# FCC TEST REPORT

**Test report**
**On Behalf of**
**Shenzhen GMK Technology Co., Ltd**
**For**
**NucBox**
**Model No.: KB1**

**FCC ID: 2AXUD-KB1**

**Prepared for :** **Shenzhen GMK Technology Co., Ltd**
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**Prepared By :** **Shenzhen Tongzhou Testing Co.,Ltd**
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**Date of Test:** **2020/9/22 ~ 2020/10/13**
**Date of Report:** **2020/10/13**
**Report Number:** **TZ200901687-E3**

The test report apply only to the specific sample(s) tested under stated test conditions
It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

# TEST RESULT CERTIFICATION

| | |
|---|---|
| **Applicant's name** ..... : | **Shenzhen GMK Technology Co., Ltd** |
| Address ..... : | 3/F, #5Bldg, HuaLian Industrial Park, XinShi Community, Dalang St, Longhua Dist, 518109, Shenzhen, China |
| **Manufacture's Name** ..... : | **Shenzhen GMK Technology Co., Ltd** |
| Address ..... : | 3/F, #5Bldg, HuaLian Industrial Park, XinShi Community, Dalang St, Longhua Dist, 518109, Shenzhen, China |
| **Product description** | |
| Trade Mark ..... : | GMK |
| Product name ..... : | NucBox |
| Model and/or type reference : | KB1 |
| **Standards** ..... : | FCC Rules and Regulations Part 15 Subpart C Section 15.247<br>ANSI C63.10: 2013 |

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| | |
|---|---|
| **Date of Test** ..... : | |
| Date (s) of performance of tests ..... : | 2020/9/22 ~ 2020/10/13 |
| Date of Issue ..... : | 2020/10/13 |
| Test Result ..... : | **Pass** |

Testing Engineer : Anna Hu

(Anna Hu)

Technical Manager : Hugo Chen

(Hugo Chen)

Authorized Signatory : Andy Zhang

(Andy Zhang)

**Revision History**

| Revision | Issue Date | Revisions | Revised By |
|---|---|---|---|
| 000 | 2020/10/13 | Initial Issue | Andy Zhang |
| | | | |
| | | | |

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# 1. GENERAL INFORMATION

## 1.1. Description of Device (EUT)

| | | |
|---|---|---|
| EUT | : | NucBox |
| Model Number | : | KB1 |
| Model Declaration | : | N/A |
| Test Model | : | KB1 |
| Power Supply | : | DC 12V by adapter |
| Hardware version | : | GB01_MB_V300 |
| Software version | : | Windows 10 |
| Sample ID | : | TZ200901687–1# |
| Bluetooth | | |
| Bluetooth Version | : | V4.2+EDR |
| Channel Number | : | 79 Channels for Bluetooth BR/EDR(DSS)<br>40 Channels for BLE (DTS) |
| Modulation Technology | : | GFSK, π/4-DQPSK, 8-DPSK for Bluetooth BR/EDR (DSS)<br>GFSK for BLE (DTS) |
| Data Rates | : | Bluetooth BR/EDR (DSS): 1/2/3Mbps<br>BLE (DTS): 1Mbps |
| Antenna Type And Gain | | Internal Antenna /1.41 dBi(Max.) |
| WiFi | | |
| WLAN | : | Supported IEEE 802.11a/b/g/n |
| WLAN FCC Operation Frequency | : | IEEE 802.11b:2412-2462MHz<br>IEEE 802.11g:2412-2462MHz<br>IEEE 802.11n HT20:2412-2462MHz / 5180-5240MHz<br>IEEE 802.11n HT40:2422-2452MHz / 5190-5230MHz<br>IEEE 802.11a: 5180-5240MHz |
| WLAN Channel Number | : | 11 Channels for 2412-2462MHz(IEEE 802.11b/g/n HT20)<br>7 Channels for 2422-2452MHz(IEEE 802.11n HT40)<br>4 Channels for 5180-5240MHz (IEEE 802.11a/n HT20)<br>2 Channels for 5190-5230MHz (IEEE 802.11n HT40) |
| WLAN Modulation Technology | : | IEEE 802.11b: DSSS(CCK,DQPSK,DBPSK)<br>IEEE 802.11g: OFDM (64QAM, 16QAM, QPSK, BPSK)<br>IEEE 802.11n: OFDM (64QAM, 16QAM, QPSK, BPSK)<br>IEEE 802.11a: OFDM (64QAM, 16QAM, QPSK, BPSK) |
| Antenna Type And Gain | : | Internal Antenna<br>Wlan2.4G: 1.41 dBi(Max.)<br>Wlan5G:1.49 dBi(Max.) |

*Note1: Antenna position refer to EUT Photos.*

## 1.2 EUT configuration

The following peripheral devices and interface cables were connected during the measurement:

☑supplied by the lab ☐ supplied by the manufacturer

| Manufacturer | Description | Model | Serial Number | Certificate |
|---|---|---|---|---|
| Shenzhen Jihongda Power Co.,Ltd. | Adapter | JHD-AP030U-120200-AS | N/A | N/A |

## 1.3. External I/O Cable

| I/O Port Description | Quantity | Cable |
|---|---|---|
| USB Port | 2 | N/A |
| Earphone Port | 1 | N/A |
| HDMI Port | 1 | N/A |
| Type-c Port | 1 | N/A |
| SD Card Port | 1 | N/A |

## 1.4. Description of Test Facility

**FCC**

Designation Number: CN1275

Test Firm Registration Number: 167722

Shenzhen Tongzhou Testing Co.,Ltd has been listed on the US Federal Communications Commission

list of test facilities recognized to perform electromagnetic emissions measurements.

**A2LA**

Certificate Number: 5463.01

Shenzhen Tongzhou Testing Co.,Ltd has been listed by American Association for Laboratory Accreditation to perform electromagnetic emission measurement.

**IC**

ISED#: 22033

CAB identifier: CN0099

Shenzhen Tongzhou Testing Co.,Ltd has been listed by Innovation, Science and Economic Development Canada to perform electromagnetic emission measurement.

The 3m-Semi anechoic test site fulfils CISPR 16-1-4 according to ANSI C63.10 and CISPR 16-1-4:2010

## 1.5. Statement of the Measurement Uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. To CISPR 16 – 4 "Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements" and is documented in the HUAK quality system acc. To DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

## 1.6. Measurement Uncertainty

| Test Item | | Frequency Range | Uncertainty | Note |
|---|---|---|---|---|
| Radiation Uncertainty | : | 9KHz~30MHz | ±3.08dB | (1) |
| | | 30MHz~1000MHz | ±4.42dB | (1) |
| | | 1GHz~40GHz | ±4.06dB | (1) |
| Conduction Uncertainty | : | 150kHz~30MHz | ±2.23dB | (1) |

(1). This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

## 1.7. Description of Test Modes

The EUT has been tested under operating condition.

AC power line conducted emission pre-test at both at AC 120V/60Hz and AC 240V/50Hz modes, recorded worst case.

Worst-case mode and channel used for 150 KHz-30 MHz power line conducted emissions was the mode and channel with the highest output power, that was determined to be 802.11b mode(Middle Channel).

Worst-case mode and channel used for 9 KHz-1000 MHz radiated emissions was the mode and channel with the highest output power, that was determined to be 802.11b mode(Middle Channel)
Worst-Case data rates were utilized from preliminary testing of the Chipset, worst-case data rates used during the testing are as follows:

IEEE 802.11b Mode: 1 Mbps, DSSS.
IEEE 802.11g Mode: 6 Mbps, OFDM.
IEEE 802.11n Mode HT20: MCS0, OFDM.
IEEE 802.11n Mode HT40: MCS0, OFDM.

**Antenna & Bandwidth**

| Antenna | Antenna 0 | | Antenna 1 | | Simultaneously |
|---|---|---|---|---|---|
| Bandwidth Mode | 20MHz | 40MHz | 20MHz | 40MHz | / |
| IEEE 802.11b | ☑ | ☐ | ☐ | ☐ | ☐ |
| IEEE 802.11g | ☑ | ☐ | ☐ | ☐ | ☐ |
| IEEE 802.11n | ☑ | ☑ | ☐ | ☐ | ☐ |

**Channel List & Frequency**

IEEE 802.11b/g/n HT20

| Frequency Band | Channel No. | Frequency(MHz) | Channel No. | Frequency(MHz) |
|---|---|---|---|---|
| 2412~2462MHz | 1 | 2412 | 7 | 2442 |
| | 2 | 2417 | 8 | 2447 |
| | 3 | 2422 | 9 | 2452 |
| | 4 | 2427 | 10 | 2457 |
| | 5 | 2432 | 11 | 2462 |
| | 6 | 2437 | -- | -- |

IEEE 802.11n HT40

| Frequency Band | Channel No. | Frequency(MHz) | Channel No. | Frequency(MHz) |
|---|---|---|---|---|
| 2422~2452MHz | 1 | -- | 7 | 2442 |
| | 2 | -- | 8 | 2447 |
| | 3 | 2422 | 9 | 2452 |
| | 4 | 2427 | 10 | -- |
| | 5 | 2432 | 11 | -- |
| | 6 | 2437 | -- | -- |

# 2. TEST METHODOLOGY

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

The radiated testing was performed at an antenna-to-EUT distance of 3 meters. All radiated and conducted emissions measurement was performed at Shenzhen Tongzhou Testing Co.,Ltd

## 2.1. EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

## 2.2. EUT Exercise

The EUT was operated in the engineering mode to fix the TX frequency that was for the purpose of the measurements.

According to FCC's request, Test Procedure KDB 558074 D01 DTS Meas Guidance v04 and KDB 662911 D01 Multiple Transmitter Output v02r01 are required to be used for this kind of FCC 15.247 digital modulation device.

According to its specifications, the EUT must comply with the requirements of the Section 15.203, 15.205, 15.207, 15.209 and 15.247 under the FCC Rules Part 15 Subpart C.

## 2.3. General Test Procedures

### 2.3.1 Conducted Emissions

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 6.2.1 of ANSI C63.10-2013 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using Quasi-peak and average detector modes.

### 2.3.2 Radiated Emissions

The EUT is placed on a turn table, which is 0.8 m above ground plane. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna, which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the maximum emissions, exploratory radiated emission measurements were made according to the requirements in Section 6.3 of ANSI C63.10-2013

## 2.4. Test Sample

The application provides 1 sample to meet requirement;

| Sample ID | Description |
|---|---|
| TZ200901687 – 1# | Engineer sample – continuous transmit |

# 3. SYSTEM TEST CONFIGURATION

## 3.1. Justification

The system was configured for testing in a continuous transmits condition.

## 3.2. EUT Exercise Software

The system was configured for testing in a continuous transmits condition and change test channels by software (DRTU)provided by application.

## 3.3. Special Accessories

| No. | Equipment | Manufacturer | Model No. | Serial No. | Length | shielded/ unshielded | Notes |
|---|---|---|---|---|---|---|---|
| 1 | / | / | / | / | / | / | / |

## 3.4. Block Diagram/Schematics

Please refer to the related document

## 3.5. Equipment Modifications

Shenzhen Tongzhou Testing Co.,Ltd has not done any modification on the EUT.

## 3.6. Test Setup

Please refer to the test setup photo.

# 4. SUMMARY OF TEST RESULTS

| Applied Standard: FCC Part 15 Subpart C | | | |
|---|---|---|---|
| FCC Rules | Description of Test | Test Sample | Result |
| / | Duty Cycle | TZ200901687–1# | Compliant |
| §15.247(b) | Maximum Conducted Output Power | TZ200901687–1# | Compliant |
| §15.247(e) | Power Spectral Density | TZ200901687–1# | Compliant |
| §15.247(a)(2) | 6dB Bandwidth | TZ200901687–1# | Compliant |
| §15.247(a) | Occupied Bandwidth | TZ200901687–1# | Compliant |
| §15.209, §15.247(d) | Radiated and Conducted Spurious Emissions | TZ200901687–1# | Compliant |
| §15.205 | Emissions at Restricted Band | TZ200901687–1# | Compliant |
| §15.207(a) | Conducted Emissions | TZ200901687–1# | Compliant |
| §15.203 | Antenna Requirements | TZ200901687–1# | Compliant |
| §15.247(i)§2.1093 | RF Exposure | TZ200901687–1# | Compliant |

# 5. TEST RESULT

## 5.1. On Time and Duty Cycle

### 5.1.1. Standard Applicable

None; for reporting purpose only.

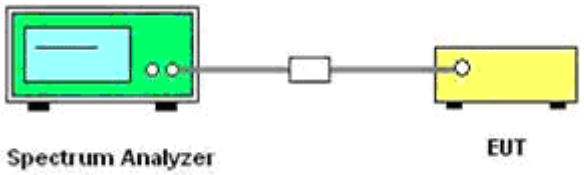
### 5.1.2. Measuring Instruments and Setting

Please refer to equipment's list in this report. The following table is the setting of the spectrum analyzer.

