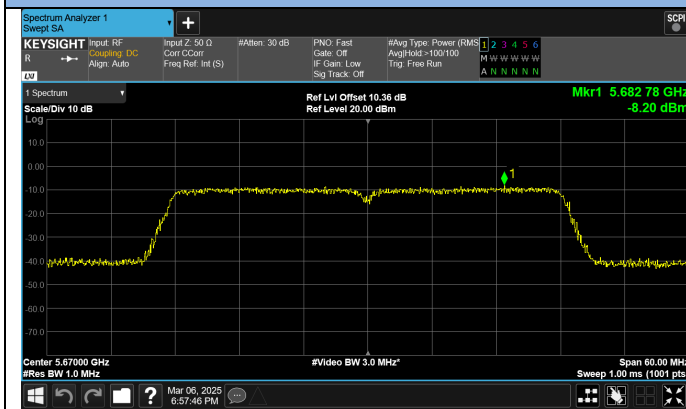
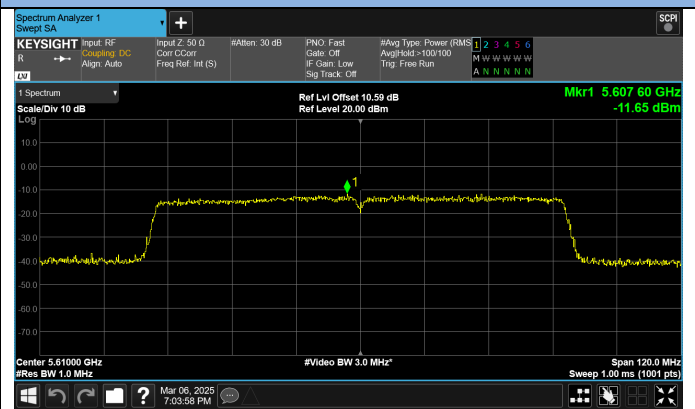


## U-NII-2C Band

### IEEE 802.11ac(VHT40) High Channel

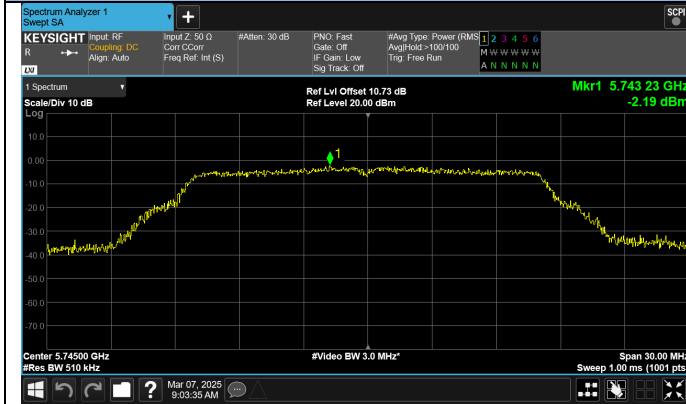


### IEEE 802.11ac(VHT80)

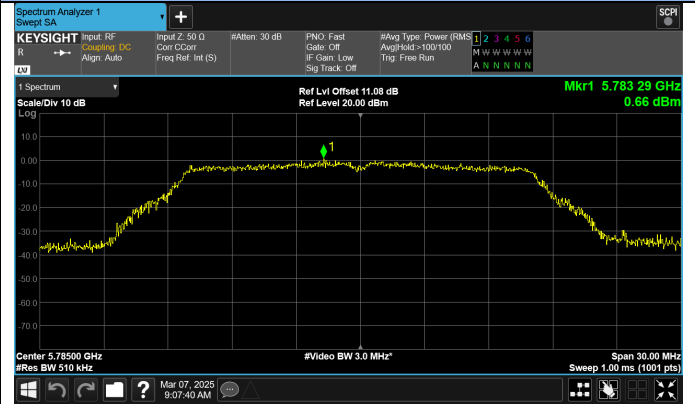


## U-NII-3 Band

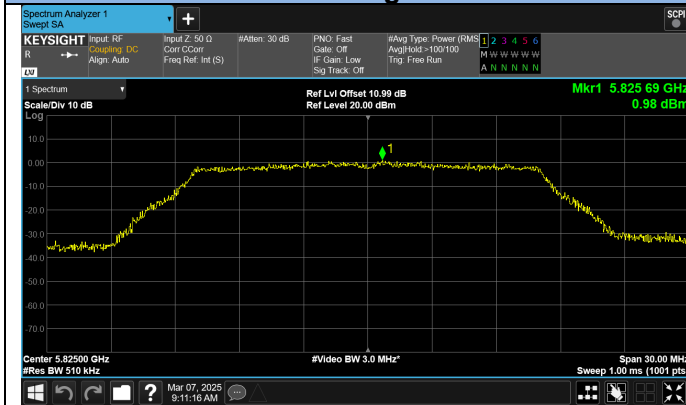
### IEEE 802.11a Low Channel



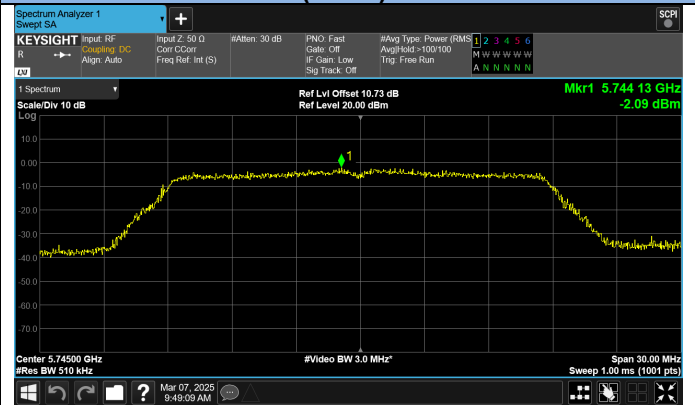
### IEEE 802.11a Middle Channel



### IEEE 802.11a High Channel



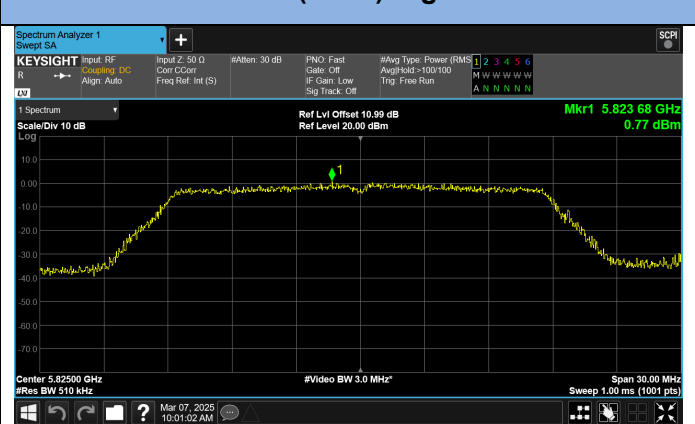
### IEEE 802.11n(HT20) Low Channel



### IEEE 802.11n(HT20) Middle Channel

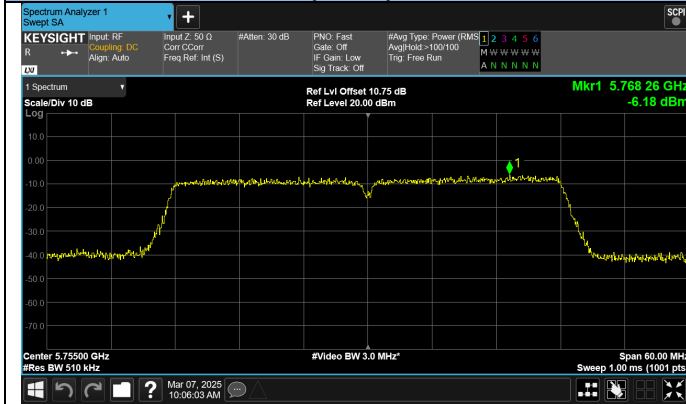


### IEEE 802.11n(HT20) High Channel

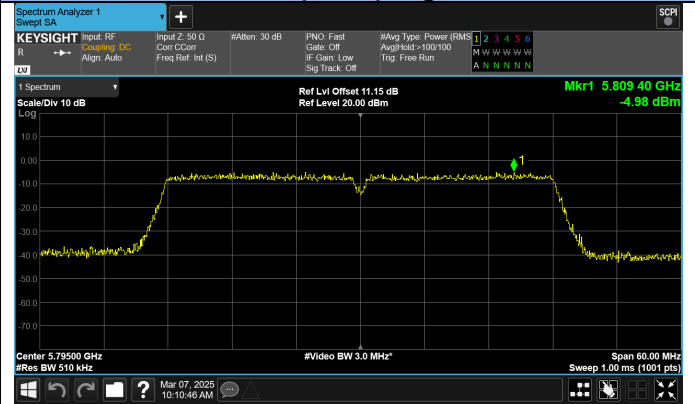


## U-NII-3 Band

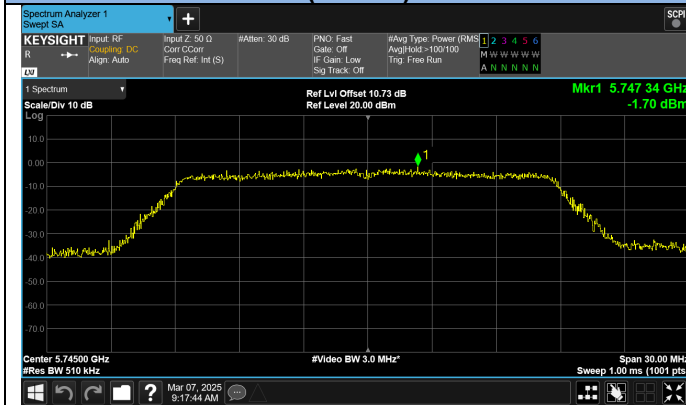
### IEEE 802.11n(HT40) Low Channel



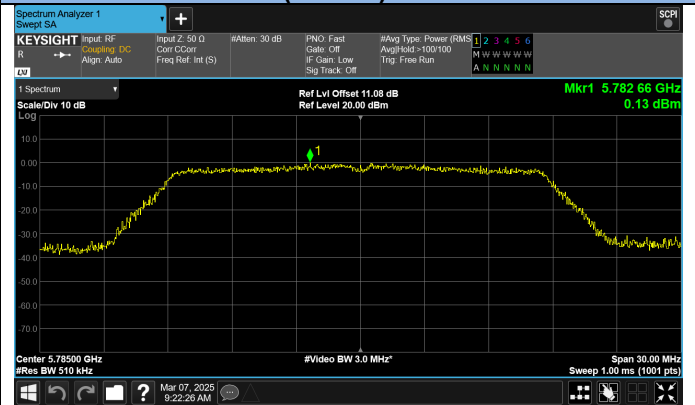
### IEEE 802.11n(HT40) High Channel



### IEEE 802.11ac(VHT20) Low Channel



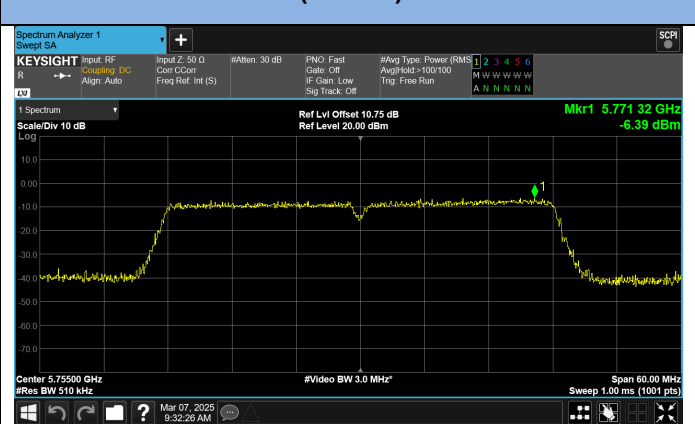
### IEEE 802.11ac(VHT20) Middle Channel



### IEEE 802.11ac(VHT20) High Channel

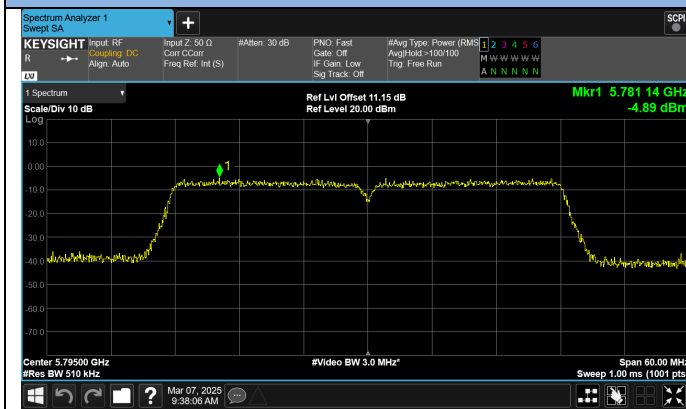


### IEEE 802.11ac(VHT40) Low Channel

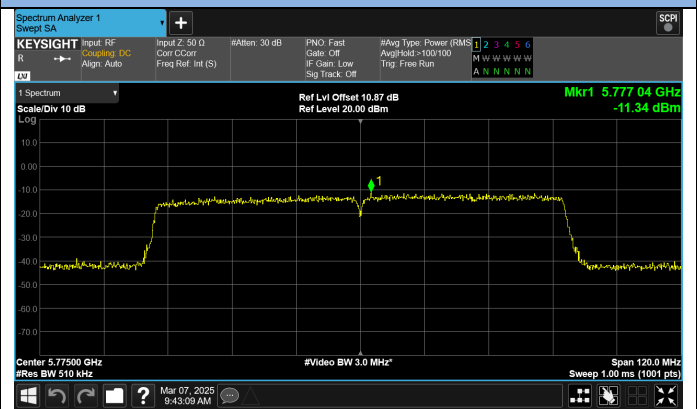


## U-NII-3 Band

### IEEE 802.11ac(VHT40) High Channel



### IEEE 802.11ac(VHT80)



## 14.6 Band Edge

### LIMITS

For transmitters operating in the 5.15-5.25 GHz band:

All emissions outside of the 5.15-5.35GHz band shall not exceed an e.i.r.p. of  $-27$  dBm/MHz.

For transmitters operating in the 5.25-5.35 GHz band:

All emissions outside of the 5.15-5.35GHz band shall not exceed an e.i.r.p. of  $-27$  dBm/MHz.

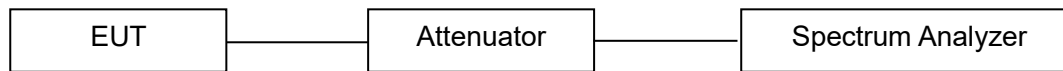
For transmitters operating in the 5.47-5.725 GHz band:

All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of  $-27$  dBm/MHz.

For transmitters operating in the 5.725-5.85 GHz band:

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 25MHz 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 27dBm/MHz at the band edge.

### BLOCK DIAGRAM OF TEST SETUP



### TEST PROCEDURES

- a. Check the calibration of the measuring instrument using either an internal calibration or a known signal from an external generator.
- b. 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.
- c. Set RBW to 1MHz and VBW to 3MHz of spectrum analyzer.
- d. 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.
- e. Repeat above procedures until all measured frequencies were complete.

---

## TEST RESULTS

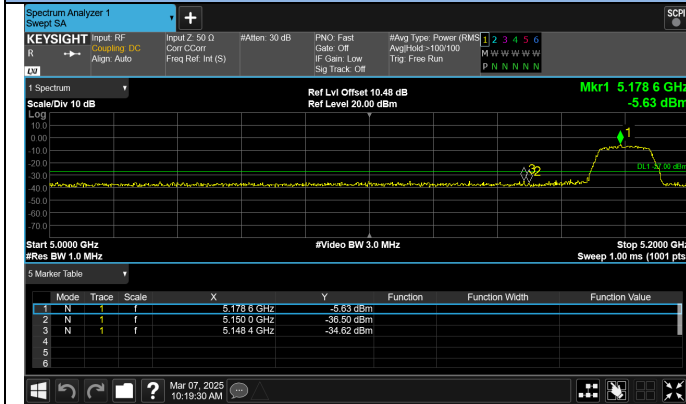
PASS

Please refer to following pages.

