# FCC TEST REPORT
# FCC ID:2A2X5-LKMSW002

| | |
|---|---|
| **Report Number**: | **ZKT-2502192655E** |
| Date of Test: | Feb. 19, 2025 to Feb. 27, 2025 |
| Date of issue: | Feb. 27, 2025 |
| Total number of pages: | 53 |
| Test Result: | PASS |
| **Testing Laboratory**: | **Shenzhen ZKT Technology Co., Ltd.** |
| Address : | 1/F, No. 101, Building B, No. 6, Tangwei Community Industrial Avenue, Fuhai Street, Bao'an District, Shenzhen, China |
| **Applicant's name :** | **Hangzhou Adaprox Intelligent Technology Co., Ltd.** |
| Address : | Room 606, 6th Floor, Building A, Yanxiang Science and Technology Building, No. 333 Jianghong Road, Changhe Street, Binjiang District, Hangzhou |
| **Manufacturer's name :** | **Hangzhou Adaprox Intelligent Technology Co., Ltd.** |
| Address : | Room 606, 6th Floor, Building A, Yanxiang Science and Technology Building, No. 333 Jianghong Road, Changhe Street, Binjiang District, Hangzhou |
| **Test specification:** | |
| Standard: | FCC CFR Title 47 Part 15 Subpart C Section 15.247<br>ANSI C63.10:2013 |
| Test procedure: | / |
| Non-standard test method : | N/A |
| **Test Report Form No: :** | TRF-EL-110_V0 |
| **Test Report Form(s) Originator: :** | ZKT Testing |
| **Master TRF :** | Dated: 2020-01-06 |

This device described above has been tested by ZKT, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.
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| | |
|---|---|
| **Product name: :** | **Wifi Sensor** |
| Trademark : | ADAPROX |
| Model/Type reference: : | LKMSW002<br>LKWSW201, LKDSW001, LKTMWL02 |
| Ratings: : | Input: DC 3V |

**Testing procedure and testing location:**

| | |
|---|---|
| **Testing Laboratory.....:** | **Shenzhen ZKT Technology Co., Ltd.** |
| Address.....: | 1/F, No. 101, Building B, No. 6, Tangwei Community Industrial Avenue, Fuhai Street, Bao'an District, Shenzhen, China |
| Tested by (name + signature).....: | Jim.Liu |
| Reviewer (name + signature).....: | Jackson.Fang |
| Approved (name + signature).....: | Lake Xie |

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## 1. VERSION

| ReportNo. | Version | Description | Approved |
|---|---|---|---|
| ZKT-2502192655E | Rev.01 | Initial issue of report | Feb. 27, 2025 |
| | | | |
| | | | |

## 2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

| FCC Part15 (15.247) , Subpart C | | | |
|---|---|---|---|
| Standard Section | Test Item | Result | Remark |
| FCC part 15.203/15.247 (c) | Antenna requirement | PASS | |
| FCC part 15.207 | AC Power Line Conducted Emission | N/A | |
| FCC part 15.247 (b)(3) | Conducted Peak Output Power | PASS | |
| FCC part 15.247 (a)(2) | -6dB Channel Bandwidth | PASS | |
| FCC part 15.247 (e) | Power Spectral Density | PASS | |
| FCC part 15.247(d) | Band Edge | PASS | |
| FCC part 15.205/15.209 | Spurious Emission | PASS | |

NOTE:

(1)" N/A" denotes test is not applicable in this Test Report

## 2.1 TEST FACILITY

Shenzhen ZKT Technology Co., Ltd.
Add. : 1/F, No. 101, Building B, No. 6, Tangwei Community Industrial Avenue, Fuhai Street, Bao'an District, Shenzhen, China

FCC Test Firm Registration Number: 692225
Designation Number: CN1299
IC Registered No.: 27033
CAB identifier: CN0110

## 2.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement y ± U，where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2，providing a level of confidence of approximately 95 %。

| No. | Item | Uncertainty |
|---|---|---|
| 1 | 3m camber Radiated spurious emission(9KHz-30MHz) | U=4.5dB |
| 2 | 3m camber Radiated spurious emission(30MHz-1GHz) | U=4.8dB |
| 3 | 3m chamber Radiated spurious emission(1GHz-6GHz) | U=4.9dB |
| 4 | 3m chamber Radiated spurious emission(6GHz-40GHz) | U=5.0dB |
| 5 | Conducted disturbance | U=3.2dB |
| 6 | RF Band Edge | U=1.68dB |
| 7 | RF power conducted | U=1.86dB |
| 8 | RF conducted Spurious Emission | U=2.2dB |
| 9 | RF Occupied Bandwidth | U=1.8MHz |
| 10 | RF Power Spectral Density | U=1.75dB |
| 11 | humidity uncertainty | U=5.3% |
| 12 | Temperature uncertainty | U=0.59℃ |

## 3. GENERAL INFORMATION

### 3.1 GENERAL DESCRIPTION OF EUT

| | |
|---|---|
| Product Name: | Wifi Sensor |
| Model No.: | LKMSW002<br>LKWSW201, LKDSW001,LKTMWL02 |
| Model Different.: | Only for different model name |
| Serial No.: | N/A |
| Sample(s) Status: | Engineer sample |
| Channel numbers: | 802.11b/802.11g /802.11n(HT20):11 |
| Channel separation: | 5MHz |
| Modulation technology: | 802.11b: Direct Sequence Spread Spectrum(DSSS)<br>802.11g/802.11n(H20):<br>Orthogonal Frequency Division Multiplexing(OFDM) |
| Frequency range: | 20M: 2412MHz-2462MHz |
| Antenna Type and<br>Antenna gain: | 802.11b/g/n20: PCB Antenna<br>Antenna gain: 2.21dBi |
| Power Supply: | Input: DC 3V |
| Adapter: | N/A |

| Operation Frequency each of channel | | | | | | | |
|---|---|---|---|---|---|---|---|
| Channel | Frequency | Channel | Frequency | Channel | Frequency | Channel | Frequency |
| 1 | 2412MHz | 4 | 2427MHz | 7 | 2442MHz | 10 | 2457MHz |
| 2 | 2417MHz | 5 | 2432MHz | 8 | 2447MHz | 11 | 2462MHz |
| 3 | 2422MHz | 6 | 2437MHz | 9 | 2452MHz | | |

Note:
In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

| Test channel | Frequency (MHz) | |
|---|---|---|
| | 802.11b/802.11g/802.11n(HT20) | |
| Lowest channel | 2412MHz | |
| Middle channel | 2437MHz | |
| Highest channel | 2462MHz | |

## 3.2 DESCRIPTION OF TEST MODES

| Transmitting mode | Keep the EUT in continuously transmitting mode |
|---|---|
| Remark: During the test, the test voltage was tuned from 85% to 115% of the nominal rated supply voltage, and found that the worst case was under the nominal rated supply condition. So the report just shows that condition's data. | |

We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:

Pre-scan all kind of data rate in lowest channel, and found the follow list which it was worst case.

| Mode | 802.11b | 802.11g | 802.11n(HT20) | |
|---|---|---|---|---|
| Data rate | 1Mbps | 6Mbps | 6.5Mbps | |

| Test Software | Dbgmon (CMD) Test Tool |
|---|---|
| Powerlevelsetup | <17dBm |

## 3.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Radiated Emission

## 3.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

| Item | Equipment | Mfr/Brand | Model/Type No. | Series No. | Note |
|---|---|---|---|---|---|
| E-1 | Wifi Sensor | ADAPROX | LKMSW002 | N/A | EUT |
| A-1 | Adapter | HUAWEI | HW-050100B3W | N/A | Auxiliary |

| Item | Shielded Type | Ferrite Core | Length | Note |
|---|---|---|---|---|
| | | | | |
| | | | | |

Note:

(1) The support equipment was authorized by Declaration of Confirmation.
(2) For detachable type I/O cable should be specified the length in cm in『Length』column.

## 3.5EQUIPMENTS LIST FOR ALL TEST ITEMS

### Conduction Emissions Test

| Item | Kind of Equipment | Manufacturer | Type No. | Serial No. | Firmware Version | Last calibration | Calibrated until |
|---|---|---|---|---|---|---|---|
| 1 | LISN | R&S | ENV216 | 101471 | N/A | Sep. 30, 2024 | Sep. 29, 2025 |
| 2 | LISN | CYBERTEK | EM5040A | E1850400149 | N/A | Sep. 30, 2024 | Sep. 29, 2025 |
| 3 | Test Cable | N/A | C-01 | N/A | N/A | Sep. 30, 2024 | Sep. 29, 2025 |
| 4 | EMI Test Receiver | R&S | ESCI3 | 101393 | 4.42 SP3 | Sep. 29, 2024 | Sep. 28, 2025 |
| 5 | EMC Software | Frad | EZ-EMC | Ver.EMC-CON 3A1.1 | N/A | \ | \ |

### Radiation Emissions & Radiation Spurious Emissions Test

| Item | Equipment | Manufacturer | Type No. | Serial No. | Firmware Version | Last calibration | Calibrated until |
|---|---|---|---|---|---|---|---|
| 1 | Spectrum Analyzer (9kHz-26.5GHz) | KEYSIGHT | N9020A | MY55370835 | A.17.05 | Sep. 29, 2024 | Sep. 28, 2025 |
| 2 | Spectrum Analyzer (10kHz-39.9GHz) | R&S | FSV40-N | 100363 | 1.71 SP2 | Sep. 30, 2024 | Sep. 29, 2025 |
| 3 | EMI Test Receiver (9kHz-7GHz) | R&S | ESCI7 | 100969 | 4.32 | Sep. 29, 2024 | Sep. 28, 2025 |
| 4 | Bilog Antenna (30MHz-1500MHz) | Schwarzbeck | VULB9168 | 00877 | N/A | Sep. 30, 2024 | Sep. 29, 2025 |
| 5 | Horn Antenna (1GHz-18GHz) | Agilent | AH-118 | 071145 | N/A | Sep. 30, 2024 | Sep. 29, 2025 |
| 6 | Horn Antenna (15GHz-40GHz) | A.H.System | SAS-574 | 588 | N/A | Sep. 30, 2024 | Sep. 29, 2025 |
| 7 | Loop Antenna | TESEQ | HLA6121 | 58357 | N/A | Oct. 11, 2024 | Oct. 10, 2025 |
| 8 | Amplifier (30-1000MHz) | EM Electronics | EM330 Amplifier | 60747 | N/A | Sep. 29, 2024 | Sep. 28, 2025 |
| 9 | Amplifier (1GHz-26.5GHz) | HuiPu | 8449B | 3008A00315 | N/A | Sep. 29, 2024 | Sep. 28, 2025 |
| 10 | Amplifier (500MHz-40GHz) | QuanJuDa | DLE-161 | 097 | N/A | Sep. 30, 2024 | Sep. 29, 2025 |
| 11 | Test Cable | N/A | R-01 | N/A | N/A | Sep. 30, 2024 | Sep. 29, 2025 |
| 12 | Test Cable | N/A | R-02 | N/A | N/A | Sep. 30, 2024 | Sep. 29, 2025 |
| 13 | Test Cable | N/A | R-03 | N/A | N/A | Sep. 30, 2024 | Sep. 29, 2025 |
| 14 | D.C. Power Supply | LongWei | TPR-6405D | GQ7516 | N/A | Sep. 29, 2024 | Sep. 28, 2025 |
| 15 | EMC Software | Frad | EZ-EMC | Ver.EMC-CON 3A1.1 | N/A | \ | \ |
| 16 | Turntable | MF | MF-7802BS | N/A | N/A | \ | \ |
| 17 | Antenna tower | MF | MF-7802BS | N/A | N/A | \ | \ |

RF Conducted Test

| Item | Equipment | Manufacturer | Type No. | Serial No. | Firmware Version | Last calibration | Calibrated until |
|---|---|---|---|---|---|---|---|
| 1 | Spectrum Analyzer (9kHz-26.5GHz) | KEYSIGHT | N9020A | MY55370835 | A.17.05 | Sep. 29, 2024 | Sep. 28, 2025 |
| 2 | Spectrum Analyzer (10kHz-39.9GHz) | R&S | FSV40-N | 100363 | 1.71 SP2 | Sep. 30, 2024 | Sep. 29, 2025 |
| 3 | Test Cable | N/A | RF-01 | N/A | N/A | Sep. 30, 2024 | Sep. 29, 2025 |
| 4 | Test Cable | N/A | RF-02 | N/A | N/A | Sep. 30, 2024 | Sep. 29, 2025 |
| 5 | Test Cable | N/A | RF-03 | N/A | N/A | Sep. 30, 2024 | Sep. 29, 2025 |
| 6 | ESG Signal Generator | Agilent | E4421B | GB40051203 | B.03.84 | Sep. 29, 2024 | Sep. 28, 2025 |
| 7 | Signal Generator | Agilent | N5182A | MY47420215 | A.01.87 | Sep. 29, 2024 | Sep. 28, 2025 |
| 8 | Magnetic Field Probe Tester | Narda | ELT-400 | 0-0344 | N/A | Sep. 29, 2024 | Sep. 28, 2025 |
| 9 | Van der Hoofden measuring head | Schwarzbeck Mess-elektronik | VDHH 9502 | 9502-039 | N/A | Sep. 30, 2024 | Sep. 29, 2025 |
| 10 | Wideband Radio Communication Test | R&S | CMW500 | 106504 | V 3.7.22 | Sep. 30, 2024 | Sep. 29, 2025 |
| 11 | MWRF Power Meter Test system | MW | MW100-RFCB | 10371 | N/A | Sep. 29, 2024 | Sep. 28, 2025 |
| 12 | Power Meter | KEYSIGHT | N1912AP | 926431 | A.05.00 | Sep. 29, 2024 | Sep. 28, 2025 |
| 13 | D.C. Power Supply | LongWei | TPR-6405 D | GQ7516 | N/A | Sep. 29, 2024 | Sep. 28, 2025 |
| 14 | RF Software | MW | MTS8310 | V2.0.0.0 | N/A | \ | \ |

## 4. EMC EMISSION TEST

### 4.1 CONDUCTED EMISSION MEASUREMENT

| | |
|---|---|
| Test Requirement: | FCC Part15 C Section 15.207 |
| Test Method: | ANSI C63.10:2013 |
| Test Frequency Range: | 150KHz to 30MHz |
| Receiver setup: | RBW=9KHz, VBW=30KHz, Sweep time=auto |

#### 4.1.1 POWER LINE CONDUCTED EMISSION Limits

| FREQUENCY (MHz) | Limit (dBuV) | | Standard |
|---|---|---|---|
| | Quasi-peak | Average | |
| 0.15 -0.5 | 66 - 56 * | 56 - 46 * | FCC |
| 0.50 -5.0 | 56.00 | 46.00 | FCC |
| 5.0 -30.0 | 60.00 | 50.00 | FCC |

Note:

(1) *Decreases with the logarithm of the frequency.

