

**Test Report**  
**AIR-AP1542D-x-K9**  
**AIR-AP1542I-x-K9**  
(x=A,B,D,N,T,Z)

Cisco Aironet 802.11ac Dual Band Access Points

FCC ID: LDK102109P  
IC: 2461B-102109P

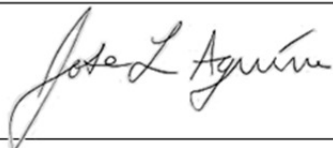
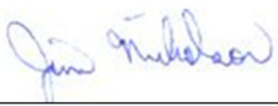
**2400-2483.5 MHz**

Against the following Specifications:

CFR47 Part 15.247  
RSS-247 Issue 2  
RSS-Gen  
AS/NZS 4268  
LP0002  
G.S.R 45 (E)



**Cisco Systems**  
170 West Tasman Drive  
San Jose, CA 95134

|                                                                                     |                                                                                                        |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|
|  |                    |
| <b>Author:</b> Jose Aguirre<br><b>Tested By:</b> TEST ENGINEER                      | <b>Approved By:</b> Jim Nicholson<br><b>Title:</b> Technical Leader, Engineering<br><b>Revision:</b> 3 |

This report replaces any previously entered test report under EDCS – **11569236**. This test report has been electronically authorized and archived using the CISCO Engineering Document Control system.

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## Section 1: Overview

The samples were assessed against the tests under the requirements of the following specifications:

| Emission                                                                   |
|----------------------------------------------------------------------------|
| CFR47 Part 15.247<br>RSS247 Issue 2: Feb 2017<br>RSS-Gen Issue 4: Nov 2014 |

Measurements were made in accordance with

- ANSI C63.10:2013
- FCC KDB 662911 D01 v02r01
- KDB 558074 D01 Meas Guidance v03r05

## Section 2: Assessment Information

### 2.1 General

This report contains an assessment of an apparatus against Electromagnetic Compatibility Standards based upon tests carried out on the samples submitted. The testing was performed by and for the use of Cisco systems Inc:

With regard to this assessment, the following points should be noted:

- a) The results contained in this report relate only to the items tested and were obtained in the period between the date of the initial assessment and the date of issue of the report. Manufactured products will not necessarily give identical results due to production and measurement tolerances.
- b) The apparatus was set up and exercised using the configuration and modes of operation defined in this report only.
- c) Where relevant, the apparatus was only assessed using the susceptibility criteria defined in this report and the Test Assessment Plan (TAP).
- d) All testing was performed under the following environmental conditions:

|                      |                                      |
|----------------------|--------------------------------------|
| Temperature          | 15°C to 35°C (54°F to 95°F)          |
| Atmospheric Pressure | 860mbar to 1060mbar (25.4" to 31.3") |
| Humidity             | 10% to 75*%                          |

\*[Where applicable] For ESD testing the humidity limits used were 30% to 60% and for EFT/B tests the humidity limits used were 25% to 75%.
- e) All AC testing was performed at one or more of the following supply voltages:  
110V 60 Hz (+/-20%)

### Units of Measurement

The units of measurements defined in the appendices are reported in specific terms, which are test dependent. Where radiated measurements are concerned these are defined at a particular distance. Basic voltage measurements are defined in units of [dBuV]

As an example, the basic calculation for all measurements is as follows:

$$\text{Emission level [dBuV]} = \text{Indicated voltage level [dBuV]} + \text{Cable Loss [dB]} + \text{Other correction factors [dB]}$$

The combinations of correction factors are dependent upon the exact test configurations [see test equipment lists for further details] and may include:-

Antenna Factors, Pre Amplifier Gain, LISN Loss, Pulse Limiter Loss and Filter Insertion Loss..

Note: to convert the results from dBuV/m to uV/m use the following formula:-

$$\text{Level in uV/m} = \text{Common Antilogarithm} [(X \text{ dBuV/m})/20] = Y \text{ uV/m}$$

## Measurement Uncertainty Values

|                                   |                         |
|-----------------------------------|-------------------------|
| voltage and power measurements    | $\pm 2$ dB              |
| conducted EIRP measurements       | $\pm 1.4$ dB            |
| radiated measurements             | $\pm 3.2$ dB            |
| frequency measurements            | $\pm 2.4 \cdot 10^{-7}$ |
| temperature measurements          | $\pm 0.54^\circ$        |
| humidity measurements             | $\pm 2.3\%$             |
| DC and low frequency measurements | $\pm 2.5\%$             |

Where relevant measurement uncertainty levels have been estimated for tests performed on the apparatus. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of  $k=2$ .

Radiated emissions (expanded uncertainty, confidence interval 95%)

|                    |            |
|--------------------|------------|
| 30 MHz - 300 MHz   | +/- 3.8 dB |
| 300 MHz - 1000 MHz | +/- 4.3 dB |
| 1 GHz - 10 GHz     | +/- 4.0 dB |
| 10 GHz - 18GHz     | +/- 8.2 dB |
| 18GHz - 26.5GHz    | +/- 4.1 dB |
| 26.5GHz - 40GHz    | +/- 3.9 dB |

Conducted emissions (expanded uncertainty, confidence interval 95%)

|                |             |
|----------------|-------------|
| 30 MHz – 40GHz | +/- 0.38 dB |
|----------------|-------------|

A product is considered to comply with a requirement if the nominal measured value is below the limit line. The product is considered to not be in compliance in case the nominal measured value is above the limit line.

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**2.2 Date of testing**

21-Jan-17 - 06-Feb-17

**2.3 Report Issue Date**

10-Feb-17

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**2.4 Testing facilities**

This assessment was performed by:

**Testing Laboratory**

Cisco Systems, Inc.,  
125 West Tasman Drive  
San Jose, CA 95134, USA

**Registration Numbers for Industry Canada**

| <b>Cisco System Site</b> | <b>Address</b>                                    | <b>Site Identifier</b> |
|--------------------------|---------------------------------------------------|------------------------|
| Building P, 10m Chamber  | 125 West Tasman Dr<br>San Jose, CA 95134          | Company #: 2461N-2     |
| Building P, 5m Chamber   | 125 West Tasman Dr<br>San Jose, CA 95134          | Company #: 2461N-1     |
| Building I, 5m Chamber   | 285 W. Tasman Drive<br>San Jose, California 95134 | Company #: 2461M-1     |

**Test Engineers**

Jose Aguirre

**2.5 Equipment Assessed (EUT)**

AIR-AP1542D-B-K9

## 2.6 EUT Description

The Cisco Aironet 802.11ac Dual Band Access Points support the following modes of operation. The modes are further defined in the radio Theory of Operation. The modes included in this report represent the worst case data for all modes. Data is recorded at the lowest supported data rate for each mode. This report covers operation on channel 1-11.

802.11b - Legacy CCK, One Antenna, 1 to 11 Mbps

802.11b - Legacy CCK, Two Antennas, 1 to 11 Mbps

802.11g - Non HT20, One Antenna, 6 to 54 Mbps, 1ss

802.11g - Non HT20, Two Antennas, 6 to 54 Mbps, 1ss

802.11g - Non HT20 Beam Forming, Two Antennas, 6 to 54 Mbps, 1ss

802.11n/ac - HT/VHT20, One Antenna, M0 to M7, 1ss

802.11n/ac - HT/VHT20, Two Antennas, M0 to M7, 1ss

802.11n/ac - HT/VHT20, Two Antennas, M8 to M15, 2ss

802.11n/ac - HT/VHT20 Beam Forming, Two Antennas, M0 to M7, 1ss

802.11n/ac - HT/VHT20 Beam Forming, Two Antennas, M8 to M15, 2ss

802.11n/ac - HT/VHT20 STBC, Two Antennas, M0 to M7, 2ss

The following antennas are supported by this product series.

The data included in this report represent the worst case data for all antennas.

| Frequency        | Part Number | Antenna Type    | Antenna Gain (dBi) | >30 degree 5 GHz Antenna Gain (dBi) |
|------------------|-------------|-----------------|--------------------|-------------------------------------|
| <b>2.4/5 GHz</b> | Internal    | BT/BLE          | 3 / NA             | NA                                  |
|                  | Internal    | Sector (I)      | 5 / 5              | 0                                   |
|                  | Internal    | Directional (D) | 8 / 9              | 1                                   |



## Section 3: Result Summary

### 3.1 Results Summary Table

#### Conducted emissions

| Basic Standard                                 | Technical Requirements / Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Result |
|------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| FCC 15.247<br>RSS-247<br>LP0002:3.10.1(6.2.1)  | <b>6dB Bandwidth:</b><br>Systems using digital modulation techniques may operate in the 2400-2483.5MHz band. The minimum 6dB bandwidth shall be at least 500 kHz.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Pass   |
| FCC 15.247<br>RSS-247                          | <b>99% &amp; 26 dB Bandwidth:</b><br>The 99% occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission. There is no limit for 99% OBW.<br><br>The 26 dB emission is the width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 26 dB relative to the maximum level measured in the fundamental emission.                                                                                                                                                                                                                                                                                                                               | Pass   |
| FCC 15.247<br>RSS-247<br>LP0002:3.10.1(2.3)    | <b>Output Power:</b><br><b>15.247</b> The maximum conducted output power of the intentional radiator for systems using digital modulation in the 2400-2483.5 MHz band shall not exceed 1 Watt (30dBm). If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.<br><br><b>RSS-247</b> For DTSs employing digital modulation techniques operating in the band 2400-2483.5 MHz, the maximum peak conducted output power shall not exceed 1W. Except as provided in Section 5.4(5), the e.i.r.p. shall not exceed 4 W.                                                                                                                                                                                                                           | Pass   |
| FCC 15.247<br>RSS-247<br>LP0002:3.10.1(6.2.2)  | <b>Power Spectral Density:</b><br>For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Pass   |
| FCC 15.247<br>RSS-247<br>LP0002:3.10.1(5)/2.8  | <b>Conducted Spurious Emissions / Band-Edge:</b><br>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 | Pass   |
| FCC 15.247<br>RSS-247<br>FCC 15.205<br>RSS-Gen | <b>Restricted band:</b><br>Unwanted emissions falling within the restricted bands, as defined in FCC 15.205 (a) and RSS-Gen 8.10 must also comply with the radiated emission limits specified in FCC 15.209 (a) and RSS-Gen 8.9.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Pass   |

**Radiated Emissions (General requirements)**

| Basic Standard                                | Technical Requirements / Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Result |
|-----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| FCC 15.209<br>RSS-Gen<br>LP0002:3.10.1(5)/2.8 | <b>TX Spurious Emissions:</b><br>Except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the filed strength limits table in this section. Unwanted emissions falling within the restricted bands, as defined in FCC 15.205 (a) and RSS-Gen 8.10 must also comply with the radiated emission limits specified in FCC 15.209 (a) and RSS-Gen 8.9.                                                                                                                                                                                                                                                                                               | Pass   |
| RSS-Gen<br>LP0002:3.10.1(5)2.8                | <b>RX Spurious Emissions:</b><br><b>RSS-Gen 8.9</b> Except when the requirements applicable to a given device state otherwise, emissions from licence-exempt transmitters shall comply with the field strength limits shown in Table 4 and Table 5 below. Additionally, the level of any transmitter emission shall not exceed the level of the transmitter's fundamental emission.<br><b>RSS-Gen 8.10</b> Unwanted emissions that fall into restricted bands of Table 6 shall comply with the limits specified in RSS-Gen; and (c ) Unwanted emissions that do not fall within the restricted frequency bands of Table 6 shall comply either with the limits specified in the applicable RSS or with those specified in this RSS-Gen. | Pass   |
| FCC 15.207<br>RSS-Gen<br>LP0002:2.3           | <b>AC conducted Emissions:</b><br>Except when the requirements applicable to a given device state otherwise, for any radio apparatus equipped to operate from the public utility AC power supply, either directly or indirectly (such as with a battery charger), the radio frequency voltage of emissions conducted back onto the AC power lines in the frequency range of 0.15 MHz to 30 MHz shall not exceed the limits shown in the table in these sections. The more stringent limit applies at the frequency range boundaries.                                                                                                                                                                                                   | Pass   |

\* MPE calculation is recorded in a separate report

## Section 4: Sample Details

Note: Each sample was evaluated to ensure that its condition was suitable to be used as a test sample prior to the commencement of testing.

### 4.1 Sample Details

| Sample No. | Equipment Details | Manufacturer  | Hardware Rev. | Firmware Rev.                                | Software Rev. | Serial Number        |
|------------|-------------------|---------------|---------------|----------------------------------------------|---------------|----------------------|
| S01        | AIR-AP1542D-B-K9  | Cisco Systems | P2            | 28bb3ae8<br>d7576e23<br>8bd6a752<br>bdc8dc74 | 8.4.1.10      | FOC20387WJ5          |
| S02*       | AIR-PWRINJ6       | Cisco Systems | V01           | NA                                           | NA            | C15456663000<br>0247 |

(\*) S02 is support equipment Power supply for EUT S01

### 4.2 System Details

| System # | Description      | Samples |
|----------|------------------|---------|
| 1        | AIR-AP1542D-B-K9 | S01     |
| 2        | AIR-PWRINJ6      | S02     |

### 4.3 Mode of Operation Details

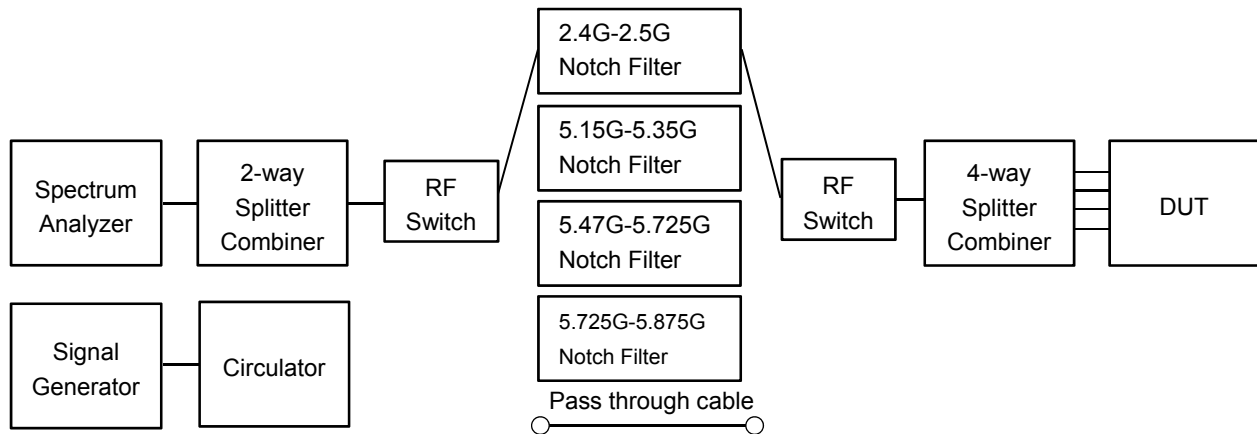
| Mode# | Description             | Comments                                |
|-------|-------------------------|-----------------------------------------|
| 1     | Continuous Transmitting | Continuous Transmitting ≥98% duty cycle |

Measurements were made in accordance with

- ANSI C63.10:2013
- FCC KDB 662911 D01 v02r01
- KDB 558074 D01 Meas Guidance v03r05

## Appendix A: Emission Test Results

### Conducted Test Setup Diagram



### Target Maximum Channel Power

The following table details the maximum supported Total Channel Power for all operating modes.

#### Antenna Gain: 5 dBi

| Operating Mode                      | Maximum Channel Power<br>(dBm EIRP) |      |      |
|-------------------------------------|-------------------------------------|------|------|
|                                     | Frequency (MHz)                     |      |      |
|                                     | 2412                                | 2437 | 2462 |
| Legacy CCK, 1 to 11 Mbps            | 29                                  | 32   | 30   |
| Non HT20, 6 to 54 Mbps              | 23                                  | 32   | 22   |
| Non HT20 Beam Forming, 6 to 54 Mbps | 24                                  | 35   | 22   |
| HT/VHT20, M0 to M15                 | 21                                  | 32   | 21   |
| HT/VHT20 Beam Forming, M0 to M15    | 22                                  | 35   | 22   |
| HT/VHT20 STBC, M0 to M7             | 21                                  | 32   | 21   |

#### Antenna Gain: 8 dBi

| Operating Mode                      | Maximum Channel Power<br>(dBm EIRP) |      |      |
|-------------------------------------|-------------------------------------|------|------|
|                                     | Frequency (MHz)                     |      |      |
|                                     | 2412                                | 2437 | 2462 |
| Legacy CCK, 1 to 11 Mbps            | 31                                  | 35   | 31   |
| Non HT20, 6 to 54 Mbps              | 24                                  | 35   | 22   |
| Non HT20 Beam Forming, 6 to 54 Mbps | 25                                  | 36   | 19   |
| HT/VHT20, M0 to M15                 | 22                                  | 35   | 22   |
| HT/VHT20 Beam Forming, M0 to M15    | 24                                  | 36   | 22   |
| HT/VHT20 STBC, M0 to M7             | 22                                  | 35   | 22   |

## A.1 6dB Bandwidth

**15.247 / RSS-247 / LP0002:3.10.1(6.2.1)** Systems using digital modulation techniques may operate in the 2400-2483.5MHz band. The minimum 6dB bandwidth shall be at least 500 kHz.

### Test Procedure

**Ref.** KDB 558074 D01 DTS Meas Guidance v03r05  
ANSI C63.10: 2013

#### 6 BW

##### Test Procedure

1. Set the radio in the continuous transmitting mode.
2. Allow the trace to stabilize.
3. Setting the x-dB bandwidth mode to -6dB within the measurement set up function.
4. Select the automatic OBW measurement function of an instrument to perform bandwidth measurement.
5. Capture graphs and record pertinent measurement data.

**Ref.** KDB 558074 D01 DTS Meas Guidance v03r05  
ANSI C63.10: 2013 section 11.8.2 Option 2

#### 6 BW

##### Test parameters

X dB BW = 6dB (using the OBW function of the spectrum analyzer)  
Span = Large enough to capture the entire EBW  
RBW = 100 KHz  
VBW  $\geq 3 \times$  RBW  
Sweep = Auto couple  
Detector = Peak or where practical sample shall be used  
Trace = Max. Hold

| System Number | Description | Samples | System under test                   | Support equipment                   |
|---------------|-------------|---------|-------------------------------------|-------------------------------------|
| 1             | EUT         | S01     | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
|               | Support     | S02     | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

#### Tested By :

Jose Aguirre

#### Date of testing:

21-Jan-17 - 06-Feb-17

#### Test Result : PASS

See Appendix C for list of test equipment

**Antenna Gain: 5 dBi**

| Frequency (MHz) | Mode                                | Data Rate (Mbps) | 6dB BW (MHz) | Limit (kHz)    | Margin (MHz) |
|-----------------|-------------------------------------|------------------|--------------|----------------|--------------|
| 2412            | <b>CCK, 1 to 11 Mbps</b>            | <b>11</b>        | <b>6.8</b>   | <b>&gt;500</b> | <b>6.3</b>   |
|                 | CCK, 1 to 11 Mbps                   | 11               | 8.1          | >500           | 7.6          |
|                 | Non HT20, 6 to 54 Mbps              | 6                | 16.4         | >500           | 15.9         |
|                 | Non HT20, 6 to 54 Mbps              | 6                | 16.4         | >500           | 15.9         |
|                 | Non HT20 Beam Forming, 6 to 54 Mbps | 6                | 16.4         | >500           | 15.9         |
|                 | HT/VHT20, M0 to M7                  | m0               | 17.6         | >500           | 17.1         |
|                 | HT/VHT20, M0 to M7                  | m0               | 17.6         | >500           | 17.1         |
|                 | HT/VHT20, M8 to M15                 | m0               | 17.6         | >500           | 17.1         |
|                 | HT/VHT20 Beam Forming, M0 to M7     | m0               | 17.6         | >500           | 17.1         |
|                 | HT/VHT20 Beam Forming, M8 to M15    | m0               | 17.6         | >500           | 17.1         |
|                 | HT/VHT20 STBC, M0 to M7             | m0               | 17.6         | >500           | 17.1         |
|                 |                                     |                  |              |                |              |
| 2437            | CCK, 1 to 11 Mbps                   | 11               | 7.7          | >500           | 7.2          |
|                 | CCK, 1 to 11 Mbps                   | 11               | 7.7          | >500           | 7.2          |
|                 | Non HT20, 6 to 54 Mbps              | 6                | 16.3         | >500           | 15.8         |
|                 | Non HT20, 6 to 54 Mbps              | 6                | 16.3         | >500           | 15.8         |
|                 | Non HT20 Beam Forming, 6 to 54 Mbps | 6                | 16.3         | >500           | 15.8         |
|                 | HT/VHT20, M0 to M7                  | m0               | 17.6         | >500           | 17.1         |
|                 | HT/VHT20, M0 to M7                  | m0               | 17.6         | >500           | 17.1         |
|                 | HT/VHT20, M8 to M15                 | m0               | 17.6         | >500           | 17.1         |
|                 | HT/VHT20 Beam Forming, M0 to M7     | m0               | 17.6         | >500           | 17.1         |
|                 | HT/VHT20 Beam Forming, M8 to M15    | m0               | 17.6         | >500           | 17.1         |
|                 | HT/VHT20 STBC, M0 to M7             | m0               | 17.6         | >500           | 17.1         |
|                 |                                     |                  |              |                |              |
| 2462            | CCK, 1 to 11 Mbps                   | 11               | 8.1          | >500           | 7.6          |
|                 | CCK, 1 to 11 Mbps                   | 11               | 8.1          | >500           | 7.6          |
|                 | Non HT20, 6 to 54 Mbps              | 6                | 16.4         | >500           | 15.9         |
|                 | Non HT20, 6 to 54 Mbps              | 6                | 16.4         | >500           | 15.9         |
|                 | Non HT20 Beam Forming, 6 to 54 Mbps | 6                | 16.4         | >500           | 15.9         |
|                 | HT/VHT20, M0 to M7                  | m0               | 17.3         | >500           | 16.8         |
|                 | HT/VHT20, M0 to M7                  | m0               | 17.6         | >500           | 17.1         |
|                 | HT/VHT20, M8 to M15                 | m0               | 17.6         | >500           | 17.1         |
|                 | HT/VHT20 Beam Forming, M0 to M7     | m0               | 17.6         | >500           | 17.1         |
|                 | HT/VHT20 Beam Forming, M8 to M15    | m0               | 17.6         | >500           | 17.1         |
|                 | HT/VHT20 STBC, M0 to M7             | m0               | 17.6         | >500           | 17.1         |
|                 |                                     |                  |              |                |              |

