



## Appendix B

### RF Test Data for BT LE (Conducted Measurement)

Product Name: BLUETOOTH EARPHONES

Test Model: BTO300

#### Environmental Conditions

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



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## B.1 -6dB Bandwidth

| Condition | Mode   | Frequency (MHz) | Antenna | -6 dB Bandwidth (MHz) | Limit -6 dB Bandwidth (MHz) | Verdict |
|-----------|--------|-----------------|---------|-----------------------|-----------------------------|---------|
| NVNT      | BLE 1M | 2402            | Ant1    | 0.659                 | $\geq 0.5$                  | Pass    |
| NVNT      | BLE 1M | 2440            | Ant1    | 0.658                 | $\geq 0.5$                  | Pass    |
| NVNT      | BLE 1M | 2480            | Ant1    | 0.66                  | $\geq 0.5$                  | Pass    |
| NVNT      | BLE 2M | 2402            | Ant1    | 1.15                  | $\geq 0.5$                  | Pass    |
| NVNT      | BLE 2M | 2440            | Ant1    | 1.149                 | $\geq 0.5$                  | Pass    |
| NVNT      | BLE 2M | 2480            | Ant1    | 1.153                 | $\geq 0.5$                  | Pass    |

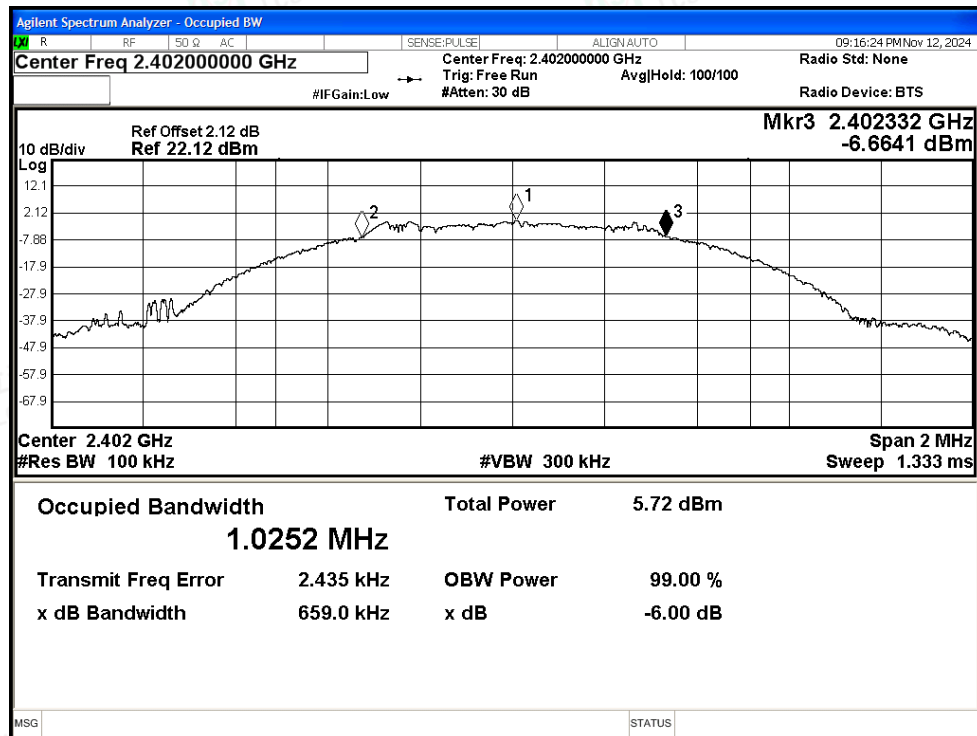


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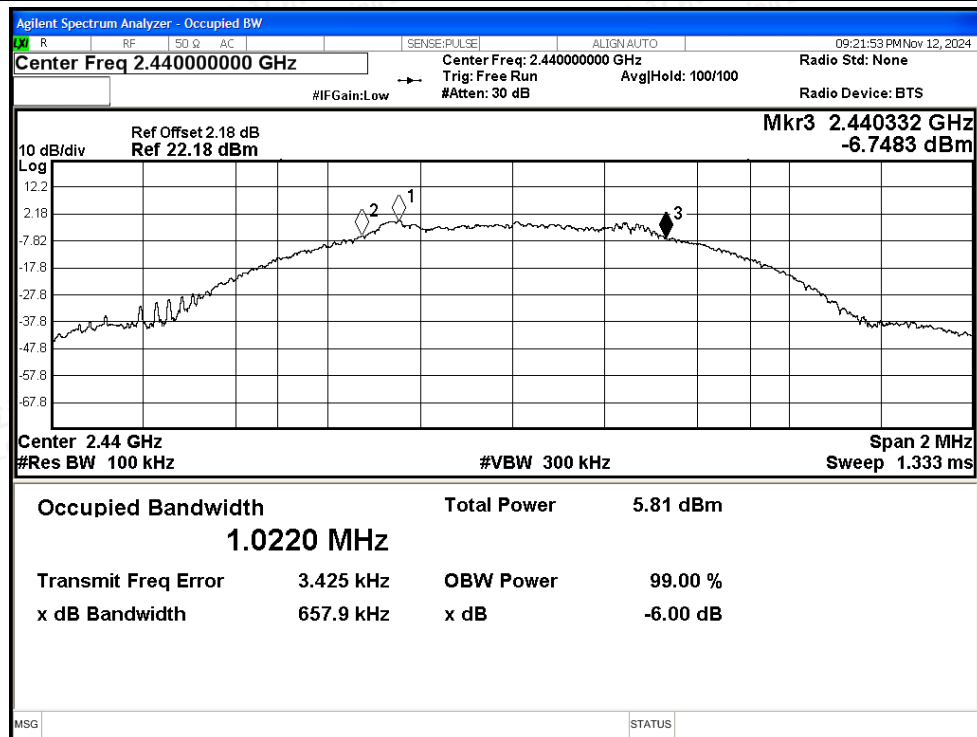


## Test Graphs

-6dB Bandwidth NVNT BLE 1M 2402MHz Ant1



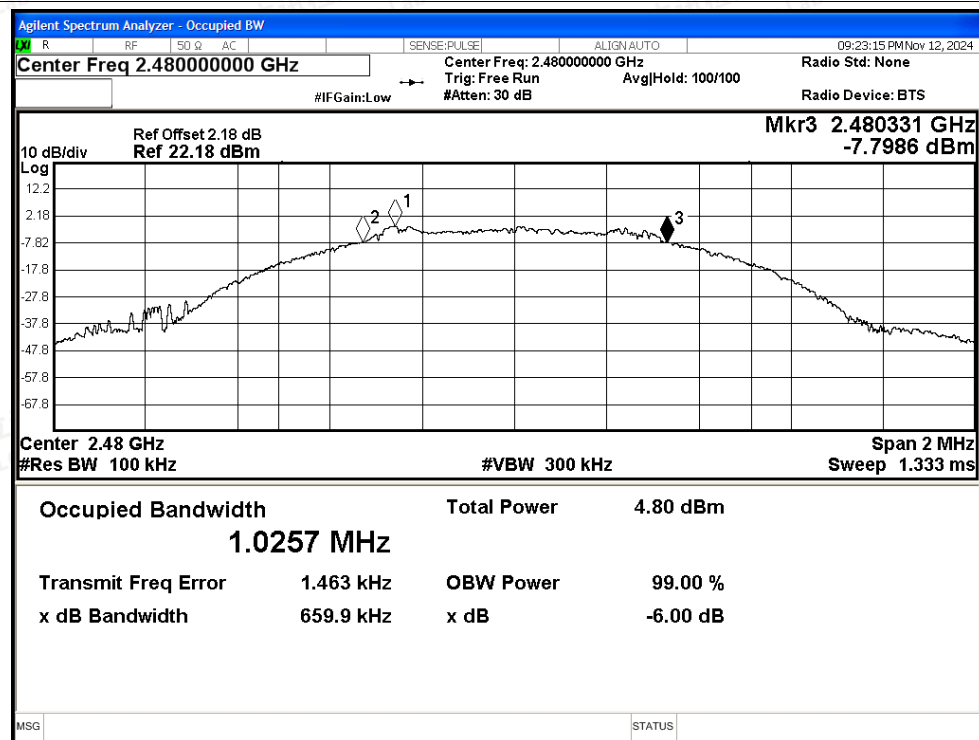
-6dB Bandwidth NVNT BLE 1M 2440MHz Ant1



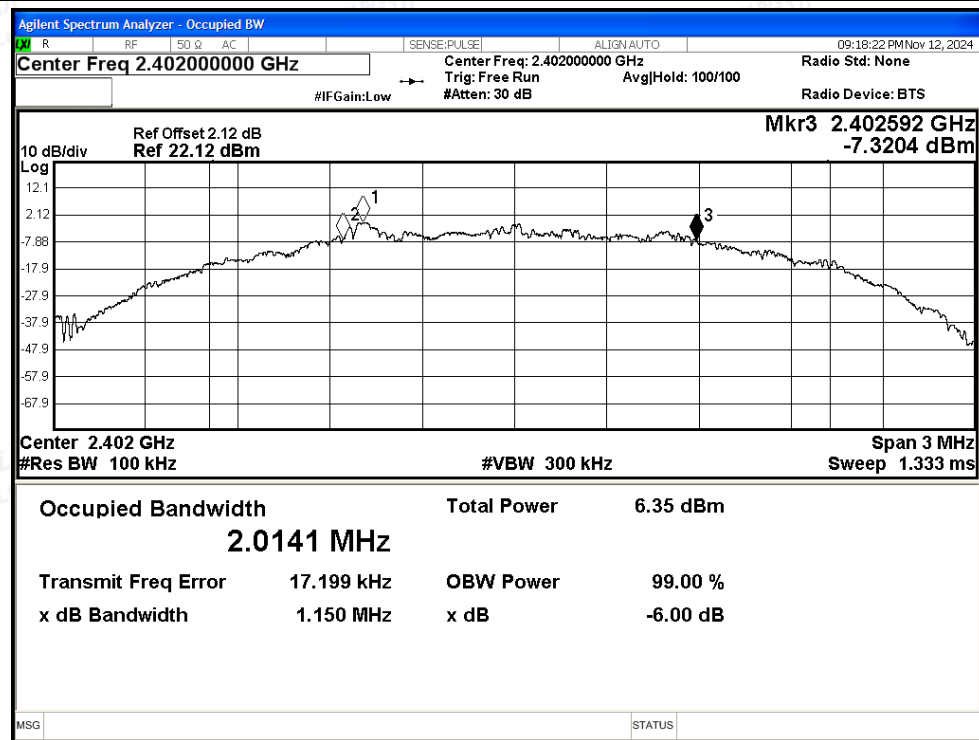
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## -6dB Bandwidth NVNT BLE 1M 2480MHz Ant1

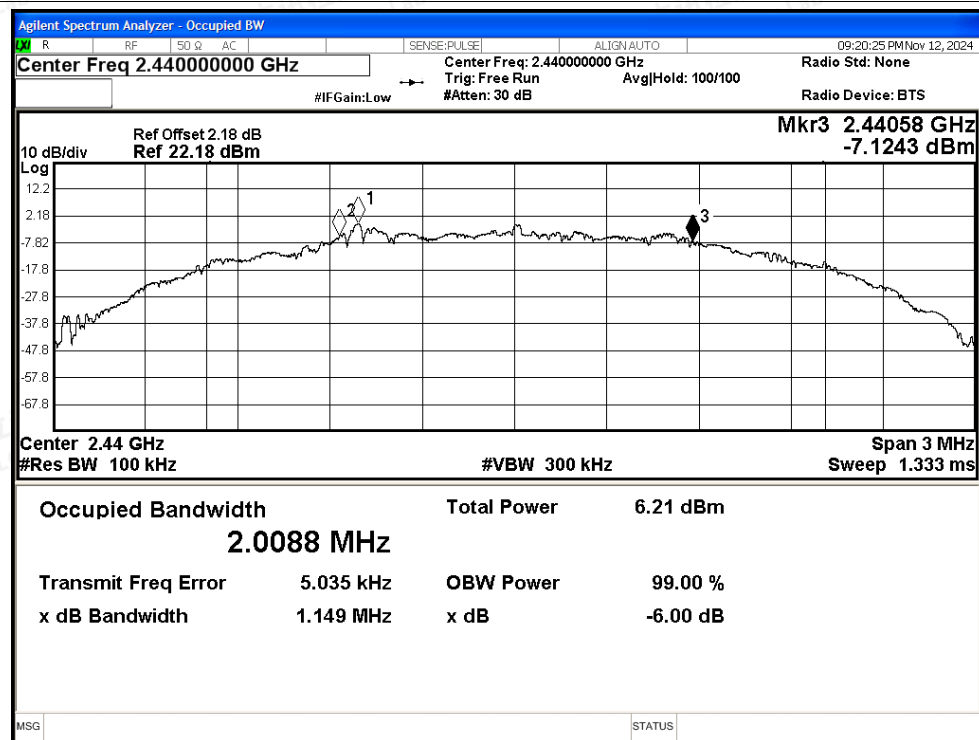


## -6dB Bandwidth NVNT BLE 2M 2402MHz Ant1

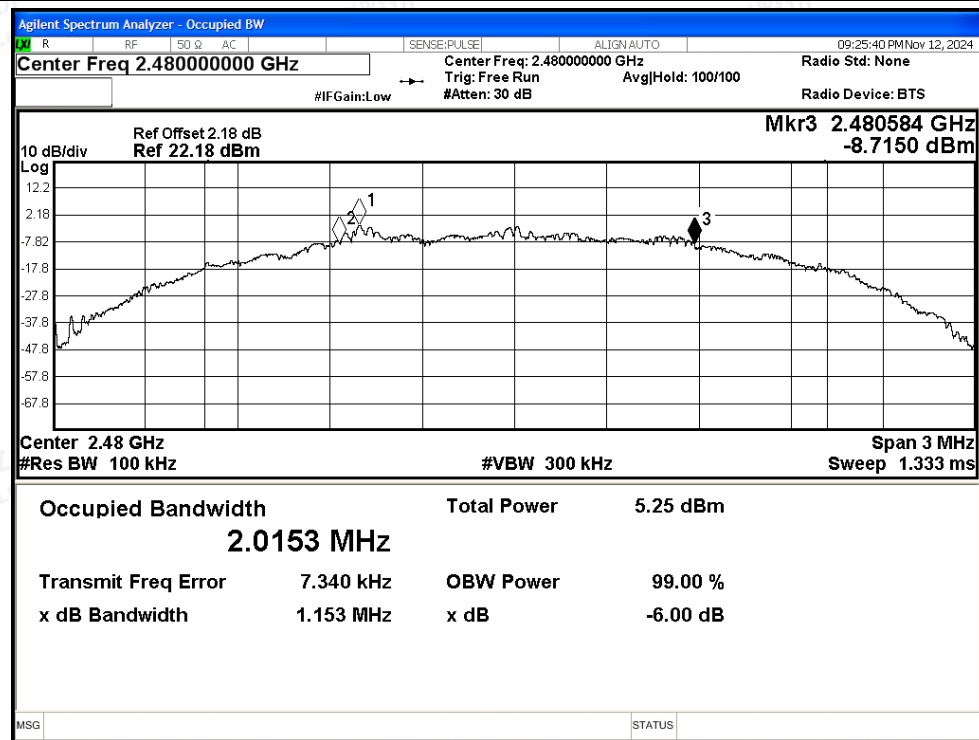




## -6dB Bandwidth NVNT BLE 2M 2440MHz Ant1



## -6dB Bandwidth NVNT BLE 2M 2480MHz Ant1





## B.2 Maximum Peak Conducted Output Power

| Condition | Mode   | Frequency (MHz) | Antenna | Conducted Power (dBm) | Limit (dBm) | Verdict |
|-----------|--------|-----------------|---------|-----------------------|-------------|---------|
| NVNT      | BLE 1M | 2402            | Ant1    | 0.02                  | 30          | Pass    |
| NVNT      | BLE 1M | 2440            | Ant1    | 0.01                  | 30          | Pass    |
| NVNT      | BLE 1M | 2480            | Ant1    | -1.03                 | 30          | Pass    |
| NVNT      | BLE 2M | 2402            | Ant1    | 0.01                  | 30          | Pass    |
| NVNT      | BLE 2M | 2440            | Ant1    | -0.19                 | 30          | Pass    |
| NVNT      | BLE 2M | 2480            | Ant1    | -1.21                 | 30          | Pass    |

