



Appendix B

RF Test Data for 2.4GWIFI (Conducted Measurement)

Product Name: North American Palm Vein WiFi Stuck

Test Model: SP300

Environmental Conditions

|                    |            |
|--------------------|------------|
| Temperature:       | 23.8°C     |
| Relative Humidity: | 52.1%      |
| ATM Pressure:      | 100.0 kPa  |
| Test Engineer:     | Paddi Chen |
| Supervised by:     | Nick Peng  |





B.1 -6dB Bandwidth

| Condition | Mode | Frequency (MHz) | Antenna | -6 dB Bandwidth (MHz) | Limit -6 dB Bandwidth (MHz) | Verdict |
|-----------|------|-----------------|---------|-----------------------|-----------------------------|---------|
| NVNT      | b    | 2412            | Ant1    | 9.569                 | >=0.5                       | Pass    |
| NVNT      | b    | 2437            | Ant1    | 9.571                 | >=0.5                       | Pass    |
| NVNT      | b    | 2462            | Ant1    | 9.574                 | >=0.5                       | Pass    |
| NVNT      | g    | 2412            | Ant1    | 16.324                | >=0.5                       | Pass    |
| NVNT      | g    | 2437            | Ant1    | 16.343                | >=0.5                       | Pass    |
| NVNT      | g    | 2462            | Ant1    | 16.343                | >=0.5                       | Pass    |
| NVNT      | n20  | 2412            | Ant1    | 17.232                | >=0.5                       | Pass    |
| NVNT      | n20  | 2437            | Ant1    | 16.831                | >=0.5                       | Pass    |
| NVNT      | n20  | 2462            | Ant1    | 17.252                | >=0.5                       | Pass    |

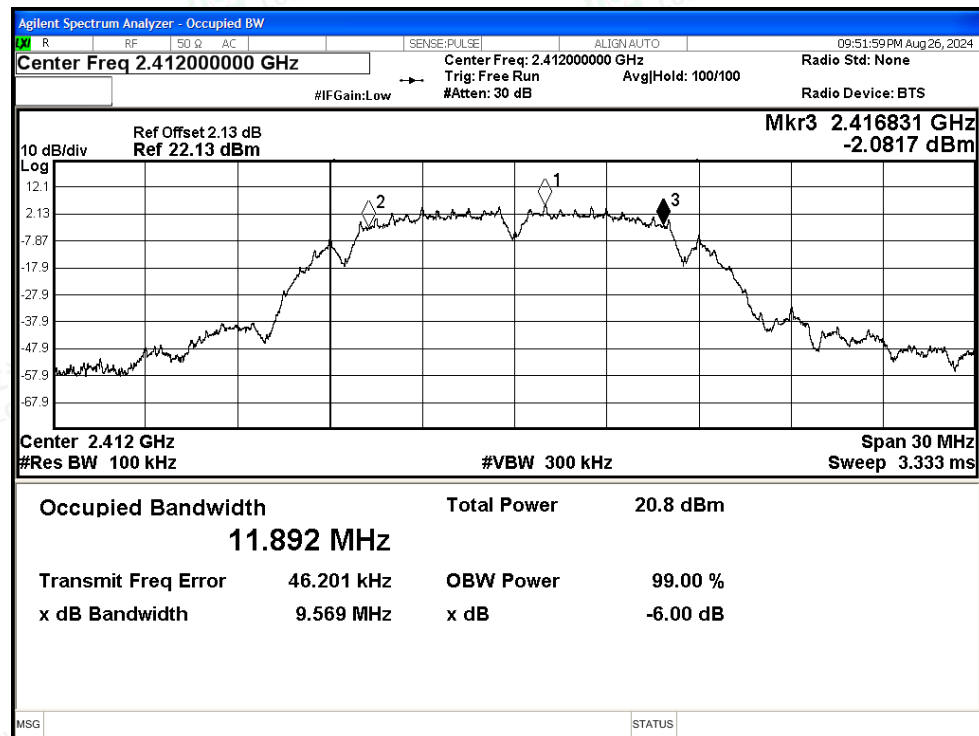


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## Test Graphs

-6dB Bandwidth NVNT b 2412MHz Ant1

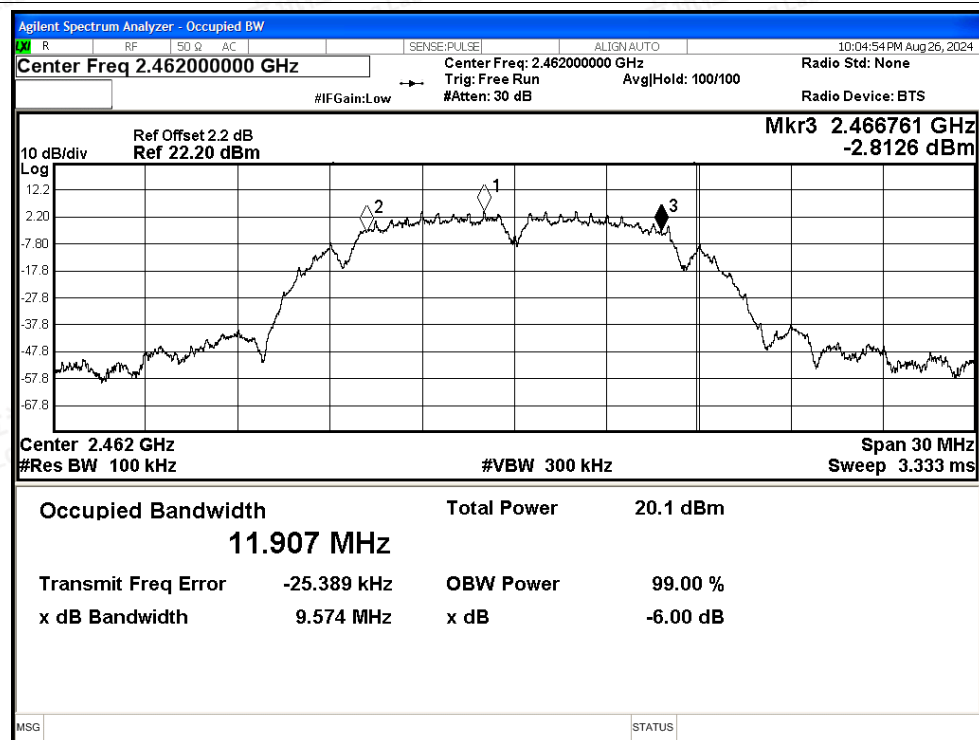


-6dB Bandwidth NVNT b 2437MHz Ant1

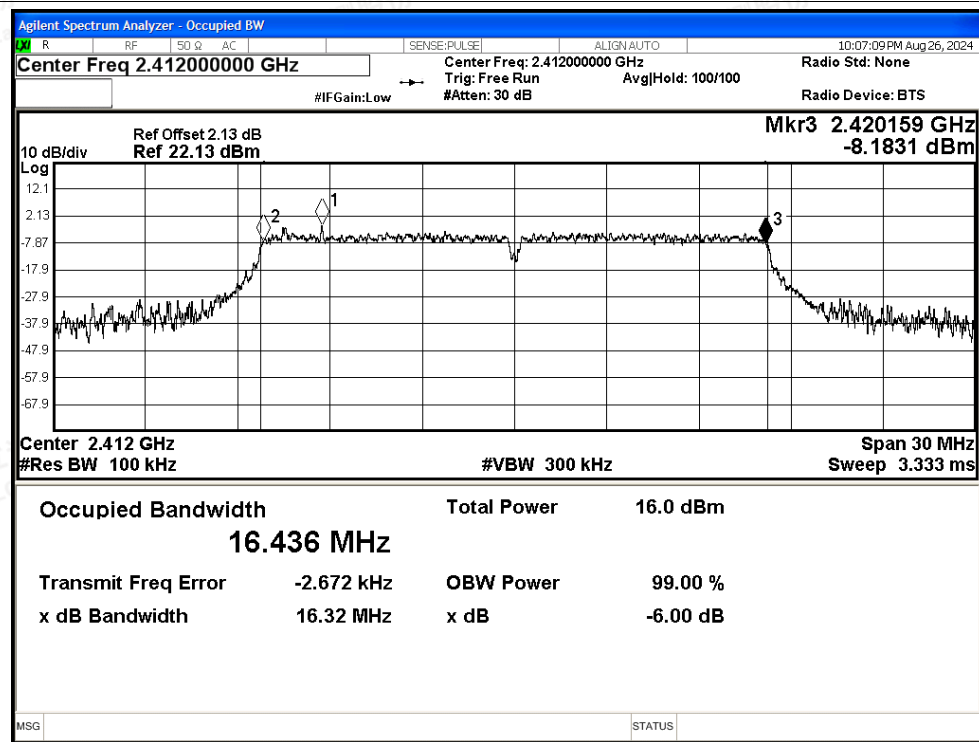




## -6dB Bandwidth NVNT b 2462MHz Ant1

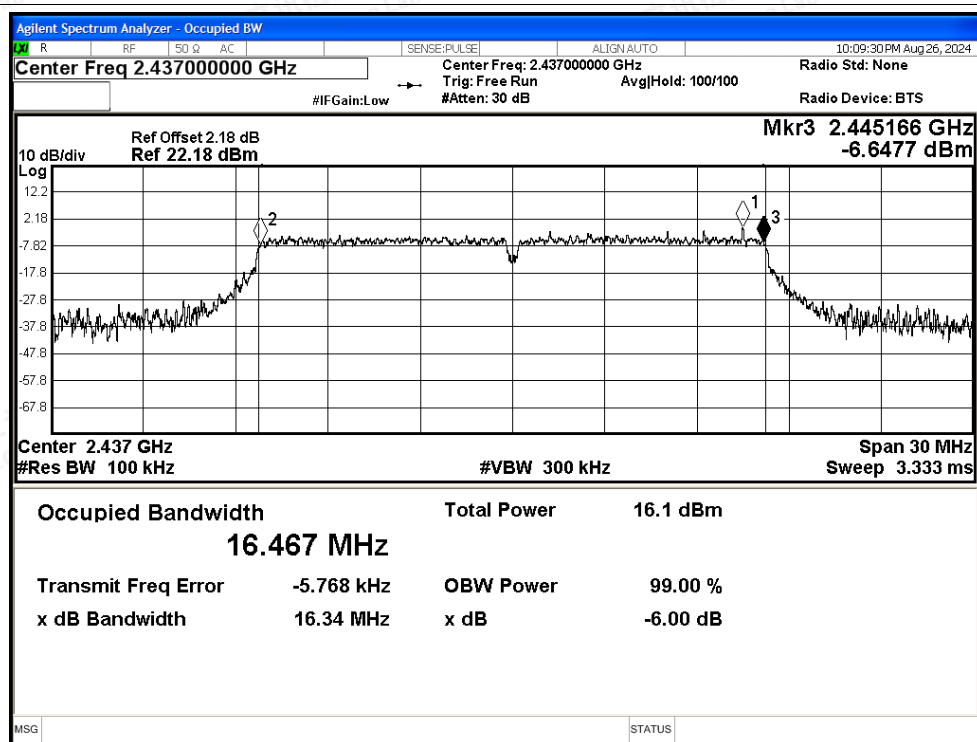


## -6dB Bandwidth NVNT g 2412MHz Ant1

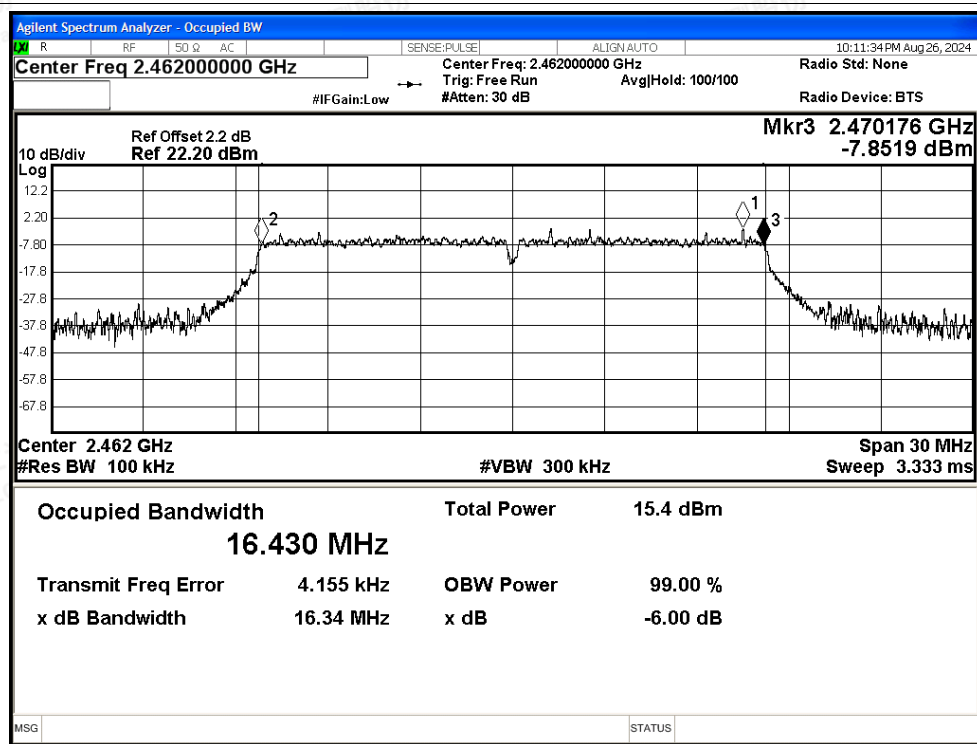




-6dB Bandwidth NVNT g 2437MHz Ant1

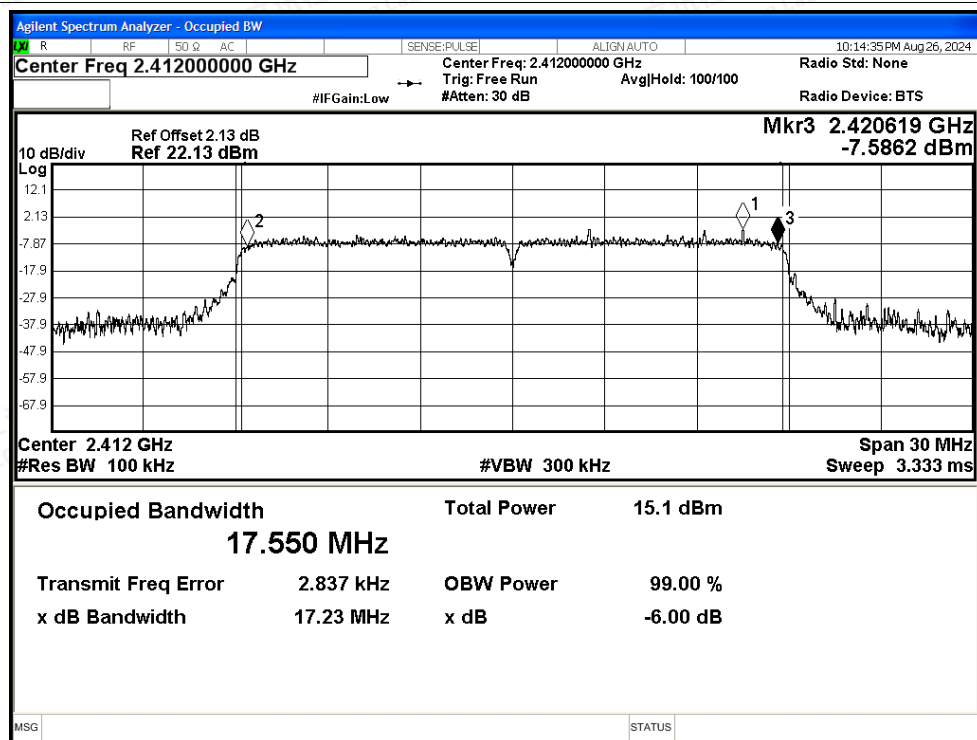


-6dB Bandwidth NVNT g 2462MHz Ant1

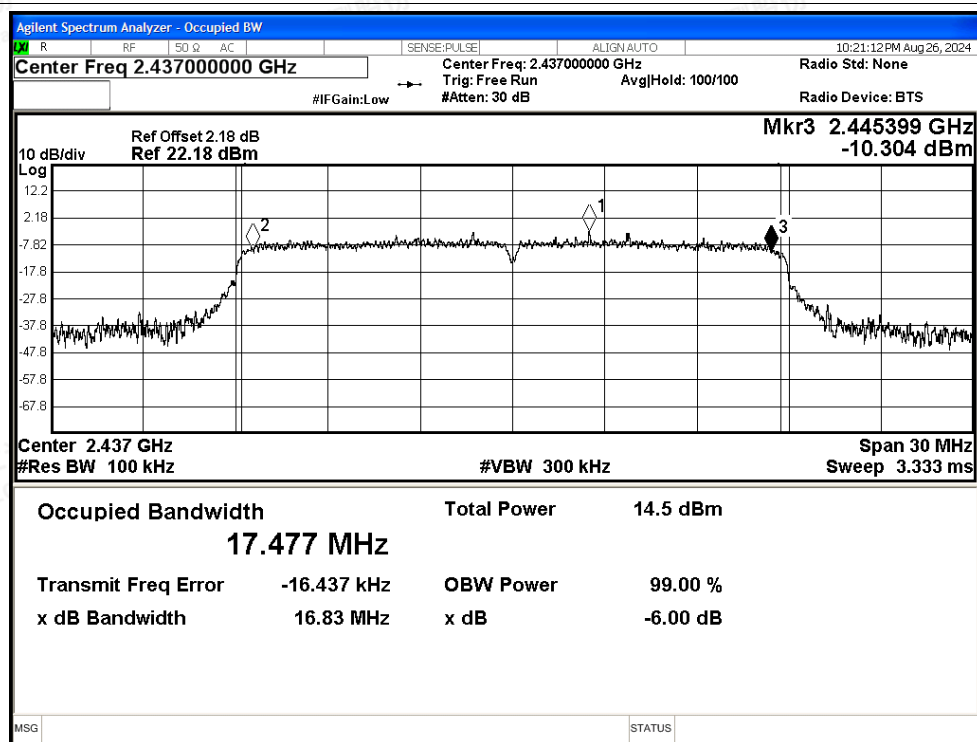


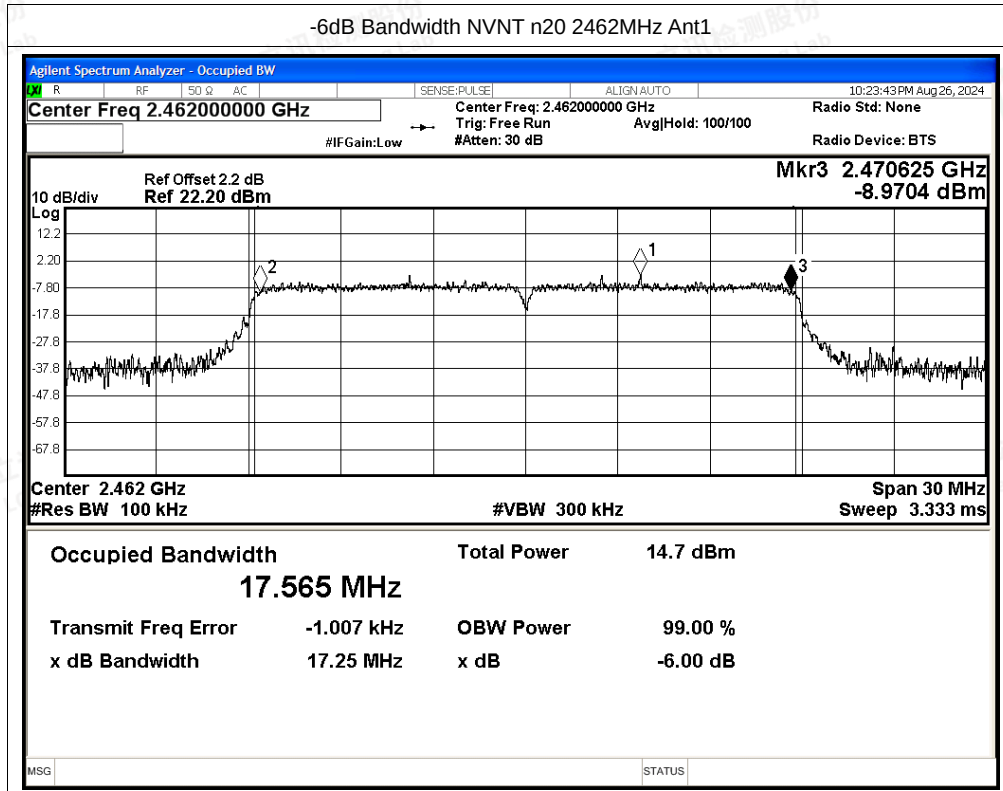


## -6dB Bandwidth NVNT n20 2412MHz Ant1



## -6dB Bandwidth NVNT n20 2437MHz Ant1







## B.2 Maximum Peak Conducted Output Power

| Condition | Mode | Frequency (MHz) | Antenna | Conducted Power (dBm) | Limit (dBm) | Verdict |
|-----------|------|-----------------|---------|-----------------------|-------------|---------|
| NVNT      | b    | 2412            | Ant1    | 15.78                 | 30          | Pass    |
| NVNT      | b    | 2437            | Ant1    | 15.83                 | 30          | Pass    |
| NVNT      | b    | 2462            | Ant1    | 15.06                 | 30          | Pass    |
| NVNT      | g    | 2412            | Ant1    | 14.75                 | 30          | Pass    |
| NVNT      | g    | 2437            | Ant1    | 14.92                 | 30          | Pass    |
| NVNT      | g    | 2462            | Ant1    | 14.12                 | 30          | Pass    |
| NVNT      | n20  | 2412            | Ant1    | 13.71                 | 30          | Pass    |
| NVNT      | n20  | 2437            | Ant1    | 13.16                 | 30          | Pass    |
| NVNT      | n20  | 2462            | Ant1    | 13.39                 | 30          | Pass    |