**6dB Bandwidth, 2412 MHz, 11 Mbps, Legacy CCK**

**Antenna Gain: 8 dBi**

| Frequency (MHz) | Mode                                | Data Rate (Mbps) | 6dB BW (MHz) | Limit (kHz)    | Margin (MHz) |
|-----------------|-------------------------------------|------------------|--------------|----------------|--------------|
| 2412            | CCK, 1 to 11 Mbps                   | 11               | 8.1          | >500           | 7.6          |
|                 | CCK, 1 to 11 Mbps                   | 11               | 8.1          | >500           | 7.6          |
|                 | Non HT20, 6 to 54 Mbps              | 6                | 16.4         | >500           | 15.9         |
|                 | Non HT20, 6 to 54 Mbps              | 6                | 16.4         | >500           | 15.9         |
|                 | Non HT20 Beam Forming, 6 to 54 Mbps | 6                | 16.4         | >500           | 15.9         |
|                 | HT/VHT20, M0 to M7                  | m0               | 17.6         | >500           | 17.1         |
|                 | HT/VHT20, M0 to M7                  | m0               | 17.6         | >500           | 17.1         |
|                 | HT/VHT20, M8 to M15                 | m0               | 17.6         | >500           | 17.1         |
|                 | HT/VHT20 Beam Forming, M0 to M7     | m0               | 17.6         | >500           | 17.1         |
|                 | HT/VHT20 Beam Forming, M8 to M15    | m0               | 17.6         | >500           | 17.1         |
|                 | HT/VHT20 STBC, M0 to M7             | m0               | 17.6         | >500           | 17.1         |
|                 | HT/VHT20 STBC, M0 to M7             | m0               | 17.6         | >500           | 17.1         |
| 2437            | <b>CCK, 1 to 11 Mbps</b>            | <b>11</b>        | <b>7.7</b>   | <b>&gt;500</b> | <b>7.2</b>   |
|                 | CCK, 1 to 11 Mbps                   | 11               | 7.7          | >500           | 7.2          |
|                 | Non HT20, 6 to 54 Mbps              | 6                | 16.3         | >500           | 15.8         |
|                 | Non HT20, 6 to 54 Mbps              | 6                | 16.3         | >500           | 15.8         |
|                 | Non HT20 Beam Forming, 6 to 54 Mbps | 6                | 16.3         | >500           | 15.8         |
|                 | HT/VHT20, M0 to M7                  | m0               | 17.6         | >500           | 17.1         |
|                 | HT/VHT20, M0 to M7                  | m0               | 17.6         | >500           | 17.1         |
|                 | HT/VHT20, M8 to M15                 | m0               | 17.6         | >500           | 17.1         |
|                 | HT/VHT20 Beam Forming, M0 to M7     | m0               | 17.6         | >500           | 17.1         |
|                 | HT/VHT20 Beam Forming, M8 to M15    | m0               | 17.6         | >500           | 17.1         |
|                 | HT/VHT20 STBC, M0 to M7             | m0               | 17.6         | >500           | 17.1         |
|                 | HT/VHT20 STBC, M0 to M7             | m0               | 17.6         | >500           | 17.1         |
| 2462            | CCK, 1 to 11 Mbps                   | 11               | 8.1          | >500           | 7.6          |
|                 | CCK, 1 to 11 Mbps                   | 11               | 7.9          | >500           | 7.4          |
|                 | Non HT20, 6 to 54 Mbps              | 6                | 16.4         | >500           | 15.9         |
|                 | Non HT20, 6 to 54 Mbps              | 6                | 16.4         | >500           | 15.9         |
|                 | Non HT20 Beam Forming, 6 to 54 Mbps | 6                | 16.3         | >500           | 15.8         |
|                 | HT/VHT20, M0 to M7                  | m0               | 17.6         | >500           | 17.1         |
|                 | HT/VHT20, M0 to M7                  | m0               | 17.6         | >500           | 17.1         |
|                 | HT/VHT20, M8 to M15                 | m0               | 17.6         | >500           | 17.1         |
|                 | HT/VHT20 Beam Forming, M0 to M7     | m0               | 17.6         | >500           | 17.1         |
|                 | HT/VHT20 Beam Forming, M8 to M15    | m0               | 17.6         | >500           | 17.1         |
|                 | HT/VHT20 STBC, M0 to M7             | m0               | 17.6         | >500           | 17.1         |
|                 | HT/VHT20 STBC, M0 to M7             | m0               | 17.6         | >500           | 17.1         |



**6dB Bandwidth, 2437 MHz, 11 Mbps, Legacy CCK**

## A.2 99% and 26dB Bandwidth

The 99% occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission. There is no limit for 99% OBW.

The 26 dB emission is the width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 26 dB relative to the maximum level measured in the fundamental emission.

### Test Procedure

Ref. ANSI C63.10: 2013

|                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>26 BW &amp; 99% BW</b>                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Test Procedure                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <ol style="list-style-type: none"> <li>1. Set the radio in the continuous transmitting mode.</li> <li>2. Allow the trace to stabilize.</li> <li>3. Setting the x-dB bandwidth mode to -26dB &amp; OBW to 99% within the measurement set up function.</li> <li>4. Select the automatic OBW measurement function of an instrument to perform bandwidth measurement.</li> <li>5. Capture graphs and record pertinent measurement data.</li> </ol> |

Ref. ANSI C63.10: 2013 section 6.9.3

|                                                                                                                                                                                                                                                                                |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>26 BW &amp; 99% BW</b>                                                                                                                                                                                                                                                      |
| Test parameters                                                                                                                                                                                                                                                                |
| X dB BW = -26dB (using the OBW function of the spectrum analyzer)<br>OBW = 99%<br>Span = 1.5 to 5 times the OBW<br>RBW = 1% to 5% of the OBW<br>VBW $\geq 3 \times$ RBW<br>Sweep = Auto couple<br>Detector = Peak or where practical sample shall be used<br>Trace = Max. Hold |

| System Number | Description | Samples | System under test                   | Support equipment                   |
|---------------|-------------|---------|-------------------------------------|-------------------------------------|
| 1             | EUT         | S01     | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
|               | Support     | S02     | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

|                                    |                                                  |
|------------------------------------|--------------------------------------------------|
| <b>Tested By :</b><br>Jose Aguirre | <b>Date of testing:</b><br>21-Jan-17 - 06-Feb-17 |
| <b>Test Result : PASS</b>          |                                                  |

See Appendix C for list of test equipment

| Frequency (MHz) | Mode                   | Data Rate (Mbps) | 26dB BW (MHz) | 99% BW (MHz) |
|-----------------|------------------------|------------------|---------------|--------------|
| 2412            | CCK, 1 to 11 Mbps      | 11               | 16.9          | 12.820       |
|                 | Non HT20, 6 to 54 Mbps | 6                | 24.8          | 18.303       |
|                 | HT/VHT20, M0 to M15    | m0               | 25.7          | 19.403       |
|                 |                        |                  |               |              |
| 2437            | CCK, 1 to 11 Mbps      | 11               | 17.0          | 12.917       |
|                 | Non HT20, 6 to 54 Mbps | 6                | 37.7          | 20.388       |
|                 | HT/VHT20, M0 to M15    | m0               | 40.0          | 22.126       |
|                 |                        |                  |               |              |
| 2462            | CCK, 1 to 11 Mbps      | 11               | 16.9          | 12.827       |
|                 | Non HT20, 6 to 54 Mbps | 6                | 25.7          | 18.304       |
|                 | HT/VHT20, M0 to M15    | m0               | 25.6          | 19.383       |

Keysight Spectrum Analyzer - Occupied BW (Prototype - Limited Sale Allowed)

Load: 50% Bandwidth, 2.412 GHz, COR, 10.0 MHz

Center Freq 2.41200000 GHz

Center Freq: 2.41200000 GHz  
Trig: Free Run  
#FGain: Low  
#Atten: 20 dB

Radio Std: None  
Radio Device: BTS

10 dB/div  
Log  
Ref 30.00 dBm

Center 2.412 GHz  
#Res BW 1 MHz  
#VBW 3 MHz  
Span 40 MHz  
#Sweep 5 s

Occupied Bandwidth  
**12.820 MHz**

Total Power  
27.9 dBm

Transmit Freq Error  
12.285 kHz  
% of OBW Power  
99.00 %

x dB Bandwidth  
16.92 MHz  
x dB  
-26.00 dB

Frequency  
Center Freq  
2.41200000 GHz

CF Step  
4.000000 MHz  
Man

Freq Offset  
0 Hz

## A.3 Maximum Conducted Output Power

**15.247 / RSS-247 section 5.4 / LP0002:3.10.1(2.3)** The maximum conducted output power of the intentional radiator for systems using digital modulation in the 2400-2483.5 MHz band shall not exceed 1 Watt (30dBm). If transmitting antennas of directional gain greater than 6 dBi are used, the maximum conducted output power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

As an alternative to a peak power measurement, compliance can be based on a measurement of the maximum conducted output power. The maximum conducted output power is the total transmit power delivered to all antennas and antenna elements, averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or transmitting at a reduced power level. If multiple modes of operation are implemented, the maximum conducted output power is the highest total transmit power occurring in any mode.

The maximum supported antenna gain is 8dBi. The peak correlated gain for each mode is listed in the table below.

### Test Procedure

**Ref.** KDB 558074 D01 DTS Meas Guidance v03r05  
ANSI C63.10: 2013

| Maximum Conducted Output power                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Procedure                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 1. Set the radio in the continuous transmitting mode at full power<br>2. Compute power by integrating the spectrum across the EBW (or alternatively entire 99% OBW) of the signal using the instrument's band power measurement function. The integration shall be performed using the spectrum analyzer band-power measurement function with band limits set equal to the EBW or the OBW band edges.<br>3. Capture graphs and record pertinent measurement data. |

**Ref.** 558074 D01 DTS Meas Guidance v03r05 section 9.2 Method AVGSA-1  
ANSI C63.10: 2013 section 11.9.2 Method AVGSA-1

| Maximum Conducted Output power                                                                                                  |
|---------------------------------------------------------------------------------------------------------------------------------|
| Test parameters                                                                                                                 |
| Span = >1.5 times the OBW<br>RBW = 1MHz<br>VBW ≥ 3 x RBW<br>Sweep = Auto couple<br>Detector = Peak<br>Trace = Trace Average 100 |

The "measure-and-sum technique" is used for measuring in-band transmit power of a device. In the measure-and-sum approach, the conducted emission level is measured at each antenna port. The measured results at the various antenna ports are then summed mathematically to determine the total emission level from the device. Summing is performed in linear power units. (See ANSI C63.10 section 14.3 for Guidance)

| System Number | Description | Samples | System under test                   | Support equipment                   |
|---------------|-------------|---------|-------------------------------------|-------------------------------------|
| 1             | EUT         | S01     | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
|               | Support     | S02     | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

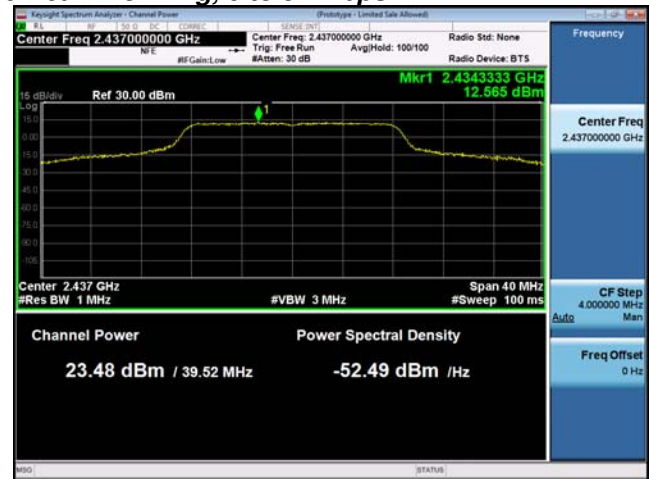
|                                    |                                                  |
|------------------------------------|--------------------------------------------------|
| <b>Tested By :</b><br>Jose Aguirre | <b>Date of testing:</b><br>21-Jan-17 - 06-Feb-17 |
| <b>Test Result : PASS</b>          |                                                  |

See Appendix C for list of test equipment

**Note: Limit is modified to ensure complying with both conducted power limit of 30dBm and eirp limit of 36 dBm**

**Antenna Gain: 5 dBi**

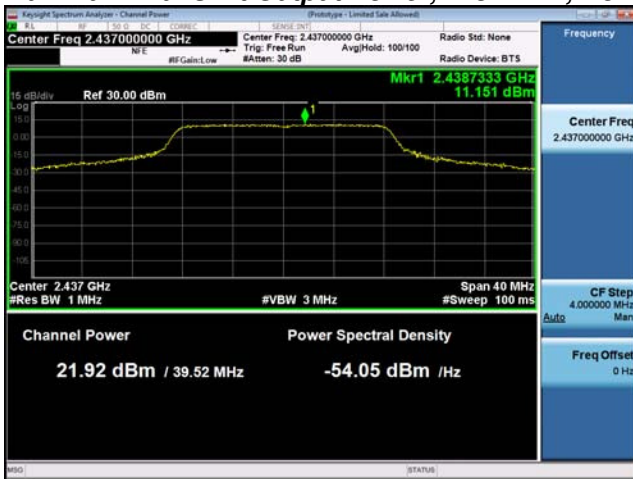
| Frequency (MHz) | Mode                                       | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Max Power (dBm) | Tx 2 Max Power (dBm) | Total Tx Channel Power (dBm) | Limit (dBm) EIRP | Margin (dB) |
|-----------------|--------------------------------------------|----------|-------------------------------|----------------------|----------------------|------------------------------|------------------|-------------|
| 2412            | CCK, 1 to 11 Mbps                          | 1        | 5                             | 23.4                 |                      | 28.4                         | 35.0             | 6.6         |
|                 | CCK, 1 to 11 Mbps                          | 2        | 5                             | 21.4                 | 21.2                 | 29.3                         | 35.0             | 5.7         |
|                 | Non HT20, 6 to 54 Mbps                     | 1        | 5                             | 14.7                 |                      | 19.7                         | 35.0             | 15.3        |
|                 | Non HT20, 6 to 54 Mbps                     | 2        | 5                             | 13.8                 | 13.9                 | 21.9                         | 35.0             | 13.1        |
|                 | Non HT20 Beam Forming, 6 to 54 Mbps        | 2        | 8                             | 11.9                 | 11.9                 | 22.9                         | 36.0             | 13.1        |
|                 | HT/VHT20, M0 to M7                         | 1        | 5                             | 13.8                 |                      | 18.8                         | 35.0             | 16.2        |
|                 | HT/VHT20, M0 to M7                         | 2        | 5                             | 12.0                 | 12.0                 | 20.0                         | 35.0             | 15.0        |
|                 | HT/VHT20, M8 to M15                        | 2        | 5                             | 12.0                 | 12.0                 | 20.0                         | 35.0             | 15.0        |
|                 | HT/VHT20 Beam Forming, M0 to M7            | 2        | 8                             | 11.0                 | 11.0                 | 22.0                         | 36.0             | 14.0        |
|                 | HT/VHT20 Beam Forming, M8 to M15           | 2        | 5                             | 12.0                 | 12.0                 | 20.0                         | 35.0             | 15.0        |
|                 | HT/VHT20 STBC, M0 to M7                    | 2        | 5                             | 12.0                 | 12.0                 | 20.0                         | 35.0             | 15.0        |
| 2437            | CCK, 1 to 11 Mbps                          | 1        | 5                             | 24.1                 |                      | 29.1                         | 35               | 5.9         |
|                 | CCK, 1 to 11 Mbps                          | 2        | 5                             | 24.1                 | 23.7                 | 31.9                         | 35               | 3.1         |
|                 | Non HT20, 6 to 54 Mbps                     | 1        | 5                             | 23.6                 |                      | 28.6                         | 35               | 6.4         |
|                 | Non HT20, 6 to 54 Mbps                     | 2        | 5                             | 23.6                 | 23.5                 | 31.6                         | 35               | 3.4         |
|                 | <b>Non HT20 Beam Forming, 6 to 54 Mbps</b> | <b>2</b> | <b>8</b>                      | <b>23.6</b>          | <b>23.5</b>          | <b>34.6</b>                  | <b>36</b>        | <b>1.4</b>  |
|                 | HT/VHT20, M0 to M7                         | 1        | 5                             | 23.6                 |                      | 28.6                         | 35               | 6.4         |
|                 | HT/VHT20, M0 to M7                         | 2        | 5                             | 23.6                 | 23.5                 | 31.6                         | 35               | 3.4         |
|                 | HT/VHT20, M8 to M15                        | 2        | 5                             | 23.6                 | 23.5                 | 31.6                         | 35               | 3.4         |
|                 | HT/VHT20 Beam Forming, M0 to M7            | 2        | 8                             | 23.6                 | 23.5                 | 34.6                         | 36               | 1.4         |
|                 | HT/VHT20 Beam Forming, M8 to M15           | 2        | 5                             | 23.6                 | 23.5                 | 31.6                         | 35               | 3.4         |
|                 | HT/VHT20 STBC, M0 to M7                    | 2        | 5                             | 23.6                 | 23.5                 | 31.6                         | 35               | 3.4         |
| 2462            | CCK, 1 to 11 Mbps                          | 1        | 5                             | 22.1                 |                      | 27.1                         | 35.0             | 7.9         |
|                 | CCK, 1 to 11 Mbps                          | 2        | 5                             | 21.0                 | 21.2                 | 29.1                         | 35.0             | 5.9         |
|                 | Non HT20, 6 to 54 Mbps                     | 1        | 5                             | 15.4                 |                      | 20.4                         | 35.0             | 14.6        |
|                 | Non HT20, 6 to 54 Mbps                     | 2        | 5                             | 13.5                 | 13.6                 | 21.6                         | 35.0             | 13.4        |
|                 | Non HT20 Beam Forming, 6 to 54 Mbps        | 2        | 8                             | 10.4                 | 10.6                 | 21.5                         | 36.0             | 14.5        |
|                 | HT/VHT20, M0 to M7                         | 1        | 5                             | 13.5                 |                      | 18.5                         | 35.0             | 16.5        |
|                 | HT/VHT20, M0 to M7                         | 2        | 5                             | 11.6                 | 11.7                 | 19.6                         | 35.0             | 15.4        |
|                 | HT/VHT20, M8 to M15                        | 2        | 5                             | 11.6                 | 11.7                 | 19.6                         | 35.0             | 15.4        |
|                 | HT/VHT20 Beam Forming, M0 to M7            | 2        | 8                             | 9.4                  | 9.8                  | 20.6                         | 36.0             | 15.4        |
|                 | HT/VHT20 Beam Forming, M8 to M15           | 2        | 5                             | 11.6                 | 11.7                 | 19.6                         | 35.0             | 15.4        |
|                 | HT/VHT20 STBC, M0 to M7                    | 2        | 5                             | 11.6                 | 11.7                 | 19.6                         | 35.0             | 15.4        |

**Maximum Transmit Output Power, 2437 MHz, Non HT20 Beam Forming, 6 to 54 Mbps****Antenna A****Antenna B**

**Antenna Gain: 8 dBi**

| Frequency (MHz) | Mode                                       | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Max Power (dBm) | Tx 2 Max Power (dBm) | Total Tx Channel Power (dBm) | Limit (dBm) EIRP | Margin (dB) |
|-----------------|--------------------------------------------|----------|-------------------------------|----------------------|----------------------|------------------------------|------------------|-------------|
| 2412            | CCK, 1 to 11 Mbps                          | 1        | 8                             | 21.4                 |                      | 29.4                         | 36.0             | 6.6         |
|                 | CCK, 1 to 11 Mbps                          | 2        | 8                             | 20.5                 | 20.2                 | 31.4                         | 36.0             | 4.6         |
|                 | Non HT20, 6 to 54 Mbps                     | 1        | 8                             | 13.8                 |                      | 21.8                         | 36.0             | 14.2        |
|                 | Non HT20, 6 to 54 Mbps                     | 2        | 8                             | 11.9                 | 11.9                 | 22.9                         | 36.0             | 13.1        |
|                 | Non HT20 Beam Forming, 6 to 54 Mbps        | 2        | 11                            | 11.0                 | 11.0                 | 25.0                         | 36.0             | 11.0        |
|                 | HT/VHT20, M0 to M7                         | 1        | 8                             | 12.0                 |                      | 20.0                         | 36.0             | 16.0        |
|                 | HT/VHT20, M0 to M7                         | 2        | 8                             | 11.0                 | 11.0                 | 22.0                         | 36.0             | 14.0        |
|                 | HT/VHT20, M8 to M15                        | 2        | 8                             | 11.0                 | 11.0                 | 22.0                         | 36.0             | 14.0        |
|                 | HT/VHT20 Beam Forming, M0 to M7            | 2        | 11                            | 9.0                  | 9.2                  | 23.1                         | 36.0             | 12.9        |
|                 | HT/VHT20 Beam Forming, M8 to M15           | 2        | 8                             | 11.0                 | 11.0                 | 22.0                         | 36.0             | 14.0        |
|                 | HT/VHT20 STBC, M0 to M7                    | 2        | 8                             | 11.0                 | 11.0                 | 22.0                         | 36.0             | 14.0        |
| 2437            | CCK, 1 to 11 Mbps                          | 1        | 8                             | 24.1                 |                      | 32.1                         | 36               | 3.9         |
|                 | CCK, 1 to 11 Mbps                          | 2        | 8                             | 24.1                 | 23.7                 | 34.9                         | 36               | 1.1         |
|                 | Non HT20, 6 to 54 Mbps                     | 1        | 8                             | 23.6                 |                      | 31.6                         | 36               | 4.4         |
|                 | Non HT20, 6 to 54 Mbps                     | 2        | 8                             | 23.6                 | 23.5                 | 34.6                         | 36               | 1.4         |
|                 | <b>Non HT20 Beam Forming, 6 to 54 Mbps</b> | <b>2</b> | <b>11</b>                     | <b>21.9</b>          | <b>21.8</b>          | <b>35.9</b>                  | <b>36</b>        | <b>0.1</b>  |
|                 | HT/VHT20, M0 to M7                         | 1        | 8                             | 23.6                 |                      | 31.6                         | 36               | 4.4         |
|                 | HT/VHT20, M0 to M7                         | 2        | 8                             | 23.6                 | 23.5                 | 34.6                         | 36               | 1.4         |
|                 | HT/VHT20, M8 to M15                        | 2        | 8                             | 23.6                 | 23.5                 | 34.6                         | 36               | 1.4         |
|                 | HT/VHT20 Beam Forming, M0 to M7            | 2        | 11                            | 22                   | 21.8                 | 35.9                         | 36               | 0.1         |
|                 | HT/VHT20 Beam Forming, M8 to M15           | 2        | 8                             | 23.6                 | 23.5                 | 34.6                         | 36               | 1.4         |
|                 | HT/VHT20 STBC, M0 to M7                    | 2        | 8                             | 23.6                 | 23.5                 | 34.6                         | 36               | 1.4         |
| 2462            | CCK, 1 to 11 Mbps                          | 1        | 8                             | 22.1                 |                      | 30.1                         | 36.0             | 5.9         |
|                 | CCK, 1 to 11 Mbps                          | 2        | 8                             | 19.0                 | 19.1                 | 30.1                         | 36.0             | 5.9         |
|                 | Non HT20, 6 to 54 Mbps                     | 1        | 8                             | 12.5                 |                      | 20.5                         | 36.0             | 15.5        |
|                 | Non HT20, 6 to 54 Mbps                     | 2        | 8                             | 9.3                  | 9.7                  | 20.5                         | 36.0             | 15.5        |
|                 | Non HT20 Beam Forming, 6 to 54 Mbps        | 2        | 11                            | 5.3                  | 5.3                  | 19.3                         | 36.0             | 16.7        |
|                 | HT/VHT20, M0 to M7                         | 1        | 8                             | 12.5                 |                      | 20.5                         | 36.0             | 15.5        |
|                 | HT/VHT20, M0 to M7                         | 2        | 8                             | 9.4                  | 9.8                  | 20.6                         | 36.0             | 15.4        |
|                 | HT/VHT20, M8 to M15                        | 2        | 8                             | 9.4                  | 9.8                  | 20.6                         | 36.0             | 15.4        |
|                 | HT/VHT20 Beam Forming, M0 to M7            | 2        | 11                            | 4.6                  | 4.4                  | 18.5                         | 36.0             | 17.5        |
|                 | HT/VHT20 Beam Forming, M8 to M15           | 2        | 8                             | 9.4                  | 9.8                  | 20.6                         | 36.0             | 15.4        |
|                 | HT/VHT20 STBC, M0 to M7                    | 2        | 8                             | 9.4                  | 9.8                  | 20.6                         | 36.0             | 15.4        |