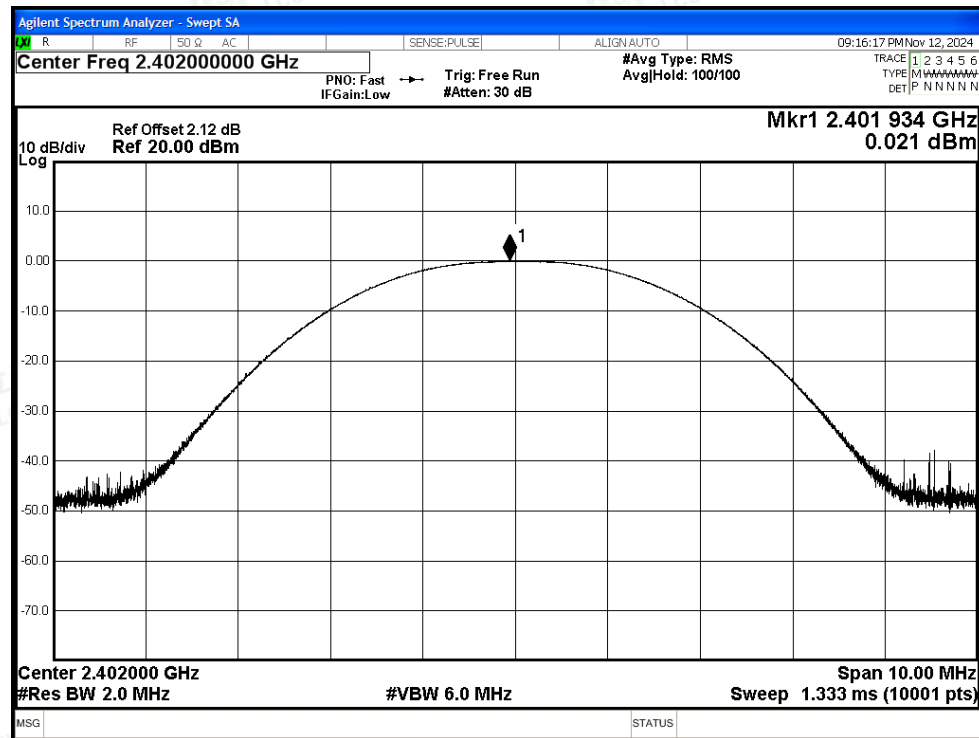


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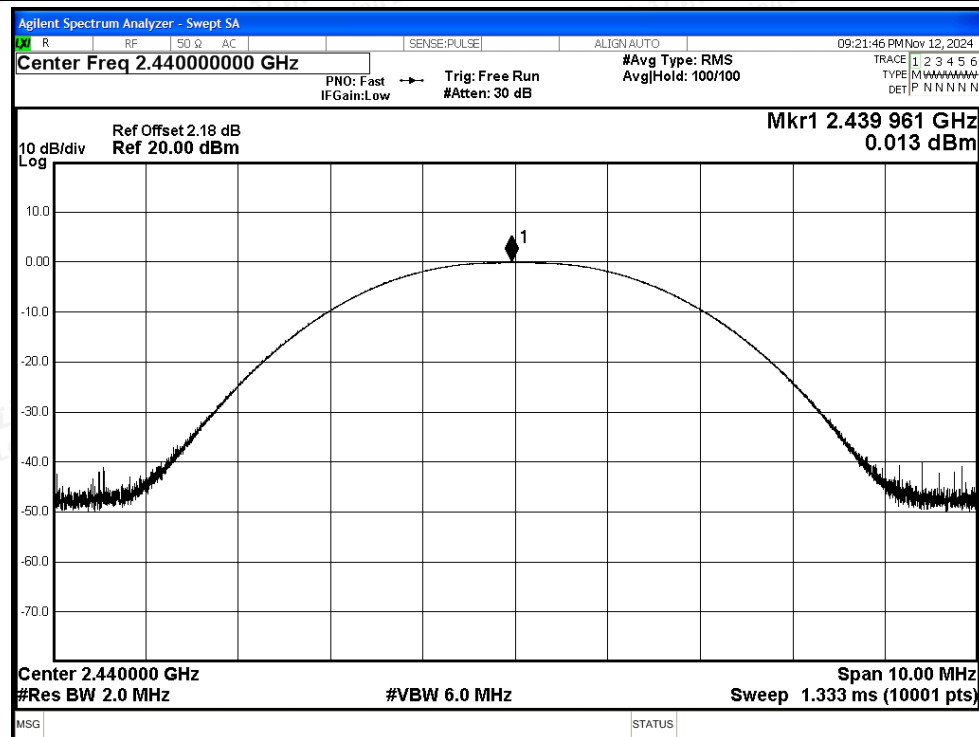


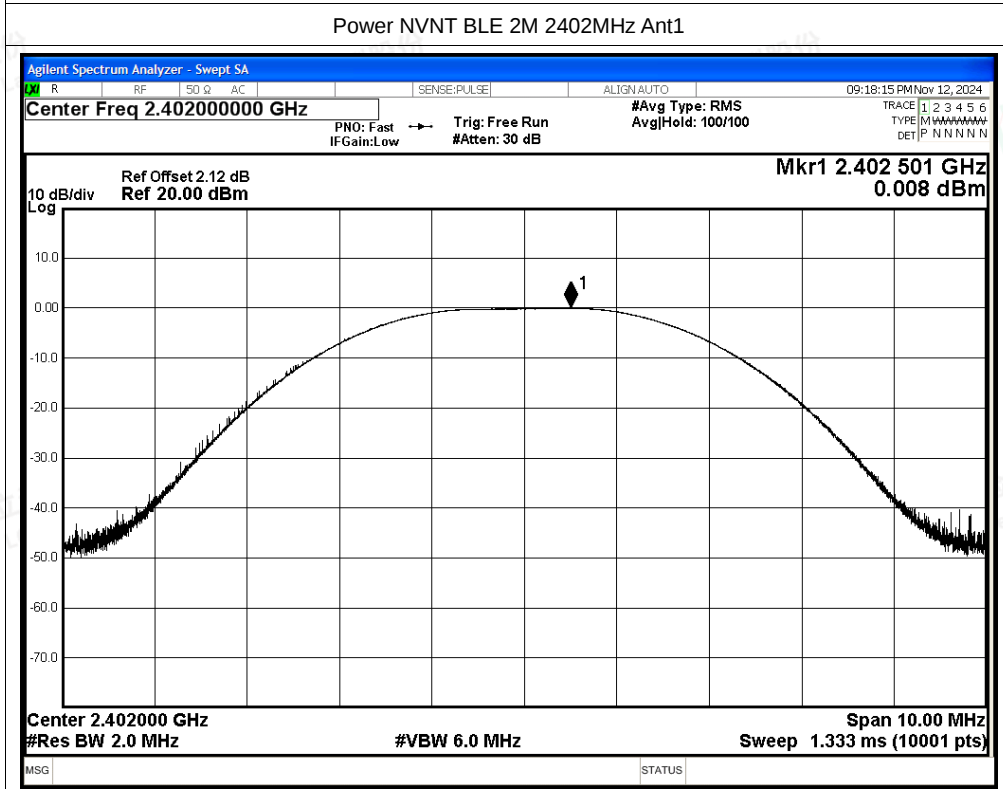
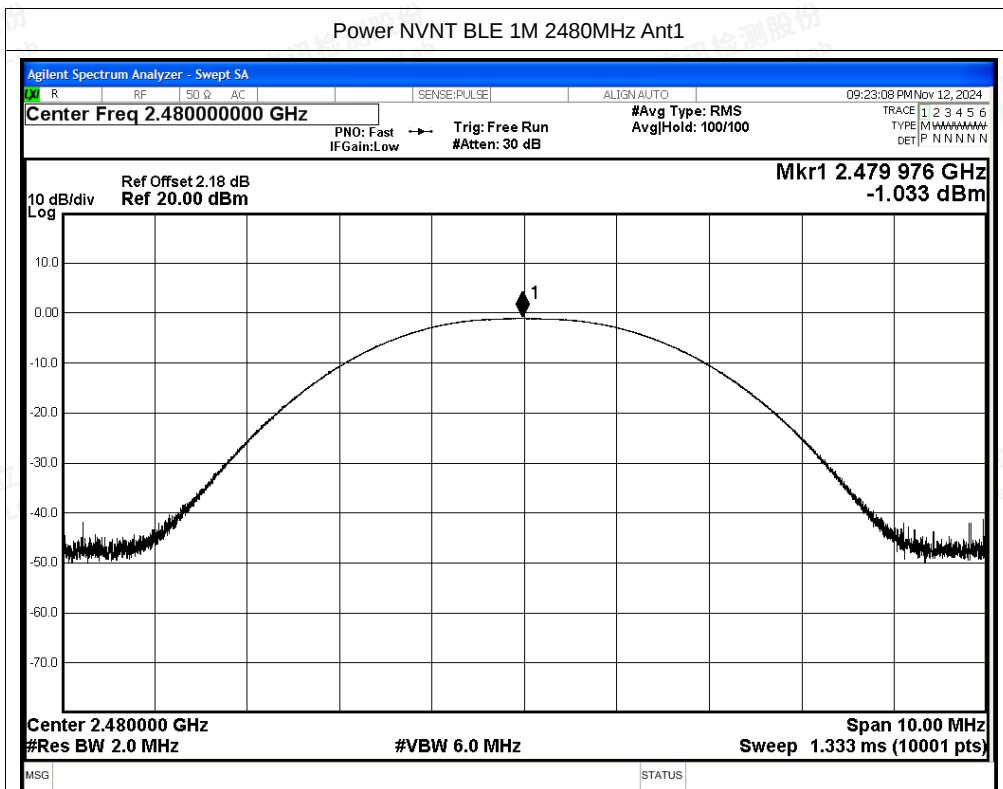
## Test Graphs

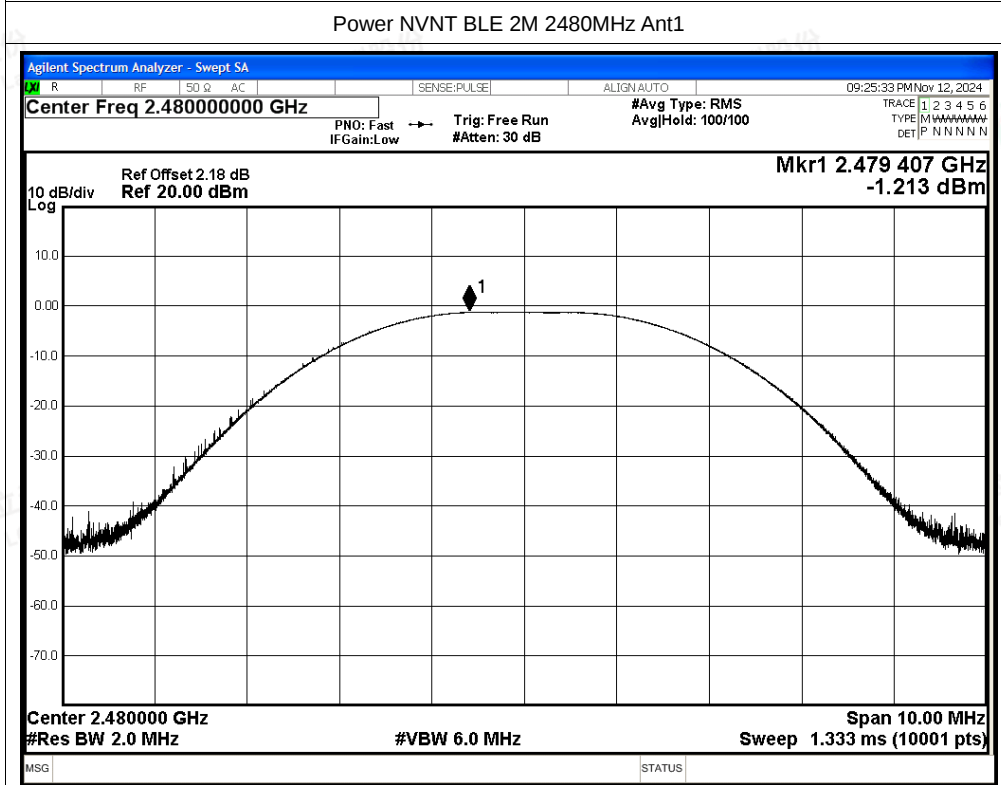
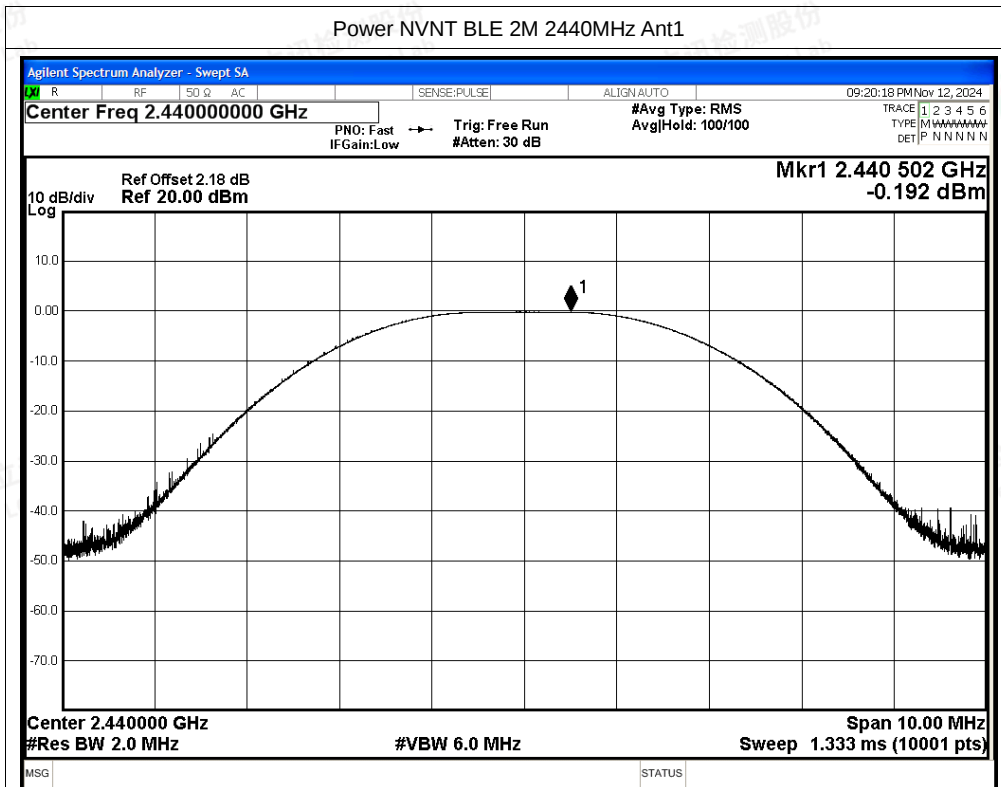
Power NVNT BLE 1M 2402MHz Ant1



Power NVNT BLE 1M 2440MHz Ant1









### B.3 Maximum Power Spectral Density Level

| Condition | Mode   | Frequency (MHz) | Antenna | Conducted PSD<br>(dBm/3kHz) | Limit (dBm/3kHz) | Verdict |
|-----------|--------|-----------------|---------|-----------------------------|------------------|---------|
| NVNT      | BLE 1M | 2402            | Ant1    | -16.68                      | 8                | Pass    |
| NVNT      | BLE 1M | 2440            | Ant1    | -16.63                      | 8                | Pass    |
| NVNT      | BLE 1M | 2480            | Ant1    | -17.63                      | 8                | Pass    |
| NVNT      | BLE 2M | 2402            | Ant1    | -19.8                       | 8                | Pass    |
| NVNT      | BLE 2M | 2440            | Ant1    | -20.17                      | 8                | Pass    |
| NVNT      | BLE 2M | 2480            | Ant1    | -20.96                      | 8                | Pass    |

