# FCC Test Report

| | |
|---|---|
| **Report No.:** | RF180523C10-7 R1 |
| **FCC ID:** | 2AJOTTA-1082 |
| **Test Model:** | TA-1082 |
| **Received Date:** | May 23, 2018 |
| **Test Date:** | Jun. 29, 2018 |
| **Issued Date:** | Oct. 24, 2018 |
| **Applicant:** | HMD Global Oy |
| **Address:** | Bertel Jungin aukio 9, 02600 Espoo, Finland |
| **Issued By:** | Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch |
| **Lab Address:** | No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan ( R.O.C ) |
| **Test Location (1):** | No. 19, Hwa Ya 2nd Rd, Wen Hwa Tsuen, Kwei Shan Hsiang, Taoyuan Hsien 333, Taiwan, R.O.C. |
| **Test Location (2):** | No.215, Sec. 3, Beixin Rd., Xindian Dist., New Taipei City 231, Taiwan, R.O.C |
| **FCC Registration / Designation Number:** | 427177 / TW0011 |

Testing Laboratory
2021

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## Release Control Record

| Issue No. | Description | Date Issued |
|---|---|---|
| RF180523C10-7 | Original Release | Jul. 05, 2018 |
| RF180523C10-7 R1 | Revise applicant's address | Oct. 24, 2018 |

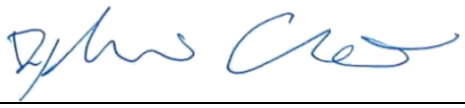
## 1 Certificate of Conformity

| | |
|---|---|
| **Product:** | Smart Phone |
| **Brand:** | NOKIA |
| **Test Model:** | TA-1082 |
| **Sample Status:** | Production Unit |
| **Applicant:** | HMD Global Oy |
| **Test Date:** | Jun. 29, 2018 |
| **Standards:** | 47 CFR FCC Part 15, Subpart E (Section 15.407)<br>ANSI C63.10:2013 |

This report is issued as a supplementary report to BV CPS report no.: RF180523C09-7. This report shall be used by combining with its original report.

**Prepared by :**  , **Date:** Oct. 24, 2018

Ivonne Wu / Supervisor

**Approved by :**  , **Date:** Oct. 24, 2018

Dylan Chiou / Project Engineer

## 2 Summary of Test Results

| 47 CFR FCC Part 15, Subpart E (Section 15.407) | | | |
|---|---|---|---|
| **FCC Clause** | **Test Item** | **Result** | **Remarks** |
| 15.407(b)(6) | AC Power Conducted Emissions | N/A | Refer to Note |
| 15.407(b) (1/2/3/4(i/ii)/6) | Radiated Emissions & Band Edge Measurement | Pass | Meet the requirement of limit. Minimum passing margin is -2.15 dB at 5350 MHz. |
| 15.407(a)(1/2/3) | Max Average Transmit Power | N/A | Refer to Note |
| --- | Occupied Bandwidth Measurement | N/A | Refer to Note |
| 15.407(a)(1/2/3) | Peak Power Spectral Density | N/A | Refer to Note |
| 15.407(e) | 6 dB Bandwidth | N/A | Refer to Note |
| 15.407(g) | Frequency Stability | N/A | Refer to Note |
| 15.203 | Antenna Requirement | Pass | No antenna connector is used. |

**Note:** Only radiated emissions test had been performed for the addendum. Refer to original report for other test data.

### 2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

| **Measurement** | **Frequency** | **Expended Uncertainty (k=2) (±)** |
|---|---|---|
| Radiated Emissions up to 1 GHz | 30 MHz ~ 200 MHz | 2.0153 dB |
| | 200 MHz ~ 1000 MHz | 2.0224 dB |
| Radiated Emissions above 1 GHz | 1 GHz ~ 18 GHz | 1.0121 dB |
| | 18 GHz ~ 40 GHz | 1.1508 dB |

### 2.2 Modification Record

There were no modifications required for compliance.

## 3 General Information

### 3.1 General Description of EUT

| | |
|---|---|
| **Product** | Smart Phone |
| **Brand** | NOKIA |
| **Test Model** | TA-1082 |
| **Status of EUT** | Production Unit |
| **Power Supply Rating** | 5.0 Vdc or 9 Vdc or 12 Vdc (adapter)<br>5.0 Vdc (host equipment)<br>3.85 Vdc (Li-ion battery) |
| **Modulation Type** | 256QAM, 64QAM, 16QAM, QPSK, BPSK |
| **Modulation Technology** | OFDM |
| **Transfer Rate** | 802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0 Mbps<br>802.11n: up to 300 Mbps<br>802.11ac: up to 866.7 Mbps |
| **Operating Frequency** | 5180 ~ 5240 MHz, 5260 ~ 5320 MHz, 5500 ~ 5720 MHz,<br>5745 ~ 5825 MHz |
| **Number of Channel** | 5180 ~ 5240 MHz: 4 for 802.11a, 802.11n (HT20)<br>2 for 802.11n (HT40)<br>1 for 802.11ac (VHT80)<br>5260 ~ 5320 MHz: 4 for 802.11a, 802.11n (HT20)<br>2 for 802.11n (HT40)<br>1 for 802.11ac (VHT80)<br>5500 ~ 5720 MHz: 12 for 802.11a, 802.11n (HT20)<br>6 for 802.11n (HT40)<br>3 for 802.11ac (VHT80)<br>5745 ~ 5825 MHz: 5 for 802.11a, 802.11n (HT20)<br>2 for 802.11n (HT40)<br>1 for 802.11ac (VHT80) |
| **Antenna Type** | PIFA antenna with -2 dBi (Main) / -4 dBi gain (Aux.) (5180 ~ 5240 MHz)<br>PIFA antenna with -0.78 dBi (Main) / -5.6 dBi gain (Aux.) (5260 ~ 5320 MHz)<br>PIFA antenna with 1.3 dBi (Main) / -2.2 dBi gain (Aux.) (5500 ~ 5720 MHz)<br>PIFA antenna with 0.9 dBi (Main) / -4.5 dBi gain (Aux.) (5745 ~ 5825 MHz) |
| **Antenna Connector** | N/A |
| **Accessory Device** | Refer to Note as below |
| **Data Cable Supplied** | Refer to Note as below |

**Note:**

1. This report is issued as a supplementary report to BV CPS report no.: RF180523C09-7. The difference is listed as below. Only radiated emission test was verified in this report.

| Report No. | FCC ID | Model | Difference |
|---|---|---|---|
| RF180523C09-7 | 2AJOTTA-1087 | TA-1087 | Dual SIM |
| RF180523C10-7 | 2AJOTTA-1082 | TA-1082 | Single SIM |
| * The models have the same layout, circuit, and components, but different SIM tray. | | | |

2. The EUT incorporates a MIMO function. Physically, the EUT provides two completed transmitters and two receivers.

| Modulation Mode | Tx Function |
|---|---|
| **802.11a** | 1TX |
| **802.11n (HT20)** | 2TX |
| **802.11n (HT40)** | 2TX |
| **802.11ac (VHT20)** | 2TX |
| **802.11ac (VHT40)** | 2TX |
| **802.11ac (VHT80)** | 2TX |

   * The modulation and bandwidth are similar for 802.11n mode for HT20 / HT40 and 802.11ac mode for VHT20 / VHT40, therefore investigated worst case to representative mode in test report. (Final test mode refer section 3.2.1)

3. The EUT's accessories list refers to Ext. Pho.
4. The above EUT information is declared by manufacturer and for more detailed features description, please refers to the manufacturer's specifications or user's manual.

## 3.2 Description of Test Modes

**For 5180 ~ 5240 MHz**

4 channels are provided for 802.11a, 802.11n (HT20):

| Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---|---|---|---|
| 36 | 5180 | 44 | 5220 |
| 40 | 5200 | 48 | 5240 |

2 channels are provided for 802.11n (HT40):

| Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---|---|---|---|
| 38 | 5190 | 46 | 5230 |

1 channel is provided for 802.11ac (VHT80):

| Channel | Frequency (MHz) |
|---|---|
| 42 | 5210 |

**For 5260 ~ 5320 MHz**

4 channels are provided for 802.11a, 802.11n (HT20):

| Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---|---|---|---|
| 52 | 5260 | 60 | 5300 |
| 56 | 5280 | 64 | 5320 |

2 channels are provided for 802.11n (HT40):

| Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---|---|---|---|
| 54 | 5270 | 62 | 5310 |

1 channel is provided for 802.11ac (VHT80):

| Channel | Frequency (MHz) |
|---|---|
| 58 | 5290 |

**For 5500 ~ 5700 MHz**

12 channels are provided for 802.11a, 802.11n (HT20):

| Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---|---|---|---|
| 100 | 5500 | 124 | 5620 |
| 104 | 5520 | 128 | 5640 |
| 108 | 5540 | 132 | 5660 |
| 112 | 5560 | 136 | 5680 |
| 116 | 5580 | 140 | 5700 |
| 120 | 5600 | 144 | 5720 |

6 channels are provided for 802.11n (HT40):

| Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---|---|---|---|
| 102 | 5510 | 126 | 5630 |
| 110 | 5550 | 134 | 5670 |
| 118 | 5590 | 142 | 5710 |

3 channels are provided for 802.11ac (VHT80):

| Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---|---|---|---|
| 106 | 5530 | 138 | 5690 |
| 122 | 5610 | | |

**For 5745 ~ 5825 MHz:**

5 channels are provided for 802.11a, 802.11n (HT20):

| Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---|---|---|---|
| 149 | 5745 | 161 | 5805 |
| 153 | 5765 | 165 | 5825 |
| 157 | 5785 | | |

2 channels are provided for 802.11n (HT40):

| Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---|---|---|---|
| 151 | 5755 | 159 | 5795 |

1 channel is provided for 802.11ac (VHT80):

| Channel | Frequency (MHz) |
|---|---|
| 155 | 5775 |

### 3.2.1 Test Mode Applicability and Tested Channel Detail

| EUT Configure Mode | Applicable To | | Description |
|---|---|---|---|
| | RE≥1G | RE<1G | |
| - | √ | √ | - |

Where **RE≥1G:** Radiated Emission above 1 GHz **RE<1G:** Radiated Emission below 1 GHz

**Note:**

1. The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **Y-plane** for 1TX 5180-5240MHz & 5260-5320MHz and 2TX, and **X-plane** for 1TX 5500-5720MHz & 5745-5825MHz.
2. "-" means no effect.

**Radiated Emission Test (Above 1 GHz):**

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

| EUT Configure Mode | Frequency Band (MHz) | Mode | Available Channel | Tested Channel | Modulation Technology | Modulation Type | Data Rate (Mbps) |
|---|---|---|---|---|---|---|---|
| - | 5180-5240 | 802.11ac (VHT80) | 42 | 42 | OFDM | BPSK | 29.3 |
| - | 5260-5320 | 802.11n (HT40) | 54 to 62 | 62 | OFDM | BPSK | 13.5 |
| - | 5500-5720 | 802.11ac (VHT80) | 106 to 138 | 106 | OFDM | BPSK | 29.3 |
| - | 5745-5825 | 802.11a | 149 to 165 | 157 | OFDM | BPSK | 6.0 |

**Radiated Emission Test (Below 1 GHz):**

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

| EUT Configure Mode | Frequency Band (MHz) | Mode | Available Channel | Tested Channel | Modulation Technology | Modulation Type | Data Rate (Mbps) |
|---|---|---|---|---|---|---|---|
| - | 5260-5320 | 802.11n (HT40) | 54 to 62 | 62 | OFDM | BPSK | 13.5 |

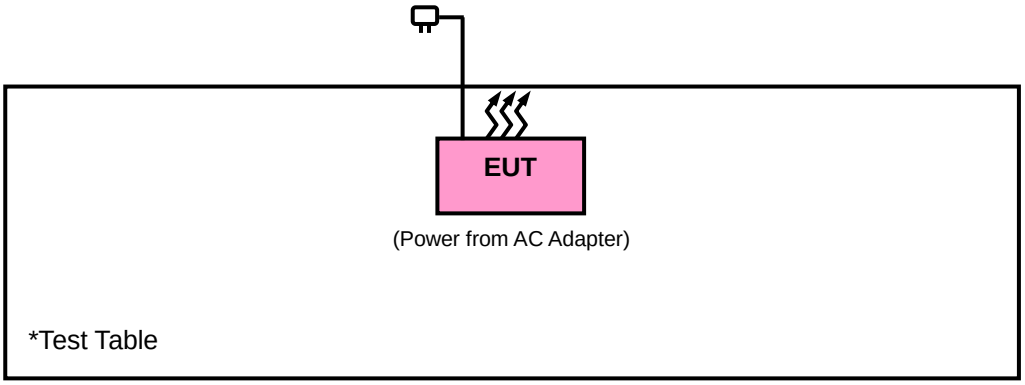
**Test Condition:**

| Applicable To | Environmental Conditions | Input Power | Tested by |
|---|---|---|---|
| RE≥1G | 25 deg. C, 65 % RH | 120 Vac, 60 Hz | Charles Hsiao |
| RE<1G | 25 deg. C, 65 % RH | 120 Vac, 60 Hz | Charles Hsiao |

### 3.3 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units.

3.3.1 Configuration of System under Test




### 3.4 General Description of Applied Standards

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

**FCC Part 15, Subpart E (15.407)**
**KDB 789033 D02 General UNII Test Procedures New Rules v02r01**
**KDB 644545 D01 Guidance for IEEE 802 11ac v01r02**
**KDB 662911 D01 Multiple Transmitter Output v02r01**
ANSI C63.10-2013

All test items have been performed and recorded as per the above standards.

# 4 Test Types and Results

## 4.1 Radiated Emission and Bandedge Measurement

### 4.1.1 Limits of Radiated Emission and Bandedge Measurement

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20 dB below the highest level of the desired power:

| Frequencies (MHz) | Field Strength (microvolts/meter) | Measurement Distance (meters) |
|---|---|---|
| 0.009 ~ 0.490 | 2400/F (kHz) | 300 |
| 0.490 ~ 1.705 | 24000/F (kHz) | 30 |
| 1.705 ~ 30.0 | 30 | 30 |
| 30 ~ 88 | 100 | 3 |
| 88 ~ 216 | 150 | 3 |
| 216 ~ 960 | 200 | 3 |
| Above 960 | 500 | 3 |

**Note**:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000 MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20 dB under any condition of modulation.

4.1.2 Limits of Unwanted Emission Out of the Restricted Bands

| Applicable To | | Limit | |
|---|---|---|---|
| 789033 D02 General UNII Test Procedures New Rules v02r01 | | Field Strength at 3 m | |
| | | PK: 74 (dBμV/m) | AV: 54 (dBμV/m) |
| **Frequency Band** | **Applicable To** | **EIRP Limit** | **Equivalent Field Strength at 3 m** |
| 5150~5250 MHz | 15.407(b)(1) | PK: -27 (dBm/MHz) | PK: 68.2 (dBμV/m) |
| 5250~5350 MHz | 15.407(b)(2) | | |
| 5470~5725 MHz | 15.407(b)(3) | | |
| 5725~5850 MHz | 15.407(b)(4)(i) | PK:-27 (dBm/MHz) *1<br>PK:10 (dBm/MHz) *2<br>PK:15.6 (dBm/MHz) *3<br>PK:27 (dBm/MHz) *4 | PK: 68.2 (dBμV/m) *1<br>PK:105.2 (dBμV/m) *2<br>PK: 110.8 (dBμV/m) *3<br>PK:122.2 (dBμV/m) *4 |
| | 15.407(b)(4)(ii) | Emission limits in section 15.247(d) | |

*1 beyond 75 MHz or more above of the band edge.

*2 below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above.

*3 below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above.

*4 from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

**Note:**

The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

$$E = \frac{1000000\sqrt{30P}}{3}$$ μV/m, where P is the eirp (Watts).

4.1.3 Test Instruments

| Description & Manufacturer | Model No. | Serial No. | Date of Calibration | Due Date of Calibration |
|---|---|---|---|---|
| Test Receiver<br>Agilent Technologies | N9038A | MY52260177 | Jul. 05, 2017 | Jul. 04, 2018 |
| Spectrum Analyzer<br>ROHDE & SCHWARZ | FSU43 | 101261 | Jan. 11, 2018 | Jan. 10, 2019 |
| Double Ridge Guide Horn Antenna EMCO | 3115 | 5619 | Nov. 30, 2017 | Nov. 29, 2018 |
| BILOG Antenna<br>SCHWARZBECK | VULB 9168 | 9168-153 | Dec. 06, 2017 | Dec. 05, 2018 |
| Fixed Attenuator<br>Mini-Circuits | BW-N10W5+ | NA | Jul. 07, 2017 | Jul. 06, 2018 |
| Loop Antenna | EM-6879 | 269 | Aug. 11, 2017 | Aug. 10, 2018 |
| Preamplifier<br>Agilent | 8447D | 2944A10628 | Oct. 13, 2018 | Oct. 12, 2019 |
| Preamplifier<br>Agilent | 8449B | 3008A01962 | Oct. 13, 2018 | Oct. 12, 2019 |
| RF signal cable<br>ETS-LINDGREN | 5D-FB | Cable-RF1-01(RFC-SMS-100-SMS-120+MY13379/4) | Jun. 20, 2018 | Jun. 19, 2019 |
| RF signal cable<br>ETS-LINDGREN | 8D-FB | Cable-RF1-02(RFC-SMS-100-NMS-120+8120_5140_2911) | Jun. 20, 2018 | Jun. 19, 2019 |
| Boresight Antenna Fixture | FBA-01 | FBA-SIP01 | NA | NA |
| Software<br>BV ADT | E3<br>8.130425b | NA | NA | NA |
| Antenna Tower<br>MF | NA | NA | NA | NA |
| Turn Table<br>MF | NA | NA | NA | NA |
| Antenna Tower &Turn Table Controller<br>MF | MF-7802 | NA | NA | NA |

Note: 1. The calibration interval of the above test instruments is 12 / 24 months and the calibrations are traceable to NML/ROC and NIST/USA.

2. The test was performed in HsinTien Chamber 1.

3. The horn antenna and preamplifier (model: 83017A) are used only for the measurement of emission frequency above 1 GHz if tested.

4. The IC Site Registration No. is IC7450I-1.

4.1.4 Test Procedures

**For Radiated Emission below 30 MHz**

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
c. Both Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
e. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

**Note:**

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9 kHz at frequency below 30 MHz.

**For Radiated Emission above 30 MHz**

a. The EUT was placed on the top of a rotating table 0.8 meters (for 30 MHz ~ 1 GHz) / 1.5 meters (for above 1 GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
f. The test-receiver system was set to peak and average detected function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

**Note:**

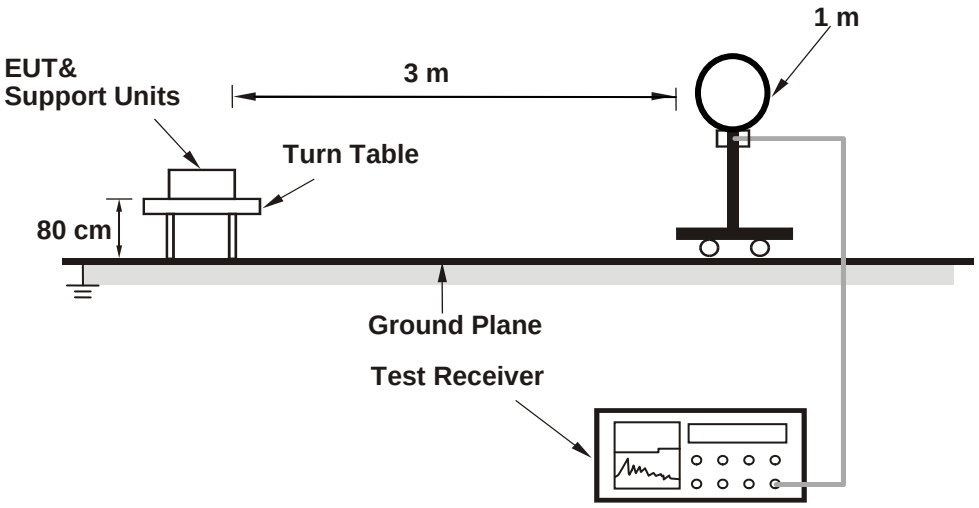
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) at frequency below 1 GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1 GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is ≥ 1/T (Duty cycle < 98 %) or 10 Hz (Duty cycle ≥ 98 %) for Average detection (AV) at frequency above 1 GHz. (11a: RBW = 1 MHz, VBW = 1 kHz ; 11n (HT20): RBW = 1 MHz, VBW = 1 kHz ; 11n (HT40): RBW = 1 MHz, VBW = 3 kHz ; 11ac (VHT80): RBW = 1 MHz, VBW = 10 kHz)
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.5 Deviation from Test Standard

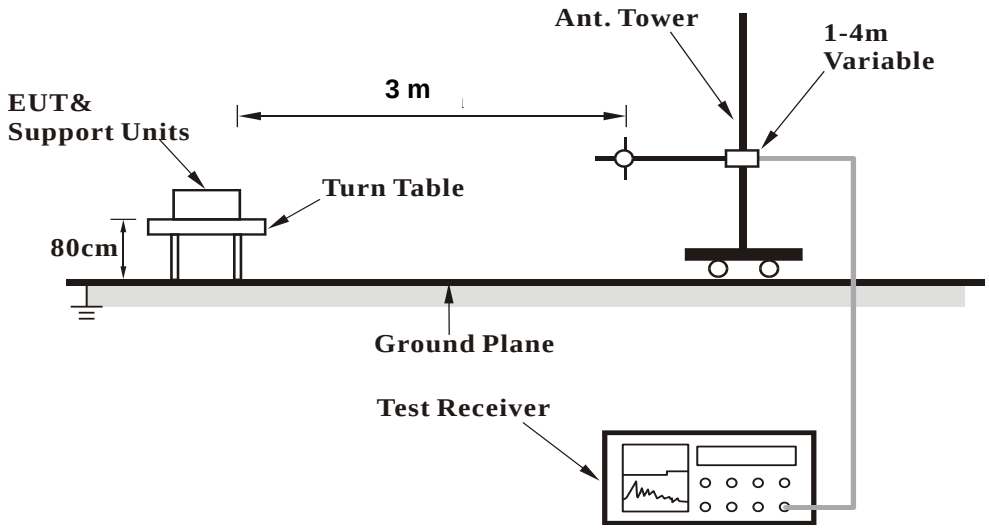
No deviation.

4.1.6 Test Setup

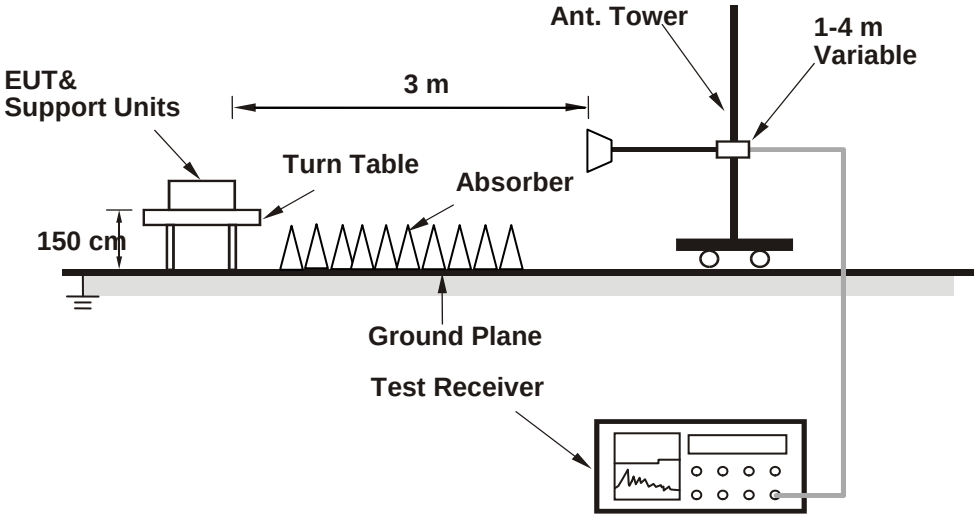
**<Radiated Emission below 30 MHz>**




**<Radiated Emission 30 MHz to 1 GHz>**



**<Radiated Emission above 1 GHz>**




For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.1.7 EUT Operating Conditions

a. Placed the EUT on a testing table.
b. Use the software to control the EUT under transmission condition continuously at specific channel frequency.

4.1.8 Test Results

**Above 1 GHz Data：**

**<2TX>**

**802.11ac (VHT80)**

| EUT Test Condition | | Measurement Detail | |
|---|---|---|---|
| **Channel** | Channel 42 | **Frequency Range** | 1 GHz ~ 40 GHz |
| **Input Power** | 120 Vac, 60 Hz | **Detector Function** | Peak (PK)<br>Average (AV) |
| **Environmental Conditions** | 25 deg. C, 65 % RH | **Tested By** | Charles Hsiao |

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5150 | 51.7 | 43.45 | 54 | -2.3 | 34.12 | 8.13 | 34 | 111 | 222 | Average |
| 5150 | 59.55 | 51.3 | 74 | -14.45 | 34.12 | 8.13 | 34 | 111 | 222 | Peak |
| 5210 | 92.75 | 84.39 | | | 34.17 | 8.19 | 34 | 120 | 220 | Average |
| 5210 | 98.88 | 90.52 | | | 34.17 | 8.19 | 34 | 120 | 220 | Peak |
| 5350 | 43.21 | 34.58 | 54 | -10.79 | 34.28 | 8.38 | 34.03 | 111 | 222 | Average |
| 5350 | 53.65 | 45.02 | 74 | -20.35 | 34.28 | 8.38 | 34.03 | 111 | 222 | Peak |
| *10420 | 55.18 | 40.77 | 68.2 | -13.02 | 37.15 | 12.42 | 35.16 | 115 | 217 | Peak |
| **Antenna Polarity & Test Distance: Vertical at 3 m** | | | | | | | | | | |
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5149 | 46.57 | 38.32 | 54 | -7.43 | 34.12 | 8.13 | 34 | 125 | 295 | Average |
| 5149 | 55.36 | 47.11 | 74 | -18.64 | 34.12 | 8.13 | 34 | 125 | 295 | Peak |
| 5210 | 87.49 | 79.13 | | | 34.17 | 8.19 | 34 | 125 | 295 | Average |
| 5210 | 94.24 | 85.88 | | | 34.17 | 8.19 | 34 | 125 | 295 | Peak |
| 5450 | 43.24 | 34.42 | 54 | -10.76 | 34.36 | 8.51 | 34.05 | 125 | 295 | Average |
| 5450 | 53 | 44.18 | 74 | -21 | 34.36 | 8.51 | 34.05 | 125 | 295 | Peak |
| *10420 | 55.02 | 40.61 | 68.2 | -13.18 | 37.15 | 12.42 | 35.16 | 117 | 14 | Peak |

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5210 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

**<2TX>**

**802.11n (HT40)**

| EUT Test Condition | | Measurement Detail | |
|---|---|---|---|
| **Channel** | Channel 62 | **Frequency Range** | 1 GHz ~ 40 GHz |
| **Input Power** | 120 Vac, 60 Hz | **Detector Function** | Peak (PK)<br>Average (AV) |
| **Environmental Conditions** | 25 deg. C, 65 % RH | **Tested By** | Charles Hsiao |

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5140 | 41.96 | 33.7 | 54 | -12.04 | 34.12 | 8.13 | 33.99 | 120 | 235 | Average |
| 5140 | 52.84 | 44.58 | 74 | -21.16 | 34.12 | 8.13 | 33.99 | 120 | 235 | Peak |
| 5310 | 93.77 | 85.22 | | | 34.25 | 8.32 | 34.02 | 103 | 235 | Average |
| 5310 | 100.77 | 92.22 | | | 34.25 | 8.32 | 34.02 | 103 | 235 | Peak |
| 5350 | 51.85 | 43.22 | 54 | -2.15 | 34.28 | 8.38 | 34.03 | 120 | 235 | Average |
| 5350 | 61 | 52.37 | 74 | -13 | 34.28 | 8.38 | 34.03 | 120 | 235 | Peak |
| 10620 | 45 | 30.29 | 54 | -9 | 37.3 | 12.69 | 35.28 | 200 | 200 | Average |
| 10620 | 55.35 | 40.64 | 74 | -18.65 | 37.3 | 12.69 | 35.28 | 200 | 200 | Peak |
| **Antenna Polarity & Test Distance: Vertical at 3 m** | | | | | | | | | | |
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5088.44 | 41.74 | 33.58 | 54 | -12.26 | 34.07 | 8.07 | 33.98 | 130 | 270 | Average |
| 5088.44 | 52.9 | 44.74 | 74 | -21.1 | 34.07 | 8.07 | 33.98 | 130 | 270 | Peak |
| 5310 | 89.85 | 81.3 | | | 34.25 | 8.32 | 34.02 | 135 | 280 | Average |
| 5310 | 96.6 | 88.05 | | | 34.25 | 8.32 | 34.02 | 135 | 280 | Peak |
| 5350 | 47.4 | 38.77 | 54 | -6.6 | 34.28 | 8.38 | 34.03 | 130 | 270 | Average |
| 5350 | 56.36 | 47.73 | 74 | -17.64 | 34.28 | 8.38 | 34.03 | 130 | 270 | Peak |
| 10620 | 44.32 | 29.61 | 54 | -9.68 | 37.3 | 12.69 | 35.28 | 105 | 28 | Average |
| 10620 | 54 | 39.29 | 74 | -20 | 37.3 | 12.69 | 35.28 | 105 | 28 | Peak |

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5310 MHz: Fundamental Frequency
3. The emission levels of other frequencies were very low against the limit

**<2TX>**

**802.11ac (VHT80)**

| EUT Test Condition | | Measurement Detail | |
|---|---|---|---|
| **Channel** | Channel 106 | **Frequency Range** | 1 GHz ~ 40 GHz |
| **Input Power** | 120 Vac, 60 Hz | **Detector Function** | Peak (PK)<br>Average (AV) |
| **Environmental Conditions** | 25 deg. C, 65 % RH | **Tested By** | Charles Hsiao |

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5460 | 51.76 | 42.94 | 54 | -2.24 | 34.36 | 8.51 | 34.05 | 105 | 244 | Average |
| 5460 | 62 | 53.18 | 74 | -12 | 34.36 | 8.51 | 34.05 | 105 | 244 | Peak |
| *5470 | 63.35 | 54.52 | 68.2 | -4.85 | 34.37 | 8.51 | 34.05 | 105 | 244 | Peak |
| 5530 | 91.74 | 82.81 | | | 34.42 | 8.58 | 34.07 | 100 | 248 | Average |
| 5530 | 99.62 | 90.69 | | | 34.42 | 8.58 | 34.07 | 100 | 248 | Peak |
| *5726 | 51.95 | 42.79 | 68.2 | -16.25 | 34.62 | 8.65 | 34.11 | 100 | 248 | Peak |
| 11060 | 45.29 | 30.21 | 54 | -8.71 | 37.64 | 12.91 | 35.47 | 135 | 322 | Average |
| 11060 | 55.36 | 40.28 | 74 | -18.64 | 37.64 | 12.91 | 35.47 | 135 | 322 | Peak |
| **Antenna Polarity & Test Distance: Vertical at 3 m** | | | | | | | | | | |
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5460 | 47.99 | 39.17 | 54 | -6.01 | 34.36 | 8.51 | 34.05 | 125 | 264 | Average |
| 5460 | 56.25 | 47.43 | 74 | -17.75 | 34.36 | 8.51 | 34.05 | 125 | 264 | Peak |
| *5470 | 58.88 | 50.05 | 68.2 | -9.32 | 34.37 | 8.51 | 34.05 | 125 | 264 | Peak |
| 5530 | 87.25 | 78.32 | | | 34.42 | 8.58 | 34.07 | 112 | 280 | Average |
| 5530 | 95.28 | 86.35 | | | 34.42 | 8.58 | 34.07 | 112 | 280 | Peak |
| *5724.44 | 52.22 | 43.06 | 68.2 | -15.98 | 34.62 | 8.65 | 34.11 | 112 | 280 | Peak |
| 11060 | 45.2 | 30.12 | 54 | -8.8 | 37.64 | 12.91 | 35.47 | 186 | 2 | Average |
| 11060 | 55 | 39.92 | 74 | -19 | 37.64 | 12.91 | 35.47 | 186 | 2 | Peak |

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5530 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

**<1TX>**

**802.11a**

| EUT Test Condition | | Measurement Detail | |
|---|---|---|---|
| **Channel** | Channel 157 | **Frequency Range** | 1 GHz ~ 40 GHz |
| **Input Power** | 120 Vac, 60 Hz | **Detector Function** | Peak (PK)<br>Average (AV) |
| **Environmental Conditions** | 25 deg. C, 65 % RH | **Tested By** | Charles Hsiao |

**<Spurious Emission>**

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5785 | 97.12 | 87.89 | | | 34.68 | 8.68 | 34.13 | 112 | 141 | Average |
| 5785 | 104.21 | 94.98 | | | 34.68 | 8.68 | 34.13 | 112 | 141 | Peak |
| 11570 | 45.22 | 29.91 | 54 | -8.78 | 38 | 12.68 | 35.37 | 125 | 184 | Average |
| 11570 | 55.21 | 39.9 | 74 | -18.79 | 38 | 12.68 | 35.37 | 125 | 184 | Peak |
| **Antenna Polarity & Test Distance: Vertical at 3 m** | | | | | | | | | | |
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5785 | 95.2 | 85.97 | | | 34.68 | 8.68 | 34.13 | 112 | 165 | Average |
| 5785 | 102.51 | 93.28 | | | 34.68 | 8.68 | 34.13 | 112 | 165 | Peak |
| 11570 | 45.12 | 29.81 | 54 | -8.88 | 38 | 12.68 | 35.37 | 115 | 142 | Average |
| 11570 | 55.21 | 39.9 | 74 | -18.79 | 38 | 12.68 | 35.37 | 115 | 142 | Peak |

**<Out of Band Emission (OOBE)>**

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| *5576.12 | 47.13 | 38.13 | 68.2 | -21.07 | 34.47 | 8.6 | 34.07 | 123 | 20 | Peak |
| 5653.21 | 47.12 | 38.02 | 70.58 | -23.46 | 34.56 | 8.63 | 34.09 | 123 | 20 | Peak |
| 5922.12 | 47.55 | 38.15 | 70.33 | -22.78 | 34.83 | 8.73 | 34.16 | 123 | 20 | Peak |
| *5985.2 | 49.13 | 39.67 | 68.2 | -19.07 | 34.88 | 8.75 | 34.17 | 123 | 20 | Peak |
| **Antenna Polarity & Test Distance: Vertical at 3 m** | | | | | | | | | | |
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| *5595.21 | 49.13 | 40.12 | 68.2 | -19.07 | 34.49 | 8.6 | 34.08 | 111 | 201 | Peak |
| 5652.56 | 47.25 | 38.15 | 70.09 | -22.84 | 34.56 | 8.63 | 34.09 | 111 | 201 | Peak |
| 5922.58 | 48.12 | 38.72 | 69.99 | -21.87 | 34.83 | 8.73 | 34.16 | 111 | 201 | Peak |
| *5953.25 | 49.21 | 39.78 | 68.2 | -18.99 | 34.85 | 8.74 | 34.16 | 111 | 201 | Peak |

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5785 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

### 9 kHz ~ 30 MHz Data:

The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

### 30 MHz ~ 1 GHz Worst-Case Data:

**<2TX>**

**802.11n (HT40)**

| EUT Test Condition | | Measurement Detail | |
|---|---|---|---|
| **Channel** | Channel 62 | **Frequency Range** | 30 MHz ~ 1 GHz |
| **Input Power** | 120 Vac, 60 Hz | **Detector Function** | Peak (PK)<br>Quasi-peak (QP) |
| **Environmental Conditions** | 25 deg. C, 65 % RH | **Tested By** | Charles Hsiao |

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 91.02 | 16 | 35.97 | 43.5 | -27.5 | 10.69 | 1.11 | 31.77 | 185 | 326 | Peak |
| 162.03 | 19.79 | 41.71 | 43.5 | -23.71 | 8.82 | 1.52 | 32.26 | 106 | 2 | Peak |
| 268.41 | 18.11 | 35.66 | 46 | -27.89 | 12.62 | 1.94 | 32.11 | 200 | 121 | Peak |
| 381.2 | 20.04 | 35.26 | 46 | -25.96 | 14.61 | 2.34 | 32.17 | 139 | 9 | Peak |
| 712.3 | 20.06 | 29.65 | 46 | -25.94 | 19.4 | 3.11 | 32.1 | 194 | 265 | Peak |
| 892.2 | 22.92 | 29.55 | 46 | -23.08 | 21.41 | 3.49 | 31.53 | 105 | 141 | Peak |
| **Antenna Polarity & Test Distance: Vertical at 3 m** | | | | | | | | | | |
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 50.52 | 17.25 | 34.03 | 40 | -22.75 | 14.54 | 0.9 | 32.22 | 180 | 14 | Peak |
| 89.4 | 13.81 | 34.25 | 43.5 | -29.69 | 10.21 | 1.11 | 31.76 | 138 | 255 | Peak |
| 166.35 | 10.28 | 32.02 | 43.5 | -33.22 | 8.99 | 1.52 | 32.25 | 127 | 217 | Peak |
| 514.2 | 15.62 | 28.51 | 46 | -30.38 | 16.53 | 2.7 | 32.12 | 165 | 296 | Peak |
| 704.6 | 19.36 | 29.05 | 46 | -26.64 | 19.29 | 3.11 | 32.09 | 170 | 14 | Peak |
| 791.4 | 20.04 | 28.6 | 46 | -25.96 | 20.24 | 3.27 | 32.07 | 199 | 200 | Peak |

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. The emission levels of other frequencies were very low against the limit

## 5 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo).

**Appendix – Information on the Testing Laboratories**

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are FCC recognized accredited test firms and accredited according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:


**Linko EMC/RF Lab**
Tel: 886-2-26052180
Fax: 886-2-26051924

**Hsin Chu EMC/RF/Telecom Lab**
Tel: 886-3-6668565
Fax: 886-3-6668323

**Hwa Ya EMC/RF/Safety**
Tel: 886-3-3183232
Fax: 886-3-3270892

**Email:** service.adt@tw.bureauveritas.com
**Web Site:** www.bureauveritas-adt.com


The address and road map of all our labs can be found in our web site also.