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### B.3 Maximum Power Spectral Density Level

| Condition | Mode | Frequency (MHz) | Antenna | Conducted PSD (dBm/3kHz) | Duty Factor (dB) | Total PSD (dBm/3kHz) | Limit (dBm/3kHz) | Verdict |
|-----------|------|-----------------|---------|--------------------------|------------------|----------------------|------------------|---------|
| NVNT      | b    | 2412            | Ant1    | -8.92                    | 0                | -8.92                | 8                | Pass    |
| NVNT      | b    | 2437            | Ant1    | -7.85                    | 0                | -7.85                | 8                | Pass    |
| NVNT      | b    | 2462            | Ant1    | -10.1                    | 0                | -10.1                | 8                | Pass    |
| NVNT      | g    | 2412            | Ant1    | -16.02                   | 0                | -16.02               | 8                | Pass    |
| NVNT      | g    | 2437            | Ant1    | -16.02                   | 0                | -16.02               | 8                | Pass    |
| NVNT      | g    | 2462            | Ant1    | -16.46                   | 0                | -16.46               | 8                | Pass    |
| NVNT      | n20  | 2412            | Ant1    | -17.34                   | 0                | -17.34               | 8                | Pass    |
| NVNT      | n20  | 2437            | Ant1    | -17.77                   | 0                | -17.77               | 8                | Pass    |
| NVNT      | n20  | 2462            | Ant1    | -17.16                   | 0                | -17.16               | 8                | Pass    |

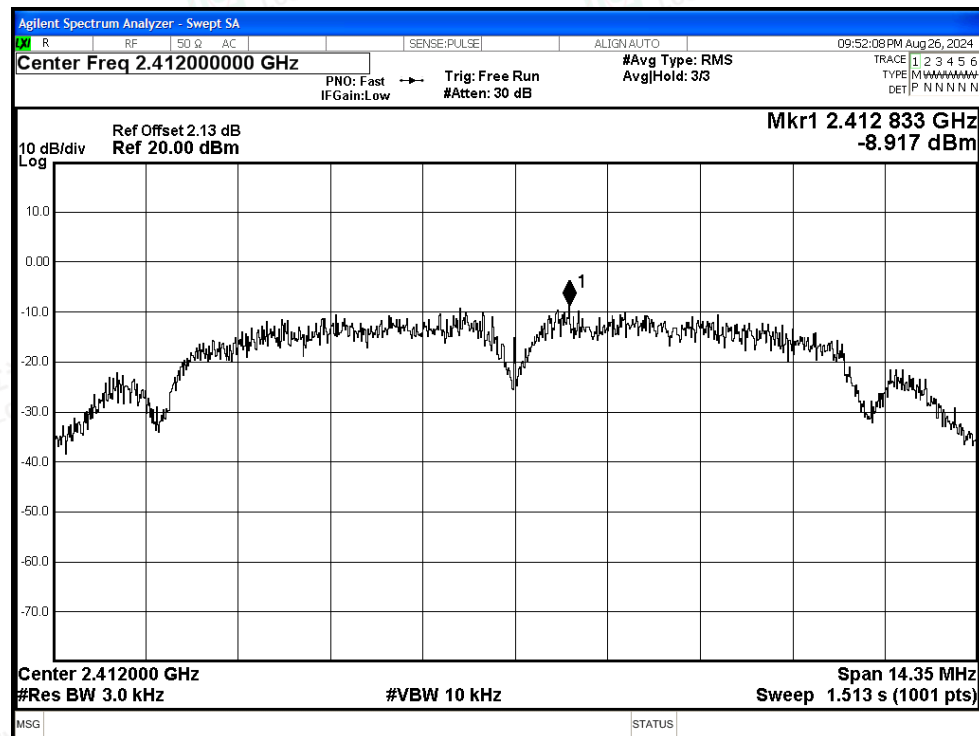


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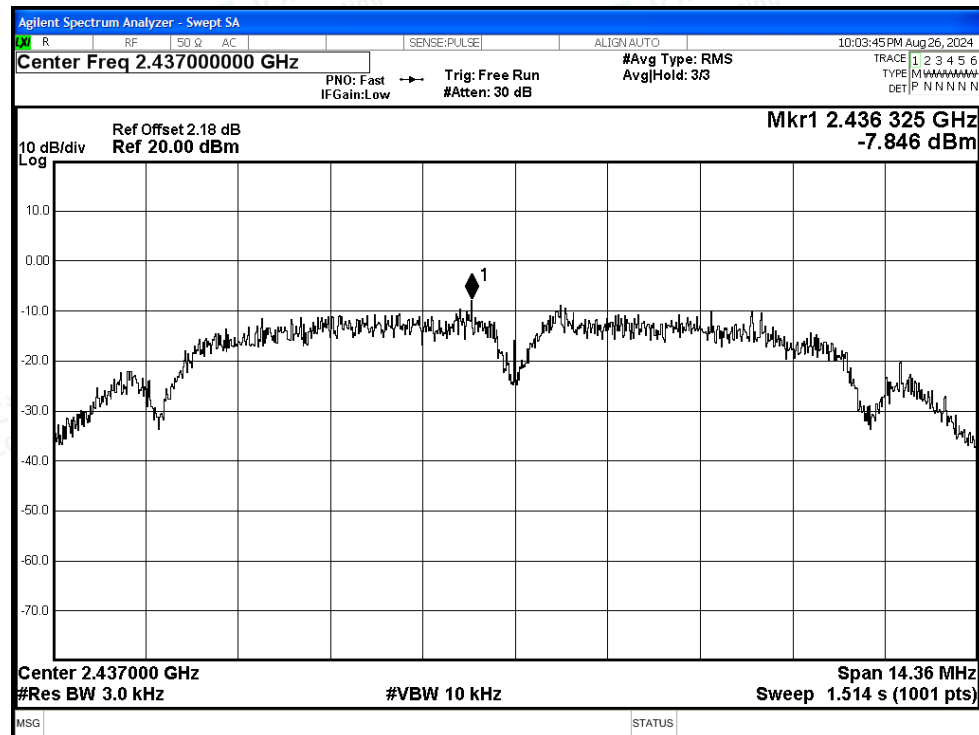


## Test Graphs

PSD NVNT b 2412MHz Ant1

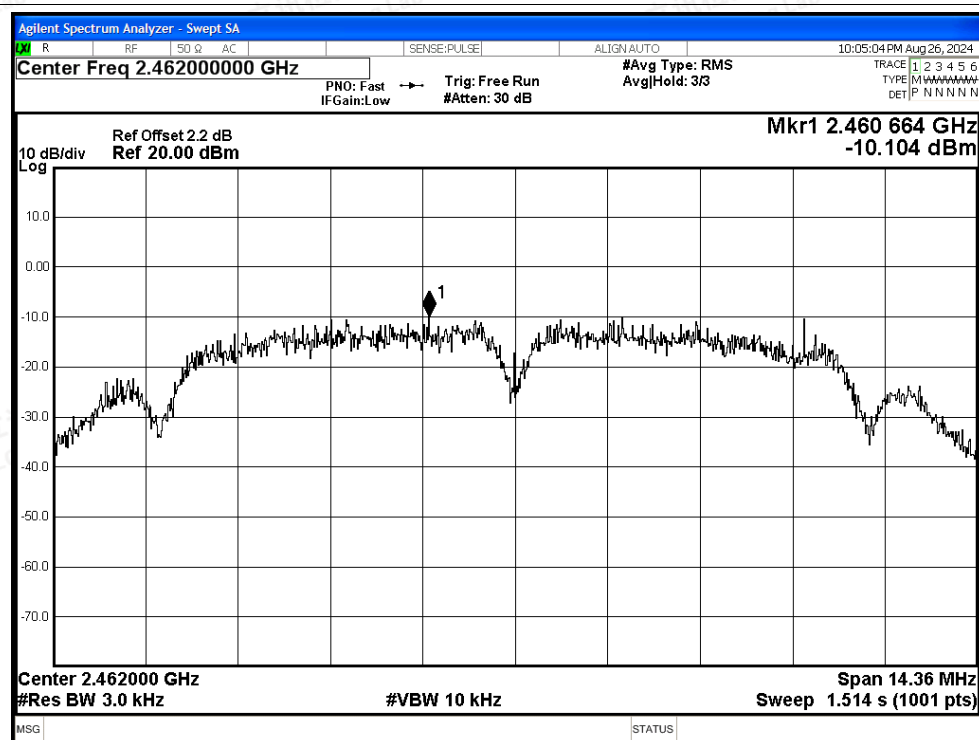


PSD NVNT b 2437MHz Ant1

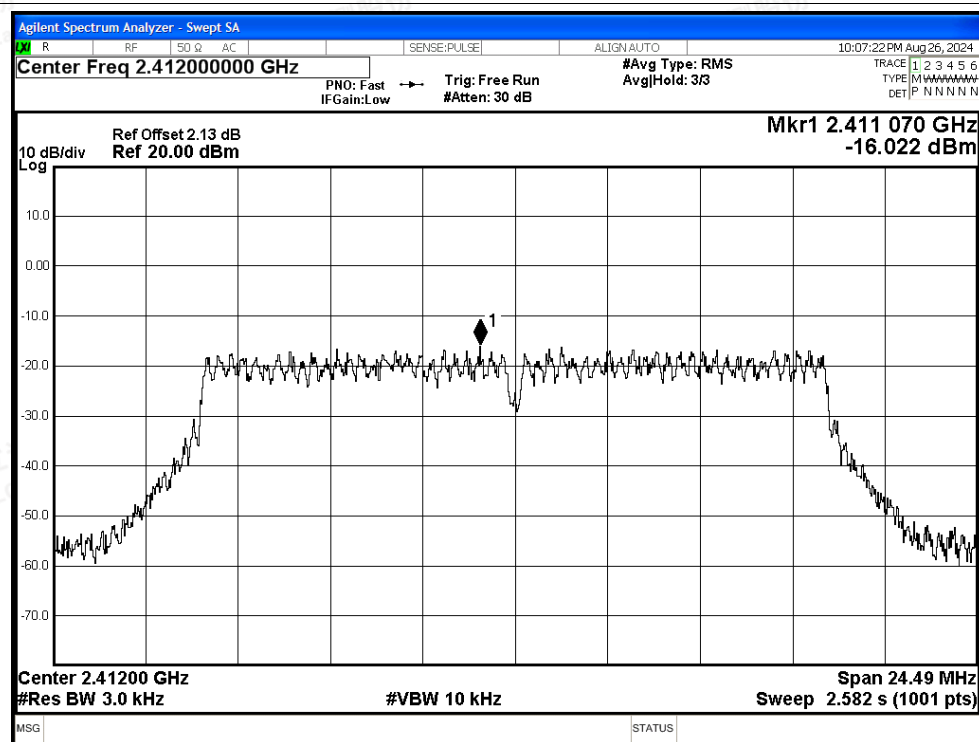




## PSD NVNT b 2462MHz Ant1

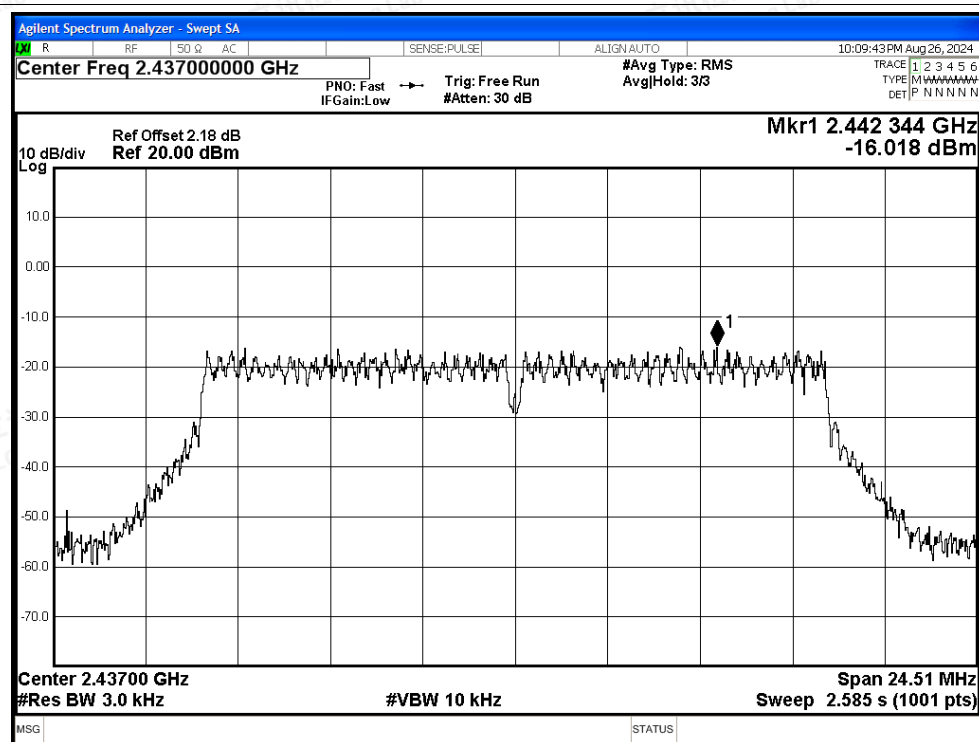


## PSD NVNT g 2412MHz Ant1

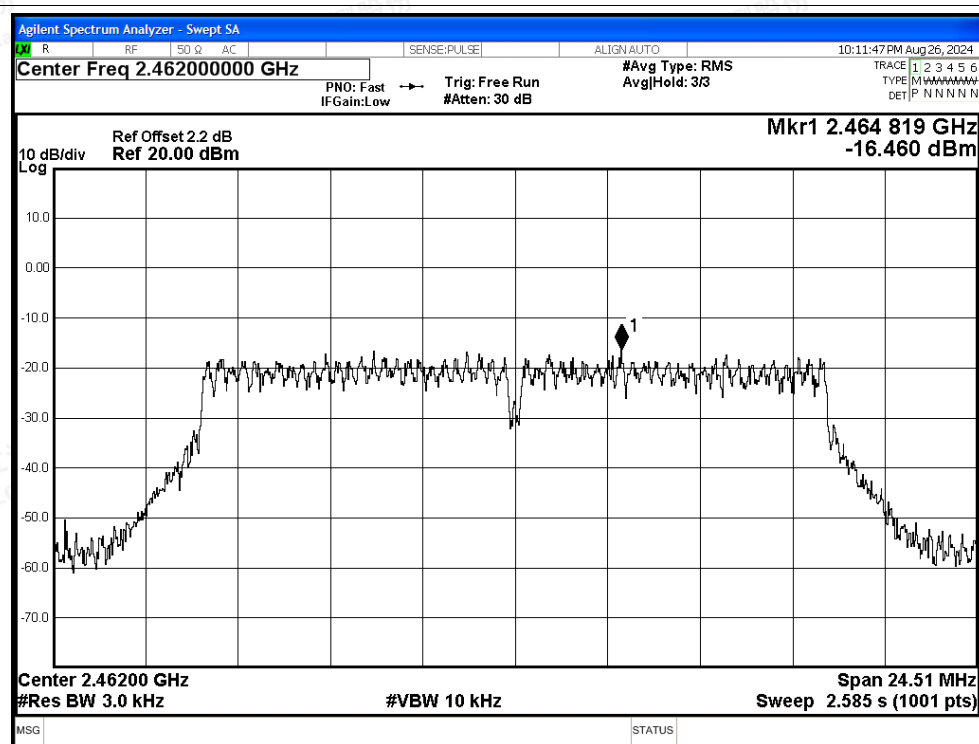


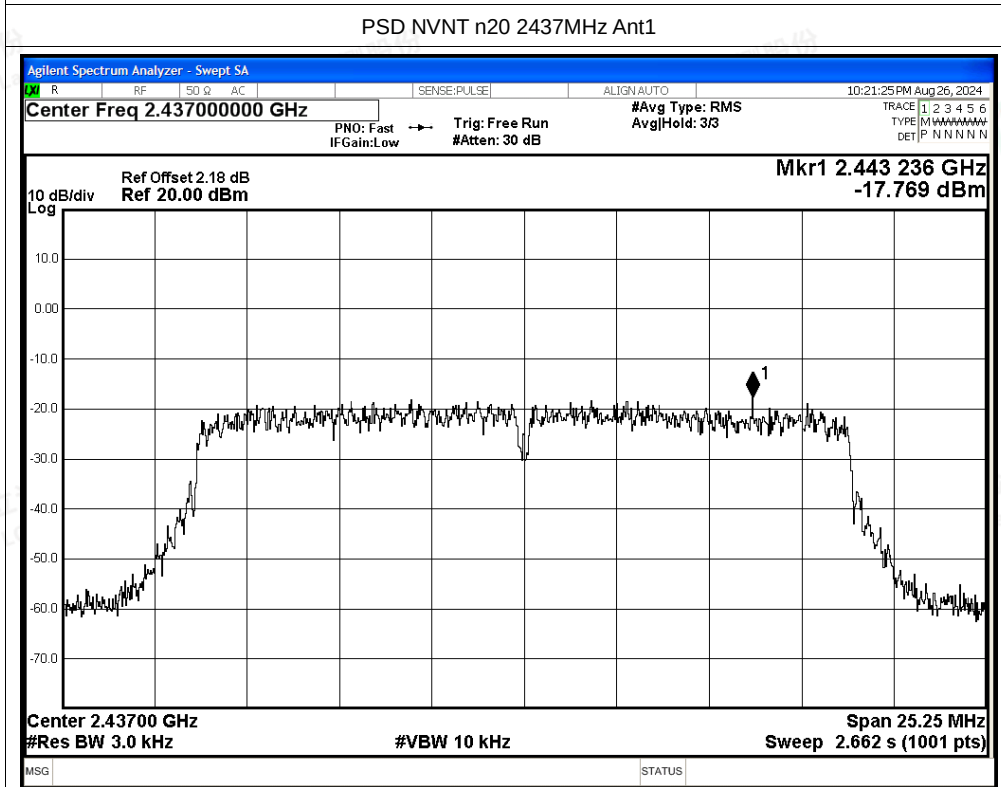
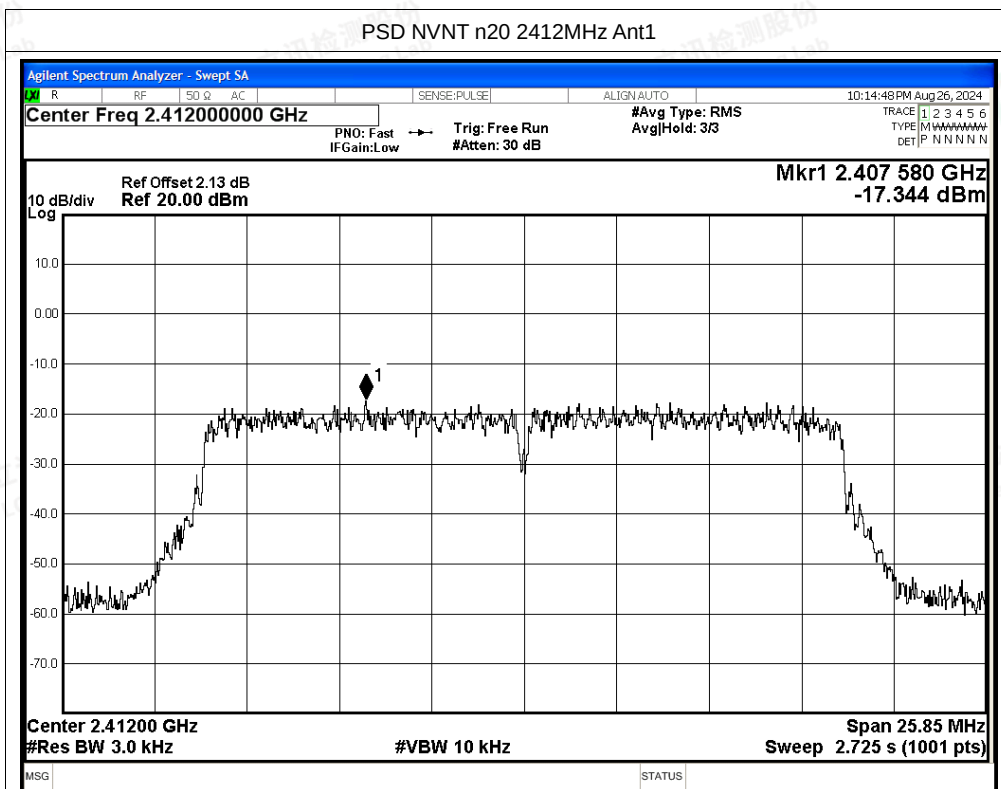