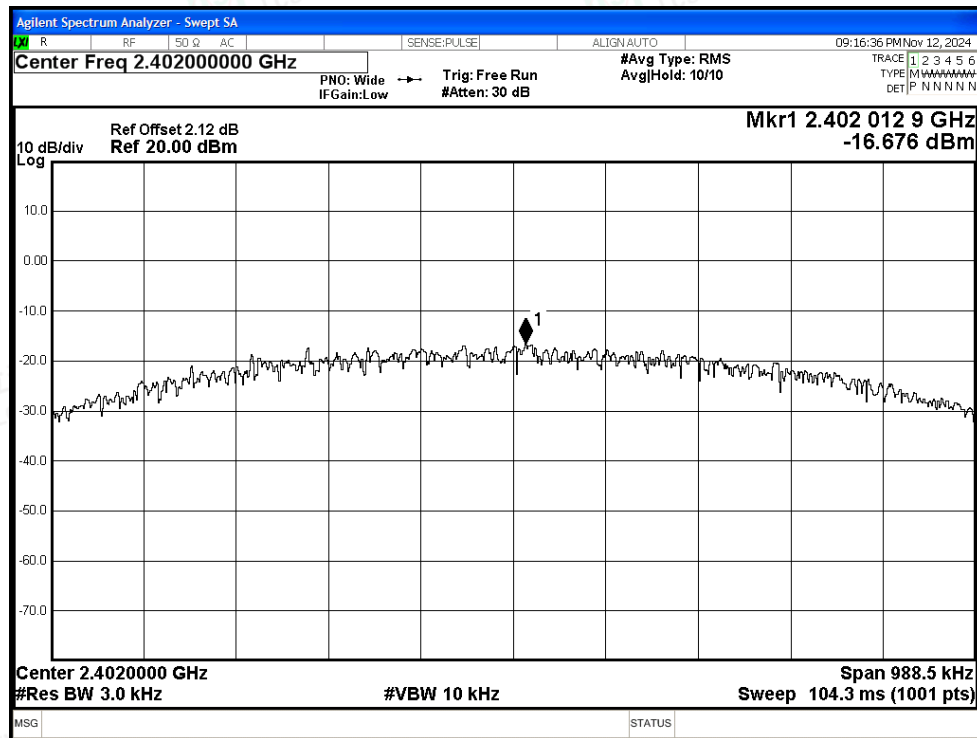


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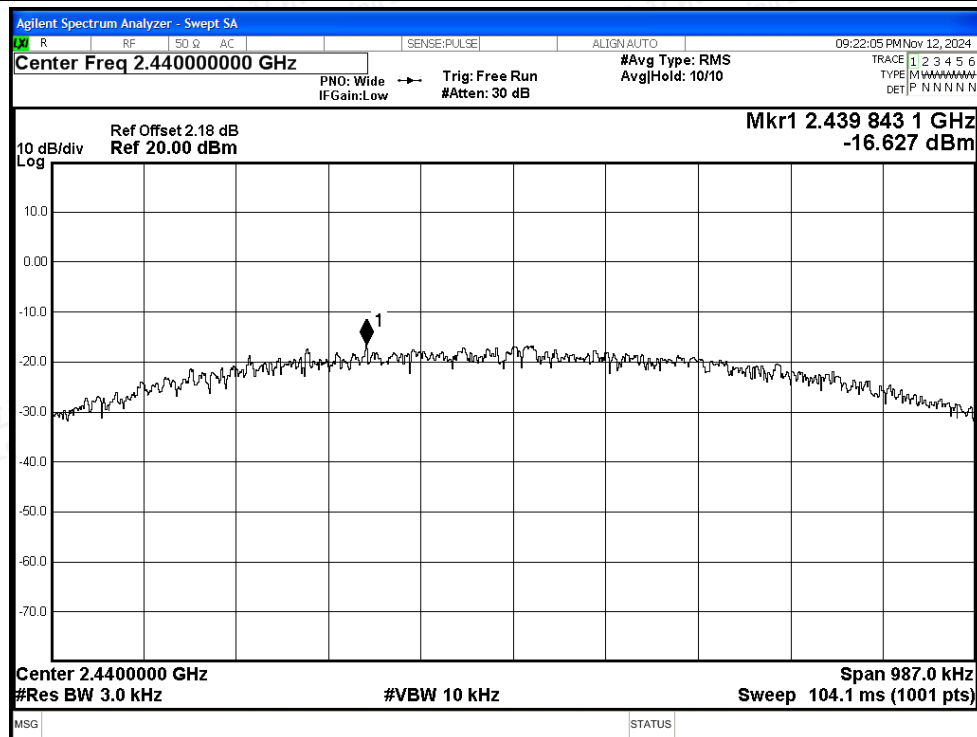


## Test Graphs

PSD NVNT BLE 1M 2402MHz Ant1

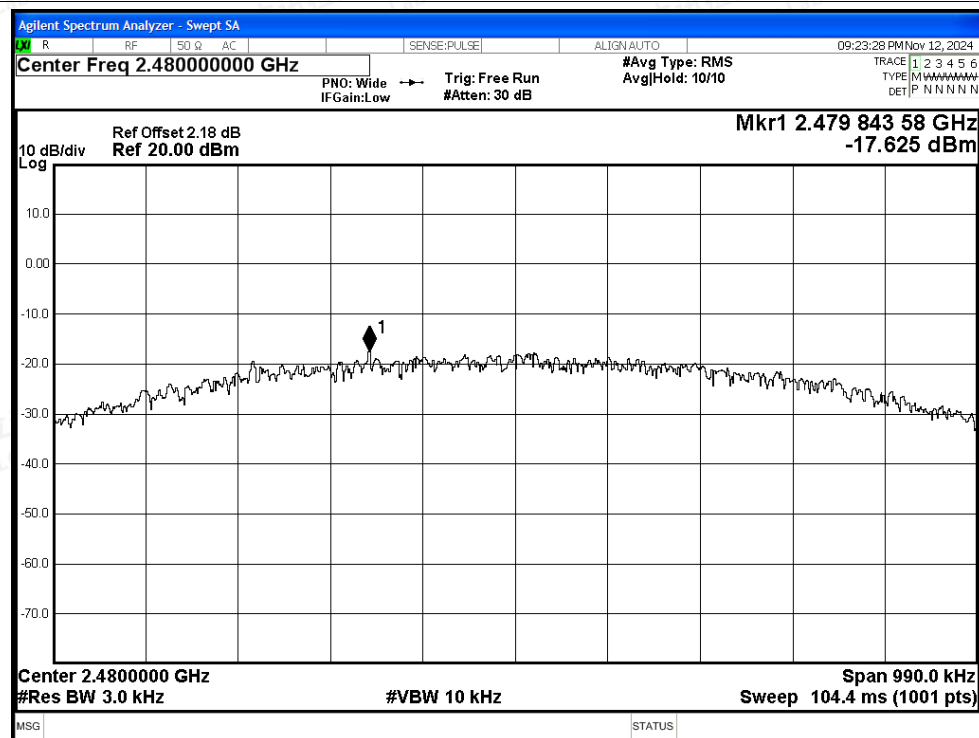


PSD NVNT BLE 1M 2440MHz Ant1

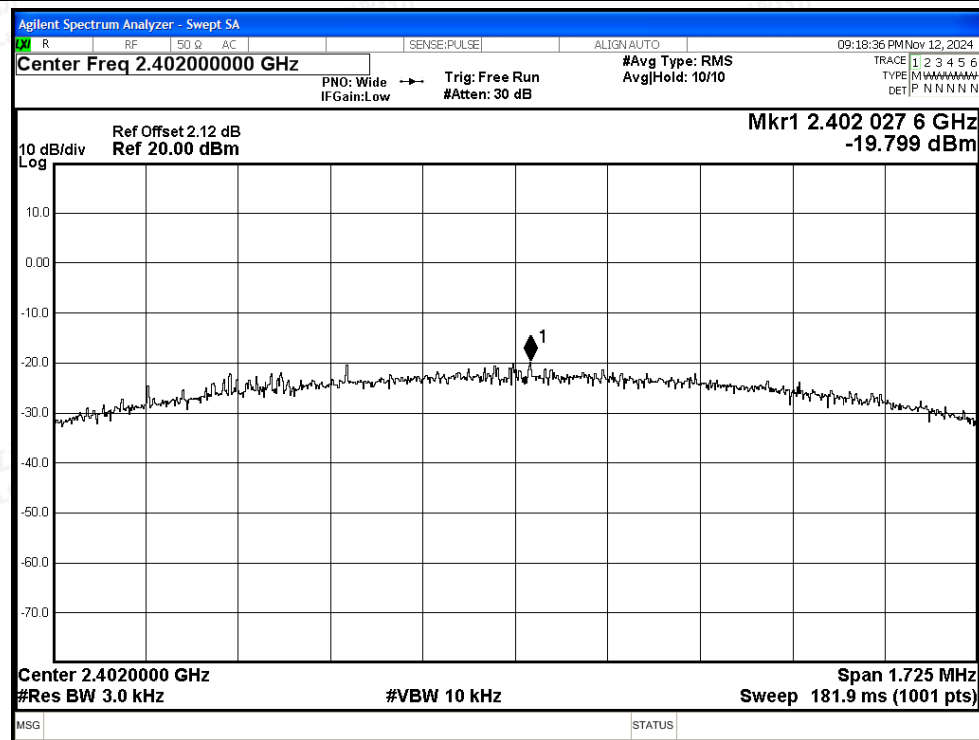




## PSD NVNT BLE 1M 2480MHz Ant1

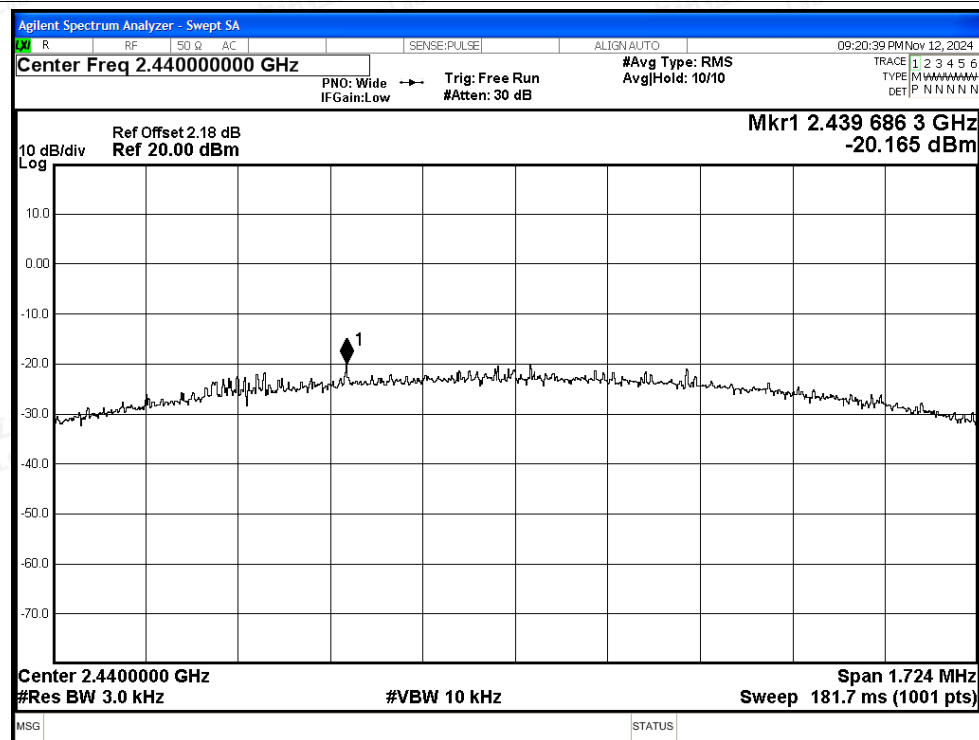


## PSD NVNT BLE 2M 2402MHz Ant1

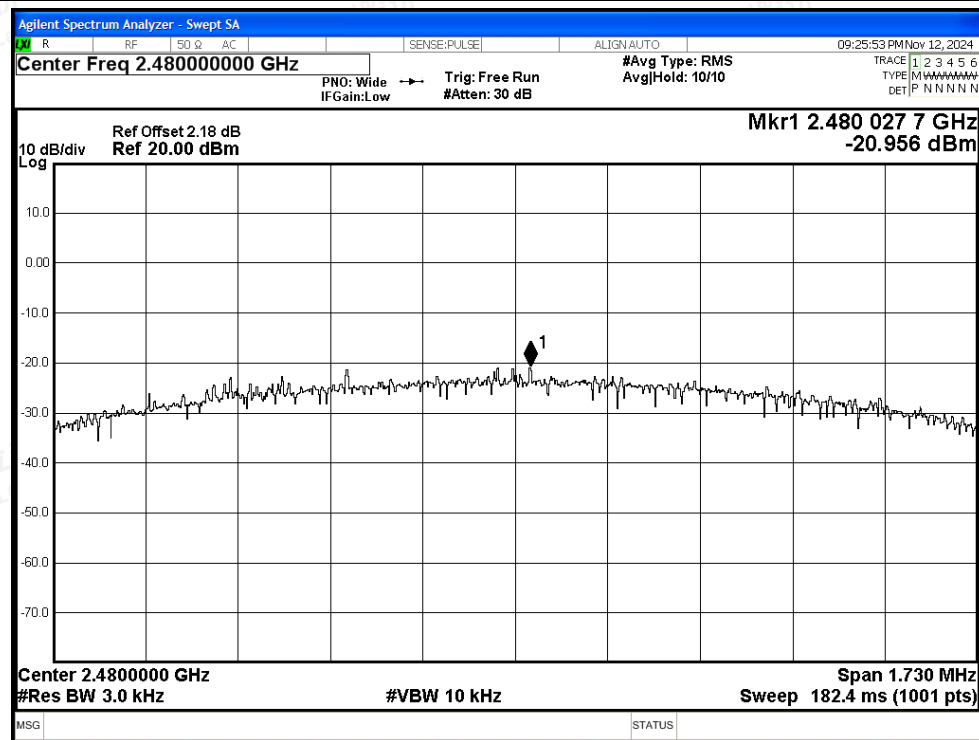




## PSD NVNT BLE 2M 2440MHz Ant1



## PSD NVNT BLE 2M 2480MHz Ant1





## B.4 Band Edge

| Condition | Mode   | Frequency (MHz) | Antenna | Max Value (dBc) | Limit (dBc) | Verdict |
|-----------|--------|-----------------|---------|-----------------|-------------|---------|
| NVNT      | BLE 1M | 2402            | Ant1    | -56.78          | -20         | Pass    |
| NVNT      | BLE 1M | 2480            | Ant1    | -55.96          | -20         | Pass    |
| NVNT      | BLE 2M | 2402            | Ant1    | -44.28          | -20         | Pass    |
| NVNT      | BLE 2M | 2480            | Ant1    | -54.38          | -20         | Pass    |

