7.6 TEST RESULTS

| | | | |
|---|---|---|---|
| Temperature : | 26 ℃ | Relative Humidity : | 54% |
| Pressure : | 1012 hPa | Test Voltage : | DC 5V |
| Test Mode : | TX | | |

| Test Channel | Frequency (MHz) | Maximum output power (dBm) | LIMIT dBm | Result |
|---|---|---|---|---|
| TX 802.11 a20M Mode | | | | |
| CH36 | 5180 | 3.134 | 23.98 | Pass |
| CH40 | 5200 | 3.485 | 23.98 | Pass |
| CH48 | 5240 | 3.685 | 23.98 | Pass |
| TX 802.11 n20M Mode | | | | |
| CH36 | 5180 | 3.322 | 23.98 | Pass |
| CH40 | 5200 | 3.049 | 23.98 | Pass |
| CH48 | 5240 | 3.351 | 23.98 | Pass |
| TX 802.11 n40M Mode | | | | |
| CH38 | 5190 | 2.639 | 23.98 | Pass |
| CH46 | 5230 | 2.918 | 23.98 | Pass |
| TX 802.11 ac20M Mode | | | | |
| CH36 | 5180 | 2.898 | 23.98 | Pass |
| CH40 | 5200 | 3.478 | 23.98 | Pass |
| CH48 | 5240 | 3.309 | 23.98 | Pass |
| TX 802.11 ac40M Mode | | | | |
| CH38 | 5190 | 3.734 | 23.98 | Pass |
| CH46 | 5230 | 2.489 | 23.98 | Pass |
| TX 802.11 ac80M Mode | | | | |
| CH42 | 5210 | 3.972 | 23.98 | Pass |

## 8.OUT OF BAND EMISSIONS

8.1 APPLICABLE STANDARD

According to FCC §15.407(b)

Undesirable emission limits. Except as shown in paragraph (b)(7) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.

(2) For transmitters operating in the 5.725-5.85 GHz band: All emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an e.i.r.p. of −17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an e.i.r.p. of −27 dBm/MHz.

8.2 TEST PROCEDURE

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
3. Set RBW of spectrum analyzer to 1 MHz with a convenient frequency span.
4. Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
5. Repeat above procedures until all measured frequencies were complete.

8.3 DEVIATION FROM STANDARD

No deviation.

