



## Appendix A

### RF Test Data for 2.4G (Conducted Measurement)

**Product Name:** Stage luminaire

**Test Model:** Omnibar 2

#### Environmental Conditions

|                    |           |
|--------------------|-----------|
| Temperature:       | 24.6°C    |
| Relative Humidity: | 53.9%     |
| ATM Pressure:      | 100.0 kPa |
| Test Engineer:     | Jerry Chu |
| Supervised by:     | Can Kun   |

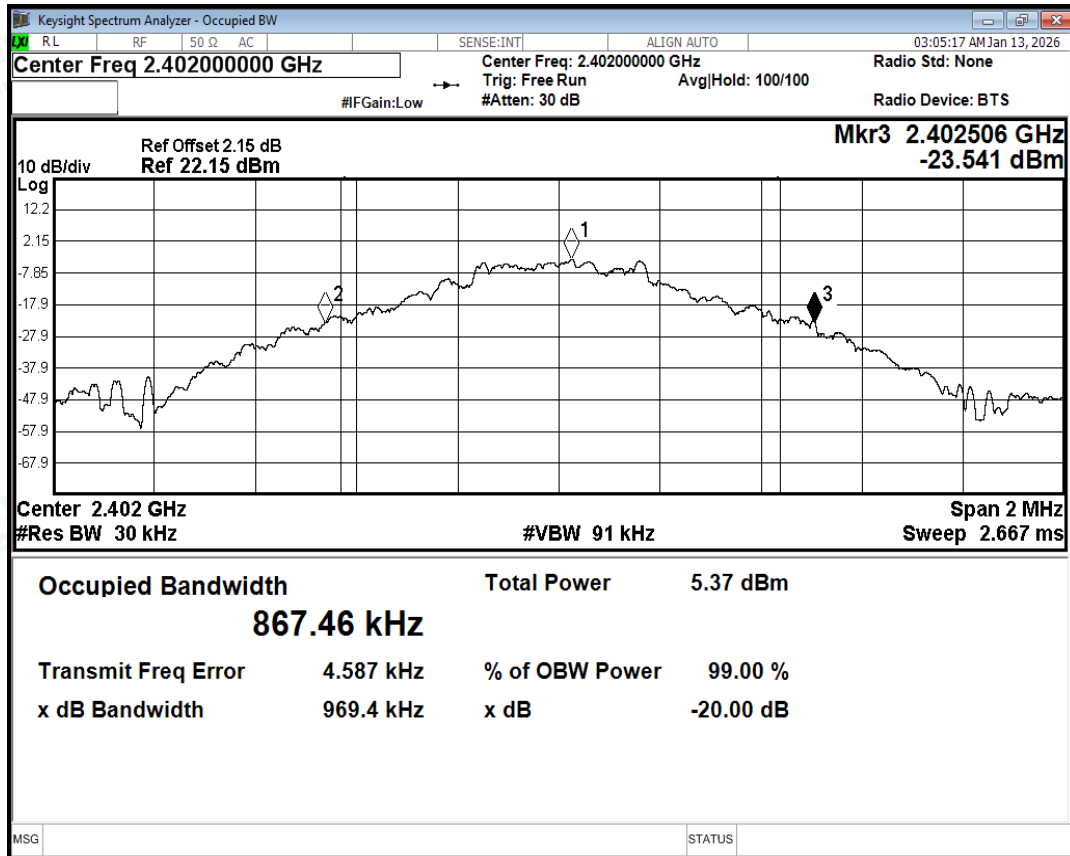




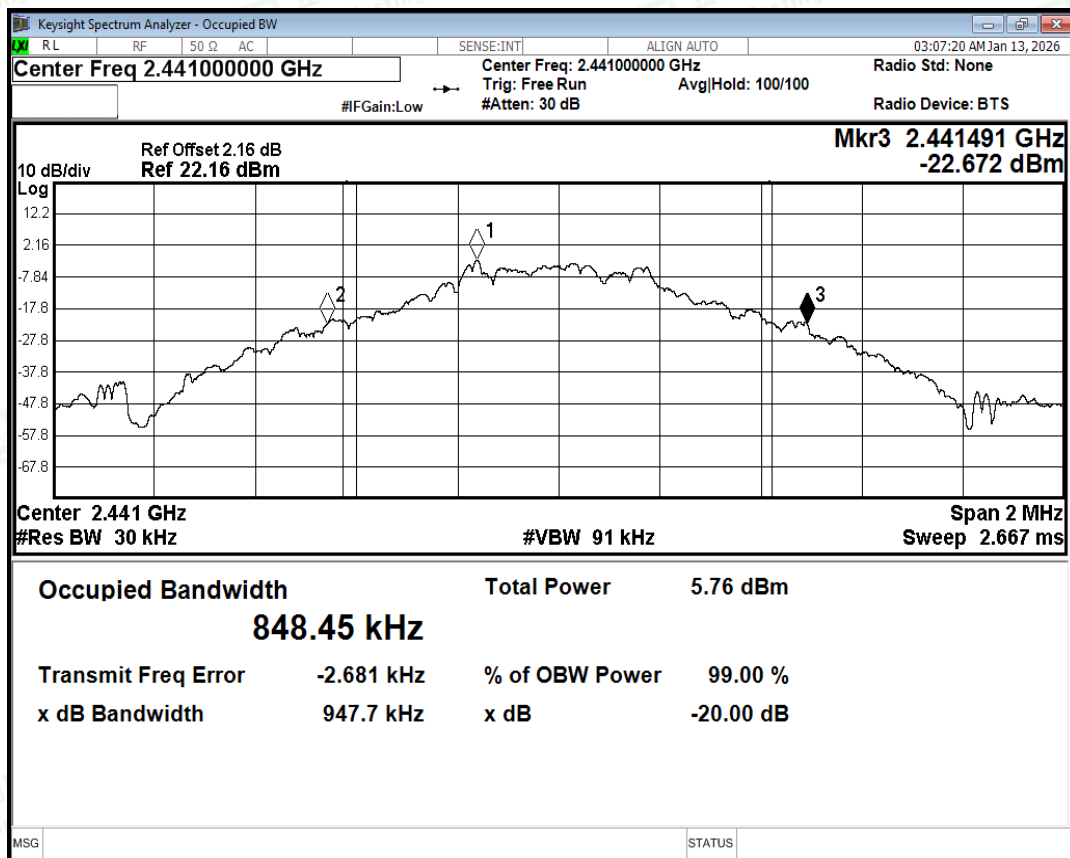
## A.1 -20dB Bandwidth

| Condition | Mode | Frequency (MHz) | Antenna | -20 dB Bandwidth (MHz) | Limit -20 dB Bandwidth (MHz) | Verdict |
|-----------|------|-----------------|---------|------------------------|------------------------------|---------|
| NVNT      | 2.4G | 2402            | Ant1    | 0.9694                 | 0                            | Pass    |
| NVNT      | 2.4G | 2441            | Ant1    | 0.9477                 | 0                            | Pass    |
| NVNT      | 2.4G | 2480            | Ant1    | 1.003                  | 0                            | Pass    |





-20dB Bandwidth NVNT 2.4G 2402MHz Ant1



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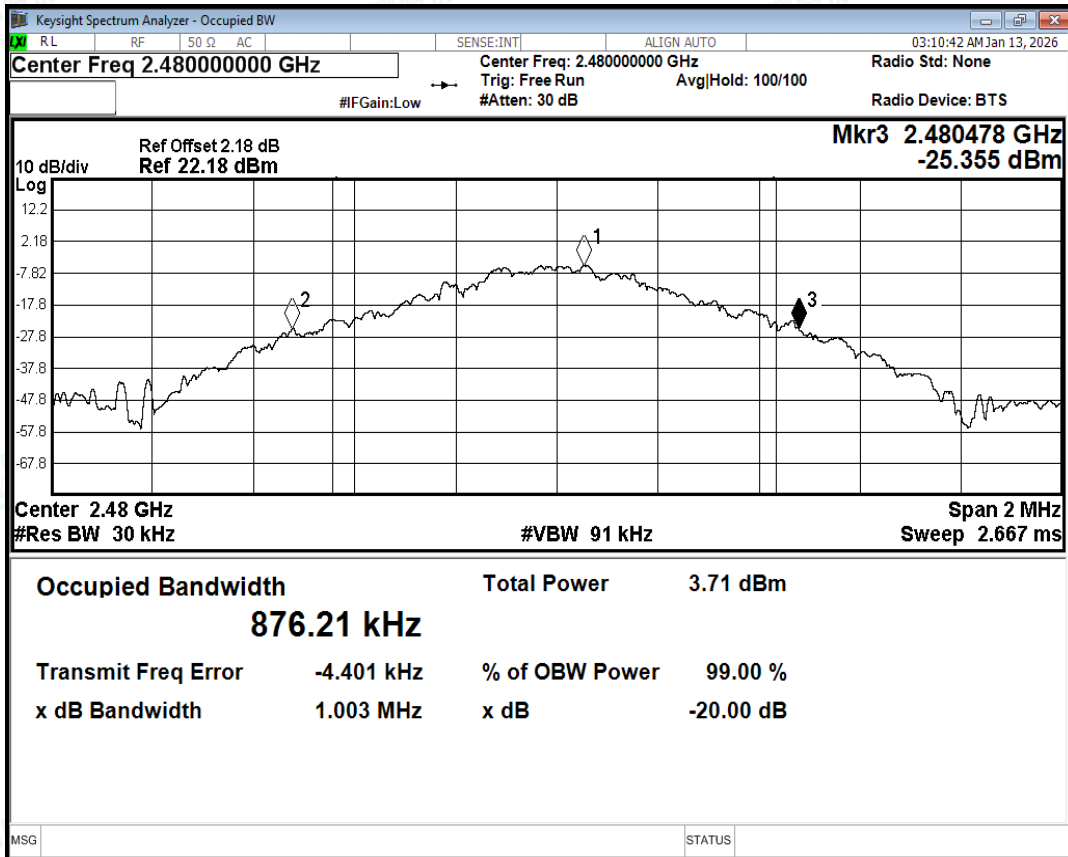
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-20dB Bandwidth NVNT 2.4G 2441MHz Ant1



