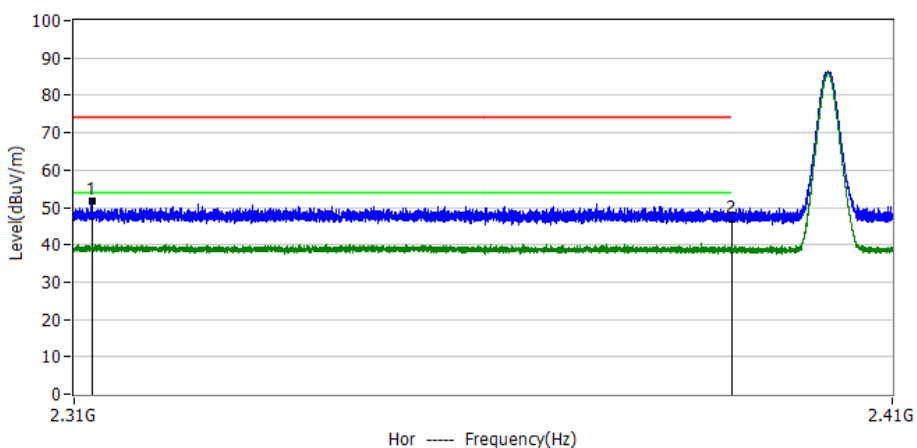


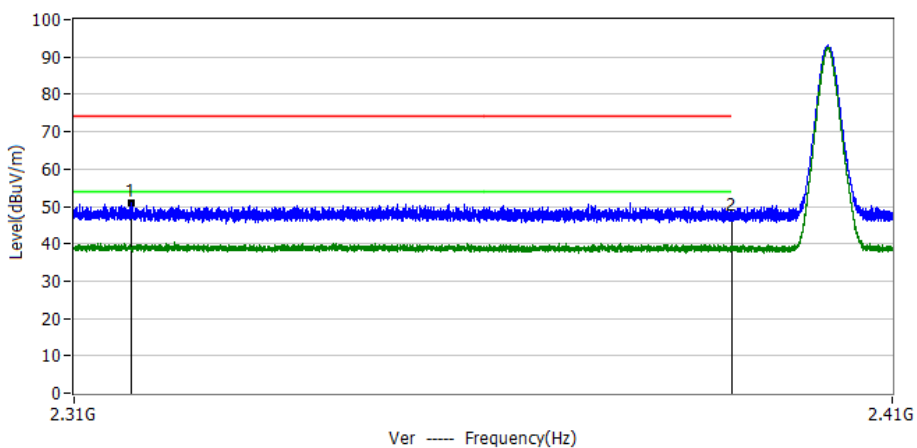


### 3.2.8 TEST RESULTS (BAND EDGE REQUIREMENTS)

|                       |                          |
|-----------------------|--------------------------|
| Project: LGT23C004    | Test Engineer: Dylan.shi |
| EUT: Smart Phone      | Temperature: 25.7°C      |
| M/N: CP12p            | Humidity: 47%RH          |
| Test Voltage: Battery | Test Data: 2023-03-14    |
| Test Mode: DH5 2402   |                          |
| Note:                 |                          |



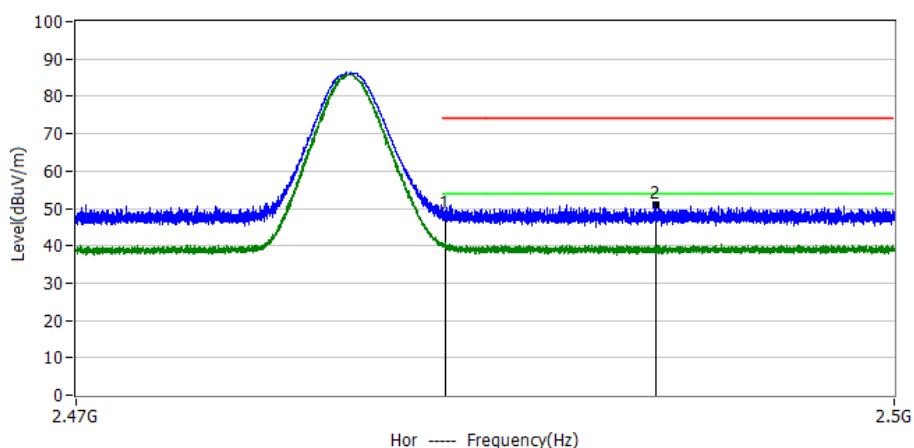
| No. | Frequency | Reading dBuV | Factor dB/m | Level dBuV/m | Limit dBuV/m | Margin dB | Detector | Polar |
|-----|-----------|--------------|-------------|--------------|--------------|-----------|----------|-------|
| 1*  | 2.3121GHz | 17.44        | 34.14       | 51.58        | 74.00        | -22.42    | PK       | Hor   |
| 2*  | 2.3900GHz | 13.05        | 33.95       | 47.00        | 74.00        | -27.00    | PK       | Hor   |



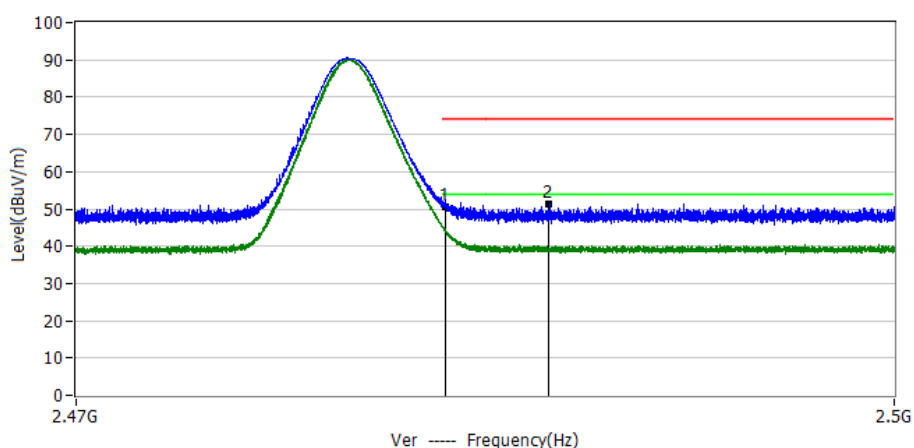
| No. | Frequency | Reading dBuV | Factor dB/m | Level dBuV/m | Limit dBuV/m | Margin dB | Detector | Polar |
|-----|-----------|--------------|-------------|--------------|--------------|-----------|----------|-------|
| 1*  | 2.3169GHz | 16.66        | 34.13       | 50.79        | 74.00        | -23.21    | PK       | Ver   |
| 2*  | 2.3900GHz | 13.35        | 33.95       | 47.30        | 74.00        | -26.70    | PK       | Ver   |