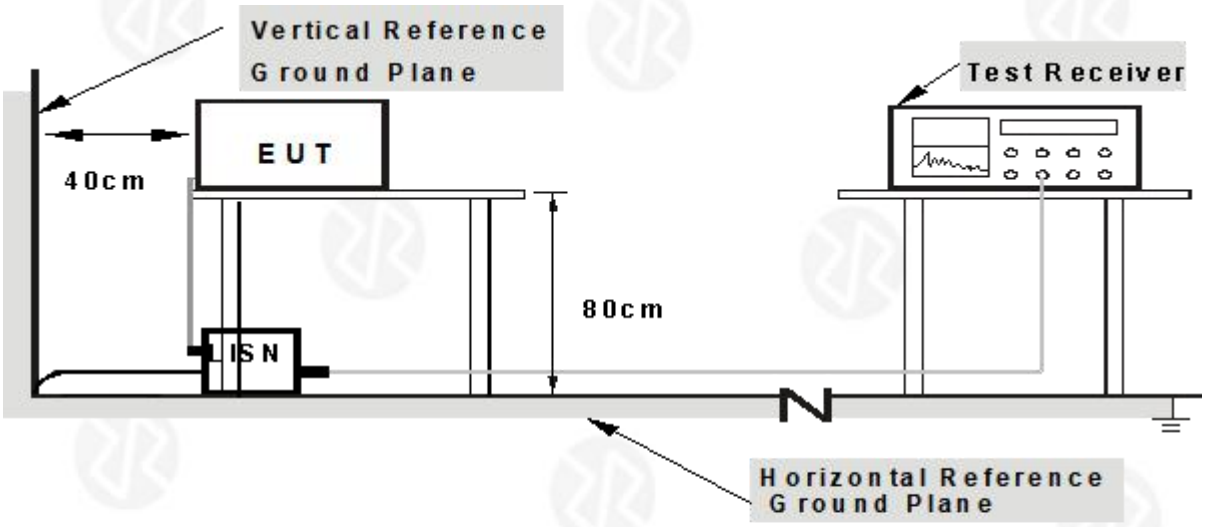
#### 4.1.2 TEST PROCEDURE

a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
d. LISN at least 80 cm from nearest part of EUT chassis.
e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

#### 4.1.3 DEVIATION FROM TEST STANDARD

No deviation

4.1.4 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

4.1.5 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

We pretest AC 120V and AC 230V, the worst voltage was AC 120V and the data recording in the report.

4.1.6 Test Result

The EUT is powered by DC only the test items is not applicable.

## 4.2 RADIATED EMISSION MEASUREMENT

<table>
<tr><td>Test Requirement:</td><td colspan="5">FCC Part15 C Section 15.209</td></tr>
<tr><td>Test Method:</td><td colspan="5">ANSI C63.10:2013</td></tr>
<tr><td>Test Frequency Range:</td><td colspan="5">9kHz to 25GHz</td></tr>
<tr><td>Test site:</td><td colspan="5">Measurement Distance: 3m</td></tr>
<tr><td>Receiver setup:</td><td colspan="5"><table>
<tr><td>Frequency</td><td>Detector</td><td>RBW</td><td>VBW</td><td>Value</td></tr>
<tr><td>9KHz-150KHz</td><td>Quasi-peak</td><td>200Hz</td><td>600Hz</td><td>Quasi-peak</td></tr>
<tr><td>150KHz-30MHz</td><td>Quasi-peak</td><td>9KHz</td><td>30KHz</td><td>Quasi-peak</td></tr>
<tr><td>30MHz-1GHz</td><td>Quasi-peak</td><td>100KHz</td><td>300KHz</td><td>Quasi-peak</td></tr>
<tr><td rowspan="2">Above 1GHz</td><td>Peak</td><td>1MHz</td><td>3MHz</td><td>Peak</td></tr>
<tr><td>Peak</td><td>1MHz</td><td>10Hz</td><td>Average</td></tr>
</table></td></tr>
</table>

### 4.2.1 RADIATED EMISSION LIMITS

| Frequencies (MHz) | Field Strength (micorvolts/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 |

LIMITS OF RADIATED EMISSION MEASUREMENT

| FREQUENCY (MHz) | Limit (dBuV/m) (at 3M) | |
|---|---|---|
| | PEAK | AVERAGE |
| Above 1000 | 74 | 54 |

Notes:

(1) The limit for radiated test was performed according to FCC PART 15C.

(2) The tighter limit applies at the band edges.

(3) Emission level (dBuV/m)=20log Emission level (uV/m).

4.2.2 TEST PROCEDURE

Below 1GHz test procedure as below:

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoiccamber. 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 avariable-height antenna tower.
c. The antenna height is varied from one meter to four meters above the ground to determine the maximum valueof 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 toheights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1meter) 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 Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could bestopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dBmargin would be re-tested one by one using peak, quasi-peak or average method as specified and then reportedin a data sheet.

Above 1GHz test procedure as below:

g. Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber andchange form table 0.8 meter to 1.5 meter( Above 18GHz the distance is 1 meter and table is 1.5 meter).
h. Test the EUT in the lowest channel ,the middle channel ,the Highest channel

Note:

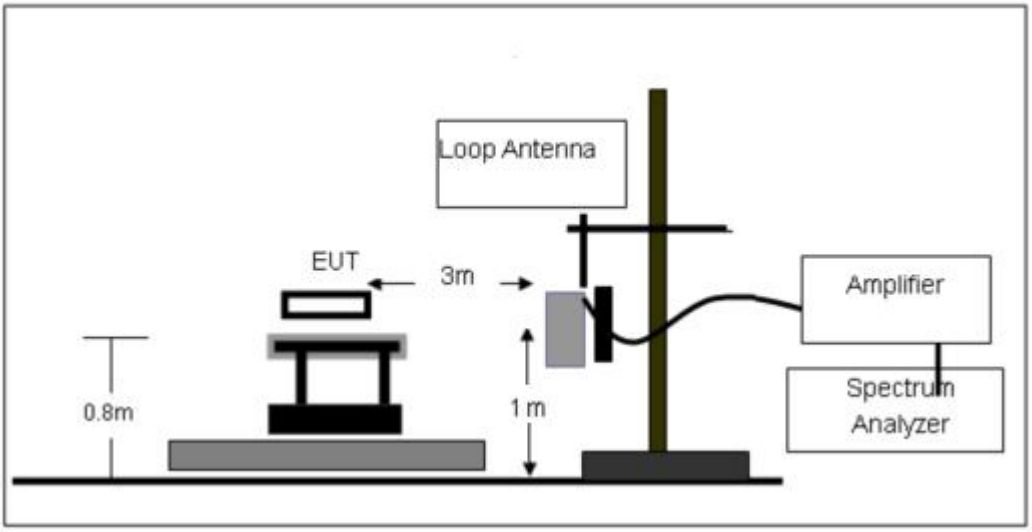
Both horizontal and vertical antenna polarities were tested
and performed pretest to three orthogonal axis. The worst case emissions were reported

4.2.3 DEVIATION FROM TEST STANDARD

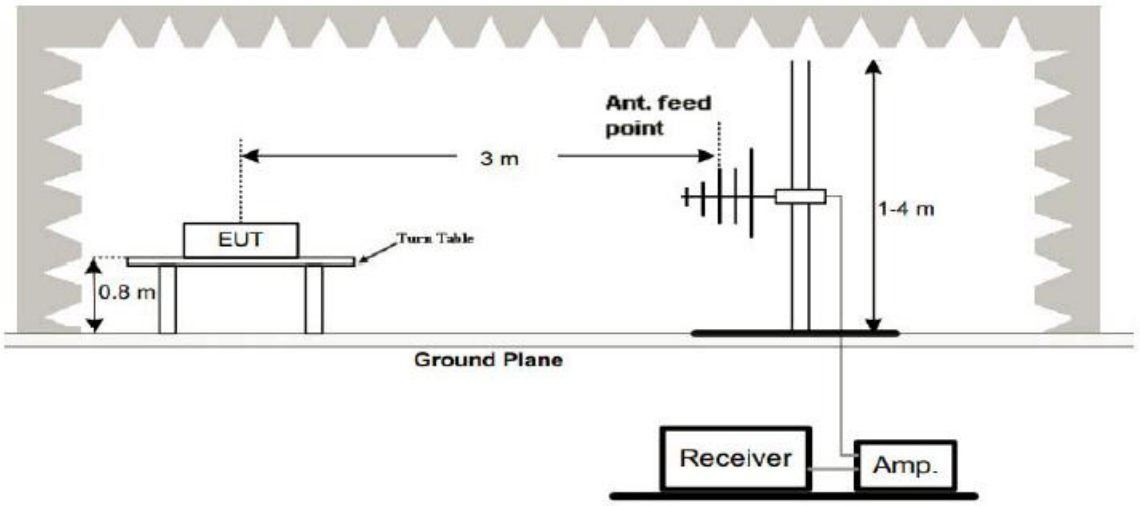
No deviation

4.2.4 TEST SETUP

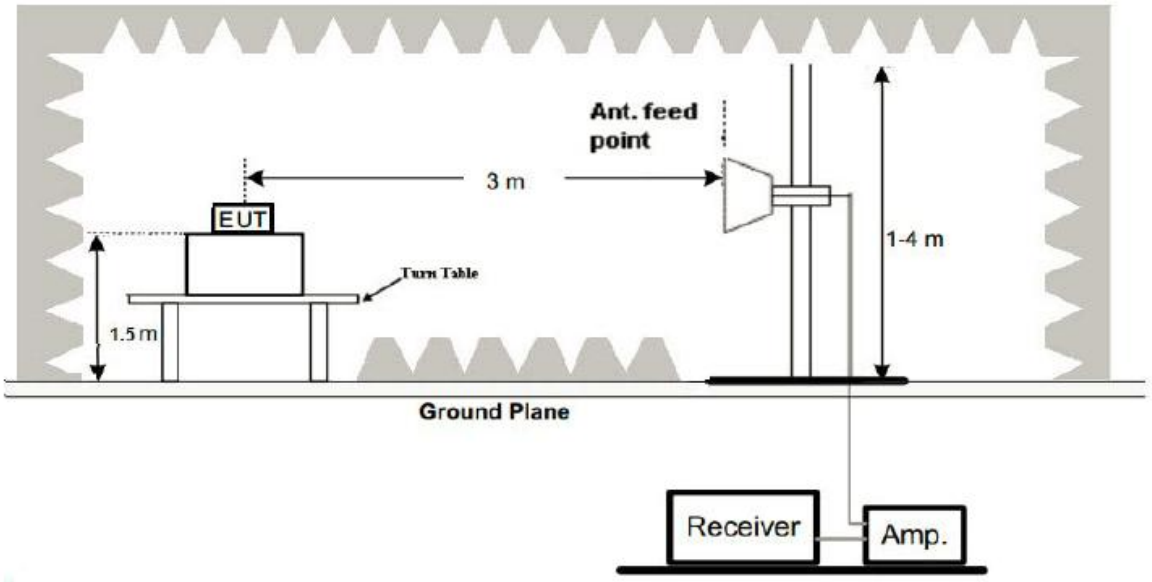
（A）Radiated Emission Test-Up Frequency Below 30MHz



（B）Radiated Emission Test-Up Frequency 30MHz~1GHz




（C）Radiated Emission Test-Up Frequency Above 1GHz




4.2.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

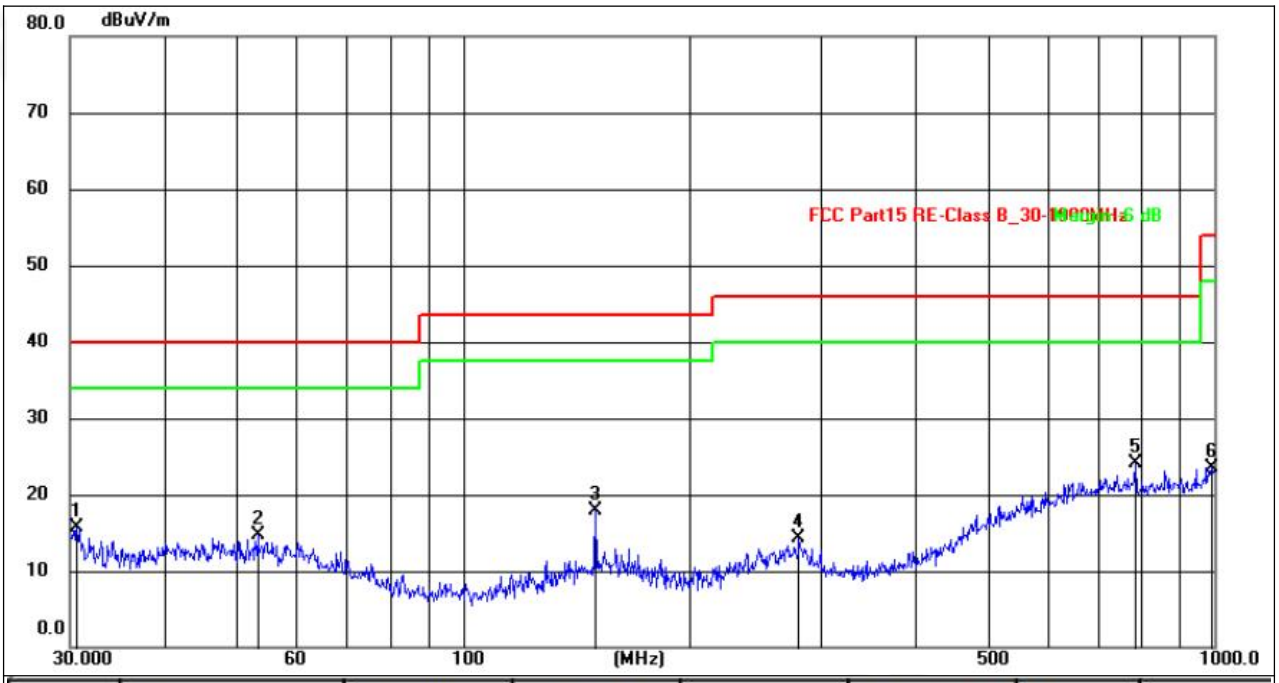
4.2.6 TEST RESULTS

Between 9KHz – 30MHz

The emission from 9 kHz to 30MHz was pre-tested and found the result was 20dB lower than the limit, and according to 15.31(o) & RSS-Gen 6.13, the test result no need to reported.