-20dB Bandwidth NVNT 2.4G 2480MHz Ant1



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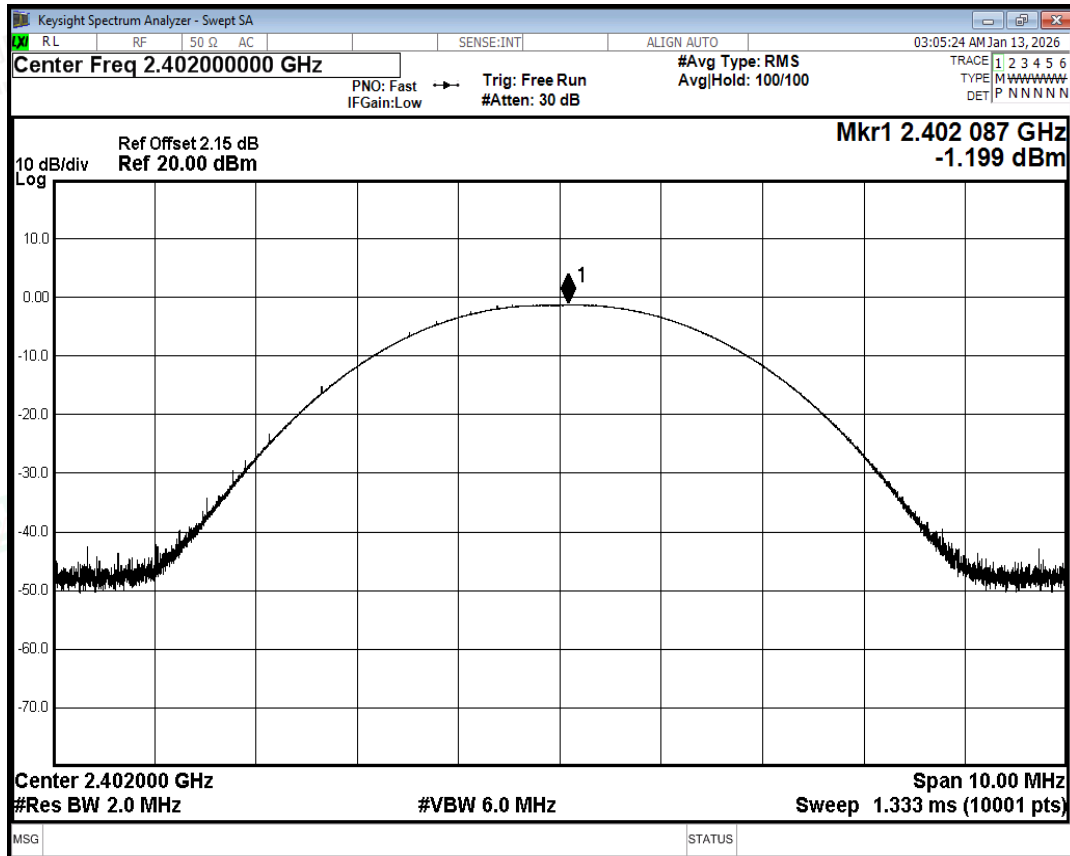
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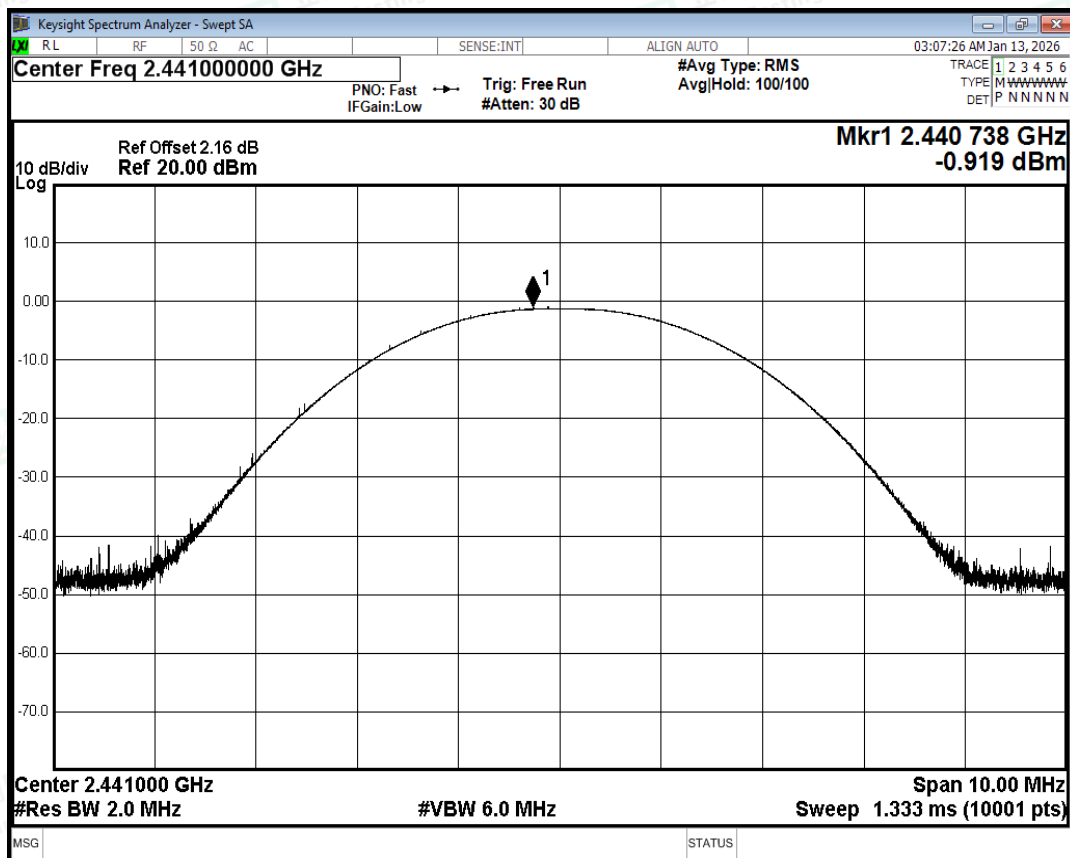
## A.2 Maximum Peak Conducted Output Power

| Condition | Mode | Frequency<br>(MHz) | Antenna | Conducted Power<br>(dBm) | Total Conducted<br>Power (W) | Limit<br>Conducted(dBm) | Verdict |
|-----------|------|--------------------|---------|--------------------------|------------------------------|-------------------------|---------|
| NVNT      | 2.4G | 2402               | Ant1    | -1.2                     | 0.00076                      | 30                      | Pass    |
| NVNT      | 2.4G | 2441               | Ant1    | -0.92                    | 0.00081                      | 30                      | Pass    |
| NVNT      | 2.4G | 2480               | Ant1    | -2.07                    | 0.00062                      | 30                      | Pass    |