**--- END ---**

**Annex A – Test Report for TA-1087 (Dual SIM)**

# FCC Test Report

| | |
|---|---|
| **Report No.:** | RF180523C09-7 R1 |
| **FCC ID:** | 2AJOTTA-1087 |
| **Test Model:** | TA-1087 |
| **Received Date:** | May 23, 2018 |
| **Test Date:** | Jun. 05, 2018 ~ Jun. 14, 2018 |
| **Issued Date:** | Oct. 24, 2018 |
| **Applicant:** | HMD Global Oy |
| **Address:** | Bertel Jungin aukio 9, 02600 Espoo, Finland |
| **Issued By:** | Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch |
| **Lab Address:** | No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan ( R.O.C ) |
| **Test Location (1):** | No. 19, Hwa Ya 2nd Rd, Wen Hwa Tsuen, Kwei Shan Hsiang, Taoyuan Hsien 333, Taiwan, R.O.C. |
| **Test Location (2):** | No.215, Sec. 3, Beixin Rd., Xindian Dist., New Taipei City 231, Taiwan, R.O.C |
| **FCC Registration / Designation Number:** | 427177 / TW0011 |

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## Release Control Record

| Issue No. | Description | Date Issued |
|---|---|---|
| RF180523C09-7 | Original Release | Jun. 28, 2018 |
| RF180523C09-7 R1 | Revise applicant's address | Oct. 24, 2018 |

## 1 Certificate of Conformity

| | |
|---|---|
| **Product:** | Smart Phone |
| **Brand:** | NOKIA |
| **Test Model:** | TA-1087 |
| **Sample Status:** | Production Unit |
| **Applicant:** | HMD Global Oy |
| **Test Date:** | Jun. 05, 2018 ~ Jun. 14, 2018 |
| **Standards:** | 47 CFR FCC Part 15, Subpart E (Section 15.407)<br>ANSI C63.10:2013 |

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions specified in this report.

**Prepared by :** _____ , **Date:** Oct. 24, 2018

Ivonne Wu / Supervisor

**Approved by :** _____ , **Date:** Oct. 24, 2018

Dylan Chiou / Project Engineer

## 2 Summary of Test Results

| 47 CFR FCC Part 15, Subpart E (Section 15.407) | | | |
|---|---|---|---|
| **FCC Clause** | **Test Item** | **Result** | **Remarks** |
| 15.407(b)(6) | AC Power Conducted Emissions | Pass | Meet the requirement of limit. Minimum passing margin is -14.32 dB at 0.54375 MHz. |
| 15.407(b) (1/2/3/4(i/ii)/6) | Radiated Emissions & Band Edge Measurement | Pass | Meet the requirement of limit. Minimum passing margin is -1.55 dB at 5350 MHz. |
| 15.407(a)(1/2/3) | Max Average Transmit Power | Pass | Meet the requirement of limit. |
| --- | Occupied Bandwidth Measurement | - | Reference only |
| 15.407(a)(1/2/3) | Peak Power Spectral Density | Pass | Meet the requirement of limit. |
| 15.407(e) | 6 dB Bandwidth | Pass | Meet the requirement of limit. (U-NII-3 Band only) |
| 15.407(g) | Frequency Stability | Pass | Meet the requirement of limit. |
| 15.203 | Antenna Requirement | Pass | No antenna connector is used. |

*For U-NII-3 band compliance with rule part 15.407(b)(4)(i), the OOBE test plots were recorded in Annex A.

### 2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

| Measurement | Frequency | Expended Uncertainty (k=2) (±) |
|---|---|---|
| Conducted Emissions at mains ports | 150 kHz ~ 30 MHz | 2.44 dB |
| Radiated Emissions up to 1 GHz | 30 MHz ~ 200 MHz | 2.0153 dB |
| | 200 MHz ~ 1000 MHz | 2.0224 dB |
| Radiated Emissions above 1 GHz | 1 GHz ~ 18 GHz | 1.0121 dB |
| | 18 GHz ~ 40 GHz | 1.1508 dB |

### 2.2 Modification Record

There were no modifications required for compliance.

## 3 General Information

### 3.1 General Description of EUT

| | |
|---|---|
| **Product** | Smart Phone |
| **Brand** | NOKIA |
| **Test Model** | TA-1087 |
| **Status of EUT** | Production Unit |
| **Power Supply Rating** | 5.0 Vdc or 9 Vdc or 12 Vdc (adapter)<br>5.0 Vdc (host equipment)<br>3.85 Vdc (Li-ion battery) |
| **Modulation Type** | 256QAM, 64QAM, 16QAM, QPSK, BPSK |
| **Modulation Technology** | OFDM |
| **Transfer Rate** | 802.11a: 54.0/ 48.0/ 36.0/ 24.0/ 18.0/ 12.0/ 9.0/ 6.0 Mbps<br>802.11n: up to 300 Mbps<br>802.11ac: up to 866.7 Mbps |
| **Operating Frequency** | 5180 ~ 5240 MHz, 5260 ~ 5320 MHz, 5500 ~ 5720 MHz,<br>5745 ~ 5825 MHz |
| **Number of Channel** | 5180 ~ 5240 MHz: 4 for 802.11a, 802.11n (HT20)<br>2 for 802.11n (HT40)<br>1 for 802.11ac (VHT80)<br>5260 ~ 5320 MHz: 4 for 802.11a, 802.11n (HT20)<br>2 for 802.11n (HT40)<br>1 for 802.11ac (VHT80)<br>5500 ~ 5720 MHz: 12 for 802.11a, 802.11n (HT20)<br>6 for 802.11n (HT40)<br>3 for 802.11ac (VHT80)<br>5745 ~ 5825 MHz: 5 for 802.11a, 802.11n (HT20)<br>2 for 802.11n (HT40)<br>1 for 802.11ac (VHT80) |
| **Output Power** | 157.592 mW for 5180 ~ 5240 MHz<br>155.976 mW for 5260 ~ 5320 MHz<br>157.592 mW for 5500 ~ 5720 MHz<br>155.079 mW for 5745 ~ 5825 MHz |
| **Antenna Type** | PIFA antenna with -2 dBi (Main) / -4 dBi gain (Aux.) (5180 ~ 5240 MHz)<br>PIFA antenna with -0.78 dBi (Main) / -5.6 dBi gain (Aux.) (5260 ~ 5320 MHz)<br>PIFA antenna with 1.3 dBi (Main) / -2.2 dBi gain (Aux.) (5500 ~ 5720 MHz)<br>PIFA antenna with 0.9 dBi (Main) / -4.5 dBi gain (Aux.) (5745 ~ 5825 MHz) |
| **Antenna Connector** | N/A |
| **Accessory Device** | Refer to Note as below |
| **Data Cable Supplied** | Refer to Note as below |

**Note:**

1. The EUT incorporates a MIMO function. Physically, the EUT provides two completed transmitters and two receivers.

| Modulation Mode | Tx Function |
|---|---|
| **802.11a** | 1TX |
| **802.11n (HT20)** | 2TX |
| **802.11n (HT40)** | 2TX |
| **802.11ac (VHT20)** | 2TX |
| **802.11ac (VHT40)** | 2TX |
| **802.11ac (VHT80)** | 2TX |

   * The modulation and bandwidth are similar for 802.11n mode for HT20 / HT40 and 802.11ac mode for VHT20 / VHT40, therefore investigated worst case to representative mode in test report. (Final test mode refer section 3.2.1)

2. The EUT's accessories list refers to Ext. Pho.
3. The above EUT information is declared by manufacturer and for more detailed features description, please refers to the manufacturer's specifications or user's manual.

### 3.2 Description of Test Modes

**For 5180 ~ 5240 MHz**

4 channels are provided for 802.11a, 802.11n (HT20):

| Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---|---|---|---|
| 36 | 5180 | 44 | 5220 |
| 40 | 5200 | 48 | 5240 |

2 channels are provided for 802.11n (HT40):

| Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---|---|---|---|
| 38 | 5190 | 46 | 5230 |

1 channel is provided for 802.11ac (VHT80):

| Channel | Frequency (MHz) |
|---|---|
| 42 | 5210 |

**For 5260 ~ 5320 MHz**

4 channels are provided for 802.11a, 802.11n (HT20):

| Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---|---|---|---|
| 52 | 5260 | 60 | 5300 |
| 56 | 5280 | 64 | 5320 |

2 channels are provided for 802.11n (HT40):

| Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---|---|---|---|
| 54 | 5270 | 62 | 5310 |

1 channel is provided for 802.11ac (VHT80):

| Channel | Frequency (MHz) |
|---|---|
| 58 | 5290 |

**For 5500 ~ 5700 MHz**

12 channels are provided for 802.11a, 802.11n (HT20):

| Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---|---|---|---|
| 100 | 5500 | 124 | 5620 |
| 104 | 5520 | 128 | 5640 |
| 108 | 5540 | 132 | 5660 |
| 112 | 5560 | 136 | 5680 |
| 116 | 5580 | 140 | 5700 |
| 120 | 5600 | 144 | 5720 |

6 channels are provided for 802.11n (HT40):

| Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---|---|---|---|
| 102 | 5510 | 126 | 5630 |
| 110 | 5550 | 134 | 5670 |
| 118 | 5590 | 142 | 5710 |

3 channels are provided for 802.11ac (VHT80):

| Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---|---|---|---|
| 106 | 5530 | 138 | 5690 |
| 122 | 5610 | | |

**For 5745 ~ 5825 MHz:**

5 channels are provided for 802.11a, 802.11n (HT20):

| Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---|---|---|---|
| 149 | 5745 | 161 | 5805 |
| 153 | 5765 | 165 | 5825 |
| 157 | 5785 | | |

2 channels are provided for 802.11n (HT40):

| Channel | Frequency (MHz) | Channel | Frequency (MHz) |
|---|---|---|---|
| 151 | 5755 | 159 | 5795 |

1 channel is provided for 802.11ac (VHT80):

| Channel | Frequency (MHz) |
|---|---|
| 155 | 5775 |

### 3.2.1 Test Mode Applicability and Tested Channel Detail

| EUT Configure Mode | Applicable To | | | | Description |
|---|---|---|---|---|---|
| | RE≥1G | RE<1G | PLC | APCM | |
| - | √ | √ | √ | √ | - |

Where **RE≥1G:** Radiated Emission above 1 GHz **RE<1G:** Radiated Emission below 1 GHz
**PLC:** Power Line Conducted Emission **APCM:** Antenna Port Conducted Measurement

**Note:**
1. The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **Y-plane** for 1TX 5180-5240MHz & 5260-5320MHz and 2TX, and **X-plane** for 1TX 5500-5720MHz & 5745-5825MHz.
2. "-" means no effect.

**Radiated Emission Test (Above 1 GHz):**

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

| EUT Configure Mode | Frequency Band (MHz) | Mode | Available Channel | Tested Channel | Modulation Technology | Modulation Type | Data Rate (Mbps) |
|---|---|---|---|---|---|---|---|
| - | 5180-5240 | 802.11a | 36 to 48 | 36, 44, 48 | OFDM | BPSK | 6.0 |
| - | | 802.11n (HT20) | 36 to 48 | 36, 44, 48 | OFDM | BPSK | 6.5 |
| - | | 802.11n (HT40) | 38 to 46 | 38, 46 | OFDM | BPSK | 13.5 |
| - | | 802.11ac (VHT80) | 42 | 42 | OFDM | BPSK | 29.3 |
| - | 5260-5320 | 802.11a | 52 to 64 | 52, 60, 64 | OFDM | BPSK | 6.0 |
| - | | 802.11n (HT20) | 52 to 64 | 52, 60, 64 | OFDM | BPSK | 6.5 |
| - | | 802.11n (HT40) | 54 to 62 | 54, 62 | OFDM | BPSK | 13.5 |
| - | | 802.11ac (VHT80) | 58 | 58 | OFDM | BPSK | 29.3 |
| - | 5500-5720 | 802.11a | 100 to 144 | 100, 116, 140, 144 | OFDM | BPSK | 6.0 |
| - | | 802.11n (HT20) | 100 to 144 | 100, 116, 140, 144 | OFDM | BPSK | 6.5 |
| - | | 802.11n (HT40) | 102 to 142 | 102, 110, 134, 142 | OFDM | BPSK | 13.5 |
| - | | 802.11ac (VHT80) | 106 to 138 | 106, 122, 138 | OFDM | BPSK | 29.3 |
| - | 5745-5825 | 802.11a | 149 to 165 | 149, 157, 165 | OFDM | BPSK | 6.0 |
| - | | 802.11n (HT20) | 149 to 165 | 149, 157, 165 | OFDM | BPSK | 6.5 |
| - | | 802.11n (HT40) | 151 to 159 | 151, 159 | OFDM | BPSK | 13.5 |
| - | | 802.11ac (VHT80) | 155 | 155 | OFDM | BPSK | 29.3 |

**Radiated Emission Test (Below 1 GHz):**

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

| EUT Configure Mode | Frequency Band (MHz) | Mode | Available Channel | Tested Channel | Modulation Technology | Modulation Type | Data Rate (Mbps) |
|---|---|---|---|---|---|---|---|
| - | 5260-5320 | 802.11n (HT40) | 54 to 62 | 62 | OFDM | BPSK | 13.5 |

**Power Line Conducted Emission Test:**

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

| EUT Configure Mode | Frequency Band (MHz) | Mode | Available Channel | Tested Channel | Modulation Technology | Modulation Type | Data Rate (Mbps) |
|---|---|---|---|---|---|---|---|
| - | 5180-5320 | 802.11a | 36 to 64 | 62 | OFDM | BPSK | 6.0 |

**Antenna Port Conducted Measurement:**

☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ Following channel(s) was (were) selected for the final test as listed below.

| EUT Configure Mode | Frequency Band (MHz) | Mode | Available Channel | Tested Channel | Modulation Technology | Modulation Type | Data Rate (Mbps) |
|---|---|---|---|---|---|---|---|
| - | 5180-5240 | 802.11a | 36 to 48 | 36, 44, 48 | OFDM | BPSK | 6.0 |
| - | | 802.11n (HT20) | 36 to 48 | 36, 44, 48 | OFDM | BPSK | 6.5 |
| - | | 802.11n (HT40) | 38 to 46 | 38, 46 | OFDM | BPSK | 13.5 |
| - | | 802.11ac (VHT80) | 42 | 42 | OFDM | BPSK | 29.3 |
| - | 5260-5320 | 802.11a | 52 to 64 | 52, 60, 64 | OFDM | BPSK | 6.0 |
| - | | 802.11n (HT20) | 52 to 64 | 52, 60, 64 | OFDM | BPSK | 6.5 |
| - | | 802.11n (HT40) | 54 to 62 | 54, 62 | OFDM | BPSK | 13.5 |
| - | | 802.11ac (VHT80) | 58 | 58 | OFDM | BPSK | 29.3 |
| - | 5500-5720 | 802.11a | 100 to 144 | 100, 116, 140, 144 | OFDM | BPSK | 6.0 |
| - | | 802.11n (HT20) | 100 to 144 | 100, 116, 140, 144 | OFDM | BPSK | 6.5 |
| - | | 802.11n (HT40) | 102 to 142 | 102, 110, 134, 142 | OFDM | BPSK | 13.5 |
| - | | 802.11ac (VHT80) | 106 to 138 | 106, 122, 138 | OFDM | BPSK | 29.3 |
| - | 5745-5825 | 802.11a | 149 to 165 | 149, 157, 165 | OFDM | BPSK | 6.0 |
| - | | 802.11n (HT20) | 149 to 165 | 149, 157, 165 | OFDM | BPSK | 6.5 |
| - | | 802.11n (HT40) | 151 to 159 | 151, 159 | OFDM | BPSK | 13.5 |
| - | | 802.11ac (VHT80) | 155 | 155 | OFDM | BPSK | 29.3 |

**Test Condition:**

| Applicable To | Environmental Conditions | Input Power | Tested by |
|---|---|---|---|
| RE≥1G | 25 deg. C, 65 % RH | 120 Vac, 60 Hz | Karl Lee |
| RE<1G | 25 deg. C, 65 % RH | 120 Vac, 60 Hz | Karl Lee |
| PLC | 25 deg. C, 65 % RH | 120 Vac, 60 Hz | Jisyong Wang |
| APCM | 25 deg. C, 65 % RH | 3.85 Vdc | Carlos Chen |

### 3.3 Duty Cycle of Test Signal

**MODULATION TYPE: BPSK**

Duty cycle of test signal is ≥ 98 %, duty factor is not required.

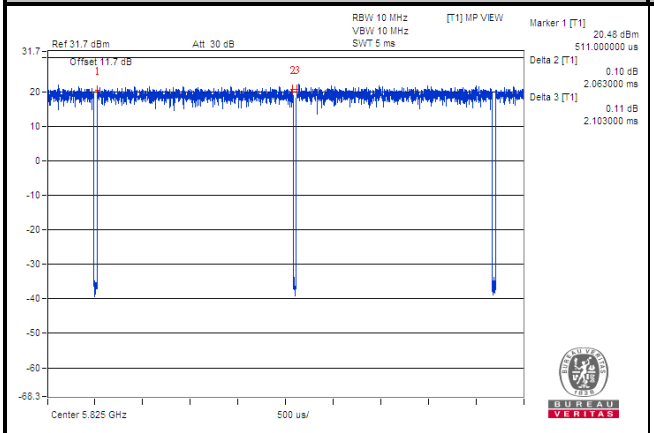
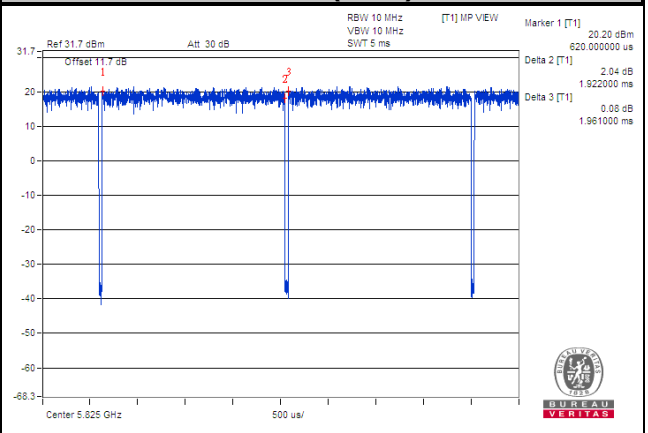
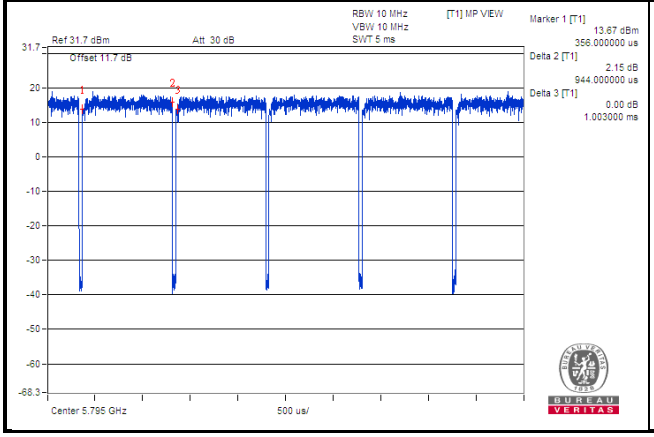
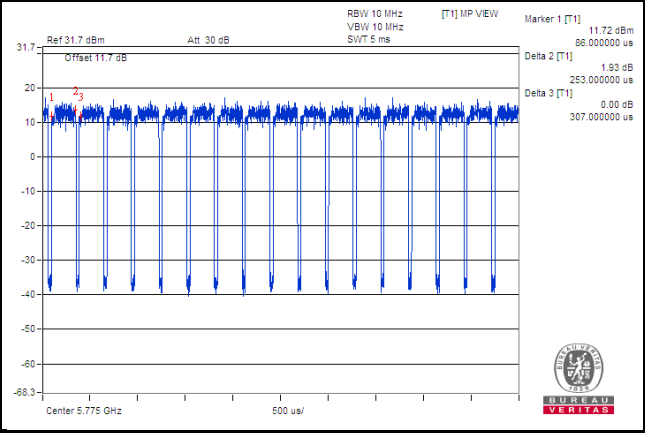
Duty cycle of test signal is < 98 %, duty factor is required.

**802.11a**: Duty cycle = 2.063/2.103 = 0.981

**802.11n (HT20):** Duty cycle = 1.922/1.961 = 0.98

**802.11n (HT40):** Duty cycle = 944/1003 = 0.941, Duty factor = 10 * log(1/0.941) = 0.26

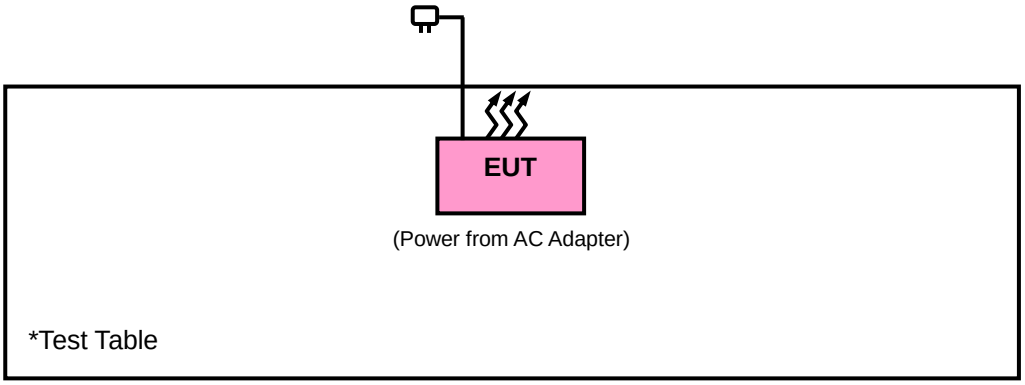
**802.11ac (VHT80):** Duty cycle = 253/307 = 0.824, Duty factor = 10 * log( 1/0.824) = 0.84

| 802.11a | 802.11n (HT20) |
|---|---|
|  |  |
| **802.11n (HT40)** | **802.11ac (VHT80)** |
|  |  |

## 3.4 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units.

### 3.4.1 Configuration of System under Test




## 3.5 General Description of Applied Standards

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

**FCC Part 15, Subpart E (15.407)**
**KDB 789033 D02 General UNII Test Procedures New Rules v02r01**
**KDB 644545 D01 Guidance for IEEE 802 11ac v01r02**
**KDB 662911 D01 Multiple Transmitter Output v02r01**
ANSI C63.10-2013

All test items have been performed and recorded as per the above standards.

# 4 Test Types and Results

## 4.1 Radiated Emission and Bandedge Measurement

### 4.1.1 Limits of Radiated Emission and Bandedge Measurement

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20 dB below the highest level of the desired power:

| Frequencies (MHz) | Field Strength (microvolts/meter) | Measurement Distance (meters) |
|---|---|---|
| 0.009 ~ 0.490 | 2400/F (kHz) | 300 |
| 0.490 ~ 1.705 | 24000/F (kHz) | 30 |
| 1.705 ~ 30.0 | 30 | 30 |
| 30 ~ 88 | 100 | 3 |
| 88 ~ 216 | 150 | 3 |
| 216 ~ 960 | 200 | 3 |
| Above 960 | 500 | 3 |

**Note**:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000 MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20 dB under any condition of modulation.

4.1.2 Limits of Unwanted Emission Out of the Restricted Bands

| Applicable To | | Limit | |
|---|---|---|---|
| 789033 D02 General UNII Test Procedures New Rules v02r01 | | Field Strength at 3 m | |
| | | PK: 74 (dBμV/m) | AV: 54 (dBμV/m) |
| **Frequency Band** | **Applicable To** | **EIRP Limit** | **Equivalent Field Strength at 3 m** |
| 5150~5250 MHz | 15.407(b)(1) | PK: -27 (dBm/MHz) | PK: 68.2 (dBμV/m) |
| 5250~5350 MHz | 15.407(b)(2) | | |
| 5470~5725 MHz | 15.407(b)(3) | | |
| 5725~5850 MHz | 15.407(b)(4)(i) | PK:-27 (dBm/MHz) *1<br>PK:10 (dBm/MHz) *2<br>PK:15.6 (dBm/MHz) *3<br>PK:27 (dBm/MHz) *4 | PK: 68.2 (dBμV/m) *1<br>PK:105.2 (dBμV/m) *2<br>PK: 110.8 (dBμV/m) *3<br>PK:122.2 (dBμV/m) *4 |
| | 15.407(b)(4)(ii) | Emission limits in section 15.247(d) | |

*1 beyond 75 MHz or more above of the band edge.

*2 below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above.

*3 below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above.

*4 from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

**Note:**

The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

$$E = \frac{1000000\sqrt{30P}}{3}$$ μV/m, where P is the eirp (Watts).

4.1.3 Test Instruments

| Description & Manufacturer | Model No. | Serial No. | Date of Calibration | Due Date of Calibration |
|---|---|---|---|---|
| Test Receiver Agilent Technologies | N9038A | MY52260177 | Jul. 05, 2017 | Jul. 04, 2018 |
| Spectrum Analyzer ROHDE & SCHWARZ | FSU43 | 101261 | Jan. 11, 2018 | Jan. 10, 2019 |
| Double Ridge Guide Horn Antenna EMCO | 3115 | 5619 | Nov. 30, 2017 | Nov. 29, 2018 |
| BILOG Antenna SCHWARZBECK | VULB 9168 | 9168-153 | Dec. 06, 2017 | Dec. 05, 2018 |
| Fixed Attenuator Mini-Circuits | BW-N10W5+ | NA | Jul. 07, 2017 | Jul. 06, 2018 |
| Loop Antenna | EM-6879 | 269 | Aug. 11, 2017 | Aug. 10, 2018 |
| Preamplifier Agilent | 310N | 187226 | Jun. 23, 2017 | Jun. 22, 2018 |
| Preamplifier Agilent | 83017A | MY39501357 | Jun. 23, 2017 | Jun. 22, 2018 |
| Power Meter Anritsu | ML2495A | 1012010 | Aug. 15, 2017 | Aug. 14, 2018 |
| Power Sensor Anritsu | MA2411B | 1315050 | Aug. 15, 2017 | Aug. 14, 2018 |
| RF signal cable ETS-LINDGREN | 5D-FB | Cable-CH1-01(RFC-SMS-100-SMS-120+RFC-SMS-100-SMS-400) | Jun. 26, 2017 | Jun. 25, 2018 |
| RF signal cable ETS-LINDGREN | 8D-FB | Cable-CH1-02(RFC-SMS-100-SMS-24) | Jun. 26, 2017 | Jun. 25, 2018 |
| Boresight Antenna Fixture | FBA-01 | FBA-SIP01 | NA | NA |
| Software BV ADT | E3 8.130425b | NA | NA | NA |
| Antenna Tower MF | NA | NA | NA | NA |
| Turn Table MF | NA | NA | NA | NA |
| Antenna Tower &Turn Table Controller MF | MF-7802 | NA | NA | NA |
| Temperature & Humidity Chamber | GTH-120-40-CP-AR | MAA1306-019 | Sep. 08, 2017 | Sep. 07, 2018 |
| DC Power Supply Topward | 33010D | 807748 | Oct. 25, 2016 | Oct. 24, 2018 |
| Digital Multimeter Fluke | 87-III | 70360742 | Jun. 30, 2017 | Jun. 29, 2018 |

Note: 1. The calibration interval of the above test instruments is 12 / 24 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HsinTien Chamber 1.
3. The horn antenna and preamplifier (model: 83017A) are used only for the measurement of emission frequency above 1 GHz if tested.
4. The IC Site Registration No. is IC7450I-1.

4.1.4 Test Procedures

**For Radiated Emission below 30 MHz**

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
c. Both Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
e. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

**Note:**

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9 kHz at frequency below 30 MHz.

