# FCC Test Report

| | | |
|---|---|---|
| **Equipment** | : | **11ac Dual Band Concurrent Wall-mount AP** |
| **Brand Name** | : | **EDIMAX** |
| **Model No.** | : | **EW-7479WAC, GAP-479WAC, WAP1200** |
| **FCC ID** | : | **NDD9574791415** |
| **Standard** | : | **47 CFR FCC Part 15.407** |
| **Operating Band** | : | **5150 MHz – 5250 MHz** |
| **FCC Classification** | : | **NII** |
| **Applicant**<br>**Manufacturer** | : | **EDIMAX TECHNOLOGY CO., LTD.**<br>No.3,Wu-Chuan 3rd Road,Wu-Ku Industrial Park,<br>New Taipei City, Taiwan |
| **Function** | : | ☐ **Outdoor AP;** ☒ **Indoor AP;** ☐ **Fixed P2P AP**<br>☐ **Portable Client** |

**The product sample received on Oct. 02, 2014 and completely tested on Nov. 05, 2014. We, SPORTON, would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.10-2009 and shown compliance with the applicable technical standards.**

**The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.**

**Reviewed by:**

**Vic Hsiao / Supervisor**

TAF
Testing Laboratory
1190

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# Summary of Test Result

| Conformance Test Specifications | | | |
|---|---|---|---|
| **Report Clause** | **Ref. Std. Clause** | **Description** | **Result** |
| 1.1.2 | 15.203 | Antenna Requirement | Complied |
| 3.1 | 15.207 | AC Power-line Conducted Emissions | Complied |
| 3.2 | 15.407(a) | Emission Bandwidth | Complied |
| 3.3 | 15.407(a) | RF Output Power (Maximum Conducted Output Power) | Complied |
| 3.4 | 15.407(a) | Peak Power Spectral Density | Complied |
| 3.5 | 15.407(b) | Transmitter Bandedge Emissions | Complied |
| 3.6 | 15.407(b) | Transmitter Unwanted Emissions | Complied |
| 3.7 | 15.407(g) | Frequency Stability | Complied |

# Revision History

| Report No. | Version | Description | Issued Date |
|---|---|---|---|
| FR411403AN | Rev. 01 | Initial issue of report | Jun. 18, 2014 |
| FR411403-04AN | Rev. 01 | 1. Update Standard version to 47 FR FCC Part 15.407.<br>2. Update RF Conducted | Oct. 06, 2014 |
| FR411403-06AN | Rev. 01 | 1. Change FCC ID.<br>2. Change model name.<br>3. Change Antenna number to two Antenna.<br>4. Change I/O port and button. | Nov. 29, 2014 |
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# 1 General Description

## 1.1 Information

### 1.1.1 RF General Information

| RF General Information | | | | | | |
|---|---|---|---|---|---|---|
| **Frequency Range (MHz)** | **IEEE Std. 802.11** | **Ch. Freq. (MHz)** | **Channel Number** | **Transmit Chains ($N_{TX}$)** | **RF Output Power (dBm)** | **Co-location** |
| 5150-5250 | a | 5180-5240 | 36-48 [4] | 1 | 21.35 | Yes |
| 5150-5250 | n (HT20)<br>ac (VHT20) | 5180-5240 | 36-48 [4] | 2 / 2 | 24.42 / 24.33 | Yes |
| 5150-5250 | n (HT40)<br>ac (VHT40) | 5190-5230 | 38-46 [2] | 2 / 2 | 24.91 / 24.90 | Yes |
| 5150-5250 | ac (VHT80) | 5210 | 42 [1] | 2 | 21.06 | Yes |

Note 1: RF output power specifies that Maximum Conducted Output Power.
Note 2: 802.11a/n uses a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM modulation.
Note 3: 802.11ac uses a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM, 256QAM modulation.
Note 4: Co-location, Co-location is generally defined as simultaneously transmitting (co-transmitting) antennas within 20 cm of each other. (i.e., EUT has simultaneously co-transmitting that operating 2.4GHz and 5GHz.)

### 1.1.2 Antenna Information

| Antenna Category | |
|---|---|
| ☐ | Integral antenna (antenna permanently attached) |
| | ☐ Temporary RF connector provided |
| | ☐ No temporary RF connector provided<br>Transmit chains bypass antenna and soldered temporary RF connector provided for connected measurement. In case of conducted measurements the transmitter shall be connected to the measuring equipment via a suitable attenuator and correct for all losses in the RF path. |
| ☒ | External antenna (dedicated antennas) |
| | ☒ Single power level with corresponding antenna(s). |
| | ☐ Multiple power level and corresponding antenna(s). |

| Antenna General Information | | | | |
|---|---|---|---|---|
| **Port No.** | **Ant. Cat.** | **Ant. Type** | **Model Name** | **Gain (dBi)** |
| 1 | External | Dipole | 98610PRSX002 | 2.58 |
| 2 | | | | 2.58 |

Remark:
1. 802.11a only include 1TX and Port1 for emission.
2. 802.11n/ac only include 2TX and CDD function.

### 1.1.3 Type of EUT

| Identify EUT | |
|---|---|
| EUT Serial Number | N/A |
| Presentation of Equipment | ☐ Production ; ☐ Pre-Production ; ☒ Prototype |

| Type of EUT | |
|---|---|
| ☒ | Stand-alone |
| ☐ | Combined (EUT where the radio part is fully integrated within another device)<br>Combined Equipment - Brand Name / Model No.: … |
| ☐ | Plug-in radio (EUT intended for a variety of host systems)<br>Host System - Brand Name / Model No.: … |
| ☐ | Other: |

### 1.1.4 Test Signal Duty Cycle

| Operated Mode for Worst Duty Cycle | |
|---|---|
| ☐ Operated normally mode for worst duty cycle | |
| ☒ Operated test mode for worst duty cycle | |
| **Test Signal Duty Cycle (x)** | **Power Duty Factor [dB] – (10 log 1/x)** |
| ☒ 100% - IEEE 802.11a | 0.00 |
| ☒ 100% - IEEE 802.11n (HT20) | 0.00 |
| ☒ 100% - IEEE 802.11n (HT40) | 0.00 |
| ☒ 100% - IEEE 802.11ac (VHT20) | 0.00 |
| ☒ 100% - IEEE 802.11ac (VHT40) | 0.00 |
| ☒ 100% - IEEE 802.11ac (VHT80) | 0.00 |

### 1.1.5 EUT Operational Condition

| | | | |
|---|---|---|---|
| **Supply Voltage** | ☒ AC mains | ☒ DC | ☐ System |
| **Type of DC Source** | ☐ Internal DC supply | ☒ External DC from PoE | ☒ External DC adapter |
| **Test Voltage** | ☒ Vnom (120 V) | ☒ Vmax (138 V) | ☒ Vmin (102 V) |
| **Test Climatic** | ☒ Tnom (20°C) | ☒ Tmax (50°C) | ☒ Tmin (-20°C) |

## 1.2 Accessories and Support Equipment

| Accessories | | | | |
|---|---|---|---|---|
| AC Adapter 1 | Brand Name | APD | Model Name | WA30B12 |
| | Power Rating | I/P: 100-240Vac 0.8A ; O/P: 12V⎓2.5A | | |
| | Power cord | 1.8m, non-shielded cable, w/o ferrite core | | |
| AC Adapter 2 | Brand Name | APD | Model Name | DA-48T12 |
| | Power Rating | I/P: 100-240Vac 1.2A ; O/P: 12V⎓4A | | |
| | Power Cord | AC: 1.4m, non-shielded cable, w/o ferrite core<br>DC: 1.5m, non-shielded cable, with one ferrite core | | |

Reminder: Regarding to more detail and other information, please refer to user manual.

| Support Equipment - AC Conduction | | | | |
|---|---|---|---|---|
| **No.** | **Equipment** | **Brand Name** | **Model Name** | **FCC ID** |
| 1 | PoE | Acelink | PI-1000PT | DoC |

| Support Equipment - RF Conducted | | | | |
|---|---|---|---|---|
| **No.** | **Equipment** | **Brand Name** | **Model Name** | **FCC ID** |
| 1 | Notebook | DELL | E5540 | DoC |

| Support Equipment - Radiated Emission | | | | |
|---|---|---|---|---|
| **No.** | **Equipment** | **Brand Name** | **Model Name** | **FCC ID** |
| 1 | PoE<br>(Remote) | Acelink | PI-1000PT | DoC |

## 1.3 Testing Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- 47 CFR FCC Part 15
- ANSI C63.10-2009
- FCC KDB 789033 D02 v01
- FCC KDB 644545 D03 v01
- FCC KDB 662911 v02r01
- FCC-14-30A1-UNII

## 1.4 Testing Location Information

| Testing Location | | | | | |
|---|---|---|---|---|---|
| ☒ | HWA YA | ADD : No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. | | | |
| | | TEL : 886-3-327-3456 | FAX : | 886-3-327-0973 | |

| Test Condition | Test Site No. | Test Engineer | Test Environment |
|---|---|---|---|
| AC Conduction | CO04-HY | Zeus | 25°C / 43% |
| RF Conducted | TH01-HY | Candy | 21.6°C / 61% |
| Radiated Emission | 03CH03-HY | Hunter | 25.9°C / 49% |

## 1.5 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)

| Measurement Uncertainty | | |
|---|---|---|
| Test Item | | Uncertainty |
| AC power-line conducted emissions | | ±2.3 dB |
| Emission bandwidth, 26dB bandwidth | | ±1.4 % |
| RF output power, conducted | | ±0.6 dB |
| Power density, conducted | | ±0.8 dB |
| Unwanted emissions, conducted | 9 – 150 kHz | ±0.4 dB |
| | 0.15 – 30 MHz | ±0.4 dB |
| | 30 – 1000 MHz | ±0.5 dB |
| | 1 – 18 GHz | ±0.7 dB |
| | 18 – 40 GHz | ±0.8 dB |
| | 40 – 200 GHz | N/A |
| All emissions, radiated | 9 – 150 kHz | ±2.5 dB |
| | 0.15 – 30 MHz | ±2.3 dB |
| | 30 – 1000 MHz | ±2.6 dB |
| | 1 – 18 GHz | ±3.6 dB |
| | 18 – 40 GHz | ±3.8 dB |
| | 40 – 200 GHz | N/A |
| Temperature | | ±0.8 °C |
| Humidity | | ±3 % |
| DC and low frequency voltages | | ±3 % |
| Time | | ±1.4 % |
| Duty Cycle | | ±1.4 % |

# 2 Test Configuration of EUT

## 2.1 The Worst Case Modulation Configuration

| Worst Modulation Used for Conformance Testing | | | |
|---|---|---|---|
| **Modulation Mode** | **Transmit Chains ($N_{TX}$)** | **Data Rate / MCS** | **Worst Data Rate / MCS** |
| 11a | 1 | 6-54Mbps | 6 Mbps |
| HT20 | 2 | MCS 0-15 | MCS 0 |
| HT40 | 2 | MCS 0-15 | MCS 0 |
| VHT20 | 2 | MCS 0-8 | MCS 0 |
| VHT40 | 2 | MCS 0-9 | MCS 0 |
| VHT80 | 2 | MCS 0-9 | MCS 0 |

## 2.2 The Worst Case Power Setting Parameter

| The Worst Case Power Setting Parameter (5150-5250MHz band) | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Test Software Version** | DOS | | | | | | |
| **Modulation Mode** | **$N_{TX}$** | **Test Frequency (MHz)** | | | | | |
| | | **NCB: 20MHz** | | | **NCB: 40MHz** | | **NCB: 80MHz** |
| | | **5180** | **5200** | **5240** | **5190** | **5230** | **5210** |
| 11a | 1 | 23 | 23 | 23 | - | - | - |
| HT20 | 2 | 21 | 22.5 | 22.5 | - | - | - |
| HT40 | 2 | - | - | - | 21 | 24 | - |
| VHT20 | 2 | 21.5 | 22.5 | 22.5 | - | - | - |
| VHT40 | 2 | - | - | - | 20 | 24 | - |
| VHT80 | 2 | - | - | - | - | - | 20.5 |

## 2.3 The Worst Case Measurement Configuration

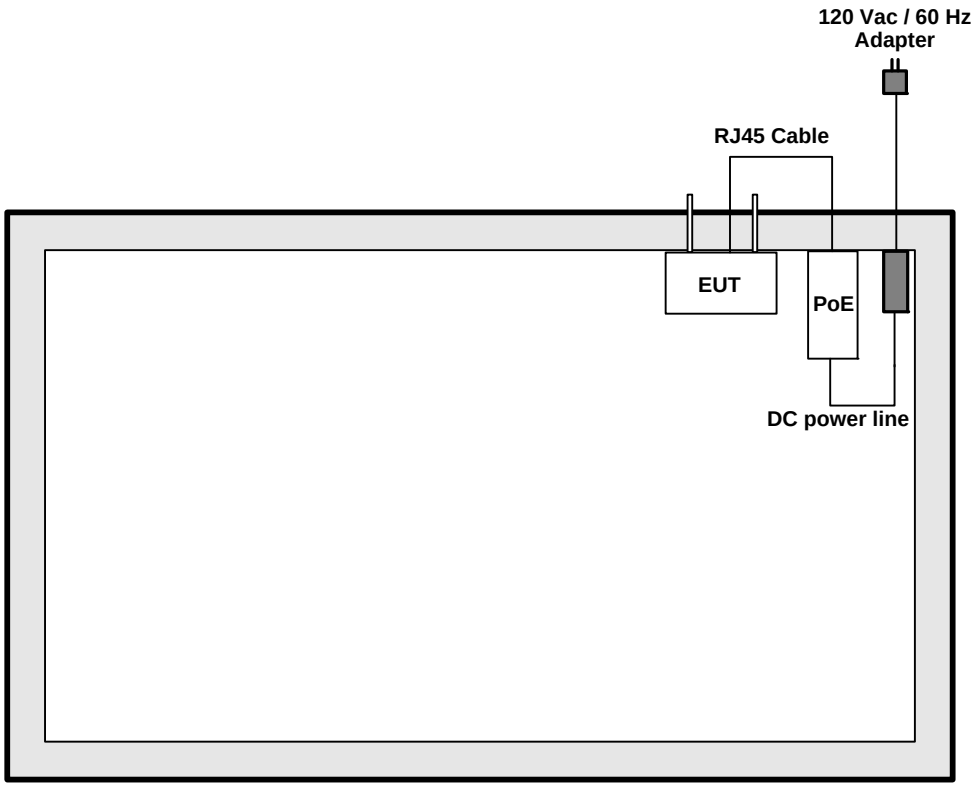
| The Worst Case Mode for Following Conformance Tests | |
|---|---|
| **Tests Item** | AC power-line conducted emissions |
| **Condition** | AC power-line conducted measurement for line and neutral<br>Test Voltage: 120Vac / 60Hz |
| **Operating Mode** | Operating Mode Description |
| 1 | EUT with adatper 1 (Model:WA30B12) |
| 2 | EUT with adatper 2 (Model: DA-48T12) |
| 3 | EUT with PoE |
| | Operating mode 3 was the worst case and it was recorded in this test report. |

| The Worst Case Mode for Following Conformance Tests | |
|---|---|
| **Tests Item** | RF Output Power, Peak Power Spectral Density, Emission Bandwidth,<br>Transmitter Conducted Unwanted Emissions,<br>Transmitter Conducted Bandedge Emissions |
| **Test Condition** | Conducted measurement at transmit chains |
| **Modulation Mode** | 11a, HT20, HT40, VHT20, VHT40, VHT80 |

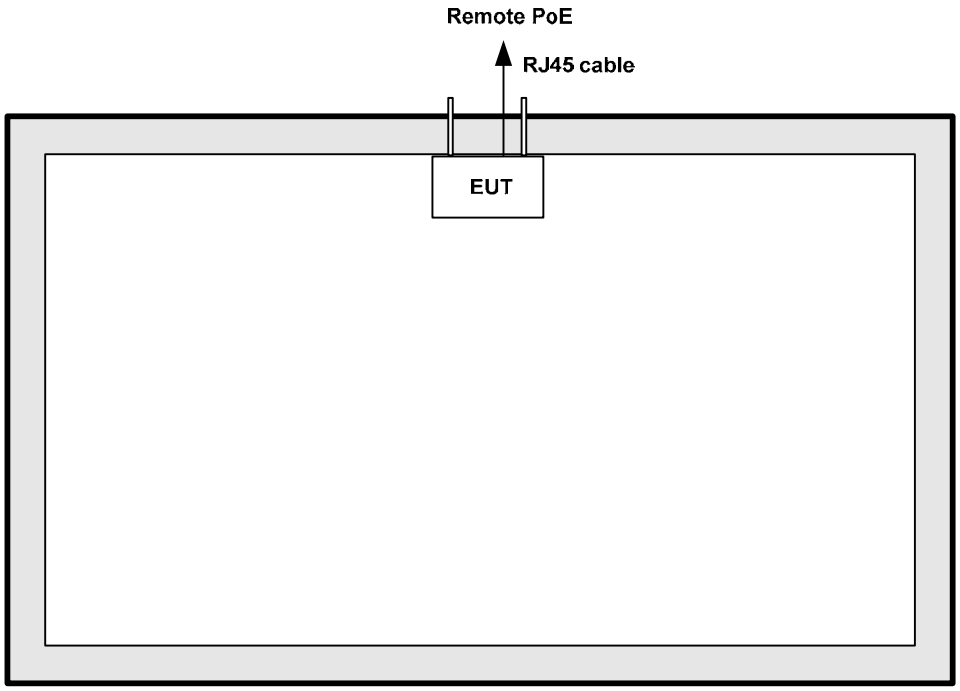
| The Worst Case Mode for Following Conformance Tests | | |
|---|---|---|
| **Tests Item** | Transmitter Radiated Unwanted Emissions<br>Transmitter Radiated Bandedge Emissions | |
| **Test Condition** | Radiated measurement<br>If EUT consist of multiple antenna assembly (multiple antenna are used in EUT regardless of spatial multiplexing MIMO configuration), the radiated test should be performed with highest antenna gain of each antenna type. | |
| **User Position** | ☐ EUT will be placed in fixed position. | |
| | ☒ EUT will be placed in mobile position and operating multiple positions. EUT shall be performed two orthogonal planes. The worst plane is Z. | |
| | ☐ EUT will be a hand-held or body-worn battery-powered devices and operating multiple positions. | |
| **Operating Mode < 1GHz** | Operating Mode Description | |
| **Operating Mode < 1GHz** | 1. EUT with adatper 1 (Model:WA30B12) | |
| | 2. EUT with adatper 2 (Model: DA-48T12) | |
| | 3. EUT with PoE | |
| | For operating mode 3 was the worst case and it was recorded in this test report. | |
| **Operating Mode > 1GHz** | 2. EUT with adatper 2 (Model: DA-48T12) | |
| **Modulation Mode** | 11a, HT20, HT40, VHT20, VHT40, VHT80 | |
| **Orthogonal Planes of EUT** | **X Plane** | **Z Plane** |
| |  |  |

## 2.4 Test Setup Diagram

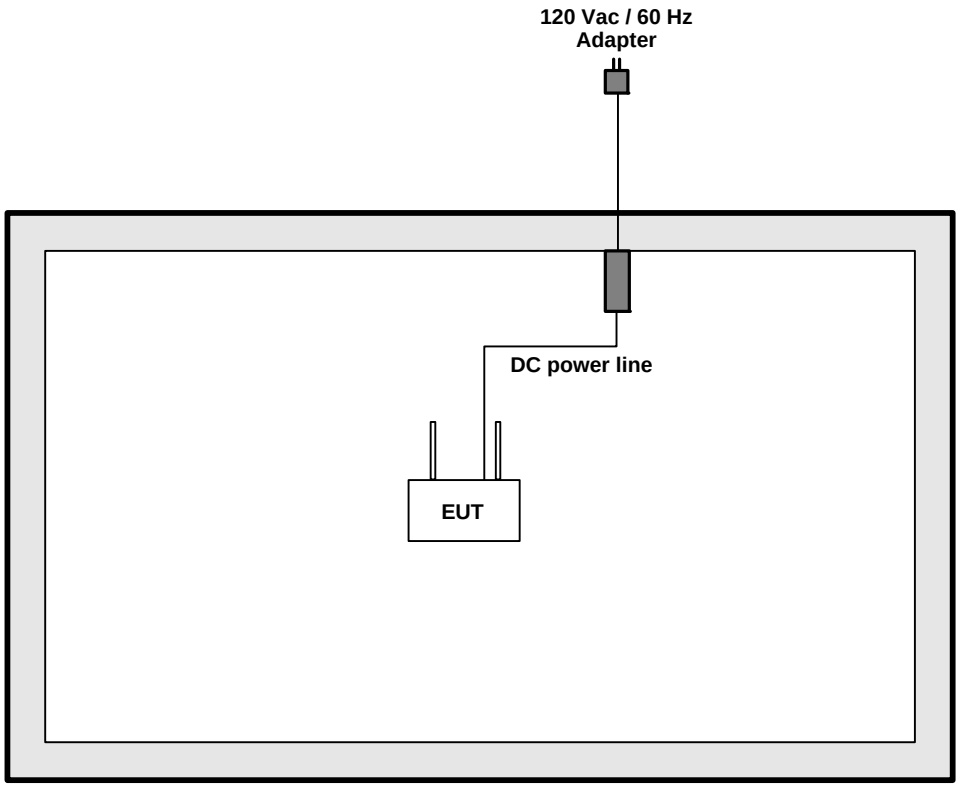
**Test Setup Diagram – AC Line Conducted Emission Test (Mode 3)**



**Test Setup Diagram - Radiated Emission mode 3 (Below 1GHz)**




**Test Setup Diagram - Radiated Emission mode 2 (Above 1GHz)**



# 3 Transmitter Test Result

## 3.1 AC Power-line Conducted Emissions

### 3.1.1 AC Power-line Conducted Emissions Limit

| AC Power-line Conducted Emissions Limit | | |
|---|---|---|
| **Frequency Emission (MHz)** | **Quasi-Peak** | **Average** |
| 0.15-0.5 | 66 - 56 * | 56 - 46 * |
| 0.5-5 | 56 | 46 |
| 5-30 | 60 | 50 |
| Note 1: * Decreases with the logarithm of the frequency. | | |

### 3.1.2 Measuring Instruments

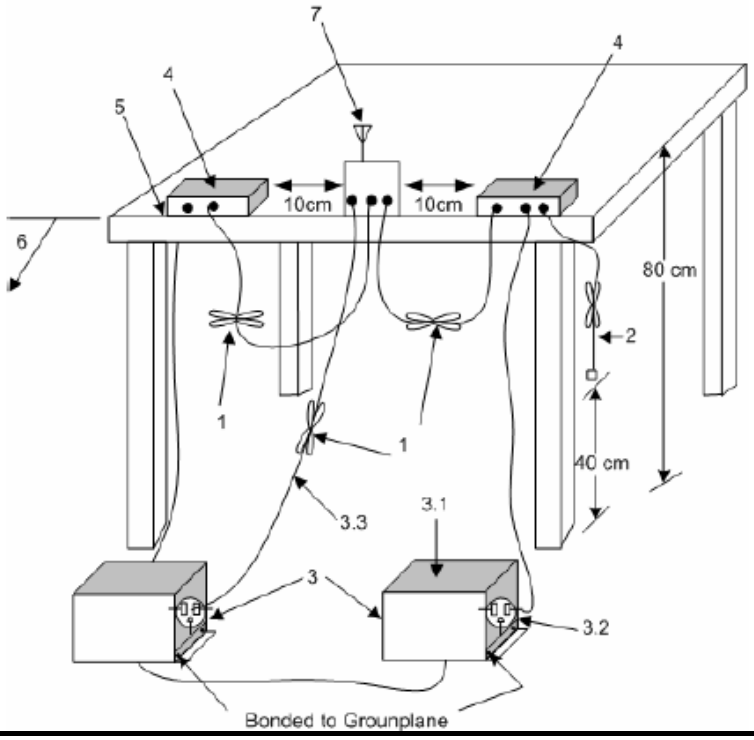
Refer a test equipment and calibration data table in this test report.