8.4 TEST SETUP

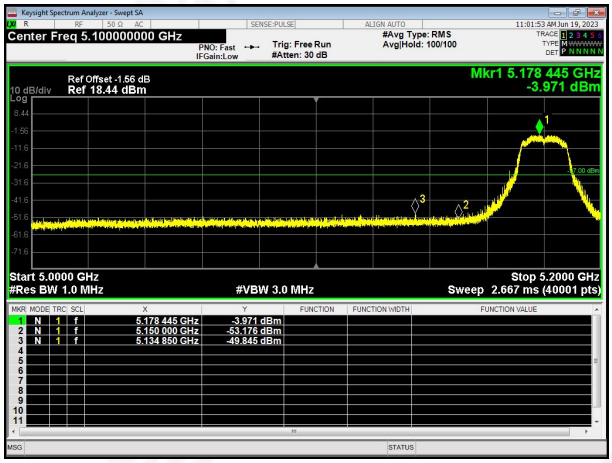

8.5 EUT OPERATION CONDITIONS

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

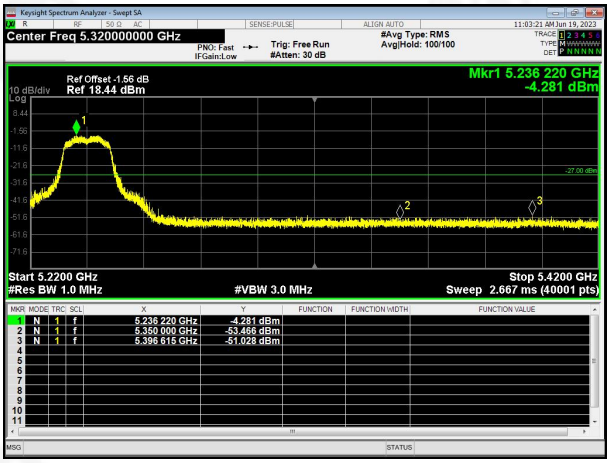
8.6 TEST RESULTS

## Test plot

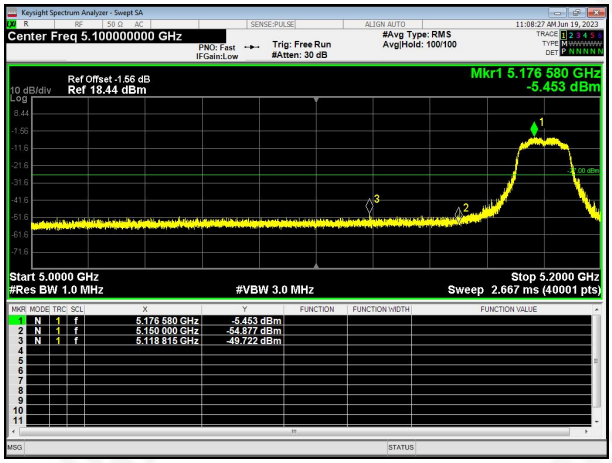
Band Edge a 5180MHz Low



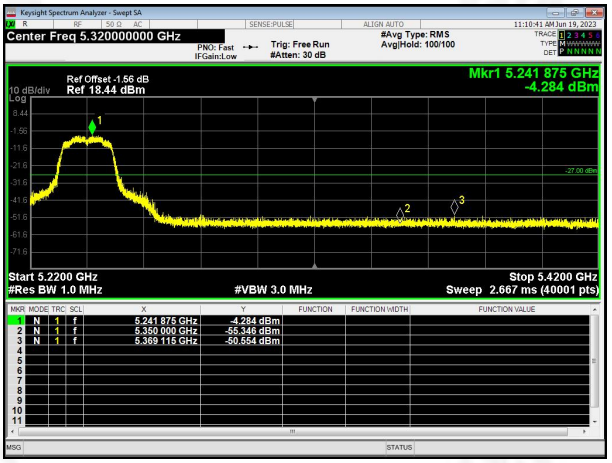

Band Edge a 5240MHz High



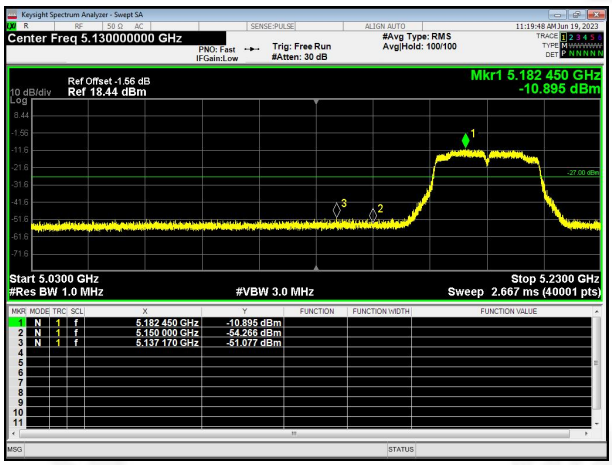

Band Edge ac20 5180MHz Low



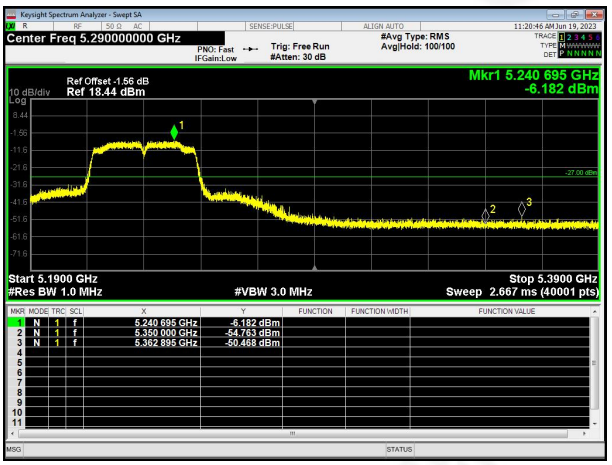

Band Edge ac20 5240MHz High




Band Edge ac40 5190MHz Low

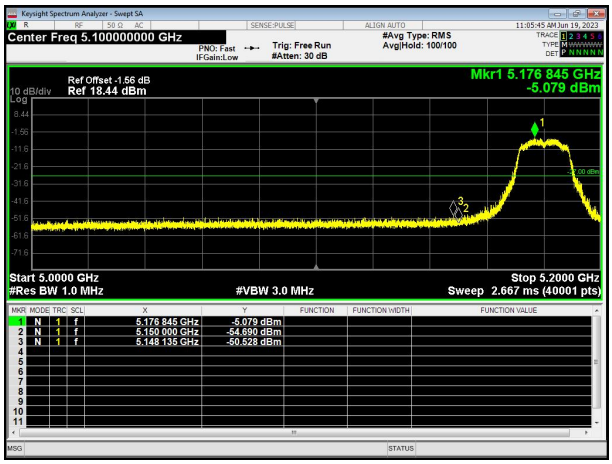



Band Edge ac40 5230MHz High

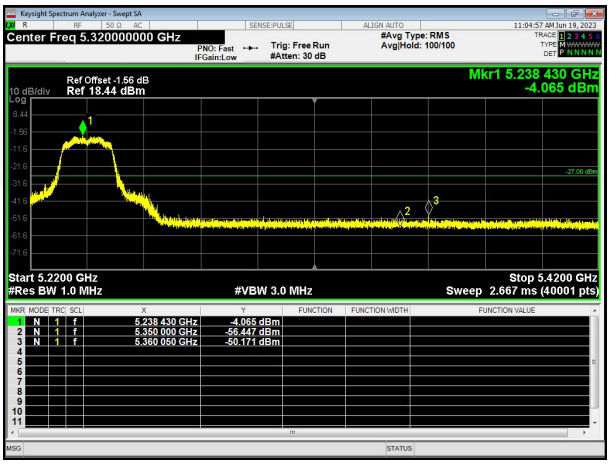



Band Edge n20 5180MHz Low

