# CFR 47 FCC PART 15 SUBPART C
# ISED RSS-247 Issue 2

# CERTIFICATION TEST REPORT

*For*

**SMART VACUUM CLEANER**

**MODEL NUMBER: VS171100US**

**PROJECT NUMBER: 4790528203**

**REPORT NUMBER: 4790528203-2**

**FCC ID: 2AV7A-S16**

**IC: 26039-S16**

**ISSUE DATE: Sep. 07, 2022**

*Prepared for*

**Tineco Intelligent Technology Co., Ltd.**

*Prepared by*

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Revision History

| Rev. | Issue Date | Revisions | Revised By |
|---|---|---|---|
| V0 | 09/07/2022 | Initial Issue | |

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# 1. ATTESTATION OF TEST RESULTS

| | |
|---|---|
| Company Name: | Tineco Intelligent Technology Co., Ltd. |
| Address: | No. 108 Shihu Road West, Wuzhong Zone,Suzhou, 215168 P.R.China |
| **Factory Information** | |
| Company Name: | Tineco Intelligent Technology Co., Ltd. |
| Address: | No. 108 Shihu Road West, Wuzhong Zone,Suzhou, 215168 P.R.China |
| **EUT Description** | |
| Product Name: | SMART VACUUM CLEANER |
| Model Number: | VS171100US |
| Sample Number: | 5264557 |
| Data of Receipt Sample: | Aug.20, 2022 |
| Date Tested: | Aug.20, 2022 – Sep. 06, 2022 |

| APPLICABLE STANDARDS | |
|---|---|
| **STANDARD** | **TEST RESULTS** |
| CFR 47 Part 15 Subpart C | PASS |
| ISED RSS-247 Issue 2 | PASS |
| ISED RSS-GEN Issue 5 | PASS |

| Summary of Test Results | | | |
|---|---|---|---|
| Clause | Test Items | FCC Rules | Test Results |
| 1 | 6db DTS Bandwidth and 99% Bandwidth | FCC 15.247 (a) (2)<br>RSS-247 Clause 5.2 (a)<br>RSS-Gen Clause 6.7 | Complied |
| 2 | Conducted Power | FCC 15.247 (b) (3)<br>RSS-247 Clause 5.4 (d)<br>RSS-Gen Clause 6.12 | Complied |
| 3 | Power Spectral Density | FCC 15.247 (e)<br>RSS-247 Clause 5.2 (b) | Complied |
| 4 | Conducted Band edge And Spurious emission | FCC 15.247 (d)<br>RSS-247 Clause 5.5<br>RSS-GEN Clause 6.13 | Complied |
| 5 | Radiated Band edges and Spurious emission | FCC 15.247 (d)<br>FCC 15.209<br>FCC 15.205<br>RSS-247 Clause 5.5<br>RSS-GEN Clause 8.9<br>RSS-GEN Clause 6.13 | Complied |
| 6 | Conducted Emission Test For AC Power Port | FCC 15.207<br>RSS-GEN Clause 8.8 | Complied |
| 7 | Antenna Requirement | FCC 15.203<br>RSS-GEN Clause 6.8 | Complied |
| Remark:<br>1) The measurement result for the sample received is <Pass> according to < ANSI C63.10-2013, FCC CFR 47 Part 2, FCC CFR 47 Part 15C, ISED RSS-GEN, ISED RSS-247> when <Accuracy Method> decision rule is applied. | | | |

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EMC&RF Lab Operations Manager

# 2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with FCC KDB 558074 D01 15.247 Meas Guidance v05r02, KDB 414788 D01 Radiated Test Site v01r01, ANSI C63.10-2013, FCC CFR 47 Part 2, FCC CFR 47 Part 15, ISED RSS-GEN ISSUE5, ISED RSS-247 ISSUE2.

# 3. FACILITIES AND ACCREDITATION

| | |
|---|---|
| Test Location | **UL-CCIC Company Limited, EMC&RF Lab** |
| Address | **No. 2, Chengwan Road, Suzhou Industrial Park, Suzhou 215122 ,China** |
| Accreditation Certificate | **A2LA (Certificate No.: 4829.01)**<br>**UL-CCIC COMPANY LIMITED has been assessed and proved to be in compliance with A2LA.**<br>**FCC (FCC Designation No.: CN1247)**<br>**UL-CCIC COMPANY LIMITED has been recognized to perform compliance testing on equipment subject to the Commission's Declaration of Conformity (DoC) and Certification rules.**<br>**IC (IC Designation No.: 25056; CAB No.:CN0073)**<br>**UL-CCIC COMPANY LIMITED has been recognized to perform compliance testing on equipment subject to the Commission's Declaration of Conformity (DoC) and Certification rules.** |

Note 1: All tests measurement facilities use to collect the measurement data are located at No. 2, Chengwan Road, Suzhou Industrial Park, Suzhou 215122, People's Republic of China

Note 2: For below 30MHz, lab had performed measurements at test anechoic chamber and comparing to measurements obtained on an open field site. These measurements below 30MHz had been correlated to measurements performed on an OFS.

Note 3: The test anechoic chamber in UL-CCIC COMPANY LIMITED had been calibrated and compared to the open field sites and the test anechoic chamber is shown to be equivalent to or worst case from the open field site.

# 4. CALIBRATION AND UNCERTAINTY

## 4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

## 4.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

| Test Item | Uncertainty |
|---|---|
| Conduction emission | 3.1dB |
| Radiation Emission test(include Fundamental emission) (9KHz-30MHz) | 3.4dB |
| Radiation Emission test(include Fundamental emission) (30MHz-1GHz) | 3.4dB |
| Radiation Emission test (1GHz to 26GHz)( include Fundamental emission) | 3.7dB (1GHz-18Gz) |
| | 4.0dB (18GHz-26.5Gz) |
| Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2. | |

# 5. EQUIPMENT UNDER TEST

## 5.1. DESCRIPTION OF EUT

| | |
|---|---|
| Product Name: | SMART VACUUM CLEANER |
| Model No.: | VS171100US |
| Operating Frequency: | IEEE 802.11b/g/n(HT20): 2412MHz to 2462MHz |
| Type of Modulation: | IEEE for 802.11b: DSSS (CCK, DQPSK, DBPSK)<br>IEEE for 802.11g: OFDM (64QAM, 16QAM, QPSK, BPSK)<br>IEEE for 802.11n HT20: OFDM (64QAM, 16QAM, QPSK, BPSK) |
| Channels Step: | Channels with 5MHz step |
| Test software of EUT: | EspRFtestTool_2.0 (manufacturer declare) |
| Antenna Type: | PCB antenna |
| Antenna Gain: | 2.87dBi |
| | Remark: This data is provided by customer and our lab isn't responsible for this data |
| Test Voltage | AC120V/60Hz |

## 5.2. MAXIMUM OUTPUT POWER

| Number of Transmit Chains (NTX) | IEE Std. 802.11 | Channel Number | Max AV Conducted Power (dBm) |
|---|---|---|---|
| 1 | IEEE 802.11B SISO | 1-11[11] | 12.84 |
| 1 | IEEE 802.11G SISO | 1-11[11] | 10.88 |
| 1 | IEEE 802.11nHT20 | 1-11[11] | 10.73 |

## 5.3. CHANNEL LIST

| Channel List for 802.11b/g/n (20 MHz) | | | | | | | |
|---|---|---|---|---|---|---|---|
| Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) | Channel | Frequency (MHz) |
| 1 | 2412 | 4 | 2427 | 7 | 2442 | 10 | 2457 |
| 2 | 2417 | 5 | 2432 | 8 | 2447 | 11 | 2462 |
| 3 | 2422 | 6 | 2437 | 9 | 2452 | | |

## 5.4. TEST CHANNEL CONFIGURATION

| Test Mode | Test Channel | Frequency |
|---|---|---|
| WiFi TX(802.11b) | CH 1, CH 6, CH 11 | 2412MHz, 2437MHz, 2462MHz |
| WiFi TX(802.11g) | CH 1, CH 6, CH 11 | 2412MHz, 2437MHz, 2462MHz |
| WiFi TX(802.11n HT20) | CH 1, CH 6, CH 11 | 2412MHz, 2437MHz, 2462MHz |

## 5.5. THE WORSE CASE POWER SETTING PARAMETER

| The Worse Case Power Setting Parameter under 2400 ~ 2483.5MHz Band | | | | | | | |
|---|---|---|---|---|---|---|---|
| Test Software | | EspRFtestTool | | | | | |
| Modulation Mode | Transmit Antenna Number | Test Channel | | | | | |
| | | NCB: 20MHz | | | NCB: 40MHz | | |
| | | CH 1 | CH 6 | CH 11 | CH 3 | CH 6 | CH 9 |
| 802.11b | 1 | N/A | N/A | N/A | / | | |
| 802.11g | 1 | N/A | N/A | N/A | | | |
| 802.11n HT20 | 1 | N/A | N/A | N/A | | | |

Remark: The value list above is the setting of att in the software.

## 5.6. DESCRIPTION OF AVAILABLE ANTENNAS

| Ant. | Frequency (MHz) | Antenna Type | Antenna Gain (dBi) |
|---|---|---|---|
| 1 | 2400-2483.5 | PCB antenna | 2.87 |

| Test Mode | Transmit and Receive Mode | Description |
|---|---|---|
| IEEE 802.11b | ☒1TX, 1RX | Antenna1 can be used as transmitting/receiving antenna independently. |
| IEEE 802.11g | ☒1TX, 1RX | Antenna1 can be used as transmitting/receiving antenna independently. |
| IEEE 802.11N (HT20) | ☒1TX, 1RX | Antenna1 can be used as transmitting/receiving antenna independently. |

## 5.7. THE WORSE CASE CONFIGURATIONS

For the product, there two transmission antennas, and pre-testing both of them, only the worse data for the antenna is recorded in the report.