**For Radiated Emission above 30 MHz**

a. The EUT was placed on the top of a rotating table 0.8 meters (for 30 MHz ~ 1 GHz) / 1.5 meters (for above 1 GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
f. The test-receiver system was set to peak and average detected function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

**Note:**

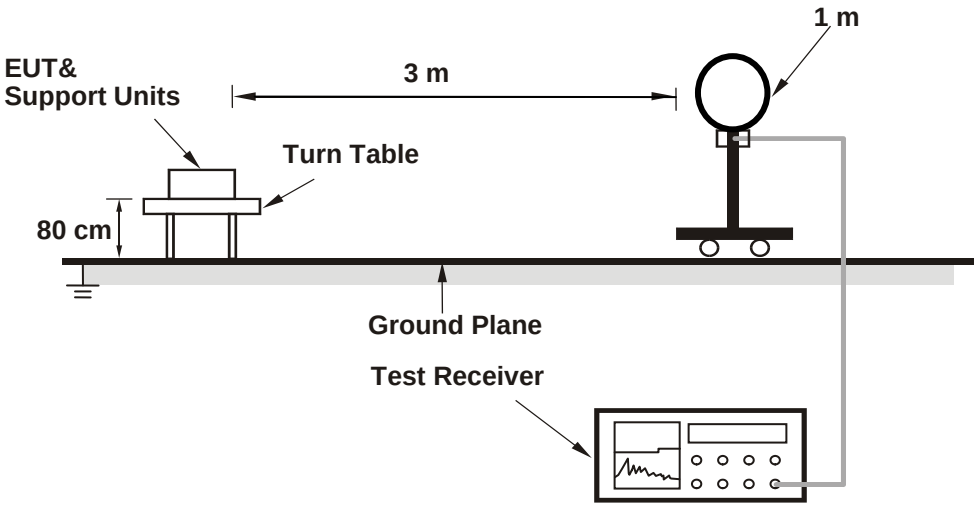
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) at frequency below 1 GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1 GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is ≥ 1/T (Duty cycle < 98 %) or 10 Hz (Duty cycle ≥ 98 %) for Average detection (AV) at frequency above 1 GHz. (11a: RBW = 1 MHz, VBW = 1 kHz ; 11n (HT20): RBW = 1 MHz, VBW = 1 kHz ; 11n (HT40): RBW = 1 MHz, VBW = 3 kHz ; 11ac (VHT80): RBW = 1 MHz, VBW = 10 kHz)
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.5 Deviation from Test Standard

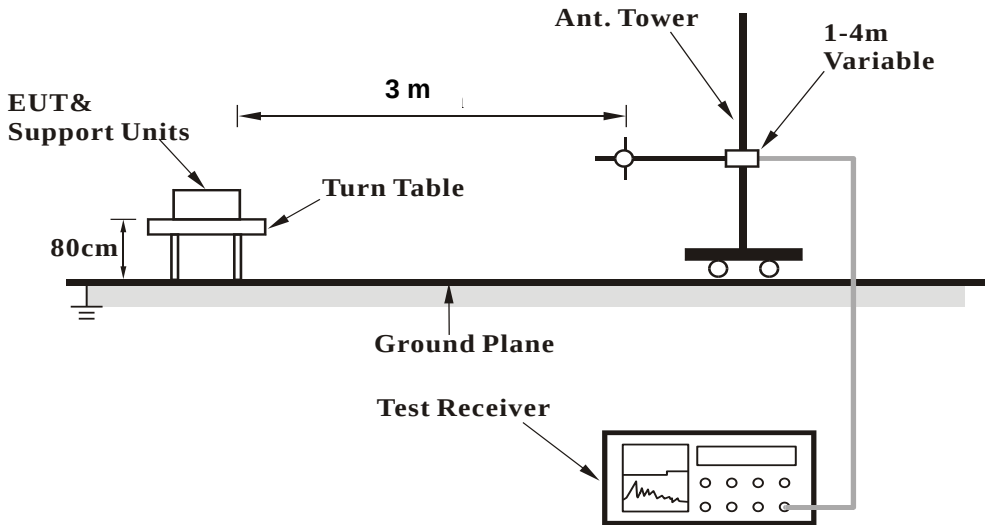
No deviation.

4.1.6 Test Setup

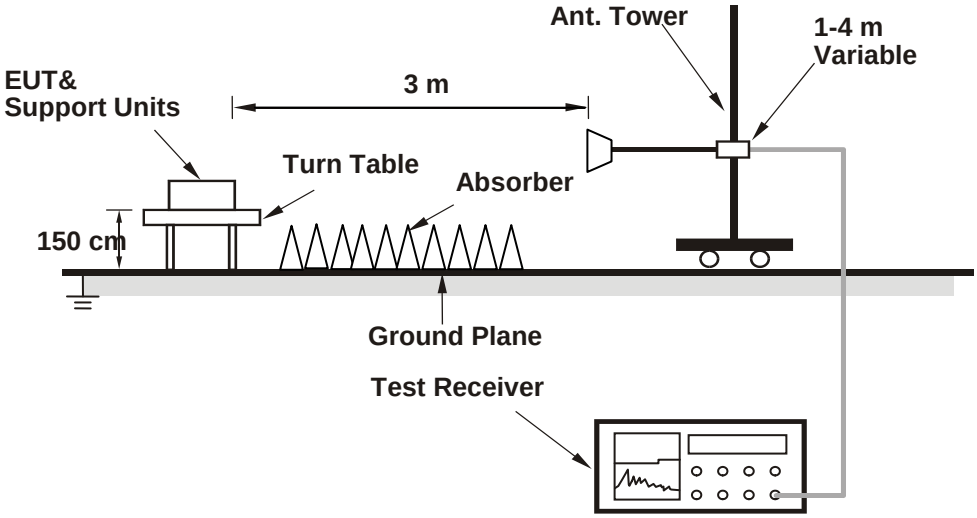
**<Radiated Emission below 30 MHz>**




**<Radiated Emission 30 MHz to 1 GHz>**



**<Radiated Emission above 1 GHz>**




For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.1.7 EUT Operating Conditions

a. Placed the EUT on a testing table.
b. Use the software to control the EUT under transmission condition continuously at specific channel frequency.

4.1.8 Test Results

**Above 1 GHz Data：**

**<1TX>**

**802.11a**

| EUT Test Condition | | Measurement Detail | |
|---|---|---|---|
| **Channel** | Channel 36 | **Frequency Range** | 1 GHz ~ 40 GHz |
| **Input Power** | 120 Vac, 60 Hz | **Detector Function** | Peak (PK)<br>Average (AV) |
| **Environmental Conditions** | 25 deg. C, 65 % RH | **Tested By** | Karl Lee |

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5148.8 | 45.97 | 37.72 | 54 | -8.03 | 34.12 | 8.13 | 34 | 100 | 246 | Average |
| 5148.8 | 56.47 | 48.22 | 74 | -17.53 | 34.12 | 8.13 | 34 | 100 | 246 | Peak |
| 5180 | 100.62 | 92.31 | | | 34.15 | 8.16 | 34 | 100 | 246 | Average |
| 5180 | 107.6 | 99.29 | | | 34.15 | 8.16 | 34 | 100 | 246 | Peak |
| *10360 | 54.68 | 40.38 | 68.2 | -13.52 | 37.12 | 12.3 | 35.12 | 103 | 248 | Peak |
| **Antenna Polarity & Test Distance: Vertical at 3 m** | | | | | | | | | | |
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5148.2 | 43.26 | 35.01 | 54 | -10.74 | 34.12 | 8.13 | 34 | 102 | 246 | Average |
| 5148.2 | 53.71 | 45.46 | 74 | -20.29 | 34.12 | 8.13 | 34 | 102 | 246 | Peak |
| 5180 | 93.65 | 85.34 | | | 34.15 | 8.16 | 34 | 102 | 246 | Average |
| 5180 | 100.9 | 92.59 | | | 34.15 | 8.16 | 34 | 102 | 246 | Peak |
| *10360 | 54.55 | 40.25 | 68.2 | -13.65 | 37.12 | 12.3 | 35.12 | 121 | 158 | Peak |

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5180 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

| EUT Test Condition | | Measurement Detail | |
|---|---|---|---|
| **Channel** | Channel 44 | **Frequency Range** | 1 GHz ~ 40 GHz |
| **Input Power** | 120 Vac, 60 Hz | **Detector Function** | Peak (PK)<br>Average (AV) |
| **Environmental Conditions** | 25 deg. C, 65 % RH | **Tested By** | Karl Lee |

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5149.85 | 43.22 | 34.97 | 54 | -10.78 | 34.12 | 8.13 | 34 | 100 | 246 | Average |
| 5149.85 | 53.63 | 45.38 | 74 | -20.37 | 34.12 | 8.13 | 34 | 100 | 246 | Peak |
| 5220 | 100.74 | 92.35 | | | 34.17 | 8.22 | 34 | 100 | 246 | Average |
| 5220 | 107.05 | 98.66 | | | 34.17 | 8.22 | 34 | 100 | 246 | Peak |
| 5453.07 | 43.02 | 34.2 | 54 | -10.98 | 34.36 | 8.51 | 34.05 | 100 | 246 | Average |
| 5453.07 | 53.26 | 44.44 | 74 | -20.74 | 34.36 | 8.51 | 34.05 | 100 | 246 | Peak |
| *10440 | 54.88 | 40.42 | 68.2 | -13.32 | 37.16 | 12.47 | 35.17 | 168 | 322 | Peak |
| **Antenna Polarity & Test Distance: Vertical at 3 m** | | | | | | | | | | |
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5125.4 | 42.64 | 34.42 | 54 | -11.36 | 34.11 | 8.1 | 33.99 | 102 | 246 | Average |
| 5125.4 | 53.96 | 45.74 | 74 | -20.04 | 34.11 | 8.1 | 33.99 | 102 | 246 | Peak |
| 5220 | 93.65 | 85.26 | | | 34.17 | 8.22 | 34 | 102 | 246 | Average |
| 5220 | 100.63 | 92.24 | | | 34.17 | 8.22 | 34 | 102 | 246 | Peak |
| 5363.42 | 42.69 | 34.05 | 54 | -11.31 | 34.29 | 8.38 | 34.03 | 102 | 246 | Average |
| 5363.42 | 53.39 | 44.75 | 74 | -20.61 | 34.29 | 8.38 | 34.03 | 102 | 246 | Peak |
| *10440 | 54.63 | 40.17 | 68.2 | -13.57 | 37.16 | 12.47 | 35.17 | 139 | 216 | Peak |

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5220 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

| EUT Test Condition | | Measurement Detail | |
|---|---|---|---|
| **Channel** | Channel 48 | **Frequency Range** | 1 GHz ~ 40 GHz |
| **Input Power** | 120 Vac, 60 Hz | **Detector Function** | Peak (PK)<br>Average (AV) |
| **Environmental Conditions** | 25 deg. C, 65 % RH | **Tested By** | Karl Lee |

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5240 | 100.47 | 92.03 | | | 34.19 | 8.26 | 34.01 | 100 | 246 | Average |
| 5240 | 107.42 | 98.98 | | | 34.19 | 8.26 | 34.01 | 100 | 246 | Peak |
| 5351.43 | 43.06 | 34.43 | 54 | -10.94 | 34.28 | 8.38 | 34.03 | 100 | 246 | Average |
| 5351.43 | 53.49 | 44.86 | 74 | -20.51 | 34.28 | 8.38 | 34.03 | 100 | 246 | Peak |
| *10480 | 56.03 | 41.52 | 68.2 | -12.17 | 37.19 | 12.53 | 35.21 | 125 | 156 | Peak |
| **Antenna Polarity & Test Distance: Vertical at 3 m** | | | | | | | | | | |
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5240 | 93.49 | 85.05 | | | 34.19 | 8.26 | 34.01 | 102 | 246 | Average |
| 5240 | 100.41 | 91.97 | | | 34.19 | 8.26 | 34.01 | 102 | 246 | Peak |
| 5459.23 | 42.78 | 33.96 | 54 | -11.22 | 34.36 | 8.51 | 34.05 | 102 | 246 | Average |
| 5459.23 | 53.13 | 44.31 | 74 | -20.87 | 34.36 | 8.51 | 34.05 | 102 | 246 | Peak |
| *10480 | 55.11 | 40.6 | 68.2 | -13.09 | 37.19 | 12.53 | 35.21 | 148 | 107 | Peak |

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5240 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

| EUT Test Condition | | Measurement Detail | |
|---|---|---|---|
| **Channel** | Channel 52 | **Frequency Range** | 1 GHz ~ 40 GHz |
| **Input Power** | 120 Vac, 60 Hz | **Detector Function** | Peak (PK)<br>Average (AV) |
| **Environmental Conditions** | 25 deg. C, 65 % RH | **Tested By** | Karl Lee |

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5129 | 42.5 | 34.28 | 54 | -11.5 | 34.11 | 8.1 | 33.99 | 100 | 246 | Average |
| 5129 | 53.26 | 45.04 | 74 | -20.74 | 34.11 | 8.1 | 33.99 | 100 | 246 | Peak |
| 5260 | 100.47 | 92.01 | | | 34.21 | 8.26 | 34.01 | 100 | 246 | Average |
| 5260 | 107.05 | 98.59 | | | 34.21 | 8.26 | 34.01 | 100 | 246 | Peak |
| *10520 | 54.88 | 40.29 | 68.2 | -13.32 | 37.21 | 12.61 | 35.23 | 186 | 213 | Peak |
| **Antenna Polarity & Test Distance: Vertical at 3 m** | | | | | | | | | | |
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5123.75 | 42.69 | 34.47 | 54 | -11.31 | 34.11 | 8.1 | 33.99 | 102 | 246 | Average |
| 5123.75 | 53.12 | 44.9 | 74 | -20.88 | 34.11 | 8.1 | 33.99 | 102 | 246 | Peak |
| 5260 | 93.35 | 84.89 | | | 34.21 | 8.26 | 34.01 | 102 | 246 | Average |
| 5260 | 100.82 | 92.36 | | | 34.21 | 8.26 | 34.01 | 102 | 246 | Peak |
| *10520 | 55.52 | 40.93 | 68.2 | -12.68 | 37.21 | 12.61 | 35.23 | 123 | 316 | Peak |

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5260 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

| EUT Test Condition | | Measurement Detail | |
|---|---|---|---|
| **Channel** | Channel 60 | **Frequency Range** | 1 GHz ~ 40 GHz |
| **Input Power** | 120 Vac, 60 Hz | **Detector Function** | Peak (PK)<br>Average (AV) |
| **Environmental Conditions** | 25 deg. C, 65 % RH | **Tested By** | Karl Lee |

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5129 | 42.65 | 34.43 | 54 | -11.35 | 34.11 | 8.1 | 33.99 | 100 | 246 | Average |
| 5129 | 53.11 | 44.89 | 74 | -20.89 | 34.11 | 8.1 | 33.99 | 100 | 246 | Peak |
| 5300 | 100.74 | 92.2 | | | 34.24 | 8.32 | 34.02 | 100 | 246 | Average |
| 5300 | 107.47 | 98.93 | | | 34.24 | 8.32 | 34.02 | 100 | 246 | Peak |
| 5351.1 | 44.33 | 35.7 | 54 | -9.67 | 34.28 | 8.38 | 34.03 | 100 | 246 | Average |
| 5351.1 | 54.5 | 45.87 | 74 | -19.5 | 34.28 | 8.38 | 34.03 | 100 | 246 | Peak |
| 10600 | 45.82 | 31.14 | 54 | -8.18 | 37.28 | 12.67 | 35.27 | 146 | 182 | Average |
| 10600 | 55.91 | 41.23 | 74 | -18.09 | 37.28 | 12.67 | 35.27 | 146 | 182 | Peak |
| **Antenna Polarity & Test Distance: Vertical at 3 m** | | | | | | | | | | |
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5108 | 42.54 | 34.34 | 54 | -11.46 | 34.09 | 8.1 | 33.99 | 102 | 246 | Average |
| 5108 | 52.82 | 44.62 | 74 | -21.18 | 34.09 | 8.1 | 33.99 | 102 | 246 | Peak |
| 5300 | 93.65 | 85.11 | | | 34.24 | 8.32 | 34.02 | 102 | 246 | Average |
| 5300 | 100.03 | 91.49 | | | 34.24 | 8.32 | 34.02 | 102 | 246 | Peak |
| 5355.39 | 42.94 | 34.31 | 54 | -11.06 | 34.28 | 8.38 | 34.03 | 102 | 246 | Average |
| 5355.39 | 53.76 | 45.13 | 74 | -20.24 | 34.28 | 8.38 | 34.03 | 102 | 246 | Peak |
| 10600 | 45.06 | 30.38 | 54 | -8.94 | 37.28 | 12.67 | 35.27 | 149 | 127 | Average |
| 10600 | 54.84 | 40.16 | 74 | -19.16 | 37.28 | 12.67 | 35.27 | 149 | 127 | Peak |

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5300 MHz: Fundamental Frequency
3. The emission levels of other frequencies were very low against the limit

| EUT Test Condition | | Measurement Detail | |
|---|---|---|---|
| **Channel** | Channel 64 | **Frequency Range** | 1 GHz ~ 40 GHz |
| **Input Power** | 120 Vac, 60 Hz | **Detector Function** | Peak (PK)<br>Average (AV) |
| **Environmental Conditions** | 25 deg. C, 65 % RH | **Tested By** | Karl Lee |

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5320 | 100.41 | 91.83 | | | 34.25 | 8.35 | 34.02 | 100 | 246 | Average |
| 5320 | 107.14 | 98.56 | | | 34.25 | 8.35 | 34.02 | 100 | 246 | Peak |
| 5350.22 | 46.59 | 37.96 | 54 | -7.41 | 34.28 | 8.38 | 34.03 | 100 | 246 | Average |
| 5350.22 | 57.61 | 48.98 | 74 | -16.39 | 34.28 | 8.38 | 34.03 | 100 | 246 | Peak |
| 10640 | 45.89 | 31.16 | 54 | -8.11 | 37.31 | 12.71 | 35.29 | 152 | 118 | Average |
| 10640 | 55.85 | 41.12 | 74 | -18.15 | 37.31 | 12.71 | 35.29 | 152 | 118 | Peak |
| **Antenna Polarity & Test Distance: Vertical at 3 m** | | | | | | | | | | |
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5320 | 93.66 | 85.08 | | | 34.25 | 8.35 | 34.02 | 102 | 246 | Average |
| 5320 | 100.79 | 92.21 | | | 34.25 | 8.35 | 34.02 | 102 | 246 | Peak |
| 5350.22 | 43.62 | 34.99 | 54 | -10.38 | 34.28 | 8.38 | 34.03 | 102 | 246 | Average |
| 5350.22 | 53.69 | 45.06 | 74 | -20.31 | 34.28 | 8.38 | 34.03 | 102 | 246 | Peak |
| 10640 | 45.39 | 30.66 | 54 | -8.61 | 37.31 | 12.71 | 35.29 | 135 | 274 | Average |
| 10640 | 55.2 | 40.47 | 74 | -18.8 | 37.31 | 12.71 | 35.29 | 135 | 274 | Peak |

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5320 MHz: Fundamental Frequency
3. The emission levels of other frequencies were very low against the limit

| EUT Test Condition | | Measurement Detail | |
|---|---|---|---|
| **Channel** | Channel 100 | **Frequency Range** | 1 GHz ~ 40 GHz |
| **Input Power** | 120 Vac, 60 Hz | **Detector Function** | Peak (PK)<br>Average (AV) |
| **Environmental Conditions** | 25 deg. C, 65 % RH | **Tested By** | Karl Lee |

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5459.12 | 44 | 35.18 | 54 | -10 | 34.36 | 8.51 | 34.05 | 200 | 37 | Average |
| 5459.12 | 53.83 | 45.01 | 74 | -20.17 | 34.36 | 8.51 | 34.05 | 200 | 37 | Peak |
| *5468.24 | 55.12 | 46.29 | 68.2 | -13.08 | 34.37 | 8.51 | 34.05 | 200 | 37 | Peak |
| 5500 | 99.75 | 90.83 | | | 34.4 | 8.57 | 34.05 | 200 | 37 | Average |
| 5500 | 106.95 | 98.03 | | | 34.4 | 8.57 | 34.05 | 200 | 37 | Peak |
| 11000 | 45.71 | 30.63 | 54 | -8.29 | 37.6 | 12.96 | 35.48 | 149 | 328 | Average |
| 11000 | 55.66 | 40.58 | 74 | -18.34 | 37.6 | 12.96 | 35.48 | 149 | 328 | Peak |
| **Antenna Polarity & Test Distance: Vertical at 3 m** | | | | | | | | | | |
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5459.92 | 43.98 | 35.16 | 54 | -10.02 | 34.36 | 8.51 | 34.05 | 100 | 348 | Average |
| 5459.92 | 54.24 | 45.42 | 74 | -19.76 | 34.36 | 8.51 | 34.05 | 100 | 348 | Peak |
| *5469.36 | 54.94 | 46.11 | 68.2 | -13.26 | 34.37 | 8.51 | 34.05 | 100 | 348 | Peak |
| 5500 | 97.77 | 88.85 | | | 34.4 | 8.57 | 34.05 | 100 | 348 | Average |
| 5500 | 104.97 | 96.05 | | | 34.4 | 8.57 | 34.05 | 100 | 348 | Peak |
| 11000 | 45.73 | 30.65 | 54 | -8.27 | 37.6 | 12.96 | 35.48 | 105 | 293 | Average |
| 11000 | 55.86 | 40.78 | 74 | -18.14 | 37.6 | 12.96 | 35.48 | 105 | 293 | Peak |

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5500 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

| EUT Test Condition | | Measurement Detail | |
|---|---|---|---|
| **Channel** | Channel 116 | **Frequency Range** | 1 GHz ~ 40 GHz |
| **Input Power** | 120 Vac, 60 Hz | **Detector Function** | Peak (PK)<br>Average (AV) |
| **Environmental Conditions** | 25 deg. C, 65 % RH | **Tested By** | Karl Lee |

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5455.12 | 42.65 | 33.83 | 54 | -11.35 | 34.36 | 8.51 | 34.05 | 200 | 37 | Average |
| 5455.12 | 53.42 | 44.6 | 74 | -20.58 | 34.36 | 8.51 | 34.05 | 200 | 37 | Peak |
| *5468.24 | 52.73 | 43.9 | 68.2 | -15.47 | 34.37 | 8.51 | 34.05 | 200 | 37 | Peak |
| 5580 | 99.65 | 90.66 | | | 34.47 | 8.6 | 34.08 | 200 | 37 | Average |
| 5580 | 106.25 | 97.26 | | | 34.47 | 8.6 | 34.08 | 200 | 37 | Peak |
| *5725.16 | 51.76 | 42.6 | 68.2 | -16.44 | 34.62 | 8.65 | 34.11 | 200 | 37 | Peak |
| 11160 | 46.83 | 31.75 | 54 | -7.17 | 37.7 | 12.83 | 35.45 | 143 | 62 | Average |
| 11160 | 56.91 | 41.83 | 74 | -17.09 | 37.7 | 12.83 | 35.45 | 143 | 62 | Peak |
| **Antenna Polarity & Test Distance: Vertical at 3 m** | | | | | | | | | | |
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5459.76 | 42.6 | 33.78 | 54 | -11.4 | 34.36 | 8.51 | 34.05 | 100 | 348 | Average |
| 5459.76 | 53.49 | 44.67 | 74 | -20.51 | 34.36 | 8.51 | 34.05 | 100 | 348 | Peak |
| *5468.56 | 52.36 | 43.53 | 68.2 | -15.84 | 34.37 | 8.51 | 34.05 | 100 | 348 | Peak |
| 5580 | 97.88 | 88.89 | | | 34.47 | 8.6 | 34.08 | 100 | 348 | Average |
| 5580 | 104.92 | 95.93 | | | 34.47 | 8.6 | 34.08 | 100 | 348 | Peak |
| *5726.04 | 52.95 | 43.79 | 68.2 | -15.25 | 34.62 | 8.65 | 34.11 | 100 | 348 | Peak |
| 11160 | 46.39 | 31.31 | 54 | -7.61 | 37.7 | 12.83 | 35.45 | 137 | 144 | Average |
| 11160 | 56.57 | 41.49 | 74 | -17.43 | 37.7 | 12.83 | 35.45 | 137 | 144 | Peak |

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5580 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

| EUT Test Condition | | Measurement Detail | |
|---|---|---|---|
| **Channel** | Channel 140 | **Frequency Range** | 1 GHz ~ 40 GHz |
| **Input Power** | 120 Vac, 60 Hz | **Detector Function** | Peak (PK)<br>Average (AV) |
| **Environmental Conditions** | 25 deg. C, 65 % RH | **Tested By** | Karl Lee |

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5700 | 98.65 | 89.52 | | | 34.59 | 8.64 | 34.1 | 200 | 37 | Average |
| 5700 | 105.77 | 96.64 | | | 34.59 | 8.64 | 34.1 | 200 | 37 | Peak |
| *5724.12 | 56.52 | 47.36 | 68.2 | -11.68 | 34.62 | 8.65 | 34.11 | 200 | 37 | Peak |
| 11400 | 46.27 | 31.17 | 54 | -7.73 | 37.84 | 12.67 | 35.41 | 163 | 309 | Average |
| 11400 | 56.16 | 41.06 | 74 | -17.84 | 37.84 | 12.67 | 35.41 | 163 | 309 | Peak |
| **Antenna Polarity & Test Distance: Vertical at 3 m** | | | | | | | | | | |
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5700 | 96.65 | 87.52 | | | 34.59 | 8.64 | 34.1 | 100 | 348 | Average |
| 5700 | 103.81 | 94.68 | | | 34.59 | 8.64 | 34.1 | 100 | 348 | Peak |
| *5724.12 | 57.28 | 48.12 | 68.2 | -10.92 | 34.62 | 8.65 | 34.11 | 100 | 348 | Peak |
| 11400 | 46.28 | 31.18 | 54 | -7.72 | 37.84 | 12.67 | 35.41 | 135 | 218 | Average |
| 11400 | 56.14 | 41.04 | 74 | -17.86 | 37.84 | 12.67 | 35.41 | 135 | 218 | Peak |

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5700 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

| EUT Test Condition | | Measurement Detail | |
|---|---|---|---|
| **Channel** | Channel 144 | **Frequency Range** | 1 GHz ~ 40 GHz |
| **Input Power** | 120 Vac, 60 Hz | **Detector Function** | Peak (PK)<br>Average (AV) |
| **Environmental Conditions** | 25 deg. C, 65 % RH | **Tested By** | Karl Lee |

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5448.4 | 42.67 | 33.84 | 54 | -11.33 | 34.36 | 8.51 | 34.04 | 200 | 37 | Average |
| 5448.4 | 54.07 | 45.24 | 74 | -19.93 | 34.36 | 8.51 | 34.04 | 200 | 37 | Peak |
| *5470.8 | 51.72 | 42.86 | 68.2 | -16.48 | 34.37 | 8.54 | 34.05 | 200 | 37 | Peak |
| 5720 | 98.74 | 89.58 | | | 34.62 | 8.65 | 34.11 | 200 | 37 | Average |
| 5720 | 105.59 | 96.43 | | | 34.62 | 8.65 | 34.11 | 200 | 37 | Peak |
| 11440 | 47.07 | 31.96 | 54 | -6.93 | 37.86 | 12.65 | 35.4 | 159 | 114 | Average |
| 11440 | 55.98 | 40.87 | 74 | -18.02 | 37.86 | 12.65 | 35.4 | 159 | 114 | Peak |
| **Antenna Polarity & Test Distance: Vertical at 3 m** | | | | | | | | | | |
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5443.12 | 42.7 | 33.91 | 54 | -11.3 | 34.35 | 8.48 | 34.04 | 100 | 348 | Average |
| 5443.12 | 53.05 | 44.26 | 74 | -20.95 | 34.35 | 8.48 | 34.04 | 100 | 348 | Peak |
| *5470 | 53.18 | 44.35 | 68.2 | -15.02 | 34.37 | 8.51 | 34.05 | 100 | 348 | Peak |
| 5720 | 96.25 | 87.09 | | | 34.62 | 8.65 | 34.11 | 100 | 348 | Average |
| 5720 | 103 | 93.84 | | | 34.62 | 8.65 | 34.11 | 100 | 348 | Peak |
| 11440 | 47.11 | 32 | 54 | -6.89 | 37.86 | 12.65 | 35.4 | 134 | 195 | Average |
| 11440 | 55.48 | 40.37 | 74 | -18.52 | 37.86 | 12.65 | 35.4 | 134 | 195 | Peak |

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5720 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

| EUT Test Condition | | Measurement Detail | |
|---|---|---|---|
| **Channel** | Channel 149 | **Frequency Range** | 1 GHz ~ 40 GHz |
| **Input Power** | 120 Vac, 60 Hz | **Detector Function** | Peak (PK)<br>Average (AV) |
| **Environmental Conditions** | 25 deg. C, 65 % RH | **Tested By** | Karl Lee |

**<Spurious Emission>**

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5745 | 98.78 | 89.59 | | | 34.64 | 8.66 | 34.11 | 200 | 37 | Average |
| 5745 | 105.07 | 95.88 | | | 34.64 | 8.66 | 34.11 | 200 | 37 | Peak |
| 11490 | 46.23 | 31.11 | 54 | -7.77 | 37.89 | 12.62 | 35.39 | 135 | 211 | Average |
| 11490 | 56.11 | 40.99 | 74 | -17.89 | 37.89 | 12.62 | 35.39 | 135 | 211 | Peak |
| **Antenna Polarity & Test Distance: Vertical at 3 m** | | | | | | | | | | |
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5745 | 96.74 | 87.55 | | | 34.64 | 8.66 | 34.11 | 100 | 348 | Average |
| 5745 | 103.09 | 93.9 | | | 34.64 | 8.66 | 34.11 | 100 | 348 | Peak |
| 11490 | 46.51 | 31.39 | 54 | -7.49 | 37.89 | 12.62 | 35.39 | 127 | 234 | Average |
| 11490 | 56.4 | 41.28 | 74 | -17.6 | 37.89 | 12.62 | 35.39 | 127 | 234 | Peak |

**<Out of Band Emission (OOBE)>**

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| *5542 | 53.35 | 44.41 | 68.2 | -14.85 | 34.43 | 8.58 | 34.07 | 200 | 37 | Peak |
| 5653.3 | 52.24 | 43.14 | 70.64 | -18.4 | 34.56 | 8.63 | 34.09 | 200 | 37 | Peak |
| 5918.95 | 52.43 | 43.05 | 72.68 | -20.25 | 34.81 | 8.73 | 34.16 | 200 | 37 | Peak |
| *6022.375 | 53.11 | 43.6 | 68.2 | -15.09 | 34.92 | 8.77 | 34.18 | 200 | 37 | Peak |
| **Antenna Polarity & Test Distance: Vertical at 3 m** | | | | | | | | | | |
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| *5639.65 | 53.61 | 44.54 | 68.2 | -14.59 | 34.54 | 8.62 | 34.09 | 100 | 348 | Peak |
| 5657.5 | 51.49 | 42.4 | 73.75 | -22.26 | 34.56 | 8.63 | 34.1 | 100 | 348 | Peak |
| 5921.575 | 52.25 | 42.85 | 70.73 | -18.48 | 34.83 | 8.73 | 34.16 | 100 | 348 | Peak |
| *5932.6 | 53.43 | 44.03 | 68.2 | -14.77 | 34.83 | 8.73 | 34.16 | 100 | 348 | Peak |

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5745 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

| EUT Test Condition | | Measurement Detail | |
|---|---|---|---|
| **Channel** | Channel 157 | **Frequency Range** | 1 GHz ~ 40 GHz |
| **Input Power** | 120 Vac, 60 Hz | **Detector Function** | Peak (PK)<br>Average (AV) |
| **Environmental Conditions** | 25 deg. C, 65 % RH | **Tested By** | Karl Lee |

**<Spurious Emission>**

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5785 | 98.36 | 89.13 | | | 34.68 | 8.68 | 34.13 | 200 | 37 | Average |
| 5785 | 105.78 | 96.55 | | | 34.68 | 8.68 | 34.13 | 200 | 37 | Peak |
| 11570 | 46.83 | 31.52 | 54 | -7.17 | 38 | 12.68 | 35.37 | 139 | 247 | Average |
| 11570 | 56.75 | 41.44 | 74 | -17.25 | 38 | 12.68 | 35.37 | 139 | 247 | Peak |
| **Antenna Polarity & Test Distance: Vertical at 3 m** | | | | | | | | | | |
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5785 | 96.55 | 87.32 | | | 34.68 | 8.68 | 34.13 | 100 | 348 | Average |
| 5785 | 103.58 | 94.35 | | | 34.68 | 8.68 | 34.13 | 100 | 348 | Peak |
| 11570 | 46.59 | 31.28 | 54 | -7.41 | 38 | 12.68 | 35.37 | 121 | 156 | Average |
| 11570 | 56.73 | 41.42 | 74 | -17.27 | 38 | 12.68 | 35.37 | 121 | 156 | Peak |

**<Out of Band Emission (OOBE)>**

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| *5639.125 | 53.16 | 44.09 | 68.2 | -15.04 | 34.54 | 8.62 | 34.09 | 200 | 37 | Peak |
| 5658.55 | 51.64 | 42.55 | 74.53 | -22.89 | 34.56 | 8.63 | 34.1 | 200 | 37 | Peak |
| 5924.2 | 54.56 | 45.16 | 68.79 | -14.23 | 34.83 | 8.73 | 34.16 | 200 | 37 | Peak |
| *5950.45 | 53.53 | 44.1 | 68.2 | -14.67 | 34.85 | 8.74 | 34.16 | 200 | 37 | Peak |
| **Antenna Polarity & Test Distance: Vertical at 3 m** | | | | | | | | | | |
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| *5648.575 | 53.32 | 44.25 | 68.2 | -14.88 | 34.54 | 8.62 | 34.09 | 100 | 348 | Peak |
| 5659.6 | 52.92 | 43.83 | 75.3 | -22.38 | 34.56 | 8.63 | 34.1 | 100 | 348 | Peak |
| 5917.9 | 51.31 | 41.93 | 73.45 | -22.14 | 34.81 | 8.73 | 34.16 | 100 | 348 | Peak |
| *5964.625 | 53.26 | 43.81 | 68.2 | -14.94 | 34.87 | 8.75 | 34.17 | 100 | 348 | Peak |