Between 30MHz – 1GHz

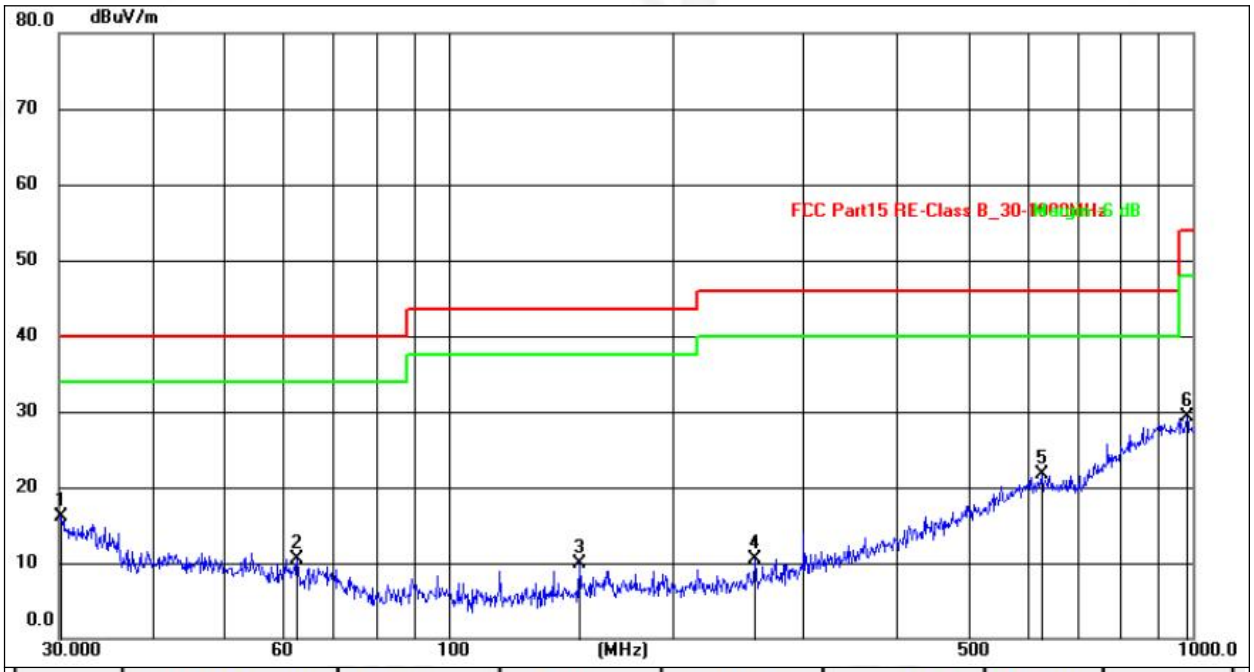
| | | | |
|---|---|---|---|
| Temperature: | 26℃ | Relative Humidity: | 54% |
| Pressure: | 101 kPa | Polarization: | Horizontal |
| Test Voltage: | DC 3V | Test Mode | 802.11g 2437MHz |




| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 | 30.6378 | 29.99 | -14.21 | 15.78 | 40.00 | -24.22 | QP |
| 2 | 53.3179 | 28.63 | -13.99 | 14.64 | 40.00 | -25.36 | QP |
| 3 | 150.0108 | 34.35 | -16.35 | 18.00 | 43.50 | -25.50 | QP |
| 4 | 280.0237 | 28.33 | -13.94 | 14.39 | 46.00 | -31.61 | QP |
| 5 | 785.0934 | 30.67 | -6.63 | 24.04 | 46.00 | -21.96 | QP |
| 6 | 993.0114 | 28.31 | -4.71 | 23.60 | 54.00 | -30.40 | QP |

Remarks:
1.Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2.The emission levels of other frequencies are very lower than the limit and not show in test report.
3.The test data shows only the worst case 802.11g 2437MHz

| Temperature: | 26℃ | Relative Humidity: | 54% |
|---|---|---|---|
| Pressure: | 101kPa | Polarization: | Vertical |
| Test Voltage: | DC 3V | Test Mode | 802.11g 2437MHz |




| No. | Frequency (MHz) | Reading (dBuV) | Factor (dB/m) | Level (dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector |
|---|---|---|---|---|---|---|---|
| 1 | 30.2111 | 34.37 | -18.31 | 16.06 | 40.00 | -23.94 | QP |
| 2 | 62.6506 | 29.04 | -18.48 | 10.56 | 40.00 | -29.44 | QP |
| 3 | 150.0108 | 30.21 | -20.35 | 9.86 | 43.50 | -33.64 | QP |
| 4 | 258.3264 | 29.93 | -19.34 | 10.59 | 46.00 | -35.41 | QP |
| 5 | 627.2737 | 29.02 | -7.34 | 21.68 | 46.00 | -24.32 | QP |
| 6 | 982.6200 | 29.37 | -0.01 | 29.36 | 54.00 | -24.64 | QP |

Remarks:
1.Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2.The emission levels of other frequencies are very lower than the limit and not show in test report.
3.The test data shows only the worst case 802.11g 2437MHz

1GHz~25GHz

802.11b

| Polar (H/V) | Frequency (MHz) | Meter Reading (dBuV) | Pre-amplifier (dB) | Cable Loss (dB) | Antenna Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Detector Type |
|---|---|---|---|---|---|---|---|---|---|
| Low Channel:2412MHz | | | | | | | | | |
| V | 4824.00 | 54.28 | 30.55 | 5.77 | 24.66 | 54.16 | 74.00 | -19.84 | PK |
| V | 4824.00 | 43.46 | 30.55 | 5.77 | 24.66 | 43.34 | 54.00 | -10.66 | AV |
| V | 7236.00 | 52.07 | 30.33 | 6.32 | 24.55 | 52.61 | 74.00 | -21.39 | PK |
| V | 7236.00 | 43.52 | 30.33 | 6.32 | 24.55 | 44.06 | 54.00 | -9.94 | AV |
| V | 9648.00 | 51.84 | 30.85 | 7.45 | 24.69 | 53.13 | 74.00 | -20.87 | PK |
| V | 9648.00 | 43.54 | 30.85 | 7.45 | 24.69 | 44.83 | 54.00 | -9.17 | AV |
| V | 12060.00 | 52.04 | 31.02 | 8.99 | 25.57 | 55.58 | 74.00 | -18.42 | PK |
| V | 12060.00 | 43.51 | 31.02 | 8.99 | 25.57 | 47.05 | 54.00 | -6.95 | AV |
| H | 4824.00 | 53.83 | 30.55 | 5.77 | 24.66 | 53.71 | 74.00 | -20.29 | PK |
| H | 4824.00 | 43.03 | 30.55 | 5.77 | 24.66 | 42.91 | 54.00 | -11.09 | AV |
| H | 7236.00 | 52.23 | 30.33 | 6.32 | 24.55 | 52.77 | 74.00 | -21.23 | PK |
| H | 7236.00 | 43.40 | 30.33 | 6.32 | 24.55 | 43.94 | 54.00 | -10.06 | AV |
| H | 9648.00 | 51.36 | 30.85 | 7.45 | 24.69 | 52.65 | 74.00 | -21.35 | PK |
| H | 9648.00 | 43.28 | 30.85 | 7.45 | 24.69 | 44.57 | 54.00 | -9.43 | AV |
| H | 12060.00 | 53.83 | 31.02 | 8.99 | 25.57 | 57.37 | 74.00 | -16.63 | PK |
| H | 12060.00 | 43.51 | 31.02 | 8.99 | 25.57 | 47.05 | 54.00 | -6.95 | AV |

| Polar (H/V) | Frequency (MHz) | Meter Reading (dBuV) | Pre-amplifier (dB) | Cable Loss (dB) | Antenna Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Detector Type |
|---|---|---|---|---|---|---|---|---|---|
| Middle Channel:2437MHz | | | | | | | | | |
| V | 4874.00 | 53.41 | 30.55 | 5.77 | 24.66 | 53.29 | 74.00 | -20.71 | PK |
| V | 4874.00 | 43.51 | 30.55 | 5.77 | 24.66 | 43.39 | 54.00 | -10.61 | AV |
| V | 7311.00 | 52.08 | 30.33 | 6.32 | 24.55 | 52.62 | 74.00 | -21.38 | PK |
| V | 7311.00 | 43.84 | 30.33 | 6.32 | 24.55 | 44.38 | 54.00 | -9.62 | AV |
| V | 9748.00 | 52.28 | 30.85 | 7.45 | 24.69 | 53.57 | 74.00 | -20.43 | PK |
| V | 9748.00 | 43.35 | 30.85 | 7.45 | 24.69 | 44.64 | 54.00 | -9.36 | AV |
| V | 12185.00 | 54.62 | 31.02 | 8.99 | 25.57 | 58.16 | 74.00 | -15.84 | PK |
| V | 12185.00 | 43.59 | 31.02 | 8.99 | 25.57 | 47.13 | 54.00 | -6.87 | AV |
| H | 4874.00 | 51.39 | 30.55 | 5.77 | 24.66 | 51.27 | 74.00 | -22.73 | PK |
| H | 4874.00 | 43.18 | 30.55 | 5.77 | 24.66 | 43.06 | 54.00 | -10.94 | AV |
| H | 7311.00 | 53.84 | 30.33 | 6.32 | 24.55 | 54.38 | 74.00 | -19.62 | PK |
| H | 7311.00 | 43.52 | 30.33 | 6.32 | 24.55 | 44.06 | 54.00 | -9.94 | AV |
| H | 9748.00 | 51.27 | 30.85 | 7.45 | 24.69 | 52.56 | 74.00 | -21.44 | PK |
| H | 9748.00 | 43.85 | 30.85 | 7.45 | 24.69 | 45.14 | 54.00 | -8.86 | AV |
| H | 12185.00 | 50.87 | 31.02 | 8.99 | 25.57 | 54.41 | 74.00 | -19.59 | PK |
| H | 12185.00 | 43.99 | 31.02 | 8.99 | 25.57 | 47.53 | 54.00 | -6.47 | AV |

| Polar (H/V) | Frequency (MHz) | Meter Reading (dBuV) | Pre-amplifier (dB) | Cable Loss (dB) | Antenna Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Detector Type |
|---|---|---|---|---|---|---|---|---|---|
| High Channel:2462MHz | | | | | | | | | |
| V | 4924.00 | 50.28 | 30.55 | 5.77 | 24.66 | 50.16 | 74.00 | -23.84 | PK |
| V | 4924.00 | 43.20 | 30.55 | 5.77 | 24.66 | 43.08 | 54.00 | -10.92 | AV |
| V | 7386.00 | 50.35 | 30.33 | 6.32 | 24.55 | 50.89 | 74.00 | -23.11 | PK |
| V | 7386.00 | 43.40 | 30.33 | 6.32 | 24.55 | 43.94 | 54.00 | -10.06 | AV |
| V | 9848.00 | 52.28 | 30.85 | 7.45 | 24.69 | 53.57 | 74.00 | -20.43 | PK |
| V | 9848.00 | 43.28 | 30.85 | 7.45 | 24.69 | 44.57 | 54.00 | -9.43 | AV |
| V | 12310.00 | 51.12 | 31.02 | 8.99 | 25.57 | 54.66 | 74.00 | -19.34 | PK |
| V | 12310.00 | 43.60 | 31.02 | 8.99 | 25.57 | 47.14 | 54.00 | -6.86 | AV |
| H | 4924.00 | 53.76 | 30.55 | 5.77 | 24.66 | 53.64 | 74.00 | -20.36 | PK |
| H | 4924.00 | 43.53 | 30.55 | 5.77 | 24.66 | 43.41 | 54.00 | -10.59 | AV |
| H | 7386.00 | 50.17 | 30.33 | 6.32 | 24.55 | 50.71 | 74.00 | -23.29 | PK |
| H | 7386.00 | 43.73 | 30.33 | 6.32 | 24.55 | 44.27 | 54.00 | -9.73 | AV |
| H | 9848.00 | 54.78 | 30.85 | 7.45 | 24.69 | 56.07 | 74.00 | -17.93 | PK |
| H | 9848.00 | 43.12 | 30.85 | 7.45 | 24.69 | 44.41 | 54.00 | -9.59 | AV |
| H | 12310.00 | 50.50 | 31.02 | 8.99 | 25.57 | 54.04 | 74.00 | -19.96 | PK |
| H | 12310.00 | 43.84 | 31.02 | 8.99 | 25.57 | 47.38 | 54.00 | -6.62 | AV |

Remark:
1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,
Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

802.11g

| Polar (H/V) | Frequency (MHz) | Meter Reading (dBuV) | Pre-amplifier (dB) | Cable Loss (dB) | Antenna Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Detector Type |
|---|---|---|---|---|---|---|---|---|---|
| Low Channel:2412MHz | | | | | | | | | |
| V | 4824.00 | 53.35 | 30.55 | 5.77 | 24.66 | 53.23 | 74.00 | -20.77 | PK |
| V | 4824.00 | 43.71 | 30.55 | 5.77 | 24.66 | 43.59 | 54.00 | -10.41 | AV |
| V | 7236.00 | 51.14 | 30.33 | 6.32 | 24.55 | 51.68 | 74.00 | -22.32 | PK |
| V | 7236.00 | 43.83 | 30.33 | 6.32 | 24.55 | 44.37 | 54.00 | -9.63 | AV |
| V | 9648.00 | 53.86 | 30.85 | 7.45 | 24.69 | 55.15 | 74.00 | -18.85 | PK |
| V | 9648.00 | 43.43 | 30.85 | 7.45 | 24.69 | 44.72 | 54.00 | -9.28 | AV |
| V | 12060.00 | 53.58 | 31.02 | 8.99 | 25.57 | 57.12 | 74.00 | -16.88 | PK |
| V | 12060.00 | 43.97 | 31.02 | 8.99 | 25.57 | 47.51 | 54.00 | -6.49 | AV |
| H | 4824.00 | 52.56 | 30.55 | 5.77 | 24.66 | 52.44 | 74.00 | -21.56 | PK |
| H | 4824.00 | 43.83 | 30.55 | 5.77 | 24.66 | 43.71 | 54.00 | -10.29 | AV |
| H | 7236.00 | 53.17 | 30.33 | 6.32 | 24.55 | 53.71 | 74.00 | -20.29 | PK |
| H | 7236.00 | 43.88 | 30.33 | 6.32 | 24.55 | 44.42 | 54.00 | -9.58 | AV |
| H | 9648.00 | 52.30 | 30.85 | 7.45 | 24.69 | 53.59 | 74.00 | -20.41 | PK |
| H | 9648.00 | 43.65 | 30.85 | 7.45 | 24.69 | 44.94 | 54.00 | -9.06 | AV |
| H | 12060.00 | 53.99 | 31.02 | 8.99 | 25.57 | 57.53 | 74.00 | -16.47 | PK |
| H | 12060.00 | 43.36 | 31.02 | 8.99 | 25.57 | 46.90 | 54.00 | -7.10 | AV |

| Polar (H/V) | Frequency (MHz) | Meter Reading (dBuV) | Pre-amplifier (dB) | Cable Loss (dB) | Antenna Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Detector Type |
|---|---|---|---|---|---|---|---|---|---|
| Middle Channel:2437MHz | | | | | | | | | |
| V | 4874.00 | 52.13 | 30.55 | 5.77 | 24.66 | 52.01 | 74.00 | -21.99 | PK |
| V | 4874.00 | 43.66 | 30.55 | 5.77 | 24.66 | 43.54 | 54.00 | -10.46 | AV |
| V | 7311.00 | 53.48 | 30.33 | 6.32 | 24.55 | 54.02 | 74.00 | -19.98 | PK |
| V | 7311.00 | 43.39 | 30.33 | 6.32 | 24.55 | 43.93 | 54.00 | -10.07 | AV |
| V | 9748.00 | 53.17 | 30.85 | 7.45 | 24.69 | 54.46 | 74.00 | -19.54 | PK |
| V | 9748.00 | 43.33 | 30.85 | 7.45 | 24.69 | 44.62 | 54.00 | -9.38 | AV |
| V | 12185.00 | 53.58 | 31.02 | 8.99 | 25.57 | 57.12 | 74.00 | -16.88 | PK |
| V | 12185.00 | 43.27 | 31.02 | 8.99 | 25.57 | 46.81 | 54.00 | -7.19 | AV |
| H | 4874.00 | 51.47 | 30.55 | 5.77 | 24.66 | 51.35 | 74.00 | -22.65 | PK |
| H | 4874.00 | 43.61 | 30.55 | 5.77 | 24.66 | 43.49 | 54.00 | -10.51 | AV |
| H | 7311.00 | 51.83 | 30.33 | 6.32 | 24.55 | 52.37 | 74.00 | -21.63 | PK |
| H | 7311.00 | 43.26 | 30.33 | 6.32 | 24.55 | 43.80 | 54.00 | -10.20 | AV |
| H | 9748.00 | 52.11 | 30.85 | 7.45 | 24.69 | 53.40 | 74.00 | -20.60 | PK |
| H | 9748.00 | 43.02 | 30.85 | 7.45 | 24.69 | 44.31 | 54.00 | -9.69 | AV |
| H | 12185.00 | 51.65 | 31.02 | 8.99 | 25.57 | 55.19 | 74.00 | -18.81 | PK |
| H | 12185.00 | 43.38 | 31.02 | 8.99 | 25.57 | 46.92 | 54.00 | -7.08 | AV |