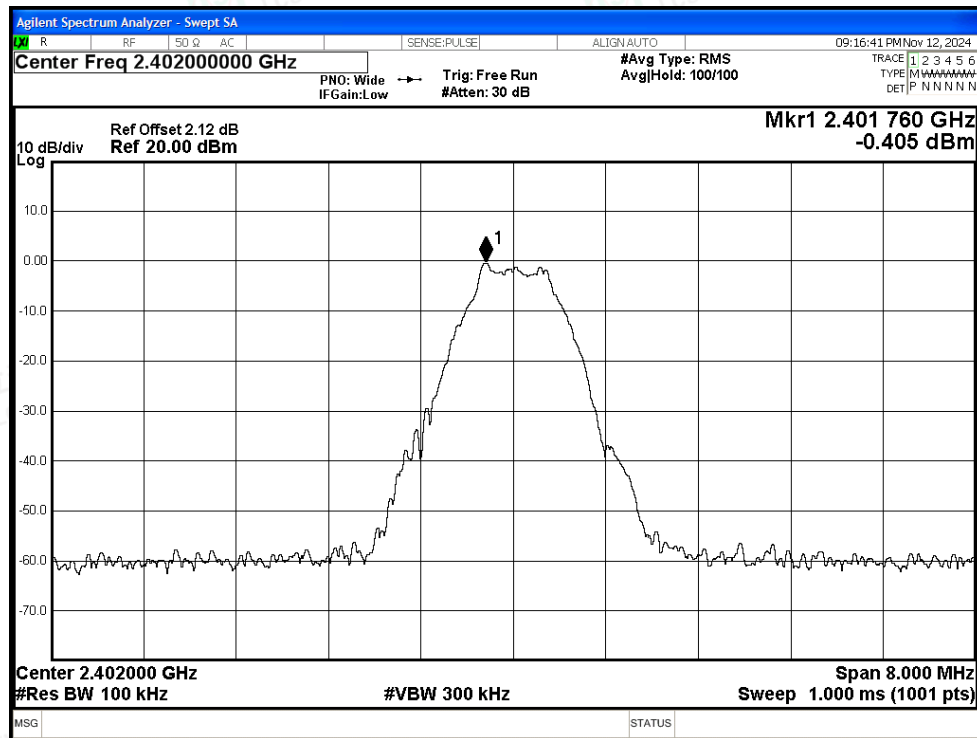


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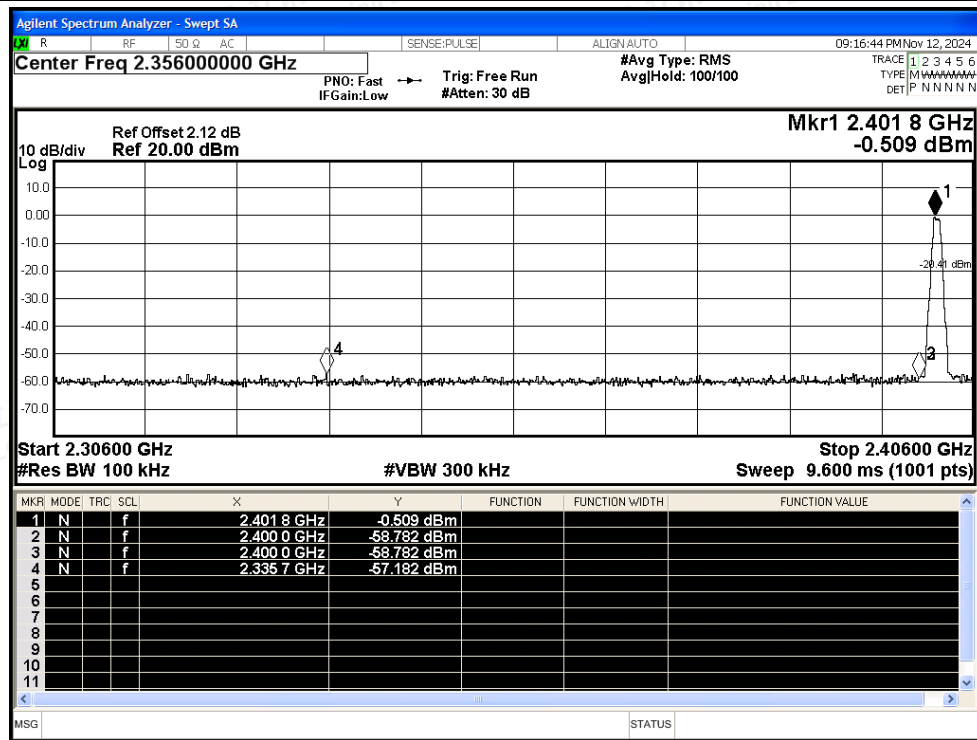


## Test Graphs

## Band Edge NVNT BLE 1M 2402MHz Ant1 Ref

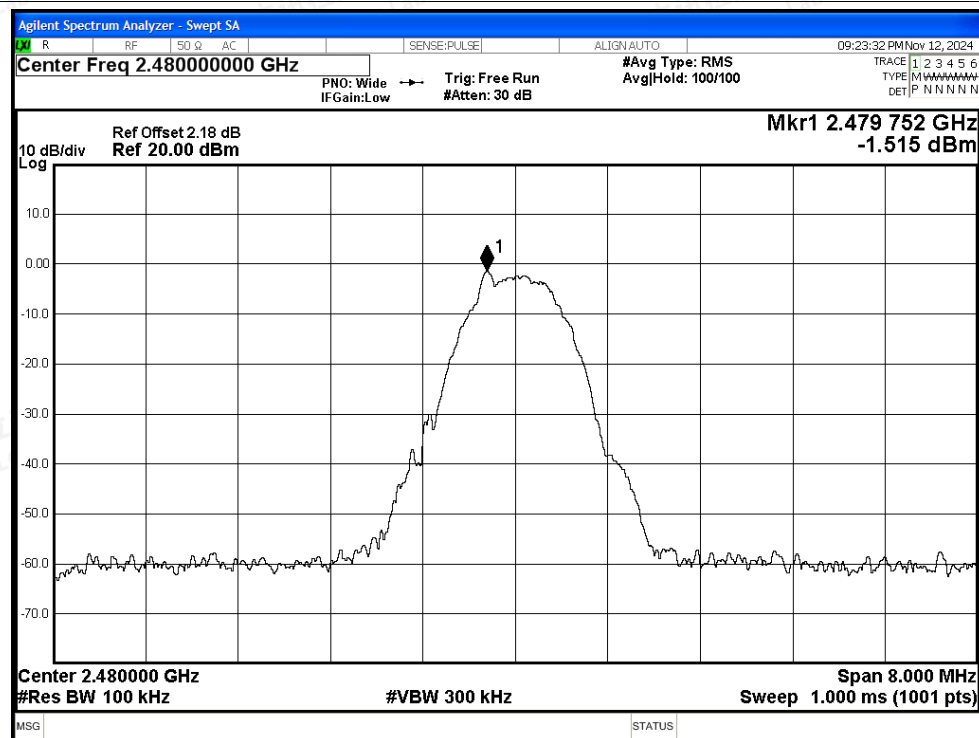


## Band Edge NVNT BLE 1M 2402MHz Ant1 Emission

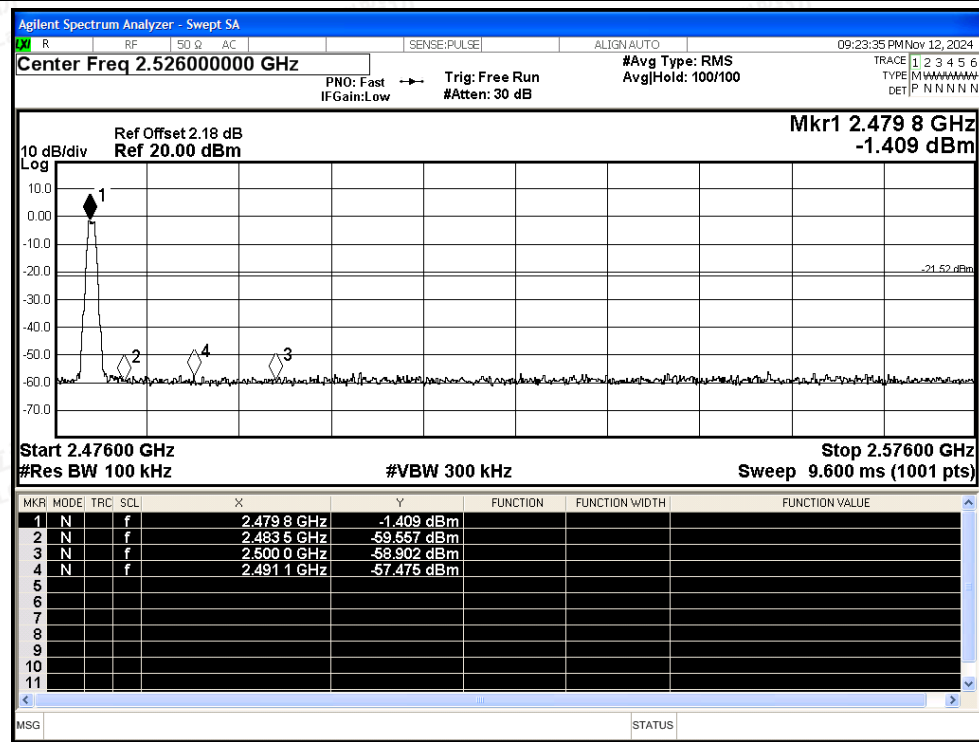




## Band Edge NVNT BLE 1M 2480MHz Ant1 Ref

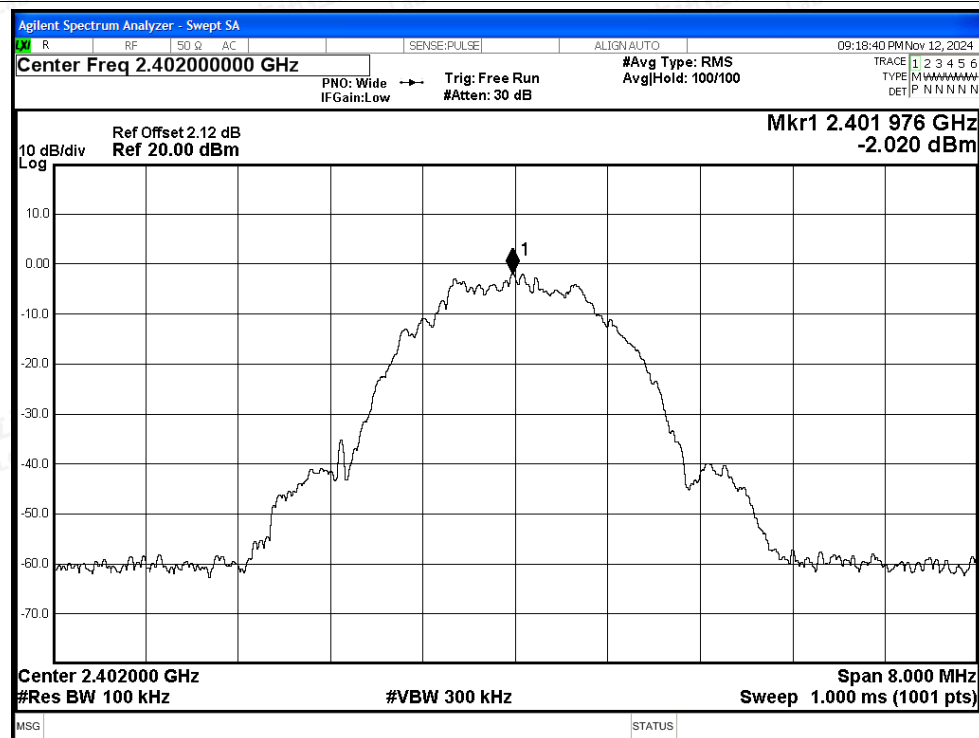


## Band Edge NVNT BLE 1M 2480MHz Ant1 Emission

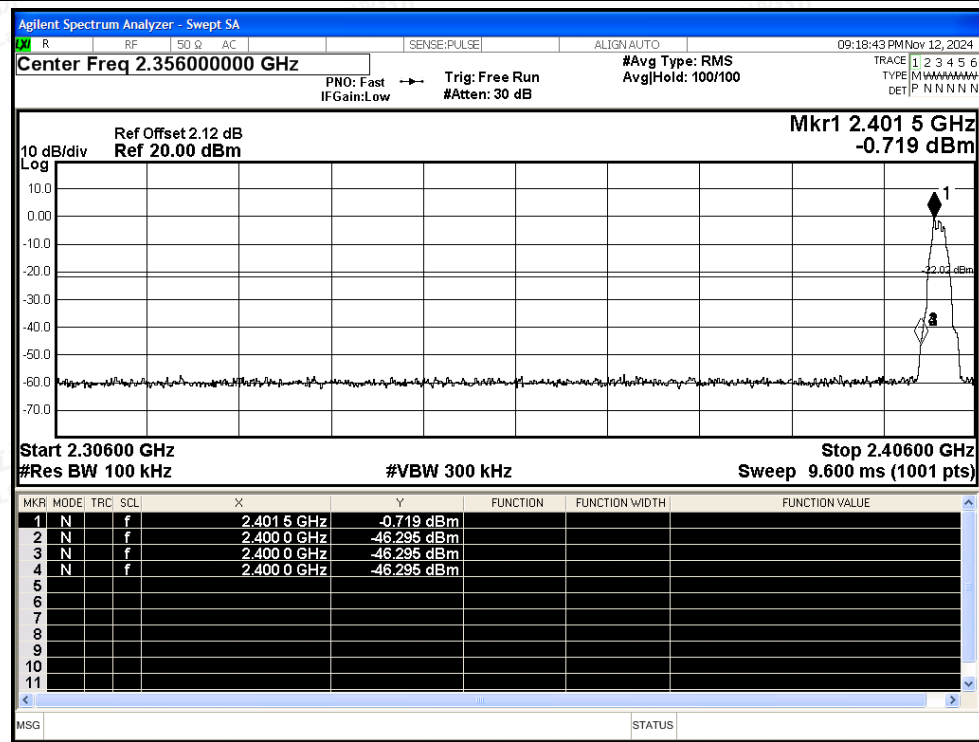




## Band Edge NVNT BLE 2M 2402MHz Ant1 Ref

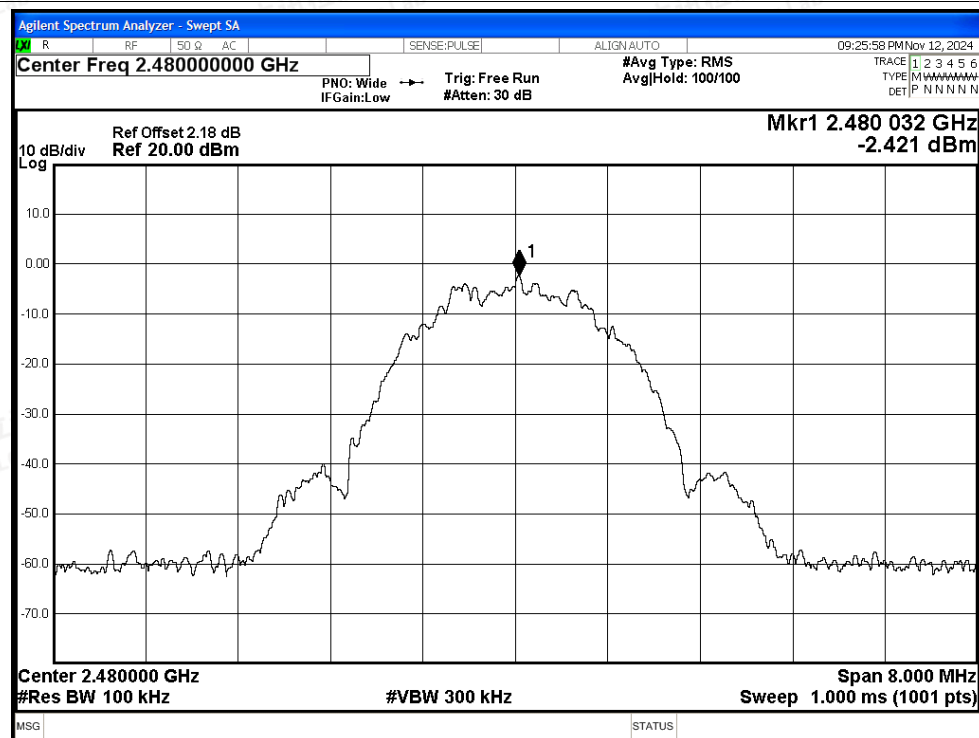


## Band Edge NVNT BLE 2M 2402MHz Ant1 Emission

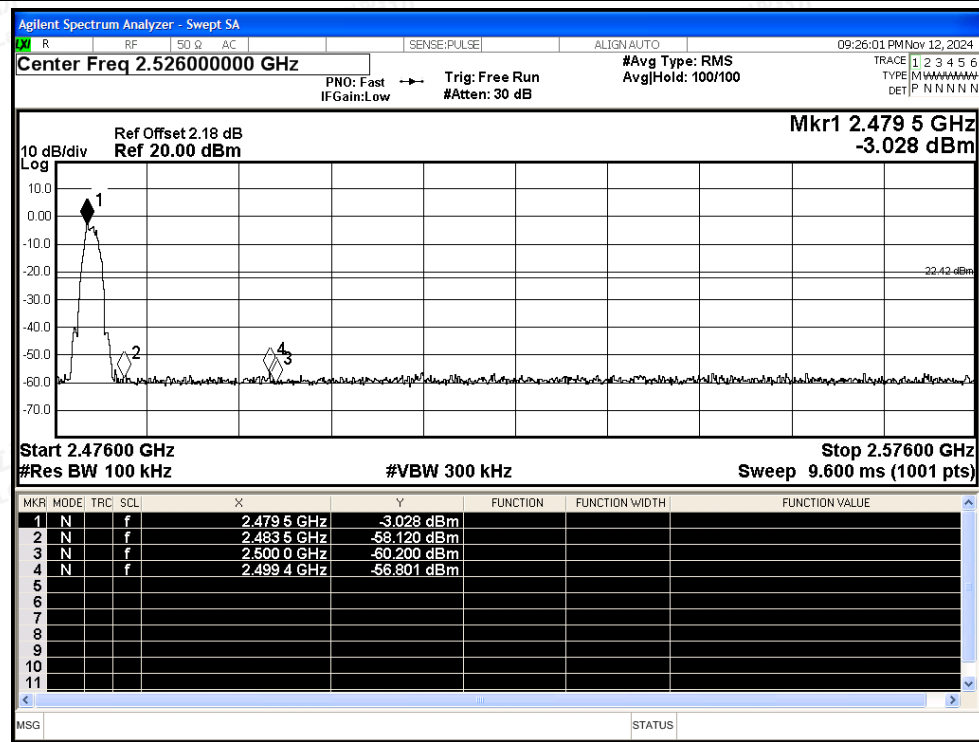




## Band Edge NVNT BLE 2M 2480MHz Ant1 Ref



## Band Edge NVNT BLE 2M 2480MHz Ant1 Emission





## B.5 Conducted RF Spurious Emission

| Condition | Mode   | Frequency (MHz) | Antenna | Max Value (dBc) | Limit (dBc) | Verdict |
|-----------|--------|-----------------|---------|-----------------|-------------|---------|
| NVNT      | BLE 1M | 2402            | Ant1    | -54.9           | -20         | Pass    |
| NVNT      | BLE 1M | 2440            | Ant1    | -54.91          | -20         | Pass    |
| NVNT      | BLE 1M | 2480            | Ant1    | -53.69          | -20         | Pass    |
| NVNT      | BLE 2M | 2402            | Ant1    | -53.46          | -20         | Pass    |
| NVNT      | BLE 2M | 2440            | Ant1    | -53.68          | -20         | Pass    |
| NVNT      | BLE 2M | 2480            | Ant1    | -53.56          | -20         | Pass    |