|                       |                          |
|-----------------------|--------------------------|
| Project: LGT23C004    | Test Engineer: Dylan.shi |
| EUT: Smart Phone      | Temperature: 25.7°C      |
| M/N: CP12p            | Humidity: 47%RH          |
| Test Voltage: Battery | Test Data: 2023-03-14    |
| Test Mode: DH5 2480   |                          |
| Note:                 |                          |



| No. | Frequency | Reading dBuV | Factor dB/m | Level dBuV/m | Limit dBuV/m | Margin dB | Detector | Polar |
|-----|-----------|--------------|-------------|--------------|--------------|-----------|----------|-------|
| 1*  | 2.4835GHz | 14.27        | 34.13       | 48.40        | 74.00        | -25.60    | PK       | Hor   |
| 2*  | 2.4912GHz | 16.95        | 34.14       | 51.09        | 74.00        | -22.91    | PK       | Hor   |



| No. | Frequency | Reading dBuV | Factor dB/m | Level dBuV/m | Limit dBuV/m | Margin dB | Detector | Polar |
|-----|-----------|--------------|-------------|--------------|--------------|-----------|----------|-------|
| 1*  | 2.4835GHz | 16.27        | 34.13       | 50.40        | 74.00        | -23.60    | PK       | Ver   |
| 2*  | 2.4873GHz | 17.09        | 34.14       | 51.23        | 74.00        | -22.77    | PK       | Ver   |



## 4. CONDUCTED SPURIOUS & BAND EDGE EMISSION

### 4.1 LIMIT

According to FCC section 15.247(d), in any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

### 4.2 TEST PROCEDURE

| <b>Spectrum Parameter</b>             | <b>Setting</b>                  |
|---------------------------------------|---------------------------------|
| Detector                              | Peak                            |
| Start/Stop Frequency                  | 30 MHz to 10th carrier harmonic |
| RB / VB (emission in restricted band) | 100 KHz/300 KHz                 |
| Trace-Mode:                           | Max hold                        |

For Band edge

| <b>Spectrum Parameter</b>             | <b>Setting</b>   |
|---------------------------------------|--|
| Detector                              | Peak   |
| Start/Stop Frequency                  | Lower Band Edge: 2300 – 2407 MHz<br>Upper Band Edge: 2475 – 2500 MHz |
| RB / VB (emission in restricted band) | 100 KHz/300 KHz  |
| Trace-Mode:                           | Max hold   |

For Hopping Band edge

| <b>Spectrum Parameter</b>             | <b>Setting</b>  |
|---------------------------------------|---|
| Detector                              | Peak  |
| Start/Stop Frequency                  | Lower Band Edge: 2300– 2403 MHz<br>Upper Band Edge: 2479 – 2500 MHz |
| RB / VB (emission in restricted band) | 100 KHz/300 KHz   |
| Trace-Mode:                           | Max hold  |



#### 4.3 TEST SETUP



The EUT is connected to the Spectrum Analyzer; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading. Tune the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 100 kHz. In order to make an accurate measurement, the span is set to be greater than RBW.

#### 4.4 EUT OPERATION CONDITIONS

Please refer to section 3.1.4 of this report.

#### 4.5 TEST RESULTS

For the measurement records, refer to the appendix I.



## 5. NUMBER OF HOPPING CHANNEL

### 5.1 LIMIT

| FCC Part 15.247, Subpart C |                           |       |                      |        |
|----------------------------|---------------------------|-------|----------------------|--------|
| Section                    | Test Item                 | Limit | FrequencyRange (MHz) | Result |
| 15.247 (a)(1)(iii)         | Number of Hopping Channel | ≥15   | 2400-2483.5          | PASS   |

| Spectrum Parameters | Setting                    |
|---------------------|----------------------------|
| Attenuation         | Auto                       |
| Span Frequency      | > Operating FrequencyRange |
| RB                  | 300KHz                     |
| VB                  | 300KHz                     |
| Detector            | Peak                       |
| Trace               | Max Hold                   |
| Sweep Time          | Auto                       |

### 5.2 TEST PROCEDURE

- a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
- b. Spectrum Setting: RBW= 300KHz, VBW=300KHz, Sweep time = Auto.

### 5.3 TEST SETUP



### 5.4 EUT OPERATION CONDITIONS

Please refer to section 3.1.4 of this report.

### 5.5 TEST RESULTS

For the measurement records · refer to the appendix I.



## 6. AVERAGE TIME OF OCCUPANCY

### 6.1 LIMIT

| FCC Part 15.247, Subpart C |                           |        |                      |        |
|----------------------------|---------------------------|--------|----------------------|--------|
| Section                    | Test Item                 | Limit  | FrequencyRange (MHz) | Result |
| 15.247 (a)(1)(iii)         | Average Time of Occupancy | 0.4sec | 2400-2483.5          | PASS   |

### 6.2 TEST PROCEDURE

- a. The transmitter output (antenna port) was connected to the spectrum analyzer.
- b. Set RBW =1MHz/VBW =3MHz.
- c. Use a video trigger with the trigger level set to enable triggering only on full pulses.
- d. Sweep Time is more than once pulse time.
- e. Set the center frequency on any frequency would be measure and set the frequency span to zero span.
- f. Measure the maximum time duration of one single pulse.
- g. Set the EUT for DH5, DH3 and DH1 packet transmitting.
- h. Measure the maximum time duration of one single pulse.
- i. DH5 Packet permit maximum  $1600 / 79 / 6 = 3.37$  hops per second in each channel (5 time slots RX, 1 time slot TX). So the number of pulses in the observation period of 31.6 seconds is  $3.37 \times 31.6 = 106.6$ .
- j. DH3 Packet permit maximum  $1600 / 79 / 4 = 5.06$  hops per second in each channel (3 time slots RX, 1 time slot TX). So the number of pulses in the observation period of 31.6 seconds is  $5.06 \times 31.6 = 160$ .
- k. DH1 Packet permit maximum  $1600 / 79 / 2 = 10.12$  hops per second in each channel (1 time slot RX, 1 time slot TX). So the number of pulses in the observation period of 31.6 seconds is  $10.12 \times 31.6 = 320$ .

### 6.3 TEST SETUP



### 6.4 EUT OPERATION CONDITIONS

Please refer to section 3.1.4 of this report.

### 6.5 TEST RESULTS

For the measurement records refer to the appendix I.



## 7. HOPPING CHANNEL SEPARATION MEASUREMENT

### 7.1 LIMIT

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

| Spectrum Parameter | Setting   |
|--------------------|---|
| Attenuation        | Auto  |
| Span Frequency     | > 20 dB Bandwidth or Channel Separation                 |
| RB                 | 30 kHz (20dB Bandwidth) / 30 kHz (Channel Separation)   |
| VB                 | 100 kHz (20dB Bandwidth) / 100 kHz (Channel Separation) |
| Detector           | Peak  |
| Trace              | Max Hold  |
| Sweep Time         | Auto  |

### 7.2 TEST PROCEDURE

- The transmitter output (antenna port) was connected to the spectrum analyser in peak hold mode.
- The resolution bandwidth of 30 kHz and the video bandwidth of 100 kHz were utilised for 20 dB bandwidth measurement.
- The resolution bandwidth of 30 kHz and the video bandwidth of 100 kHz were utilised for channel separation measurement.