**Maximum Transmit Output Power, 2437 MHz, Non HT20 Beam Forming, 6 to 54 Mbps****Antenna A****Antenna B**

## A.4 Power Spectral Density

**15.247 / RSS-247 / LP0002:3.10.1(6.2.2)** For digitally modulated systems, the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

### Test Procedure

**Ref.** KDB 558074 D01 DTS Meas Guidance v03r05  
ANSI C63.10: 2013

|                                                                                                                                                                                                                      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Power Spectral Density</b><br>Test Procedure                                                                                                                                                                      |
| 1. Set the radio in the continuous transmitting mode at full power<br>2. Configure Spectrum analyzer as per test parameters below and Peak search marker<br>3. Capture graphs and record pertinent measurement data. |

**Ref.** 558074 D01 DTS Meas Guidance v03r05 section 10.2 Peak PSD  
ANSI C63.10: 2013 section 11.10.2 Peak PSD

|                                                                                                                                                   |
|---------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Power Spectral Density</b><br>Test parameters                                                                                                  |
| Span = >1.5 times the OBW<br>RBW = 3 kHz ≤ RBW ≤ 100 kHz.<br>VBW ≥ 3 x RBW<br>Sweep = Auto couple<br>Detector = Peak<br>Trace = Trace Average 100 |

The “Measure and add 10 log(N) dB technique”, where N is the number of outputs, is used for measuring in-band Power Spectral Density. (See ANSI C63.10 section 14.3.2.3 )

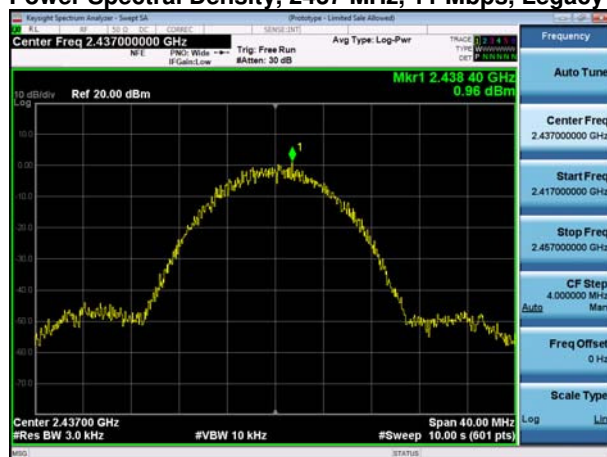
| System Number | Description | Samples | System under test                   | Support equipment                   |
|---------------|-------------|---------|-------------------------------------|-------------------------------------|
| 1             | EUT         | S01     | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
|               | Support     | S02     | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

|                                    |                                                  |
|------------------------------------|--------------------------------------------------|
| <b>Tested By :</b><br>Jose Aguirre | <b>Date of testing:</b><br>21-Jan-17 - 06-Feb-17 |
| <b>Test Result : PASS</b>          |                                                  |

See Appendix C for list of test equipment

**Antenna Gain: 5 dBi**

| Frequency (MHz) | Mode                                | Data Rate (Mbps) | PSD / Antenna (dBm/3kHz) | Total PSD (dBm/3kHz) | Limit (dBm/3kHz) | Margin (dB) |
|-----------------|-------------------------------------|------------------|--------------------------|----------------------|------------------|-------------|
| 2412            | CCK, 1 to 11 Mbps                   | 11               | 0.6                      | 3.6                  | 8.0              | 4.4         |
|                 | CCK, 1 to 11 Mbps                   | 11               | -1.4                     | 1.6                  | 8.0              | 6.4         |
|                 | Non HT20, 6 to 54 Mbps              | 6                | -11.8                    | -8.8                 | 8.0              | 16.8        |
|                 | Non HT20, 6 to 54 Mbps              | 6                | -13.2                    | -10.2                | 8.0              | 18.2        |
|                 | Non HT20 Beam Forming, 6 to 54 Mbps | 6                | -14.9                    | -11.9                | 8.0              | 19.9        |
|                 | HT/VHT20, M0 to M7                  | m0               | -13.6                    | -10.6                | 8.0              | 18.6        |
|                 | HT/VHT20, M0 to M7                  | m0               | -13.2                    | -10.2                | 8.0              | 18.2        |
|                 | HT/VHT20, M8 to M15                 | m0               | -13.2                    | -10.2                | 8.0              | 18.2        |
|                 | HT/VHT20 Beam Forming, M0 to M7     | m0               | -16.1                    | -13.1                | 8.0              | 21.1        |
|                 | HT/VHT20 Beam Forming, M8 to M15    | m0               | -13.2                    | -10.2                | 8.0              | 18.2        |
|                 | HT/VHT20 STBC, M0 to M7             | m0               | -13.2                    | -10.2                | 8.0              | 18.2        |
| 2437            | CCK, 1 to 11 Mbps                   | 11               | 0.8                      | 3.8                  | 8.0              | 4.2         |
|                 | <b>CCK, 1 to 11 Mbps</b>            | <b>11</b>        | <b>1.0</b>               | <b>4.0</b>           | <b>8.0</b>       | <b>4.0</b>  |
|                 | Non HT20, 6 to 54 Mbps              | 6                | -3.2                     | -0.2                 | 8.0              | 8.2         |
|                 | Non HT20, 6 to 54 Mbps              | 6                | -3.2                     | -0.2                 | 8.0              | 8.2         |
|                 | Non HT20 Beam Forming, 6 to 54 Mbps | 6                | -3.2                     | -0.2                 | 8.0              | 8.2         |
|                 | HT/VHT20, M0 to M7                  | m0               | -4.7                     | -1.7                 | 8.0              | 9.7         |
|                 | HT/VHT20, M0 to M7                  | m0               | -4.3                     | -1.3                 | 8.0              | 9.3         |
|                 | HT/VHT20, M8 to M15                 | m0               | -4.3                     | -1.3                 | 8.0              | 9.3         |
|                 | HT/VHT20 Beam Forming, M0 to M7     | m0               | -4.3                     | -1.3                 | 8.0              | 9.3         |
|                 | HT/VHT20 Beam Forming, M8 to M15    | m0               | -4.3                     | -1.3                 | 8.0              | 9.3         |
|                 | HT/VHT20 STBC, M0 to M7             | m0               | -4.3                     | -1.3                 | 8.0              | 9.3         |
| 2462            | CCK, 1 to 11 Mbps                   | 11               | 0.3                      | 3.3                  | 8.0              | 4.7         |
|                 | CCK, 1 to 11 Mbps                   | 11               | -0.9                     | 2.1                  | 8.0              | 5.9         |
|                 | Non HT20, 6 to 54 Mbps              | 6                | -12.6                    | -9.6                 | 8.0              | 17.6        |
|                 | Non HT20, 6 to 54 Mbps              | 6                | -12.8                    | -9.8                 | 8.0              | 17.8        |
|                 | Non HT20 Beam Forming, 6 to 54 Mbps | 6                | -16.2                    | -13.2                | 8.0              | 21.2        |
|                 | HT/VHT20, M0 to M7                  | m0               | -13.8                    | -10.8                | 8.0              | 18.8        |
|                 | HT/VHT20, M0 to M7                  | m0               | -14.8                    | -11.8                | 8.0              | 19.8        |
|                 | HT/VHT20, M8 to M15                 | m0               | -14.8                    | -11.8                | 8.0              | 19.8        |
|                 | HT/VHT20 Beam Forming, M0 to M7     | m0               | -16.8                    | -13.8                | 8.0              | 21.8        |
|                 | HT/VHT20 Beam Forming, M8 to M15    | m0               | -14.8                    | -11.8                | 8.0              | 19.8        |
|                 | HT/VHT20 STBC, M0 to M7             | m0               | -14.8                    | -11.8                | 8.0              | 19.8        |

**Power Spectral Density, 2437 MHz, 11 Mbps, Legacy CCK**

**Antenna Gain: 8 dBi**

| Frequency (MHz) | Mode                                | Data Rate (Mbps) | PSD / Antenna (dBm/3kHz) | Total PSD (dBm/3kHz) | Limit (dBm/3kHz) | Margin (dB) |
|-----------------|-------------------------------------|------------------|--------------------------|----------------------|------------------|-------------|
| 2412            | CCK, 1 to 11 Mbps                   | 11               | -1.4                     | 1.6                  | 8.0              | 6.4         |
|                 | CCK, 1 to 11 Mbps                   | 11               | 0.7                      | 3.7                  | 8.0              | 4.3         |
|                 | Non HT20, 6 to 54 Mbps              | 6                | -13.2                    | -10.2                | 8.0              | 18.2        |
|                 | Non HT20, 6 to 54 Mbps              | 6                | -14.9                    | -11.9                | 8.0              | 19.9        |
|                 | Non HT20 Beam Forming, 6 to 54 Mbps | 6                | -16.5                    | -13.5                | 8.0              | 21.5        |
|                 | HT/VHT20, M0 to M7                  | m0               | -13.2                    | -10.2                | 8.0              | 18.2        |
|                 | HT/VHT20, M0 to M7                  | m0               | -16.1                    | -13.1                | 8.0              | 21.1        |
|                 | HT/VHT20, M8 to M15                 | m0               | -16.1                    | -13.1                | 8.0              | 21.1        |
|                 | HT/VHT20 Beam Forming, M0 to M7     | m0               | -18.1                    | -15.1                | 8.0              | 23.1        |
|                 | HT/VHT20 Beam Forming, M8 to M15    | m0               | -16.1                    | -13.1                | 8.0              | 21.1        |
|                 | HT/VHT20 STBC, M0 to M7             | m0               | -16.1                    | -13.1                | 8.0              | 21.1        |
| 2437            | CCK, 1 to 11 Mbps                   | 11               | 0.8                      | 3.8                  | 8.0              | 4.2         |
|                 | <b>CCK, 1 to 11 Mbps</b>            | <b>11</b>        | <b>1.0</b>               | <b>4.0</b>           | <b>8.0</b>       | <b>4.0</b>  |
|                 | Non HT20, 6 to 54 Mbps              | 6                | -3.2                     | -0.2                 | 8.0              | 8.2         |
|                 | Non HT20, 6 to 54 Mbps              | 6                | -3.2                     | -0.2                 | 8.0              | 8.2         |
|                 | Non HT20 Beam Forming, 6 to 54 Mbps | 6                | -5.8                     | -2.8                 | 8.0              | 10.8        |
|                 | HT/VHT20, M0 to M7                  | m0               | -4.7                     | -1.7                 | 8.0              | 9.7         |
|                 | HT/VHT20, M0 to M7                  | m0               | -4.3                     | -1.3                 | 8.0              | 9.3         |
|                 | HT/VHT20, M8 to M15                 | m0               | -4.3                     | -1.3                 | 8.0              | 9.3         |
|                 | HT/VHT20 Beam Forming, M0 to M7     | m0               | -5.9                     | -2.9                 | 8.0              | 10.9        |
|                 | HT/VHT20 Beam Forming, M8 to M15    | m0               | -4.3                     | -1.3                 | 8.0              | 9.3         |
|                 | HT/VHT20 STBC, M0 to M7             | m0               | -4.3                     | -1.3                 | 8.0              | 9.3         |
| 2462            | CCK, 1 to 11 Mbps                   | 11               | -1.1                     | 1.9                  | 8.0              | 6.1         |
|                 | CCK, 1 to 11 Mbps                   | 11               | -2.5                     | 0.5                  | 8.0              | 7.5         |
|                 | Non HT20, 6 to 54 Mbps              | 6                | -12.8                    | -9.8                 | 8.0              | 17.8        |
|                 | Non HT20, 6 to 54 Mbps              | 6                | -16.2                    | -13.2                | 8.0              | 21.2        |
|                 | Non HT20 Beam Forming, 6 to 54 Mbps | 6                | -22.5                    | -19.5                | 8.0              | 27.5        |
|                 | HT/VHT20, M0 to M7                  | m0               | -15.5                    | -12.5                | 8.0              | 20.5        |
|                 | HT/VHT20, M0 to M7                  | m0               | -16.8                    | -13.8                | 8.0              | 21.8        |
|                 | HT/VHT20, M8 to M15                 | m0               | -16.8                    | -13.8                | 8.0              | 21.8        |
|                 | HT/VHT20 Beam Forming, M0 to M7     | m0               | -23.3                    | -20.3                | 8.0              | 28.3        |
|                 | HT/VHT20 Beam Forming, M8 to M15    | m0               | -16.8                    | -13.8                | 8.0              | 21.8        |
|                 | HT/VHT20 STBC, M0 to M7             | m0               | -16.8                    | -13.8                | 8.0              | 21.8        |

**Power Spectral Density, 2437 MHz, 11 Mbps, Legacy CCK**

## A.5 Conducted Spurious Emissions

**15.205 / 15.209 / LP0002** - Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)).

**RSS-Gen 8.9:** Except when the requirements applicable to a given device state otherwise, emissions from licence-exempt transmitters shall comply with the field strength limits shown in Table 4 and Table 5 below. Additionally, the level of any transmitter emission shall not exceed the level of the transmitter's fundamental emission.

**RSS-Gen 8.10 (b)** Unwanted emissions that fall into restricted bands of Table 6 shall comply with the limits specified in RSS-Gen; and **(c)** Unwanted emissions that do not fall within the restricted frequency bands of Table 6 shall comply either with the limits specified in the applicable RSS or with those specified in this RSS-Gen.

Use formula below to substitute conducted measurements in place of radiated measurements

$$E[\text{dB}\mu\text{V/m}] = \text{EIRP}[\text{dBm}] - 20 \log(d[\text{meters}]) + 104.77, \text{ where } E = \text{field strength and } d = 3 \text{ meter}$$

- 1) Average Plot, Limit= -41.25 dBm eirp
- 2) Peak plot, Limit = -21.25 dBm eirp

### Test Procedure

**Ref.** KDB 558074 D01 DTS Meas Guidance v03r05  
ANSI C63.10: 2013

| <b>Conducted Spurious Emissions</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test Procedure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <ol style="list-style-type: none"> <li>1. Connect the antenna port(s) to the spectrum analyzer input.</li> <li>2. Place the radio in continuous transmit mode</li> <li>3. Configure Spectrum analyzer as per test parameters below (be sure to enter all losses between the transmitter output and the spectrum analyzer).</li> <li>4. Use the peak marker function to determine the maximum spurs amplitude level.</li> <li>5. The "measure-and-sum technique" is used for measuring in-band transmit power of a device. In the measure-and-sum approach, the conducted emission level is measured at each antenna port. The measured results at the various antenna ports are then summed mathematically to determine the total emission level from the device. Summing is performed in linear power units. The worst case output is recorded. (see ANSI C63.10 2013 section 14.3.2.2)</li> <li>6. Capture graphs and record pertinent measurement data.</li> </ol> |

**Ref.** 558074 D01 DTS Meas Guidance v03r05 section 11.1b, 11.2-3, 12.2.4 & 12.2.5.3  
ANSI C63.10: 2013 section 11.10.3 & 11.12.2.4 & 11.12.2.5.3

| <b>Conducted Spurious Emissions</b>                                                                                   |
|-----------------------------------------------------------------------------------------------------------------------|
| Test parameters                                                                                                       |
| Span = 30 MHz-26 GHz<br>RBW = 100 kHz.<br>VBW ≥ 3 x RBW<br>Sweep = Auto couple<br>Detector = Peak<br>Trace = Max Hold |

KDB: 558074 D01 DTS Meas Guidance v03r05 section 12.2.2 © add the max antenna gain + ground reflection factor (4.7 dB for frequencies between 30 MHz and 1000 MHz, and 0 dB for frequencies > 1000 MHz).

| System Number | Description | Samples | System under test                   | Support equipment                   |
|---------------|-------------|---------|-------------------------------------|-------------------------------------|
| 1             | EUT         | S01     | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
|               | Support     | S02     | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

**Tested By :**

Jose Aguirre

**Date of testing:**

21-Jan-17 - 06-Feb-17

**Test Result : PASS**

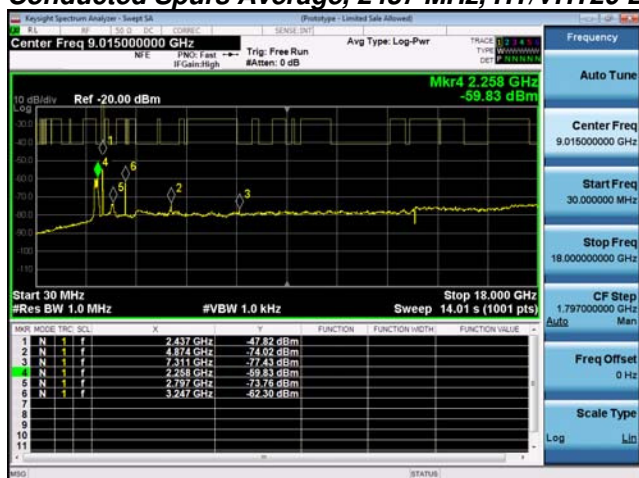
See Appendix C for list of test equipment



**Conducted Spurs Average Upper, All Antennas****Conducted Spurs Peak Upper, All Antennas**

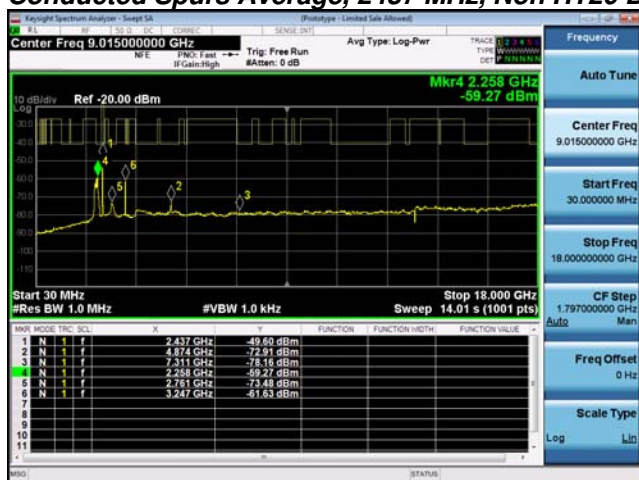
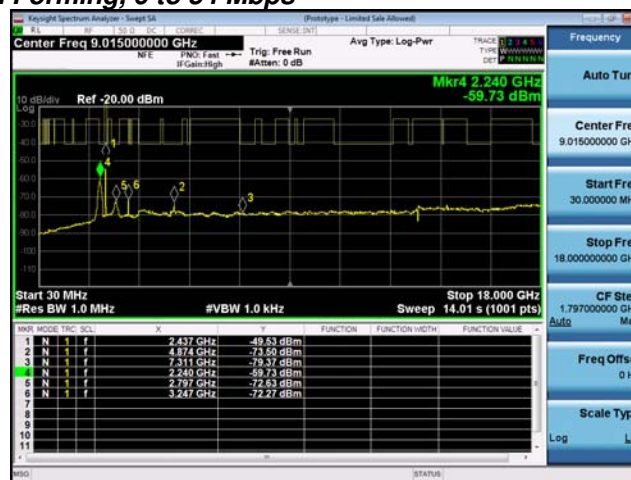
**Antenna Gain: 5 dBi**

