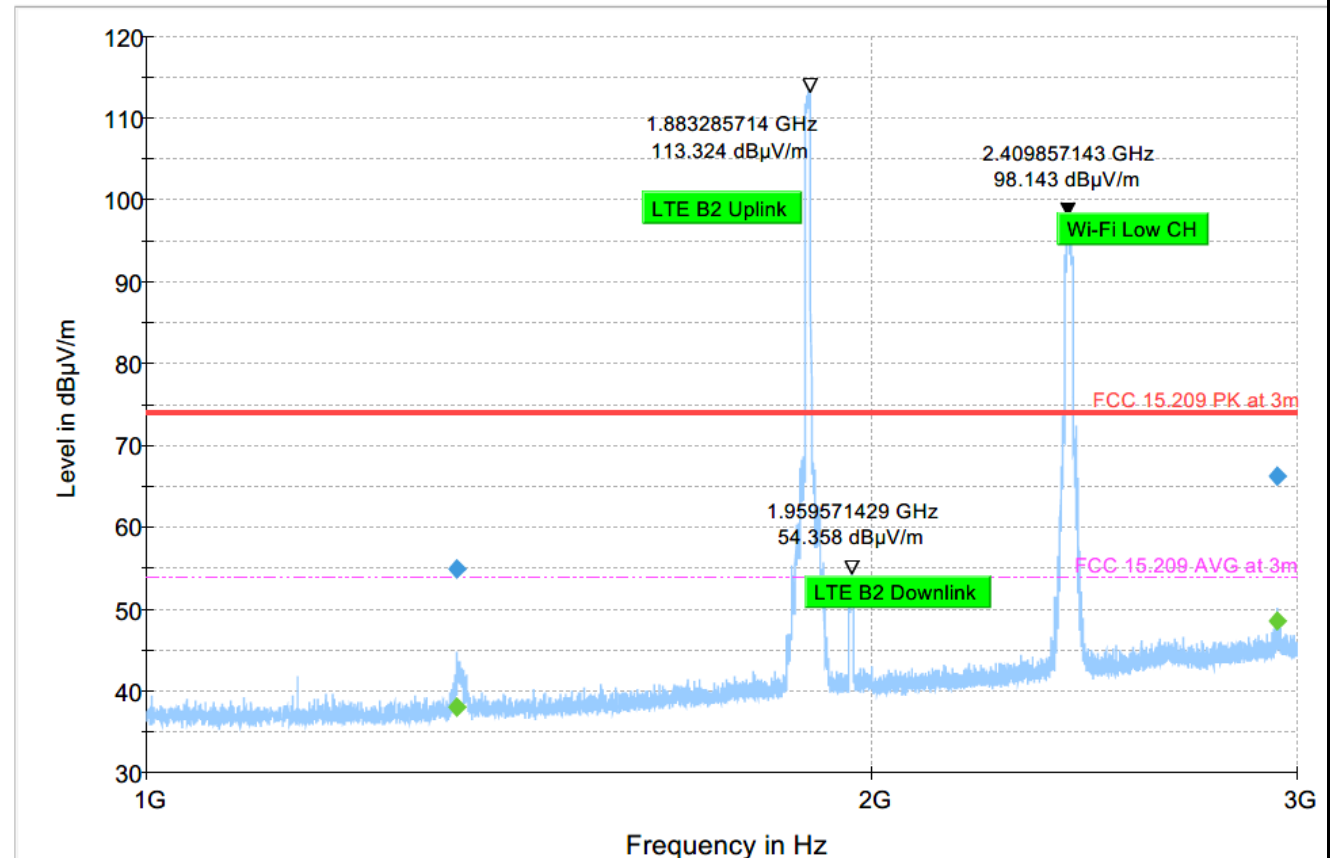
Modulation: 802.11g

Channel: Low

WiFi Module#2

## Final Result

| Frequency (MHz) | MaxPeak (dBμV/m) | CAverage (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) | Comment |
|-----------------|------------------|-------------------|----------------|-------------|-----------------|-----------------|-------------|-----|---------------|--------------|---------|
| 1343.714        | 54.88            | ---               | 73.98          | 19.10       | 500.0           | 1000.000        | 207.0       | H   | 304.0         | 5.1          |         |
| 1343.714        | ---              | 38.00             | 53.98          | 15.98       | 500.0           | 1000.000        | 207.0       | H   | 304.0         | 5.1          |         |
| 2942.857        | 66.17            | ---               | 73.98          | 7.81        | 500.0           | 1000.000        | 140.0       | H   | 288.0         | 11.6         |         |
| 2942.857        | ---              | 48.50             | 53.98          | 5.48        | 500.0           | 1000.000        | 140.0       | H   | 288.0         | 11.6         |         |



Preview Result 2-QPK      Preview Result 1-PK+      FCC 15.209 PK at 3m  
FCC 15.209 AVG at 3m      Final\_Result PK+      Final\_Result CAV