Peak Power NVNT 2.4G 2402MHz Ant1



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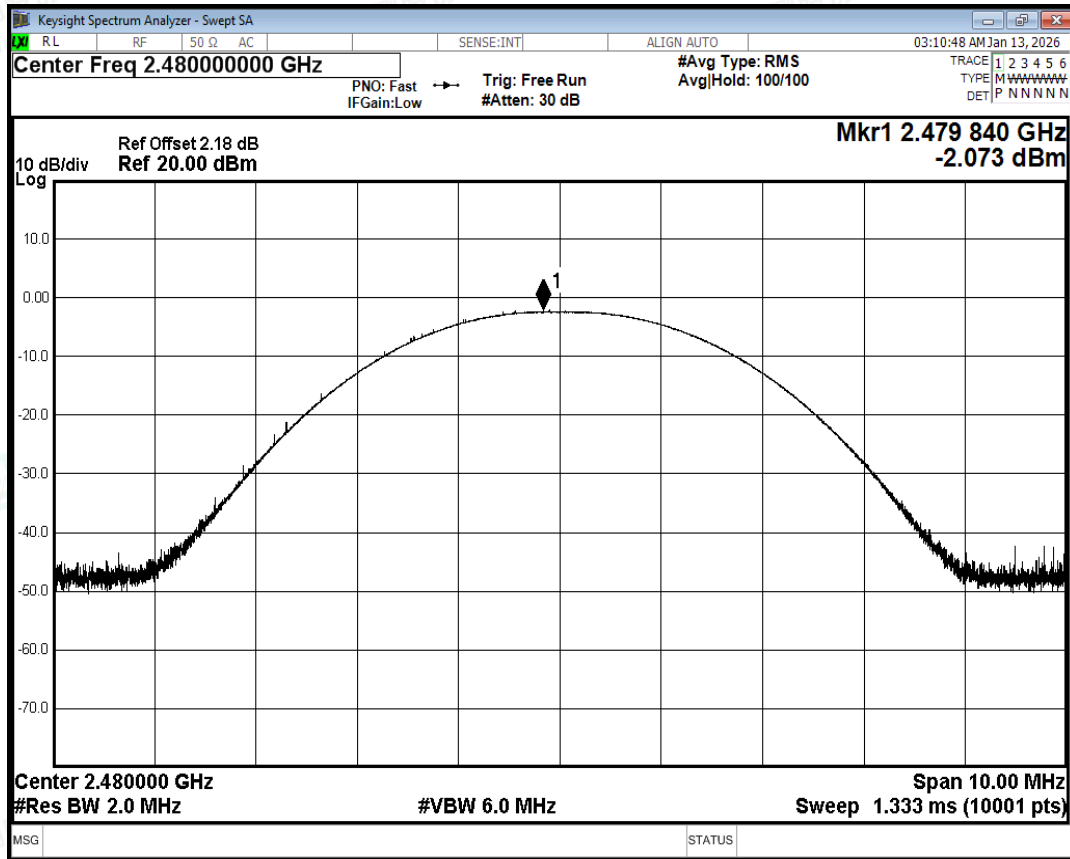
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## Peak Power NVNT 2.4G 2441MHz Ant1



## Peak Power NVNT 2.4G 2480MHz Ant1

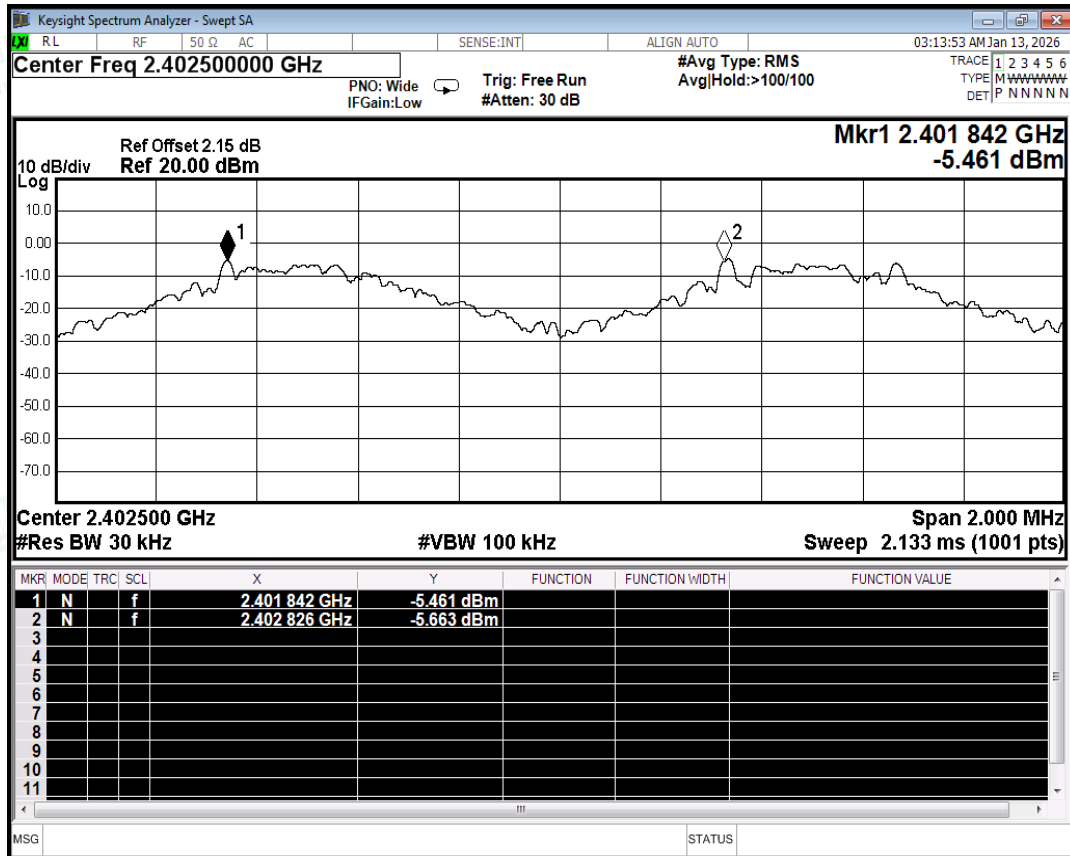




### A.3 Carrier Frequencies Separation

| Condition | Mode | Antenna | Hopping Freq1 (MHz) | Hopping Freq2 (MHz) | HFS (MHz) | Limit (MHz) | Verdict |
|-----------|------|---------|---------------------|---------------------|-----------|-------------|---------|
| NVNT      | 2.4G | Ant1    | 2401.842            | 2402.826            | 0.984     | 0.669       | Pass    |