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5785 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

| EUT Test Condition | | Measurement Detail | |
|---|---|---|---|
| **Channel** | Channel 165 | **Frequency Range** | 1 GHz ~ 40 GHz |
| **Input Power** | 120 Vac, 60 Hz | **Detector Function** | Peak (PK)<br>Average (AV) |
| **Environmental Conditions** | 25 deg. C, 65 % RH | **Tested By** | Karl Lee |

**<Spurious Emission>**

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5825 | 98.52 | 89.23 | | | 34.73 | 8.69 | 34.13 | 200 | 37 | Average |
| 5825 | 105.14 | 95.85 | | | 34.73 | 8.69 | 34.13 | 200 | 37 | Peak |
| 11650 | 46.02 | 30.49 | 54 | -7.98 | 38.09 | 12.8 | 35.36 | 189 | 216 | Average |
| 11650 | 55.99 | 40.46 | 74 | -18.01 | 38.09 | 12.8 | 35.36 | 189 | 216 | Peak |
| **Antenna Polarity & Test Distance: Vertical at 3 m** | | | | | | | | | | |
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5825 | 96.17 | 86.88 | | | 34.73 | 8.69 | 34.13 | 100 | 348 | Average |
| 5825 | 103.63 | 94.34 | | | 34.73 | 8.69 | 34.13 | 100 | 348 | Peak |
| 11650 | 46.53 | 31 | 54 | -7.47 | 38.09 | 12.8 | 35.36 | 147 | 128 | Average |
| 11650 | 56.47 | 40.94 | 74 | -17.53 | 38.09 | 12.8 | 35.36 | 147 | 128 | Peak |

**<Out of Band Emission (OOBE)>**

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| *5644.9 | 53.12 | 44.05 | 68.2 | -15.08 | 34.54 | 8.62 | 34.09 | 200 | 37 | Peak |
| 5656.45 | 51.03 | 41.94 | 72.97 | -21.94 | 34.56 | 8.63 | 34.1 | 200 | 37 | Peak |
| 5922.1 | 52.12 | 42.72 | 70.35 | -18.23 | 34.83 | 8.73 | 34.16 | 200 | 37 | Peak |
| *5946.775 | 53.47 | 44.04 | 68.2 | -14.73 | 34.85 | 8.74 | 34.16 | 200 | 37 | Peak |
| **Antenna Polarity & Test Distance: Vertical at 3 m** | | | | | | | | | | |
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| *5607.625 | 54.04 | 45.01 | 68.2 | -14.16 | 34.5 | 8.61 | 34.08 | 100 | 348 | Peak |
| 5657.5 | 52.31 | 43.22 | 73.75 | -21.44 | 34.56 | 8.63 | 34.1 | 100 | 348 | Peak |
| 5922.1 | 52.11 | 42.71 | 70.35 | -18.24 | 34.83 | 8.73 | 34.16 | 100 | 348 | Peak |
| *5938.9 | 53.37 | 43.94 | 68.2 | -14.83 | 34.85 | 8.74 | 34.16 | 100 | 348 | Peak |

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5825 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

**<2TX>**

**802.11n (HT20)**

| EUT Test Condition | | Measurement Detail | |
|---|---|---|---|
| **Channel** | Channel 36 | **Frequency Range** | 1 GHz ~ 40 GHz |
| **Input Power** | 120 Vac, 60 Hz | **Detector Function** | Peak (PK)<br>Average (AV) |
| **Environmental Conditions** | 25 deg. C, 65 % RH | **Tested By** | Karl Lee |

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5149.85 | 46.8 | 38.55 | 54 | -7.2 | 34.12 | 8.13 | 34 | 100 | 246 | Average |
| 5149.85 | 56.34 | 48.09 | 74 | -17.66 | 34.12 | 8.13 | 34 | 100 | 246 | Peak |
| 5180 | 100.11 | 91.8 | | | 34.15 | 8.16 | 34 | 230 | 246 | Average |
| 5180 | 107.34 | 99.03 | | | 34.15 | 8.16 | 34 | 230 | 246 | Peak |
| *10360 | 54.91 | 40.61 | 68.2 | -13.29 | 37.12 | 12.3 | 35.12 | 196 | 115 | Peak |
| **Antenna Polarity & Test Distance: Vertical at 3 m** | | | | | | | | | | |
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5148.35 | 43.67 | 35.42 | 54 | -10.33 | 34.12 | 8.13 | 34 | 108 | 292 | Average |
| 5148.35 | 53.9 | 45.65 | 74 | -20.1 | 34.12 | 8.13 | 34 | 108 | 292 | Peak |
| 5180 | 95.56 | 87.25 | | | 34.15 | 8.16 | 34 | 111 | 280 | Average |
| 5180 | 103.34 | 95.03 | | | 34.15 | 8.16 | 34 | 111 | 280 | Peak |
| *10360 | 53.92 | 39.62 | 68.2 | -14.28 | 37.12 | 12.3 | 35.12 | 149 | 121 | Peak |

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5180 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

| EUT Test Condition | | Measurement Detail | |
|---|---|---|---|
| **Channel** | Channel 44 | **Frequency Range** | 1 GHz ~ 40 GHz |
| **Input Power** | 120 Vac, 60 Hz | **Detector Function** | Peak (PK)<br>Average (AV) |
| **Environmental Conditions** | 25 deg. C, 65 % RH | **Tested By** | Karl Lee |

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5149.25 | 42.59 | 34.34 | 54 | -11.41 | 34.12 | 8.13 | 34 | 230 | 246 | Average |
| 5149.25 | 52.95 | 44.7 | 74 | -21.05 | 34.12 | 8.13 | 34 | 230 | 246 | Peak |
| 5220 | 99.16 | 90.77 | | | 34.17 | 8.22 | 34 | 230 | 246 | Average |
| 5220 | 107.26 | 98.87 | | | 34.17 | 8.22 | 34 | 230 | 246 | Peak |
| 5451.86 | 42.88 | 34.06 | 54 | -11.12 | 34.36 | 8.51 | 34.05 | 230 | 246 | Average |
| 5451.86 | 52.95 | 44.13 | 74 | -21.05 | 34.36 | 8.51 | 34.05 | 230 | 246 | Peak |
| *10440 | 54.74 | 40.28 | 68.2 | -13.46 | 37.16 | 12.47 | 35.17 | 195 | 131 | Peak |
| **Antenna Polarity & Test Distance: Vertical at 3 m** | | | | | | | | | | |
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5144 | 42.58 | 34.33 | 54 | -11.42 | 34.12 | 8.13 | 34 | 111 | 280 | Average |
| 5144 | 53.41 | 45.16 | 74 | -20.59 | 34.12 | 8.13 | 34 | 111 | 280 | Peak |
| 5220 | 95.66 | 87.27 | | | 34.17 | 8.22 | 34 | 111 | 280 | Average |
| 5220 | 103.55 | 95.16 | | | 34.17 | 8.22 | 34 | 111 | 280 | Peak |
| 5383.99 | 42.55 | 33.87 | 54 | -11.45 | 34.31 | 8.41 | 34.04 | 111 | 280 | Average |
| 5383.99 | 53.49 | 44.81 | 74 | -20.51 | 34.31 | 8.41 | 34.04 | 111 | 280 | Peak |
| *10440 | 54.45 | 39.99 | 68.2 | -13.75 | 37.16 | 12.47 | 35.17 | 163 | 124 | Peak |

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5220 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

| EUT Test Condition | | Measurement Detail | |
|---|---|---|---|
| **Channel** | Channel 48 | **Frequency Range** | 1 GHz ~ 40 GHz |
| **Input Power** | 120 Vac, 60 Hz | **Detector Function** | Peak (PK)<br>Average (AV) |
| **Environmental Conditions** | 25 deg. C, 65 % RH | **Tested By** | Karl Lee |

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5240 | 100.56 | 92.12 | | | 34.19 | 8.26 | 34.01 | 230 | 246 | Average |
| 5240 | 107.77 | 99.33 | | | 34.19 | 8.26 | 34.01 | 230 | 246 | Peak |
| 5359.02 | 42.68 | 34.05 | 54 | -11.32 | 34.28 | 8.38 | 34.03 | 230 | 246 | Average |
| 5359.02 | 53.2 | 44.57 | 74 | -20.8 | 34.28 | 8.38 | 34.03 | 230 | 246 | Peak |
| *10480 | 55.27 | 40.76 | 68.2 | -12.93 | 37.19 | 12.53 | 35.21 | 126 | 118 | Peak |
| **Antenna Polarity & Test Distance: Vertical at 3 m** | | | | | | | | | | |
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5240 | 95.98 | 87.54 | | | 34.19 | 8.26 | 34.01 | 111 | 280 | Average |
| 5240 | 103.84 | 95.4 | | | 34.19 | 8.26 | 34.01 | 111 | 280 | Peak |
| 5381.57 | 42.69 | 34.01 | 54 | -11.31 | 34.31 | 8.41 | 34.04 | 111 | 280 | Average |
| 5381.57 | 53.4 | 44.72 | 74 | -20.6 | 34.31 | 8.41 | 34.04 | 111 | 280 | Peak |
| *10480 | 55.62 | 41.11 | 68.2 | -12.58 | 37.19 | 12.53 | 35.21 | 151 | 177 | Peak |

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5240 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

| EUT Test Condition | | Measurement Detail | |
|---|---|---|---|
| **Channel** | Channel 52 | **Frequency Range** | 1 GHz ~ 40 GHz |
| **Input Power** | 120 Vac, 60 Hz | **Detector Function** | Peak (PK)<br>Average (AV) |
| **Environmental Conditions** | 25 deg. C, 65 % RH | **Tested By** | Karl Lee |

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5146.1 | 42.31 | 34.06 | 54 | -11.69 | 34.12 | 8.13 | 34 | 100 | 171 | Average |
| 5146.1 | 53.13 | 44.88 | 74 | -20.87 | 34.12 | 8.13 | 34 | 100 | 171 | Peak |
| 5260 | 99.61 | 91.15 | | | 34.21 | 8.26 | 34.01 | 100 | 171 | Average |
| 5260 | 107.26 | 98.8 | | | 34.21 | 8.26 | 34.01 | 100 | 171 | Peak |
| *10520 | 55.02 | 40.43 | 68.2 | -13.18 | 37.21 | 12.61 | 35.23 | 133 | 269 | Peak |
| **Antenna Polarity & Test Distance: Vertical at 3 m** | | | | | | | | | | |
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5109.5 | 42.33 | 34.13 | 54 | -11.67 | 34.09 | 8.1 | 33.99 | 107 | 283 | Average |
| 5109.5 | 53.56 | 45.36 | 74 | -20.44 | 34.09 | 8.1 | 33.99 | 107 | 283 | Peak |
| 5260 | 96.28 | 87.82 | | | 34.21 | 8.26 | 34.01 | 107 | 283 | Average |
| 5260 | 103.03 | 94.57 | | | 34.21 | 8.26 | 34.01 | 107 | 283 | Peak |
| *10520 | 55.24 | 40.65 | 68.2 | -12.96 | 37.21 | 12.61 | 35.23 | 114 | 129 | Peak |

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5260 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

| EUT Test Condition | | Measurement Detail | |
|---|---|---|---|
| **Channel** | Channel 60 | **Frequency Range** | 1 GHz ~ 40 GHz |
| **Input Power** | 120 Vac, 60 Hz | **Detector Function** | Peak (PK)<br>Average (AV) |
| **Environmental Conditions** | 25 deg. C, 65 % RH | **Tested By** | Karl Lee |

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5118.8 | 42.43 | 34.23 | 54 | -11.57 | 34.09 | 8.1 | 33.99 | 100 | 171 | Average |
| 5118.8 | 52.83 | 44.63 | 74 | -21.17 | 34.09 | 8.1 | 33.99 | 100 | 171 | Peak |
| 5300 | 100.18 | 91.64 | | | 34.24 | 8.32 | 34.02 | 100 | 171 | Average |
| 5300 | 107.36 | 98.82 | | | 34.24 | 8.32 | 34.02 | 100 | 171 | Peak |
| 5352.09 | 43.77 | 35.14 | 54 | -10.23 | 34.28 | 8.38 | 34.03 | 100 | 171 | Average |
| 5352.09 | 53.47 | 44.84 | 74 | -20.53 | 34.28 | 8.38 | 34.03 | 100 | 171 | Peak |
| 10600 | 45.71 | 31.03 | 54 | -8.29 | 37.28 | 12.67 | 35.27 | 139 | 241 | Average |
| 10600 | 55.72 | 41.04 | 74 | -18.28 | 37.28 | 12.67 | 35.27 | 139 | 241 | Peak |
| **Antenna Polarity & Test Distance: Vertical at 3 m** | | | | | | | | | | |
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5108 | 42.41 | 34.21 | 54 | -11.59 | 34.09 | 8.1 | 33.99 | 107 | 283 | Average |
| 5108 | 53.02 | 44.82 | 74 | -20.98 | 34.09 | 8.1 | 33.99 | 107 | 283 | Peak |
| 5300 | 95.8 | 87.26 | | | 34.24 | 8.32 | 34.02 | 107 | 283 | Average |
| 5300 | 103.31 | 94.77 | | | 34.24 | 8.32 | 34.02 | 107 | 283 | Peak |
| 5356.38 | 43.09 | 34.46 | 54 | -10.91 | 34.28 | 8.38 | 34.03 | 107 | 283 | Average |
| 5356.38 | 54.1 | 45.47 | 74 | -19.9 | 34.28 | 8.38 | 34.03 | 107 | 283 | Peak |
| 10600 | 45.02 | 30.34 | 54 | -8.98 | 37.28 | 12.67 | 35.27 | 145 | 227 | Average |
| 10600 | 54.92 | 40.24 | 74 | -19.08 | 37.28 | 12.67 | 35.27 | 145 | 227 | Peak |

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5300 MHz: Fundamental Frequency
3. The emission levels of other frequencies were very low against the limit

| EUT Test Condition | | Measurement Detail | |
|---|---|---|---|
| **Channel** | Channel 64 | **Frequency Range** | 1 GHz ~ 40 GHz |
| **Input Power** | 120 Vac, 60 Hz | **Detector Function** | Peak (PK)<br>Average (AV) |
| **Environmental Conditions** | 25 deg. C, 65 % RH | **Tested By** | Karl Lee |

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5320 | 100.06 | 91.48 | | | 34.25 | 8.35 | 34.02 | 100 | 171 | Average |
| 5320 | 107.31 | 98.73 | | | 34.25 | 8.35 | 34.02 | 100 | 171 | Peak |
| 5350 | 49.48 | 40.85 | 54 | -4.52 | 34.28 | 8.38 | 34.03 | 115 | 245 | Average |
| 5350 | 59.6 | 50.97 | 74 | -14.4 | 34.28 | 8.38 | 34.03 | 115 | 245 | Peak |
| 10640 | 44.86 | 30.13 | 54 | -9.14 | 37.31 | 12.71 | 35.29 | 126 | 305 | Average |
| 10640 | 54.74 | 40.01 | 74 | -19.26 | 37.31 | 12.71 | 35.29 | 126 | 305 | Peak |
| **Antenna Polarity & Test Distance: Vertical at 3 m** | | | | | | | | | | |
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5320 | 95.87 | 87.29 | | | 34.25 | 8.35 | 34.02 | 107 | 283 | Average |
| 5320 | 103.45 | 94.87 | | | 34.25 | 8.35 | 34.02 | 107 | 283 | Peak |
| 5350.33 | 45.48 | 36.85 | 54 | -8.52 | 34.28 | 8.38 | 34.03 | 107 | 283 | Average |
| 5350.33 | 55.39 | 46.76 | 74 | -18.61 | 34.28 | 8.38 | 34.03 | 107 | 283 | Peak |
| 10640 | 45.31 | 30.58 | 54 | -8.69 | 37.31 | 12.71 | 35.29 | 158 | 227 | Average |
| 10640 | 55.44 | 40.71 | 74 | -18.56 | 37.31 | 12.71 | 35.29 | 158 | 227 | Peak |

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5320 MHz: Fundamental Frequency
3. The emission levels of other frequencies were very low against the limit

| EUT Test Condition | | Measurement Detail | |
|---|---|---|---|
| **Channel** | Channel 100 | **Frequency Range** | 1 GHz ~ 40 GHz |
| **Input Power** | 120 Vac, 60 Hz | **Detector Function** | Peak (PK)<br>Average (AV) |
| **Environmental Conditions** | 25 deg. C, 65 % RH | **Tested By** | Karl Lee |

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5458.8 | 45.92 | 37.1 | 54 | -8.08 | 34.36 | 8.51 | 34.05 | 106 | 243 | Average |
| 5458.8 | 56.72 | 47.9 | 74 | -17.28 | 34.36 | 8.51 | 34.05 | 106 | 243 | Peak |
| *5468.72 | 58.84 | 50.01 | 68.2 | -9.36 | 34.37 | 8.51 | 34.05 | 106 | 243 | Peak |
| 5500 | 101.17 | 92.25 | | | 34.4 | 8.57 | 34.05 | 103 | 243 | Average |
| 5500 | 108.79 | 99.87 | | | 34.4 | 8.57 | 34.05 | 103 | 243 | Peak |
| 11000 | 46.39 | 31.31 | 54 | -7.61 | 37.6 | 12.96 | 35.48 | 125 | 80 | Average |
| 11000 | 56.54 | 41.46 | 74 | -17.46 | 37.6 | 12.96 | 35.48 | 125 | 80 | Peak |
| **Antenna Polarity & Test Distance: Vertical at 3 m** | | | | | | | | | | |
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5456.24 | 43.96 | 35.14 | 54 | -10.04 | 34.36 | 8.51 | 34.05 | 120 | 280 | Average |
| 5456.24 | 54.15 | 45.33 | 74 | -19.85 | 34.36 | 8.51 | 34.05 | 120 | 280 | Peak |
| *5470 | 55.04 | 46.21 | 68.2 | -13.16 | 34.37 | 8.51 | 34.05 | 120 | 280 | Peak |
| 5500 | 97.58 | 88.66 | | | 34.4 | 8.57 | 34.05 | 120 | 280 | Average |
| 5500 | 104.67 | 95.75 | | | 34.4 | 8.57 | 34.05 | 120 | 280 | Peak |
| 11000 | 46.18 | 31.1 | 54 | -7.82 | 37.6 | 12.96 | 35.48 | 183 | 155 | Average |
| 11000 | 56.21 | 41.13 | 74 | -17.79 | 37.6 | 12.96 | 35.48 | 183 | 155 | Peak |

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5500 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

| EUT Test Condition | | Measurement Detail | |
|---|---|---|---|
| **Channel** | Channel 116 | **Frequency Range** | 1 GHz ~ 40 GHz |
| **Input Power** | 120 Vac, 60 Hz | **Detector Function** | Peak (PK)<br>Average (AV) |
| **Environmental Conditions** | 25 deg. C, 65 % RH | **Tested By** | Karl Lee |

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5453.04 | 42.86 | 34.04 | 54 | -11.14 | 34.36 | 8.51 | 34.05 | 105 | 243 | Average |
| 5453.04 | 54.15 | 45.33 | 74 | -19.85 | 34.36 | 8.51 | 34.05 | 105 | 243 | Peak |
| *5469.36 | 52.65 | 43.82 | 68.2 | -15.55 | 34.37 | 8.51 | 34.05 | 105 | 243 | Peak |
| 5580 | 100.39 | 91.4 | | | 34.47 | 8.6 | 34.08 | 105 | 243 | Average |
| 5580 | 108.28 | 99.29 | | | 34.47 | 8.6 | 34.08 | 105 | 243 | Peak |
| *5724.68 | 51.57 | 42.41 | 68.2 | -16.63 | 34.62 | 8.65 | 34.11 | 105 | 243 | Peak |
| 11160 | 46.93 | 31.85 | 54 | -7.07 | 37.7 | 12.83 | 35.45 | 158 | 207 | Average |
| 11160 | 57.17 | 42.09 | 74 | -16.83 | 37.7 | 12.83 | 35.45 | 158 | 207 | Peak |
| **Antenna Polarity & Test Distance: Vertical at 3 m** | | | | | | | | | | |
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5445.2 | 42.6 | 33.78 | 54 | -11.4 | 34.35 | 8.51 | 34.04 | 120 | 279 | Average |
| 5445.2 | 53.77 | 44.95 | 74 | -20.23 | 34.35 | 8.51 | 34.04 | 120 | 279 | Peak |
| *5468.4 | 51.98 | 43.15 | 68.2 | -16.22 | 34.37 | 8.51 | 34.05 | 120 | 279 | Peak |
| 5580 | 96.89 | 87.9 | | | 34.47 | 8.6 | 34.08 | 120 | 279 | Average |
| 5580 | 104.34 | 95.35 | | | 34.47 | 8.6 | 34.08 | 120 | 279 | Peak |
| *5725.32 | 52.24 | 43.08 | 68.2 | -15.96 | 34.62 | 8.65 | 34.11 | 120 | 279 | Peak |
| 11160 | 46.21 | 31.13 | 54 | -7.79 | 37.7 | 12.83 | 35.45 | 124 | 196 | Average |
| 11160 | 56.03 | 40.95 | 74 | -17.97 | 37.7 | 12.83 | 35.45 | 124 | 196 | Peak |

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5580 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

| EUT Test Condition | | Measurement Detail | |
|---|---|---|---|
| **Channel** | Channel 140 | **Frequency Range** | 1 GHz ~ 40 GHz |
| **Input Power** | 120 Vac, 60 Hz | **Detector Function** | Peak (PK)<br>Average (AV) |
| **Environmental Conditions** | 25 deg. C, 65 % RH | **Tested By** | Karl Lee |

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5700 | 99.47 | 90.34 | | | 34.59 | 8.64 | 34.1 | 190 | 115 | Average |
| 5700 | 106.08 | 96.95 | | | 34.59 | 8.64 | 34.1 | 190 | 115 | Peak |
| *5724.12 | 66.14 | 56.98 | 68.2 | -2.06 | 34.62 | 8.65 | 34.11 | 190 | 176 | Peak |
| 11400 | 46.11 | 31.01 | 54 | -7.89 | 37.84 | 12.67 | 35.41 | 196 | 320 | Average |
| 11400 | 56 | 40.9 | 74 | -18 | 37.84 | 12.67 | 35.41 | 196 | 320 | Peak |
| **Antenna Polarity & Test Distance: Vertical at 3 m** | | | | | | | | | | |
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5700 | 95.63 | 86.5 | | | 34.59 | 8.64 | 34.1 | 120 | 119 | Average |
| 5700 | 102.17 | 93.04 | | | 34.59 | 8.64 | 34.1 | 120 | 119 | Peak |
| *5723.96 | 62.26 | 53.1 | 68.2 | -5.94 | 34.62 | 8.65 | 34.11 | 120 | 119 | Peak |
| 11400 | 47.23 | 32.13 | 54 | -6.77 | 37.84 | 12.67 | 35.41 | 159 | 224 | Average |
| 11400 | 57.11 | 42.01 | 74 | -16.89 | 37.84 | 12.67 | 35.41 | 159 | 224 | Peak |

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5700 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

| EUT Test Condition | | Measurement Detail | |
|---|---|---|---|
| **Channel** | Channel 144 | **Frequency Range** | 1 GHz ~ 40 GHz |
| **Input Power** | 120 Vac, 60 Hz | **Detector Function** | Peak (PK)<br>Average (AV) |
| **Environmental Conditions** | 25 deg. C, 65 % RH | **Tested By** | Karl Lee |

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5458.8 | 42.73 | 33.91 | 54 | -11.27 | 34.36 | 8.51 | 34.05 | 190 | 115 | Average |
| 5458.8 | 53.01 | 44.19 | 74 | -20.99 | 34.36 | 8.51 | 34.05 | 190 | 115 | Peak |
| *5470.48 | 51.62 | 42.79 | 68.2 | -16.58 | 34.37 | 8.51 | 34.05 | 190 | 115 | Peak |
| 5720 | 100.95 | 91.79 | | | 34.62 | 8.65 | 34.11 | 190 | 115 | Average |
| 5720 | 107.28 | 98.12 | | | 34.62 | 8.65 | 34.11 | 190 | 115 | Peak |
| 11440 | 47.51 | 32.4 | 54 | -6.49 | 37.86 | 12.65 | 35.4 | 154 | 355 | Average |
| 11440 | 55.4 | 40.29 | 74 | -18.6 | 37.86 | 12.65 | 35.4 | 154 | 355 | Peak |
| **Antenna Polarity & Test Distance: Vertical at 3 m** | | | | | | | | | | |
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5446.32 | 42.65 | 33.82 | 54 | -11.35 | 34.36 | 8.51 | 34.04 | 120 | 119 | Average |
| 5446.32 | 53.25 | 44.42 | 74 | -20.75 | 34.36 | 8.51 | 34.04 | 120 | 119 | Peak |
| *5469.68 | 52.06 | 43.23 | 68.2 | -16.14 | 34.37 | 8.51 | 34.05 | 120 | 119 | Peak |
| 5720 | 96.54 | 87.38 | | | 34.62 | 8.65 | 34.11 | 120 | 119 | Average |
| 5720 | 103.86 | 94.7 | | | 34.62 | 8.65 | 34.11 | 120 | 119 | Peak |
| 11440 | 47.25 | 32.14 | 54 | -6.75 | 37.86 | 12.65 | 35.4 | 151 | 290 | Average |
| 11440 | 55.5 | 40.39 | 74 | -18.5 | 37.86 | 12.65 | 35.4 | 151 | 290 | Peak |

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5720 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

| EUT Test Condition | | Measurement Detail | |
|---|---|---|---|
| **Channel** | Channel 149 | **Frequency Range** | 1 GHz ~ 40 GHz |
| **Input Power** | 120 Vac, 60 Hz | **Detector Function** | Peak (PK)<br>Average (AV) |
| **Environmental Conditions** | 25 deg. C, 65 % RH | **Tested By** | Karl Lee |

**<Spurious Emission>**

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5745 | 100.44 | 91.25 | | | 34.64 | 8.66 | 34.11 | 125 | 200 | Average |
| 5745 | 107.45 | 98.26 | | | 34.64 | 8.66 | 34.11 | 125 | 200 | Peak |
| 11490 | 46.31 | 31.19 | 54 | -7.69 | 37.89 | 12.62 | 35.39 | 145 | 223 | Average |
| 11490 | 56.42 | 41.3 | 74 | -17.58 | 37.89 | 12.62 | 35.39 | 145 | 223 | Peak |
| **Antenna Polarity & Test Distance: Vertical at 3 m** | | | | | | | | | | |
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5745 | 99.62 | 90.43 | | | 34.64 | 8.66 | 34.11 | 200 | 145 | Average |
| 5745 | 106.77 | 97.58 | | | 34.64 | 8.66 | 34.11 | 200 | 145 | Peak |
| 11490 | 46.39 | 31.27 | 54 | -7.61 | 37.89 | 12.62 | 35.39 | 106 | 311 | Average |
| 11490 | 56.21 | 41.09 | 74 | -17.79 | 37.89 | 12.62 | 35.39 | 106 | 311 | Peak |

**<Out of Band Emission (OOBE)>**

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| *5563.525 | 53.69 | 44.72 | 68.2 | -14.51 | 34.45 | 8.59 | 34.07 | 125 | 200 | Peak |
| 5658.55 | 51.98 | 42.89 | 74.53 | -22.55 | 34.56 | 8.63 | 34.1 | 125 | 200 | Peak |
| 5916.325 | 51.32 | 41.94 | 74.62 | -23.3 | 34.81 | 8.73 | 34.16 | 125 | 200 | Peak |
| *6016.075 | 53.2 | 43.7 | 68.2 | -15 | 34.92 | 8.76 | 34.18 | 125 | 200 | Peak |
| **Antenna Polarity & Test Distance: Vertical at 3 m** | | | | | | | | | | |
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| *5564.05 | 54.67 | 45.7 | 68.2 | -13.53 | 34.45 | 8.59 | 34.07 | 200 | 145 | Peak |
| 5653.3 | 50.46 | 41.36 | 70.64 | -20.18 | 34.56 | 8.63 | 34.09 | 200 | 145 | Peak |
| 5921.575 | 52.43 | 43.03 | 70.73 | -18.3 | 34.83 | 8.73 | 34.16 | 200 | 145 | Peak |
| *6011.875 | 53.37 | 43.87 | 68.2 | -14.83 | 34.92 | 8.76 | 34.18 | 200 | 145 | Peak |

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5745 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

| EUT Test Condition | | Measurement Detail | |
|---|---|---|---|
| **Channel** | Channel 157 | **Frequency Range** | 1 GHz ~ 40 GHz |
| **Input Power** | 120 Vac, 60 Hz | **Detector Function** | Peak (PK)<br>Average (AV) |
| **Environmental Conditions** | 25 deg. C, 65 % RH | **Tested By** | Karl Lee |

**<Spurious Emission>**

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5785 | 100 | 90.77 | | | 34.68 | 8.68 | 34.13 | 125 | 200 | Average |
| 5785 | 107.08 | 97.85 | | | 34.68 | 8.68 | 34.13 | 125 | 200 | Peak |
| 11570 | 46.1 | 30.79 | 54 | -7.9 | 38 | 12.68 | 35.37 | 148 | 221 | Average |
| 11570 | 55.99 | 40.68 | 74 | -18.01 | 38 | 12.68 | 35.37 | 148 | 221 | Peak |
| **Antenna Polarity & Test Distance: Vertical at 3 m** | | | | | | | | | | |
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5785 | 99.85 | 90.62 | | | 34.68 | 8.68 | 34.13 | 200 | 145 | Average |
| 5785 | 106.68 | 97.45 | | | 34.68 | 8.68 | 34.13 | 200 | 145 | Peak |
| 11570 | 46.11 | 30.8 | 54 | -7.89 | 38 | 12.68 | 35.37 | 193 | 218 | Average |
| 11570 | 56.17 | 40.86 | 74 | -17.83 | 38 | 12.68 | 35.37 | 193 | 218 | Peak |

**<Out of Band Emission (OOBE)>**

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| *5549.875 | 53.6 | 44.63 | 68.2 | -14.6 | 34.45 | 8.59 | 34.07 | 125 | 200 | Peak |
| 5660.65 | 52.05 | 42.96 | 76.08 | -24.03 | 34.56 | 8.63 | 34.1 | 125 | 200 | Peak |
| 5922.625 | 52.9 | 43.5 | 69.96 | -17.06 | 34.83 | 8.73 | 34.16 | 125 | 200 | Peak |
| *5976.7 | 54.55 | 45.09 | 68.2 | -13.65 | 34.88 | 8.75 | 34.17 | 125 | 200 | Peak |
| **Antenna Polarity & Test Distance: Vertical at 3 m** | | | | | | | | | | |
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| *5600.8 | 53.95 | 44.92 | 68.2 | -14.25 | 34.5 | 8.61 | 34.08 | 200 | 145 | Peak |
| 5656.975 | 52.75 | 43.66 | 73.36 | -20.61 | 34.56 | 8.63 | 34.1 | 200 | 145 | Peak |
| 5918.95 | 52.49 | 43.11 | 72.68 | -20.19 | 34.81 | 8.73 | 34.16 | 200 | 145 | Peak |
| *5993.5 | 53.51 | 44.02 | 68.2 | -14.69 | 34.9 | 8.76 | 34.17 | 200 | 145 | Peak |

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5785 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

| EUT Test Condition | | Measurement Detail | |
|---|---|---|---|
| **Channel** | Channel 165 | **Frequency Range** | 1 GHz ~ 40 GHz |
| **Input Power** | 120 Vac, 60 Hz | **Detector Function** | Peak (PK)<br>Average (AV) |
| **Environmental Conditions** | 25 deg. C, 65 % RH | **Tested By** | Karl Lee |

**<Spurious Emission>**

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5825 | 100.38 | 91.09 | | | 34.73 | 8.69 | 34.13 | 125 | 200 | Average |
| 5825 | 107.31 | 98.02 | | | 34.73 | 8.69 | 34.13 | 125 | 200 | Peak |
| 11650 | 46.07 | 30.54 | 54 | -7.93 | 38.09 | 12.8 | 35.36 | 131 | 117 | Average |
| 11650 | 56.02 | 40.49 | 74 | -17.98 | 38.09 | 12.8 | 35.36 | 131 | 117 | Peak |
| **Antenna Polarity & Test Distance: Vertical at 3 m** | | | | | | | | | | |
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5825 | 99.99 | 90.7 | | | 34.73 | 8.69 | 34.13 | 200 | 145 | Average |
| 5825 | 106.78 | 97.49 | | | 34.73 | 8.69 | 34.13 | 200 | 145 | Peak |
| 11650 | 45.83 | 30.3 | 54 | -8.17 | 38.09 | 12.8 | 35.36 | 142 | 116 | Average |
| 11650 | 55.92 | 40.39 | 74 | -18.08 | 38.09 | 12.8 | 35.36 | 142 | 116 | Peak |

**<Out of Band Emission (OOBE)>**

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| *5602.375 | 53.31 | 44.28 | 68.2 | -14.89 | 34.5 | 8.61 | 34.08 | 125 | 200 | Peak |
| 5657.5 | 53.05 | 43.96 | 73.75 | -20.7 | 34.56 | 8.63 | 34.1 | 125 | 200 | Peak |
| 5922.1 | 53.05 | 43.65 | 70.35 | -17.3 | 34.83 | 8.73 | 34.16 | 125 | 200 | Peak |
| *5957.275 | 53.78 | 44.33 | 68.2 | -14.42 | 34.87 | 8.74 | 34.16 | 125 | 200 | Peak |
| **Antenna Polarity & Test Distance: Vertical at 3 m** | | | | | | | | | | |
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| *5635.45 | 53.15 | 44.08 | 68.2 | -15.05 | 34.54 | 8.62 | 34.09 | 200 | 145 | Peak |
| 5657.5 | 51.11 | 42.02 | 73.75 | -22.64 | 34.56 | 8.63 | 34.1 | 200 | 145 | Peak |
| 5921.05 | 51.24 | 41.86 | 71.12 | -19.88 | 34.81 | 8.73 | 34.16 | 200 | 145 | Peak |
| *6008.2 | 53.83 | 44.32 | 68.2 | -14.37 | 34.92 | 8.76 | 34.17 | 200 | 145 | Peak |