### 7.3 TEST SETUP



### 7.4 EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

### 7.5 TEST RESULTS

For the measurement records refer to the appendix I.



## 8. BANDWIDTH TEST

### 8.1 LIMIT

| FCC Part15 15.247, Subpart C |           |       |                      |        |
|------------------------------|-----------|-------|----------------------|--------|
| Section                      | Test Item | Limit | FrequencyRange (MHz) | Result |
| 15.247 (a)(1)                | Bandwidth | N/A   | 2400-2483.5          | PASS   |

| Spectrum Parameter | Setting   |
|--------------------|---|
| Attenuation        | Auto  |
| Span Frequency     | > Measurement Bandwidth or Channel Separation           |
| RB                 | 30 kHz (20dB Bandwidth) / 30 kHz (Channel Separation)   |
| VB                 | 100 kHz (20dB Bandwidth) / 100 kHz (Channel Separation) |
| Detector           | Peak  |
| Trace              | Max Hold  |
| Sweep Time         | Auto  |

### 8.2 TEST PROCEDURE

- a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below.
- b. Spectrum Setting: RBW= 30KHz, VBW=100KHz, Sweep time = Auto.

### 8.3 TEST SETUP



### 8.4 EUT OPERATION CONDITIONS

Please refer to section 3.1.4 of this report.

### 8.5 TEST RESULTS

For the measurement records refer to the appendix I.





## 9. OUTPUT POWER TEST

### 9.1 LIMIT

| FCC Part 15.247, Subpart C |              |   |                       |        |
|----------------------------|--------------|---|-----------------------|--------|
| Section                    | Test Item    | Limit   | Frequency Range (MHz) | Result |
| 15.247<br>(a)(1)&(b)(1)    | Output Power | 1 W or 0.125W   | 2400-2483.5           | PASS   |
|                            |              | if channel separation > 2/3 bandwidth provided the systems operate with an output power no greater than 125 mW (20.97dBm) |                       |        |

### 9.2 TEST PROCEDURE

This is an RF-conducted test to evaluate maximum peak output power. Use a direct connection between the antenna port of the unlicensed wireless device and the spectrum analyzer, through suitable attenuation. The hopping shall be disabled for this test:

a) Use the following spectrum analyzer settings:

- 1) Span: Approximately five times the 20 dB bandwidth, centered on a hopping channel.
- 2) RBW > 20 dB bandwidth of the emission being measured.
- 3) VBW  $\geq$  RBW.
- 4) Sweep: Auto.
- 5) Detector function: Peak.
- 6) Trace: Max hold.

b) Allow trace to stabilize.

c) Use the marker-to-peak function to set the marker to the peak of the emission.

d) The indicated level is the peak output power, after any corrections for external attenuators and cables.

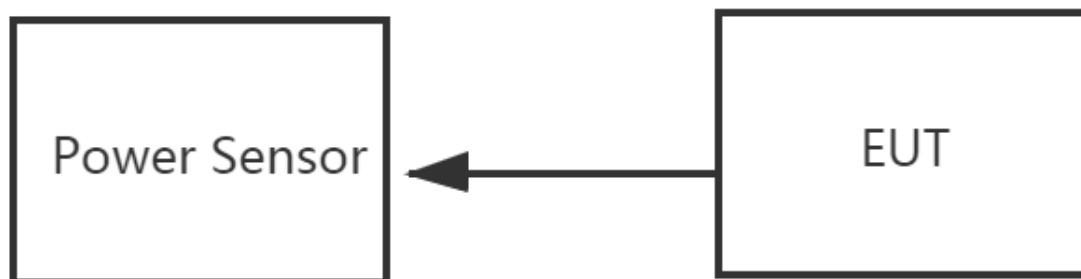
e) A plot of the test results and setup description shall be included in the test report.

NOTE—A peak responding power meter may be used, where the power meter and sensor system video bandwidth is greater than the occupied bandwidth of the unlicensed wireless device, rather than a spectrum analyzer.

PKPM1 Peak power meter method:

The maximum peak conducted output power may be measured using a broadband peak RF power meter. The power meter shall have a video bandwidth that is greater than or equal to the DSS bandwidth and shall use a fast-responding diode detector.

### 9.3 TEST SETUP



### 9.4 EUT OPERATION CONDITIONS

Please refer to section 3.1.4 of this report.



## 9.5 TEST RESULTS

For the measurement records refer to the appendix I.



## 10. ANTENNA REQUIREMENT

### 10.1 STANDARD REQUIREMENT

15.203 requirement: For intentional device, according to 15.203: an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

### 10.2 EUT ANTENNA

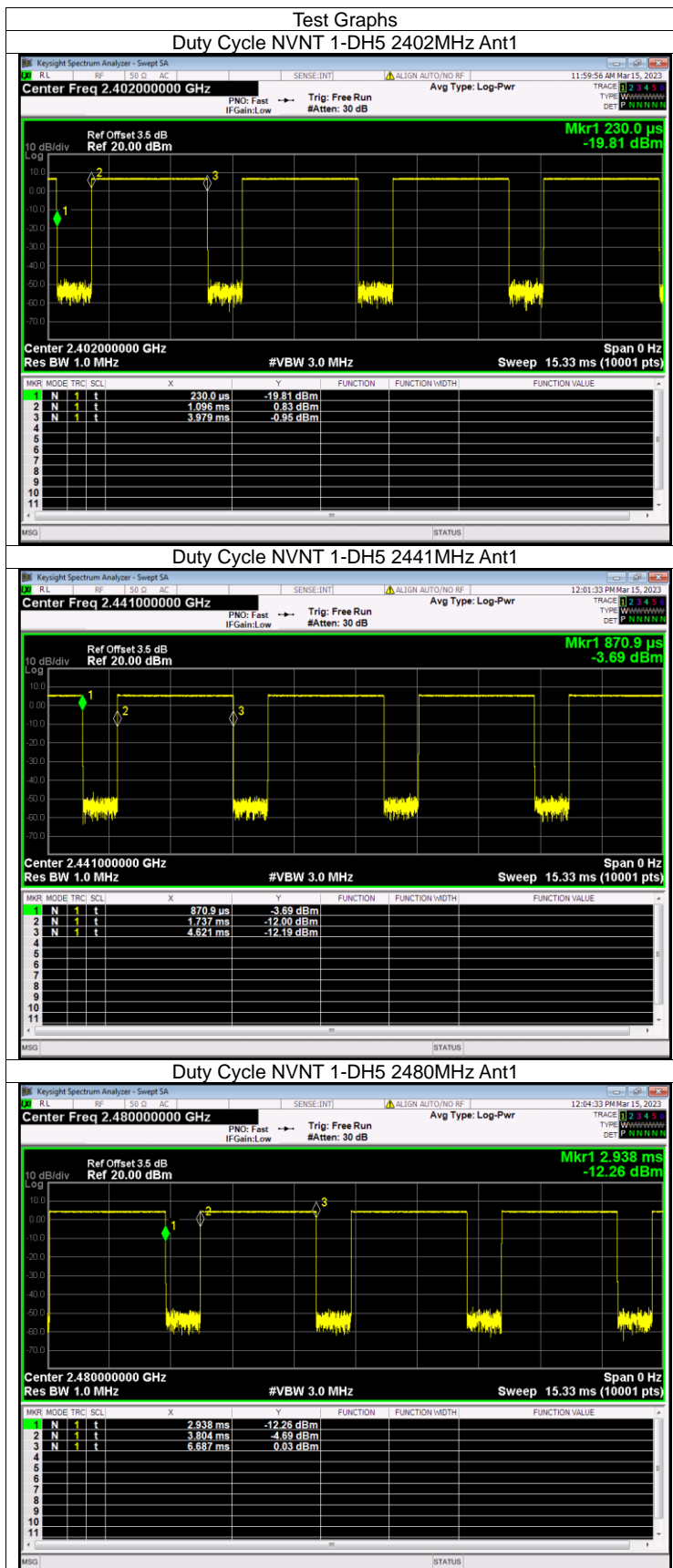
The EUT antenna is FPC antenna. It comply with the standard requirement.