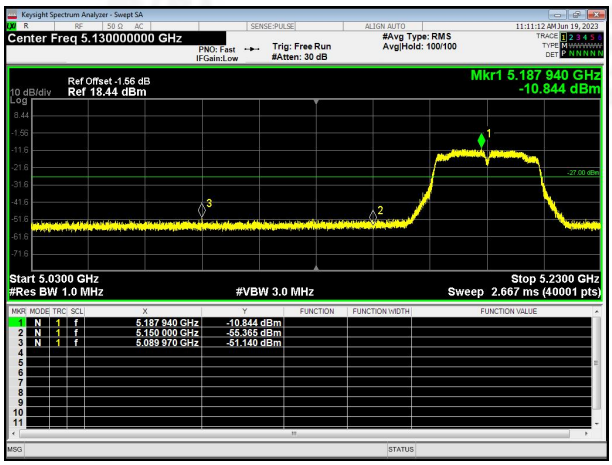
Band Edge n20 5240MHz High

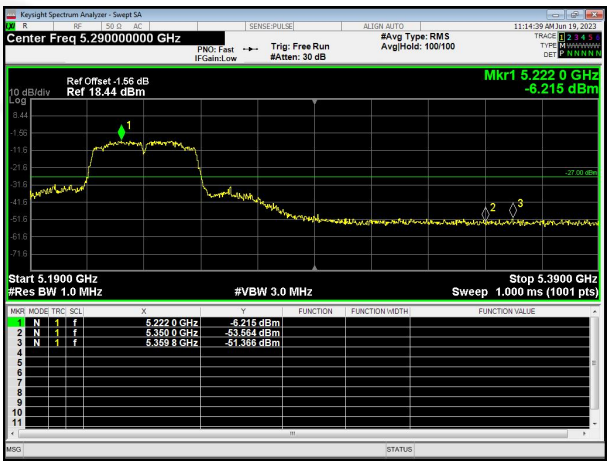



Band Edge n40 5190MHz Low




Band Edge n40 5230MHz High



## 9.SPURIOUS RF CONDUCTED EMISSIONS

### 9.1 CONFORMANCE LIMIT

| Frequency Band (MHz) | Limit |
|---|---|
| 5150 - 5250 | Outside of the 5.15-5.35 GHz band: e.i.r.p. -27 dBm |
| 5250 - 5350 | Outside of the 5.15-5.35 GHz band: e.i.r.p. -27 dBm |
| 5470 - 5725 | Outside of the 5.47-5.725 GHz band: e.i.r.p. -27 dBm |
| 5725 - 5850 | All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge. |

### 9.2 MEASURING INSTRUMENTS

The Measuring equipment is listed in the section 6.3 of this test report.