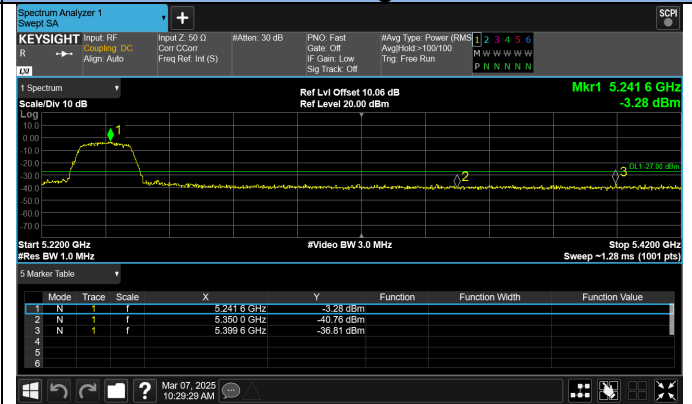
Note: Antenna gain was considered during the test.

## U-NII-1 Band

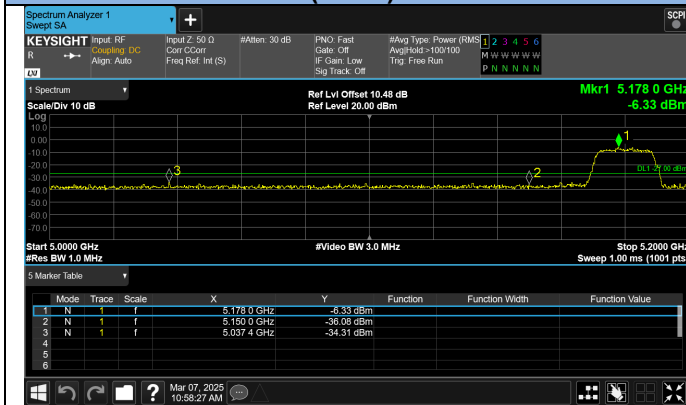
### IEEE 802.11a Low Channel



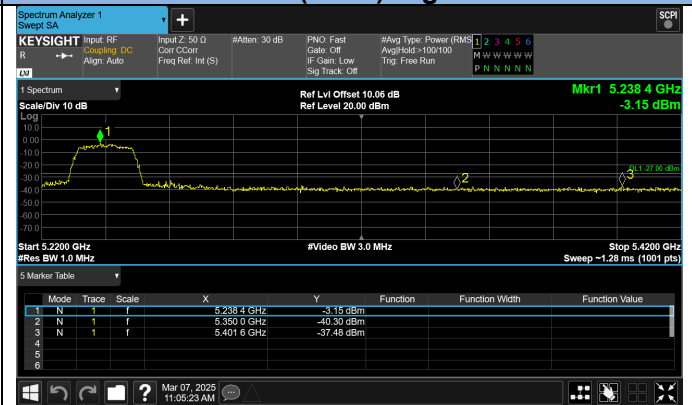
### IEEE 802.11a High Channel



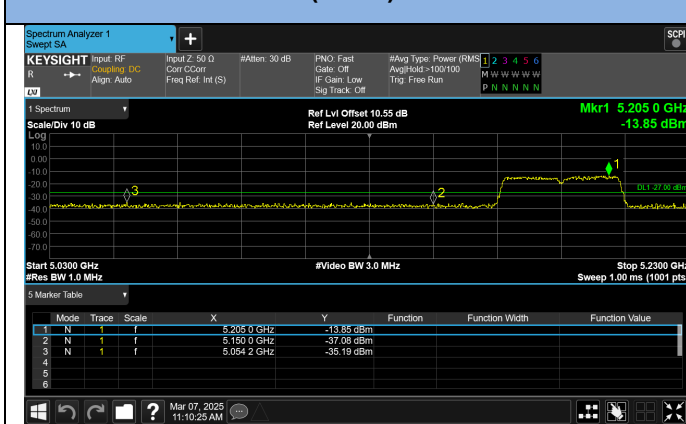
### IEEE 802.11n(HT20) Low Channel



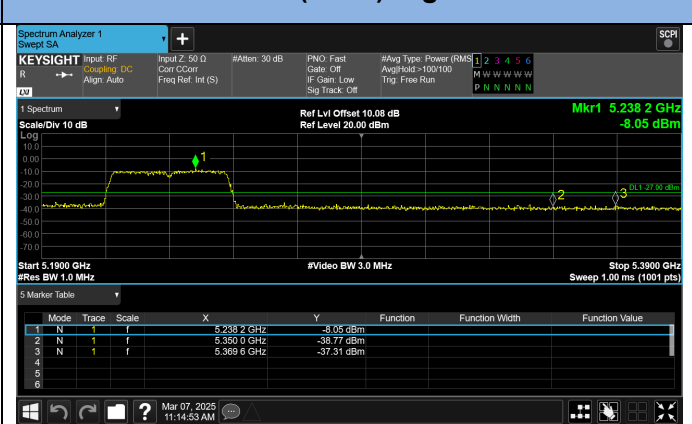
### IEEE 802.11n(HT20) High Channel



### IEEE 802.11n(HT40) Low Channel

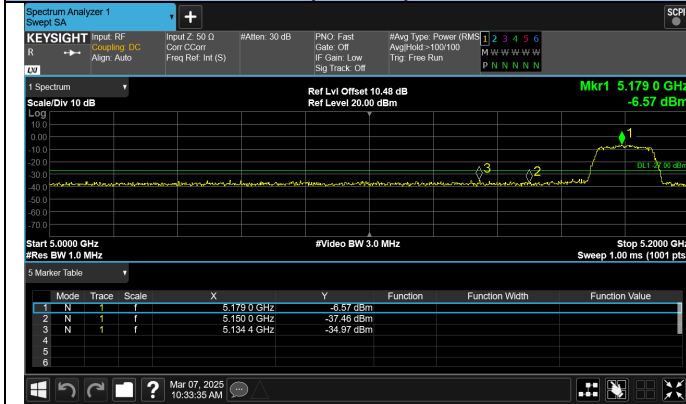


### IEEE 802.11n(HT40) High Channel

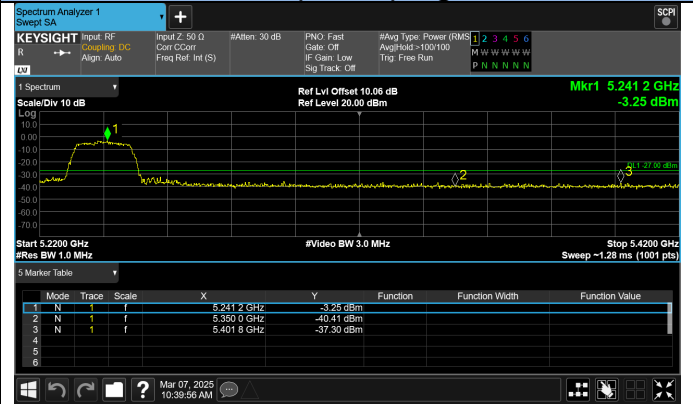


## U-NII-1 Band

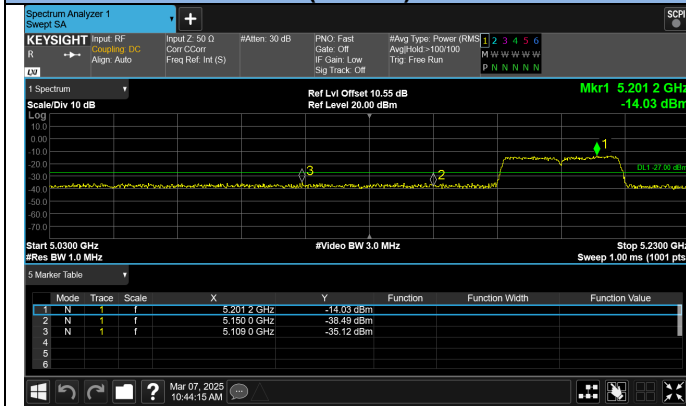
### IEEE 802.11ac(VHT20) Low Channel



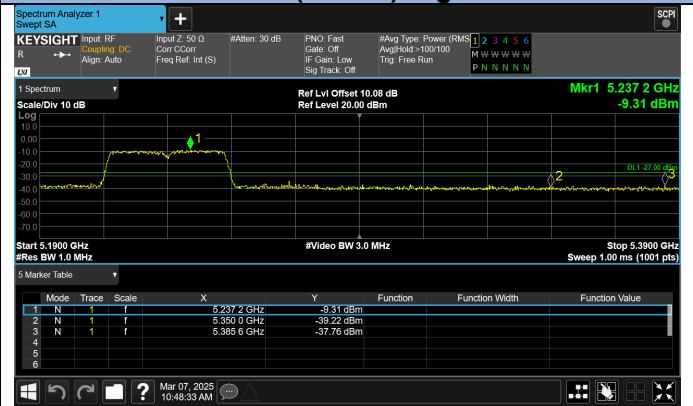
### IEEE 802.11ac(VHT20) High Channel



### IEEE 802.11ac(VHT40) Low Channel

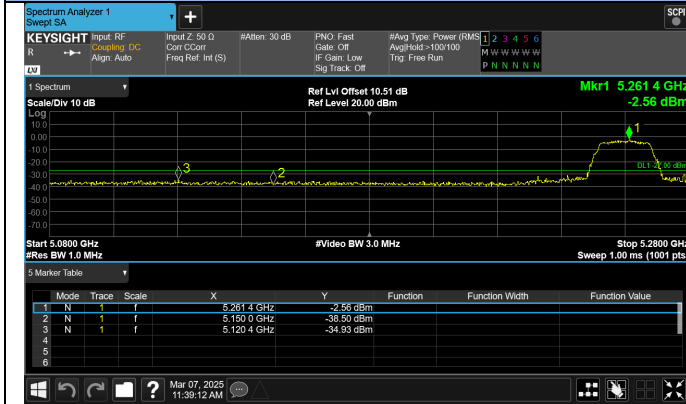


### IEEE 802.11ac(VHT40) High Channel

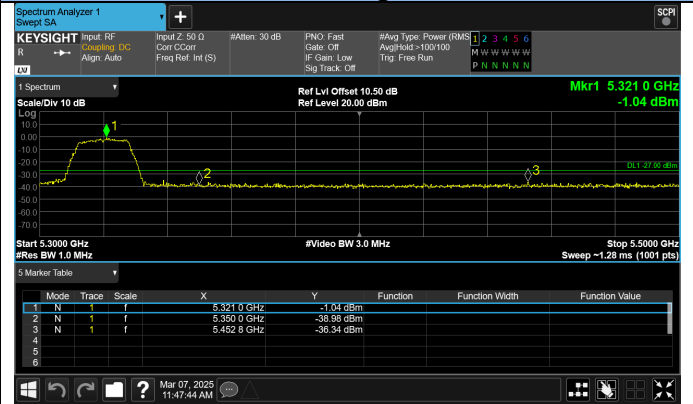


## U-NII-2A Band

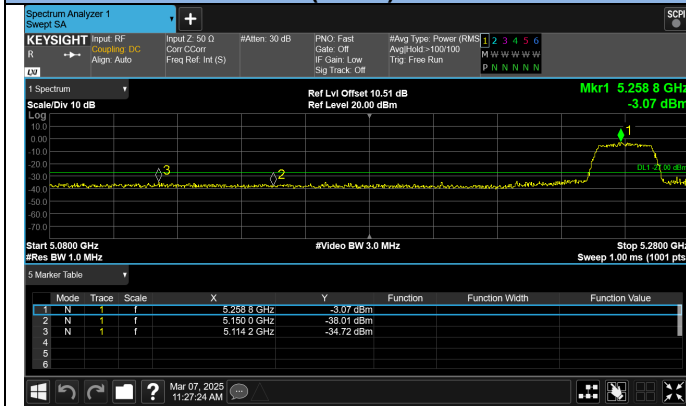
### IEEE 802.11a Low Channel



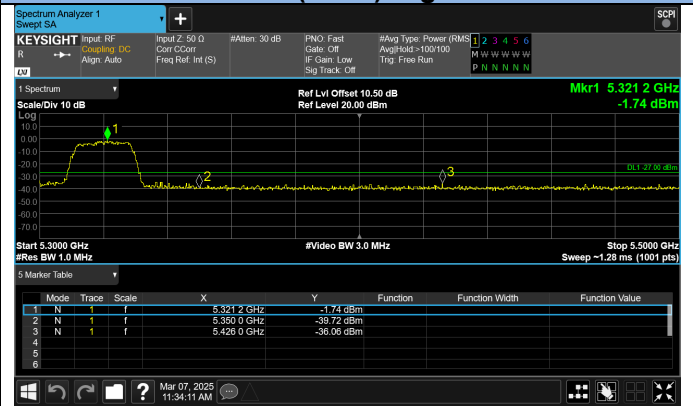
### IEEE 802.11a High Channel



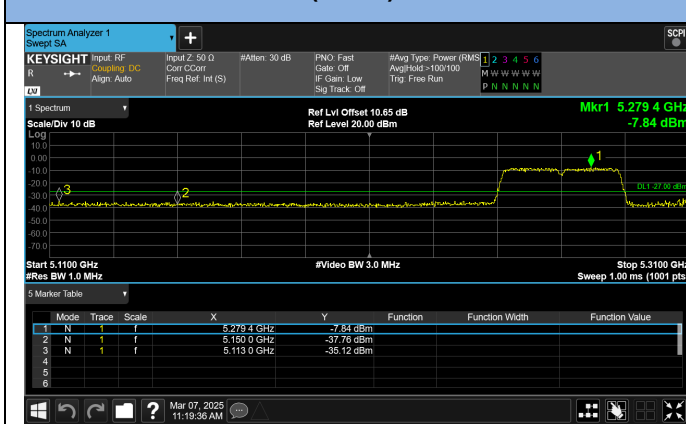
### IEEE 802.11n(HT20) Low Channel



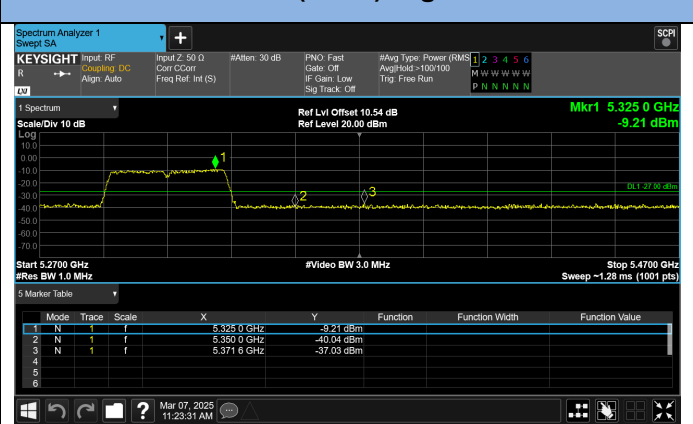
### IEEE 802.11n(HT20) High Channel



### IEEE 802.11n(HT40) Low Channel

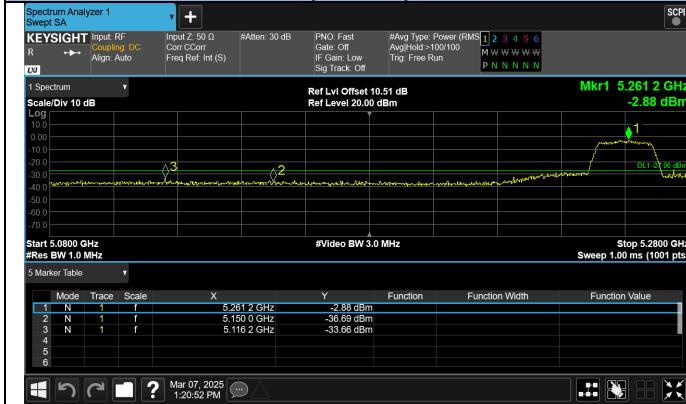


### IEEE 802.11n(HT40) High Channel

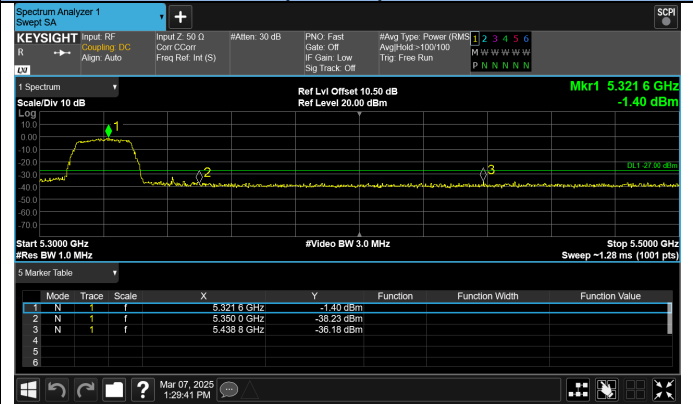


## U-NII-2A Band

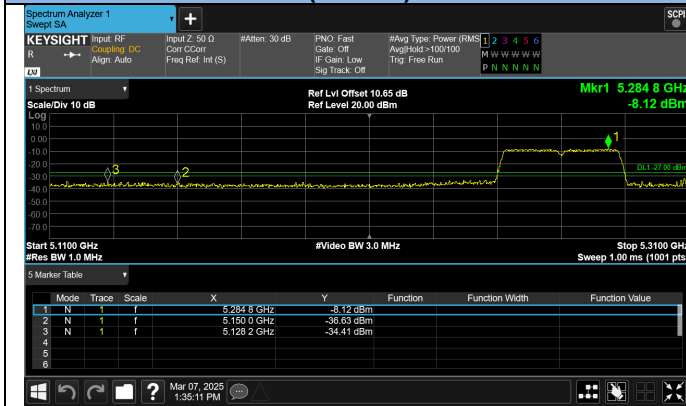
### IEEE 802.11ac(VHT20) Low Channel



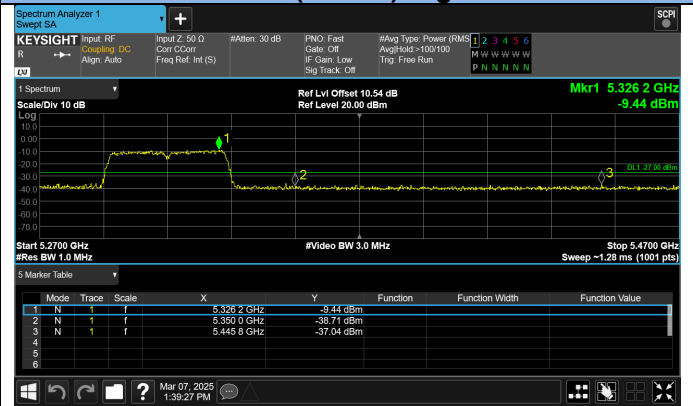
### IEEE 802.11ac(VHT20) Middle Channel



### IEEE 802.11ac(VHT40) Low Channel

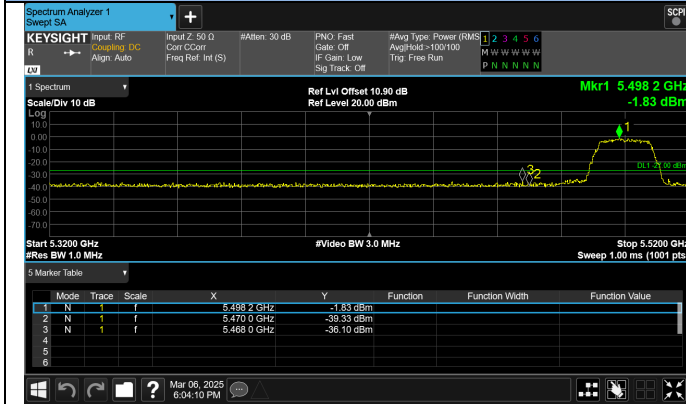


### IEEE 802.11ac(VHT40) High Channel

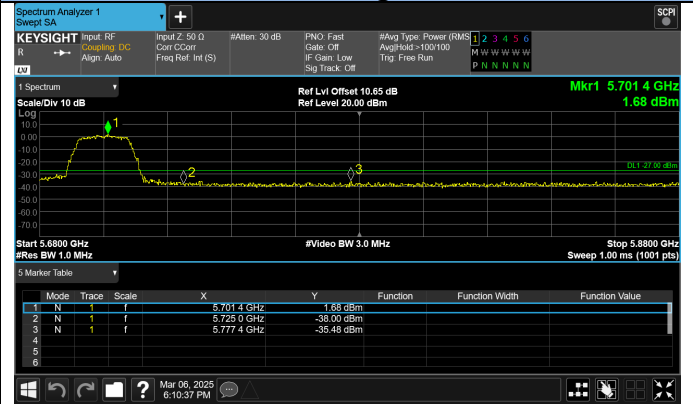


## U-NII-2C Band

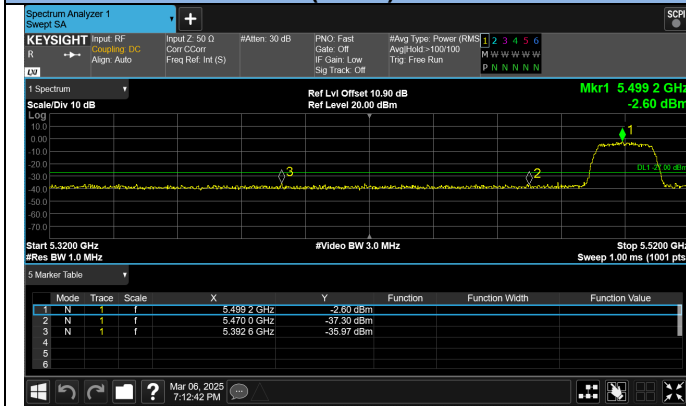
### IEEE 802.11a Low Channel



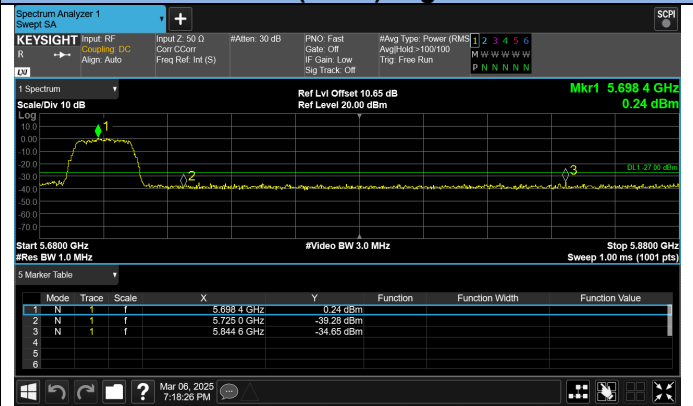
### IEEE 802.11a High Channel



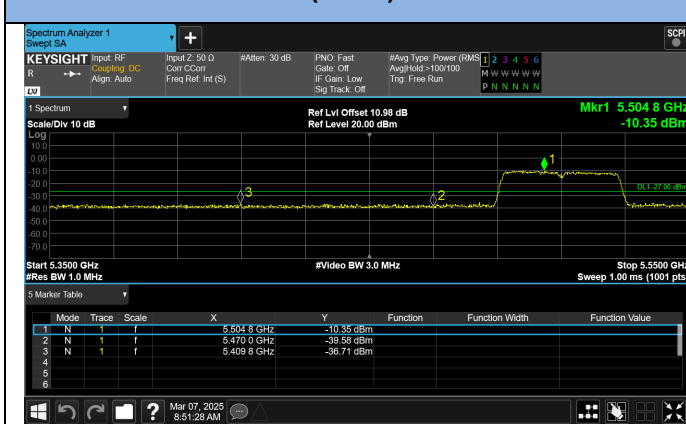
### IEEE 802.11n(HT20) Low Channel



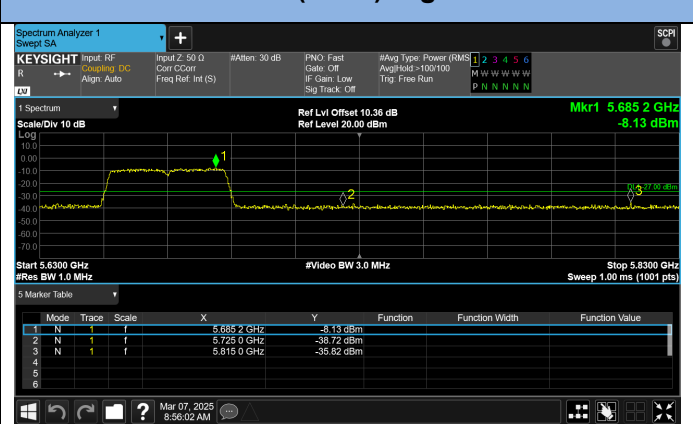
### IEEE 802.11n(HT20) High Channel



### IEEE 802.11n(HT40) Low Channel

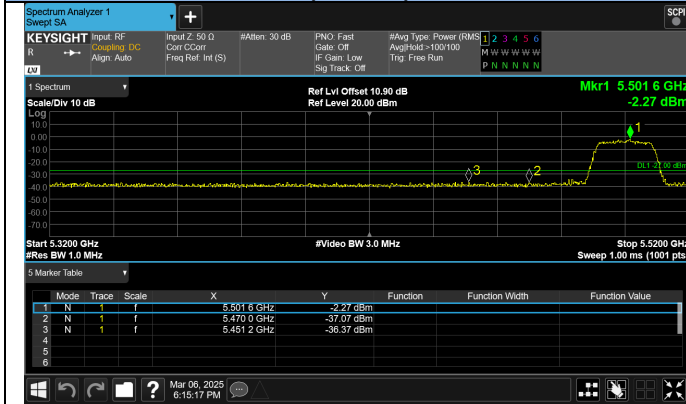


### IEEE 802.11n(HT40) High Channel

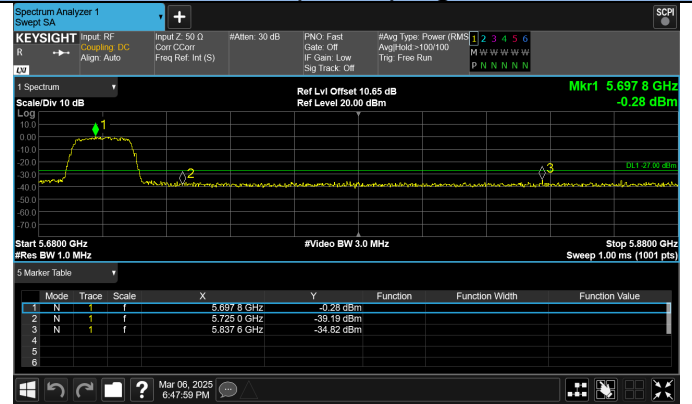


## U-NII-2C Band

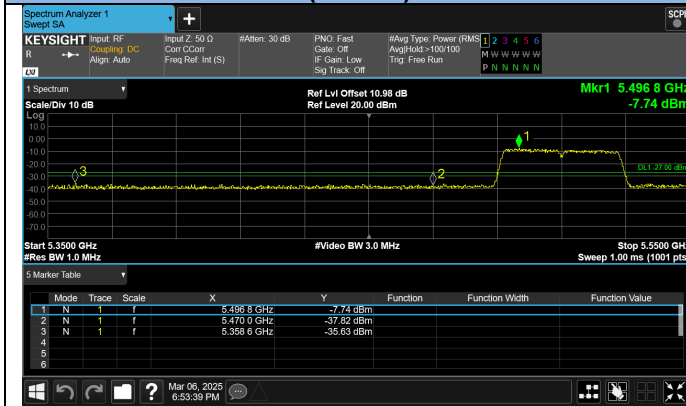
### IEEE 802.11ac(VHT20) Low Channel



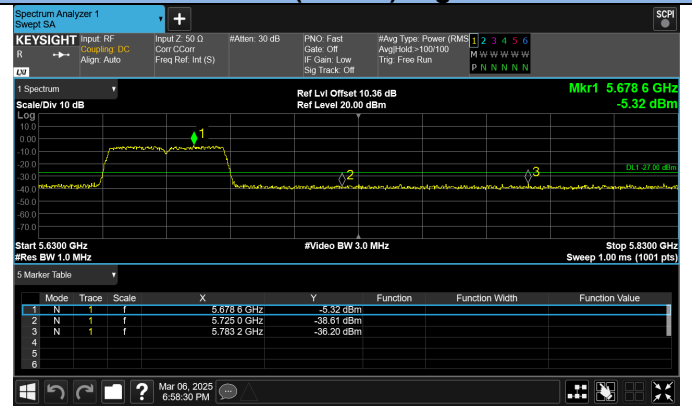
### IEEE 802.11ac(VHT20) High Channel



### IEEE 802.11ac(VHT40) Low Channel

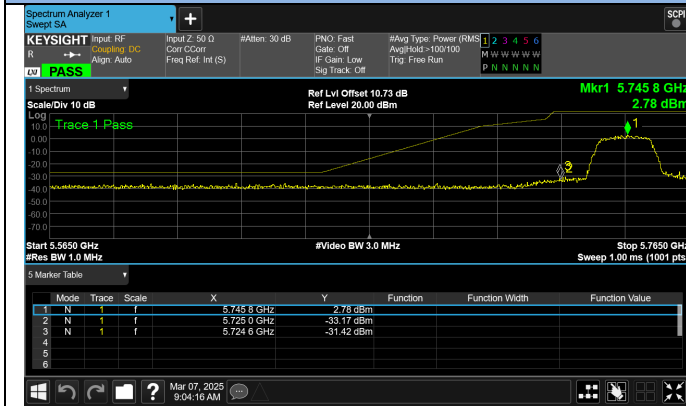


### IEEE 802.11ac(VHT40) High Channel

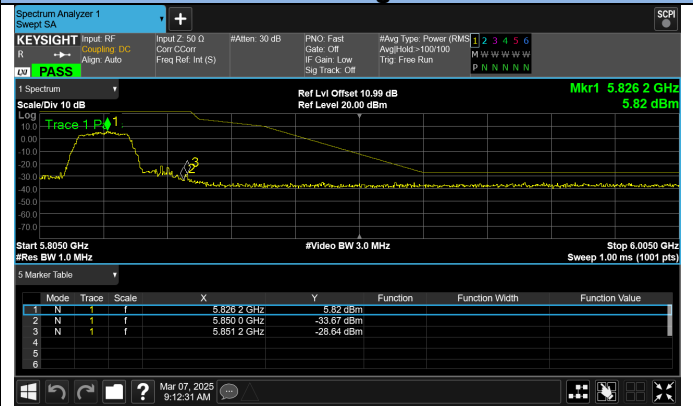


## U-NII-3 Band

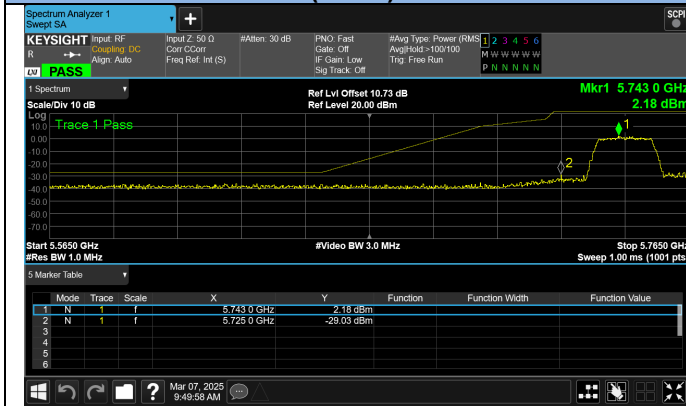
### IEEE 802.11a Low Channel



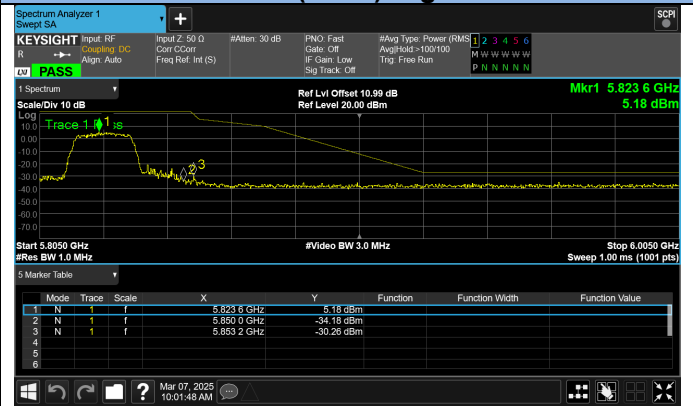
### IEEE 802.11a High Channel



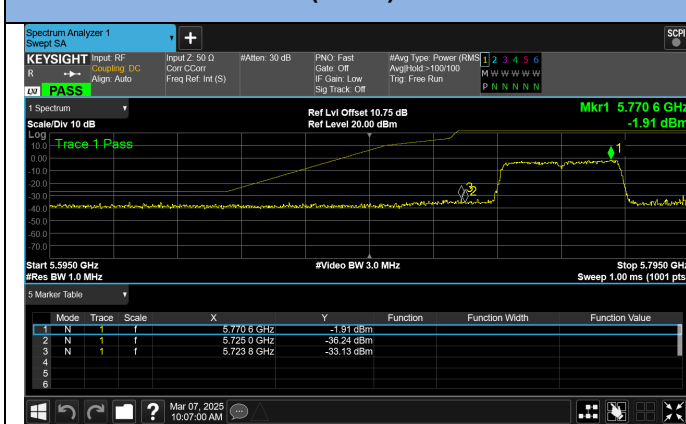
### IEEE 802.11n(HT20) Low Channel



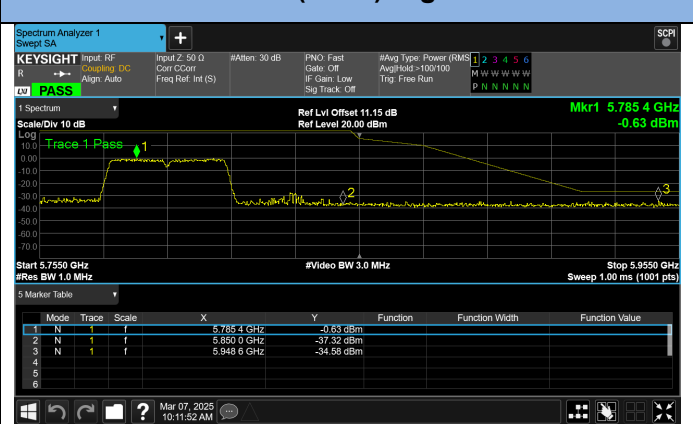
### IEEE 802.11n(HT20) High Channel



### IEEE 802.11n(HT40) Low Channel

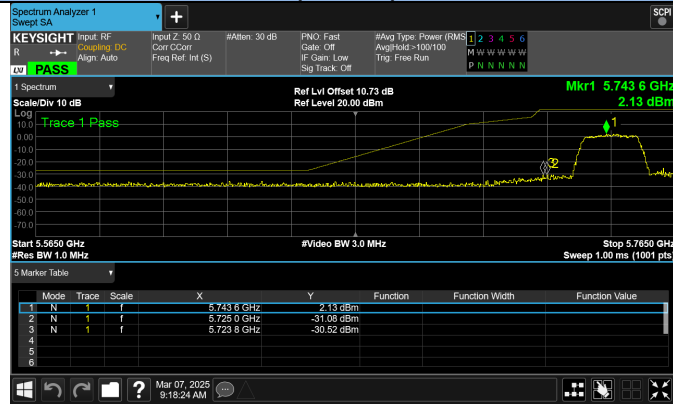


### IEEE 802.11n(HT40) High Channel

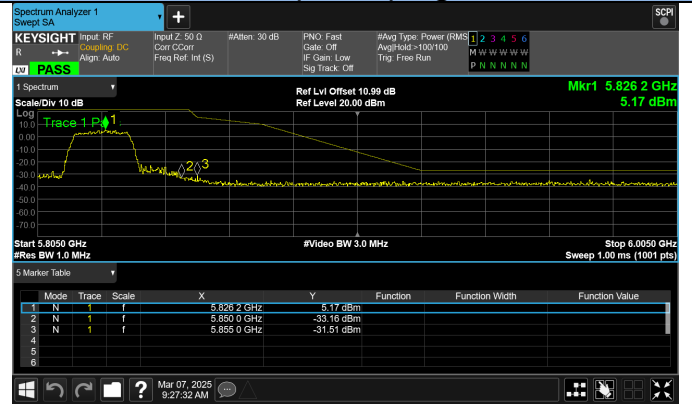


## U-NII-3 Band

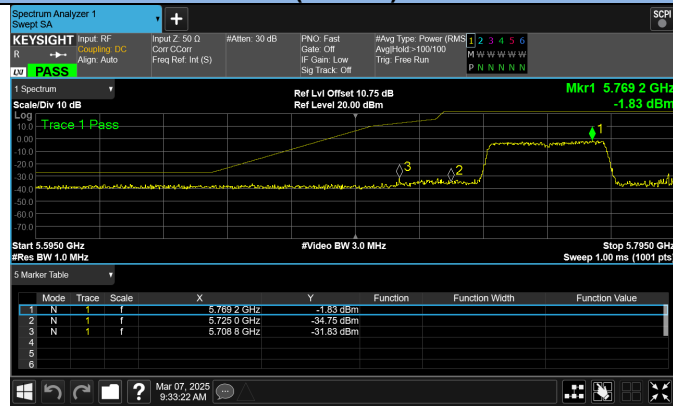
### IEEE 802.11ac(VHT20) Low Channel



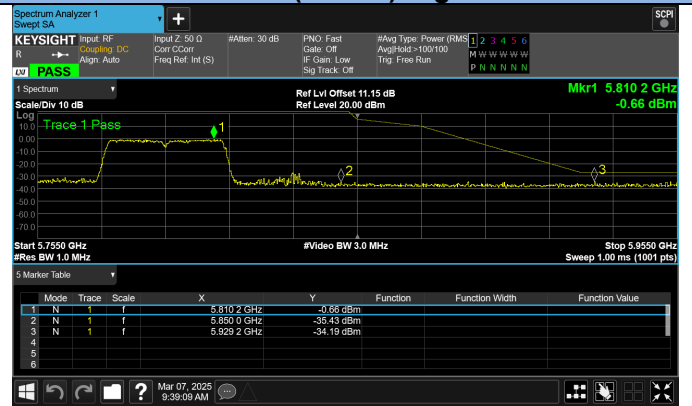
### IEEE 802.11ac(VHT20) High Channel



### IEEE 802.11ac(VHT40) Low Channel



### IEEE 802.11ac(VHT40) High Channel

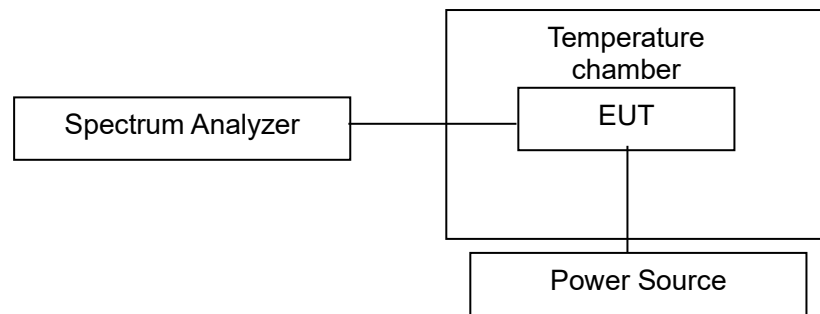


## 14.7 Frequency Stability

### LIMITS

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.

### BLOCK DIAGRAM OF TEST SETUP



### TEST PROCEDURES

- The EUT was placed inside the environmental test chamber and powered by Power source.
- Turn the EUT on and couple its output to a spectrum analyzer.
- Turn the EUT off and set the chamber to the highest temperature specified.
- Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT on and measure the operating frequency after 2, 5, and 10 minutes.
- Repeat step 2 and 3 with the temperature chamber set to the lowest temperature.
- The chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85% to 115% and the frequency record.

Note: The EUT set at un-modulation mode during frequency stability test.

### TEST RESULTS

PASS

Please refer to the following pages.

| U-NII-1 Band               |                            |                             |           |           |           |             |
|----------------------------|----------------------------|-----------------------------|-----------|-----------|-----------|-------------|
| Lowest channel<br>5180MHz  |                            |                             |           |           |           |             |
| Temperature<br>(°C)        | Power<br>Supplied<br>(Vdc) | Measured Frequency<br>(MHz) |           |           |           | Test Result |
|                            |                            | 0 Minute                    | 2 Minute  | 5 Minute  | 10 Minute |             |
| 0                          | 3.7                        | 5179.9801                   | 5180.0128 | 5180.0164 | 5180.0126 | Pass        |
