# FCC Test Report

Report No.: AGC11805240901FR04

| | | |
|---|---|---|
| **FCC ID** | : | 2BK8B-DSDR23A |
| **APPLICATION PURPOSE** | : | Original Equipment |
| **PRODUCT DESIGNATION** | : | ATOM 2 Drone |
| **BRAND NAME** | : | Potensic |
| **MODEL NAME** | : | DSDR23A, DSDR23B, DSDR23C, DSDR23D |
| **APPLICANT** | : | Shenzhen Potensic Intelligent Co., Ltd. |
| **DATE OF ISSUE** | : | Dec. 18, 2024 |
| **STANDARD(S)** | : | FCC Part 15 Subpart C §15.247 |
| **REPORT VERSION** | : | V1.0 |

***A***ttestation of ***G***lobal ***C***ompliance (Shenzhen) Co., Ltd

## Report Revise Record

| Report Version | Revise Time | Issued Date | Valid Version | Notes |
|---|---|---|---|---|
| V1.0 | / | Dec. 18, 2024 | Valid | Initial Release |

# Table of Contents

## 1. General Information

| | |
|---|---|
| Applicant | Shenzhen Potensic Intelligent Co., Ltd. |
| Address | Room 1901, Jinqizhigu Building, Tangling Road, Nanshan District, Shenzhen, China |
| Manufacturer | Shenzhen Potensic Intelligent Co., Ltd. |
| Address | Room 1901, Jinqizhigu Building, Tangling Road, Nanshan District, Shenzhen, China |
| Factory | Shenzhen Potensic Intelligent Co., Ltd. |
| Address | Room 1901, Jinqizhigu Building, Tangling Road, Nanshan District, Shenzhen, China |
| Product Designation | ATOM 2 Drone |
| Brand Name | Potensic |
| Test Model | DSDR23A |
| Series Model(s) | DSDR23B, DSDR23C, DSDR23D |
| Difference Description | All the same except the model name |
| Date of receipt of test item | Sep. 19, 2024 |
| Date of Test | Sep. 19, 2024~Dec. 18, 2024 |
| Deviation from Standard | No any deviation from the test method |
| Condition of Test Sample | Normal |
| Test Result | Pass |
| Test Report Form No | AGCER-FCC-2.4G-V1 |

Note: The test results of this report relate only to the tested sample identified in this report

| | | |
|---|---|---|
| Prepared By | Bibo Zhang<br>(Project Engineer) | Dec. 18, 2024 |
| Reviewed By | Calvin Liu<br>(Reviewer) | Dec. 18, 2024 |
| Approved By | Angela Li<br>(Authorized Officer) | Dec. 18, 2024 |

# 2. Product Information

## 2.1 Product Technical Description

| | |
|---|---|
| Equipment Type | Custom IEEE 802.11 for 2.4GHz |
| Frequency Band | 2400MHz~2483.5MHz |
| Operation Frequency | 2415MHz~2470MHz |
| Output Power (Average) | 16.84dBm |
| Output Power (Peak) | 24.45dBm |
| Output Power (MIMO- Average) | 19.69dBm |
| Output Power (MIMO- Peak) | 27.15dBm |
| Modulation | OFDM (64-QAM, 16-QAM, QPSK, BPSK) |
| Number of channels | 6 |
| Hardware Version | V06 |
| Software Version | V4.2.4 |
| Antenna Designation | Dipole Antenna for ANT 1 (Chain A Port)<br>Dipole Antenna for ANT 2 (Chain B Port) |
| Antenna Gain | Please refer to report section 2.9 description |
| Number of transmit chain | 2 (Custom IEEE 802.11 support MIMO) |
| Power Supply | DC 7.7V by battery |

## 2.2 Table of Carrier Frequency

| Channel | Frequency | Channel | Frequency | Channel | Frequency |
|---|---|---|---|---|---|
| 00 | 2415 MHz | 01 | 2425 MHz | 02 | 2435 MHz |
| 03 | 2445 MHz | 04 | 2455 MHz | 05 | 2465 MHz |
| 06 | 2470 MHz | \ | \ | \ | \ |

### 2.4 Related Submittal(S) / Grant (S)

This submittal(s) (test report) is intended for FCC ID: **2BK8B-DSDR23A,** filing to comply with Part 2, Part 15 of the Federal Communication Commission rules.

### 2.5 Test Methodology

The tests were performed according to following standards:

| No. | Identity | Document Title |
|---|---|---|
| 1 | FCC 47 CFR Part 2 | Frequency allocations and radio treaty matters; general rules and regulations |
| 2 | FCC 47 CFR Part 15 | Radio Frequency Devices |
| 3 | ANSI C63.10-2013 | American National Standard for Testing Unlicensed Wireless Devices |
| 4 | KDB 662911 | KDB 662911 D01 Multiple Transmitter Output v02r01Emissions Testing of Transmitters with Multiple Outputs in the Same Band (e.g., MIMO, Smart Antenna, etc) |

### 2.6 Special Accessories

Refer to section 4.4.

### 2.7 Equipment Modifications

Not available for this EUT intended for grant.

### 2.8 Antenna Requirement

| **Standard Requirement** |
|---|
| 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, 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.<br>15.247(b) (4) requirement:<br>The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi |
| **EUT Antenna:** |
| The non-detachable antenna inside the device cannot be replaced by the user at will. For the antenna gain, please refer to the description in Chapter 2.9 of the report. |

**2.9 Description of Available Antennas**

| Antenna Type | Frequency Band (MHz) | TX Paths | Bandwidth (MHz) | Max Peak Gain (dBi) | | Max Directional Gain (dBi) |
|---|---|---|---|---|---|---|
| | | | | Chain A | Chain B | |
| Custom IEEE 802.11 FPC Antenna List (2.4GHz 2*2 MIMO) | | | | | | |
| Dipole Antenna | 2400~2483.5 | 2 | 20 | 2.38 | 3.15 | 6.16 |

Note 1: The EUT supports Cyclic Delay Diversity (CDD) technology for Custom IEEE 802.11(OFDM) mode.

Note 2: The EUT supports Cyclic Delay Diversity (CDD) mode, and CDD signals are correlated.

If all antennas have the same gain, $G_{ANT}$, Directional gain = $G_{ANT}$ + Array Gain, where Array Gain is as follows.

- For power spectral density (PSD) measurements on devices:
  - Array Gain = 10 log ($N_{ANT}$/ $N_{SS}$) dB = 3.01;
- For power measurements on IEEE 802.11 devices:
  - Array Gain = 0 dB for $N_{ANT} \leq 4$;
  - Array Gain = 0 dB (i.e., no array gain) for channel widths ≥40 MHz for any $N_{ANT}$;
  - Array Gain = 5 log ($N_{ANT}$/$N_{SS}$) dB or 3 dB, whichever is less, for 20 MHz channel widths with $N_{ANT} \geq 5$.

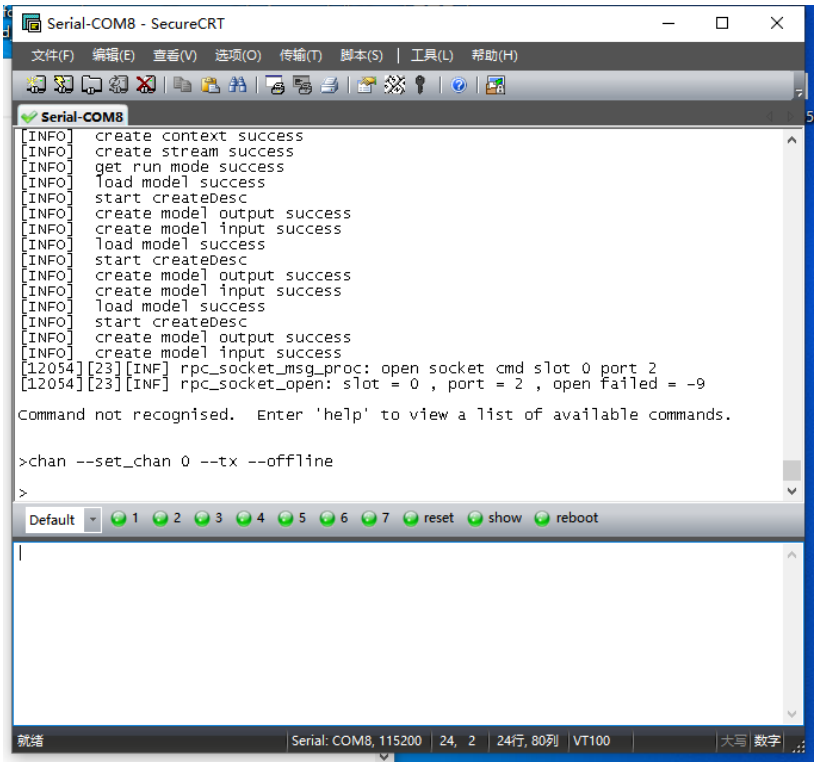
If antenna gains are not equal, Directional gain may be calculated by using the formulas applicable to equal gain antennas with $G_{ANT}$ set equal to the gain of the antenna having the highest gain.

## 2.10 Description of Test Software

**For Custom IEEE 802.11 mode:**

The test utility software used during testing was “SecureCRT”, and the version was “6.6.1”.

Software Setting Diagram




| Test Mode | Channel | Power Index | |
|---|---|---|---|
| | | Chain A | Chain B |
| Custom IEEE 802.11 | L/M/H | 18 | 18 |

# 3. Test Environment

## 3.1 Address of The Test Laboratory

Laboratory: Attestation of Global Compliance (Shenzhen) Co., Ltd.

Address: 1-2/F, Building 19, Junfeng Industrial Park, Chongqing Road, Heping Community, Fuhai Street, Bao'an District, Shenzhen, Guangdong, China

## 3.2 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

**CNAS-Lab Code: L5488**

Attestation of Global Compliance (Shenzhen) Co., Ltd. has been assessed and proved to follow CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories).

**A2LA-Lab Cert. No.: 5054.02**

Attestation of Global Compliance (Shenzhen) Co., Ltd. EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to follow ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

**FCC-Registration No.: 975832**

Attestation of Global Compliance (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the FCC (Federal Communications Commission). The acceptance letter from the FCC is maintained in our files with Registration 975832.

**IC-Registration No.: 24842 (CAB identifier: CN0063)**

Attestation of Global Compliance (Shenzhen) Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the Certification and Engineering Bureau of Industry Canada. The acceptance letter from the IC is maintained in our files with Registration 24842.

### 3.3 Environmental Conditions

| | Normal Conditions |
|---|---|
| Temperature range (℃) | 15 - 35 |
| Relative humidity range | 20 % - 75 % |
| Pressure range (kPa) | 86 - 106 |

### 3.4 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%.

| Item | Measurement Uncertainty |
|---|---|
| Uncertainty of Conducted Emission for AC Port | $U_c$ = ±2.9 dB |
| Uncertainty of Radiated Emission for 9kHz-30MHz | $U_c$ = ±3.9 dB |
| Uncertainty of Radiated Emission for 30MHz-1GHz | $U_c$ = ±3.9 dB |
| Uncertainty of Radiated Emission above 1GHz | $U_c$ = ±4.9 dB |
| Uncertainty of RF Power Sensor, Conducted | $U_c$ = ±0.8 dB |
| Uncertainty of total RF Power, Conducted | $U_c$ = ±1.8 dB |
| Uncertainty of RF Power Density, Conducted | $U_c$ = ±2.6 dB |
| Uncertainty of Conducted Spurious Emissions for 9kHz-40GHz | $U_c$ = ±2.7dB |
| Uncertainty of Occupied Channel Bandwidth | $U_c$ = ±2.0 % |
| Uncertainty of Dwell Time | $U_c$ = ±0.2 % |

### 3.5 List of Equipment Used

| ● RF Conducted Test System | | | | | | | |
|---|---|---|---|---|---|---|---|
| Used | Equipment No. | Test Equipment | Manufacturer | Model No. | Serial No. | Last Cal. Date (YY-MM-DD) | Next Cal. Date (YY-MM-DD) |
| ☒ | AGC-ER-E036 | Spectrum Analyzer | Agilent | N9020A | MY49100060 | 2024-05-24 | 2025-05-23 |
| ☒ | AGC-ER-E062 | Power Sensor | Agilent | U2021XA | MY54110007 | 2024-02-01 | 2025-01-31 |
| ☒ | AGC-ER-E063 | Power Sensor | Agilent | U2021XA | MY54110009 | 2024-02-01 | 2025-01-31 |
| ☒ | AGC-ER-A001 | 6dB Attenuator | Eeatsheep | LM-XX-6-5W | N/A | 2023-09-21 | 2025-09-20 |
| ☒ | N/A | RF Connection Cable | N/A | 1# | N/A | Each time | N/A |
| ☒ | N/A | RF Connection Cable | N/A | 2# | N/A | Each time | N/A |

| ● Radiated Spurious Emission | | | | | | | |
|---|---|---|---|---|---|---|---|
| Used | Equipment No. | Test Equipment | Manufacturer | Model No. | Serial No. | Last Cal. Date (YY-MM-DD) | Next Cal. Date (YY-MM-DD) |
| ☒ | AGC-EM-E046 | EMI Test Receiver | R&S | ESCI | 10096 | 2024-02-01 | 2025-01-31 |
| ☒ | AGC-EM-E116 | EMI Test Receiver | R&S | ESCI | 100034 | 2024-05-24 | 2025-05-23 |
| ☒ | AGC-EM-E061 | Spectrum Analyzer | Agilent | N9010A | MY53470504 | 2024-05-28 | 2025-05-27 |
| ☒ | AGC-EM-E086 | Loop Antenna | ZHINAN | ZN30900C | 18051 | 2024-03-05 | 2026-03-04 |
| ☒ | AGC-EM-E001 | Wideband Antenna | SCHWARZBECK | VULB9168 | D69250 | 2023-05-11 | 2025-05-10 |
| ☒ | AGC-EM-E029 | Broadband Ridged Horn Antenna | ETS | 3117 | 00034609 | 2024-03-31 | 2025-03-30 |
| ☒ | AGC-EM-E082 | Horn Antenna | SCHWARZBECK | BBHA 9170 | #768 | 2023-09-24 | 2025-09-23 |
| ☒ | AGC-EM-E083 | Pre-amplifier | CHENGXI | EMC184045SE | 980508 | 2023-09-20 | 2025-09-19 |
| ☒ | AGC-EM-E146 | Pre-amplifier | ETS | 3117-PA | 00246148 | 2024-07-24 | 2026-07-23 |
| ☒ | AGC-EM-A119 | 2.4G Filter | SongYi | N/A | N/A | 2024-05-23 | 2025-05-22 |
| ☒ | AGC-EM-A138 | 6dB Attenuator | Eeatsheep | LM-XX-6-5W | N/A | 2023-06-09 | 2025-06-08 |

| ● Test Software | | | | | |
|---|---|---|---|---|---|
| Used | Equipment No. | Test Equipment | Manufacturer | Model No. | Version Information |
| ☒ | AGC-EM-S001 | CE Test System | R&S | ES-K1 | V1.71 |
| ☒ | AGC-EM-S003 | RE Test System | FARA | EZ-EMC | VRA-03A |
| ☒ | AGC-ER-S012 | BT/WIFI Test System | Tonscend | JS1120-2 | 2.6 |
| ☒ | AGC-EM-S011 | RSE Test System | Tonscend | TS+-Ver2.1(JS36-RSE) | 4.0.0.0 |

# 4.System Test Configuration

## 4.1 EUT Configuration

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

## 4.2 EUT Exercise

The Transmitter was operated in the normal operating mode. The TX frequency was fixed which was for the purpose of the measurements.

## 4.3 Configuration of Tested System


## 4.4 Equipment Used in Tested System

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

☐ Test Accessories Come from the Laboratory

☒ Test Accessories Come from the Manufacturer

| No. | Equipment | Manufacturer | Model No. | Specification Information | Cable |
|---|---|---|---|---|---|
| 1 | Battery | Xi'an SAFTY Energy Technology Co., Ltd | DSBT02B | DC 7.7V 2230mAh | N/A |

**4.5 Summary of Test Results**

| Item | FCC Rules | Description of Test | Result |
|---|---|---|---|
| 1 | §15.203&15.247(b)(4) | Antenna Equipment | Pass |
| 2 | §15.247 (b)(1) | RF Output Power | Pass |
| 3 | §15.247 (a)(1) | 6 dB Bandwidth | Pass |
| 4 | §15.247 (e) | Power Spectral Density | Pass |
| 5 | §15.247 (d) | Conducted Band Edge and Out-of-Band Emissions | Pass |
| 6 | §15.247 (d)&15.209 | Radiated Spurious Emission | Pass |
| 7 | §15.207 | AC Power Line Conducted Emission | N/A |

Note: The Custom IEEE 802.11 function cannot transmit when charging.

## 5. Description of Test Modes

| Summary table of Test Cases | |
|---|---|
| Test Item | Data Rate / Modulation |
| | Custom IEEE 802.11(OFDM)/MCS0-MCS7 Mbps |
| Radiated & Conducted Test Cases | Mode 1: Custom IEEE 802.11_TX CH00_2415 MHz_MCS0 Mbps<br>Mode 2: Custom IEEE 802.11_TX CH03_2445 MHz_ MCS0 Mbps<br>Mode 3: Custom IEEE 802.11_TX CH06_2470 MHz_ MCS0 Mbps |
| AC Conducted Emission | N/A |

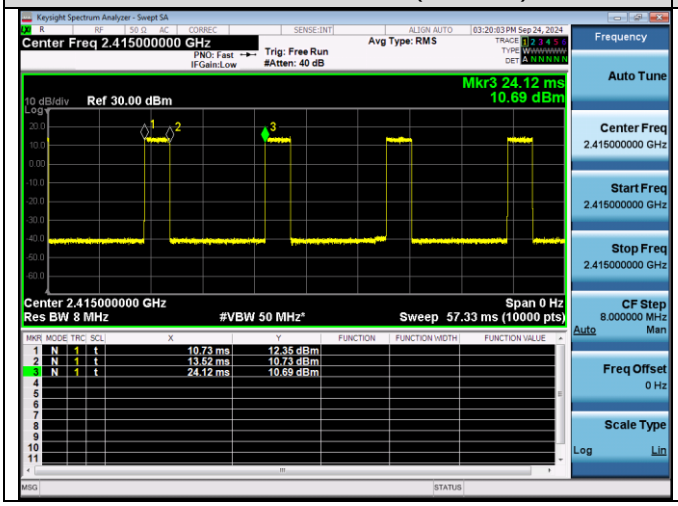
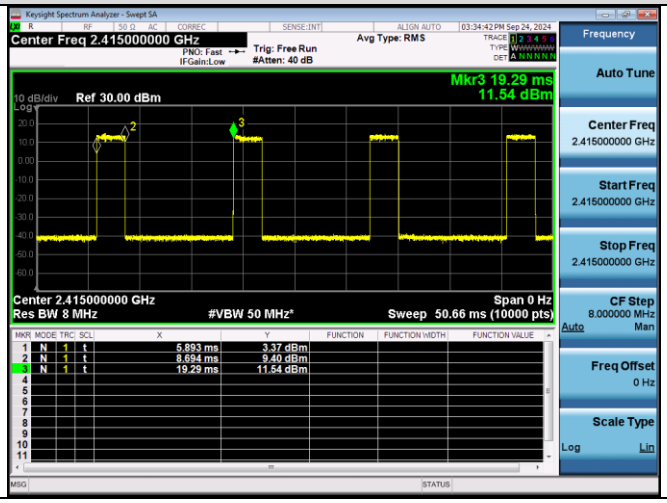
Note:
1. The battery is full-charged during the test.
2. For Radiated Emission, 3axis were chosen for testing for each applicable mode.
3. For Conducted Test method, a temporary antenna connector is provided by the manufacture.
4. All modes and antennas in the radiation spurious test are pre-scanned. When there is no MIMO technology mode, antenna 1 is evaluated. When there is MIMO technology mode, antenna 1 + antenna 2 are evaluated as the worst data.

## 6. Duty Cycle Measurement

Custom IEEE 802.11 (DTS) operation is possible in 20MHz channel bandwidths. The maximum achievable duty cycles for all modes were determined based on measurements performed on a spectrum analyzer in zero-span mode with RBW = 8MHz, VBW = 50MHz, and detector = Average. The RBW and VBW were both greater than 50/T, where T is the minimum transmission duration, and the number of sweep points across T was greater than 100. The duty cycles are as follows:

| Operating mode | Data rates (Mbps) | Duty Cycle (%) | Duty Cycle Factor (dB) |
|---|---|---|---|
| Custom IEEE 802.11 (Chain A) | MCS0 | 21 | 6.78 |
| Custom IEEE 802.11 (Chain B) | MCS0 | 21 | 6.78 |

- The test plots as follows:

| Custom IEEE 802.11 (Chain A) | Custom IEEE 802.11 (Chain B) |
|---|---|
|  |  |



Remark:

1. Duty Cycle factor = 10 * log (1/ Duty cycle)
2. The duty cycle of each frequency band mode reflects the determination requirements of the low channel measurement value.