### 3.1.3 Test Procedures

| Test Method |
|---|
| ☒ Refer as ANSI C63.10-2009, clause 6.2 for AC power-line conducted emissions. |

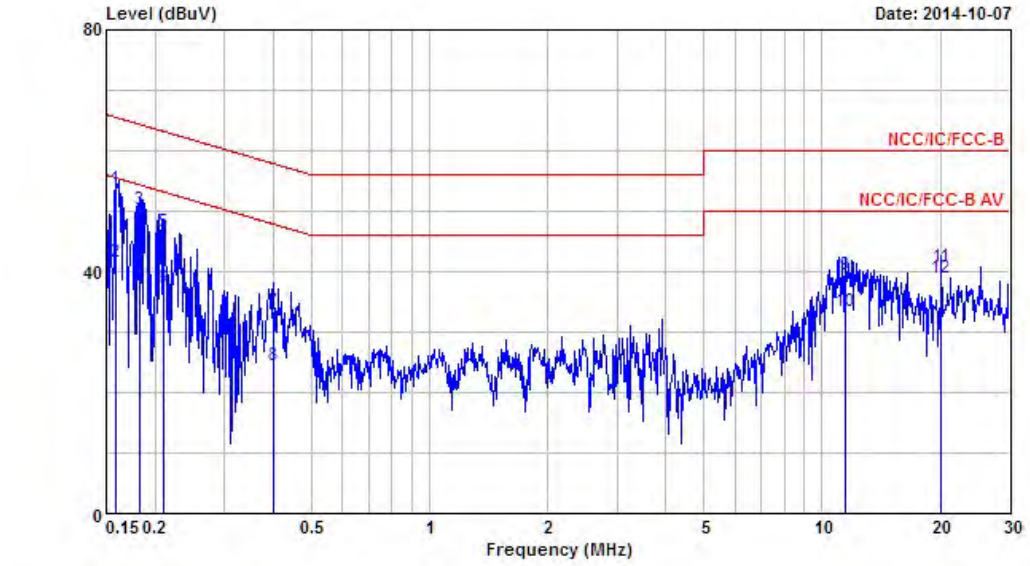
### 3.1.4 Test Setup

**AC Power-line Conducted Emissions**



### 3.1.5 Test Result of AC Power-line Conducted Emissions

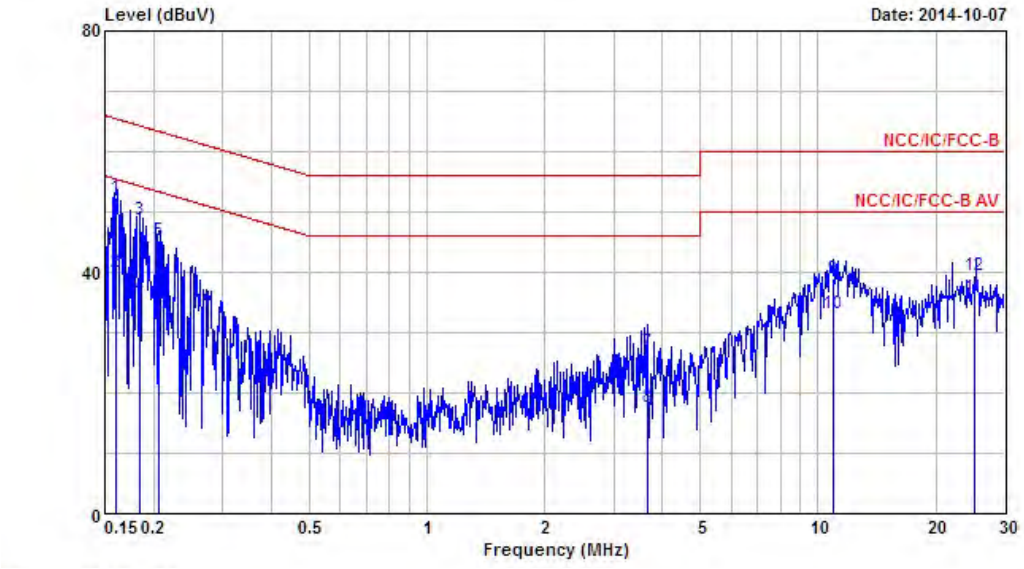
| AC Power-line Conducted Emissions Result | | | |
|---|---|---|---|
| **Operating Mode** | 3 | **Power Phase** | Neutral |
| **Operating Function** | EUT with PoE | | |




| | Freq | Level | Over Limit | Limit Line | Read Level | LISN Factor | Cable Loss | Remark |
|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV | dB | dBuV | dBuV | dB | dB | |
| 1 | @0.1590020 | 53.61 | -11.91 | 65.52 | 53.36 | 0.02 | 0.23 | QP |
| 2 | 0.1590020 | 41.68 | -13.84 | 55.52 | 41.43 | 0.02 | 0.23 | Average |
| 3 | 0.1824860 | 50.33 | -14.04 | 64.37 | 50.10 | 0.02 | 0.21 | QP |
| 4 | 0.1824860 | 39.52 | -14.85 | 54.37 | 39.29 | 0.02 | 0.21 | Average |
| 5 | 0.2094380 | 46.51 | -16.72 | 63.23 | 46.29 | 0.02 | 0.20 | QP |
| 6 | 0.2094380 | 37.32 | -15.91 | 53.23 | 37.10 | 0.02 | 0.20 | Average |
| 7 | 0.4018680 | 33.29 | -24.52 | 57.81 | 33.06 | 0.03 | 0.20 | QP |
| 8 | 0.4018680 | 24.58 | -23.23 | 47.81 | 24.35 | 0.03 | 0.20 | Average |
| 9 | 11.440 | 39.38 | -20.62 | 60.00 | 38.94 | 0.21 | 0.23 | QP |
| 10 | 11.440 | 33.31 | -16.69 | 50.00 | 32.87 | 0.21 | 0.23 | Average |
| 11 | 20.109 | 40.77 | -19.23 | 60.00 | 40.23 | 0.32 | 0.22 | QP |
| 12 | @ 20.109 | 39.05 | -10.95 | 50.00 | 38.51 | 0.32 | 0.22 | Average |

Note 1: “>20dB” means emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found emissions (No emissions were detected.)

| AC Power-line Conducted Emissions Result | | | |
|---|---|---|---|
| **Operating Mode** | 3 | **Power Phase** | Line |
| **Operating Function** | EUT with PoE | | |




| | Freq | Level | Over Limit | Limit Line | Read Level | LISN Factor | Cable Loss | Remark |
|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV | dB | dBuV | dBuV | dB | dB | |
| 1 | 0.1606960 | 52.46 | -12.97 | 65.43 | 52.20 | 0.03 | 0.23 | QP |
| 2 | 0.1606960 | 39.87 | -15.56 | 55.43 | 39.61 | 0.03 | 0.23 | Average |
| 3 | 0.1844300 | 48.74 | -15.54 | 64.28 | 48.50 | 0.03 | 0.21 | QP |
| 4 | 0.1844300 | 36.18 | -18.10 | 54.28 | 35.94 | 0.03 | 0.21 | Average |
| 5 | 0.2061360 | 45.35 | -18.01 | 63.36 | 45.12 | 0.03 | 0.20 | QP |
| 6 | 0.2061360 | 32.64 | -20.72 | 53.36 | 32.41 | 0.03 | 0.20 | Average |
| 7 | 3.660 | 26.71 | -29.29 | 56.00 | 26.48 | 0.10 | 0.13 | QP |
| 8 | 3.660 | 17.53 | -28.47 | 46.00 | 17.30 | 0.10 | 0.13 | Average |
| 9 | 10.900 | 39.04 | -20.96 | 60.00 | 38.62 | 0.20 | 0.22 | QP |
| 10 | 10.900 | 33.11 | -16.89 | 50.00 | 32.69 | 0.20 | 0.22 | Average |
| 11 | 25.031 | 35.88 | -14.12 | 50.00 | 34.80 | 0.38 | 0.70 | Average |
| 12 | 25.031 | 39.36 | -20.64 | 60.00 | 38.28 | 0.38 | 0.70 | QP |

Note 1: “>20dB” means emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found emissions (No emissions were detected.)

# 3.2 Emission Bandwidth

## 3.2.1 Emission Bandwidth Limit

| Emission Bandwidth Limit | |
|---|---|
| **UNII Devices** | |
| ☒ | For the 5.15-5.25 GHz band, N/A |
| ☐ | For the 5.25-5.35 GHz band, the maximum conducted output power shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz. |
| ☐ | For the 5.47-5.725 GHz band, the maximum conducted output power shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz. |
| ☐ | For the 5.725-5.85 GHz band, 6 dB emission bandwidth ≥ 500kHz. |

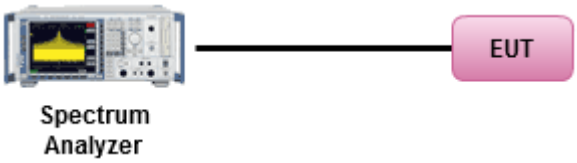
## 3.2.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

## 3.2.3 Test Procedures

| Test Method | | | |
|---|---|---|---|
| ☒ | For the emission bandwidth shall be measured using one of the options below: | | |
| | ☒ | Refer as FCC KDB 789033 D02 v01, clause C for EBW and clause D for OBW measurement. | |
| | ☐ | Refer as ANSI C63.10, clause 6.9.1 for occupied bandwidth testing. | |
| | ☐ | Refer as IC RSS-Gen, clause 4.6 for bandwidth testing. | |
| ☒ | For conducted measurement. | | |
| | ☒ | The EUT supports single transmit chain and measurements performed on this transmit chain.The chain is port 1. | |
| | ☐ | The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case. | |
| | ☒ | The EUT supports multiple transmit chains using options given below: | |
| | | ☐ | Option 1: Multiple transmit chains measurements need to be performed on one of the active transmit chains (antenna outputs). All measurement had be performed on transmit chains 1. |
| | | ☒ | Option 2: Multiple transmit chains measurements need to be performed on each transmit chains individually (antenna outputs). All measurement had be performed on all transmit chains. |

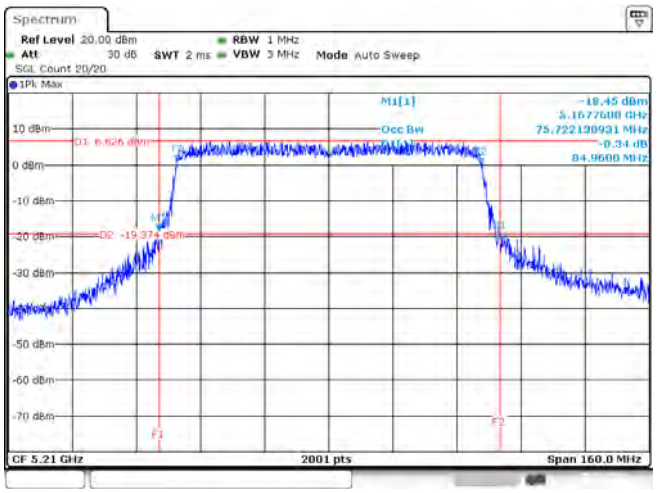
### 3.2.4 Test Setup

| Emission Bandwidth |
|---|
|   |

### 3.2.5 Test Result of Emission Bandwidth

| Test Date: Nov. 05, 2014 | | | UNII Emission Bandwidth Result (5150-5250MHz band) | | | |
|---|---|---|---|---|---|---|
| Condition | | | Emission Bandwidth (MHz) | | | |
| Modulation Mode | $N_{TX}$ | Freq. (MHz) | 99% Bandwidth | | 26dB Bandwidth | |
| | | | Chain Port 1 | Chain Port 2 | Chain Port 1 | Chain Port 2 |
| 11a | 1 | 5180 | 16.84 | - | 21.90 | - |
| 11a | 1 | 5200 | 16.59 | - | 22.72 | - |
| 11a | 1 | 5240 | 16.99 | - | 23.20 | - |
| HT20 | 2 | 5180 | 17.74 | 17.86 | 21.60 | 21.07 |
| HT20 | 2 | 5200 | 17.76 | 17.74 | 21.12 | 21.02 |
| HT20 | 2 | 5240 | 17.71 | 17.89 | 20.57 | 20.80 |
| HT40 | 2 | 5190 | 36.66 | 36.58 | 45.92 | 43.72 |
| HT40 | 2 | 5230 | 37.06 | 37.02 | 61.56 | 62.60 |
| VHT20 | 2 | 5180 | 17.69 | 17.84 | 20.87 | 20.77 |
| VHT20 | 2 | 5200 | 17.59 | 17.89 | 20.15 | 20.82 |
| VHT20 | 2 | 5240 | 17.74 | 17.96 | 20.27 | 21.17 |
| VHT40 | 2 | 5190 | 36.58 | 36.66 | 43.76 | 44.40 |
| VHT40 | 2 | 5230 | 36.98 | 37.02 | 60.40 | 62.08 |
| VHT80 | 2 | 5210 | 75.72 | 75.72 | 84.96 | 84.64 |
| Result | | | Complied | | | |

**5150-5250MHz - Worst Emission 26Bandwidth Plots**



# 3.3 RF Output Power

## 3.3.1 RF Output Power Limit

| Maximum Conducted Output Power Limit | |
|---|---|
| **UNII Devices** | |
| ☒ | For the 5.15-5.25 GHz band: |
| ☐ | Outdoor AP: the maximum conducted output power ($P_{Out}$) shall not exceed the lesser of 1 W. If $G_{TX}$ > 6 dBi, then $P_{Out}$ = 30 – ($G_{TX}$ – 6). e.i.r.p. at any elevation angle above 30 degrees ≤ 125mW [21dBm] |
| ☒ | Indoor AP: the maximum conducted output power ($P_{Out}$) shall not exceed the lesser of 1 W. If $G_{TX}$ > 6 dBi, then $P_{Out}$ = 30 – ($G_{TX}$ – 6) |
| ☐ | Point-to-point AP: the maximum conducted output power ($P_{Out}$) shall not exceed the lesser of 1 W If $G_{TX}$ > 23 dBi, then $P_{Out}$ = 30 – ($G_{TX}$ – 23). |
| ☐ | Mobile or Portable Client: the maximum conducted output power ($P_{Out}$) shall not exceed the lesser of 250 mW. If $G_{TX}$ > 6 dBi, then $P_{Out}$ = 24 – ($G_{TX}$ – 6). |
| ☐ | For the 5.25-5.35 GHz band, the maximum conducted output power ($P_{Out}$) shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz. If $G_{TX}$ > 6 dBi, then $P_{Out}$ = 24 – ($G_{TX}$ – 6). |
| ☐ | For the 5.47-5.725 GHz band, the maximum conducted output power ($P_{Out}$) shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in MHz. If $G_{TX}$ > 6 dBi, then $P_{Out}$ = 24 – ($G_{TX}$ – 6). |
| ☐ | For the 5.725-5.85 GHz band: |
| ☐ | Point-to-multipoint systems (P2M): the maximum conducted output power ($P_{Out}$) shall not exceed the lesser of 1 W. If $G_{TX}$ > 6 dBi, then $P_{Out}$ = 30 – ($G_{TX}$ – 6). |
| ☐ | Point-to-point systems (P2P): the maximum conducted output power ($P_{Out}$) shall not exceed the lesser of 1 W. |
| **$P_{Out}$** = maximum conducted output power in dBm,<br>**$G_{TX}$** = the maximum transmitting antenna directional gain in dBi. | |

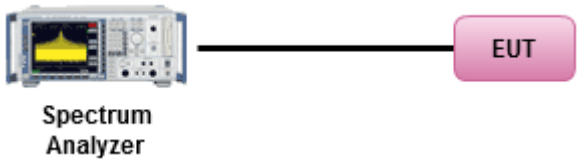
## 3.3.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

### 3.3.3 Test Procedures

| Test Method | |
|---|---|
| ☒ | Maximum Conducted Output Power |
| | [duty cycle ≥ 98% or external video / power trigger] |
| ☒ | Refer as FCC KDB 789033 D02 v01, clause E Method SA-1 (spectral trace averaging). |
| ☐ | Refer as FCC KDB 789033 D02 v01, clause E Method SA-1 Alt. (RMS detection with slow sweep speed) |
| | duty cycle < 98% and average over on/off periods with duty factor |
| ☐ | Refer as FCC KDB 789033 D02 v01, clause E Method SA-2 (spectral trace averaging). |
| ☐ | Refer as FCC KDB 789033 D02 v01, clause E Method SA-2 Alt. (RMS detection with slow sweep speed) |
| | Wideband RF power meter and average over on/off periods with duty factor |
| ☐ | Refer as FCC KDB 789033 D02 v01, clause E Method PM (using an RF average power meter). |
| ☒ | For conducted measurement. |
| ☒ | The EUT supports single transmit chain and measurements performed on this transmit chain. The chain is port 1. |
| ☐ | The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case. |
| ☒ | The EUT supports multiple transmit chains using options given below:<br>Refer as FCC KDB 662911, In-band power measurements. Using the measure-and-sum approach, measured all transmit ports individually. Sum the power (in linear power units e.g., mW) of all ports for each individual sample and save them. |
| ☒ | If multiple transmit chains, EIRP calculation could be following as methods:<br>$P_{total} = P_1 + P_2 + \ldots + P_n$<br>(calculated in linear unit [mW] and transfer to log unit [dBm])<br>$EIRP_{total} = P_{total} + DG$ |