| 5                          |                            | 5180.0125                   | 5180.0156 | 5180.0145 | 5180.0124 | Pass        |
| 10                         |                            | 5180.0134                   | 5180.0145 | 5180.0126 | 5180.0153 | Pass        |
| 15                         |                            | 5180.0152                   | 5180.0124 | 5180.0164 | 5180.0125 | Pass        |
| 20                         |                            | 5180.0124                   | 5180.0122 | 5180.0145 | 5180.0154 | Pass        |
| 25                         |                            | 5180.0148                   | 5180.0152 | 5180.0154 | 5180.0155 | Pass        |
| 35                         |                            | 5180.0157                   | 5180.0144 | 5180.0122 | 5180.0144 | Pass        |
| 20                         | 3.145                      | 5180.0165                   | 5180.0155 | 5180.0141 | 5180.0133 | Pass        |
| 20                         | 4.255                      | 5180.0171                   | 5180.0162 | 5180.0125 | 5180.0165 | Pass        |
| Highest channel<br>5240MHz |                            |                             |           |           |           |             |
| Temperature<br>(°C)        | Power<br>Supplied<br>(Vdc) | Measured Frequency<br>(MHz) |           |           |           | Test Result |
|                            |                            | 0 Minute                    | 2 Minute  | 5 Minute  | 10 Minute |             |
| 0                          | 3.7                        | 5240.0113                   | 5240.0225 | 5240.0142 | 5240.0134 | Pass        |
| 5                          |                            | 5240.0145                   | 5240.0128 | 5240.0129 | 5240.0142 | Pass        |
| 10                         |                            | 5240.0135                   | 5240.0134 | 5240.0157 | 5240.0145 | Pass        |
| 15                         |                            | 5240.0144                   | 5240.0156 | 5240.0166 | 5240.0157 | Pass        |
| 20                         |                            | 5240.0134                   | 5240.0144 | 5240.0142 | 5240.0164 | Pass        |
| 25                         |                            | 5240.0132                   | 5240.0125 | 5240.0174 | 5240.0172 | Pass        |
| 35                         |                            | 5240.0144                   | 5240.0112 | 5240.0182 | 5240.0133 | Pass        |
| 20                         | 3.145                      | 5240.0165                   | 5240.0125 | 5240.0154 | 5240.0154 | Pass        |
| 20                         | 4.255                      | 5240.0144                   | 5240.0134 | 5240.0144 | 5240.0155 | Pass        |

Note: EUT temperature working range is 0 to 35.

| U-NII-2A Band              |                            |                             |           |           |           |             |
|----------------------------|----------------------------|-----------------------------|-----------|-----------|-----------|-------------|
| Lowest channel<br>5260MHz  |                            |                             |           |           |           |             |
| Temperature<br>(°C)        | Power<br>Supplied<br>(Vdc) | Measured Frequency<br>(MHz) |           |           |           | Test Result |
|                            |                            | 0 Minute                    | 2 Minute  | 5 Minute  | 10 Minute |             |
| 0                          | 3.7                        | 5260.0114                   | 5260.0146 | 5260.0156 | 5260.0155 | Pass        |
| 5                          |                            | 5260.0115                   | 5260.0149 | 5260.0141 | 5260.0145 | Pass        |
| 10                         |                            | 5260.0126                   | 5260.0166 | 5260.0131 | 5260.0138 | Pass        |
| 15                         |                            | 5260.0138                   | 5260.0133 | 5260.0133 | 5260.0142 | Pass        |
| 20                         |                            | 5260.0153                   | 5260.0135 | 5260.0127 | 5260.0158 | Pass        |
| 25                         |                            | 5260.0164                   | 5260.0153 | 5260.0126 | 5260.0143 | Pass        |
| 35                         |                            | 5260.0154                   | 5260.0148 | 5260.0145 | 5260.0156 | Pass        |
| 20                         | 3.145                      | 5260.0143                   | 5260.0156 | 5260.0140 | 5260.0172 | Pass        |
| 20                         | 4.255                      | 5260.0152                   | 5260.0163 | 5260.0134 | 5260.0141 | Pass        |
| Highest channel<br>5320MHz |                            |                             |           |           |           |             |
| Temperature<br>(°C)        | Power<br>Supplied<br>(Vdc) | Measured Frequency<br>(MHz) |           |           |           | Test Result |