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5825 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

## 802.11n (HT40)

| EUT Test Condition | | Measurement Detail | |
|---|---|---|---|
| **Channel** | Channel 38 | **Frequency Range** | 1 GHz ~ 40 GHz |
| **Input Power** | 120 Vac, 60 Hz | **Detector Function** | Peak (PK)<br>Average (AV) |
| **Environmental Conditions** | 25 deg. C, 65 % RH | **Tested By** | Karl Lee |

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5149.7 | 51.61 | 43.36 | 54 | -2.39 | 34.12 | 8.13 | 34 | 100 | 246 | Average |
| 5149.7 | 61.31 | 53.06 | 74 | -12.69 | 34.12 | 8.13 | 34 | 100 | 246 | Peak |
| 5190 | 94.54 | 86.2 | | | 34.15 | 8.19 | 34 | 230 | 246 | Average |
| 5190 | 101.93 | 93.59 | | | 34.15 | 8.19 | 34 | 230 | 246 | Peak |
| 5412.59 | 43.52 | 34.79 | 54 | -10.48 | 34.33 | 8.44 | 34.04 | 100 | 246 | Average |
| 5412.59 | 53.54 | 44.81 | 74 | -20.46 | 34.33 | 8.44 | 34.04 | 100 | 246 | Peak |
| *10380 | 54.98 | 40.63 | 68.2 | -13.22 | 37.13 | 12.36 | 35.14 | 159 | 263 | Peak |
| **Antenna Polarity & Test Distance: Vertical at 3 m** | | | | | | | | | | |
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5149.85 | 46.1 | 37.85 | 54 | -7.9 | 34.12 | 8.13 | 34 | 130 | 284 | Average |
| 5149.85 | 55.36 | 47.11 | 74 | -18.64 | 34.12 | 8.13 | 34 | 130 | 284 | Peak |
| 5190 | 89.8 | 81.46 | | | 34.15 | 8.19 | 34 | 130 | 280 | Average |
| 5190 | 97.02 | 88.68 | | | 34.15 | 8.19 | 34 | 130 | 280 | Peak |
| 5411.6 | 43.1 | 34.37 | 54 | -10.9 | 34.33 | 8.44 | 34.04 | 130 | 284 | Average |
| 5411.6 | 53.5 | 44.77 | 74 | -20.5 | 34.33 | 8.44 | 34.04 | 130 | 284 | Peak |
| *10380 | 54.4 | 40.05 | 68.2 | -13.8 | 37.13 | 12.36 | 35.14 | 145 | 316 | Peak |

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5190 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

| EUT Test Condition | | Measurement Detail | |
|---|---|---|---|
| **Channel** | Channel 46 | **Frequency Range** | 1 GHz ~ 40 GHz |
| **Input Power** | 120 Vac, 60 Hz | **Detector Function** | Peak (PK)<br>Average (AV) |
| **Environmental Conditions** | 25 deg. C, 65 % RH | **Tested By** | Karl Lee |

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5148.95 | 43.27 | 35.02 | 54 | -10.73 | 34.12 | 8.13 | 34 | 196 | 245 | Average |
| 5148.95 | 53.74 | 45.49 | 74 | -20.26 | 34.12 | 8.13 | 34 | 196 | 245 | Peak |
| 5230 | 97.02 | 88.62 | | | 34.19 | 8.22 | 34.01 | 210 | 245 | Average |
| 5230 | 104.32 | 95.92 | | | 34.19 | 8.22 | 34.01 | 210 | 245 | Peak |
| 5452.96 | 45.25 | 36.43 | 54 | -8.75 | 34.36 | 8.51 | 34.05 | 196 | 245 | Average |
| 5452.96 | 53.86 | 45.04 | 74 | -20.14 | 34.36 | 8.51 | 34.05 | 196 | 245 | Peak |
| *10460 | 55.09 | 40.58 | 68.2 | -13.11 | 37.17 | 12.53 | 35.19 | 155 | 208 | Peak |
| **Antenna Polarity & Test Distance: Vertical at 3 m** | | | | | | | | | | |
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5147.75 | 42.46 | 34.21 | 54 | -11.54 | 34.12 | 8.13 | 34 | 130 | 280 | Average |
| 5147.75 | 53.38 | 45.13 | 74 | -20.62 | 34.12 | 8.13 | 34 | 130 | 280 | Peak |
| 5230 | 92.42 | 84.02 | | | 34.19 | 8.22 | 34.01 | 130 | 280 | Average |
| 5230 | 100.03 | 91.63 | | | 34.19 | 8.22 | 34.01 | 130 | 280 | Peak |
| 5377.5 | 43.7 | 35.02 | 54 | -10.3 | 34.31 | 8.41 | 34.04 | 130 | 280 | Average |
| 5377.5 | 53.85 | 45.17 | 74 | -20.15 | 34.31 | 8.41 | 34.04 | 130 | 280 | Peak |
| *10460 | 56.15 | 41.64 | 68.2 | -12.05 | 37.17 | 12.53 | 35.19 | 158 | 63 | Peak |

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5230 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

| EUT Test Condition | | Measurement Detail | |
|---|---|---|---|
| **Channel** | Channel 54 | **Frequency Range** | 1 GHz ~ 40 GHz |
| **Input Power** | 120 Vac, 60 Hz | **Detector Function** | Peak (PK)<br>Average (AV) |
| **Environmental Conditions** | 25 deg. C, 65 % RH | **Tested By** | Karl Lee |

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5123.15 | 42.61 | 34.39 | 54 | -11.39 | 34.11 | 8.1 | 33.99 | 124 | 241 | Average |
| 5123.15 | 52.75 | 44.53 | 74 | -21.25 | 34.11 | 8.1 | 33.99 | 124 | 241 | Peak |
| 5270 | 96.96 | 88.47 | | | 34.21 | 8.29 | 34.01 | 124 | 241 | Average |
| 5270 | 104.21 | 95.72 | | | 34.21 | 8.29 | 34.01 | 124 | 241 | Peak |
| 5352.75 | 44.56 | 35.93 | 54 | -9.44 | 34.28 | 8.38 | 34.03 | 124 | 241 | Average |
| 5352.75 | 55.18 | 46.55 | 74 | -18.82 | 34.28 | 8.38 | 34.03 | 124 | 241 | Peak |
| *10540 | 55.96 | 41.34 | 68.2 | -12.24 | 37.23 | 12.63 | 35.24 | 168 | 205 | Peak |
| **Antenna Polarity & Test Distance: Vertical at 3 m** | | | | | | | | | | |
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5112.95 | 42.31 | 34.11 | 54 | -11.69 | 34.09 | 8.1 | 33.99 | 130 | 279 | Average |
| 5112.95 | 53.16 | 44.96 | 74 | -20.84 | 34.09 | 8.1 | 33.99 | 130 | 279 | Peak |
| 5270 | 92.81 | 84.32 | | | 34.21 | 8.29 | 34.01 | 130 | 279 | Average |
| 5270 | 100.28 | 91.79 | | | 34.21 | 8.29 | 34.01 | 130 | 279 | Peak |
| 5350.33 | 43.26 | 34.63 | 54 | -10.74 | 34.28 | 8.38 | 34.03 | 130 | 279 | Average |
| 5350.33 | 53.76 | 45.13 | 74 | -20.24 | 34.28 | 8.38 | 34.03 | 130 | 279 | Peak |
| *10540 | 56.21 | 41.59 | 68.2 | -11.99 | 37.23 | 12.63 | 35.24 | 125 | 186 | Peak |

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5270 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

| EUT Test Condition | | Measurement Detail | |
|---|---|---|---|
| **Channel** | Channel 62 | **Frequency Range** | 1 GHz ~ 40 GHz |
| **Input Power** | 120 Vac, 60 Hz | **Detector Function** | Peak (PK)<br>Average (AV) |
| **Environmental Conditions** | 25 deg. C, 65 % RH | **Tested By** | Karl Lee |

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5136.5 | 42.5 | 34.25 | 54 | -11.5 | 34.11 | 8.13 | 33.99 | 124 | 241 | Average |
| 5136.5 | 53.21 | 44.96 | 74 | -20.79 | 34.11 | 8.13 | 33.99 | 124 | 241 | Peak |
| 5310 | 94.56 | 86.01 | | | 34.25 | 8.32 | 34.02 | 100 | 241 | Average |
| 5310 | 101.54 | 92.99 | | | 34.25 | 8.32 | 34.02 | 100 | 241 | Peak |
| 5350 | 52.45 | 43.82 | 54 | -1.55 | 34.28 | 8.38 | 34.03 | 124 | 241 | Average |
| 5350 | 61.99 | 53.36 | 74 | -12.01 | 34.28 | 8.38 | 34.03 | 124 | 241 | Peak |
| 10620 | 45.18 | 30.47 | 54 | -8.82 | 37.3 | 12.69 | 35.28 | 196 | 235 | Average |
| 10620 | 55.97 | 41.26 | 74 | -18.03 | 37.3 | 12.69 | 35.28 | 196 | 235 | Peak |
| **Antenna Polarity & Test Distance: Vertical at 3 m** | | | | | | | | | | |
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5089.55 | 42.28 | 34.11 | 54 | -11.72 | 34.08 | 8.07 | 33.98 | 130 | 279 | Average |
| 5089.55 | 53.54 | 45.37 | 74 | -20.46 | 34.08 | 8.07 | 33.98 | 130 | 279 | Peak |
| 5310 | 90.18 | 81.63 | | | 34.25 | 8.32 | 34.02 | 130 | 279 | Average |
| 5310 | 97.45 | 88.9 | | | 34.25 | 8.32 | 34.02 | 130 | 279 | Peak |
| 5350 | 48.07 | 39.44 | 54 | -5.93 | 34.28 | 8.38 | 34.03 | 126 | 279 | Average |
| 5350 | 57.62 | 48.99 | 74 | -16.38 | 34.28 | 8.38 | 34.03 | 126 | 279 | Peak |
| 10620 | 45.06 | 30.35 | 54 | -8.94 | 37.3 | 12.69 | 35.28 | 142 | 88 | Average |
| 10620 | 54.95 | 40.24 | 74 | -19.05 | 37.3 | 12.69 | 35.28 | 142 | 88 | Peak |

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5310 MHz: Fundamental Frequency
3. The emission levels of other frequencies were very low against the limit

| EUT Test Condition | | Measurement Detail | |
|---|---|---|---|
| **Channel** | Channel 102 | **Frequency Range** | 1 GHz ~ 40 GHz |
| **Input Power** | 120 Vac, 60 Hz | **Detector Function** | Peak (PK)<br>Average (AV) |
| **Environmental Conditions** | 25 deg. C, 65 % RH | **Tested By** | Karl Lee |

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5460 | 47.64 | 38.82 | 54 | -6.36 | 34.36 | 8.51 | 34.05 | 105 | 243 | Average |
| 5460 | 58.15 | 49.33 | 74 | -15.85 | 34.36 | 8.51 | 34.05 | 105 | 243 | Peak |
| *5470 | 65.53 | 56.7 | 68.2 | -2.67 | 34.37 | 8.51 | 34.05 | 105 | 243 | Peak |
| 5510 | 96.23 | 87.32 | | | 34.4 | 8.57 | 34.06 | 107 | 243 | Average |
| 5510 | 103.54 | 94.63 | | | 34.4 | 8.57 | 34.06 | 107 | 243 | Peak |
| *5725.24 | 52.37 | 43.21 | 68.2 | -15.83 | 34.62 | 8.65 | 34.11 | 105 | 243 | Peak |
| 11020 | 46.23 | 31.16 | 54 | -7.77 | 37.61 | 12.94 | 35.48 | 146 | 208 | Average |
| 11020 | 56.1 | 41.03 | 74 | -17.9 | 37.61 | 12.94 | 35.48 | 146 | 208 | Peak |
| **Antenna Polarity & Test Distance: Vertical at 3 m** | | | | | | | | | | |
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5460 | 44.51 | 35.69 | 54 | -9.49 | 34.36 | 8.51 | 34.05 | 112 | 280 | Average |
| 5460 | 54.64 | 45.82 | 74 | -19.36 | 34.36 | 8.51 | 34.05 | 112 | 280 | Peak |
| *5470.48 | 60.29 | 51.46 | 68.2 | -7.91 | 34.37 | 8.51 | 34.05 | 112 | 280 | Peak |
| 5510 | 92.21 | 83.3 | | | 34.4 | 8.57 | 34.06 | 120 | 280 | Average |
| 5510 | 99.61 | 90.7 | | | 34.4 | 8.57 | 34.06 | 120 | 280 | Peak |
| *5724.44 | 52.75 | 43.59 | 68.2 | -15.45 | 34.62 | 8.65 | 34.11 | 120 | 280 | Peak |
| 11020 | 46.32 | 31.25 | 54 | -7.68 | 37.61 | 12.94 | 35.48 | 142 | 166 | Average |
| 11020 | 56.27 | 41.2 | 74 | -17.73 | 37.61 | 12.94 | 35.48 | 142 | 166 | Peak |

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5510 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

| EUT Test Condition | | Measurement Detail | |
|---|---|---|---|
| **Channel** | Channel 110 | **Frequency Range** | 1 GHz ~ 40 GHz |
| **Input Power** | 120 Vac, 60 Hz | **Detector Function** | Peak (PK)<br>Average (AV) |
| **Environmental Conditions** | 25 deg. C, 65 % RH | **Tested By** | Karl Lee |

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5456.08 | 43.83 | 35.01 | 54 | -10.17 | 34.36 | 8.51 | 34.05 | 106 | 243 | Average |
| 5456.08 | 54.29 | 45.47 | 74 | -19.71 | 34.36 | 8.51 | 34.05 | 106 | 243 | Peak |
| *5470.8 | 53.45 | 44.59 | 68.2 | -14.75 | 34.37 | 8.54 | 34.05 | 106 | 243 | Peak |
| 5550 | 97.98 | 89.01 | | | 34.45 | 8.59 | 34.07 | 106 | 243 | Average |
| 5550 | 105.73 | 96.76 | | | 34.45 | 8.59 | 34.07 | 106 | 243 | Peak |
| *5723.96 | 52.84 | 43.68 | 68.2 | -15.36 | 34.62 | 8.65 | 34.11 | 106 | 243 | Peak |
| 11100 | 46.71 | 31.62 | 54 | -7.29 | 37.66 | 12.89 | 35.46 | 185 | 246 | Average |
| 11100 | 56.64 | 41.55 | 74 | -17.36 | 37.66 | 12.89 | 35.46 | 185 | 246 | Peak |
| **Antenna Polarity & Test Distance: Vertical at 3 m** | | | | | | | | | | |
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5459.12 | 42.9 | 34.08 | 54 | -11.1 | 34.36 | 8.51 | 34.05 | 120 | 279 | Average |
| 5459.12 | 53.6 | 44.78 | 74 | -20.4 | 34.36 | 8.51 | 34.05 | 120 | 279 | Peak |
| *5470.8 | 53.21 | 44.35 | 68.2 | -14.99 | 34.37 | 8.54 | 34.05 | 120 | 279 | Peak |
| 5550 | 94.42 | 85.45 | | | 34.45 | 8.59 | 34.07 | 120 | 279 | Average |
| 5550 | 101.75 | 92.78 | | | 34.45 | 8.59 | 34.07 | 120 | 279 | Peak |
| *5723.96 | 52.39 | 43.23 | 68.2 | -15.81 | 34.62 | 8.65 | 34.11 | 120 | 279 | Peak |
| 11100 | 46.39 | 31.3 | 54 | -7.61 | 37.66 | 12.89 | 35.46 | 137 | 126 | Average |
| 11100 | 56.6 | 41.51 | 74 | -17.4 | 37.66 | 12.89 | 35.46 | 137 | 126 | Peak |

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5550 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

| EUT Test Condition | | Measurement Detail | |
|---|---|---|---|
| **Channel** | Channel 134 | **Frequency Range** | 1 GHz ~ 40 GHz |
| **Input Power** | 120 Vac, 60 Hz | **Detector Function** | Peak (PK)<br>Average (AV) |
| **Environmental Conditions** | 25 deg. C, 65 % RH | **Tested By** | Karl Lee |

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5447.28 | 43.53 | 34.7 | 54 | -10.47 | 34.36 | 8.51 | 34.04 | 190 | 115 | Average |
| 5447.28 | 54.14 | 45.31 | 74 | -19.86 | 34.36 | 8.51 | 34.04 | 190 | 115 | Peak |
| *5469.2 | 51.83 | 43 | 68.2 | -16.37 | 34.37 | 8.51 | 34.05 | 190 | 115 | Peak |
| 5670 | 96.47 | 87.37 | | | 34.57 | 8.63 | 34.1 | 190 | 115 | Average |
| 5670 | 103.98 | 94.88 | | | 34.57 | 8.63 | 34.1 | 190 | 115 | Peak |
| *5725.32 | 55.62 | 46.46 | 68.2 | -12.58 | 34.62 | 8.65 | 34.11 | 190 | 115 | Peak |
| 11340 | 45.83 | 30.74 | 54 | -8.17 | 37.8 | 12.71 | 35.42 | 187 | 145 | Average |
| 11340 | 55.73 | 40.64 | 74 | -18.27 | 37.8 | 12.71 | 35.42 | 187 | 145 | Peak |
| **Antenna Polarity & Test Distance: Vertical at 3 m** | | | | | | | | | | |
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5446.32 | 43.34 | 34.51 | 54 | -10.66 | 34.36 | 8.51 | 34.04 | 120 | 119 | Average |
| 5446.32 | 53.49 | 44.66 | 74 | -20.51 | 34.36 | 8.51 | 34.04 | 120 | 119 | Peak |
| *5469.2 | 52.45 | 43.62 | 68.2 | -15.75 | 34.37 | 8.51 | 34.05 | 120 | 119 | Peak |
| 5670 | 92.25 | 83.15 | | | 34.57 | 8.63 | 34.1 | 120 | 119 | Average |
| 5670 | 99.1 | 90 | | | 34.57 | 8.63 | 34.1 | 120 | 119 | Peak |
| *5724.2 | 54.38 | 45.22 | 68.2 | -13.82 | 34.62 | 8.65 | 34.11 | 120 | 119 | Peak |
| 11340 | 46.31 | 31.22 | 54 | -7.69 | 37.8 | 12.71 | 35.42 | 156 | 229 | Average |
| 11340 | 56.24 | 41.15 | 74 | -17.76 | 37.8 | 12.71 | 35.42 | 156 | 229 | Peak |

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5670 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

| EUT Test Condition | | Measurement Detail | |
|---|---|---|---|
| **Channel** | Channel 142 | **Frequency Range** | 1 GHz ~ 40 GHz |
| **Input Power** | 120 Vac, 60 Hz | **Detector Function** | Peak (PK)<br>Average (AV) |
| **Environmental Conditions** | 25 deg. C, 65 % RH | **Tested By** | Karl Lee |

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5457.68 | 43.1 | 34.28 | 54 | -10.9 | 34.36 | 8.51 | 34.05 | 190 | 115 | Average |
| 5457.68 | 53.46 | 44.64 | 74 | -20.54 | 34.36 | 8.51 | 34.05 | 190 | 115 | Peak |
| *5468.72 | 51.46 | 42.63 | 68.2 | -16.74 | 34.37 | 8.51 | 34.05 | 190 | 115 | Peak |
| 5710 | 96.35 | 87.2 | | | 34.61 | 8.65 | 34.11 | 190 | 115 | Average |
| 5710 | 103.53 | 94.38 | | | 34.61 | 8.65 | 34.11 | 190 | 115 | Peak |
| 11420 | 47.78 | 32.68 | 54 | -6.22 | 37.85 | 12.65 | 35.4 | 135 | 326 | Average |
| 11420 | 55.87 | 40.77 | 74 | -18.13 | 37.85 | 12.65 | 35.4 | 135 | 326 | Peak |
| **Antenna Polarity & Test Distance: Vertical at 3 m** | | | | | | | | | | |
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5444.4 | 43.21 | 34.42 | 54 | -10.79 | 34.35 | 8.48 | 34.04 | 120 | 119 | Average |
| 5444.4 | 53.51 | 44.72 | 74 | -20.49 | 34.35 | 8.48 | 34.04 | 120 | 119 | Peak |
| *5469.2 | 52.85 | 44.02 | 68.2 | -15.35 | 34.37 | 8.51 | 34.05 | 120 | 119 | Peak |
| 5710 | 92.58 | 83.43 | | | 34.61 | 8.65 | 34.11 | 120 | 119 | Average |
| 5710 | 99.74 | 90.59 | | | 34.61 | 8.65 | 34.11 | 120 | 119 | Peak |
| 11420 | 47.62 | 32.52 | 54 | -6.38 | 37.85 | 12.65 | 35.4 | 147 | 248 | Average |
| 11420 | 55.89 | 40.79 | 74 | -18.11 | 37.85 | 12.65 | 35.4 | 147 | 248 | Peak |

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5710 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

| EUT Test Condition | | Measurement Detail | |
|---|---|---|---|
| **Channel** | Channel 151 | **Frequency Range** | 1 GHz ~ 40 GHz |
| **Input Power** | 120 Vac, 60 Hz | **Detector Function** | Peak (PK)<br>Average (AV) |
| **Environmental Conditions** | 25 deg. C, 65 % RH | **Tested By** | Karl Lee |

**<Spurious Emission>**

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5755 | 95.68 | 86.47 | | | 34.66 | 8.66 | 34.11 | 125 | 200 | Average |
| 5755 | 102.65 | 93.44 | | | 34.66 | 8.66 | 34.11 | 125 | 200 | Peak |
| 11510 | 45.19 | 30.08 | 54 | -8.81 | 37.9 | 12.6 | 35.39 | 147 | 180 | Average |
| 11510 | 55.23 | 40.12 | 74 | -18.77 | 37.9 | 12.6 | 35.39 | 147 | 180 | Peak |
| **Antenna Polarity & Test Distance: Vertical at 3 m** | | | | | | | | | | |
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5755 | 94.58 | 85.37 | | | 34.66 | 8.66 | 34.11 | 200 | 145 | Average |
| 5755 | 101.15 | 91.94 | | | 34.66 | 8.66 | 34.11 | 200 | 145 | Peak |
| 11510 | 46.31 | 31.2 | 54 | -7.69 | 37.9 | 12.6 | 35.39 | 184 | 131 | Average |
| 11510 | 56.05 | 40.94 | 74 | -17.95 | 37.9 | 12.6 | 35.39 | 184 | 131 | Peak |

**<Out of Band Emission (OOBE)>**

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| *5635.975 | 53.8 | 44.73 | 68.2 | -14.4 | 34.54 | 8.62 | 34.09 | 125 | 200 | Peak |
| 5654.35 | 52.78 | 43.69 | 71.42 | -18.64 | 34.56 | 8.63 | 34.1 | 125 | 200 | Peak |
| 5917.375 | 52.36 | 42.98 | 73.84 | -21.48 | 34.81 | 8.73 | 34.16 | 125 | 200 | Peak |
| *5934.7 | 54.09 | 44.69 | 68.2 | -14.11 | 34.83 | 8.73 | 34.16 | 125 | 200 | Peak |
| **Antenna Polarity & Test Distance: Vertical at 3 m** | | | | | | | | | | |
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| *5635.45 | 54.2 | 45.13 | 68.2 | -14 | 34.54 | 8.62 | 34.09 | 200 | 145 | Peak |
| 5655.925 | 51.72 | 42.63 | 72.58 | -20.86 | 34.56 | 8.63 | 34.1 | 200 | 145 | Peak |
| 5920.525 | 52.02 | 42.64 | 71.51 | -19.49 | 34.81 | 8.73 | 34.16 | 200 | 145 | Peak |
| *5981.95 | 53.71 | 44.25 | 68.2 | -14.49 | 34.88 | 8.75 | 34.17 | 200 | 145 | Peak |

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5755 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

| EUT Test Condition | | Measurement Detail | |
|---|---|---|---|
| **Channel** | Channel 159 | **Frequency Range** | 1 GHz ~ 40 GHz |
| **Input Power** | 120 Vac, 60 Hz | **Detector Function** | Peak (PK)<br>Average (AV) |
| **Environmental Conditions** | 25 deg. C, 65 % RH | **Tested By** | Karl Lee |

**<Spurious Emission>**

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5795 | 97.79 | 88.55 | | | 34.69 | 8.68 | 34.13 | 125 | 200 | Average |
| 5795 | 104.69 | 95.45 | | | 34.69 | 8.68 | 34.13 | 125 | 200 | Peak |
| 11590 | 45.58 | 30.21 | 54 | -8.42 | 38.02 | 12.72 | 35.37 | 169 | 322 | Average |
| 11590 | 55.71 | 40.34 | 74 | -18.29 | 38.02 | 12.72 | 35.37 | 169 | 322 | Peak |
| **Antenna Polarity & Test Distance: Vertical at 3 m** | | | | | | | | | | |
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5795 | 96.6 | 87.36 | | | 34.69 | 8.68 | 34.13 | 200 | 145 | Average |
| 5795 | 103.74 | 94.5 | | | 34.69 | 8.68 | 34.13 | 200 | 145 | Peak |
| 11590 | 45.07 | 29.7 | 54 | -8.93 | 38.02 | 12.72 | 35.37 | 134 | 157 | Average |
| 11590 | 54.89 | 39.52 | 74 | -19.11 | 38.02 | 12.72 | 35.37 | 134 | 157 | Peak |

**<Out of Band Emission (OOBE)>**

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| *5618.125 | 53.12 | 44.07 | 68.2 | -15.08 | 34.52 | 8.61 | 34.08 | 125 | 200 | Peak |
| 5657.5 | 52.07 | 42.98 | 73.75 | -21.68 | 34.56 | 8.63 | 34.1 | 125 | 200 | Peak |
| 5920.525 | 52 | 42.62 | 71.51 | -19.51 | 34.81 | 8.73 | 34.16 | 125 | 200 | Peak |
| *6019.225 | 54.11 | 44.6 | 68.2 | -14.09 | 34.92 | 8.77 | 34.18 | 125 | 200 | Peak |
| **Antenna Polarity & Test Distance: Vertical at 3 m** | | | | | | | | | | |
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| *5576.65 | 52.97 | 43.97 | 68.2 | -15.23 | 34.47 | 8.6 | 34.07 | 200 | 145 | Peak |
| 5652.775 | 52.24 | 43.14 | 70.25 | -18.01 | 34.56 | 8.63 | 34.09 | 200 | 145 | Peak |
| 5921.05 | 51.44 | 42.06 | 71.12 | -19.68 | 34.81 | 8.73 | 34.16 | 200 | 145 | Peak |
| *6018.7 | 53.45 | 43.94 | 68.2 | -14.75 | 34.92 | 8.77 | 34.18 | 200 | 145 | Peak |

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5795 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

## 802.11ac (VHT80)

| EUT Test Condition | | Measurement Detail | |
|---|---|---|---|
| **Channel** | Channel 42 | **Frequency Range** | 1 GHz ~ 40 GHz |
| **Input Power** | 120 Vac, 60 Hz | **Detector Function** | Peak (PK)<br>Average (AV) |
| **Environmental Conditions** | 25 deg. C, 65 % RH | **Tested By** | Karl Lee |

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5149.55 | 52.21 | 43.96 | 54 | -1.79 | 34.12 | 8.13 | 34 | 119 | 245 | Average |
| 5149.55 | 60.08 | 51.83 | 74 | -13.92 | 34.12 | 8.13 | 34 | 119 | 245 | Peak |
| 5210 | 93.05 | 84.69 | | | 34.17 | 8.19 | 34 | 114 | 245 | Average |
| 5210 | 99.92 | 91.56 | | | 34.17 | 8.19 | 34 | 114 | 245 | Peak |
| 5350.55 | 43.63 | 35 | 54 | -10.37 | 34.28 | 8.38 | 34.03 | 119 | 245 | Average |
| 5350.55 | 53.98 | 45.35 | 74 | -20.02 | 34.28 | 8.38 | 34.03 | 119 | 245 | Peak |
| *10420 | 55.37 | 40.96 | 68.2 | -12.83 | 37.15 | 12.42 | 35.16 | 136 | 115 | Peak |
| **Antenna Polarity & Test Distance: Vertical at 3 m** | | | | | | | | | | |
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5149.7 | 47 | 38.75 | 54 | -7 | 34.12 | 8.13 | 34 | 130 | 280 | Average |
| 5149.7 | 55.97 | 47.72 | 74 | -18.03 | 34.12 | 8.13 | 34 | 130 | 280 | Peak |
| 5210 | 88.06 | 79.7 | | | 34.17 | 8.19 | 34 | 130 | 280 | Average |
| 5210 | 95.52 | 87.16 | | | 34.17 | 8.19 | 34 | 130 | 280 | Peak |
| 5453.84 | 43.44 | 34.62 | 54 | -10.56 | 34.36 | 8.51 | 34.05 | 130 | 280 | Average |
| 5453.84 | 53.4 | 44.58 | 74 | -20.6 | 34.36 | 8.51 | 34.05 | 130 | 280 | Peak |
| *10420 | 55.41 | 41 | 68.2 | -12.79 | 37.15 | 12.42 | 35.16 | 124 | 177 | Peak |

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5210 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

| EUT Test Condition | | Measurement Detail | |
|---|---|---|---|
| **Channel** | Channel 58 | **Frequency Range** | 1 GHz ~ 40 GHz |
| **Input Power** | 120 Vac, 60 Hz | **Detector Function** | Peak (PK)<br>Average (AV) |
| **Environmental Conditions** | 25 deg. C, 65 % RH | **Tested By** | Karl Lee |

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5135.3 | 42.5 | 34.25 | 54 | -11.5 | 34.11 | 8.13 | 33.99 | 124 | 243 | Average |
| 5135.3 | 52.74 | 44.49 | 74 | -21.26 | 34.11 | 8.13 | 33.99 | 124 | 243 | Peak |
| 5290 | 91.41 | 82.88 | | | 34.23 | 8.32 | 34.02 | 121 | 241 | Average |
| 5290 | 99.22 | 90.69 | | | 34.23 | 8.32 | 34.02 | 121 | 241 | Peak |
| 5351.21 | 52.36 | 43.73 | 54 | -1.64 | 34.28 | 8.38 | 34.03 | 124 | 243 | Average |
| 5351.21 | 61.26 | 52.63 | 74 | -12.74 | 34.28 | 8.38 | 34.03 | 124 | 243 | Peak |
| *10580 | 55.12 | 40.47 | 68.2 | -13.08 | 37.27 | 12.65 | 35.27 | 105 | 87 | Peak |
| **Antenna Polarity & Test Distance: Vertical at 3 m** | | | | | | | | | | |
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5135.15 | 42.38 | 34.13 | 54 | -11.62 | 34.11 | 8.13 | 33.99 | 130 | 279 | Average |
| 5135.15 | 53.06 | 44.81 | 74 | -20.94 | 34.11 | 8.13 | 33.99 | 130 | 279 | Peak |
| 5290 | 87.31 | 78.78 | | | 34.23 | 8.32 | 34.02 | 130 | 279 | Average |
| 5290 | 95.46 | 86.93 | | | 34.23 | 8.32 | 34.02 | 130 | 279 | Peak |
| 5353.96 | 48.35 | 39.72 | 54 | -5.65 | 34.28 | 8.38 | 34.03 | 138 | 271 | Average |
| 5353.96 | 58.26 | 49.63 | 74 | -15.74 | 34.28 | 8.38 | 34.03 | 138 | 271 | Peak |
| *10580 | 55.88 | 41.23 | 68.2 | -12.32 | 37.27 | 12.65 | 35.27 | 122 | 186 | Peak |

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5290 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

| EUT Test Condition | | Measurement Detail | |
|---|---|---|---|
| **Channel** | Channel 106 | **Frequency Range** | 1 GHz ~ 40 GHz |
| **Input Power** | 120 Vac, 60 Hz | **Detector Function** | Peak (PK)<br>Average (AV) |
| **Environmental Conditions** | 25 deg. C, 65 % RH | **Tested By** | Karl Lee |