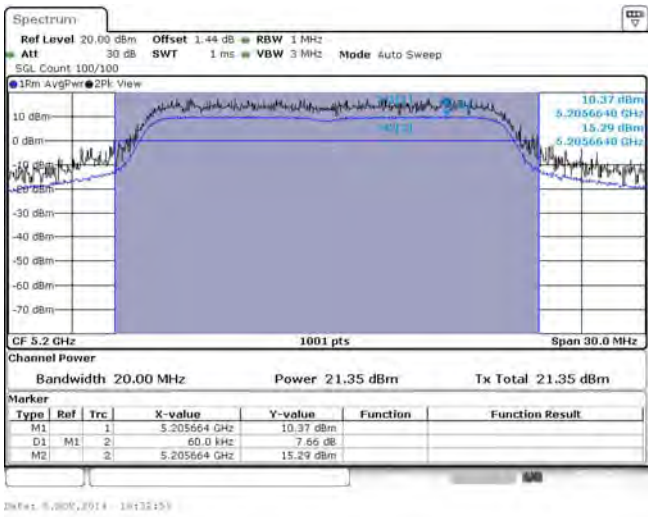
### 3.3.4 Test Setup

| RF Output Power (Spectrum Analyzer) |
|---|
|  |

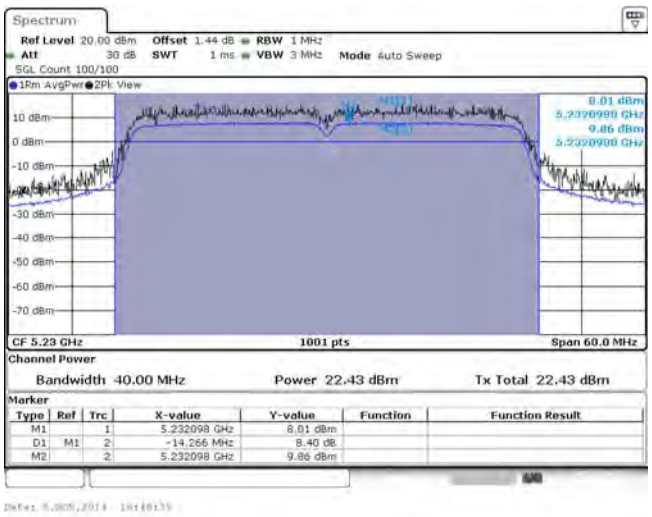
## 3.3.5 Test Result of Maximum Conducted Output Power

| Test Date: Nov. 05, 2014 | | | Maximum Conducted Output Power (5150-5250MHz band) | | | | |
|---|---|---|---|---|---|---|---|
| Modulation Mode | $N_{TX}$ | Freq. (MHz) | Output Power (dBm) | | | Antenna Gain (dBi) | Power Limit |
| | | | Chain Port 1 | Chain Port 2 | Sum Chain | | |
| 11a | 1 | 5180 | 21.30 | - | 21.30 | 2.58 | 30.00 |
| 11a | 1 | 5200 | 21.35 | - | 21.35 | 2.58 | 30.00 |
| 11a | 1 | 5240 | 21.07 | - | 21.07 | 2.58 | 30.00 |
| HT20 | 2 | 5180 | 19.35 | 20.02 | 22.71 | 2.58 | 30.00 |
| HT20 | 2 | 5200 | 20.91 | 21.86 | 24.42 | 2.58 | 30.00 |
| HT20 | 2 | 5240 | 20.65 | 21.67 | 24.20 | 2.58 | 30.00 |
| HT40 | 2 | 5190 | 18.58 | 19.17 | 21.90 | 2.58 | 30.00 |
| HT40 | 2 | 5230 | 21.34 | 22.40 | 24.91 | 2.58 | 30.00 |
| VHT20 | 2 | 5180 | 19.82 | 20.49 | 23.18 | 2.58 | 30.00 |
| VHT20 | 2 | 5200 | 20.84 | 21.75 | 24.33 | 2.58 | 30.00 |
| VHT20 | 2 | 5240 | 20.57 | 21.68 | 24.17 | 2.58 | 30.00 |
| VHT40 | 2 | 5190 | 17.47 | 18.12 | 20.82 | 2.58 | 30.00 |
| VHT40 | 2 | 5230 | 21.27 | 22.43 | 24.90 | 2.58 | 30.00 |
| VHT80 | 2 | 5210 | 17.63 | 18.44 | 21.06 | 2.58 | 30.00 |
| Result | | | Complied | | | | |

**5150-5250MHz - Worst RF Output Power Plots (port 1)**




**5150-5250MHz - Worst RF Output Power Plots (port 2)**



# 3.4 Peak Power Spectral Density

## 3.4.1 Peak Power Spectral Density Limit

| Peak Power Spectral Density Limit | |
|---|---|
| **UNII Devices** | |
| ☒ | For the 5.15-5.25 GHz band: |
| ☐ | Outdoor AP: the peak power spectral density (PPSD) shall not exceed the lesser of 17dBm/MHz. If $G_{TX}$ > 6 dBi, then $P_{Out}$ = 17 – ($G_{TX}$ – 6). |
| ☒ | Indoor AP: the peak power spectral density (PPSD) shall not exceed the lesser of 17dBm/MHz. If $G_{TX}$ > 6 dBi, then $P_{Out}$ = 17 – ($G_{TX}$ – 6). |
| ☐ | Point-to-point AP: the peak power spectral density (PPSD) shall not exceed the lesser of 17dBm/MHz. If $G_{TX}$ > 23 dBi, then $P_{Out}$ = 17 – ($G_{TX}$ – 23). |
| ☐ | Mobile or Portable Client: the peak power spectral density (PPSD) ≤ 11 dBm/MHz. If $G_{TX}$ > 6 dBi, then PPSD= 11 – ($G_{TX}$ – 6).. |
| ☐ | For the 5.25-5.35 GHz band, the peak power spectral density (PPSD) ≤ 11 dBm/MHz. If $G_{TX}$ > 6 dBi, then PPSD= 11 – ($G_{TX}$ – 6). |
| ☐ | For the 5.47-5.725 GHz band, the peak power spectral density (PPSD) ≤ 11 dBm/MHz. If $G_{TX}$ > 6 dBi, then PPSD= 11 – ($G_{TX}$ – 6). |
| ☐ | For the 5.725-5.85 GHz band: |
| ☐ | Point-to-multipoint systems (P2M): the peak power spectral density (PPSD) ≤ 30 dBm/500kHz. If $G_{TX}$ > 6 dBi, then PPSD= 30 – ($G_{TX}$ – 6). |
| ☐ | Point-to-point systems (P2P): the peak power spectral density (PPSD) ≤ 30 dBm/500kHz. |
| **PPSD** = peak power spectral density that he same method as used to determine the conducted output power shall be used to determine the power spectral density. And power spectral density in dBm/MHz<br>**$G_{TX}$** = the maximum transmitting antenna directional gain in dBi. | |

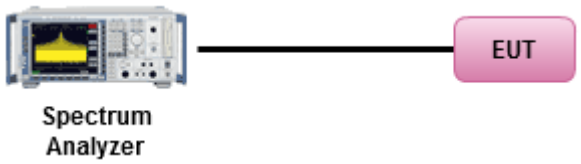
## 3.4.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

### 3.4.3 Test Procedures

| Test Method | | |
|---|---|---|
| ☒ | Peak power spectral density procedures that the same method as used to determine the conducted output power shall be used to determine the peak power spectral density and use the peak search function on the spectrum analyzer to find the peak of the spectrum. For the peak power spectral density shall be measured using below options: | |
| | ☒ | Refer as FCC KDB 789033 D02 v01, F)5) power spectral density can be measured using resolution bandwidths < 1 MHz provided that the results are integrated over 1 MHz bandwidth |
| | [duty cycle ≥ 98% or external video / power trigger] | |
| | ☒ | Refer as FCC KDB 789033 D02 v01, clause E Method SA-1 (spectral trace averaging). |
| | ☐ | Refer as FCC KDB 789033 D02 v01, clause E Method SA-1 Alt.<br>(RMS detection with slow sweep speed) |
| | duty cycle < 98% and average over on/off periods with duty factor | |
| | ☐ | Refer as FCC KDB 789033 D02 v01, clause E Method SA-2 (spectral trace averaging). |
| | ☐ | Refer as FCC KDB 789033 D02 v01, clause E Method SA-2 Alt.<br>(RMS detection with slow sweep speed) |
| ☒ | For conducted measurement. | |
| | ☒ | The EUT supports single transmit chain and measurements performed on this transmit chain. The chain is port 1. |
| | ☐ | The EUT supports diversity transmitting and the results on transmit chain port 1 is the worst case. |
| | ☒ | The EUT supports multiple transmit chains using options given below: |
| | | ☒ Option 1: Measure and sum the spectra across the outputs. Refer as FCC KDB 662911, In-band power measurements. Using the measure-and-sum approach, measured all transmit ports individually. Sum the power (in linear power units e.g., mW) of all ports for each individual sample and save them. |
| | | ☐ Option 2: Measure and add 10 log(N) dB, where N is the number of transmit chains. Refer as FCC KDB 662911, In-band power spectral density (PSD). Performed at each transmit chains and each transmit chains shall be compared with the limit have been reduced with 10 log(N). Or each transmit chains shall be add 10 log(N) to compared with the limit. |
| | ☒ | If multiple transmit chains, EIRP PPSD calculation could be following as methods:<br>$PPSD_{total} = PPSD_1 + PPSD_2 + \ldots + PPSD_n$<br>(calculated in linear unit [mW] and transfer to log unit [dBm/MHz])<br>$EIRP_{total} = PPSD_{total} + DG$ |
| | ☐ | Each individually PPSD plots refer as test report clause 3.3.5 with each individually PPSD plots. |

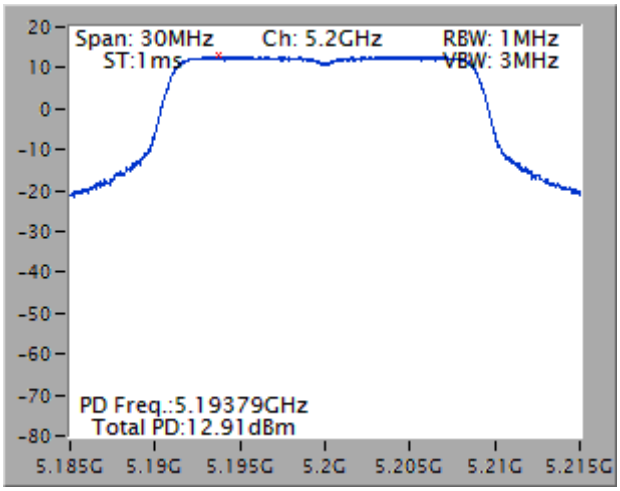
### 3.4.4 Test Setup

| Power Spectral Density |
|---|
|  |

## 3.4.5 Test Result of Peak Power Spectral Density

| Test Date: Nov. 05, 2014 | | | Peak Power Spectral Density Result (5150-5250MHz band) | | |
|---|---|---|---|---|---|
| Modulation Mode | $N_{TX}$ | Freq. (MHz) | Peak Power Spectral Density (dBm/MHz) | PSD Limit | Antenna Gain (dBi) |
| 11a | 1 | 5180 | 10.20 | 17.00 | 2.58 |
| 11a | 1 | 5200 | 10.37 | 17.00 | 2.58 |
| 11a | 1 | 5240 | 10.21 | 17.00 | 2.58 |
| HT20 | 2 | 5180 | 11.08 | 17.00 | 5.59 |
| HT20 | 2 | 5200 | 12.91 | 17.00 | 5.59 |
| HT20 | 2 | 5240 | 12.56 | 17.00 | 5.59 |
| HT40 | 2 | 5190 | 7.39 | 17.00 | 5.59 |
| HT40 | 2 | 5230 | 10.25 | 17.00 | 5.59 |
| VHT20 | 2 | 5180 | 11.63 | 17.00 | 5.59 |
| VHT20 | 2 | 5200 | 12.78 | 17.00 | 5.59 |
| VHT20 | 2 | 5240 | 12.66 | 17.00 | 5.59 |
| VHT40 | 2 | 5190 | 6.31 | 17.00 | 5.59 |
| VHT40 | 2 | 5230 | 10.28 | 17.00 | 5.59 |
| VHT80 | 2 | 5210 | 3.24 | 17.00 | 5.59 |
| Result | | | Complied | | |

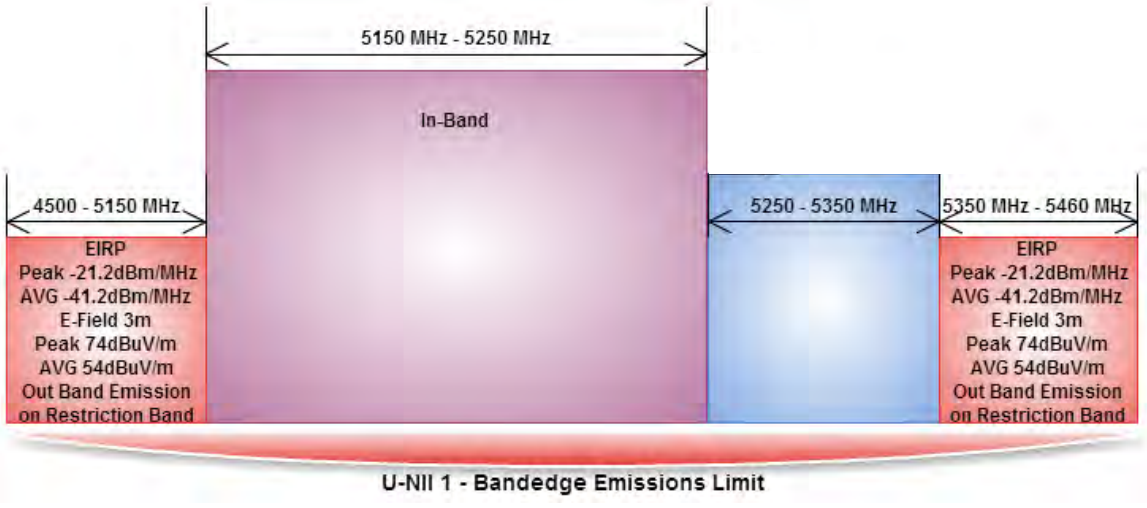
**5150-5250MHz - Worst Power Spectral Density Plots**



# 3.5 Transmitter Bandedge Emissions

## 3.5.1 Transmitter Radiated Bandedge Emissions Limit

**Transmitter Radiated Bandedge Emissions Limit: 5.15-5.25 GHz band**




Refer as FCC KDB 789033 D02 v01, G)2)c)(i) specifying that if a non-restricted-band out-of-band emission satisfies both the average and peak limits of 15.209, it is not required to satisfy the -27 dBm or -17 dBm peak emission limit. Reason for change: to ensure that emission requirements in the non-restricted bands are not more stringent than those in the restricted bands.

## 3.5.2 Measuring Instruments

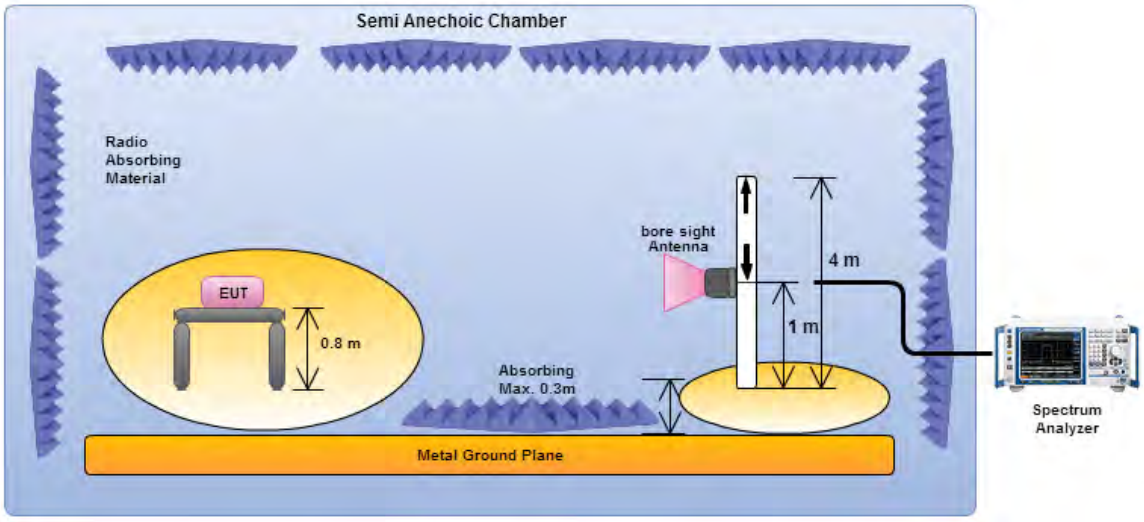
Refer a test equipment and calibration data table in this test report.

### 3.5.3 Test Procedures

| Test Method | |
|---|---|
| ☒ | The average emission levels shall be measured in [duty cycle ≥ 98 or duty factor]. |
| ☒ | Refer as ANSI C63.10, clause 6.9.2.2 bandedge testing shall be performed at the lowest frequency channel and highest frequency channel within the allowed operating band. |
| ☐ | If EUT operate in adjacent contiguous bands, bandedge testing performed at the lowest frequency channel at lower-band and highest frequency channel at higher-band. Transmitter in-band emissions will consist of adjacent contiguous bands (e.g., IEEE 802.11ac VHT160 The lowest frequency channel at lower-band and highest frequency channel at higher-band in-band emissions will consist of two adjacent contiguous bands.) |
| | ☐ Operating in 5.15-5.25 GHz band (lower-band) and 5.25-5.35 GHz band (higher-band). |
| | ☐ Operating in 5.47-5.725 GHz band (lower-band) and 5.725-5.85 GHz band (higher-band). |
| ☐ | If EUT operate in individual non-contiguous bands, bandedge testing performed at the lowest frequency channel and highest frequency channel within lower-band and higher-band. (e.g., (e.g., IEEE 802.11ac VHT160) |
| | ☐ Operating in 5.25-5.35 GHz band (lower-band) and 5.47-5.725 GHz band (higher-band). |
| | ☐ Operating in 5.15-5.25 GHz band (lower-band) and 5.725-5.85 GHz band (higher-band). |
| ☒ | For the transmitter unwanted emissions shall be measured using following options below: |
| | ☒ Refer as FCC KDB 789033 D02 v01, clause H)2) for unwanted emissions into non-restricted bands. |
| | ☒ Refer as FCC KDB 789033 D02 v01, clause H)1) for unwanted emissions into restricted bands. |
| | ☐ Refer as FCC KDB 789033 D02 v01, H)6) Method AD (Trace Averaging). |
| | ☐ Refer as FCC KDB 789033 D02 v01, H)6) Method VB (Reduced VBW). |
| | ☒ Refer as ANSI C63.10, clause 4.2.3.2.3 (Reduced VBW). VBW ≥ 1/T, where T is pulse time. |
| | ☐ Refer as ANSI C63.10, clause 4.2.3.2.4 average value of pulsed emissions. |
| | ☒ Refer as FCC KDB 789033 D02 v01, clause H)5) measurement procedure peak limit. |
| | ☐ Refer as ANSI C63.10, clause 4.2.3.2.2 measurement procedure peak limit. |
| ☒ | For the transmitter bandedge emissions shall be measured using following options below: |
| | ☐ Refer as FCC KDB 789033 D02 v01, clause H)3)d) for narrower resolution bandwidth (100kHz) using the band power and summing the spectral levels (i.e., 1 MHz). |
| | ☒ Refer as ANSI C63.10, clause 6.9.2 for band-edge testing. |
| | ☐ Refer as ANSI C63.10, clause 6.9.3 for marker-delta method for band-edge measurements. |
| ☒ | For radiated measurement, refer as ANSI C63.10, clause 6.6. Test distance is 3m. |
| ☒ | Measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements). Measurements in the bandedge are typically made at a closer distance 3m, because the instrumentation noise floor is typically close to the radiated emission limit. |

### 3.5.4 Test Setup

**Transmitter Radiated Bandedge Emissions**




Electric field tests shall be performed in transmitter bandedge emissions using a calibrated horn antenna.

## 3.5.5 Transmitter Radiated Bandedge Emissions (with Antenna)

| U-NII 5150-5250MHz Transmitter Radiated Bandedge (with Antenna) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Modulation Mode | $N_{TX}$ | Freq. (MHz) | Measure Distance (m) | Freq. (MHz) PK | Level (dBuV/m) PK | Limit (dBuV/m) PK | Freq. (MHz) AV | Level (dBuV/m) AV | Limit (dBuV/m) AV | Pol. |
| 11a | 1 | 5180 | 3 | 5148.60 | 69.11 | 74 | 5149.90 | 52.86 | 54 | V |
| 11a | 1 | 5240 | 3 | 5377.80 | 61.05 | 74 | 5392.20 | 47.45 | 54 | V |
| HT20 | 2 | 5180 | 3 | 5149.80 | 65.93 | 74 | 5149.80 | 51.96 | 54 | V |
| HT20 | 2 | 5240 | 3 | 5398.80 | 61.75 | 74 | 5397.60 | 47.86 | 54 | V |
| HT40 | 2 | 5190 | 3 | 5149.50 | 67.92 | 74 | 5148.62 | 52.49 | 54 | V |
| HT40 | 2 | 5230 | 3 | 5356.80 | 60.77 | 74 | 5394.60 | 47.98 | 54 | V |
| VHT20 | 2 | 5180 | 3 | 5149.90 | 67.33 | 74 | 5149.90 | 53.00 | 54 | V |
| VHT20 | 2 | 5240 | 3 | 5377.80 | 60.66 | 74 | 5394.00 | 48.08 | 54 | V |
| VHT40 | 2 | 5190 | 3 | 5147.74 | 64.57 | 74 | 5149.72 | 52.34 | 54 | V |
| VHT40 | 2 | 5230 | 3 | 5389.20 | 61.52 | 74 | 5395.20 | 48.03 | 54 | V |
| VHT80 | 2 | 5210 | 3 | 5149.20 | 65.81 | 74 | 5149.80 | 52.97 | 54 | V |
| VHT80 | 2 | 5210 | 3 | 5375.40 | 60.45 | 74 | 5391.60 | 47.75 | 54 | V |
| Note 1: Measurement worst emissions of receive antenna polarization. | | | | | | | | | | |

# 3.6 Transmitter Unwanted Emissions

## 3.6.1 Transmitter Radiated Unwanted Emissions Limit

| Unwanted emissions below 1 GHz and restricted band emissions above 1GHz limit | | | |
|---|---|---|---|
| **Frequency Range (MHz)** | **Field Strength (uV/m)** | **Field Strength (dBuV/m)** | **Measure Distance (m)** |
| 0.009~0.490 | 2400/F(kHz) | 48.5 - 13.8 | 300 |
| 0.490~1.705 | 24000/F(kHz) | 33.8 - 23 | 30 |
| 1.705~30.0 | 30 | 29 | 30 |
| 30~88 | 100 | 40 | 3 |
| 88~216 | 150 | 43.5 | 3 |
| 216~960 | 200 | 46 | 3 |
| Above 960 | 500 | 54 | 3 |

Note 1: Test distance for frequencies at or above 30 MHz, measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).