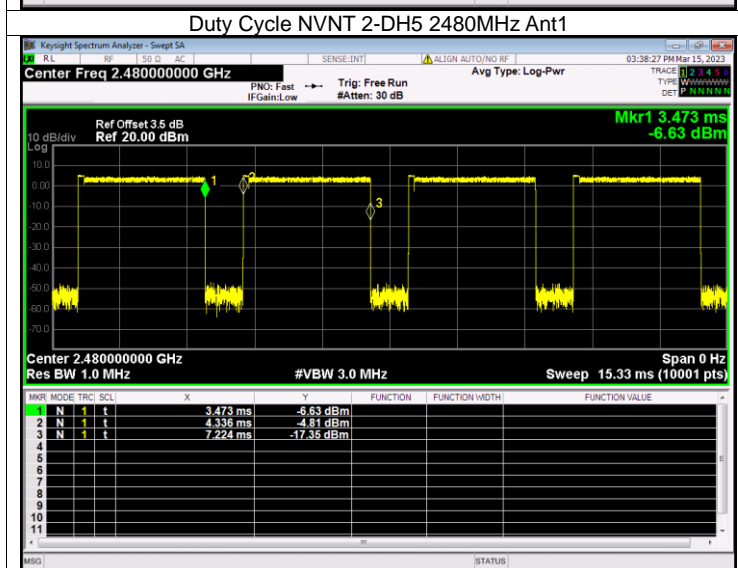
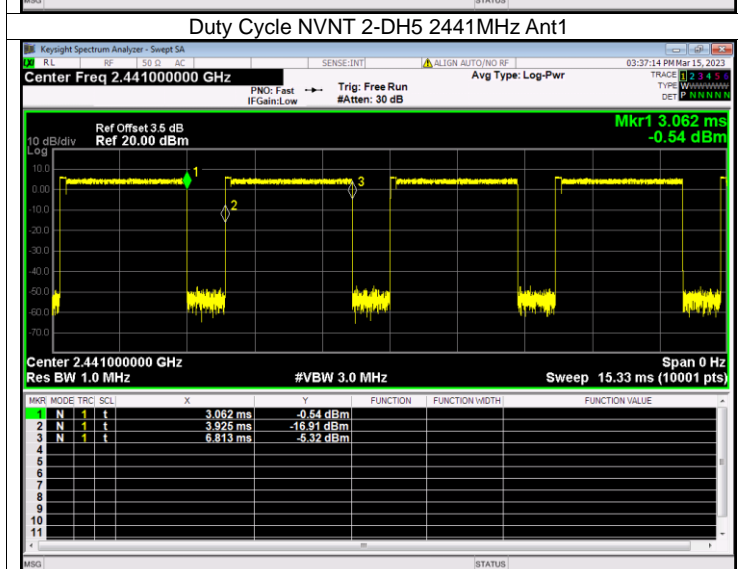
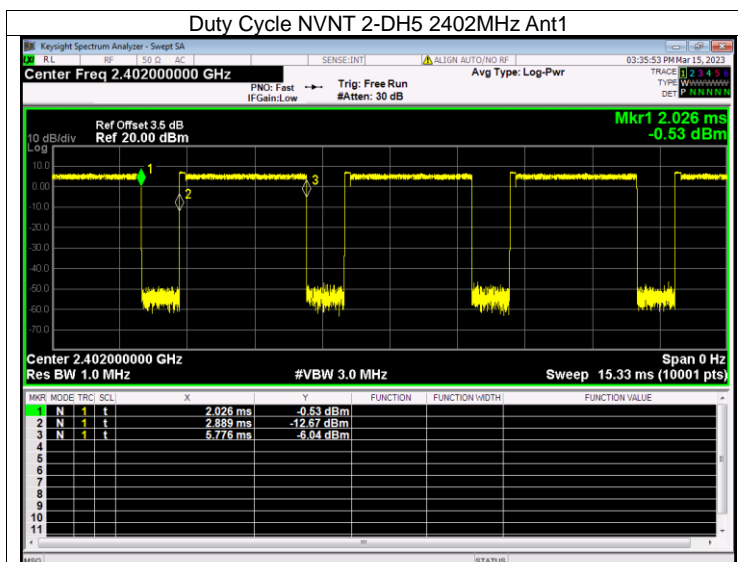