# 7. RF Output Power Measurement

## 7.1 Provisions Applicable

For DTSs employing digital modulation techniques operating in the bands 2400-2483.5 MHz, the maximum peak conducted output power shall not exceed 1 W.

## 7.2 Measurement Procedure

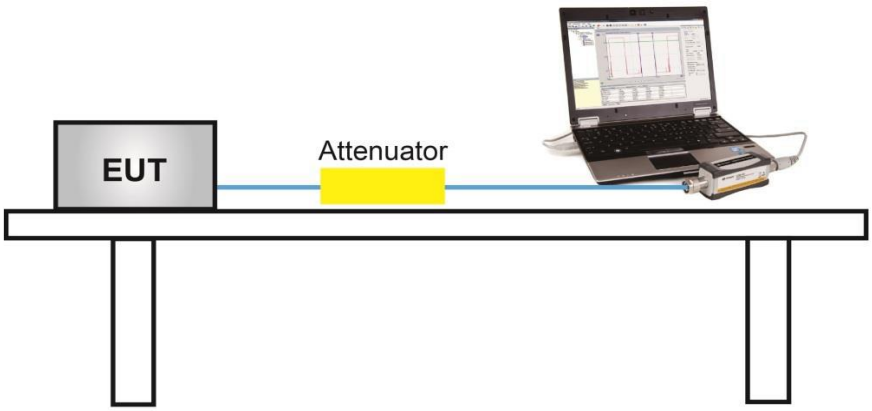
☒Method PM is Measurement using an RF Peak power meter. The procedure for this method is as follows:

1. The testing follows the ANSI C63.10 Section 11.9.1.3
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 use a fast-responding diode detector.

☒Method PM is Measurement using an RF average power meter. The procedure for this method is as follows:

1. The testing follows the ANSI C63.10 Section 11.9.2.3
2. Measurements may be performed using a wideband RF power meter with a thermocouple detector or equivalent if all of the following conditions are satisfied:
3. The EUT is configured to transmit continuously, or to transmit with a constant duty cycle.
4. At all times when the EUT is transmitting, it shall be transmitting at its maximum power control level.
5. The integration period of the power meter exceeds the repetition period of the transmitted signal by at least a factor of five.
6. Determine according to the duty cycle of the equipment: when it is less than 98%, follow the steps below.
7. Measure the average power of the transmitter. This measurement is an average over both the ON and OFF periods of the transmitter.
8. Adjust the measurement in dBm by adding [10 log (1 / D)], where D is the duty cycle {e.g., [10 log (1 / 0.25)], if the duty cycle is 25%}.
9. Record the test results in the report.

## 7.3 Measurement Setup (Block Diagram of Configuration)



**7.4 Measurement Result**

| Test Data of Conducted Output Power-Chain A | | | | | |
|---|---|---|---|---|---|
| Test Mode | Test Frequency (MHz) | Average Power (dBm) | Peak Power (dBm) | Limits (dBm) | Pass or Fail |
| Custom IEEE 802.11 | 2415 | 16.84 | 24.19 | ≤30 | Pass |
| | 2445 | 16.36 | **24.45** | ≤30 | Pass |
| | 2470 | 16.16 | 23.72 | ≤30 | Pass |

| Test Data of Conducted Output Power-Chain B | | | | | |
|---|---|---|---|---|---|
| Test Mode | Test Frequency (MHz) | Average Power (dBm) | Peak Power (dBm) | Limits (dBm) | Pass or Fail |
| Custom IEEE 802.11 | 2415 | 16.51 | 23.89 | ≤30 | Pass |
| | 2445 | 15.94 | 23.80 | ≤30 | Pass |
| | 2470 | 15.79 | 23.88 | ≤30 | Pass |

| Test Data of Conducted Output Power-Total | | | | | |
|---|---|---|---|---|---|
| Test Mode | Test Frequency (MHz) | Average Power (dBm) | Peak Power (dBm) | Limits (dBm) | Pass or Fail |
| Custom IEEE 802.11 | 2412 | 19.69 | 27.05 | ≤30 | Pass |
| | 2437 | 19.17 | 27.15 | ≤30 | Pass |
| | 2462 | 18.99 | 26.81 | ≤30 | Pass |

Note：

1. The Total Average Conducted Output Power (dBm) = 10*log $\{10^{(\text{Chain A AVG }/10)} + 10^{(\text{Chain B AVG }/10)}\}$.
2. The Total Peak Conducted Output Power (dBm) = 10*log $\{10^{(\text{Chain A PK }/10)} + 10^{(\text{Chain B PK }/10)}\}$.

# 8. 6dB Bandwidth Measurement

## 8.1 Provisions Applicable

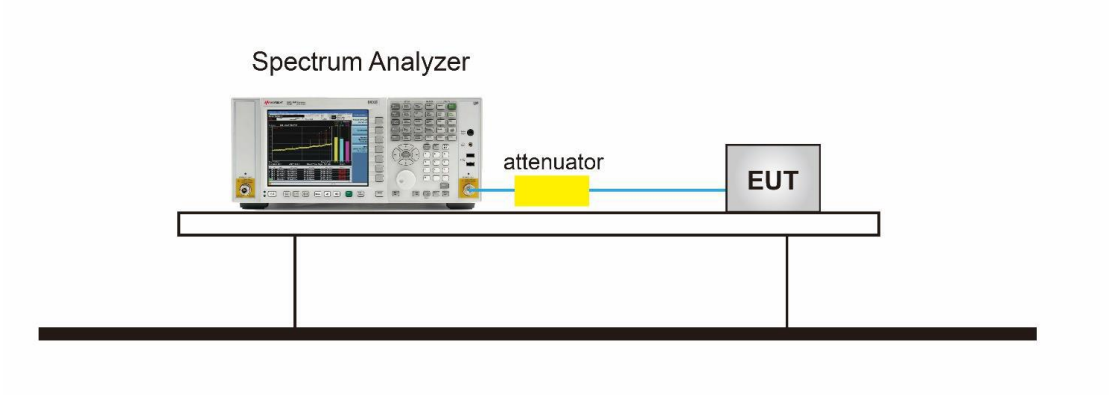
The minimum 6dB bandwidth shall be 500 kHz.

## 8.2 Measurement Procedure

The testing follows the ANSI C63.10 Section 6.9.3 (OBW) and 11.8.1 (6dB BW).

1. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
2. Set to the maximum power setting and enable the EUT transmit continuously.
3. For 6dB Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. Set the Video bandwidth (VBW) = 300 kHz. In order to make an accurate measurement.
4. For 99% Bandwidth Measurement, the spectrum analyzer's resolution bandwidth (RBW) is set 1-5% of the OBW and set the Video bandwidth (VBW) ≥ 3 * RBW.
5. Detector = peak
6. Trace mode = max hold.
7. Sweep = auto couple.
8. Allow the trace to stabilize.
9. Measure and record the results in the test report.

## 8.3 Measurement Setup (Block Diagram of Configuration)

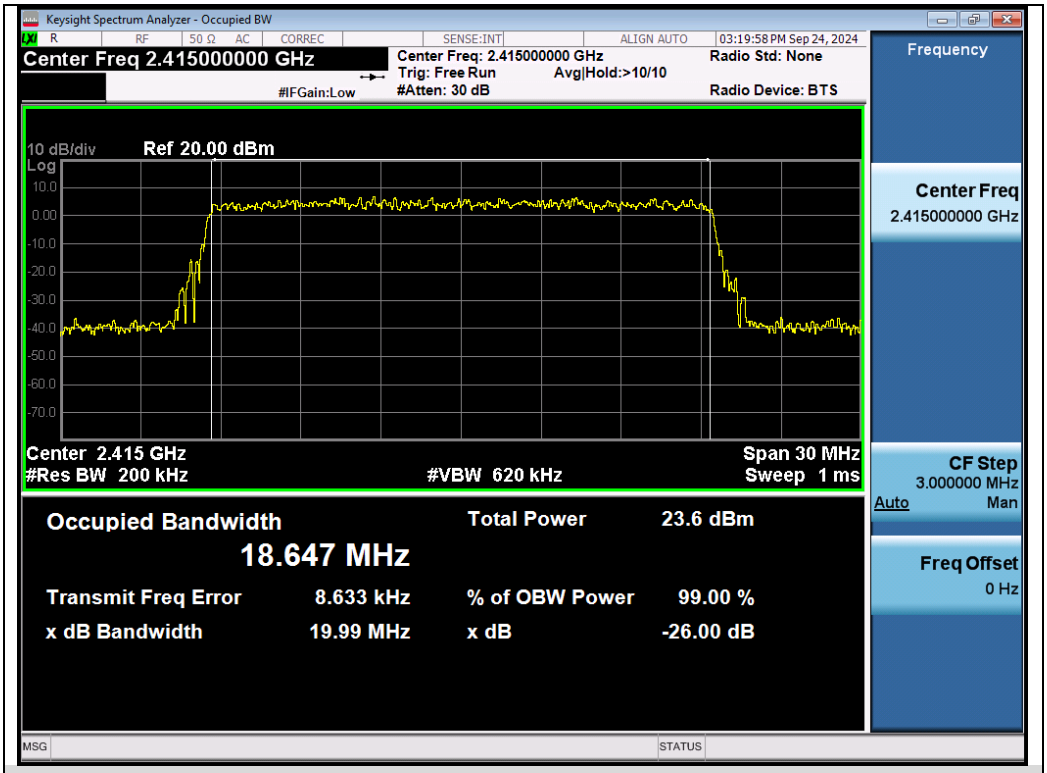


**8.4 Measurement Result**

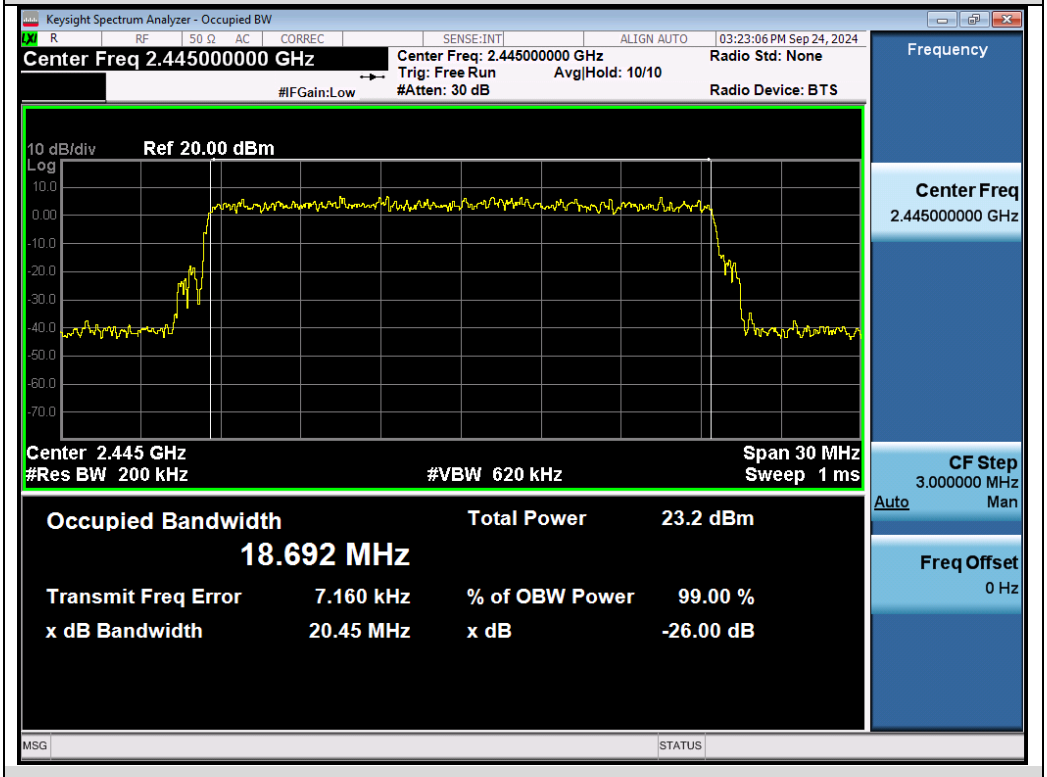
| Test Data of Occupied Bandwidth and DTS Bandwidth-Chain A | | | | | |
|---|---|---|---|---|---|
| Test Mode | Test Frequency (MHz) | 99% Occupied Bandwidth (MHz) | DTS Bandwidth (MHz) | DTS Bandwidth Limits (MHz) | Pass or Fail |
| Custom IEEE 802.11 | 2415 | 18.647 | 18.873 | ⩾0.5 | Pass |
| | 2445 | 18.692 | 18.893 | ⩾0.5 | Pass |
| | 2470 | 18.726 | 18.841 | ⩾0.5 | Pass |

| Test Data of Occupied Bandwidth and DTS Bandwidth-Chain B | | | | | |
|---|---|---|---|---|---|
| Test Mode | Test Frequency (MHz) | 99% Occupied Bandwidth (MHz) | DTS Bandwidth (MHz) | DTS Bandwidth Limits (MHz) | Pass or Fail |
| Custom IEEE 802.11 | 2415 | 18.701 | 18.876 | ⩾0.5 | Pass |
| | 2445 | 18.677 | 18.793 | ⩾0.5 | Pass |
| | 2470 | 18.722 | 18.925 | ⩾0.5 | Pass |