| Frequency (MHz) | Mode                                   | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Spur Power (dBm) | Tx 2 Spur Power (dBm) | Total Conducted Spur (dBm) | Limit (dBm)   | Margin (dB) |
|-----------------|----------------------------------------|----------|-------------------------------|-----------------------|-----------------------|----------------------------|---------------|-------------|
| 2412            | CCK, 1 to 11 Mbps                      | 1        | 5                             | -73.3                 |                       | -68.3                      | -41.25        | 27.1        |
|                 | CCK, 1 to 11 Mbps                      | 2        | 5                             | -74.2                 | -69.7                 | -63.4                      | -41.25        | 22.1        |
|                 | Non HT20, 6 to 54 Mbps                 | 1        | 5                             | -61.1                 |                       | -56.1                      | -41.25        | 14.9        |
|                 | Non HT20, 6 to 54 Mbps                 | 2        | 5                             | -72.1                 | -76.6                 | -65.8                      | -41.25        | 24.5        |
|                 | Non HT20 Beam Forming, 6 to 54 Mbps    | 2        | 8                             | -71.7                 | -78.2                 | -62.8                      | -41.25        | 21.6        |
|                 | HT/VHT20, M0 to M7                     | 1        | 5                             | -72.2                 |                       | -67.2                      | -41.25        | 26.0        |
|                 | HT/VHT20, M0 to M7                     | 2        | 5                             | -71.8                 | -77.1                 | -65.7                      | -41.25        | 24.4        |
|                 | HT/VHT20, M8 to M15                    | 2        | 5                             | -71.8                 | -77.1                 | -65.7                      | -41.25        | 24.4        |
|                 | HT/VHT20 Beam Forming, M0 to M7        | 2        | 8                             | -72.0                 | -74.4                 | -62.0                      | -41.25        | 20.8        |
|                 | HT/VHT20 Beam Forming, M8 to M15       | 2        | 5                             | -71.8                 | -77.1                 | -65.7                      | -41.25        | 24.4        |
|                 | HT/VHT20 STBC, M0 to M7                | 2        | 5                             | -71.8                 | -77.1                 | -65.7                      | -41.25        | 24.4        |
| 2437            | CCK, 1 to 11 Mbps                      | 1        | 5                             | -64.3                 |                       | -59.3                      | -41.25        | 18.1        |
|                 | CCK, 1 to 11 Mbps                      | 2        | 5                             | -64.3                 | -60.1                 | -53.7                      | -41.25        | 12.5        |
|                 | Non HT20, 6 to 54 Mbps                 | 1        | 5                             | -60.0                 |                       | -55.0                      | -41.25        | 13.8        |
|                 | Non HT20, 6 to 54 Mbps                 | 2        | 5                             | -60.0                 | -60.4                 | -52.2                      | -41.25        | 10.9        |
|                 | Non HT20 Beam Forming, 6 to 54 Mbps    | 2        | 8                             | -60.0                 | -60.4                 | -49.2                      | -41.25        | 7.9         |
|                 | HT/VHT20, M0 to M7                     | 1        | 5                             | -59.8                 |                       | -54.8                      | -41.25        | 13.6        |
|                 | HT/VHT20, M0 to M7                     | 2        | 5                             | -59.8                 | -60.2                 | -52.0                      | -41.25        | 10.7        |
|                 | HT/VHT20, M8 to M15                    | 2        | 5                             | -59.8                 | -60.2                 | -52.0                      | -41.25        | 10.7        |
|                 | <b>HT/VHT20 Beam Forming, M0 to M7</b> | <b>2</b> | <b>8</b>                      | <b>-59.8</b>          | <b>-60.2</b>          | <b>-49.0</b>               | <b>-41.25</b> | <b>7.7</b>  |
|                 | HT/VHT20 Beam Forming, M8 to M15       | 2        | 5                             | -59.8                 | -60.2                 | -52.0                      | -41.25        | 10.7        |
|                 | HT/VHT20 STBC, M0 to M7                | 2        | 5                             | -59.8                 | -60.2                 | -52.0                      | -41.25        | 10.7        |
| 2462            | CCK, 1 to 11 Mbps                      | 1        | 5                             | -64.7                 |                       | -59.7                      | -41.25        | 18.5        |
|                 | CCK, 1 to 11 Mbps                      | 2        | 5                             | -63.8                 | -59.7                 | -53.3                      | -41.25        | 12.0        |
|                 | Non HT20, 6 to 54 Mbps                 | 1        | 5                             | -66.2                 |                       | -61.2                      | -41.25        | 20.0        |
|                 | Non HT20, 6 to 54 Mbps                 | 2        | 5                             | -65.6                 | -60.5                 | -54.3                      | -41.25        | 13.1        |
|                 | Non HT20 Beam Forming, 6 to 54 Mbps    | 2        | 8                             | -67.7                 | -60.9                 | -52.1                      | -41.25        | 10.8        |
|                 | HT/VHT20, M0 to M7                     | 1        | 5                             | -66.2                 |                       | -61.2                      | -41.25        | 20.0        |
|                 | HT/VHT20, M0 to M7                     | 2        | 5                             | -65.5                 | -60.5                 | -54.3                      | -41.25        | 13.1        |
|                 | HT/VHT20, M8 to M15                    | 2        | 5                             | -65.5                 | -60.5                 | -54.3                      | -41.25        | 13.1        |
|                 | HT/VHT20 Beam Forming, M0 to M7        | 2        | 8                             | -68.0                 | -60.6                 | -51.9                      | -41.25        | 10.6        |
|                 | HT/VHT20 Beam Forming, M8 to M15       | 2        | 5                             | -65.5                 | -60.5                 | -54.3                      | -41.25        | 13.1        |
|                 | HT/VHT20 STBC, M0 to M7                | 2        | 5                             | -65.5                 | -60.5                 | -54.3                      | -41.25        | 13.1        |

**Conducted Spurs Average, 2437 MHz, HT/VHT20 Beam Forming, M0 to M7****Antenna A****Antenna B**

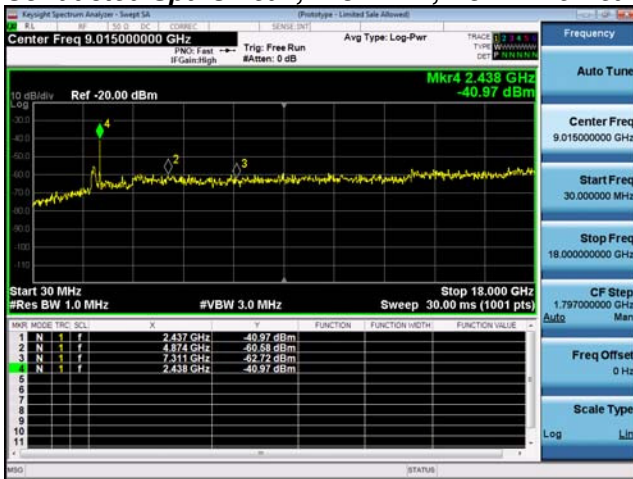
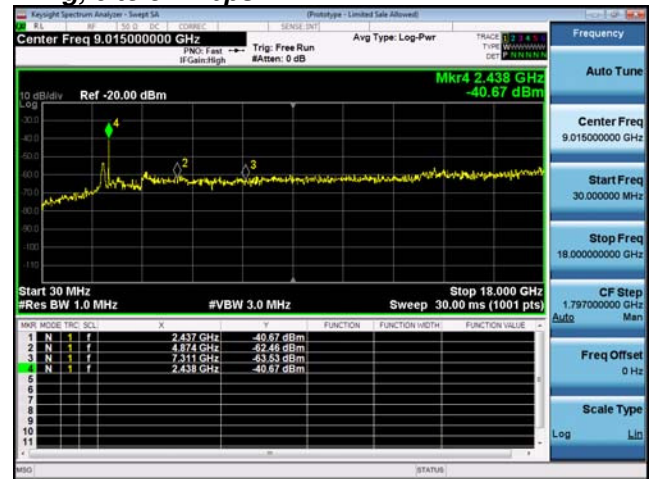
**Antenna Gain: 8 dBi**

| Frequency (MHz) | Mode                                       | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Spur Power (dBm) | Tx 2 Spur Power (dBm) | Total Conducted Spur (dBm) | Limit (dBm)   | Margin (dB) |
|-----------------|--------------------------------------------|----------|-------------------------------|-----------------------|-----------------------|----------------------------|---------------|-------------|
| 2412            | CCK, 1 to 11 Mbps                          | 1        | 8                             | -74.2                 |                       | -66.2                      | -41.25        | 25.0        |
|                 | CCK, 1 to 11 Mbps                          | 2        | 8                             | -69.4                 | -73.0                 | -59.8                      | -41.25        | 18.6        |
|                 | Non HT20, 6 to 54 Mbps                     | 1        | 8                             | -72.1                 |                       | -64.1                      | -41.25        | 22.9        |
|                 | Non HT20, 6 to 54 Mbps                     | 2        | 8                             | -71.7                 | -78.2                 | -62.8                      | -41.25        | 21.6        |
|                 | Non HT20 Beam Forming, 6 to 54 Mbps        | 2        | 11                            | -71.4                 | -74.2                 | -58.6                      | -41.25        | 17.3        |
|                 | HT/VHT20, M0 to M7                         | 1        | 8                             | -71.8                 |                       | -63.8                      | -41.25        | 22.6        |
|                 | HT/VHT20, M0 to M7                         | 2        | 8                             | -72.0                 | -74.4                 | -62.0                      | -41.25        | 20.8        |
|                 | HT/VHT20, M8 to M15                        | 2        | 8                             | -72.0                 | -74.4                 | -62.0                      | -41.25        | 20.8        |
|                 | HT/VHT20 Beam Forming, M0 to M7            | 2        | 11                            | -61.3                 | -74.3                 | -50.1                      | -41.25        | 8.8         |
|                 | HT/VHT20 Beam Forming, M8 to M15           | 2        | 8                             | -72.0                 | -74.4                 | -62.0                      | -41.25        | 20.8        |
|                 | HT/VHT20 STBC, M0 to M7                    | 2        | 8                             | -72.0                 | -74.4                 | -62.0                      | -41.25        | 20.8        |
| 2437            | CCK, 1 to 11 Mbps                          | 1        | 8                             | -64.3                 |                       | -56.3                      | -41.25        | 15.1        |
|                 | CCK, 1 to 11 Mbps                          | 2        | 8                             | -64.3                 | -60.1                 | -50.7                      | -41.25        | 9.5         |
|                 | Non HT20, 6 to 54 Mbps                     | 1        | 8                             | -60.0                 |                       | -52.0                      | -41.25        | 10.8        |
|                 | Non HT20, 6 to 54 Mbps                     | 2        | 8                             | -60.0                 | -60.4                 | -49.2                      | -41.25        | 7.9         |
|                 | <b>Non HT20 Beam Forming, 6 to 54 Mbps</b> | <b>2</b> | <b>11</b>                     | <b>-59.3</b>          | <b>-59.7</b>          | <b>-45.5</b>               | <b>-41.25</b> | <b>4.2</b>  |
|                 | HT/VHT20, M0 to M7                         | 1        | 8                             | -59.8                 |                       | -51.8                      | -41.25        | 10.6        |
|                 | HT/VHT20, M0 to M7                         | 2        | 8                             | -59.8                 | -60.2                 | -49.0                      | -41.25        | 7.7         |
|                 | HT/VHT20, M8 to M15                        | 2        | 8                             | -59.8                 | -60.2                 | -49.0                      | -41.25        | 7.7         |
|                 | HT/VHT20 Beam Forming, M0 to M7            | 2        | 11                            | -59.5                 | -60.0                 | -45.7                      | -41.25        | 4.5         |
|                 | HT/VHT20 Beam Forming, M8 to M15           | 2        | 8                             | -59.8                 | -60.2                 | -49.0                      | -41.25        | 7.7         |
|                 | HT/VHT20 STBC, M0 to M7                    | 2        | 8                             | -59.8                 | -60.2                 | -49.0                      | -41.25        | 7.7         |
| 2462            | CCK, 1 to 11 Mbps                          | 1        | 8                             | -63.8                 |                       | -55.8                      | -41.25        | 14.6        |
|                 | CCK, 1 to 11 Mbps                          | 2        | 8                             | -64.7                 | -59.9                 | -50.7                      | -41.25        | 9.4         |
|                 | Non HT20, 6 to 54 Mbps                     | 1        | 8                             | -65.6                 |                       | -57.6                      | -41.25        | 16.4        |
|                 | Non HT20, 6 to 54 Mbps                     | 2        | 8                             | -67.7                 | -60.9                 | -52.1                      | -41.25        | 10.8        |
|                 | Non HT20 Beam Forming, 6 to 54 Mbps        | 2        | 11                            | -70.8                 | -62.2                 | -50.6                      | -41.25        | 9.4         |
|                 | HT/VHT20, M0 to M7                         | 1        | 8                             | -65.5                 |                       | -57.5                      | -41.25        | 16.3        |
|                 | HT/VHT20, M0 to M7                         | 2        | 8                             | -68.0                 | -60.6                 | -51.9                      | -41.25        | 10.6        |
|                 | HT/VHT20, M8 to M15                        | 2        | 8                             | -68.0                 | -60.6                 | -51.9                      | -41.25        | 10.6        |
|                 | HT/VHT20 Beam Forming, M0 to M7            | 2        | 11                            | -70.6                 | -61.4                 | -49.9                      | -41.25        | 8.7         |
|                 | HT/VHT20 Beam Forming, M8 to M15           | 2        | 8                             | -68.0                 | -60.6                 | -51.9                      | -41.25        | 10.6        |
|                 | HT/VHT20 STBC, M0 to M7                    | 2        | 8                             | -68.0                 | -60.6                 | -51.9                      | -41.25        | 10.6        |

**Conducted Spurs Average, 2437 MHz, Non HT20 Beam Forming, 6 to 54 Mbps****Antenna A****Antenna B**

**Antenna Gain: 5 dBi**

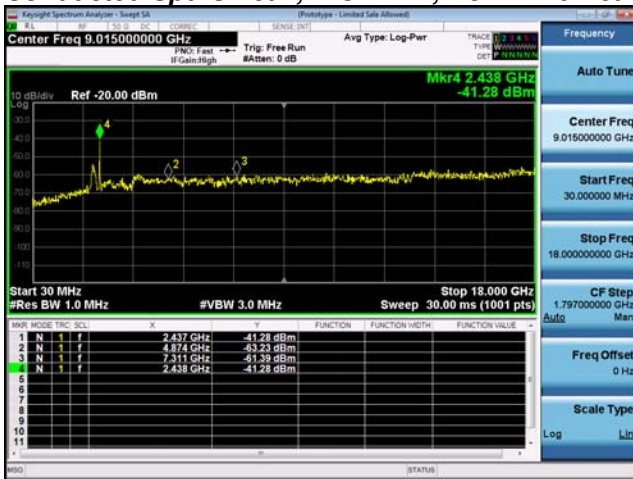
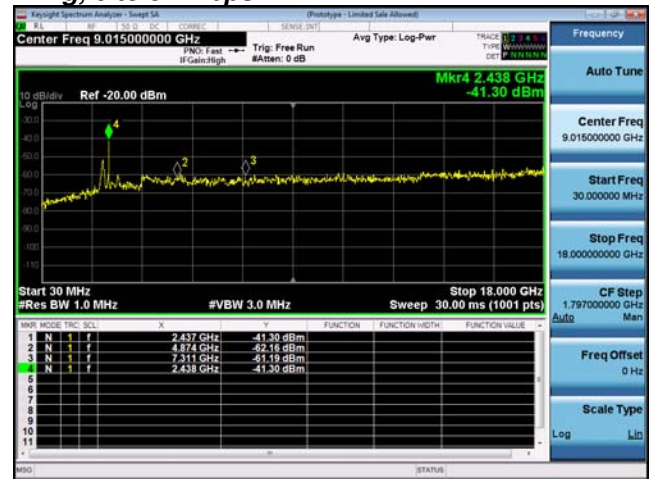
| Frequency (MHz) | Mode                                       | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Spur Power (dBm) | Tx 2 Spur Power (dBm) | Total Conducted Spur (dBm) | Limit (dBm)   | Margin (dB) |
|-----------------|--------------------------------------------|----------|-------------------------------|-----------------------|-----------------------|----------------------------|---------------|-------------|
| 2412            | CCK, 1 to 11 Mbps                          | 1        | 5                             | -61.8                 |                       | -56.8                      | -21.25        | 35.6        |
|                 | CCK, 1 to 11 Mbps                          | 2        | 5                             | -47.3                 | -62.8                 | -42.2                      | -21.25        | 20.9        |
|                 | Non HT20, 6 to 54 Mbps                     | 1        | 5                             | -53.2                 |                       | -48.2                      | -21.25        | 27.0        |
|                 | Non HT20, 6 to 54 Mbps                     | 2        | 5                             | -62.6                 | -63.0                 | -54.8                      | -21.25        | 33.5        |
|                 | Non HT20 Beam Forming, 6 to 54 Mbps        | 2        | 8                             | -61.2                 | -61.9                 | -50.5                      | -21.25        | 29.3        |
|                 | HT/VHT20, M0 to M7                         | 1        | 5                             | -52.8                 |                       | -47.8                      | -21.25        | 26.6        |
|                 | HT/VHT20, M0 to M7                         | 2        | 5                             | -61.5                 | -59.5                 | -52.4                      | -21.25        | 31.1        |
|                 | HT/VHT20, M8 to M15                        | 2        | 5                             | -61.5                 | -59.5                 | -52.4                      | -21.25        | 31.1        |
|                 | HT/VHT20 Beam Forming, M0 to M7            | 2        | 8                             | -53.9                 | -60.7                 | -45.1                      | -21.25        | 23.8        |
|                 | HT/VHT20 Beam Forming, M8 to M15           | 2        | 5                             | -61.5                 | -59.5                 | -52.4                      | -21.25        | 31.1        |
|                 | HT/VHT20 STBC, M0 to M7                    | 2        | 5                             | -61.5                 | -59.5                 | -52.4                      | -21.25        | 31.1        |
| 2437            | CCK, 1 to 11 Mbps                          | 1        | 5                             | -38.2                 |                       | -33.2                      | -21.25        | 12.0        |
|                 | CCK, 1 to 11 Mbps                          | 2        | 5                             | -38.2                 | -39.0                 | -30.6                      | -21.25        | 9.3         |
|                 | Non HT20, 6 to 54 Mbps                     | 1        | 5                             | -41.0                 |                       | -36.0                      | -21.25        | 14.8        |
|                 | Non HT20, 6 to 54 Mbps                     | 2        | 5                             | -41.0                 | -40.7                 | -32.8                      | -21.25        | 11.6        |
|                 | <b>Non HT20 Beam Forming, 6 to 54 Mbps</b> | <b>2</b> | <b>8</b>                      | <b>-41.0</b>          | <b>-40.7</b>          | <b>-29.8</b>               | <b>-21.25</b> | <b>8.6</b>  |
|                 | HT/VHT20, M0 to M7                         | 1        | 5                             | -40.6                 |                       | -35.6                      | -21.25        | 14.4        |
|                 | HT/VHT20, M0 to M7                         | 2        | 5                             | -40.6                 | -41.8                 | -33.1                      | -21.25        | 11.9        |
|                 | HT/VHT20, M8 to M15                        | 2        | 5                             | -40.6                 | -41.8                 | -33.1                      | -21.25        | 11.9        |
|                 | HT/VHT20 Beam Forming, M0 to M7            | 2        | 8                             | -40.6                 | -41.8                 | -30.1                      | -21.25        | 8.9         |
|                 | HT/VHT20 Beam Forming, M8 to M15           | 2        | 5                             | -40.6                 | -41.8                 | -33.1                      | -21.25        | 11.9        |
|                 | HT/VHT20 STBC, M0 to M7                    | 2        | 5                             | -40.6                 | -41.8                 | -33.1                      | -21.25        | 11.9        |
| 2462            | CCK, 1 to 11 Mbps                          | 1        | 5                             | -38.0                 |                       | -33.0                      | -21.25        | 11.8        |
|                 | CCK, 1 to 11 Mbps                          | 2        | 5                             | -39.1                 | -63.3                 | -34.1                      | -21.25        | 12.8        |
|                 | Non HT20, 6 to 54 Mbps                     | 1        | 5                             | -63.8                 |                       | -58.8                      | -21.25        | 37.6        |
|                 | Non HT20, 6 to 54 Mbps                     | 2        | 5                             | -64.4                 | -62.7                 | -55.5                      | -21.25        | 34.2        |
|                 | Non HT20 Beam Forming, 6 to 54 Mbps        | 2        | 8                             | -64.5                 | -65.2                 | -53.8                      | -21.25        | 32.6        |
|                 | HT/VHT20, M0 to M7                         | 1        | 5                             | -49.1                 |                       | -44.1                      | -21.25        | 22.9        |
|                 | HT/VHT20, M0 to M7                         | 2        | 5                             | -62.7                 | -63.1                 | -54.9                      | -21.25        | 33.6        |
|                 | HT/VHT20, M8 to M15                        | 2        | 5                             | -62.7                 | -63.1                 | -54.9                      | -21.25        | 33.6        |
|                 | HT/VHT20 Beam Forming, M0 to M7            | 2        | 8                             | -51.4                 | -52.3                 | -40.8                      | -21.25        | 19.6        |
|                 | HT/VHT20 Beam Forming, M8 to M15           | 2        | 5                             | -62.7                 | -63.1                 | -54.9                      | -21.25        | 33.6        |
|                 | HT/VHT20 STBC, M0 to M7                    | 2        | 5                             | -62.7                 | -63.1                 | -54.9                      | -21.25        | 33.6        |