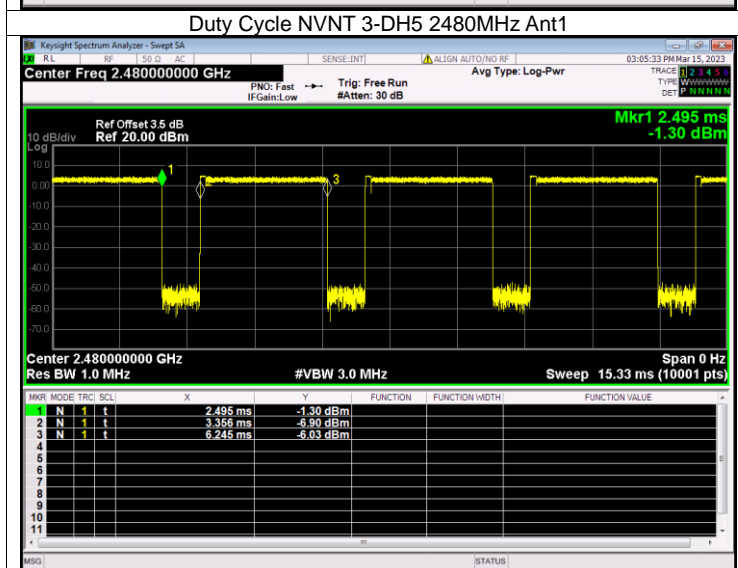
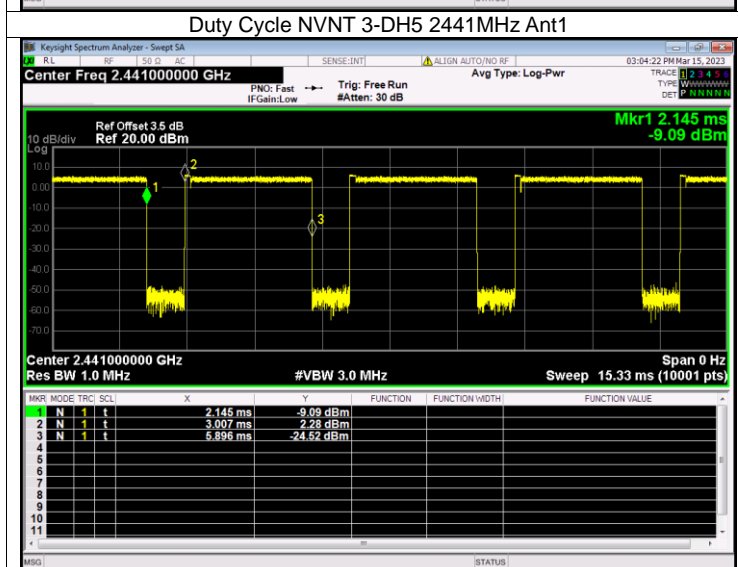
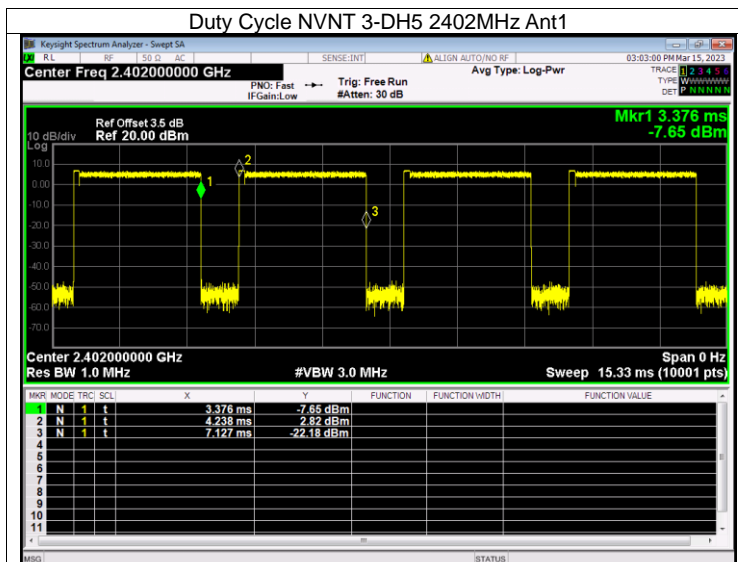
## APPENDIX I:TEST RESULTS

### Duty Cycle

| Condition | Mode  | Frequency (MHz) | Antenna | Duty Cycle (%) | Correction Factor (dB) | 1/T (kHz) |
|-----------|-------|-----------------|---------|----------------|------------------------|-----------|
| NVNT      | 1-DH5 | 2402            | Ant1    | 76.89          | 1.14                   | 0.35      |
| NVNT      | 1-DH5 | 2441            | Ant1    | 76.90          | 1.14                   | 0.35      |
| NVNT      | 1-DH5 | 2480            | Ant1    | 76.89          | 1.14                   | 0.35      |
| NVNT      | 2-DH5 | 2402            | Ant1    | 76.98          | 1.14                   | 0.35      |
| NVNT      | 2-DH5 | 2441            | Ant1    | 76.98          | 1.14                   | 0.35      |
| NVNT      | 2-DH5 | 2480            | Ant1    | 76.98          | 1.14                   | 0.35      |
| NVNT      | 3-DH5 | 2402            | Ant1    | 77.02          | 1.13                   | 0.35      |
| NVNT      | 3-DH5 | 2441            | Ant1    | 77.02          | 1.13                   | 0.35      |
| NVNT      | 3-DH5 | 2480            | Ant1    | 77.02          | 1.13                   | 0.35      |









## Maximum Peak Conducted Output Power

| Condition | Mode  | Frequency (MHz) | Antenna | Conducted Power (dBm) | Limit (dBm) | Verdict |
|-----------|-------|-----------------|---------|-----------------------|-------------|---------|
| NVNT      | 1-DH5 | 2402            | Ant1    | 6.89                  | 21          | Pass    |
| NVNT      | 1-DH5 | 2441            | Ant1    | 5.68                  | 21          | Pass    |
| NVNT      | 1-DH5 | 2480            | Ant1    | 4.70                  | 21          | Pass    |
| NVNT      | 2-DH5 | 2402            | Ant1    | 7.07                  | 21          | Pass    |
| NVNT      | 2-DH5 | 2441            | Ant1    | 6.13                  | 21          | Pass    |
| NVNT      | 2-DH5 | 2480            | Ant1    | 5.11                  | 21          | Pass    |
| NVNT      | 3-DH5 | 2402            | Ant1    | 7.00                  | 21          | Pass    |
| NVNT      | 3-DH5 | 2441            | Ant1    | 6.07                  | 21          | Pass    |
| NVNT      | 3-DH5 | 2480            | Ant1    | 4.97                  | 21          | Pass    |