CFS NVNT 2.4G 2402MHz Ant1

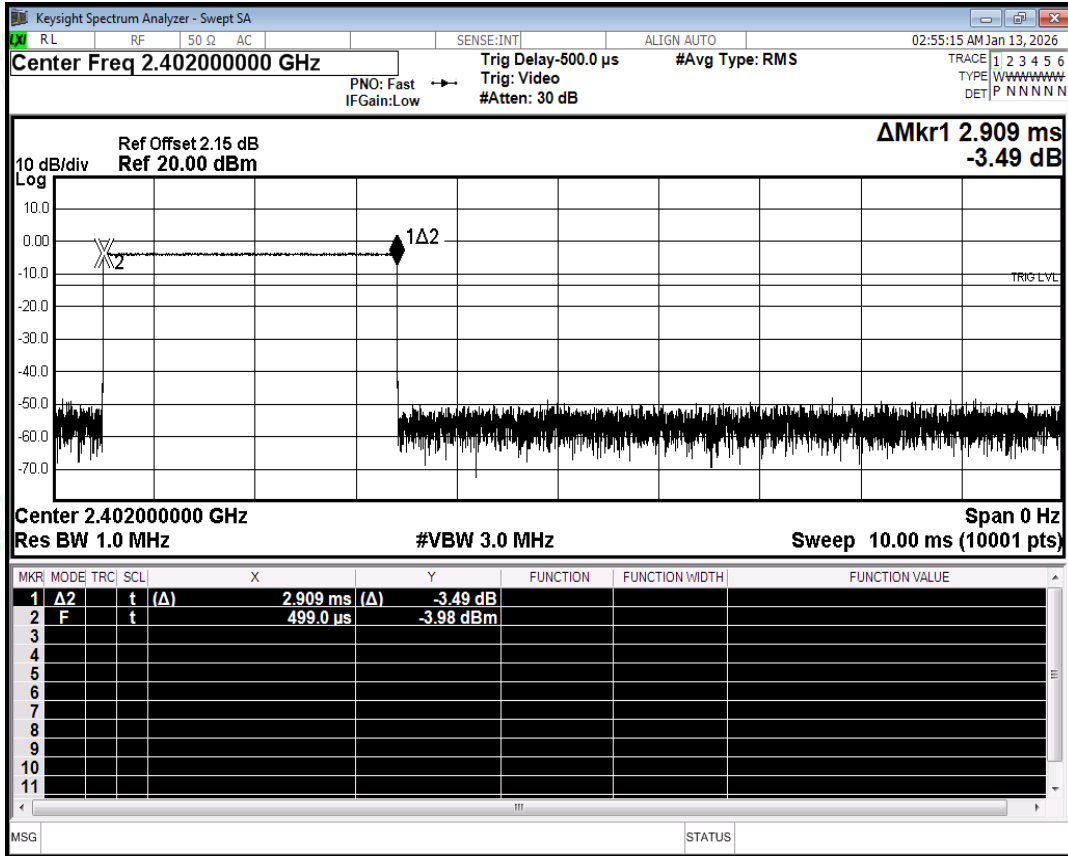




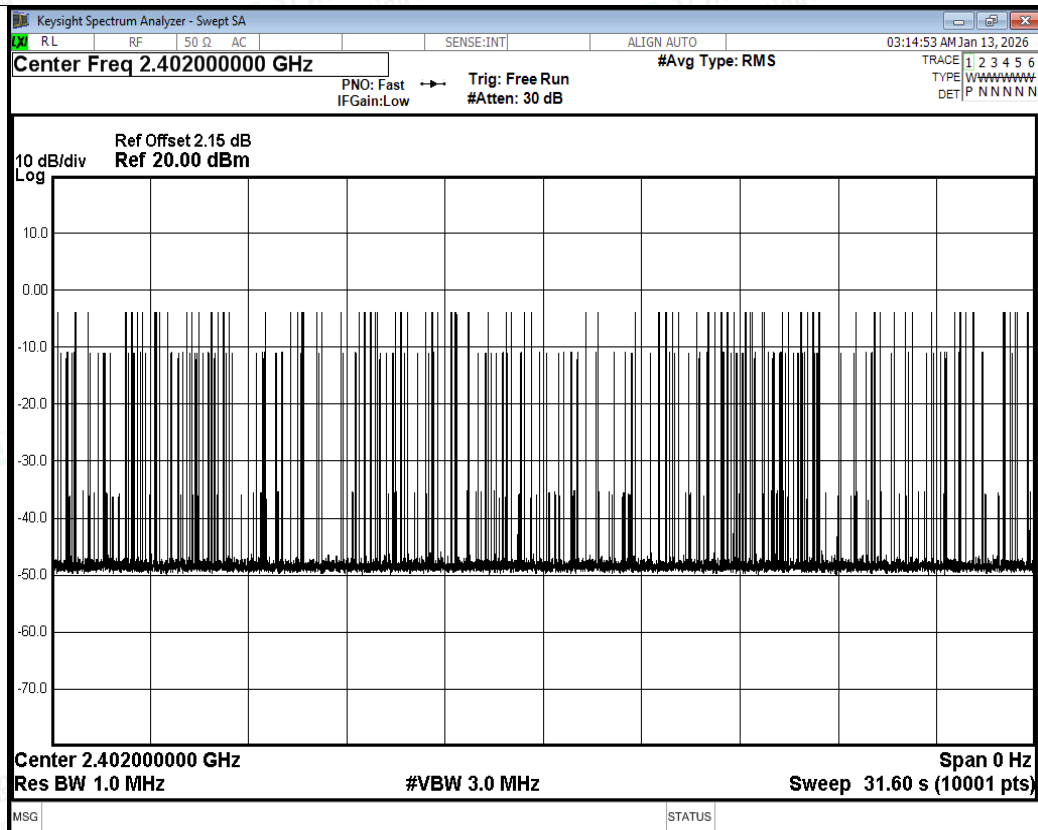
## A.4 Dwell Time

| Condition | Mode | Frequency<br>(MHz) | Antenna | Pulse Time<br>(ms) | Total Dwell<br>Time (ms) | Burst<br>Count | Period Time<br>(ms) | Limit<br>(ms) | Verdict |
|-----------|------|--------------------|---------|--------------------|--------------------------|----------------|---------------------|---------------|---------|
| NVNT      | 2.4G | 2402               | Ant1    | 2.909              | 322.899                  | 111            | 31600               | 400           | Pass    |





Dwell NVNT 2.4G 2402MHz Ant1 One Burst



Dwell NVNT 2.4G 2402MHz Ant1 Accumulated



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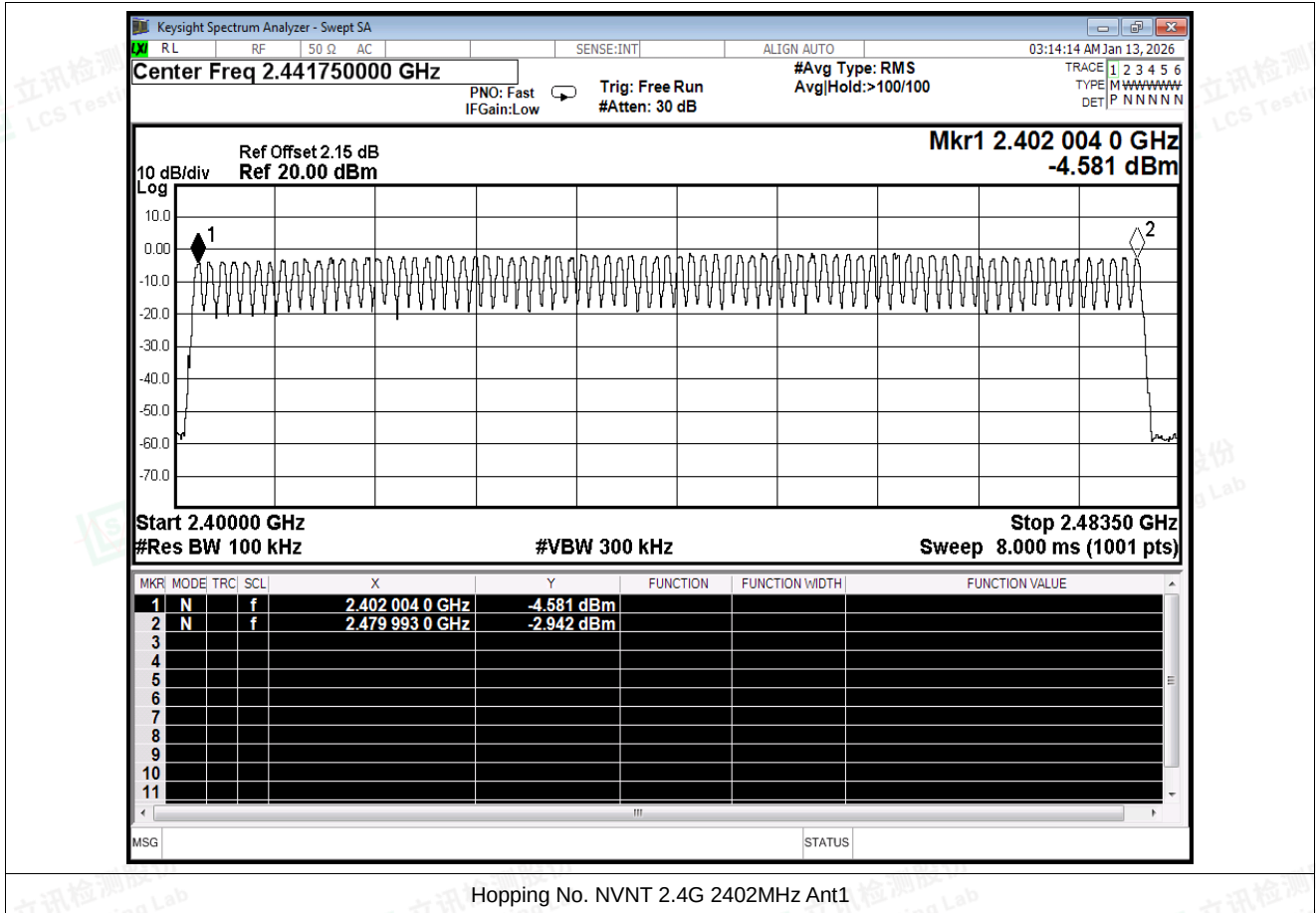
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## A.5 Number of Hopping Channel

| Condition | Mode | Antenna | Hopping Number | Limit | Verdict |
|-----------|------|---------|----------------|-------|---------|
| NVNT      | 2.4G | Ant1    | 79             | 15    | Pass    |