## Plot #14 Radiated Emissions: 3-18 GHz

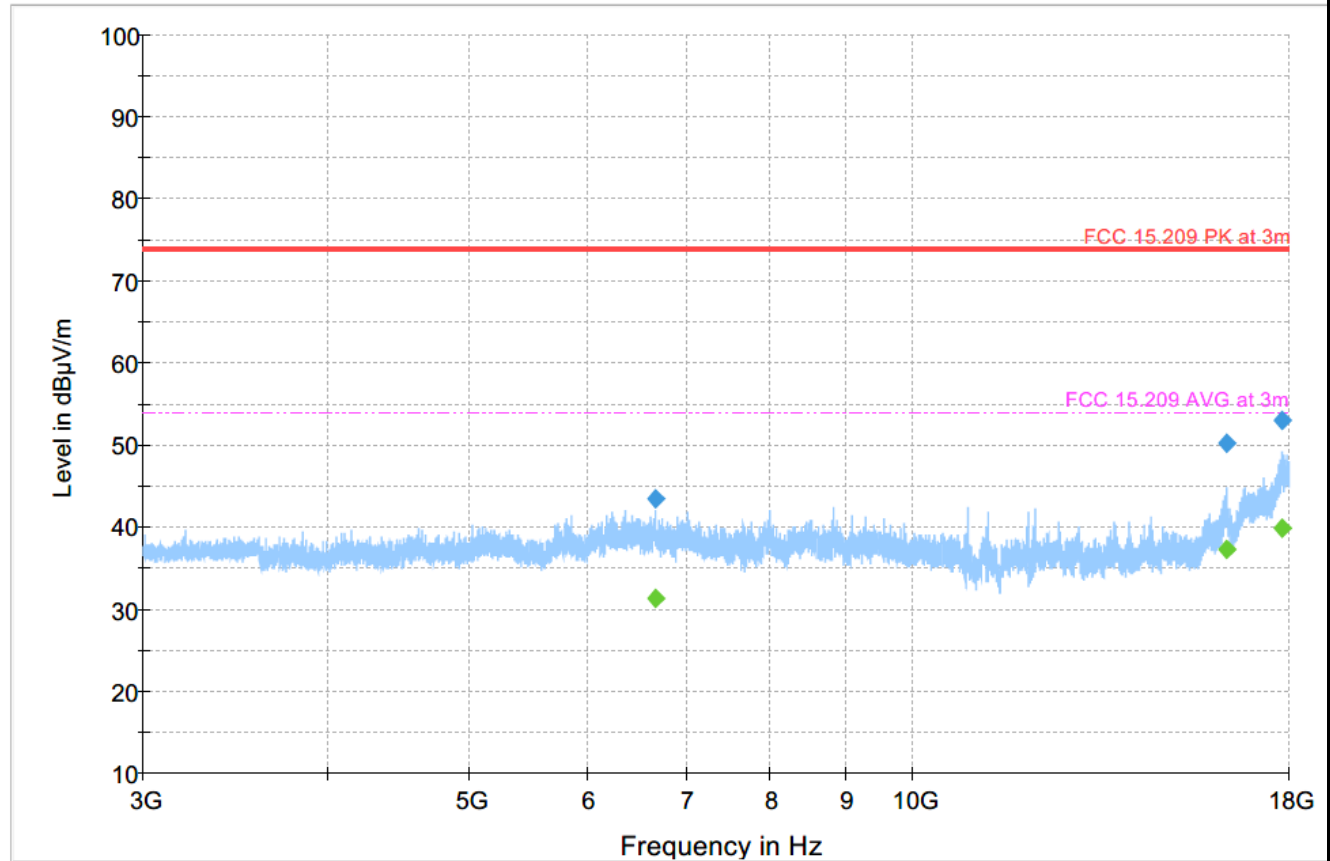
Modulation: 802.11g

Channel: Low

WiFi Module#2

## Final Result

| Frequency (MHz) | MaxPeak (dBμV/m) | CAverage (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) | Comment |
|-----------------|------------------|-------------------|----------------|-------------|-----------------|-----------------|-------------|-----|---------------|--------------|---------|
| 6680.000        | 43.38            | ---               | 73.98          | 30.60       | 500.0           | 1000.000        | 275.0       | H   | 19.0          | -0.2         |         |
| 6680.000        | ---              | 31.39             | 53.98          | 22.58       | 500.0           | 1000.000        | 275.0       | H   | 19.0          | -0.2         |         |
| 16334.500       | 50.20            | ---               | 73.98          | 23.78       | 500.0           | 1000.000        | 268.0       | H   | 5.0           | 10.5         |         |
| 16334.500       | ---              | 37.34             | 53.98          | 16.64       | 500.0           | 1000.000        | 268.0       | H   | 5.0           | 10.5         |         |
| 17817.000       | ---              | 39.96             | 53.98          | 14.02       | 500.0           | 1000.000        | 152.0       | H   | 242.0         | 16.4         |         |
| 17817.000       | 53.09            | ---               | 73.98          | 20.89       | 500.0           | 1000.000        | 152.0       | H   | 242.0         | 16.4         |         |