Worst-case data rates as provided by the client were:

802.11b mode: 1 Mbps
802.11b mode: 6 Mbps
802.11n HT20 mode: MCS0

## 5.8. DESCRIPTION OF TEST SETUP

**SUPPORT EQUIPMENT**

| Item | Equipment | Brand Name | Model Name | Description |
|---|---|---|---|---|
| 1 | Laptop | ThinkPad | E590 | N/A |
| 2 | Fixed Frequency Board | N/A | N/A | Supply by Customer |
| 3 | USB Cable | N/A | N/A | Supply by UL Lab(100cm length) |

**I/O PORT**

| Cable No | Port | Connector Type | Cable Type | Cable Length(m) | Remarks |
|---|---|---|---|---|---|
| 1 | N/A | N/A | N/A | N/A | N/A |

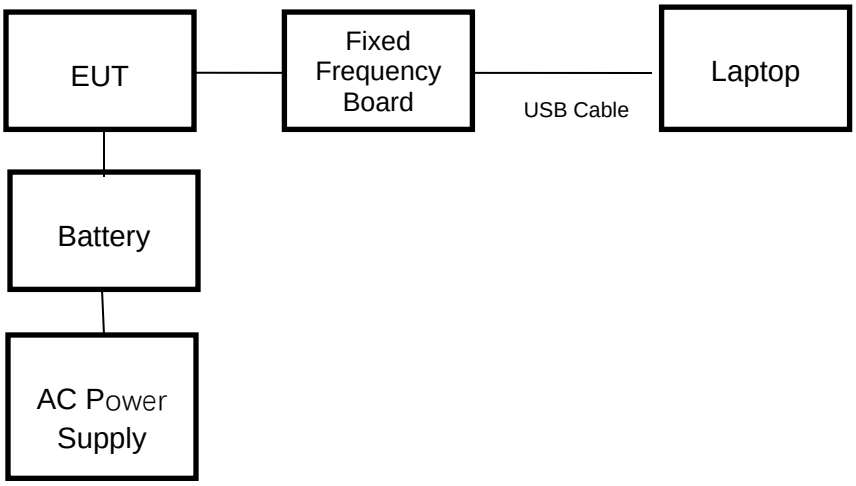
**ACCESSORY**

| Item | Accessory | Brand Name | Model Name | Description |
|---|---|---|---|---|
| 1 | AC/DC ADAPTER | TINECO | KL-WA180100-V | INPUT:AC100-240V, 50/60Hz, 0.5A<br>OUTPUT: DC18.0V⎓1.0A |

**TEST SETUP**

The EUT can work in an engineer mode with a software through a table PC.

**SETUP DIAGRAM FOR TESTS**



## 5.9. MEASURING INSTRUMENT AND SOFTWARE USED

| **Conducted Emissions (**Instrument**)** | | | | | | | |
|---|---|---|---|---|---|---|---|
| Used | Equipment | Manufacturer | Model No. | Serial No. | Upper Last Cal. | Last Cal. | Next Cal. |
| ☑ | EMI Test Receiver | R&S | ESR3 | 126700 | 2020-12-05 | 2021-12-04 | 2022-12-03 |
| ☑ | Two-Line V-Network | R&S | ENV216 | 126701 | 2020-12-05 | 2021-12-04 | 2022-12-03 |
| **Software** | | | | | | | |
| Used | Description | | Manufacturer | Name | Version | | |
| ☑ | Test Software for Conducted disturbance | | R&S | EMC32 | Ver. 9.25 | | |
| **Radiated Emissions (**Instrument**)** | | | | | | | |
| Used | Equipment | Manufacturer | Model No. | Serial No. | Upper Last Cal. | Last Cal. | Next Cal. |
| ☑ | Spectrum Analyzer | Keysight | N9010B | 155727 | 2021-05-09 | 2022-04-09 | 2023-04-08 |
| ☑ | EMI test receiver | R&S | ESR26 | 126703 | 2020-12-05 | 2021-12-04 | 2022-12-03 |
| ☑ | Receiver Antenna (9kHz-30MHz) | Schwarzbeck | FMZB 1513 | 155456 | 2018-06-15 | 2021-06-03 | 2024-06-02 |
| ☑ | Receiver Antenna (30MHz-1GHz) | SunAR RF Motion | JB1 | 177821 | 2019-01-28 | 2022-01-18 | 2025-01-17 |
| ☑ | Receiver Antenna (1GHz-18GHz) | R&S | HF907 | 126705 | 2018-01-29 | 2022-02-28 | 2025-02-27 |
| ☑ | Receiver Antenna (18GHz-26.5GHz) | ETS | 3160-10 | 155565 | 2019-01-05 | 2021-07-15 | 2024-07-14 |
| ☑ | Pre-amplification (To 18GHz) | Compliance Direction System Inc. | PAP-1G18-50 | 177825 | 2021-03-18 | 2022-03-01 | 2023-02-28 |
| ☑ | Pre-amplification (To 26.5GHz) | R&S | SCU-26D | 135391 | 2021-12-05 | 2022-12-04 | 2022-12-03 |
| ☑ | Band Reject Filter | Wainwright | WRCJV8-2350-2400-2483.5-2533.5-40SS | 1 | 2021-05-09 | 2022-04-09 | 2023-04-08 |
| ☑ | Highpass Filter | Wainwright | WHKX10-2700-3000-18000-40SS | 2 | 2021-05-09 | 2022-04-09 | 2023-04-08 |
| **Software** | | | | | | | |
| Used | Description | | Manufacturer | Name | Version | | |
| ☑ | Test Software for Radiated disturbance | | Tonscend | JS36-RSE | 4.0.0.1 | | |
| **Other instruments** | | | | | | | |
| Used | Equipment | Manufacturer | Model No. | Serial No. | Upper Last Cal. | Last Cal. | Next Cal. |
| ☑ | Spectrum Analyzer | Keysight | N9010B | 155368 | 2021-05-09 | 2022-04-09 | 2023-04-08 |
| ☑ | Power Meter | Keysight | U2021XA | 155370 | 2021-05-09 | 2022-04-09 | 2023-04-08 |

# 6. MEASUREMENT METHODS

| No. | Test Item | KDB Name | Section |
|---|---|---|---|
| 1 | 6dB Bandwidth and 99% Bandwidth | KDB 558074 D01 15.247 Meas Guidance v05r02 | 8.2 |
| 2 | Conducted Output Power | KDB 558074 D01 15.247 Meas Guidance v05r02 | 8.3.2.3 (Method AVGPM) |
| 3 | Power Spectral Density | KDB 558074 D01 15.247 Meas Guidance v05r02 | 8.4 (Method PKPSD) |
| 4 | Out-of-band emissions in non-restricted bands | KDB 558074 D01 15.247 Meas Guidance v05r02 | 8.5 |
| 5 | Out-of-band emissions in restricted bands | KDB 558074 D01 15.247 Meas Guidance v05r02 | 8.6 |
| 6 | Band-edge | KDB 558074 D01 15.247 Meas Guidance v05r02 | 8.7 |
| 7 | Conducted Emission Test For AC Power Port | ANSI C63.10-2013 | 6.2 |

# 7. ANTENNA PORT TEST RESULTS

## 7.1. TEST ENVIRONMENT

| Environment Parameter | Selected Values During Tests |
|---|---|
| Relative Humidity | 67.2% |
| Atmospheric Pressure: | 101kPa |
| Temperature | 20.1°C |

## 7.2. ON TIME AND DUTY CYCLE

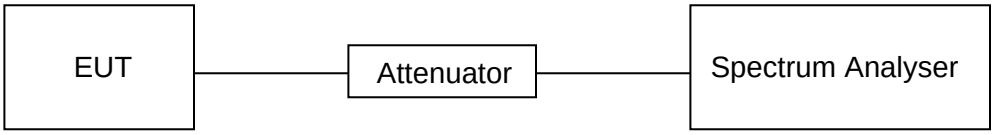
**LIMITS**

None; for reporting purposes only

**PROCEDURE**

FCC KDB 558074 Zero-Span Spectrum Analyzer Method

**TEST SETUP**




**RESULTS**

| Mode | On Time (msec) | Period (msec) | Duty Cycle x (Linear) | Duty Cycle (%) | Duty Cycle Correction Factor (db) | Final Minimum VBW (KHz) |
|---|---|---|---|---|---|---|
| 11B | 100 | 100 | 1 | 100 | 0 | 0.01(Note4) |
| 11G | 100 | 100 | 1 | 100 | 0 | 0.01(Note4) |
| 11N HT20 | 100 | 100 | 1 | 100 | 0 | 0.01(Note4) |

Note: 1) Duty Cycle Correction Factor=10log(1/x).
2) Where: x is Duty Cycle(Linear)
3) Where: T is On Time (transmit duration)
4) The minimum VBW should be 10Hz if the duty cycle is over 98%.

## 11B ON TIME AND DUTY CYCLE MID CH (WORSE CASE)


## 11G ON TIME AND DUTY CYCLE MID CH (WORSE CASE)

11N HT20 ON TIME AND DUTY CYCLE MID CH (WORSE CASE)

## 7.3. 6 dB BANDWIDTH AND 99% BANDWIDTH

**LIMITS**

| FCC Part15 (15.247) Subpart C, ISED RSS-247 Issue 2 | | | |
|---|---|---|---|
| Section | Test Item | Limit | Frequency Range (MHz) |
| FCC 15.247(a)(2) | 6dB Bandwidth | >= 500KHz | 2400-2483.5 |
| ISED RSS-Gen Clause 6.7 | 99% Occupied Bandwidth | For reporting purposes only. | 2400-2483.5 |

**TEST PROCEDURE**

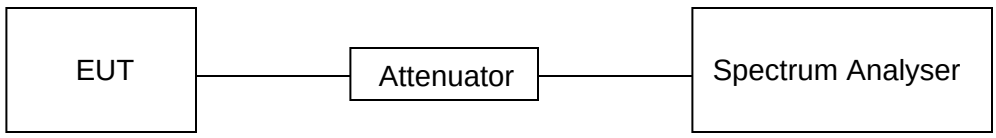
Refer to FCC KDB 558074, connect the UUT to the spectrum analyzer and use the following settings:

| | |
|---|---|
| Center Frequency | The centre frequency of the channel under test |
| Detector | Peak |
| RBW | For 6dB Bandwidth :100K<br>For 99% Occupied Bandwidth :1% to 5% of the occupied bandwidth |
| VBW | For 6dB Bandwidth : ≥3 × RBW<br>For 99% Occupied Bandwidth : approximately 3×RBW |
| Trace | Max hold |
| Sweep | Auto couple |

Allow the trace to stabilize and 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.

.