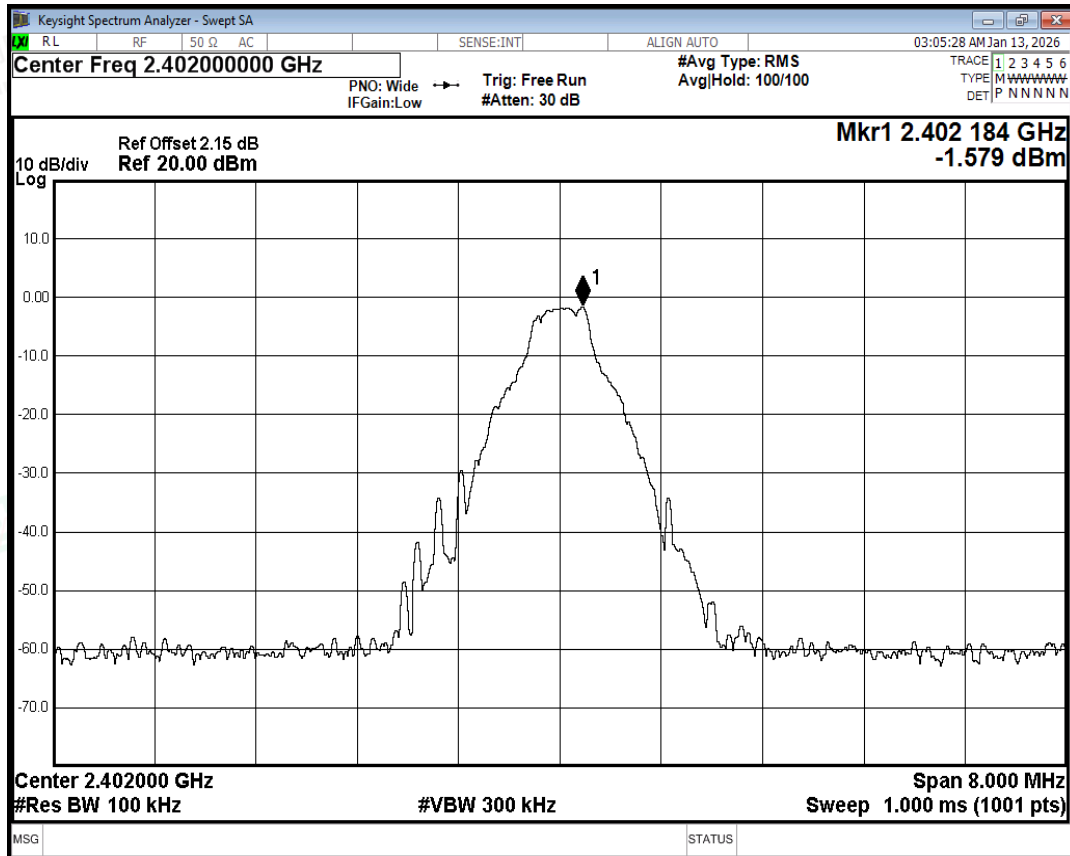




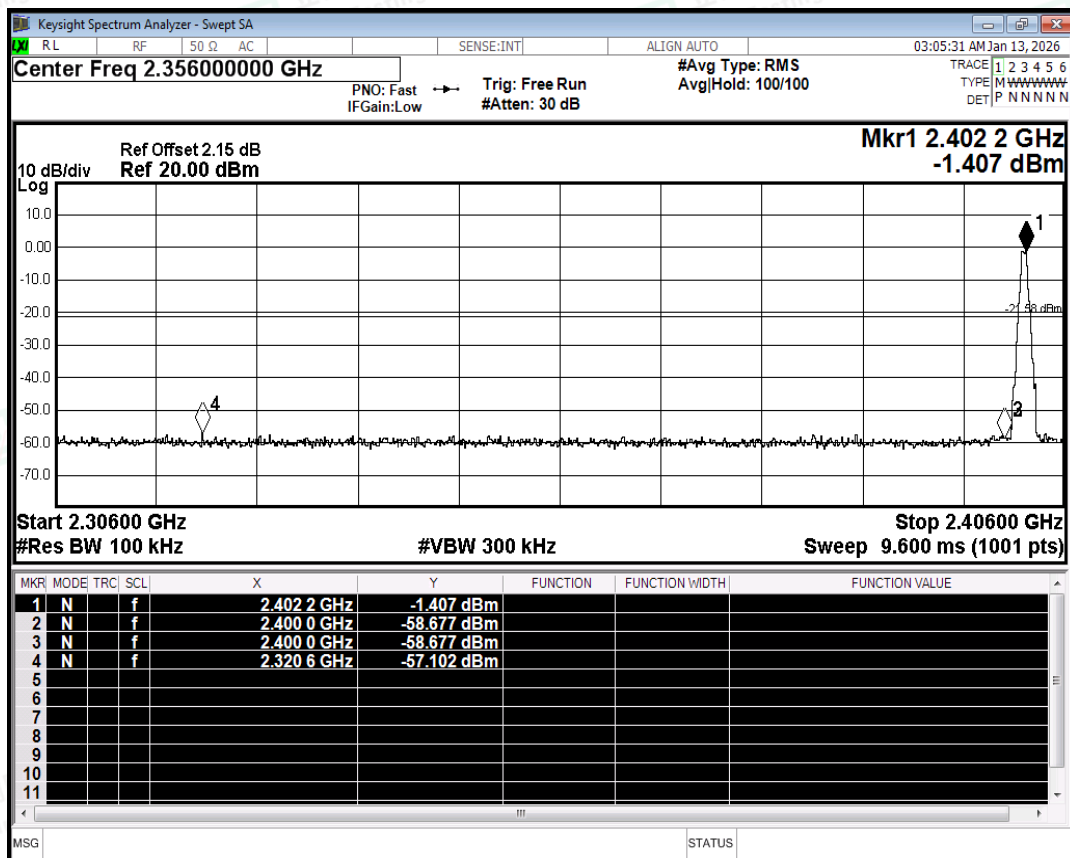
## A.6 Band Edge

| Condition | Mode | Frequency (MHz) | Antenna | Hopping Mode | Max Value (dBc) | Limit (dBc) | Verdict |
|-----------|------|-----------------|---------|--------------|-----------------|-------------|---------|
| NVNT      | 2.4G | 2402            | Ant1    | No-Hopping   | -55.52          | -20         | Pass    |
| NVNT      | 2.4G | 2480            | Ant1    | No-Hopping   | -54.64          | -20         | Pass    |





Band Edge NVNT 2.4G 2402MHz Ant1 No-Hopping Ref



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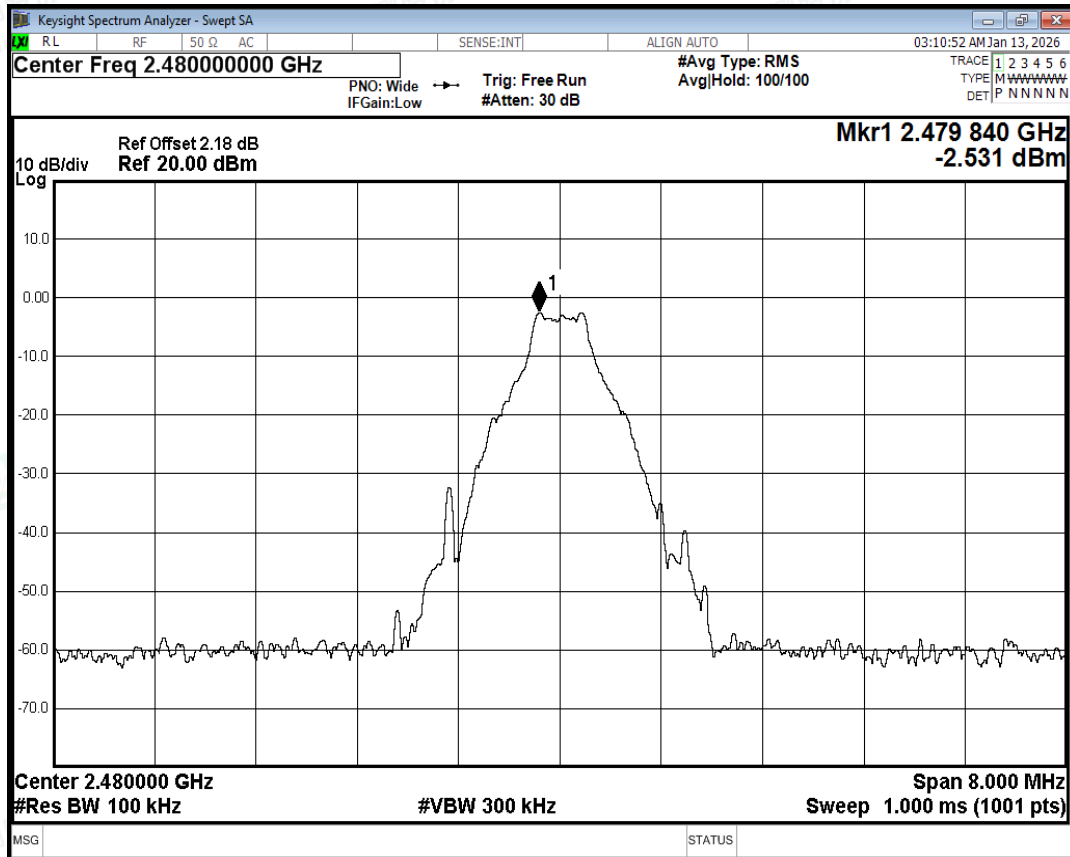
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## Band Edge NVNT 2.4G 2402MHz Ant1 No-Hopping Emission