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5458.8 | 52.33 | 43.51 | 54 | -1.67 | 34.36 | 8.51 | 34.05 | 104 | 243 | Average |
| 5458.8 | 62.45 | 53.63 | 74 | -11.55 | 34.36 | 8.51 | 34.05 | 104 | 243 | Peak |
| *5469.68 | 63.78 | 54.95 | 68.2 | -4.42 | 34.37 | 8.51 | 34.05 | 104 | 243 | Peak |
| 5530 | 92.61 | 83.68 | | | 34.42 | 8.58 | 34.07 | 106 | 243 | Average |
| 5530 | 100.66 | 91.73 | | | 34.42 | 8.58 | 34.07 | 106 | 243 | Peak |
| *5726.04 | 52.13 | 42.97 | 68.2 | -16.07 | 34.62 | 8.65 | 34.11 | 104 | 243 | Peak |
| 11060 | 45.54 | 30.46 | 54 | -8.46 | 37.64 | 12.91 | 35.47 | 126 | 271 | Average |
| 11060 | 55.62 | 40.54 | 74 | -18.38 | 37.64 | 12.91 | 35.47 | 126 | 271 | Peak |
| **Antenna Polarity & Test Distance: Vertical at 3 m** | | | | | | | | | | |
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5458.32 | 48.63 | 39.81 | 54 | -5.37 | 34.36 | 8.51 | 34.05 | 122 | 263 | Average |
| 5458.32 | 57.12 | 48.3 | 74 | -16.88 | 34.36 | 8.51 | 34.05 | 122 | 263 | Peak |
| *5470 | 59.93 | 51.1 | 68.2 | -8.27 | 34.37 | 8.51 | 34.05 | 122 | 263 | Peak |
| 5530 | 88.06 | 79.13 | | | 34.42 | 8.58 | 34.07 | 120 | 280 | Average |
| 5530 | 96.67 | 87.74 | | | 34.42 | 8.58 | 34.07 | 120 | 280 | Peak |
| *5724.36 | 52.64 | 43.48 | 68.2 | -15.56 | 34.62 | 8.65 | 34.11 | 120 | 280 | Peak |
| 11060 | 45.42 | 30.34 | 54 | -8.58 | 37.64 | 12.91 | 35.47 | 135 | 224 | Average |
| 11060 | 55.3 | 40.22 | 74 | -18.7 | 37.64 | 12.91 | 35.47 | 135 | 224 | Peak |

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5530 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

| EUT Test Condition | | Measurement Detail | |
|---|---|---|---|
| **Channel** | Channel 122 | **Frequency Range** | 1 GHz ~ 40 GHz |
| **Input Power** | 120 Vac, 60 Hz | **Detector Function** | Peak (PK)<br>Average (AV) |
| **Environmental Conditions** | 25 deg. C, 65 % RH | **Tested By** | Karl Lee |

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5458.64 | 43.84 | 35.02 | 54 | -10.16 | 34.36 | 8.51 | 34.05 | 102 | 244 | Average |
| 5458.64 | 53.94 | 45.12 | 74 | -20.06 | 34.36 | 8.51 | 34.05 | 102 | 244 | Peak |
| *5468.08 | 52.6 | 43.77 | 68.2 | -15.6 | 34.37 | 8.51 | 34.05 | 102 | 244 | Peak |
| 5610 | 93.33 | 84.3 | | | 34.5 | 8.61 | 34.08 | 102 | 244 | Average |
| 5610 | 101.31 | 92.28 | | | 34.5 | 8.61 | 34.08 | 102 | 244 | Peak |
| *5725.16 | 54.17 | 45.01 | 68.2 | -14.03 | 34.62 | 8.65 | 34.11 | 102 | 244 | Peak |
| 11220 | 46.85 | 31.76 | 54 | -7.15 | 37.73 | 12.8 | 35.44 | 132 | 189 | Average |
| 11220 | 56.83 | 41.74 | 74 | -17.17 | 37.73 | 12.8 | 35.44 | 132 | 189 | Peak |
| **Antenna Polarity & Test Distance: Vertical at 3 m** | | | | | | | | | | |
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5457.84 | 43.56 | 34.74 | 54 | -10.44 | 34.36 | 8.51 | 34.05 | 120 | 280 | Average |
| 5457.84 | 53.29 | 44.47 | 74 | -20.71 | 34.36 | 8.51 | 34.05 | 120 | 280 | Peak |
| *5469.2 | 52.08 | 43.25 | 68.2 | -16.12 | 34.37 | 8.51 | 34.05 | 120 | 280 | Peak |
| 5610 | 89.04 | 80.01 | | | 34.5 | 8.61 | 34.08 | 120 | 280 | Average |
| 5610 | 97.09 | 88.06 | | | 34.5 | 8.61 | 34.08 | 120 | 280 | Peak |
| *5724.84 | 52.39 | 43.23 | 68.2 | -15.81 | 34.62 | 8.65 | 34.11 | 120 | 280 | Peak |
| 11220 | 46.59 | 31.5 | 54 | -7.41 | 37.73 | 12.8 | 35.44 | 143 | 121 | Average |
| 11220 | 56.71 | 41.62 | 74 | -17.29 | 37.73 | 12.8 | 35.44 | 143 | 121 | Peak |

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5610 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

| EUT Test Condition | | Measurement Detail | |
|---|---|---|---|
| **Channel** | Channel 138 | **Frequency Range** | 1 GHz ~ 40 GHz |
| **Input Power** | 120 Vac, 60 Hz | **Detector Function** | Peak (PK)<br>Average (AV) |
| **Environmental Conditions** | 25 deg. C, 65 % RH | **Tested By** | Karl Lee |

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5453.2 | 43.52 | 34.7 | 54 | -10.48 | 34.36 | 8.51 | 34.05 | 190 | 115 | Average |
| 5453.2 | 54.26 | 45.44 | 74 | -19.74 | 34.36 | 8.51 | 34.05 | 190 | 115 | Peak |
| *5468.24 | 53.12 | 44.29 | 68.2 | -15.08 | 34.37 | 8.51 | 34.05 | 190 | 115 | Peak |
| 5690 | 93.47 | 84.34 | | | 34.59 | 8.64 | 34.1 | 190 | 115 | Average |
| 5690 | 100 | 90.87 | | | 34.59 | 8.64 | 34.1 | 190 | 115 | Peak |
| 11380 | 47.96 | 32.85 | 54 | -6.04 | 37.83 | 12.69 | 35.41 | 135 | 126 | Average |
| 11380 | 57.26 | 42.15 | 74 | -16.74 | 37.83 | 12.69 | 35.41 | 135 | 126 | Peak |
| **Antenna Polarity & Test Distance: Vertical at 3 m** | | | | | | | | | | |
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5454.48 | 43.49 | 34.67 | 54 | -10.51 | 34.36 | 8.51 | 34.05 | 120 | 119 | Average |
| 5454.48 | 53.43 | 44.61 | 74 | -20.57 | 34.36 | 8.51 | 34.05 | 120 | 119 | Peak |
| *5470 | 52.86 | 44.03 | 68.2 | -15.34 | 34.37 | 8.51 | 34.05 | 120 | 119 | Peak |
| 5690 | 89.74 | 80.61 | | | 34.59 | 8.64 | 34.1 | 120 | 119 | Average |
| 5690 | 96.22 | 87.09 | | | 34.59 | 8.64 | 34.1 | 120 | 119 | Peak |
| 11380 | 47.58 | 32.47 | 54 | -6.42 | 37.83 | 12.69 | 35.41 | 164 | 9 | Average |
| 11380 | 56.36 | 41.25 | 74 | -17.64 | 37.83 | 12.69 | 35.41 | 164 | 9 | Peak |

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5690 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

| EUT Test Condition | | Measurement Detail | |
|---|---|---|---|
| **Channel** | Channel 155 | **Frequency Range** | 1 GHz ~ 40 GHz |
| **Input Power** | 120 Vac, 60 Hz | **Detector Function** | Peak (PK)<br>Average (AV) |
| **Environmental Conditions** | 25 deg. C, 65 % RH | **Tested By** | Karl Lee |

**<Spurious Emission>**

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5775 | 92.79 | 83.56 | | | 34.68 | 8.67 | 34.12 | 125 | 200 | Average |
| 5775 | 99.45 | 90.22 | | | 34.68 | 8.67 | 34.12 | 125 | 200 | Peak |
| 11550 | 45.27 | 30 | 54 | -8.73 | 37.97 | 12.68 | 35.38 | 131 | 196 | Average |
| 11550 | 55.28 | 40.01 | 74 | -18.72 | 37.97 | 12.68 | 35.38 | 131 | 196 | Peak |
| **Antenna Polarity & Test Distance: Vertical at 3 m** | | | | | | | | | | |
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 5775 | 91.47 | 82.24 | | | 34.68 | 8.67 | 34.12 | 200 | 145 | Average |
| 5775 | 98.15 | 88.92 | | | 34.68 | 8.67 | 34.12 | 200 | 145 | Peak |
| 11550 | 45.39 | 30.12 | 54 | -8.61 | 37.97 | 12.68 | 35.38 | 134 | 270 | Average |
| 11550 | 55.21 | 39.94 | 74 | -18.79 | 37.97 | 12.68 | 35.38 | 134 | 270 | Peak |

**<Out of Band Emission (OOBE)>**

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| *5591.35 | 53.09 | 44.08 | 68.2 | -15.11 | 34.49 | 8.6 | 34.08 | 125 | 200 | Peak |
| 5658.55 | 54.68 | 45.59 | 74.53 | -19.85 | 34.56 | 8.63 | 34.1 | 125 | 200 | Peak |
| 5917.375 | 51.07 | 41.69 | 73.84 | -22.77 | 34.81 | 8.73 | 34.16 | 125 | 200 | Peak |
| *5926.825 | 53.44 | 44.04 | 68.2 | -14.76 | 34.83 | 8.73 | 34.16 | 125 | 200 | Peak |
| **Antenna Polarity & Test Distance: Vertical at 3 m** | | | | | | | | | | |
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| *5630.2 | 53.42 | 44.37 | 68.2 | -14.78 | 34.52 | 8.62 | 34.09 | 200 | 145 | Peak |
| 5655.925 | 52.47 | 43.38 | 72.58 | -20.11 | 34.56 | 8.63 | 34.1 | 200 | 145 | Peak |
| 5923.675 | 51.85 | 42.45 | 69.18 | -17.33 | 34.83 | 8.73 | 34.16 | 200 | 145 | Peak |
| *6022.375 | 53.08 | 43.57 | 68.2 | -15.12 | 34.92 | 8.77 | 34.18 | 200 | 145 | Peak |

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. 5775 MHz: Fundamental Frequency
3. *: Out of Restricted Band
4. The emission levels of other frequencies were very low against the limit

**9 kHz ~ 30 MHz Data:**

The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

**30 MHz ~ 1 GHz Worst-Case Data:**

**<2TX>**

**802.11n (HT40)**

| EUT Test Condition | | Measurement Detail | |
|---|---|---|---|
| **Channel** | Channel 62 | **Frequency Range** | 30 MHz ~ 1 GHz |
| **Input Power** | 120 Vac, 60 Hz | **Detector Function** | Peak (PK)<br>Quasi-peak (QP) |
| **Environmental Conditions** | 25 deg. C, 65 % RH | **Tested By** | Karl Lee |

| Antenna Polarity & Test Distance: Horizontal at 3 m | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 89.13 | 17.34 | 37.78 | 43.5 | -26.16 | 10.21 | 1.11 | 31.76 | 131 | 40 | Peak |
| 157.44 | 21.04 | 43.15 | 43.5 | -22.46 | 8.64 | 1.52 | 32.27 | 134 | 175 | Peak |
| 277.05 | 19.32 | 36.7 | 46 | -26.68 | 12.71 | 2.03 | 32.12 | 127 | 156 | Peak |
| 374.2 | 22.21 | 37.57 | 46 | -23.79 | 14.52 | 2.26 | 32.14 | 158 | 177 | Peak |
| 691.3 | 20.34 | 30.28 | 46 | -25.66 | 19.11 | 3.05 | 32.1 | 142 | 204 | Peak |
| 937.7 | 27.68 | 33.6 | 46 | -18.32 | 21.66 | 3.62 | 31.2 | 169 | 135 | Peak |
| **Antenna Polarity & Test Distance: Vertical at 3 m** | | | | | | | | | | |
| **Frequency (MHz)** | **Emission Level (dBuV/m)** | **Read Level (dBuV)** | **Limit (dBuV/m)** | **Margin (dB)** | **Antenna Factor (dB/m)** | **Cable Loss (dB)** | **Preamp Factor (dB)** | **Antenna Height (cm)** | **Table Angle (Degree)** | **Remark** |
| 49.17 | 19.21 | 35.98 | 40 | -20.79 | 14.55 | 0.9 | 32.22 | 112 | 164 | Peak |
| 87.24 | 15.36 | 36.41 | 40 | -24.64 | 9.7 | 1.11 | 31.86 | 126 | 243 | Peak |
| 155.55 | 16.17 | 38.36 | 43.5 | -27.33 | 8.56 | 1.52 | 32.27 | 178 | 245 | Peak |
| 374.2 | 17.63 | 32.99 | 46 | -28.37 | 14.52 | 2.26 | 32.14 | 186 | 254 | Peak |
| 600.3 | 20.26 | 31.65 | 46 | -25.74 | 17.93 | 2.87 | 32.19 | 196 | 132 | Peak |
| 937.7 | 30.51 | 36.43 | 46 | -15.49 | 21.66 | 3.62 | 31.2 | 133 | 7 | Peak |

Remarks:

1. Emission Level = Read Level + Antenna Factor + Cable Loss - Preamp Factor
   Margin value = Emission level – Limit value
2. The emission levels of other frequencies were very low against the limit

## 4.2 Conducted Emission Measurement

### 4.2.1 Limits of Conducted Emission Measurement

| Frequency (MHz) | Conducted Limit (dBuV) | |
|---|---|---|
| | Quasi-Peak | Average |
| 0.15 - 0.5 | 66 - 56 | 56 - 46 |
| 0.50 - 5.0 | 56 | 46 |
| 5.0 - 30.0 | 60 | 50 |

Note: 1. The lower limit shall apply at the transition frequencies.
2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50 MHz.

### 4.2.2 Test Instruments

| Description & Manufacturer | Model No. | Serial No. | Date of Calibration | Due Date of Calibration |
|---|---|---|---|---|
| Test Receiver ROHDE & SCHWARZ | ESCI | 100613 | Nov. 23, 2017 | Nov. 22, 2018 |
| RF signal cable (with 10dB PAD) Woken | 5D-FB | Cable-cond1-01 | Sep. 05, 2017 | Sep. 04, 2018 |
| LISN/AMN ROHDE & SCHWARZ (EUT) | ESH3-Z5 | 835239/001 | Mar. 06, 2018 | Mar. 05, 2019 |
| LISN/AMN ROHDE & SCHWARZ (Peripheral) | ESH3-Z5 | 100311 | Aug. 15, 2017 | Aug. 14, 2018 |
| Software ADT | BV ADT_Cond_ V7.3.7.4 | NA | NA | NA |

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in HwaYa Shielded Room 1.
3. The VCCI Site Registration No. is C-2040.

4.2.3 Test Procedures

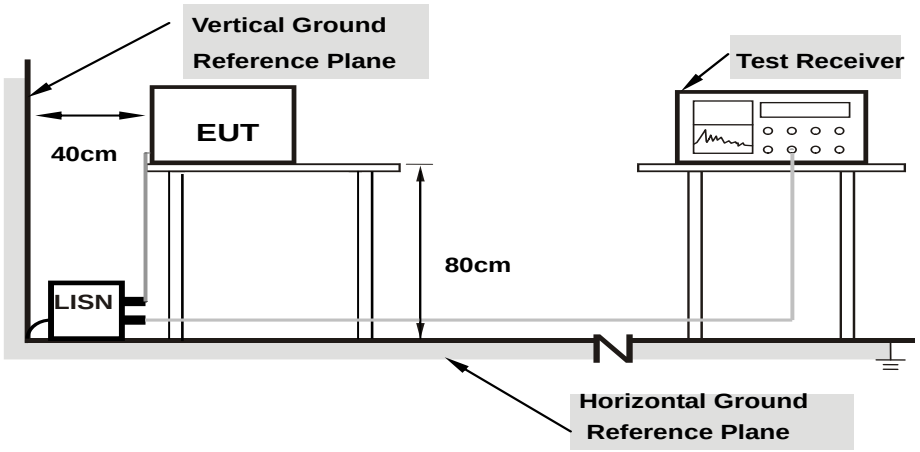
a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
c. The frequency range from 150 kHz to 30 MHz was searched. Emission levels under (Limit -20 dB) was not recorded.

**Note:** All modes of operation were investigated and the worst-case emissions are reported.

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup




**Note: 1.Support units were connected to second LISN.**
**2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes**

For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.2.6 EUT Operating Conditions

a. Placed the EUT on a testing table.
b. Use the software to control the EUT under transmission condition continuously at specific channel frequency.

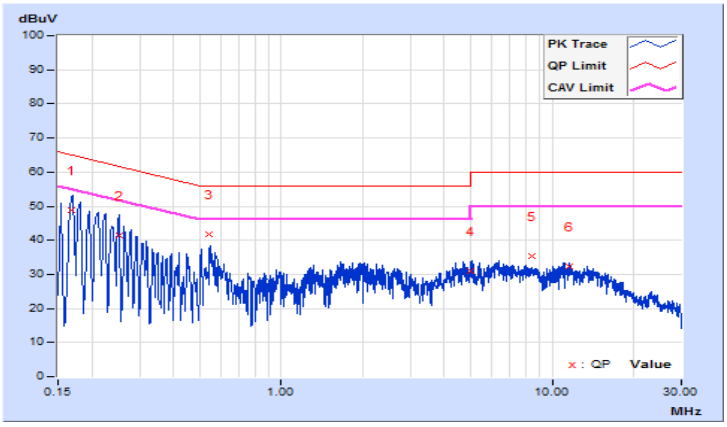
4.2.7 Test Results

| | | | |
|---|---|---|---|
| Frequency Range | 150kHz ~ 30MHz | Detector Function & Resolution Bandwidth | Quasi-Peak (QP) / Average (AV), 9kHz |
| Input Power | 120Vac, 60Hz | Environmental Conditions | 25℃, 65%RH |
| Tested by | Jisyong Wang | Test Date | 2018/6/14 |

| Phase Of Power : Line (L) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| No | Frequency (MHz) | Correction Factor (dB) | Reading Value (dBuV) | | Emission Level (dBuV) | | Limit (dBuV) | | Margin (dB) | |
| | | | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. |
| 1 | 0.16834 | 10.10 | 38.63 | 23.20 | 48.73 | 33.30 | 65.04 | 55.04 | -16.31 | -21.74 |
| 2 | 0.25166 | 10.11 | 31.39 | 15.62 | 41.50 | 25.73 | 61.70 | 51.70 | -20.20 | -25.97 |
| 3 | 0.54375 | 10.12 | 31.56 | 15.09 | 41.68 | 25.21 | 56.00 | 46.00 | -14.32 | -20.79 |
| 4 | 5.01404 | 10.34 | 20.72 | 7.01 | 31.06 | 17.35 | 60.00 | 50.00 | -28.94 | -32.65 |
| 5 | 8.45484 | 10.53 | 24.75 | 10.52 | 35.28 | 21.05 | 60.00 | 50.00 | -24.72 | -28.95 |
| 6 | 11.55938 | 10.71 | 21.45 | 9.13 | 32.16 | 19.84 | 60.00 | 50.00 | -27.84 | -30.16 |

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

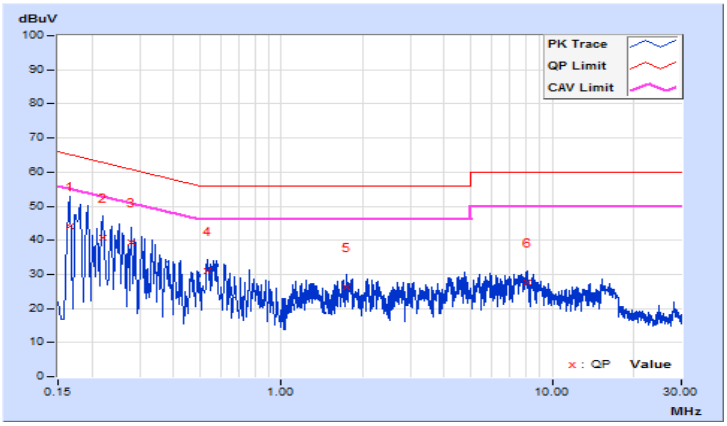


| | | | |
|---|---|---|---|
| Frequency Range | 150kHz ~ 30MHz | Detector Function & Resolution Bandwidth | Quasi-Peak (QP) / Average (AV), 9kHz |
| Input Power | 120Vac, 60Hz | Environmental Conditions | 25℃, 65%RH |
| Tested by | Jisyong Wang | Test Date | 2018/6/14 |

| Phase Of Power : Neutral (N) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| No | Frequency (MHz) | Correction Factor (dB) | Reading Value (dBuV) | | Emission Level (dBuV) | | Limit (dBuV) | | Margin (dB) | |
| | | | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. | Q.P. | AV. |
| 1 | 0.16564 | 10.10 | 34.02 | 16.89 | 44.12 | 26.99 | 65.18 | 55.18 | -21.06 | -28.19 |
| 2 | 0.22038 | 10.11 | 30.64 | 14.40 | 40.75 | 24.51 | 62.80 | 52.80 | -22.05 | -28.29 |
| 3 | 0.27903 | 10.11 | 29.15 | 14.30 | 39.26 | 24.41 | 60.84 | 50.84 | -21.58 | -26.43 |
| 4 | 0.53318 | 10.12 | 20.73 | 6.20 | 30.85 | 16.32 | 56.00 | 46.00 | -25.15 | -29.68 |
| 5 | 1.73355 | 10.16 | 16.05 | 3.52 | 26.21 | 13.68 | 56.00 | 46.00 | -29.79 | -32.32 |
| 6 | 8.14595 | 10.44 | 17.09 | 3.06 | 27.53 | 13.50 | 60.00 | 50.00 | -32.47 | -36.50 |

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value



## 4.3 Transmit Power Measurement

### 4.3.1 Limits of Transmit Power Measurement

| Operation Band | EUT Category | | Limit |
|---|---|---|---|
| U-NII-1 | | Outdoor Access Point | 1 Watt (30 dBm)<br>(Max. e.i.r.p ≦ 125 mW (21 dBm) at any elevation angle above 30 degrees as measured from the horizon) |
| | | Fixed point-to-point Access Point | 1 Watt (30 dBm) |
| | | Indoor Access Point | 1 Watt (30 dBm) |
| | √ | Mobile and Portable client device | 250 mW (24 dBm) |
| U-NII-2A | √ | | 250 mW (24 dBm) or 11 dBm + 10 log B* |
| U-NII-2C | √ | | 250 mW (24 dBm) or 11 dBm + 10 log B* |
| U-NII-3 | √ | | 1 Watt (30 dBm) |

*B is the 26 dB emission bandwidth in megahertz

Per KDB 662911 Method of conducted output power measurement on IEEE 802.11 devices,

Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

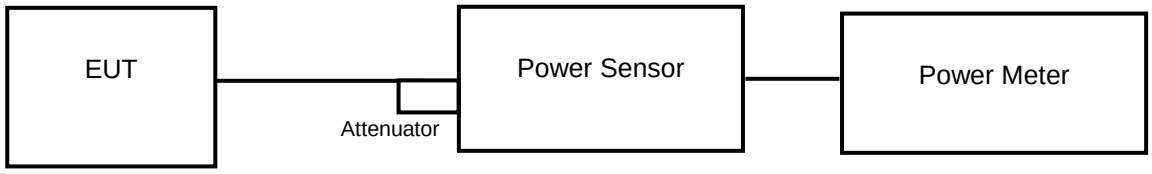
Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any $N_{ANT}$;

Array Gain = 5 log($N_{ANT}$/$N_{SS}$) dB or 3 dB, whichever is less for 20 MHz channel widths with $N_{ANT} \geq 5$.

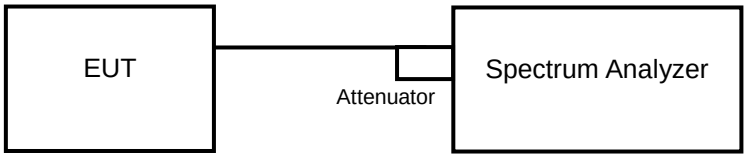
For power measurements on all other devices: Array Gain = 10 log($N_{ANT}$/$N_{SS}$) dB.

### 4.3.2 Test Setup

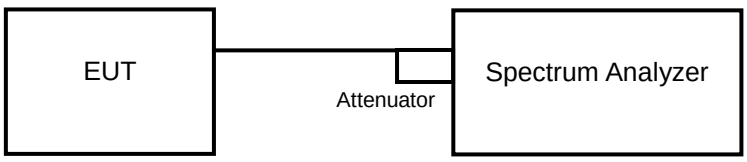
**<Power Output Measurement>**




or




**<26 dB Bandwidth>**



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedure

**Average Power Measurement**

<802.11a, 802.11n (HT20), 802.11n (HT40)>

Method PM is used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst. Duty factor is not added to measured value.

<802.11ac (VHT80)>

a. Set span to encompass the entire 26 dB EBW (or, alternatively, the entire 99 % occupied bandwidth) of the signal.
b. Set sweep trigger to “free run”.
c. Set RBW = 1 MHz.
d. Set VBW ≥ 3 MHz
e. Number of points in sweep ≥ 2 Span / RBW.
f. Sweep time ≤ (number of points in sweep) * T
g. Using emission bandwidth to determine the frequency span for integration the channel bandwidth.
h. Detector = RMS.
i. Trace mode = max hold.
j. Allow max hold to run for at least 60 seconds, or longer as needed to allow the trace to stabilize.

**26 dB Bandwidth**

a. Set RBW = approximately 1 % of the emission bandwidth.
b. Set the VBW > RBW.
c. Detector = Peak.
d. Trace mode = max hold.
e. Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1 %.

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Conditions

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.3.7 Test Results

**Power Output:**

**802.11a**

| Channel | Frequency (MHz) | Maximum Conducted Power (mW) | Maximum Conducted Power (dBm) | Power Limit (dBm) | Pass / Fail |
|---|---|---|---|---|---|
| 36 | 5180 | 78.886 | 18.97 | 24 | Pass |
| 44 | 5220 | 79.068 | 18.98 | 24 | Pass |
| 48 | 5240 | 77.804 | 18.91 | 24 | Pass |
| 52 | 5260 | 78.524 | 18.95 | 24 | Pass |
| 60 | 5300 | 79.25 | 18.99 | 24 | Pass |
| 64 | 5320 | 78.886 | 18.97 | 24 | Pass |
| 100 | 5500 | 77.983 | 18.92 | 24 | Pass |
| 116 | 5580 | 79.068 | 18.98 | 24 | Pass |
| 140 | 5700 | 69.984 | 18.45 | 24 | Pass |
| 144 | 5720 (U-NII-2C) | 48.753 | 16.88 | 23.32 | Pass |
| 144 | 5720 (U-NII-3) | 22.387 | 13.50 | 30 | Pass |
| 149 | 5745 | 66.374 | 18.22 | 30 | Pass |
| 157 | 5785 | 68.077 | 18.33 | 30 | Pass |
| 165 | 5825 | 73.114 | 18.64 | 30 | Pass |

**Note:**

**For U-NII-2A, U-NII-2C Band:**

1. 11 dBm + 10log (26.48 ) = 25.22 dBm > 24 dBm.
2. 11 dBm + 10log (27.07 ) = 25.32 dBm > 24 dBm.
3. 11 dBm + 10log (26.45 ) = 25.22 dBm > 24 dBm.
4. 11 dBm + 10log (25.80 ) = 25.11 dBm > 24 dBm.
5. 11 dBm + 10log (26.73 ) = 25.26 dBm > 24 dBm.
6. 11 dBm + 10log (25.01 ) = 24.98 dBm > 24 dBm.
7. 11 dBm + 10log (17.10 ) = 23.32 dBm < 24 dBm.

## 802.11n (HT20)

| Channel | Frequency (MHz) | Maximum Conducted Power (dBm) | | Total Power (mW) | Total Power (dBm) | Power Limit (dBm) | Pass / Fail |
|---|---|---|---|---|---|---|---|
| | | Chain 0 | Chain 1 | | | | |
| 36 | 5180 | 18.96 | 18.93 | 156.868 | 21.96 | 24 | Pass |
| 44 | 5220 | 18.98 | 18.95 | 157.592 | 21.98 | 24 | Pass |
| 48 | 5240 | 18.31 | 18.24 | 134.445 | 21.29 | 24 | Pass |
| 52 | 5260 | 18.37 | 18.24 | 135.388 | 21.32 | 24 | Pass |
| 60 | 5300 | 18.97 | 18.87 | 155.976 | 21.93 | 24 | Pass |
| 64 | 5320 | 18.92 | 18.79 | 153.666 | 21.87 | 24 | Pass |
| 100 | 5500 | 18.43 | 18.28 | 136.961 | 21.37 | 24 | Pass |
| 116 | 5580 | 18.98 | 18.95 | 157.592 | 21.98 | 24 | Pass |
| 140 | 5700 | 18.73 | 18.58 | 146.756 | 21.67 | 24 | Pass |
| 144 | 5720 (U-NII-2C) | 16.68 | 17.09 | 97.727 | 19.90 | 23.45 | Pass |
| 144 | 5720 (U-NII-3) | 14.04 | 13.37 | 47.078 | 16.73 | 30 | Pass |
| 149 | 5745 | 18.51 | 18.44 | 140.781 | 21.49 | 30 | Pass |
| 157 | 5785 | 18.69 | 18.53 | 145.246 | 21.62 | 30 | Pass |
| 165 | 5825 | 18.94 | 18.85 | 155.079 | 21.91 | 30 | Pass |

**Note:**

**For U-NII-2A, U-NII-2C Band:**

**Chain 0**

1. 11 dBm + 10log (29.13 ) = 25.64 dBm > 24 dBm.
2. 11 dBm + 10log (28.67 ) = 25.57 dBm > 24 dBm.
3. 11 dBm + 10log (28.48 ) = 25.54 dBm > 24 dBm.
4. 11 dBm + 10log (28.99 ) = 25.62 dBm > 24 dBm.
5. 11 dBm + 10log (28.43 ) = 25.53 dBm > 24 dBm.
6. 11 dBm + 10log (28.73 ) = 25.58 dBm > 24 dBm.
7. 11 dBm + 10log (18.25 ) = 23.61 dBm < 24 dBm.

**Chain 1**

1. 11 dBm + 10log (28.48 ) = 25.54 dBm > 24 dBm.
2. 11 dBm + 10log (28.28 ) = 25.51 dBm > 24 dBm.
3. 11 dBm + 10log (27.42 ) = 25.38 dBm > 24 dBm.
4. 11 dBm + 10log (28.62 ) = 25.56 dBm > 24 dBm.
5. 11 dBm + 10log (27.16 ) = 25.33 dBm > 24 dBm.
6. 11 dBm + 10log (25.99 ) = 25.14 dBm > 24 dBm.
7. 11 dBm + 10log (17.61 ) = 23.45 dBm < 24 dBm.

## 802.11n (HT40)

| Channel | Frequency (MHz) | Maximum Conducted Power (dBm) | | Total Power (mW) | Total Power (dBm) | Power Limit (dBm) | Pass / Fail |
|---|---|---|---|---|---|---|---|
| | | Chain 0 | Chain 1 | | | | |
| 38 | 5190 | 16.52 | 16.89 | 93.74 | 19.72 | 24 | Pass |
| 46 | 5230 | 17.56 | 17.82 | 117.55 | 20.70 | 24 | Pass |
| 54 | 5270 | 17.61 | 17.85 | 118.631 | 20.74 | 24 | Pass |
| 62 | 5310 | 15.60 | 15.83 | 74.59 | 18.73 | 24 | Pass |
| 102 | 5510 | 16.74 | 16.91 | 96.297 | 19.84 | 24 | Pass |
| 110 | 5550 | 17.68 | 17.88 | 119.99 | 20.79 | 24 | Pass |
| 134 | 5670 | 17.51 | 17.60 | 113.908 | 20.57 | 24 | Pass |
| 142 | 5710 (U-NII-2C) | 16.88 | 16.92 | 97.957 | 19.91 | 24 | Pass |
| 142 | 5710 (U-NII-3) | 9.09 | 9.13 | 16.295 | 12.12 | 30 | Pass |
| 151 | 5755 | 17.55 | 17.86 | 117.979 | 20.72 | 30 | Pass |
| 159 | 5795 | 17.56 | 17.77 | 116.857 | 20.68 | 30 | Pass |

**Note:**

**For U-NII-2A, U-NII-2C Band:**

**Chain 0**

1. 11 dBm + 10log (41.94 ) = 27.22 dBm > 24 dBm.
2. 11 dBm + 10log (42.73 ) = 27.30 dBm > 24 dBm.
3. 11 dBm + 10log (42.67 ) = 27.30 dBm > 24 dBm.
4. 11 dBm + 10log (42.47 ) = 27.28 dBm > 24 dBm.
5. 11 dBm + 10log (42.28 ) = 27.26 dBm > 24 dBm.
6. 11 dBm + 10log (36.05 ) = 26.56 dBm > 24 dBm.

**Chain 1**

1. 11 dBm + 10log (42.24 ) = 27.25 dBm > 24 dBm.
2. 11 dBm + 10log (42.01 ) = 27.23 dBm > 24 dBm.
3. 11 dBm + 10log (42.09 ) = 27.24 dBm > 24 dBm.
4. 11 dBm + 10log (42.15 ) = 27.24 dBm > 24 dBm.
5. 11 dBm + 10log (42.39 ) = 27.27 dBm > 24 dBm.
6. 11 dBm + 10log (35.99 ) = 26.56 dBm > 24 dBm.