### 9.3 TEST SETUP

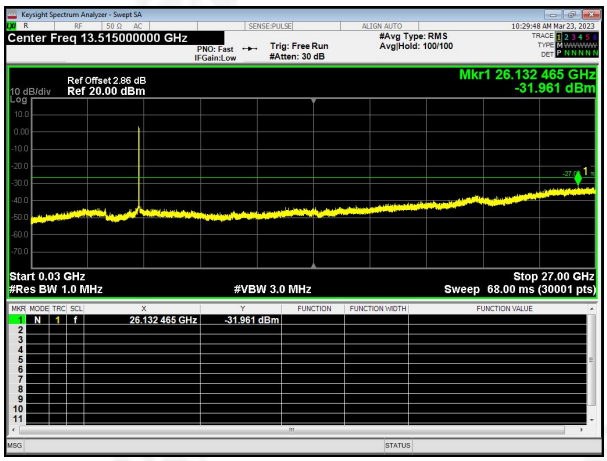

### 9.4 TEST PROCEDURE

The Spurious RF conducted emissions compliance of RF radiated emission should be measured by following the guidance in ANSI C63.10-2013 with respect to maximizing the emission by rotating the EUT, measuring the emission while the EUT is situated in three orthogonal planes (if appropriate), adjusting the measurement antenna height and polarization etc. Set RBW=1MHz and VBW= 3MHz to measure the peak field strength, and measure frequency range from 30MHz to 26.5GHz.