Note 2: Test distance for frequencies at below 30 MHz, measurements may be performed at a distance closer than the EUT limit distance; however, an attempt should be made to avoid making measurements in the near field. When performing measurements below 30 MHz at a closer distance than the limit distance, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two or more distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). The test report shall specify the extrapolation method used to determine compliance of the EUT.

| Un-restricted band emissions above 1GHz Limit | |
|---|---|
| **Operating Band** | **Limit** |
| 5.15 - 5.25 GHz | e.i.r.p. -27 dBm [68.2 dBuV/m@3m] |

Note 1: Measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).

## 3.6.2 Measuring Instruments

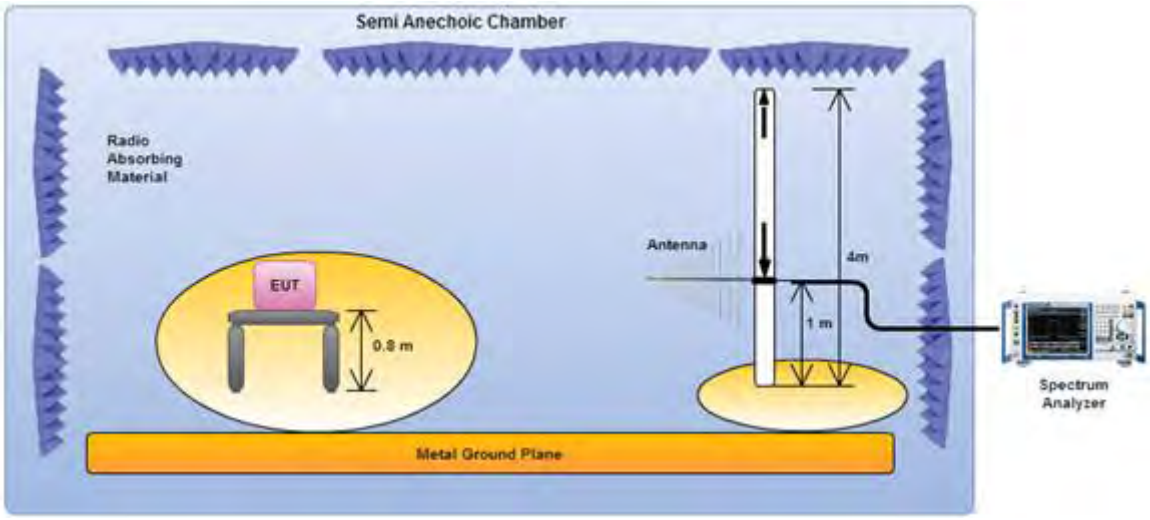
Refer a test equipment and calibration data table in this test report.

### 3.6.3 Test Procedures

| Test Method | | | |
|---|---|---|---|
| ☒ | Measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. Measurements shall not be performed at a distance greater than 30 m for frequencies above 30 MHz, unless it can be further demonstrated that measurements at a distance of 30 m or less are impractical. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements). | | |
| ☒ | The average emission levels shall be measured in [duty cycle ≥ 98 or duty factor]. | | |
| ☒ | For the transmitter unwanted emissions shall be measured using following options below: | | |
| | ☒ | Refer as FCC KDB 789033 D02 v01, clause G)2) for unwanted emissions into non-restricted bands. | |
| | ☒ | Refer as FCC KDB 789033 D02 v01, clause G)1) for unwanted emissions into restricted bands. | |
| | | ☐ | Refer as FCC KDB 789033 D02 v01, G)6) Method AD (Trace Averaging). |
| | | ☐ | Refer as FCC KDB 789033 D02 v01, G)6) Method VB (Reduced VBW). |
| | | ☒ | Refer as ANSI C63.10, clause 4.2.3.2.3 (Reduced VBW). VBW ≥ 1/T, where T is pulse time. |
| | | ☐ | Refer as ANSI C63.10, clause 4.2.3.2.4 average value of pulsed emissions. |
| | | ☒ | Refer as FCC KDB 789033 D02 v01, clause G)5) measurement procedure peak limit. |
| | | ☐ | Refer as ANSI C63.10, clause 4.2.3.2.2 measurement procedure peak limit. |
| ☒ | For radiated measurement. | | |
| | ☒ | Refer as ANSI C63.10, clause 6.4 for radiated emissions below 30 MHz and test distance is 3m. | |
| | ☒ | Refer as ANSI C63.10, clause 6.5 for radiated emissions 30 MHz to 1 GHz and test distance is 3m. | |
| | ☒ | Refer as ANSI C63.10, clause 6.6 for radiated emissions above 1GHz.<br>For 1 GHz to 5 GHz, test distance is 3m; For 5 GHz to 40 GHz, test distance is 3m. | |
| ☒ | The any unwanted emissions level shall not exceed the fundamental emission level. | | |
| ☒ | All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported. | | |

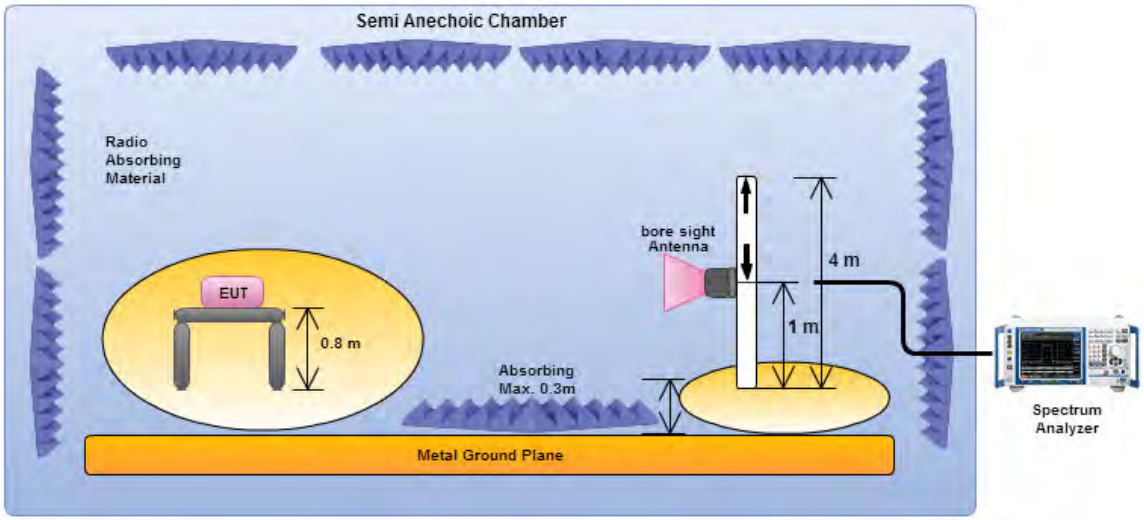
### 3.6.4 Test Setup

**Transmitter Radiated Unwanted Emissions Below 1GHz**




Magnetic field tests shall be performed in the frequency range of 9 kHz to 30 MHz using a calibrated loop antenna. Electric field tests shall be performed in the frequency range of 30 MHz to 1000 MHz using a calibrated bi-log antenna.

**Transmitter Radiated Unwanted Emissions Above 1GHz**



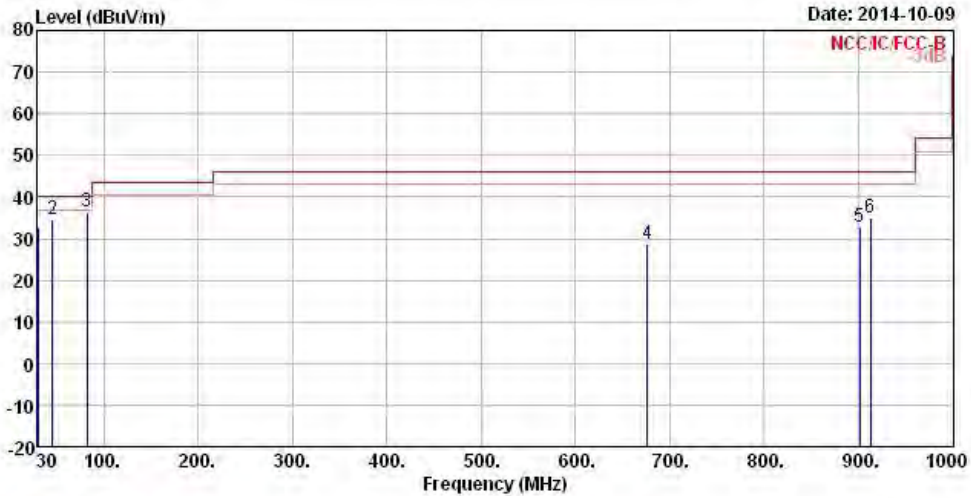

Electric field tests shall be performed in the frequency range of 1 GHz to 10th harmonic of highest fundamental frequency or 40 GHz using a calibrated horn antenna.

### 3.6.5 Transmitter Radiated Unwanted Emissions-with Antenna (Below 30MHz)

All amplitude of spurious emissions that are attenuated by more than 20 dB below the permissible value has no need to be reported.

### 3.6.6 Transmitter Radiated Unwanted Emissions (Below 1GHz)

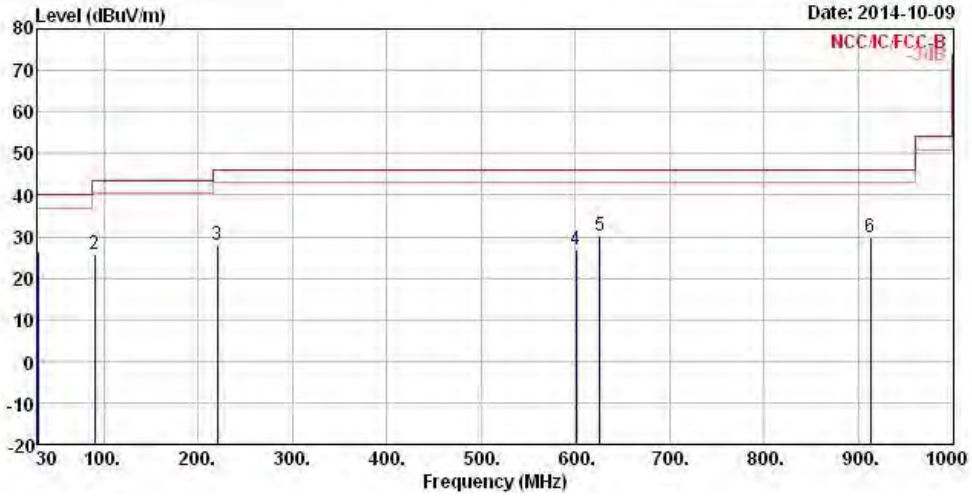
| Transmitter Radiated Unwanted Emissions (Below 1GHz) | | | |
|---|---|---|---|
| **Operating Mode** | 3 | **Polarization** | V |
| **Operating Function** | EUT with PoE | | |




| | Freq | Level | Over Limit | Limit Line | Read Level | Antenna Factor | Cable Loss | Preamp Factor | Remark | A/Pos | T/Pos |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | dB | | cm | deg |
| 1 | 30.00 | 32.59 | -7.41 | 40.00 | 40.31 | 18.85 | 0.82 | 27.39 | Peak | --- | --- |
| 2 | 45.52 | 34.44 | -5.56 | 40.00 | 50.75 | 9.96 | 1.09 | 27.36 | Peak | --- | --- |
| 3 | 82.38 | 36.59 | -3.41 | 40.00 | 54.94 | 7.56 | 1.47 | 27.38 | Peak | --- | --- |
| 4 | 676.02 | 28.80 | -17.20 | 46.00 | 33.44 | 18.68 | 4.46 | 27.78 | Peak | --- | --- |
| 5 | 901.06 | 32.72 | -13.28 | 46.00 | 34.29 | 20.53 | 5.19 | 27.29 | Peak | --- | --- |
| 6 | 912.70 | 35.14 | -10.86 | 46.00 | 36.62 | 20.60 | 5.23 | 27.31 | Peak | --- | --- |

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical).
Note 4: No level of unwanted emissions exceeds the level of the fundamental emission.

| Transmitter Radiated Unwanted Emissions (Below 1GHz) | | | |
|---|---|---|---|
| **Operating Mode** | 3 | **Polarization** | H |
| **Operating Function** | EUT with PoE | | |

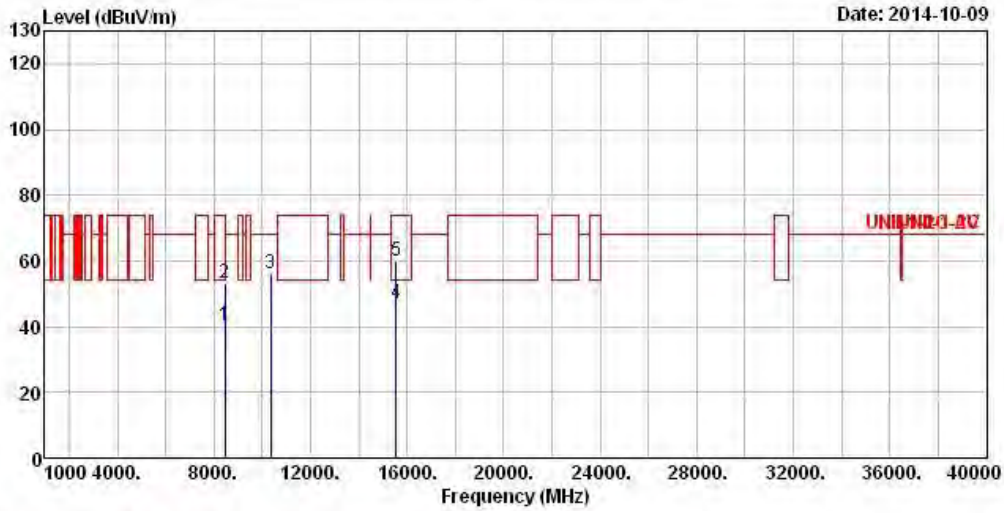



| | Freq | Level | Over Limit | Limit Line | Read Level | Antenna Factor | Cable Loss | Preamp Factor | Remark | A/Pos | T/Pos |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | dB | | cm | deg |
| 1 | 30.00 | 26.54 | -13.46 | 40.00 | 34.26 | 18.85 | 0.82 | 27.39 | Peak | --- | --- |
| 2 | 90.14 | 25.59 | -17.91 | 43.50 | 42.25 | 8.99 | 1.54 | 27.19 | Peak | --- | --- |
| 3 | 220.12 | 28.04 | -17.96 | 46.00 | 43.06 | 9.58 | 2.44 | 27.04 | Peak | --- | --- |
| 4 | 600.36 | 26.99 | -19.01 | 46.00 | 32.14 | 18.46 | 4.15 | 27.76 | Peak | --- | --- |
| 5 | 625.58 | 30.26 | -15.74 | 46.00 | 35.11 | 18.67 | 4.25 | 27.77 | Peak | --- | --- |
| 6 | 912.70 | 29.91 | -16.09 | 46.00 | 31.39 | 20.60 | 5.23 | 27.31 | Peak | --- | --- |

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical).
Note 4: No level of unwanted emissions exceeds the level of the fundamental emission.

### 3.6.7 Transmitter Radiated Unwanted Emissions (Above 1GHz) for 5150-5250MHz

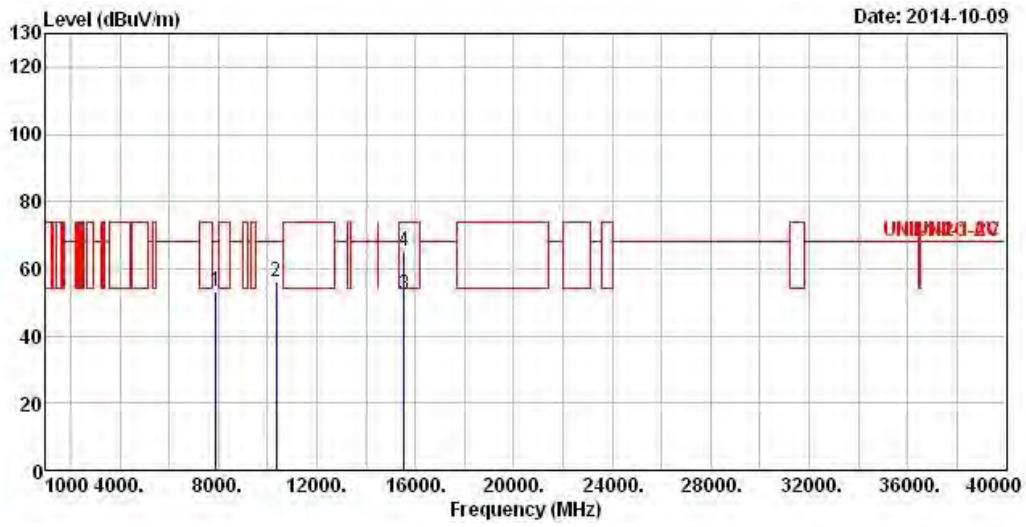
| Transmitter Radiated Unwanted Emissions (Above 1GHz) | | | |
|---|---|---|---|
| **Modulation Mode** | 11a | **Test Freq. (MHz)** | 5180 |
| **$N_{TX}$** | 1 | **Polarization** | V |




| | Freq | Level | Over Limit | Limit Line | Read Level | Antenna Factor | Cable Loss | Preamp Factor | Remark | A/Pos | T/Pos |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | dB | | cm | deg |
| 1 | 8456.00 | 40.49 | -13.51 | 54.00 | 27.35 | 38.03 | 8.03 | 32.92 | Average | --- | --- |
| 2 | 8456.00 | 53.17 | -20.83 | 74.00 | 40.03 | 38.03 | 8.03 | 32.92 | Peak | --- | --- |
| 3 | 10360.00 | 56.04 | -12.16 | 68.20 | 40.93 | 39.00 | 8.92 | 32.81 | Peak | --- | --- |
| 4 | 15540.00 | 47.21 | -6.79 | 54.00 | 30.21 | 37.64 | 11.59 | 32.23 | Average | --- | --- |
| 5 | 15540.00 | 59.99 | -14.01 | 74.00 | 42.99 | 37.64 | 11.59 | 32.23 | Peak | --- | --- |

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
Note 5: For un-restricted bands emission satisfies both the average and peak limits of 15.209, it is not required to satisfy the -27 dBm peak emission limit of 15.407.
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

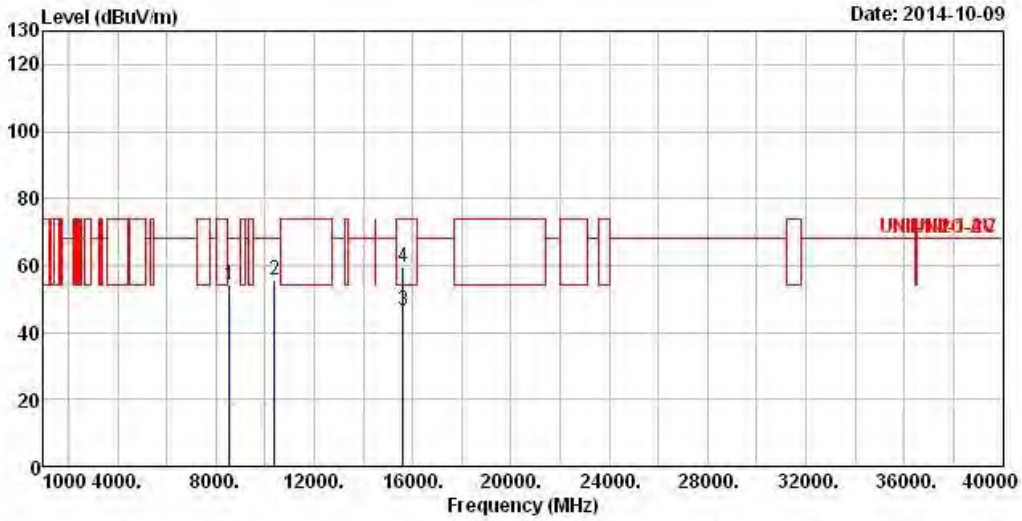
| Transmitter Radiated Unwanted Emissions (Above 1GHz) | | | |
|---|---|---|---|
| **Modulation Mode** | 11a | **Test Freq. (MHz)** | 5180 |
| **$N_{TX}$** | 1 | **Polarization** | H |




| | Freq | Level | Over Limit | Limit Line | Read Level | Antenna Factor | Cable Loss | Preamp Factor | Remark | A/Pos | T/Pos |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | dB | | cm | deg |
| 1 | 7904.00 | 53.05 | -15.15 | 68.20 | 40.77 | 37.00 | 8.14 | 32.86 | Peak | --- | --- |
| 2 | 10360.00 | 56.23 | -11.97 | 68.20 | 41.12 | 39.00 | 8.92 | 32.81 | Peak | --- | --- |
| 3 | 15540.00 | 52.12 | -1.88 | 54.00 | 35.12 | 37.64 | 11.59 | 32.23 | Average | --- | --- |
| 4 | 15540.00 | 65.33 | -8.67 | 74.00 | 48.33 | 37.64 | 11.59 | 32.23 | Peak | --- | --- |