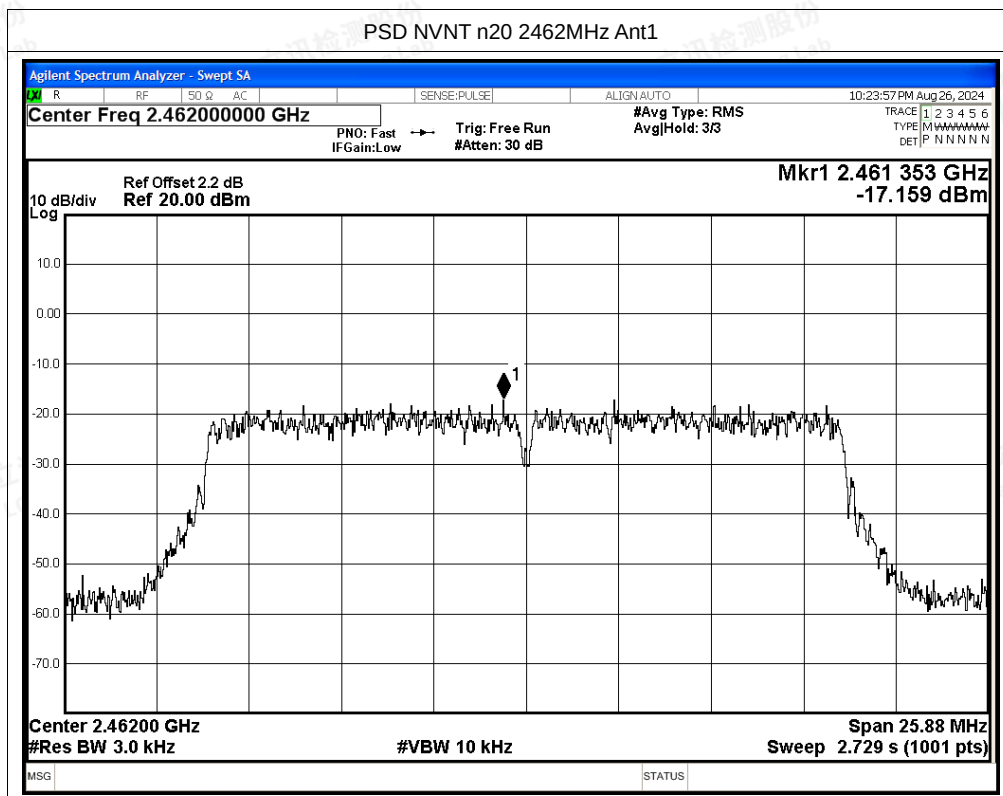
## PSD NVNT g 2437MHz Ant1



## PSD NVNT g 2462MHz Ant1









B.4 Band Edge

| Condition | Mode | Frequency (MHz) | Antenna | Max Value (dBc) | Limit (dBc) | Verdict |
|-----------|------|-----------------|---------|-----------------|-------------|---------|
| NVNT      | b    | 2412            | Ant1    | -53.24          | -20         | Pass    |
| NVNT      | b    | 2462            | Ant1    | -56.86          | -20         | Pass    |
| NVNT      | g    | 2412            | Ant1    | -30.01          | -20         | Pass    |
| NVNT      | g    | 2462            | Ant1    | -39.75          | -20         | Pass    |
| NVNT      | n20  | 2412            | Ant1    | -28.11          | -20         | Pass    |
| NVNT      | n20  | 2462            | Ant1    | -40.24          | -20         | Pass    |



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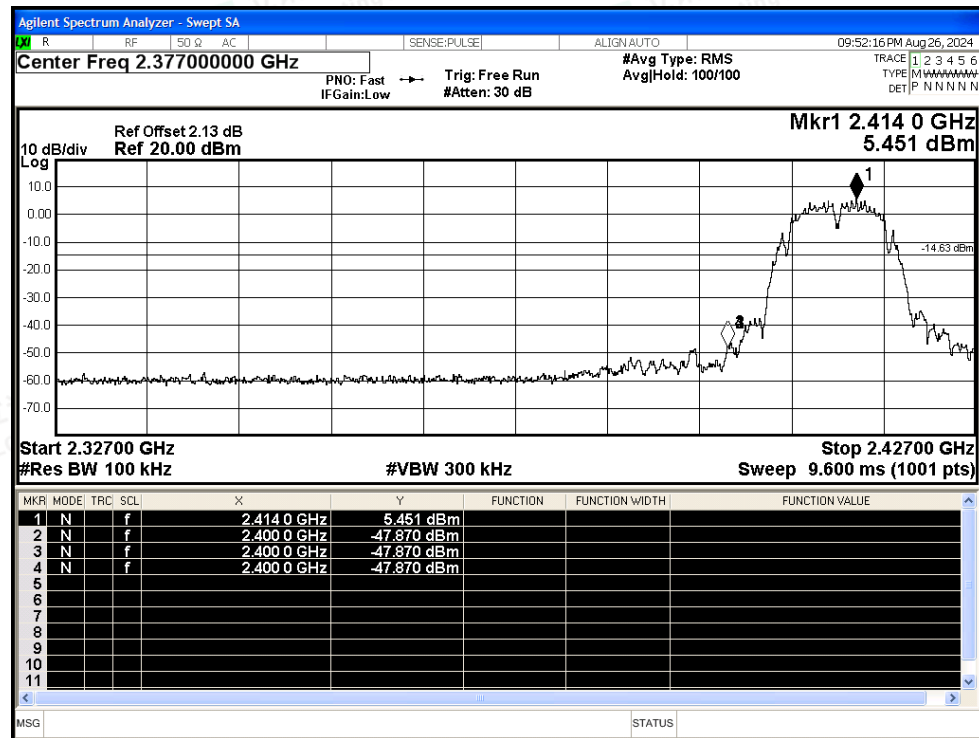


## Test Graphs

## Band Edge NVNT b 2412MHz Ant1 Ref



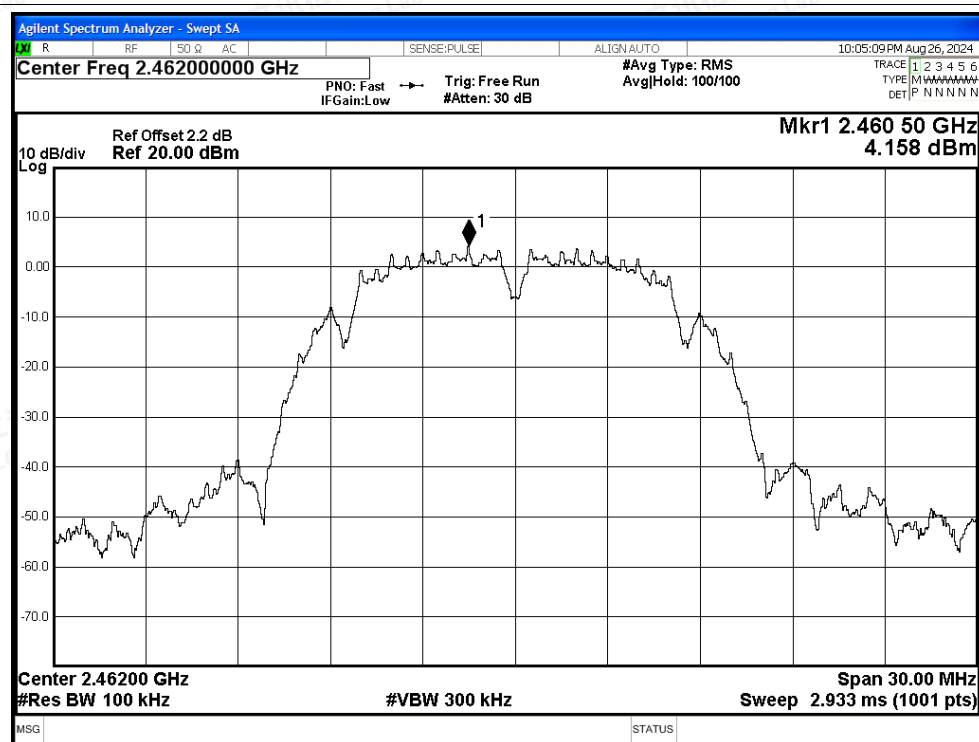
## Band Edge NVNT b 2412MHz Ant1 Emission