### 5.1.3. Test Procedures

1. Set the centre frequency of the spectrum analyzer to the transmitting frequency;
2. Set the span=0MHz, RBW=10MHz, VBW=10MHz, Sweep time=5ms;
3. Detector = peak;
4. Trace mode = Single hold.

### 5.1.4. Test Setup Layout



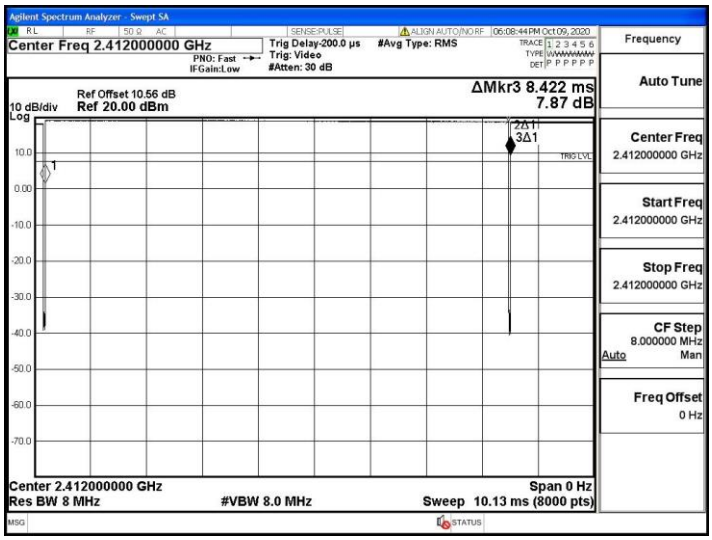

### 5.1.5. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

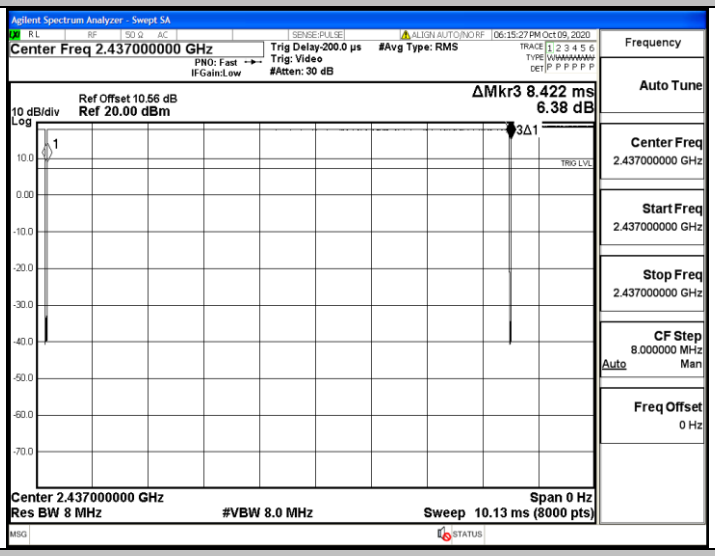
### 5.1.6. Test result

| TestMode | Antenna | Channel | Transmission Duration [ms] | Transmission Period [ms] | Duty Cycle [%] | 1/B Minimum VBW (KHz) |
|---|---|---|---|---|---|---|
| 11B | Ant1 | 2412 | 8.38 | 8.42 | 99.52 | 0.12 |
| | | 2437 | 8.38 | 8.42 | 99.52 | 0.12 |
| | | 2462 | 8.38 | 8.42 | 99.53 | 0.12 |
| 11G | Ant1 | 2412 | 1.39 | 1.44 | 96.74 | 0.69 |
| | | 2437 | 1.39 | 1.44 | 96.65 | 0.69 |
| | | 2462 | 1.39 | 1.44 | 96.74 | 0.69 |
| 11N20SISO | Ant1 | 2412 | 1.30 | 1.35 | 96.52 | 0.74 |
| | | 2437 | 1.30 | 1.34 | 96.51 | 0.75 |
| | | 2462 | 1.30 | 1.34 | 96.51 | 0.75 |
| 11N40SISO | Ant1 | 2422 | 0.65 | 0.69 | 93.24 | 1.45 |
| | | 2437 | 0.65 | 0.69 | 93.41 | 1.45 |
| | | 2452 | 0.65 | 0.69 | 93.24 | 1.45 |