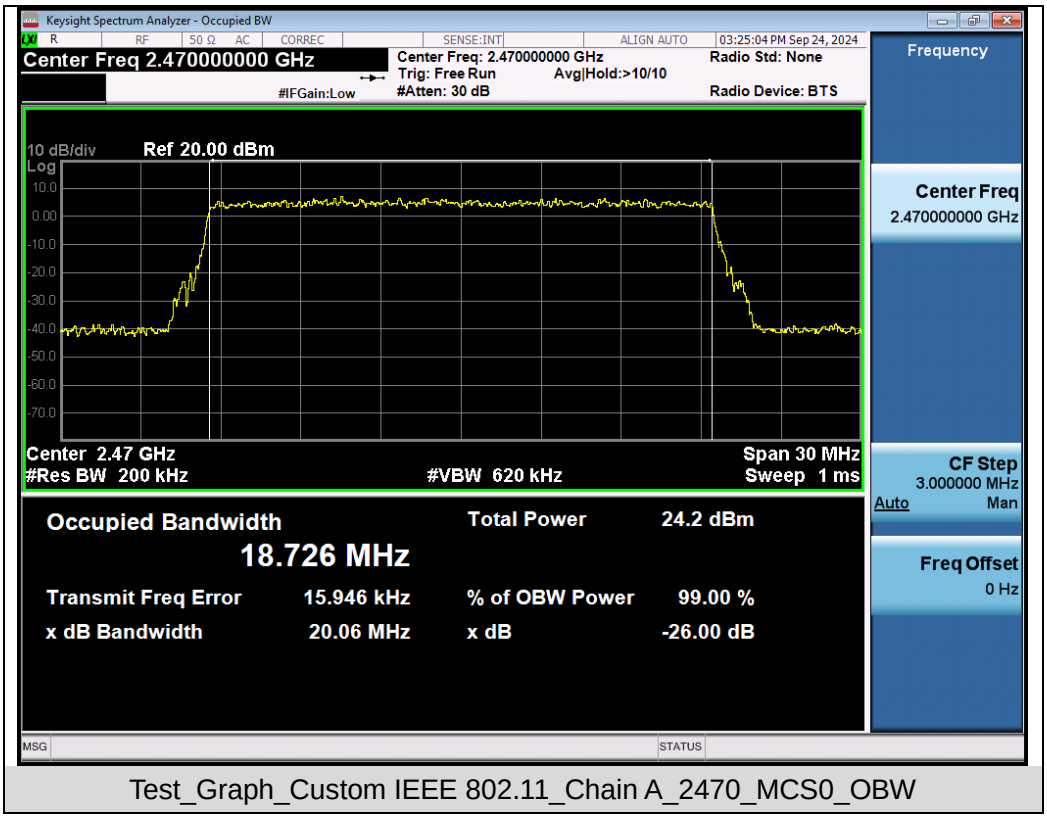
## Test Graphs of Occupied Bandwidth



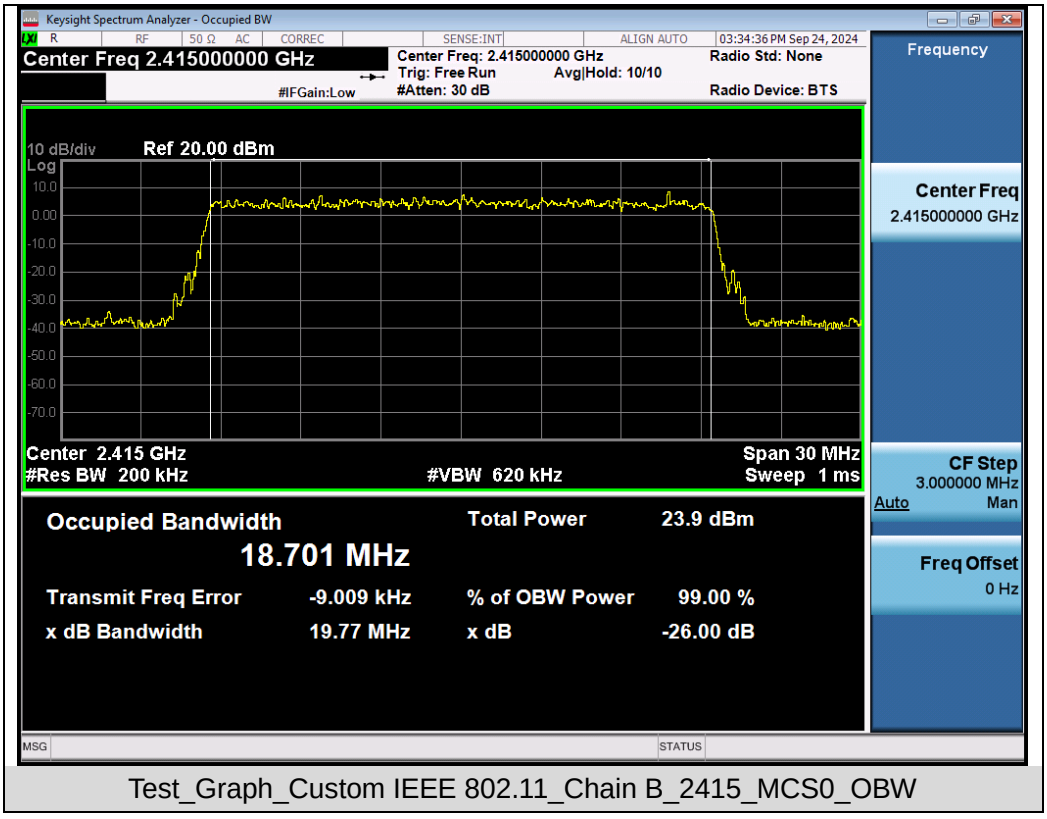

Test_Graph_Custom IEEE 802.11_Chain A_2415_MCS0_OBW



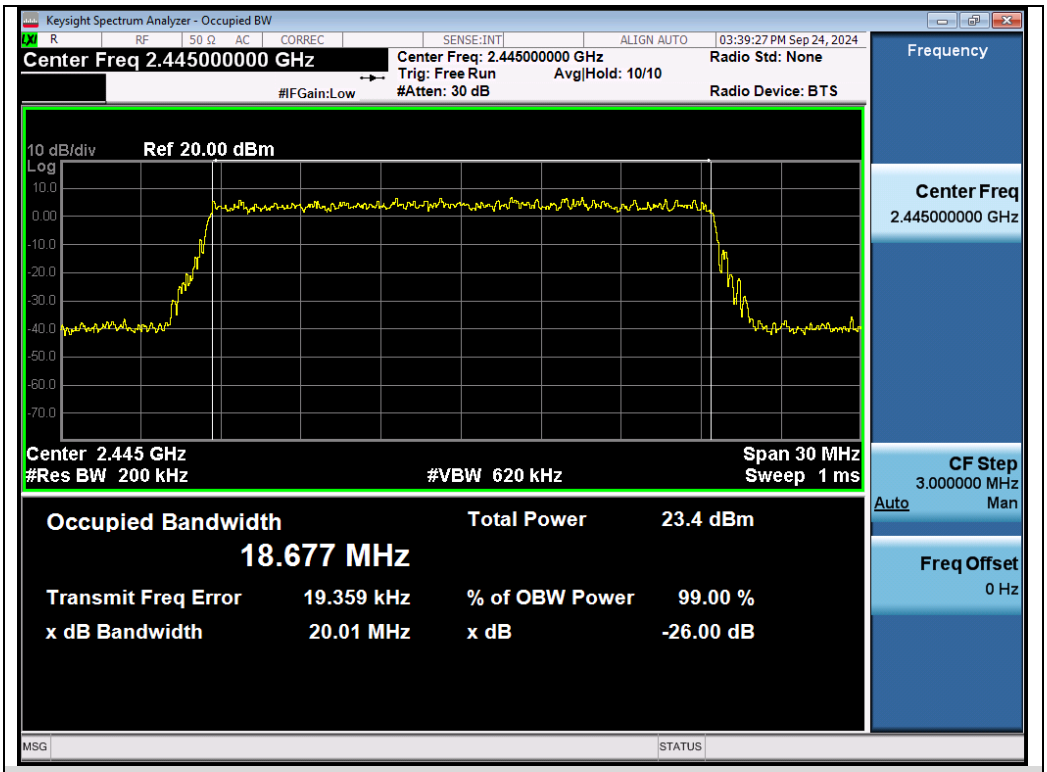

Test_Graph_Custom IEEE 802.11_Chain A_2445_MCS0_OBW



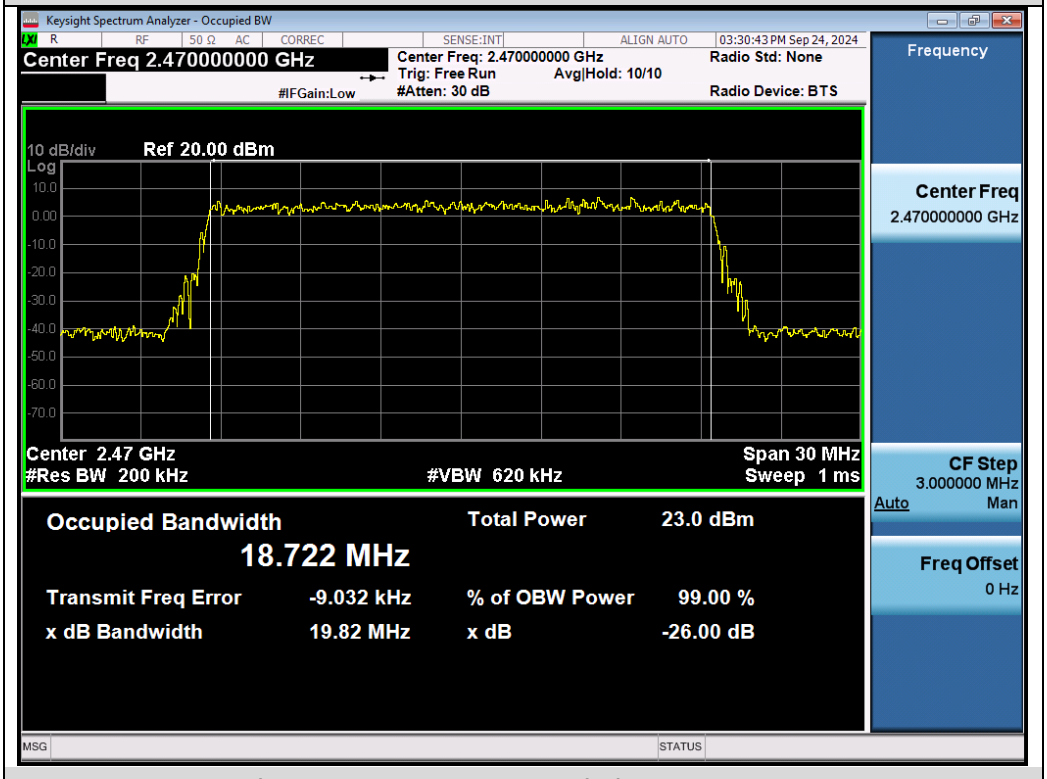

Test_Graph_Custom IEEE 802.11_Chain A_2470_MCS0_OBW




Test_Graph_Custom IEEE 802.11_Chain B_2415_MCS0_OBW

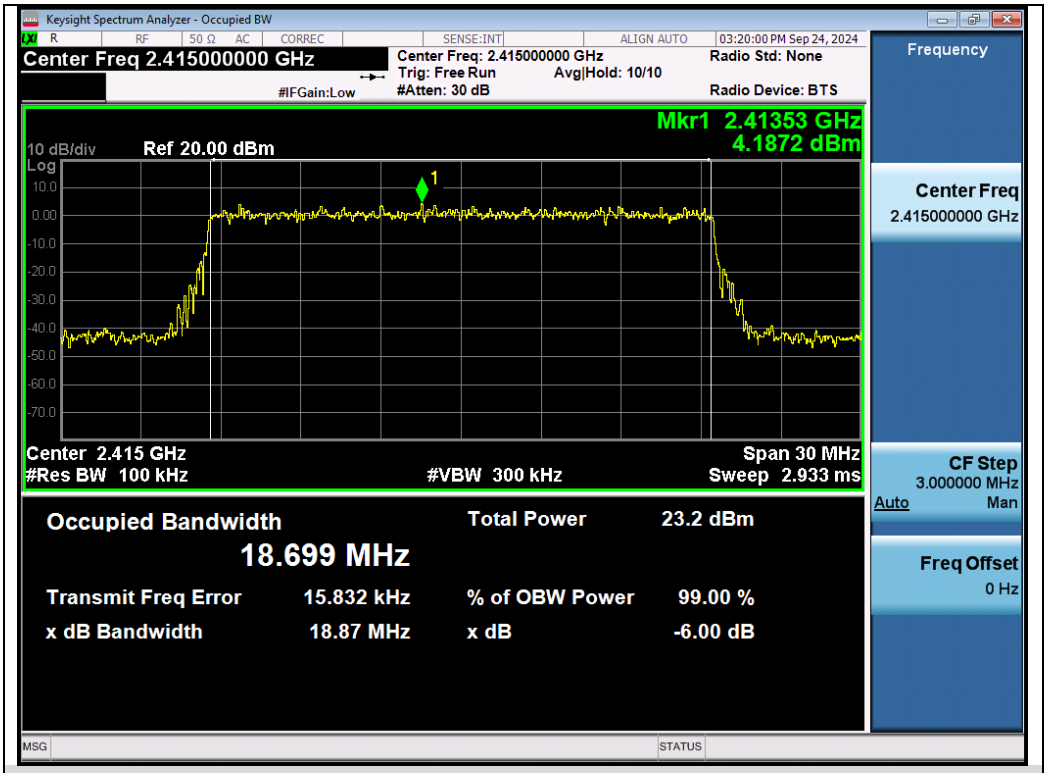



Test_Graph_Custom IEEE 802.11_Chain B_2445_MCS0_OBW

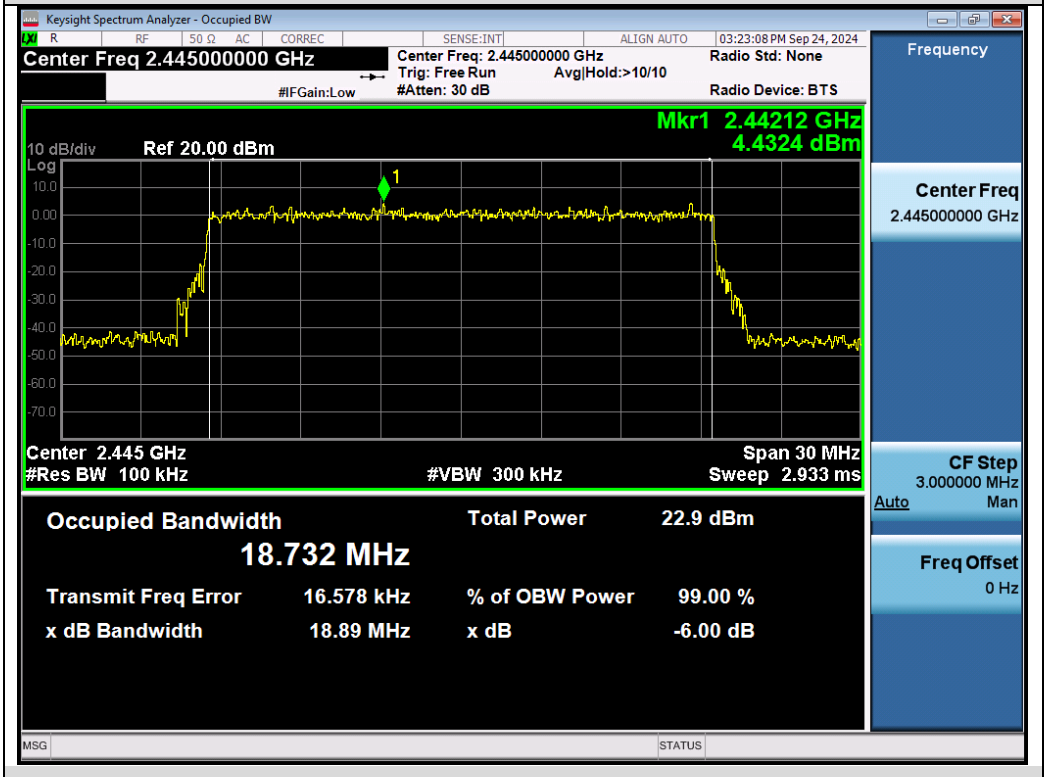



Test_Graph_Custom IEEE 802.11_Chain B_2470_MCS0_OBW

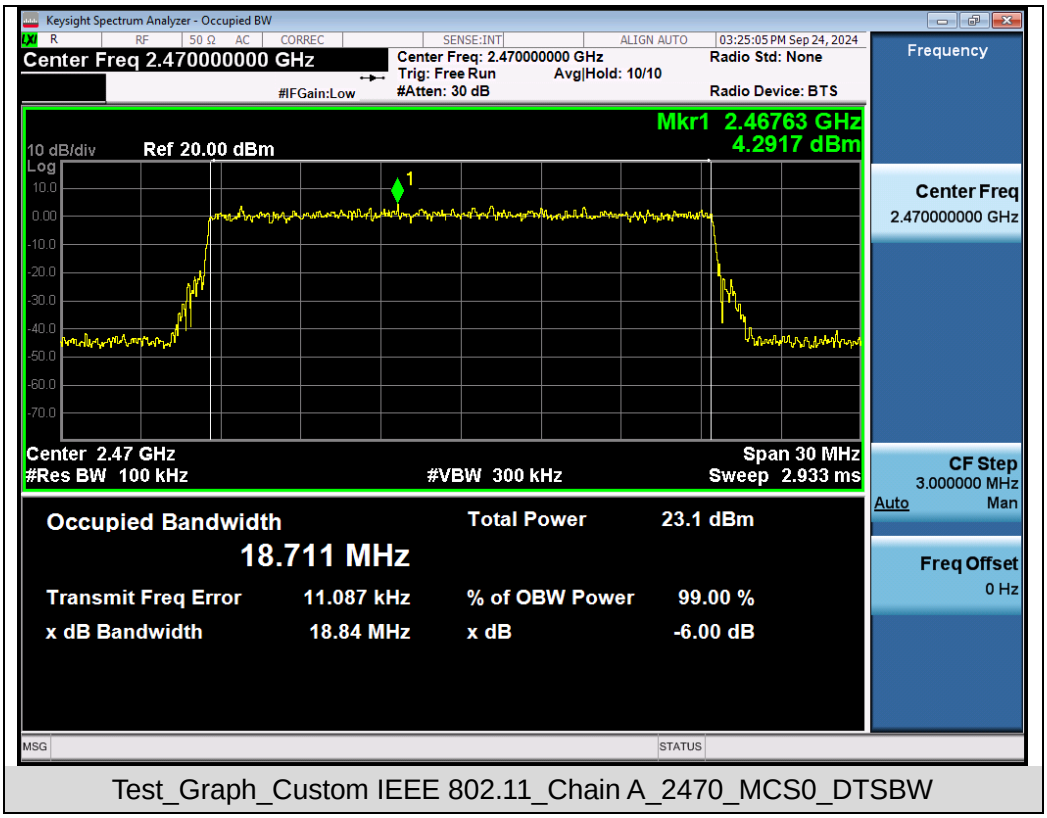
## Test Graphs of DTS Bandwidth



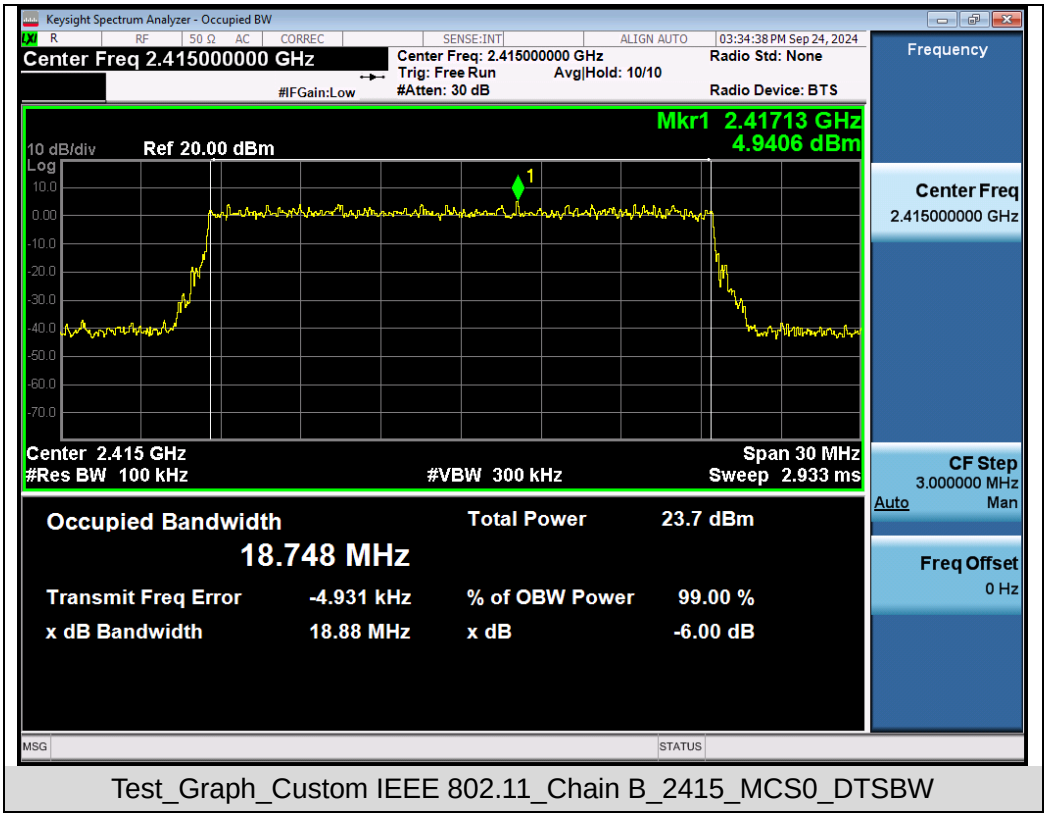

Test_Graph_Custom IEEE 802.11_Chain A_2415_MCS0_DTSBW



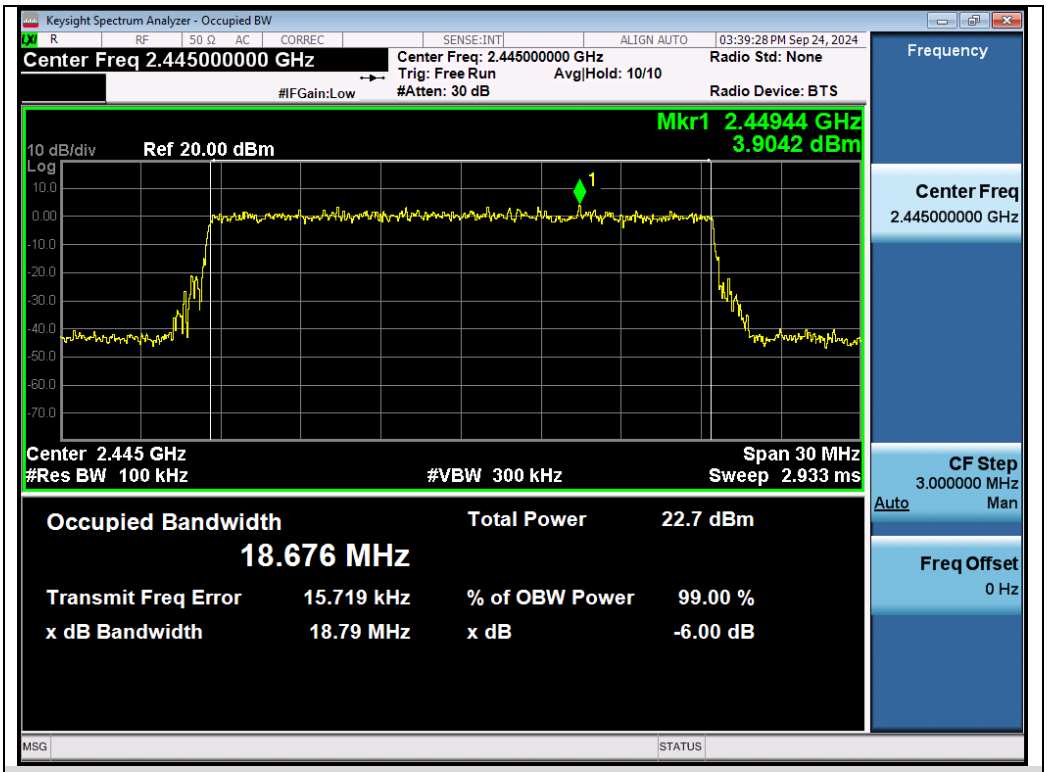

Test_Graph_Custom IEEE 802.11_Chain A_2445_MCS0_DTSBW



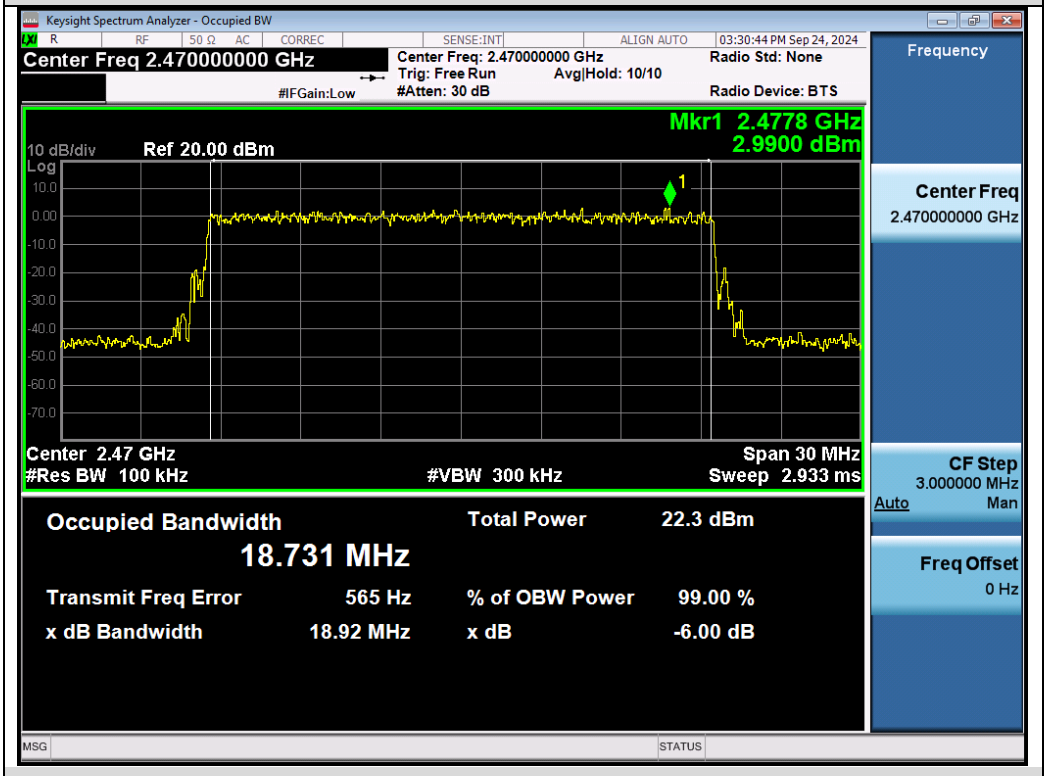

Test_Graph_Custom IEEE 802.11_Chain A_2470_MCS0_DTSBW




Test_Graph_Custom IEEE 802.11_Chain B_2415_MCS0_DTSBW




Test_Graph_Custom IEEE 802.11_Chain B_2445_MCS0_DTSBW




Test_Graph_Custom IEEE 802.11_Chain B_2470_MCS0_DTSBW

# 9. Power Spectral Density Measurement

## 9.1 Provisions Applicable

The transmitter power spectral density conducted from the transmitter to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

## 9.2 Measurement Procedure

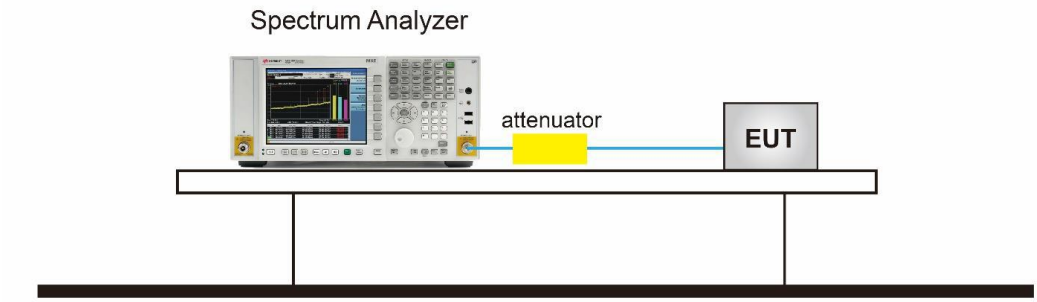
☒For Peak power spectral density test:

1. The testing follows the ANSI C63.10 Section 11.10.2 Method PKPSD.
2. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
3. Set the RBW = 20 kHz.
4. Set the VBW ≥ [3 × RBW].
5. Set the Span ≥ [1.5 × DTS bandwidth].
6. Sweep time=Auto couple.
7. Detector function=Peak.
8. Trace Mode=Max hold.
9. When the measurement bandwidth of the maximum PSD is 3 kHz, a constant factor of 10*log(3kHz/20kHz) = -8.23 dB is added to the measurement result.
10. Allow trace to stabilize. Use the marker-to-peak function to set the marker to the peak of the emission.
11. The indicated level is the peak output power, after any corrections for external attenuators and cables.