| Polar (H/V) | Frequency (MHz) | Meter Reading (dBuV) | Pre-amplifier (dB) | Cable Loss (dB) | Antenna Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Detector Type |
|---|---|---|---|---|---|---|---|---|---|
| High Channel:2462MHz | | | | | | | | | |
| V | 4924.00 | 50.11 | 30.55 | 5.77 | 24.66 | 49.99 | 74.00 | -24.01 | PK |
| V | 4924.00 | 43.49 | 30.55 | 5.77 | 24.66 | 43.37 | 54.00 | -10.63 | AV |
| V | 7386.00 | 54.44 | 30.33 | 6.32 | 24.55 | 54.98 | 74.00 | -19.02 | PK |
| V | 7386.00 | 43.21 | 30.33 | 6.32 | 24.55 | 43.75 | 54.00 | -10.25 | AV |
| V | 9848.00 | 51.53 | 30.85 | 7.45 | 24.69 | 52.82 | 74.00 | -21.18 | PK |
| V | 9848.00 | 43.98 | 30.85 | 7.45 | 24.69 | 45.27 | 54.00 | -8.73 | AV |
| V | 12310.00 | 53.94 | 31.02 | 8.99 | 25.57 | 57.48 | 74.00 | -16.52 | PK |
| V | 12310.00 | 43.43 | 31.02 | 8.99 | 25.57 | 46.97 | 54.00 | -7.03 | AV |
| H | 4924.00 | 53.87 | 30.55 | 5.77 | 24.66 | 53.75 | 74.00 | -20.25 | PK |
| H | 4924.00 | 43.89 | 30.55 | 5.77 | 24.66 | 43.77 | 54.00 | -10.23 | AV |
| H | 7386.00 | 50.47 | 30.33 | 6.32 | 24.55 | 51.01 | 74.00 | -22.99 | PK |
| H | 7386.00 | 43.19 | 30.33 | 6.32 | 24.55 | 43.73 | 54.00 | -10.27 | AV |
| H | 9848.00 | 53.46 | 30.85 | 7.45 | 24.69 | 54.75 | 74.00 | -19.25 | PK |
| H | 9848.00 | 43.03 | 30.85 | 7.45 | 24.69 | 44.32 | 54.00 | -9.68 | AV |
| H | 12310.00 | 53.04 | 31.02 | 8.99 | 25.57 | 56.58 | 74.00 | -17.42 | PK |
| H | 12310.00 | 43.27 | 31.02 | 8.99 | 25.57 | 46.81 | 54.00 | -7.19 | AV |

Remark:
1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,
Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

802.11n20

| Polar (H/V) | Frequency (MHz) | Meter Reading (dBuV) | Pre-amplifier (dB) | Cable Loss (dB) | Antenna Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Detector Type |
|---|---|---|---|---|---|---|---|---|---|
| Low Channel:2412MHz | | | | | | | | | |
| V | 4824.00 | 53.25 | 30.55 | 5.77 | 24.66 | 53.13 | 74.00 | -20.87 | PK |
| V | 4824.00 | 43.94 | 30.55 | 5.77 | 24.66 | 43.82 | 54.00 | -10.18 | AV |
| V | 7236.00 | 54.61 | 30.33 | 6.32 | 24.55 | 55.15 | 74.00 | -18.85 | PK |
| V | 7236.00 | 43.14 | 30.33 | 6.32 | 24.55 | 43.68 | 54.00 | -10.32 | AV |
| V | 9648.00 | 52.48 | 30.85 | 7.45 | 24.69 | 53.77 | 74.00 | -20.23 | PK |
| V | 9648.00 | 43.44 | 30.85 | 7.45 | 24.69 | 44.73 | 54.00 | -9.27 | AV |
| V | 12060.00 | 51.60 | 31.02 | 8.99 | 25.57 | 55.14 | 74.00 | -18.86 | PK |
| V | 12060.00 | 43.43 | 31.02 | 8.99 | 25.57 | 46.97 | 54.00 | -7.03 | AV |
| H | 4824.00 | 53.98 | 30.55 | 5.77 | 24.66 | 53.86 | 74.00 | -20.14 | PK |
| H | 4824.00 | 43.97 | 30.55 | 5.77 | 24.66 | 43.85 | 54.00 | -10.15 | AV |
| H | 7236.00 | 51.39 | 30.33 | 6.32 | 24.55 | 51.93 | 74.00 | -22.07 | PK |
| H | 7236.00 | 43.67 | 30.33 | 6.32 | 24.55 | 44.21 | 54.00 | -9.79 | AV |
| H | 9648.00 | 50.11 | 30.85 | 7.45 | 24.69 | 51.40 | 74.00 | -22.60 | PK |
| H | 9648.00 | 43.79 | 30.85 | 7.45 | 24.69 | 45.08 | 54.00 | -8.92 | AV |
| H | 12060.00 | 53.93 | 31.02 | 8.99 | 25.57 | 57.47 | 74.00 | -16.53 | PK |
| H | 12060.00 | 43.48 | 31.02 | 8.99 | 25.57 | 47.02 | 54.00 | -6.98 | AV |

| Polar (H/V) | Frequency (MHz) | Meter Reading (dBuV) | Pre-amplifier (dB) | Cable Loss (dB) | Antenna Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Detector Type |
|---|---|---|---|---|---|---|---|---|---|
| Middle Channel:2437MHz | | | | | | | | | |
| V | 4874.00 | 51.63 | 30.55 | 5.77 | 24.66 | 51.51 | 74.00 | -22.49 | PK |
| V | 4874.00 | 43.96 | 30.55 | 5.77 | 24.66 | 43.84 | 54.00 | -10.16 | AV |
| V | 7311.00 | 50.88 | 30.33 | 6.32 | 24.55 | 51.42 | 74.00 | -22.58 | PK |
| V | 7311.00 | 43.66 | 30.33 | 6.32 | 24.55 | 44.20 | 54.00 | -9.80 | AV |
| V | 9748.00 | 53.71 | 30.85 | 7.45 | 24.69 | 55.00 | 74.00 | -19.00 | PK |
| V | 9748.00 | 43.89 | 30.85 | 7.45 | 24.69 | 45.18 | 54.00 | -8.82 | AV |
| V | 12185.00 | 50.69 | 31.02 | 8.99 | 25.57 | 54.23 | 74.00 | -19.77 | PK |
| V | 12185.00 | 43.69 | 31.02 | 8.99 | 25.57 | 47.23 | 54.00 | -6.77 | AV |
| H | 4874.00 | 52.21 | 30.55 | 5.77 | 24.66 | 52.09 | 74.00 | -21.91 | PK |
| H | 4874.00 | 43.71 | 30.55 | 5.77 | 24.66 | 43.59 | 54.00 | -10.41 | AV |
| H | 7311.00 | 52.07 | 30.33 | 6.32 | 24.55 | 52.61 | 74.00 | -21.39 | PK |
| H | 7311.00 | 43.52 | 30.33 | 6.32 | 24.55 | 44.06 | 54.00 | -9.94 | AV |
| H | 9748.00 | 53.85 | 30.85 | 7.45 | 24.69 | 55.14 | 74.00 | -18.86 | PK |
| H | 9748.00 | 43.12 | 30.85 | 7.45 | 24.69 | 44.41 | 54.00 | -9.59 | AV |
| H | 12185.00 | 54.72 | 31.02 | 8.99 | 25.57 | 58.26 | 74.00 | -15.74 | PK |
| H | 12185.00 | 43.68 | 31.02 | 8.99 | 25.57 | 47.22 | 54.00 | -6.78 | AV |

| Polar (H/V) | Frequency (MHz) | Meter Reading (dBuV) | Pre-amplifier (dB) | Cable Loss (dB) | Antenna Factor (dB) | Emission Level (dBuV/m) | Limits (dBuV/m) | Margin (dB) | Detector Type |
|---|---|---|---|---|---|---|---|---|---|
| High Channel:2462MHz | | | | | | | | | |
| V | 4924.00 | 54.76 | 30.55 | 5.77 | 24.66 | 54.64 | 74.00 | -19.36 | PK |
| V | 4924.00 | 43.63 | 30.55 | 5.77 | 24.66 | 43.51 | 54.00 | -10.49 | AV |
| V | 7386.00 | 50.58 | 30.33 | 6.32 | 24.55 | 51.12 | 74.00 | -22.88 | PK |
| V | 7386.00 | 43.57 | 30.33 | 6.32 | 24.55 | 44.11 | 54.00 | -9.89 | AV |
| V | 9848.00 | 51.61 | 30.85 | 7.45 | 24.69 | 52.90 | 74.00 | -21.10 | PK |
| V | 9848.00 | 43.38 | 30.85 | 7.45 | 24.69 | 44.67 | 54.00 | -9.33 | AV |
| V | 12310.00 | 54.07 | 31.02 | 8.99 | 25.57 | 57.61 | 74.00 | -16.39 | PK |
| V | 12310.00 | 43.36 | 31.02 | 8.99 | 25.57 | 46.90 | 54.00 | -7.10 | AV |
| H | 4924.00 | 52.60 | 30.55 | 5.77 | 24.66 | 52.48 | 74.00 | -21.52 | PK |
| H | 4924.00 | 43.18 | 30.55 | 5.77 | 24.66 | 43.06 | 54.00 | -10.94 | AV |
| H | 7386.00 | 51.41 | 30.33 | 6.32 | 24.55 | 51.95 | 74.00 | -22.05 | PK |
| H | 7386.00 | 43.20 | 30.33 | 6.32 | 24.55 | 43.74 | 54.00 | -10.26 | AV |
| H | 9848.00 | 50.11 | 30.85 | 7.45 | 24.69 | 51.40 | 74.00 | -22.60 | PK |
| H | 9848.00 | 43.23 | 30.85 | 7.45 | 24.69 | 44.52 | 54.00 | -9.48 | AV |
| H | 12310.00 | 50.69 | 31.02 | 8.99 | 25.57 | 54.23 | 74.00 | -19.77 | PK |
| H | 12310.00 | 43.79 | 31.02 | 8.99 | 25.57 | 47.33 | 54.00 | -6.67 | AV |

Remark:
1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,
Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

## 5.RADIATED BAND EMISSIONMEASUREMENT

### 5.1 TEST REQUIREMENT:

| | |
|---|---|
| Test Requirement: | FCC Part15 C Section 15.209 and 15.205 |
| Test Method: | ANSI C63.10: 2013 |
| Test Frequency Range: | All of the restrict bands were tested, only the worst band's (2310MHz to 2500MHz) data was showed. |
| Test site: | Measurement Distance: 3m |
| Receiver setup: | See below |

| Frequency | Detector | RBW | VBW | Value |
|---|---|---|---|---|
| Above 1GHz | Peak | 1MHz | 3MHz | Peak |
| | Average | 1MHz | 3MHz | Average |

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

| FREQUENCY (MHz) | Class B (dBuV/m) (at 3M) | |
|---|---|---|
| | PEAK | AVERAGE |
| Above 1000 | 74 | 54 |

Notes:

(1) The limit for radiated test was performed according to FCC PART 15C.

(2) The tighter limit applies at the band edges.

(3) Emission level (dBuV/m)=20log Emission level (uV/m).

### 5.2 TEST PROCEDURE

Above 1GHz test procedure as below:

a. 1. The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter camber. 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 antenna height 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 rota table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could bestopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dBmargin would be re-tested one by one using peak, quasi-peak or average method as specified and then reportedin a data sheet.

g. Test the EUT in the lowest channel,the Highest channel

Note:

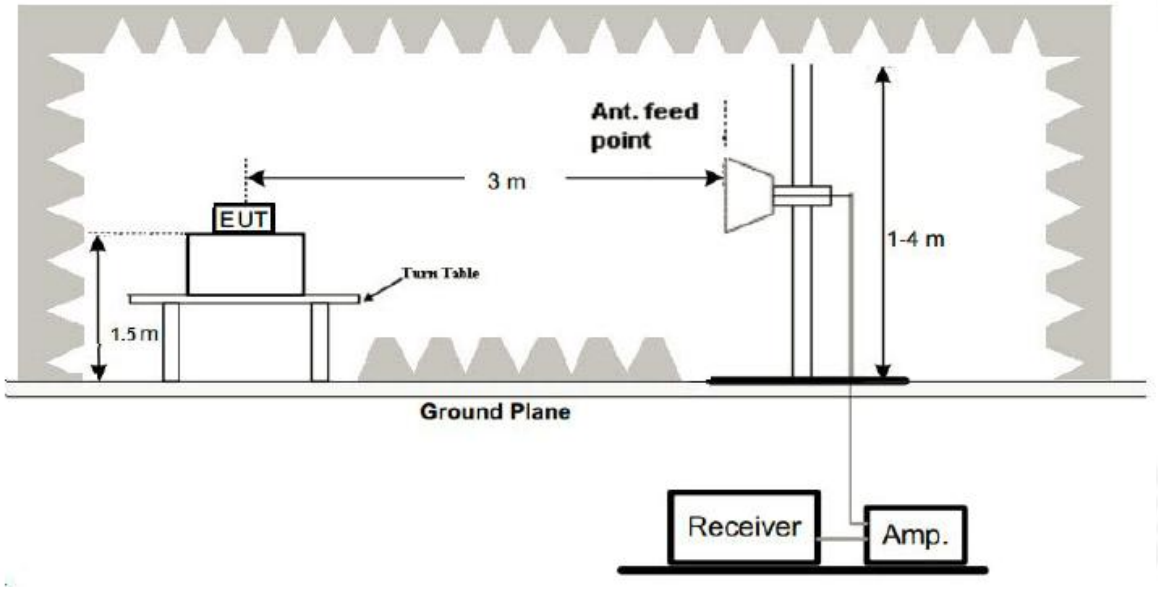
Both horizontal and vertical antenna polarities were tested
and performed pretest to three orthogonal axis. The worst case emissions were reported