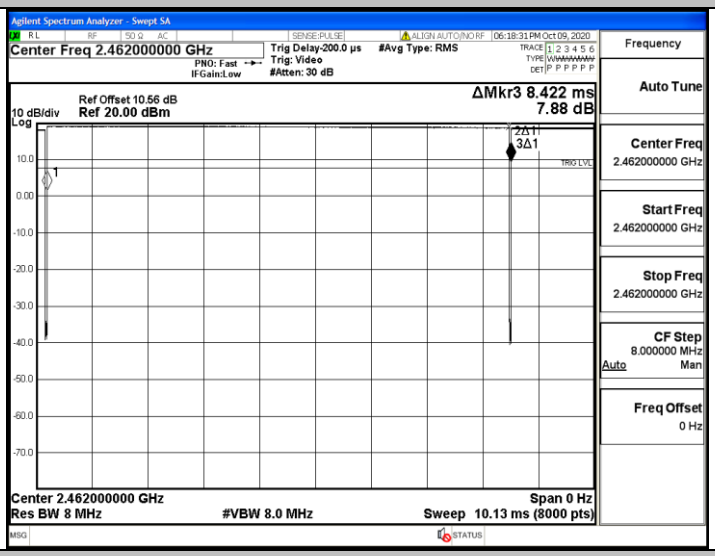
11B_Ant1_2412



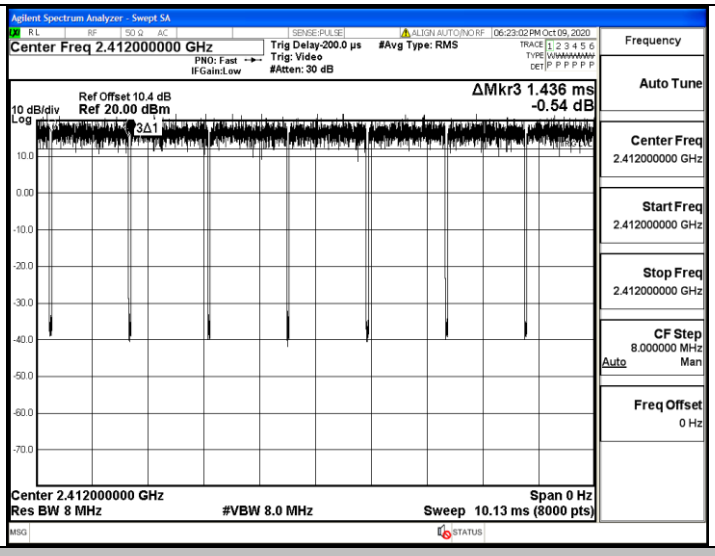

11B_Ant1_2437



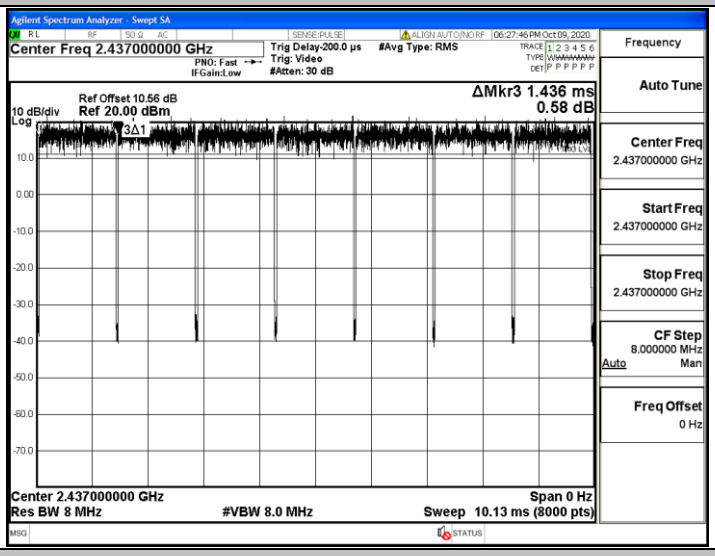

11B_Ant1_2462



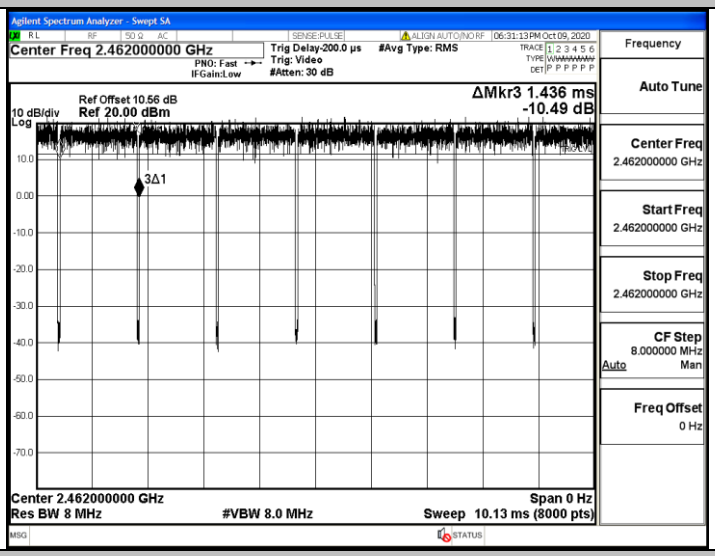

11G_Ant1_2412



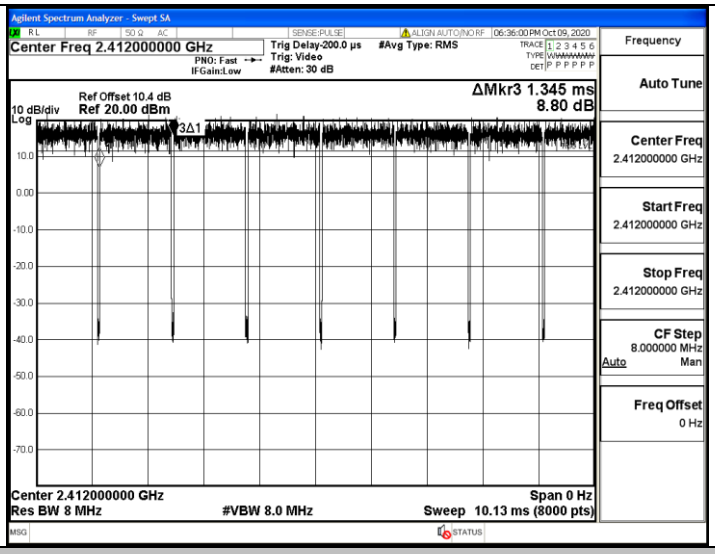

11G_Ant1_2437



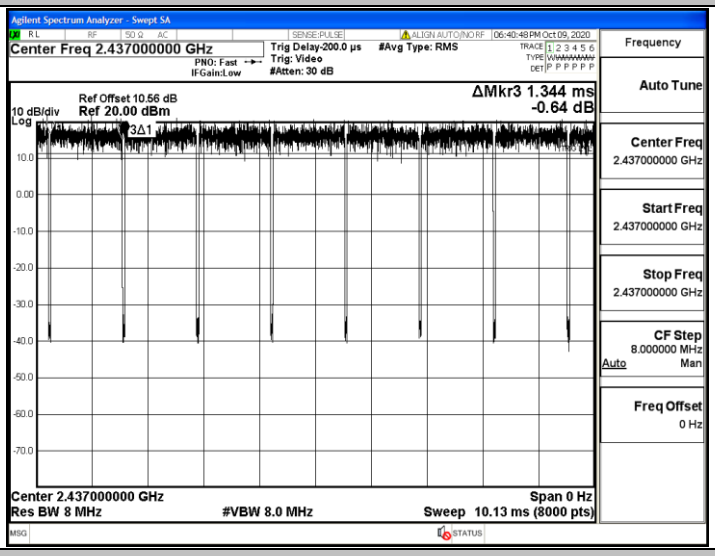

11G_Ant1_2462



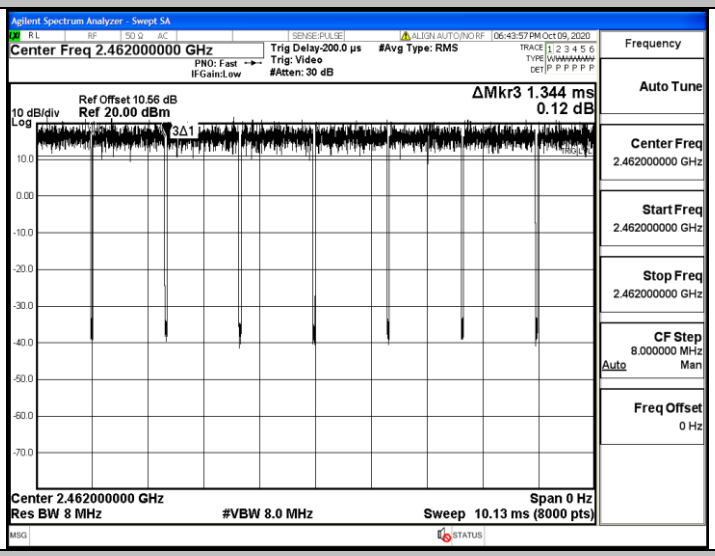

11N20SISO_Ant1_2412



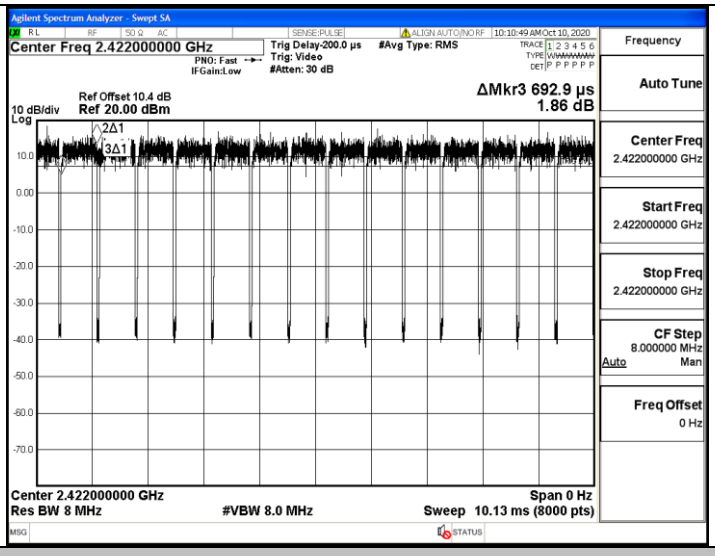

11N20SISO_Ant1_2437



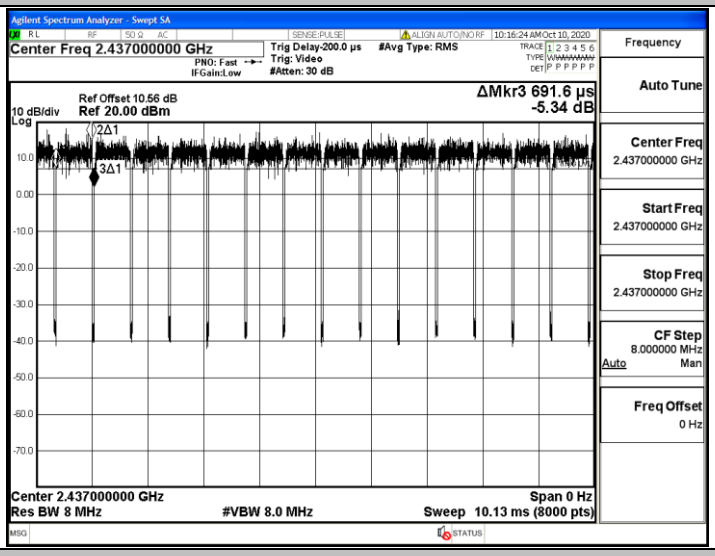

11N20SISO_Ant1_2462



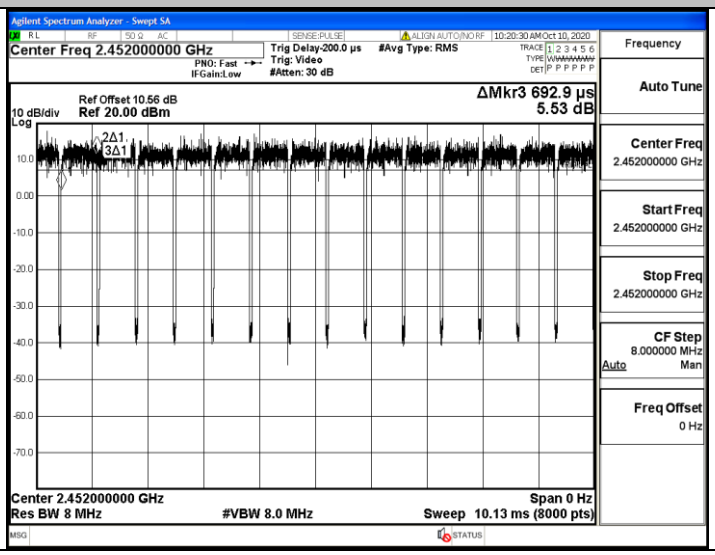

11N40SISO_Ant1_2422




11N40SISO_Ant1_2437




11N40SISO_Ant1_2452



## 5.2. Maximum Conducted Output Power Measurement

### 5.2.1. Standard Applicable

According to §15.247(b): For systems using digital modulation in the 2400-2483.5 MHz and 5725-5850 MHz band, the limit for maximum peak conducted output power is 30dBm. The limited has to be reduced by the amount in dB that the gain of the antenna exceeds 6dBi. In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of the antenna exceeds 6dBi.

Systems operating in the 5725-5850 MHz band that are used exclusively for fixed, point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi without any corresponding reduction in transmitter peak output power.

### 5.2.2. Measuring Instruments and Setting

Please refer to equipment list in this report. The following table is the setting of the power meter.

### 5.2.3. Test Procedures

According to KDB558074 D01 DTS Measurement Guidance Section 9.1 Maximum peak conducted output power, 9.1.2 the maximum peak conducted output power may be measured using a broadband peak RF power meter. The power meter shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall utilize a fast-responding diode detector.

According to KDB558074 D01 DTS Measurement Guidance Section 9.2 Maximum average conducted output power, 9.2.3.1 Method AVGPM (Measurement using an RF average power meter)

(a) As an alternative to spectrum analyzer or EMI receiver measurements, measurements may be performed using a wideband RF power meter with a thermocouple detector or equivalent if all of the conditions listed below are satisfied.

1) The EUT is configured to transmit continuously, or to transmit with a constant duty factor.

2) At all times when the EUT is transmitting, it shall be transmitting at its maximum power control level.

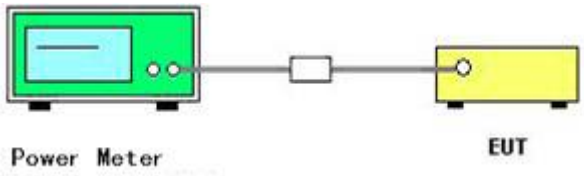
3) The integration period of the power meter exceeds the repetition period of the transmitted signal by at least a factor of five.

(b) If the transmitter does not transmit continuously, measure the duty cycle (x) of the transmitter output signal as described in Section 6.0.

(c) Measure the average power of the transmitter. This measurement is an average over both the on and off periods of the transmitter.

(d) Adjust the measurement in dBm by adding 10log (1/x), where x is the duty cycle to the measurement result.

### 5.2.4. Test Setup Layout




### 5.2.5. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

5.2.6. Test Result of Maximum Conducted Output Power

| | | | |
|---|---|---|---|
| Temperature | 22.8℃ | Humidity | 50% |
| Test Engineer | Anna Hu | Configurations | IEEE 802.11b/g/n |

| TestMode | Antenna | Channel | Result[dBm] | Limit[dBm] | Verdict |
|---|---|---|---|---|---|
| 11B | Ant1 | 2412 | 14.68 | <=30 | PASS |
| | | 2437 | 14.39 | <=30 | PASS |
| | | 2462 | 14.44 | <=30 | PASS |
| 11G | Ant1 | 2412 | 14.15 | <=30 | PASS |
| | | 2437 | 14.06 | <=30 | PASS |
| | | 2462 | 14.22 | <=30 | PASS |
| 11N20SISO | Ant1 | 2412 | 14.01 | <=30 | PASS |
| | | 2437 | 14.08 | <=30 | PASS |
| | | 2462 | 14.09 | <=30 | PASS |
| 11N40SISO | Ant1 | 2422 | 12.54 | <=30 | PASS |
| | | 2437 | 12.58 | <=30 | PASS |
| | | 2452 | 12.48 | <=30 | PASS |

*Remark:*

1. *Measured output power at difference data rate for each mode and recorded worst case for each mode.*
2. *Test results including cable loss;*
3. *Worst case data at 1Mbps at IEEE 802.11b; 6Mbps at IEEE 802.11g; 6.5Mbps at IEEE 802.11n HT20; 13.5Mbps at IEEE 802.11n HT40;*
4. *Average power is for report only;*

## 5.3. Power Spectral Density Measurement

### 5.3.1. Standard Applicable

According to §15.247(e): For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

### 5.3.2. Measuring Instruments and Setting

Please refer to equipment's list in this report. The following table is the setting of Spectrum Analyzer.

### 5.3.3. Test Procedures

1. The transmitter was connected directly to a Spectrum Analyzer.

2. The power was monitored at the coupler port with a Spectrum Analyzer. The power level was set to the maximum level.

3. Set the RBW = 3 KHz~100 KHz.

4. Set the VBW ≥ 3*RBW

5. Set span to at least 1.5 times the OBW.

6. Detector = power averaging (rms)

7. Sweep time = auto couple.

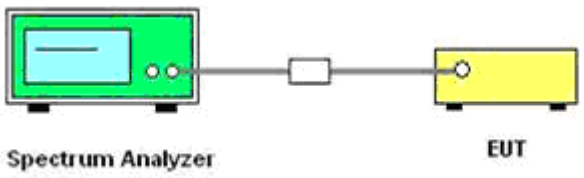
8. Trace mode = max hold.

9. Employ trace averaging (rms) mode over a minimum of 100 traces.

10. Use the peak marker function to determine the maximum power level in any 3 kHz band segment within the fundamental EBW.

11. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

### 5.3.4. Test Setup Layout




### 5.3.5. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

### 5.3.6. Test Result of Power Spectral Density

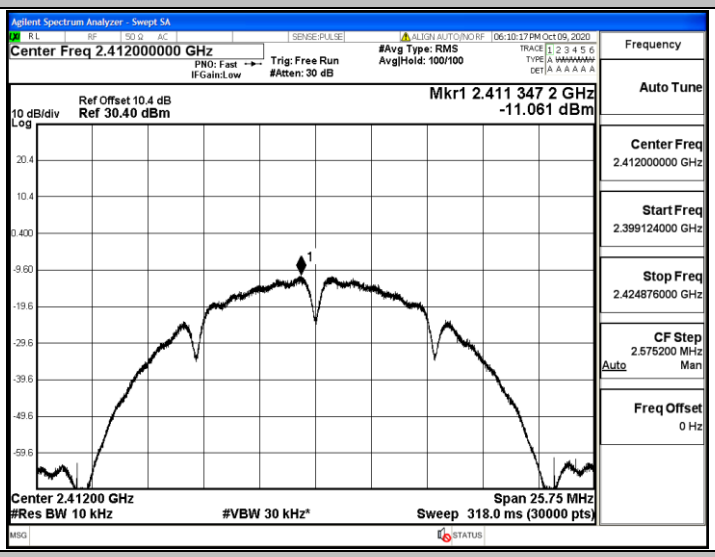
| | | | |
|---|---|---|---|
| Temperature | 22.8℃ | Humidity | 50% |
| Test Engineer | Anna Hu | Configurations | IEEE 802.11b/g/n |

| TestMode | Antenna | Channel | Result[dBm/3-100kHz] | Limit[dBm/3kHz] | Verdict |
|---|---|---|---|---|---|
| 11B | Ant1 | 2412 | -11.06 | <=8 | PASS |
| | | 2437 | -11.15 | <=8 | PASS |
| | | 2462 | -11.19 | <=8 | PASS |
| 11G | Ant1 | 2412 | -13.79 | <=8 | PASS |
| | | 2437 | -14.19 | <=8 | PASS |
| | | 2462 | -13.56 | <=8 | PASS |
| 11N20SISO | Ant1 | 2412 | -12.09 | <=8 | PASS |
| | | 2437 | -12.61 | <=8 | PASS |
| | | 2462 | -12.53 | <=8 | PASS |
| 11N40SISO | Ant1 | 2422 | -17.66 | <=8 | PASS |
| | | 2437 | -17.68 | <=8 | PASS |
| | | 2452 | -17.95 | <=8 | PASS |