**Conducted Spurs Peak, 2437 MHz, Non HT20 Beam Forming, 6 to 54 Mbps****Antenna A****Antenna B**

**Antenna Gain: 8 dBi**

| Frequency (MHz) | Mode                                       | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Spur Power (dBm) | Tx 2 Spur Power (dBm) | Total Conducted Spur (dBm) | Limit (dBm)   | Margin (dB) |
|-----------------|--------------------------------------------|----------|-------------------------------|-----------------------|-----------------------|----------------------------|---------------|-------------|
| 2412            | CCK, 1 to 11 Mbps                          | 1        | 8                             | -47.3                 |                       | -39.3                      | -21.25        | 18.1        |
|                 | CCK, 1 to 11 Mbps                          | 2        | 8                             | -47.3                 | -63.8                 | -39.2                      | -21.25        | 18.0        |
|                 | Non HT20, 6 to 54 Mbps                     | 1        | 8                             | -62.6                 |                       | -54.6                      | -21.25        | 33.4        |
|                 | Non HT20, 6 to 54 Mbps                     | 2        | 8                             | -61.2                 | -61.9                 | -50.5                      | -21.25        | 29.3        |
|                 | Non HT20 Beam Forming, 6 to 54 Mbps        | 2        | 11                            | -62.6                 | -59.7                 | -46.9                      | -21.25        | 25.7        |
|                 | HT/VHT20, M0 to M7                         | 1        | 8                             | -61.5                 |                       | -53.5                      | -21.25        | 32.3        |
|                 | HT/VHT20, M0 to M7                         | 2        | 8                             | -53.9                 | -60.7                 | -45.1                      | -21.25        | 23.8        |
|                 | HT/VHT20, M8 to M15                        | 2        | 8                             | -53.9                 | -60.7                 | -45.1                      | -21.25        | 23.8        |
|                 | HT/VHT20 Beam Forming, M0 to M7            | 2        | 11                            | -59.4                 | -61.0                 | -46.1                      | -21.25        | 24.9        |
|                 | HT/VHT20 Beam Forming, M8 to M15           | 2        | 8                             | -53.9                 | -60.7                 | -45.1                      | -21.25        | 23.8        |
|                 | HT/VHT20 STBC, M0 to M7                    | 2        | 8                             | -53.9                 | -60.7                 | -45.1                      | -21.25        | 23.8        |
| 2437            | CCK, 1 to 11 Mbps                          | 1        | 8                             | -38.2                 |                       | -30.2                      | -21.25        | 9.0         |
|                 | CCK, 1 to 11 Mbps                          | 2        | 8                             | -38.2                 | -39.0                 | -27.6                      | -21.25        | 6.3         |
|                 | Non HT20, 6 to 54 Mbps                     | 1        | 8                             | -41.0                 |                       | -33.0                      | -21.25        | 11.8        |
|                 | Non HT20, 6 to 54 Mbps                     | 2        | 8                             | -41.0                 | -40.7                 | -29.8                      | -21.25        | 8.6         |
|                 | <b>Non HT20 Beam Forming, 6 to 54 Mbps</b> | <b>2</b> | <b>11</b>                     | <b>-41.3</b>          | <b>-41.3</b>          | <b>-27.3</b>               | <b>-21.25</b> | <b>6.0</b>  |
|                 | HT/VHT20, M0 to M7                         | 1        | 8                             | -40.6                 |                       | -32.6                      | -21.25        | 11.4        |
|                 | HT/VHT20, M0 to M7                         | 2        | 8                             | -40.6                 | -41.8                 | -30.1                      | -21.25        | 8.9         |
|                 | HT/VHT20, M8 to M15                        | 2        | 8                             | -40.6                 | -41.8                 | -30.1                      | -21.25        | 8.9         |
|                 | HT/VHT20 Beam Forming, M0 to M7            | 2        | 11                            | -42.8                 | -42.1                 | -28.4                      | -21.25        | 7.2         |
|                 | HT/VHT20 Beam Forming, M8 to M15           | 2        | 8                             | -40.6                 | -41.8                 | -30.1                      | -21.25        | 8.9         |
|                 | HT/VHT20 STBC, M0 to M7                    | 2        | 8                             | -40.6                 | -41.8                 | -30.1                      | -21.25        | 8.9         |
| 2462            | CCK, 1 to 11 Mbps                          | 1        | 8                             | -39.1                 |                       | -31.1                      | -21.25        | 9.9         |
|                 | CCK, 1 to 11 Mbps                          | 2        | 8                             | -42.1                 | -42.3                 | -31.2                      | -21.25        | 9.9         |
|                 | Non HT20, 6 to 54 Mbps                     | 1        | 8                             | -64.4                 |                       | -56.4                      | -21.25        | 35.2        |
|                 | Non HT20, 6 to 54 Mbps                     | 2        | 8                             | -64.5                 | -65.2                 | -53.8                      | -21.25        | 32.6        |
|                 | Non HT20 Beam Forming, 6 to 54 Mbps        | 2        | 11                            | -63.0                 | -62.9                 | -48.9                      | -21.25        | 27.7        |
|                 | HT/VHT20, M0 to M7                         | 1        | 8                             | -62.7                 |                       | -54.7                      | -21.25        | 33.5        |
|                 | HT/VHT20, M0 to M7                         | 2        | 8                             | -51.4                 | -52.3                 | -40.8                      | -21.25        | 19.6        |
|                 | HT/VHT20, M8 to M15                        | 2        | 8                             | -51.4                 | -52.3                 | -40.8                      | -21.25        | 19.6        |
|                 | HT/VHT20 Beam Forming, M0 to M7            | 2        | 11                            | -60.8                 | -64.2                 | -48.2                      | -21.25        | 26.9        |
|                 | HT/VHT20 Beam Forming, M8 to M15           | 2        | 8                             | -51.4                 | -52.3                 | -40.8                      | -21.25        | 19.6        |
|                 | HT/VHT20 STBC, M0 to M7                    | 2        | 8                             | -51.4                 | -52.3                 | -40.8                      | -21.25        | 19.6        |



**Conducted Spurs Peak, 2437 MHz, Non HT20 Beam Forming, 6 to 54 Mbps****Antenna A****Antenna B**

## A.6 Conducted Bandedge

**15.205 / 15.247 / RSS-Gen / RSS-247 / LP0002:3.10.1(5) & 2.8** In any 100 kHz bandwidth outside the frequency band in which the digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 30 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power.

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), and RSS-Gen 8.10 must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)) and RSS-Gen 8.9..

### Test Procedure

**Ref.** KDB 558074 D01 DTS Meas Guidance v03r05  
ANSI C63.10: 2013

| <b>Conducted Band edge</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                              |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| Test Procedure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                              |
| 1. Connect the antenna port(s) to the spectrum analyzer input.<br>2. Place the radio in continuous transmit mode. Use the procedures in KDB 558074 D01 DTS Meas Guidance v03r05 to substitute conducted measurements in place of radiated measurements.<br>3. Configure Spectrum analyzer as per test parameters below (be sure to enter all losses between the transmitter output and the spectrum analyzer).<br>4. Place a marker at the end of the restricted band closest to the transmit frequency to show compliance.<br>Also measure any emissions in the restricted bands..<br>5. The “measure-and-sum technique” is used for measuring in-band transmit power of a device. In the measure-and-sum approach, the conducted emission level is measured at each antenna port. The measured results at the various antenna ports are then summed mathematically to determine the total emission level from the device. Summing is performed in linear power units. The worst case output is recorded.<br>6. Place a marker at the end of the restricted band closest to the transmit frequency to show compliance.<br>Also measure any emissions in the restricted bands<br>7. Capture graphs and record pertinent measurement data. |                                                                                                                                              |
| <b>Conducted Bandedge</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>Conducted Bandedge</b>                                                                                                                    |
| Test parameters non-restricted Band<br>KDB 558074 D01 v03r05 section 11.1b, 11.2-3, also see<br>ANSI C63.10: 2013 section 11.10.3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Test parameters restricted Band<br>KDB 558074 D01 v03r05 section 12.2.4 & 12.2.5.3 also<br>see ANSI C63.10: 2013 section 11.12.4 & 11.12.5.3 |
| RBW = 100 kHz<br>VBW ≥ 3 x RBW<br>Sweep = Auto couple<br>Detector = Peak<br>Trace = Max Hold.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | RBW = 1 MHz<br>VBW ≥ 3 x RBW for Peak, 100Hz for Average<br>Sweep = Auto couple<br>Detector = Peak<br>Trace = Max Hold.                      |

| System Number | Description | Samples | System under test                   | Support equipment                   |
|---------------|-------------|---------|-------------------------------------|-------------------------------------|
| 1             | EUT         | S01     | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
|               | Support     | S02     | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

|                                    |                                                  |
|------------------------------------|--------------------------------------------------|
| <b>Tested By :</b><br>Jose Aguirre | <b>Date of testing:</b><br>21-Jan-17 - 06-Feb-17 |
| <b>Test Result : PASS</b>          |                                                  |

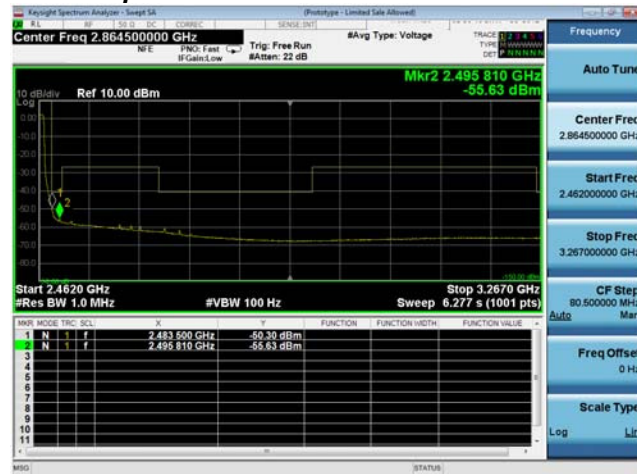
See Appendix C for list of test equipment

## Restricted Band

Antenna Gain: 5 dBi

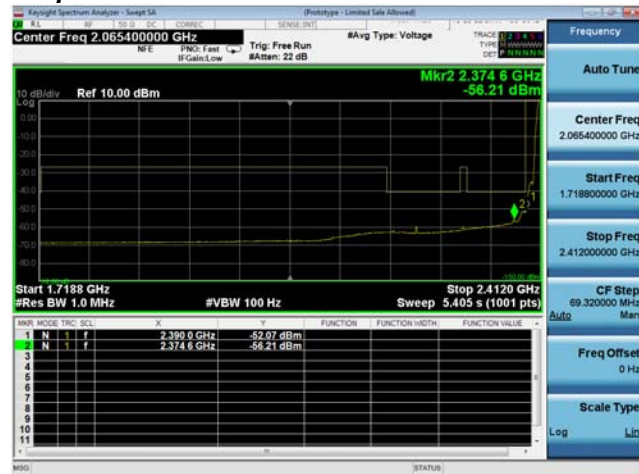
| Frequency (MHz) | Mode                                | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Bandedge Level (dBm) | Tx 2 Bandedge Level (dBm) | Total Tx Bandedge Level (dBm) | Limit (dBm)   | Margin (dB) |
|-----------------|-------------------------------------|----------|-------------------------------|---------------------------|---------------------------|-------------------------------|---------------|-------------|
| 2412            | CCK, 1 to 11 Mbps                   | 1        | 5                             | -47.6                     |                           | -42.6                         | -41.25        | 1.4         |
|                 | CCK, 1 to 11 Mbps                   | 2        | 5                             | -50.9                     | -52.1                     | -43.4                         | -41.25        | 2.2         |
|                 | Non HT20, 6 to 54 Mbps              | 1        | 5                             | -48.0                     |                           | -43.0                         | -41.25        | 1.8         |
|                 | Non HT20, 6 to 54 Mbps              | 2        | 5                             | -49.9                     | -50.2                     | -42.0                         | -41.25        | 0.8         |
|                 | Non HT20 Beam Forming, 6 to 54 Mbps | 2        | 8                             | -53.2                     | -53.3                     | -42.2                         | -41.25        | 1.0         |
|                 | <b>HT/VHT20, M0 to M7</b>           | <b>1</b> | <b>5</b>                      | <b>-46.7</b>              |                           | <b>-41.7</b>                  | <b>-41.25</b> | <b>0.5</b>  |
|                 | HT/VHT20, M0 to M7                  | 2        | 5                             | -50.6                     | -51.0                     | -42.8                         | -41.25        | 1.5         |
|                 | HT/VHT20, M8 to M15                 | 2        | 5                             | -50.6                     | -51.0                     | -42.8                         | -41.25        | 1.5         |
|                 | HT/VHT20 Beam Forming, M0 to M7     | 2        | 8                             | -52.5                     | -53.3                     | -41.9                         | -41.25        | 0.6         |
|                 | HT/VHT20 Beam Forming, M8 to M15    | 2        | 5                             | -50.6                     | -51.0                     | -42.8                         | -41.25        | 1.5         |
|                 | HT/VHT20 STBC, M0 to M7             | 2        | 5                             | -50.6                     | -51.0                     | -42.8                         | -41.25        | 1.5         |
| 2462            | CCK, 1 to 11 Mbps                   | 1        | 5                             | -47.7                     |                           | -42.7                         | -41.25        | 1.5         |
|                 | CCK, 1 to 11 Mbps                   | 2        | 5                             | -51.1                     | -51.1                     | -43.1                         | -41.25        | 1.8         |
|                 | Non HT20, 6 to 54 Mbps              | 1        | 5                             | -47.0                     |                           | -42.0                         | -41.25        | 0.8         |
|                 | <b>Non HT20, 6 to 54 Mbps</b>       | <b>2</b> | <b>5</b>                      | <b>-48.8</b>              | <b>-50.3</b>              | <b>-41.5</b>                  | <b>-41.25</b> | <b>0.2</b>  |
|                 | Non HT20 Beam Forming, 6 to 54 Mbps | 2        | 8                             | -52.5                     | -53.2                     | -41.8                         | -41.25        | 0.6         |
|                 | HT/VHT20, M0 to M7                  | 1        | 5                             | -46.6                     |                           | -41.6                         | -41.25        | 0.4         |
|                 | HT/VHT20, M0 to M7                  | 2        | 5                             | -50.8                     | -51.6                     | -43.2                         | -41.25        | 1.9         |
|                 | HT/VHT20, M8 to M15                 | 2        | 5                             | -50.8                     | -51.6                     | -43.2                         | -41.25        | 1.9         |
|                 | HT/VHT20 Beam Forming, M0 to M7     | 2        | 8                             | -52.3                     | -53.2                     | -41.7                         | -41.25        | 0.5         |
|                 | HT/VHT20 Beam Forming, M8 to M15    | 2        | 5                             | -50.8                     | -51.6                     | -43.2                         | -41.25        | 1.9         |
|                 | HT/VHT20 STBC, M0 to M7             | 2        | 5                             | -50.8                     | -51.6                     | -43.2                         | -41.25        | 1.9         |

**Conducted Bandedge Average, 2412 MHz, HT/VHT20, M0 to M7****Antenna A**

**Conducted Bandedge Average, 2462 MHz, Non HT20, 6 to 54 Mbps****Antenna A****Antenna B**

**Antenna Gain: 8 dBi**

| Frequency (MHz) | Mode                                       | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Bandedge Level (dBm) | Tx 2 Bandedge Level (dBm) | Total Tx Bandedge Level (dBm) | Limit (dBm)   | Margin (dB) |
|-----------------|--------------------------------------------|----------|-------------------------------|---------------------------|---------------------------|-------------------------------|---------------|-------------|
| 2412            | CCK, 1 to 11 Mbps                          | 1        | 8                             | -50.9                     |                           | -42.9                         | -41.25        | 1.6         |
|                 | <b>CCK, 1 to 11 Mbps</b>                   | <b>2</b> | <b>8</b>                      | <b>-53.9</b>              | <b>-52.1</b>              | <b>-41.9</b>                  | <b>-41.25</b> | <b>0.6</b>  |
|                 | Non HT20, 6 to 54 Mbps                     | 1        | 8                             | -49.9                     |                           | -41.9                         | -41.25        | 0.7         |
|                 | Non HT20, 6 to 54 Mbps                     | 2        | 8                             | -53.2                     | -53.3                     | -42.2                         | -41.25        | 1.0         |
|                 | Non HT20 Beam Forming, 6 to 54 Mbps        | 2        | 11                            | -56.2                     | -55.6                     | -41.9                         | -41.25        | 0.6         |
|                 | HT/VHT20, M0 to M7                         | 1        | 8                             | -50.6                     |                           | -42.6                         | -41.25        | 1.4         |
|                 | HT/VHT20, M0 to M7                         | 2        | 8                             | -52.5                     | -53.3                     | -41.9                         | -41.25        | 0.6         |
|                 | HT/VHT20, M8 to M15                        | 2        | 8                             | -52.5                     | -53.3                     | -41.9                         | -41.25        | 0.6         |
|                 | HT/VHT20 Beam Forming, M0 to M7            | 2        | 11                            | -57.5                     | -56.3                     | -42.8                         | -41.25        | 1.6         |
|                 | HT/VHT20 Beam Forming, M8 to M15           | 2        | 8                             | -52.5                     | -53.3                     | -41.9                         | -41.25        | 0.6         |
|                 | HT/VHT20 STBC, M0 to M7                    | 2        | 8                             | -52.5                     | -53.3                     | -41.9                         | -41.25        | 0.6         |
| 2462            | CCK, 1 to 11 Mbps                          | 1        | 8                             | -51.1                     |                           | -43.1                         | -41.25        | 1.9         |
|                 | CCK, 1 to 11 Mbps                          | 2        | 8                             | -52.4                     | -52.4                     | -41.4                         | -41.25        | 0.1         |
|                 | Non HT20, 6 to 54 Mbps                     | 1        | 8                             | -50.8                     |                           | -42.8                         | -41.25        | 1.6         |
|                 | Non HT20, 6 to 54 Mbps                     | 2        | 8                             | -52.5                     | -53.2                     | -41.8                         | -41.25        | 0.6         |
|                 | <b>Non HT20 Beam Forming, 6 to 54 Mbps</b> | <b>2</b> | <b>11</b>                     | <b>-54.4</b>              | <b>-56.4</b>              | <b>-41.3</b>                  | <b>-41.25</b> | <b>0.0</b>  |
|                 | HT/VHT20, M0 to M7                         | 1        | 8                             | -50.8                     |                           | -42.8                         | -41.25        | 1.6         |
|                 | HT/VHT20, M0 to M7                         | 2        | 8                             | -52.3                     | -53.2                     | -41.7                         | -41.25        | 0.5         |
|                 | HT/VHT20, M8 to M15                        | 2        | 8                             | -52.3                     | -53.2                     | -41.7                         | -41.25        | 0.5         |
|                 | HT/VHT20 Beam Forming, M0 to M7            | 2        | 11                            | -54.5                     | -56.2                     | -41.3                         | -41.25        | 0.0         |
|                 | HT/VHT20 Beam Forming, M8 to M15           | 2        | 8                             | -52.3                     | -53.2                     | -41.7                         | -41.25        | 0.5         |
|                 | HT/VHT20 STBC, M0 to M7                    | 2        | 8                             | -52.3                     | -53.2                     | -41.7                         | -41.25        | 0.5         |

**Conducted Bandedge Average, 2412 MHz, CCK, 1 to 11 Mbps****Antenna A****Antenna B**

**Conducted Bandedge Average, 2462 MHz, Non HT20 Beam Forming, 6 to 54 Mbps****Antenna A****Antenna B**



**Antenna Gain: 5 dBi**

| Frequency (MHz) | Mode                                | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Bandedge Level (dBm) | Tx 2 Bandedge Level (dBm) | Total Tx Bandedge Level (dBm) | Limit (dBm)   | Margin (dB) |
|-----------------|-------------------------------------|----------|-------------------------------|---------------------------|---------------------------|-------------------------------|---------------|-------------|
| 2412            | CCK, 1 to 11 Mbps                   | 1        | 5                             | -36.0                     |                           | -31.0                         | -21.25        | 9.8         |
|                 | CCK, 1 to 11 Mbps                   | 2        | 5                             | -35.0                     | -39.2                     | -28.6                         | -21.25        | 7.4         |
|                 | Non HT20, 6 to 54 Mbps              | 1        | 5                             | -28.4                     |                           | -23.4                         | -21.25        | 2.2         |
|                 | Non HT20, 6 to 54 Mbps              | 2        | 5                             | -30.7                     | -32.3                     | -23.4                         | -21.25        | 2.2         |
|                 | Non HT20 Beam Forming, 6 to 54 Mbps | 2        | 8                             | -35.2                     | -35.9                     | -24.5                         | -21.25        | 3.3         |
|                 | <b>HT/VHT20, M0 to M7</b>           | <b>1</b> | <b>5</b>                      | <b>-26.4</b>              |                           | <b>-21.4</b>                  | <b>-21.25</b> | <b>0.1</b>  |
|                 | HT/VHT20, M0 to M7                  | 2        | 5                             | -30.9                     | -31.8                     | -23.3                         | -21.25        | 2.1         |
|                 | HT/VHT20, M8 to M15                 | 2        | 5                             | -30.9                     | -31.8                     | -23.3                         | -21.25        | 2.1         |
|                 | HT/VHT20 Beam Forming, M0 to M7     | 2        | 8                             | -33.5                     | -34.4                     | -22.9                         | -21.25        | 1.7         |
|                 | HT/VHT20 Beam Forming, M8 to M15    | 2        | 5                             | -30.9                     | -31.8                     | -23.3                         | -21.25        | 2.1         |
|                 | HT/VHT20 STBC, M0 to M7             | 2        | 5                             | -30.9                     | -31.8                     | -23.3                         | -21.25        | 2.1         |
| 2462            | CCK, 1 to 11 Mbps                   | 1        | 5                             | -33.6                     |                           | -28.6                         | -21.25        | 7.4         |
|                 | CCK, 1 to 11 Mbps                   | 2        | 5                             | -34.0                     | -38.7                     | -27.7                         | -21.25        | 6.5         |
|                 | <b>Non HT20, 6 to 54 Mbps</b>       | <b>1</b> | <b>5</b>                      | <b>-30.2</b>              |                           | <b>-25.2</b>                  | <b>-21.25</b> | <b>4.0</b>  |
|                 | Non HT20, 6 to 54 Mbps              | 2        | 5                             | -34.8                     | -34.7                     | -26.7                         | -21.25        | 5.5         |
|                 | Non HT20 Beam Forming, 6 to 54 Mbps | 2        | 8                             | -36.7                     | -39.8                     | -27.0                         | -21.25        | 5.7         |
|                 | HT/VHT20, M0 to M7                  | 1        | 5                             | -31.5                     |                           | -26.5                         | -21.25        | 5.3         |
|                 | HT/VHT20, M0 to M7                  | 2        | 5                             | -33.2                     | -34.2                     | -25.7                         | -21.25        | 4.4         |
|                 | HT/VHT20, M8 to M15                 | 2        | 5                             | -33.2                     | -34.2                     | -25.7                         | -21.25        | 4.4         |
|                 | HT/VHT20 Beam Forming, M0 to M7     | 2        | 8                             | -38.4                     | -37.7                     | -27.0                         | -21.25        | 5.8         |
|                 | HT/VHT20 Beam Forming, M8 to M15    | 2        | 5                             | -33.2                     | -34.2                     | -25.7                         | -21.25        | 4.4         |
|                 | HT/VHT20 STBC, M0 to M7             | 2        | 5                             | -33.2                     | -34.2                     | -25.7                         | -21.25        | 4.4         |