## Plot #15 Radiated Emissions: 9 KHz – 30 MHz

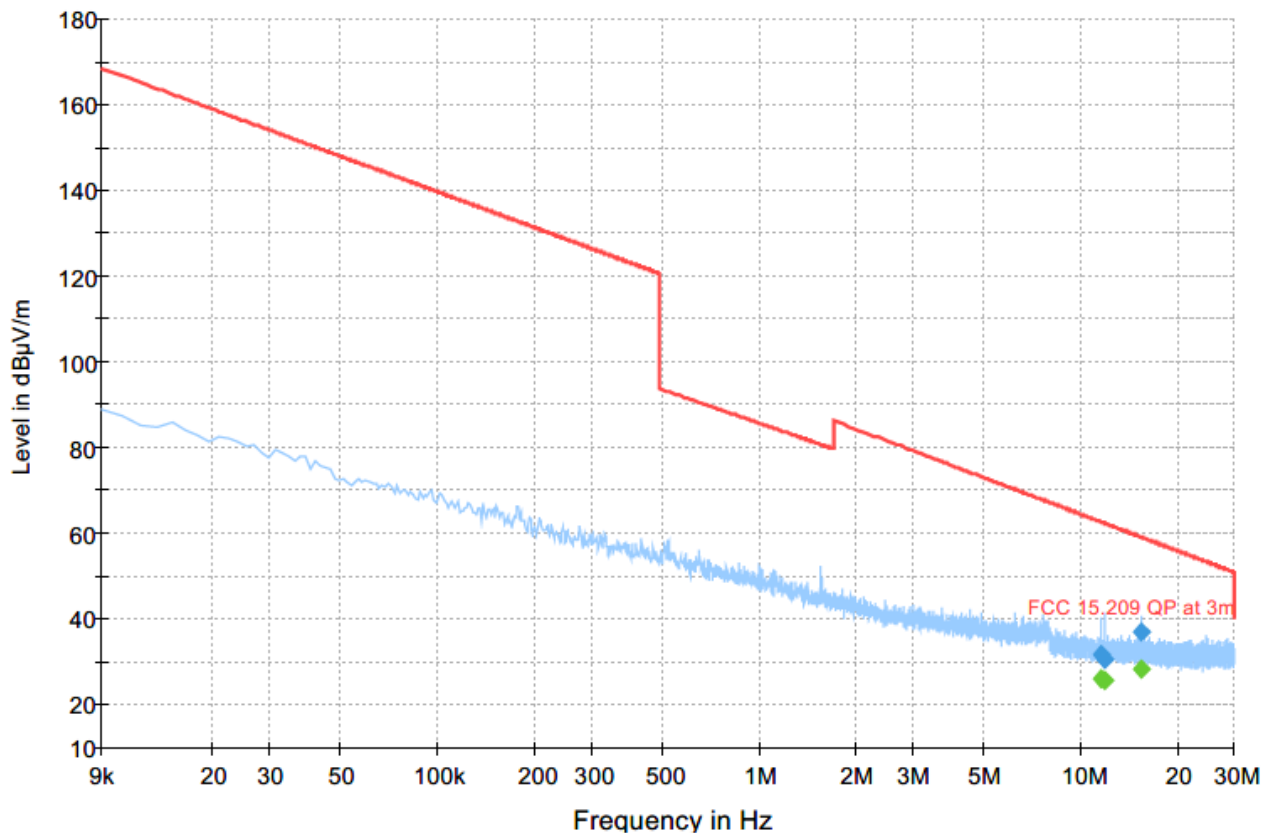
Modulation: 802.11g

Channel: Mid

WiFi Module#2

## Final Result

| Frequency (MHz) | MaxPeak (dBμV/m) | QuasiPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) | Comment |
|-----------------|------------------|--------------------|----------------|-------------|-----------------|-----------------|-------------|-----|---------------|--------------|---------|
| 11.635          | 31.74            | ---                | 62.70          | 30.96       | 500.0           | 9.000           | 208.0       | H   | 312.0         | 17.4         |         |
| 11.635          | ---              | 26.04              | 62.70          | 36.66       | 500.0           | 9.000           | 208.0       | H   | 312.0         | 17.4         |         |
| 11.906          | 30.84            | ---                | 62.42          | 31.58       | 500.0           | 9.000           | 140.0       | H   | 34.0          | 17.4         |         |
| 11.906          | ---              | 25.78              | 62.42          | 36.64       | 500.0           | 9.000           | 140.0       | H   | 34.0          | 17.4         |         |
| 15.366          | ---              | 28.57              | 59.28          | 30.71       | 500.0           | 9.000           | 195.0       | V   | 192.0         | 17.1         |         |
| 15.366          | 37.24            | ---                | 59.28          | 22.04       | 500.0           | 9.000           | 195.0       | V   | 192.0         | 17.1         |         |