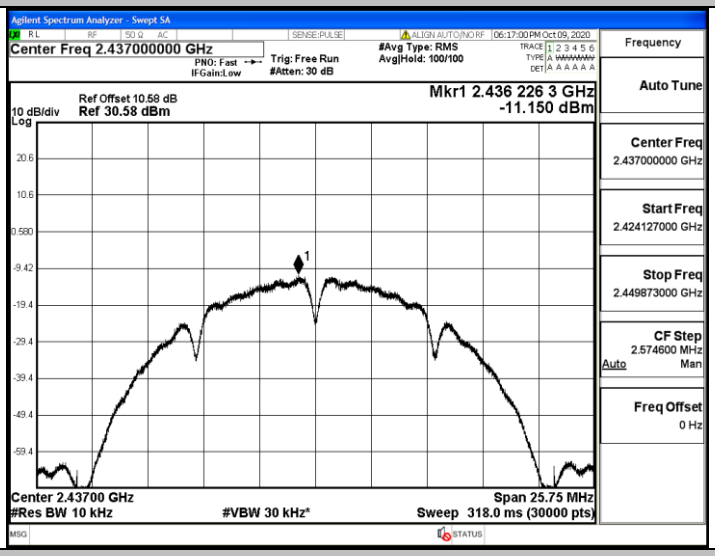
*Remark:*

1. *Measured peak power spectrum density at difference data rate for each mode and recorded worst case for each mode.*
2. *Test results including cable loss;*
3. *Worst case data at 1Mbps at IEEE 802.11b; 6Mbps at IEEE 802.11g; 6.5Mbps at IEEE 802.11n HT20; 13.5Mbps at IEEE 802.11n HT40;*
4. *Please refer to following plots;*