☐For Average power spectral density test:

1. The testing follows the ANSI C63.10 Section 11.10.5 Method AVPSD.
2. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator.
3. Set Span to at least 1.5 times the OBW.
4. Set RBW to:3 kHz ≤ RBW ≤ 100 kHz.
5. Set VBW≥[3×RBW].
6. Sweep Time=Auto couple.
7. Detector function=RMS (i.e., power averaging).
8. Trace average at least 100 traces in power averaging (rms) mode.
9. When the measurement bandwidth of the maximum PSD is 3 kHz, a constant factor of 10*log(3kHz/20kHz) = -8.23 dB is added to the measurement result.
10. Determine according to the duty cycle of the equipment: when it is less than 98%, follow the steps below.
11. Add [10 log (1 / D)], where D is the duty cycle, to the measured power to compute the average power during the actual transmission times (because the measurement represents an average over both the ON and OFF times of the transmission). For example, add [10 log (1/0.25)] = 6 dB if the duty cycle is 25%.
12. Record the test results in the report.

### 9.3 Measurement Setup (Block Diagram of Configuration)




### 9.4 Measurement Result

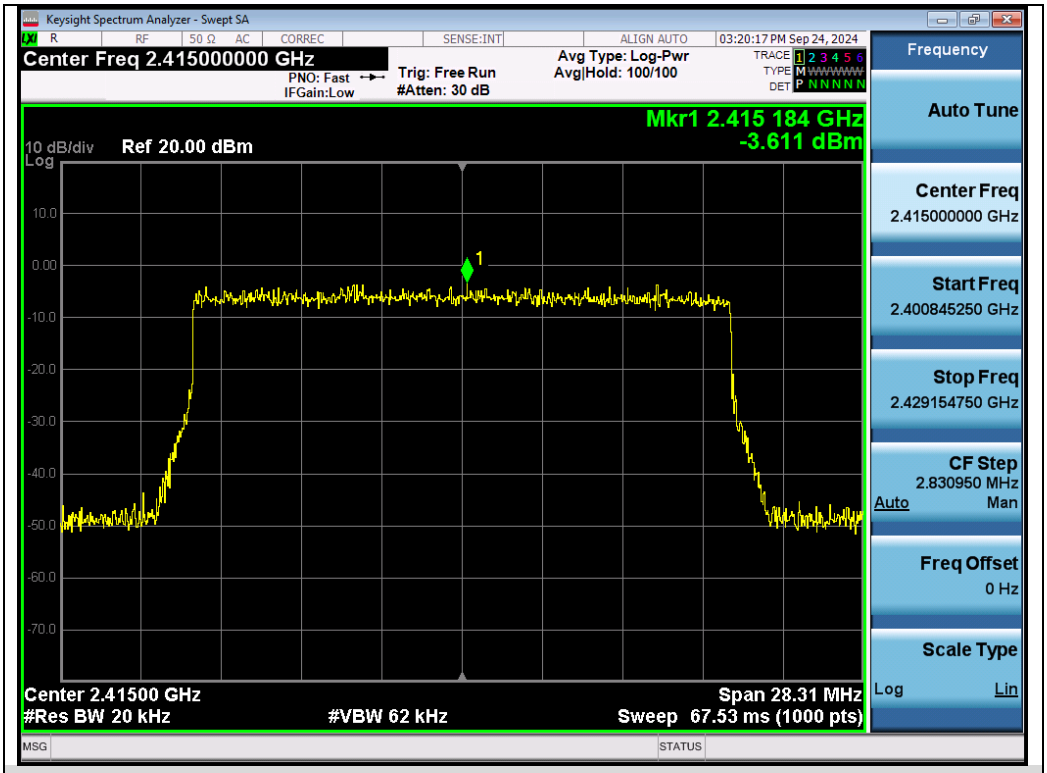
| Test Data of Conducted Output Power Spectral Density-Chain A | | | | | |
|---|---|---|---|---|---|
| Test Mode | Test Frequency (MHz) | Power Spectral density (dBm/20kHz) | Power Spectral density (dBm/3kHz) | Limit (dBm/3kHz) | Pass or Fail |
| Custom IEEE 802.11 | 2415 | -3.611 | -11.850 | ≤8 | Pass |
| | 2445 | -2.696 | -10.935 | ≤8 | Pass |
| | 2470 | -4.059 | -12.298 | ≤8 | Pass |

| Test Data of Conducted Output Power Spectral Density-Chain B | | | | | |
|---|---|---|---|---|---|
| Test Mode | Test Frequency (MHz) | Power Spectral density (dBm/20kHz) | Power Spectral density (dBm/3kHz) | Limit (dBm/3kHz) | Pass or Fail |
| Custom IEEE 802.11 | 2415 | -3.281 | -11.520 | ≤8 | Pass |
| | 2445 | -3.643 | -11.882 | ≤8 | Pass |
| | 2470 | -4.239 | -12.478 | ≤8 | Pass |

| Test Data of Conducted Output Power Spectral Density-Total | | | | | |
|---|---|---|---|---|---|
| Test Mode | Test Frequency (MHz) | Power Spectral density (dBm/20kHz) | Power Spectral density (dBm/3kHz) | Limit (dBm/3kHz) | Pass or Fail |
| Custom IEEE 802.11 | 2415 | -0.43 | -8.67 | ≤8 | Pass |
| | 2445 | -0.13 | -8.37 | ≤8 | Pass |
| | 2470 | -1.14 | -9.38 | ≤8 | Pass |

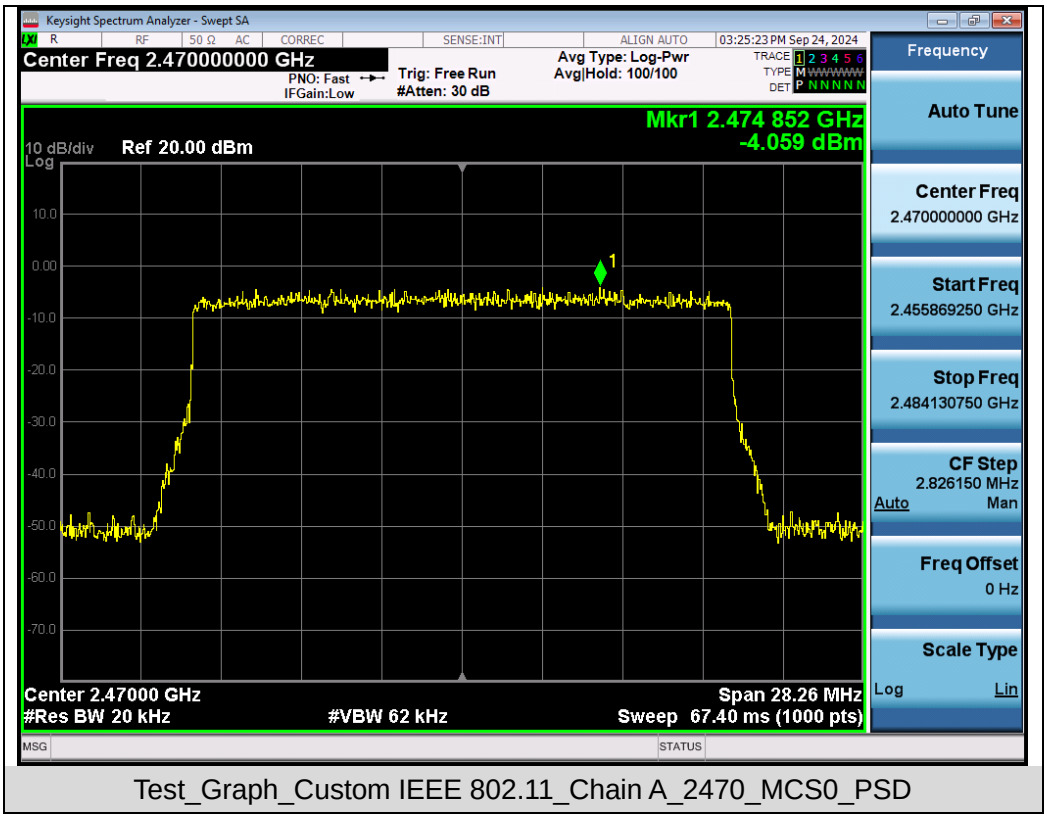
Note: The Total Power Spectral Density (dBm) = $10*\log_{10}\{10^{(\text{Chain A PSD }/10)} + 10^{(\text{Chain B PSD }/10)}\}$.

## Test Graphs of Conducted Output Power Spectral Density

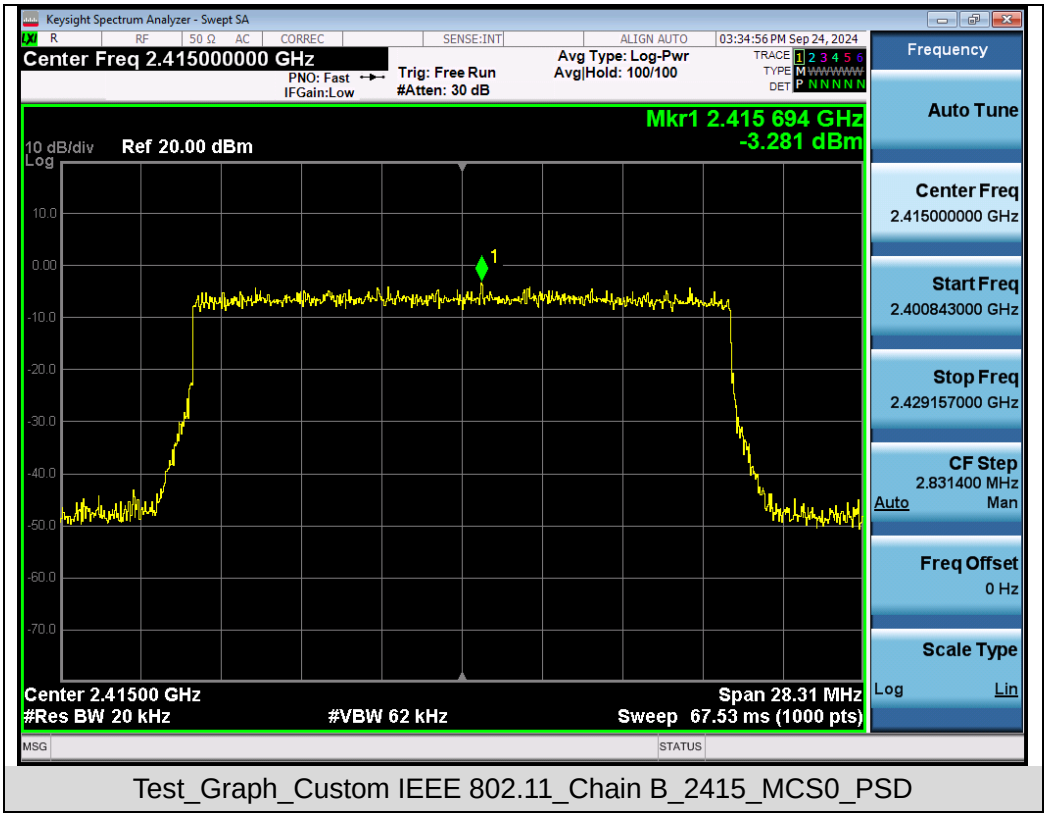



Test_Graph_Custom IEEE 802.11_Chain A_2415_MCS0_PSD

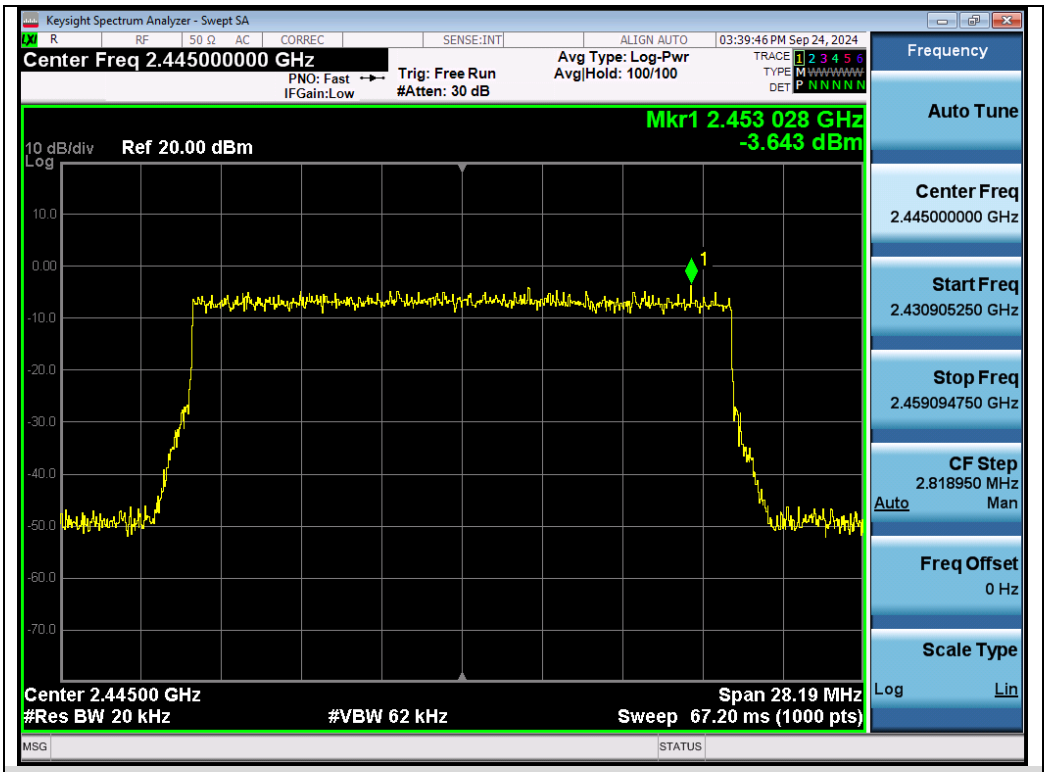

Test_Graph_Custom IEEE 802.11_Chain A_2445_MCS0_PSD



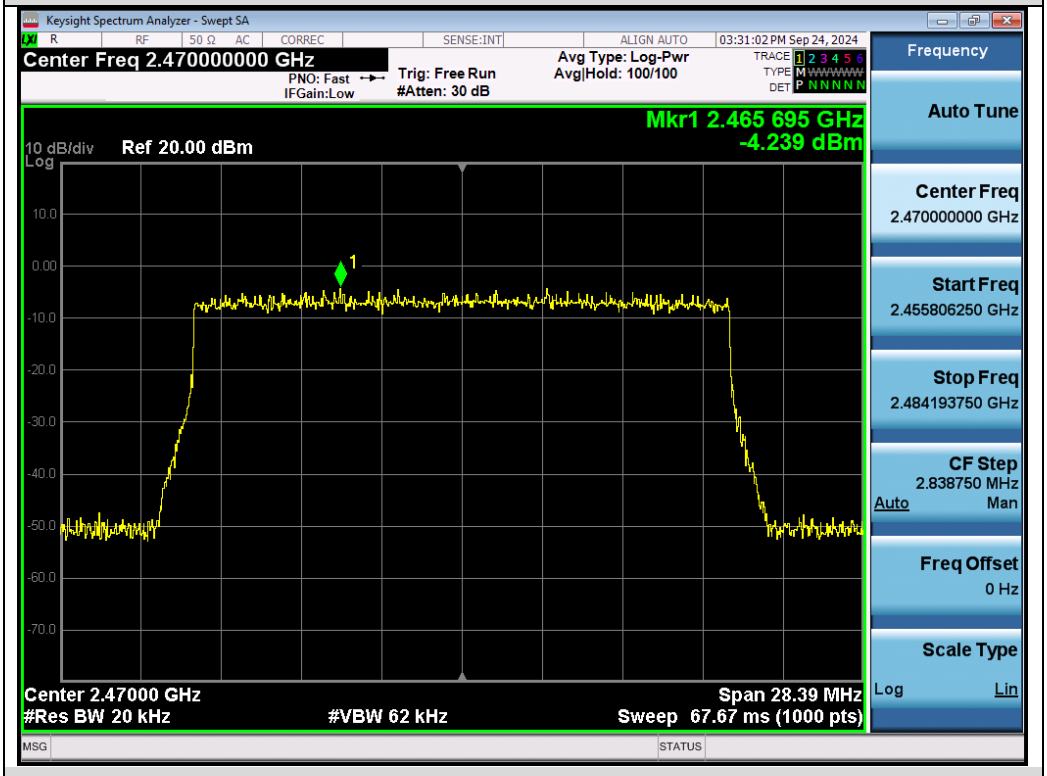

Test_Graph_Custom IEEE 802.11_Chain A_2470_MCS0_PSD




Test_Graph_Custom IEEE 802.11_Chain B_2415_MCS0_PSD




Test_Graph_Custom IEEE 802.11_Chain B_2445_MCS0_PSD




Test_Graph_Custom IEEE 802.11_Chain B_2470_MCS0_PSD

# 10. Conducted Band Edge and Out-of-Band Emissions

## 10.1 Provisions Applicable

In any 100kHz 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.

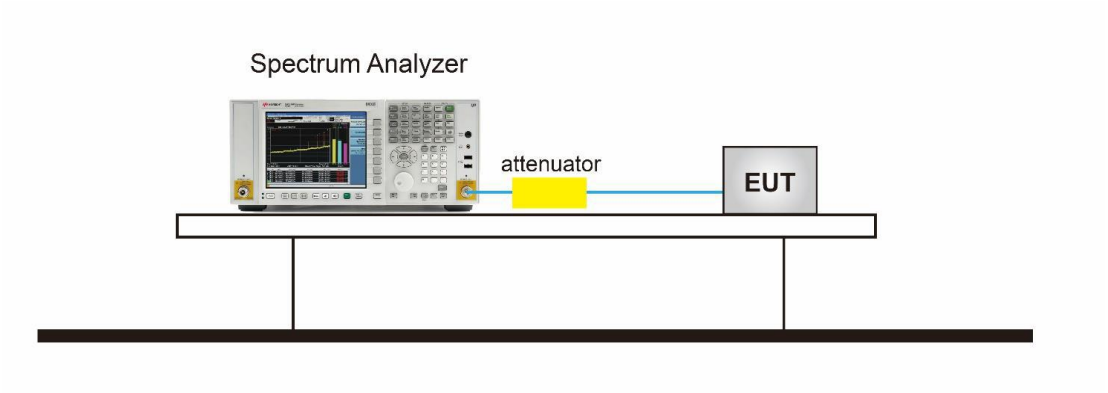
## 10.2 Measurement Procedure

Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
Use the following spectrum analyzer settings:

- Step 1: Measurement Procedure In-Band Reference Level
  1. Set instrument center frequency to DTS channel center frequency.
  2. Set the span to ≥ 1.5 times the DTS bandwidth.
  3. Set the 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 PSD level.
  10. Note that the channel found to contain the maximum PSD level can be used to establish the reference level.
  11. For reference level values, please refer to DTS bandwidth test.
- Step 2: Measurement Procedure Out of Band Emission
  1. Set RBW = 100 kHz.
  2. Set VBW ≥ 300 kHz.
  3. Detector = peak.
  4. Sweep = auto couple.
  5. Trace Mode = max hold.
  6. Allow trace to fully stabilize.
  7. Use the peak marker function to determine the maximum amplitude level.