## Band Edge NVNT 2.4G 2480MHz Ant1 No-Hopping Ref

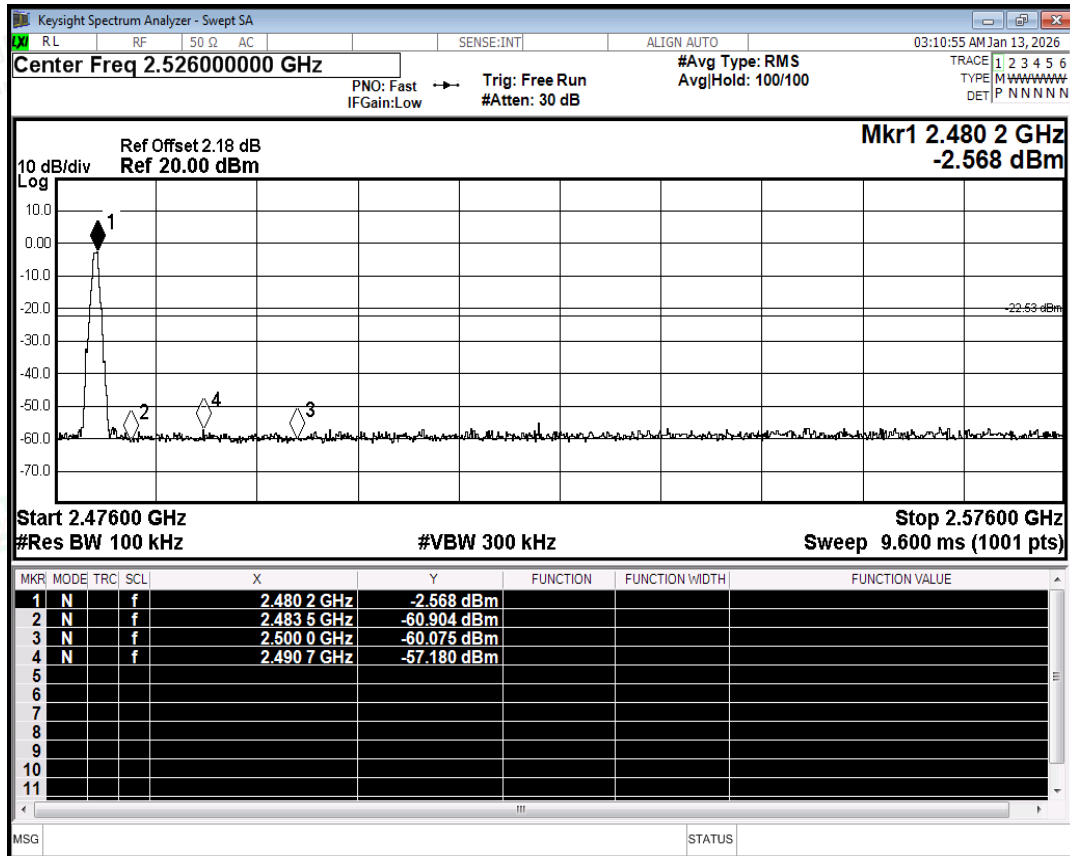


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Band Edge NVNT 2.4G 2480MHz Ant1 No-Hopping Emission



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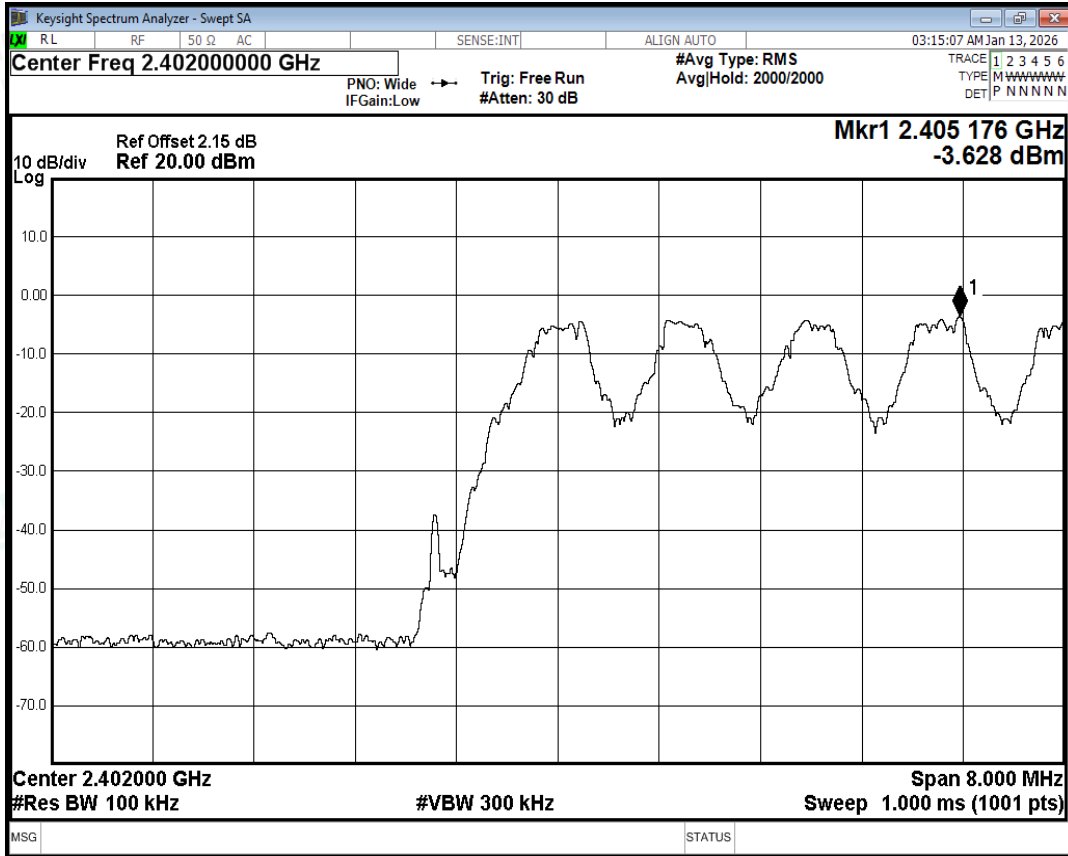
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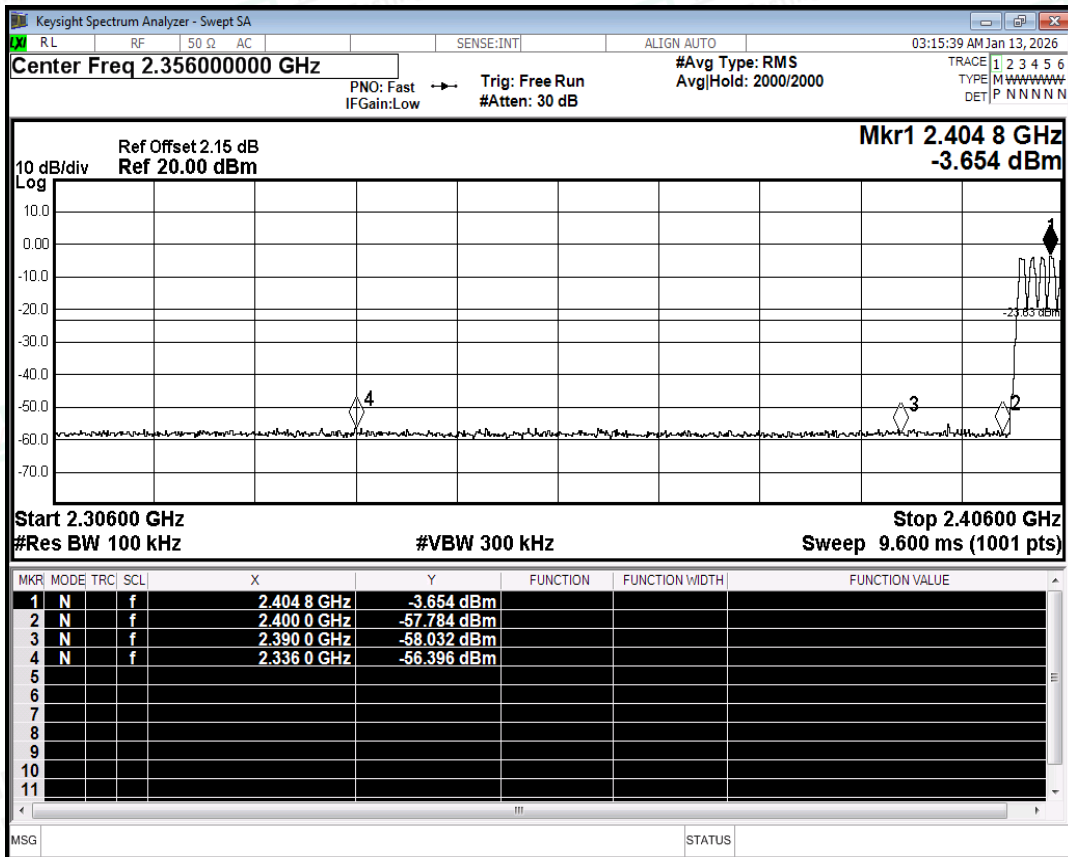
## (Hopping)

| Condition | Mode | Frequency (MHz) | Antenna | Hopping Mode | Max Value (dBc) | Limit (dBc) | Verdict |
|-----------|------|-----------------|---------|--------------|-----------------|-------------|---------|
| NVNT      | 2.4G | 2402            | Ant1    | Hopping      | -52.76          | -20         | Pass    |
| NVNT      | 2.4G | 2480            | Ant1    | Hopping      | -53.14          | -20         | Pass    |