Preview Result 2-QPK  
Final\_Result PK+

Preview Result 1-PK+  
Final\_Result QPK

FCC 15.209 QP at 3m

## Plot #16 Radiated Emissions: 30 MHz – 1GHz

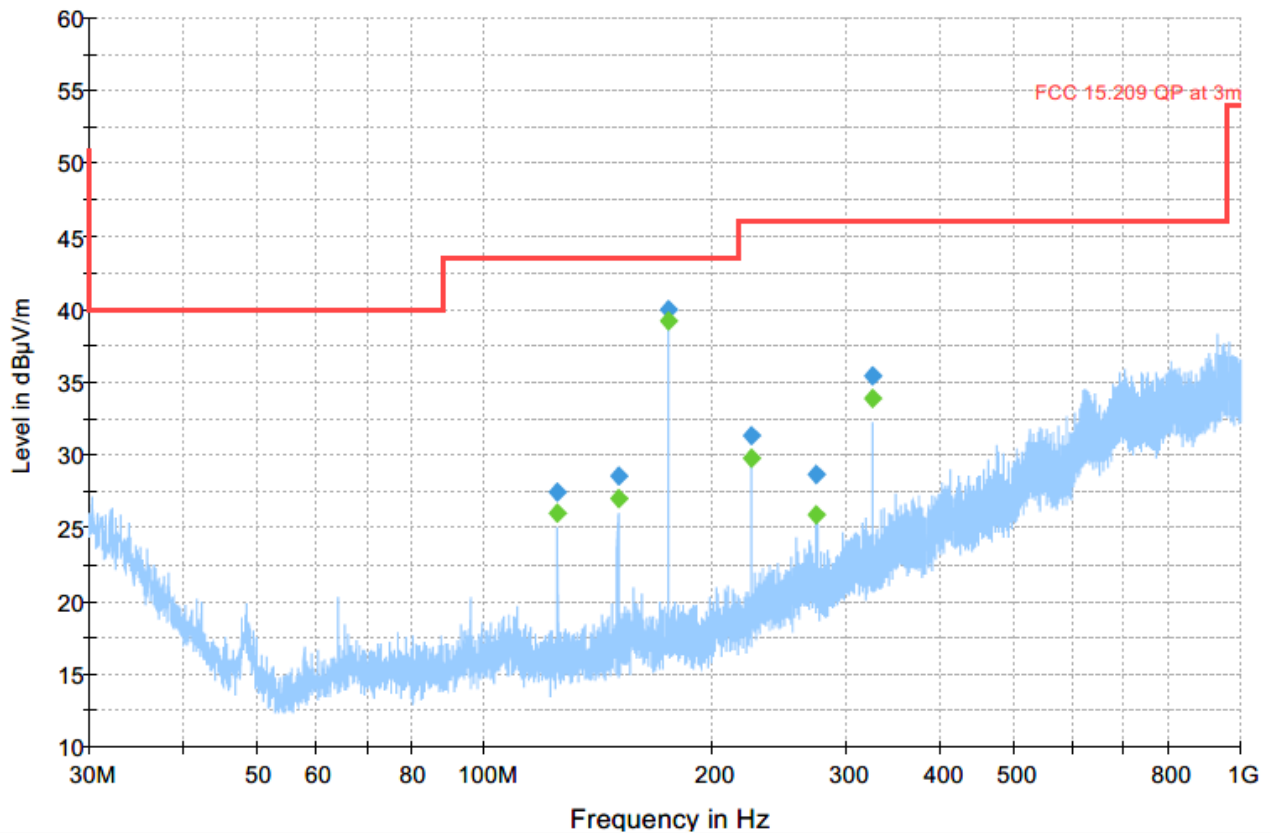
Modulation: 802.11g

Channel: Mid

WiFi Module#2

## Final Result

| Frequency (MHz) | MaxPeak (dBμV/m) | QuasiPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) | Comment |
|-----------------|------------------|--------------------|----------------|-------------|-----------------|-----------------|-------------|-----|---------------|--------------|---------|
| 124.995         | 27.48            | ---                | 43.50          | 16.02       | 500.0           | 120.000         | 287.0       | H   | 260.0         | 12.8         |         |
| 124.995         | ---              | 26.00              | ---            | ---         | 500.0           | 120.000         | 287.0       | H   | 260.0         | 12.8         |         |
| 149.989         | ---              | 27.01              | ---            | ---         | 500.0           | 120.000         | 208.0       | H   | 128.0         | 13.7         |         |
| 149.989         | 28.62            | ---                | 43.50          | 14.88       | 500.0           | 120.000         | 208.0       | H   | 128.0         | 13.7         |         |
| 175.015         | 39.96            | ---                | 43.50          | 3.54        | 500.0           | 120.000         | 198.0       | H   | 277.0         | 14.3         |         |
| 175.015         | ---              | 39.26              | ---            | ---         | 500.0           | 120.000         | 198.0       | H   | 277.0         | 14.3         |         |
| 225.002         | ---              | 29.81              | ---            | ---         | 500.0           | 120.000         | 140.0       | H   | 92.0          | 15.9         |         |
| 225.002         | 31.30            | ---                | 46.02          | 14.73       | 500.0           | 120.000         | 140.0       | H   | 92.0          | 15.9         |         |
| 274.990         | ---              | 25.93              | ---            | ---         | 500.0           | 120.000         | 208.0       | H   | 278.0         | 17.9         |         |
| 274.990         | 28.71            | ---                | 46.02          | 17.31       | 500.0           | 120.000         | 208.0       | H   | 278.0         | 17.9         |         |
| 325.009         | ---              | 33.86              | ---            | ---         | 500.0           | 120.000         | 140.0       | H   | 331.0         | 19.3         |         |
| 325.009         | 35.40            | ---                | 46.02          | 10.62       | 500.0           | 120.000         | 140.0       | H   | 331.0         | 19.3         |         |



Preview Result 2-QPK      Preview Result 1-PK+      FCC 15.209 QP at 3m  
Final\_Result PK+      Final\_Result QPK

## Plot #17 Radiated Emissions: 1-3 GHz

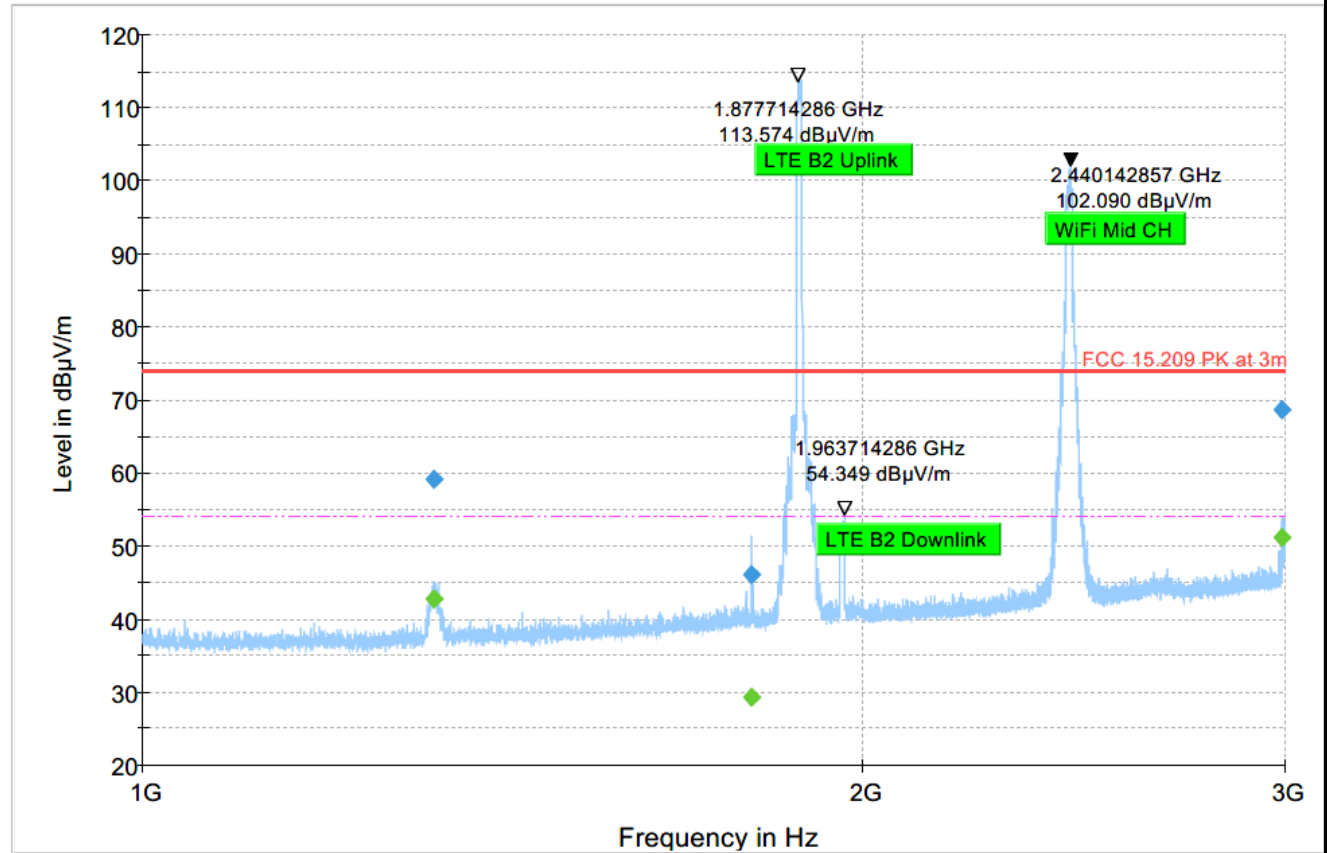
Modulation: 802.11g

Channel: Mid

WiFi Module#2

## Final Result

| Frequency (MHz) | MaxPeak (dBμV/m) | CAverage (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) | Comment |
|-----------------|------------------|-------------------|----------------|-------------|-----------------|-----------------|-------------|-----|---------------|--------------|---------|
| 1323.286        | 59.26            | ---               | 73.98          | 14.72       | 500.0           | 1000.000        | 140.0       | H   | 292.0         | 5.1          |         |
| 1323.286        | ---              | 42.78             | 53.98          | 11.20       | 500.0           | 1000.000        | 140.0       | H   | 292.0         | 5.1          |         |
| 1796.571        | 46.19            | ---               | 73.98          | 27.79       | 500.0           | 1000.000        | 288.0       | V   | 269.0         | 6.8          |         |
| 1796.571        | ---              | 29.27             | 53.98          | 24.71       | 500.0           | 1000.000        | 288.0       | V   | 269.0         | 6.8          |         |
| 2989.000        | ---              | 51.14             | 53.98          | 2.84        | 500.0           | 1000.000        | 140.0       | H   | 285.0         | 11.9         |         |
| 2989.000        | 68.76            | ---               | 73.98          | 5.22        | 500.0           | 1000.000        | 140.0       | H   | 285.0         | 11.9         |         |



Preview Result 2-QPK    Preview Result 1-PK+    FCC 15.209 PK at 3m  
FCC 15.209 AVG at 3m    Final\_Result PK+    Final\_Result CAV