## 802.11ac (VHT80)

| Channel | Frequency (MHz) | Maximum Conducted Power (dBm) | | Total Power (mW) | Total Power (dBm) | Power Limit (dBm) | Pass / Fail |
|---|---|---|---|---|---|---|---|
| | | Chain 0 | Chain 1 | | | | |
| 42 | 5210 | 16.17 | 16.26 | 83.667 | 19.23 | 24 | Pass |
| 58 | 5290 | 15.07 | 15.57 | 68.195 | 18.34 | 24 | Pass |
| 106 | 5530 | 16.24 | 16.31 | 84.829 | 19.29 | 24 | Pass |
| 122 | 5610 | 16.79 | 16.90 | 96.731 | 19.86 | 24 | Pass |
| 138 | 5690 (U-NII-2C) | 16.28 | 16.61 | 88.276 | 19.46 | 24 | Pass |
| 138 | 5690 (U-NII-3) | 6.09 | 6.08 | 8.119 | 9.10 | 30 | Pass |
| 155 | 5775 | 16.62 | 16.98 | 95.808 | 19.81 | 30 | Pass |

**Note:**

**For U-NII-2A, U-NII-2C Band:**

**Chain 0**

1. 11 dBm + 10log (83.48 ) = 30.21 dBm > 24 dBm.
2. 11 dBm + 10log (84.44 ) = 30.26 dBm > 24 dBm.
3. 11 dBm + 10log (84.64 ) = 30.27 dBm > 24 dBm.
4. 11 dBm + 10log (77.08 ) = 29.86 dBm > 24 dBm.

**Chain 1**

1. 11 dBm + 10log (83.67 ) = 30.22 dBm > 24 dBm.
2. 11 dBm + 10log (84.33 ) = 30.25 dBm > 24 dBm.
3. 11 dBm + 10log (83.00 ) = 30.19 dBm > 24 dBm.
4. 11 dBm + 10log (76.72 ) = 29.84 dBm > 24 dBm.

**26 dB Bandwidth:**

**802.11a**

| Channel | Frequency (MHz) | 26 dBc Bandwidth (MHz) |
|---|---|---|
| 36 | 5180 | 26.34 |
| 44 | 5220 | 26.92 |
| 48 | 5240 | 28.25 |
| 52 | 5260 | 26.48 |
| 60 | 5300 | 27.07 |
| 64 | 5320 | 26.45 |
| 100 | 5500 | 25.80 |
| 116 | 5580 | 26.73 |
| 140 | 5700 | 25.01 |
| 144 | 5720 (U-NII-2C) | 17.10 |
| 144 | 5720 (U-NII-3) | 7.85 |

**802.11n (HT20)**

| Channel | Frequency (MHz) | 26 dBc Bandwidth (MHz) | |
|---|---|---|---|
| | | Chain 0 | Chain 1 |
| 36 | 5180 | 28.63 | 28.78 |
| 44 | 5220 | 28.92 | 28.63 |
| 48 | 5240 | 29.04 | 28.72 |
| 52 | 5260 | 29.13 | 28.48 |
| 60 | 5300 | 28.67 | 28.28 |
| 64 | 5320 | 28.48 | 27.42 |
| 100 | 5500 | 28.99 | 28.62 |
| 116 | 5580 | 28.43 | 27.16 |
| 140 | 5700 | 28.73 | 25.99 |
| 144 | 5720 (U-NII-2C) | 18.25 | 17.61 |
| 144 | 5720 (U-NII-3) | 9.93 | 7.48 |

### 802.11n (HT40)

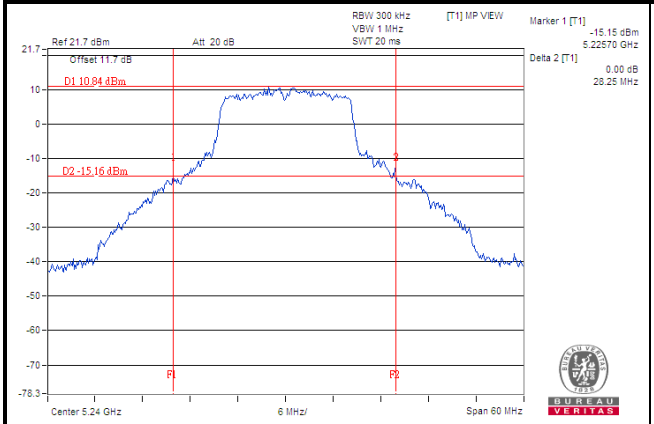
| Channel | Frequency (MHz) | 26 dBc Bandwidth (MHz) | |
|---|---|---|---|
| | | Chain 0 | Chain 1 |
| 38 | 5190 | 42.65 | 42.06 |
| 46 | 5230 | 49.26 | 42.68 |
| 54 | 5270 | 41.94 | 42.24 |
| 62 | 5310 | 42.73 | 42.01 |
| 102 | 5510 | 42.67 | 42.09 |
| 110 | 5550 | 42.47 | 42.15 |
| 134 | 5670 | 42.28 | 42.39 |
| 142 | 5710 (U-NII-2C) | 36.05 | 35.99 |
| 142 | 5710 (U-NII-3) | 5.99 | 5.99 |

### 802.11ac (VHT80)

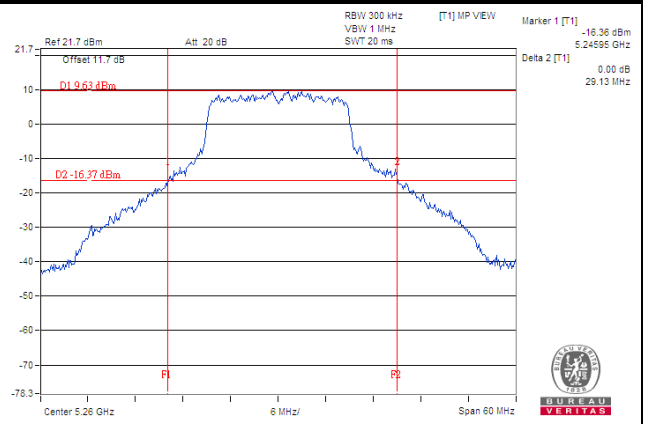
| Channel | Frequency (MHz) | 26 dBc Bandwidth (MHz) | |
|---|---|---|---|
| | | Chain 0 | Chain 1 |
| 42 | 5210 | 83.85 | 83.48 |
| 58 | 5290 | 83.48 | 83.67 |
| 106 | 5530 | 84.44 | 84.33 |
| 122 | 5610 | 84.64 | 83.00 |
| 138 | 5690 (U-NII-2C) | 77.08 | 76.72 |
| 138 | 5690 (U-NII-3) | 7.37 | 6.79 |

## Spectrum Plot of Worst Value

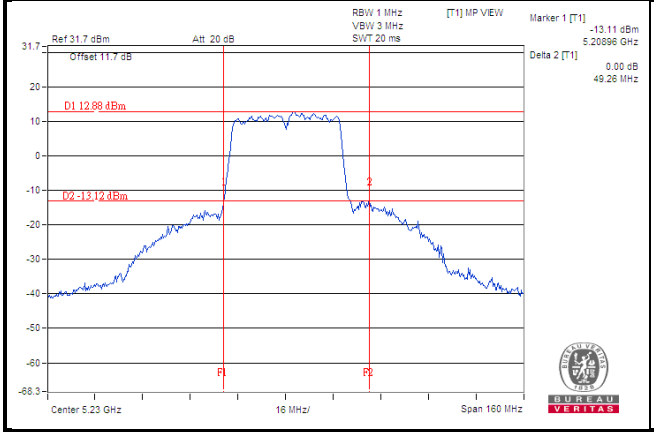
### 802.11a



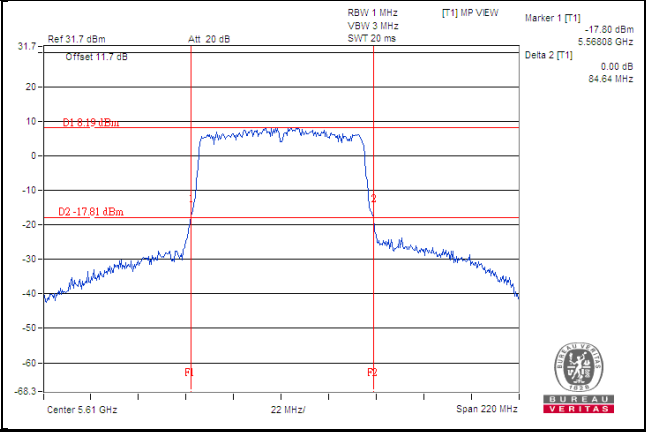

### 802.11n (HT20)




### 802.11n (HT40)

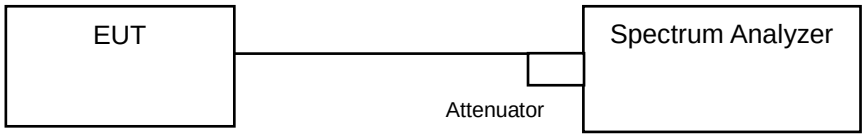



### 802.11ac (VHT80)



## 4.4 Occupied Bandwidth Measurement

### 4.4.1 Test Setup




### 4.4.2 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

### 4.4.3 Test Procedure

The transmitter output was connected to the spectrum analyzer through an attenuator. The bandwidth of the fundamental frequency was measured by spectrum analyzer with resolution bandwidth in the range of 1 % to 5 % of the anticipated emission bandwidth, and a video bandwidth at least 3x the resolution bandwidth and set the detector to SAMPLE. The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 % of the total mean power of a given emission.

4.4.4 Test Results

**802.11a**

| Channel | Channel Frequency (MHz) | Occupied Bandwidth (MHz) |
|---|---|---|
| 36 | 5180 | 16.92 |
| 40 | 5200 | 16.92 |
| 48 | 5240 | 17.16 |
| 52 | 5260 | 16.92 |
| 60 | 5300 | 17.04 |
| 64 | 5320 | 16.80 |
| 100 | 5500 | 16.80 |
| 116 | 5580 | 16.92 |
| 140 | 5700 | 16.92 |
| 144 | 5720 (U-NII-2C) | 13.28 |
| 144 | 5720 (U-NII-3) | 3.16 |
| 149 | 5745 | 16.92 |
| 157 | 5785 | 16.92 |
| 165 | 5825 | 16.83 |

**802.11n (HT20)**

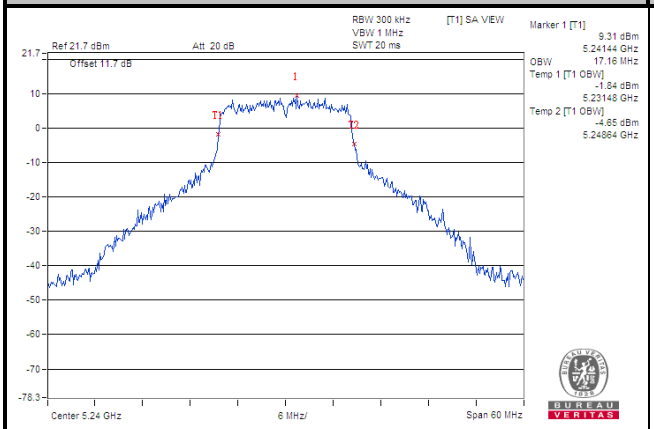
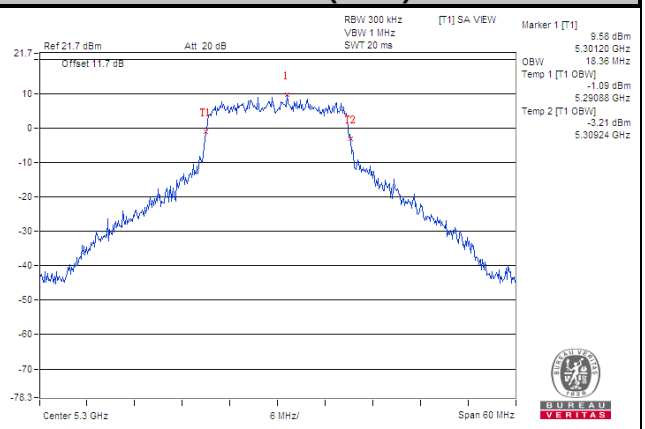
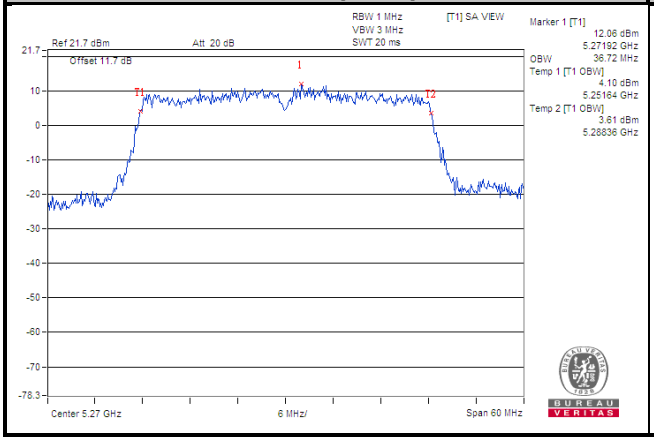
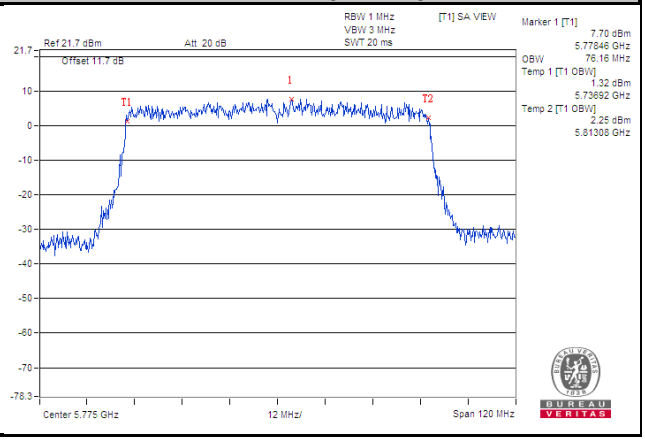
| Channel | Channel Frequency (MHz) | Occupied Bandwidth (MHz) | |
|---|---|---|---|
| | | Chain 0 | Chain 1 |
| 36 | 5180 | 18.24 | 18.12 |
| 40 | 5200 | 18.12 | 18.00 |
| 48 | 5240 | 18.24 | 18.24 |
| 52 | 5260 | 18.24 | 18.12 |
| 60 | 5300 | 18.36 | 18.00 |
| 64 | 5320 | 18.00 | 18.00 |
| 100 | 5500 | 18.12 | 18.00 |
| 116 | 5580 | 18.24 | 18.00 |
| 140 | 5700 | 18.12 | 17.88 |
| 144 | 5720 (U-NII-2C) | 14.00 | 13.88 |
| 144 | 5720 (U-NII-3) | 3.88 | 3.76 |
| 149 | 5745 | 18.08 | 17.88 |
| 157 | 5785 | 18.17 | 17.98 |
| 165 | 5825 | 18.08 | 17.98 |

### 802.11n (HT40)

| Channel | Channel Frequency (MHz) | Occupied Bandwidth (MHz) | |
|---|---|---|---|
| | | Chain 0 | Chain 1 |
| 38 | 5190 | 36.48 | 36.60 |
| 46 | 5230 | 36.60 | 36.60 |
| 54 | 5270 | 36.72 | 36.72 |
| 62 | 5310 | 36.60 | 36.60 |
| 102 | 5510 | 36.72 | 36.60 |
| 110 | 5550 | 36.60 | 36.72 |
| 134 | 5670 | 36.60 | 36.60 |
| 142 | 5710 (U-NII-2C) | 33.24 | 33.36 |
| 142 | 5710 (U-NII-3) | 3.24 | 3.24 |
| 151 | 5755 | 36.72 | 36.60 |
| 159 | 5795 | 36.60 | 36.48 |

### 802.11ac (VHT80)

| Channel | Channel Frequency (MHz) | Occupied Bandwidth (MHz) | |
|---|---|---|---|
| | | Chain 0 | Chain 1 |
| 42 | 5210 | 75.84 | 75.84 |
| 58 | 5290 | 75.84 | 75.84 |
| 106 | 5530 | 75.84 | 75.84 |
| 122 | 5610 | 76.08 | 75.84 |
| 138 | 5690 (U-NII-2C) | 72.92 | 72.92 |
| 138 | 5690 (U-NII-3) | 2.68 | 2.68 |
| 155 | 5775 | 75.76 | 76.16 |

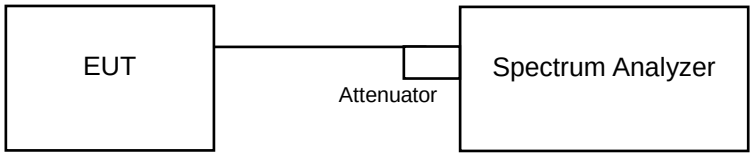
| Spectrum Plot of Worst Value | |
|---|---|
| **802.11a** | **802.11n (HT20)** |
|  |  |
| **802.11n (HT40)** | **802.11ac (VHT80)** |
|  |  |

## 4.5 Peak Power Spectral Density Measurement

### 4.5.1 Limits of Peak Power Spectral Density Measurement

| Operation Band | EUT Category | | Limit |
|---|---|---|---|
| U-NII-1 | | Outdoor Access Point | 17 dBm/MHz |
| | | Fixed point-to-point Access Point | |
| | | Indoor Access Point | |
| | √ | Mobile and Portable client device | 11 dBm/MHz |
| U-NII-2A | √ | | 11 dBm/MHz |
| U-NII-2C | √ | | 11 dBm/MHz |
| U-NII-3 | √ | | 30 dBm/500 kHz |

### 4.5.2 Test Setup




### 4.5.3 Test Instruments

Refer to section 4.1.3 to get information of above instrument.

### 4.5.4 Test Procedures

**For U-NII-1, U-NII-2A, U-NII-2C band:**

Using method SA-1

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW = 1 MHz, Set VBW ≥ 3 RBW, Detector = RMS
3. Sweep time = auto, trigger set to “free run”.
4. Trace average at least 100 traces in power averaging mode.
5. Record the max value

Using method SA-2

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW = 1 MHz, Set VBW ≥ 3 RBW, Detector = RMS
3. Sweep time = auto, trigger set to “free run”.
4. Trace average at least 100 traces in power averaging mode.
5. Record the max value and add 10 log (1/duty cycle)

**※For U-NII-3:**

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW = 500 kHz, Set VBW ≥ 3 RBW, Detector = RMS
3. Use the peak marker function to determine the maximum power level in any 500 kHz band segment within the fundamental EBW.
4. Sweep time = auto, trigger set to “free run”.
5. Trace average at least 100 traces in power averaging mode.
6. Record the max value

**※For U-NII-3:**

1. Set span to encompass the entire emission bandwidth (EBW) of the signal.
2. Set RBW = 500 kHz, Set VBW ≥ 3 RBW, Detector = RMS
3. Use the peak marker function to determine the maximum power level in any 500 kHz band segment within the fundamental EBW.
4. Sweep time = auto, trigger set to “free run”.
5. Trace average at least 100 traces in power averaging mode.
6. Record the max value and add 10 log (1/duty cycle)

### 4.5.5 Deviation from Test Standard

No deviation.

### 4.5.6 EUT Operating Conditions

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.5.7 Test Results

**For U-NII-1, U-NII-2A, U-NII-2C Band**

**802.11a**

| Channel | Frequency (MHz) | PSD (dBm/MHz) | Maximum Limit (dBm/MHz) | Pass / Fail |
|---|---|---|---|---|
| 36 | 5180 | 5.36 | 11 | Pass |
| 44 | 5220 | 5.50 | 11 | Pass |
| 48 | 5240 | 5.58 | 11 | Pass |
| 52 | 5260 | 5.51 | 11 | Pass |
| 60 | 5300 | 5.92 | 11 | Pass |
| 64 | 5320 | 5.68 | 11 | Pass |
| 100 | 5500 | 6.00 | 11 | Pass |
| 116 | 5580 | 5.93 | 11 | Pass |
| 140 | 5700 | 5.50 | 11 | Pass |
| 144 | 5720 (U-NII-2C) | 7.47 | 11 | Pass |

**802.11n (HT20)**

| Channel | Frequency (MHz) | PSD (dBm/MHz) | | Total Power Density (dBm/MHz) | Max. Limit (dBm/MHz) | Pass / Fail |
|---|---|---|---|---|---|---|
| | | Chain 0 | Chain 1 | | | |
| 36 | 5180 | 4.29 | 5.11 | 7.73 | 11 | Pass |
| 44 | 5220 | 4.21 | 5.28 | 7.79 | 11 | Pass |
| 48 | 5240 | 4.29 | 5.38 | 7.88 | 11 | Pass |
| 52 | 5260 | 4.11 | 5.32 | 7.77 | 11 | Pass |
| 60 | 5300 | 4.64 | 5.54 | 8.12 | 11 | Pass |
| 64 | 5320 | 4.58 | 5.34 | 7.99 | 11 | Pass |
| 100 | 5500 | 5.31 | 5.66 | 8.50 | 11 | Pass |
| 116 | 5580 | 5.36 | 5.43 | 8.41 | 11 | Pass |
| 140 | 5700 | 4.73 | 5.06 | 7.91 | 11 | Pass |
| 144 | 5720 (U-NII-2C) | 6.89 | 6.92 | 9.92 | 11 | Pass |

**Note:**

1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. 5180~5240MHz: Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 0.07$ dBi < 6 dBi, so the power density limit no need to reduce.
   5260~5320MHz: Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 0.15$ dBi < 6 dBi, so the power density limit no need to reduce.
   5500~5720MHz: Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 2.74$ dBi < 6 dBi, so the power density limit no need to reduce.

**802.11n (HT40)**

| Channel | Frequency (MHz) | PSD (dBm/MHz) | | Duty Factor (dB) | Total PSD with Duty Factor (dBm/MHz) | Max. Limit (dBm/MHz) | Pass / Fail |
|---|---|---|---|---|---|---|---|
| | | Chain 0 | Chain 1 | | | | |
| 38 | 5190 | 1.61 | 1.57 | 0.26 | 4.86 | 11 | Pass |
| 46 | 5230 | 1.28 | 1.66 | 0.26 | 4.75 | 11 | Pass |
| 54 | 5270 | 1.56 | 1.71 | 0.26 | 4.91 | 11 | Pass |
| 62 | 5310 | 1.56 | 1.86 | 0.26 | 4.99 | 11 | Pass |
| 102 | 5510 | 2.18 | 1.91 | 0.26 | 5.32 | 11 | Pass |
| 110 | 5550 | 1.89 | 1.92 | 0.26 | 5.18 | 11 | Pass |
| 134 | 5670 | 1.38 | 1.53 | 0.26 | 4.73 | 11 | Pass |
| 142 | 5710 (U-NII-2C) | 3.30 | 3.60 | 0.26 | 6.73 | 11 | Pass |

**Note:**

1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. 5180~5240MHz: Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 0.07$ dBi < 6 dBi, so the power density limit no need to reduce.
   5260~5320MHz: Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 0.15$ dBi < 6 dBi, so the power density limit no need to reduce.
   5500~5720MHz: Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 2.74$ dBi < 6 dBi, so the power density limit no need to reduce.
3. Refer to section 3.3 for duty cycle spectrum plot.

### 802.11ac (VHT80):

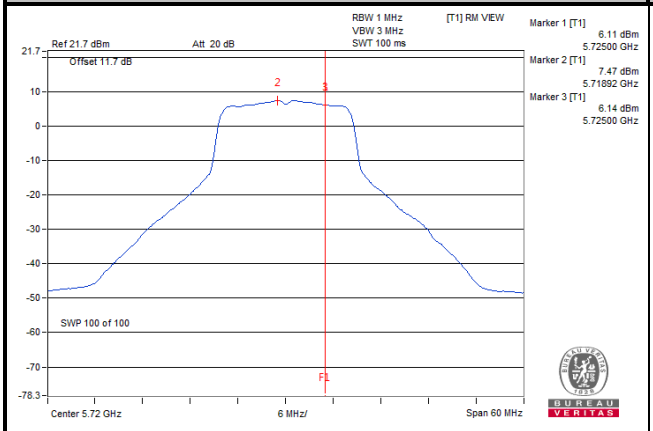
| Channel | Frequency (MHz) | PSD (dBm/MHz) | | Duty Factor (dB) | Total PSD with Duty Factor (dBm/MHz) | Max. Limit (dBm/MHz) | Pass / Fail |
|---|---|---|---|---|---|---|---|
| | | Chain 0 | Chain 1 | | | | |
| 42 | 5210 | -3.74 | -2.78 | 0.84 | 0.62 | 11 | Pass |
| 58 | 5290 | -3.15 | -2.45 | 0.84 | 1.07 | 11 | Pass |
| 106 | 5530 | -2.76 | -2.37 | 0.84 | 1.29 | 11 | Pass |
| 122 | 5610 | -3.04 | -2.82 | 0.84 | 0.92 | 11 | Pass |
| 138 | 5690 (U-NII-2C) | -1.34 | -1.00 | 0.84 | 2.68 | 11 | Pass |

**Note:**

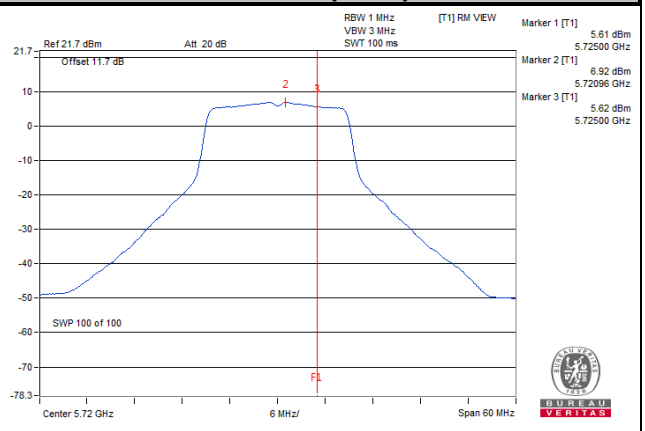
1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. 5180~5240MHz: Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 0.07$ dBi < 6 dBi, so the power density limit no need to reduce.
   5260~5320MHz: Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 0.15$ dBi < 6 dBi, so the power density limit no need to reduce.
   5500~5720MHz: Directional gain = $10\log[(10^{G1/20} + 10^{G2/20} + \ldots. + 10^{GN/20})^2 / N_{ANT}] = 2.74$ dBi < 6 dBi, so the power density limit no need to reduce.
3. Refer to section 3.3 for duty cycle spectrum plot.

**Spectrum Plot of Worst Value**

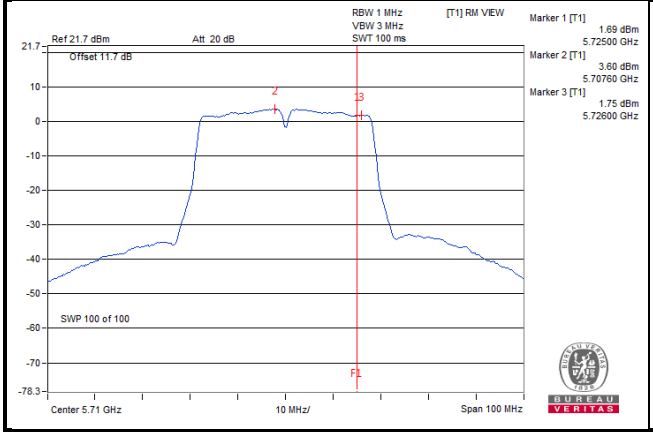
**802.11a**



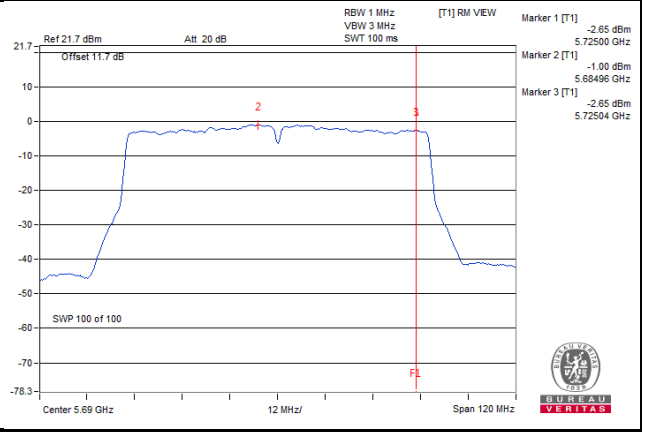

**802.11n (HT20)**




**802.11n (HT40)**




**802.11ac (VHT80)**



## For U-NII-3 Band

### 802.11a

| Channel | Freq. (MHz) | PSD (dBm/500 kHz) | Limit (dBm/500 kHz) | Pass / Fail |
|---|---|---|---|---|
| 144 | 5720 (U-NII-3) | 0.87 | 30 | Pass |
| 149 | 5745 | -2.49 | 30 | Pass |
| 157 | 5785 | -2.55 | 30 | Pass |
| 165 | 5825 | -2.54 | 30 | Pass |

### 802.11n (HT20)

| TX Chain | Channel | Freq. (MHz) | PSD (dBm/500 kHz) | 10 log (N=2) dB | Total PSD (dBm/500 kHz) | Limit (dBm/500 kHz) | Pass / Fail |
|---|---|---|---|---|---|---|---|
| 0 | 144 | 5720 (U-NII-3) | 0.28 | 3.01 | 3.29 | 30 | Pass |
| | 149 | 5745 | -3.35 | 3.01 | -0.34 | 30 | Pass |
| | 157 | 5785 | -3.25 | 3.01 | -0.24 | 30 | Pass |
| | 165 | 5825 | -3.54 | 3.01 | -0.53 | 30 | Pass |
| 1 | 144 | 5720 (U-NII-3) | 0.42 | 3.01 | 3.43 | 30 | Pass |
| | 149 | 5745 | -2.77 | 3.01 | 0.24 | 30 | Pass |
| | 157 | 5785 | -2.87 | 3.01 | 0.14 | 30 | Pass |
| | 165 | 5825 | -2.91 | 3.01 | 0.10 | 30 | Pass |

**Note:**

1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2 / N_{ANT}] = 1.62 < 6$ dBi, so the limit no need to reduce.

### 802.11n (HT40)

| TX Chain | Channel | Frequency (MHz) | PSD (dBm/500 kHz) | 10 log (N=2) dB | Duty Factor (dB) | Total PSD with Duty Factor (dBm/500 kHz) | Limit (dBm/500 kHz) | Pass / Fail |
|---|---|---|---|---|---|---|---|---|
| 0 | 142 | 5710 (U-NII-3) | -3.41 | 3.01 | 0.26 | -0.14 | 30 | Pass |
| | 151 | 5755 | -7.44 | 3.01 | 0.26 | -4.17 | 30 | Pass |
| | 159 | 5795 | -7.09 | 3.01 | 0.26 | -3.82 | 30 | Pass |
| 1 | 142 | 5710 (U-NII-3) | -3.34 | 3.01 | 0.26 | -0.07 | 30 | Pass |
| | 151 | 5755 | -7.47 | 3.01 | 0.26 | -4.20 | 30 | Pass |
| | 159 | 5795 | -6.81 | 3.01 | 0.26 | -3.54 | 30 | Pass |

**Note:**

1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2 / N_{ANT}$]= 1.62 < 6 dBi, so the limit no need to reduce.
3. Refer to section 3.3 for duty cycle spectrum plot.

### 802.11ac (VHT80)

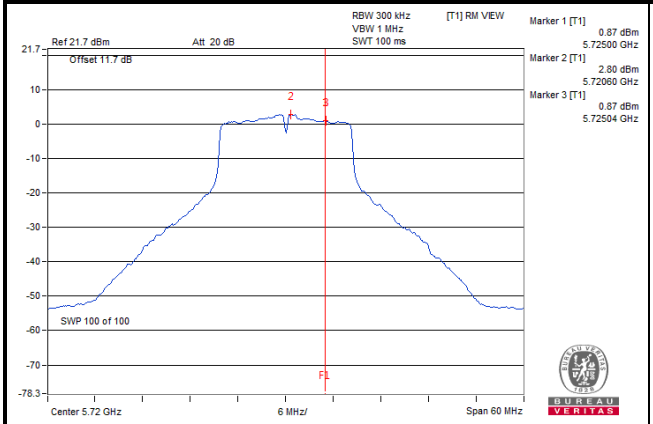
| TX Chain | Channel | Frequency (MHz) | PSD (dBm/500 kHz) | 10 log (N=2) dB | Duty Factor (dB) | Total PSD with Duty Factor (dBm/500 kHz) | Limit (dBm/500 kHz) | Pass / Fail |
|---|---|---|---|---|---|---|---|---|
| 0 | 138 | 5690 (U-NII-3) | -7.42 | 3.01 | 0.84 | -3.57 | 30 | Pass |
| | 155 | 5775 | -9.61 | 3.01 | 0.84 | -5.76 | 30 | Pass |
| 1 | 138 | 5690 (U-NII-3) | -7.34 | 3.01 | 0.84 | -3.49 | 30 | Pass |
| | 155 | 5775 | -10.25 | 3.01 | 0.84 | -6.40 | 30 | Pass |

**Note:**

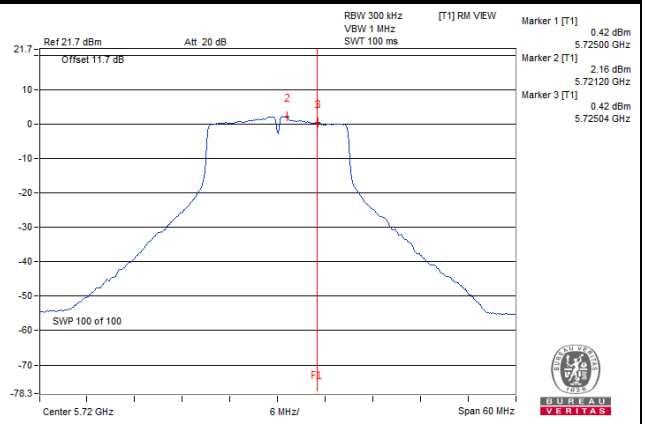
1. Method 1 of power density measurement of KDB 662911 is using for calculating total power density. Total power density is summing entire spectra across corresponding frequency bins on the various outputs by computer.
2. Directional gain = 10 log[$(10^{G1/20} + 10^{G2/20} + ... + 10^{GN/20})^2 / N_{ANT}$]= 1.62 < 6 dBi, so the limit no need to reduce.
3. Refer to section 3.3 for duty cycle spectrum plot.