**Conducted Bandedge Peak, 2412 MHz, HT/VHT20, M0 to M7****Antenna A**

**Conducted Bandedge Peak, 2462 MHz, Non HT20, 6 to 54 Mbps****Antenna A**

**Antenna Gain: 8 dBi**

| Frequency (MHz) | Mode                                   | Tx Paths | Correlated Antenna Gain (dBi) | Tx 1 Bandedge Level (dBm) | Tx 2 Bandedge Level (dBm) | Total Tx Bandedge Level (dBm) | Limit (dBm)   | Margin (dB) |
|-----------------|----------------------------------------|----------|-------------------------------|---------------------------|---------------------------|-------------------------------|---------------|-------------|
| 2412            | CCK, 1 to 11 Mbps                      | 1        | 8                             | -35.0                     |                           | -27.0                         | -21.25        | 5.8         |
|                 | CCK, 1 to 11 Mbps                      | 2        | 8                             | -41.2                     | -35.8                     | -26.7                         | -21.25        | 5.4         |
|                 | Non HT20, 6 to 54 Mbps                 | 1        | 8                             | -30.7                     |                           | -22.7                         | -21.25        | 1.5         |
|                 | Non HT20, 6 to 54 Mbps                 | 2        | 8                             | -35.2                     | -35.9                     | -24.5                         | -21.25        | 3.3         |
|                 | Non HT20 Beam Forming, 6 to 54 Mbps    | 2        | 11                            | -37.1                     | -39.6                     | -24.2                         | -21.25        | 2.9         |
|                 | HT/VHT20, M0 to M7                     | 1        | 8                             | -30.9                     |                           | -22.9                         | -21.25        | 1.7         |
|                 | HT/VHT20, M0 to M7                     | 2        | 8                             | -33.5                     | -34.4                     | -22.9                         | -21.25        | 1.7         |
|                 | HT/VHT20, M8 to M15                    | 2        | 8                             | -33.5                     | -34.4                     | -22.9                         | -21.25        | 1.7         |
|                 | <b>HT/VHT20 Beam Forming, M0 to M7</b> | <b>2</b> | <b>11</b>                     | <b>-36.1</b>              | <b>-36.3</b>              | <b>-22.2</b>                  | <b>-21.25</b> | <b>0.9</b>  |
|                 | HT/VHT20 Beam Forming, M8 to M15       | 2        | 8                             | -33.5                     | -34.4                     | -22.9                         | -21.25        | 1.7         |
|                 | HT/VHT20 STBC, M0 to M7                | 2        | 8                             | -33.5                     | -34.4                     | -22.9                         | -21.25        | 1.7         |
| 2462            | CCK, 1 to 11 Mbps                      | 1        | 8                             | -34.0                     |                           | -26.0                         | -21.25        | 4.8         |
|                 | CCK, 1 to 11 Mbps                      | 2        | 8                             | -37.0                     | -41.8                     | -27.8                         | -21.25        | 6.5         |
|                 | Non HT20, 6 to 54 Mbps                 | 1        | 8                             | -34.8                     |                           | -26.8                         | -21.25        | 5.6         |
|                 | Non HT20, 6 to 54 Mbps                 | 2        | 8                             | -36.7                     | -39.8                     | -27.0                         | -21.25        | 5.7         |
|                 | Non HT20 Beam Forming, 6 to 54 Mbps    | 2        | 11                            | -42.3                     | -48.5                     | -30.4                         | -21.25        | 9.1         |
|                 | <b>HT/VHT20, M0 to M7</b>              | <b>1</b> | <b>8</b>                      | <b>-33.2</b>              |                           | <b>-25.2</b>                  | <b>-21.25</b> | <b>4.0</b>  |
|                 | HT/VHT20, M0 to M7                     | 2        | 8                             | -38.4                     | -37.7                     | -27.0                         | -21.25        | 5.8         |
|                 | HT/VHT20, M8 to M15                    | 2        | 8                             | -38.4                     | -37.7                     | -27.0                         | -21.25        | 5.8         |
|                 | HT/VHT20 Beam Forming, M0 to M7        | 2        | 11                            | -43.9                     | -51.3                     | -32.2                         | -21.25        | 10.9        |
|                 | HT/VHT20 Beam Forming, M8 to M15       | 2        | 8                             | -38.4                     | -37.7                     | -27.0                         | -21.25        | 5.8         |
|                 | HT/VHT20 STBC, M0 to M7                | 2        | 8                             | -38.4                     | -37.7                     | -27.0                         | -21.25        | 5.8         |

**Conducted Bandedge Peak, 2412 MHz, HT/VHT20 Beam Forming, M0 to M7****Antenna A****Antenna B**

**Conducted Bandedge Peak, 2462 MHz, HT/VHT20, M0 to M7****Antenna A**

## Non-Restricted Band

Antenna Gain: 5 dBi

| Frequency<br>(MHz) | Mode                                | Data<br>Rate<br>(Mbps) | Conducted<br>Bandedge<br>Delta<br>(dB) | Limit<br>(dBc) | Margin<br>(dB) |
|--------------------|-------------------------------------|------------------------|----------------------------------------|----------------|----------------|
| 2412               | CCK, 1 to 11 Mbps                   | 11                     | 45.7                                   | >30            | 15.7           |
|                    | CCK, 1 to 11 Mbps                   | 11                     | 50.2                                   | >30            | 20.2           |
|                    | Non HT20, 6 to 54 Mbps              | 6                      | 33.7                                   | >30            | 3.7            |
|                    | <b>Non HT20, 6 to 54 Mbps</b>       | <b>6</b>               | <b>33.2</b>                            | <b>&gt;30</b>  | <b>3.2</b>     |
|                    | Non HT20 Beam Forming, 6 to 54 Mbps | 6                      | 34.5                                   | >30            | 4.5            |
|                    | HT/VHT20, M0 to M7                  | m0                     | 33.6                                   | >30            | 3.6            |
|                    | HT/VHT20, M0 to M7                  | m0                     | 33.7                                   | >30            | 3.7            |
|                    | HT/VHT20, M8 to M15                 | m0                     | 33.7                                   | >30            | 3.7            |
|                    | HT/VHT20 Beam Forming, M0 to M7     | m0                     | 34.0                                   | >30            | 4.0            |
|                    | HT/VHT20 Beam Forming, M8 to M15    | m0                     | 33.7                                   | >30            | 3.7            |
|                    | HT/VHT20 STBC, M0 to M7             | m0                     | 33.7                                   | >30            | 3.7            |

**Conducted Bandedge Average, 2412 MHz, Non HT20, 6 to 54 Mbps**



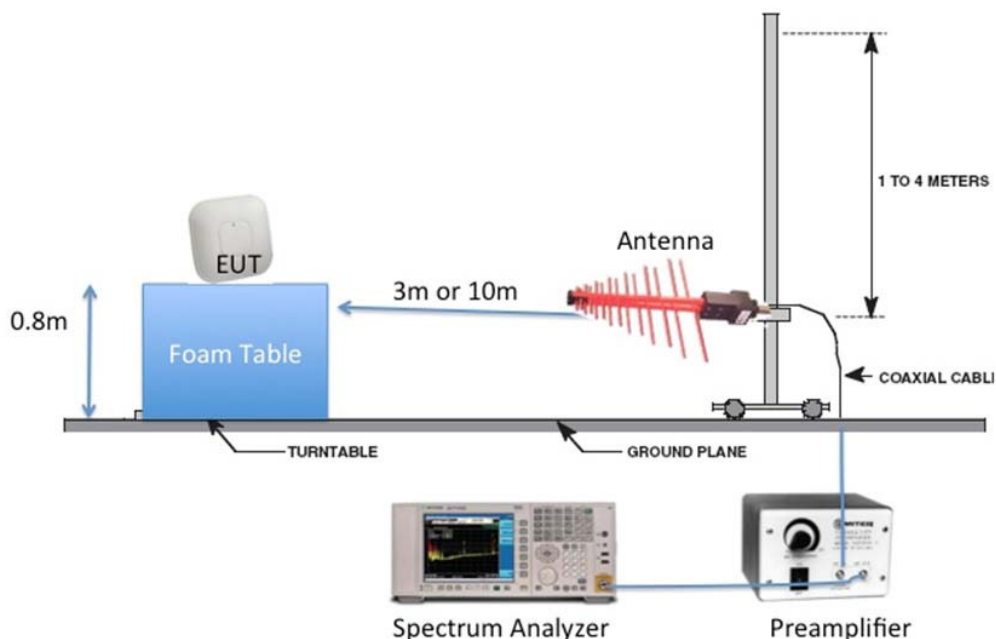
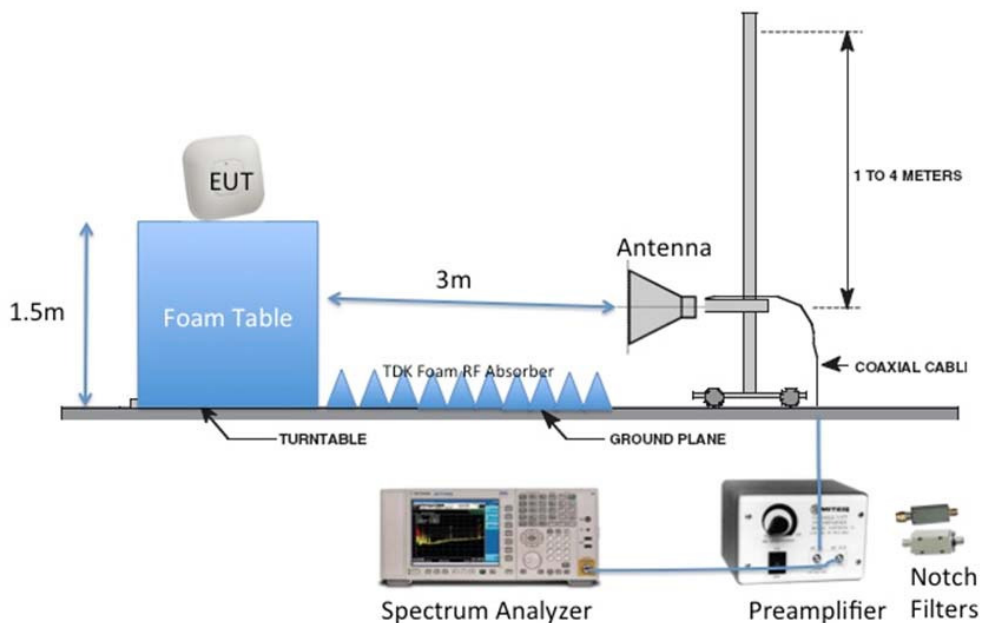
**Antenna Gain: 8 dBi**

| Frequency<br>(MHz) | Mode                                | Data<br>Rate<br>(Mbps) | Conducted<br>Bandedge<br>Delta<br>(dB) | Limit<br>(dBc) | Margin<br>(dB) |
|--------------------|-------------------------------------|------------------------|----------------------------------------|----------------|----------------|
| 2412               | CCK, 1 to 11 Mbps                   | 11                     | 50.2                                   | >30            | 20.2           |
|                    | CCK, 1 to 11 Mbps                   | 11                     | 47.1                                   | >30            | 17.1           |
|                    | <b>Non HT20, 6 to 54 Mbps</b>       | <b>6</b>               | <b>33.2</b>                            | <b>&gt;30</b>  | <b>3.2</b>     |
|                    | Non HT20, 6 to 54 Mbps              | 6                      | 34.5                                   | >30            | 4.5            |
|                    | Non HT20 Beam Forming, 6 to 54 Mbps | 6                      | 34.6                                   | >30            | 4.6            |
|                    | HT/VHT20, M0 to M7                  | m0                     | 33.7                                   | >30            | 3.7            |
|                    | HT/VHT20, M0 to M7                  | m0                     | 34.0                                   | >30            | 4.0            |
|                    | HT/VHT20, M8 to M15                 | m0                     | 34.0                                   | >30            | 4.0            |
|                    | HT/VHT20 Beam Forming, M0 to M7     | m0                     | 33.8                                   | >30            | 3.8            |
|                    | HT/VHT20 Beam Forming, M8 to M15    | m0                     | 34.0                                   | >30            | 4.0            |
|                    | HT/VHT20 STBC, M0 to M7             | m0                     | 34.0                                   | >30            | 4.0            |

**Conducted Bandedge Average, 2412 MHz, Non HT20, 6 to 54 Mbps**

**Appendix B: Emission Test Results**

Testing Laboratory: Cisco Systems, Inc., 125 West Tasman Drive, San Jose, CA 95134, USA

**Radiated Emission Setup Diagram-Below 1G****Radiated Emission Setup Diagram-Above 1G**

## B.1 Radiated Spurious Emissions

**15.205 / RSS-Gen / LP0002:3.10.1(5)/2.8** Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a) and RSS-Gen 8.10, must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)) and RSS-Gen 8.9.

**Ref.** ANSI C63.10: 2013 section 4.1.4.2.2, 4.1.4.2.3, 6.6.4 & 11.12.2

Using Vasona, configure the spectrum analyzer as shown below (be sure to enter all losses between the transmitter output and the spectrum analyzer). Place the radio in continuous transmit mode.

|                       |                                   |
|-----------------------|-----------------------------------|
| Span:                 | 1GHz – 18 GHz                     |
| Reference Level:      | 80 dBuV                           |
| Attenuation:          | 10 dB                             |
| Sweep Time:           | Coupled                           |
| Resolution Bandwidth: | 1MHz                              |
| Video Bandwidth:      | 3 MHz for peak, 1 KHz for average |
| Detector:             | Peak                              |

Terminate the access Point RF ports with 50 ohm loads.

Maximize Turntable (find worst case table angle), Maximize Antenna (find worst case height)

Save 2 plots:     1) Average plot, Limit= 54dBuV/m @3m  
                      2) Peak plot, Limit = 74dBuV/m @3m

Place a marker at the end of the restricted band closest to the transmit frequency to show compliance.  
Also measure any emissions in the restricted bands.

This report represents the worst case data for all supported operating modes and antennas. There are no measurable emissions above 18 GHz.

| System Number | Description | Samples | System under test                   | Support equipment                   |
|---------------|-------------|---------|-------------------------------------|-------------------------------------|
| 1             | EUT         | S01     | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
|               | Support     | S02     | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

|                                    |                                                  |
|------------------------------------|--------------------------------------------------|
| <b>Tested By :</b><br>Jose Aguirre | <b>Date of testing:</b><br>21-Jan-17 - 06-Feb-17 |
| <b>Test Result : PASS</b>          |                                                  |

See Appendix C for list of test equipment

**B.1.A Transmitter Radiated Spurious Emissions-Average Worst Case**

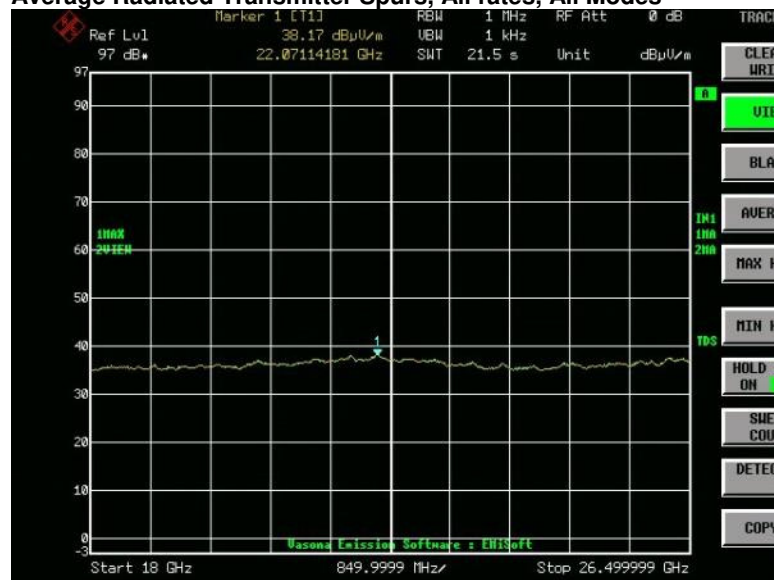
| Frequency<br>(MHz) | Mode              | Data Rate<br>(Mbps) | Spurious<br>Emission<br>Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>dBuV/m) |
|--------------------|-------------------|---------------------|-------------------------------------------|-------------------|-------------------|
| 2412               | CCK, 1 to 11 Mbps | 11                  | 48.0                                      | 54.0              | 6.0               |
| 2437               | CCK, 1 to 11 Mbps | 11                  | 47.9                                      | 54.0              | 6.1               |
| 2462               | CCK, 1 to 11 Mbps | 11                  | 48.2                                      | 54.0              | 5.8               |

**Average Radiated Transmitter Spurs, 2412 MHz, CCK, 1 to 11 Mbps****Average Radiated Transmitter Spurs, 2437 MHz, CCK, 1 to 11 Mbps**

## Average Radiated Transmitter Spurs, 2462 MHz, CCK, 1 to 11 Mbps



## Average Radiated Transmitter Spurs, All rates, All Modes

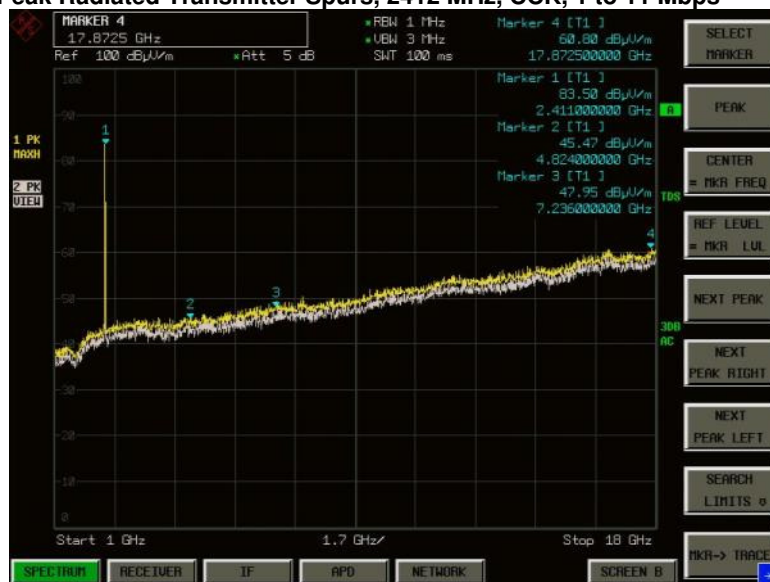
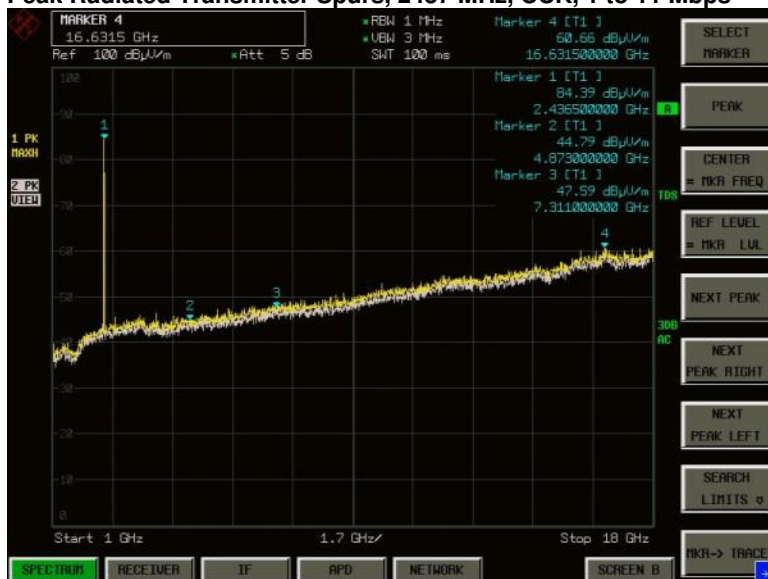


No emissions seen above 18GHz, the plot above is representative of all modes tested.

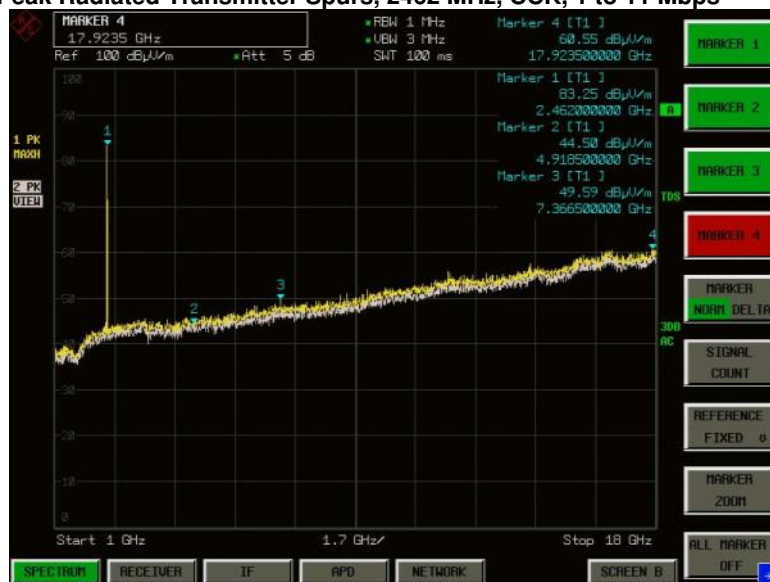
**B.1.P Transmitter Radiated Spurious Emissions-Peak Worst Case**

| Frequency<br>(MHz) | Mode              | Data Rate<br>(Mbps) | Spurious<br>Emission<br>Level<br>(dBuV/m) | Limit<br>(dBuV/m) | Margin<br>dBuV/m) |
|--------------------|-------------------|---------------------|-------------------------------------------|-------------------|-------------------|
| 2412               | CCK, 1 to 11 Mbps | 11                  | 60.8                                      | 74.0              | 13.2              |
| 2437               | CCK, 1 to 11 Mbps | 11                  | 60.7                                      | 74.0              | 13.3              |
| 2462               | CCK, 1 to 11 Mbps | 11                  | 60.6                                      | 74.0              | 13.4              |

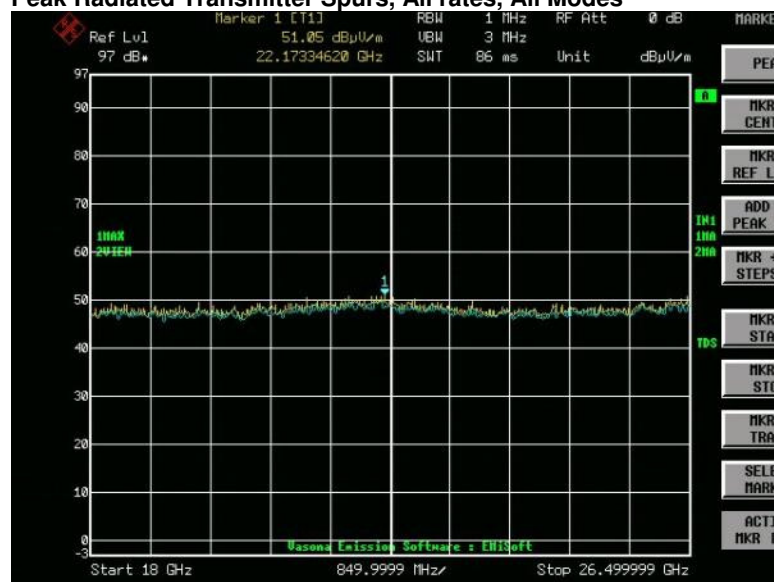


**Peak Radiated Transmitter Spurs, 2412 MHz, CCK, 1 to 11 Mbps****Peak Radiated Transmitter Spurs, 2437 MHz, CCK, 1 to 11 Mbps**

### Peak Radiated Transmitter Spurs, 2462 MHz, CCK, 1 to 11 Mbps



### Peak Radiated Transmitter Spurs, All rates, All Modes



No emissions seen above 18GHz, the plot above represents worst case for all modes tested.