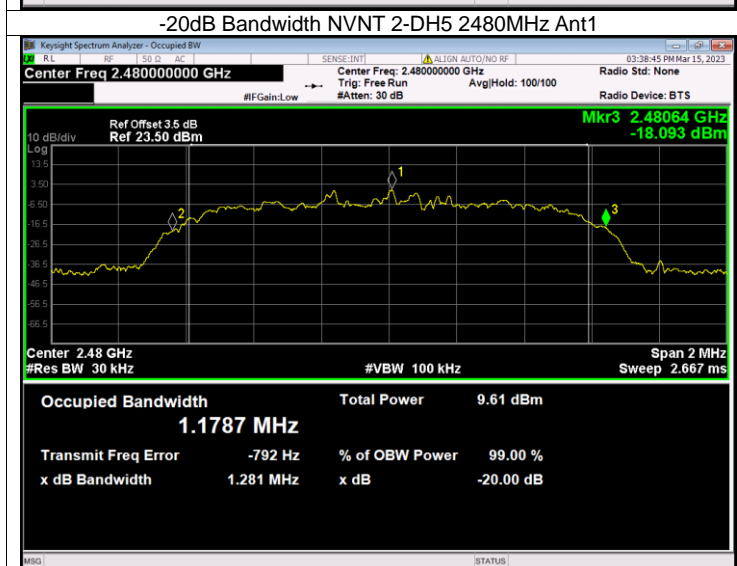
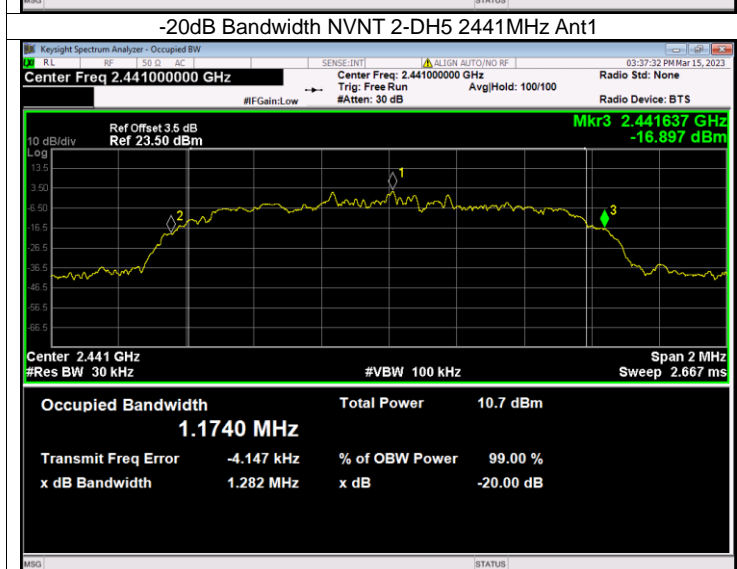
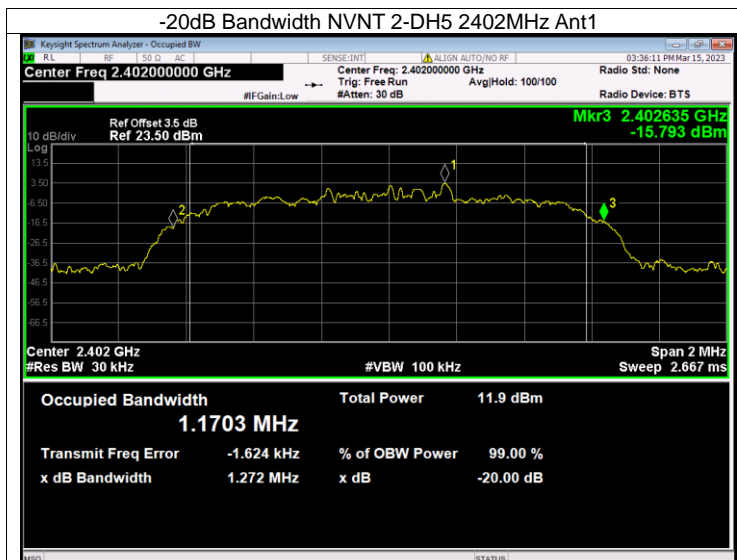


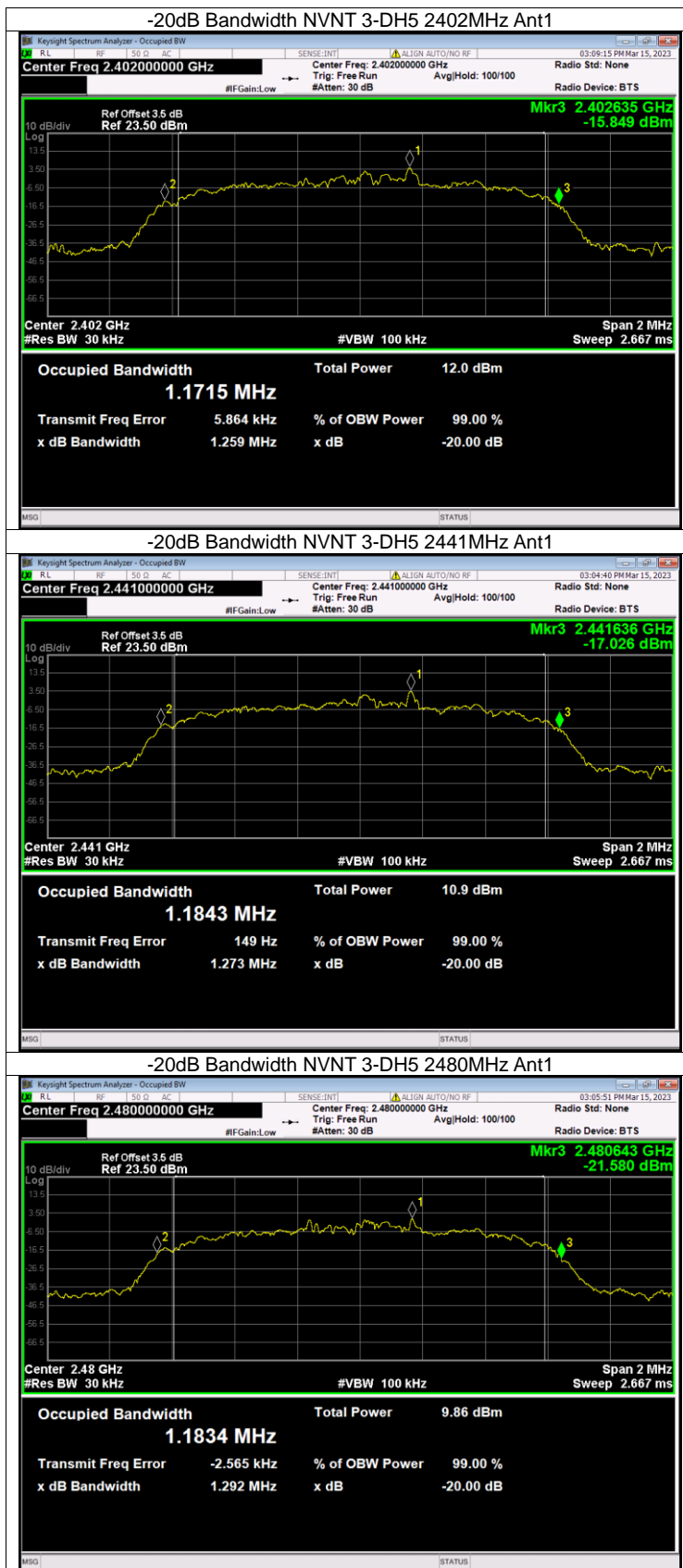


## -20dB Bandwidth

| Condition | Mode  | Frequency (MHz) | Antenna | -20 dB Bandwidth (MHz) | Verdict |
|-----------|-------|-----------------|---------|------------------------|---------|
| NVNT      | 1-DH5 | 2402            | Ant1    | 0.872                  | Pass    |
| NVNT      | 1-DH5 | 2441            | Ant1    | 0.897                  | Pass    |
| NVNT      | 1-DH5 | 2480            | Ant1    | 0.911                  | Pass    |
| NVNT      | 2-DH5 | 2402            | Ant1    | 1.272                  | Pass    |
| NVNT      | 2-DH5 | 2441            | Ant1    | 1.282                  | Pass    |
| NVNT      | 2-DH5 | 2480            | Ant1    | 1.281                  | Pass    |
| NVNT      | 3-DH5 | 2402            | Ant1    | 1.259                  | Pass    |
| NVNT      | 3-DH5 | 2441            | Ant1    | 1.273                  | Pass    |
| NVNT      | 3-DH5 | 2480            | Ant1    | 1.292                  | Pass    |