## Spectrum Plot of Worst Value

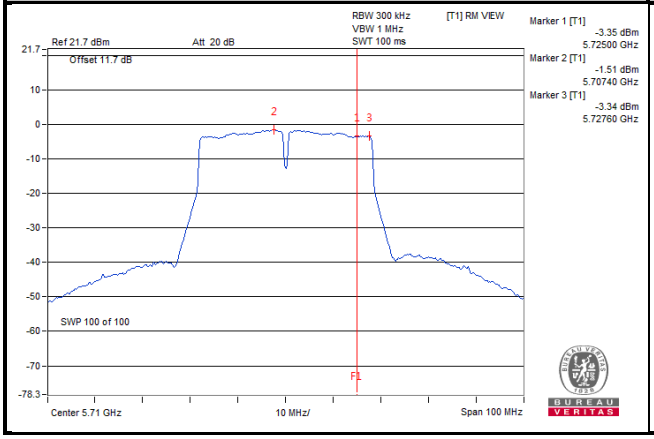
### 802.11a



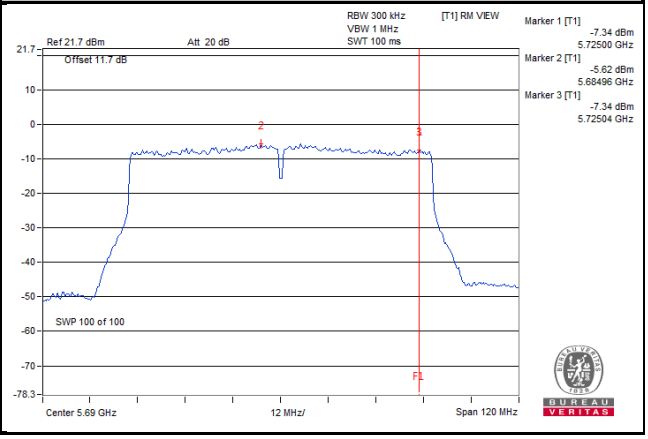

### 802.11n (HT20)




### 802.11n (HT40)




### 802.11ac (VHT80)

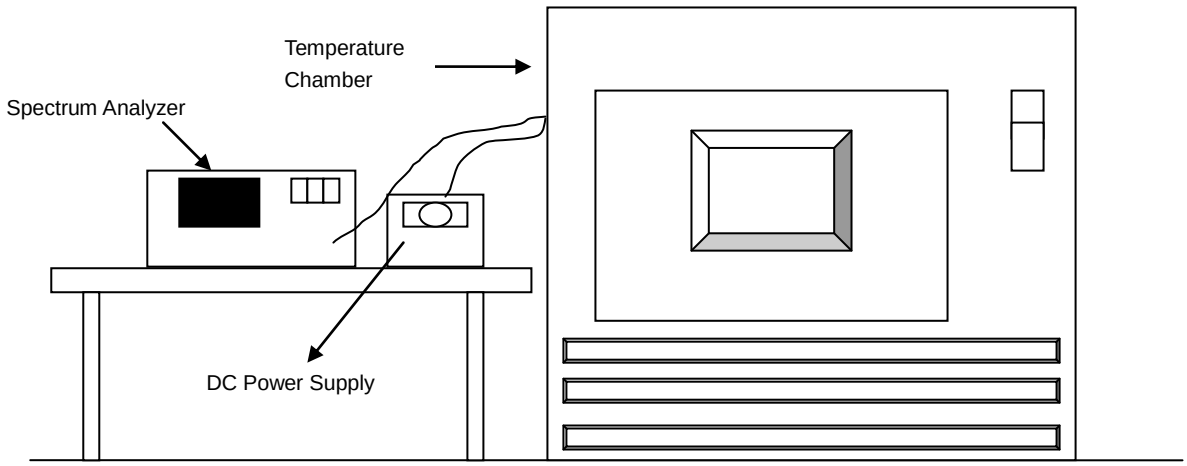


## 4.6 Frequency Stability

### 4.6.1 Limit of Frequency Stability Measurement

The frequency of the carrier signal shall be maintained within band of operation.

### 4.6.2 Test Setup




### 4.6.3 Test Instruments

Refer to section 4.1.3 to get information of above instrument.

### 4.6.4 Test Procedure

a. To ensure emission at the band edge is maintained within the authorized band, those values shall be measured by radiation emissions at upper and lower frequency points, and finally compensated by frequency deviation as procedures below.
b. The EUT was operated at the maximum output power, and connected to the spectrum analyzer, which is set to maximum hold function and peak detector. The peak value of the power envelope was measured and noted. The upper and lower frequency points were respectively measured relatively 10 dB lower than the measured peak value.
c. The frequency deviation was calculated by adding the upper frequency point and the lower frequency point divided by two. Those detailed values of frequency deviation are provided in table below.

### 4.6.5 Deviation from Test Standard

No deviation.

### 4.6.6 EUT Operating Condition

Set the EUT transmit at un-modulation mode to test frequency stability.

4.6.7 Test Results

| Frequency Stability Versus Temp. | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Operating Frequency: 5180 MHz | | | | | | | | | |
| Temp. (℃) | Power Supply (Vdc) | 0 Minute | | 2 Minute | | 5 Minute | | 10 Minute | |
| | | Measured Frequency (MHz) | Frequency Drift (ppm) | Measured Frequency (MHz) | Frequency Drift (ppm) | Measured Frequency (MHz) | Frequency Drift (ppm) | Measured Frequency (MHz) | Frequency Drift (ppm) |
| 50 | 3.85 | 5180.0131 | 2.53000 | 5180.0138 | 2.66000 | 5180.0165 | 3.19000 | 5180.0124 | 2.39000 |
| 40 | 3.85 | 5179.9732 | -5.17000 | 5179.9718 | -5.44000 | 5179.9758 | -4.67000 | 5179.975 | -4.83000 |
| 30 | 3.85 | 5180.015 | 2.90000 | 5180.0136 | 2.63000 | 5180.0146 | 2.82000 | 5180.0114 | 2.20000 |
| 20 | 3.85 | 5180.0042 | 0.81000 | 5180.0001 | 0.02000 | 5180.0025 | 0.48000 | 5180.0014 | 0.27000 |
| 10 | 3.85 | 5180.0249 | 4.81000 | 5180.0246 | 4.75000 | 5180.023 | 4.44000 | 5180.0231 | 4.46000 |
| 0 | 3.85 | 5179.978 | -4.25000 | 5179.9761 | -4.61000 | 5179.9784 | -4.17000 | 5179.9767 | -4.50000 |
| -10 | 3.85 | 5180.0183 | 3.53000 | 5180.0172 | 3.32000 | 5180.0142 | 2.74000 | 5180.0167 | 3.22000 |
| -20 | 3.85 | 5179.9965 | -0.68000 | 5179.9995 | -0.10000 | 5179.9996 | -0.08000 | 5180.0003 | 0.06000 |
| -30 | 3.85 | 5180.0037 | 0.71000 | 5180.0058 | 1.12000 | 5180.002 | 0.39000 | 5180.0041 | 0.79000 |

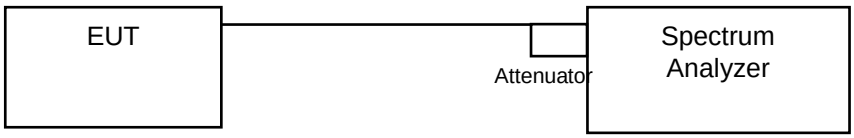
| Frequency Stability Versus Temp. | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Operating Frequency: 5180 MHz | | | | | | | | | |
| Temp. (℃) | Power Supply (Vdc) | 0 Minute | | 2 Minute | | 5 Minute | | 10 Minute | |
| | | Measured Frequency (MHz) | Frequency Drift (ppm) | Measured Frequency (MHz) | Frequency Drift (ppm) | Measured Frequency (MHz) | Frequency Drift (ppm) | Measured Frequency (MHz) | Frequency Drift (ppm) |
| 20 | 4.4275 | 5180.0044 | 0.85000 | 5180 | 0.00000 | 5180.0023 | 0.44000 | 5180.002 | 0.39000 |
| | 3.85 | 5180.0042 | 0.81000 | 5180.0001 | 0.02000 | 5180.0025 | 0.48000 | 5180.0014 | 0.27000 |
| | 3.2725 | 5180.0044 | 0.85000 | 5179.9993 | -0.14000 | 5180.0029 | 0.56000 | 5180.0009 | 0.17000 |

## 4.7 6 dB Bandwidth Measurement

### 4.7.1 Limits of 6 dB Bandwidth Measurement

The minimum of 6 dB Bandwidth Measurement is 0.5 MHz.

### 4.7.2 Test Setup




### 4.7.3 Test Instruments

Refer to section 4.1.3 to get information of above instrument.

### 4.7.4 Test Procedure

**MEASUREMENT PROCEDURE REF**

a. Set resolution bandwidth (RBW) = 100 kHz
b. Set the video bandwidth (VBW) ≥ 3 x RBW, Detector = Peak.
c. Trace mode = max hold.
d. Sweep = auto couple.
e. Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission

### 4.7.5 Deviation from Test Standard

No deviation.

### 4.7.6 EUT Operating Condition

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.7.7 Test Results

**802.11a**

| Channel | Frequency (MHz) | 6 dB Bandwidth (MHz) | Minimum Limit (MHz) | Pass / Fail |
|---|---|---|---|---|
| 144 | 5720 (U-NII-3) | 2.8 | 0.5 | Pass |
| 149 | 5745 | 15.17 | 0.5 | Pass |
| 157 | 5785 | 15.35 | 0.5 | Pass |
| 165 | 5825 | 15.38 | 0.5 | Pass |

**802.11n (HT20)**

| Channel | Frequency (MHz) | 6 dB Bandwidth (MHz) | | Minimum Limit (MHz) | Pass / Fail |
|---|---|---|---|---|---|
| | | Chain 0 | Chain 1 | | |
| 144 | 5720 (U-NII-3) | 2.76 | 3.15 | 0.5 | Pass |
| 149 | 5745 | 16.55 | 16.27 | 0.5 | Pass |
| 157 | 5785 | 16.56 | 16.57 | 0.5 | Pass |
| 165 | 5825 | 16.00 | 16.20 | 0.5 | Pass |

**802.11n (HT40)**

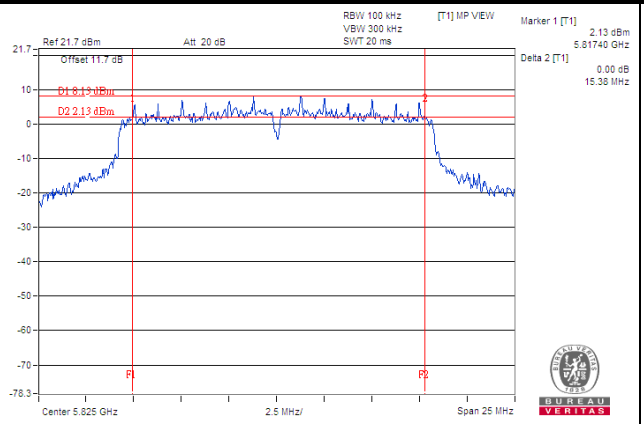
| Channel | Frequency (MHz) | 6 dB Bandwidth (MHz) | | Minimum Limit (MHz) | Pass / Fail |
|---|---|---|---|---|---|
| | | Chain 0 | Chain 1 | | |
| 142 | 5710 (U-NII-3) | 2.66 | 2.66 | 0.5 | Pass |
| 151 | 5755 | 36.11 | 35.46 | 0.5 | Pass |
| 159 | 5795 | 36.11 | 35.33 | 0.5 | Pass |

**802.11ac (VHT80)**

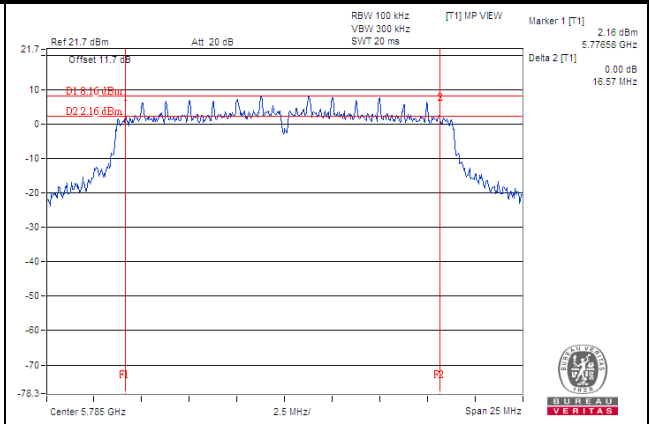
| Channel | Frequency (MHz) | 6 dB Bandwidth (MHz) | | Minimum Limit (MHz) | Pass / Fail |
|---|---|---|---|---|---|
| | | Chain 0 | Chain 1 | | |
| 138 | 5690 (U-NII-3) | 2.73 | 2.70 | 0.5 | Pass |
| 155 | 5775 | 75.49 | 75.42 | 0.5 | Pass |

## Spectrum Plot of Worst Value

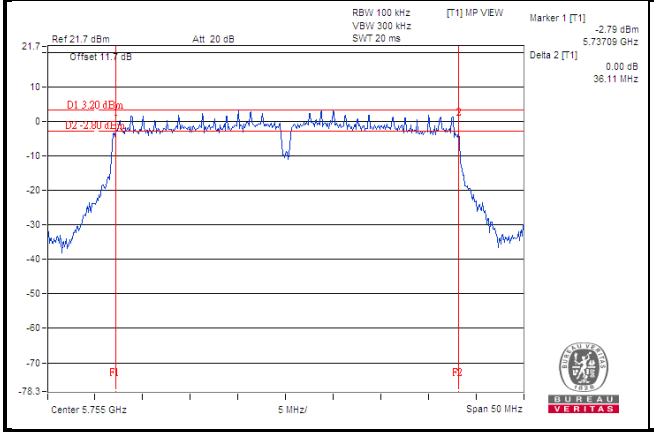
### 802.11a



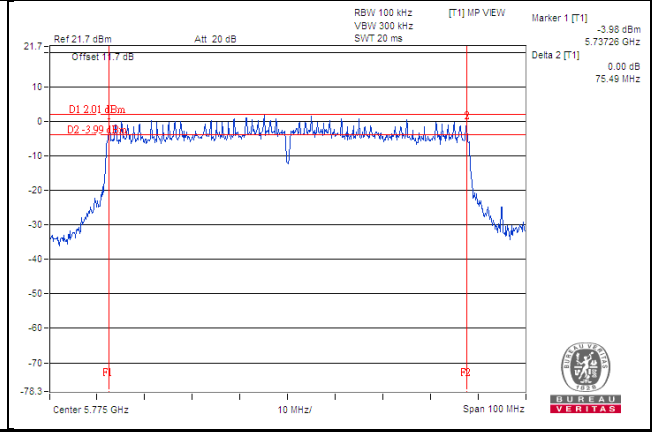

### 802.11n (HT20)




### 802.11n (HT40)




### 802.11ac (VHT80)



## 5 Pictures of Test Arrangements

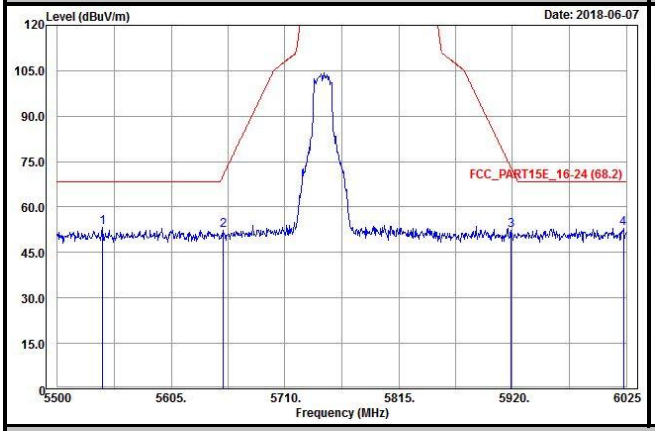
Please refer to the attached file (Test Setup Photo).

## Annex A- Radiated Out of Band Emission (OOBE) Measurement (For U-NII-3 band)

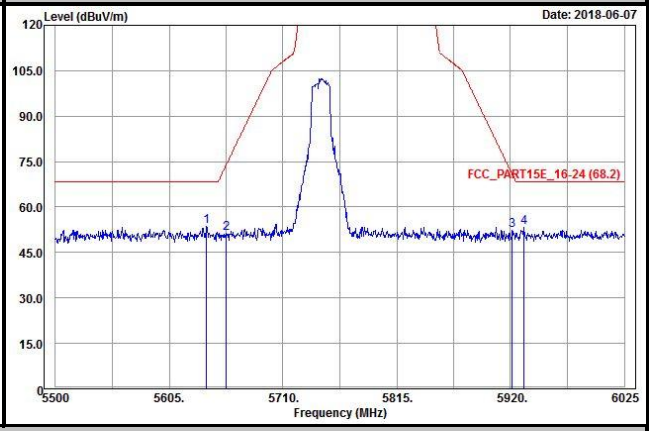
### 802.11a

**Ch 149**

**Horizontal**

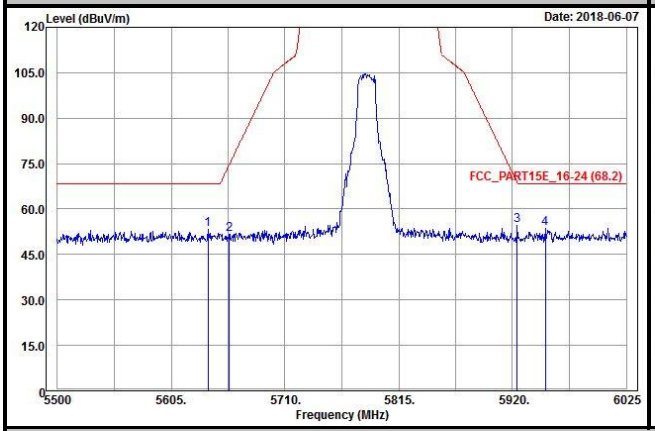



**Vertical**

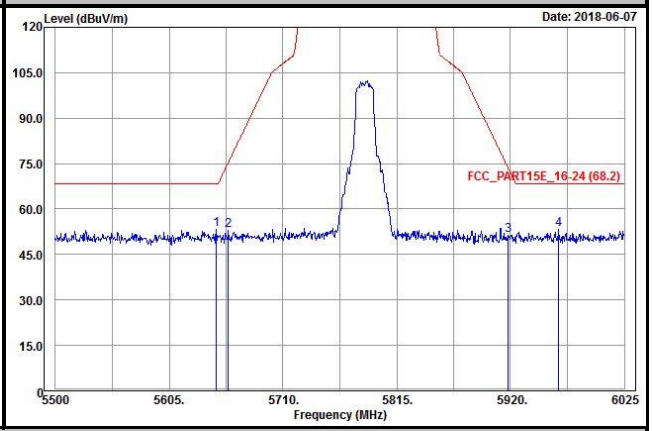



**Ch 157**

**Horizontal**

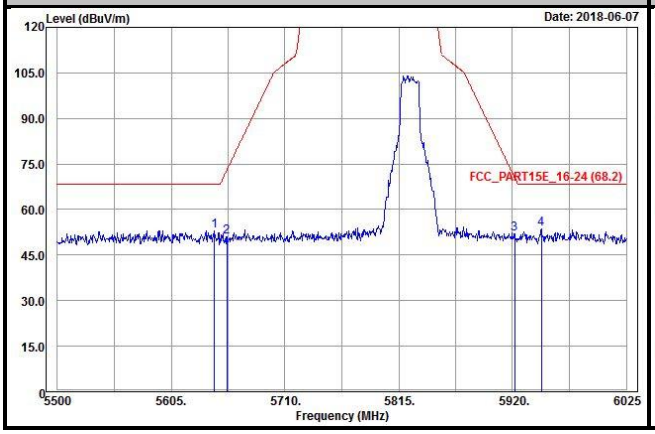



**Vertical**

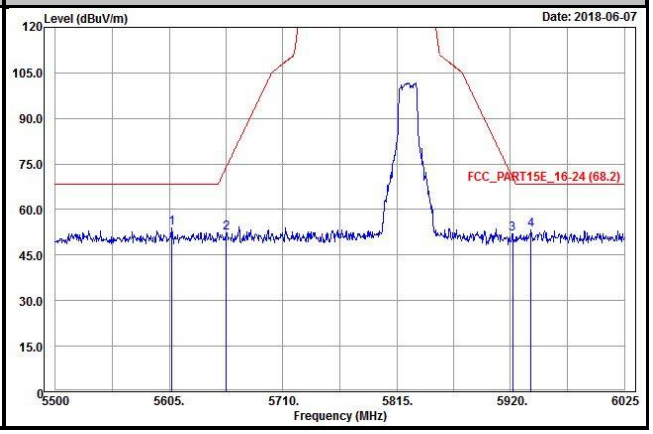



**Ch 165**

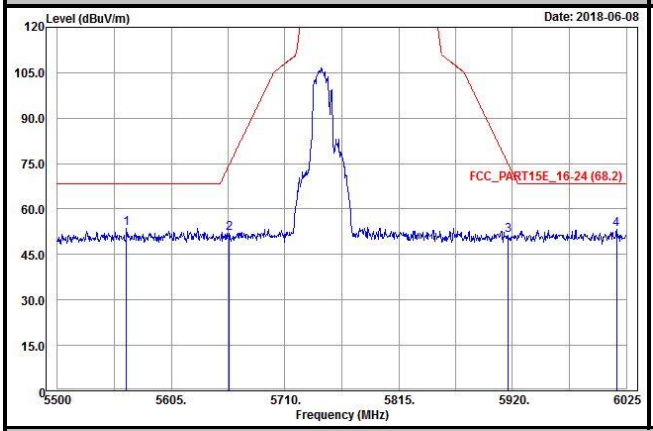
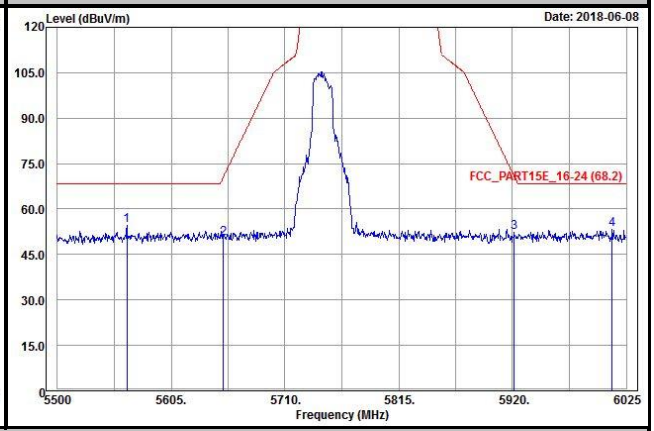
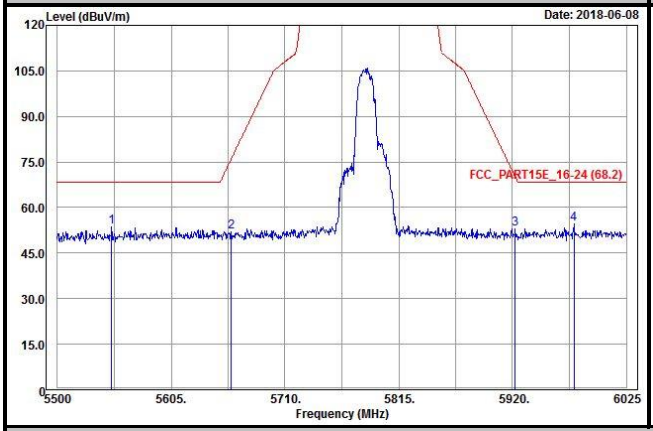
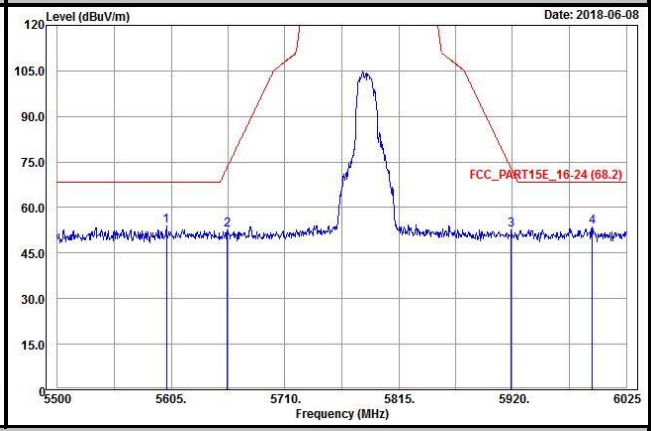
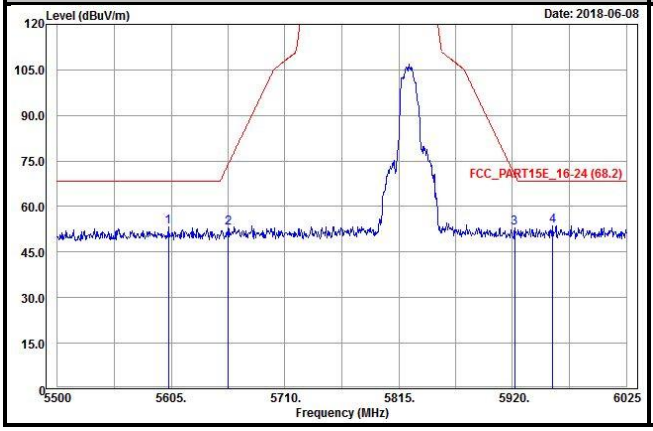
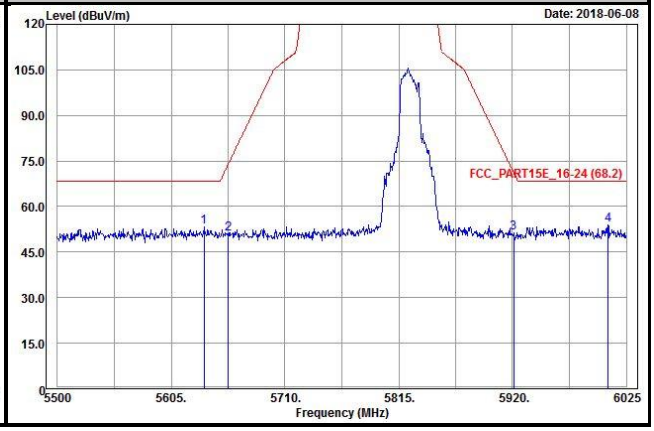
**Horizontal**



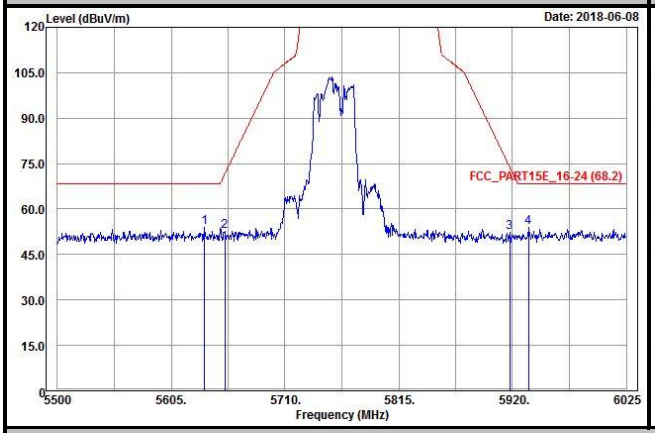
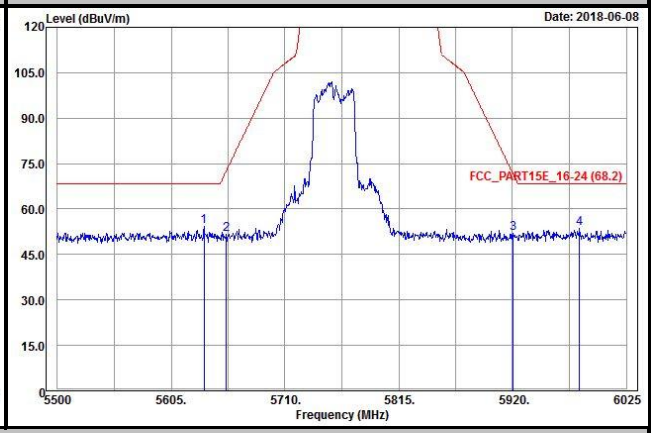
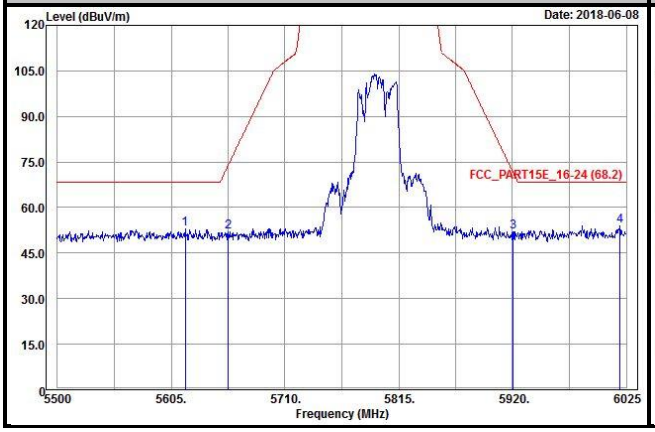
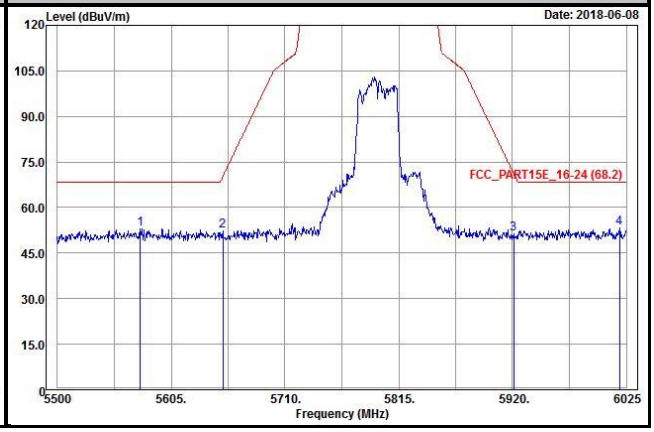

**Vertical**



## 802.11n (HT20)

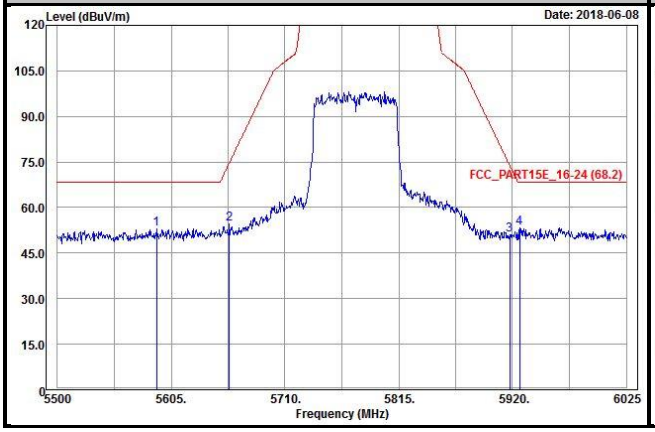
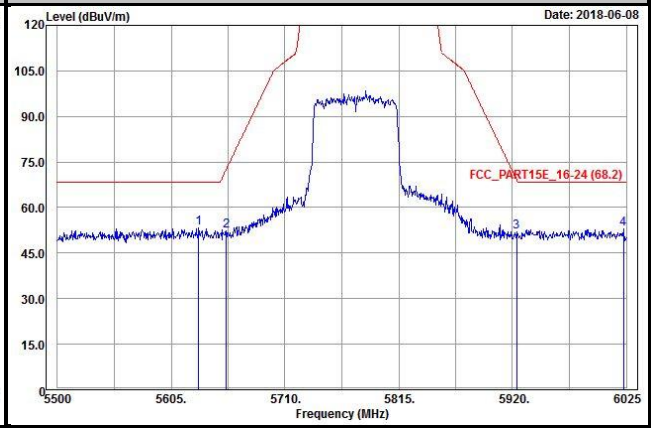
| Ch 149 | |
|---|---|
| Horizontal | Vertical |
|  |  |
| **Ch 157** | |
| Horizontal | Vertical |
|  |  |
| **Ch 165** | |
| Horizontal | Vertical |
|  |  |

## 802.11n (HT40)

| Ch 151 | |
|---|---|
| Horizontal | Vertical |
|  |  |
| **Ch 159** | |
| Horizontal | Vertical |
|  |  |



## 802.11ac (VHT80)

| Ch 155 | |
|---|---|
| Horizontal | Vertical |
|  |  |

**Appendix – Information on the Testing Laboratories**

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are FCC recognized accredited test firms and accredited according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following: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Fax: 886-2-26051924

**Hsin Chu EMC/RF/Telecom Lab**
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**Email:** service.adt@tw.bureauveritas.com
**Web Site:** www.bureauveritas-adt.com


The address and road map of all our labs can be found in our web site also.

**--- END ---**