|                            |                            | 0 Minute                    | 2 Minute  | 5 Minute  | 10 Minute |             |
| 0                          | 3.7                        | 5320.0125                   | 5320.0237 | 5320.0153 | 5320.0137 | Pass        |
| 5                          |                            | 5320.0139                   | 5320.0148 | 5320.0149 | 5320.0118 | Pass        |
| 10                         |                            | 5320.0134                   | 5320.0146 | 5320.0154 | 5320.0128 | Pass        |
| 15                         |                            | 5320.0152                   | 5320.0133 | 5320.0115 | 5320.0182 | Pass        |
| 20                         |                            | 5320.0135                   | 5320.0124 | 5320.0115 | 5320.0147 | Pass        |
| 25                         |                            | 5320.0164                   | 5320.0121 | 5320.0148 | 5320.0145 | Pass        |
| 35                         |                            | 5320.0158                   | 5320.0124 | 5320.0152 | 5320.0142 | Pass        |
| 20                         | 3.145                      | 5320.0163                   | 5320.0142 | 5320.0157 | 5320.0145 | Pass        |
| 20                         | 4.255                      | 5320.0154                   | 5320.0126 | 5320.0116 | 5320.0157 | Pass        |

Note: EUT temperature working range is 0 to 35.

| U-NII-2C Band              |                            |                             |           |           |           |             |
|----------------------------|----------------------------|-----------------------------|-----------|-----------|-----------|-------------|
| Lowest channel<br>5500MHz  |                            |                             |           |           |           |             |
| Temperature<br>(°C)        | Power<br>Supplied<br>(Vdc) | Measured Frequency<br>(MHz) |           |           |           | Test Result |
|                            |                            | 0 Minute                    | 2 Minute  | 5 Minute  | 10 Minute |             |
| 0                          | 3.7                        | 5500.0115                   | 5500.0122 | 5500.0144 | 5500.0154 | Pass        |
| 5                          |                            | 5500.0124                   | 5500.0144 | 5500.0155 | 5500.0142 | Pass        |
| 10                         |                            | 5500.0133                   | 5500.0132 | 5500.0147 | 5500.0134 | Pass        |
| 15                         |                            | 5500.0145                   | 5500.0131 | 5500.0145 | 5500.0143 | Pass        |
| 20                         |                            | 5500.0134                   | 5500.0122 | 5500.0134 | 5500.0147 | Pass        |
| 25                         |                            | 5500.0122                   | 5500.0154 | 5500.0152 | 5500.0121 | Pass        |
| 35                         |                            | 5500.0136                   | 5500.0156 | 5500.0124 | 5500.0141 | Pass        |
| 20                         | 3.145                      | 5500.0145                   | 5500.0158 | 5500.0125 | 5500.0144 | Pass        |
| 20                         | 4.255                      | 5500.0189                   | 5500.0156 | 5500.0133 | 5500.0155 | Pass        |
| Highest channel<br>5700MHz |                            |                             |           |           |           |             |
| Temperature<br>(°C)        | Power<br>Supplied<br>(Vdc) | Measured Frequency<br>(MHz) |           |           |           | Test Result |
|                            |                            | 0 Minute                    | 2 Minute  | 5 Minute  | 10 Minute |             |
| 0                          | 3.7                        | 5700.0123                   | 5700.0225 | 5700.0175 | 5700.0111 | Pass        |
| 5                          |                            | 5700.0141                   | 5700.0127 | 5700.0144 | 5700.0122 | Pass        |
| 10                         |                            | 5700.0112                   | 5700.0149 | 5700.0152 | 5700.0137 | Pass        |
| 15                         |                            | 5700.0144                   | 5700.0127 | 5700.0143 | 5700.0145 | Pass        |
| 20                         |                            | 5700.0142                   | 5700.0136 | 5700.0124 | 5700.0154 | Pass        |
| 25                         |                            | 5700.0128                   | 5700.0134 | 5700.0143 | 5700.0112 | Pass        |
| 35                         |                            | 5700.0114                   | 5700.0135 | 5700.0115 | 5700.0144 | Pass        |
| 20                         | 3.145                      | 5700.0143                   | 5700.0134 | 5700.0131 | 5700.0135 | Pass        |
| 20                         | 4.255                      | 5700.0134                   | 5700.0132 | 5700.0142 | 5700.0173 | Pass        |