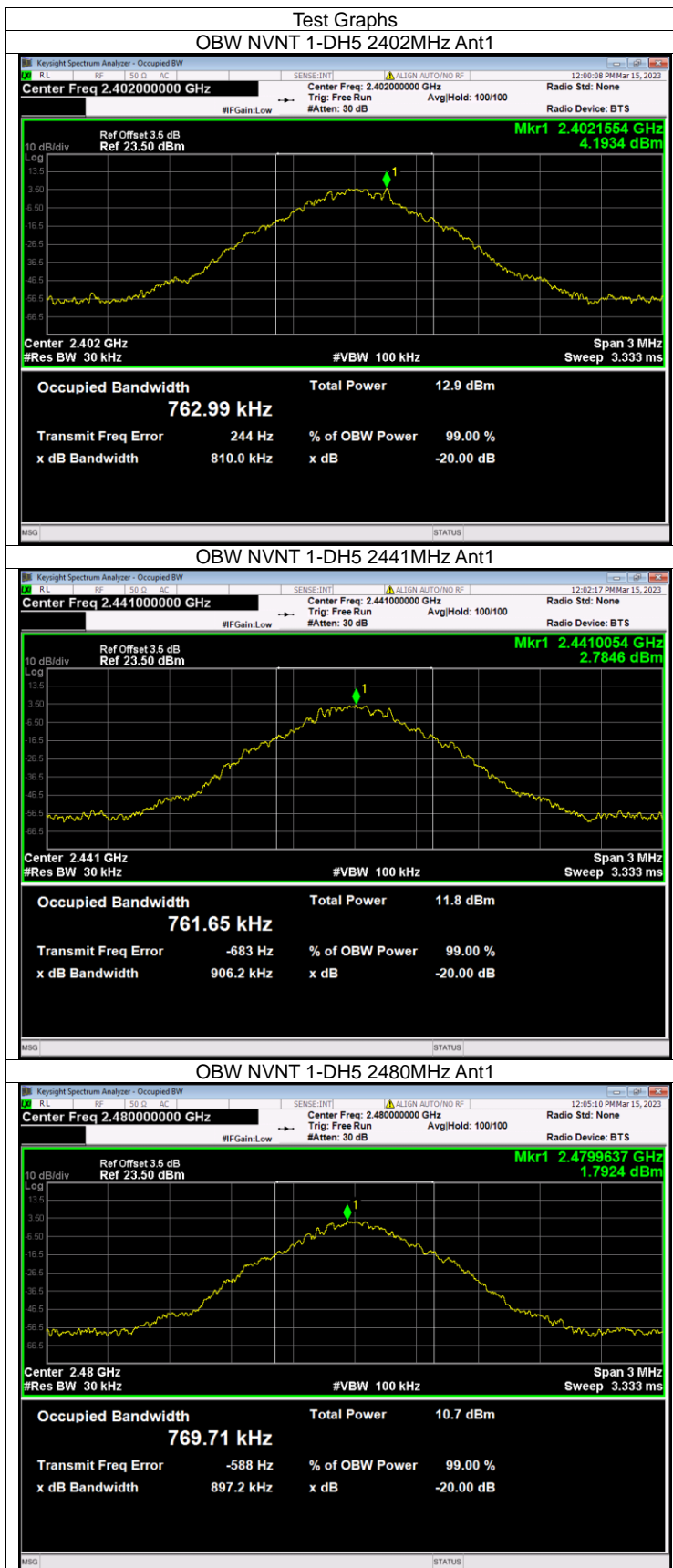


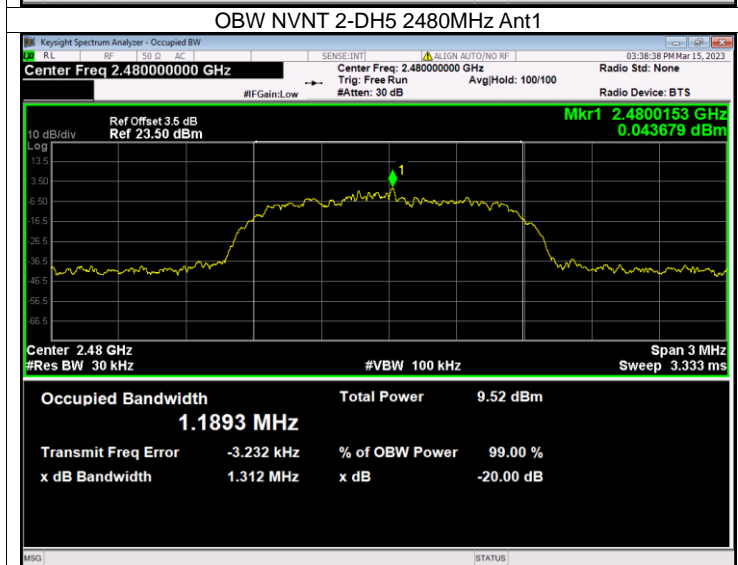
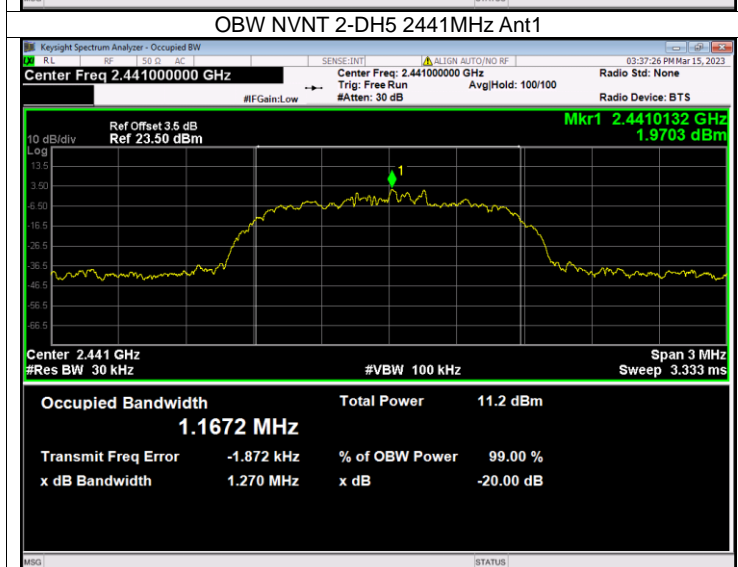
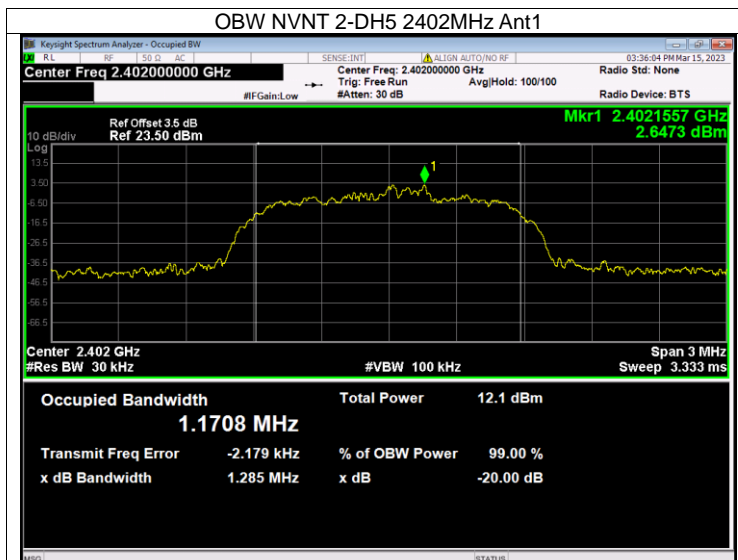