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
Note 5: For un-restricted bands emission satisfies both the average and peak limits of 15.209, it is not required to satisfy the -27 dBm peak emission limit of 15.407.
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

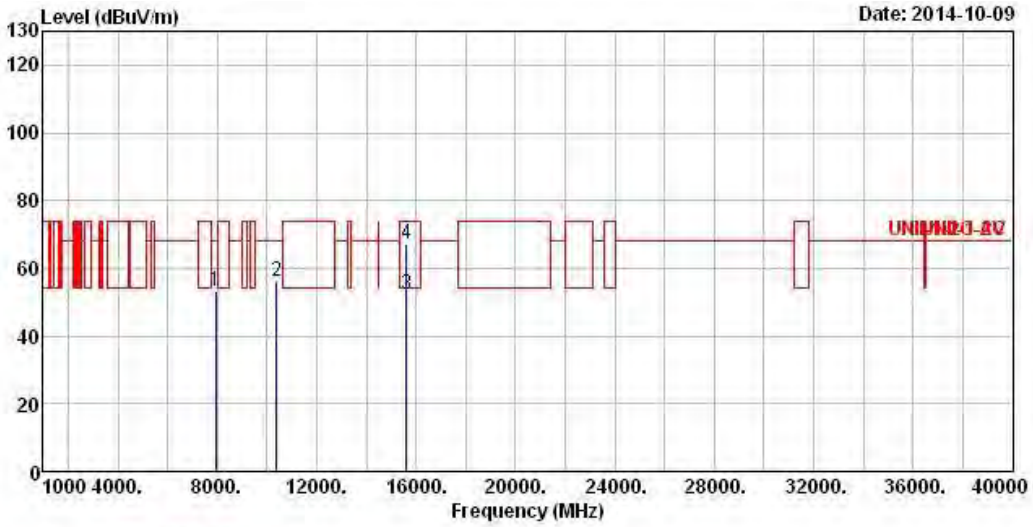
| Transmitter Radiated Unwanted Emissions (Above 1GHz) | | | |
|---|---|---|---|
| **Modulation Mode** | 11a | **Test Freq. (MHz)** | 5200 |
| **$N_{TX}$** | 1 | **Polarization** | V |




| | Freq | Level | Over Limit | Limit Line | Read Level | Antenna Factor | Cable Loss | Preamp Factor | Remark | A/Pos | T/Pos |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | dB | | cm | deg |
| 1 | 8544.00 | 54.30 | -13.90 | 68.20 | 41.12 | 38.12 | 7.99 | 32.93 | Peak | --- | --- |
| 2 | 10400.00 | 55.58 | -12.62 | 68.20 | 40.41 | 39.00 | 8.94 | 32.77 | Peak | --- | --- |
| 3 | 15600.00 | 46.75 | -7.25 | 54.00 | 29.89 | 37.53 | 11.59 | 32.26 | Average | --- | --- |
| 4 | 15600.00 | 59.37 | -14.63 | 74.00 | 42.51 | 37.53 | 11.59 | 32.26 | Peak | --- | --- |

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
Note 5: For un-restricted bands emission satisfies both the average and peak limits of 15.209, it is not required to satisfy the -27 dBm peak emission limit of 15.407.
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

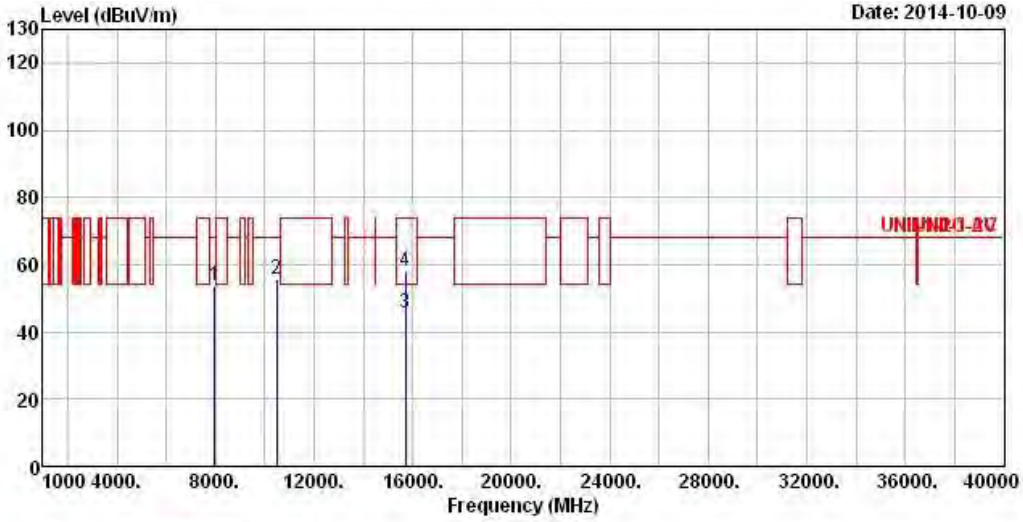
| Transmitter Radiated Unwanted Emissions (Above 1GHz) | | | |
|---|---|---|---|
| **Modulation Mode** | 11a | **Test Freq. (MHz)** | 5200 |
| **$N_{TX}$** | 1 | **Polarization** | H |




| | Freq | Level | Over Limit | Limit Line | Read Level | Antenna Factor | Cable Loss | Preamp Factor | Remark | A/Pos | T/Pos |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | dB | | cm | deg |
| 1 | 7926.00 | 53.02 | -15.18 | 68.20 | 40.65 | 37.02 | 8.21 | 32.86 | Peak | --- | --- |
| 2 | 10400.00 | 55.96 | -12.24 | 68.20 | 40.79 | 39.00 | 8.94 | 32.77 | Peak | --- | --- |
| 3 | 15600.00 | 52.22 | -1.78 | 54.00 | 35.36 | 37.53 | 11.59 | 32.26 | Average | --- | --- |
| 4 | 15600.00 | 67.04 | -6.96 | 74.00 | 50.18 | 37.53 | 11.59 | 32.26 | Peak | --- | --- |

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
Note 5: For un-restricted bands emission satisfies both the average and peak limits of 15.209, it is not required to satisfy the -27 dBm peak emission limit of 15.407.
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

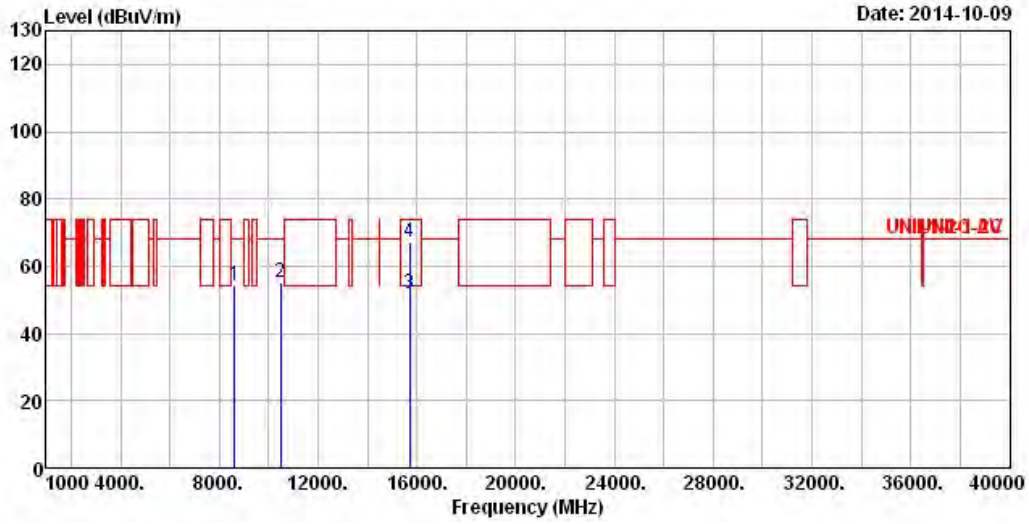
| Transmitter Radiated Unwanted Emissions (Above 1GHz) | | | |
|---|---|---|---|
| **Modulation Mode** | 11a | **Test Freq. (MHz)** | 5240 |
| **$N_{TX}$** | 1 | **Polarization** | V |




| | Freq | Level | Over Limit | Limit Line | Read Level | Antenna Factor | Cable Loss | Preamp Factor | Remark | A/Pos | T/Pos |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | dB | | cm | deg |
| 1 | 7968.00 | 53.76 | -14.44 | 68.20 | 41.28 | 37.07 | 8.28 | 32.87 | Peak | --- | --- |
| 2 | 10480.00 | 55.69 | -12.51 | 68.20 | 40.40 | 39.00 | 8.99 | 32.70 | Peak | --- | --- |
| 3 | 15720.00 | 45.56 | -8.44 | 54.00 | 28.93 | 37.34 | 11.59 | 32.30 | Average | --- | --- |
| 4 | 15720.00 | 57.98 | -16.02 | 74.00 | 41.35 | 37.34 | 11.59 | 32.30 | Peak | --- | --- |

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
Note 5: For un-restricted bands emission satisfies both the average and peak limits of 15.209, it is not required to satisfy the -27 dBm peak emission limit of 15.407.
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

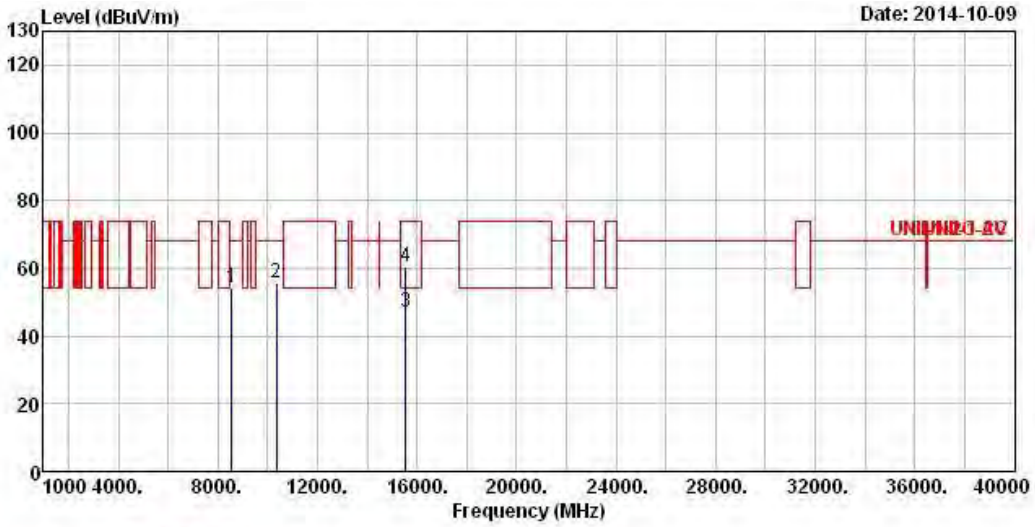
| Transmitter Radiated Unwanted Emissions (Above 1GHz) | | | |
|---|---|---|---|
| **Modulation Mode** | 11a | **Test Freq. (MHz)** | 5240 |
| **$N_{TX}$** | 1 | **Polarization** | H |




| | Freq | Level | Over Limit | Limit Line | Read Level | Antenna Factor | Cable Loss | Preamp Factor | Remark | A/Pos | T/Pos |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | dB | | cm | deg |
| 1 | 8610.00 | 54.18 | -14.02 | 68.20 | 41.02 | 38.15 | 7.95 | 32.94 | Peak | --- | --- |
| 2 | 10480.00 | 55.30 | -12.90 | 68.20 | 40.01 | 39.00 | 8.99 | 32.70 | Peak | --- | --- |
| 3 | 15720.00 | 51.93 | -2.07 | 54.00 | 35.30 | 37.34 | 11.59 | 32.30 | Average | 0 | 0 |
| 4 | 15720.00 | 66.98 | -7.02 | 74.00 | 50.35 | 37.34 | 11.59 | 32.30 | Peak | --- | --- |

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
Note 5: For un-restricted bands emission satisfies both the average and peak limits of 15.209, it is not required to satisfy the -27 dBm peak emission limit of 15.407.
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

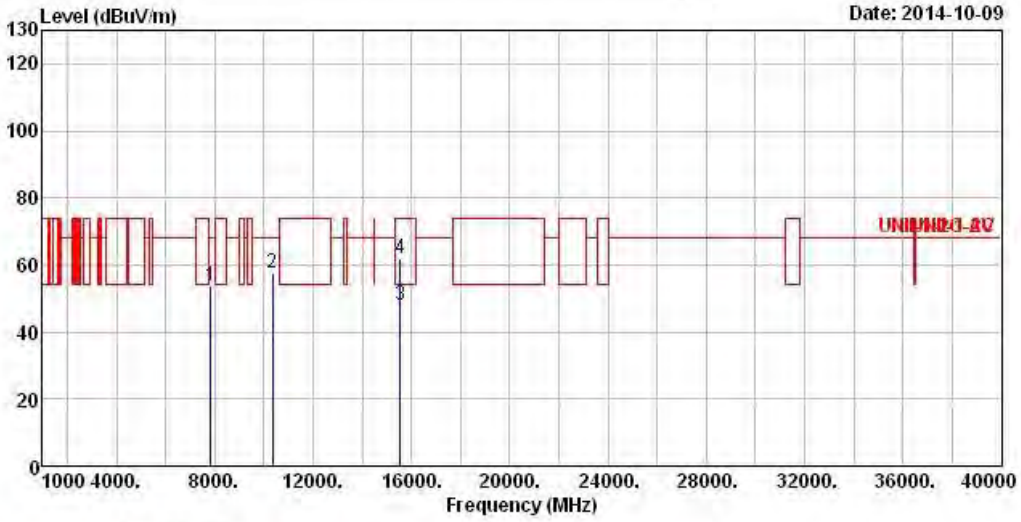
| Transmitter Radiated Unwanted Emissions (Above 1GHz) | | | |
|---|---|---|---|
| **Modulation Mode** | HT20 | **Test Freq. (MHz)** | 5180 |
| **$N_{TX}$** | 2 | **Polarization** | V |




| | Freq | Level | Over Limit | Limit Line | Read Level | Antenna Factor | Cable Loss | Preamp Factor | Remark | A/Pos | T/Pos |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | dB | | cm | deg |
| 1 | 8562.00 | 54.39 | -13.81 | 68.20 | 41.22 | 38.13 | 7.97 | 32.93 | Peak | --- | --- |
| 2 | 10360.00 | 55.67 | -12.53 | 68.20 | 40.56 | 39.00 | 8.92 | 32.81 | Peak | --- | --- |
| 3 | 15540.00 | 47.00 | -7.00 | 54.00 | 30.00 | 37.64 | 11.59 | 32.23 | Average | --- | --- |
| 4 | 15540.00 | 60.54 | -13.46 | 74.00 | 43.54 | 37.64 | 11.59 | 32.23 | Peak | --- | --- |

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
Note 5: For un-restricted bands emission satisfies both the average and peak limits of 15.209, it is not required to satisfy the -27 dBm peak emission limit of 15.407.
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

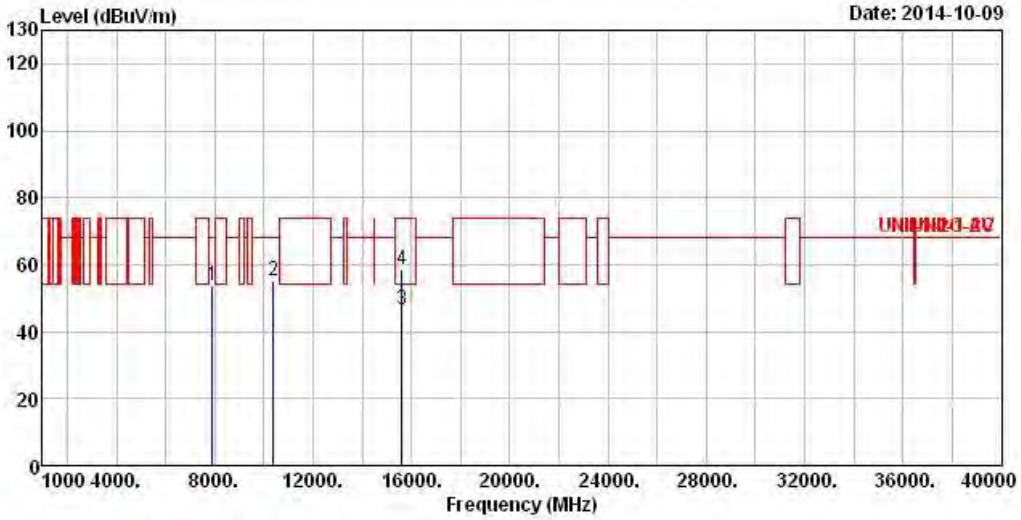
| Transmitter Radiated Unwanted Emissions (Above 1GHz) | | | |
|---|---|---|---|
| **Modulation Mode** | HT20 | **Test Freq. (MHz)** | 5180 |
| **$N_{TX}$** | 2 | **Polarization** | H |




| | Freq | Level | Over Limit | Limit Line | Read Level | Antenna Factor | Cable Loss | Preamp Factor | Remark | A/Pos | T/Pos |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | dB | | cm | deg |
| 1 | 7836.00 | 53.61 | -14.59 | 68.20 | 41.52 | 36.93 | 8.00 | 32.84 | Peak | --- | --- |
| 2 | 10360.00 | 57.49 | -10.71 | 68.20 | 42.38 | 39.00 | 8.92 | 32.81 | Peak | --- | --- |
| 3 | 15540.00 | 48.11 | -5.89 | 54.00 | 31.11 | 37.64 | 11.59 | 32.23 | Average | --- | --- |
| 4 | 15540.00 | 61.75 | -12.25 | 74.00 | 44.75 | 37.64 | 11.59 | 32.23 | Peak | --- | --- |

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
Note 5: For un-restricted bands emission satisfies both the average and peak limits of 15.209, it is not required to satisfy the -27 dBm peak emission limit of 15.407.
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

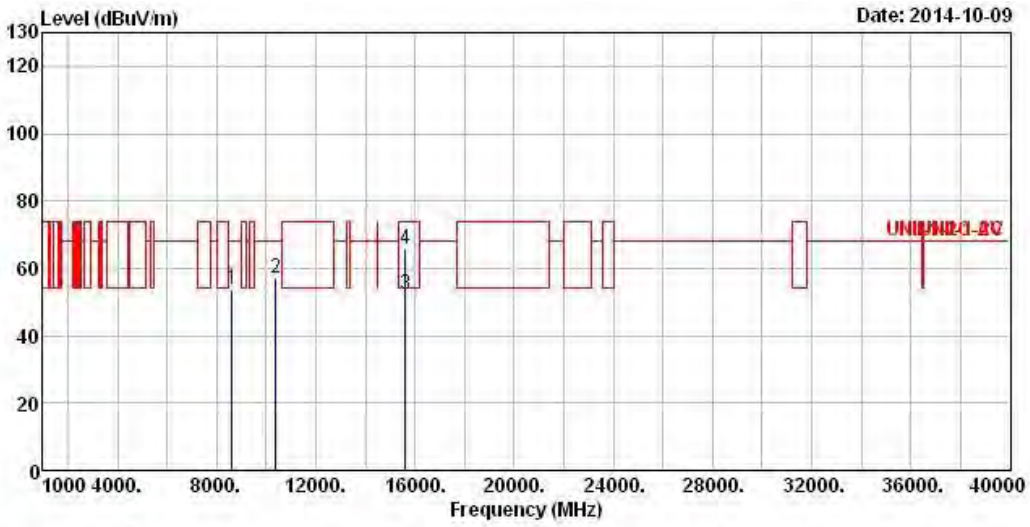
| Transmitter Radiated Unwanted Emissions (Above 1GHz) | | | |
|---|---|---|---|
| **Modulation Mode** | HT20 | **Test Freq. (MHz)** | 5200 |
| **$N_{TX}$** | 2 | **Polarization** | V |




| | Freq | Level | Over Limit | Limit Line | Read Level | Antenna Factor | Cable Loss | Preamp Factor | Remark | A/Pos | T/Pos |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | dB | | cm | deg |
| 1 | 7920.00 | 53.66 | -14.54 | 68.20 | 41.36 | 37.02 | 8.14 | 32.86 | Peak | --- | --- |
| 2 | 10400.00 | 55.06 | -13.14 | 68.20 | 39.89 | 39.00 | 8.94 | 32.77 | Peak | --- | --- |
| 3 | 15600.00 | 46.54 | -7.46 | 54.00 | 29.68 | 37.53 | 11.59 | 32.26 | Average | --- | --- |
| 4 | 15600.00 | 58.74 | -15.26 | 74.00 | 41.88 | 37.53 | 11.59 | 32.26 | Peak | --- | --- |