**TEST SETUP**

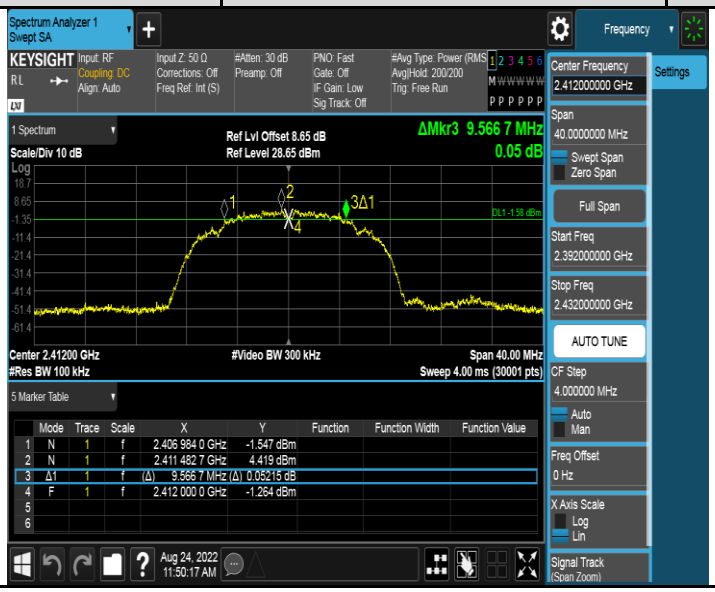


**RESULTS**

| Test Mode | Test Channel | 6dB bandwidth (MHz) | 99% bandwidth (MHz) | Result |
|---|---|---|---|---|
| 11B | LCH | 9.567 | 13.129 | Pass |
| | MCH | 9.109 | 13.042 | Pass |
| | HCH | 8.864 | 13.130 | Pass |
| 11G | LCH | 16.327 | 16.388 | Pass |
| | MCH | 16.319 | 16.372 | Pass |
| | HCH | 16.329 | 16.392 | Pass |
| 11N HT20 | LCH | 16.860 | 17.175 | Pass |
| | MCH | 16.831 | 17.133 | Pass |
| | HCH | 16.879 | 17.174 | Pass |

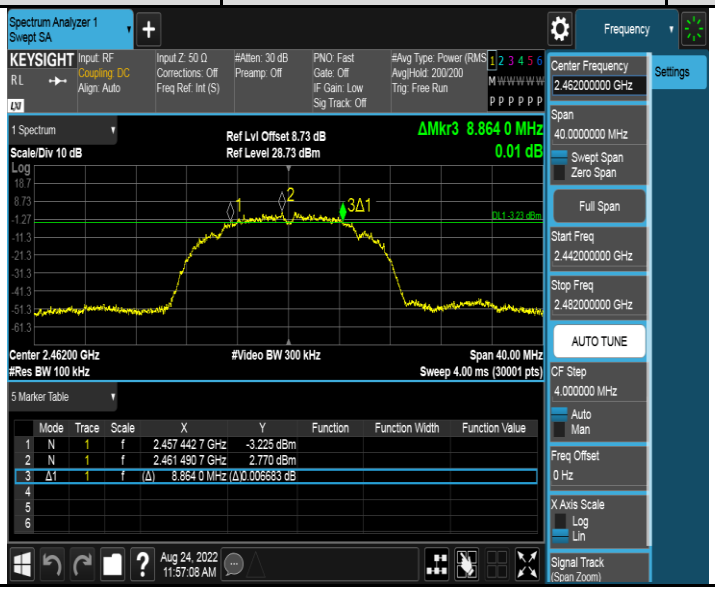
**Test Graphs**
**For 6dB Bandwidth part:**

| Test Mode | Test Channel | Verdict |
|---|---|---|
| 11B | LCH | PASS |

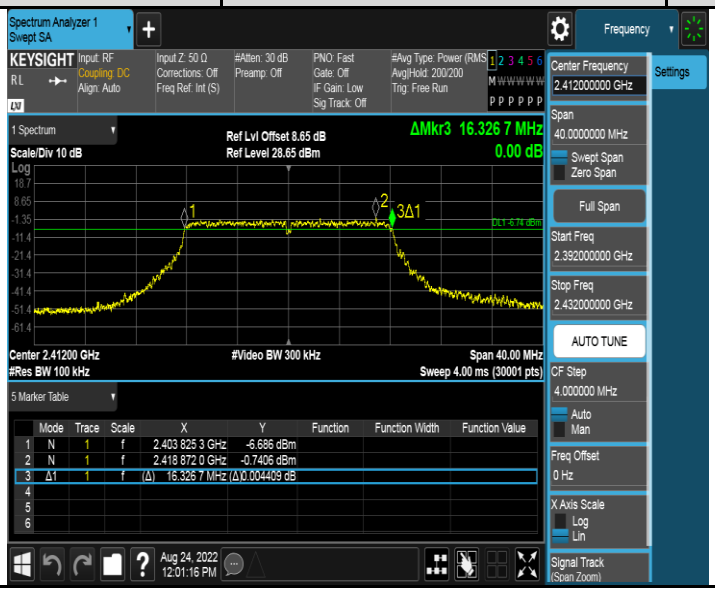



| Test Mode | Test Channel | Verdict |
|---|---|---|
| 11B | MCH | PASS |

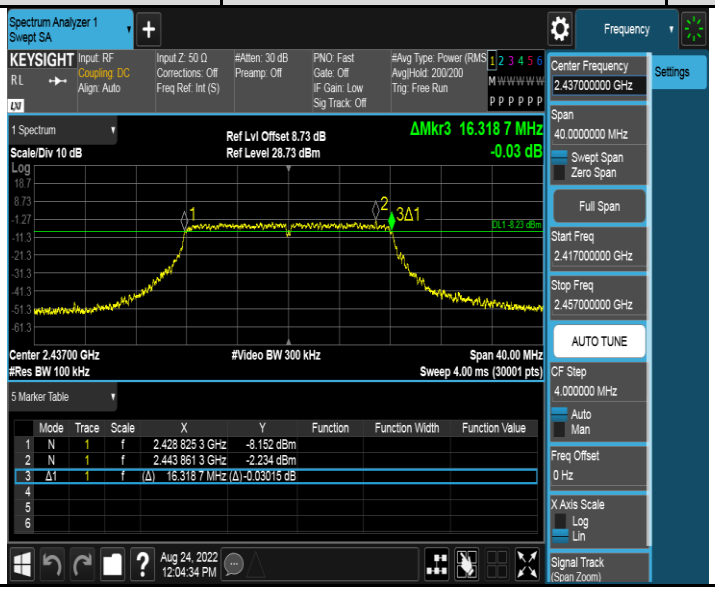
| Test Mode | Test Channel | Verdict |
|---|---|---|
| 11B | HCH | PASS |




| Test Mode | Test Channel | Verdict |
|---|---|---|
| 11G | LCH | PASS |

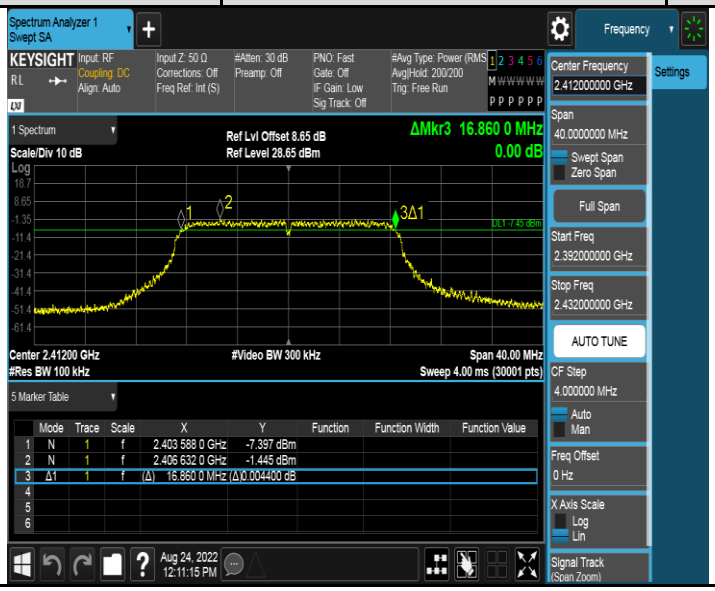


| Test Mode | Test Channel | Verdict |
|---|---|---|
| 11G | MCH | PASS |

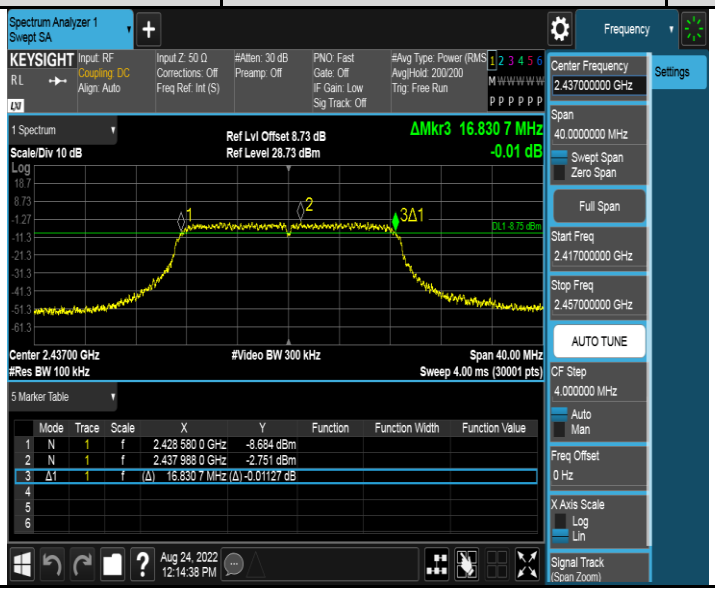



| Test Mode | Test Channel | Verdict |
|---|---|---|
| 11G | HCH | PASS |

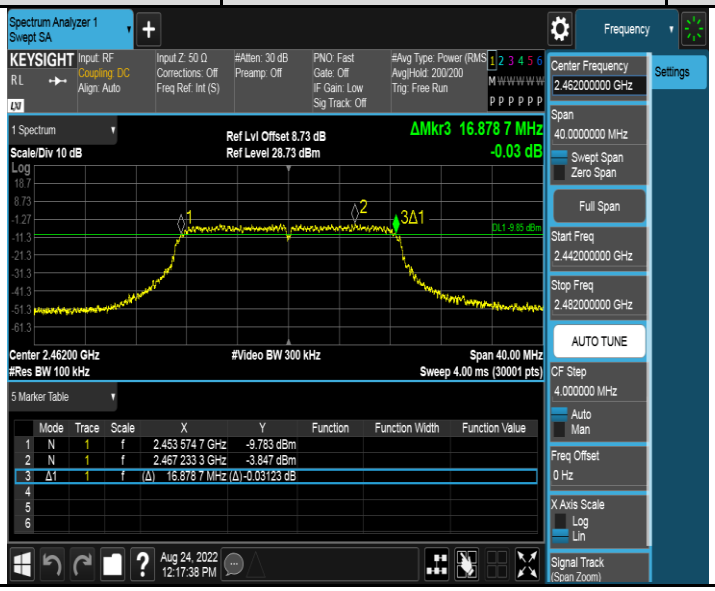
| Test Mode | Test Channel | Verdict |
|---|---|---|
| 11N HT20 | LCH | PASS |