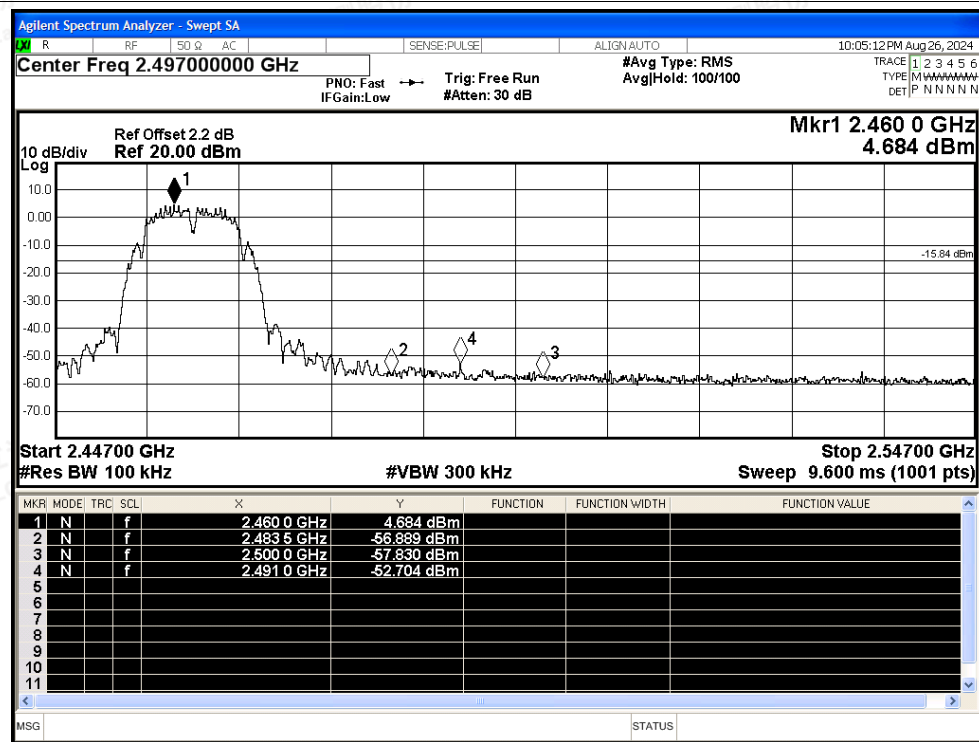




## Band Edge NVNT b 2462MHz Ant1 Ref

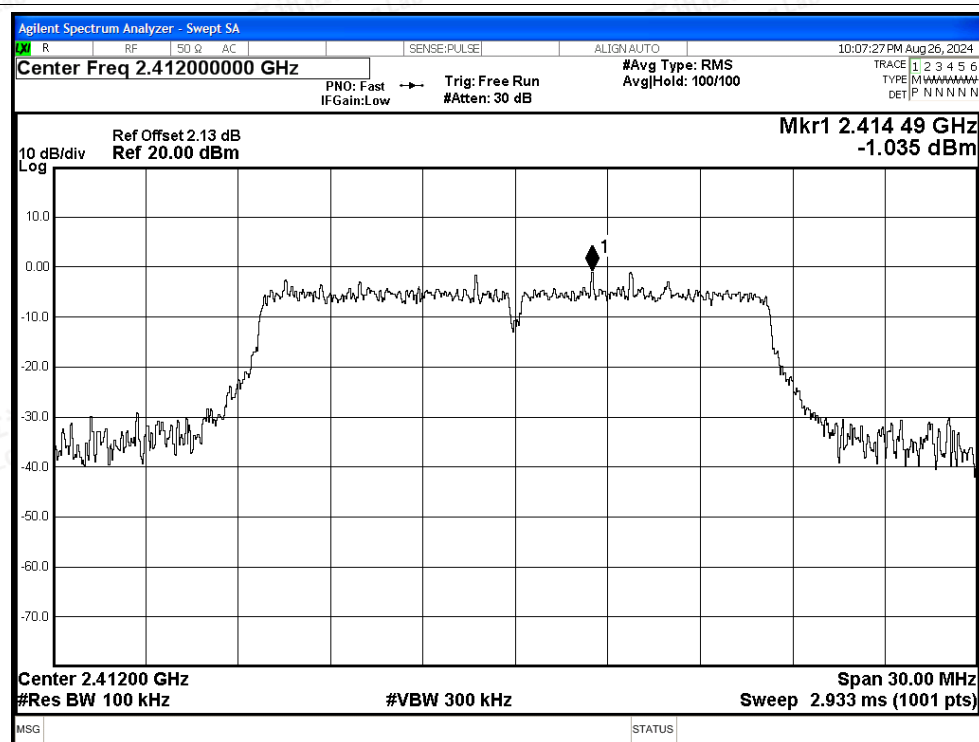


## Band Edge NVNT b 2462MHz Ant1 Emission

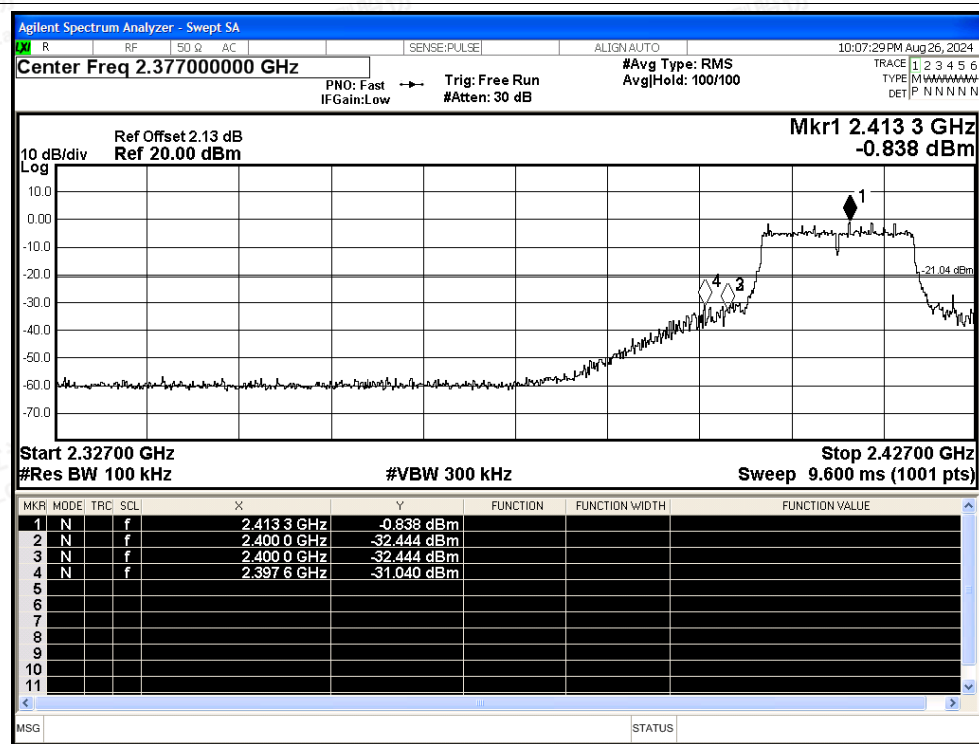




## Band Edge NVNT g 2412MHz Ant1 Ref

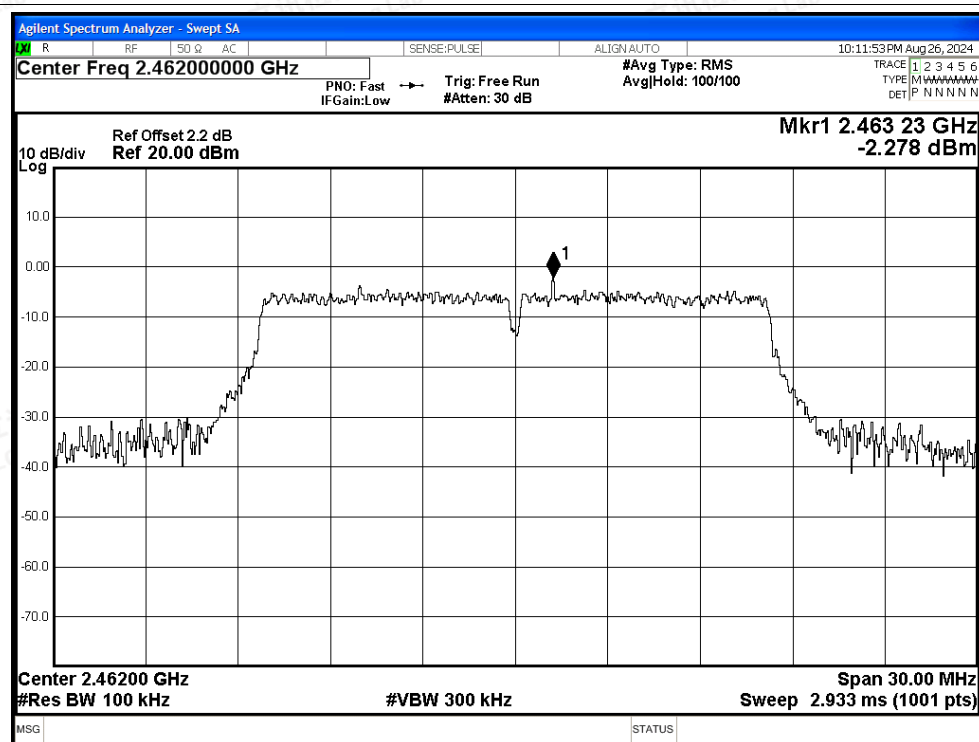


## Band Edge NVNT g 2412MHz Ant1 Emission

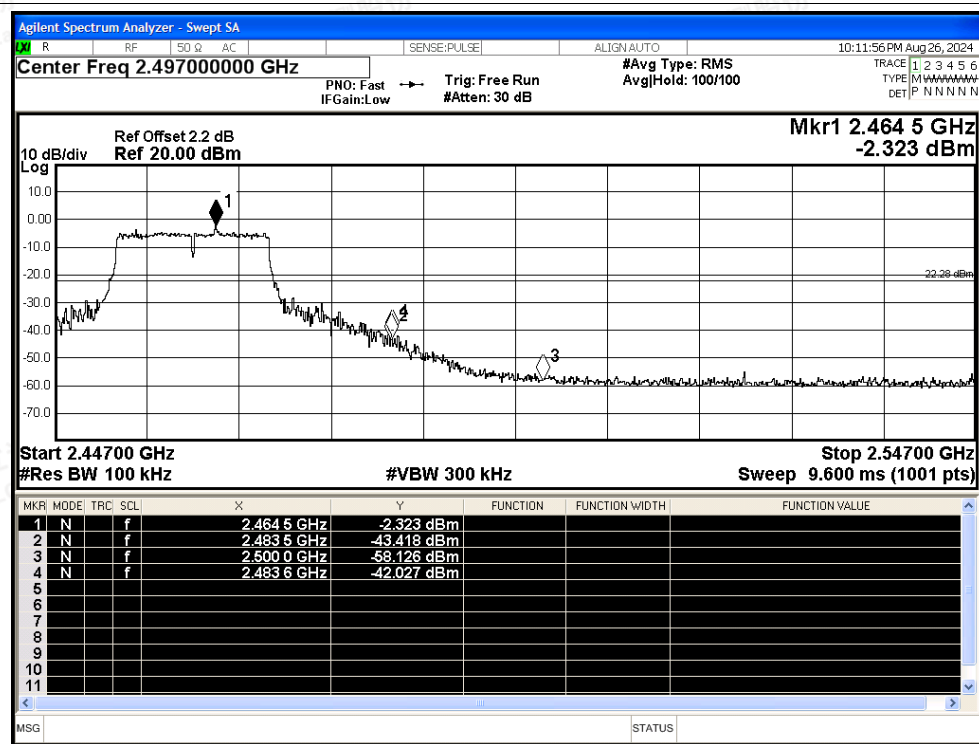




## Band Edge NVNT g 2462MHz Ant1 Ref

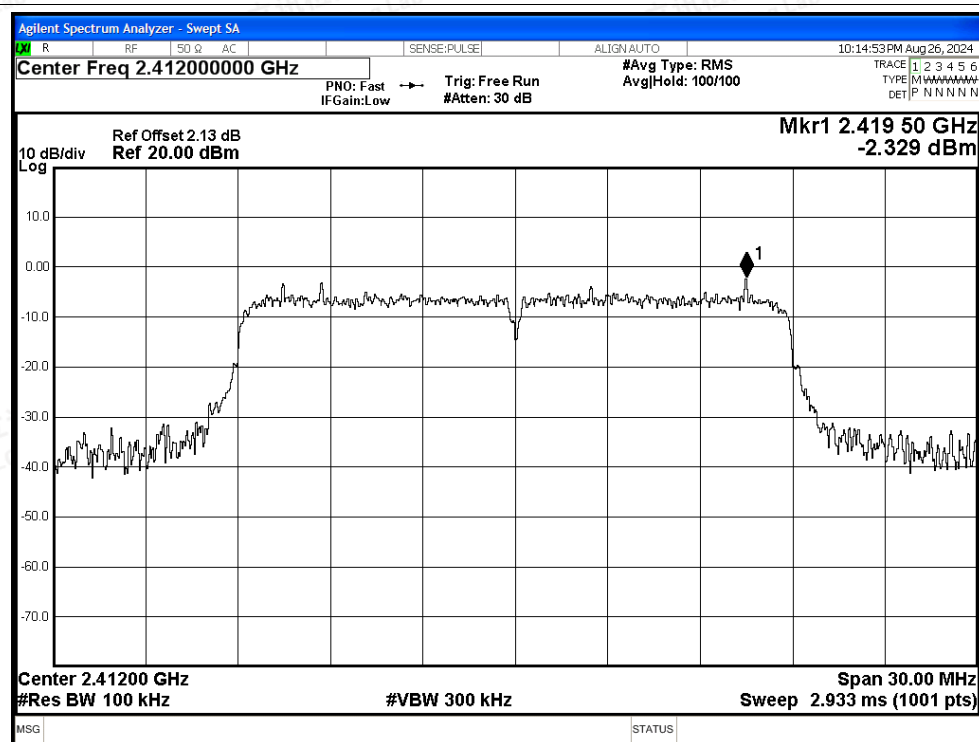


## Band Edge NVNT g 2462MHz Ant1 Emission

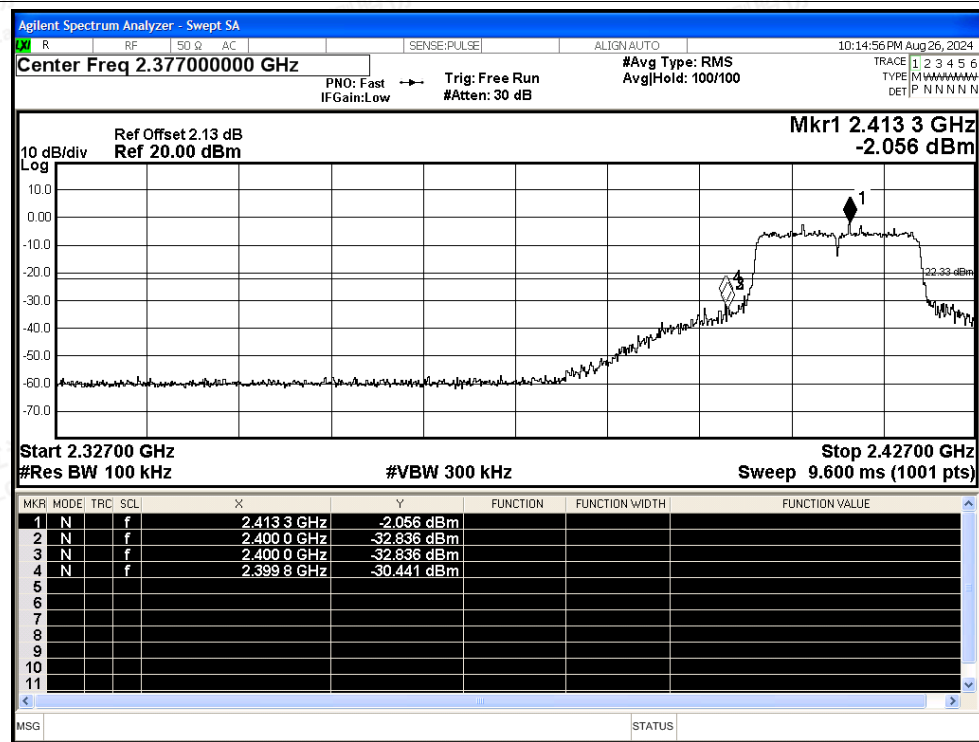


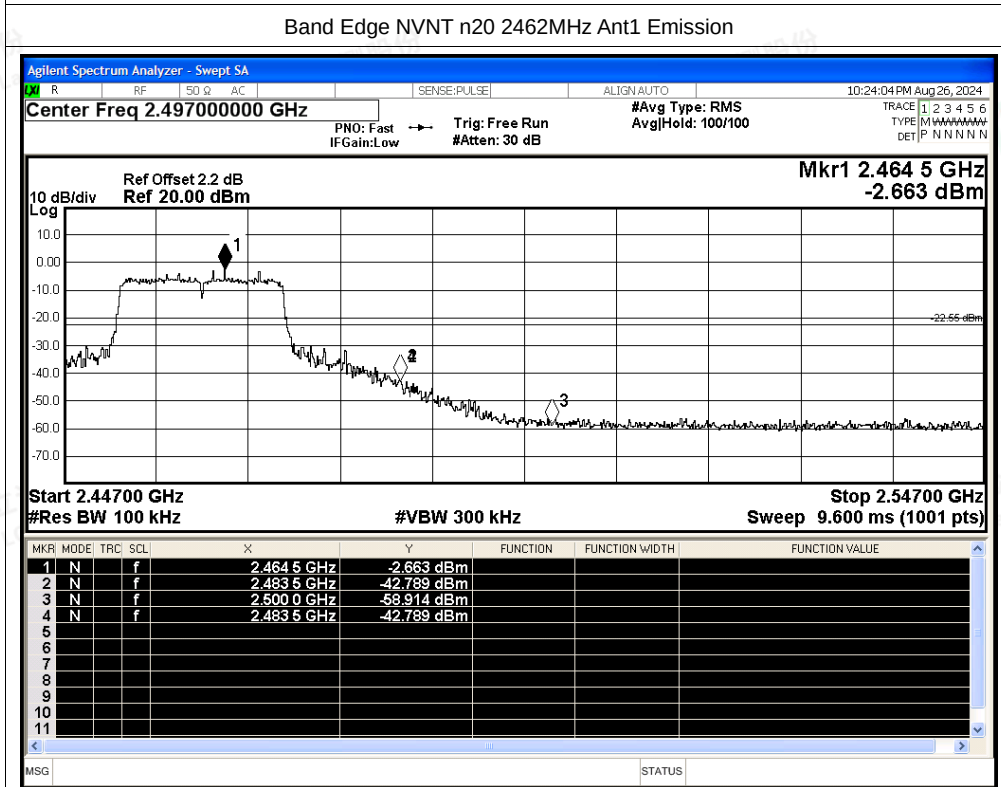
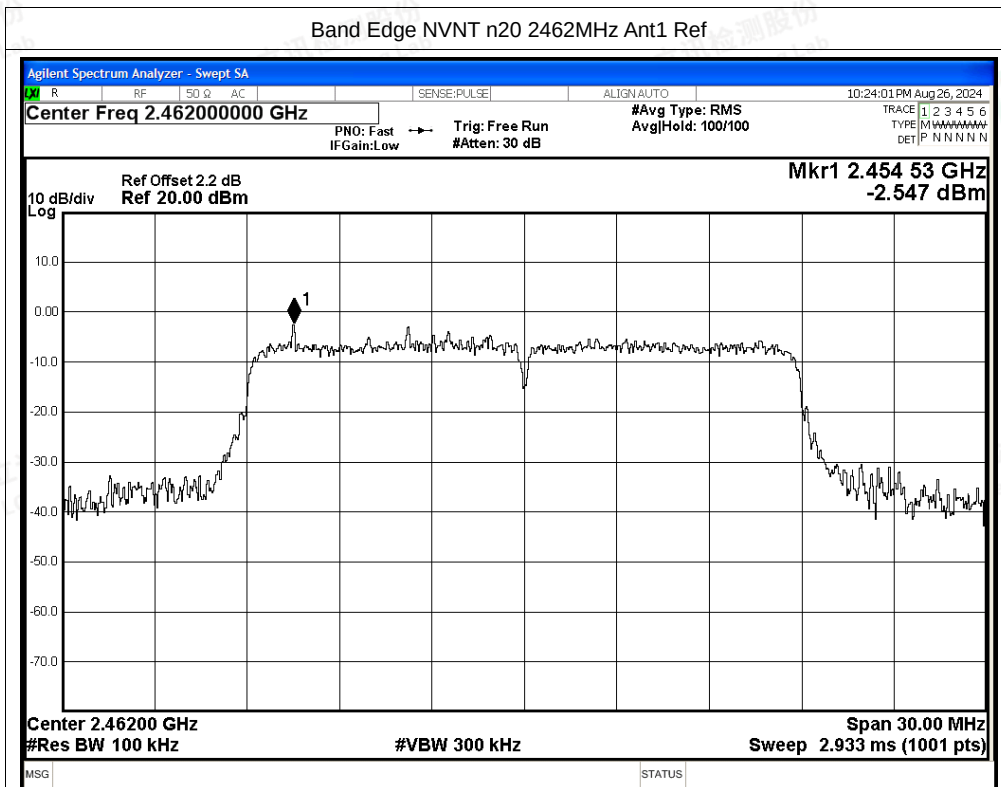


## Band Edge NVNT n20 2412MHz Ant1 Ref



## Band Edge NVNT n20 2412MHz Ant1 Emission







## B.5 Conducted RF Spurious Emission

| Condition | Mode | Frequency (MHz) | Antenna | Max Value (dBc) | Limit (dBc) | Verdict |
|-----------|------|-----------------|---------|-----------------|-------------|---------|
| NVNT      | b    | 2412            | Ant1    | -51.33          | -20         | Pass    |
| NVNT      | b    | 2437            | Ant1    | -50.75          | -20         | Pass    |