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
Note 5: For un-restricted bands emission satisfies both the average and peak limits of 15.209, it is not required to satisfy the -27 dBm peak emission limit of 15.407.
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

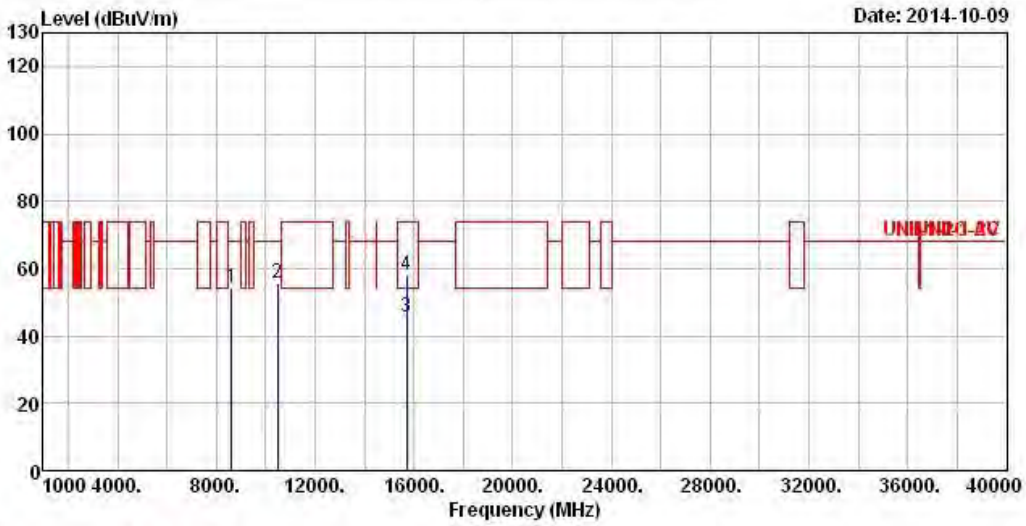
| Transmitter Radiated Unwanted Emissions (Above 1GHz) | | | |
|---|---|---|---|
| **Modulation Mode** | HT20 | **Test Freq. (MHz)** | 5200 |
| **$N_{TX}$** | 2 | **Polarization** | H |




| | Freq | Level | Over Limit | Limit Line | Read Level | Antenna Factor | Cable Loss | Preamp Factor | Remark | A/Pos | T/Pos |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | dB | | cm | deg |
| 1 | 8616.00 | 53.65 | -14.55 | 68.20 | 40.49 | 38.15 | 7.95 | 32.94 | Peak | --- | --- |
| 2 | 10400.00 | 57.14 | -11.06 | 68.20 | 41.97 | 39.00 | 8.94 | 32.77 | Peak | --- | --- |
| 3 | 15600.00 | 52.48 | -1.52 | 54.00 | 35.62 | 37.53 | 11.59 | 32.26 | Average | 0 | 0 |
| 4 | 15600.00 | 65.91 | -8.09 | 74.00 | 49.05 | 37.53 | 11.59 | 32.26 | Peak | --- | --- |

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
Note 5: For un-restricted bands emission satisfies both the average and peak limits of 15.209, it is not required to satisfy the -27 dBm peak emission limit of 15.407.
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

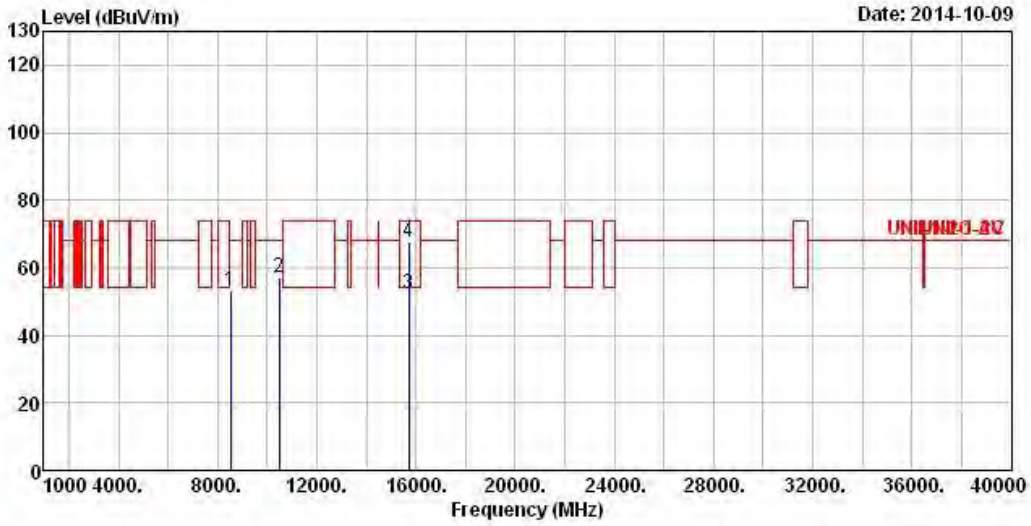
| Transmitter Radiated Unwanted Emissions (Above 1GHz) | | | |
|---|---|---|---|
| **Modulation Mode** | HT20 | **Test Freq. (MHz)** | 5240 |
| **$N_{TX}$** | 2 | **Polarization** | V |




| | Freq | Level | Over Limit | Limit Line | Read Level | Antenna Factor | Cable Loss | Preamp Factor | Remark | A/Pos | T/Pos |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | dB | | cm | deg |
| 1 | 8616.00 | 54.14 | -14.06 | 68.20 | 40.98 | 38.15 | 7.95 | 32.94 | Peak | --- | --- |
| 2 | 10480.00 | 55.67 | -12.53 | 68.20 | 40.38 | 39.00 | 8.99 | 32.70 | Peak | --- | --- |
| 3 | 15720.00 | 45.59 | -8.41 | 54.00 | 28.96 | 37.34 | 11.59 | 32.30 | Average | --- | --- |
| 4 | 15720.00 | 58.09 | -15.91 | 74.00 | 41.46 | 37.34 | 11.59 | 32.30 | Peak | --- | --- |

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
Note 5: For un-restricted bands emission satisfies both the average and peak limits of 15.209, it is not required to satisfy the -27 dBm peak emission limit of 15.407.
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

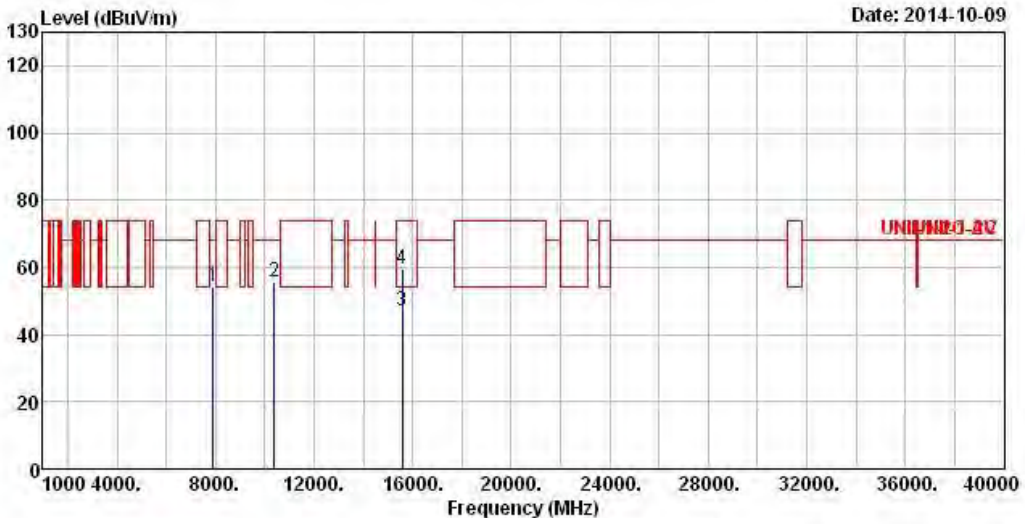
| Transmitter Radiated Unwanted Emissions (Above 1GHz) | | | |
|---|---|---|---|
| **Modulation Mode** | HT20 | **Test Freq. (MHz)** | 5240 |
| **$N_{TX}$** | 2 | **Polarization** | H |




| | Freq | Level | Over Limit | Limit Line | Read Level | Antenna Factor | Cable Loss | Preamp Factor | Remark | A/Pos | T/Pos |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | dB | | cm | deg |
| 1 | 8514.00 | 53.39 | -14.81 | 68.20 | 40.21 | 38.11 | 7.99 | 32.92 | Peak | --- | --- |
| 2 | 10480.00 | 56.89 | -11.31 | 68.20 | 41.60 | 39.00 | 8.99 | 32.70 | Peak | --- | --- |
| 3 | 15720.00 | 52.36 | -1.64 | 54.00 | 35.73 | 37.34 | 11.59 | 32.30 | Average | 0 | 0 |
| 4 | 15720.00 | 67.64 | -6.36 | 74.00 | 51.01 | 37.34 | 11.59 | 32.30 | Peak | --- | --- |

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
Note 5: For un-restricted bands emission satisfies both the average and peak limits of 15.209, it is not required to satisfy the -27 dBm peak emission limit of 15.407.
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

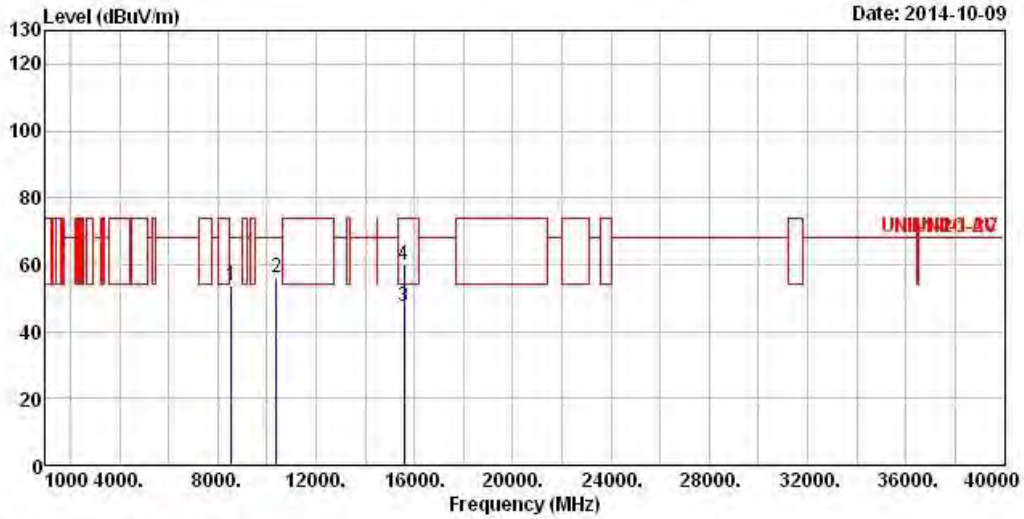
| Transmitter Radiated Unwanted Emissions (Above 1GHz) | | | |
|---|---|---|---|
| **Modulation Mode** | HT40 | **Test Freq. (MHz)** | 5190 |
| **$N_{TX}$** | 2 | **Polarization** | V |




| | Freq | Level | Over Limit | Limit Line | Read Level | Antenna Factor | Cable Loss | Preamp Factor | Remark | A/Pos | T/Pos |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | dB | | cm | deg |
| 1 | 7896.00 | 54.13 | -14.07 | 68.20 | 41.84 | 37.00 | 8.14 | 32.85 | Peak | --- | --- |
| 2 | 10380.00 | 55.51 | -12.69 | 68.20 | 40.36 | 39.00 | 8.94 | 32.79 | Peak | --- | --- |
| 3 | 15570.00 | 46.79 | -7.21 | 54.00 | 29.86 | 37.59 | 11.59 | 32.25 | Average | 0 | 0 |
| 4 | 15570.00 | 59.44 | -14.56 | 74.00 | 42.51 | 37.59 | 11.59 | 32.25 | Peak | --- | --- |

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
Note 5: For un-restricted bands emission satisfies both the average and peak limits of 15.209, it is not required to satisfy the -27 dBm peak emission limit of 15.407.
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

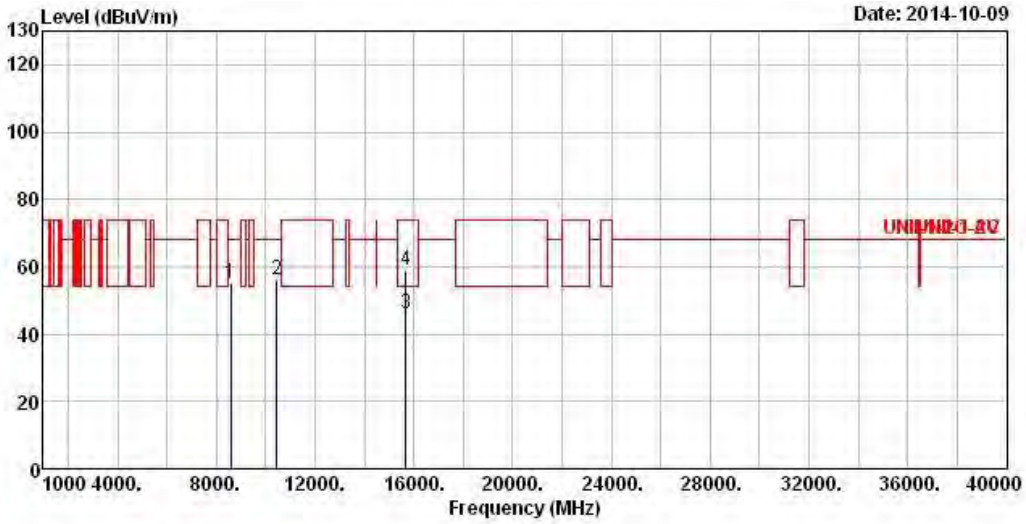
| Transmitter Radiated Unwanted Emissions (Above 1GHz) | | | |
|---|---|---|---|
| **Modulation Mode** | HT40 | **Test Freq. (MHz)** | 5190 |
| **$N_{TX}$** | 2 | **Polarization** | H |




| | Freq | Level | Over Limit | Limit Line | Read Level | Antenna Factor | Cable Loss | Preamp Factor | Remark | A/Pos | T/Pos |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | dB | | cm | deg |
| 1 | 8562.00 | 53.77 | -14.43 | 68.20 | 40.60 | 38.13 | 7.97 | 32.93 | Peak | --- | --- |
| 2 | 10380.00 | 55.91 | -12.29 | 68.20 | 40.76 | 39.00 | 8.94 | 32.79 | Peak | --- | --- |
| 3 | 15570.00 | 47.46 | -6.54 | 54.00 | 30.53 | 37.59 | 11.59 | 32.25 | Average | --- | --- |
| 4 | 15570.00 | 59.98 | -14.02 | 74.00 | 43.05 | 37.59 | 11.59 | 32.25 | Peak | --- | --- |

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
Note 5: For un-restricted bands emission satisfies both the average and peak limits of 15.209, it is not required to satisfy the -27 dBm peak emission limit of 15.407.
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

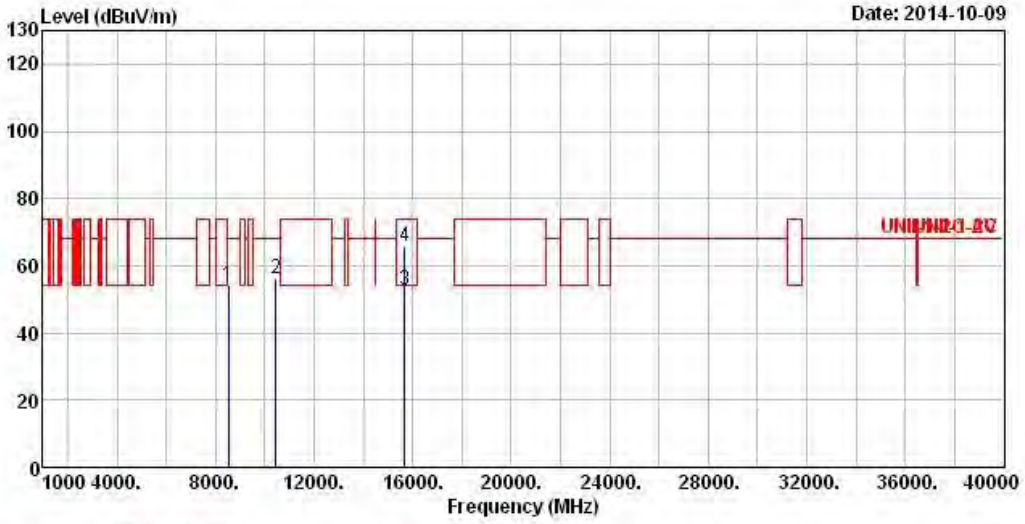
| Transmitter Radiated Unwanted Emissions (Above 1GHz) | | | |
|---|---|---|---|
| **Modulation Mode** | HT40 | **Test Freq. (MHz)** | 5230 |
| **$N_{TX}$** | 2 | **Polarization** | V |




| | Freq | Level | Over Limit | Limit Line | Read Level | Antenna Factor | Cable Loss | Preamp Factor | Remark | A/Pos | T/Pos |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | dB | | cm | deg |
| 1 | 8598.00 | 55.14 | -13.06 | 68.20 | 41.99 | 38.14 | 7.95 | 32.94 | Peak | --- | --- |
| 2 | 10460.00 | 56.09 | -12.11 | 68.20 | 40.82 | 39.00 | 8.99 | 32.72 | Peak | --- | --- |
| 3 | 15690.00 | 46.00 | -8.00 | 54.00 | 29.30 | 37.40 | 11.59 | 32.29 | Average | --- | --- |
| 4 | 15690.00 | 58.97 | -15.03 | 74.00 | 42.27 | 37.40 | 11.59 | 32.29 | Peak | --- | --- |

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
Note 5: For un-restricted bands emission satisfies both the average and peak limits of 15.209, it is not required to satisfy the -27 dBm peak emission limit of 15.407.
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

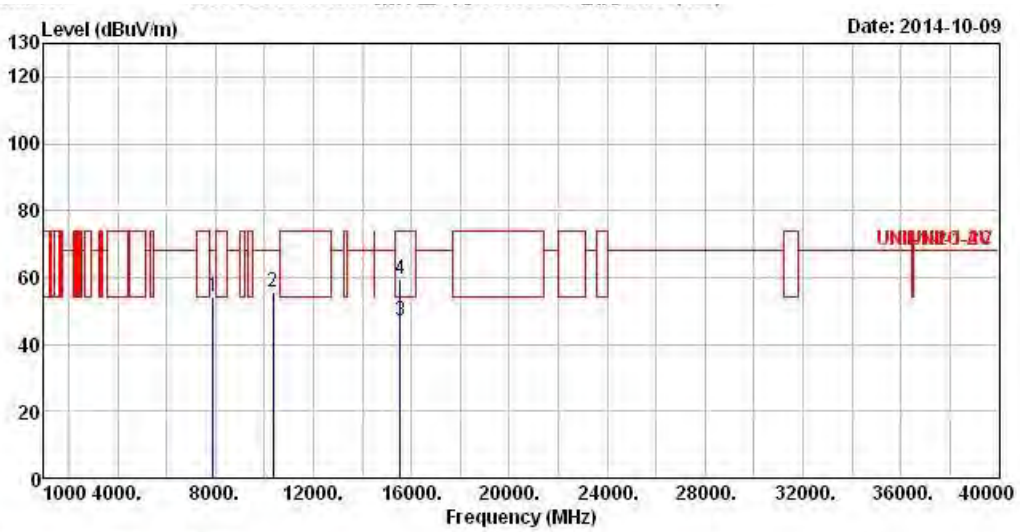
| Transmitter Radiated Unwanted Emissions (Above 1GHz) | | | |
|---|---|---|---|
| **Modulation Mode** | HT40 | **Test Freq. (MHz)** | 5230 |
| **$N_{TX}$** | 2 | **Polarization** | H |




| | Freq | Level | Over Limit | Limit Line | Read Level | Antenna Factor | Cable Loss | Preamp Factor | Remark | A/Pos | T/Pos |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | dB | | cm | deg |
| 1 | 8538.00 | 54.09 | -14.11 | 68.20 | 40.92 | 38.11 | 7.99 | 32.93 | Peak | --- | --- |
| 2 | 10460.00 | 55.98 | -12.22 | 68.20 | 40.71 | 39.00 | 8.99 | 32.72 | Peak | --- | --- |
| 3 | 15690.00 | 52.86 | -1.14 | 54.00 | 36.16 | 37.40 | 11.59 | 32.29 | Average | 0 | 0 |
| 4 | 15690.00 | 65.83 | -8.17 | 74.00 | 49.13 | 37.40 | 11.59 | 32.29 | Peak | --- | --- |