| Test Mode | Test Channel | Verdict |
|---|---|---|
| 11N HT20 | MCH | PASS |

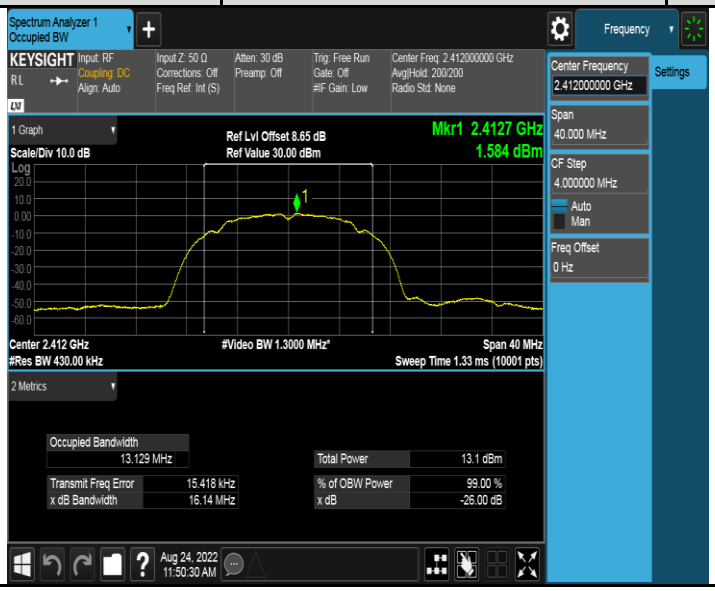


| Test Mode | Test Channel | Verdict |
|---|---|---|
| 11N HT20 | HCH | PASS |

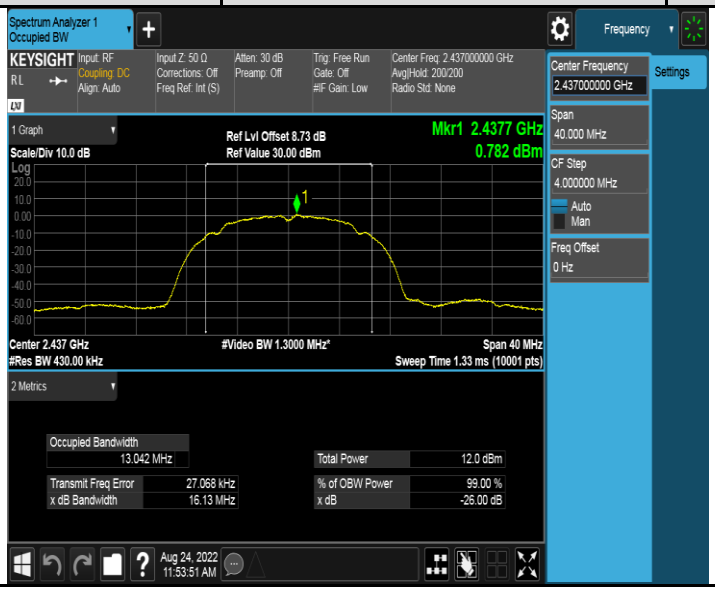



**For 99% Bandwidth part:**

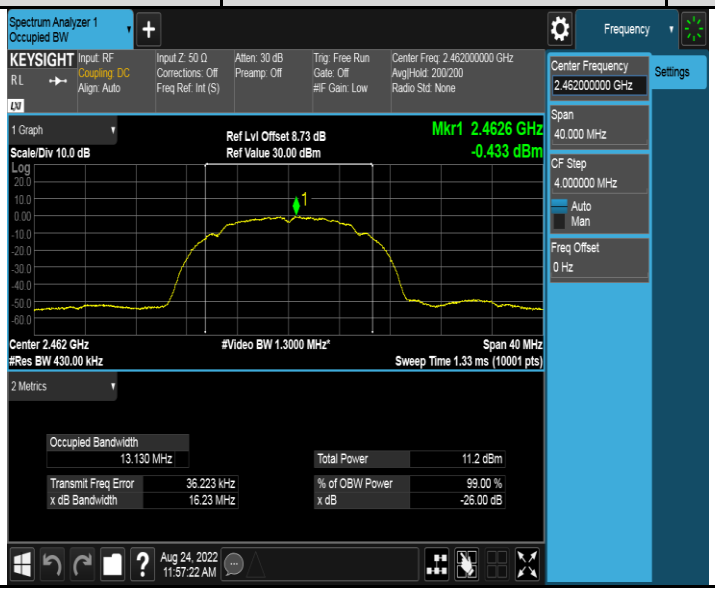
| Test Mode | Test Channel | Verdict |
|---|---|---|
| 11B | LCH | PASS |



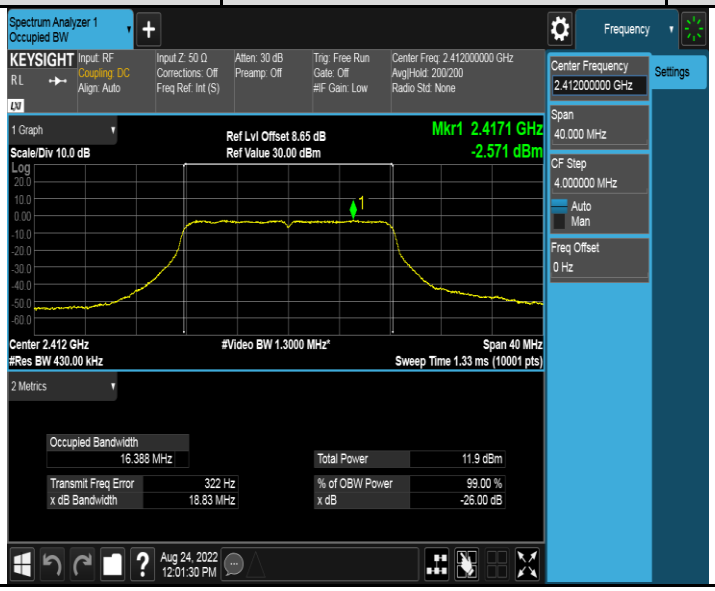
| Test Mode | Test Channel | Verdict |
|---|---|---|
| 11B | MCH | PASS |



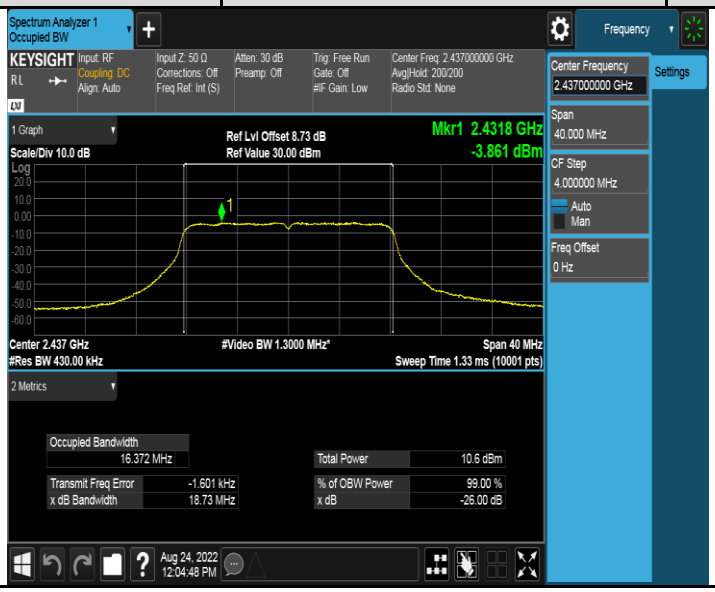

| Test Mode | Test Channel | Verdict |
|---|---|---|
| 11B | HCH | PASS |



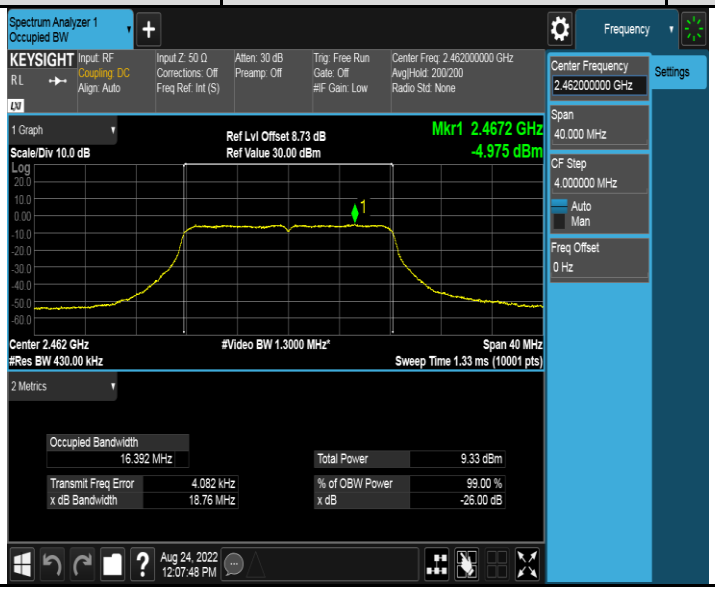
| Test Mode | Test Channel | Verdict |
|---|---|---|
| 11G | LCH | PASS |



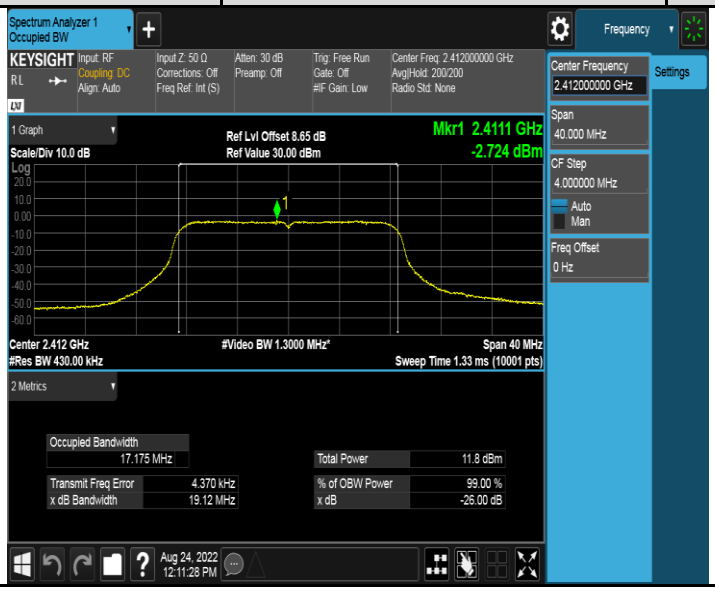

| Test Mode | Test Channel | Verdict |
|---|---|---|
| 11G | MCH | PASS |



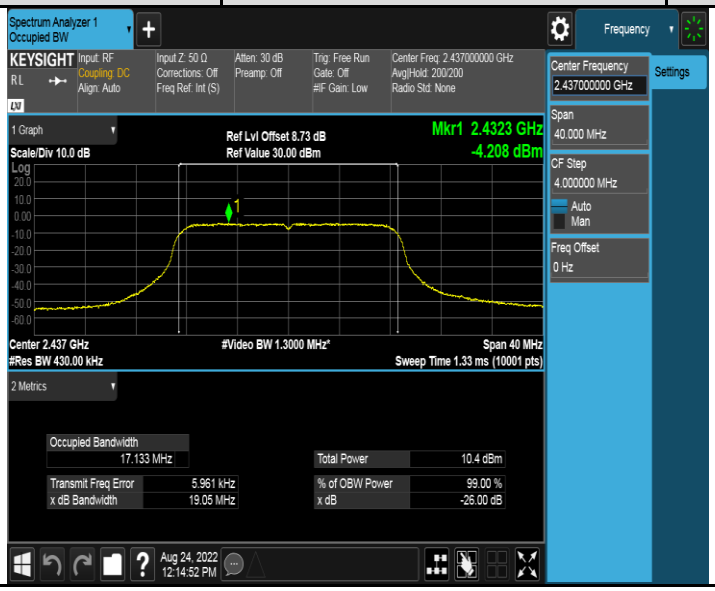
| Test Mode | Test Channel | Verdict |
|---|---|---|
| 11G | HCH | PASS |