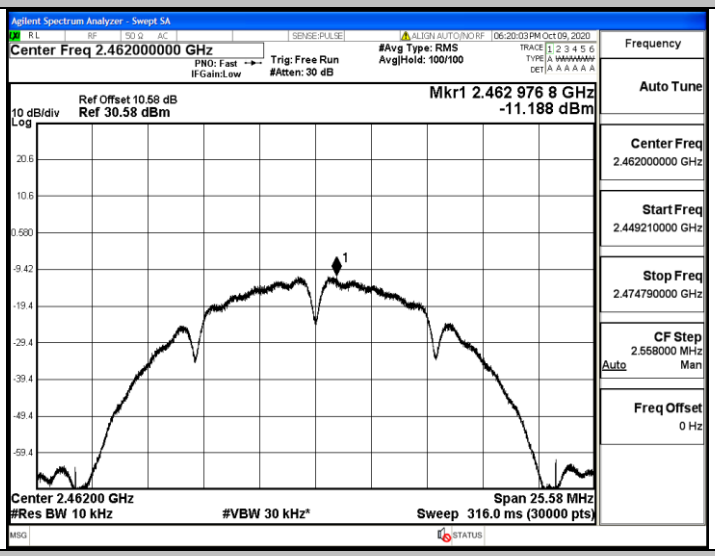
11B_Ant1_2412



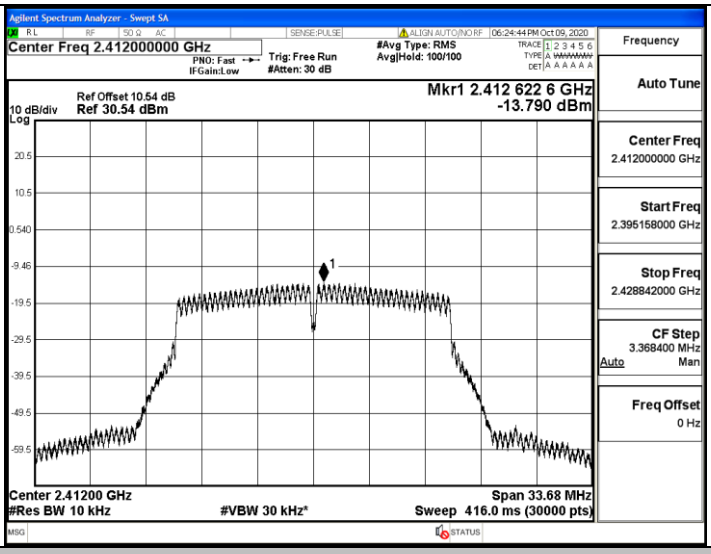

11B_Ant1_2437



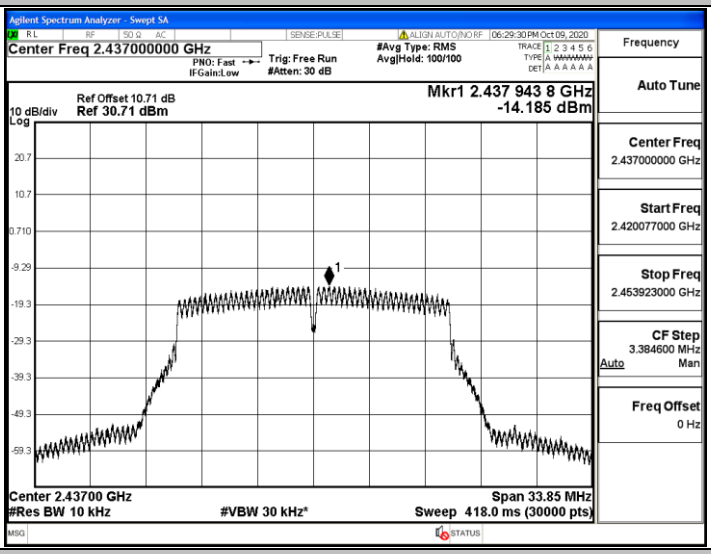

11B_Ant1_2462



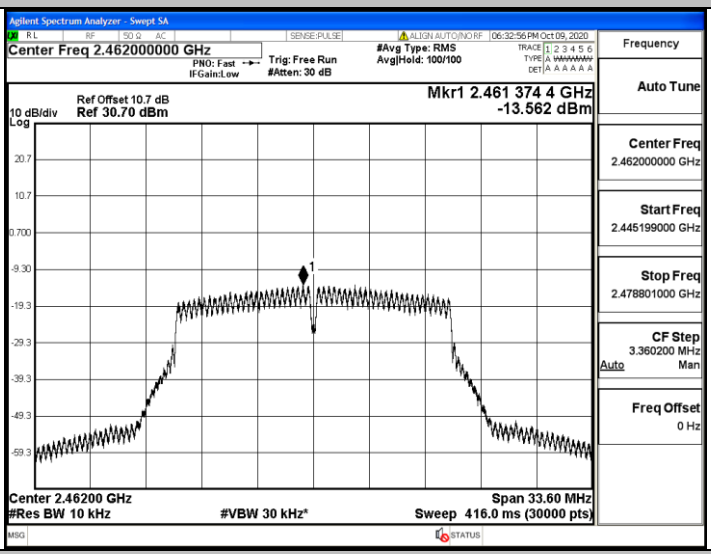

11G_Ant1_2412



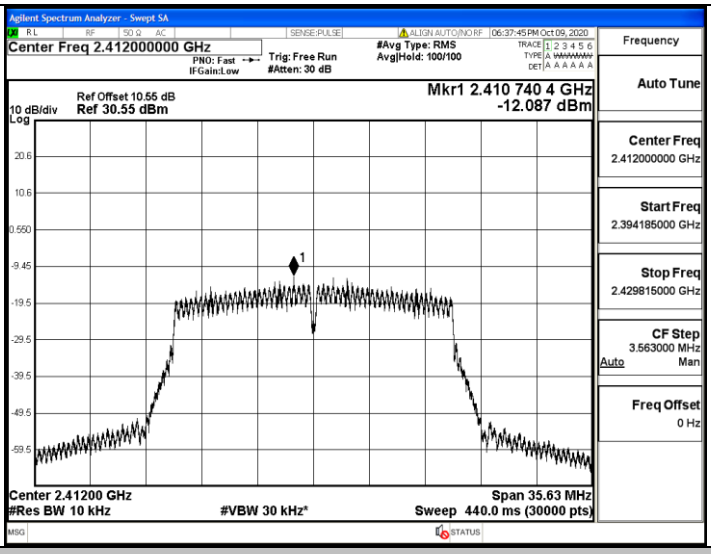

11G_Ant1_2437



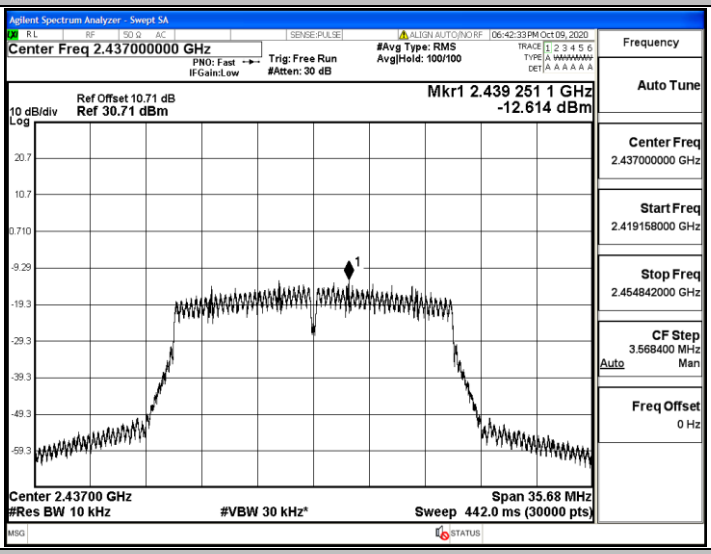

11G_Ant1_2462



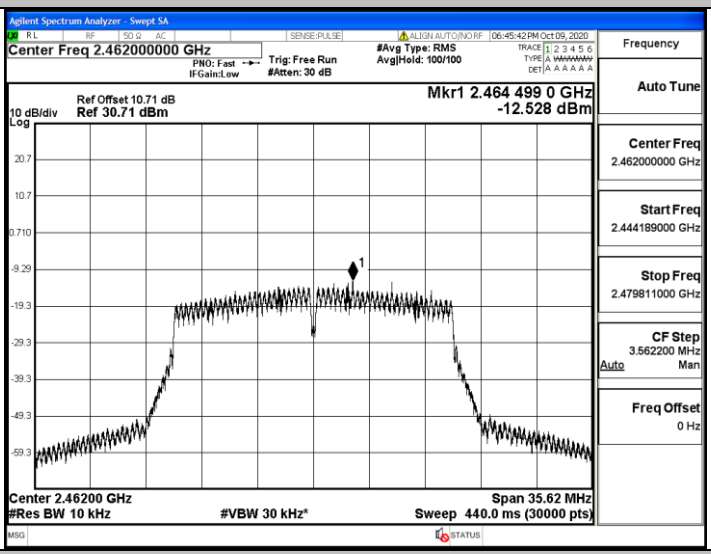

11N20SISO_Ant1_2412



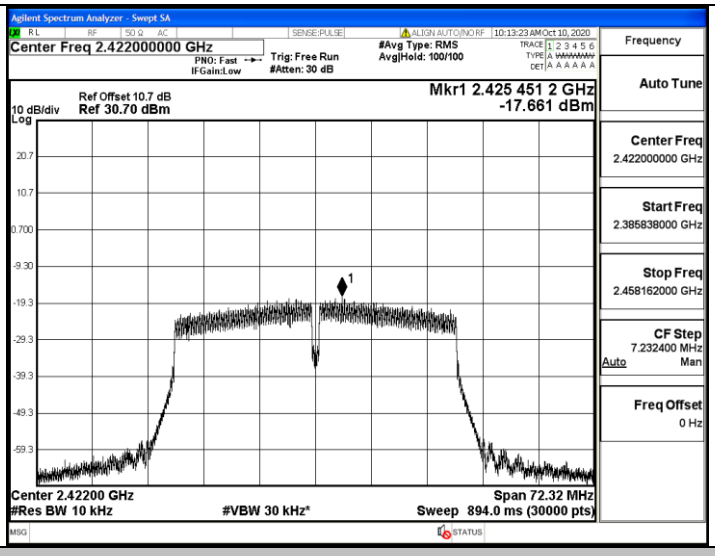

11N20SISO_Ant1_2437



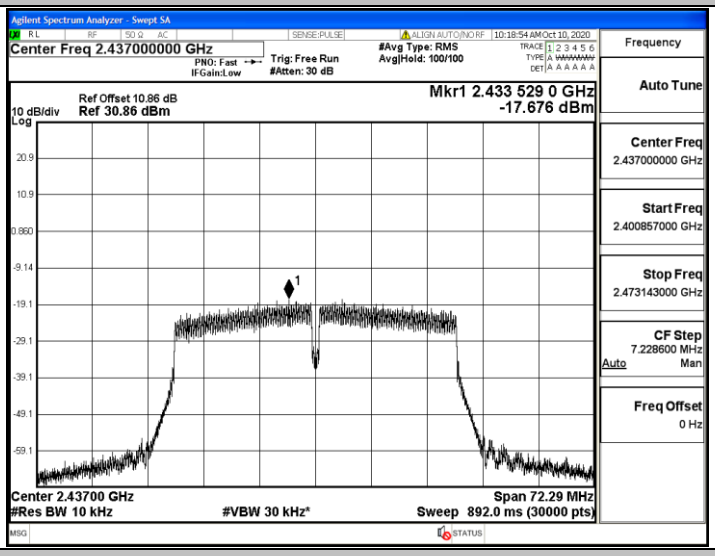

11N20SISO_Ant1_2462



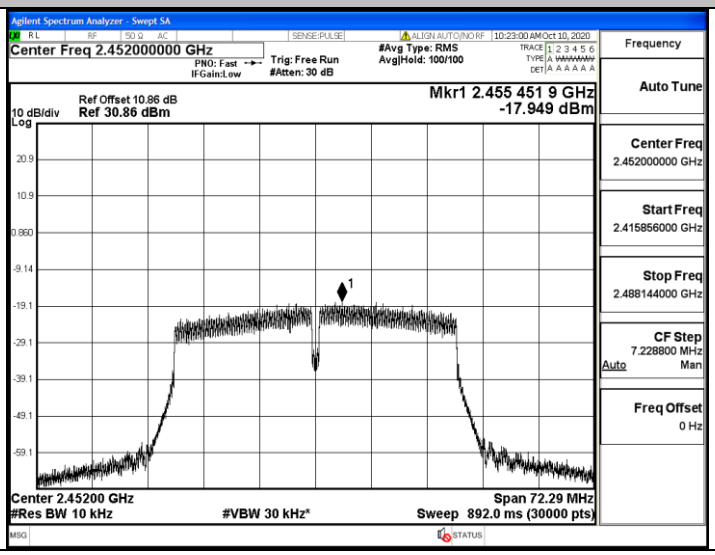

11N40SISO_Ant1_2422




11N40SISO_Ant1_2437




11N40SISO_Ant1_2452



## 5.4. 6 dB Spectrum Bandwidth Measurement

### 5.4.1. Standard Applicable

According to §15.247(a) (2): For digital modulation systems, the minimum 6 dB bandwidth shall be at least 500 kHz.

### 5.4.2. Measuring Instruments and Setting

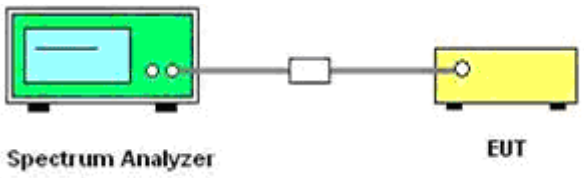
Please refer to equipments list in this report. The following table is the setting of the Spectrum Analyzer.

| Spectrum Parameter | Setting |
|---|---|
| Attenuation | Auto |
| Span Frequency | > RBW |
| Detector | Peak |
| Trace | Max Hold |
| Sweep Time | 100ms |

### 5.4.3. Test Procedures

1. The transmitter output (antenna port) was connected to the spectrum analyzer in peak hold mode.
2. The resolution bandwidth and the video bandwidth were set according to KDB558074.
3. Measured the spectrum width with power higher than 6dB below carrier.

### 5.4.4. Test Setup Layout




### 5.4.5. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

### 4.4.6. Test Result of 6dB Spectrum Bandwidth

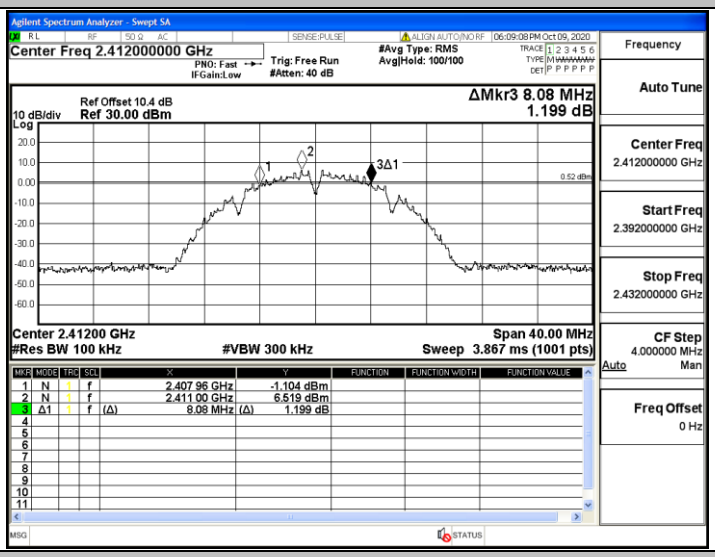
| | | | |
|---|---|---|---|
| Temperature | 22.8℃ | Humidity | 50% |
| Test Engineer | Anna Hu | Configurations | IEEE 802.11b/g/n |

| TestMode | Antenna | Channel | DTS BW [MHz] | FL[MHz] | FH[MHz] | Limit[MHz] | Verdict |
|---|---|---|---|---|---|---|---|
| 11B | Ant1 | 2412 | 8.080 | 2407.960 | 2416.040 | 0.5 | PASS |
| | | 2437 | 7.120 | 2433.440 | 2440.560 | 0.5 | PASS |
| | | 2462 | 8.640 | 2457.920 | 2466.560 | 0.5 | PASS |
| 11G | Ant1 | 2412 | 15.880 | 2404.080 | 2419.960 | 0.5 | PASS |
| | | 2437 | 14.480 | 2430.080 | 2444.560 | 0.5 | PASS |
| | | 2462 | 15.360 | 2454.440 | 2469.800 | 0.5 | PASS |
| 11N20SISO | Ant1 | 2412 | 13.720 | 2405.880 | 2419.600 | 0.5 | PASS |
| | | 2437 | 16.160 | 2429.400 | 2445.560 | 0.5 | PASS |
| | | 2462 | 15.120 | 2454.440 | 2469.560 | 0.5 | PASS |
| 11N40SISO | Ant1 | 2422 | 35.200 | 2404.400 | 2439.600 | 0.5 | PASS |
| | | 2437 | 35.280 | 2419.400 | 2454.680 | 0.5 | PASS |
| | | 2452 | 31.440 | 2438.160 | 2469.600 | 0.5 | PASS |

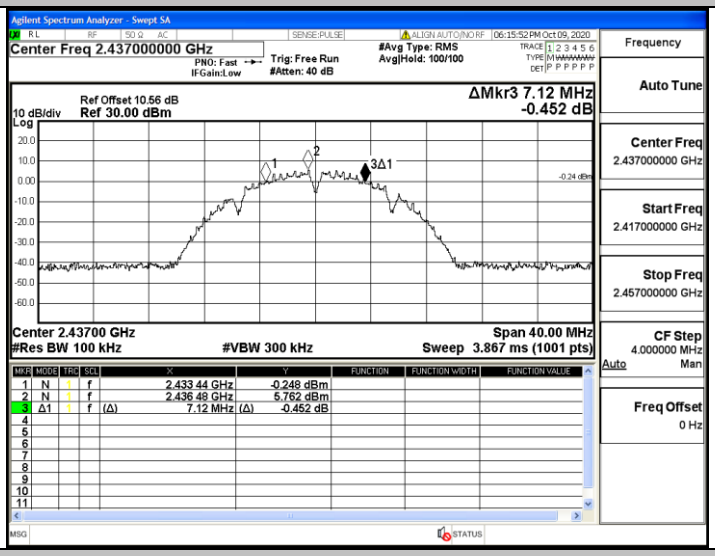
*Remark:*

1. *Measured 6dB Bandwidth at difference data rate for each mode and recorded worst case for each mode.*
2. *Test results including cable loss;*
3. *Worst case data at 1Mbps at IEEE 802.11b; 6Mbps at IEEE 802.11g; 6.5Mbps at IEEE 802.11n HT20; 13.5Mbps at IEEE 802.11n HT40;*
4. *Please refer to following plots;*