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
Note 5: For un-restricted bands emission satisfies both the average and peak limits of 15.209, it is not required to satisfy the -27 dBm peak emission limit of 15.407.
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

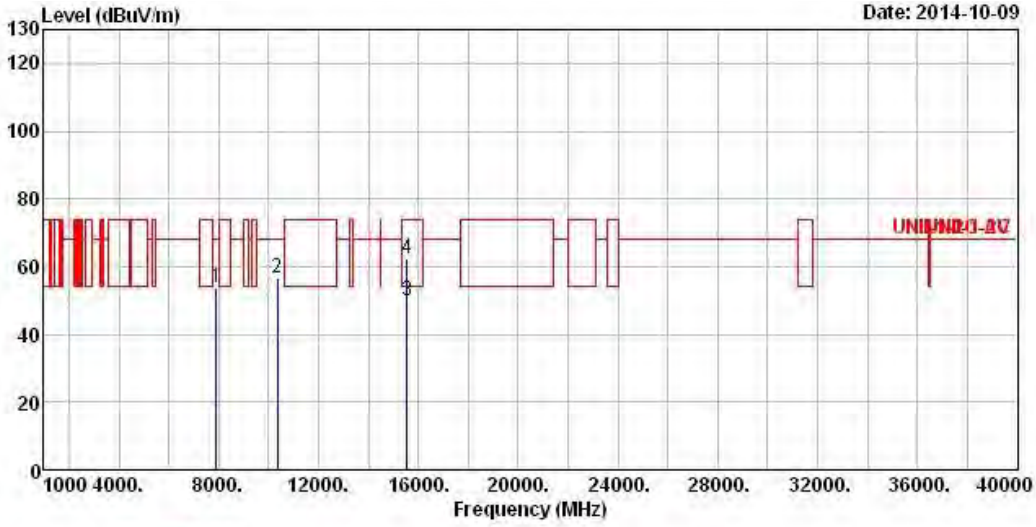
| Transmitter Radiated Unwanted Emissions (Above 1GHz) | | | |
|---|---|---|---|
| **Modulation Mode** | VHT20 | **Test Freq. (MHz)** | 5180 |
| **$N_{TX}$** | 2 | **Polarization** | V |




| | Freq | Level | Over Limit | Limit Line | Read Level | Antenna Factor | Cable Loss | Preamp Factor | Remark | A/Pos | T/Pos |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | dB | | cm | deg |
| 1 | 7902.00 | 54.30 | -13.90 | 68.20 | 42.01 | 37.00 | 8.14 | 32.85 | Peak | --- | --- |
| 2 | 10360.00 | 55.55 | -12.65 | 68.20 | 40.44 | 39.00 | 8.92 | 32.81 | Peak | --- | --- |
| 3 | 15540.00 | 47.18 | -6.82 | 54.00 | 30.18 | 37.64 | 11.59 | 32.23 | Average | --- | --- |
| 4 | 15540.00 | 59.54 | -14.46 | 74.00 | 42.54 | 37.64 | 11.59 | 32.23 | Peak | --- | --- |

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
Note 5: For un-restricted bands emission satisfies both the average and peak limits of 15.209, it is not required to satisfy the -27 dBm peak emission limit of 15.407.
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

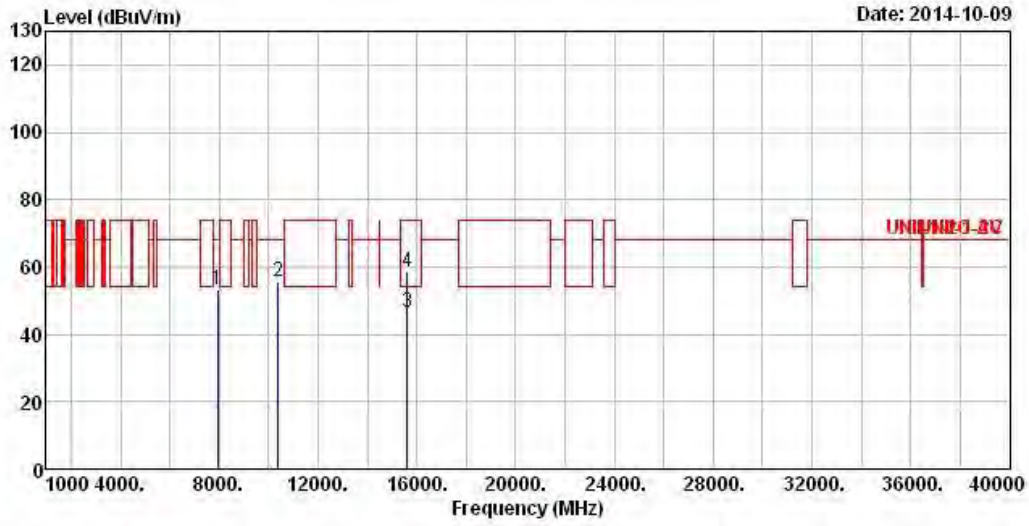
| Transmitter Radiated Unwanted Emissions (Above 1GHz) | | | |
|---|---|---|---|
| **Modulation Mode** | VHT20 | **Test Freq. (MHz)** | 5180 |
| **$N_{TX}$** | 2 | **Polarization** | H |




| | Freq | Level | Over Limit | Limit Line | Read Level | Antenna Factor | Cable Loss | Preamp Factor | Remark | A/Pos | T/Pos |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | dB | | cm | deg |
| 1 | 7914.00 | 53.51 | -14.69 | 68.20 | 41.21 | 37.02 | 8.14 | 32.86 | Peak | --- | --- |
| 2 | 10360.00 | 56.49 | -11.71 | 68.20 | 41.38 | 39.00 | 8.92 | 32.81 | Peak | --- | --- |
| 3 | 15540.00 | 49.93 | -4.07 | 54.00 | 32.93 | 37.64 | 11.59 | 32.23 | Average | 0 | 0 |
| 4 | 15540.00 | 62.54 | -11.46 | 74.00 | 45.54 | 37.64 | 11.59 | 32.23 | Peak | --- | --- |

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
Note 5: For un-restricted bands emission satisfies both the average and peak limits of 15.209, it is not required to satisfy the -27 dBm peak emission limit of 15.407.
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

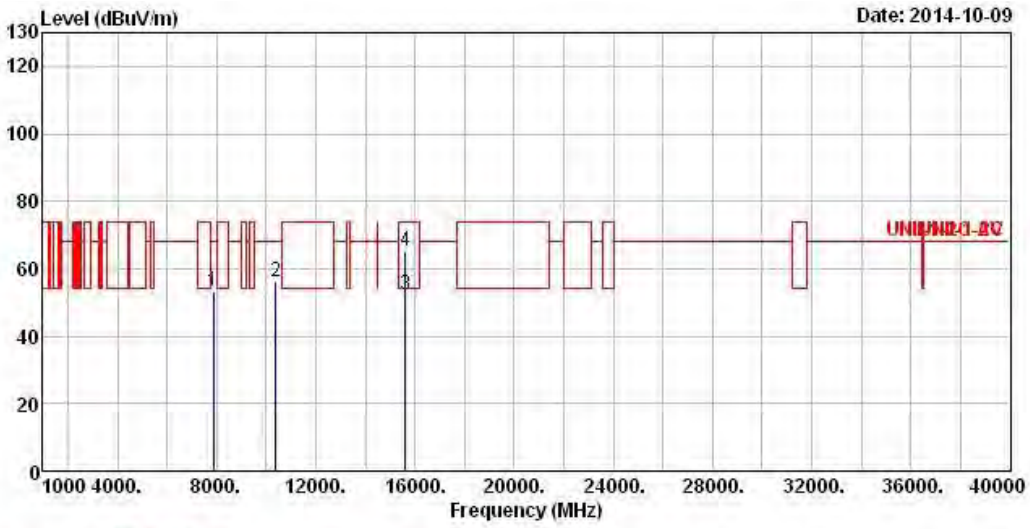
| Transmitter Radiated Unwanted Emissions (Above 1GHz) | | | |
|---|---|---|---|
| **Modulation Mode** | VHT20 | **Test Freq. (MHz)** | 5200 |
| **$N_{TX}$** | 2 | **Polarization** | V |




| | Freq | Level | Over Limit | Limit Line | Read Level | Antenna Factor | Cable Loss | Preamp Factor | Remark | A/Pos | T/Pos |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | dB | | cm | deg |
| 1 | 7932.00 | 53.42 | -14.78 | 68.20 | 41.04 | 37.03 | 8.21 | 32.86 | Peak | --- | --- |
| 2 | 10400.00 | 55.66 | -12.54 | 68.20 | 40.49 | 39.00 | 8.94 | 32.77 | Peak | --- | --- |
| 3 | 15600.00 | 46.63 | -7.37 | 54.00 | 29.77 | 37.53 | 11.59 | 32.26 | Average | --- | --- |
| 4 | 15600.00 | 58.73 | -15.27 | 74.00 | 41.87 | 37.53 | 11.59 | 32.26 | Peak | --- | --- |

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
Note 5: For un-restricted bands emission satisfies both the average and peak limits of 15.209, it is not required to satisfy the -27 dBm peak emission limit of 15.407.
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

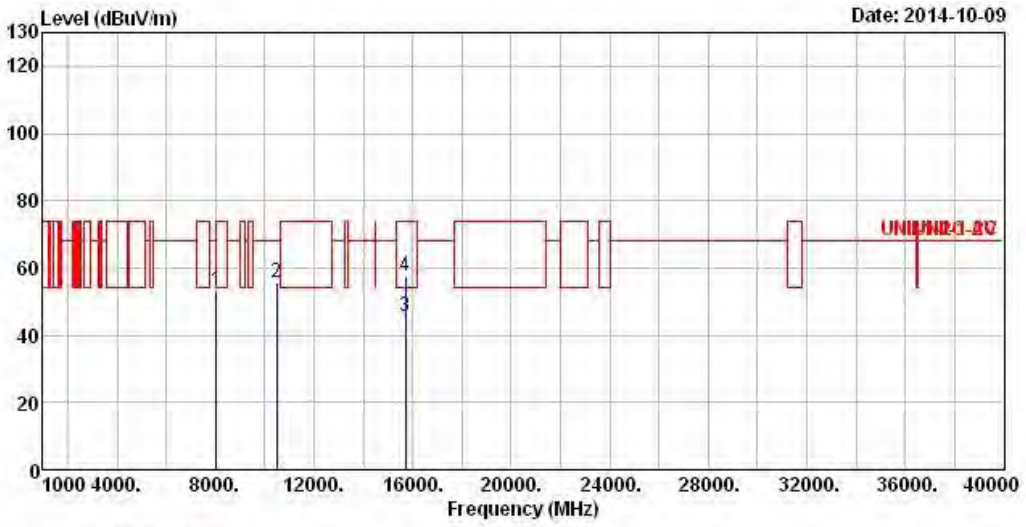
| Transmitter Radiated Unwanted Emissions (Above 1GHz) | | | |
|---|---|---|---|
| **Modulation Mode** | VHT20 | **Test Freq. (MHz)** | 5200 |
| **$N_{TX}$** | 2 | **Polarization** | H |




| | Freq | Level | Over Limit | Limit Line | Read Level | Antenna Factor | Cable Loss | Preamp Factor | Remark | A/Pos | T/Pos |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | dB | | cm | deg |
| 1 | 7884.00 | 53.43 | -14.77 | 68.20 | 41.16 | 36.98 | 8.14 | 32.85 | Peak | --- | --- |
| 2 | 10400.00 | 56.16 | -12.04 | 68.20 | 40.99 | 39.00 | 8.94 | 32.77 | Peak | --- | --- |
| 3 | 15600.00 | 52.33 | -1.67 | 54.00 | 35.47 | 37.53 | 11.59 | 32.26 | Average | 0 | 0 |
| 4 | 15600.00 | 65.44 | -8.56 | 74.00 | 48.58 | 37.53 | 11.59 | 32.26 | Peak | --- | --- |

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
Note 5: For un-restricted bands emission satisfies both the average and peak limits of 15.209, it is not required to satisfy the -27 dBm peak emission limit of 15.407.
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

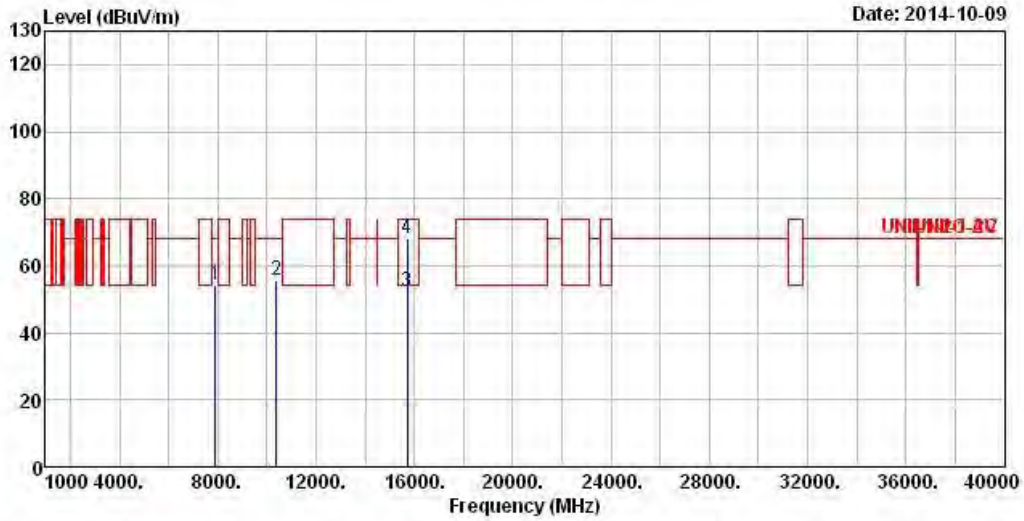
| Transmitter Radiated Unwanted Emissions (Above 1GHz) | | | |
|---|---|---|---|
| **Modulation Mode** | VHT20 | **Test Freq. (MHz)** | 5240 |
| **$N_{TX}$** | 2 | **Polarization** | V |




| | Freq | Level | Over Limit | Limit Line | Read Level | Antenna Factor | Cable Loss | Preamp Factor | Remark | A/Pos | T/Pos |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | dB | | cm | deg |
| 1 | 8022.00 | 53.18 | -15.02 | 68.20 | 40.67 | 37.13 | 8.26 | 32.88 | Peak | --- | --- |
| 2 | 10480.00 | 55.72 | -12.48 | 68.20 | 40.43 | 39.00 | 8.99 | 32.70 | Peak | --- | --- |
| 3 | 15720.00 | 45.51 | -8.49 | 54.00 | 28.88 | 37.34 | 11.59 | 32.30 | Average | --- | --- |
| 4 | 15720.00 | 57.76 | -16.24 | 74.00 | 41.13 | 37.34 | 11.59 | 32.30 | Peak | --- | --- |

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
Note 5: For un-restricted bands emission satisfies both the average and peak limits of 15.209, it is not required to satisfy the -27 dBm peak emission limit of 15.407.
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

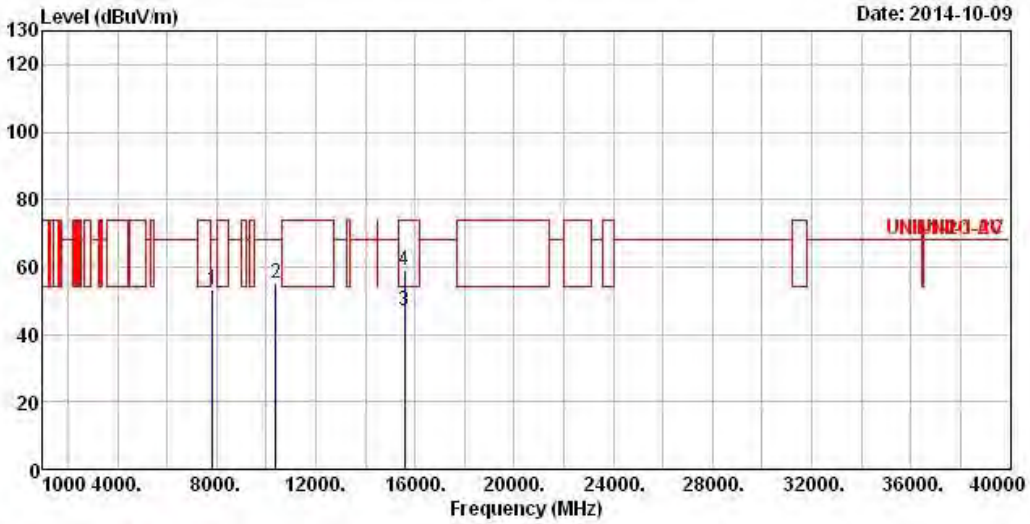
| Transmitter Radiated Unwanted Emissions (Above 1GHz) | | | |
|---|---|---|---|
| **Modulation Mode** | VHT20 | **Test Freq. (MHz)** | 5240 |
| **$N_{TX}$** | 2 | **Polarization** | H |




| | Freq | Level | Over Limit | Limit Line | Read Level | Antenna Factor | Cable Loss | Preamp Factor | Remark | A/Pos | T/Pos |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | dB | | cm | deg |
| 1 | 7896.00 | 54.42 | -13.78 | 68.20 | 42.13 | 37.00 | 8.14 | 32.85 | Peak | --- | --- |
| 2 | 10400.00 | 55.72 | -12.48 | 68.20 | 40.55 | 39.00 | 8.94 | 32.77 | Peak | --- | --- |
| 3 | 15720.00 | 52.31 | -1.69 | 54.00 | 35.68 | 37.34 | 11.59 | 32.30 | Average | 0 | 0 |
| 4 | 15720.00 | 68.00 | -6.00 | 74.00 | 51.37 | 37.34 | 11.59 | 32.30 | Peak | --- | --- |

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
Note 5: For un-restricted bands emission satisfies both the average and peak limits of 15.209, it is not required to satisfy the -27 dBm peak emission limit of 15.407.
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

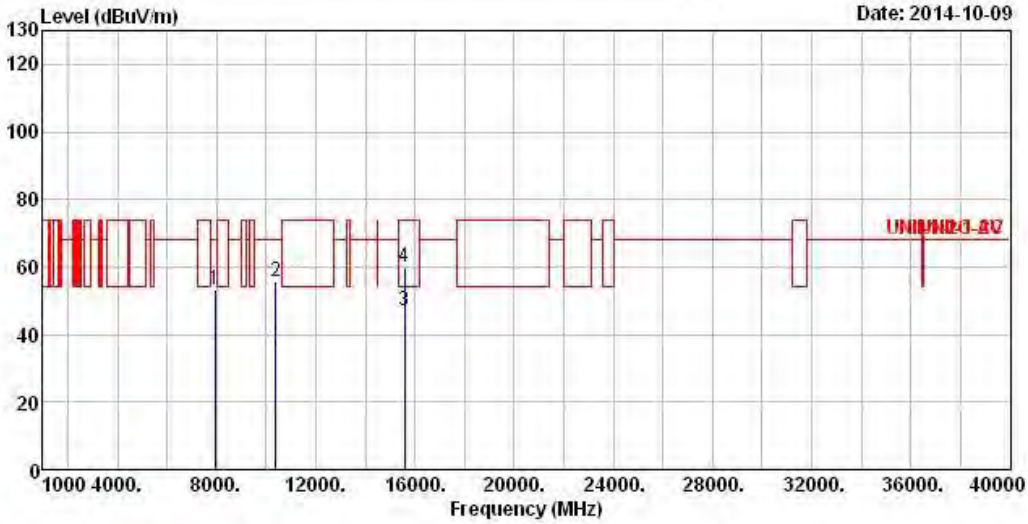
| Transmitter Radiated Unwanted Emissions (Above 1GHz) | | | |
|---|---|---|---|
| **Modulation Mode** | VHT40 | **Test Freq. (MHz)** | 5190 |
| **$N_{TX}$** | 2 | **Polarization** | V |




| | Freq | Level | Over Limit | Limit Line | Read Level | Antenna Factor | Cable Loss | Preamp Factor | Remark | A/Pos | T/Pos |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | dB | | cm | deg |
| 1 | 7848.00 | 53.22 | -14.98 | 68.20 | 41.04 | 36.95 | 8.07 | 32.84 | Peak | --- | --- |
| 2 | 10380.00 | 55.25 | -12.95 | 68.20 | 40.10 | 39.00 | 8.94 | 32.79 | Peak | --- | --- |
| 3 | 15570.00 | 46.88 | -7.12 | 54.00 | 29.95 | 37.59 | 11.59 | 32.25 | Average | --- | --- |
| 4 | 15570.00 | 59.18 | -14.82 | 74.00 | 42.25 | 37.59 | 11.59 | 32.25 | Peak | --- | --- |

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
Note 5: For un-restricted bands emission satisfies both the average and peak limits of 15.209, it is not required to satisfy the -27 dBm peak emission limit of 15.407.
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