Band Edge(Hopping) NVNT 2.4G 2402MHz Ant1 Hopping Ref



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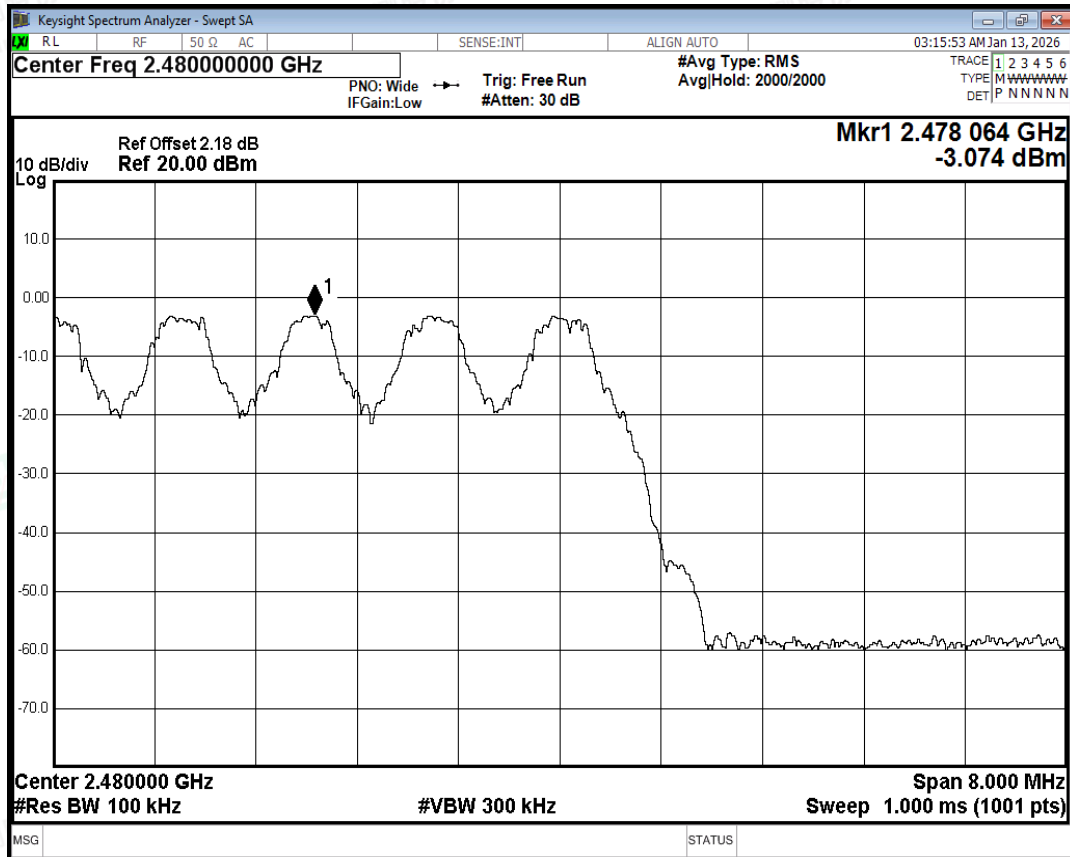
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## Band Edge(Hopping) NVNT 2.4G 2402MHz Ant1 Hopping Emission



## Band Edge(Hopping) NVNT 2.4G 2480MHz Ant1 Hopping Ref

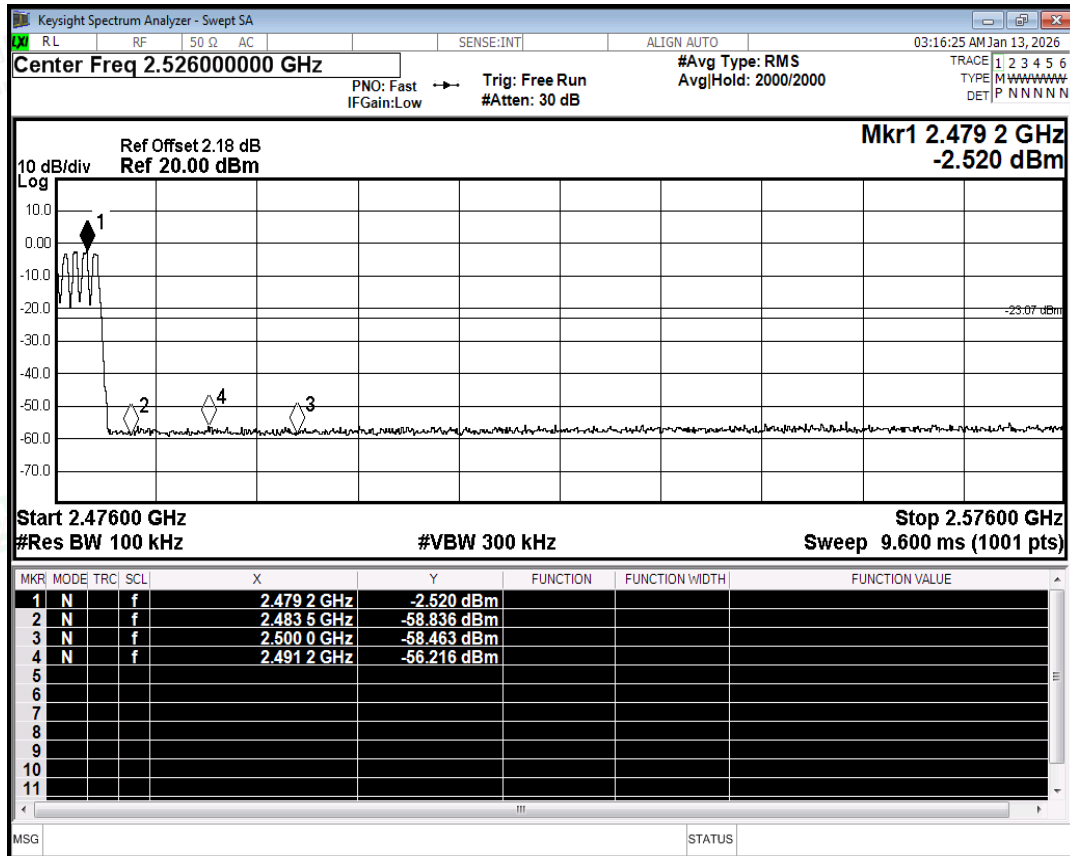


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Band Edge(Hopping) NVNT 2.4G 2480MHz Ant1 Hopping Emission