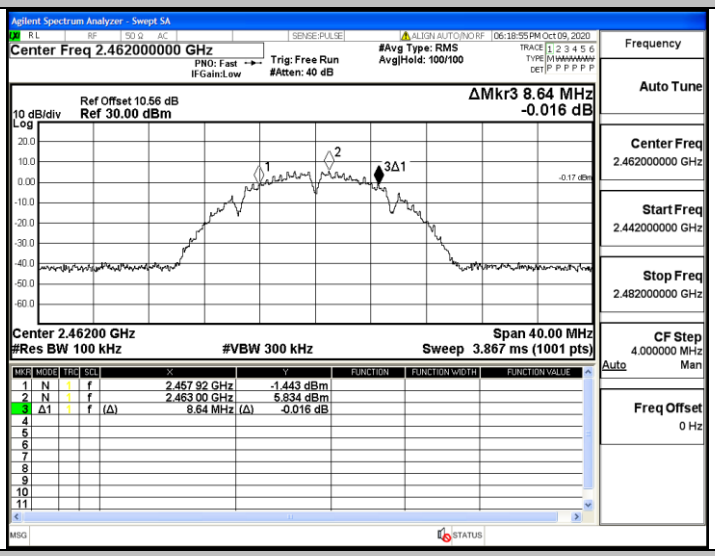
11B_Ant1_2412



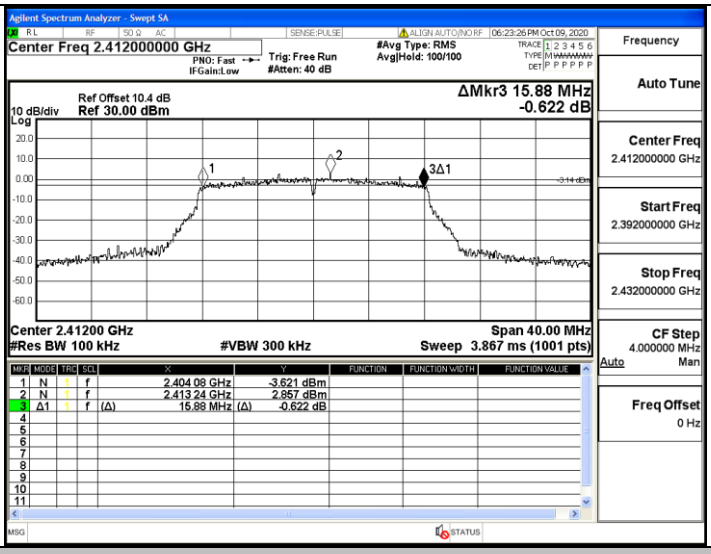

11B_Ant1_2437



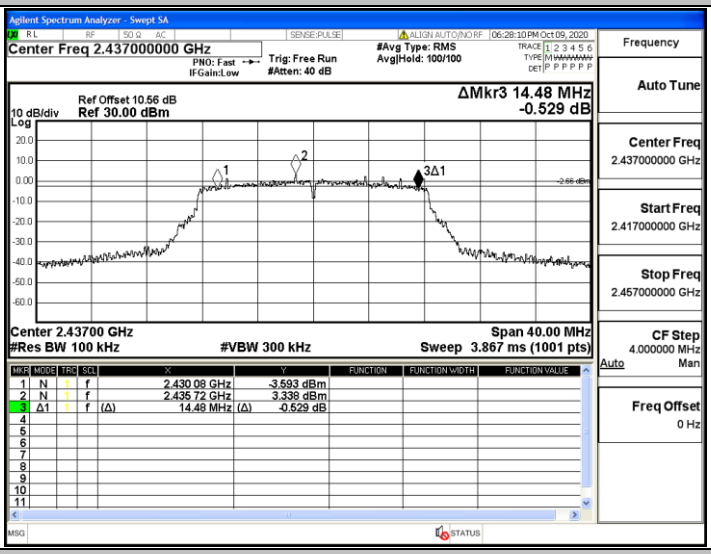

11B_Ant1_2462



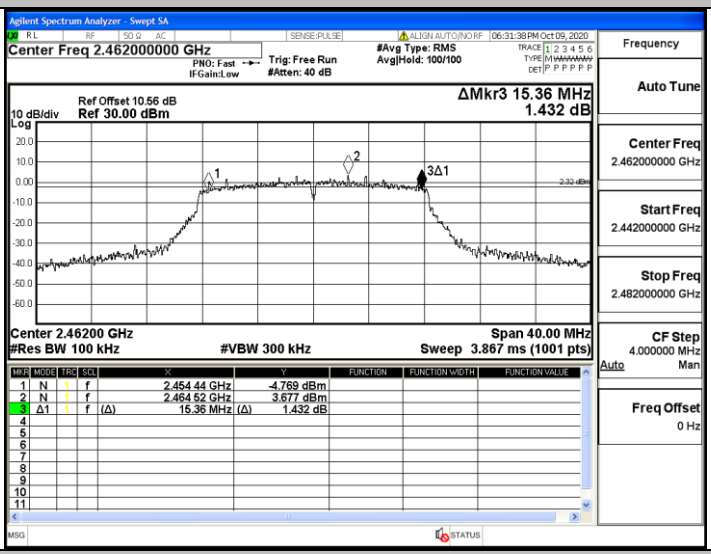

11G_Ant1_2412



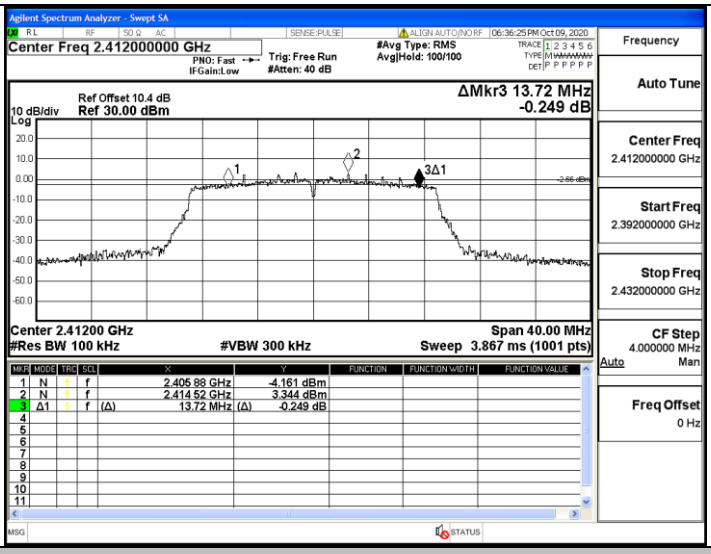

11G_Ant1_2437



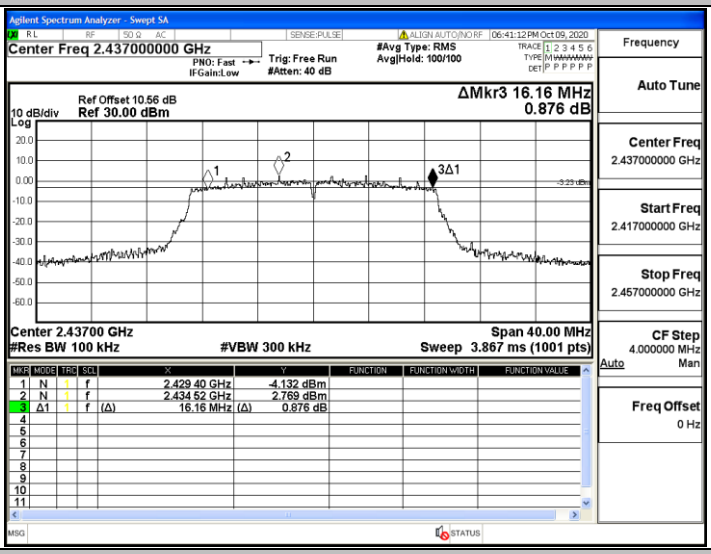

11G_Ant1_2462



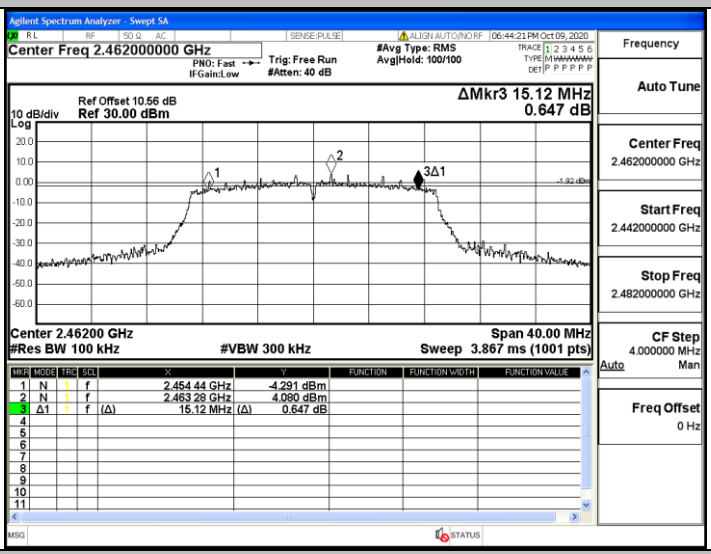

11N20SISO_Ant1_2412



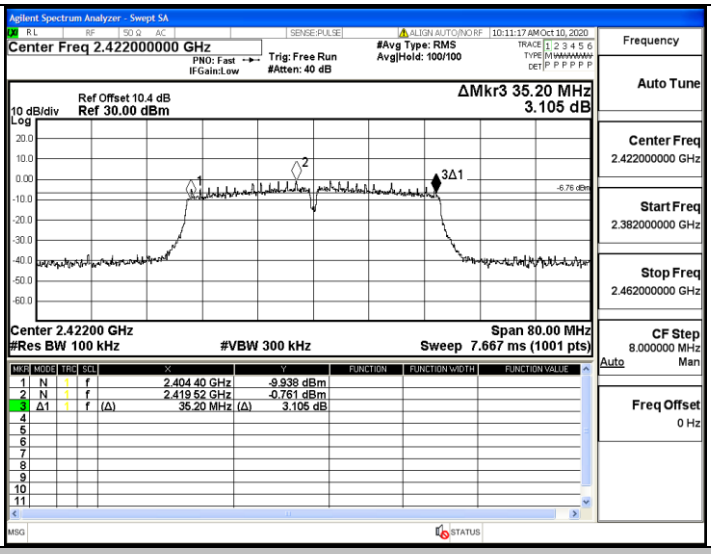

11N20SISO_Ant1_2437



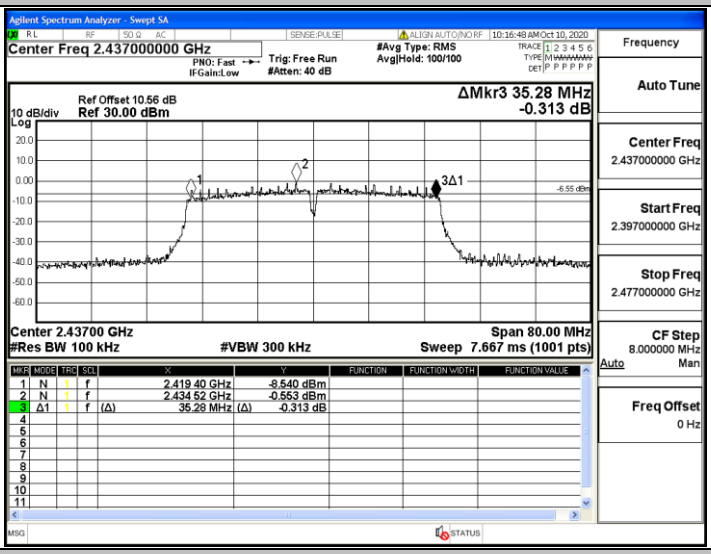

11N20SISO_Ant1_2462



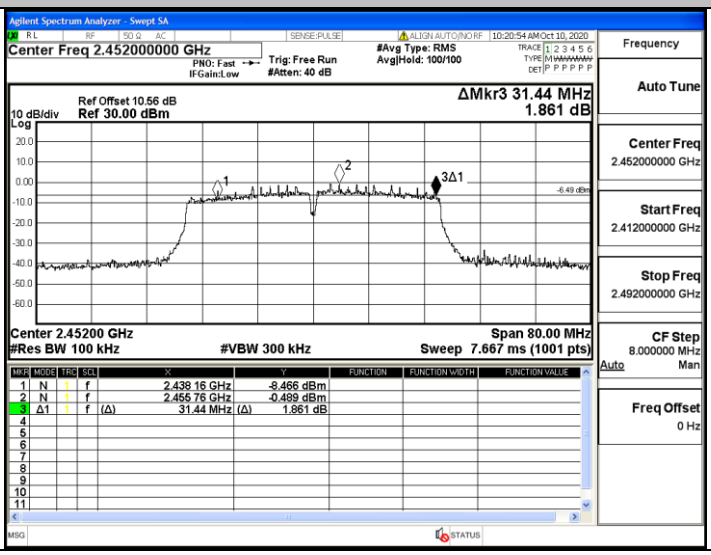

11N40SISO_Ant1_2422




11N40SISO_Ant1_2437




11N40SISO_Ant1_2452



## 5.5. Radiated Emissions Measurement

### 5.5.1. Standard Applicable

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

| MHz | MHz | MHz | GHz |
|---|---|---|---|
| 0.090-0.110 | 16.42-16.423 | 399.9-410 | 4.5-5.15 |
| \1\ 0.495-0.505 | 16.69475-16.69525 | 608-614 | 5.35-5.46 |
| 2.1735-2.1905 | 16.80425-16.80475 | 960-1240 | 7.25-7.75 |
| 4.125-4.128 | 25.5-25.67 | 1300-1427 | 8.025-8.5 |
| 4.17725-4.17775 | 37.5-38.25 | 1435-1626.5 | 9.0-9.2 |
| 4.20725-4.20775 | 73-74.6 | 1645.5-1646.5 | 9.3-9.5 |
| 6.215-6.218 | 74.8-75.2 | 1660-1710 | 10.6-12.7 |
| 6.26775-6.26825 | 108-121.94 | 1718.8-1722.2 | 13.25-13.4 |
| 6.31175-6.31225 | 123-138 | 2200-2300 | 14.47-14.5 |
| 8.291-8.294 | 149.9-150.05 | 2310-2390 | 15.35-16.2 |
| 8.362-8.366 | 156.52475-156.52525 | 2483.5-2500 | 17.7-21.4 |
| 8.37625-8.38675 | 156.7-156.9 | 2690-2900 | 22.01-23.12 |
| 8.41425-8.41475 | 162.0125-167.17 | 3260-3267 | 23.6-24.0 |
| 12.29-12.293. | 167.72-173.2 | 3332-3339 | 31.2-31.8 |
| 12.51975-12.52025 | 240-285 | 3345.8-3358 | 36.43-36.5 |
| 12.57675-12.57725 | 322-335.4 | 3600-4400 | (\2\) |
| 13.36-13.41 | | | |

\1\ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

\2\ Above 38.6

According to §15.247 (d): 20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

| 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 |

### 5.5.2. Measuring Instruments and Setting

Please refer to equipment list in this report. The following table is the setting of spectrum analyzer and receiver.

| Spectrum Parameter | Setting |
|---|---|
| Attenuation | Auto |
| Start Frequency | 1000 MHz |
| Stop Frequency | $10^{th}$ carrier harmonic |
| RB / VB (Emission in restricted band) | 1MHz / 1MHz for Peak, 1 MHz / 1/B kHz for Average |
| RB / VB (Emission in non-restricted band) | 1MHz / 1MHz for Peak, 1 MHz / 1/B kHz for Average |

| Receiver Parameter | Setting |
|---|---|
| Attenuation | Auto |
| Start ~ Stop Frequency | 9kHz~150kHz / RB/VB 200Hz/1KHz for QP/AVG |
| Start ~ Stop Frequency | 150kHz~30MHz / RB/VB 9kHz/30KHz for QP/AVG |
| Start ~ Stop Frequency | 30MHz~1000MHz / RB/VB 120kHz/1MHz for QP |

5.5.3. Test Procedures

**1) Sequence of testing 9 kHz to 30 MHz**

**Setup:**

--- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.

--- If the EUT is a tabletop system, a rotatable table with 0.8 m height is used.

--- If the EUT is a floor standing device, it is placed on the ground.

--- Auxiliary equipment and cables were positioned to simulate normal operation conditions.

--- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.

--- The measurement distance is 3 meter.

--- The EUT was set into operation.

**Premeasurement:**

--- The turntable rotates from 0° to 315° using 45° steps.

--- The antenna height is 1.5 meter.

--- At each turntable position the analyzer sweeps with peak detection to find the maximum of all emissions

**Final measurement:**

--- Identified emissions during the premeasurement the software maximizes by rotating the turntable position (0° to 360°) and by rotating the elevation axes (0° to 360°).

--- The final measurement will be done in the position (turntable and elevation) causing the highest emissions with QPK detector.

--- The final levels, frequency, measuring time, bandwidth, turntable position, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement and the limit will be stored.

**2) Sequence of testing 30 MHz to 1 GHz**

**Setup:**

--- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.

--- If the EUT is a tabletop system, a table with 0.8 m height is used, which is placed on the ground plane.

--- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.

--- Auxiliary equipment and cables were positioned to simulate normal operation conditions

--- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.

--- The measurement distance is 3 meter.

--- The EUT was set into operation.

**Premeasurement:**

--- The turntable rotates from 0° to 315° using 45° steps.

--- The antenna is polarized vertical and horizontal.

--- The antenna height changes from 1 to 3 meter.

--- At each turntable position, antenna polarization and height the analyzer sweeps three times in peak to find the maximum of all emissions.