Note: EUT temperature working range is 0 to 35.

| U-NII-3 Band               |                            |                             |           |           |           |             |
|----------------------------|----------------------------|-----------------------------|-----------|-----------|-----------|-------------|
| Lowest channel<br>5745MHz  |                            |                             |           |           |           |             |
| Temperature<br>(°C)        | Power<br>Supplied<br>(Vdc) | Measured Frequency<br>(MHz) |           |           |           | Test Result |
|                            |                            | 0 Minute                    | 2 Minute  | 5 Minute  | 10 Minute |             |
| 0                          | 3.7                        | 5745.0123                   | 5745.0146 | 5745.0154 | 5745.0125 | Pass        |
| 5                          |                            | 5745.0145                   | 5745.0147 | 5745.0148 | 5745.0115 | Pass        |
| 10                         |                            | 5745.0114                   | 5745.0125 | 5745.0124 | 5745.0145 | Pass        |
| 15                         |                            | 5745.0134                   | 5745.0134 | 5745.0145 | 5745.0134 | Pass        |
| 20                         |                            | 5745.0152                   | 5745.0154 | 5745.0153 | 5745.0142 | Pass        |
| 25                         |                            | 5745.0135                   | 5745.0114 | 5745.0114 | 5745.0117 | Pass        |
| 35                         |                            | 5745.0155                   | 5745.0143 | 5745.0122 | 5745.0123 | Pass        |
| 20                         | 3.145                      | 5745.0147                   | 5745.0154 | 5745.0143 | 5745.0177 | Pass        |
| 20                         | 4.255                      | 5745.0125                   | 5745.0172 | 5745.0134 | 5745.0165 | Pass        |
| Highest channel<br>5825MHz |                            |                             |           |           |           |             |
| Temperature<br>(°C)        | Power<br>Supplied<br>(Vdc) | Measured Frequency<br>(MHz) |           |           |           | Test Result |
|                            |                            | 0 Minute                    | 2 Minute  | 5 Minute  | 10 Minute |             |
| 0                          | 3.7                        | 5825.0115                   | 5825.0112 | 5825.0125 | 5825.0143 | Pass        |
| 5                          |                            | 5825.0137                   | 5825.0125 | 5825.0115 | 5825.0127 | Pass        |
| 10                         |                            | 5825.0145                   | 5825.0144 | 5825.0145 | 5825.0143 | Pass        |
| 15                         |                            | 5825.0114                   | 5825.0135 | 5825.0122 | 5825.0152 | Pass        |
| 20                         |                            | 5825.0127                   | 5825.0127 | 5825.0145 | 5825.0144 | Pass        |
| 25                         |                            | 5825.0147                   | 5825.0146 | 5825.0113 | 5825.0134 | Pass        |
| 35                         |                            | 5825.0124                   | 5825.0151 | 5825.0131 | 5825.0155 | Pass        |
| 20                         | 3.145                      | 5825.0145                   | 5825.0141 | 5825.0142 | 5825.0146 | Pass        |
| 20                         | 4.255                      | 5825.01234                  | 5825.0115 | 5825.0111 | 5825.0115 | Pass        |

Note: EUT temperature working range is 0 to 35.

## 14.8 Radiated Spurious Emissions and Restricted Bands Measurement and Band Edge

### LIMITS

| Frequency range<br>MHz | Distance Meters | Field Strengths Limit (15.209) |
|------------------------|-----------------|--------------------------------|
|                        |                 | $\mu\text{V/m}$                |
| 0.009 ~ 0.490          | 300             | $2400/F(\text{kHz})$           |
| 0.490 ~ 1.705          | 30              | $24000/F(\text{kHz})$          |
| 1.705 ~ 30             | 30              | 30                             |
| 30 ~ 88                | 3               | 100                            |
| 88 ~ 216               | 3               | 150                            |
| 216 ~ 960              | 3               | 200                            |
| Above 960              | 3               | 500                            |

- Remark:
- (1) Emission level (dB) $\mu\text{V}$  = 20 log Emission level  $\mu\text{V/m}$ .
  - (2) The smaller limit shall apply at the cross point between two frequency bands.
  - (3) As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.
  - (4) The frequency range scanned is from the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or 40 GHz, whichever is lower.
  - (5) §15.407 specifies that emissions which fall in the restricted bands, as defined in §15.205 comply with radiated emission limits specified in §15.209.

For transmitters operating in the 5.15-5.25 GHz band:

All emissions outside of the 5.15-5.35GHz band shall not exceed an e.i.r.p. of  $-27$  dBm/MHz.

For transmitters operating in the 5.25-5.35 GHz band:

All emissions outside of the 5.15-5.35GHz band shall not exceed an e.i.r.p. of  $-27$  dBm/MHz.

For transmitters operating in the 5.47-5.725 GHz band:

All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of  $-27$  dBm/MHz.

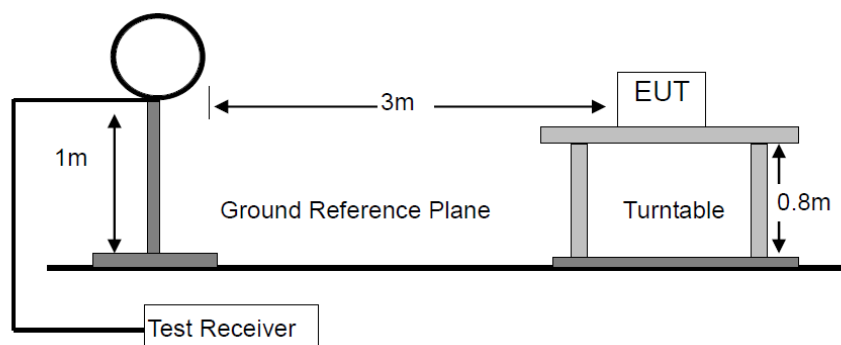
For transmitters operating in the 5.725-5.85 GHz band:

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 25MHz 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

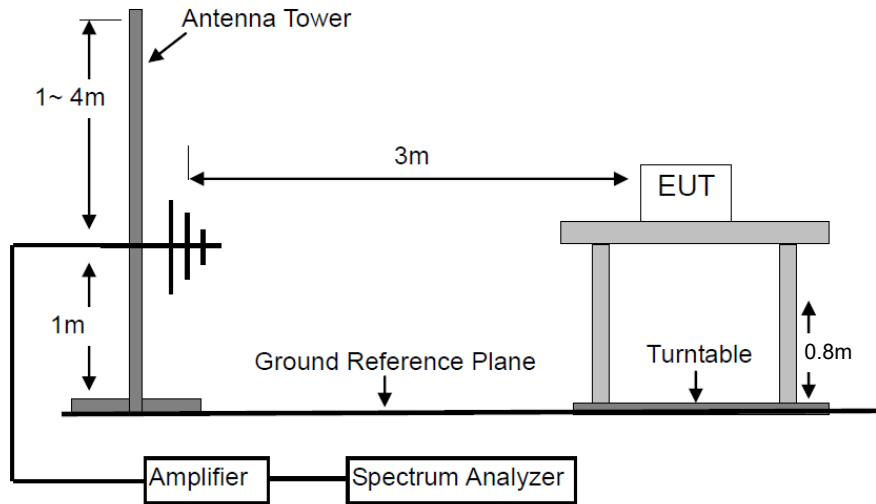
increasing linearly to a level of 27dBm/MHz at the band edge.

## BLOCK DIAGRAM OF TEST SETUP

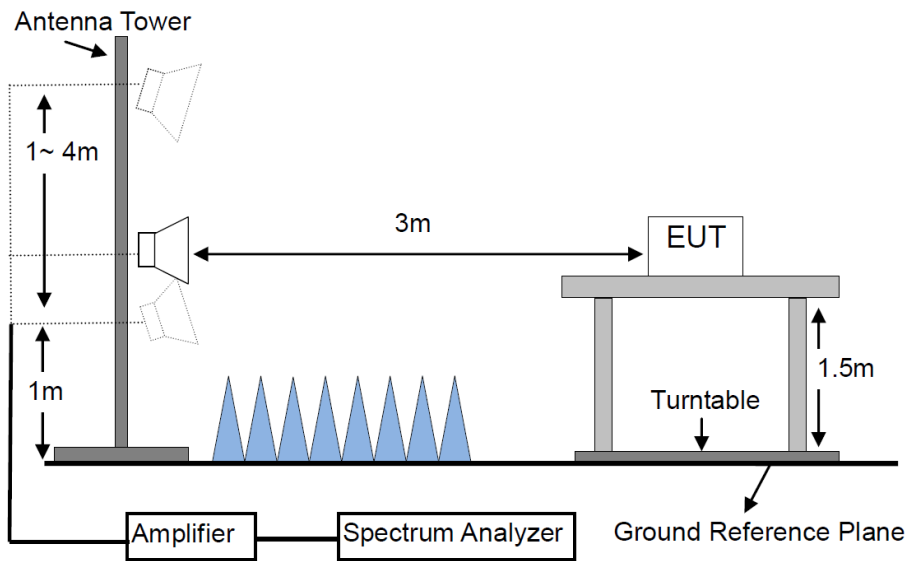
For Radiated Emission below 30MHz



For Radiated Emission 30-1000MHz



For Radiated Emission Above 1000MHz.



## TEST PROCEDURES

- a. Below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi- anechoic chamber room.
- b. For the radiated emission test above 1GHz:  
The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter full anechoic chamber room. The table was rotated 360 degrees to determine the position of the highest radiation. 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.
- c. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- d. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading. The test-receiver system was set to peak detect function and specified bandwidth with maximum hold mode.
- f. A Quasi-peak measurement was then made for that frequency point for below 1GHz test. PK and AV for above 1GHz emission test.

During the radiated emission test, the spectrum analyzer was set with the following configurations:

| Frequency Band (MHz) | Detector | Resolution Bandwidth | Video Bandwidth |
|----------------------|----------|----------------------|-----------------|
| 30 to 1000           | QP       | 120 kHz              | 300 kHz         |
| Above 1000           | Peak     | 1 MHz                | 3 MHz           |
|                      | Average  | 1 MHz                | 10 Hz           |

## **TEST RESULTS**

PASS

Please refer to the following pages of the worst case.

M/N: UCR3

Testing Voltage: AC 120V/60Hz

Polarization: Horizontal

Detector: QP

Test Mode: 2

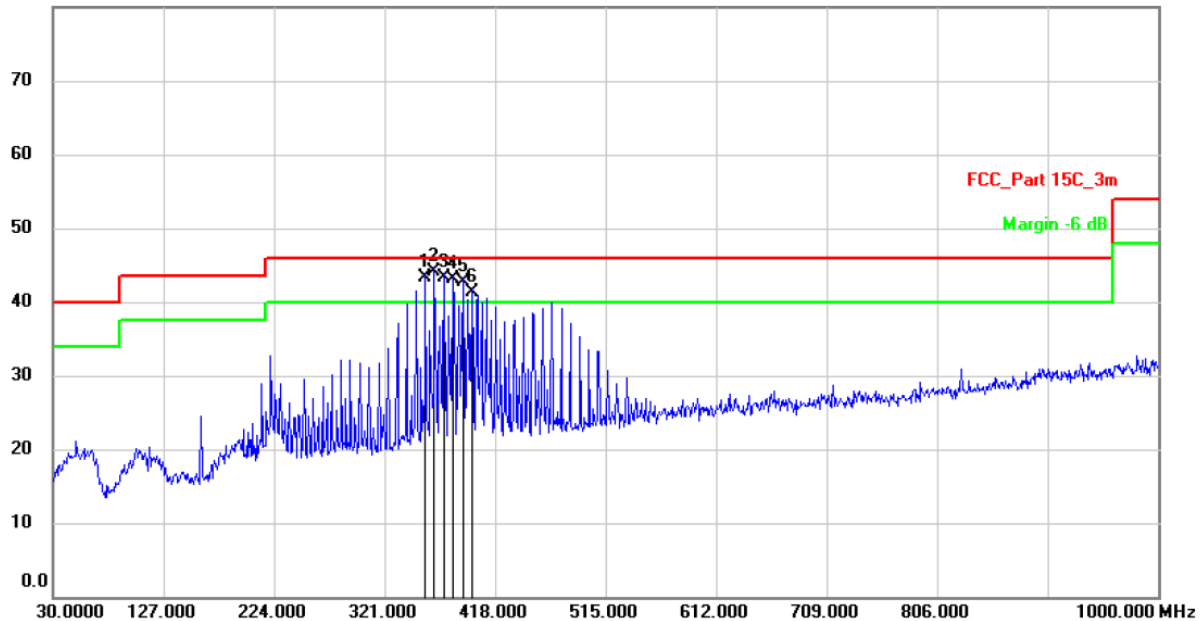
Distance: 3m

## Radiated Emission Measurement

Date: 2025/2/28

Time: 0:40:36

80.0 dBuV/m



| No. | Mk. | Freq.    | Reading Level | Correct Factor | Measurement | Limit  | Over  |          |         |
|-----|-----|----------|---------------|----------------|-------------|--------|-------|----------|---------|
|     |     | MHz      | dBuV          | dB/m           | dBuV/m      | dBuV/m | dB    | Detector | Comment |
| 1   | !   | 356.8900 | 47.35         | -4.05          | 43.30       | 46.00  | -2.70 | QP       |         |
| 2   | *   | 364.6500 | 48.04         | -3.94          | 44.10       | 46.00  | -1.90 | QP       |         |
| 3   | !   | 373.3800 | 47.14         | -3.84          | 43.30       | 46.00  | -2.70 | QP       |         |
| 4   | !   | 381.1400 | 46.83         | -3.73          | 43.10       | 46.00  | -2.90 | QP       |         |
| 5   | !   | 389.8700 | 46.34         | -3.54          | 42.80       | 46.00  | -3.20 | QP       |         |
| 6   | !   | 397.6300 | 44.78         | -3.38          | 41.40       | 46.00  | -4.60 | QP       |         |

**Note:** Below 30MHz, the emissions are lower than 20dB below the allowable limit.

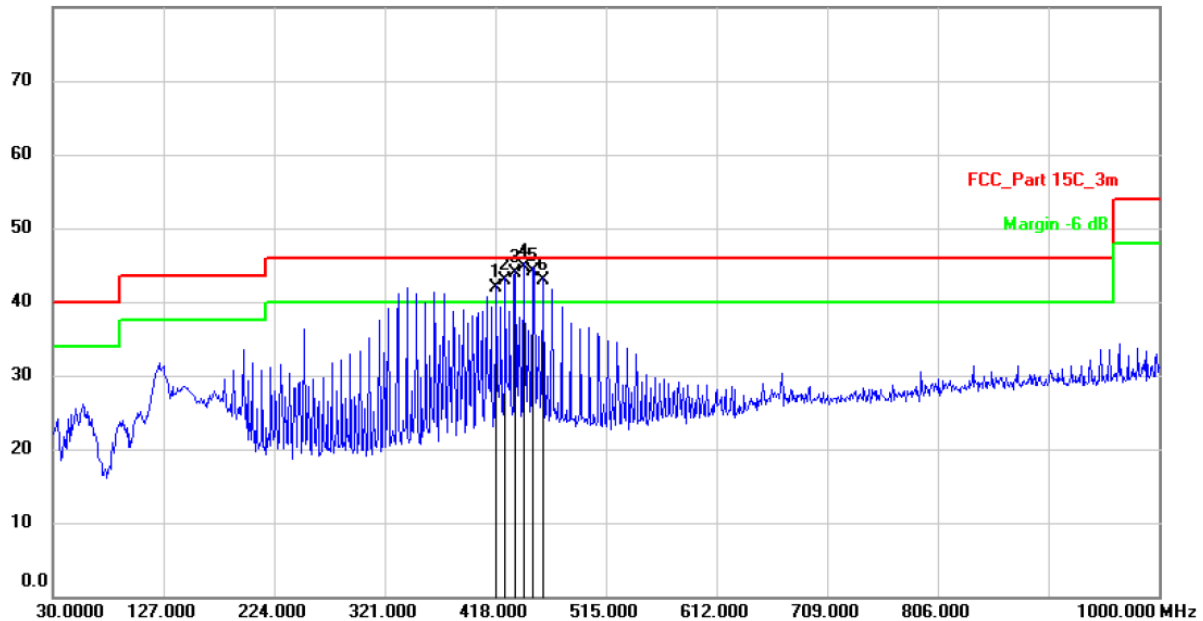
|                        |                               |
|------------------------|-------------------------------|
| M/N: UCR3              | Testing Voltage: AC 120V/60Hz |
| Polarization: Vertical | Detector: QP                  |
| Test Mode: 2           | Distance: 3m                  |