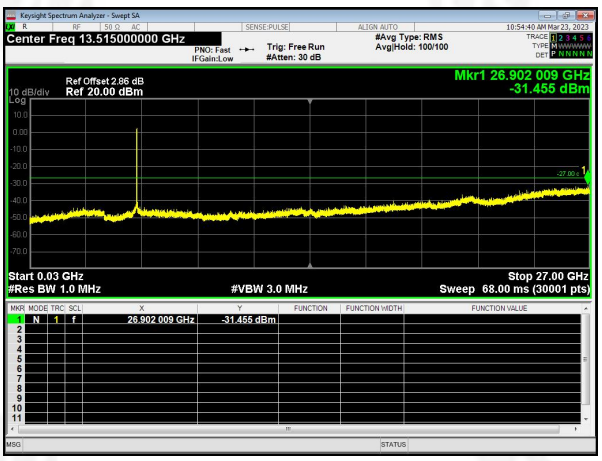
## 9.5 TEST RESULTS

### Test plot

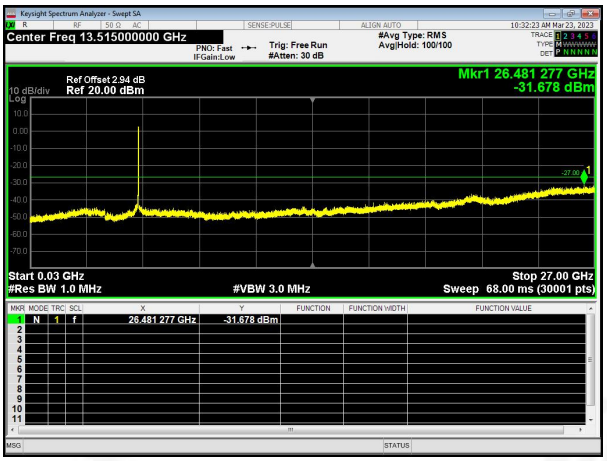
Tx. Spurious NVNT a 5180MHz Emission



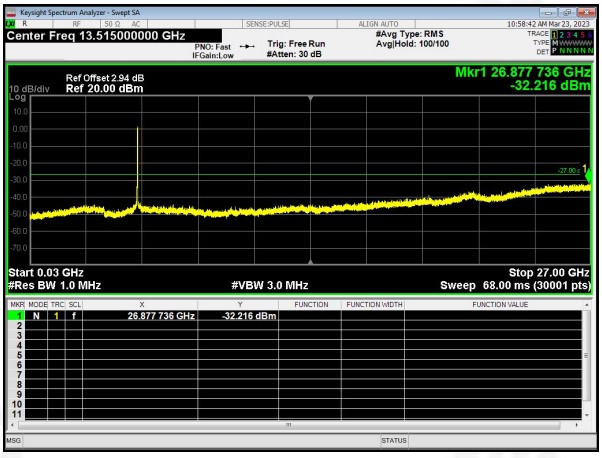

Tx. Spurious NVNT ac20 5180MHz Emission



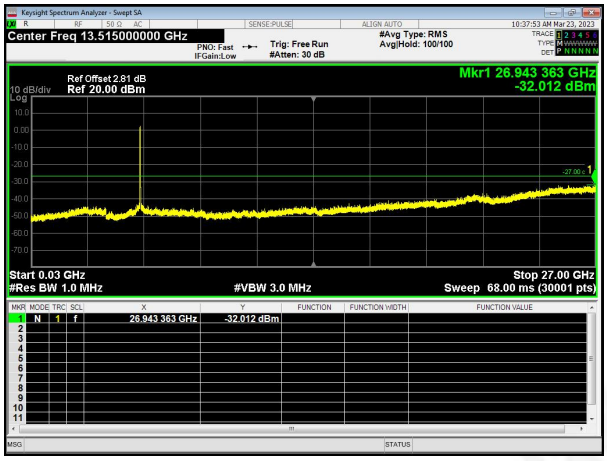

Tx. Spurious NVNT a 5200MHz Emission



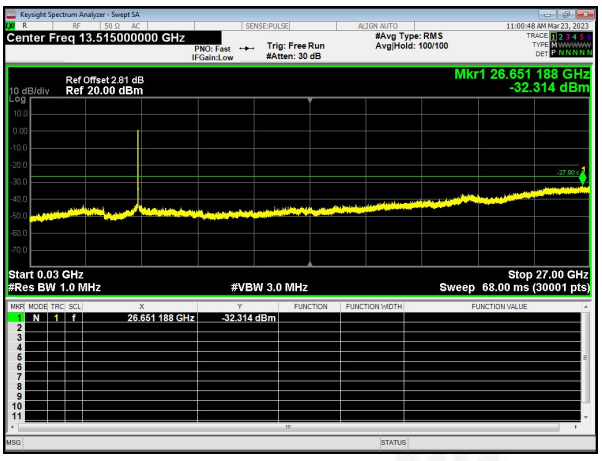

Tx. Spurious NVNT ac20 5200MHz Emission




Tx. Spurious NVNT a 5240MHz Emission

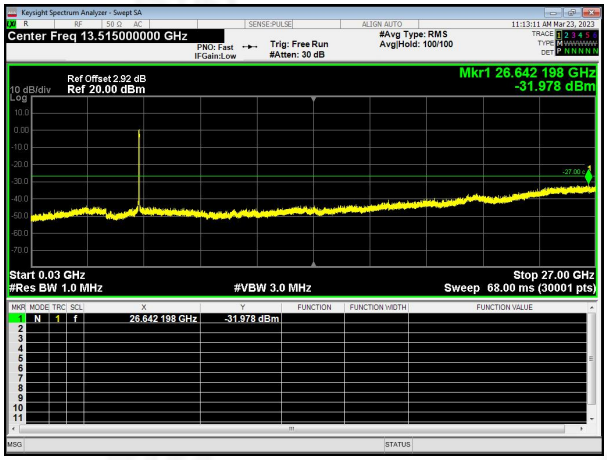



Tx. Spurious NVNT ac20 5240MHz Emission

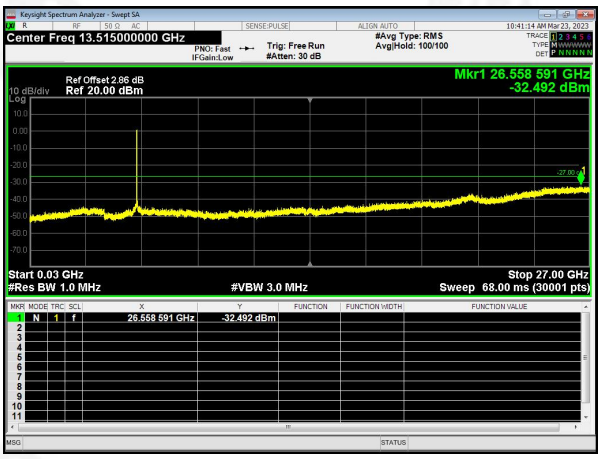


## Test plot

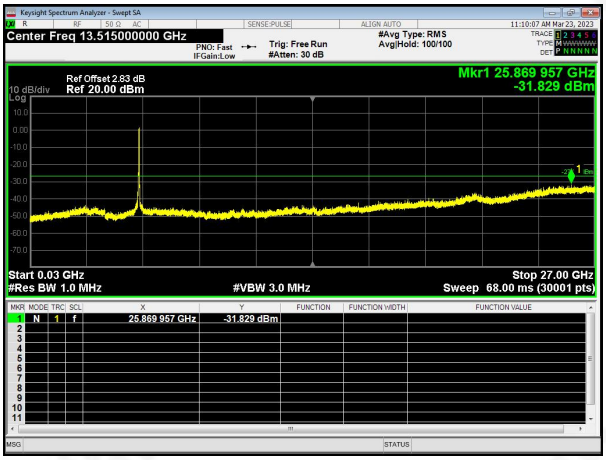
### Tx. Spurious NVNT ac40 5190MHz Emission