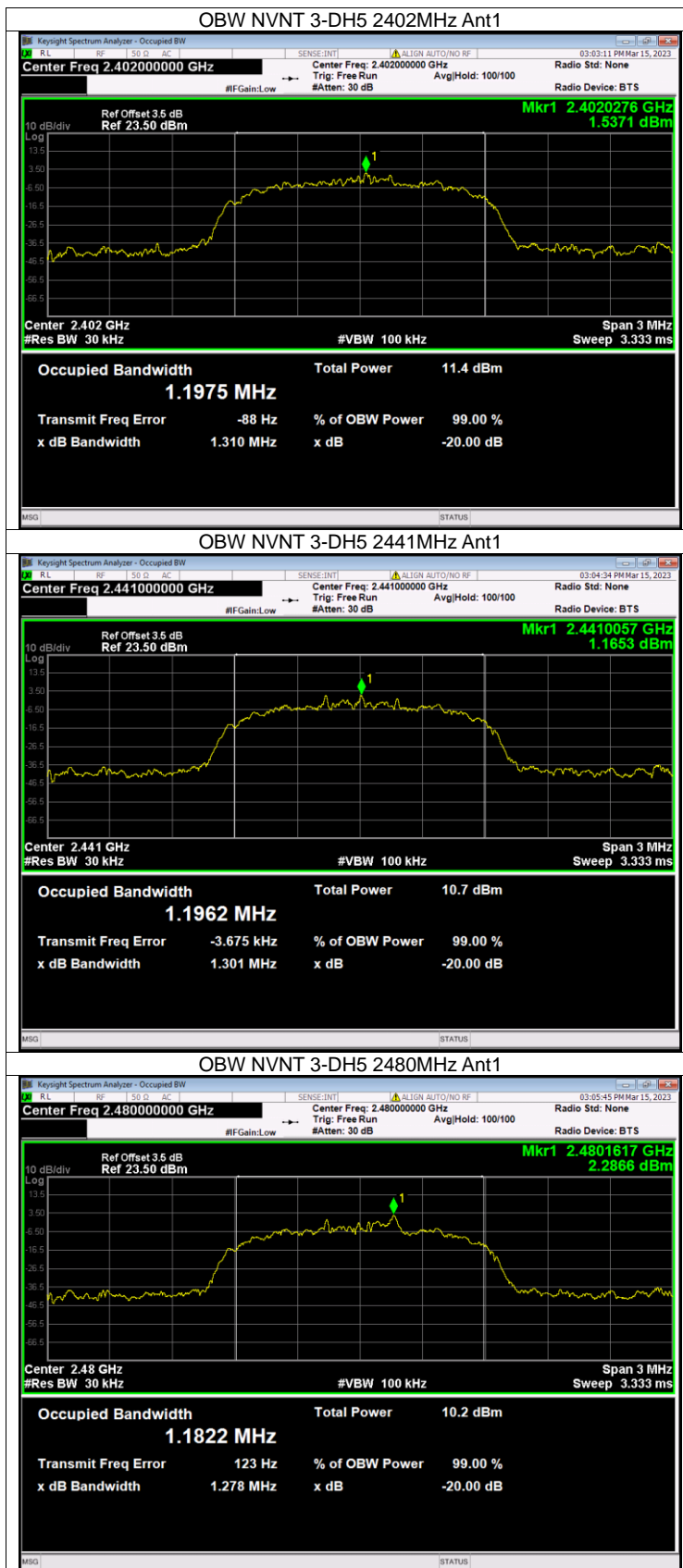


## Occupied Channel Bandwidth

| Condition | Mode  | Frequency (MHz) | Antenna | 99% OBW (MHz) |
|-----------|-------|-----------------|---------|---------------|
| NVNT      | 1-DH5 | 2402            | Ant1    | 0.763         |
| NVNT      | 1-DH5 | 2441            | Ant1    | 0.762         |
| NVNT      | 1-DH5 | 2480            | Ant1    | 0.77          |
| NVNT      | 2-DH5 | 2402            | Ant1    | 1.171         |
| NVNT      | 2-DH5 | 2441            | Ant1    | 1.167         |
| NVNT      | 2-DH5 | 2480            | Ant1    | 1.189         |
| NVNT      | 3-DH5 | 2402            | Ant1    | 1.197         |
| NVNT      | 3-DH5 | 2441            | Ant1    | 1.196         |
| NVNT      | 3-DH5 | 2480            | Ant1    | 1.182         |











## Carrier Frequencies Separation

| Condition | Mode  | Antenna | Hopping Freq1 (MHz) | Hopping Freq2 (MHz) | HFS (MHz) | Limit (MHz) | Verdict |
|-----------|-------|---------|---------------------|---------------------|-----------|-------------|---------|
| NVNT      | 1-DH5 | Ant1    | 2402.008            | 2403.01             | 1.002     | 0.581       | Pass    |
| NVNT      | 1-DH5 | Ant1    | 2441.01             | 2442.006            | 0.996     | 0.598       | Pass    |
| NVNT      | 1-DH5 | Ant1    | 2479.008            | 2480.008            | 1.000     | 0.607       | Pass    |
| NVNT      | 2-DH5 | Ant1    | 2402.012            | 2402.986            | 0.974     | 0.848       | Pass    |
| NVNT      | 2-DH5 | Ant1    | 2441.012            | 2442.02             | 1.008     | 0.855       | Pass    |
| NVNT      | 2-DH5 | Ant1    | 2479.01             | 2480.006            | 0.996     | 0.854       | Pass    |
| NVNT      | 3-DH5 | Ant1    | 2401.946            | 2403.018            | 1.072     | 0.839       | Pass    |
| NVNT      | 3-DH5 | Ant1    | 2440.946            | 2442.044            | 1.098     | 0.849       | Pass    |
| NVNT      | 3-DH5 | Ant1    | 2479.02             | 2479.996            | 0.976     | 0.861       | Pass    |