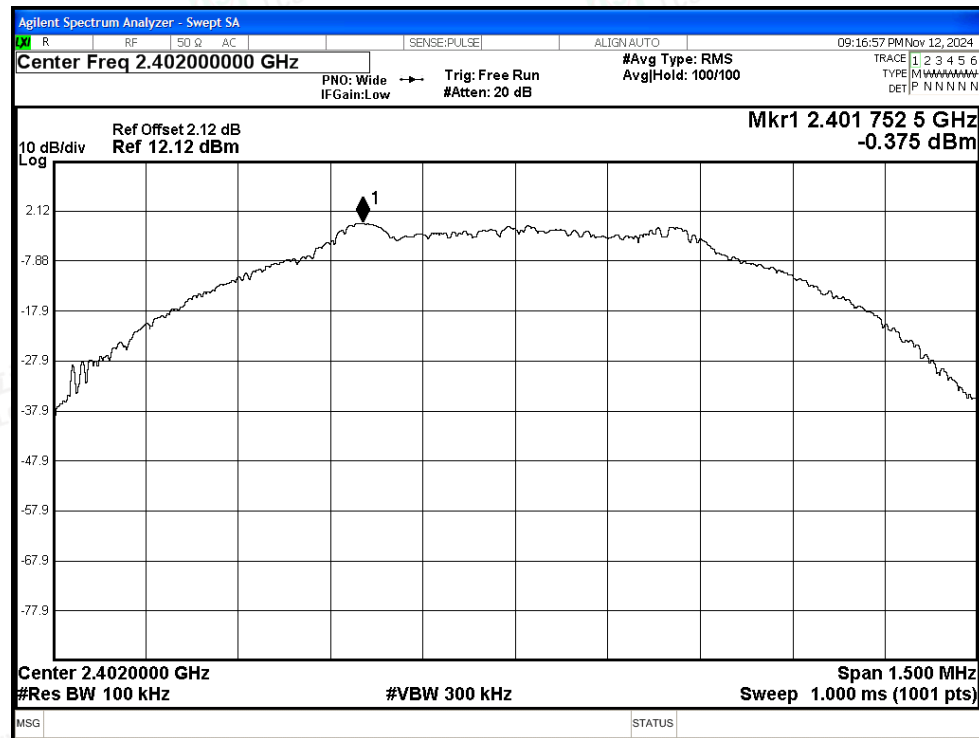


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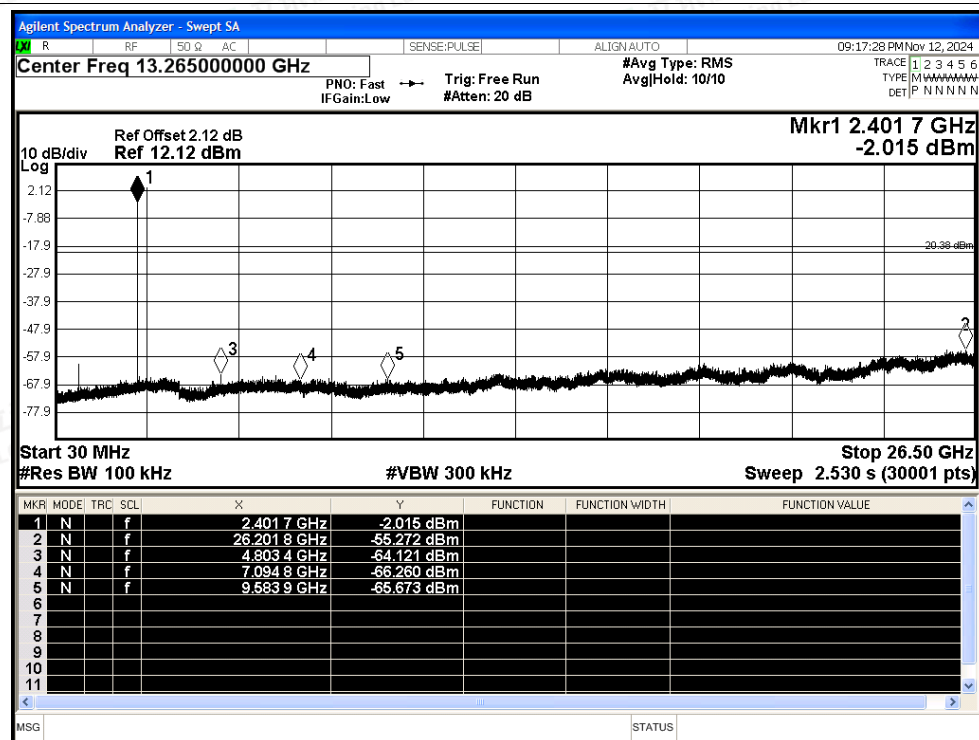


## Test Graphs

Tx. Spurious NVNT BLE 1M 2402MHz Ant1 Ref



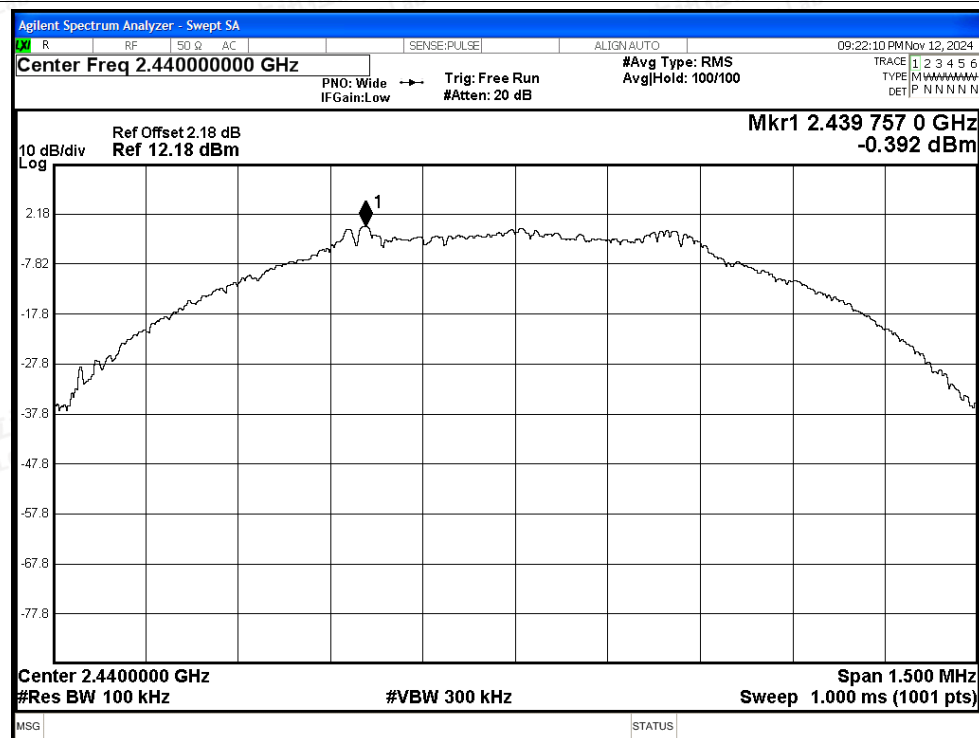
Tx. Spurious NVNT BLE 1M 2402MHz Ant1 Emission



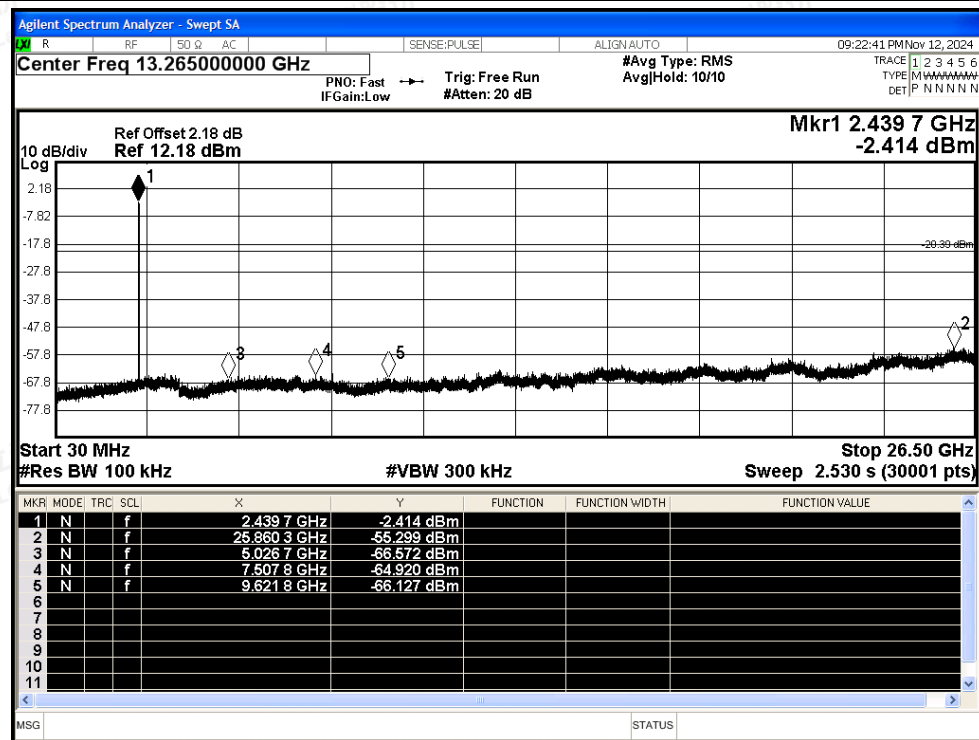
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## Tx. Spurious NVNT BLE 1M 2440MHz Ant1 Ref