## B.2 Receiver Spurious Emissions

**RSS-Gen** Receivers are required to comply with the limits of spurious emissions as set out in this section. Receiver emission measurements are to be performed as per the normative test method referenced in Section 3.

Radiated emissions which fall in the restricted bands, as defined in RSS-Gen section 8.10, must also comply with the radiated emission limits specified in RSS-Gen section 8.9.

For emissions at frequencies below 1 GHz, measurements shall be performed using a CISPR quasi-peak detector and the related measurement bandwidth. At frequencies above 1 GHz, measurements shall be performed using a linear average detector with a minimum resolution bandwidth of 1 MHz.

**Ref.** RSS-Gen section 8.9 & 8.10

ANSI C63.10: 2013 section 4.1.4.2.2, 4.1.4.2.3, 6.6.4 & 11.12.2

Using Vasona, configure the spectrum analyzer as shown below (be sure to enter all losses between the transmitter output and the spectrum analyzer). Place the radio in continuous transmit mode.

|                       |                                  |
|-----------------------|----------------------------------|
| Span:                 | 1GHz – 18 GHz                    |
| Reference Level:      | 80 dBuV                          |
| Attenuation:          | 10 dB                            |
| Sweep Time:           | Coupled                          |
| Resolution Bandwidth: | 1MHz                             |
| Video Bandwidth:      | 3MHz for Peak, 1 kHz for average |
| Detector:             | Peak                             |

Radiated emission measurements shall be performed with the receiver antenna connected to the receiver antenna terminals.

Maximize Turntable (find worst case table angle), Maximize Antenna (find worst case height)

Save plot: 1) Average Plot (Vertical and Horizontal), Limit= 54dBuV/m @3m  
2) Peak Plot (Vertical and Horizontal), Limit= 74dBuV/m @3m

This report represents the worst case data for all supported operating modes and antennas. There are no measurable emissions above 18 GHz.

| System Number | Description | Samples | System under test                   | Support equipment                   |
|---------------|-------------|---------|-------------------------------------|-------------------------------------|
| 1             | EUT         | S01     | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
|               | Support     | S02     | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

|                                    |                                                  |
|------------------------------------|--------------------------------------------------|
| <b>Tested By :</b><br>Jose Aguirre | <b>Date of testing:</b><br>21-Jan-17 - 06-Feb-17 |
| <b>Test Result : PASS</b>          |                                                  |

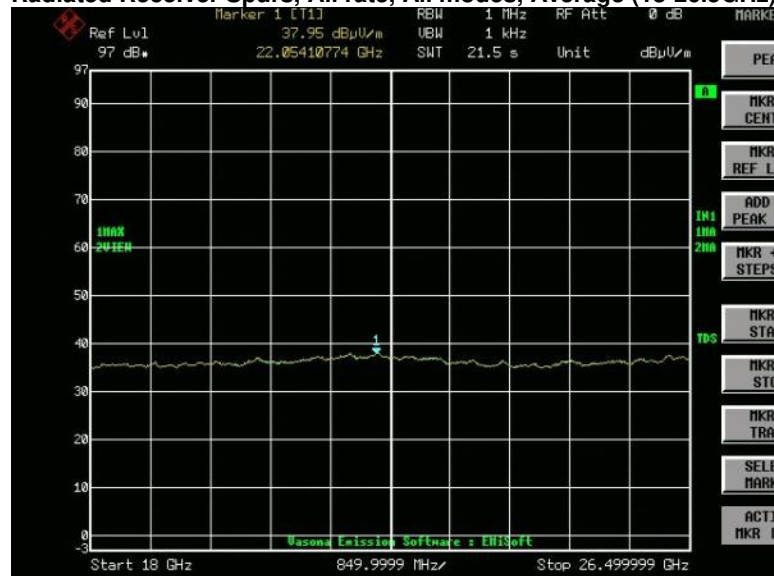
See Appendix C for list of test equipment

## B.2.A Receiver Radiated Spurious Emissions (Average Measurements)

### Average Radiated Receiver Spurs, All Rates, All Modes, (1-18GHz)



### Radiated Receiver Spurs, All rate, All modes, Average (18-26.5GHz)



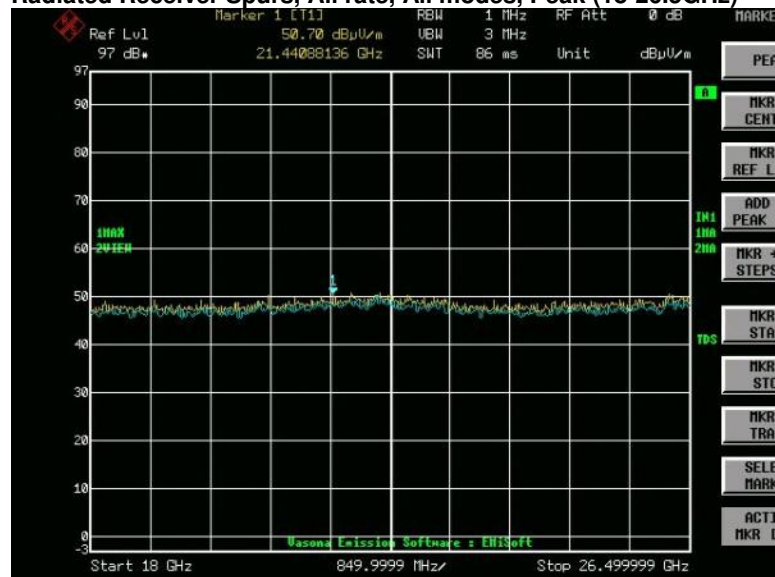
No emissions seen above 18GHz. The plots above are representative of all modes tested.

## B.2.A Receiver Radiated Spurious Emissions (Peak Measurements)

### Peak Radiated Receiver Spurs, All Rates, All Modes, (1-18GHz)



### Radiated Receiver Spurs, All rate, All modes, Peak (18-26.5GHz)



No emissions seen above 18GHz. The plots above are representative of all modes tested.

## B.3 Radiated Emissions 30MHz to 1GHz

**15.205 / 15.209 / RSS-Gen / LP0002:3.10.1(5)/2.8** Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a) (see Section 15.205(c)) and RSS-Gen section 8.9.

**Ref. ANSI C63.10: 2013 section 6.5**

Using Vasona, configure the spectrum analyzer as shown below (be sure to enter all losses between the transmitter output and the spectrum analyzer). Place the radio in continuous transmit mode.

|                       |                               |
|-----------------------|-------------------------------|
| Span:                 | 30MHz – 1GHz                  |
| Reference Level:      | 80 dBuV                       |
| Attenuation:          | 10 dB                         |
| Sweep Time:           | Coupled                       |
| Resolution Bandwidth: | 100kHz                        |
| Video Bandwidth:      | 300kHz                        |
| Detector:             | Peak for Pre-scan, Quasi-Peak |

Compliance shall be determined using CISPR quasi-peak detection; however, peak detection is permitted as an alternative to quasi-peak detection.

Terminate the access Point RF ports with 50 ohm loads.

Maximize Turntable (find worst case table angle), Maximize Antenna (find worst case height)

This report represents the worst case data for all supported operating modes and antennas.

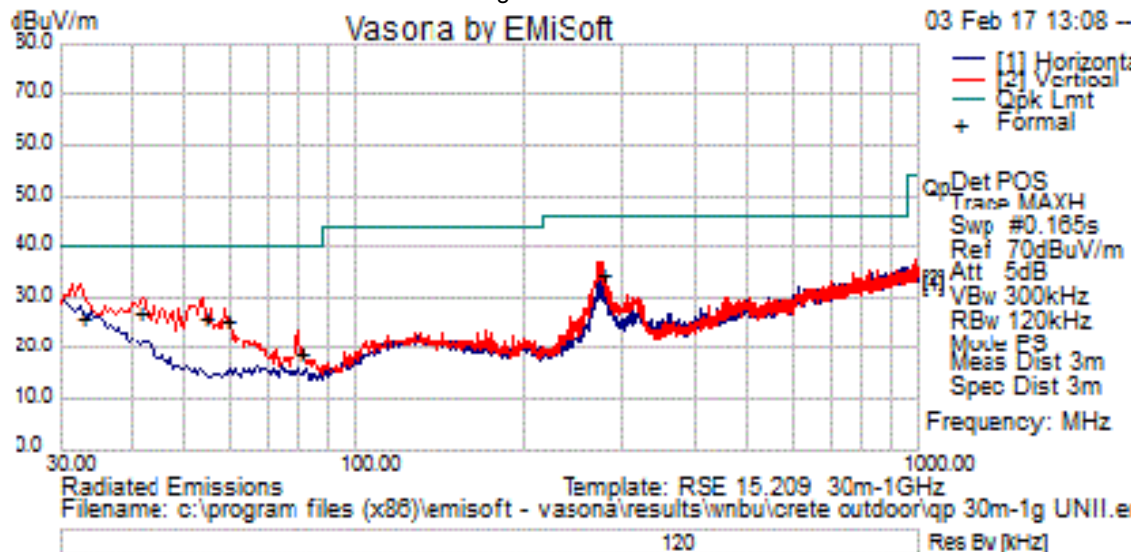
| System Number | Description | Samples | System under test                   | Support equipment                   |
|---------------|-------------|---------|-------------------------------------|-------------------------------------|
| 1             | EUT         | S01     | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
|               | Support     | S02     | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

|                                    |                                                  |
|------------------------------------|--------------------------------------------------|
| <b>Tested By :</b><br>Jose Aguirre | <b>Date of testing:</b><br>21-Jan-17 - 06-Feb-17 |
| <b>Test Result : PASS</b>          |                                                  |

See Appendix C for list of test equipment

### Graphical Test Results

Note that the data displayed on the plots detailed in this appendix were measured using a 'Peak Detector'. Please refer to the results table for the detectors used during formal measurements



### Test Results

| Frequency MHz | Raw dBuV | Cable Loss | AF dB | Level dBuV/m | Measurement Type | Pol | Hgt cm | Azt Deg | Limit dBuV/m | Margin dB | Pass /Fail |
|---------------|----------|------------|-------|--------------|------------------|-----|--------|---------|--------------|-----------|------------|
| 32.635        | 6.3      | 0.4        | 19.4  | 26.2         | Quasi Max        | V   | 104    | 360     | 40           | -13.8     | Pass       |
| 274.02        | 19.6     | 1.5        | 13.4  | 34.5         | Quasi Max        | V   | 101    | 327     | 46           | -11.5     | Pass       |
| 41.223        | 13.8     | 0.5        | 13.1  | 27.4         | Quasi Max        | V   | 103    | 22      | 40           | -12.6     | Pass       |
| 53.853        | 18.6     | 0.7        | 7.2   | 26.4         | Quasi Max        | V   | 102    | 258     | 40           | -13.6     | Pass       |
| 58.698        | 17.7     | 0.7        | 7.3   | 25.7         | Quasi Max        | V   | 107    | 135     | 40           | -14.3     | Pass       |
| 79.843        | 10.3     | 0.8        | 7.7   | 18.9         | Quasi Max        | V   | 127    | 160     | 40           | -21.1     | Pass       |

## B.4 AC Conducted Emissions

**FCC 15.207 (a) & RSS-Gen 8.8 / LP0002:2.3** Except when the requirements applicable to a given device state otherwise, for any radio apparatus equipped to operate from the public utility AC power supply, either directly or indirectly (such as with a battery charger), the radio frequency voltage of emissions conducted back onto the AC power lines in the frequency range of 0.15 MHz to 30 MHz shall not exceed the limits shown in the table in these sections. The more stringent limit applies at the frequency range boundaries.

### Measurement Procedure

Accordance with ANSI C63.10:2013 section 6.2

Using Vasona, configure the spectrum analyzer as shown below (be sure to enter all losses between the transmitter output and the spectrum analyzer). Place the radio in continuous transmit mode.

|                       |                      |
|-----------------------|----------------------|
| Span:                 | 150 KHz – 30 MHz     |
| Attenuation:          | 10 dB                |
| Sweep Time:           | Coupled              |
| Resolution Bandwidth: | 9 KHz                |
| Video Bandwidth:      | 30 KHz               |
| Detector:             | Quasi-Peak / Average |

| System Number | Description | Samples | System under test                   | Support equipment                   |
|---------------|-------------|---------|-------------------------------------|-------------------------------------|
| 1             | EUT         | S01     | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
|               | Support     | S02     | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

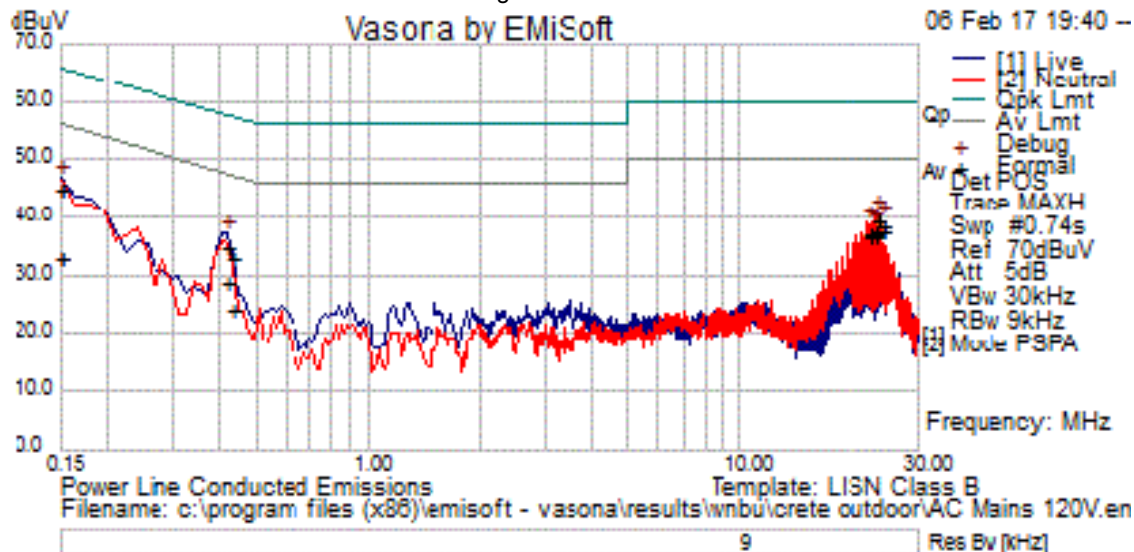
|                                    |                                                  |
|------------------------------------|--------------------------------------------------|
| <b>Tested By :</b><br>Jose Aguirre | <b>Date of testing:</b><br>21-Jan-17 - 06-Feb-17 |
| <b>Test Result : PASS</b>          |                                                  |

See separate EMC test report for test data.



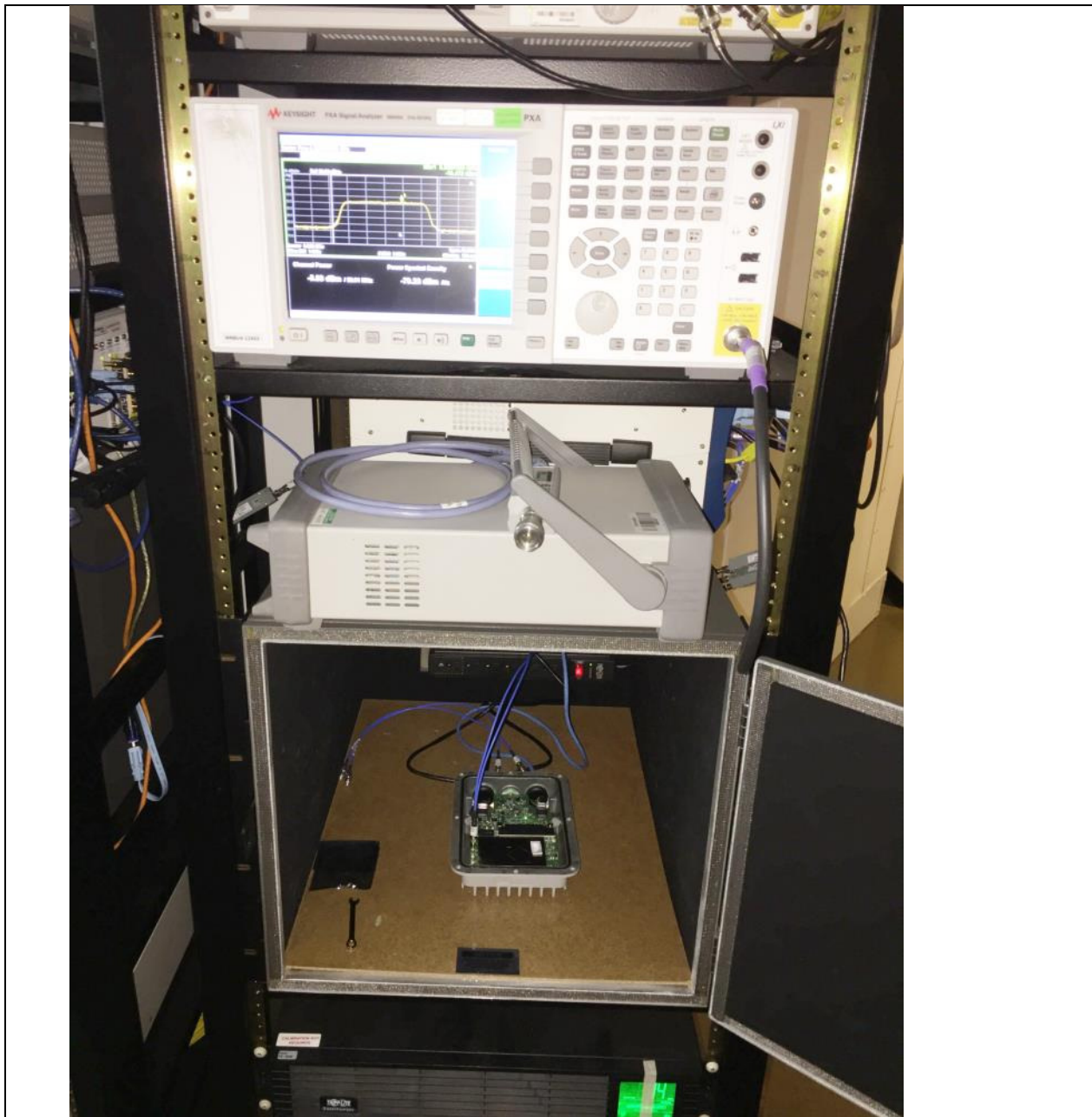
### Graphical Test Results

Note that the data displayed on the plots detailed in this appendix were measured using a 'Peak Detector'. Please refer to the results table for the detectors used during formal measurements



### Test Results

| Frequency MHz | Raw dBuV | Cable Loss | Factors dB | Level dBuV | Measurement Type | Line    | Limit dBuV | Margin dB | Pass /Fail |
|---------------|----------|------------|------------|------------|------------------|---------|------------|-----------|------------|
| 0.429         | 12.9     | 20         | 0          | 32.9       | Quasi Peak       | Live    | 57.3       | -24.3     | Pass       |
| 23.287        | 19       | 20.4       | 0.3        | 39.7       | Quasi Peak       | Live    | 60         | -20.3     | Pass       |
| 0.15          | 23.8     | 21.1       | 0.1        | 44.9       | Quasi Peak       | Live    | 66         | -21.1     | Pass       |
| 24.015        | 17.7     | 20.4       | 0.3        | 38.4       | Quasi Peak       | Live    | 60         | -21.6     | Pass       |
| 22.802        | 16.8     | 20.4       | 0.3        | 37.6       | Quasi Peak       | Live    | 60         | -22.4     | Pass       |
| 22.074        | 16.6     | 20.4       | 0.3        | 37.4       | Quasi Peak       | Live    | 60         | -22.6     | Pass       |
| 23.285        | 19       | 20.4       | 0.3        | 39.8       | Quasi Peak       | Neutral | 60         | -20.2     | Pass       |
| 0.15          | 23.8     | 21         | 0.1        | 45         | Quasi Peak       | Neutral | 66         | -21       | Pass       |
| 22.802        | 16.7     | 20.4       | 0.3        | 37.4       | Quasi Peak       | Neutral | 60         | -22.6     | Pass       |
| 22.073        | 16.6     | 20.4       | 0.3        | 37.4       | Quasi Peak       | Neutral | 60         | -22.6     | Pass       |
| 24.014        | 17.7     | 20.4       | 0.3        | 38.5       | Quasi Peak       | Neutral | 60         | -21.5     | Pass       |
| 0.416         | 14.9     | 20         | 0          | 34.9       | Quasi Peak       | Neutral | 57.5       | -22.6     | Pass       |
| 0.429         | 4.2      | 20         | 0          | 24.2       | Average          | Live    | 47.3       | -23.1     | Pass       |
| 23.287        | 18.7     | 20.4       | 0.3        | 39.4       | Average          | Live    | 50         | -10.6     | Pass       |
| 0.15          | 11.8     | 21.1       | 0.1        | 32.9       | Average          | Live    | 56         | -23.1     | Pass       |
| 24.015        | 17.1     | 20.4       | 0.3        | 37.8       | Average          | Live    | 50         | -12.2     | Pass       |
| 22.802        | 16.4     | 20.4       | 0.3        | 37.1       | Average          | Live    | 50         | -12.9     | Pass       |
| 22.074        | 16       | 20.4       | 0.3        | 36.7       | Average          | Live    | 50         | -13.3     | Pass       |
| 23.285        | 18.6     | 20.4       | 0.3        | 39.4       | Average          | Neutral | 50         | -10.6     | Pass       |
| 0.15          | 11.9     | 21         | 0.1        | 33         | Average          | Neutral | 56         | -23       | Pass       |
| 22.802        | 16.1     | 20.4       | 0.3        | 36.8       | Average          | Neutral | 50         | -13.2     | Pass       |
| 22.073        | 15.9     | 20.4       | 0.3        | 36.7       | Average          | Neutral | 50         | -13.3     | Pass       |
| 24.014        | 17.1     | 20.4       | 0.3        | 37.8       | Average          | Neutral | 50         | -12.2     | Pass       |
| 0.416         | 8.8      | 20         | 0          | 28.9       | Average          | Neutral | 47.5       | -18.7     | Pass       |

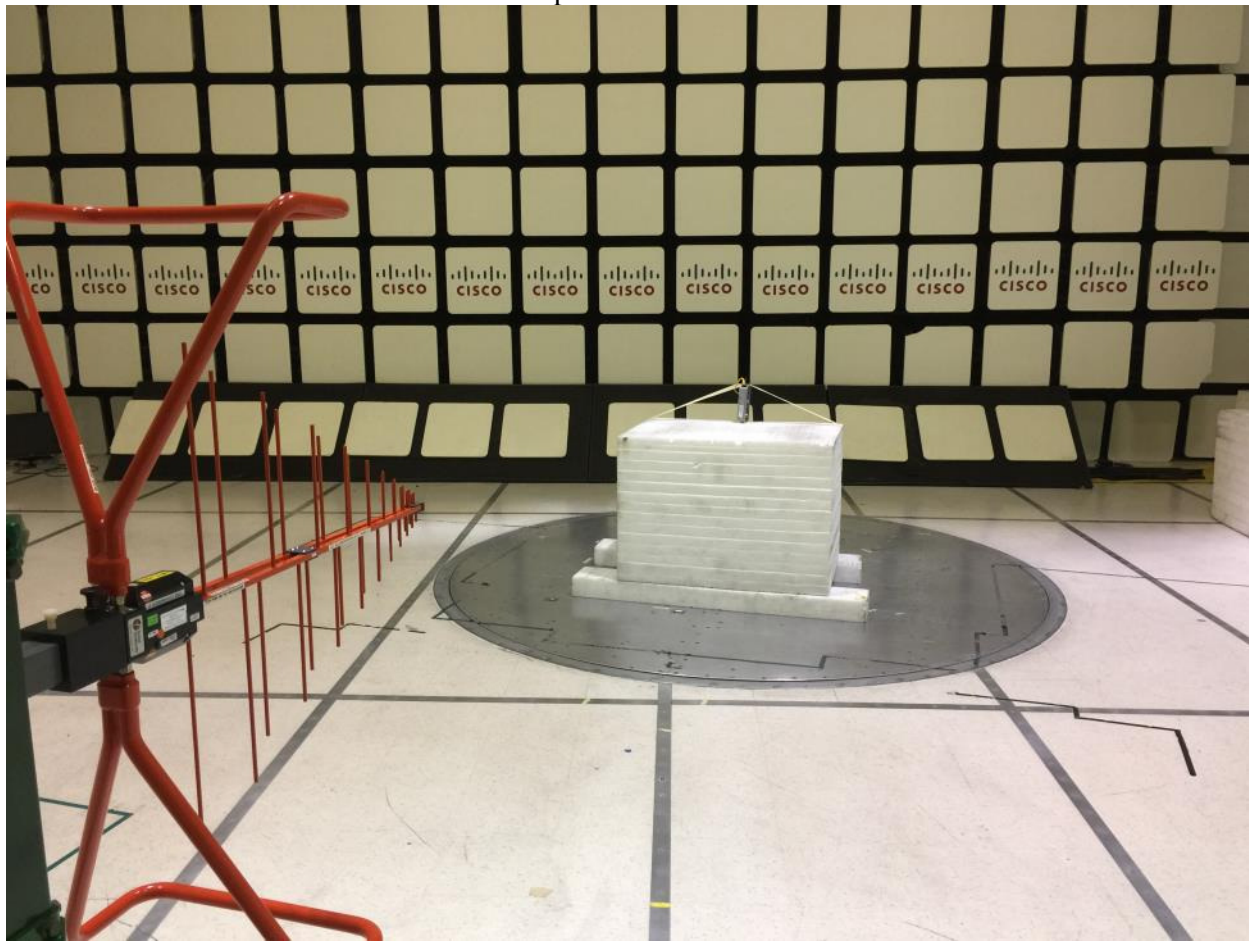
**Photographs of setup****Title: Conducted Test Setup**

This is a dual band 2.4GHz / 5GHz device. All ports in this test set up photo are connected as all testing is automated. Section 2.6 of this test report given an overview of the different Tx antenna combinations used by this device.