| NVNT      | b    | 2462            | Ant1    | -50.39          | -20         | Pass    |
| NVNT      | g    | 2412            | Ant1    | -44.62          | -20         | Pass    |
| NVNT      | g    | 2437            | Ant1    | -44.89          | -20         | Pass    |
| NVNT      | g    | 2462            | Ant1    | -43.32          | -20         | Pass    |
| NVNT      | n20  | 2412            | Ant1    | -43.03          | -20         | Pass    |
| NVNT      | n20  | 2437            | Ant1    | -43.52          | -20         | Pass    |
| NVNT      | n20  | 2462            | Ant1    | -43.87          | -20         | Pass    |

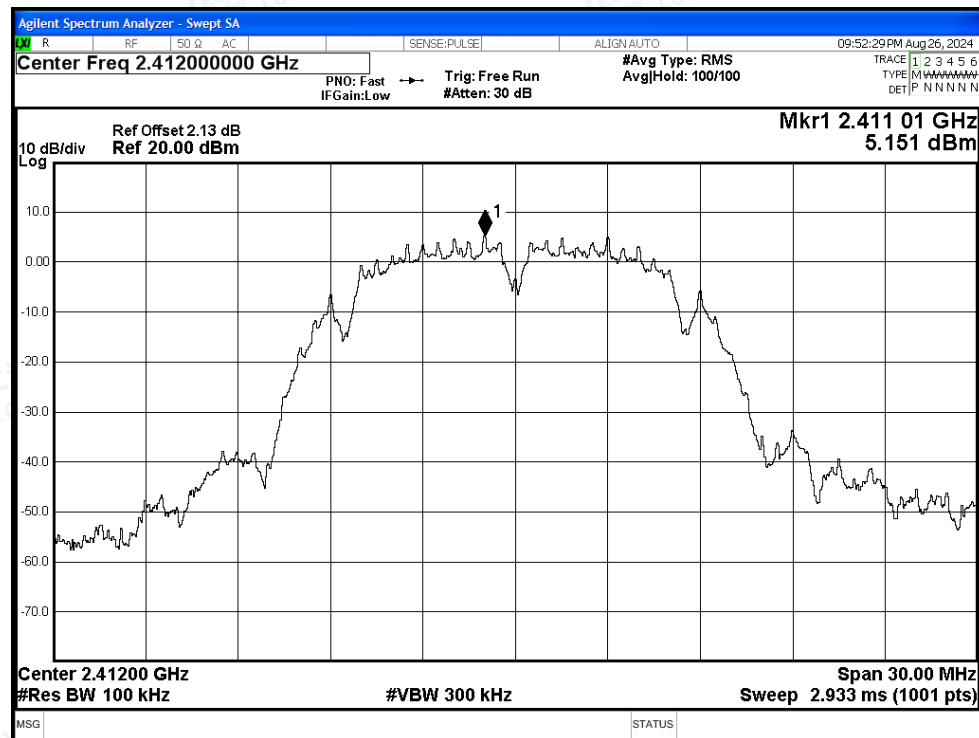


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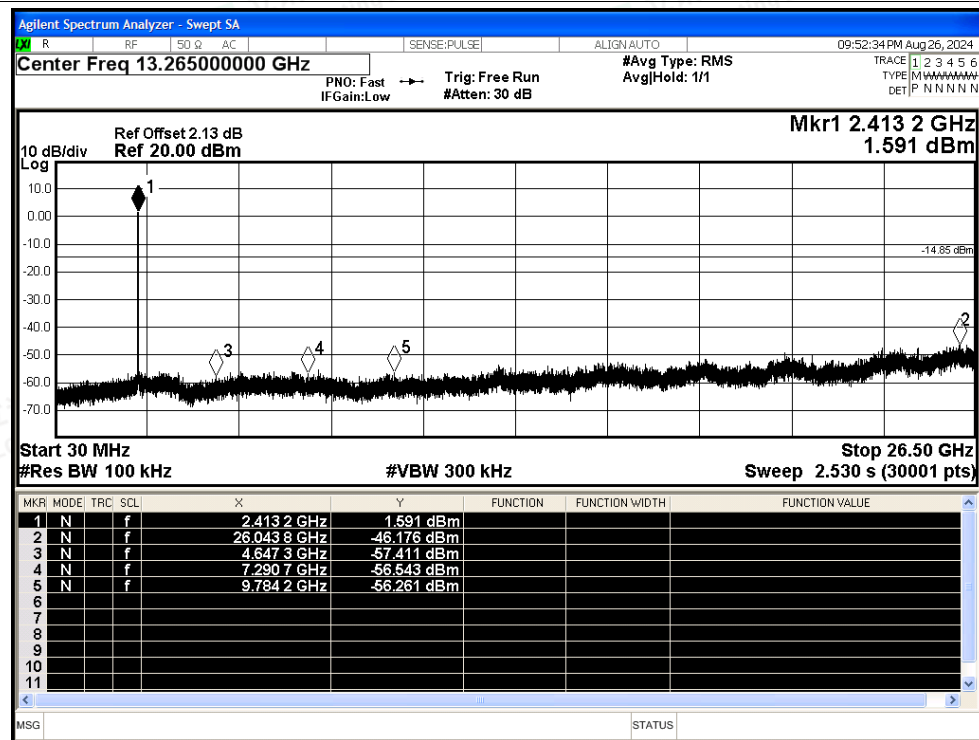


## Test Graphs

Tx. Spurious NVNT b 2412MHz Ant1 Ref

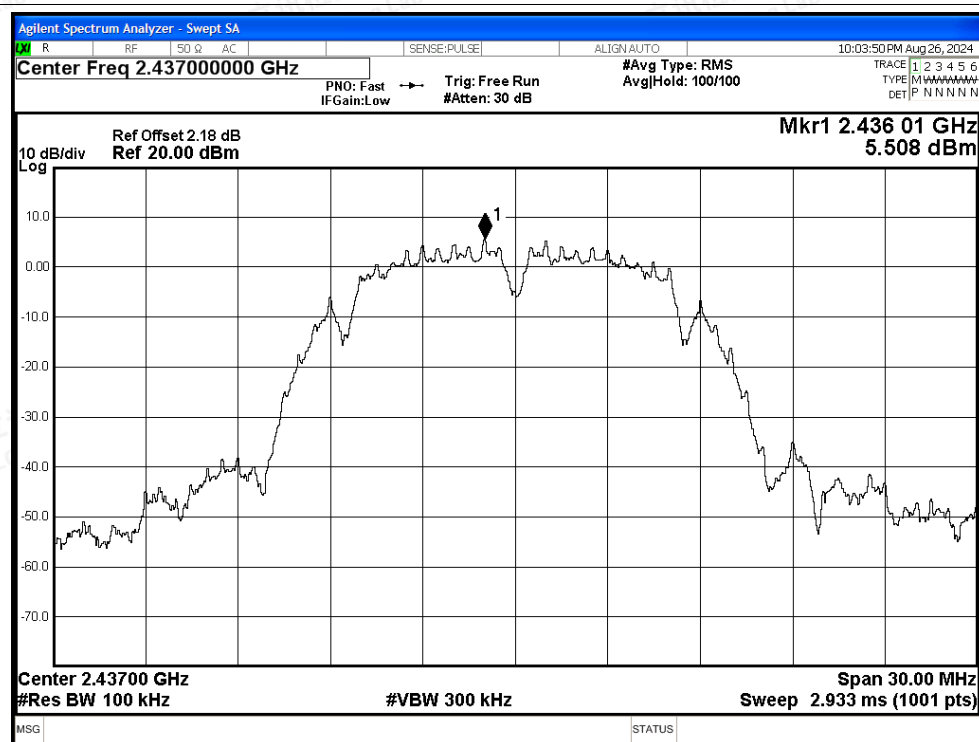


Tx. Spurious NVNT b 2412MHz Ant1 Emission

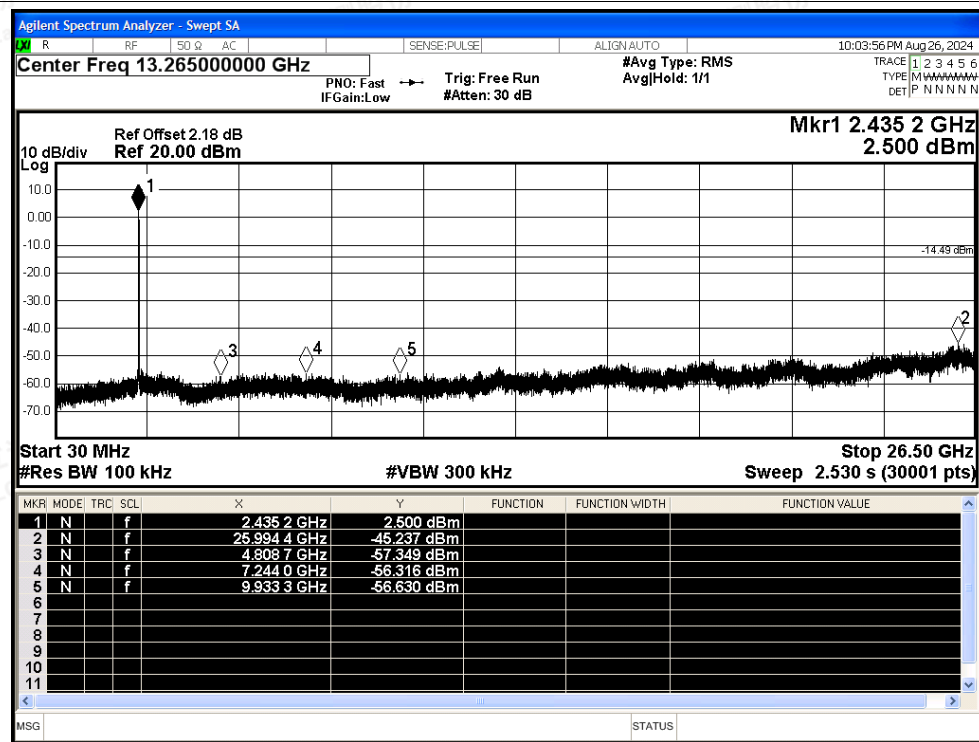




## Tx. Spurious NVNT b 2437MHz Ant1 Ref



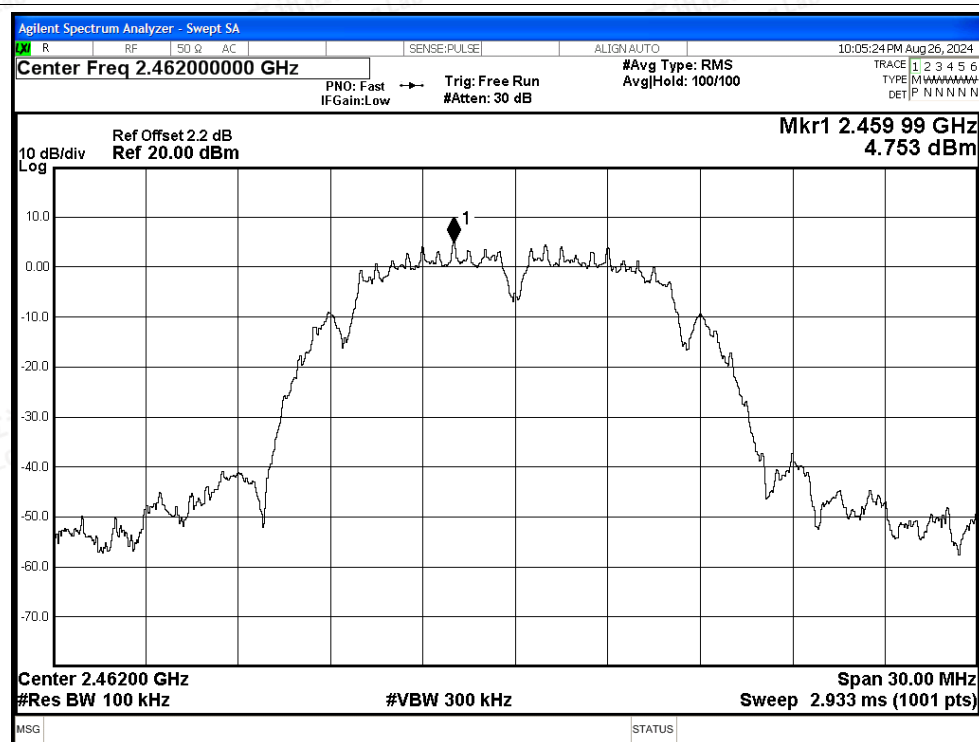
## Tx. Spurious NVNT b 2437MHz Ant1 Emission