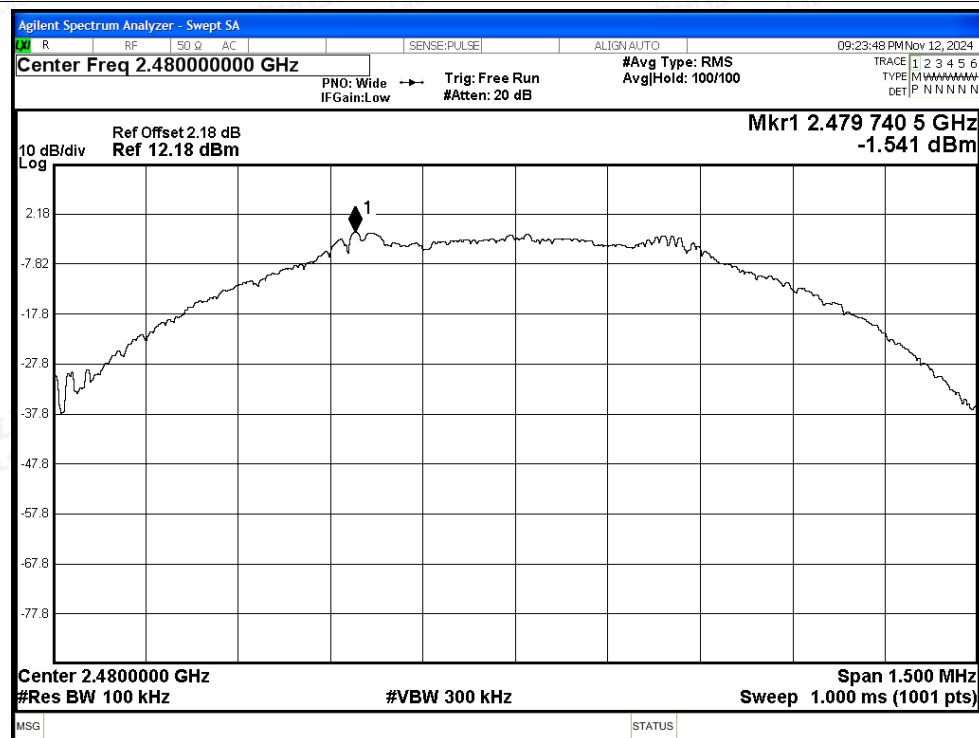


## Tx. Spurious NVNT BLE 1M 2440MHz Ant1 Emission

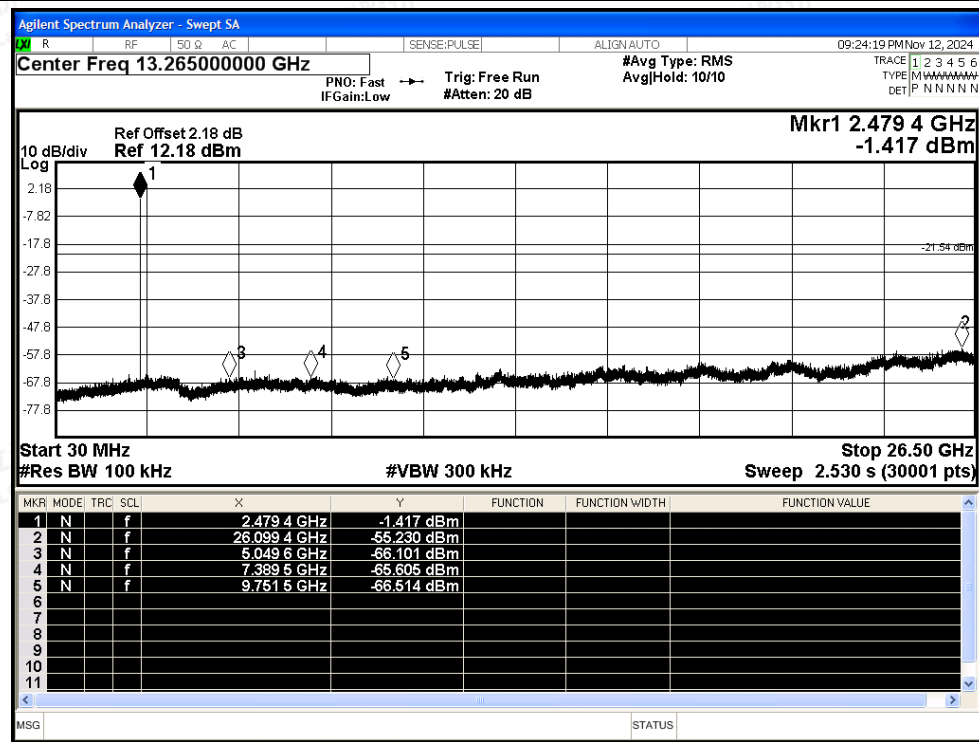




## Tx. Spurious NVNT BLE 1M 2480MHz Ant1 Ref

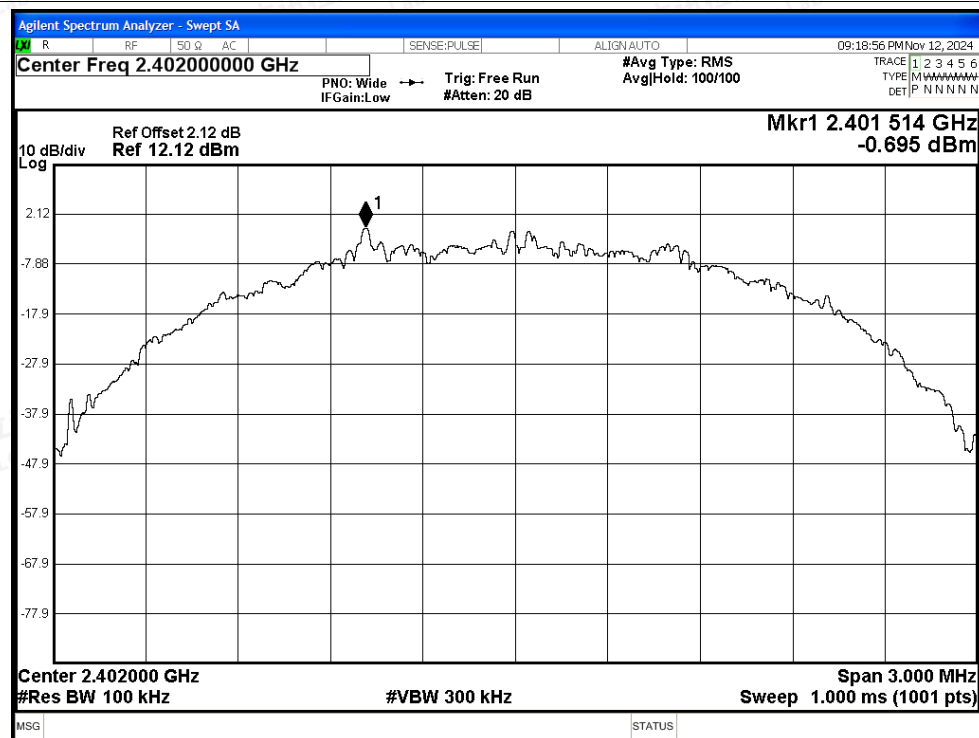


## Tx. Spurious NVNT BLE 1M 2480MHz Ant1 Emission

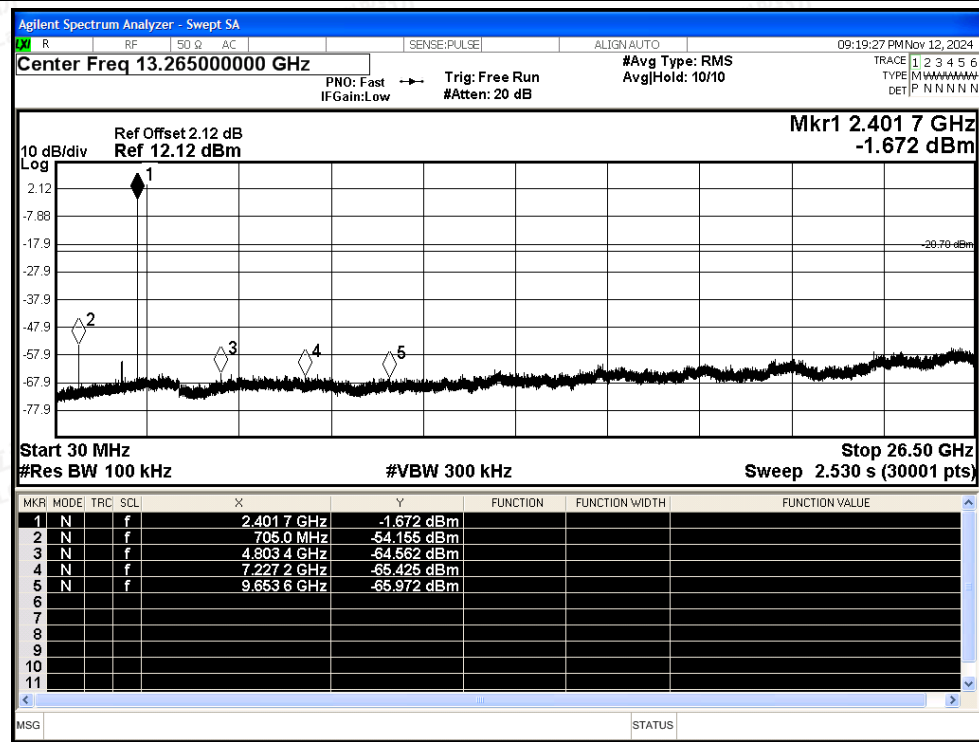




## Tx. Spurious NVNT BLE 2M 2402MHz Ant1 Ref



## Tx. Spurious NVNT BLE 2M 2402MHz Ant1 Emission

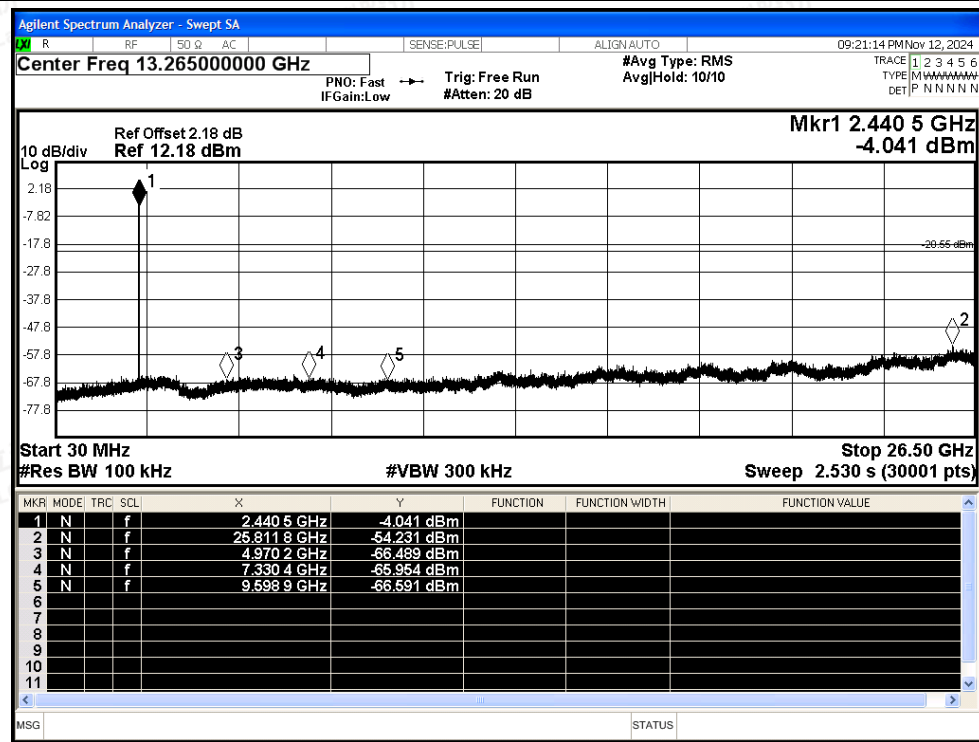




## Tx. Spurious NVNT BLE 2M 2440MHz Ant1 Ref

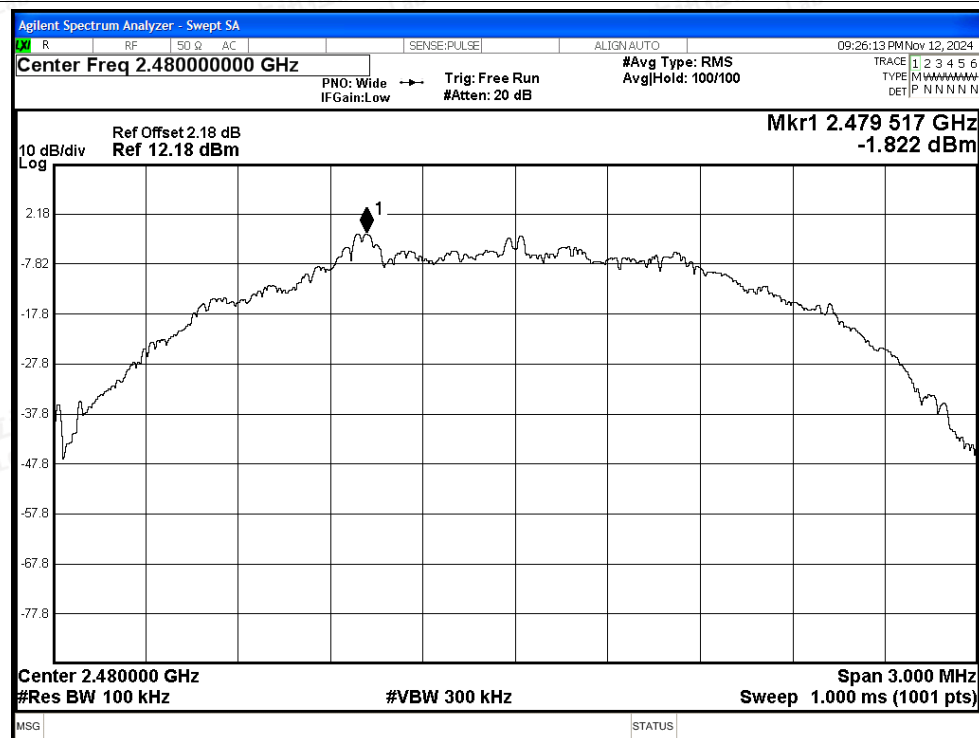


## Tx. Spurious NVNT BLE 2M 2440MHz Ant1 Emission

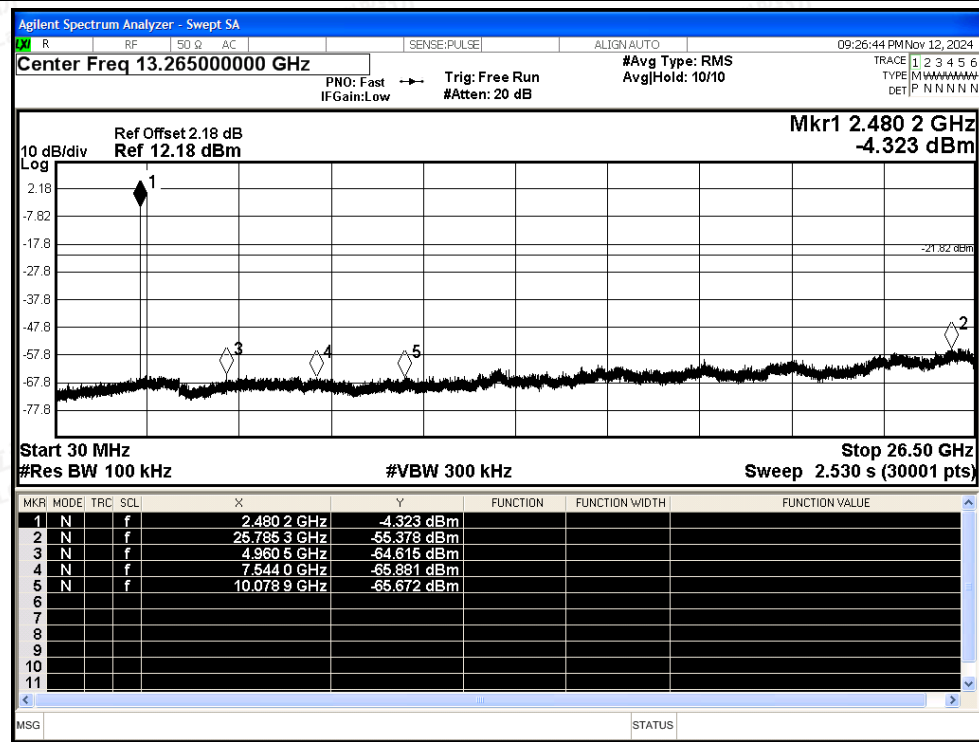




## Tx. Spurious NVNT BLE 2M 2480MHz Ant1 Ref



## Tx. Spurious NVNT BLE 2M 2480MHz Ant1 Emission





## B.6 Duty Cycle

| Condition | Mode   | Frequency (MHz) | Antenna | Duty Cycle (%) | Correction Factor (dB) | 1/T (kHz) |
|-----------|--------|-----------------|---------|----------------|------------------------|-----------|
| NVNT      | BLE 1M | 2402            | Ant1    | 87.39          | 0.59                   | 0.61      |
| NVNT      | BLE 1M | 2440            | Ant1    | 87.39          | 0.59                   | 0.61      |
| NVNT      | BLE 1M | 2480            | Ant1    | 87.39          | 0.59                   | 0.61      |
| NVNT      | BLE 2M | 2402            | Ant1    | 65.93          | 1.81                   | 1.21      |
| NVNT      | BLE 2M | 2440            | Ant1    | 65.96          | 1.81                   | 1.21      |
| NVNT      | BLE 2M | 2480            | Ant1    | 65.96          | 1.81                   | 1.21      |

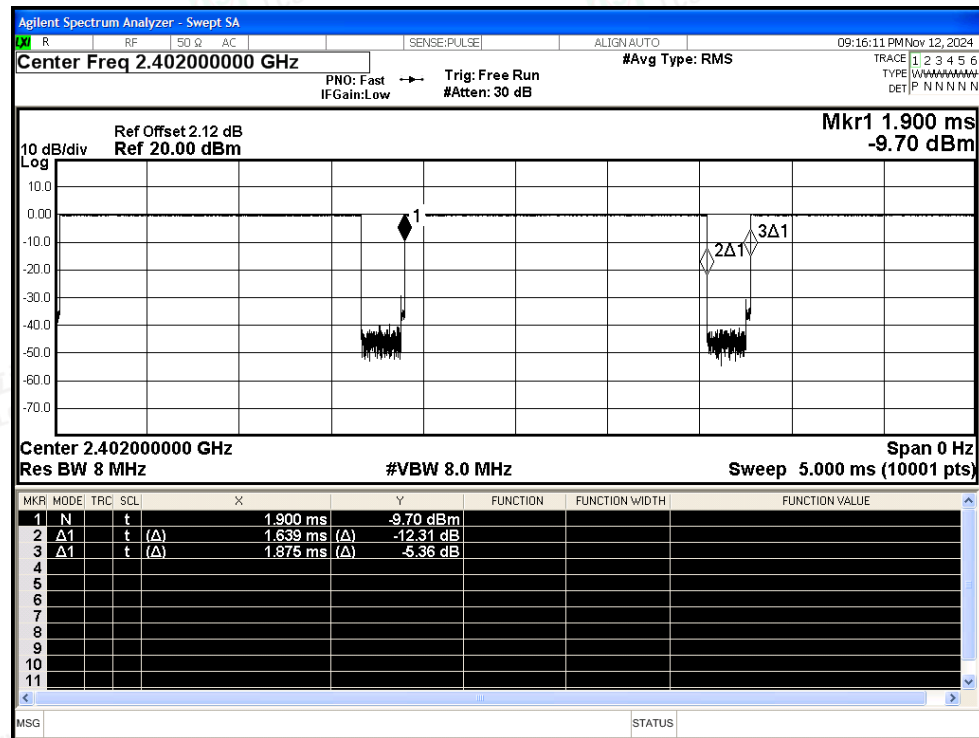


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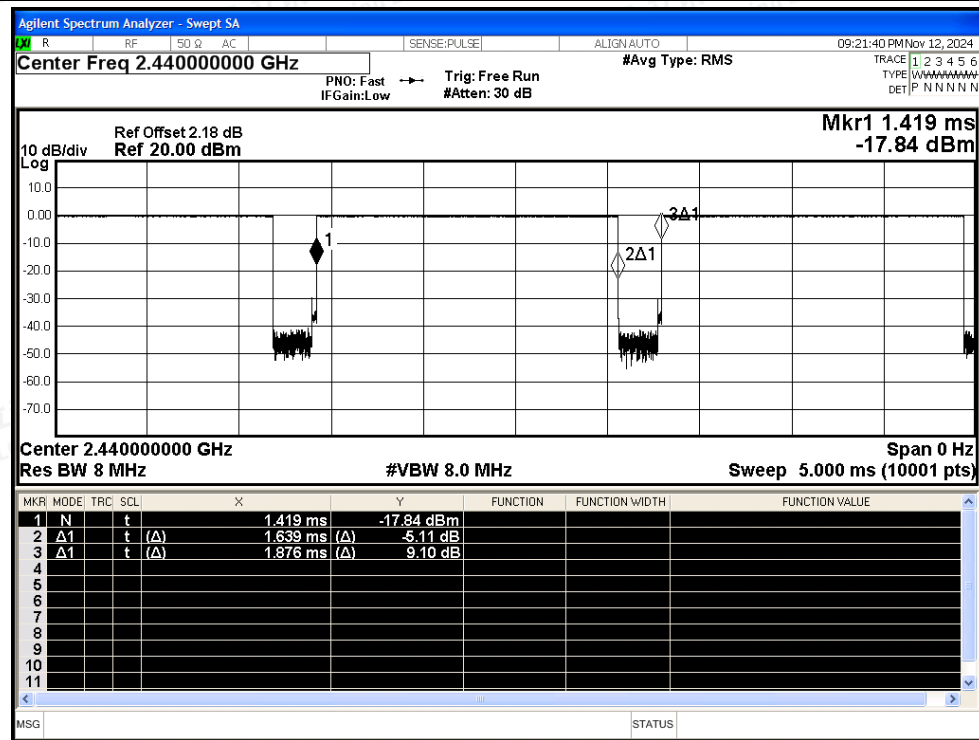