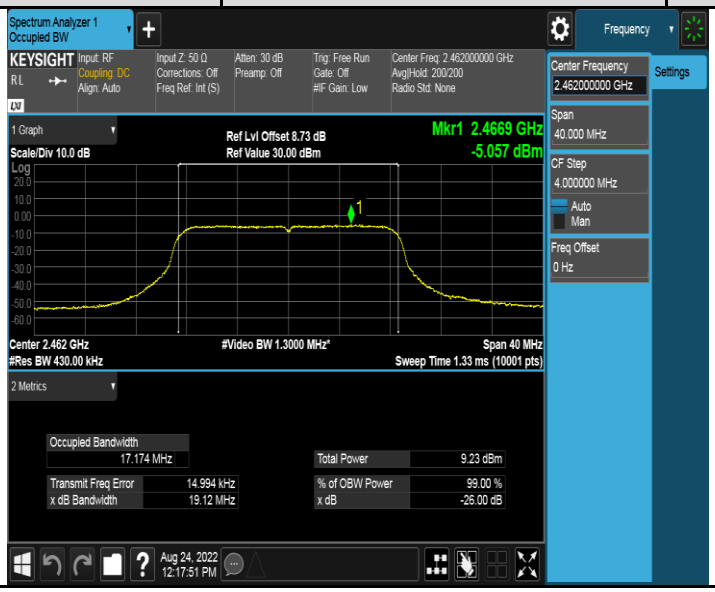

| Test Mode | Test Channel | Verdict |
|---|---|---|
| 11N HT20 | LCH | PASS |



| Test Mode | Test Channel | Verdict |
|---|---|---|
| 11N HT20 | MCH | PASS |




| Test Mode | Test Channel | Verdict |
|---|---|---|
| 11N HT20 | HCH | PASS |



## 7.4. CONDUCTED POWER

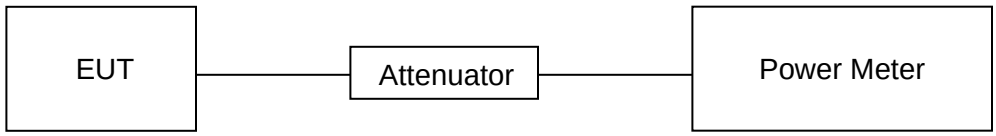
**LIMITS**

| FCC Part15 (15.247) Subpart C, , ISED RSS-247 ISSUE 2 | | | |
|---|---|---|---|
| Section | Test Item | Limit | Frequency Range (MHz) |
| FCC 15.247(b)(3)<br>ISED RSS-247 5.4 (d)<br>RSS-Gen Clause 6.12 | Output Power | 1 watt or 30dBm | 2400-2483.5 |

**TEST PROCEDURE**

Place the EUT on the table and set it in the transmitting mode.
Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the Power Meter.
Measure the power of each channel.
AVG Detector use for AVG result.

**TEST SETUP**



**RESULTS**

For Normal Testing Part:

| Test Mode | Test Channel | Maximum Conducted Output Power (AV) | Result |
|---|---|---|---|
| | | dBm | |
| 11B | LCH | 12.84 | Pass |
| | MCH | 12.06 | Pass |
| | HCH | 11.21 | Pass |
| 11G | LCH | 10.88 | Pass |
| | MCH | 10.61 | Pass |
| | HCH | 9.33 | Pass |
| 11N HT20 | LCH | 10.73 | Pass |
| | MCH | 10.38 | Pass |
| | HCH | 9.19 | Pass |

Remark:
1) For all the test results has been adjusted the duty cycle factor.
2) For Correction Factor is refer to the result in section 7.2

## 7.5. POWER SPECTRAL DENSITY

**LIMITS**

| FCC Part15 (15.247) Subpart C, ISED RSS-247 ISSUE 2 | | | |
|---|---|---|---|
| Section | Test Item | Limit | Frequency Range (MHz) |
| FCC §15.247 (e)<br>ISED RSS-247 5.2 (b) | Power Spectral Density | 8 dBm in any 3 kHz band | 2400-2483.5 |

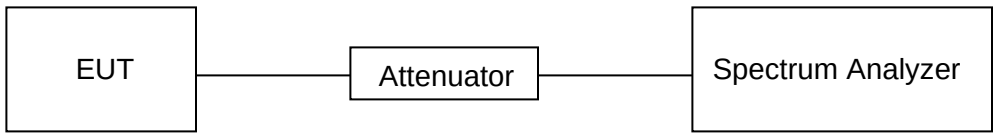
**TEST PROCEDURE**

Refer to FCC KDB 558074, connect the UUT to the spectrum analyser and use the following settings:

| | |
|---|---|
| Center Frequency | The centre frequency of the channel under test |
| Detector | Peak |
| RBW | 3 kHz ≤ RBW ≤100 kHz |
| VBW | ≥3 × RBW |
| Span | 1.5 x DTS bandwidth |
| Trace | Max hold |
| Sweep time | Auto couple. |

Allow trace to fully stabilize and use the peak marker function to determine the maximum amplitude level within the RBW.
If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

**TEST SETUP**



**RESULTS**

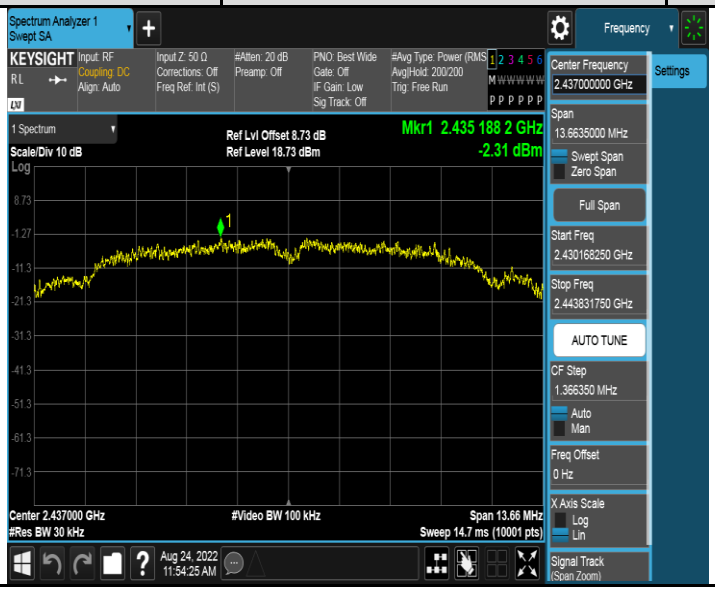
For Normal Testing Part:

| Test Mode | Test Channel | Maximum Peak power spectral density (dBm/30kHz) | Result |
|---|---|---|---|
| 11B | LCH | -1.41 | Pass |
| | MCH | -2.31 | Pass |
| | HCH | -3.06 | Pass |
| 11G | LCH | -4.62 | Pass |
| | MCH | -5.78 | Pass |
| | HCH | -7.15 | Pass |
| 11N HT20 | LCH | -5.12 | Pass |
| | MCH | -6.28 | Pass |
| | HCH | -7.41 | Pass |

**Test Graphs:**

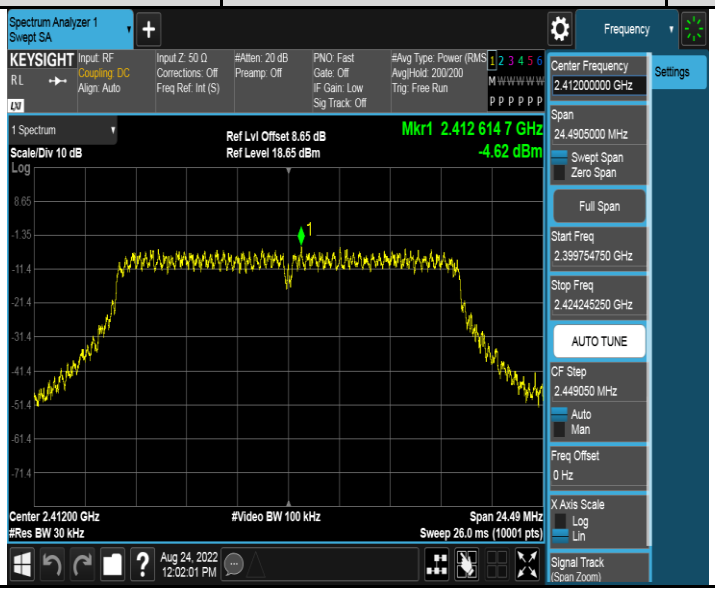
| Test Mode | Test Channel | Verdict |
|---|---|---|
| 11B | LCH | PASS |