## Plot #18 Radiated Emissions: 3-18 GHz

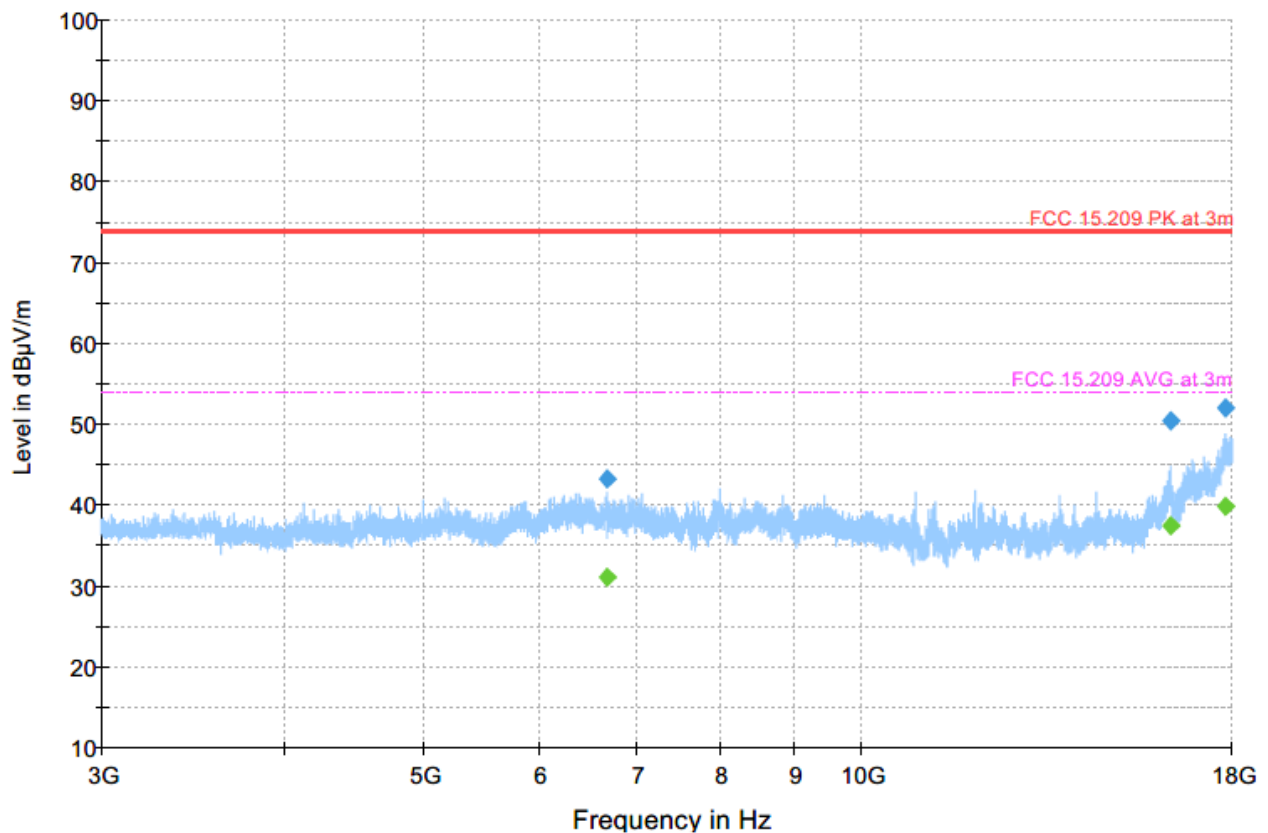
Modulation: 802.11g

Channel: Mid

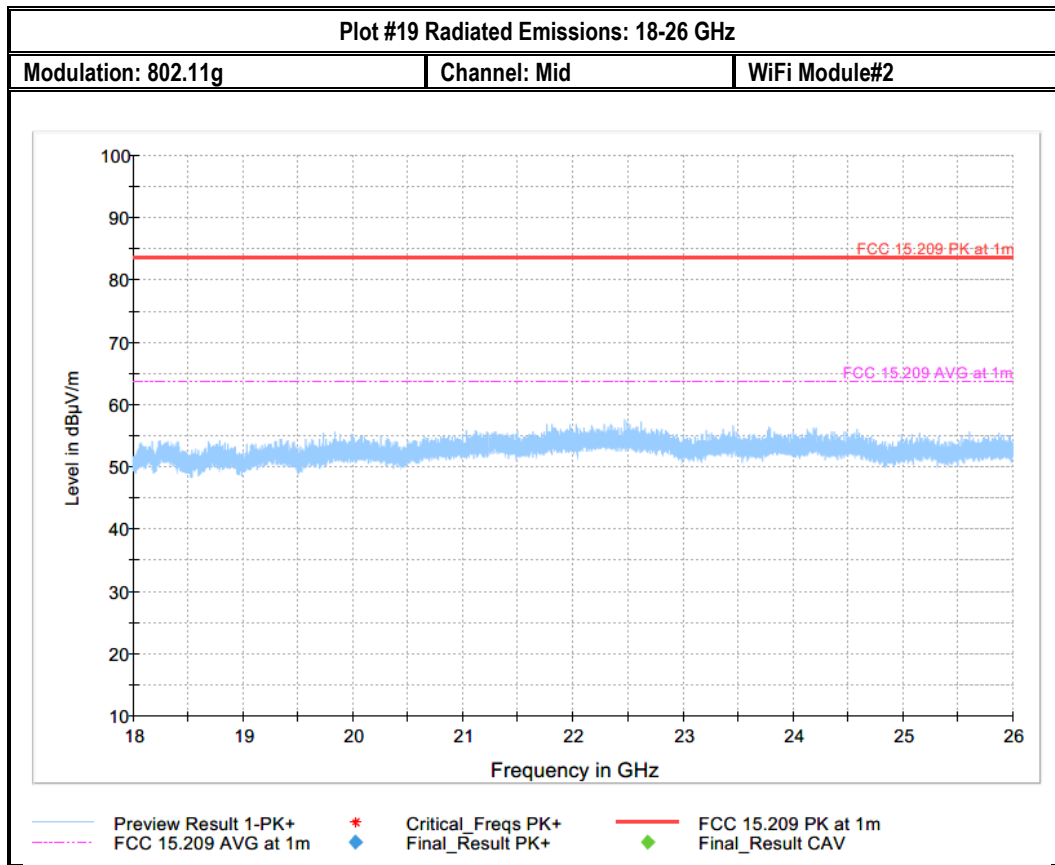
WiFi Module#2

## Final Result

| Frequency (MHz) | MaxPeak (dBμV/m) | CAverage (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) | Comment |
|-----------------|------------------|-------------------|----------------|-------------|-----------------|-----------------|-------------|-----|---------------|--------------|---------|
| 6678.000        | 43.18            | ---               | 73.98          | 30.80       | 500.0           | 1000.000        | 140.0       | V   | 12.0          | -0.2         |         |
| 6678.000        | ---              | 31.03             | 53.98          | 22.95       | 500.0           | 1000.000        | 140.0       | V   | 12.0          | -0.2         |         |
| 16339.500       | 50.47            | ---               | 73.98          | 23.51       | 500.0           | 1000.000        | 217.0       | V   | 59.0          | 10.5         |         |
| 16339.500       | ---              | 37.55             | 53.98          | 16.43       | 500.0           | 1000.000        | 217.0       | V   | 59.0          | 10.5         |         |
| 17794.000       | ---              | 39.82             | 53.98          | 14.16       | 500.0           | 1000.000        | 164.0       | V   | 309.0         | 16.2         |         |
| 17794.000       | 52.05            | ---               | 73.98          | 21.93       | 500.0           | 1000.000        | 164.0       | V   | 309.0         | 16.2         |         |



Preview Result 2-QPK      Preview Result 1-PK+      FCC 15.209 PK at 3m  
FCC 15.209 AVG at 3m      Final\_Result PK+      Final\_Result CAV



## Plot #20 Radiated Emissions: 30 MHz – 1GHz

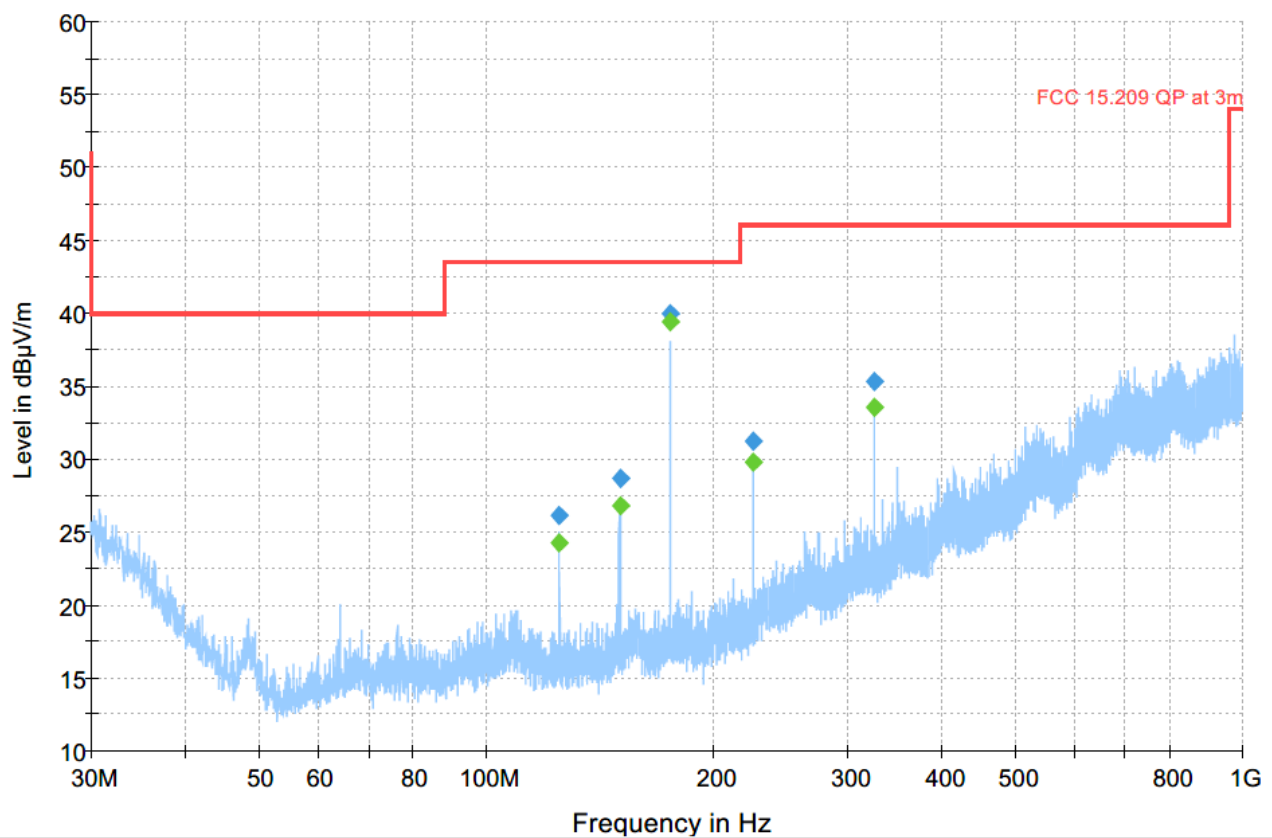
Modulation: 802.11g

Channel: High

WiFi Module#2

## Final Result

| Frequency (MHz) | MaxPeak (dBμV/m) | QuasiPeak (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) | Comment |