## Radiated Emission Measurement

Date: 2025/2/28

Time: 0:32:30

80.0 dBuV/m



| No. | Mk. | Freq.    | Reading Level | Correct Factor | Measurement | Limit  | Over  |          |         |
|-----|-----|----------|---------------|----------------|-------------|--------|-------|----------|---------|
|     |     | MHz      | dBuV          | dB/m           | dBuV/m      | dBuV/m | dB    | Detector | Comment |
| 1   | !   | 418.9700 | 46.02         | -4.02          | 42.00       | 46.00  | -4.00 | QP       |         |
| 2   | !   | 426.7300 | 46.91         | -3.91          | 43.00       | 46.00  | -3.00 | QP       |         |
| 3   | !   | 435.4600 | 47.79         | -3.79          | 44.00       | 46.00  | -2.00 | QP       |         |
| 4   | *   | 443.2200 | 48.36         | -3.66          | 44.70       | 46.00  | -1.30 | QP       |         |
| 5   | !   | 450.9800 | 47.62         | -3.52          | 44.10       | 46.00  | -1.90 | QP       |         |
| 6   | !   | 459.7100 | 46.39         | -3.39          | 43.00       | 46.00  | -3.00 | QP       |         |

**Note:** Below 30MHz, the emissions are lower than 20dB below the allowable limit.

| Modulation: U-NII-1 (5180-5240 MHz)<br>TX (IEEE 802.11a the worst case)                                                                                                                                                                                                                                            |                       |                        |       | Test Result: PASS |                            |       | Test frequency range: 1-40GHz |       |                |        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|------------------------|-------|-------------------|----------------------------|-------|-------------------------------|-------|----------------|--------|
| Freq.<br>(MHz)                                                                                                                                                                                                                                                                                                     | Ant.<br>Pol.<br>(H/V) | Reading<br>Level(dBuV) |       | Factor<br>(dB/m)  | Emission Level<br>(dBuV/m) |       | Limit 3m<br>(dBuV/m)          |       | Margin<br>(dB) |        |
|                                                                                                                                                                                                                                                                                                                    |                       | PK                     | AV    |                   | PK                         | AV    | PK                            | AV    | PK             | AV     |
| Operation Mode: TX Mode (Low)                                                                                                                                                                                                                                                                                      |                       |                        |       |                   |                            |       |                               |       |                |        |
| 5150                                                                                                                                                                                                                                                                                                               | V                     | 42.71                  | 29.61 | 6.91              | 49.62                      | 36.52 | 68.20                         | 54.00 | -18.58         | -17.48 |
| 10360                                                                                                                                                                                                                                                                                                              | V                     | 39.22                  | ---   | 14.04             | 53.26                      | ---   | 68.20                         | ---   | -14.94         | ---    |
| 15540                                                                                                                                                                                                                                                                                                              | V                     | 38.09                  | 26.25 | 21.12             | 59.21                      | 47.37 | 74.00                         | 54.00 | -14.79         | -6.63  |
| ---                                                                                                                                                                                                                                                                                                                |                       |                        |       |                   |                            |       |                               |       |                |        |
| 5150                                                                                                                                                                                                                                                                                                               | H                     | 52.24                  | 42.00 | 6.91              | 59.15                      | 48.91 | 68.20                         | 54.00 | -9.05          | -5.09  |
| 10360                                                                                                                                                                                                                                                                                                              | H                     | 39.87                  | ---   | 14.04             | 53.91                      | ---   | 68.20                         | ---   | -14.29         | ---    |
| 15540                                                                                                                                                                                                                                                                                                              | H                     | 38.53                  | 26.72 | 21.12             | 59.65                      | 47.84 | 74.00                         | 54.00 | -14.35         | -6.16  |
| ---                                                                                                                                                                                                                                                                                                                |                       |                        |       |                   |                            |       |                               |       |                |        |
| Operation Mode: TX Mode (Mid)                                                                                                                                                                                                                                                                                      |                       |                        |       |                   |                            |       |                               |       |                |        |
| 10400                                                                                                                                                                                                                                                                                                              | V                     | 43.19                  | ---   | 14.12             | 57.31                      | ---   | 68.20                         | ---   | -10.89         | ---    |
| 15600                                                                                                                                                                                                                                                                                                              | V                     | 38.00                  | 27.14 | 20.82             | 58.82                      | 47.96 | 74.00                         | 54.00 | -15.18         | -6.04  |
| ---                                                                                                                                                                                                                                                                                                                |                       |                        |       |                   |                            |       |                               |       |                |        |
| 10400                                                                                                                                                                                                                                                                                                              | H                     | 43.61                  | ---   | 14.12             | 57.73                      | ---   | 68.20                         | ---   | -10.47         | ---    |
| 15600                                                                                                                                                                                                                                                                                                              | H                     | 38.22                  | 27.40 | 20.82             | 59.04                      | 48.22 | 74.00                         | 54.00 | -14.96         | -5.78  |
| ---                                                                                                                                                                                                                                                                                                                |                       |                        |       |                   |                            |       |                               |       |                |        |
| Operation Mode: TX Mode (High)                                                                                                                                                                                                                                                                                     |                       |                        |       |                   |                            |       |                               |       |                |        |
| 10480                                                                                                                                                                                                                                                                                                              | V                     | 38.94                  | ---   | 14.29             | 53.23                      | ---   | 68.20                         | ---   | -14.97         | ---    |
| 15720                                                                                                                                                                                                                                                                                                              | V                     | 36.61                  | 27.73 | 20.20             | 56.81                      | 47.93 | 74.00                         | 54.00 | -17.19         | -6.07  |
| ---                                                                                                                                                                                                                                                                                                                |                       |                        |       |                   |                            |       |                               |       |                |        |
| 10480                                                                                                                                                                                                                                                                                                              | H                     | 43.29                  | ---   | 14.29             | 57.58                      | ---   | 68.20                         | ---   | -10.62         | ---    |
| 15720                                                                                                                                                                                                                                                                                                              | H                     | 37.57                  | 27.92 | 20.20             | 57.77                      | 48.12 | 74.00                         | 54.00 | -16.23         | -5.88  |
| Remark: 1. All the points within the restricted band are lower than the edge punctuation of the restricted band shown in the data.<br>2. Data of measurement within this frequency range shown “---” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits. |                       |                        |       |                   |                            |       |                               |       |                |        |

| Modulation: U-NII-2A (5260-5320 MHz)<br>TX (IEEE 802.11a the worst case) |                       |                        |       | Test Result: PASS |                            |       | Test frequency range: 1-40GHz |       |                |        |
|--------------------------------------------------------------------------|-----------------------|------------------------|-------|-------------------|----------------------------|-------|-------------------------------|-------|----------------|--------|
| Freq.<br>(MHz)                                                           | Ant.<br>Pol.<br>(H/V) | Reading<br>Level(dBuV) |       | Factor<br>(dB/m)  | Emission Level<br>(dBuV/m) |       | Limit 3m<br>(dBuV/m)          |       | Margin<br>(dB) |        |
|                                                                          |                       | PK                     | AV    |                   | PK                         | AV    | PK                            | AV    | PK             | AV     |
| Operation Mode: TX Mode (Low)                                            |                       |                        |       |                   |                            |       |                               |       |                |        |
| 10520                                                                    | V                     | 38.04                  | ---   | 14.37             | 52.41                      | ---   | 68.20                         | ---   | -15.79         | ---    |
| 15780                                                                    | V                     | 39.03                  | 28.8  | 19.91             | 58.94                      | 48.71 | 74.00                         | 54.00 | -15.06         | -5.29  |
| ---                                                                      |                       |                        |       |                   |                            |       |                               |       |                |        |
| 10520                                                                    | H                     | 39.05                  | ---   | 14.37             | 53.42                      | ---   | 68.20                         | ---   | -14.78         | ---    |
| 15780                                                                    | H                     | 40.27                  | 29.12 | 19.91             | 60.18                      | 49.03 | 74.00                         | 54.00 | -13.82         | -4.97  |
| ---                                                                      |                       |                        |       |                   |                            |       |                               |       |                |        |
| Operation Mode: TX Mode (Mid)                                            |                       |                        |       |                   |                            |       |                               |       |                |        |
| 10600                                                                    | V                     | 31.72                  | ---   | 14.48             | 46.20                      | ---   | 68.20                         | ---   | -22.00         | ---    |
| 15900                                                                    | V                     | 40.22                  | 30.33 | 19.29             | 59.51                      | 49.62 | 74.00                         | 54.00 | -14.49         | -4.38  |
| ---                                                                      |                       |                        |       |                   |                            |       |                               |       |                |        |
| 10600                                                                    | H                     | 32.71                  | ---   | 14.48             | 47.19                      | ---   | 68.20                         | ---   | -21.01         | ---    |
| 15900                                                                    | H                     | 36.13                  | 31.12 | 19.29             | 55.42                      | 50.41 | 74.00                         | 54.00 | -18.58         | -3.59  |
| ---                                                                      |                       |                        |       |                   |                            |       |                               |       |                |        |
| Operation Mode: TX Mode (High)                                           |                       |                        |       |                   |                            |       |                               |       |                |        |
| 5350                                                                     | V                     | 46.11                  | 34.05 | 6.81              | 52.92                      | 40.86 | 68.20                         | 54.00 | -15.28         | -13.14 |
| 10640                                                                    | V                     | 36.69                  | ---   | 14.53             | 51.22                      | ---   | 68.20                         | ---   | -16.98         | ---    |
| 15960                                                                    | V                     | 40.63                  | 30.13 | 18.99             | 59.62                      | 49.12 | 74.00                         | 54.00 | -14.38         | -4.88  |
| ---                                                                      |                       |                        |       |                   |                            |       |                               |       |                |        |
| 5350                                                                     | H                     | 45.90                  | 34.43 | 6.81              | 52.71                      | 41.24 | 68.20                         | 54.00 | -15.49         | -12.76 |
| 10640                                                                    | H                     | 38.47                  | ---   | 14.53             | 53.00                      | ---   | 68.20                         | ---   | -15.20         | ---    |
| 15960                                                                    | H                     | 42.22                  | 30.84 | 18.99             | 61.21                      | 49.83 | 74.00                         | 54.00 | -12.79         | -4.17  |

Remark: 1. All the points within the restricted band are lower than the edge punctuation of the restricted band shown in the data.  
2. Data of measurement within this frequency range shown "—" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits.

| Modulation: U-NII-2C (5500-5700 MHz)<br>TX (IEEE 802.11a the worst case) |                       |                        |       | Test Result: PASS |                            |       | Test frequency range: 1-40GHz |       |                |        |
|--------------------------------------------------------------------------|-----------------------|------------------------|-------|-------------------|----------------------------|-------|-------------------------------|-------|----------------|--------|
| Freq.<br>(MHz)                                                           | Ant.<br>Pol.<br>(H/V) | Reading<br>Level(dBuV) |       | Factor<br>(dB/m)  | Emission Level<br>(dBuV/m) |       | Limit 3m<br>(dBuV/m)          |       | Margin<br>(dB) |        |
|                                                                          |                       | PK                     | AV    |                   | PK                         | AV    | PK                            | AV    | PK             | AV     |
| Operation Mode: TX Mode (Low)                                            |                       |                        |       |                   |                            |       |                               |       |                |        |
| 5470                                                                     | V                     | 58.38                  | 41.08 | 6.81              | 65.19                      | 47.89 | 68.20                         | 54.00 | -3.01          | -6.11  |
| 11000                                                                    | V                     | 38.05                  | 26.69 | 15.03             | 53.08                      | 41.72 | 74.00                         | 54.00 | -20.92         | -12.28 |
| 16500                                                                    | V                     | 36.53                  | ---   | 19.64             | 56.17                      | ---   | 68.20                         | ---   | -12.03         | ---    |
| ---                                                                      |                       |                        |       |                   |                            |       |                               |       |                |        |
| 5470                                                                     | H                     | 60.59                  | 42.92 | 6.81              | 67.40                      | 49.73 | 68.20                         | 54.00 | -0.80          | -4.27  |
| 11000                                                                    | H                     | 39.08                  | 26.89 | 15.03             | 54.11                      | 41.92 | 74.00                         | 54.00 | -19.89         | -12.08 |
| 16500                                                                    | H                     | 37.08                  | ---   | 19.64             | 56.72                      | ---   | 68.20                         | ---   | -11.48         | ---    |
| ---                                                                      |                       |                        |       |                   |                            |       |                               |       |                |        |
| Operation Mode: TX Mode (Mid)                                            |                       |                        |       |                   |                            |       |                               |       |                |        |
| 11200                                                                    | V                     | 43.26                  | 32.75 | 15.77             | 59.03                      | 48.52 | 74.00                         | 54.00 | -14.97         | -5.48  |
| 16800                                                                    | V                     | 38.41                  | ---   | 20.73             | 59.14                      | ---   | 68.20                         | ---   | -9.06          | ---    |
| ---                                                                      |                       |                        |       |                   |                            |       |                               |       |                |        |
| 11200                                                                    | H                     | 43.37                  | 32.37 | 15.77             | 59.14                      | 48.14 | 74.00                         | 54.00 | -14.86         | -5.86  |
| 16800                                                                    | H                     | 40.09                  | ---   | 20.73             | 60.82                      | ---   | 68.20                         | ---   | -7.38          | ---    |
| ---                                                                      |                       |                        |       |                   |                            |       |                               |       |                |        |
| Operation Mode: TX Mode (High)                                           |                       |                        |       |                   |                            |       |                               |       |                |        |
| 11400                                                                    | V                     | 42.44                  | 30.74 | 16.52             | 58.96                      | 47.26 | 74.00                         | 54.00 | -15.04         | -6.74  |
| 17100                                                                    | V                     | 37.08                  | ---   | 21.78             | 58.86                      | ---   | 68.20                         | ---   | -9.34          | ---    |
| ---                                                                      |                       |                        |       |                   |                            |       |                               |       |                |        |
| 11400                                                                    | H                     | 43.82                  | 30.59 | 16.52             | 60.34                      | 47.11 | 74.00                         | 54.00 | -13.66         | -6.89  |
| 17100                                                                    | H                     | 37.58                  | ---   | 21.78             | 59.36                      | ---   | 68.20                         | ---   | -8.84          | ---    |

Remark: 1. All the points within the restricted band are lower than the edge punctuation of the restricted band shown in the data.  
2. Data of measurement within this frequency range shown "----" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits.