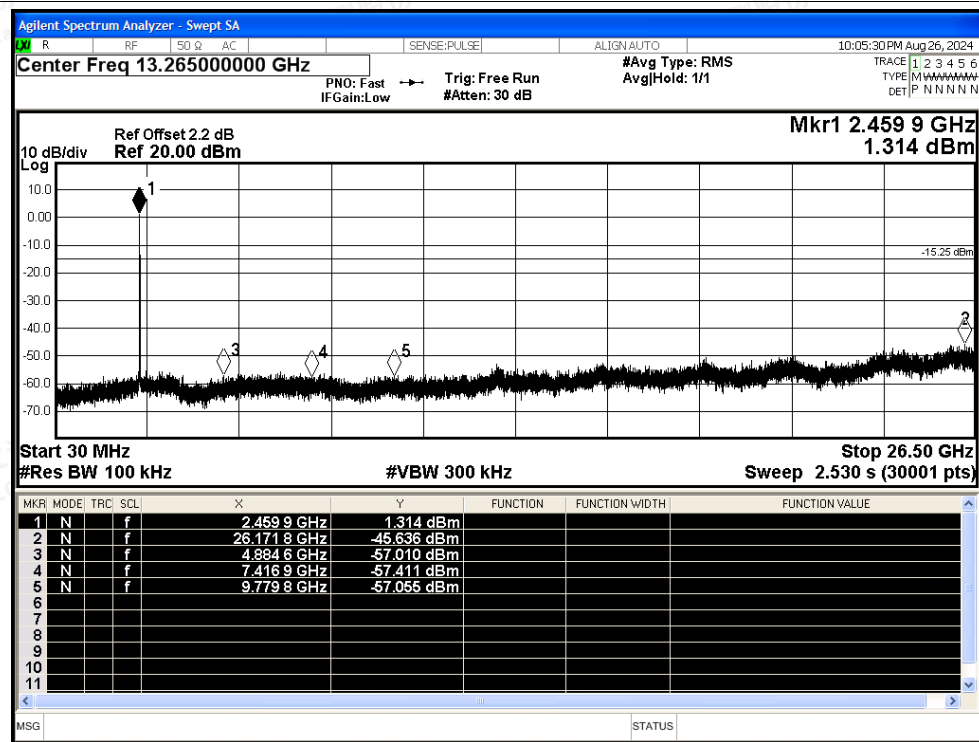




## Tx. Spurious NVNT b 2462MHz Ant1 Ref

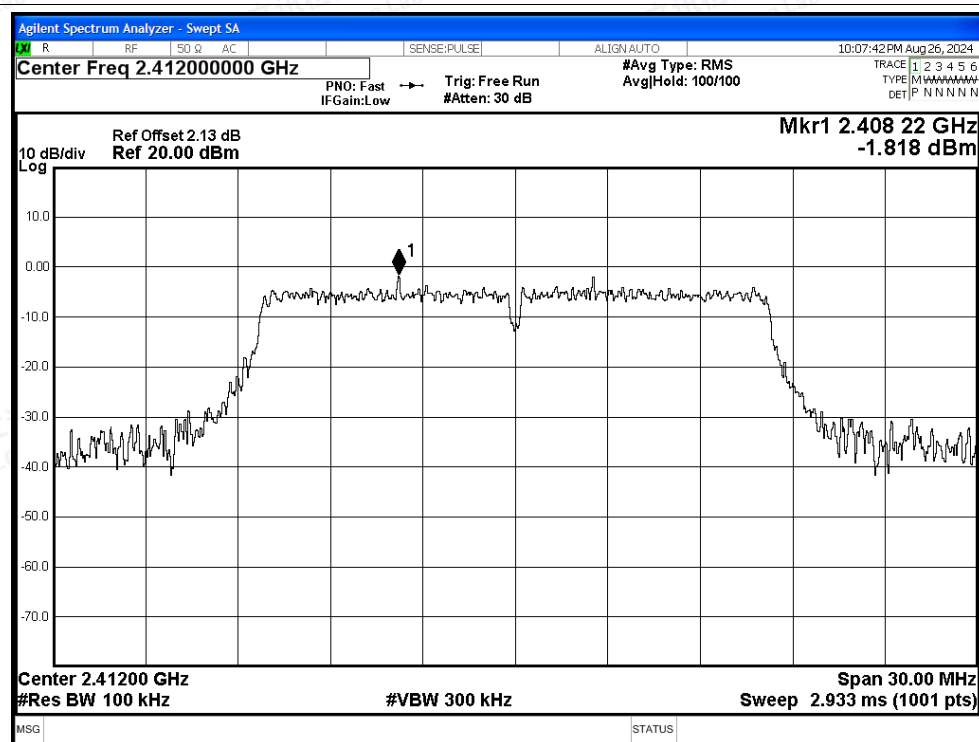


## Tx. Spurious NVNT b 2462MHz Ant1 Emission

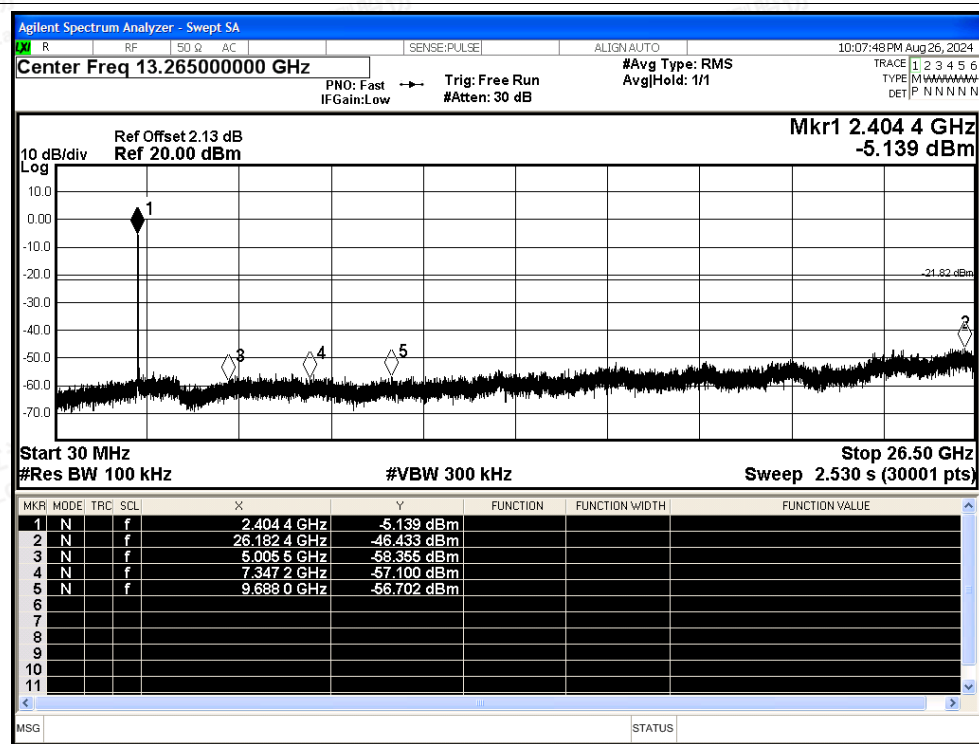




## Tx. Spurious NVNT g 2412MHz Ant1 Ref

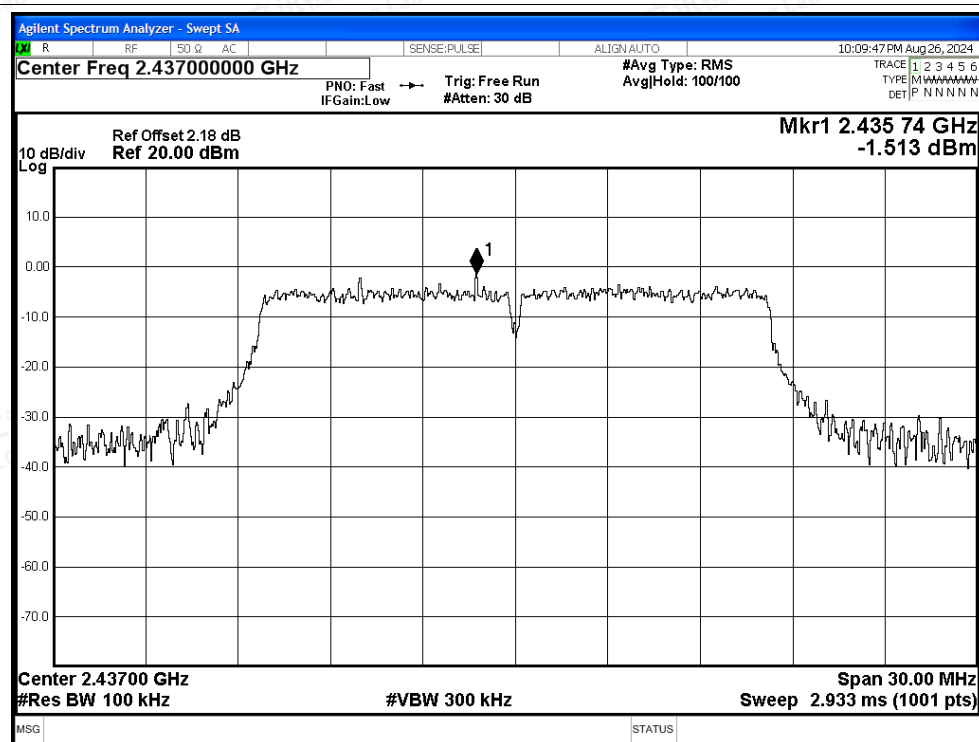


## Tx. Spurious NVNT g 2412MHz Ant1 Emission

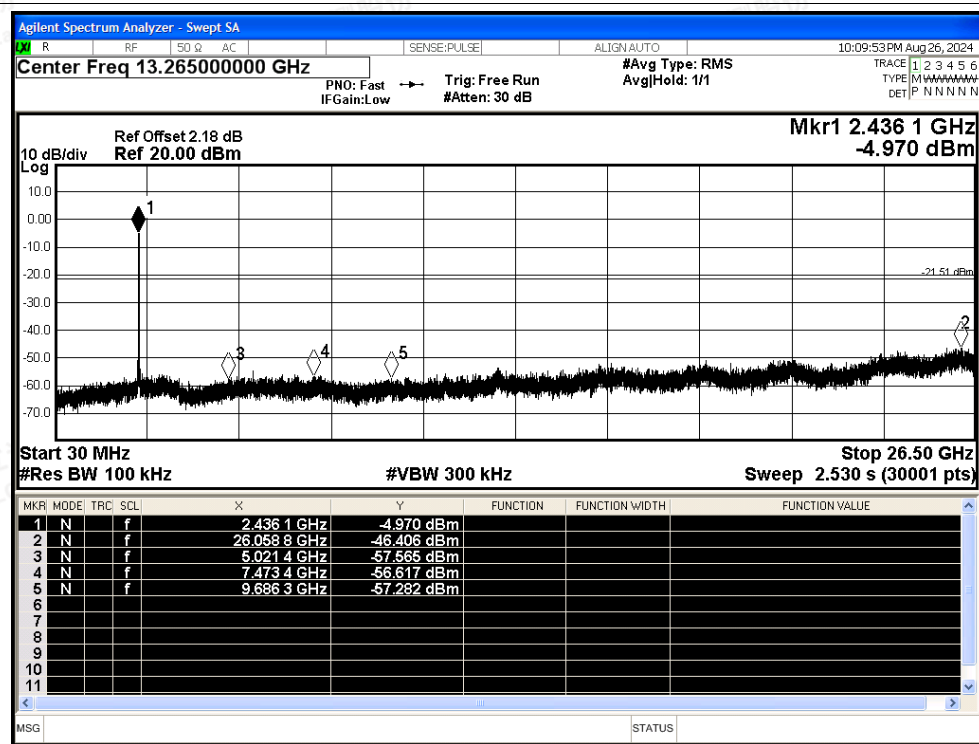




## Tx. Spurious NVNT g 2437MHz Ant1 Ref

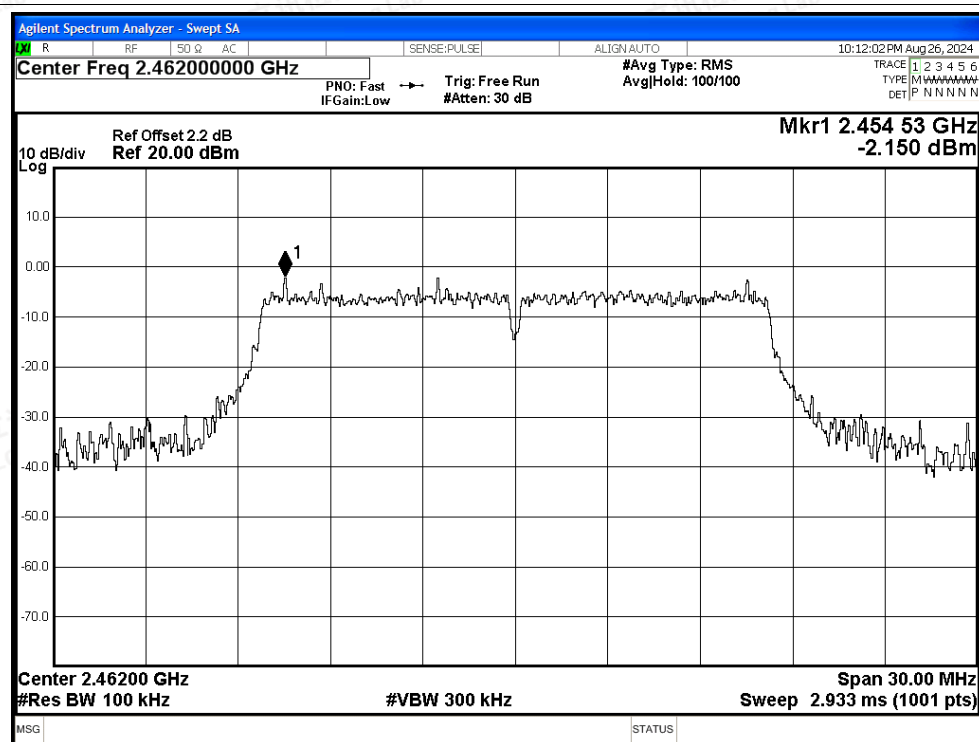


## Tx. Spurious NVNT g 2437MHz Ant1 Emission

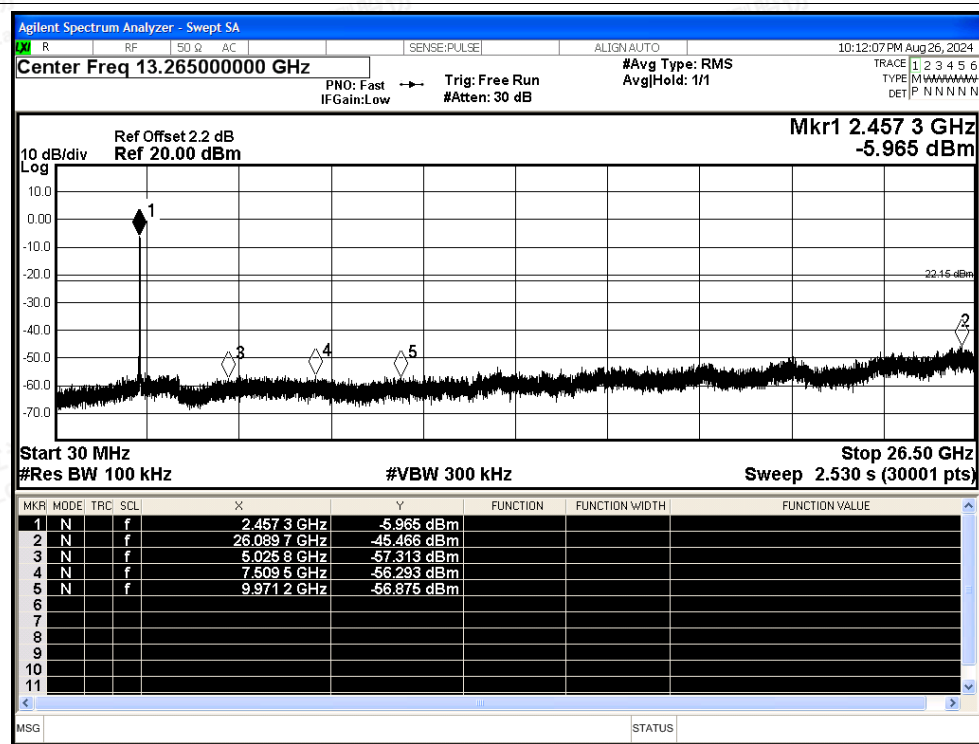




## Tx. Spurious NVNT g 2462MHz Ant1 Ref

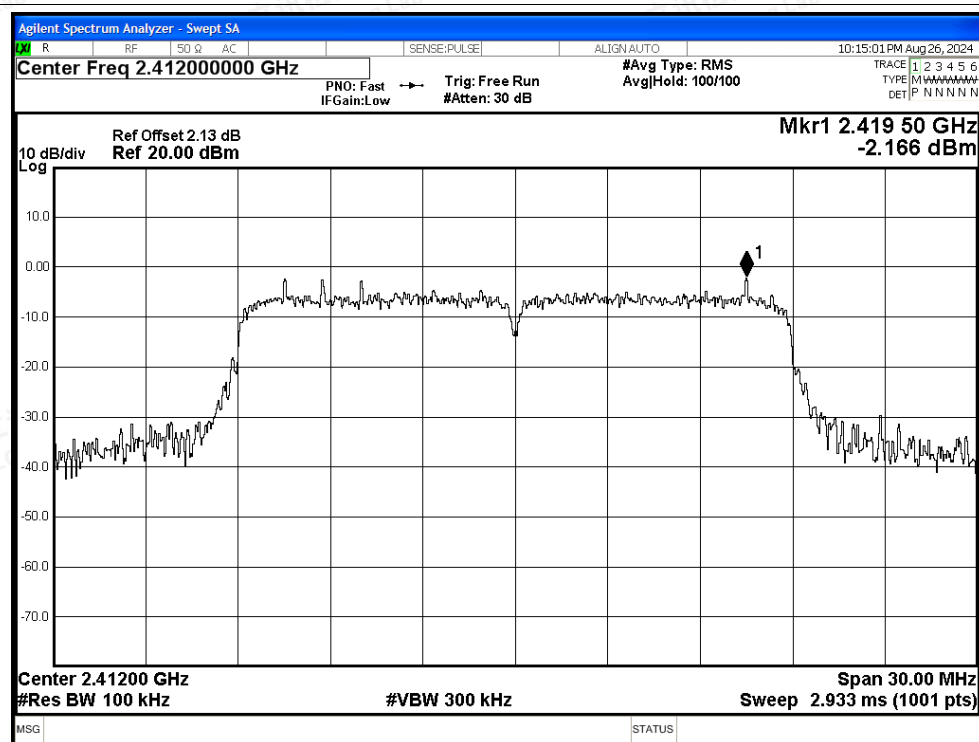


## Tx. Spurious NVNT g 2462MHz Ant1 Emission

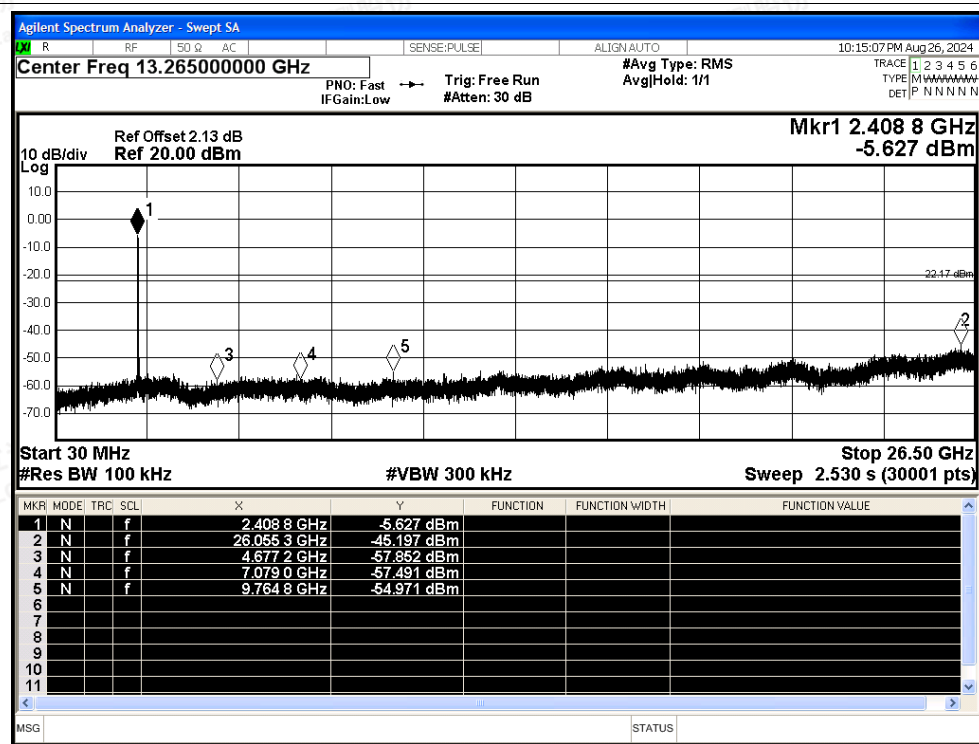




## Tx. Spurious NVNT n20 2412MHz Ant1 Ref

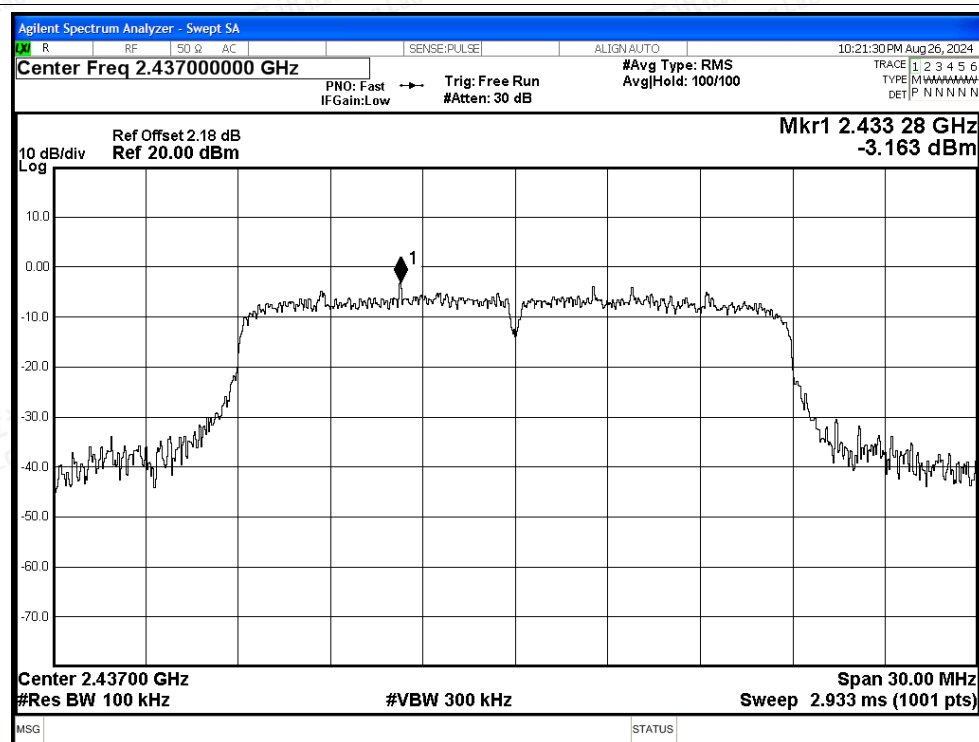


## Tx. Spurious NVNT n20 2412MHz Ant1 Emission

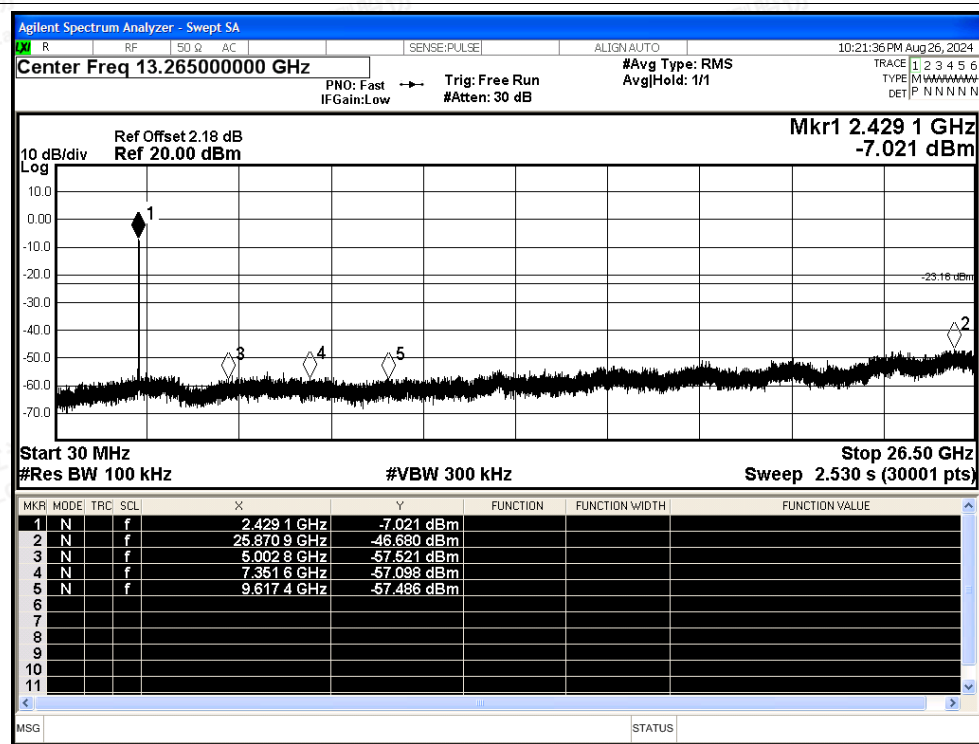




## Tx. Spurious NVNT n20 2437MHz Ant1 Ref

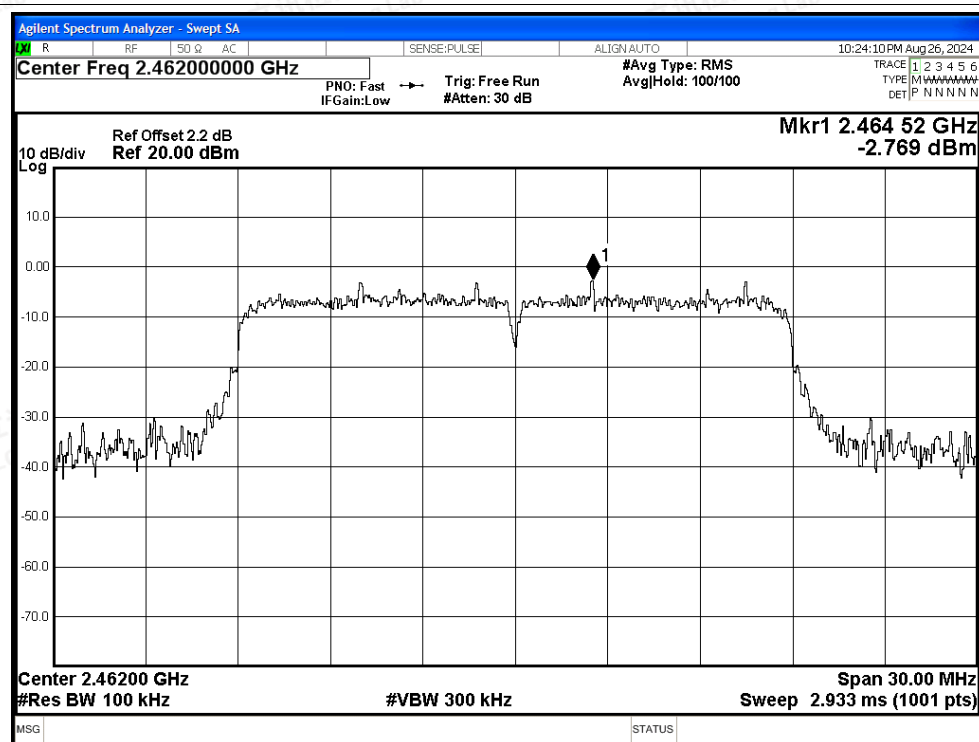


## Tx. Spurious NVNT n20 2437MHz Ant1 Emission

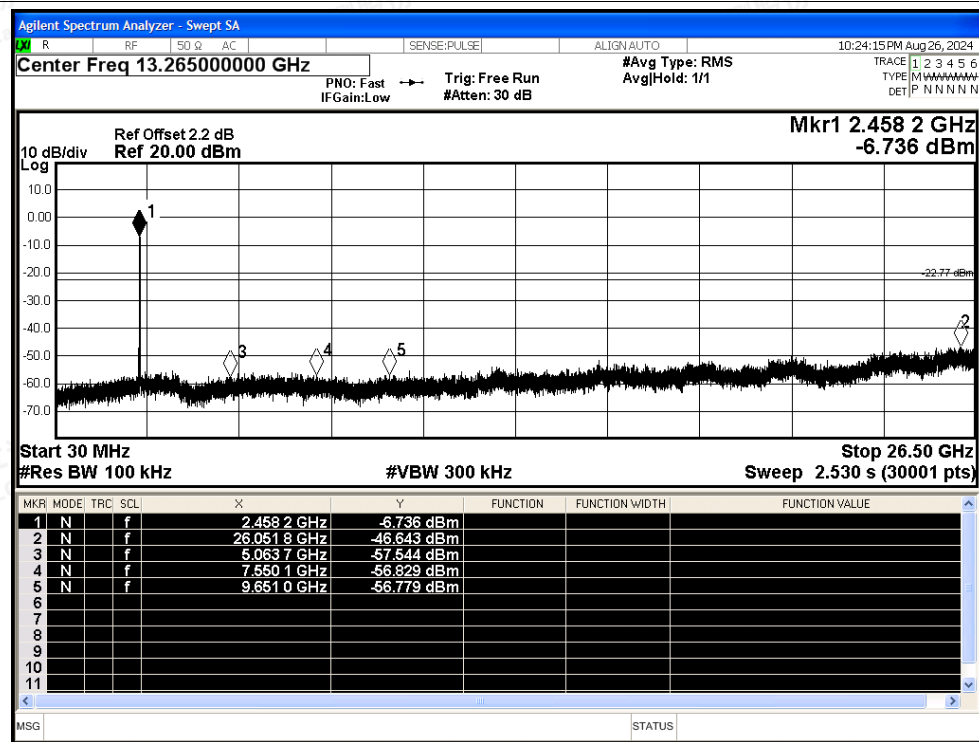




## Tx. Spurious NVNT n20 2462MHz Ant1 Ref



## Tx. Spurious NVNT n20 2462MHz Ant1 Emission





B.6 Duty Cycle

| Condition | Mode | Frequency (MHz) | Antenna | Duty Cycle (%) | Correction Factor (dB) | 1/T (kHz) |
|-----------|------|-----------------|---------|----------------|------------------------|-----------|
| NVNT      | b    | 2412            | Ant1    | 98.07          | 0                      | 0.15      |
| NVNT      | b    | 2437            | Ant1    | 98.07          | 0                      | 0.15      |
| NVNT      | b    | 2462            | Ant1    | 98.07          | 0                      | 0.15      |
| NVNT      | g    | 2412            | Ant1    | 92.25          | 0.35                   | 0.37      |
| NVNT      | g    | 2437            | Ant1    | 92.07          | 0.36                   | 0.37      |
| NVNT      | g    | 2462            | Ant1    | 92.07          | 0.36                   | 0.37      |
| NVNT      | n20  | 2412            | Ant1    | 90.6           | 0.43                   | 0.44      |
| NVNT      | n20  | 2437            | Ant1    | 90.68          | 0.42                   | 0.44      |
| NVNT      | n20  | 2462            | Ant1    | 90.68          | 0.42                   | 0.44      |