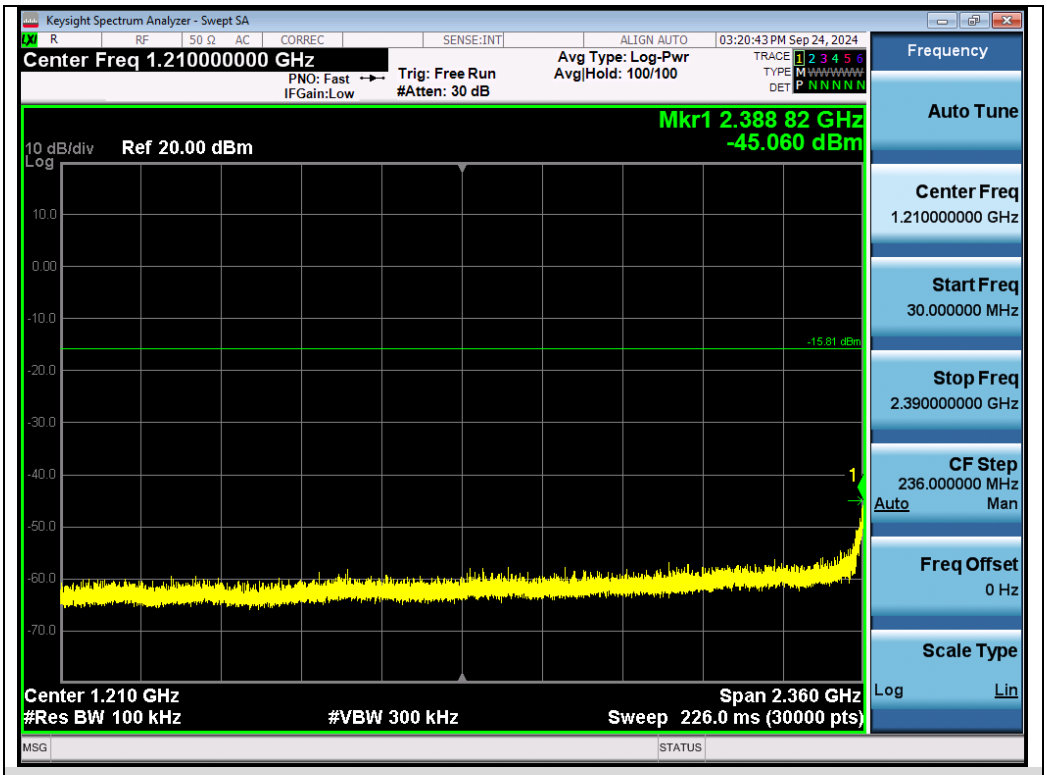
Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

## 10.3 Measurement Setup (Block Diagram of Configuration)



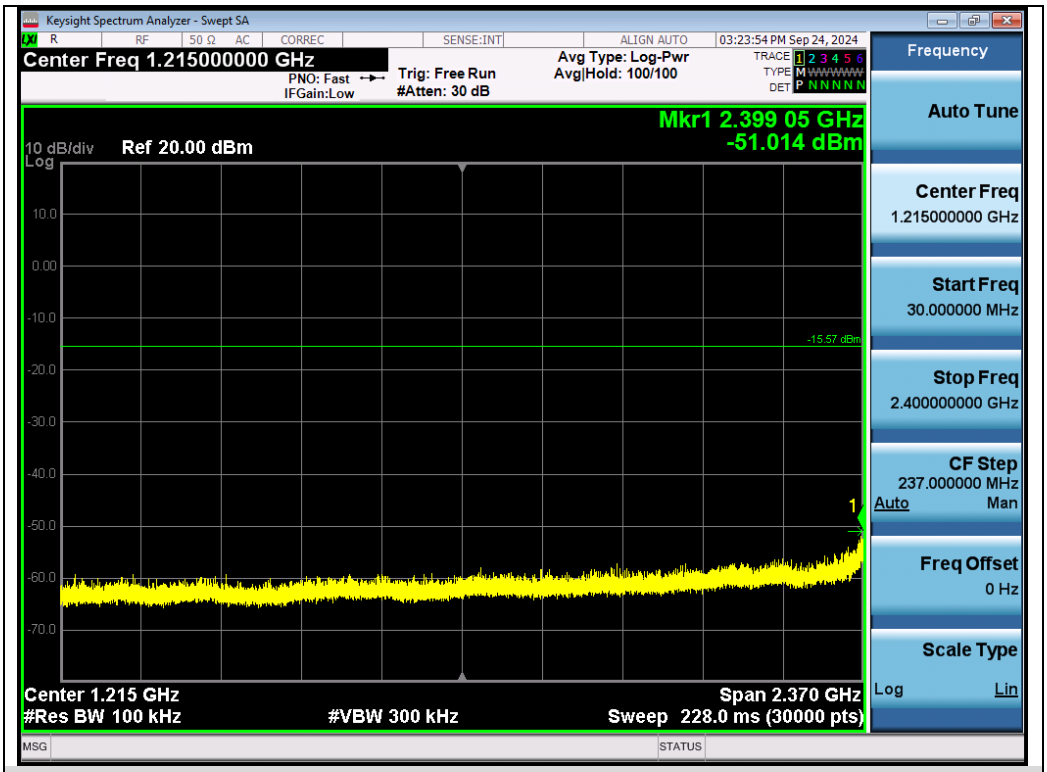
## 10.4 Measurement Result

**Test Graphs of Spurious Emissions in Non-Restricted Frequency Bands**



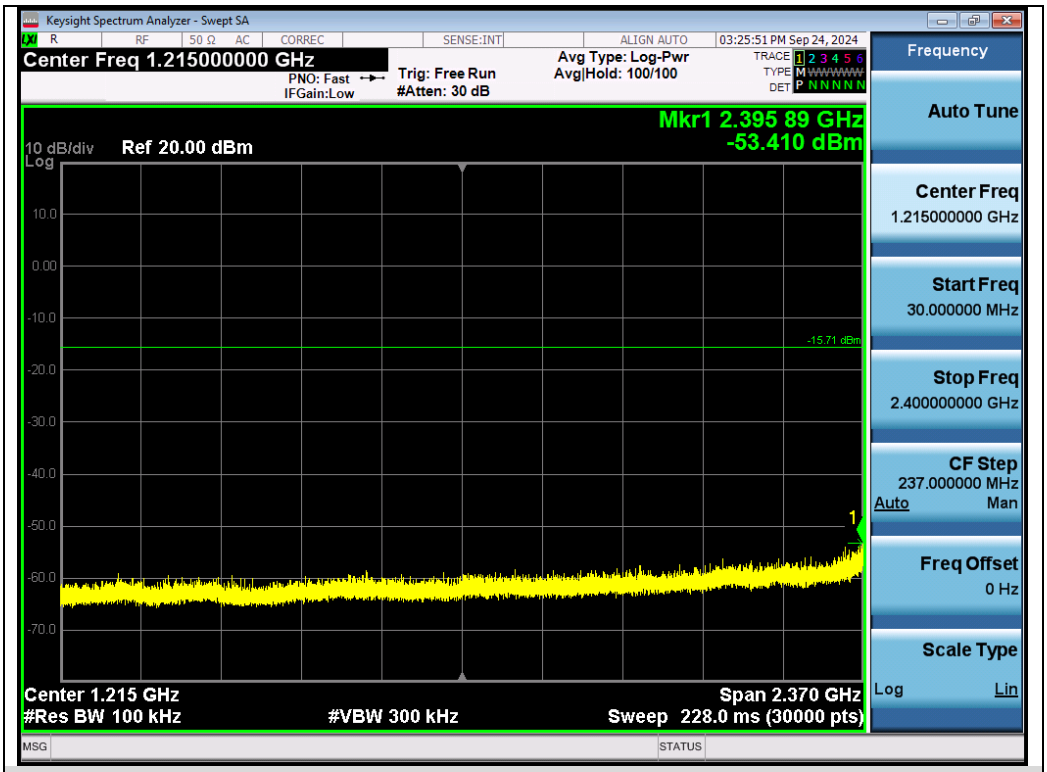

Test_Graph_Custom IEEE 802.11_Chain A_2415_MCS0_Lower Band Emissions


Test_Graph_Custom IEEE 802.11_Chain A_2415_MCS0_Higher Band Emissions



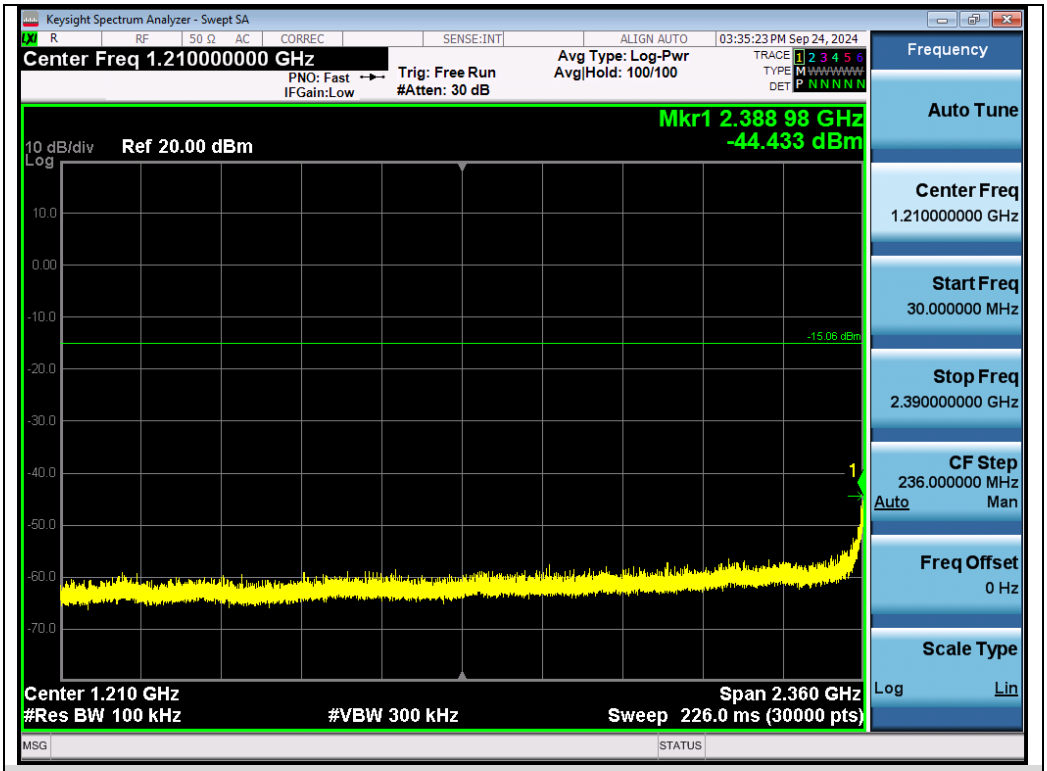

Test_Graph_Custom IEEE 802.11_Chain A_2445_MCS0_Lower Band Emissions


Test_Graph_Custom IEEE 802.11_Chain A_2445_MCS0_Higher Band Emissions



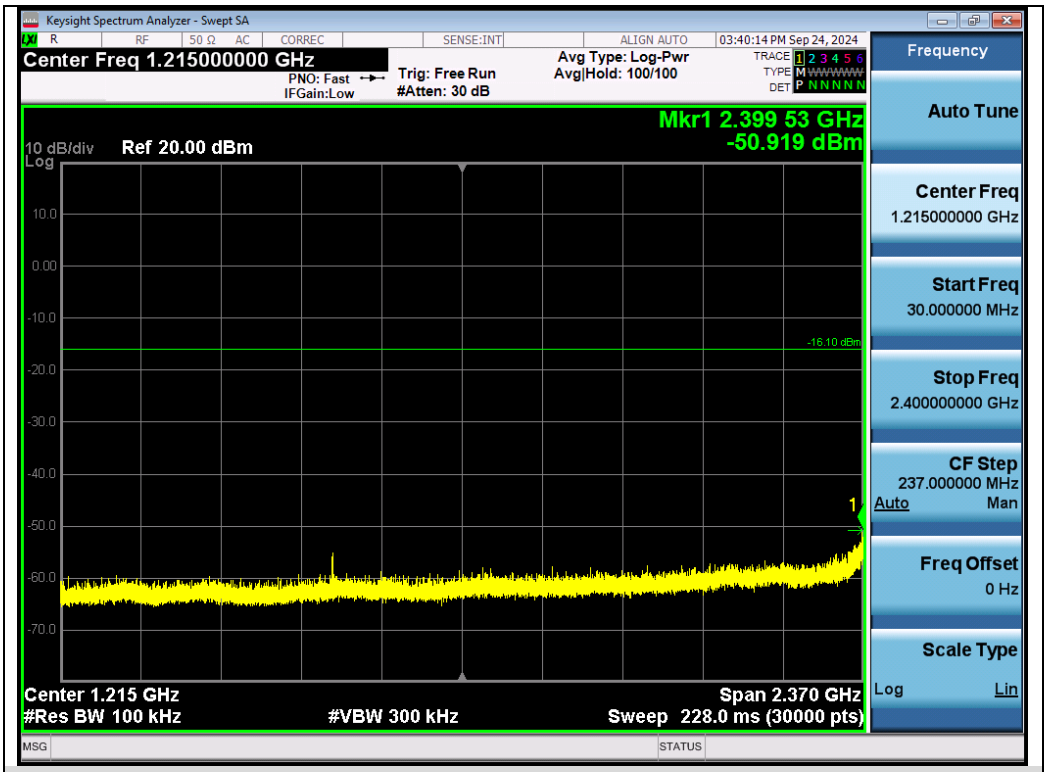

Test_Graph_Custom IEEE 802.11_Chain A_2470_MCS0_Lower Band Emissions


Test_Graph_Custom IEEE 802.11_Chain A_2470_MCS0_Higher Band Emissions



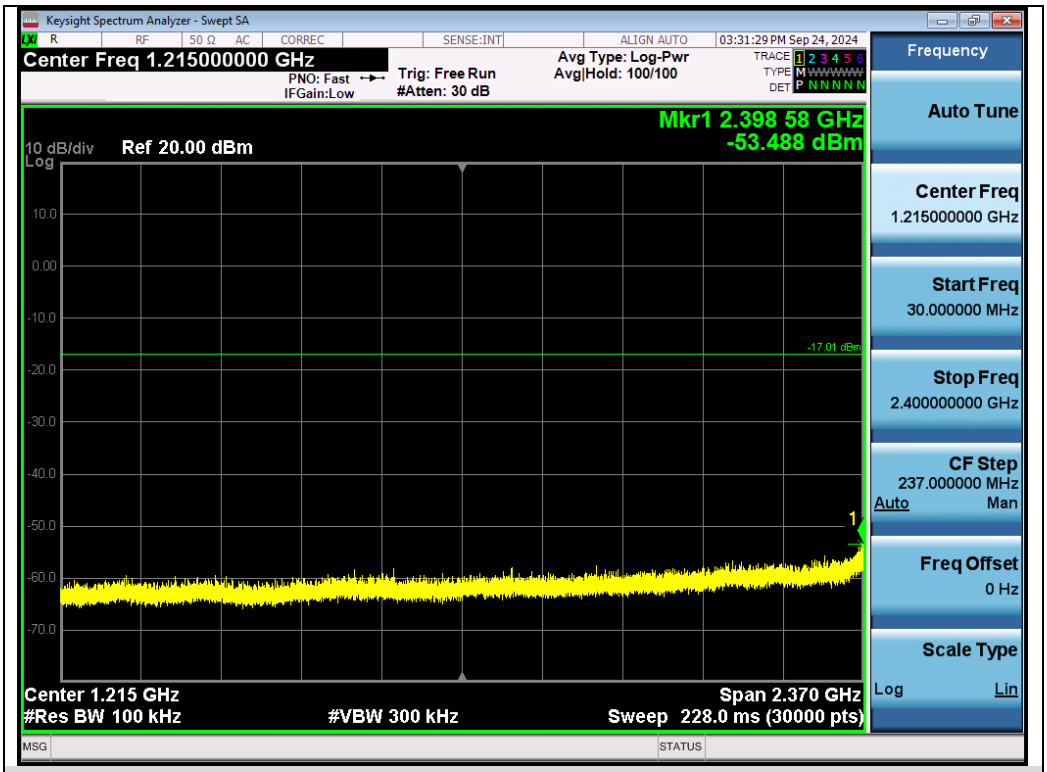

Test_Graph_Custom IEEE 802.11_Chain B_2415_MCS0_Lower Band Emissions


Test_Graph_Custom IEEE 802.11_Chain B_2415_MCS0_Higher Band Emissions




Test_Graph_Custom IEEE 802.11_Chain B_2445_MCS0_Lower Band Emissions

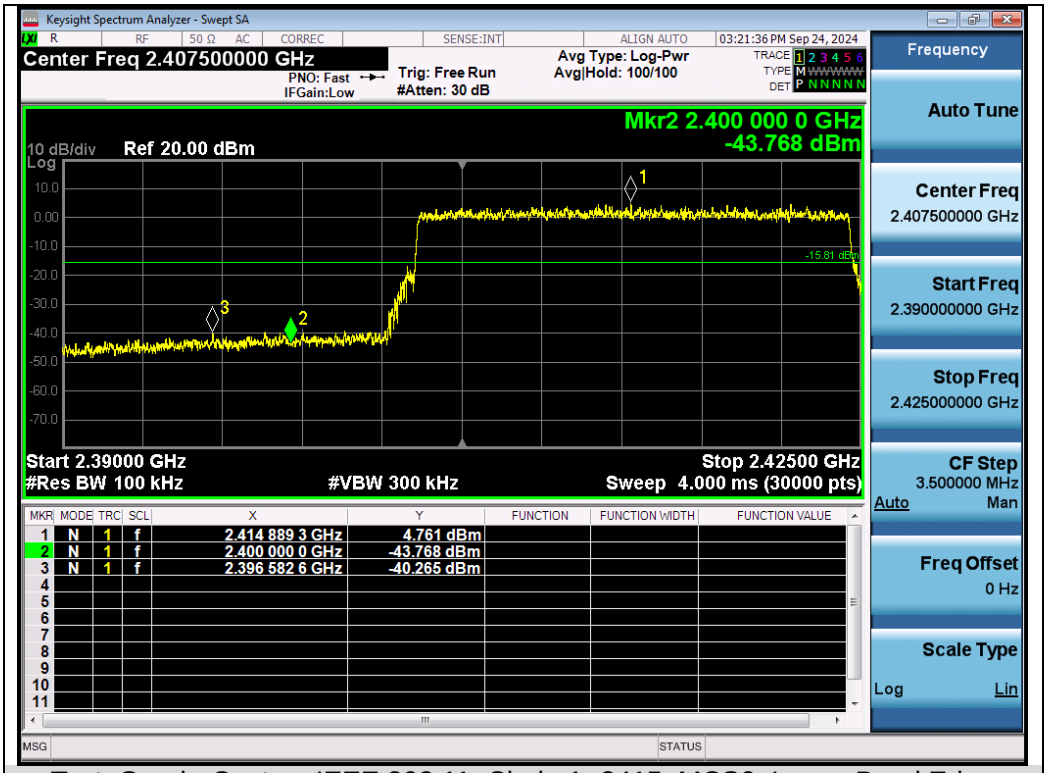

Test_Graph_Custom IEEE 802.11_Chain B_2445_MCS0_Higher Band Emissions



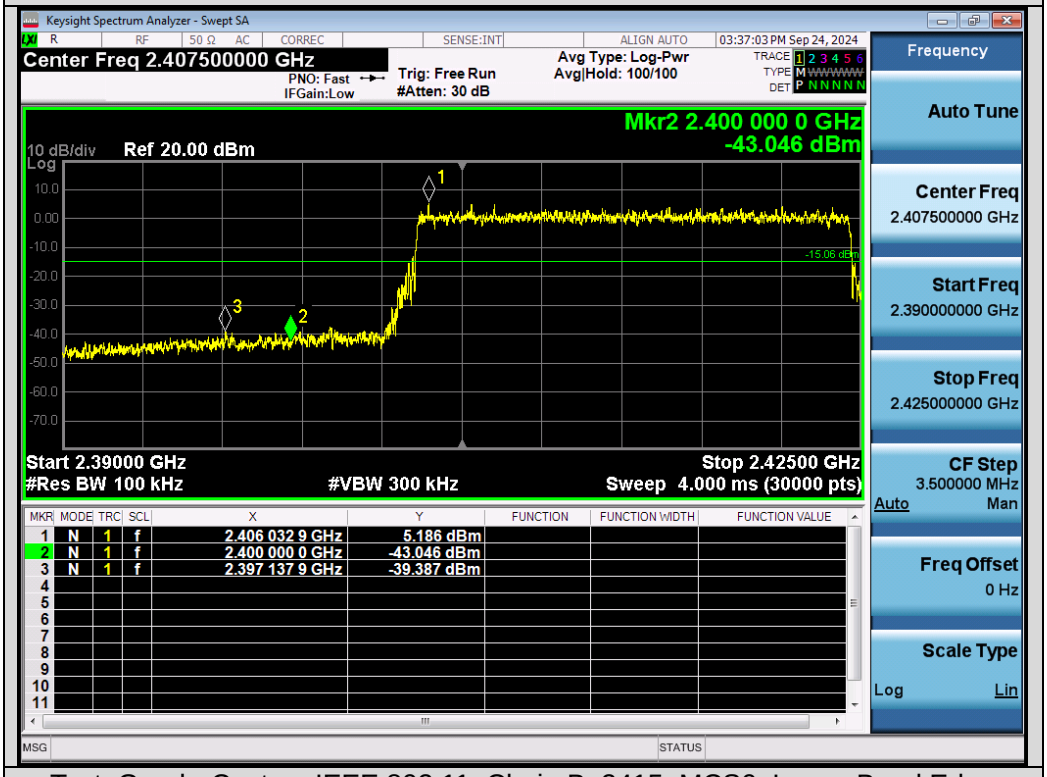

Test_Graph_Custom IEEE 802.11_Chain B_2470_MCS0_Lower Band Emissions


Test_Graph_Custom IEEE 802.11_Chain B_2470_MCS0_Higher Band Emissions

## Test Graphs of Band Edge Emissions in Non-Restricted Frequency Bands




Test_Graph_Custom IEEE 802.11_Chain A_2415_MCS0_Lower Band Edge Emissions




Test_Graph_Custom IEEE 802.11_Chain B_2415_MCS0_Lower Band Edge Emissions

# 11. Radiated Spurious Emission

## 11.1 Measurement Limits

15.209(a) Limit in the below table 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 |

Note: All modes were tested for restricted band radiated emission, the test records reported below are the worst result compared to other modes.