| Modulation: U-NII-3 (5745-5825 MHz)<br>TX (IEEE 802.11a the worst case)                                                                                                                                                                                                                                            |                       |                        |       | Test Result: PASS |                            |       | Test frequency range: 1-40GHz |       |                |       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|------------------------|-------|-------------------|----------------------------|-------|-------------------------------|-------|----------------|-------|
| Freq.<br>(MHz)                                                                                                                                                                                                                                                                                                     | Ant.<br>Pol.<br>(H/V) | Reading<br>Level(dBuV) |       | Factor<br>(dB/m)  | Emission Level<br>(dBuV/m) |       | Limit 3m<br>(dBuV/m)          |       | Margin<br>(dB) |       |
|                                                                                                                                                                                                                                                                                                                    |                       | PK                     | AV    |                   | PK                         | AV    | PK                            | AV    | PK             | AV    |
| Operation Mode: TX Mode (Low)                                                                                                                                                                                                                                                                                      |                       |                        |       |                   |                            |       |                               |       |                |       |
| 11490                                                                                                                                                                                                                                                                                                              | V                     | 50.78                  | 35.51 | 16.86             | 67.64                      | 52.37 | 74.00                         | 54.00 | -6.36          | -1.63 |
| 17235                                                                                                                                                                                                                                                                                                              | V                     | 37.34                  | ---   | 22.28             | 59.62                      | ---   | 68.20                         | ---   | -8.58          | ---   |
| ---                                                                                                                                                                                                                                                                                                                |                       |                        |       |                   |                            |       |                               |       |                |       |
| 11490                                                                                                                                                                                                                                                                                                              | H                     | 45.84                  | 34.02 | 16.86             | 62.70                      | 50.88 | 74.00                         | 54.00 | -11.30         | -3.12 |
| 17235                                                                                                                                                                                                                                                                                                              | H                     | 39.49                  | ---   | 22.28             | 61.77                      | ---   | 68.20                         | ---   | -6.43          | ---   |
| ---                                                                                                                                                                                                                                                                                                                |                       |                        |       |                   |                            |       |                               |       |                |       |
| Operation Mode: TX Mode (Mid)                                                                                                                                                                                                                                                                                      |                       |                        |       |                   |                            |       |                               |       |                |       |
| 11570                                                                                                                                                                                                                                                                                                              | V                     | 48.24                  | 36.16 | 17.01             | 65.25                      | 53.17 | 74.00                         | 54.00 | -8.75          | -0.83 |
| 17355                                                                                                                                                                                                                                                                                                              | V                     | 33.41                  | ---   | 22.56             | 55.97                      | ---   | 68.20                         | ---   | -12.23         | ---   |
| ---                                                                                                                                                                                                                                                                                                                |                       |                        |       |                   |                            |       |                               |       |                |       |
| 11570                                                                                                                                                                                                                                                                                                              | H                     | 43.49                  | 31.92 | 17.01             | 60.50                      | 48.93 | 74.00                         | 54.00 | -13.50         | -5.07 |
| 17355                                                                                                                                                                                                                                                                                                              | H                     | 33.50                  | ---   | 22.56             | 56.06                      | ---   | 68.20                         | ---   | -12.14         | ---   |
| ---                                                                                                                                                                                                                                                                                                                |                       |                        |       |                   |                            |       |                               |       |                |       |
| Operation Mode: TX Mode (High)                                                                                                                                                                                                                                                                                     |                       |                        |       |                   |                            |       |                               |       |                |       |
| 11650                                                                                                                                                                                                                                                                                                              | V                     | 45.71                  | 35.04 | 17.16             | 62.87                      | 52.20 | 74.00                         | 54.00 | -11.13         | -1.80 |
| 17475                                                                                                                                                                                                                                                                                                              | V                     | 29.19                  | ---   | 23.01             | 52.20                      | ---   | 68.20                         | ---   | -16.00         | ---   |
| ---                                                                                                                                                                                                                                                                                                                |                       |                        |       |                   |                            |       |                               |       |                |       |
| 11650                                                                                                                                                                                                                                                                                                              | H                     | 45.71                  | 34.03 | 17.16             | 62.87                      | 51.19 | 74.00                         | 54.00 | -11.13         | -2.81 |
| 17475                                                                                                                                                                                                                                                                                                              | H                     | 35.55                  | ---   | 23.01             | 58.56                      | ---   | 68.20                         | ---   | -9.64          | ---   |
| Remark: 1. All the points within the restricted band are lower than the edge punctuation of the restricted band shown in the data.<br>2. Data of measurement within this frequency range shown “---” in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits. |                       |                        |       |                   |                            |       |                               |       |                |       |

| Modulation: U-NII-3 (5745-5825 MHz)<br>TX (IEEE 802.11a the worst case)                                                                                                                                                                                                                                            |                       |                        |    | Test Result: PASS |                            |    | Test frequency range: 1-40GHz |       |                |    |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|------------------------|----|-------------------|----------------------------|----|-------------------------------|-------|----------------|----|
| Freq.<br>(MHz)                                                                                                                                                                                                                                                                                                     | Ant.<br>Pol.<br>(H/V) | Reading<br>Level(dBuV) |    | Factor<br>(dB/m)  | Emission Level<br>(dBuV/m) |    | Limit 3m<br>(dBuV/m)          |       | Margin<br>(dB) |    |
|                                                                                                                                                                                                                                                                                                                    |                       | PK                     | AV |                   | PK                         | AV | PK                            | AV    | PK             | AV |
| Restricted Bands Measurement and Band Edge                                                                                                                                                                                                                                                                         |                       |                        |    |                   |                            |    |                               |       |                |    |
| 5725                                                                                                                                                                                                                                                                                                               | V                     | 69.54                  | -- | 6.90              | 76.44                      | -- | 122.20                        | 74.00 | -45.76         | -- |
| 5725                                                                                                                                                                                                                                                                                                               | H                     | 69.11                  | -- | 6.90              | 76.01                      | -- | 122.20                        | 74.00 | -46.19         | -- |
| ---                                                                                                                                                                                                                                                                                                                |                       |                        |    |                   |                            |    |                               |       |                |    |
| 5850                                                                                                                                                                                                                                                                                                               | V                     | 68.22                  | -- | 6.98              | 75.20                      | -- | 122.20                        | 74.00 | -47.00         | -- |
| 5850                                                                                                                                                                                                                                                                                                               | H                     | 67.52                  | -- | 6.98              | 74.50                      | -- | 122.20                        | 74.00 | -47.70         | -- |
| Remark: 1. All the points within the restricted band are lower than the edge punctuation of the restricted band shown in the data.<br>2. Data of measurement within this frequency range shown "---" in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits. |                       |                        |    |                   |                            |    |                               |       |                |    |

## 14.9 Dynamic Frequency Selection

### List of Measurement and Examinations

EUT Operational mode:

| DFS Operational mode                                | Operating Frequency Range |          |
|-----------------------------------------------------|---------------------------|----------|
|                                                     | U-NII-2A                  | U-NII-2C |
| Slave without radar Interference detection function | √                         | √        |

Devices with radar detection

| Maximum Transmit Power                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Value (See Note 1 and 2) |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| ≥200 mw                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | -64 dBm                  |
| EIRP < 200 mw and power spectral density < 10 dBm/MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | -62 dBm                  |
| E IRP < 200 mw that do not meet the power spectral density requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | -64 dBm                  |
| <p>Note:</p> <ol style="list-style-type: none"> <li>1. This is the level at the input of the receiver assuming a 0 dBi receive antenna.</li> <li>2. Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response.</li> <li>3: EIRP is based on the highest antenna gain. For MIMO devices refer to KDB Publication 662911 D01.</li> </ol> |                          |

Applicability of DFS requirements prior to use of a channel

| Requirement Radar                                                                                                                                                                                                                                                                                                                                                                              | Operational Mode |                                |                             |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|--------------------------------|-----------------------------|
|                                                                                                                                                                                                                                                                                                                                                                                                | Master           | Client without Radar Detection | Client with Radar Detection |
| Non-Occupancy Period                                                                                                                                                                                                                                                                                                                                                                           | √                | Not required                   | Yes                         |
| DFS Detection Threshold                                                                                                                                                                                                                                                                                                                                                                        | √                | Not required                   | Yes                         |
| Channel Availability Check Time                                                                                                                                                                                                                                                                                                                                                                | √                | Not required                   | Not Required                |
| U-NII Detection Bandwidth                                                                                                                                                                                                                                                                                                                                                                      | √                | Not required                   | Yes                         |
| <p>Note: Regarding KDB 905462 D03 Client Without DFS New Rules section (b)(5/6), If the client moves with the master, the device is considered compliant if nothing appears in the client non- occupancy period test. For devices that shut down (rather than moving channels), no beacons should appear. An analyzer plot that contains a single 30-minute sweep on the original channel.</p> |                  |                                |                             |

Applicability of DFS requirements during normal operation

| Requirement<br>Radar                                                                                                                                                                                                                                                                                                                                                                    | Operational Mode                      |                                 |                                                                            |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|---------------------------------|----------------------------------------------------------------------------|
|                                                                                                                                                                                                                                                                                                                                                                                         | Master                                | Client without Radar<br>Detecon | Client with Radar<br>Detection                                             |
| DFS Detection Threshold                                                                                                                                                                                                                                                                                                                                                                 | √                                     | Not required                    | Yes                                                                        |
| Channel Closing Transmission Time                                                                                                                                                                                                                                                                                                                                                       | √                                     | Yes                             | Yes                                                                        |
| Channel Move Time                                                                                                                                                                                                                                                                                                                                                                       | √                                     | Yes                             | Yes                                                                        |
| U-NII Detection Bandwidth                                                                                                                                                                                                                                                                                                                                                               | √                                     | Not required                    | Yes                                                                        |
| Note: Regarding KDB 905462 D03 Client Without DFS New Rules section (b)(5/6), If the client moves with the master, the device is considered compliant if nothing appears in the client non- occupancy period test. For devices that shut down (rather than moving channels), no beacons should appear. An analyzer plot that contains a single 30-minute sweep on the original channel. |                                       |                                 |                                                                            |
| Additional requirements for devices with multiple bandwidth modes                                                                                                                                                                                                                                                                                                                       | Master or Client with radar detection |                                 | Client without radar detection                                             |
| U-NII Detection Bandwidth and Statistical Performance Check                                                                                                                                                                                                                                                                                                                             | All BW modes must be ested            |                                 | Not required                                                               |
| Channel Move Time and Channel Closing<br>Channel Move Time and Channel Closing<br>Transmission Time                                                                                                                                                                                                                                                                                     | Test using widest BW mode available   |                                 | Test using the widest Test using the widest BW mode available for the link |
| All other                                                                                                                                                                                                                                                                                                                                                                               | Any single BW mode                    |                                 | Not required                                                               |
| Note: Frequencies selected for statistical performance check (Section 7.8.4) should include several frequencies within the radar detection bandwidth and frequencies near the edge of the radar detection bandwidth. For 802.11 devices it is suggested to select frequencies in each of the bonded 20 MHz channels and the channel center frequency.                                   |                                       |                                 |                                                                            |

DFS Radar Signal Parameter Values:

| Parameter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Value                                                                                       |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| Non-occupancy period                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Minimum 30 minutes                                                                          |
| Channel Availability Check Time                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 60 seconds                                                                                  |
| Channel Move Time                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 10 seconds (See Note 1)                                                                     |
| Channel Closing Transmission Time                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 200 milliseconds + an aggregate of 60ms over remaining 10 second period (See Notes 1 and 2) |
| U-NII Detection Bandwidth                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Minimum 100% of the U-NII 99% transmission power bandwidth (See Note 3.)                    |
| Note: <ol style="list-style-type: none"> <li>Channel Move Time and the Channel Closing Transmission Time should be performed with Radar Type 0. The measurement timing begins at the end of the Radar Type 0 burst.</li> <li>The Channel Closing Transmission Time is comprised of 200 milliseconds starting at the beginning of the Channel Move Time plus any additional intermittent control signals required to facilitate a Channel move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.</li> <li>During the U-NII Detection Bandwidth detection test, radar type 0 should be used. For each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.</li> </ol> |                                                                                             |

DFS Radar Signal Parameter:

Radar Type 0 was used in the evaluation of the Client device for the purpose of measuring the Channel Move Time and the Channel Closing Transmission Time

Table 1: Short Pulse Radar Test Waveforms

| Radar Type                                                                                                                                                                                                                                                                              | Pulse Width (μsec) | PRI (μsec)     | Number of Pulses                                                                                                                     | Minimum Percentage of Successful Detection | Minimum Trials |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------------|--------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|----------------|
| 0                                                                                                                                                                                                                                                                                       | 1                  | 1428           | 18                                                                                                                                   | See Note 1                                 | See Note 1     |
| 1                                                                                                                                                                                                                                                                                       | 1                  | Test A, Test B | $\text{Roundup} \left\{ \left( \frac{1}{\left( \frac{360}{19 \cdot 10^6} \right) \cdot \text{PRI}_{\mu\text{sec}}} \right) \right\}$ | 60%                                        | 30             |
| 2                                                                                                                                                                                                                                                                                       | 1-5                | 150-230        | 23-29                                                                                                                                | 60%                                        | 30             |
| 3                                                                                                                                                                                                                                                                                       | 6-10               | 200-500        | 16-18                                                                                                                                | 60%                                        | 30             |
| 4                                                                                                                                                                                                                                                                                       | 11-20              | 200-500        | 12-16                                                                                                                                | 60%                                        | 30             |
| Aggregate (Radar Types 1-4)                                                                                                                                                                                                                                                             |                    |                |                                                                                                                                      | 80%                                        | 120            |
| Note: Short Pulse Radar Type 0 should be used for the detection bandwidth test, channel move time, and channel closing time tests.                                                                                                                                                      |                    |                |                                                                                                                                      |                                            |                |
| Test A: 15 unique PRI values randomly selected from the list of 23 PRI values in Table 5a                                                                                                                                                                                               |                    |                |                                                                                                                                      |                                            |                |
| Test B: 15 unique PRI values randomly selected within the range of 518-3066 μsec, with a minimum increment of 1 μsec, excluding PRI values selected in Test A.                                                                                                                          |                    |                |                                                                                                                                      |                                            |                |
| Remark1: A minimum of 30 unique waveforms are required for each of the Short Pulse Radar Types 2 through 4. If more than 30 waveforms are used for Short Pulse Radar Types 2 through 4, then each additional waveform must also be unique and not repeated from the previous waveforms. |                    |                |                                                                                                                                      |                                            |                |
| Remark2: If more than 30 waveforms are used for Short Pulse Radar Type 1, then each additional waveform is generated with Test B and must also be unique and not repeated from the previous waveforms in Tests A or B.                                                                  |                    |                |                                                                                                                                      |                                            |                |
| Remark3: The aggregate is the average of the percentage of successful detections of short pulse radar types 1-4.                                                                                                                                                                        |                    |                |                                                                                                                                      |                                            |                |

Table 2: Long Pulse Radar Test Waveform

| Radar Type | Pulse Width (μsec) | Chirp Width (MHz) | PRI (μsec) | Number of Pulses per Burst | Number of Bursts | Minimum Percentage of Successful Detection | Minimum Trials |
|------------|--------------------|-------------------|------------|----------------------------|------------------|--------------------------------------------|----------------|
| 5          | 50-100             | 5-20              | 1000-2000  | 1-3                        | 8-20             | 80%                                        | 30             |

Table 3: Frequency Hopping Radar Test Waveform

| Radar Type | Pulse Width (μsec) | PRI (μsec) | Pulses per Hop | Hopping Rate (kHz) | Hopping Sequence Length (msec) | Minimum Percentage of Successful Detection | Minimum Trials |
|------------|--------------------|------------|----------------|--------------------|--------------------------------|--------------------------------------------|----------------|
| 6          | 1                  | 333        | 9              | 0.333              | 300                            | 70%                                        | 30             |

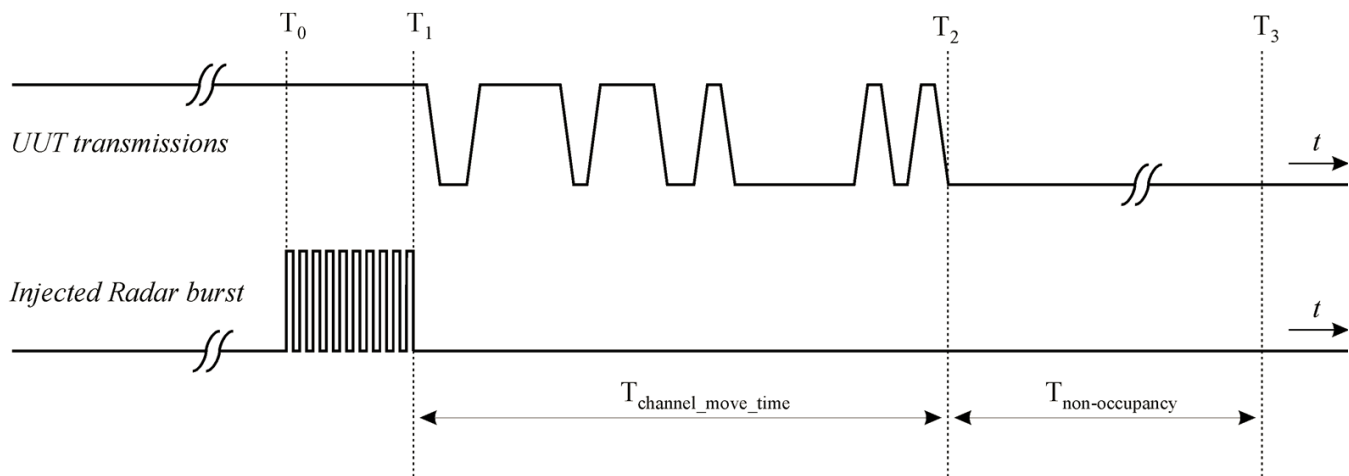
In-Service Monitoring: Channel Move Time, Channel Closing Transmission Time and Non-Occupancy Period

## Limit of In-Service Monitoring

Reference to DFS Radar Signal Parameter Values.