| Test Mode | Test Channel | Verdict |
|---|---|---|
| 11B | MCH | PASS |

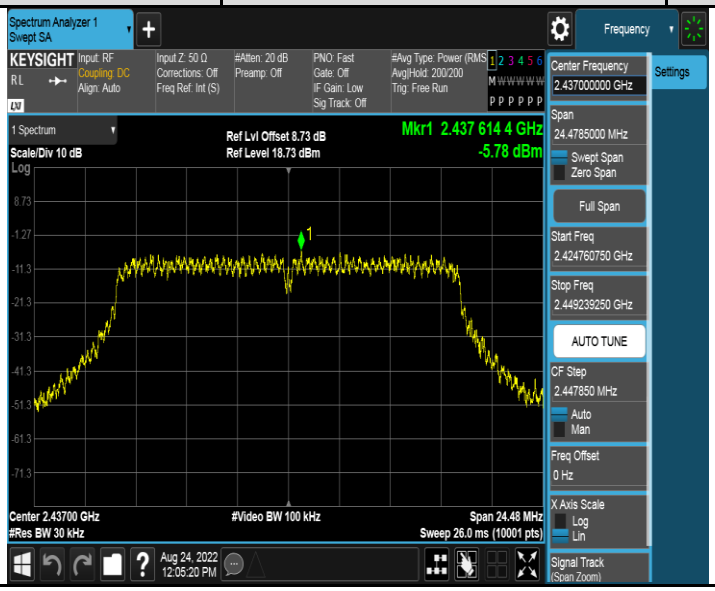


| Test Mode | Test Channel | Verdict |
|---|---|---|
| 11B | HCH | PASS |

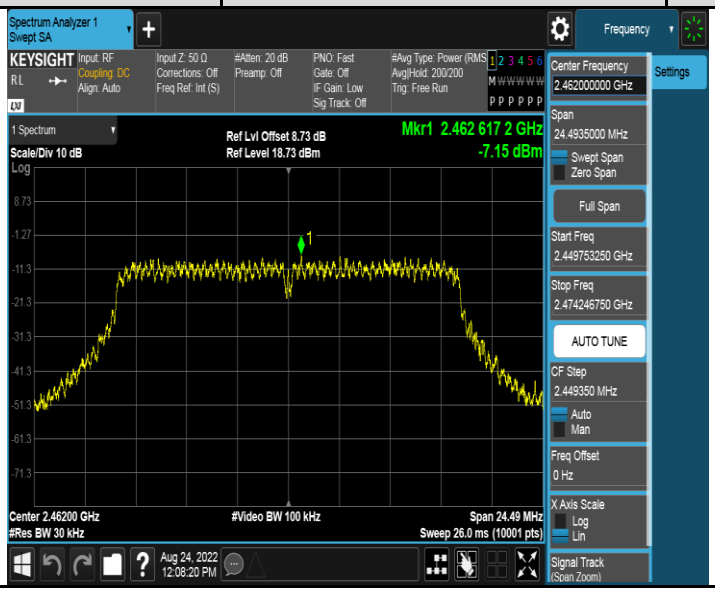

| Test Mode | Test Channel | Verdict |
|---|---|---|
| 11G | LCH | PASS |



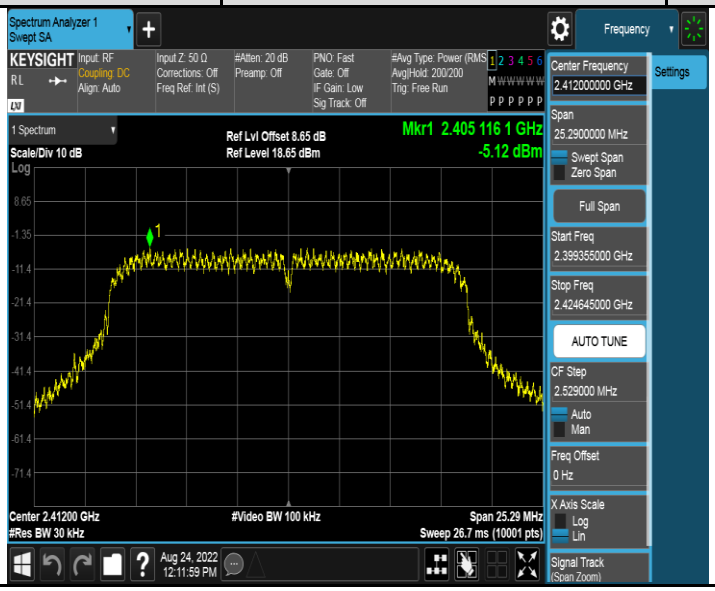
| Test Mode | Test Channel | Verdict |
|---|---|---|
| 11G | MCH | PASS |



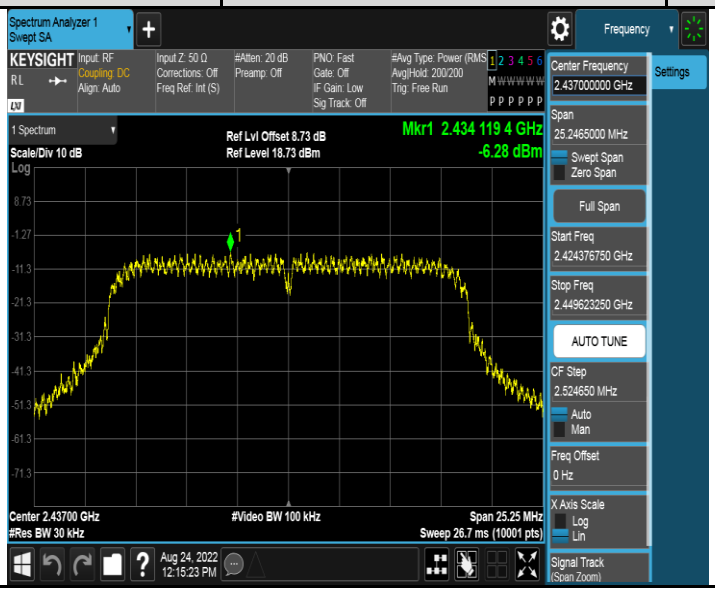

| Test Mode | Test Channel | Verdict |
|---|---|---|
| 11G | HCH | PASS |



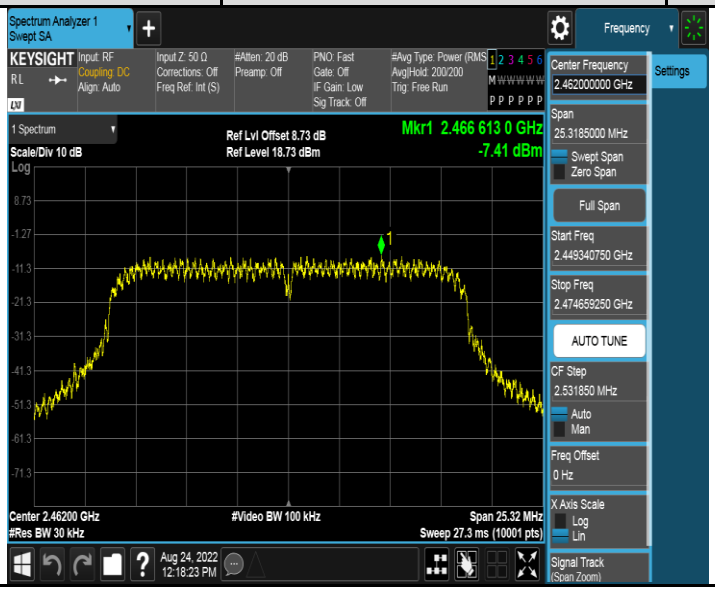
| Test Mode | Test Channel | Verdict |
|---|---|---|
| 11N HT20 | LCH | PASS |




| Test Mode | Test Channel | Verdict |
|---|---|---|
| 11N HT20 | MCH | PASS |



| Test Mode | Test Channel | Verdict |
|---|---|---|
| 11N HT20 | HCH | PASS |



## 7.6. CONDUCTED BANDEDGE AND SPURIOUS EMISSIONS

**LIMITS**

| FCC Part15 (15.247) Subpart C, ISED RSS-247 ISSUE 2 | | |
|---|---|---|
| Section | Test Item | Limit |
| FCC §15.247 (d) RSS-247 Clause 5.5 RSS-GEN Clause 6.13 | Conducted Bandedge and Spurious Emissions | At least 30 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power |

**TEST PROCEDURE**

Refer to FCC KDB 558074, connect the UUT to the spectrum analyser and use the following

| | |
|---|---|
| Center Frequency | The centre frequency of the channel under test |
| Detector | Peak |
| RBW | 100K |
| VBW | ≥3 × RBW |
| Span | 1.5 x DTS bandwidth |
| Trace | Max hold |
| Sweep time | Auto couple. |

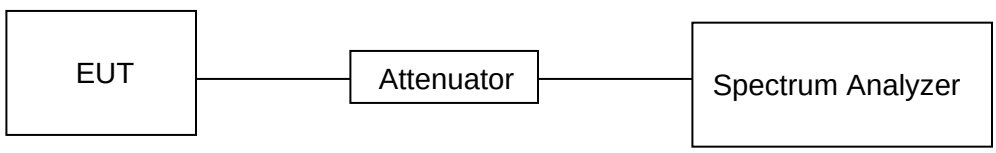
settings:

Use the peak marker function to determine the maximum PSD level.

| | |
|---|---|
| Span | Set the center frequency and span to encompass frequency range to be measured |
| Detector | Peak |
| RBW | 100K |
| VBW | ≥3 × RBW |
| measurement points | ≥span/RBW |
| Trace | Max hold |
| Sweep time | Auto couple. |

Use the peak marker function to determine the maximum amplitude level**.**

**TEST SETUP**



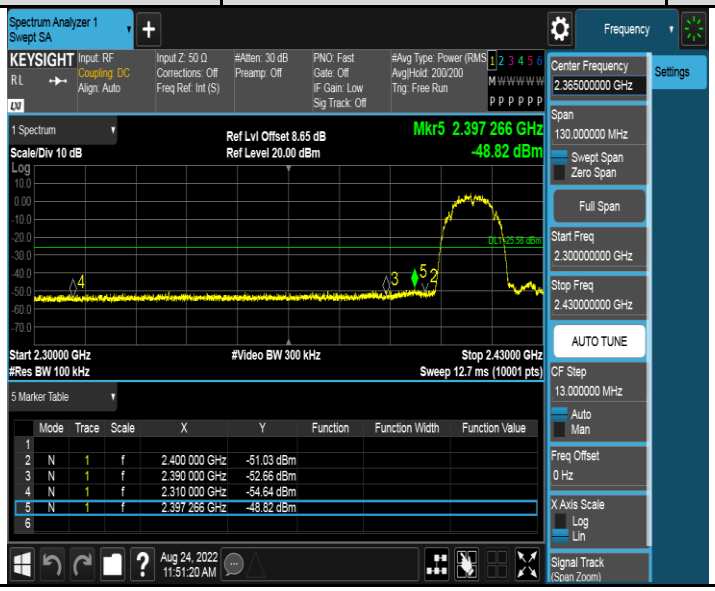
**Part I :Conducted Bandedge**

**RESULTS TABLE**

| Test Mode | Test Antenna | Test Channel | Test Result | Verdict |
|---|---|---|---|---|
| 11B | Antenna 1 | LCH | See the test graphs | PASS |
| | | HCH | See the test graphs | PASS |
| 11G | Antenna 1 | LCH | See the test graphs | PASS |
| | | HCH | See the test graphs | PASS |
| 11N HT20 | Antenna 1 | LCH | See the test graphs | PASS |
| | | HCH | See the test graphs | PASS |