**Final measurement:**

--- The final measurement will be performed with minimum the six highest peaks.

--- According to the maximum antenna and turntable positions of premeasurement the software maximize the peaks by changing turntable position (± 45°) and antenna movement between 1 and 4 meter.

--- The final measurement will be done with QP detector with an EMI receiver.

--- The final levels, frequency, measuring time, bandwidth, antenna height, antenna polarization, turntable angle, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement with marked maximum final measurements and the limit will be stored.

**3) Sequence of testing 1 GHz to 18 GHz**

**Setup:**

--- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.

--- If the EUT is a tabletop system, a rotatable table with 1.5 m height is used.

--- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.

--- Auxiliary equipment and cables were positioned to simulate normal operation conditions

--- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.

--- The measurement distance is 3 meter.

--- The EUT was set into operation.

**Premeasurement:**

--- The turntable rotates from 0° to 315° using 45° steps.

--- The antenna is polarized vertical and horizontal.

--- The antenna height scan range is 1 meter to 2.5 meter.

--- At each turntable position and antenna polarization the analyzer sweeps with peak detection to find the maximum of all emissions.

**Final measurement:**

--- The final measurement will be performed with minimum the six highest peaks.

--- According to the maximum antenna and turntable positions of premeasurement the software maximize the peaks by changing turntable position (± 45°) and antenna movement between 1 and 4 meter. This procedure is repeated for both antenna polarizations.

--- The final measurement will be done in the position (turntable, EUT-table and antenna polarization) causing the highest emissions with Peak and Average detector.

--- The final levels, frequency, measuring time, bandwidth, turntable position, EUT-table position, antenna polarization, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement with marked maximum final measurements and the limit will be stored.

**4) Sequence of testing above 18 GHz**

**Setup:**

--- The equipment was set up to simulate a typical usage like described in the user manual or described by manufacturer.

--- If the EUT is a tabletop system, a rotatable table with 1.5 m height is used.

--- If the EUT is a floor standing device, it is placed on the ground plane with insulation between both.

--- Auxiliary equipment and cables were positioned to simulate normal operation conditions

--- The AC power port of the EUT (if available) is connected to a power outlet below the turntable.

--- The measurement distance is 1 meter.

--- The EUT was set into operation.

**Premeasurement:**

--- The antenna is moved spherical over the EUT in different polarizations of the antenna.

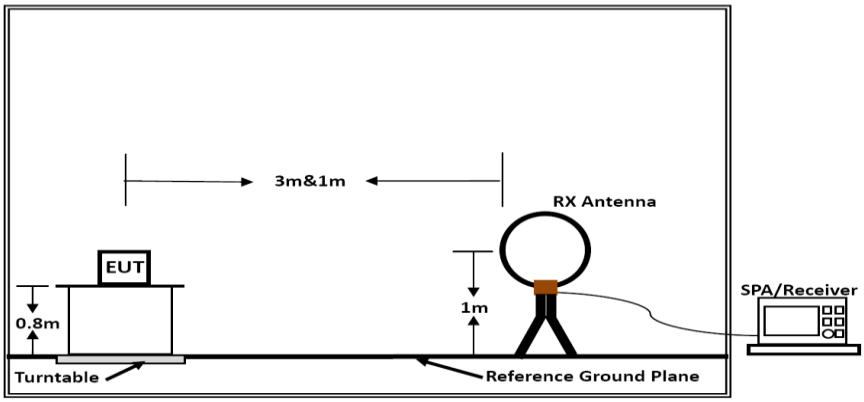
**Final measurement:**

--- The final measurement will be performed at the position and antenna orientation for all detected emissions that were found during the premeasurements with Peak and Average detector.

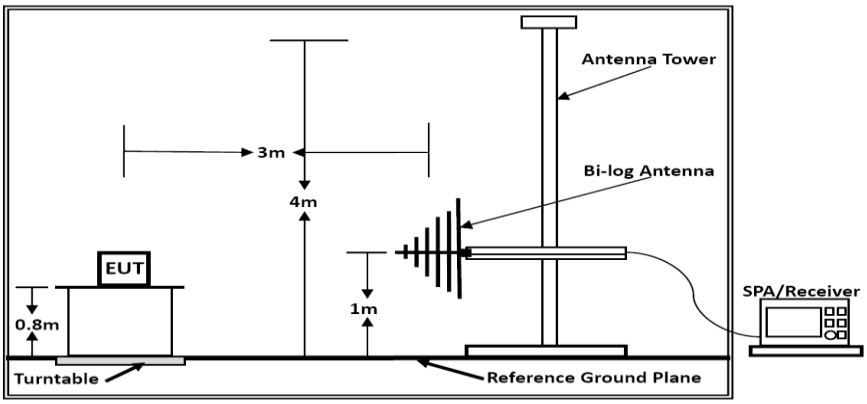
--- The final levels, frequency, measuring time, bandwidth, correction factor, margin to the limit and limit will be recorded. Also a plot with the graph of the premeasurement and the limit will be stored.

5.5.4. Test Setup Layout

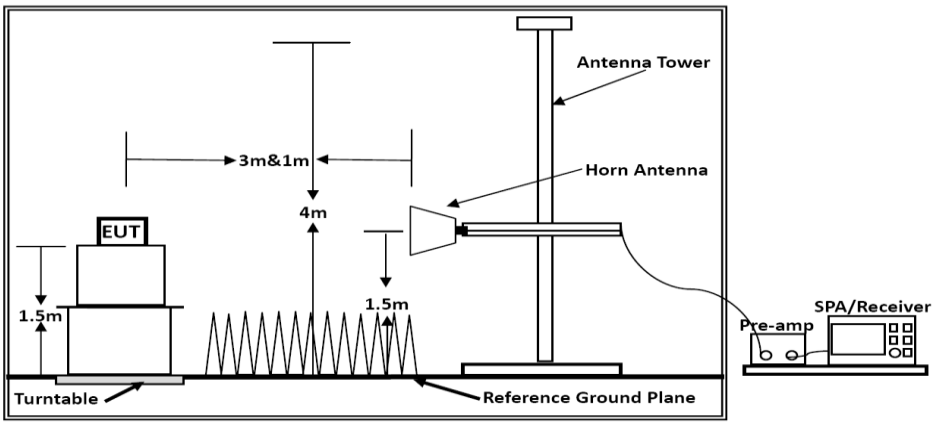
For radiated emissions below 30MHz




**Below 30MHz**




**Below 1GHz**




**Above 1GHz**

Above 18 GHz shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade form 3m to 1m.

Distance extrapolation factor = 20 log (specific distanc [3m] / test distance [1m]) (dB);
Limit line = specific limits (dBuV) + distance extrapolation factor [6 dB].

5.5.5. EUT Operation during Test

The EUT was programmed to be in continuously transmitting mode.

5.5.6. Results of Radiated Emissions (9 KHz~30MHz)

| | | | |
|---|---|---|---|
| Temperature | 22.8℃ | Humidity | 50% |
| Test Engineer | Anna Hu | Configurations | IEEE 802.11b/g/n |
| Test Date | 2020/3/6 | | |

| Freq. (MHz) | Level (dBuV) | Over Limit (dB) | Over Limit (dBuV) | Remark |
|---|---|---|---|---|
| - | - | - | - | See Note |

Note:

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

Distance extrapolation factor = 40 log (specific distance / test distance) (dB);

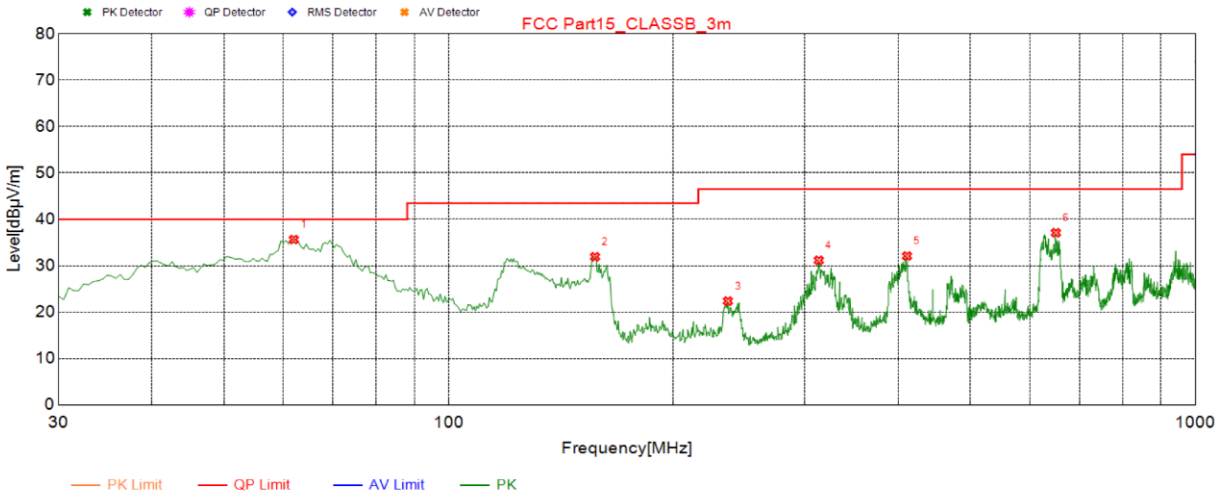
Limit line = specific limits (dBuV) + distance extrapolation factor.

5.5.7. Results of Radiated Emissions (30MHz~1GHz)

| | | | |
|---|---|---|---|
| Temperature | 22.8℃ | Humidity | 50% |
| Test Engineer | Anna Hu | Configurations | 802.11b Low Channel |

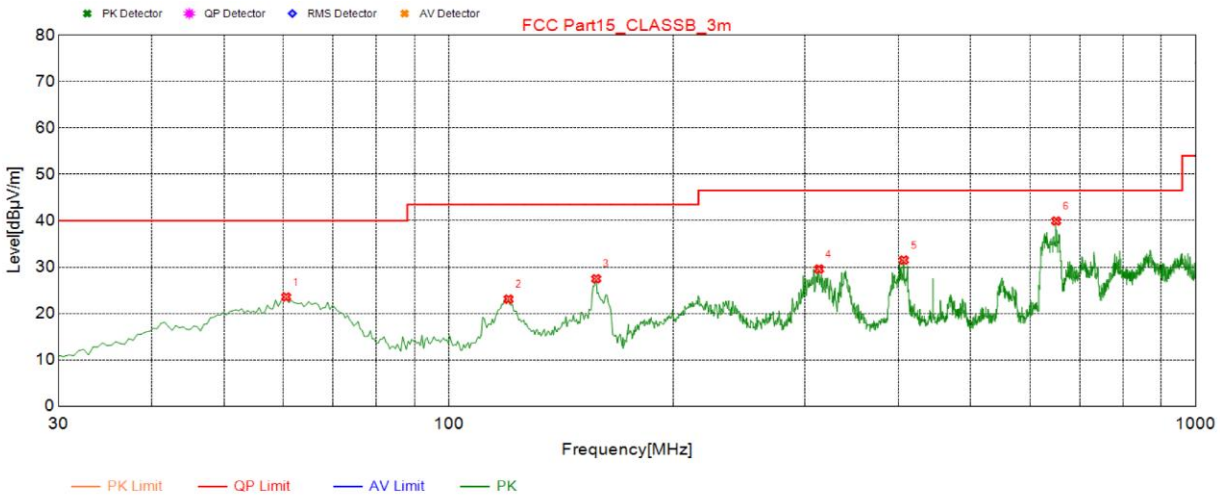
*The Worst Test result for 802.11g Mode(Low Channel)*

*Vertical*




| Suspected List | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| NO. | Freq. [MHz] | Result Level [dBµV/m] | Factor [dB/m] | Limit [dBµV/m] | Margin [dB] | Height [cm] | Angle[°] | Polarity |
| 1 | 62.010 | 35.64 | -16.16 | 40 | 4.36 | 100 | 183 | Vertical |
| 2 | 157.070 | 31.92 | -18.80 | 43.5 | 11.58 | 100 | 360 | Vertical |
| 3 | 236.610 | 22.36 | -14.29 | 46.5 | 24.14 | 100 | 355 | Vertical |
| 4 | 313.240 | 31.16 | -12.44 | 46.5 | 15.34 | 100 | 352 | Vertical |
| 5 | 411.210 | 32.09 | -9.82 | 46.5 | 14.41 | 100 | 288 | Vertical |
| 6 | 650.800 | 37.1 | -4.96 | 46.5 | 9.40 | 100 | 310 | Vertical |