|-----------------|------------------|--------------------|----------------|-------------|-----------------|-----------------|-------------|-----|---------------|--------------|---------|
| 124.995         | ---              | 24.26              | ---            | ---         | 500.0           | 120.000         | 313.0       | H   | 99.0          | 12.8         |         |
| 124.995         | 26.10            | ---                | 43.50          | 17.40       | 500.0           | 120.000         | 313.0       | H   | 99.0          | 12.8         |         |
| 149.989         | 28.73            | ---                | 43.50          | 14.77       | 500.0           | 120.000         | 230.0       | H   | 124.0         | 13.7         |         |
| 149.989         | ---              | 26.83              | ---            | ---         | 500.0           | 120.000         | 230.0       | H   | 124.0         | 13.7         |         |
| 175.015         | 40.01            | ---                | 43.50          | 3.49        | 500.0           | 120.000         | 198.0       | H   | 280.0         | 14.3         |         |
| 175.015         | ---              | 39.40              | ---            | ---         | 500.0           | 120.000         | 198.0       | H   | 280.0         | 14.3         |         |
| 225.002         | ---              | 29.81              | ---            | ---         | 500.0           | 120.000         | 140.0       | H   | 90.0          | 15.9         |         |
| 225.002         | 31.22            | ---                | 46.02          | 14.81       | 500.0           | 120.000         | 140.0       | H   | 90.0          | 15.9         |         |
| 325.009         | ---              | 33.61              | ---            | ---         | 500.0           | 120.000         | 140.0       | H   | 326.0         | 19.3         |         |
| 325.009         | 35.32            | ---                | 46.02          | 10.70       | 500.0           | 120.000         | 140.0       | H   | 326.0         | 19.3         |         |