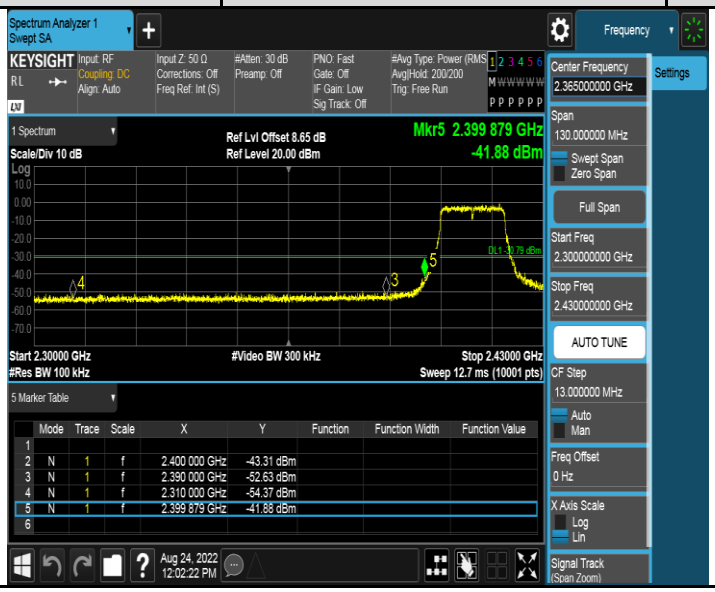
**TEST GRAPHS**

| Test Mode | Test Channel | Verdict |
|---|---|---|
| 11B | LCH | PASS |

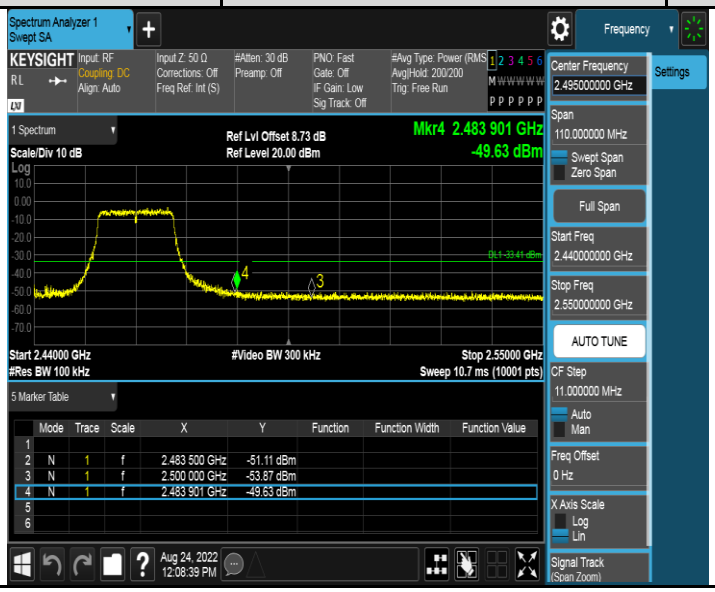



| Test Mode | Test Channel | Verdict |
|---|---|---|
| 11B | HCH | PASS |

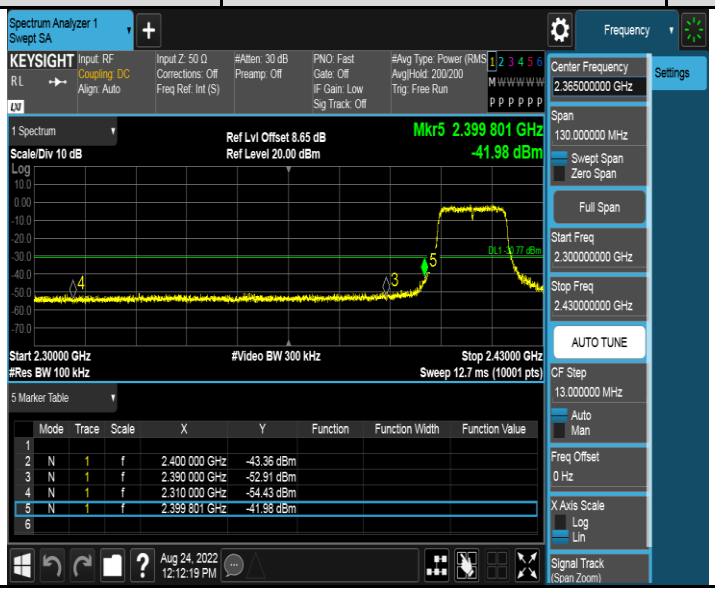
| Test Mode | Test Channel | Verdict |
|---|---|---|
| 11G | LCH | PASS |



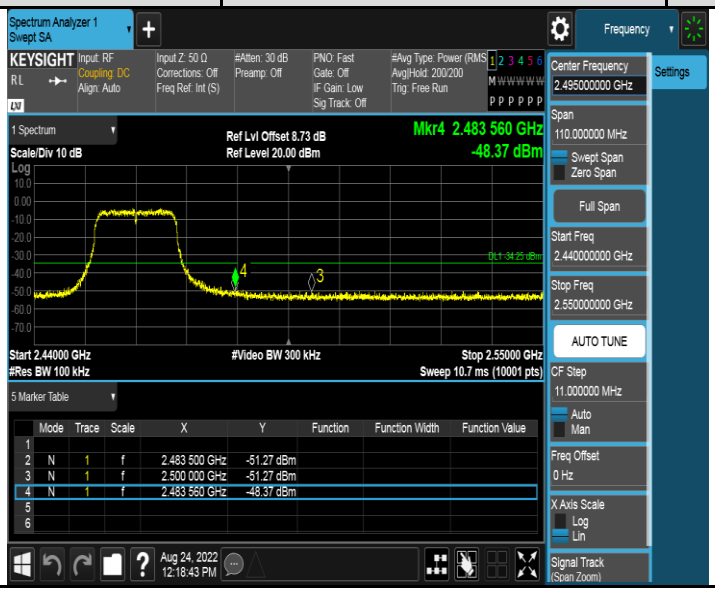

| Test Mode | Test Channel | Verdict |
|---|---|---|
| 11G | HCH | PASS |



| Test Mode | Test Channel | Verdict |
|---|---|---|
| 11N HT20 | LCH | PASS |




| Test Mode | Test Channel | Verdict |
|---|---|---|
| 11N HT20 | HCH | PASS |



**Part II :Conducted Emission**

Test Result Table

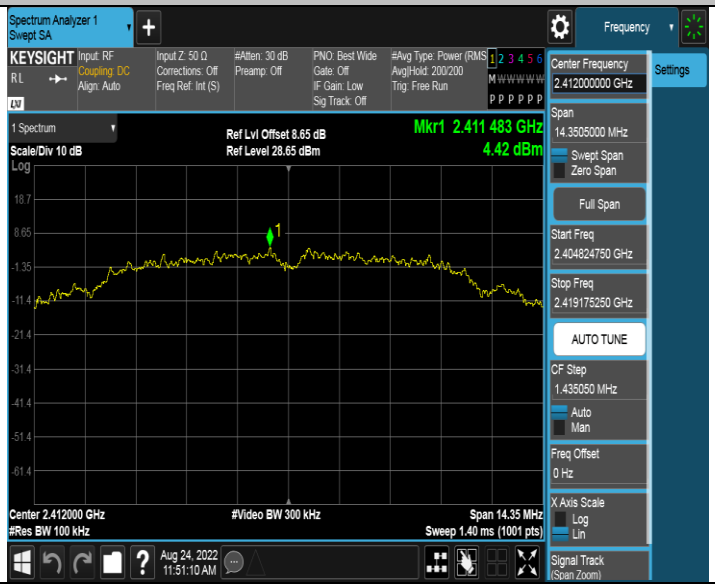
| Test Mode | Test Antenna | Channel | Pref(dBm) | Puw(dBm) | Verdict |
|---|---|---|---|---|---|
| 11B SISO | Antenna 1 | LCH | See the test graphs | <Limit | PASS |
| | | MCH | See the test graphs | <Limit | PASS |
| | | HCH | See the test graphs | <Limit | PASS |
| 11G SISO | Antenna 1 | LCH | See the test graphs | <Limit | PASS |
| | | MCH | See the test graphs | <Limit | PASS |
| | | HCH | See the test graphs | <Limit | PASS |
| 11N HT20 | Antenna 1 | LCH | See the test graphs | <Limit | PASS |
| | | MCH | See the test graphs | <Limit | PASS |
| | | HCH | See the test graphs | <Limit | PASS |