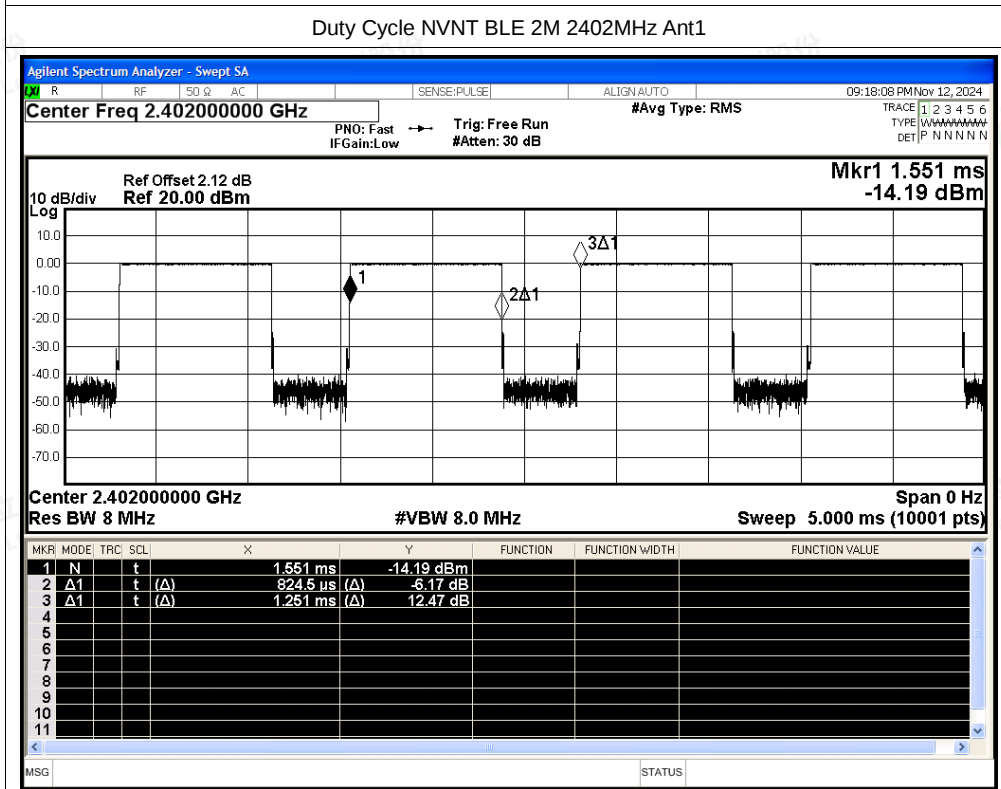
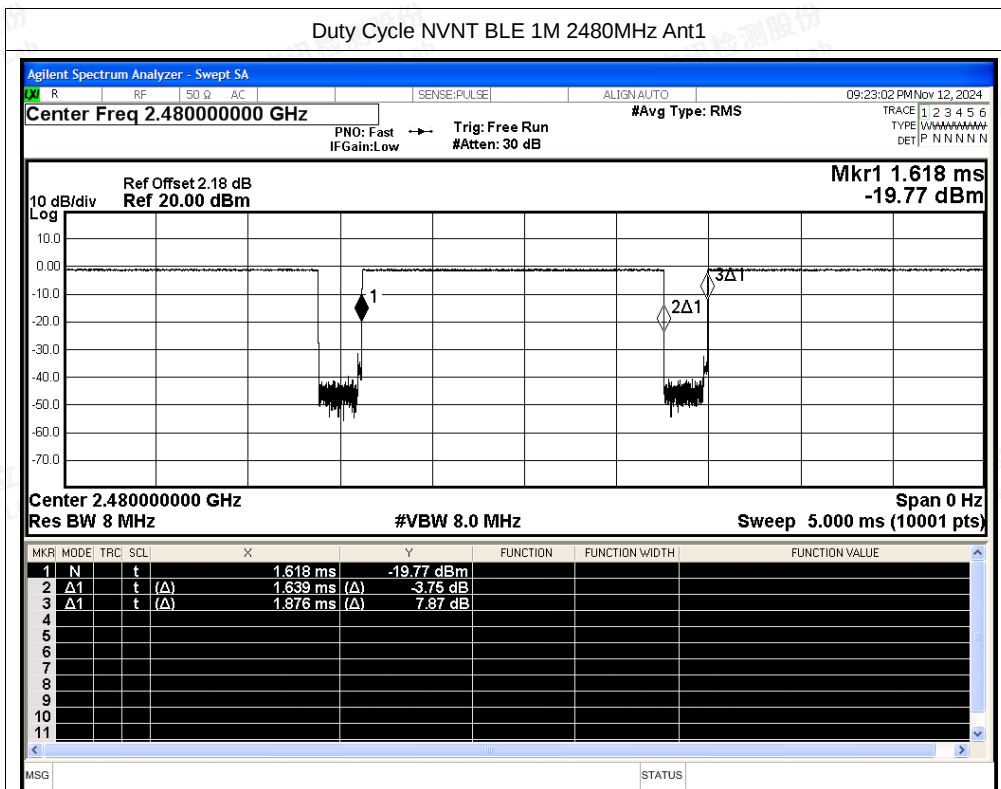
## Test Graphs

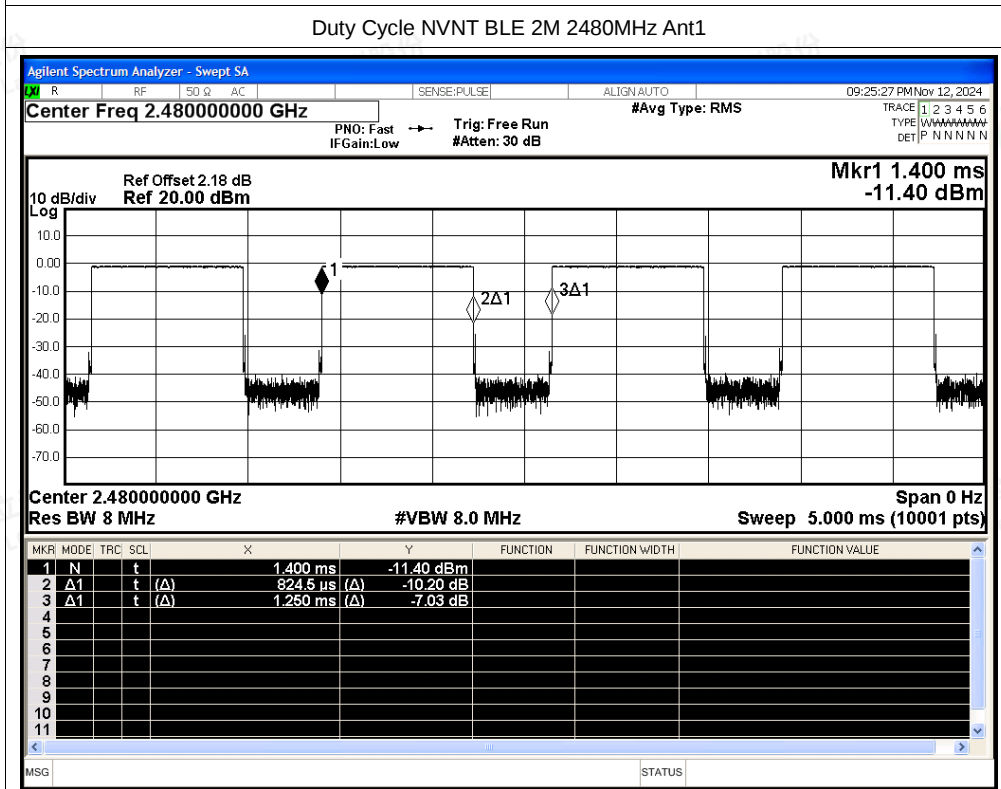
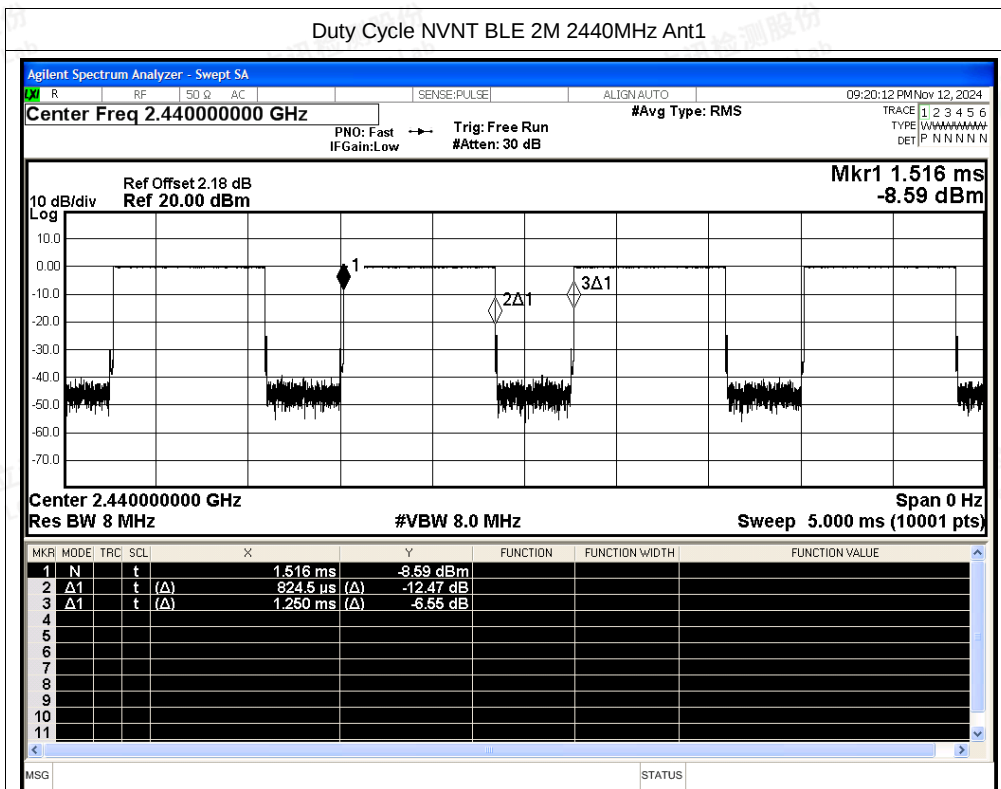
## Duty Cycle NVNT BLE 1M 2402MHz Ant1



## Duty Cycle NVNT BLE 1M 2440MHz Ant1









## 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      | BLE 1M | 2402            | Ant1    | 2310            | -50.65      | 2.70       | -                | 47.31      | Peak     | 74             | Pass    |
| NVNT      | BLE 1M | 2402            | Ant1    | 2310            | -59.59      | 2.70       | 0.59             | 38.96      | Average  | 54             | Pass    |
| NVNT      | BLE 1M | 2402            | Ant1    | 2354.928        | -47.61      | 2.70       | -                | 50.35      | Peak     | 74             | Pass    |
| NVNT      | BLE 1M | 2402            | Ant1    | 2318.928        | -57.57      | 2.70       | 0.59             | 40.98      | Average  | 54             | Pass    |
| NVNT      | BLE 1M | 2402            | Ant1    | 2390            | -50.08      | 2.70       | -                | 47.88      | Peak     | 74             | Pass    |
| NVNT      | BLE 1M | 2402            | Ant1    | 2390            | -58.55      | 2.70       | 0.59             | 40.00      | Average  | 54             | Pass    |
| NVNT      | BLE 1M | 2480            | Ant1    | 2483.5          | -48.66      | 2.70       | -                | 49.30      | Peak     | 74             | Pass    |
| NVNT      | BLE 1M | 2480            | Ant1    | 2483.5          | -57.93      | 2.70       | 0.59             | 40.62      | Average  | 54             | Pass    |
| NVNT      | BLE 1M | 2480            | Ant1    | 2484.424        | -45.18      | 2.70       | -                | 52.78      | Peak     | 74             | Pass    |
| NVNT      | BLE 1M | 2480            | Ant1    | 2491.384        | -57.03      | 2.70       | 0.59             | 41.52      | Average  | 54             | Pass    |
| NVNT      | BLE 1M | 2480            | Ant1    | 2500            | -49.81      | 2.70       | -                | 48.15      | Peak     | 74             | Pass    |
| NVNT      | BLE 1M | 2480            | Ant1    | 2500            | -58.05      | 2.70       | 0.59             | 40.50      | Average  | 54             | Pass    |
| NVNT      | BLE 2M | 2402            | Ant1    | 2310            | -49.56      | 2.70       | -                | 48.40      | Peak     | 74             | Pass    |
| NVNT      | BLE 2M | 2402            | Ant1    | 2310            | -58.2       | 2.70       | 1.81             | 41.57      | Average  | 54             | Pass    |
| NVNT      | BLE 2M | 2402            | Ant1    | 2319.6          | -47.64      | 2.70       | -                | 50.32      | Peak     | 74             | Pass    |
| NVNT      | BLE 2M | 2402            | Ant1    | 2376.24         | -57.56      | 2.70       | 1.81             | 42.21      | Average  | 54             | Pass    |
| NVNT      | BLE 2M | 2402            | Ant1    | 2390            | -50.72      | 2.70       | -                | 47.24      | Peak     | 74             | Pass    |
| NVNT      | BLE 2M | 2402            | Ant1    | 2390            | -58.15      | 2.70       | 1.81             | 41.62      | Average  | 54             | Pass    |
| NVNT      | BLE 2M | 2480            | Ant1    | 2483.5          | -49.55      | 2.70       | -                | 48.41      | Peak     | 74             | Pass    |
| NVNT      | BLE 2M | 2480            | Ant1    | 2483.5          | -57.52      | 2.70       | 1.81             | 42.25      | Average  | 54             | Pass    |
| NVNT      | BLE 2M | 2480            | Ant1    | 2491.72         | -46.78      | 2.70       | -                | 51.18      | Peak     | 74             | Pass    |
| NVNT      | BLE 2M | 2480            | Ant1    | 2483.536        | -56.84      | 2.70       | 1.81             | 42.93      | Average  | 54             | Pass    |
| NVNT      | BLE 2M | 2480            | Ant1    | 2500            | -49.33      | 2.70       | -                | 48.63      | Peak     | 74             | Pass    |
| NVNT      | BLE 2M | 2480            | Ant1    | 2500            | -58.24      | 2.70       | 1.81             | 41.53      | Average  | 54             | Pass    |