## Plot #21 Radiated Emissions: 1-3 GHz

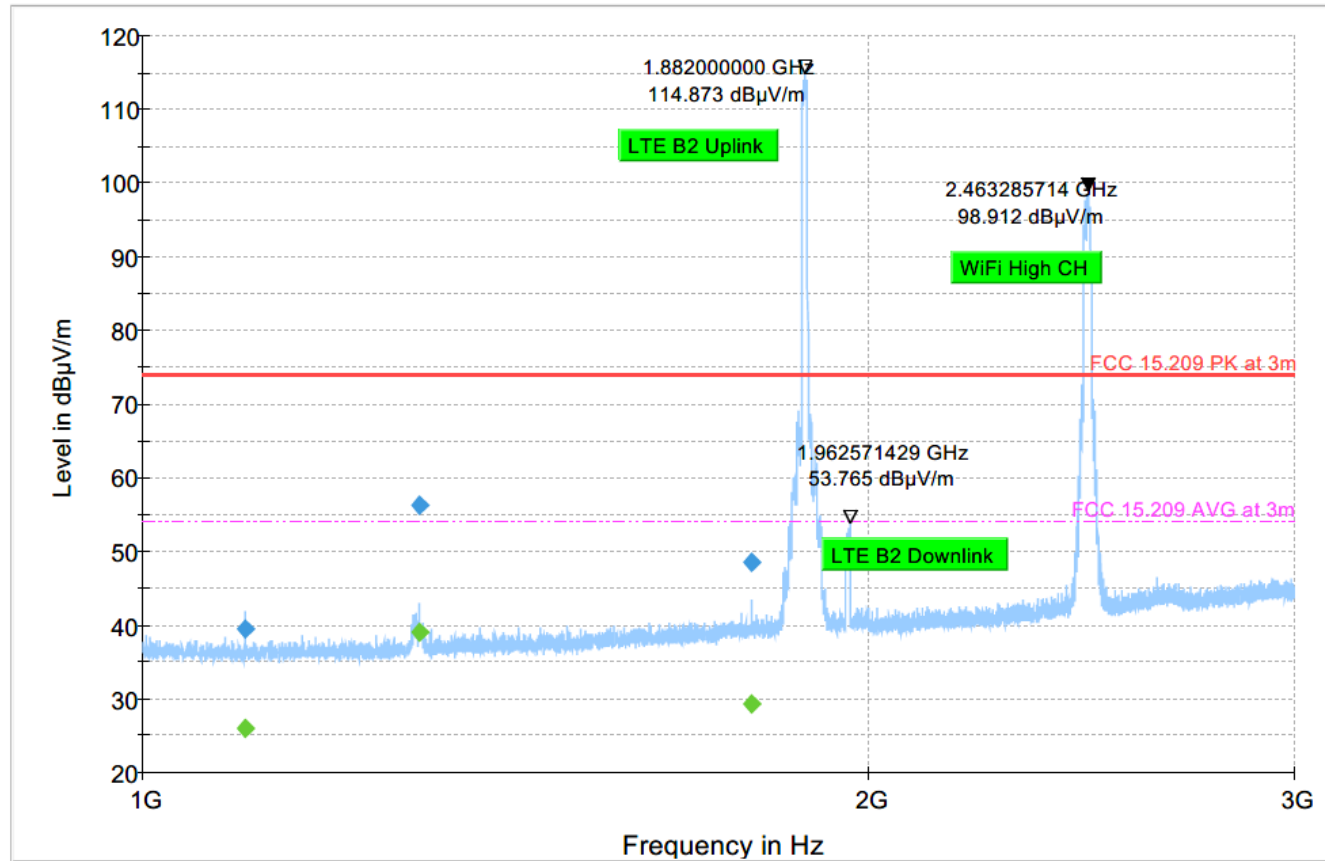
Modulation: 802.11g

Channel: High

WiFi Module#2

## Final Result

| Frequency (MHz) | MaxPeak (dBμV/m) | CAverage (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) | Comment |
|-----------------|------------------|-------------------|----------------|-------------|-----------------|-----------------|-------------|-----|---------------|--------------|---------|
| 1103.143        | 39.41            | ---               | 73.98          | 34.57       | 500.0           | 1000.000        | 229.0       | V   | 309.0         | 4.1          |         |
| 1103.143        | ---              | 25.88             | 53.98          | 28.10       | 500.0           | 1000.000        | 229.0       | V   | 309.0         | 4.1          |         |
| 1301.429        | ---              | 39.02             | 53.98          | 14.96       | 500.0           | 1000.000        | 140.0       | H   | 291.0         | 4.7          |         |
| 1301.429        | 56.21            | ---               | 73.98          | 17.77       | 500.0           | 1000.000        | 140.0       | H   | 291.0         | 4.7          |         |
| 1787.857        | 48.48            | ---               | 73.98          | 25.50       | 500.0           | 1000.000        | 267.0       | H   | 127.0         | 6.8          |         |
| 1787.857        | ---              | 29.24             | 53.98          | 24.74       | 500.0           | 1000.000        | 267.0       | H   | 127.0         | 6.8          |         |



Preview Result 2-QPK      Preview Result 1-PK+      FCC 15.209 PK at 3m  
FCC 15.209 AVG at 3m      Final\_Result PK+      Final\_Result CAV