## 11.2 Measurement Procedure

1. The EUT was placed on the top of the turntable 0.8 or 1.5 meter above ground. The phase center of the receiving antenna mounted on the top of a height-variable antenna tower was placed 3 meters far away from the turntable.
2. Power on the EUT and all the supporting units. The turntable was rotated by 360 degrees to determine the position of the highest radiation.
3. The height of the broadband receiving antenna was varied between one meter and four meters above ground to find the maximum emissions field strength of both horizontal and vertical polarization.
4. For each suspected emission, the antenna tower was scan (from 1 M to 4 M) and then the turntable was rotated (from 0 degree to 360 degrees) to find the maximum reading.
5. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function with specified bandwidth under Maximum Hold Mode.
6. For emissions above 1GHz, use 1MHz RBW and 3MHz VBW for peak reading. Place the measurement antenna away from each area of the EUT determined to be a source of emissions at the specified measurement distance, while keeping the measurement antenna aimed at the source of emissions at each frequency of significant emissions, with polarization oriented for maximum response. The measurement antenna may have to be higher or lower than the EUT, depending on the radiation pattern of the emission and staying aimed at the emission source for receiving the maximum signal. The final measurement antenna elevation shall be that which maximizes the emissions. The measurement antenna elevation for maximum emissions shall be restricted to a range of heights of from 1 m to 4 m above the ground or reference ground plane.
7. When the radiated emissions limits are expressed in terms of the average value of the emissions, and pulsed operation is employed, the measurement field strength shall be determined by averaging over one complete pulse train, including blanking intervals, as long as the pulse train does not exceed 0.1 seconds. As an alternative (provided the transmitter operates for longer than 0.1 seconds) or in cases where the

pulse train exceeds 0.1 seconds, the measured field strength shall be determined from the average absolute voltage during a 0.1 second interval during which the field strength is at its maximum values.

8. If the emissions level of the EUT in peak mode was 3 dB lower than the average limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method for below 1GHz.
9. For testing above 1GHz, the emissions level of the EUT in peak mode was lower than average limit (that means the emissions level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
10. In case the emission is lower than 30MHz, loop antenna has to be used for measurement and the recorded data should be QP measured by receiver. High - Low scan is not required in this case.
11. Support MIMO technology. When testing a single antenna transmission, the software compensation coeffi cient has been added to the constant $10*Log_{10}(N)$ to calculate the margin, confirming that it meets the exe mption test MIMO mode.

◆ The following table is the setting of spectrum analyzer and receiver.

| Spectrum Parameter | Setting |
|---|---|
| Start ~Stop Frequency | 9kHz~150KHz/RB 200Hz for QP |
| Start ~Stop Frequency | 150kHz~30MHz/RB 9kHz for QP |
| Start ~Stop Frequency | 30MHz~1000MHz/RB 120kHz for QP |
| Start ~Stop Frequency | 1GHz~26.5GHz<br>1MHz/3MHz for Peak, 1MHz/3MHz for Average |

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

- **Quasi-Peak Measurements below 1GHz**

1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. Span was set greater than 1MHz
3. RBW = as shown in the table above
4. Detector = CISPR quasi-peak
5. Sweep time = auto couple
6. Trace was allowed to stabilize

- **Peak Measurements above 1GHz**

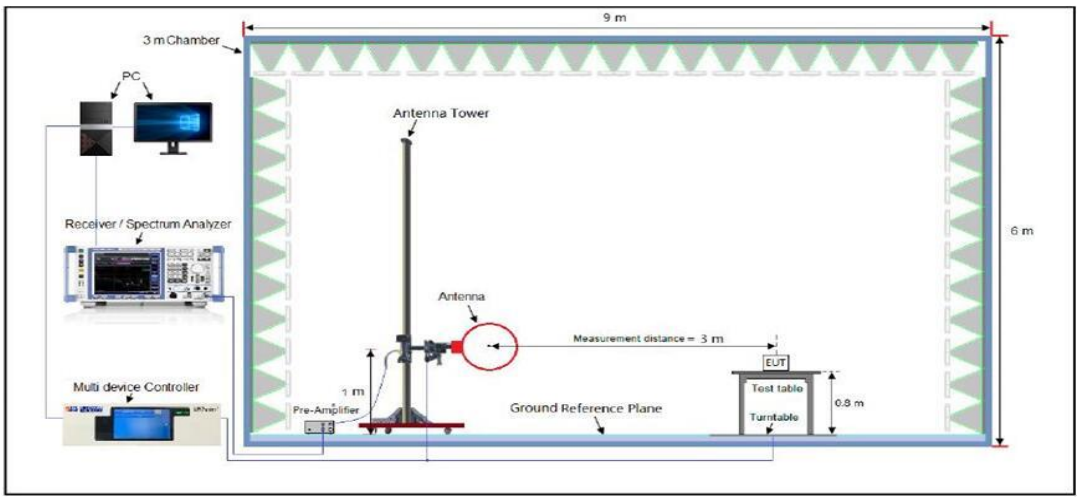
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW = 3MHz
4. Detector = peak
5. Sweep time = auto couple
6. Trace mode = max hold
7. Trace was allowed to stabilize

- **Average Measurements above 1GHz**

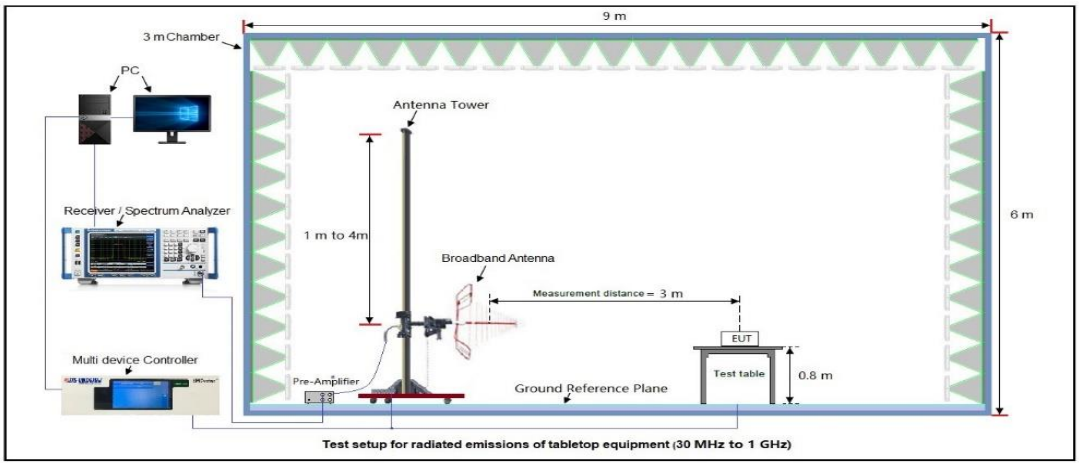
1. Analyzer center frequency was set to the frequency of the radiated spurious emission of interest
2. RBW = 1MHz
3. VBW ≥ [3 × RBW]
4. Detector = Power averaging (rms)
5. Averaging type = power (i.e., rms)
6. Sweep time = auto
7. Perform a trace average of at least 100 traces.
8. The applicable correction factor is [10*log (1 / D)], where D is the duty cycle. The factor had been edited in the “Input Correction” of the Spectrum Analyzer.

## 11.3 Measurement Setup (Block Diagram of Configuration)

Radiated Emission Test Setup 9kHz-30MHz

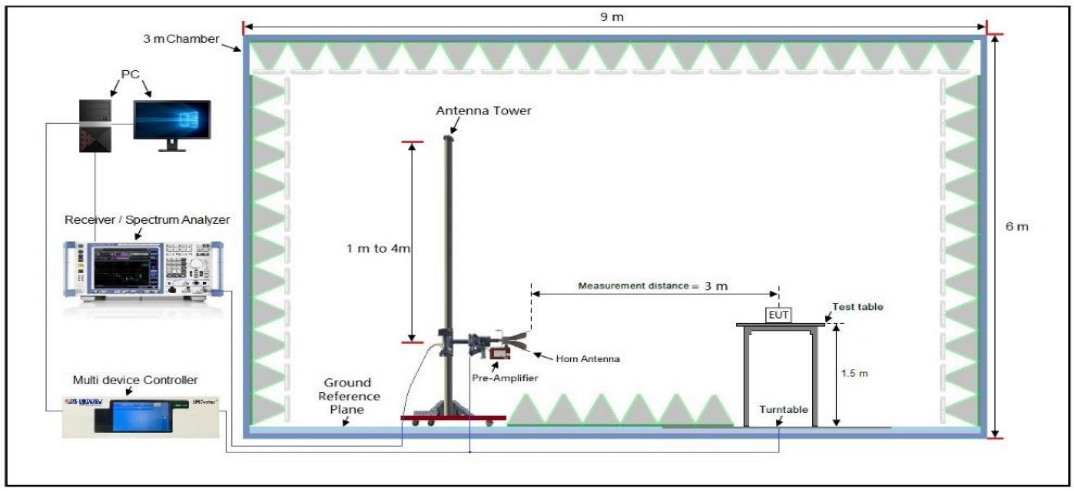



Radiated Emission Test Setup 30MHz-1000MHz




Test setup for radiated emissions of tabletop equipment (30 MHz to 1 GHz)

Radiated Emission Test Setup Above 1000MHz

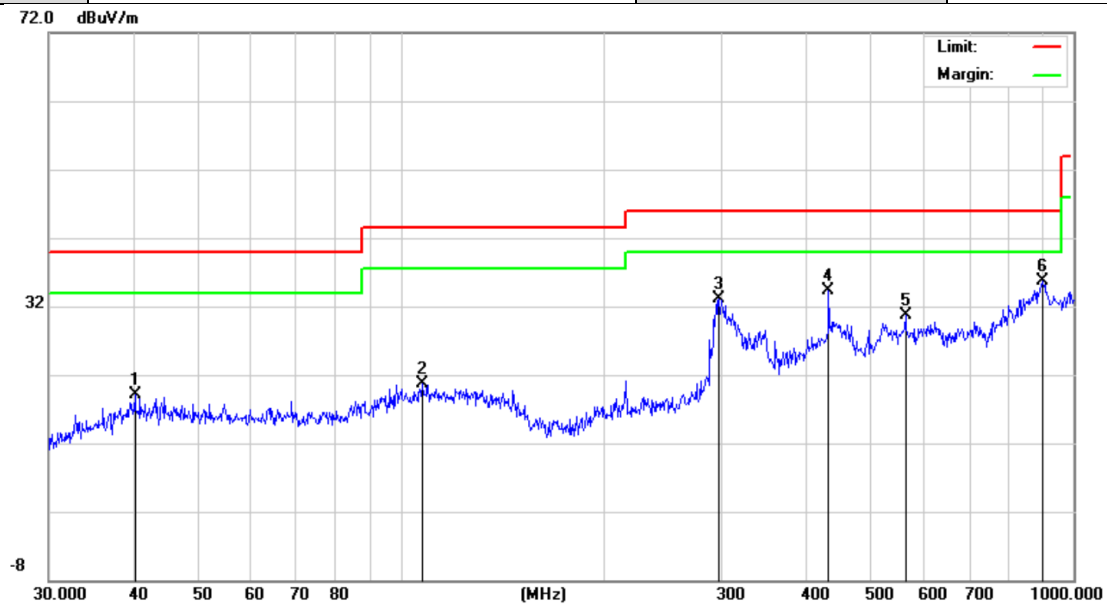


### 11.4 Measurement Result

**Radiated Emission at 9kHz-30MHz**

The amplitude of spurious emissions from 9kHz to 30MHz which are attenuated more than 20 dB below the permissible value need not be reported.

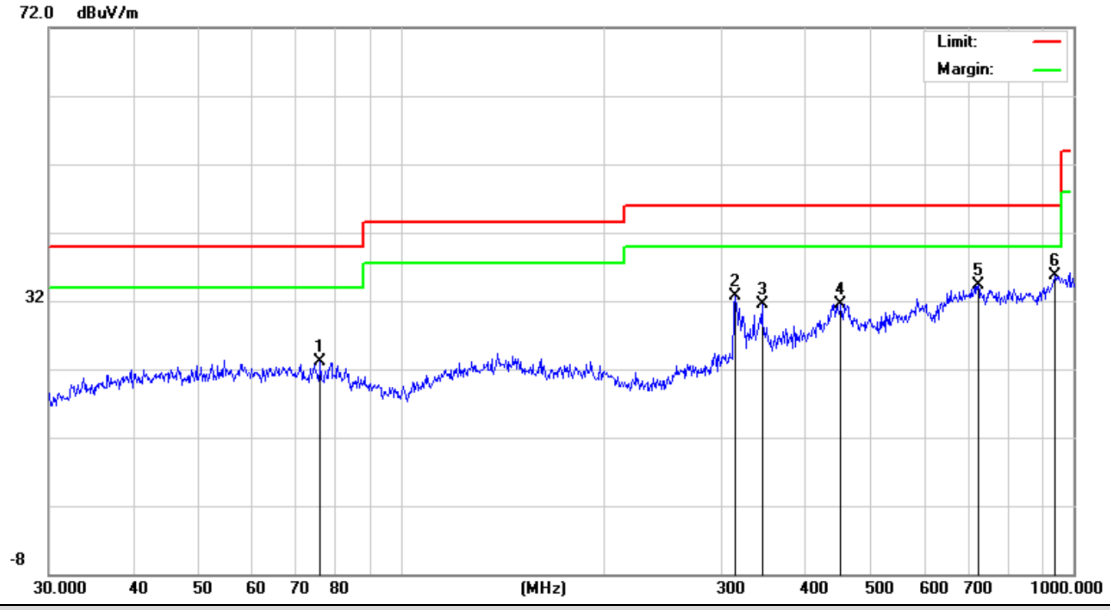
| Radiated Emission Test Results at 30MHz-1GHz | | | |
|---|---|---|---|
| **EUT Name** | ATOM 2 Drone | **Model Name** | DSDR23A |
| **Temperature** | 22.6℃ | **Relative Humidity** | 56.3% |
| **Pressure** | 960hPa | **Test Voltage** | DC 7.7V |
| **Test Mode** | Mode 2 | **Antenna Polarity** | Horizontal |




**Final Peak Data List**

| NO. | Freq. [MHz] | Level [dBμV/m] | Factor [dB] | Limit [dBμV/m] | Margin [dB] | Height [cm] | Angle [°] | Polarity |
|---|---|---|---|---|---|---|---|---|
| 1 | 40.2757 | 19.01 | 13.88 | 40.00 | 20.99 | 100 | 160 | Horizontal |
| 2 | 107.8876 | 20.76 | 16.28 | 43.50 | 22.74 | 100 | 170 | Horizontal |
| 3 | 297.2241 | 33.09 | 16.28 | 46.00 | 12.91 | 100 | 90 | Horizontal |
| 4 | 432.5457 | 34.26 | 23.50 | 46.00 | 11.74 | 100 | 220 | Horizontal |
| 5 | 562.6624 | 30.70 | 24.21 | 46.00 | 15.3 | 100 | 160 | Horizontal |
| 6 | 900.1473 | 35.61 | 31.78 | 46.00 | 10.39 | 100 | 140 | Horizontal |

| Radiated Emission Test Results at 30MHz-1GHz | | | |
|---|---|---|---|
| **EUT Name** | ATOM 2 Drone | **Model Name** | DSDR23A |
| **Temperature** | 25°C | **Relative Humidity** | 55.4% |
| **Pressure** | 960hPa | **Test Voltage** | DC 7.7V |
| **Test Mode** | Mode 2 | **Antenna Polarity** | Vertical |




**Final Peak Data List**

| NO. | Freq. [MHz] | Level [dBµV/m] | Factor [dB] | Limit [dBµV/m] | Margin [dB] | Height [cm] | Angle [°] | Polarity |
|---|---|---|---|---|---|---|---|---|
| 1 | 75.9773 | 23.08 | 16.94 | 40.00 | 16.92 | 100 | 120 | Vertical |
| 2 | 314.3765 | 32.70 | 19.91 | 46.00 | 13.3 | 100 | 180 | Vertical |
| 3 | 344.3855 | 31.42 | 19.95 | 46.00 | 14.58 | 100 | 90 | Vertical |
| 4 | 451.1350 | 31.57 | 25.60 | 46.00 | 14.43 | 100 | 210 | Vertical |
| 5 | 721.7259 | 34.26 | 28.64 | 46.00 | 11.74 | 100 | 180 | Vertical |
| 6 | 938.8326 | 35.78 | 30.84 | 46.00 | 10.22 | 100 | 100 | Vertical |

**RESULT: Pass**

**Note:** 1. Factor=Antenna Factor + Cable loss, Margin=Measurement-Limit.

2. All test modes had been pre-tested. The mode 2 is the worst case and recorded in the report.

**Radiated Emissions Test Results above 1 GHz**

| **EUT Name** | ATOM 2 Drone | **Model Name** | DSDR23A |
|---|---|---|---|
| **Temperature** | 25°C | **Relative Humidity** | 55.4% |
| **Pressure** | 960hPa | **Test Voltage** | DC 7.7V |
| **Test Mode** | Mode 1 | **Antenna Polarity** | Horizontal |

| Frequency | Meter Reading | Factor | Emission Level | Limits | Margin | Value Type |
|---|---|---|---|---|---|---|
| (MHz) | (dBμV) | (dB) | (dBμV/m) | (dBμV/m) | (dB) | |
| 4830.000 | 50.74 | 0.08 | 50.82 | 74.00 | -23.18 | peak |
| 4830.000 | 41.06 | 0.08 | 41.14 | 54.00 | -12.86 | AVG |
| 7245.000 | 48.77 | 2.21 | 50.98 | 74.00 | -23.02 | peak |
| 7245.000 | 41.36 | 2.21 | 43.57 | 54.00 | -10.43 | AVG |
| Remark: | | | | | | |
| Factor = Antenna Factor + Cable Loss – Pre-amplifier. | | | | | | |

| **EUT Name** | ATOM 2 Drone | **Model Name** | DSDR23A |
|---|---|---|---|
| **Temperature** | 25°C | **Relative Humidity** | 55.4% |
| **Pressure** | 960hPa | **Test Voltage** | DC 7.7V |
| **Test Mode** | Mode 1 | **Antenna Polarity** | Vertical |

| Frequency | Meter Reading | Factor | Emission Level | Limits | Margin | Value Type |
|---|---|---|---|---|---|---|
| (MHz) | (dBμV) | (dB) | (dBμV/m) | (dBμV/m) | (dB) | |
| 4830.000 | 51.12 | 0.08 | 51.2 | 74.00 | -22.80 | peak |
| 4830.000 | 41.05 | 0.08 | 41.13 | 54.00 | -12.87 | AVG |
| 7245.000 | 49.33 | 2.21 | 51.54 | 74.00 | -22.46 | peak |
| 7245.000 | 40.05 | 2.21 | 42.26 | 54.00 | -11.74 | AVG |
| Remark: | | | | | | |
| Factor = Antenna Factor + Cable Loss – Pre-amplifier. | | | | | | |