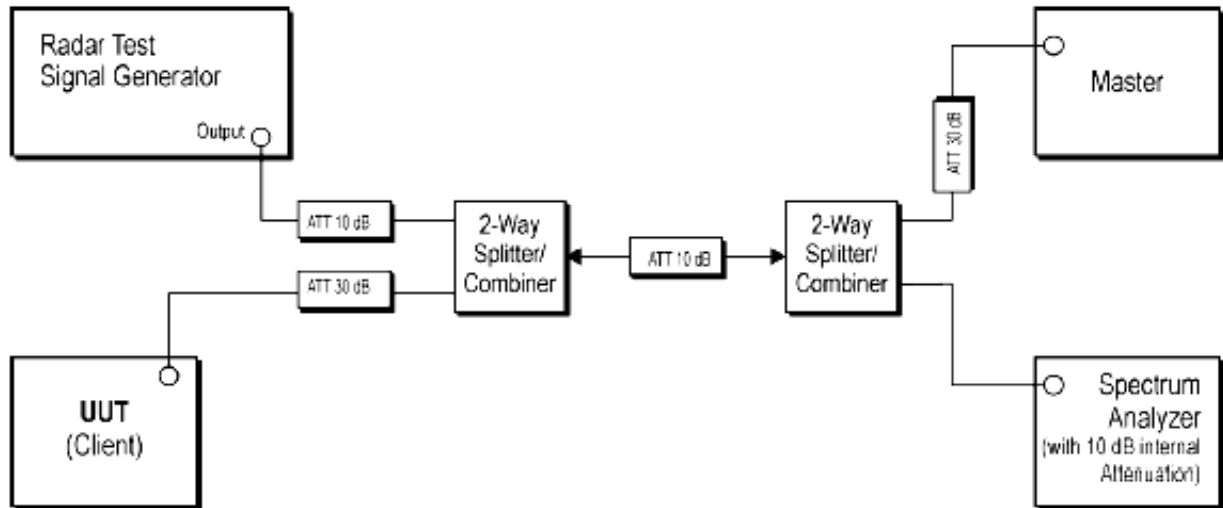
## Test Procedures

1. One frequency will be chosen from the Operating Channels of the EUT within the 5250-5350 MHz or 5470-5725 MHz bands. For 802.11 devices, the test frequency must contain control signals. This can be verified by disabling channel loading and monitoring the spectrum analyzer. If no control signals are detected, another frequency must be selected within the emission bandwidth where control signals are detected.
2. In case the EUT is a Master Device, a U-NII device operating as a Client Device will be used and it is assumed that the Client will associate with the EUT (Master). For radiated tests, the emissions of the Radar Waveform generator will be directed towards the Master Device. If the Master Device has antenna gain, the main beam of the antenna will be directed toward the radar emitter. Vertical polarization is used for testing.
3. The TCP protocol unicast data stream was generated by the iperf software command line with at least 17% activity ratio over any 100ms period.
4. Timing plots are reported with calculations demonstrating a minimum channel loading of approximately 17% or greater. For example, channel loading can be estimated by setting the spectrum analyzer for zero span and approximate the Time On/ (Time On + Off Time).
5. At time  $T_0$  the Radar Waveform generator sends a Burst of pulses for one of the Short Pulse Radar Types 1-4 at DFS Detection Threshold levels on the Operating Channel. An additional 1dB is added to the radar test signal to ensure it is at or above the DFS Detection Threshold, accounting for equipment variations/errors.
6. Observe the transmissions of the EUT at the end of the radar Burst on the Operating Channel for duration greater than 10 seconds. Measure and record the transmissions from the EUT during the observation time (Channel Move Time). Measure and record the Channel Move Time and Channel Closing Transmission Time if radar detection occurs.
7. When operating as a Master Device, monitor the EUT for more than 30 minutes following instant  $T_2$  to verify that the EUT does not resume any transmissions on this Channel. Perform this test once and record the measurement result.



Channel Closing Transmission Time, Channel Move Time and Non-Occupancy Period

## Test Set-Up



Setup for Client with injection at the Master

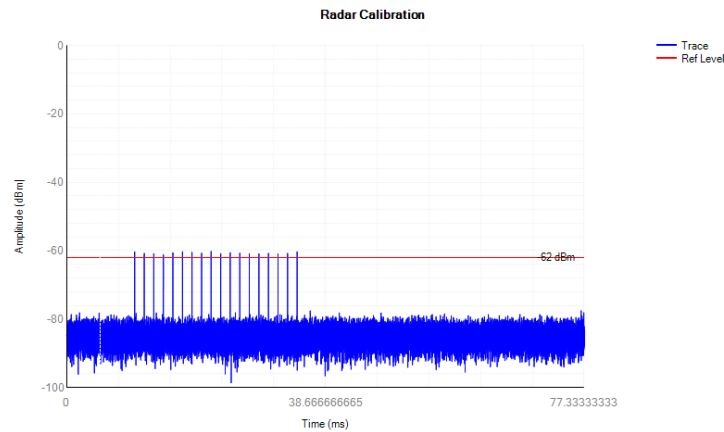
## Measurement Results

### Pass

Please refer to following plots of the worst case.

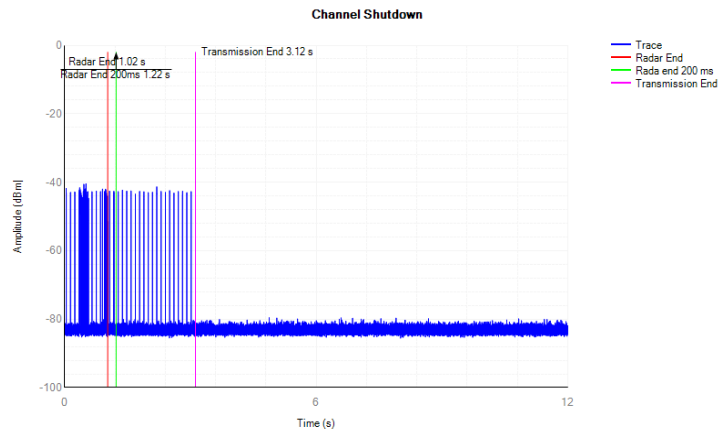
| Channel | Test Item                         | Test Result     | Limit      | Pass/Fail |
|---------|-----------------------------------|-----------------|------------|-----------|
| 5280MHz | Channel Move Time                 | 3.12 s          | <10s       | Pass      |
|         | Channel Closing Transmission Time | 15 ms           | <200+60ms  | Pass      |
|         | Non-Occupancy Period              | No transmission | 30 minutes | Pass      |

### Radar Waveform Calibration Plot - 5280MHz

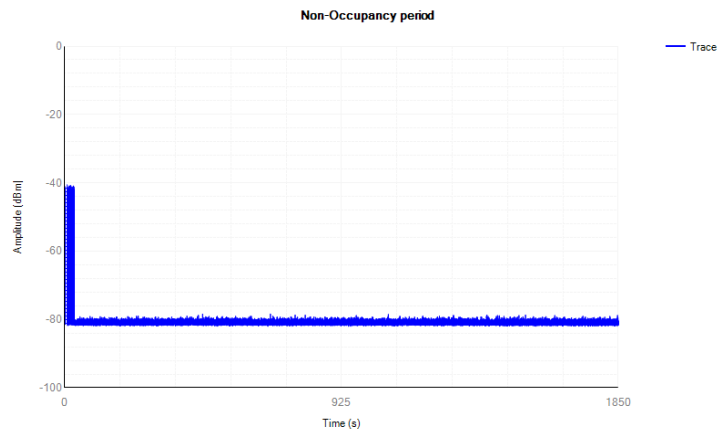


## The Worst Case - 5280MHz

### Channel Move Time & Channel Closing Transmission Time Plot

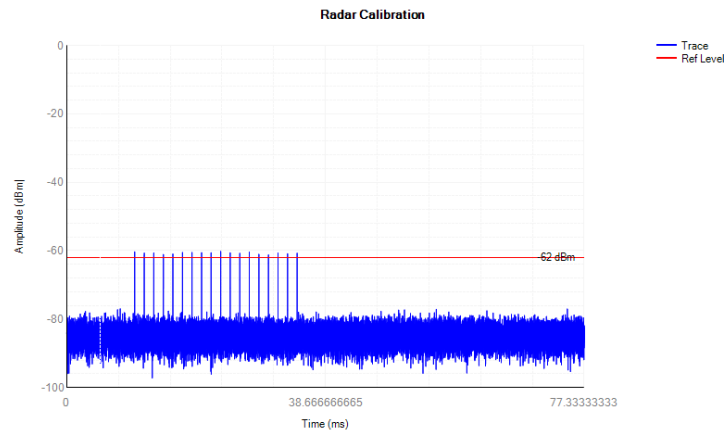


### Non-Occupancy Period Plot



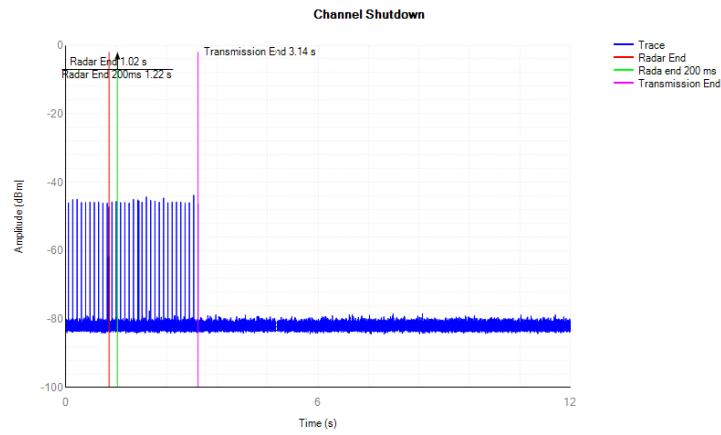
| Channel | Test Item                         | Test Result     | Limit      | Pass/Fail |
|---------|-----------------------------------|-----------------|------------|-----------|
| 5520MHz | Channel Move Time                 | 3.14 s          | <10s       | Pass      |
|         | Channel Closing Transmission Time | 15.6 ms         | <200+60ms  | Pass      |
|         | Non-Occupancy Period              | No transmission | 30 minutes | Pass      |

### Radar Waveform Calibration Plot - 5530MHz

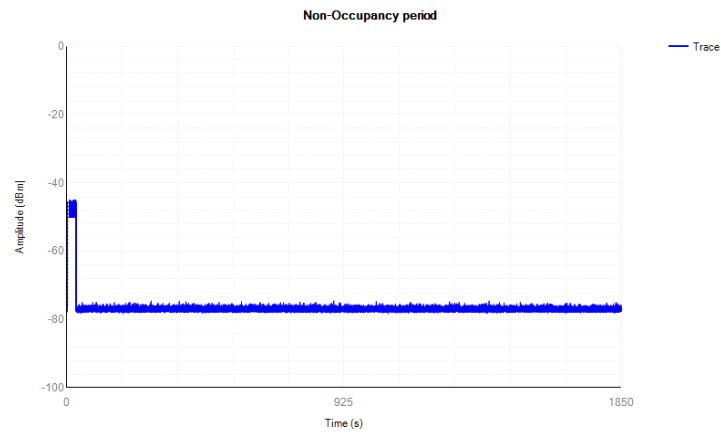


## The Worst Case - 5520MHz

### Channel Move Time & Channel Closing Transmission Time Plot



### Non-Occupancy Period Plot



## 14.10 Antenna Requirement

### STANDARD APPLICABLE

According to of FCC part 15C section 15.203:

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. The structure and application of the EUT were analyzed to determine compliance with section 15.203 of the rules.

And according to 47 CFR section 15.407(a), if the transmitting antennas of directional gain greater than 6dBi are used, the transmit power and power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

### ANTENNA CONNECTED CONSTRUCTION

The antenna is embedded ceramic antenna that no antenna other than furnished by the responsible party shall be used with the device, and the best case gain of the antenna is 2.6dBi, Therefore, the antenna is considered to meet the requirement.

## 15. Test Equipment List

| Item | Equipment                         | Manufacturer                            | Model No.             | Serial No. | Last Cal.     | Cal. Interval |
|------|-----------------------------------|-----------------------------------------|-----------------------|------------|---------------|---------------|
| 1.   | Test Receiver                     | Rohde & Schwarz                         | ESCI7                 | 100837     | Mar. 12, 2025 | 1 Year        |
| 2.   | Antenna                           | Schwarzbeck                             | VULB9162              | 9162-010   | Mar. 23, 2024 | 2 Year        |
| 3.   | Spectrum Analyzer                 | Keysight                                | N9020A                | MY54200831 | Mar. 12, 2025 | 1 Year        |
| 4.   | Spectrum Analyzer                 | Keysight                                | N9010B                | MY62170254 | Aug. 14, 2024 | 1 Year        |
| 5.   | Power Sensor                      | Agilent                                 | N1921A                | MY48251036 | Mar. 12, 2025 | 1 Year        |
| 6.   | Power Meter                       | Agilent                                 | N1912A                | MY41497159 | Mar. 12, 2025 | 1 Year        |
| 7.   | Horn Antenna                      | COM-Power                               | AH-118                | 071078     | Mar. 23, 2024 | 2 Year        |
| 8.   | Pre-Amplifier                     | HP                                      | HP 8449B              | 3008A00964 | Mar. 12, 2025 | 1 Year        |
| 9.   | Pre-Amplifier                     | HP                                      | HP 8447D              | 1145A00203 | Mar. 12, 2025 | 1 Year        |
| 10.  | Loop Antenna                      | Schwarzbeck                             | FMZB 1513             | 1513-272   | Mar. 23, 2024 | 2 Year        |
| 11.  | Horn Antenna                      | COM-Power                               | AH-840                | 10100020   | Mar. 23, 2024 | 2 Year        |
| 12.  | Test Receiver                     | Rohde & Schwarz                         | ESCI                  | 101152     | Mar. 12, 2025 | 1 Year        |
| 13.  | L.I.S.N                           | Rohde & Schwarz                         | ENV 216               | 101317     | Mar. 12, 2025 | 1 Year        |
| 14.  | L.I.S.N                           | Rohde & Schwarz                         | ESH2-Z5               | 893606/014 | Mar. 12, 2025 | 1 Year        |
| 15.  | RF Switching Unit                 | Compliance<br>Direction Systems<br>Inc. | RSU-M2                | 38311      | Mar. 12, 2025 | 1 Year        |
| 16.  | Temperature &<br>Humidity Chamber | Wanshun                                 | SS-HWHS-80            | N/A        | Mar. 12, 2025 | 1 Year        |
| 17.  | DC Source                         | Maynuo                                  | MY8811                | N/A        | Mar. 12, 2025 | 1 Year        |
| 18.  | Temporary<br>antenna connector    | TESCOM                                  | SS402                 | N/A        | N/A           | N/A           |
| 19.  | Chamber                           | SAEMC                                   | 9*7*7m                | N/A        | Apr. 21, 2023 | 2 Year        |
| 20.  | Attenuator                        | Mini-circuits                           | BW-S10W2+             | N/A        | N/A           | N/A           |
| 21.  | Test Software                     | EZ                                      | EZ EMC,<br>NTC-3A1.1  | N/A        | N/A           | N/A           |
| 22.  | Test Software                     | MWRF                                    | MTS 8310,<br>V2.0.0.0 | N/A        | N/A           | N/A           |

Note: For photographs of EUT and measurement, please refer to appendix in separate documents.

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