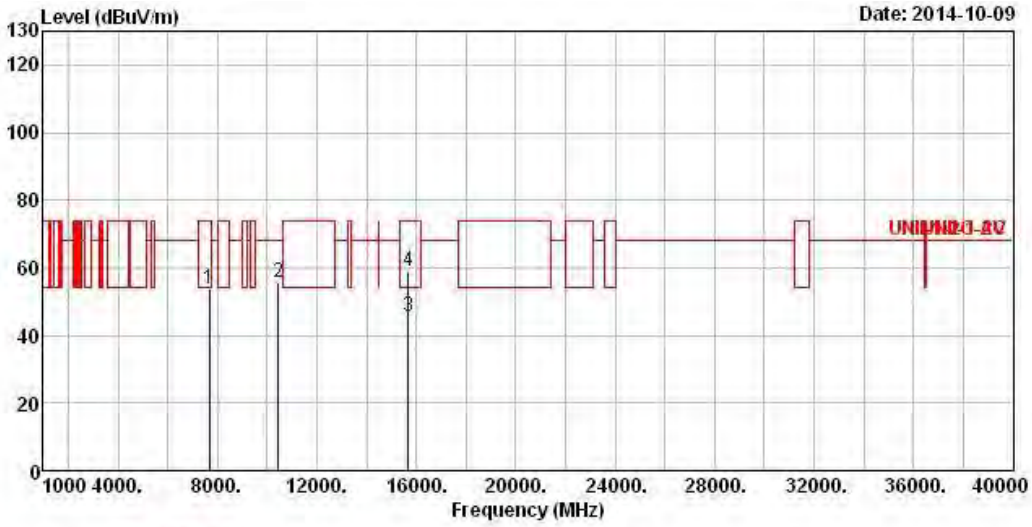
| Transmitter Radiated Unwanted Emissions (Above 1GHz) | | | |
|---|---|---|---|
| **Modulation Mode** | VHT40 | **Test Freq. (MHz)** | 5190 |
| **$N_{TX}$** | 2 | **Polarization** | H |




| | Freq | Level | Over Limit | Limit Line | Read Level | Antenna Factor | Cable Loss | Preamp Factor | Remark | A/Pos | T/Pos |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | dB | | cm | deg |
| 1 | 7935.00 | 53.13 | -15.07 | 68.20 | 40.75 | 37.03 | 8.21 | 32.86 | Peak | --- | --- |
| 2 | 10380.00 | 55.74 | -12.46 | 68.20 | 40.59 | 39.00 | 8.94 | 32.79 | Peak | --- | --- |
| 3 | 15570.00 | 47.16 | -6.84 | 54.00 | 30.23 | 37.59 | 11.59 | 32.25 | Average | 0 | 0 |
| 4 | 15570.00 | 59.81 | -14.19 | 74.00 | 42.88 | 37.59 | 11.59 | 32.25 | Peak | --- | --- |

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
Note 5: For un-restricted bands emission satisfies both the average and peak limits of 15.209, it is not required to satisfy the -27 dBm peak emission limit of 15.407.
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

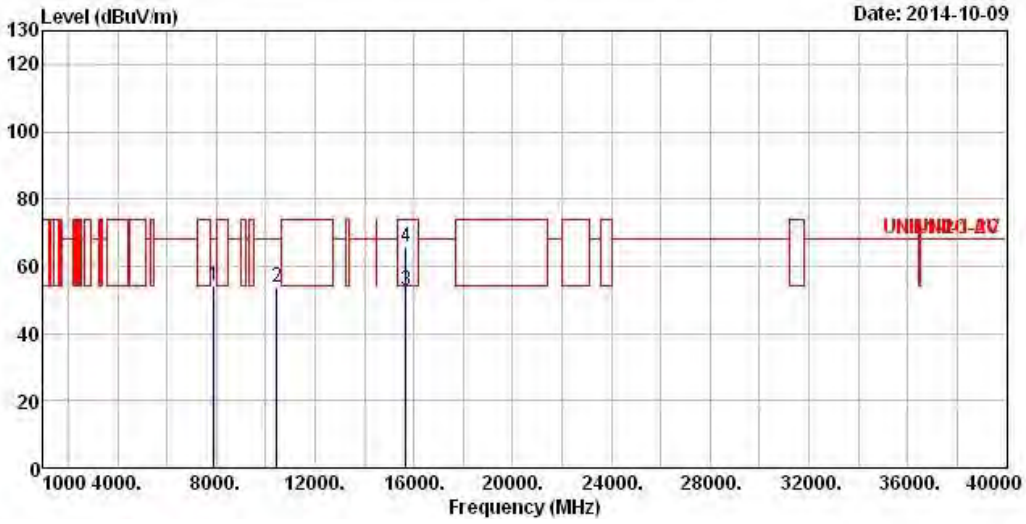
| Transmitter Radiated Unwanted Emissions (Above 1GHz) | | | |
|---|---|---|---|
| **Modulation Mode** | VHT40 | **Test Freq. (MHz)** | 5230 |
| **$N_{TX}$** | 2 | **Polarization** | V |




| | Freq | Level | Over Limit | Limit Line | Read Level | Antenna Factor | Cable Loss | Preamp Factor | Remark | A/Pos | T/Pos |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | dB | | cm | deg |
| 1 | 7682.00 | 53.95 | -20.05 | 74.00 | 42.26 | 36.78 | 7.71 | 32.80 | Peak | --- | --- |
| 2 | 10460.00 | 55.63 | -12.57 | 68.20 | 40.36 | 39.00 | 8.99 | 32.72 | Peak | --- | --- |
| 3 | 15690.00 | 45.63 | -8.37 | 54.00 | 28.93 | 37.40 | 11.59 | 32.29 | Average | --- | --- |
| 4 | 15690.00 | 58.98 | -15.02 | 74.00 | 42.28 | 37.40 | 11.59 | 32.29 | Peak | --- | --- |

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
Note 5: For un-restricted bands emission satisfies both the average and peak limits of 15.209, it is not required to satisfy the -27 dBm peak emission limit of 15.407.
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

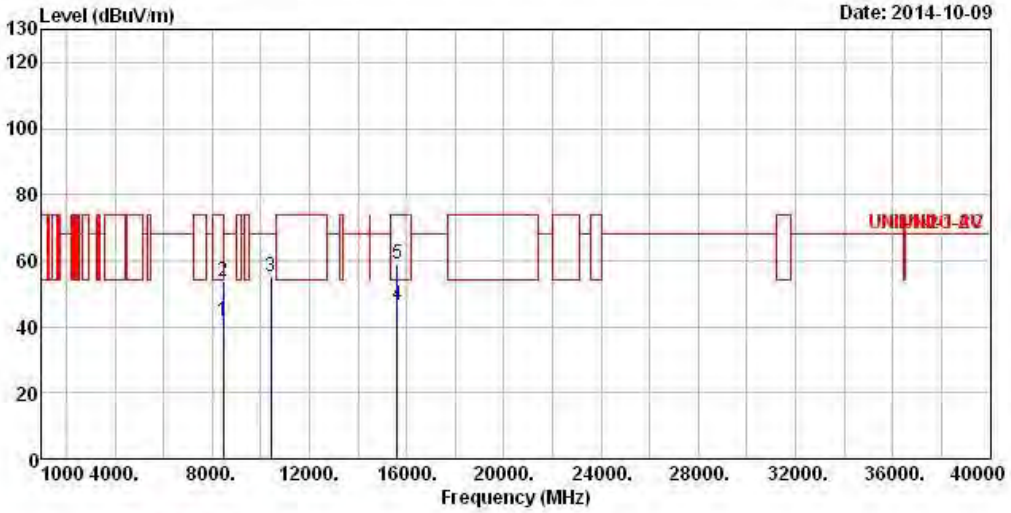
| Transmitter Radiated Unwanted Emissions (Above 1GHz) | | | |
|---|---|---|---|
| **Modulation Mode** | VHT40 | **Test Freq. (MHz)** | 5230 |
| **$N_{TX}$** | 2 | **Polarization** | H |




| | Freq | Level | Over Limit | Limit Line | Read Level | Antenna Factor | Cable Loss | Preamp Factor | Remark | A/Pos | T/Pos |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | dB | | cm | deg |
| 1 | 7908.00 | 54.01 | -14.19 | 68.20 | 41.73 | 37.00 | 8.14 | 32.86 | Peak | --- | --- |
| 2 | 10460.00 | 53.73 | -14.47 | 68.20 | 38.46 | 39.00 | 8.99 | 32.72 | Peak | --- | --- |
| 3 | 15690.00 | 53.00 | -1.00 | 54.00 | 36.30 | 37.40 | 11.59 | 32.29 | Average | 0 | 0 |
| 4 | 15690.00 | 65.88 | -8.12 | 74.00 | 49.18 | 37.40 | 11.59 | 32.29 | Peak | --- | --- |

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
Note 5: For un-restricted bands emission satisfies both the average and peak limits of 15.209, it is not required to satisfy the -27 dBm peak emission limit of 15.407.
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

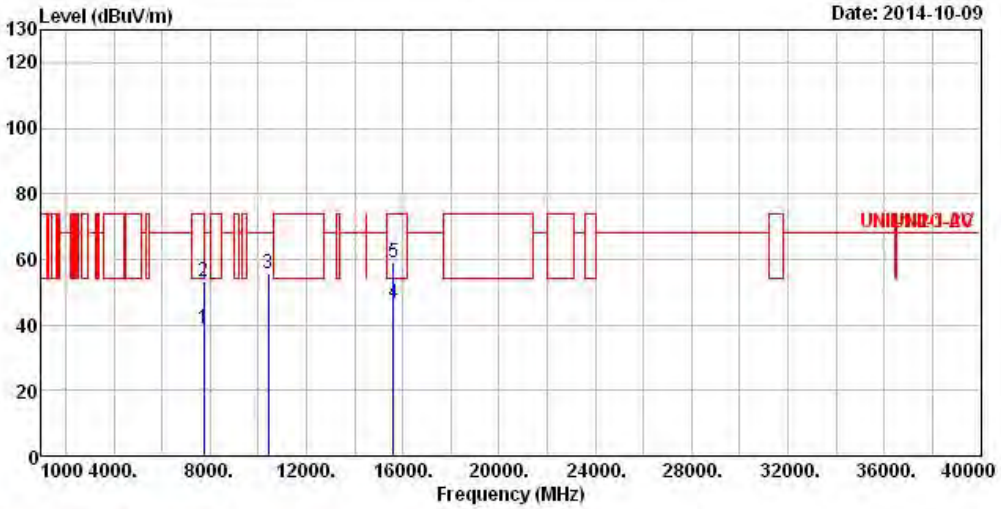
| Transmitter Radiated Unwanted Emissions (Above 1GHz) | | | |
|---|---|---|---|
| **Modulation Mode** | VHT80 | **Test Freq. (MHz)** | 5210 |
| **$N_{TX}$** | 2 | **Polarization** | V |




| | Freq | Level | Over Limit | Limit Line | Read Level | Antenna Factor | Cable Loss | Preamp Factor | Remark | A/Pos | T/Pos |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | dB | | cm | deg |
| 1 | 8454.00 | 41.78 | -12.22 | 54.00 | 28.67 | 38.00 | 8.03 | 32.92 | Average | --- | --- |
| 2 | 8454.00 | 53.86 | -20.14 | 74.00 | 40.75 | 38.00 | 8.03 | 32.92 | Peak | --- | --- |
| 3 | 10420.00 | 55.11 | -13.09 | 68.20 | 39.89 | 39.00 | 8.97 | 32.75 | Peak | --- | --- |
| 4 | 15630.00 | 46.33 | -7.67 | 54.00 | 29.53 | 37.48 | 11.59 | 32.27 | Average | --- | --- |
| 5 | 15630.00 | 58.88 | -15.12 | 74.00 | 42.08 | 37.48 | 11.59 | 32.27 | Peak | --- | --- |

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
Note 5: For un-restricted bands emission satisfies both the average and peak limits of 15.209, it is not required to satisfy the -27 dBm peak emission limit of 15.407.
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

| Transmitter Radiated Unwanted Emissions (Above 1GHz) | | | |
|---|---|---|---|
| **Modulation Mode** | VHT80 | **Test Freq. (MHz)** | 5210 |
| **$N_{TX}$** | 2 | **Polarization** | H |




| | Freq | Level | Over Limit | Limit Line | Read Level | Antenna Factor | Cable Loss | Preamp Factor | Remark | A/Pos | T/Pos |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBuV/m | dB | dBuV/m | dBuV | dB/m | dB | dB | | cm | deg |
| 1 | 7734.000 | 39.09 | -14.91 | 54.00 | 27.21 | 36.83 | 7.86 | 32.81 | Average | --- | --- |
| 2 | 7734.000 | 53.42 | -20.58 | 74.00 | 41.54 | 36.83 | 7.86 | 32.81 | Peak | --- | --- |
| 3 | 10420.000 | 55.87 | -12.33 | 68.20 | 40.65 | 39.00 | 8.97 | 32.75 | Peak | --- | --- |
| 4 | 15630.000 | 46.72 | -7.28 | 54.00 | 29.92 | 37.48 | 11.59 | 32.27 | Average | --- | --- |
| 5 | 15630.000 | 58.79 | -15.21 | 74.00 | 41.99 | 37.48 | 11.59 | 32.27 | Peak | --- | --- |

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: "N/F" means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)
Note 4: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.
Note 5: For un-restricted bands emission satisfies both the average and peak limits of 15.209, it is not required to satisfy the -27 dBm peak emission limit of 15.407.
Note 6: No level of unwanted emissions exceeds the level of the fundamental emission.

# 3.7 Frequency Stability

## 3.7.1 Frequency Stability Limit

| Frequency Stability Limit |
|---|
| **UNII Devices** |
| ☒ In-band emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual. |
| **IEEE Std. 802.11n-2009** |
| ☒ The transmitter center frequency tolerance shall be ± 20 ppm maximum for the 5 GHz band and ± 25 ppm maximum for the 2.4 GHz band. |

## 3.7.2 Measuring Instruments

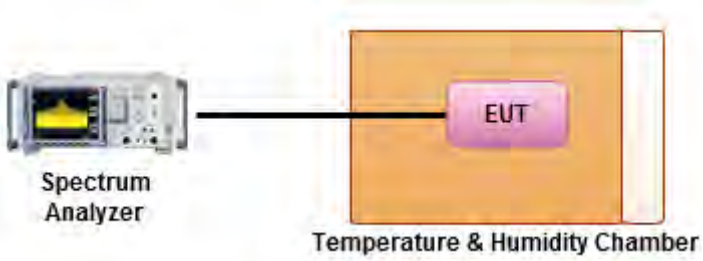
Refer a test equipment and calibration data table in this test report.

## 3.7.3 Test Procedures

| Test Method | |
|---|---|
| ☒ | Refer as ANSI C63.10, clause 6.8 for frequency stability tests |
| | ☒ Frequency stability with respect to ambient temperature |
| | ☒ Frequency stability when varying supply voltage |
| ☒ | For conducted measurement. |
| | ☒ For conducted measurements on devices with multiple transmit chains:<br>Measurements need only to be performed on one of the active transmit chains (antenna outputs) |
| ☐ | For radiated measurement. The equipment to be measured and the test antenna shall be oriented to obtain the maximum emitted power level. |

## 3.7.4 Test Setup

**Frequency Stability**



### 3.7.5 Test Result of Frequency Stability

| Frequency Stability Result | | | |
|---|---|---|---|
| **Mode** | | **Frequency Stability (ppm)** | |
| **Condition** | **Freq. (MHz)** | **Test Frequency (MHz)** | **Frequency Stability (ppm)** |
| $T_{20°C}$Vmax | 5180 | 5179.99347 | -1.2606 |
| $T_{20°C}$Vmin | 5180 | 5179.99315 | -1.3224 |
| $T_{50°C}$Vnom | 5180 | 5179.96006 | -7.7104 |
| $T_{40°C}$Vnom | 5180 | 5179.97308 | -5.1969 |
| $T_{30°C}$Vnom | 5180 | 5179.98350 | -3.1853 |
| $T_{20°C}$Vnom | 5180 | 5179.99262 | -1.4247 |
| $T_{10°C}$Vnom | 5180 | 5179.99566 | -0.8378 |
| $T_{0°C}$Vnom | 5180 | 5180.02518 | 4.8610 |
| $T_{-10°C}$Vnom | 5180 | 5180.04342 | 8.3822 |
| $T_{-20°C}$Vnom | 5180 | 5180.04689 | 9.0521 |
| **Limit (ppm)** | | 20 | |
| **Result** | | **Complied** | |

Note 1: Measure at 85 % [Vmin] and 115 % [Vmax] of the nominal voltage [Vnom].
Note 2: The nominal voltage refer test report clause 1.1.5 for EUT operational condition.

# 4 Test Equipment and Calibration Data

| Instrument | Manufacturer | Model No. | Serial No. | Characteristics | Calibration Date | Remark |
|---|---|---|---|---|---|---|
| EMC Receiver | R&S | ESCS 30 | 100174 | 9kHz ~ 2.75GHz | Mar. 26, 2014 | AC Conduction |
| LISN | SCHWARZBECK MESS-ELEKTRONIK | NSLK 8127 | 8127-477 | 9kHz ~ 30MHz | Jan. 21, 2014 | AC Conduction |
| RF Cable-CON | HUBER+SUHNER | RG213/U | 7.61183201e+012 | 9kHz ~ 30MHz | Oct. 30, 2013 | AC Conduction |
| EMI Filter | LINDGREN | LRE-2030 | 2651 | < 450 Hz | N/A | AC Conduction |

Note: Calibration Interval of instruments listed above is one year.

| Instrument | Manufacturer | Model No. | Serial No. | Characteristics | Calibration Date | Remark |
|---|---|---|---|---|---|---|
| Spectrum Analyzer | R&S | FSV 40 | 101013 | 9kHz ~ 40GHz | Jan. 25, 2014 | RF Conducted |
| AC Power Source | G.W | APS-9102 | EL920581 | AC 0V ~ 300V | Jul. 15, 2014 | RF Conducted |
| Temp. and Humidity Chamber | Giant Force | GTH-225-20-SP-SD | MAA1112-007 | -20 ~ 100℃ | Nov. 20, 2013 | RF Conducted |
| Signal Generator | R&S | SMR40 | 100116 | 10MHz ~ 40GHz | Jul. 31, 2014 | RF Conducted |
| RF Cable-2m | HUBER+SUHNER | SUCOFLEX_104 | SN 345675/4 | 30MHz ~ 26.5GHz | Dec. 02, 2013 | RF Conducted |
| RF Cable-2m | HUBER+SUHNER | SUCOFLEX_104 | SN 345679/4 | 30MHz ~ 26.5GHz | Dec. 02, 2013 | RF Conducted |

Note: Calibration Interval of instruments listed above is one year.

| Instrument | Manufacturer | Model No. | Serial No. | Characteristics | Calibration Date | Remark |
|---|---|---|---|---|---|---|
| 3m Semi Anechoic Chamber | SIDT FRANKONIA | SAC-3M | 03CH03-HY | 30MHz ~ 1GHz 3m | Nov. 30, 2013 | Radiation |
| Amplifier | HP | 8447D | 2944A08033 | 10kHz ~ 1.3GHz | May 05, 2014 | Radiation |
| Amplifier | Agilent | 8449B | 3008A02120 | 1GHz ~ 26.5GHz | Sep. 01, 2014 | Radiation |
| Spectrum | R&S | FSP40 | 100004 | 9kHz ~ 40GHz | Mar. 27, 2014 | Radiation |
| Bilog Antenna | SCHAFFNER | CBL 6112D | 22237 | 30MHz ~ 1GHz | Sep. 20, 2014 | Radiation |
| Horn Antenna | ETS・LINDGREN | 3115 | 6741 | 1GHz ~ 18GHz | Jun. 11, 2014 | Radiation |
| Horn Antenna | SCHWARZBECK | BBHA9170 | BBHA9170154 | 15GHz ~ 40GHz | Jan. 10, 2014 | Radiation |
| RF Cable-R03m | Jye Bao | RG142 | CB021 | 9kHz ~ 1GHz | Nov. 16, 2013 | Radiation |
| RF Cable-high | SUHNER | SUCOFLEX 106 | 03CH03-HY | 1GHz ~ 40GHz | Dec. 11, 2013 | Radiation |
| Turn Table | EM Electronics | EM Electronics | 060615 | 0 ~ 360 degree | N/A | Radiation |
| Antenna Mast | MF | MF-7802 | MF780208179 | 1 ~ 4 m | N/A | Radiation |

Note: Calibration Interval of instruments listed above is one year.

| Instrument | Manufacturer | Model No. | Serial No. | Characteristics | Calibration Date | Remark |
|---|---|---|---|---|---|---|
| Amplifier | EM | EM18G40G | 060604 | 18GHz ~ 40GHz | Oct. 17. 2013 | Radiated |
| Loop Antenna | TESEQ | HLA 6120 | 31244 | 9kHz ~ 30MHz | Dec. 02, 2012 | Radiation |

Note: Calibration Interval of instruments listed above is two year.