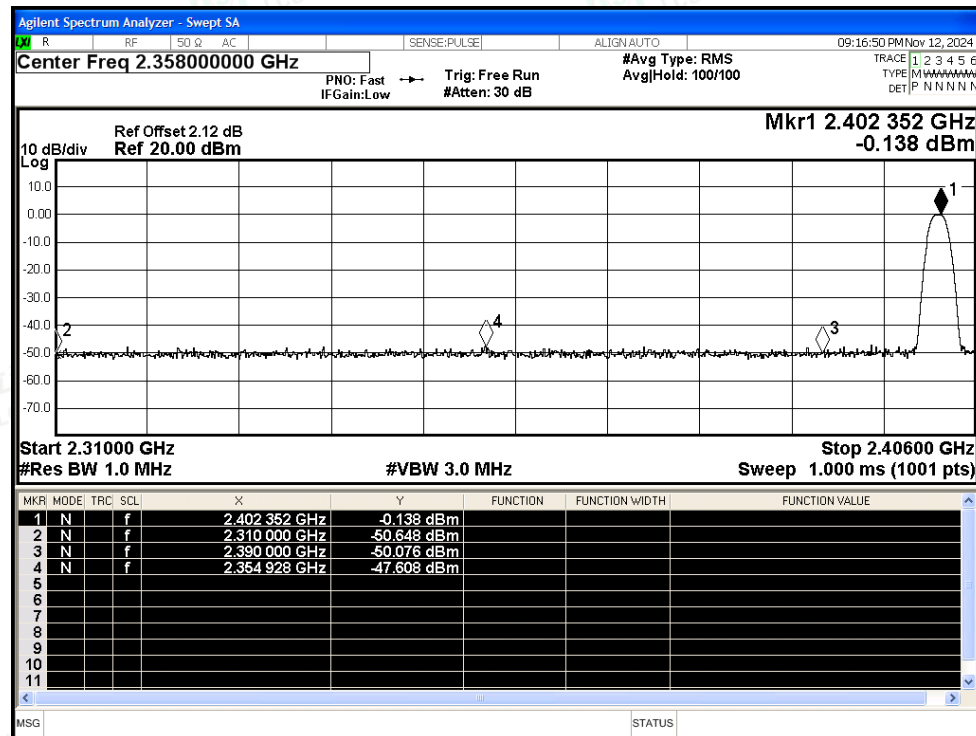


Shenzhen LCS Compliance Testing Laboratory Ltd.  
Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street,  
Baoan District, Shenzhen, 518000, China  
Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com  
Scan code to check authenticity

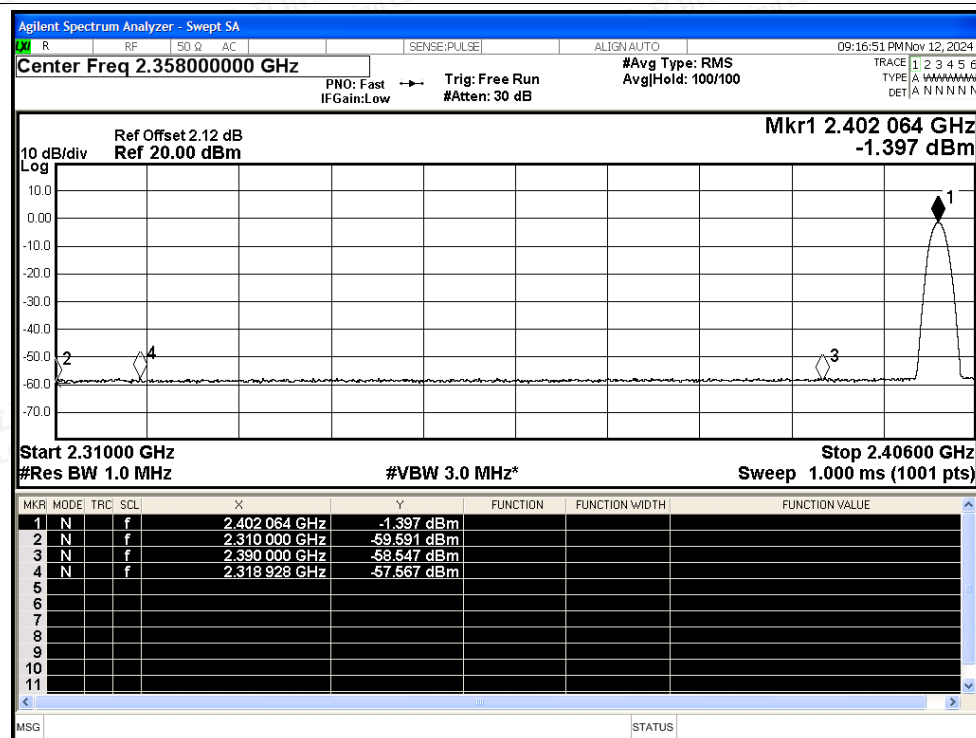


## Test Graphs

## Restrict Band NVNT BLE 1M 2402MHz Ant1 Peak



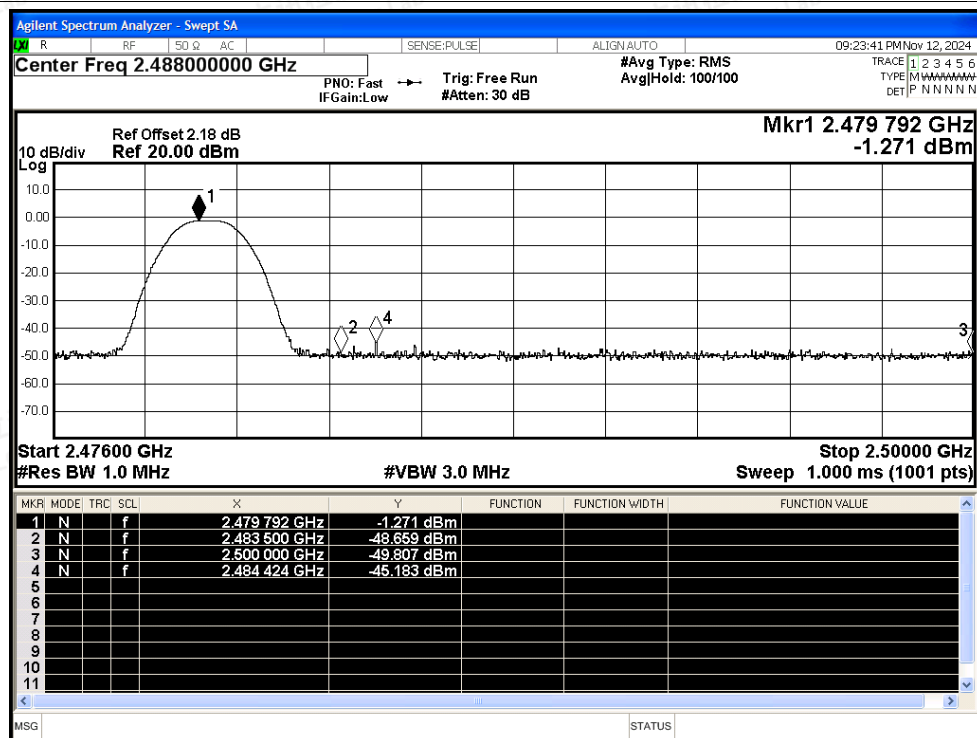
## Restrict Band NVNT BLE 1M 2402MHz Ant1 Average



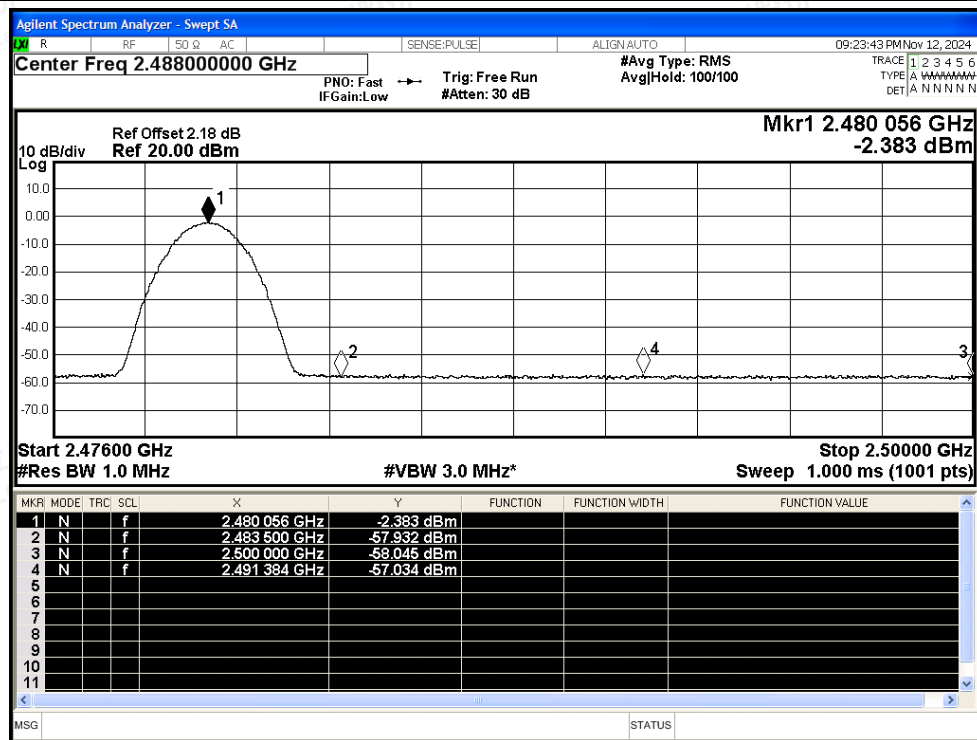
Shenzhen LCS Compliance Testing Laboratory Ltd.  
Add: 101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street,  
Baoan District, Shenzhen, 518000, China  
Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com  
Scan code to check authenticity

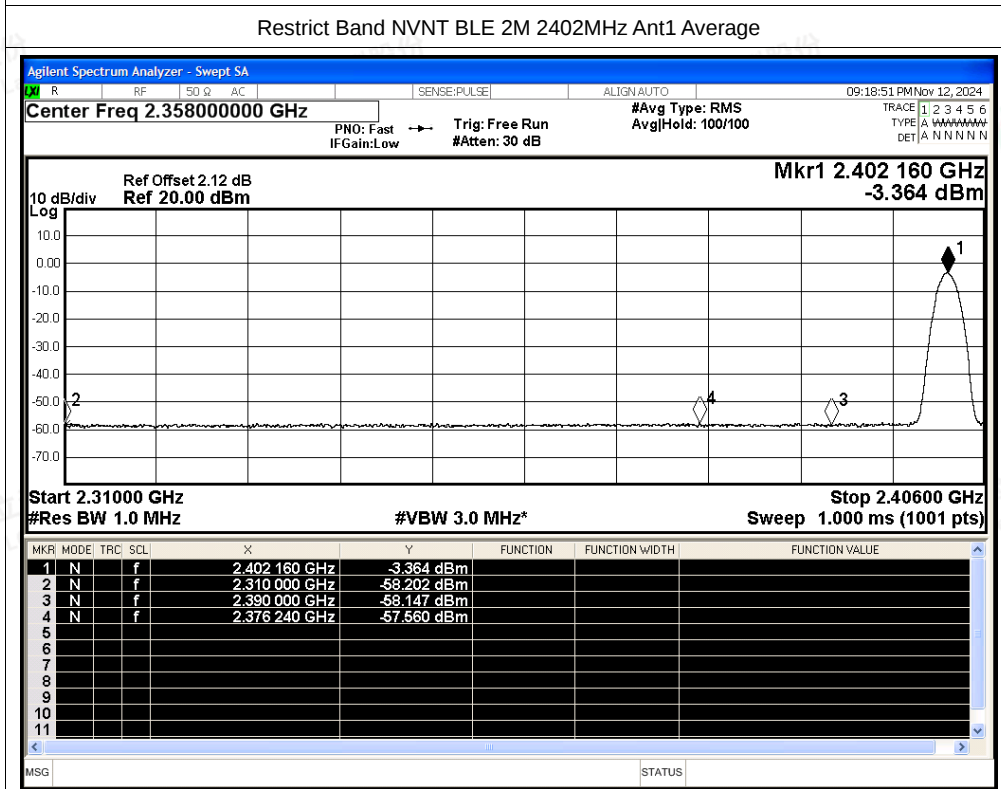
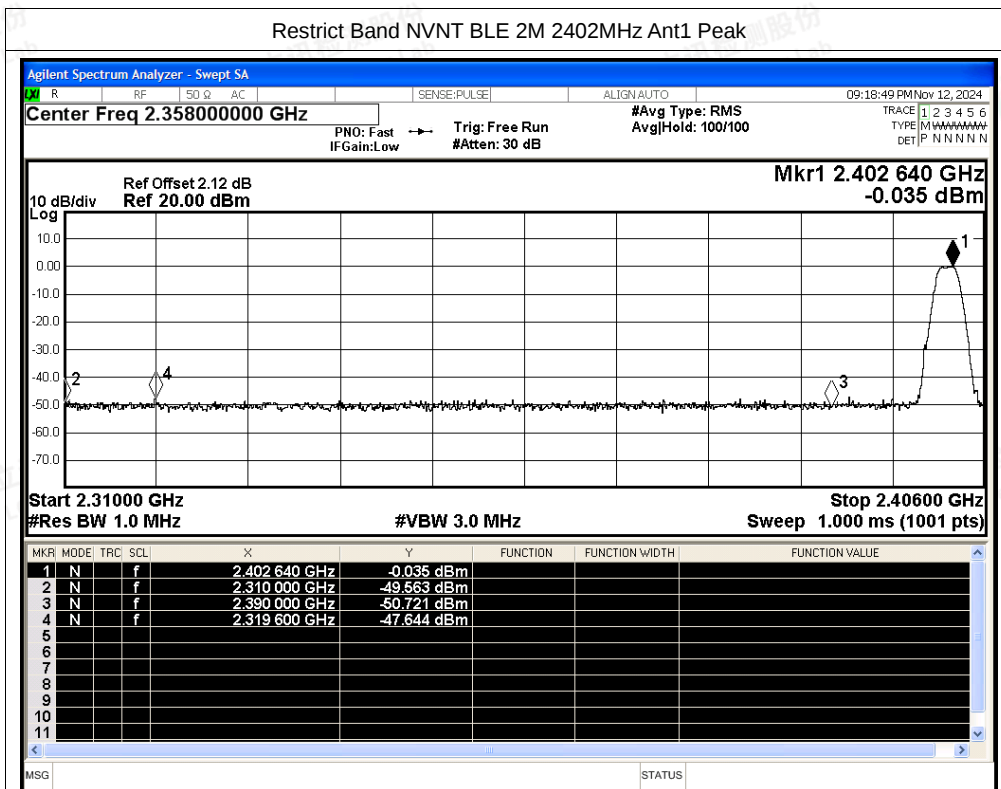


## Restrict Band NVNT BLE 1M 2480MHz Ant1 Peak



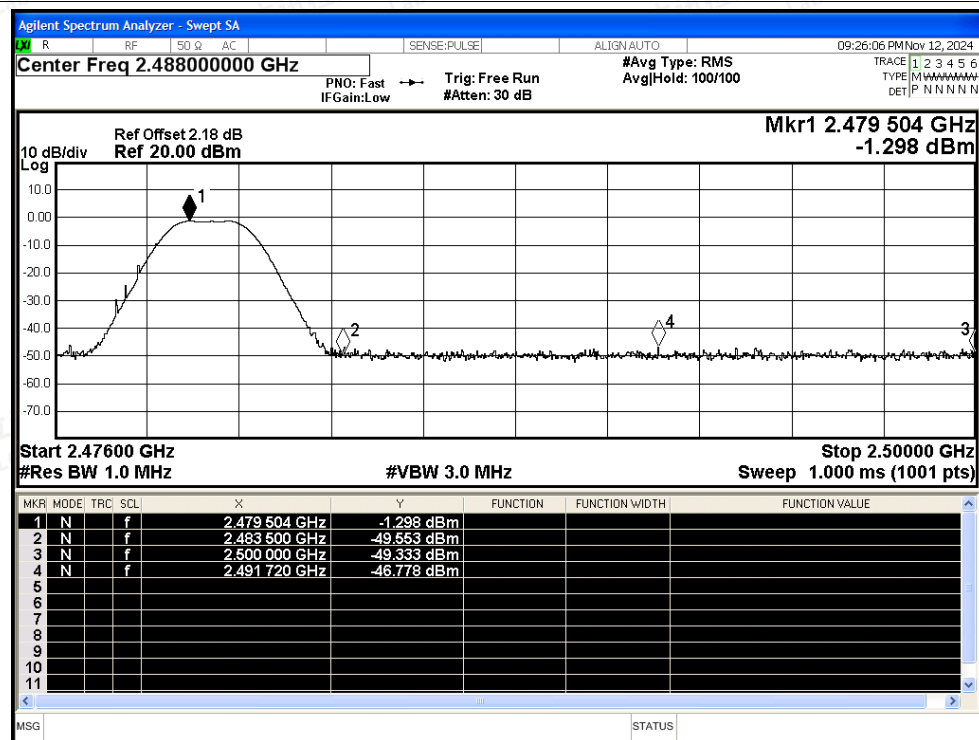
## Restrict Band NVNT BLE 1M 2480MHz Ant1 Average







## Restrict Band NVNT BLE 2M 2480MHz Ant1 Peak



## Restrict Band NVNT BLE 2M 2480MHz Ant1 Average