### 5.3 DEVIATION FROM TEST STANDARD

No deviation

## 5.4 TEST SETUP

Radiated Emission Test-Up Frequency Above 1GHz




## 5.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

5.6 TEST RESULT

| | Polar (H/V) | Frequency (MHz) | Meter Reading (dBuV) | Pre-amplifier (dB) | Cable Loss (dB) | Antenna Factor (dB/m) | Emission level (dBuV/m) | Limit (dBuV/m) | Detector Type | Result |
|---|---|---|---|---|---|---|---|---|---|---|
| 802.11b | LowChannel 2412MHz | | | | | | | | | |
| | H | 2390.00 | 54.24 | 30.22 | 4.85 | 23.98 | 52.85 | 74.00 | PK | PASS |
| | H | 2390.00 | 44.05 | 30.22 | 4.85 | 23.98 | 42.66 | 54.00 | AV | PASS |
| | H | 2400.00 | 53.09 | 30.22 | 4.85 | 23.98 | 51.70 | 74.00 | PK | PASS |
| | H | 2400.00 | 44.46 | 30.22 | 4.85 | 23.98 | 43.07 | 54.00 | AV | PASS |
| | V | 2390.00 | 54.09 | 30.22 | 4.85 | 23.98 | 52.70 | 74.00 | PK | PASS |
| | V | 2390.00 | 44.85 | 30.22 | 4.85 | 23.98 | 43.46 | 54.00 | AV | PASS |
| | V | 2400.00 | 54.06 | 30.22 | 4.85 | 23.98 | 52.67 | 74.00 | PK | PASS |
| | V | 2400.00 | 44.43 | 30.22 | 4.85 | 23.98 | 43.04 | 54.00 | AV | PASS |
| | HighChannel 2462MHz | | | | | | | | | |
| | H | 2483.50 | 53.76 | 30.22 | 4.85 | 23.98 | 52.37 | 74.00 | PK | PASS |
| | H | 2483.50 | 44.74 | 30.22 | 4.85 | 23.98 | 43.35 | 54.00 | AV | PASS |
| | H | 2500.00 | 54.43 | 30.22 | 4.85 | 23.98 | 53.04 | 74.00 | PK | PASS |
| | H | 2500.00 | 44.50 | 30.22 | 4.85 | 23.98 | 43.11 | 54.00 | AV | PASS |
| | V | 2483.50 | 54.45 | 30.22 | 4.85 | 23.98 | 53.06 | 74.00 | PK | PASS |
| | V | 2483.50 | 44.72 | 30.22 | 4.85 | 23.98 | 43.33 | 54.00 | AV | PASS |
| | V | 2500.00 | 53.61 | 30.22 | 4.85 | 23.98 | 52.22 | 74.00 | PK | PASS |
| | V | 2500.00 | 44.38 | 30.22 | 4.85 | 23.98 | 42.99 | 54.00 | AV | PASS |
| 802.11g | LowChannel 2412MHz | | | | | | | | | |
| | H | 2390.00 | 53.10 | 30.22 | 4.85 | 23.98 | 51.71 | 74.00 | PK | PASS |
| | H | 2390.00 | 44.10 | 30.22 | 4.85 | 23.98 | 42.71 | 54.00 | AV | PASS |
| | H | 2400.00 | 53.45 | 30.22 | 4.85 | 23.98 | 52.06 | 74.00 | PK | PASS |
| | H | 2400.00 | 44.62 | 30.22 | 4.85 | 23.98 | 43.23 | 54.00 | AV | PASS |
| | V | 2390.00 | 54.65 | 30.22 | 4.85 | 23.98 | 53.26 | 74.00 | PK | PASS |
| | V | 2390.00 | 44.48 | 30.22 | 4.85 | 23.98 | 43.09 | 54.00 | AV | PASS |
| | V | 2400.00 | 54.95 | 30.22 | 4.85 | 23.98 | 53.56 | 74.00 | PK | PASS |
| | V | 2400.00 | 44.03 | 30.22 | 4.85 | 23.98 | 42.64 | 54.00 | AV | PASS |
| | High Channel 2462MHz | | | | | | | | | |
| | H | 2483.50 | 53.31 | 30.22 | 4.85 | 23.98 | 51.92 | 74.00 | PK | PASS |
| | H | 2483.50 | 44.65 | 30.22 | 4.85 | 23.98 | 43.26 | 54.00 | AV | PASS |
| | H | 2500.00 | 54.18 | 30.22 | 4.85 | 23.98 | 52.79 | 74.00 | PK | PASS |
| | H | 2500.00 | 44.33 | 30.22 | 4.85 | 23.98 | 42.94 | 54.00 | AV | PASS |
| | V | 2483.50 | 53.64 | 30.22 | 4.85 | 23.98 | 52.25 | 74.00 | PK | PASS |
| | V | 2483.50 | 44.56 | 30.22 | 4.85 | 23.98 | 43.17 | 54.00 | AV | PASS |
| | V | 2500.00 | 54.57 | 30.22 | 4.85 | 23.98 | 53.18 | 74.00 | PK | PASS |
| | V | 2500.00 | 44.27 | 30.22 | 4.85 | 23.98 | 42.88 | 54.00 | AV | PASS |

Remark:
1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier, Margin= Emission Level - Limit

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 802.11n20 | LowChannel 2412MHz | | | | | | | | |
| | H | 2390.00 | 53.99 | 30.22 | 4.85 | 23.98 | 52.60 | 74.00 | PK | PASS |
| | H | 2390.00 | 44.88 | 30.22 | 4.85 | 23.98 | 43.49 | 54.00 | AV | PASS |
| | H | 2400.00 | 54.70 | 30.22 | 4.85 | 23.98 | 53.31 | 74.00 | PK | PASS |
| | H | 2400.00 | 44.94 | 30.22 | 4.85 | 23.98 | 43.55 | 54.00 | AV | PASS |
| | V | 2390.00 | 53.71 | 30.22 | 4.85 | 23.98 | 52.32 | 74.00 | PK | PASS |
| | V | 2390.00 | 44.56 | 30.22 | 4.85 | 23.98 | 43.17 | 54.00 | AV | PASS |
| | V | 2400.00 | 54.25 | 30.22 | 4.85 | 23.98 | 52.86 | 74.00 | PK | PASS |
| | V | 2400.00 | 44.94 | 30.22 | 4.85 | 23.98 | 43.55 | 54.00 | AV | PASS |
| | High Channel 2462MHz | | | | | | | | |
| | H | 2483.50 | 54.67 | 30.22 | 4.85 | 23.98 | 53.28 | 74.00 | PK | PASS |
| | H | 2483.50 | 44.81 | 30.22 | 4.85 | 23.98 | 43.42 | 54.00 | AV | PASS |
| | H | 2500.00 | 53.75 | 30.22 | 4.85 | 23.98 | 52.36 | 74.00 | PK | PASS |
| | H | 2500.00 | 44.70 | 30.22 | 4.85 | 23.98 | 43.31 | 54.00 | AV | PASS |
| | V | 2483.50 | 54.18 | 30.22 | 4.85 | 23.98 | 52.79 | 74.00 | PK | PASS |
| | V | 2483.50 | 44.93 | 30.22 | 4.85 | 23.98 | 43.54 | 54.00 | AV | PASS |
| | V | 2500.00 | 54.91 | 30.22 | 4.85 | 23.98 | 53.52 | 74.00 | PK | PASS |
| | V | 2500.00 | 44.97 | 30.22 | 4.85 | 23.98 | 43.58 | 54.00 | AV | PASS |

Remark:

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier, Margin= Emission Level - Limit

## 6.POWER SPECTRAL DENSITY TEST

| | |
|---|---|
| Test Requirement: | FCC Part15 C Section 15.247 (e) |
| Test Method: | ANSI C63.10:2013 and KDB558074 D01DTS Meas Guidancev05r02 |

### 6.1 APPLIED PROCEDURES / LIMIT

| FCC Part15 (15.247) , Subpart C | | | | |
|---|---|---|---|---|
| Section | Test Item | Limit | Frequency Range (MHz) | Result |
| 15.247 | Power Spectral Density | 8dBm/3kHz | 2400-2483.5 | PASS |

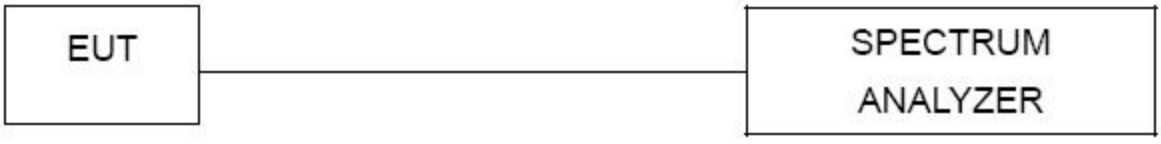
### 6.2 TEST PROCEDURE

1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS bandwidth.
3. Set the RBW to: 3 kHz ≤ RBW ≤ 100 kHz.
4. Set the VBW ≥ 3 x RBW.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level within the RBW.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

### 6.3 DEVIATION FROM STANDARD

No deviation.

### 6.4 TEST SETUP




### 6.5 EUT OPERATION CONDITIONS

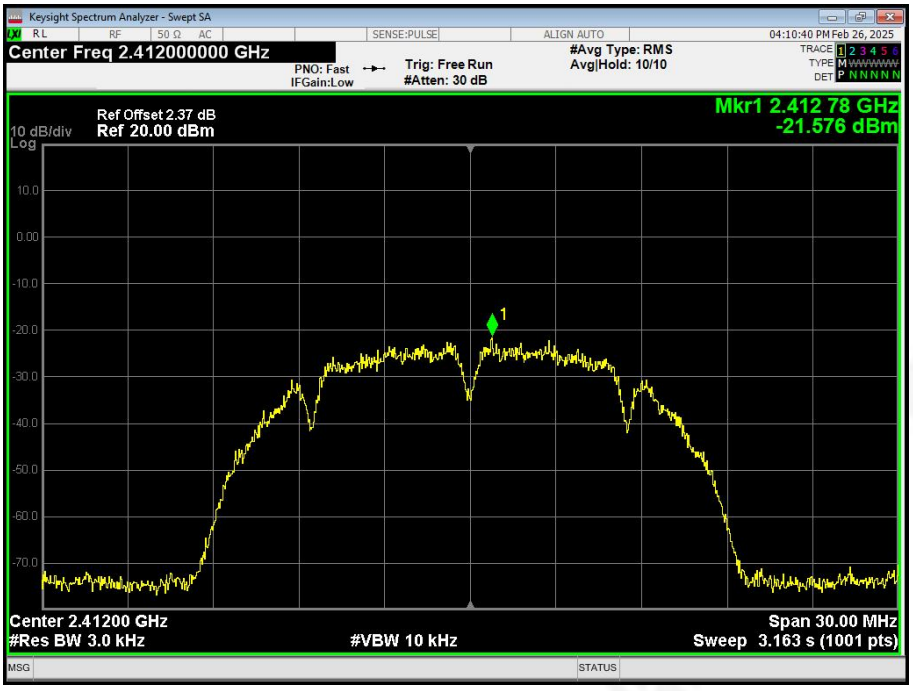
The EUT tested system was configured as the statements of 2.1 Unless otherwise a special operating condition is specified in the follows during the testing.

## 6.6 TEST RESULT

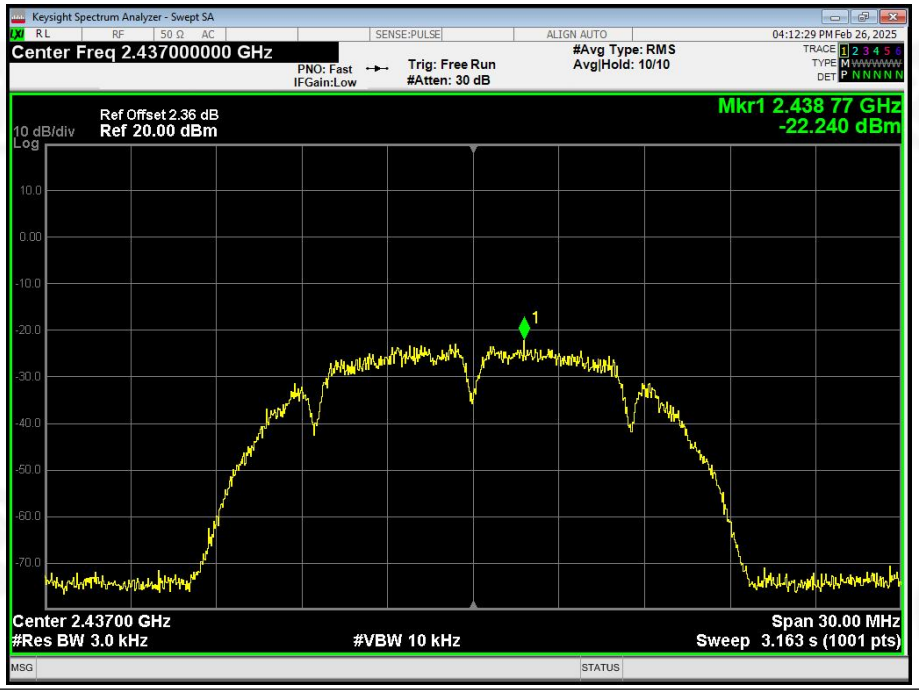
| | | | |
|---|---|---|---|
| Temperature: | 26℃ | Relative Humidity: | 54% |
| Pressure: | 101kPa | Test Voltage : | DC 3V |
| Test Mode : | TX b Mode | | |

| Frequency | Power Spectral Density (dBm/3kHz) | Limit (dBm/3kHz) | Result |
|---|---|---|---|
| 2412 MHz | -21.576 | 8 | PASS |
| 2437 MHz | -22.24 | 8 | PASS |
| 2462 MHz | -22.372 | 8 | PASS |

**TX CH01**



## TX CH06

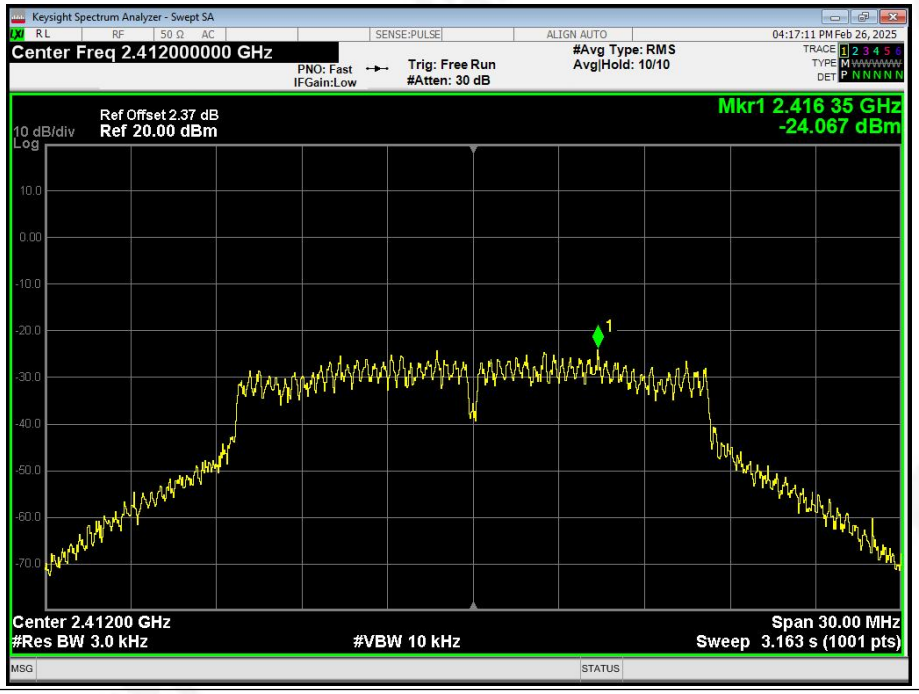



## TX CH11

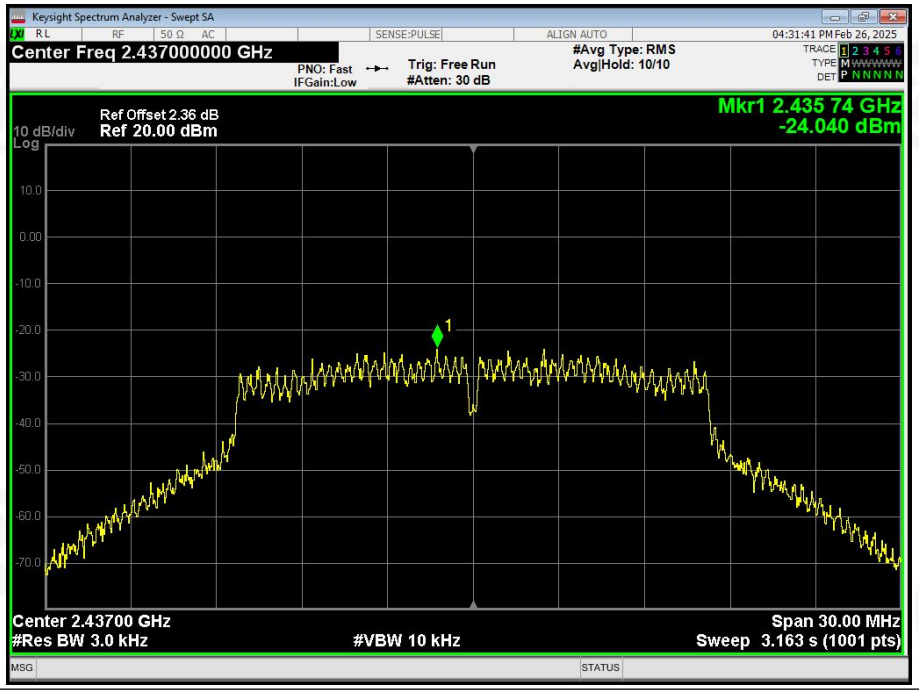
| Temperature: | 26℃ | Relative Humidity: | 54% |
|---|---|---|---|
| Pressure: | 101kPa | Test Voltage: | DC 3V |
| Test Mode : | TX g Mode | | |

| Frequency | Power Spectral Density (dBm/3kHz) | Limit (dBm/3kHz) | Result |
|---|---|---|---|
| 2412 MHz | -24.067 | 8 | PASS |
| 2437 MHz | -24.04 | 8 | PASS |
| 2462 MHz | -23.983 | 8 | PASS |