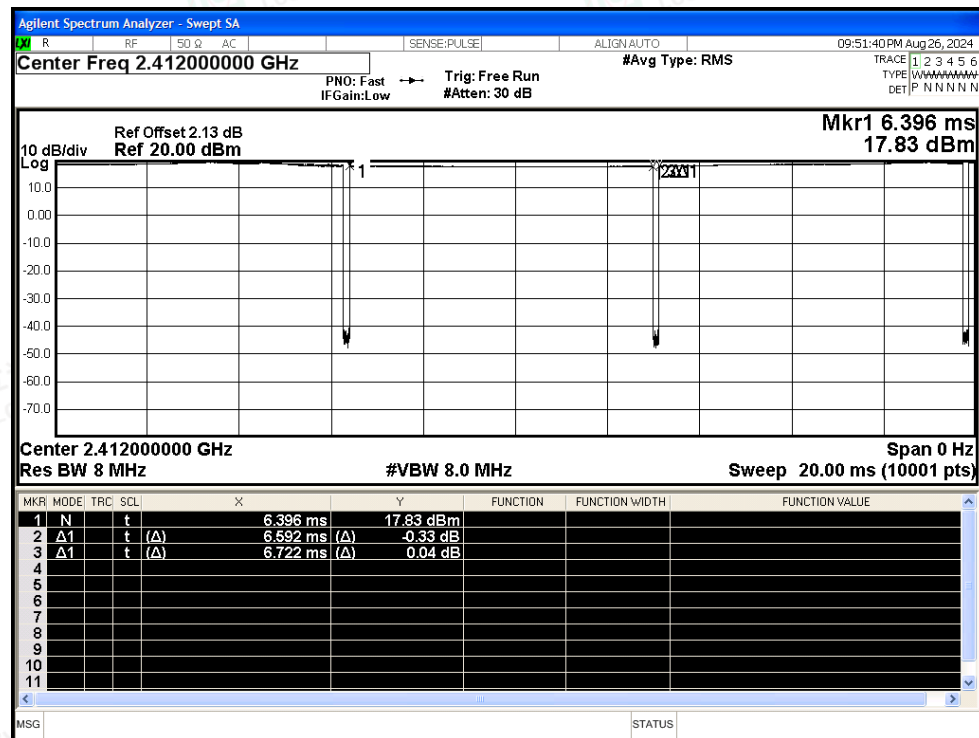




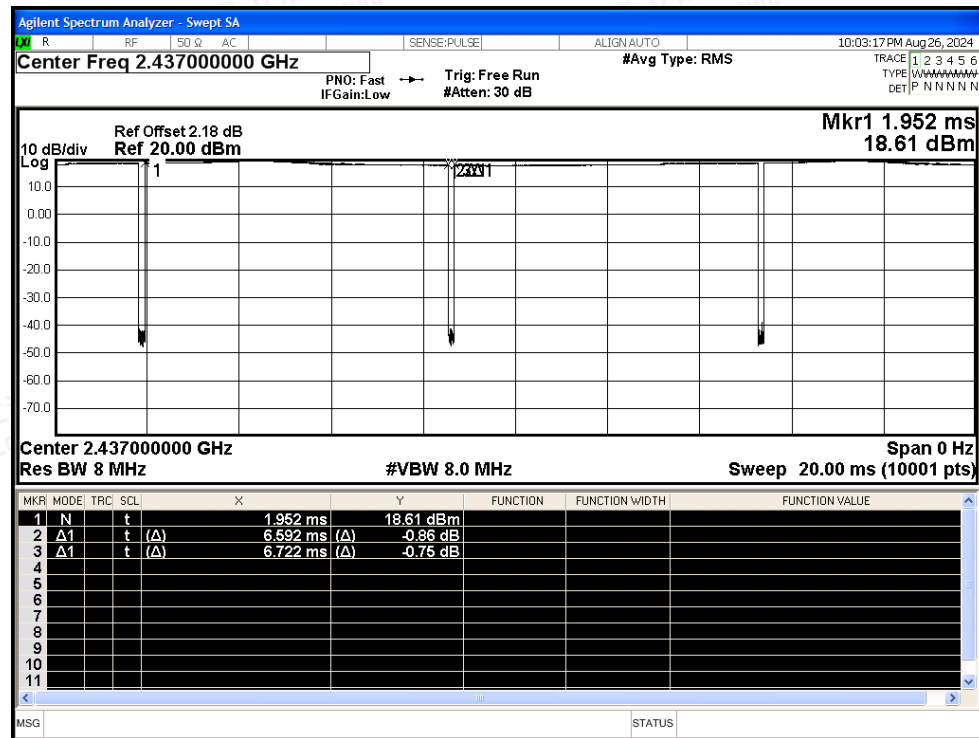


## Test Graphs

## Duty Cycle NVNT b 2412MHz Ant1

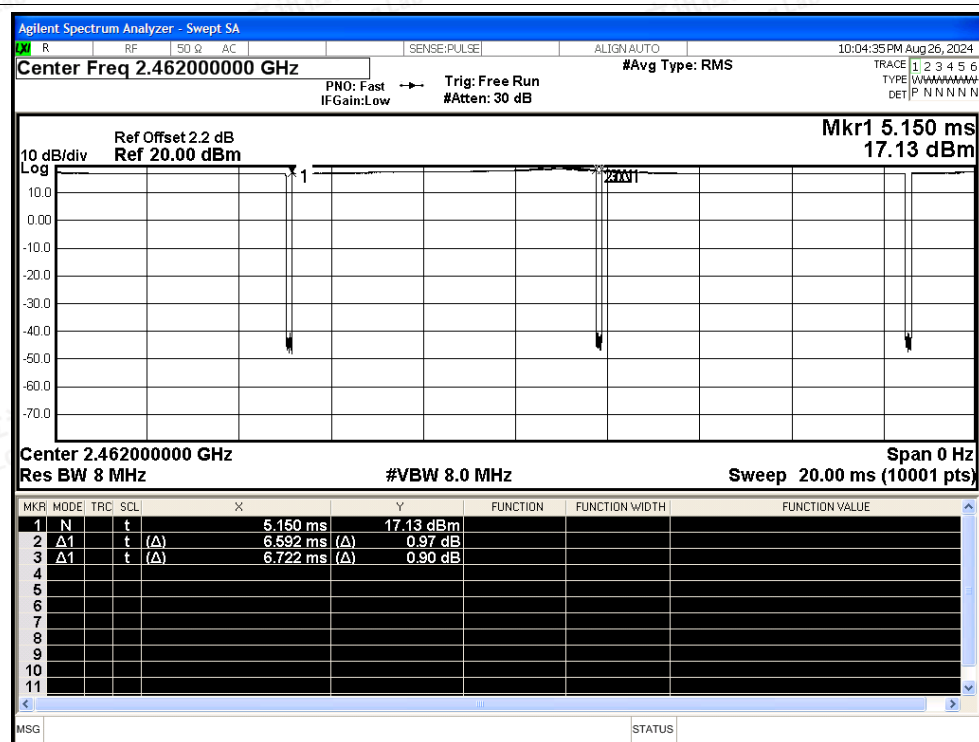


## Duty Cycle NVNT b 2437MHz Ant1

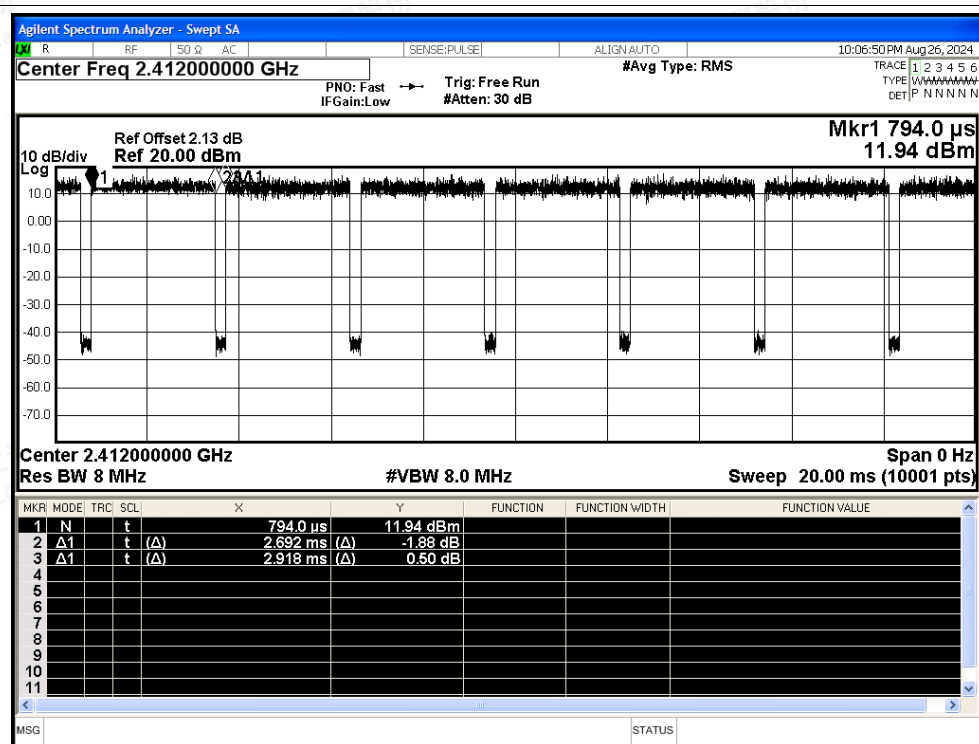




## Duty Cycle NVNT b 2462MHz Ant1

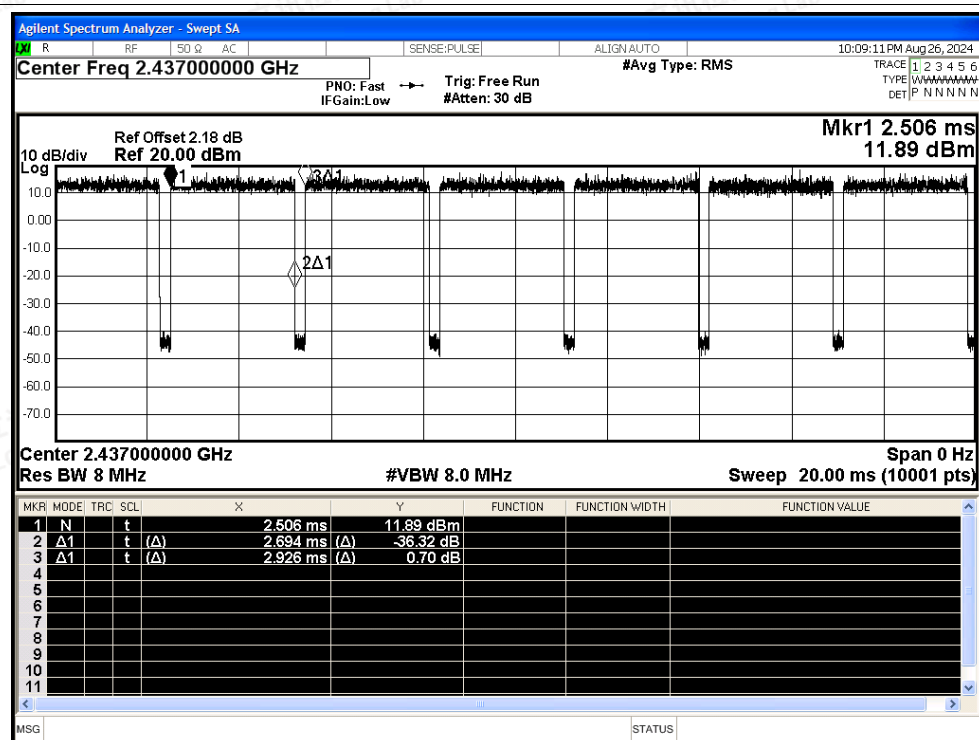


## Duty Cycle NVNT g 2412MHz Ant1

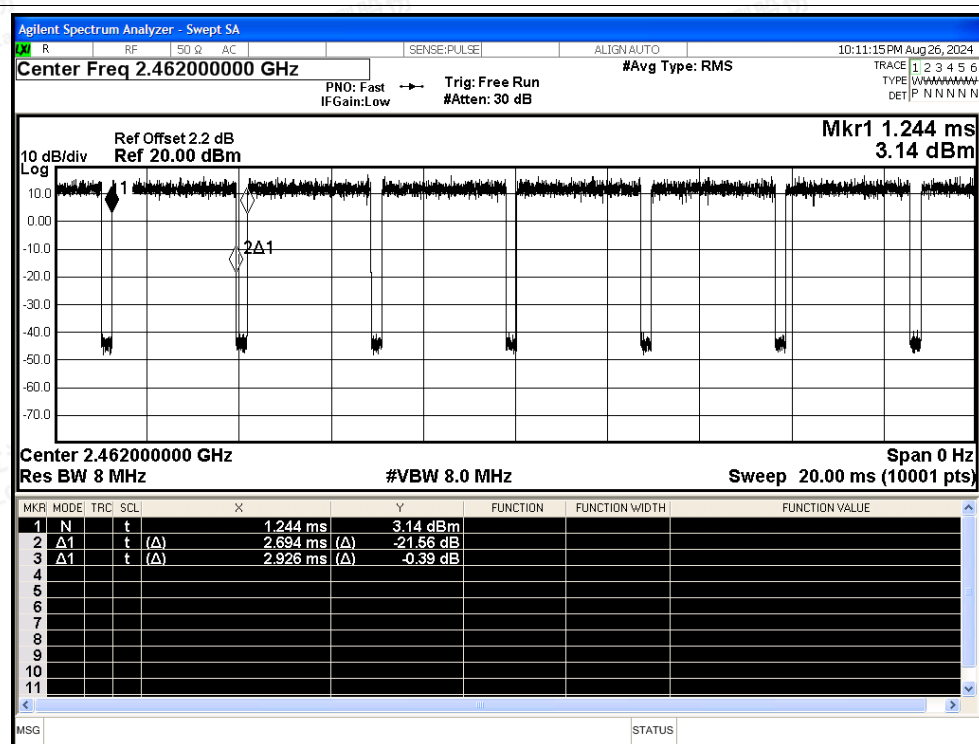




## Duty Cycle NVNT g 2437MHz Ant1

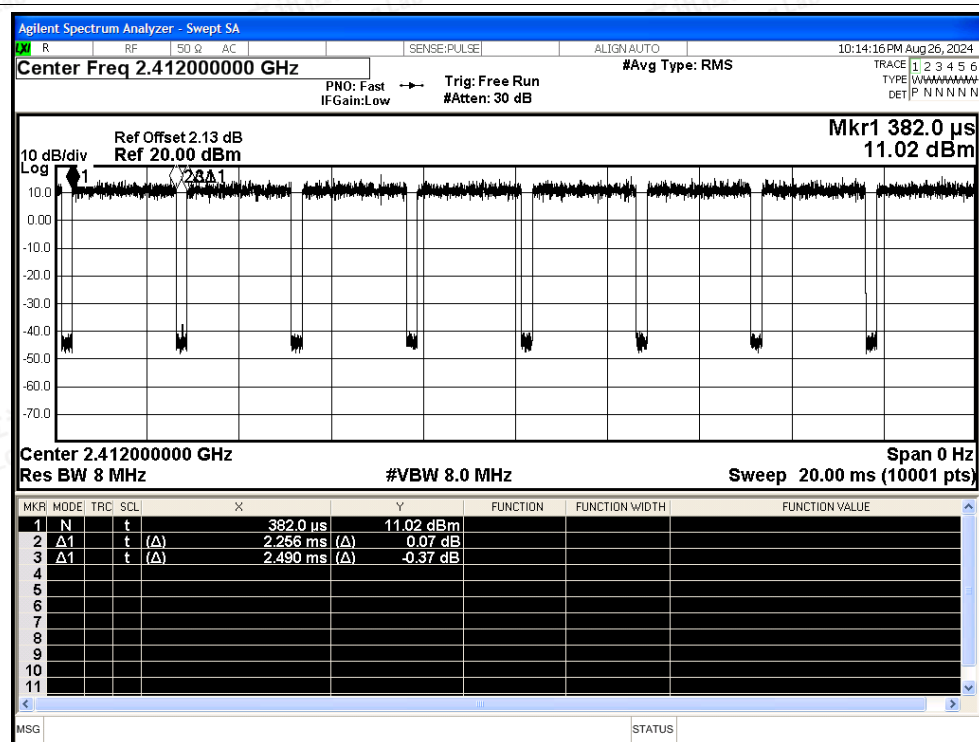


## Duty Cycle NVNT g 2462MHz Ant1

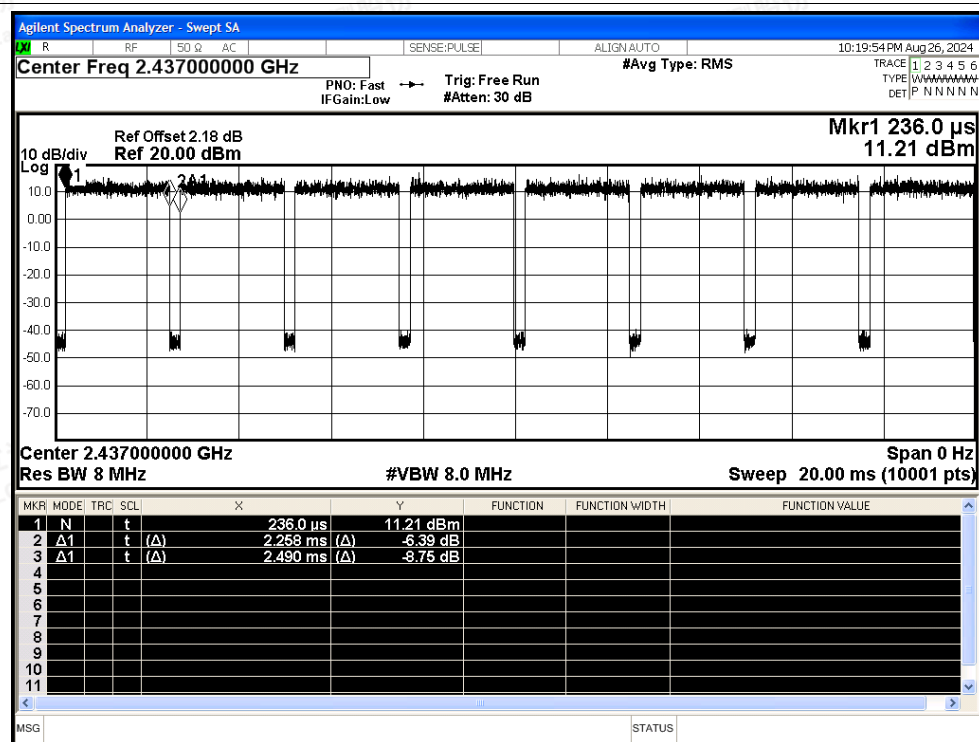


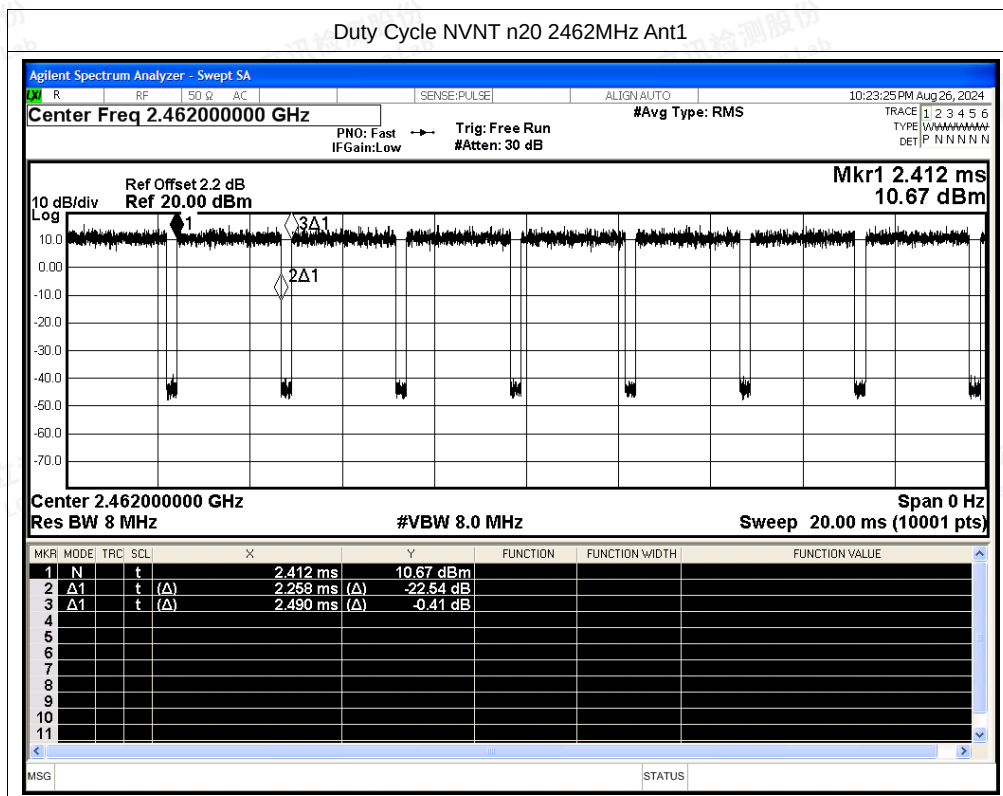


## Duty Cycle NVNT n20 2412MHz Ant1



## Duty Cycle NVNT n20 2437MHz Ant1





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Scan code to check authenticity



## B.7 Restrict Band

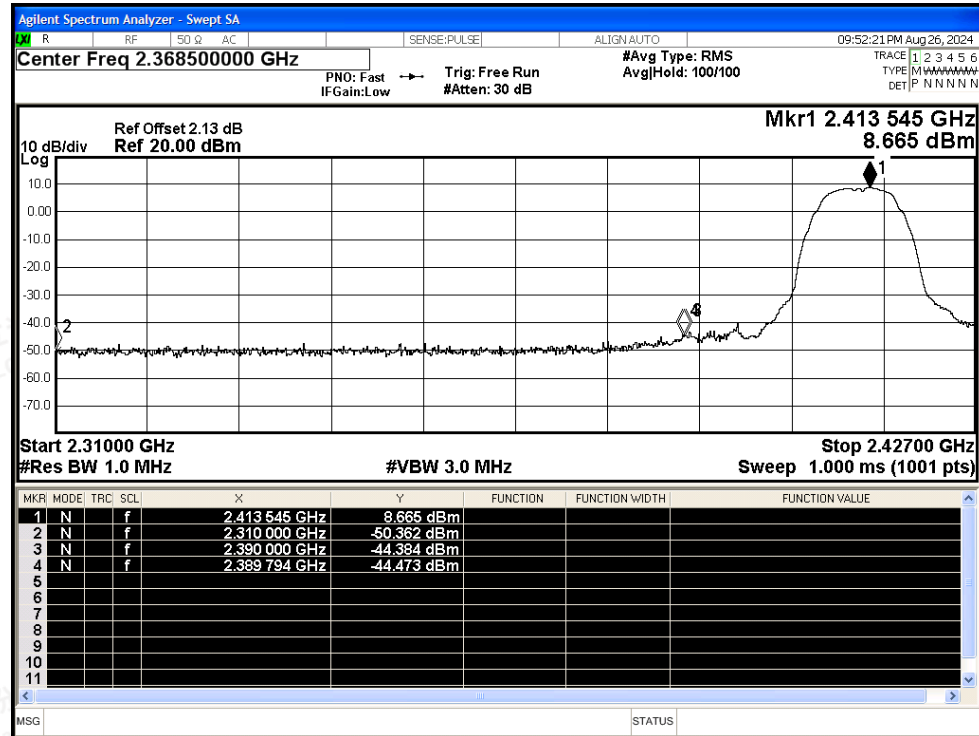
| Condition | Mode | Frequency (MHz) | Antenna | Spur Freq (MHz) | Power (dBm) | Gain (dBi) | Duty Factor (dB) | E (dBuV/m) | Detector | Limit (dBuV/m) | Verdict |
|-----------|------|-----------------|---------|-----------------|-------------|------------|------------------|------------|----------|----------------|---------|
| NVNT      | b    | 2412            | Ant1    | 2310            | -50.36      | 2          | -                | 46.9       | Peak     | 74             | Pass    |
| NVNT      | b    | 2412            | Ant1    | 2310            | -58.73      | 2          | 0                | 38.53      | Average  | 54             | Pass    |
| NVNT      | b    | 2412            | Ant1    | 2389.794        | -44.47      | 2          | -                | 52.79      | Peak     | 74             | Pass    |
| NVNT      | b    | 2412            | Ant1    | 2389.794        | -53.03      | 2          | 0                | 44.23      | Average  | 54             | Pass    |
| NVNT      | b    | 2412            | Ant1    | 2390            | -44.38      | 2          | -                | 52.88      | Peak     | 74             | Pass    |
| NVNT      | b    | 2412            | Ant1    | 2390            | -52.72      | 2          | 0                | 44.54      | Average  | 54             | Pass    |
| NVNT      | b    | 2462            | Ant1    | 2483.5          | -47.44      | 2          | -                | 49.82      | Peak     | 74             | Pass    |
| NVNT      | b    | 2462            | Ant1    | 2483.5          | -55.06      | 2          | 0                | 42.2       | Average  | 54             | Pass    |
| NVNT      | b    | 2462            | Ant1    | 2485.372        | -44.38      | 2          | -                | 52.88      | Peak     | 74             | Pass    |
| NVNT      | b    | 2462            | Ant1    | 2485.584        | -53.68      | 2          | 0                | 43.58      | Average  | 54             | Pass    |
| NVNT      | b    | 2462            | Ant1    | 2500            | -48.61      | 2          | -                | 48.65      | Peak     | 74             | Pass    |
| NVNT      | b    | 2462            | Ant1    | 2500            | -56.84      | 2          | 0                | 40.42      | Average  | 54             | Pass    |
| NVNT      | g    | 2412            | Ant1    | 2310            | -49.23      | 2          | -                | 48.03      | Peak     | 74             | Pass    |
| NVNT      | g    | 2412            | Ant1    | 2310            | -58.55      | 2          | 0.35             | 39.06      | Average  | 54             | Pass    |
| NVNT      | g    | 2412            | Ant1    | 2388.858        | -40.42      | 2          | -                | 56.84      | Peak     | 74             | Pass    |
| NVNT      | g    | 2412            | Ant1    | 2389.209        | -55.14      | 2          | 0.35             | 42.47      | Average  | 54             | Pass    |
| NVNT      | g    | 2412            | Ant1    | 2390            | -44.86      | 2          | -                | 52.4       | Peak     | 74             | Pass    |
| NVNT      | g    | 2412            | Ant1    | 2390            | -56.22      | 2          | 0.35             | 41.39      | Average  | 54             | Pass    |
| NVNT      | g    | 2462            | Ant1    | 2483.5          | -38.68      | 2          | -                | 58.58      | Peak     | 74             | Pass    |
| NVNT      | g    | 2462            | Ant1    | 2483.5          | -53.17      | 2          | 0.36             | 44.45      | Average  | 54             | Pass    |
| NVNT      | g    | 2462            | Ant1    | 2484.365        | -37.04      | 2          | -                | 60.22      | Peak     | 74             | Pass    |
| NVNT      | g    | 2462            | Ant1    | 2483.57         | -51.04      | 2          | 0.36             | 46.58      | Average  | 54             | Pass    |
| NVNT      | g    | 2462            | Ant1    | 2500            | -49.55      | 2          | -                | 47.71      | Peak     | 74             | Pass    |
| NVNT      | g    | 2462            | Ant1    | 2500            | -57.76      | 2          | 0.36             | 39.86      | Average  | 54             | Pass    |
| NVNT      | n20  | 2412            | Ant1    | 2310            | -49.29      | 2          | -                | 47.97      | Peak     | 74             | Pass    |
| NVNT      | n20  | 2412            | Ant1    | 2310            | -58.97      | 2          | 0.43             | 38.72      | Average  | 54             | Pass    |
| NVNT      | n20  | 2412            | Ant1    | 2389.677        | -40.33      | 2          | -                | 56.93      | Peak     | 74             | Pass    |
| NVNT      | n20  | 2412            | Ant1    | 2389.209        | -55.56      | 2          | 0.43             | 42.13      | Average  | 54             | Pass    |
| NVNT      | n20  | 2412            | Ant1    | 2390            | -41.76      | 2          | -                | 55.5       | Peak     | 74             | Pass    |
| NVNT      | n20  | 2412            | Ant1    | 2390            | -56.39      | 2          | 0.43             | 41.3       | Average  | 54             | Pass    |
| NVNT      | n20  | 2462            | Ant1    | 2483.5          | -39.62      | 2          | -                | 57.64      | Peak     | 74             | Pass    |
| NVNT      | n20  | 2462            | Ant1    | 2483.5          | -53.38      | 2          | 0.42             | 44.3       | Average  | 54             | Pass    |
| NVNT      | n20  | 2462            | Ant1    | 2483.623        | -35.84      | 2          | -                | 61.42      | Peak     | 74             | Pass    |
| NVNT      | n20  | 2462            | Ant1    | 2483.676        | -52.32      | 2          | 0.42             | 45.36      | Average  | 54             | Pass    |
| NVNT      | n20  | 2462            | Ant1    | 2500            | -50.05      | 2          | -                | 47.21      | Peak     | 74             | Pass    |
| NVNT      | n20  | 2462            | Ant1    | 2500            | -57.14      | 2          | 0.42             | 40.54      | Average  | 54             | Pass    |



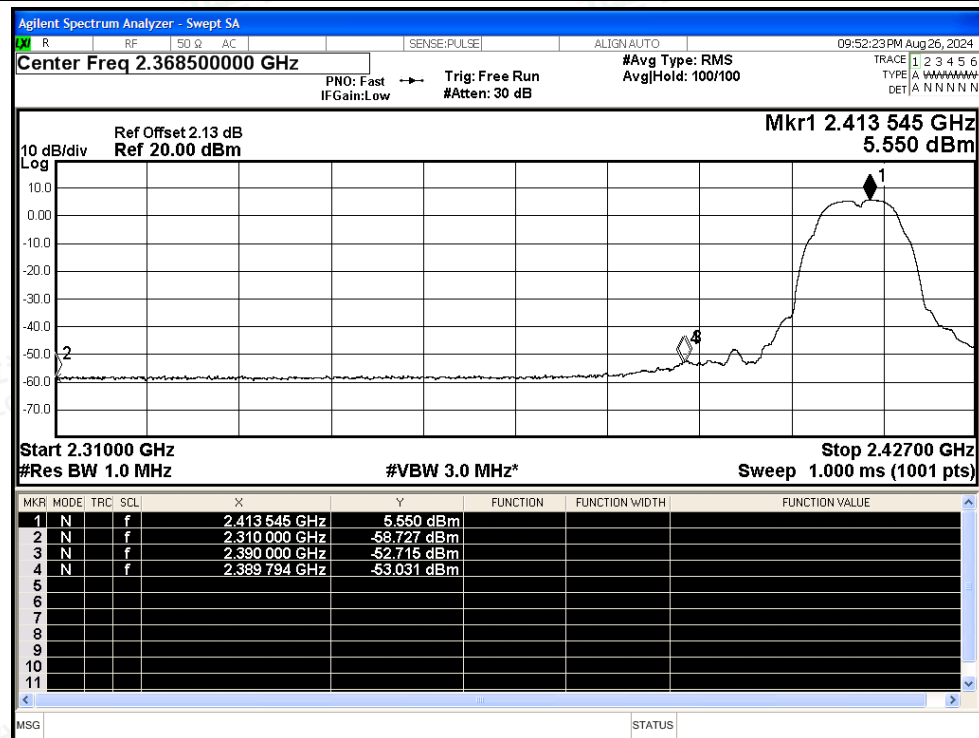


## Test Graphs

## Restrict Band NVNT b 2412MHz Ant1 Peak



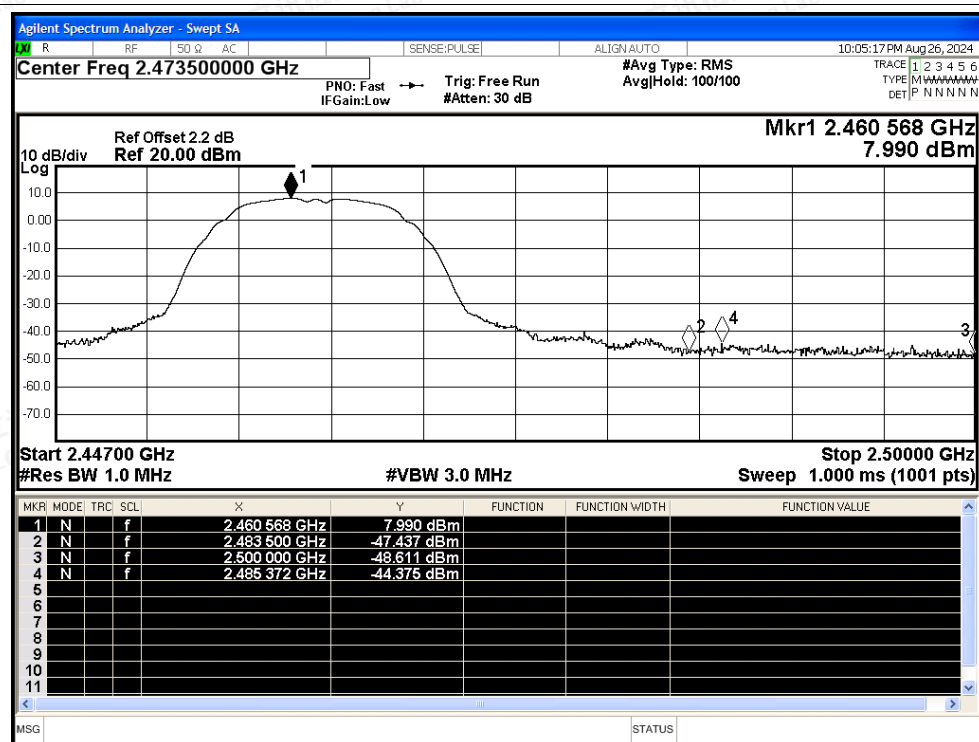
## Restrict Band NVNT b 2412MHz Ant1 Average