*Horizontal*




| Suspected List | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| NO. | Freq. [MHz] | Result Level [dBµV/m] | Factor [dB/m] | Limit [dBµV/m] | Margin [dB] | Height [cm] | Angle[°] | Polarity |
| 1 | 60.555 | 23.53 | -15.79 | 40 | 16.47 | 100 | 223 | Horizontal |
| 2 | 120.210 | 23.07 | -17.67 | 43.5 | 20.43 | 100 | 344 | Horizontal |
| 3 | 157.555 | 27.46 | -18.78 | 43.5 | 16.04 | 100 | 304 | Horizontal |
| 4 | 313.240 | 29.56 | -12.44 | 46.5 | 16.94 | 100 | 241 | Horizontal |
| 5 | 406.845 | 31.5 | -9.90 | 46.5 | 15.00 | 100 | 164 | Horizontal |
| 6 | 650.800 | 39.93 | -4.96 | 46.5 | 6.57 | 100 | 344 | Horizontal |

*Note:*
*1). Pre-scan all modes and recorded the worst case results in this report (IEEE 802.11b Low Channel)*
*2). Emission level (dBuV/m) = 20 log Emission level (uV/m).*
*3). Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.*
*4).Margin(dB) = limit(dBµV/m) – Result Level(dBµV/m)*

5.5.8. Results for Radiated Emissions (Above 1GHz)

**802.11b**

*Channel 1 / 2412 MHz*

| Freq. MHz | Reading dBuV | Ant. Fac. dB/m | Pre. Fac. dB | Cab. Loss dB | Measured dBuV/m | Limit dBuV/m | Margin dB | Remark | Pol. |
|---|---|---|---|---|---|---|---|---|---|
| 4824.00 | 59.24 | 33.06 | 35.04 | 3.94 | 61.20 | 74.00 | 12.80 | Peak | Horizontal |
| 4824.00 | 45.95 | 33.06 | 35.04 | 3.94 | 47.91 | 54.00 | 6.09 | Average | Horizontal |
| 4824.00 | 58.94 | 33.06 | 35.04 | 3.94 | 60.90 | 74.00 | 13.10 | Peak | Vertical |
| 4824.00 | 40.14 | 33.06 | 35.04 | 3.94 | 42.10 | 54.00 | 11.90 | Average | Vertical |

*Channel 6 / 2437 MHz*

| Freq. MHz | Reading dBuV | Ant. Fac. dB/m | Pre. Fac. dB | Cab. Loss dB | Measured dBuV/m | Limit dBuV/m | Margin dB | Remark | Pol. |
|---|---|---|---|---|---|---|---|---|---|
| 4874.00 | 60.00 | 33.16 | 35.15 | 3.96 | 61.97 | 74.00 | 12.03 | Peak | Horizontal |
| 4874.00 | 41.08 | 33.16 | 35.15 | 3.96 | 43.05 | 54.00 | 10.95 | Average | Horizontal |
| 4874.00 | 56.10 | 33.16 | 35.15 | 3.96 | 58.07 | 74.00 | 15.93 | Peak | Vertical |
| 4874.00 | 40.59 | 33.16 | 35.15 | 3.96 | 42.56 | 54.00 | 11.44 | Average | Vertical |

*Channel 11 / 2462 MHz*

| Freq. MHz | Reading dBuV | Ant. Fac. dB/m | Pre. Fac. dB | Cab. Loss dB | Measured dBuV/m | Limit dBuV/m | Margin dB | Remark | Pol. |
|---|---|---|---|---|---|---|---|---|---|
| 4924.00 | 58.59 | 33.26 | 35.14 | 3.98 | 60.69 | 74.00 | 13.31 | Peak | Horizontal |
| 4924.00 | 45.22 | 33.26 | 35.14 | 3.98 | 47.32 | 54.00 | 6.68 | Average | Horizontal |
| 4924.00 | 59.36 | 33.26 | 35.14 | 3.98 | 61.46 | 74.00 | 12.54 | Peak | Vertical |
| 4924.00 | 45.43 | 33.26 | 35.14 | 3.98 | 47.53 | 54.00 | 6.47 | Average | Vertical |

***802.11g***

*Channel 1 / 2412 MHz*

| Freq. MHz | Reading dBuV | Ant. Fac. dB/m | Pre. Fac. dB | Cab. Loss dB | Measured dBuV/m | Limit dBuV/m | Margin dB | Remark | Pol. |
|---|---|---|---|---|---|---|---|---|---|
| 4824.00 | 59.87 | 33.06 | 35.04 | 3.94 | 61.83 | 74.00 | 12.17 | Peak | Horizontal |
| 4824.00 | 44.79 | 33.06 | 35.04 | 3.94 | 46.75 | 54.00 | 7.25 | Average | Horizontal |
| 4824.00 | 57.53 | 33.06 | 35.04 | 3.94 | 59.49 | 74.00 | 14.51 | Peak | Vertical |
| 4824.00 | 40.97 | 33.06 | 35.04 | 3.94 | 42.93 | 54.00 | 11.07 | Average | Vertical |

*Channel 6 / 2437 MHz*

| Freq. MHz | Reading dBuV | Ant. Fac. dB/m | Pre. Fac. dB | Cab. Loss dB | Measured dBuV/m | Limit dBuV/m | Margin dB | Remark | Pol. |
|---|---|---|---|---|---|---|---|---|---|
| 4874.00 | 59.41 | 33.16 | 35.15 | 3.96 | 61.38 | 74.00 | 12.62 | Peak | Horizontal |
| 4874.00 | 45.02 | 33.16 | 35.15 | 3.96 | 46.99 | 54.00 | 7.01 | Average | Horizontal |
| 4874.00 | 56.73 | 33.16 | 35.15 | 3.96 | 58.70 | 74.00 | 15.30 | Peak | Vertical |
| 4874.00 | 45.84 | 33.16 | 35.15 | 3.96 | 47.81 | 54.00 | 6.19 | Average | Vertical |

*Channel 11 / 2462 MHz*

| Freq. MHz | Reading dBuV | Ant. Fac. dB/m | Pre. Fac. dB | Cab. Loss dB | Measured dBuV/m | Limit dBuV/m | Margin dB | Remark | Pol. |
|---|---|---|---|---|---|---|---|---|---|
| 4924.00 | 59.81 | 33.26 | 35.14 | 3.98 | 61.91 | 74.00 | 12.09 | Peak | Horizontal |
| 4924.00 | 40.36 | 33.26 | 35.14 | 3.98 | 42.46 | 54.00 | 11.54 | Average | Horizontal |
| 4924.00 | 56.59 | 33.26 | 35.14 | 3.98 | 58.69 | 74.00 | 15.31 | Peak | Vertical |
| 4924.00 | 43.87 | 33.26 | 35.14 | 3.98 | 45.97 | 54.00 | 8.03 | Average | Vertical |

***802.11n HT20***

*Channel 1 / 2412 MHz*

| Freq. MHz | Reading dBuV | Ant. Fac. dB/m | Pre. Fac. dB | Cab. Loss dB | Measured dBuV/m | Limit dBuV/m | Margin dB | Remark | Pol. |
|---|---|---|---|---|---|---|---|---|---|
| 4824.00 | 58.86 | 33.06 | 35.04 | 3.94 | 60.82 | 74.00 | 13.18 | Peak | Horizontal |
| 4824.00 | 43.06 | 33.06 | 35.04 | 3.94 | 45.02 | 54.00 | 8.98 | Average | Horizontal |
| 4824.00 | 59.54 | 33.06 | 35.04 | 3.94 | 61.50 | 74.00 | 12.50 | Peak | Vertical |
| 4824.00 | 44.32 | 33.06 | 35.04 | 3.94 | 46.28 | 54.00 | 7.72 | Average | Vertical |

*Channel 6 / 2437 MHz*

| Freq. MHz | Reading dBuV | Ant. Fac. dB/m | Pre. Fac. dB | Cab. Loss dB | Measured dBuV/m | Limit dBuV/m | Margin dB | Remark | Pol. |
|---|---|---|---|---|---|---|---|---|---|
| 4874.00 | 57.96 | 33.16 | 35.15 | 3.96 | 59.93 | 74.00 | 14.07 | Peak | Horizontal |
| 4874.00 | 44.81 | 33.16 | 35.15 | 3.96 | 46.78 | 54.00 | 7.22 | Average | Horizontal |
| 4874.00 | 58.57 | 33.16 | 35.15 | 3.96 | 60.54 | 74.00 | 13.46 | Peak | Vertical |
| 4874.00 | 42.27 | 33.16 | 35.15 | 3.96 | 44.24 | 54.00 | 9.76 | Average | Vertical |

*Channel 11 / 2462 MHz*

| Freq. MHz | Reading dBuV | Ant. Fac. dB/m | Pre. Fac. dB | Cab. Loss dB | Measured dBuV/m | Limit dBuV/m | Margin dB | Remark | Pol. |
|---|---|---|---|---|---|---|---|---|---|
| 4924.00 | 58.78 | 33.26 | 35.14 | 3.98 | 60.88 | 74.00 | 13.12 | Peak | Horizontal |
| 4924.00 | 41.55 | 33.26 | 35.14 | 3.98 | 43.65 | 54.00 | 10.35 | Average | Horizontal |
| 4924.00 | 58.23 | 33.26 | 35.14 | 3.98 | 60.33 | 74.00 | 13.67 | Peak | Vertical |
| 4924.00 | 40.94 | 33.26 | 35.14 | 3.98 | 43.04 | 54.00 | 10.96 | Average | Vertical |

***802.11n HT40***

| Freq. MHz | Reading dBuV | Ant. Fac. dB/m | Pre. Fac. dB | Cab. Loss dB | Measured dBuV/m | Limit dBuV/m | Margin dB | Remark | Pol. |
|---|---|---|---|---|---|---|---|---|---|
| 4844.00 | 57.41 | 33.06 | 35.04 | 3.94 | 59.37 | 74.00 | 14.63 | Peak | Horizontal |
| 4844.00 | 40.17 | 33.06 | 35.04 | 3.94 | 42.13 | 54.00 | 11.87 | Average | Horizontal |
| 4844.00 | 58.22 | 33.06 | 35.04 | 3.94 | 60.18 | 74.00 | 13.82 | Peak | Vertical |
| 4844.00 | 44.83 | 33.06 | 35.04 | 3.94 | 46.79 | 54.00 | 7.21 | Average | Vertical |

*Channel 6 / 2437 MHz*

| Freq. MHz | Reading dBuV | Ant. Fac. dB/m | Pre. Fac. dB | Cab. Loss dB | Measured dBuV/m | Limit dBuV/m | Margin dB | Remark | Pol. |
|---|---|---|---|---|---|---|---|---|---|
| 4874.00 | 59.70 | 33.16 | 35.15 | 3.96 | 61.67 | 74.00 | 12.33 | Peak | Horizontal |
| 4874.00 | 45.92 | 33.16 | 35.15 | 3.96 | 47.89 | 54.00 | 6.11 | Average | Horizontal |
| 4874.00 | 58.16 | 33.16 | 35.15 | 3.96 | 60.13 | 74.00 | 13.87 | Peak | Vertical |
| 4874.00 | 45.63 | 33.16 | 35.15 | 3.96 | 47.60 | 54.00 | 6.40 | Average | Vertical |

*Channel 9 / 2452 MHz*

| Freq. MHz | Reading dBuV | Ant. Fac. dB/m | Pre. Fac. dB | Cab. Loss dB | Measured dBuV/m | Limit dBuV/m | Margin dB | Remark | Pol. |
|---|---|---|---|---|---|---|---|---|---|
| 4904.00 | 57.82 | 33.26 | 35.14 | 3.98 | 59.92 | 74.00 | 14.08 | Peak | Horizontal |
| 4904.00 | 45.22 | 33.26 | 35.14 | 3.98 | 47.32 | 54.00 | 6.68 | Average | Horizontal |
| 4904.00 | 57.45 | 33.26 | 35.14 | 3.98 | 59.55 | 74.00 | 14.45 | Peak | Vertical |
| 4904.00 | 42.81 | 33.26 | 35.14 | 3.98 | 44.91 | 54.00 | 9.09 | Average | Vertical |

***Notes:***

1. *Measuring frequencies from 9 KHz - 10th harmonic or 26.5GHz (which is less), No emission found between lowest internal used/generated frequency to 30MHz.*
2. *Radiated emissions measured in frequency range from 9 KHz ~10th harmonic or 26.5GHz (which is less) were made with an instrument using Peak detector mode.*
3. *Data of measurement within this frequency range shown "---" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.*
4. *Worst case data at 1Mbps at IEEE 802.11b; 6Mbps at IEEE 802.11g; 6.5Mbps at IEEE 802.11n HT20; 13.5Mbps at IEEE 802.11n HT40;*
5. *Measured[dBμv/m] = Reading[dBμv/m] + Ant. Fac.[dB/m] - Pre. Fac.[dB] + Cab. Loss[dB];*

   *Margin[dB] = Limit[dBμV/m] –Measured Level[dBμV/m]*