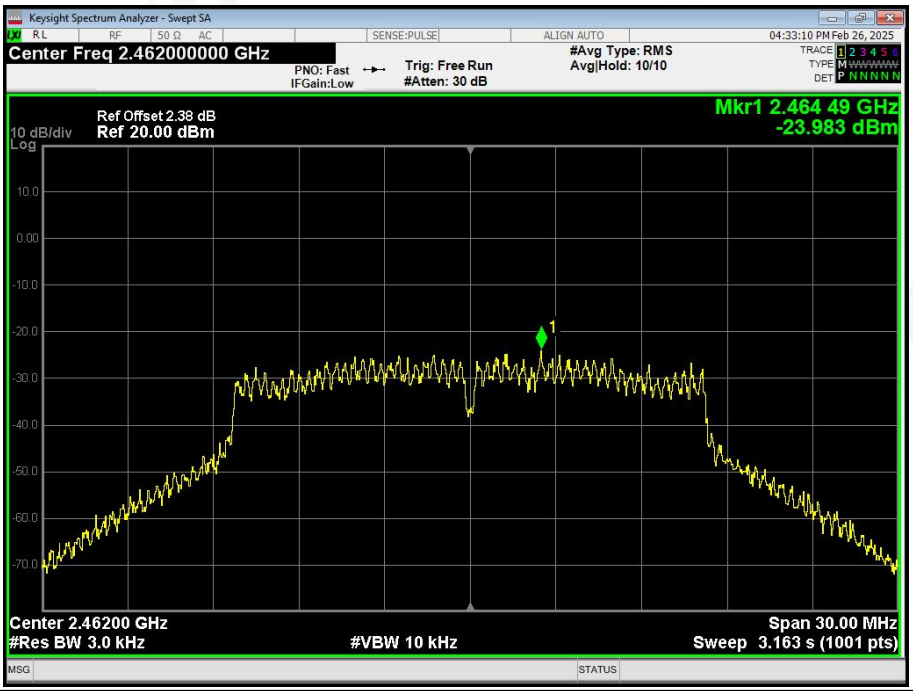
**TX CH01**



**TX CH06**



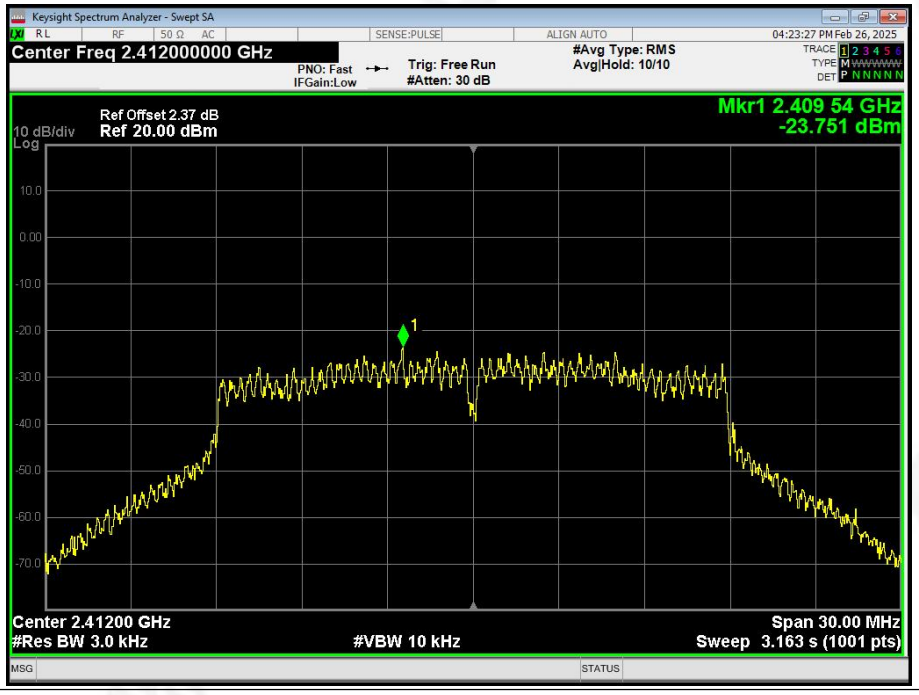

**TX CH11**



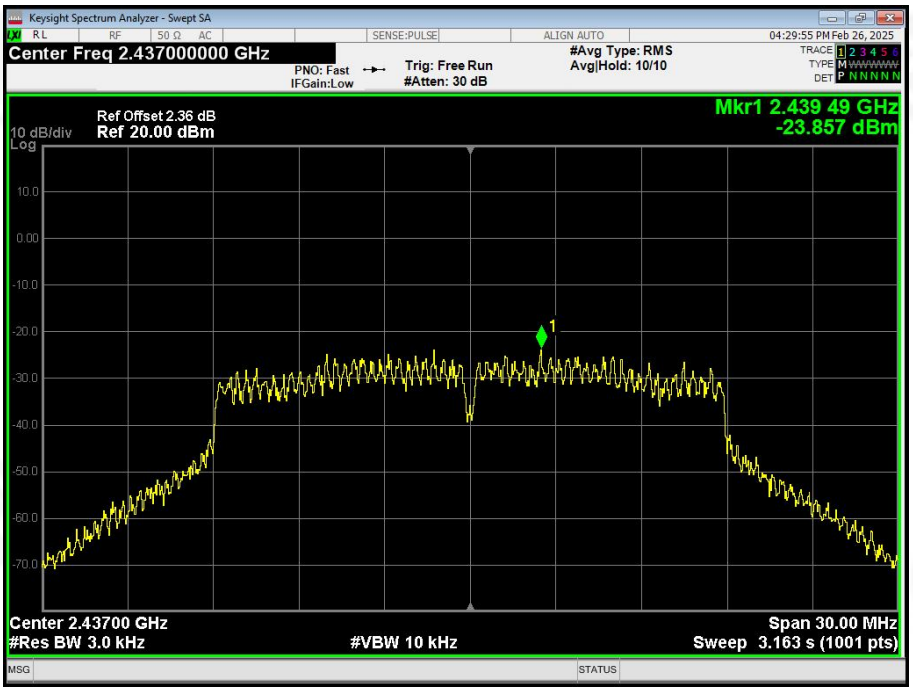
| Temperature: | 26℃ | Relative Humidity: | 54% |
|---|---|---|---|
| Pressure: | 101kPa | Test Voltage: | DC 3V |
| Test Mode : | TX n Mode(20M) | | |

| Frequency | Power Spectral Density (dBm/3kHz) | Limit (dBm/3kHz) | Result |
|---|---|---|---|
| 2412 MHz | -23.751 | 8 | PASS |
| 2437 MHz | -23.857 | 8 | PASS |
| 2462 MHz | -24.556 | 8 | PASS |

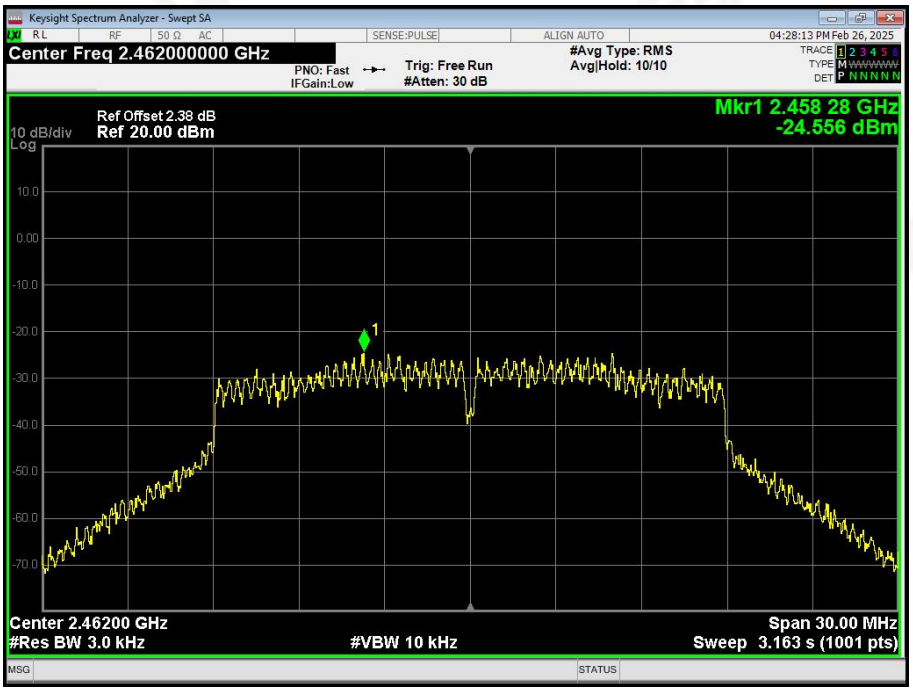
**TX CH01**



## TX CH06




## TX CH11



## 7. CHANNEL BANDWIDTH OCCUPY BANDWIDTH

| | |
|---|---|
| Test Requirement: | FCC Part15 C Section 15.247 (a)(2) |
| Test Method: | ANSI C63.10:2013 and KDB558074 D01DTS Meas Guidancev05r02 |

### 7.1 APPLIED PROCEDURES / LIMIT

| FCC Part15 (15.247) , Subpart C | | | | |
|---|---|---|---|---|
| Section | Test Item | Limit | Frequency Range (MHz) | Result |
| 15.247(a)(2) | Bandwidth | >= 500KHz (6dB bandwidth) | 2400-2483.5 | PASS |

### 7.2 TEST PROCEDURE

1. Set RBW = 100 kHz.
2. Set the video bandwidth (VBW) ≥ 3 xRBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

### 7.3 DEVIATION FROM STANDARD

No deviation.

### 7.4 TEST SETUP


### 7.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

7.6 TEST RESULT

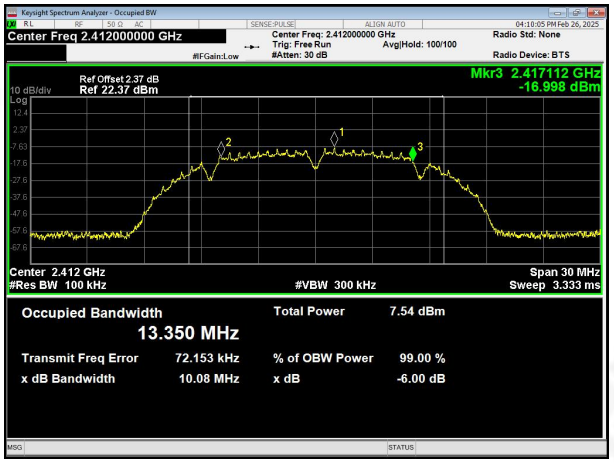
| | | | |
|---|---|---|---|
| Temperature: | 26℃ | Relative Humidity: | 54% |
| Pressure: | 101kPa | Test Voltage : | DC 3V |

| Test CH | -6dB Occupy Bandwidth (MHz) | | | | |
|---|---|---|---|---|---|
| | 802.11b | 802.11g | 802.11n(HT20) | Limit(KHz) | Result |
| Lowest | 10.08 | 15.116 | 15.107 | >500 | Pass |
| Middle | 10.097 | 15.104 | 15.099 | | |
| Highest | 10.049 | 15.096 | 15.113 | | |

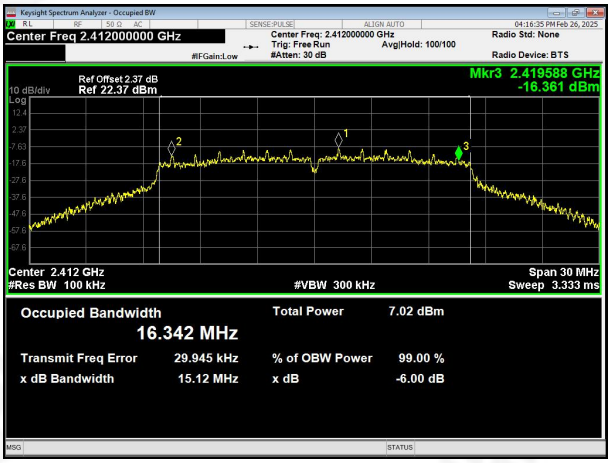
Test plot as follows:

## Lowest channel

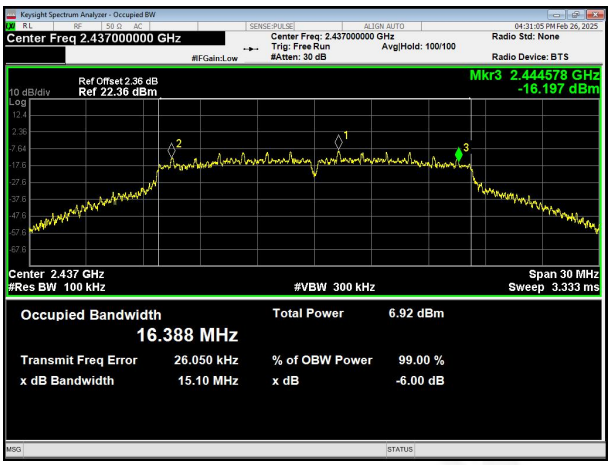
### 802.11b



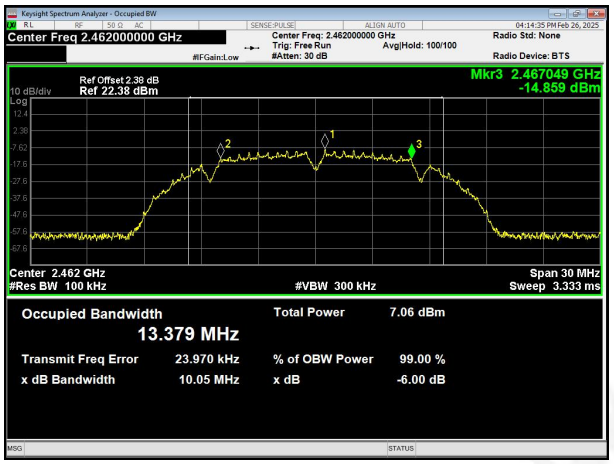

### 802.11g

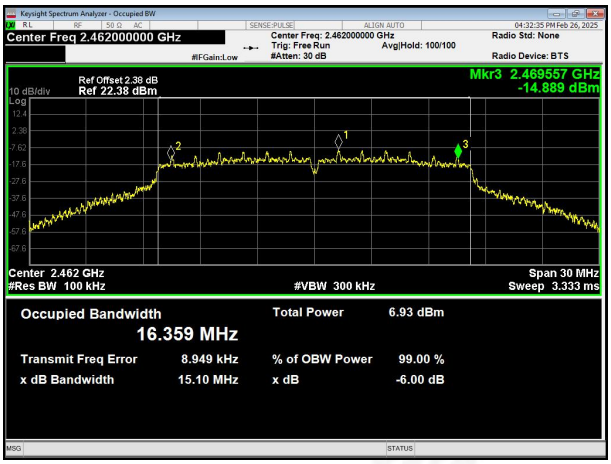



## Middle channel

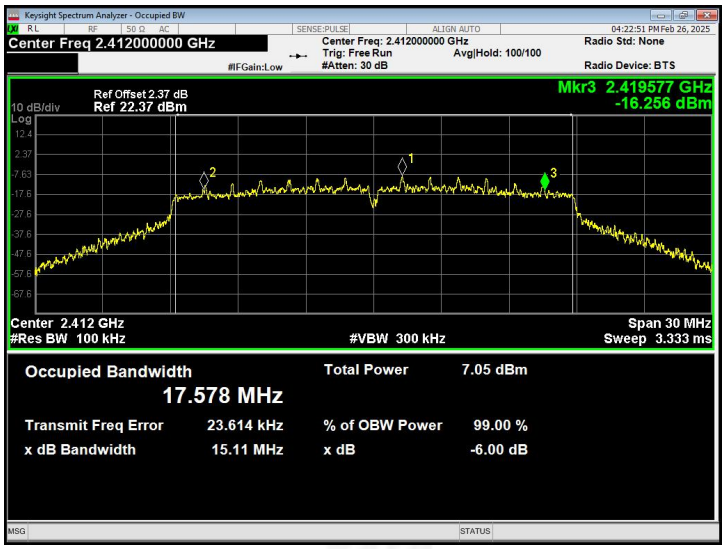

## Highest channel



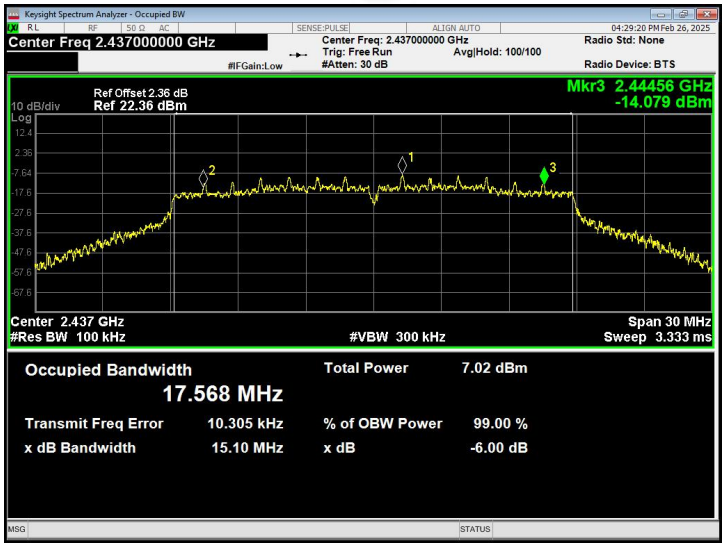



## Lowest channel

### 802.11n20




Middle channel




Highest channel

## 8.PEAK OUTPUT POWER TEST

| | |
|---|---|
| Test Requirement: | FCC Part15 C Section 15.247 (b)(3) |
| Test Method: | ANSI C63.10:2013 and KDB558074 D01DTS Meas Guidancev05r02 |

### 8.1 APPLIED PROCEDURES/LIMIT

| FCC Part15 (15.247) , Subpart C | | | | |
|---|---|---|---|---|
| Section | Test Item | Limit | Frequency Range (MHz) | Result |
| 15.247(b)(3) | Peak Output Power | 1 watt or 30dBm | 2400-2483.5 | PASS |

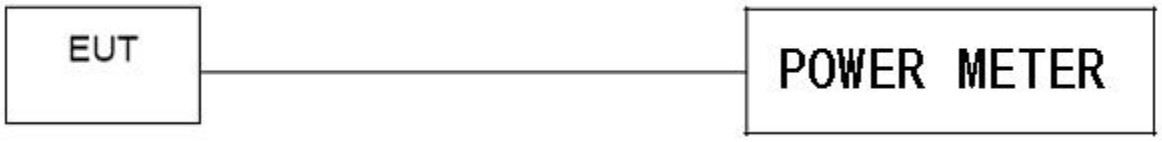
### 8.2 TEST PROCEDURE

a. The EUT was directly connected to the Power meter

### 8.3 DEVIATION FROM STANDARD

No deviation.

### 8.4 TEST SETUP




### 8.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

8.6 TEST RESULT

| | | | |
|---|---|---|---|
| Temperature: | 26℃ | Relative Humidity: | 54% |
| Pressure: | 101kPa | Test Voltage : | DC 3V |

| Test CH | Peak Output Power (dBm) | | | Limit(dBm) | Result |
|---|---|---|---|---|---|
| | 802.11b | 802.11g | 802.11n20 | | |
| Lowest | 2.613 | 5.181 | 5.171 | 30.00 | Pass |
| Middle | 2.306 | 5.165 | 5.097 | | |
| Highest | 2.052 | 5.131 | 4.911 | | |

## 9. CONDUCTED BAND EDGE AND SPURIOUS EMISSION

| | |
|---|---|
| Test Requirement: | FCC Part15 C Section 15.247 (d) |
| Test Method: | ANSI C63.10:2013 and KDB558074 D01DTS Meas Guidancev05r02 |

### 9.1 APPLICABLE STANDARD

in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator in operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, In addition, radiated emissions which fall in the restricted bands, as defined in§15.205(a), must also comply with the radiated emission limits specified in15.209(a).

### 9.2 TEST PROCEDURE

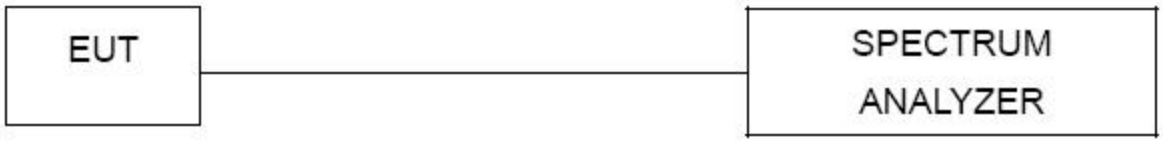
Using the following spectrum analyzer setting:

A) Set the RBW = 100KHz.
B) Set the VBW = 300KHz.
C) Sweep time = auto couple.
D) Detector function = peak.
E) Trace mode = max hold.
F) Allow trace to fully stabilize.

### 9.3 DEVIATION FROM STANDARD

No deviation.

### 9.4 TEST SETUP



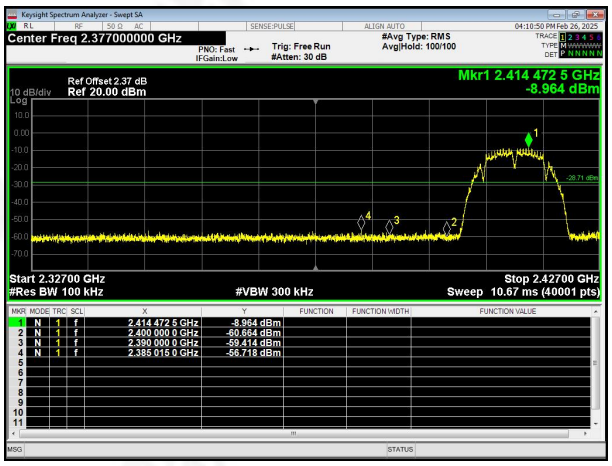

### 9.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

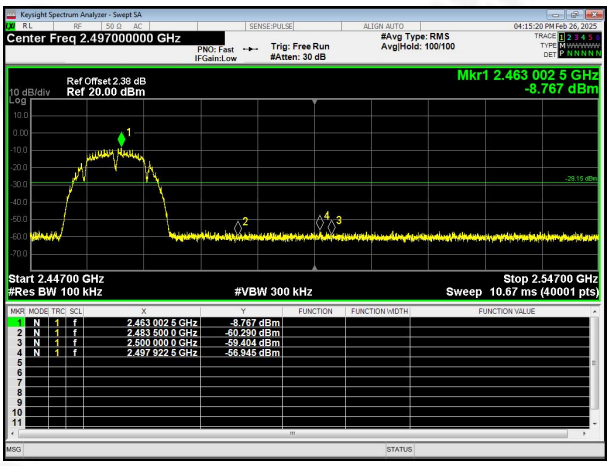
### 9.6 TEST RESULTS

Test plot as follows:

| Test mode: | 802.11b |
|---|---|

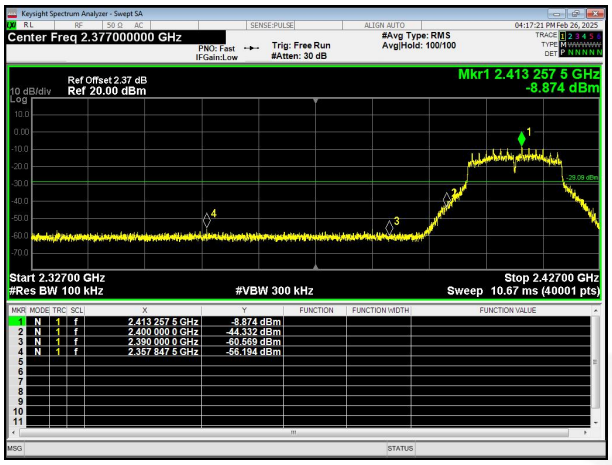



Lowest channel

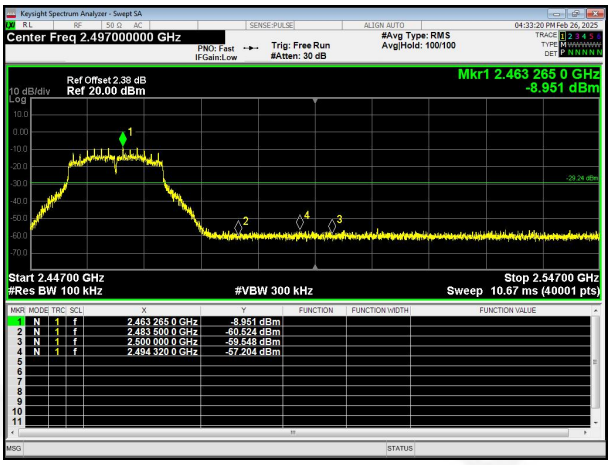



Highest channel

| Test mode: | 802.11g |
|---|---|

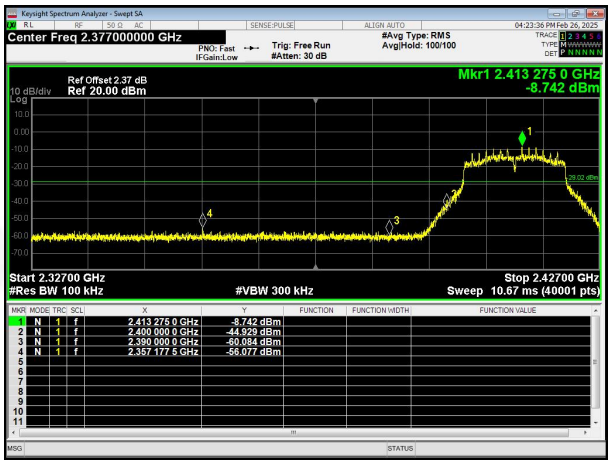



Lowest channel

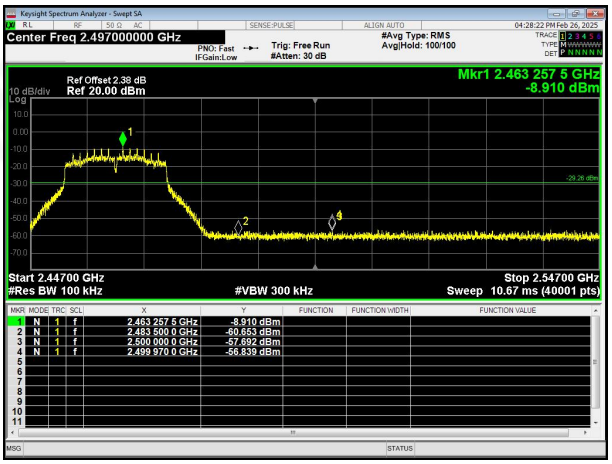



Highest channel

| Test mode: | 802.11n(HT20) |
|---|---|




Lowest channel

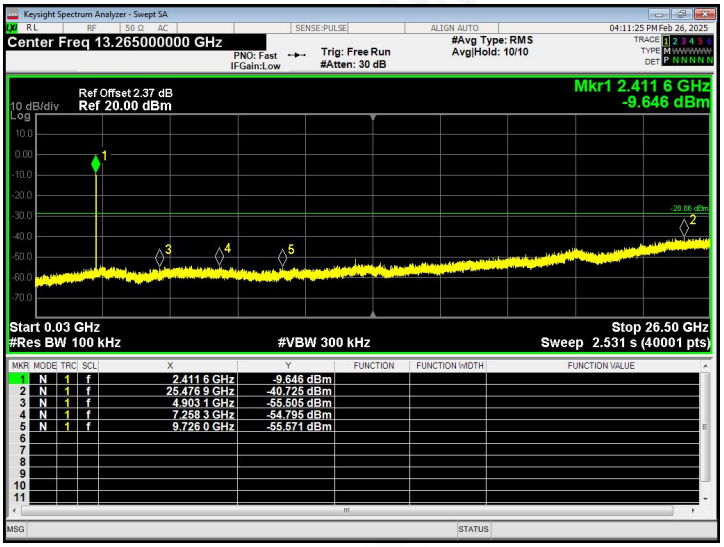



Highest channel

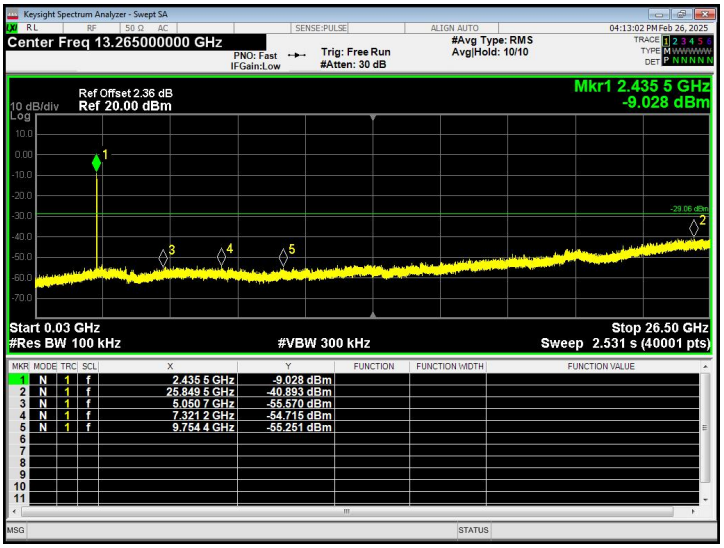
**Test plot as follows:**

802.11b

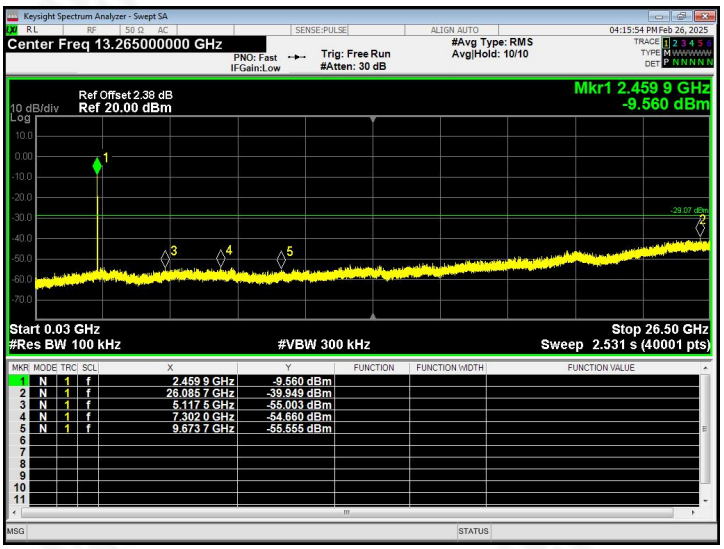
Lowest channel




Middle channel

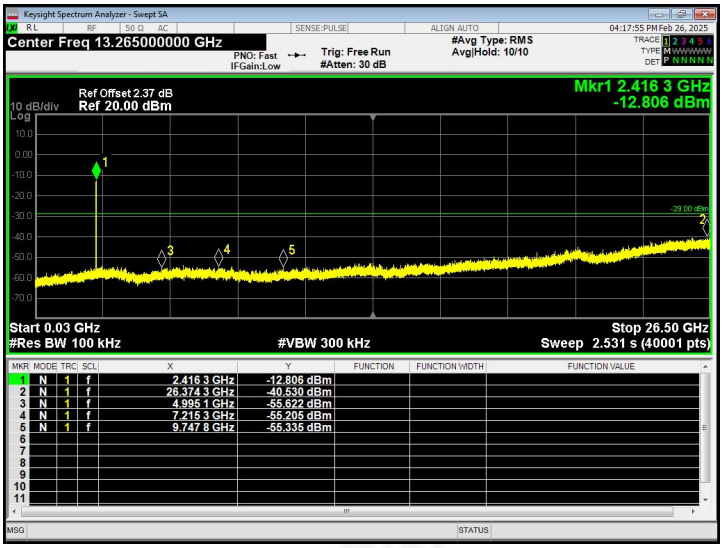



Highest channel

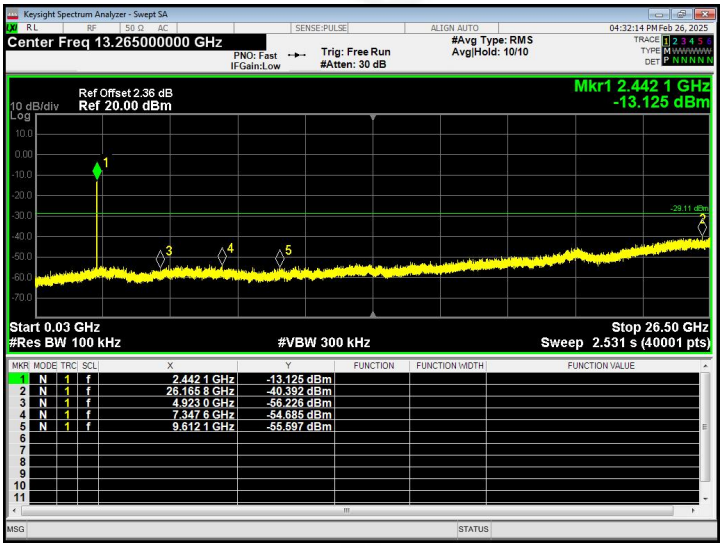


802.11g

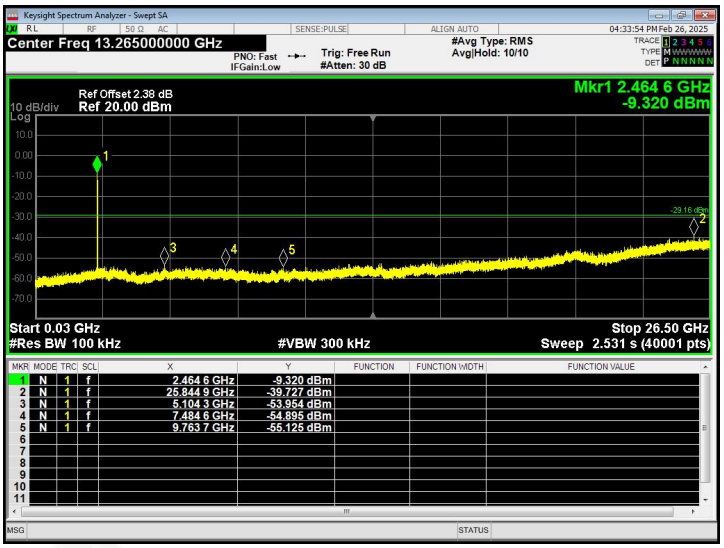
Lowest channel




Middle channel

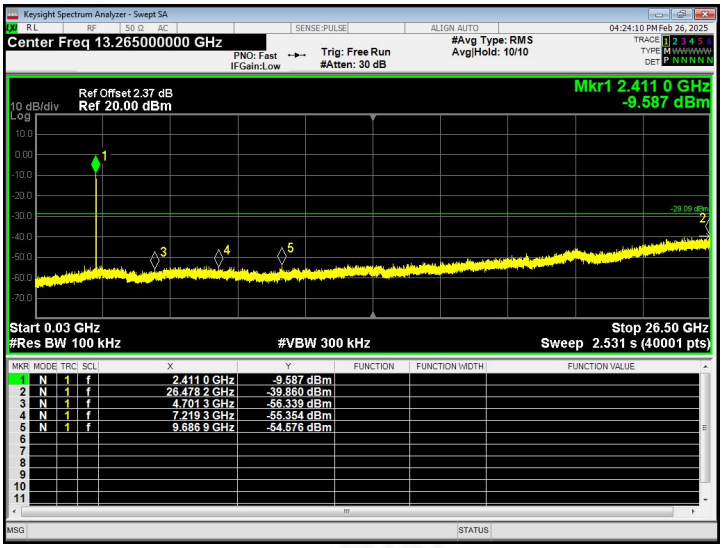



Highest channel

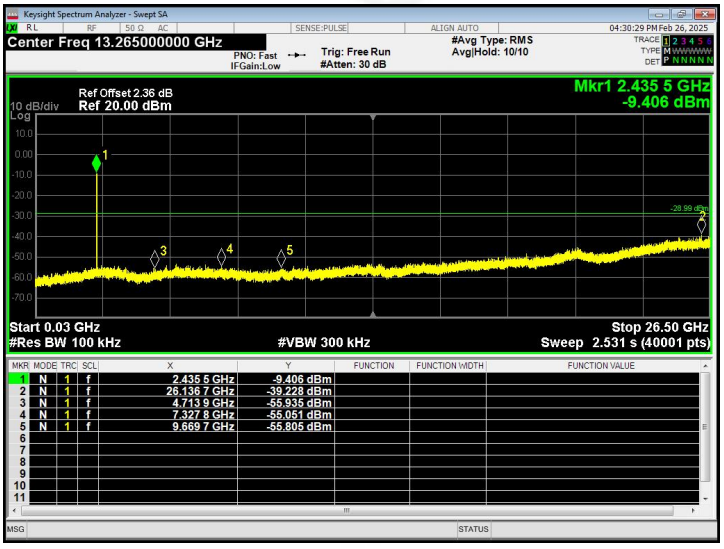


## 802.11n(HT20)

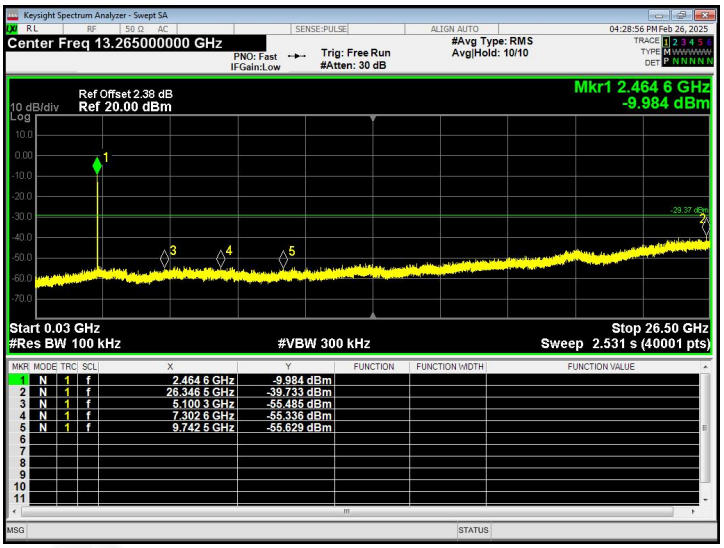
### Lowest channel




### Middle channel




### Highest channel



## 10. DUTY CYCLE

| Test Method: | ANSI C63.10:2013 |
|---|---|

### 10.1 APPLIED PROCEDURES / LIMIT

Measurements of duty cycle and transmission duration shall be performed using one of the following techniques:

a) A diode detector and an oscilloscope that together have a sufficiently short response time to permit accurate measurements of the ON and OFF times of the transmitted signal.

b) The zero-span mode on a spectrum analyzer or EMI receiver if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the ON and OFF times of the transmitted signal:

1) Set the center frequency of the instrument to the center frequency of the transmission.

2) Set RBW ≥ OBW if possible; otherwise, set RBW to the largest available value.

3) Set VBW ≥ RBW. Set detector = peak or average.

4) The zero-span measurement method shall not be used unless both RBW and VBW are > 50/*T* and the number of sweep points across duration *T* exceeds 100. (For example, if VBW and/or RBW are limited to 3 MHz, then the zero-span method of measuring the duty cycle shall not be used if *T* ≤ 16.7 µs.)

### 10.2 DEVIATION FROM STANDARD

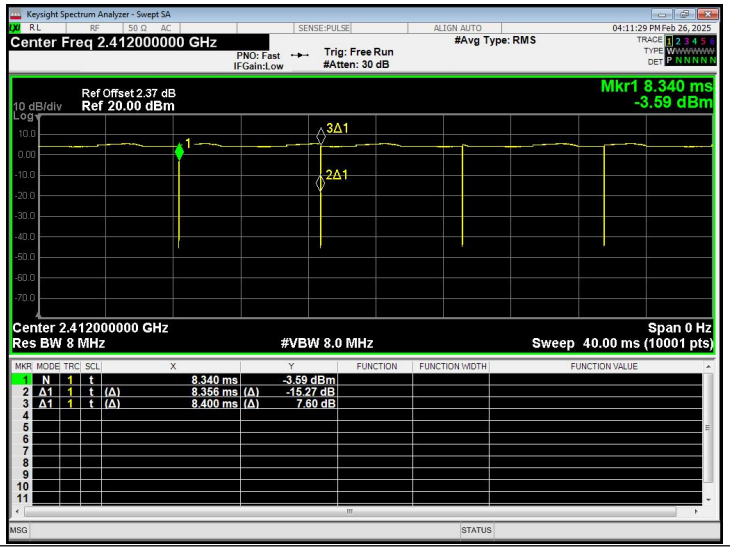
No deviation.

### 10.3 TEST SETUP

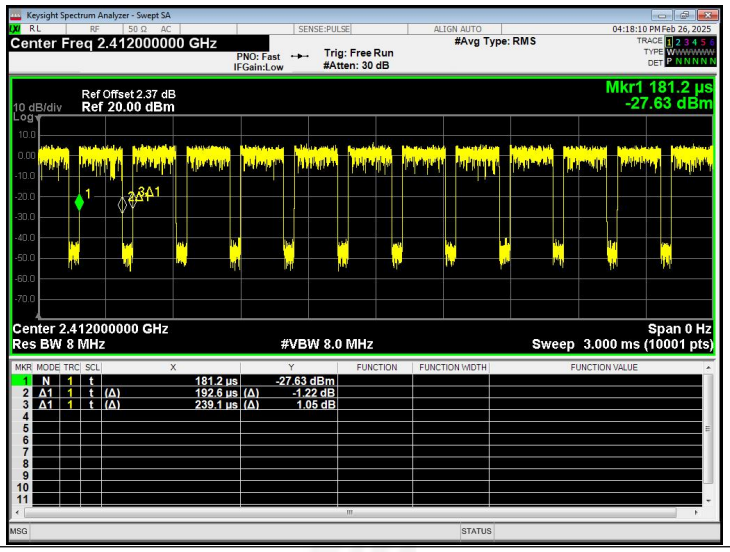
## 10.4 TEST RESULTS

| Mode | Frequency (MHz) | Duty Cycle (%) | Duty Cycle Correction Factor (dB) | Result |
|---|---|---|---|---|
| 802.11b | 2412 | 99.52 | 0 | Pass |
| 802.11g | 2412 | 79.17 | 1.01 | Pass |
| 802.11n20 | 2412 | 80.77 | 0.93 | Pass |

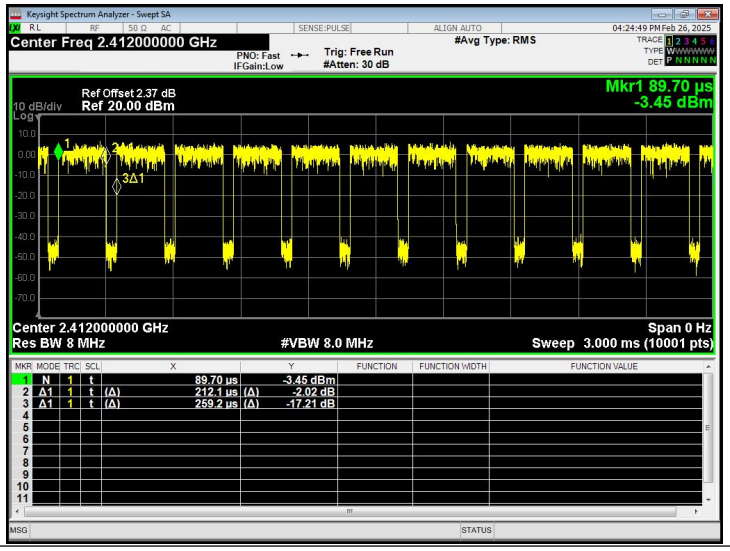
802.11b 2412MHz



802.11g 2412MHz




802.11n20 2412MHz




Note: All channel have been tested, and the report only reflects the worst case data.
Duty Cycle= Ton /Total*100%
Duty Cycle Correction Factor = 10log (1/Duty Cycle)

## 11. ANTENNA REQUIREMENT

| Standard requirement: | FCC Part15 C Section 15.203 /247(c) |
|---|---|
| 15.203 requirement:<br>An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §§ 15.211, 15.213, 15.217, 15.219, 15.221, or § 15.236. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with § 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.<br>15.247(c) (1)(i) requirement:<br>(i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.<br>A transmitter can only be sold or operated with antennas with which it was approved. | |
| EUT Antenna: | |
| The antenna is PCBl Antenna, the best case gain of the antenna is 2.21dBi, reference to the appendix II for details | |

## 12. TEST SETUP PHOTO

Reference to the appendix I for details.

## 13. EUT CONSTRUCTIONAL DETAILS

Reference to the appendix II for details.

**※※※※※ END OF REPORT ※※※※※**