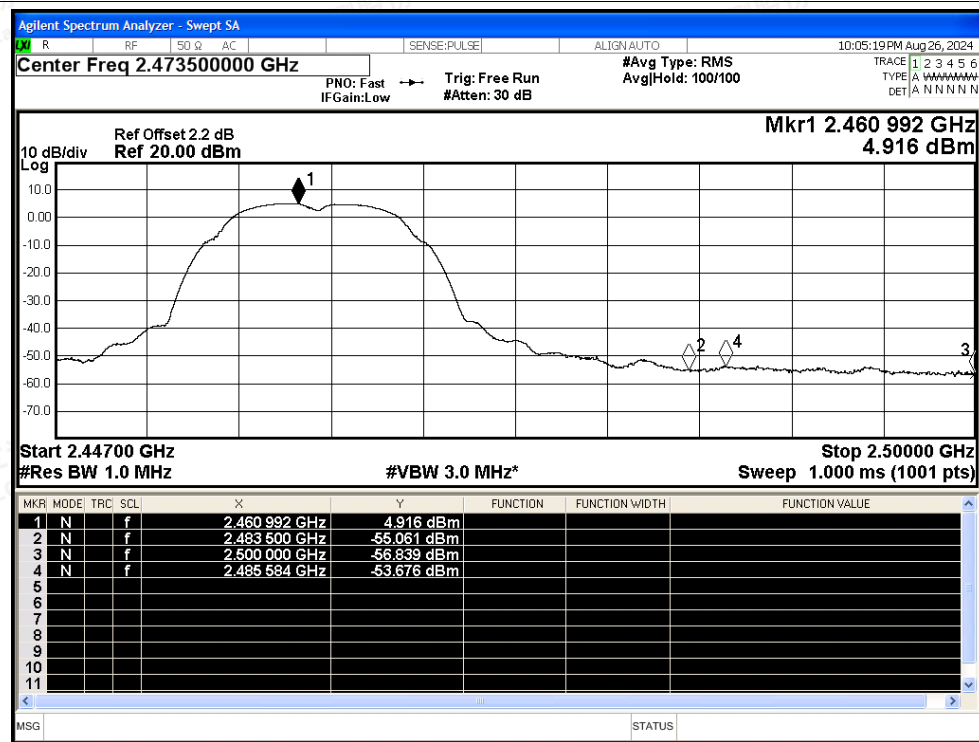




## Restrict Band NVNT b 2462MHz Ant1 Peak



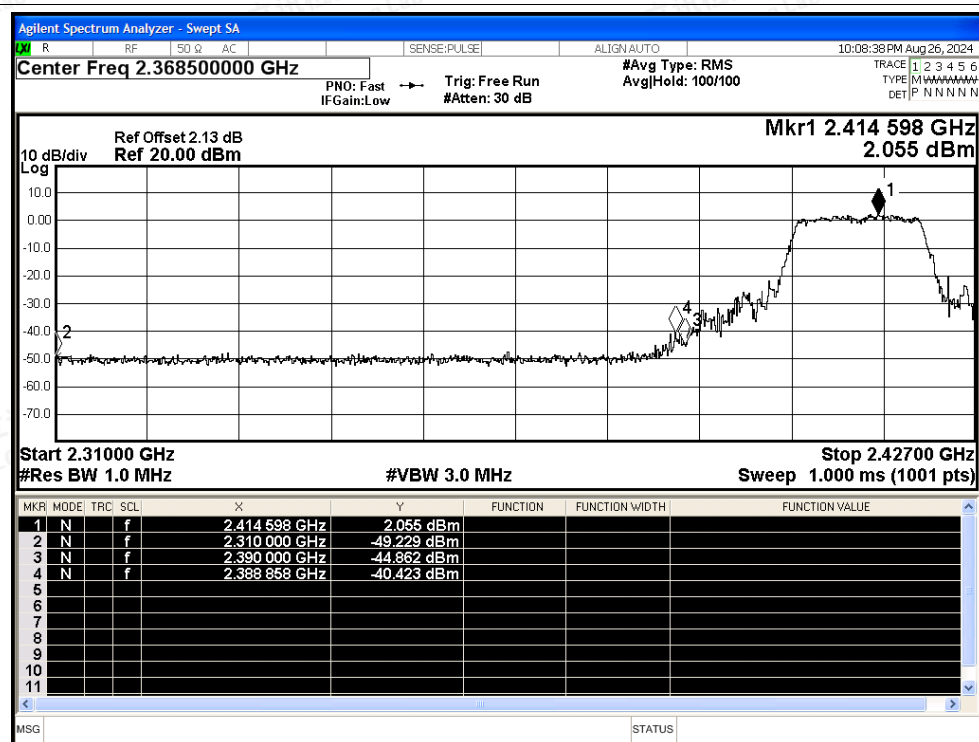
## Restrict Band NVNT b 2462MHz Ant1 Average



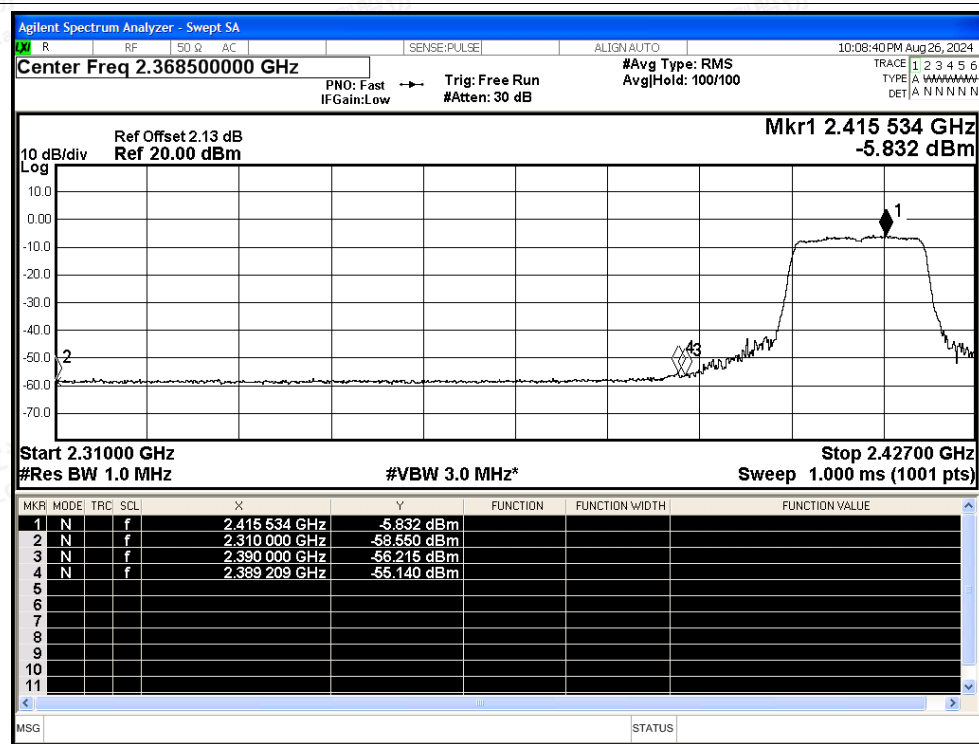




## Restrict Band NVNT g 2412MHz Ant1 Peak

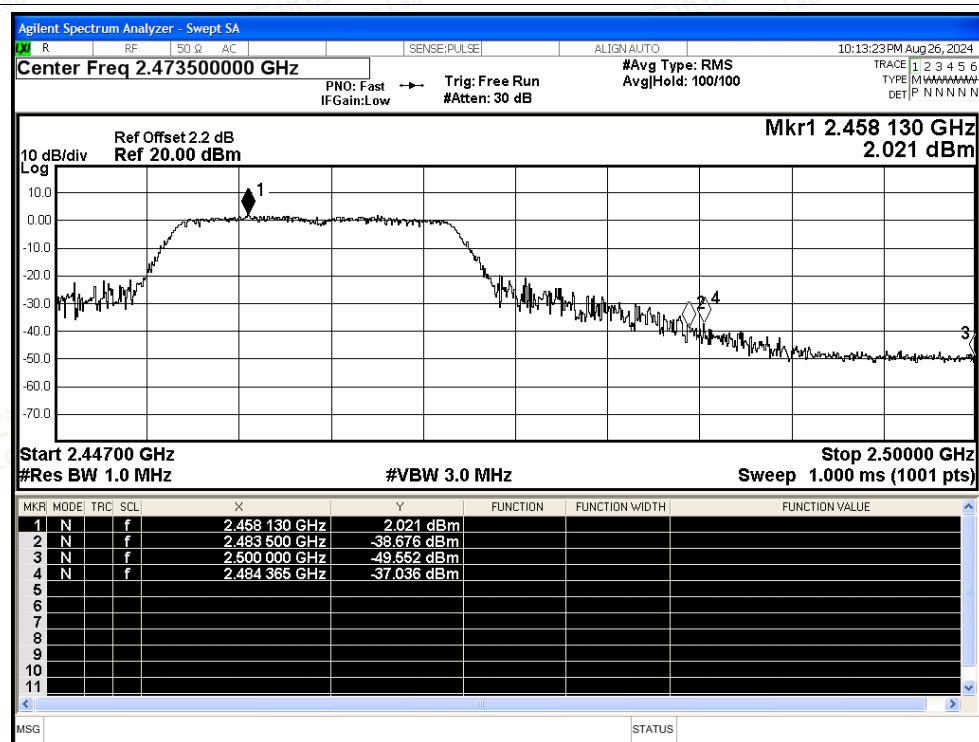


## Restrict Band NVNT g 2412MHz Ant1 Average

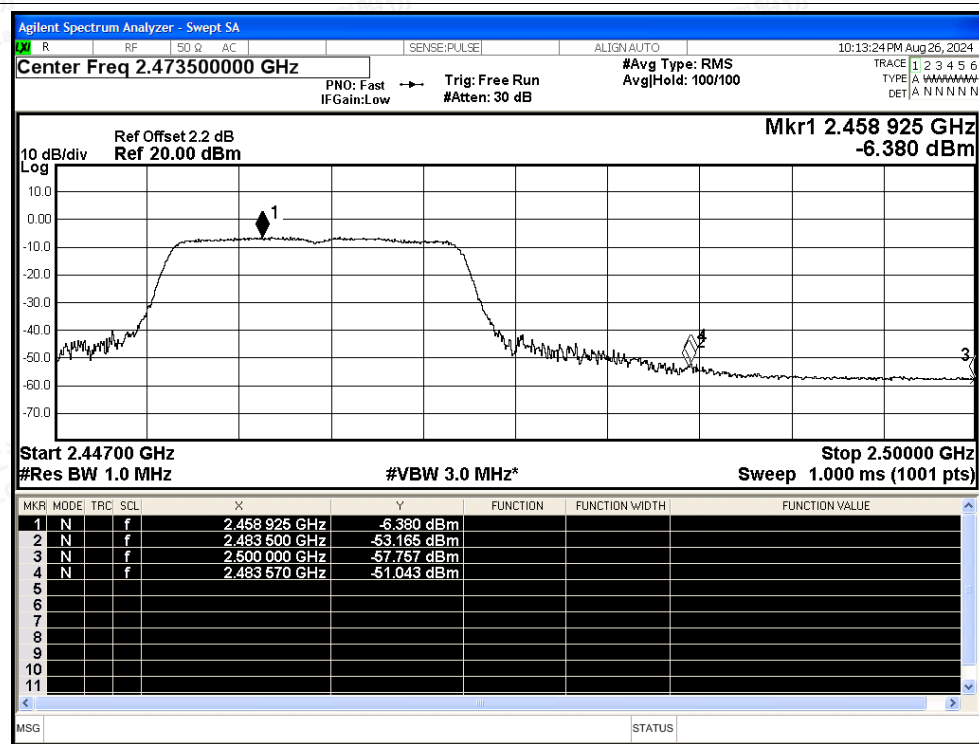




## Restrict Band NVNT g 2462MHz Ant1 Peak

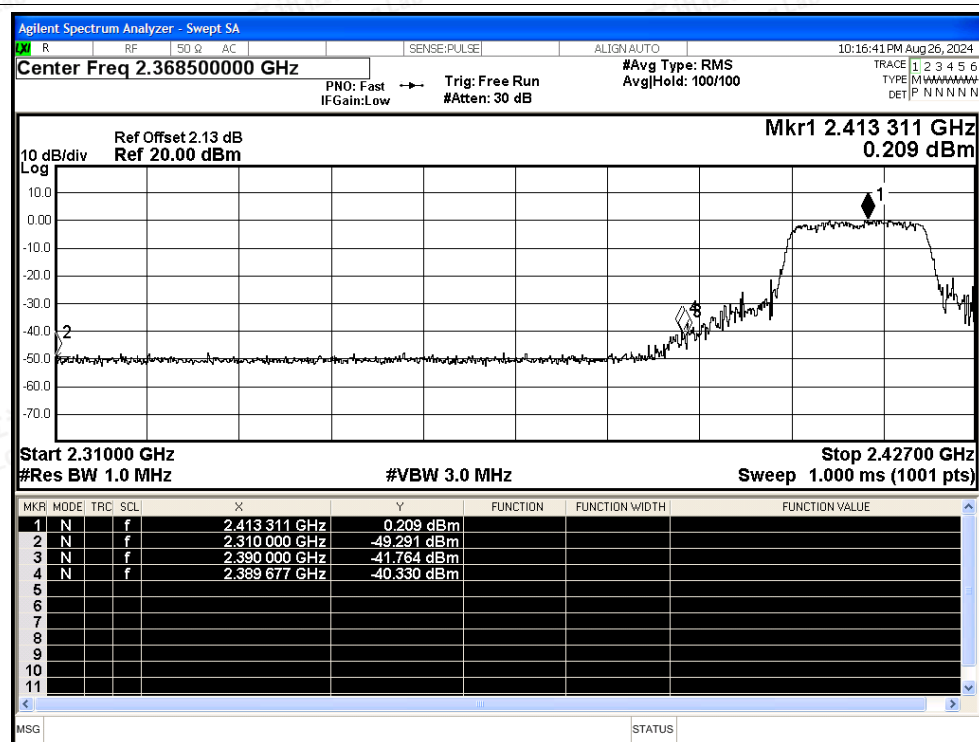


## Restrict Band NVNT g 2462MHz Ant1 Average

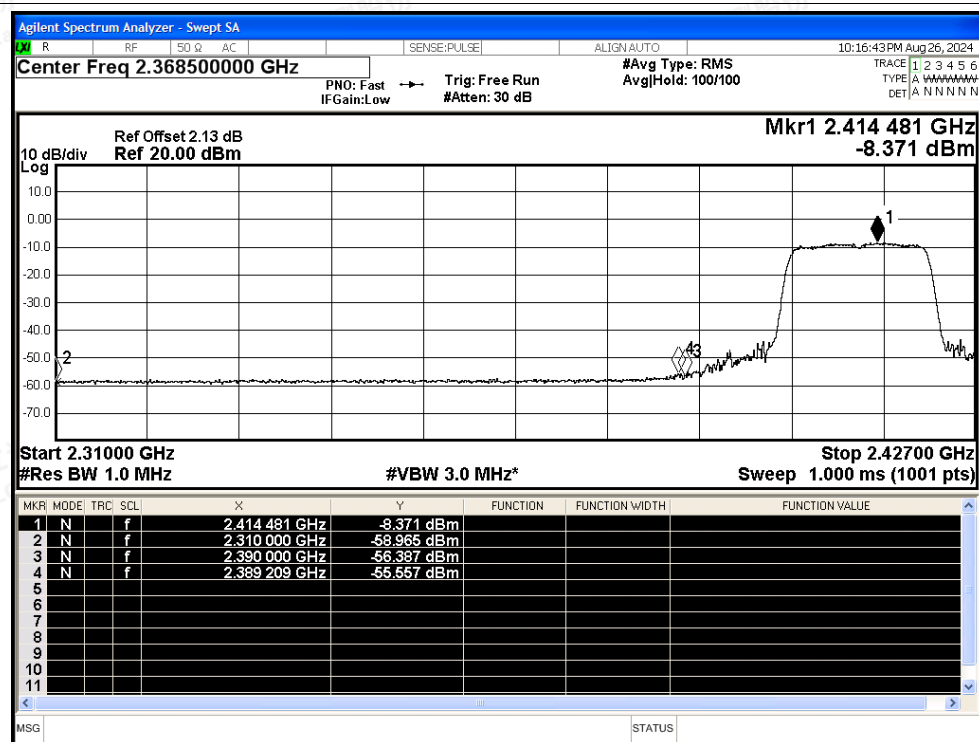




## Restrict Band NVNT n20 2412MHz Ant1 Peak

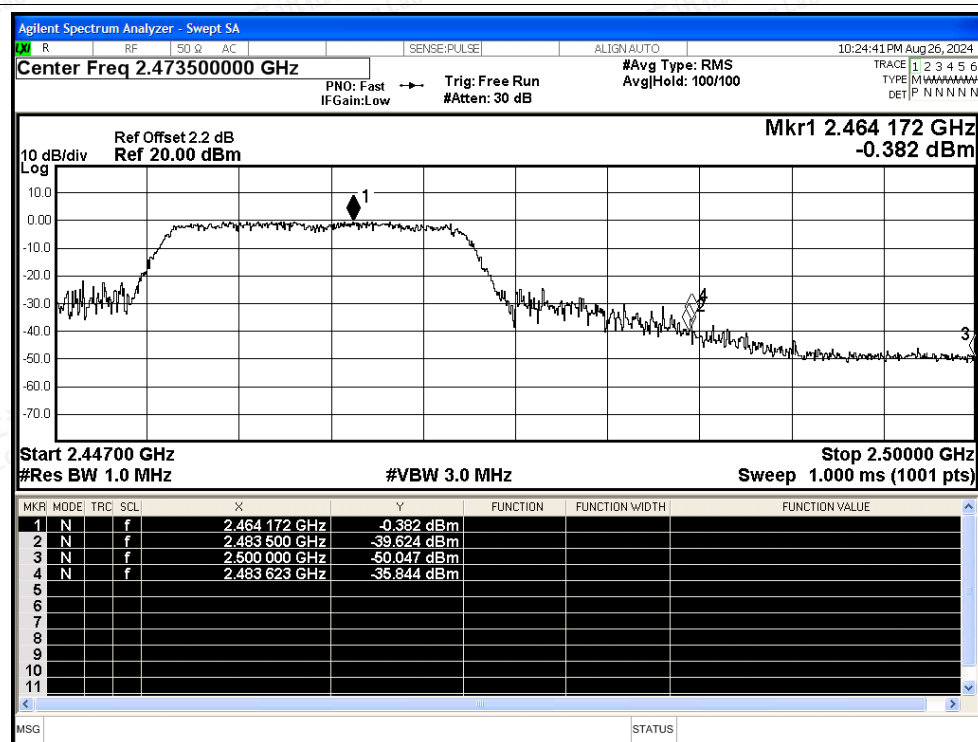


## Restrict Band NVNT n20 2412MHz Ant1 Average





## Restrict Band NVNT n20 2462MHz Ant1 Peak



## Restrict Band NVNT n20 2462MHz Ant1 Average