## Plot #22 Radiated Emissions: 3-18 GHz

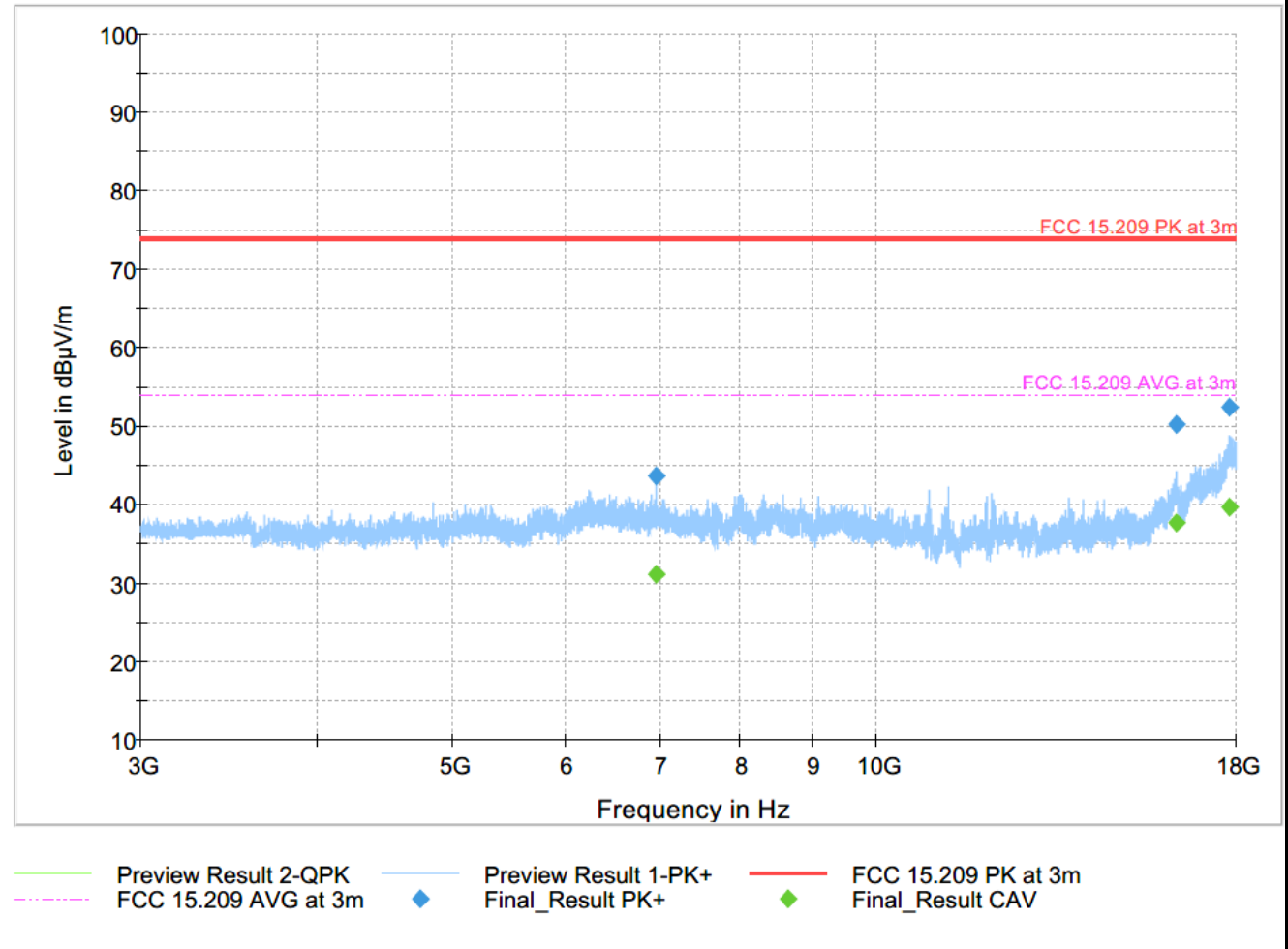
Modulation: 802.11g

Channel: High

WiFi Module#2

## Final Result

| Frequency (MHz) | MaxPeak (dBμV/m) | CAverage (dBμV/m) | Limit (dBμV/m) | Margin (dB) | Meas. Time (ms) | Bandwidth (kHz) | Height (cm) | Pol | Azimuth (deg) | Corr. (dB/m) | Comment |
|-----------------|------------------|-------------------|----------------|-------------|-----------------|-----------------|-------------|-----|---------------|--------------|---------|
| 6964.500        | 43.62            | ---               | 73.98          | 30.36       | 500.0           | 1000.000        | 289.0       | H   | 20.0          | -0.3         |         |
| 6964.500        | ---              | 31.19             | 53.98          | 22.79       | 500.0           | 1000.000        | 289.0       | H   | 20.0          | -0.3         |         |
| 16330.500       | 50.25            | ---               | 73.98          | 23.73       | 500.0           | 1000.000        | 246.0       | H   | 34.0          | 10.5         |         |
| 16330.500       | ---              | 37.59             | 53.98          | 16.39       | 500.0           | 1000.000        | 246.0       | H   | 34.0          | 10.5         |         |
| 17791.000       | ---              | 39.57             | 53.98          | 14.41       | 500.0           | 1000.000        | 153.0       | V   | 283.0         | 16.2         |         |
| 17791.000       | 52.47            | ---               | 73.98          | 21.51       | 500.0           | 1000.000        | 153.0       | V   | 283.0         | 16.2         |         |



## 9 Test setup photos

Setup photos are included in supporting file name: "EMC\_GARMI-086-20001\_FCC\_Setup\_Photos.pdf"

## 10 Test Equipment And Ancillaries Used For Testing

| Equipment Type            | Manufacturer    | Model     | Serial #  | Calibration Cycle | Last Calibration Date |
|---------------------------|-----------------|-----------|-----------|-------------------|-----------------------|
| ACTIVE LOOP ANTENNA       | ETS LINDGREN    | 6507      | 00161344  | 2 YEARS           | 10/30/2020            |
| BILOG ANTENNA             | ETS.LINDGREN    | 3142E     | 00166067  | 2 YEARS           | 03/12/2020            |
| HORN ANTENNA              | EMCO            | 3115      | 00035114  | 2 YEARS           | 08/10/2020            |
| HORN ANTENNA              | ETS.LINDGREN    | 3117      | 00215984  | 2 YEARS           | 01/31/2021            |
| HORN ANTENNA              | ETS.LINDGREN    | 3116      | 00070497  | 2 YEARS           | 11/23/2020            |
| TEST RECEIVER             | R&S             | ESU40     | 100251    | 2 YEARS           | 09/13/2021            |
| COMPACT DIGITAL BAROMETER | CONTROL COMPANY | 10510-922 | 200236891 | 2 YEARS           | 04/13/2020            |
| DIGITAL THRMOMETER        | CONTROL COMPANY | 36934-164 | 181230565 | 3 YEARS           | 01/10/2019            |

**Note:** Equipment used meets the measurement uncertainty requirements as required per applicable standards for 95% confidence levels. Calibration due dates, unless defined specifically, falls on the last day of the month. Items indicated "N/A" for cal status either do not specifically require calibration or is internally characterized before use.

## 11 History

| Date       | Report Name                     | Changes to report | Report prepared by |
|------------|---------------------------------|-------------------|--------------------|
| 2021-10-22 | EMC_GARMI-086-20001_15.247_WLAN | Initial Version   | Yuchan Lu          |

<<< The End >>>