## Test Plots

| Test Mode | Channel | Verdict |
|---|---|---|
| 11B | LCH | PASS |

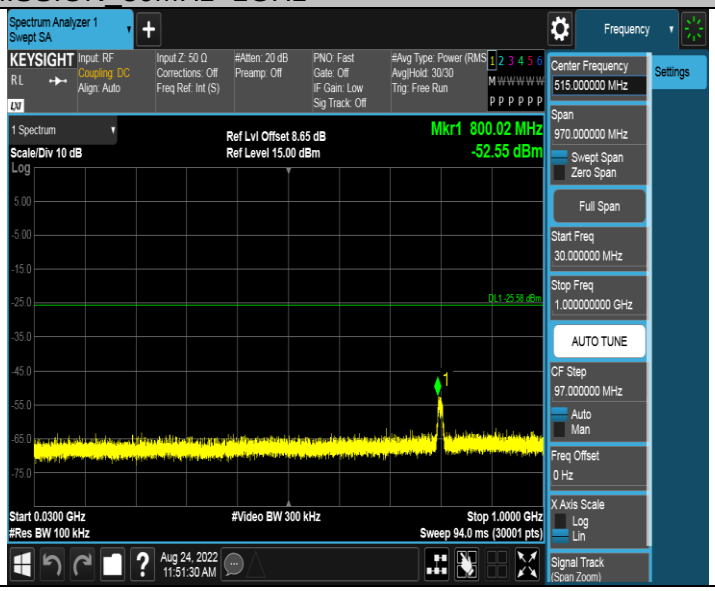
Pref test Plot

LCH SPURIOUS EMISSION

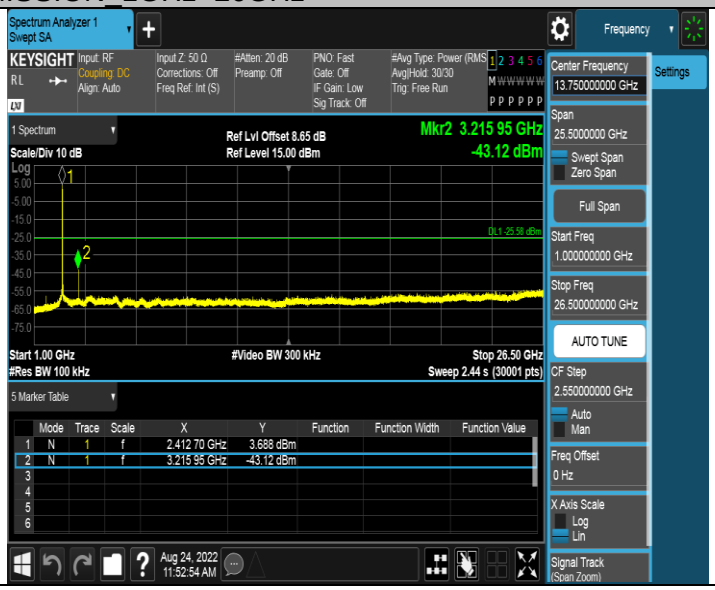


Puw test Plot

LCH SPURIOUS EMISSION_30MHz~1GHz



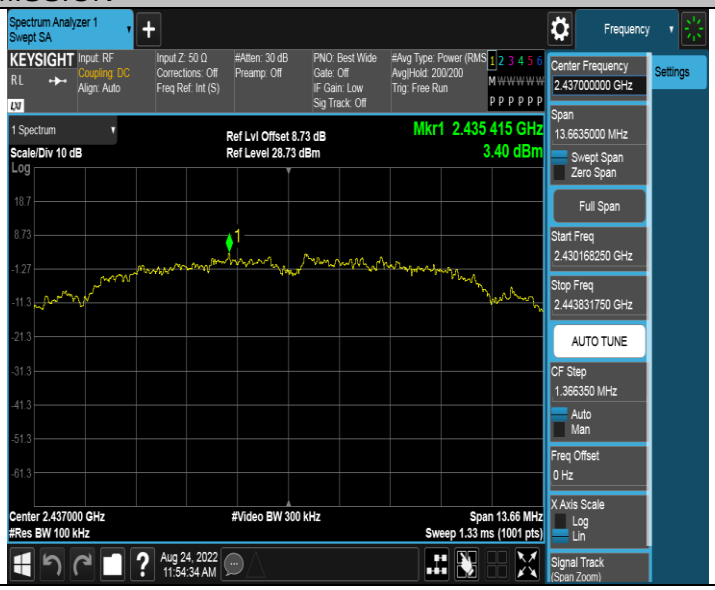

LCH SPURIOUS EMISSION_1GHz~26GHz



| Test Mode | Channel | Verdict |
|---|---|---|
| 11B | MCH | PASS |

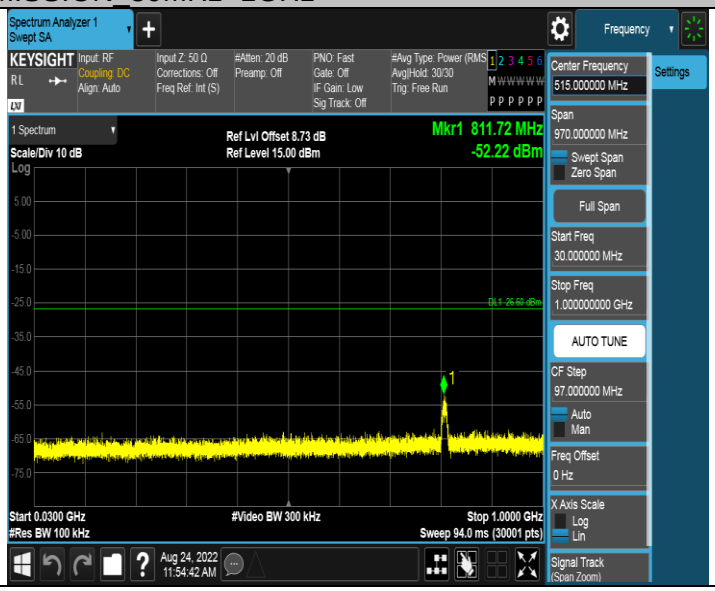
Pref test Plot

MCH SPURIOUS EMISSION

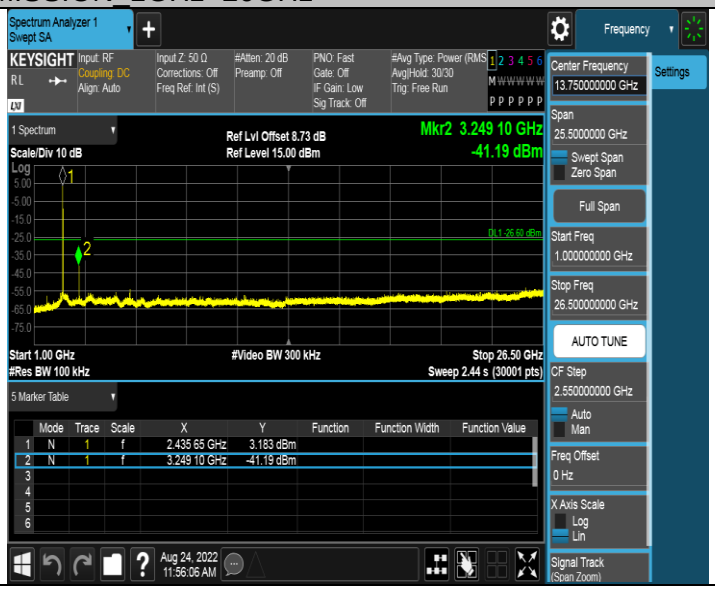


Puw test Plot

MCH SPURIOUS EMISSION_30MHz~1GHz



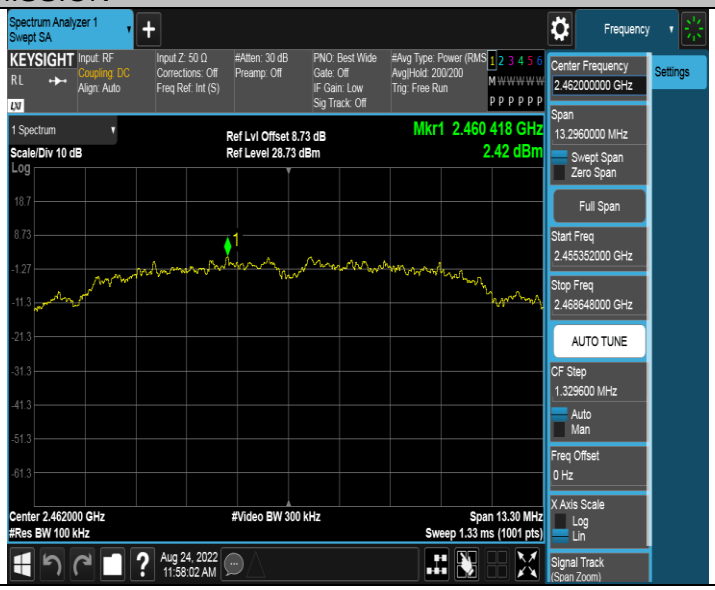

MCH SPURIOUS EMISSION_1GHz~26GHz



| Test Mode | Channel | Verdict |
|---|---|---|
| 11B | HCH | PASS |

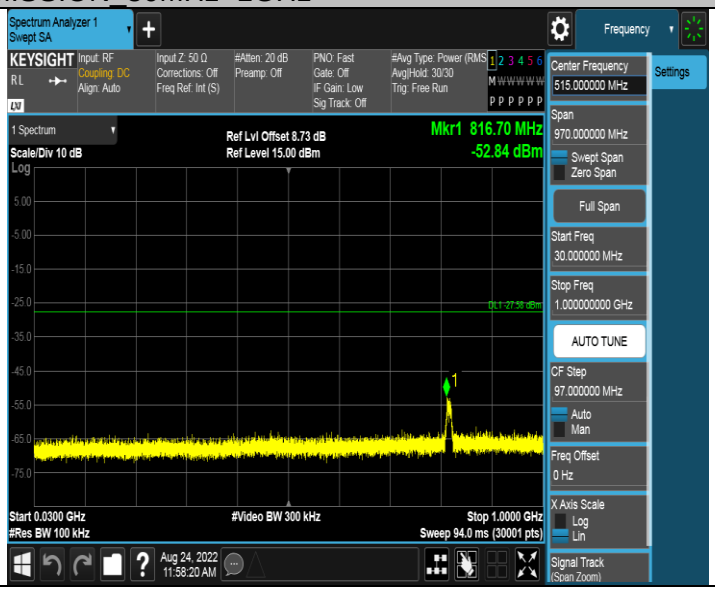
Pref test Plot

HCH SPURIOUS EMISSION

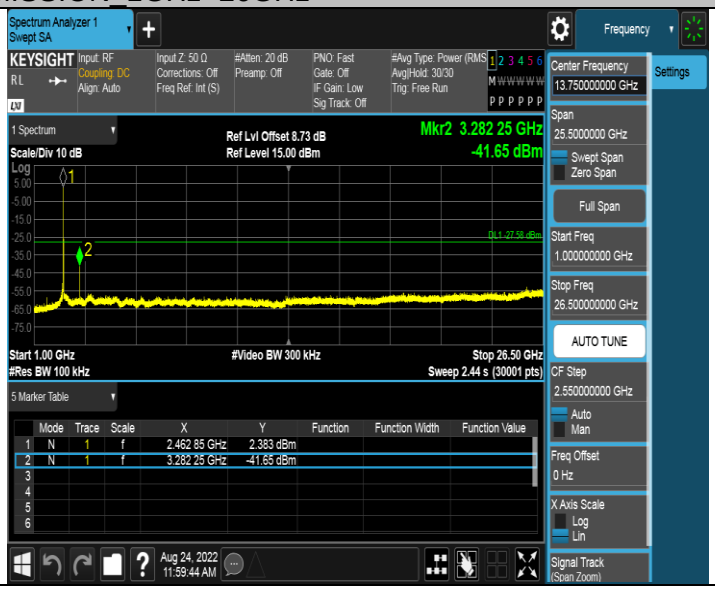


Puw test Plot

HCH SPURIOUS EMISSION_30MHz~1GHz




HCH SPURIOUS EMISSION_1GHz~26GHz



| Test Mode | Channel | Verdict |
|---|---|---|
| 11G | LCH | PASS |

Pref test Plot

LCH SPURIOUS EMISSION