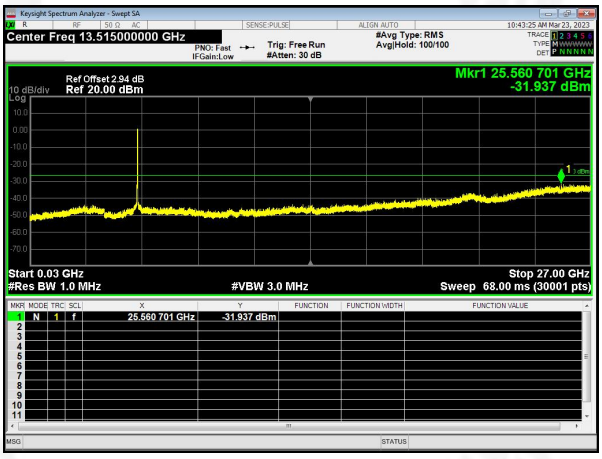

### Tx. Spurious NVNT n20 5180MHz Emission



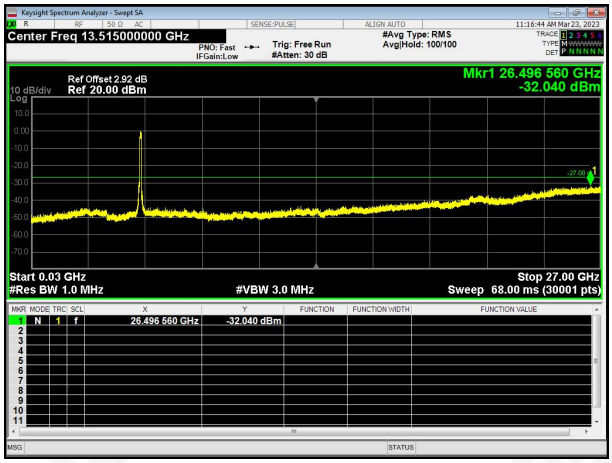

### Tx. Spurious NVNT ac40 5230MHz Emission



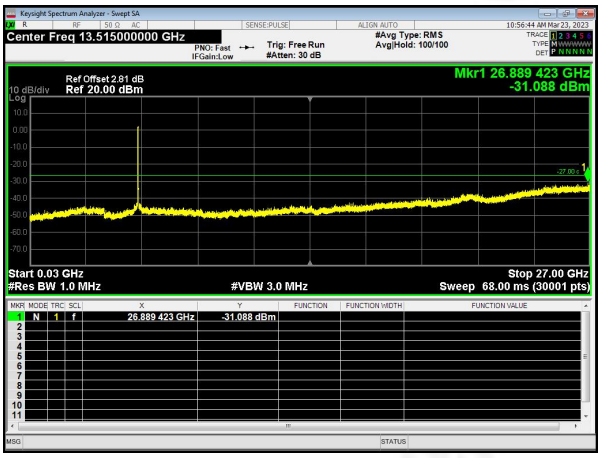

### Tx. Spurious NVNT n20 5200MHz Emission




### Tx. Spurious NVNT ac80 5210MHz Emission

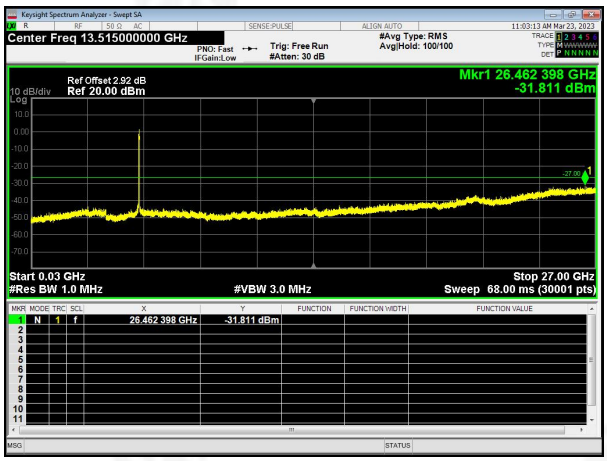



### Tx. Spurious NVNT n20 5240MHz Emission

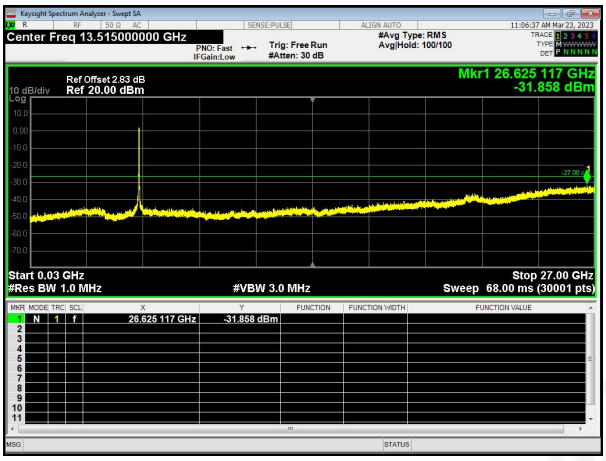


## Test plot

### Tx. Spurious NVNT n40 5190MHz Emission




### Tx. Spurious NVNT n40 5230MHz Emission



## 10.Frequency Stability Measurement

### 10.1 LIMIT

Manufactures of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

### 10.2 TEST PROCEDURES

1. The transmitter output (antenna port) was connected to the spectrum analyzer.
2. EUT have transmitted absence of modulation signal and fixed channelize.
3. Set the spectrum analyzer span to view the entire absence of modulation emissions bandwidth.
4. Set RBW = 10 kHz, VBW = 10 kHz with peak detector and maxhold settings.
5. The test extreme voltage is to change the primary supply voltage from 85 to 115 percent of the nominal value
6. Extreme temperature is -20°C~70°C.

### 10.3 TEST SETUP LAYOUT


### 10.4 EUT OPERATION DURING TEST

The EUT was programmed to be in continuously un-modulation transmitting mode.

10.5 TEST RESULTS

| | | | |
|---|---|---|---|
| Temperature： | 26 ℃ | Relative Humidity： | 54% |
| Pressure： | 1012 hPa | Test Voltage ： | DC 5V |
| Test Mode ： | TX | | |

5.1G

802.11a20

| Reference Frequency(Middle Channel): 5200MHz | | | |
|---|---|---|---|
| Environment Temperature (°C) | Power Supplied (VDC) | Frequency Measure with Time Elapsed | |