**AIR-AP1542D-x-K9** AC Mains Conducted Emissions setup

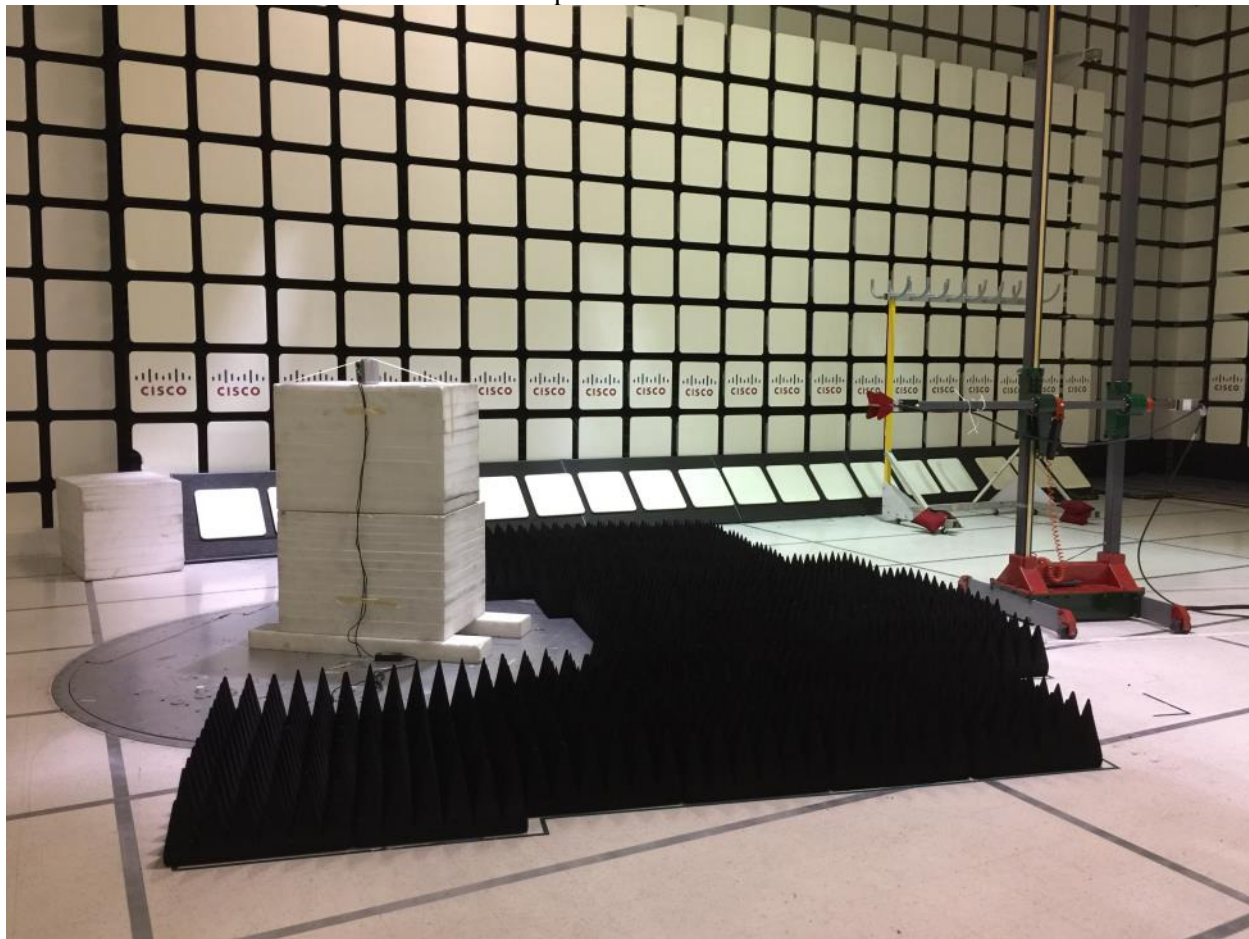


**AIR-AP1542D-x-K9** Radiated Emissions setup 30MHz – 1GHz





**AIR-AP1542D-x-K9 Radiated Emissions setup above 1GHz**



## Appendix C: List of Test Equipment Used to perform the test

| Test Equipment used for Radiated Emissions |                                        |                                             |                  |                  |               |
|--------------------------------------------|----------------------------------------|---------------------------------------------|------------------|------------------|---------------|
| Equip No                                   | Model<br>Manufacturer                  | Description                                 | Last Cal         | Next Cal         | Test Item     |
| CIS041929                                  | iBTHP-5-DB9<br>Newport                 | 5 inch Temp/RH/Press Sensor w/20ft cable    | 22-Dec-16        | 22-Dec-17        | B.1, B.2, B.3 |
| CIS001937                                  | NSA 5m Chamber<br>Cisco                | NSA 5m Chamber                              | 12-Feb-16        | 12-Feb-17        | B.3           |
| CIS049535                                  | Above 1GHz Site Cal<br>Cisco           | Above 1GHz CISPR Site Validation            | 13-Feb-16        | 13-Feb-17        | B.1, B.2      |
| CIS028072                                  | 1840<br>Cisco                          | 18-40GHz EMI Test Head                      | 22-Feb-16        | 22-Feb-17        | B.1, B.2      |
| CIS045588                                  | JB1<br>Sunol Sciences                  | Combination Antenna, 30MHz-2GHz             | 9-Mar-16         | 9-Mar-17         | B.3           |
| CIS042000                                  | E4440A<br>Agilent                      | Spectrum Analyzer                           | 6-Jul-16         | 6-Jul-17         | B.1, B.2      |
| CIS037581                                  | 3117<br>ETS-Lindgren                   | Horn Antenna                                | 7-Oct-16         | 7-Oct-17         | B.1, B.2      |
| CIS045098                                  | TH0118<br>Cisco                        | Mast Mount Preamplifier Array, 1-18GHz      | 31-Oct-16        | 31-Oct-17        | B.1, B.2      |
| CIS033602                                  | CSY-NMM-80-273001<br>Midwest Microwave | RF Coaxial Cable, to 18GHz                  | 8-Nov-16         | 8-Nov-17         | B.1, B.2, B.3 |
| CIS030443                                  | UFB311A-0-1560-520520<br>Micro-Coax    | RF Coaxial Cable, to 18GHz                  | 8-Nov-16         | 8-Nov-17         | B.1, B.2, B.3 |
| CIS008024                                  | SF106A<br>Huber + Suhner               | 3 meter Sucoflex cable                      | 8-Nov-16         | 8-Nov-17         | B.1, B.2, B.3 |
| CIS024201                                  | FSEK30<br>Rohde & Schwarz              | Spectrum Analyzer<br>20Hz - 40GHz           | 23-Nov-16        | 23-Nov-17        | B.1, B.2      |
| CIS037235                                  | 50CB-015<br>JFW                        | GPIB Control Box                            | Cal not Required | Cal not Required | B.1, B.2      |
| CIS035244                                  | 926-8ME<br>Klein Tools                 | 8 Meter Tape Measure                        | Cal not Required | Cal not Required | B.1, B.2, B.3 |
| CIS043124                                  | Above 1GHz Site Cal<br>Cisco           | Above 1GHz Cisp Site Verification           | 14-Jan-16        | 14-Jan-17        | B.1, B.2      |
| CIS047300                                  | N9038A<br>Agilent Technologies         | MXE EMI Receiver 20Hz to 26.5 Ghz           | 28-Jan-16        | 28-Jan-17        | B.1, B.2, B.3 |
| CIS030559                                  | UFB311A-1-0950-504504<br>Micro-Coax    | RF Coaxial Cable, to 18GHz, 95 in           | 15-Feb-16        | 15-Feb-17        | B.1, B.2, B.3 |
| CIS020975                                  | UFB311A-0-1344-520520<br>Micro-Coax    | RF Coaxial Cable, to 18GHz, 134.4 in        | 17-Feb-16        | 17-Feb-17        | B.1, B.2, B.3 |
| CIS019630                                  | ESi 40(ESiB 40)<br>Rohde & Schwarz     | EMI Test Receiver, 20Hz - 40GHz             | 22-Feb-16        | 22-Feb-17        | B.1, B.2      |
| CIS008447                                  | NSA 10m Chamber<br>Cisco               | NSA 10m Chamber                             | 14-Oct-16        | 14-Oct-17        | B.3           |
| CIS036710                                  | 1840<br>Cisco                          | 18-40GHz EMI Test Head/Verification Fixture | 17-Nov-16        | 17-Nov-17        | B.1, B.2      |
| CIS030652                                  | JB1<br>Sunol Sciences                  | Combination Antenna, 30MHz-2GHz             | 16-Dec-16        | 16-Dec-17        | B.3           |

| Test Equipment used for AC Mains Conducted Emissions |                                                          |                                          |                     |                     |           |
|------------------------------------------------------|----------------------------------------------------------|------------------------------------------|---------------------|---------------------|-----------|
| Equip No                                             | Model<br>Manufacturer                                    | Description                              | Last Cal            | Next Cal            | Test Item |
| CIS051642                                            | Sucoflex 106PA<br>Huber+Suhner                           | RF N Type Cable 8.5m                     | 11-Feb-16           | 11-Feb-17           | B.4       |
| CIS030559                                            | UFB311A-1-0950-504504<br>Micro-Coax                      | RF Coaxial Cable, to 18GHz, 95 in        | 15-Feb-16           | 15-Feb-17           | B.4       |
| CIS020975                                            | UFB311A-0-1344-520520<br>Micro-Coax                      | RF Coaxial Cable, to 18GHz, 134.4 in     | 17-Feb-16           | 17-Feb-17           | B.4       |
| CIS046717                                            | 5-T-MB<br>Bird                                           | 5W 50 Ohm BNC Termination 4GHz           | 9-Mar-16            | 9-Mar-17            | B.4       |
| CIS008510                                            | FCC-450B-2.4-N<br>Fischer Custom Communications          | Instrumentation Limiter                  | 16-May-16           | 16-May-17           | B.4       |
| CIS023796                                            | FCC-LISN-PA-520R<br>Fischer Custom Communications        | POWER ADAPTOR, POLARIZED 120VAC          | 27-Jul-16           | 27-Jul-17           | B.4       |
| CIS023794                                            | FCC-LISN-50/250-50-2-02<br>Fischer Custom Communications | LISN                                     | 27-Jul-16           | 27-Jul-17           | B.4       |
| CIS019206                                            | H785-150K-50-21378<br>TTE                                | High Pas Filter, Fo=150kHz               | 13-Sep-16           | 13-Sep-17           | B.4       |
| CIS005687                                            | 73 III<br>Fluke                                          | Digital Multimeter                       | 3-Nov-16            | 3-Nov-17            | B.4       |
| CIS041929                                            | iBTHP-5-DB9<br>Newport                                   | 5 inch Temp/RH/Press Sensor w/20ft cable | 22-Dec-16           | 22-Dec-17           | B.4       |
| CIS054645                                            | 33-428<br>Stanley                                        | Tape measure 8 meter                     | Cal Not<br>Required | Cal Not<br>Required | B.4       |

| Test Equipment used for RF Conducted Tests |                              |                                           |           |           |            |
|--------------------------------------------|------------------------------|-------------------------------------------|-----------|-----------|------------|
| Equip No                                   | Model<br>Manufacturer        | Description                               | Last Cal  | Next Cal  | Test Item  |
| CIS049445                                  | BRC50704-02<br>Micro-Tronics | Notch Filter, SB:5.470-5.725GHz, to 12GHz | 12-Apr-16 | 12-Apr-17 | A1 thru A6 |
| CIS035038                                  | BRC50703-02<br>Micro-Tronics | Notch Filter, SB:5.150-5.350GHz, to 11GHz | 6-Jul-16  | 6-Jul-17  | A1 thru A6 |
| CIS055561                                  | F120-S1S1-48<br>MegaPhase    | SMA Cable 48"                             | 15-Jul-16 | 15-Jul-17 | A1 thru A6 |
| CIS054635                                  | F120-S1S1-48<br>Megaphase    | SMA cable 48"                             | 15-Jul-16 | 15-Jul-17 | A1 thru A6 |
| CIS055588                                  | BWS30-W2<br>Aeroflex         | SMA 30dB Attenuator                       | 21-Jul-16 | 21-Jul-17 | A1 thru A6 |
| CIS055578                                  | BWS20-W2<br>Aeroflex         | SMA 20dB Attenuator                       | 21-Jul-16 | 21-Jul-17 | A1 thru A6 |
| CIS054656                                  | BRC50705-02<br>Micro-Tronics | Band Reject Filter                        | 19-Sep-16 | 19-Sep-17 | A1 thru A6 |
| CIS054653                                  | BRM50702-02<br>Micro-Tronics | Notch Filter, SB:2.400-2.500GHz, to 18GHz | 19-Sep-16 | 19-Sep-17 | A1 thru A6 |
| CIS055858                                  | SMSM-A2PH-012<br>Dynawave    | 12" SMA Cable                             | 29-Sep-16 | 29-Sep-17 | A1 thru A6 |
| CIS055856                                  | SMSM-A2PH-012<br>Dynawave    | 12" SMA Cable                             | 29-Sep-16 | 29-Sep-17 | A1 thru A6 |
| CIS055849                                  | SMSM-A2PH-012<br>Dynawave    | 12" SMA Cable                             | 29-Sep-16 | 29-Sep-17 | A1 thru A6 |
| CIS055848                                  | SMSM-A2PH-012<br>Dynawave    | 12" SMA Cable                             | 29-Sep-16 | 29-Sep-17 | A1 thru A6 |
| CIS055847                                  | SMSM-A2PH-012<br>Dynawave    | 12" SMA Cable                             | 29-Sep-16 | 29-Sep-17 | A1 thru A6 |
| CIS055846                                  | SMSM-A2PH-012<br>Dynawave    | 12" SMA Cable                             | 29-Sep-16 | 29-Sep-17 | A1 thru A6 |

|           |                                  |                                         |                     |                     |            |
|-----------|----------------------------------|-----------------------------------------|---------------------|---------------------|------------|
| CIS055845 | SMSM-A2PH-012<br>Dynawave        | 12" SMA Cable                           | 29-Sep-16           | 29-Sep-17           | A1 thru A6 |
| CIS055844 | SMSM-A2PH-012<br>Dynawave        | 12" SMA Cable                           | 29-Sep-16           | 29-Sep-17           | A1 thru A6 |
| CIS055843 | SMSM-A2PH-012<br>Dynawave        | 12" SMA Cable                           | 29-Sep-16           | 29-Sep-17           | A1 thru A6 |
| CIS055842 | SMSM-A2PH-012<br>Dynawave        | 12" SMA cable                           | 29-Sep-16           | 29-Sep-17           | A1 thru A6 |
| CIS055874 | SMSM-A2PH-024<br>Dynawave        | 24" SMA Cable                           | 7-Oct-16            | 7-Oct-17            | A1 thru A6 |
| CIS055872 | SMSM-A2PH-024<br>Dynawave        | 24" SMA Cable                           | 7-Oct-16            | 7-Oct-17            | A1 thru A6 |
| CIS055868 | SMSM-A2PH-024<br>Dynawave        | 24" SMA Cable                           | 7-Oct-16            | 7-Oct-17            | A1 thru A6 |
| CIS055867 | SMSM-A2PH-024<br>Dynawave        | 24" SMA Cable                           | 7-Oct-16            | 7-Oct-17            | A1 thru A6 |
| CIS055885 | SMSM-A2PH-018<br>Dynawave        | 18" SMA Cable                           | 10-Oct-16           | 10-Oct-17           | A1 thru A6 |
| CIS055170 | RFLT4WDC40GK<br>RF Lambda        | 4 Way Power Divider 40GHz               | 29-Nov-16           | 29-Nov-17           | A1 thru A6 |
| CIS050721 | N9030A<br>Keysight               | PXA Signal Analyzer                     | 30-Mar-16           | 30-Mar-17           | A1 thru A6 |
| CIS054303 | N5182B<br>Keysight               | MXG X-Series RF Vector Signal Generator | 6-Apr-16            | 6-Apr-17            | A1 thru A6 |
| CIS055099 | SMART2200RM2U<br>Tripp-Lite      | Power Supply                            | Cal Not<br>Required | Cal Not<br>Required | A1 thru A6 |
| CIS055094 | PXI-1042<br>National Instruments | Chassis                                 | Cal Not<br>Required | Cal Not<br>Required | A1 thru A6 |



**Appendix E: Abbreviation Key and Definitions**

The following table defines abbreviations used within this test report.

| Abbreviation | Description                                                          | Abbreviation | Description                         |
|--------------|----------------------------------------------------------------------|--------------|-------------------------------------|
| EMC          | Electro Magnetic Compatibility                                       | °F           | Degrees Fahrenheit                  |
| EMI          | Electro Magnetic Interference                                        | °C           | Degrees Celsius                     |
| EUT          | Equipment Under Test                                                 | Temp         | Temperature                         |
| ITE          | Information Technology Equipment                                     | S/N          | Serial Number                       |
| TAP          | Test Assessment Schedule                                             | Qty          | Quantity                            |
| ESD          | Electro Static Discharge                                             | emf          | Electromotive force                 |
| EFT          | Electric Fast Transient                                              | RMS          | Root mean square                    |
| EDCS         | Engineering Document Control System                                  | Qp           | Quasi Peak                          |
| Config       | Configuration                                                        | Av           | Average                             |
| CIS#         | Cisco Number (unique identification number for Cisco test equipment) | Pk           | Peak                                |
| Cal          | Calibration                                                          | kHz          | Kilohertz ( $1 \times 10^3$ )       |
| EN           | European Norm                                                        | MHz          | MegaHertz ( $1 \times 10^6$ )       |
| IEC          | International Electro technical Commission                           | GHz          | Gigahertz ( $1 \times 10^9$ )       |
| CISPR        | International Special Committee on Radio Interference                | H            | Horizontal                          |
| CDN          | Coupling/Decoupling Network                                          | V            | Vertical                            |
| LISN         | Line Impedance Stabilization Network                                 | dB           | decibel                             |
| PE           | Protective Earth                                                     | V            | Volt                                |
| GND          | Ground                                                               | kV           | Kilovolt ( $1 \times 10^3$ )        |
| L1           | Line 1                                                               | $\mu$ V      | Microvolt ( $1 \times 10^{-6}$ )    |
| L2           | Line2                                                                | A            | Amp                                 |
| L3           | Line 3                                                               | $\mu$ A      | Micro Amp ( $1 \times 10^{-6}$ )    |
| DC           | Direct Current                                                       | mS           | Milli Second ( $1 \times 10^{-3}$ ) |
| RAW          | Uncorrected measurement value, as indicated by the measuring device  | $\mu$ S      | Micro Second ( $1 \times 10^{-6}$ ) |
| RF           | Radio Frequency                                                      | $\mu$ S      | Micro Second ( $1 \times 10^{-6}$ ) |
| SLCE         | Signal Line Conducted Emissions                                      | m            | Meter                               |
| Meas dist    | Measurement distance                                                 | Spec dist    | Specification distance              |
| N/A or NA    | Not Applicable                                                       | SL           | Signal Line (or Telecom Line)       |
| P            | Power Line                                                           | L            | Live Line                           |
| N            | Neutral Line                                                         | R            | Return                              |
| S            | Supply                                                               | AC           | Alternating Current                 |

**End**