**RESULT: Pass**

**Radiated Emissions Test Results above 1GHz**

| **EUT Name** | ATOM 2 Drone | **Model Name** | DSDR23A |
|---|---|---|---|
| **Temperature** | 25°C | **Relative Humidity** | 55.4% |
| **Pressure** | 960hPa | **Test Voltage** | DC 7.7V |
| **Test Mode** | Mode 2 | **Antenna Polarity** | Horizontal |

| Frequency | Meter Reading | Factor | Emission Level | Limits | Margin | Value Type |
|---|---|---|---|---|---|---|
| (MHz) | (dBμV) | (dB) | (dBμV/m) | (dBμV/m) | (dB) | |
| 4890.000 | 50.01 | 0.14 | 50.15 | 74.00 | -23.85 | peak |
| 4890.000 | 40.37 | 0.14 | 40.51 | 54.00 | -13.49 | AVG |
| 7335.000 | 49.32 | 2.36 | 51.68 | 74.00 | -22.32 | peak |
| 7335.000 | 40.01 | 2.36 | 42.37 | 54.00 | -11.63 | AVG |
| Remark: | | | | | | |
| Factor = Antenna Factor + Cable Loss – Pre-amplifier. | | | | | | |

| **EUT Name** | ATOM 2 Drone | **Model Name** | DSDR23A |
|---|---|---|---|
| **Temperature** | 25°C | **Relative Humidity** | 55.4% |
| **Pressure** | 960hPa | **Test Voltage** | DC 7.7V |
| **Test Mode** | Mode 2 | **Antenna Polarity** | Vertical |

| Frequency | Meter Reading | Factor | Emission Level | Limits | Margin | Value Type |
|---|---|---|---|---|---|---|
| (MHz) | (dBμV) | (dB) | (dBμV/m) | (dBμV/m) | (dB) | |
| 4890.000 | 50.01 | 0.14 | 50.15 | 74.00 | -23.85 | peak |
| 4890.000 | 40.37 | 0.14 | 40.51 | 54.00 | -13.49 | AVG |
| 7335.000 | 49.32 | 2.36 | 51.68 | 74.00 | -22.32 | peak |
| 7335.000 | 40.01 | 2.36 | 42.37 | 54.00 | -11.63 | AVG |
| Remark: | | | | | | |
| Factor = Antenna Factor + Cable Loss – Pre-amplifier. | | | | | | |

**RESULT: Pass**

**Radiated Emissions Test Results above 1GHz**

| | | | |
|---|---|---|---|
| **EUT Name** | ATOM 2 Drone | **Model Name** | DSDR23A |
| **Temperature** | 25°C | **Relative Humidity** | 55.4% |
| **Pressure** | 960hPa | **Test Voltage** | DC 7.7V |
| **Test Mode** | Mode 3 | **Antenna Polarity** | Horizontal |

| Frequency | Meter Reading | Factor | Emission Level | Limits | Margin | Value Type |
|---|---|---|---|---|---|---|
| (MHz) | (dBμV) | (dB) | (dBμV/m) | (dBμV/m) | (dB) | |
| 4940.000 | 50.01 | 0.22 | 50.23 | 74.00 | -23.77 | peak |
| 4940.000 | 40.39 | 0.22 | 40.61 | 54.00 | -13.39 | AVG |
| 7410.000 | 47.63 | 2.64 | 50.27 | 74.00 | -23.73 | peak |
| 7410.000 | 40.01 | 2.64 | 42.65 | 54.00 | -11.35 | AVG |
| Remark: | | | | | | |
| Factor = Antenna Factor + Cable Loss – Pre-amplifier. | | | | | | |

| | | | |
|---|---|---|---|
| **EUT Name** | ATOM 2 Drone | **Model Name** | DSDR23A |
| **Temperature** | 25°C | **Relative Humidity** | 55.4% |
| **Pressure** | 960hPa | **Test Voltage** | DC 7.7V |
| **Test Mode** | Mode 3 | **Antenna Polarity** | Vertical |

| Frequency | Meter Reading | Factor | Emission Level | Limits | Margin | Value Type |
|---|---|---|---|---|---|---|
| (MHz) | (dBμV) | (dB) | (dBμV/m) | (dBμV/m) | (dB) | |
| 4940.000 | 48.96 | 0.22 | 49.18 | 74.00 | -24.82 | peak |
| 4940.000 | 41.34 | 0.22 | 41.56 | 54.00 | -12.44 | AVG |
| 7410.000 | 46.55 | 2.64 | 49.19 | 74.00 | -24.81 | peak |
| 7410.000 | 41.27 | 2.64 | 43.91 | 54.00 | -10.09 | AVG |
| Remark: | | | | | | |
| Factor = Antenna Factor + Cable Loss – Pre-amplifier. | | | | | | |

**RESULT: Pass**

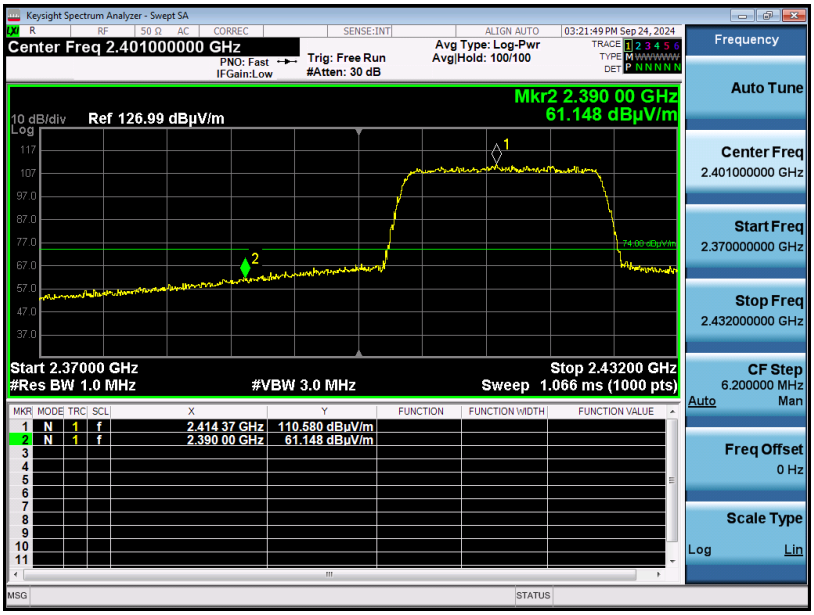
**Note:**

1. The amplitude of other spurious emissions from 1G to 26 GHz which are attenuated more than 20 dB below the permissible value need not be reported.
2. Factor = Antenna Factor + Cable loss – Pre-amplifier gain, Margin =Emission Level-Limit.
3. The “Factor” value can be calculated automatically by software of measurement system.

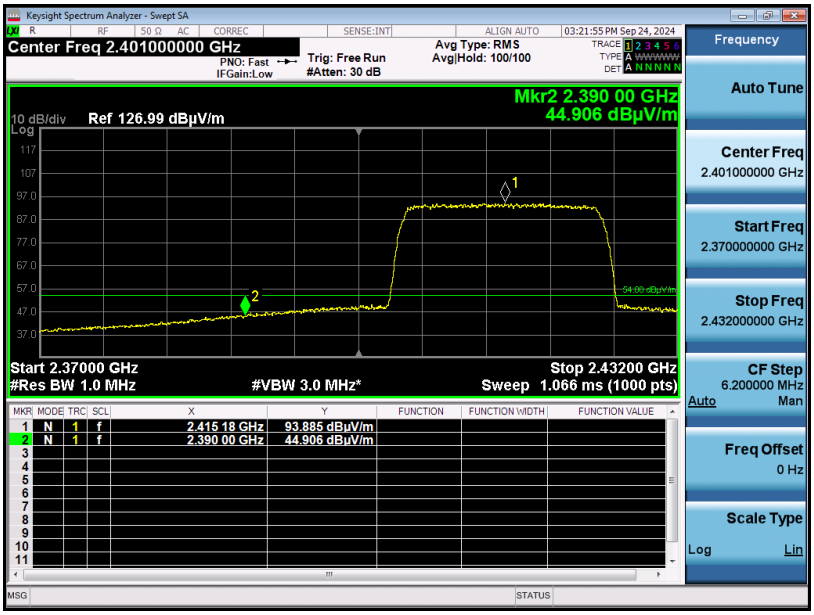
**Band Edge Emission Test Results for Restricted Bands-Chain A**

| EUT Name | ATOM 2 Drone | Model Name | DSDR23A |
|---|---|---|---|
| Temperature | 25°C | Relative Humidity | 55.4% |
| Pressure | 960hPa | Test Voltage | DC 7.7V |
| Test Mode | Mode 1 | Antenna Polarity | Horizontal |

Test Graph for Peak Measurement




Test Graph for Average Measurement

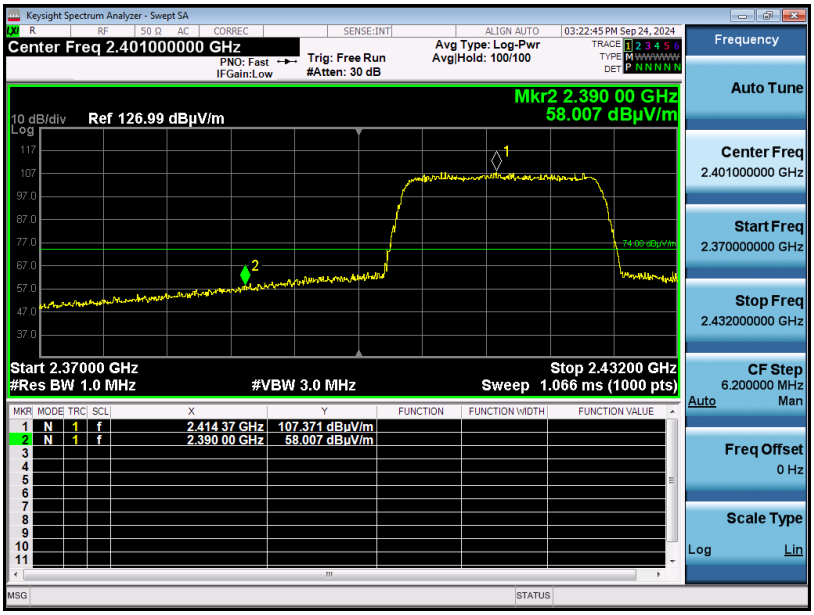



**RESULT: Pass**

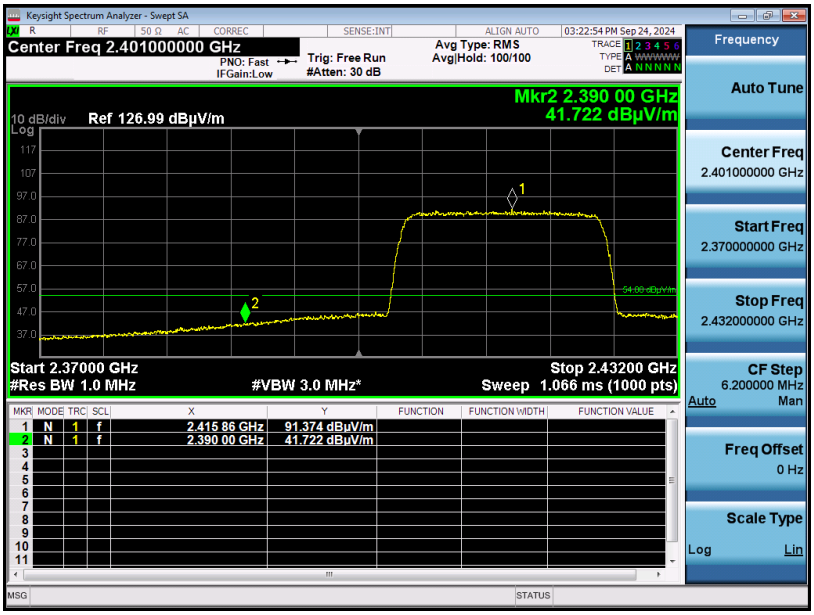
## Band Edge Emission Test Results for Restricted Bands-Chain A

| EUT Name | ATOM 2 Drone | Model Name | DSDR23A |
|---|---|---|---|
| Temperature | 25°C | Relative Humidity | 55.4% |
| Pressure | 960hPa | Test Voltage | DC 7.7V |
| Test Mode | Mode 1 | Antenna Polarity | Vertical |

Test Graph for Peak Measurement




Test Graph for Average Measurement

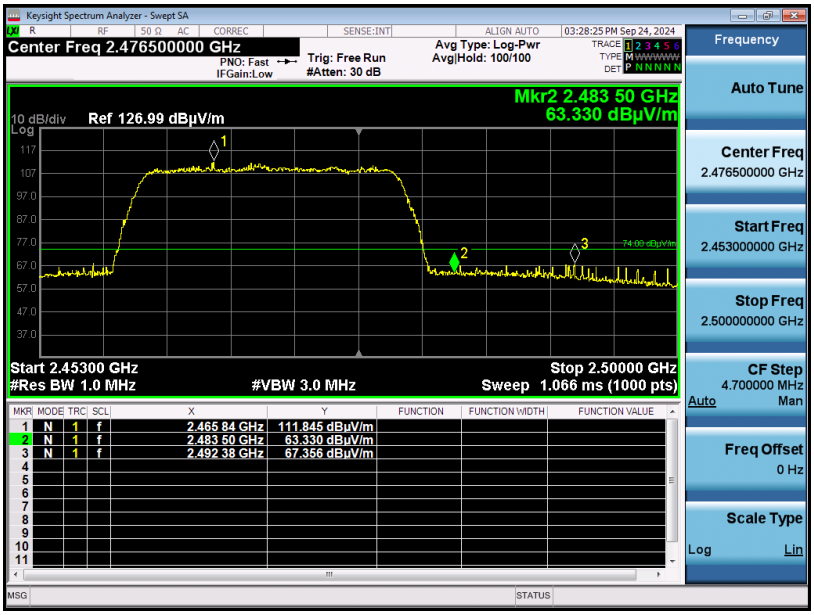



**RESULT: Pass**

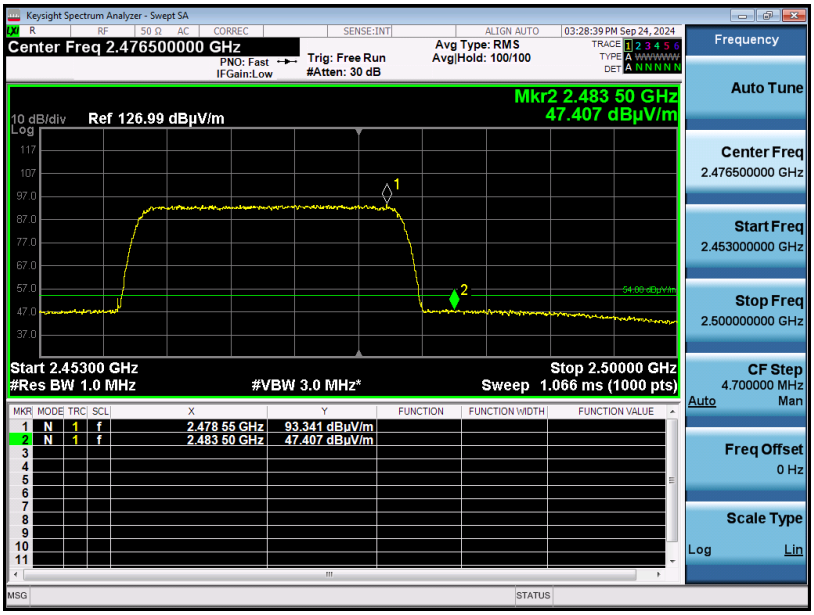
**Band Edge Emission Test Results for Restricted Bands-Chain A**

| EUT Name | ATOM 2 Drone | Model Name | DSDR23A |
|---|---|---|---|
| Temperature | 25°C | Relative Humidity | 55.4% |
| Pressure | 960hPa | Test Voltage | DC 7.7V |
| Test Mode | Mode 3 | Antenna Polarity | Horizontal |

Test Graph for Peak Measurement




Test Graph for Average Measurement

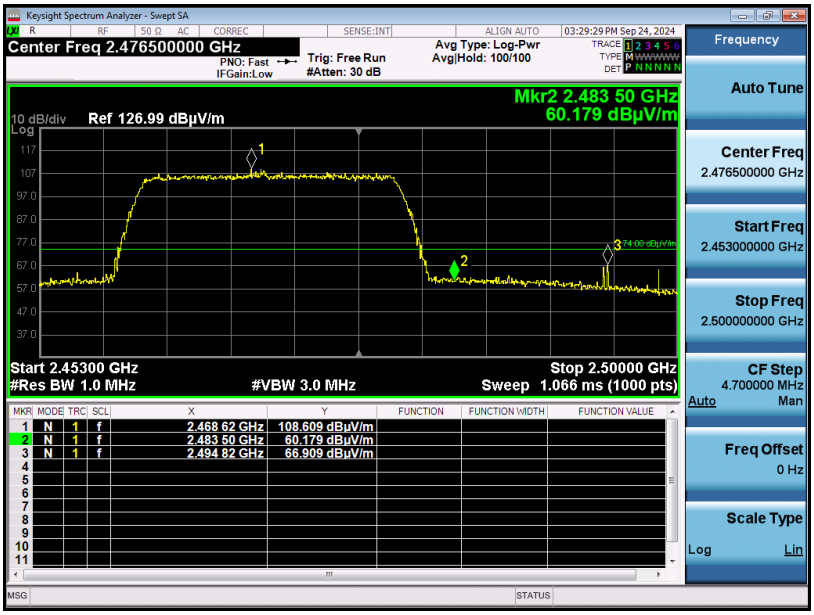



**RESULT: Pass**

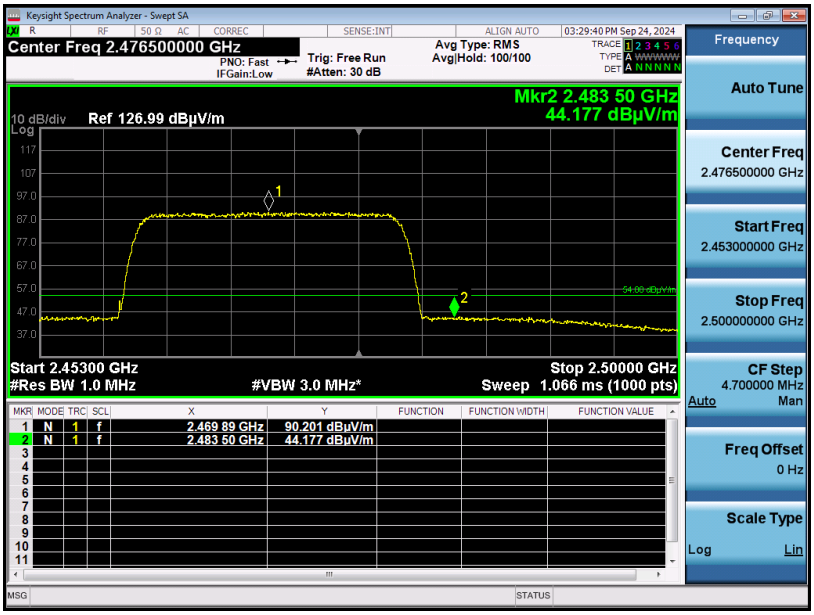
## Band Edge Emission Test Results for Restricted Bands-Chain A

| EUT Name | ATOM 2 Drone | Model Name | DSDR23A |
|---|---|---|---|
| Temperature | 25°C | Relative Humidity | 55.4% |
| Pressure | 960hPa | Test Voltage | DC 7.7V |
| Test Mode | Mode 3 | Antenna Polarity | Vertical |