| | | MCF | Error (ppm) |
| 50 | 5.0 | 22 | 0.0038 |
| 40 | 5.0 | 12 | 0.00207 |
| 30 | 5.0 | 32 | 0.00553 |
| 20 | 5.0 | 13 | 0.00225 |
| 10 | 5.0 | 21 | 0.00363 |
| 0 | 5.0 | 32 | 0.00553 |
| -10 | 5.0 | 12 | 0.00207 |
| -20 | 5.0 | 24 | 0.00415 |
| -30 | 5.0 | 22 | 0.0038 |

802.11n_HT20

| Reference Frequency(Middle Channel): 5200MHz | | | |
|---|---|---|---|
| Environment Temperature (°C) | Power Supplied (VDC) | Frequency Measure with Time Elapsed | |
| | | MCF | Error (ppm) |
| 50 | 5.0 | 55 | 0.00951 |
| 40 | 5.0 | 42 | 0.00726 |
| 30 | 5.0 | 32 | 0.00553 |
| 20 | 5.0 | 13 | 0.00225 |
| 10 | 5.0 | 21 | 0.00363 |
| 0 | 5.0 | 32 | 0.00553 |
| -10 | 5.0 | 12 | 0.00207 |
| -20 | 5.0 | 24 | 0.00415 |
| -30 | 5.0 | 22 | 0.0038 |

802.11n_HT40

| Reference Frequency(Middle Channel): 5190MHz | | | |
|---|---|---|---|
| Environment Temperature (°C) | Power Supplied (VDC) | Frequency Measure with Time Elapsed | |
| | | MCF | Error (ppm) |
| 50 | 5.0 | 61 | 0.01053 |
| 40 | 5.0 | 54 | 0.00932 |
| 30 | 5.0 | 42 | 0.00725 |
| 20 | 5.0 | 44 | 0.00759 |
| 10 | 5.0 | 34 | 0.00587 |
| 0 | 5.0 | 32 | 0.00552 |
| -10 | 5.0 | 42 | 0.00725 |
| -20 | 5.0 | 51 | 0.0088 |
| -30 | 5.0 | 34 | 0.00587 |

802.11 ac20

| Reference Frequency(Middle Channel): 5200 MHz | | | |
|---|---|---|---|
| Environment Temperature (°C) | Power Supplied (VDC) | Frequency Measure with Time Elapsed | |
| | | MCF | Error (ppm) |
| 50 | 5.0 | 63 | 0.01089 |
| 40 | 5.0 | 51 | 0.00882 |
| 30 | 5.0 | 43 | 0.00743 |
| 20 | 5.0 | 32 | 0.00553 |
| 10 | 5.0 | 23 | 0.00398 |
| 0 | 5.0 | 26 | 0.00449 |
| -10 | 5.0 | 36 | 0.00622 |
| -20 | 5.0 | 43 | 0.00743 |
| -30 | 5.0 | 22 | 0.0038 |

802.11ac40

| Reference Frequency(Middle Channel): 5190MHz | | | |
|---|---|---|---|
| Environment Temperature (°C) | Power Supplied (VDC) | Frequency Measure with Time Elapsed | |
| | | MCF | Error (ppm) |
| 50 | 5.0 | 61 | 0.01053 |
| 40 | 5.0 | 52 | 0.009 |
| 30 | 5.0 | 43 | 0.00745 |
| 20 | 5.0 | 44 | 0.00759 |
| 10 | 5.0 | 34 | 0.00587 |
| 0 | 5.0 | 22 | 0.0038 |
| -10 | 5.0 | 43 | 0.00743 |
| -20 | 5.0 | 51 | 0.0088 |
| -30 | 5.0 | 36 | 0.00622 |

802.11ac80

| Reference Frequency(Middle Channel): 5210MHz | | | |
|---|---|---|---|
| Environment Temperature (°C) | Power Supplied (VDC) | Frequency Measure with Time Elapsed | |
| | | MCF | Error (ppm) |
| 50 | 5.0 | 63 | 0.01091 |
| 40 | 5.0 | 52 | 0.009 |
| 30 | 5.0 | 43 | 0.00745 |
| 20 | 5.0 | 41 | 0.0071 |
| 10 | 5.0 | 36 | 0.00623 |
| 0 | 5.0 | 32 | 0.00554 |
| -10 | 5.0 | 43 | 0.00745 |
| -20 | 5.0 | 52 | 0.009 |
| -30 | 5.0 | 34 | 0.00589 |

So, Frequency Stability Versus Input Voltage is:

802.11a20

| Reference Frequency(Middle Channel): 5200 MHz | | | |
|---|---|---|---|
| Environment Temperature (°C) | Power Supplied (VDC) | Frequency Measure with Time Elapsed | |
| | | Frequency | Error (ppm) |
| 20 | 5.0 | 43 | 0.00743 |
| | 4.5 | 42 | 0.00725 |
| | 5.5 | 44 | 0.00759 |

802.11n_HT20

| Reference Frequency(Middle Channel): 5200 MHz | | | |
|---|---|---|---|
| Environment Temperature (°C) | Power Supplied (VDC) | Frequency Measure with Time Elapsed | |
| | | Frequency | Error (ppm) |
| 20 | 5.0 | 43 | 0.00743 |
| | 4.5 | 55 | 0.00951 |
| | 5.5 | 21 | 0.00363 |

802.11n_HT40

| Reference Frequency(Middle Channel): 5190 MHz | | | |
|---|---|---|---|
| Environment Temperature (°C) | Power Supplied (VDC) | Frequency Measure with Time Elapsed | |
| | | Frequency | Error (ppm) |
| 20 | 5.0 | 42 | 0.00725 |
| | 4.5 | 42 | 0.00725 |
| | 5.5 | 44 | 0.00759 |

802.11ac20

| Reference Frequency(Middle Channel): 5200 MHz | | | |
|---|---|---|---|
| Environment Temperature (°C) | Power Supplied (VDC) | Frequency Measure with Time Elapsed | |
| | | Frequency | Error (ppm) |
| 20 | 5.0 | 33 | 0.0057 |
| | 4.5 | 34 | 0.00588 |
| | 5.5 | 32 | 0.00553 |

802.11ac40

| Reference Frequency(Middle Channel): 5190 MHz | | | |
|---|---|---|---|
| Environment Temperature (°C) | Power Supplied (VDC) | Frequency Measure with Time Elapsed | |
| | | Frequency | Error (ppm) |
| 20 | 5.0 | 42 | 0.00725 |
| | 4.5 | 42 | 0.00725 |
| | 5.5 | 32 | 0.00553 |

802.11ac80

| Reference Frequency(Middle Channel): 5210 MHz | | | |
|---|---|---|---|
| Environment Temperature (°C) | Power Supplied (VDC) | Frequency Measure with Time Elapsed | |
| | | Frequency | Error (ppm) |
| 20 | 5.0 | 42 | 0.00727 |
| | 4.5 | 33 | 0.0057 |
| | 5.5 | 44 | 0.00762 |

## 11.ANTENNA REQUIREMENT

| Standard requirement: | FCC Part15 C Section 15.203 |
|---|---|
| 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. | |
| EUT Antenna: | |
| The antenna is FPCB Antenna, the best case gain of the antenna is 4.15dBi, reference to the appendix II for details | |

## 12. TEST SETUP PHOTO

Reference to the appendix I for details.

## 13. EUT CONSTRUCTIONAL DETAILS

Reference to the appendix II for details.

**※※※※※ END OF REPORT ※※※※※**