Test Graph for Peak Measurement




Test Graph for Average Measurement

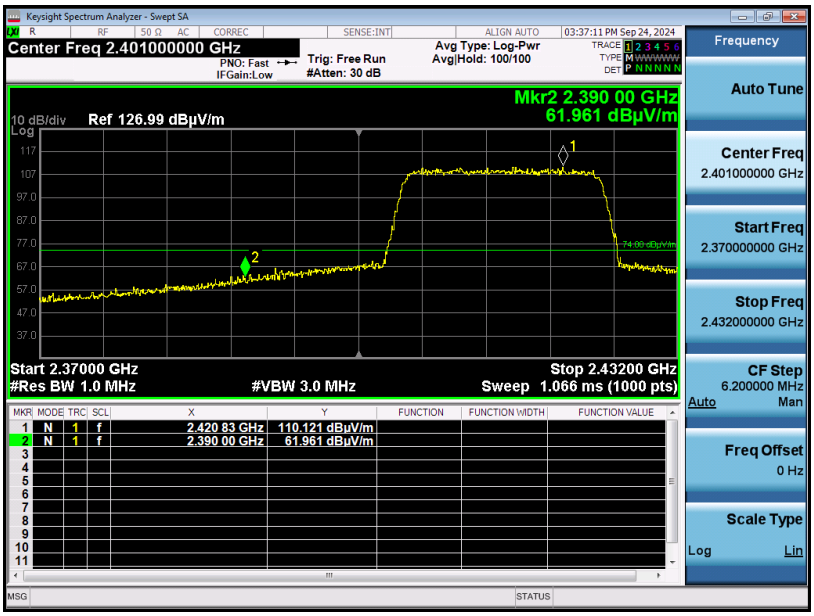



**RESULT: Pass**

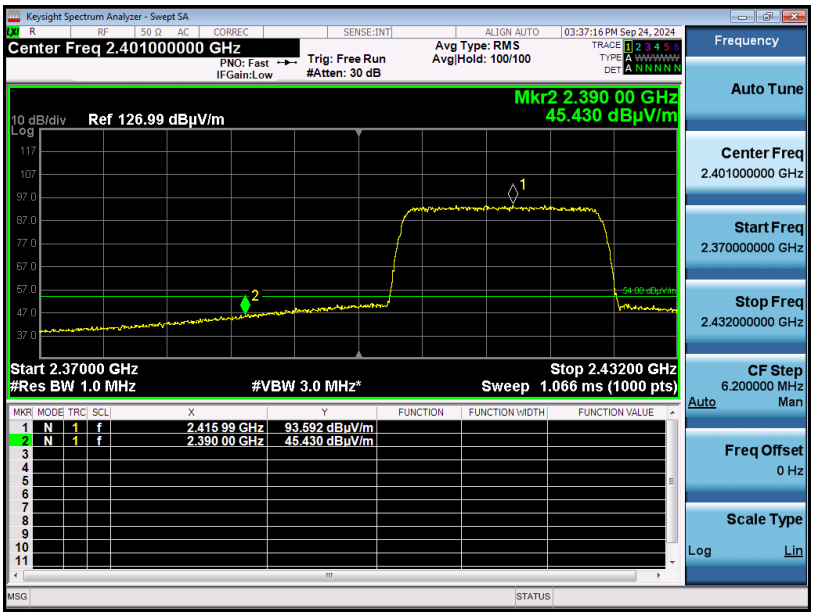
**Test result for band edge emission at restricted bands-Chain B**

| | | | |
|---|---|---|---|
| **EUT** | ATOM 2 Drone | **Model Name** | DSDR23A |
| **Temperature** | 25°C | **Relative Humidity** | 55.4% |
| **Pressure** | 960hPa | **Test Voltage** | DC 7.7V |
| **Test Mode** | 802.11b with data rate 1<br>2412MHz | **Antenna** | Horizontal |

Test Graph for Peak Measurement




Test Graph for Average Measurement

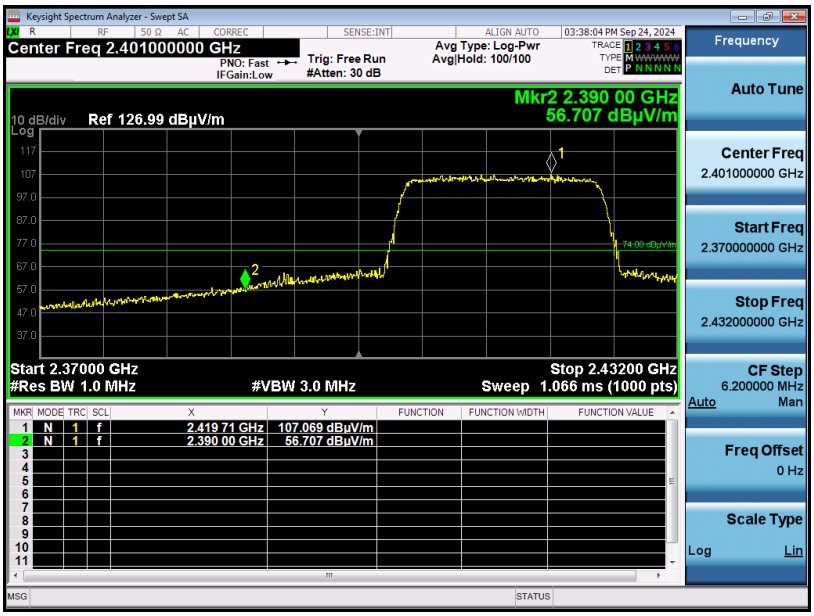



**RESULT: PASS**

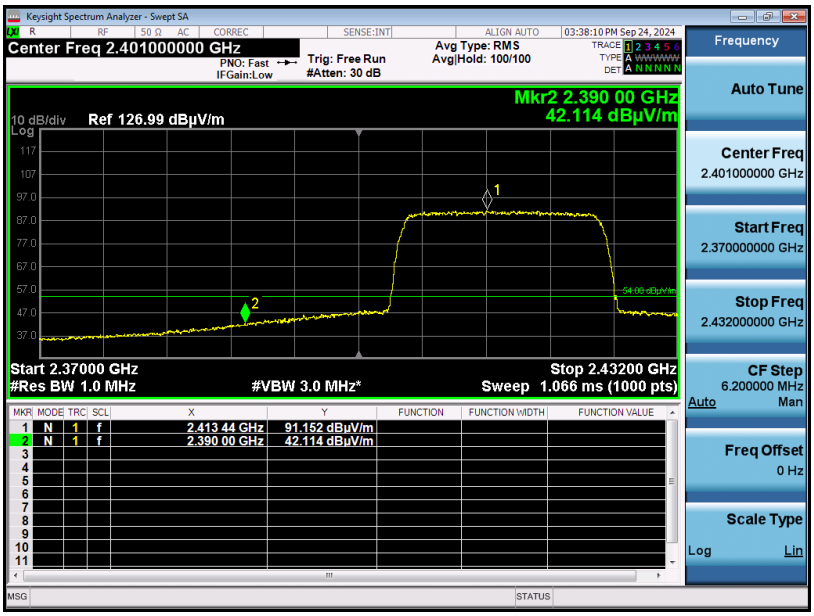
**Test result for band edge emission at restricted bands-Chain B**

| | | | |
|---|---|---|---|
| **EUT** | ATOM 2 Drone | **Model Name** | DSDR23A |
| **Temperature** | 25°C | **Relative Humidity** | 55.4% |
| **Pressure** | 960hPa | **Test Voltage** | DC 7.7V |
| **Test Mode** | 802.11b with data rate 1<br>2412MHz | **Antenna** | Vertical |

Test Graph for Peak Measurement




Test Graph for Average Measurement

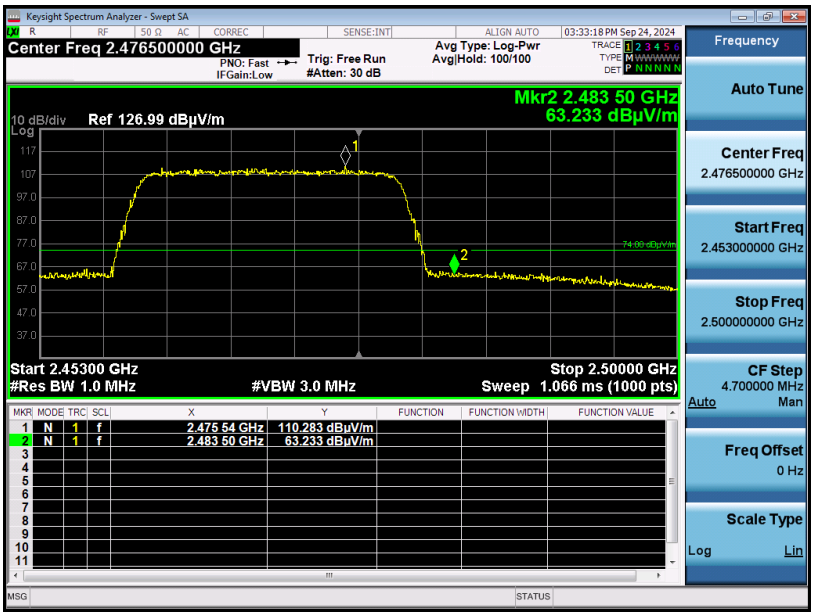



**RESULT: PASS**

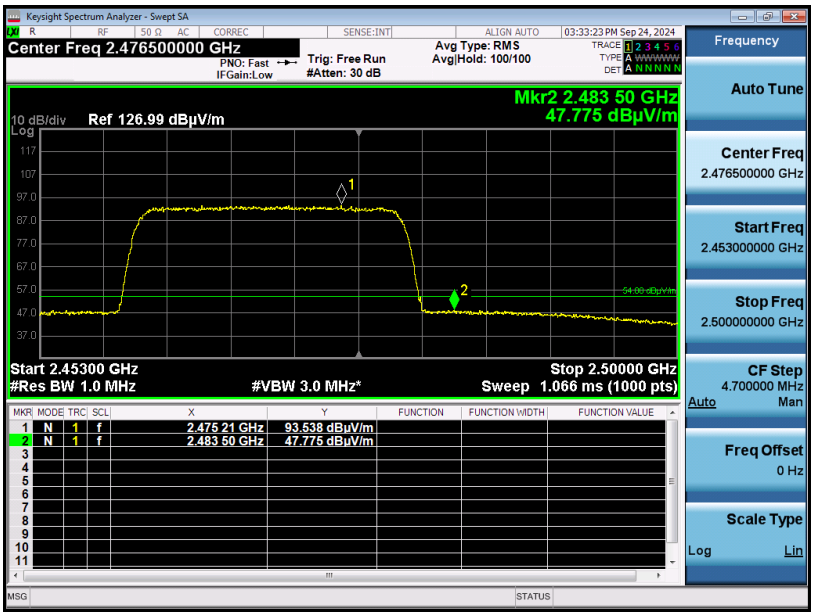
**Test result for band edge emission at restricted bands-Chain B**

| | | | |
|---|---|---|---|
| **EUT** | ATOM 2 Drone | **Model Name** | DSDR23A |
| **Temperature** | 25°C | **Relative Humidity** | 55.4% |
| **Pressure** | 960hPa | **Test Voltage** | DC 7.7V |
| **Test Mode** | 802.11b with data rate 1<br>2462MHz | **Antenna** | Horizontal |

Test Graph for Peak Measurement




Test Graph for Average Measurement



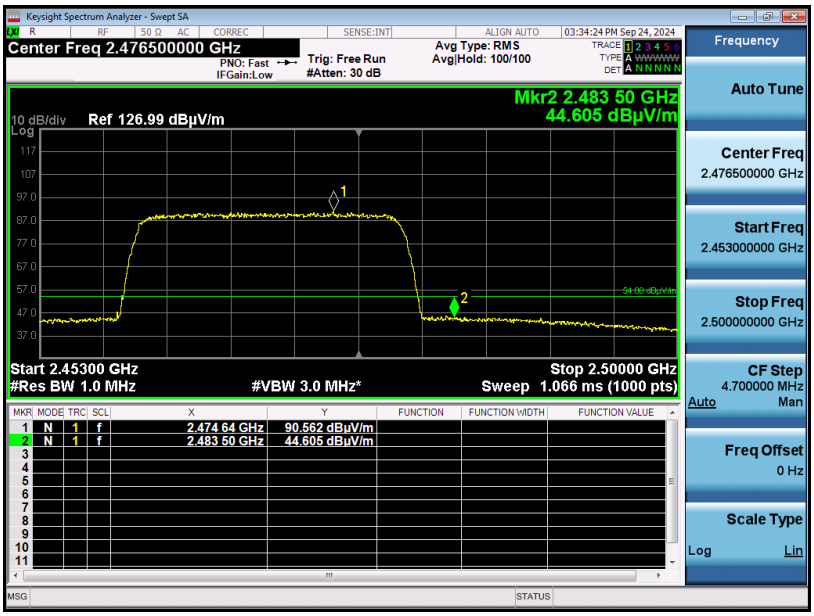

**RESULT: PASS**

**Test result for band edge emission at restricted bands-Chain B**

| | | | |
|---|---|---|---|
| **EUT** | ATOM 2 Drone | **Model Name** | DSDR23A |
| **Temperature** | 25°C | **Relative Humidity** | 55.4% |
| **Pressure** | 960hPa | **Test Voltage** | DC 7.7V |
| **Test Mode** | 802.11b with data rate 1<br>2462MHz | **Antenna** | Vertical |

Test Graph for Peak Measurement


Test Graph for Average Measurement




**RESULT: PASS**

Note: The factor had been edited in the “Input Correction” of the Spectrum Analyzer.

# 12. AC Power Line Conducted Emission

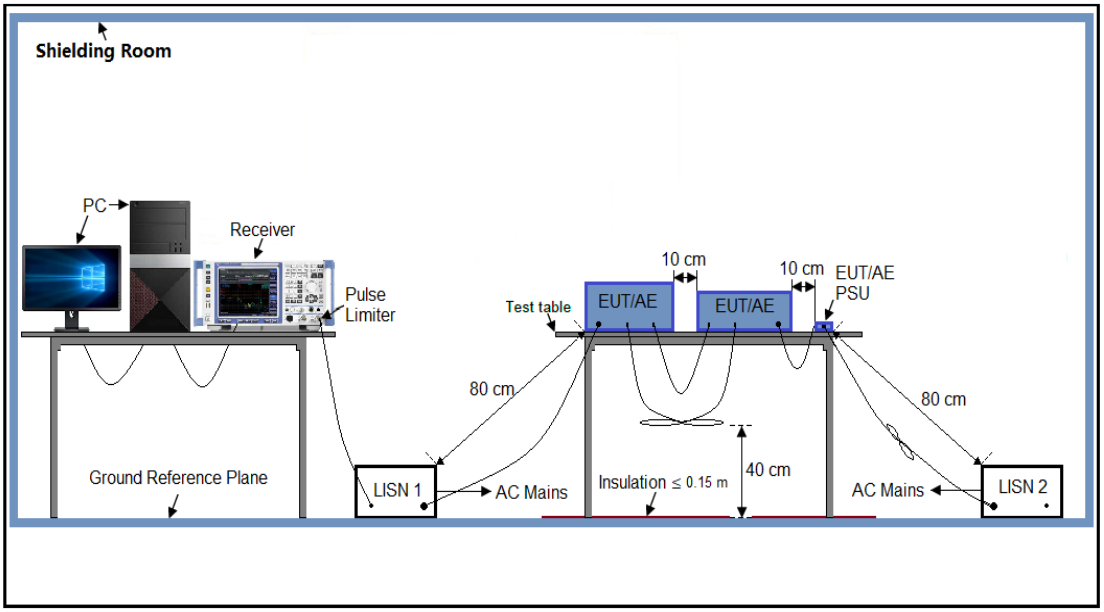
## 12.1 Measurement Limits

| Frequency | Maximum RF Line Voltage | |
|---|---|---|
| | Q.P (dBμV) | Average (dBμV) |
| 150kHz~500kHz | 66-56 | 56-46 |
| 500kHz~5MHz | 56 | 46 |
| 5MHz~30MHz | 60 | 50 |

Note:

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

## 12.2 Block Diagram of Line Conducted Emission Test



**12.3 Preliminary Procedure of Line Conducted Emission Test**

1. The equipment was set up as per the test configuration to simulate typical actual usage per the user's manual. When the EUT is a tabletop system, a wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10 (see Test Facility for the dimensions of the ground plane used). When the EUT is a floor-standing equipment, it is placed on the ground plane which has a 3-12 mm non-conductive covering to insulate the EUT from the ground plane.
2. Support equipment, if needed, was placed as per ANSI C63.10.
3. All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.
4. All support equipment received AC120V/60Hz power from a LISN, if any.
5. The EUT received DC 5V power from adapter which received AC120V/60Hz power from a LISN.
6. The test program was started. Emissions were measured on each current carrying line of the EUT using a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has two monitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 Ohm load; the second scan had Line 1 connected to a 50 Ohm load and Line 2 connected to the Analyzer / Receiver.
7. Analyzer / Receiver scanned from 150 kHz to 30MHz for emissions in each of the test modes.
8. During the above scans, the emissions were maximized by cable manipulation.
9. The test mode(s) were scanned during the preliminary test.

Then, the EUT configuration and cable configuration of the above highest emission level were recorded for reference of final testing.

**12.4 Final Procedure of Line Conducted Emission Test**

1. EUT and support equipment was set up on the test bench as per step 2 of the preliminary test.
2. A scan was taken on both power lines, Line 1 and Line 2, recording at least the six highest emissions. Emission frequency and amplitude were recorded into a computer in which correction factors were used to calculate the emission level and compare reading to the applicable limit. If EUT emission level was less –2dB to the A.V. limit in Peak mode, then the emission signal was re-checked using Q.P and Average detector.
3. The test data of the worst case was reported on the Summary Data page.

**12.5 Test Result of Line Conducted Emission Test**

N/A

Note: The Custom IEEE 802.11 function cannot transmit when charging.

## Appendix I: Photographs of Test Setup

Refer to the Report No.: AGC11805240901AP01

## Appendix II: Photographs of Test EUT

Refer to the Report No.: AGC11805240901AP02

**-----End of Report-----**

# Conditions of Issuance of Test Reports

1. All samples and goods are accepted by the Attestation of Global Compliance (Shenzhen) Co., Ltd (the "Company") solely for testing and reporting in accordance with the following terms and conditions. The company provides its services on the basis that such terms and conditions constitute express agreement between the company and any person, firm or company requesting its services (the "Clients").

2. Any report issued by Company as a result of this application for testing services (the "Report") shall be issued in confidence to the Clients and the Report will be strictly treated as such by the Company. It may not be reproduced either in its entirety or in part and it may not be used for advertising or other unauthorized purposes without the written consent of the Company. The Clients to whom the Report is issued may, however, show or send it, or a certified copy thereof prepared by the Company to its customer, supplier or other persons directly concerned. The Company will not, without the consent of the Clients, enter into any discussion or correspondence with any third party concerning the contents of the Report, unless required by the relevant governmental authorities, laws or court orders.

3.The Company shall not be called or be liable to be called to give evidence or testimony on the Report in a court of law without its prior written consent, unless required by the relevant governmental authorities, laws or court orders.

4. In the event of the improper use of the report as determined by the Company, the Company reserves the right to withdraw it, and to adopt any other additional remedies which may be appropriate.

5. Samples submitted for testing are accepted on the understanding that the Report issued cannot form the basis of, or be the instrument for, any legal action against the Company.

6. The Company will not be liable for or accept responsibility for any loss or damage however arising from the use of information contained in any of its Reports or in any communication whatsoever about its said tests or investigations.

7.Clients wishing to use the Report in court proceedings or arbitration shall inform the Company to that effect prior to submitting the sample for testing.

8. The Company is not responsible for recalling the electronic version of the original report when any revision is made to them. The Client assumes the responsibility to providing the revised version to any interested party who uses them.

9. Subject to the variable length of retention time for test data and report stored hereinto as otherwise specifically required by individual accreditation authorities, the Company will only keep the supporting test data and information of the test report for a period of six years. The data and information will be disposed of after the aforementioned retention period has elapsed. Under no circumstances shall we provide any data and information which has been disposed of after retention period. Under no circumstances shall we be liable for damage of any kind, including (but not limited to) compensatory damages, lost profits, lost data, or any form of special, incidental, indirect, consequential or punitive damages of any kind, whether based on breach of contract of warranty, tort (including negligence), product liability or otherwise, even if we are informed in advance of the possibility of such damages.