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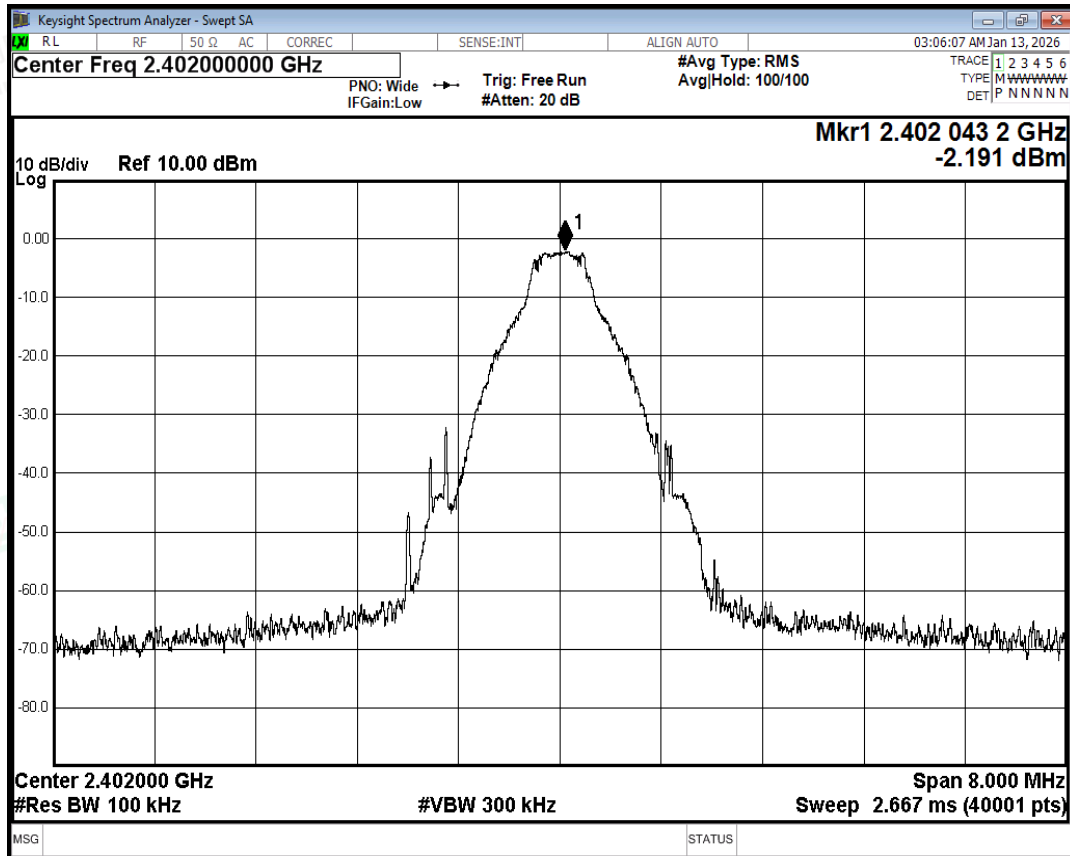
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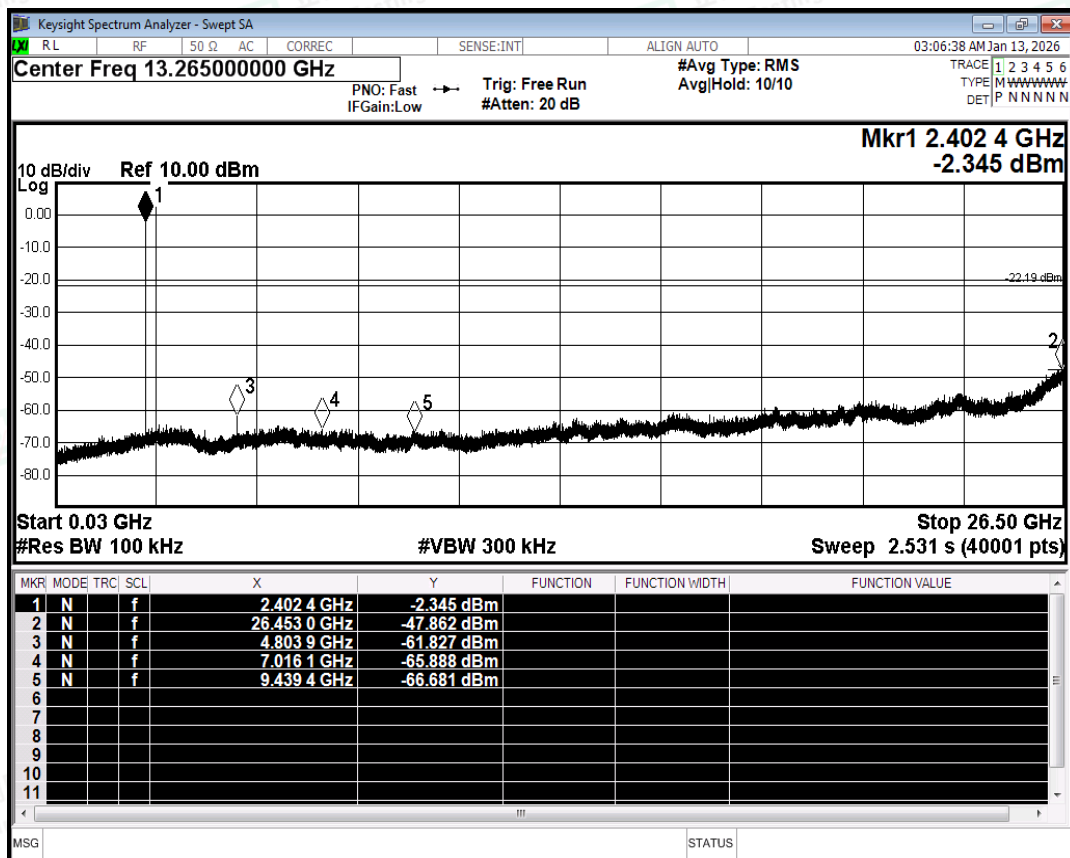
## A.7 Conducted RF Spurious Emission

| Condition | Mode | Frequency (MHz) | Antenna | Max Value (dBc) | Limit (dBc) | Verdict |
|-----------|------|-----------------|---------|-----------------|-------------|---------|
| NVNT      | 2.4G | 2402            | Ant1    | -45.67          | -20         | Pass    |
| NVNT      | 2.4G | 2441            | Ant1    | -45.49          | -20         | Pass    |
| NVNT      | 2.4G | 2480            | Ant1    | -43.9           | -20         | Pass    |





Tx. Spurious NVNT 2.4G 2402MHz Ant1 Ref



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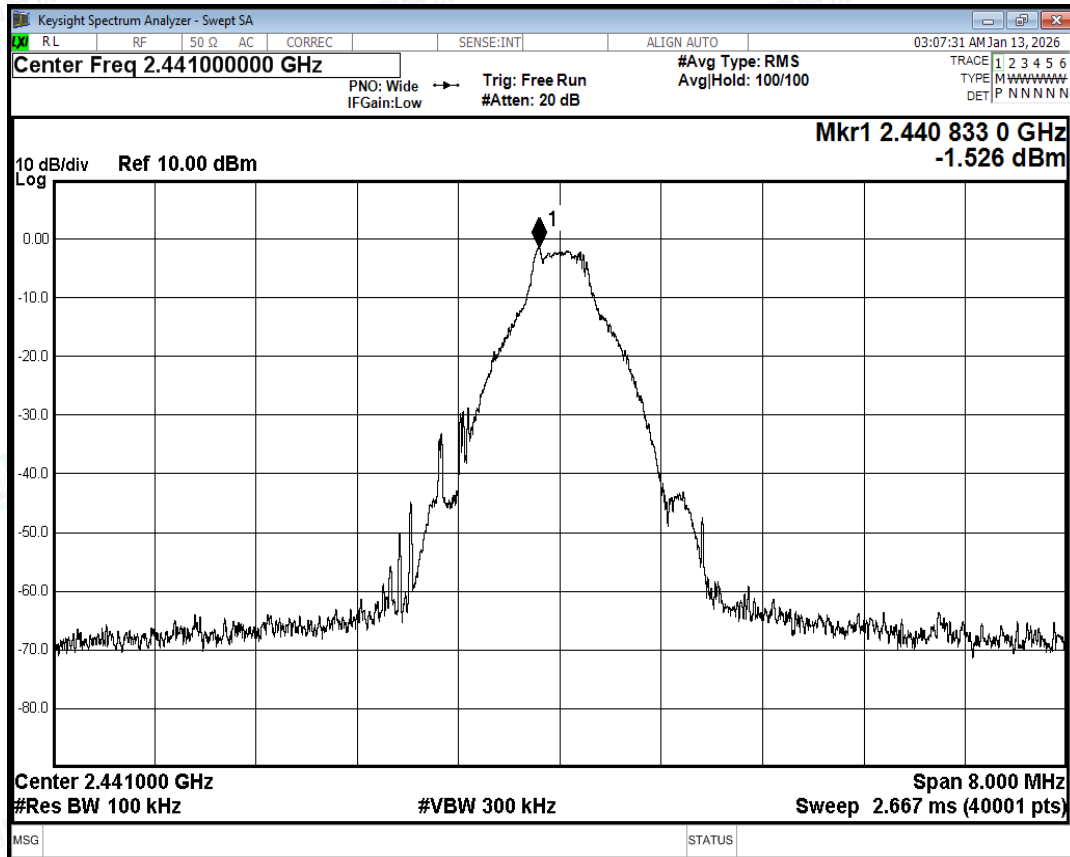
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## Tx. Spurious NVNT 2.4G 2402MHz Ant1 Emission



## Tx. Spurious NVNT 2.4G 2441MHz Ant1 Ref

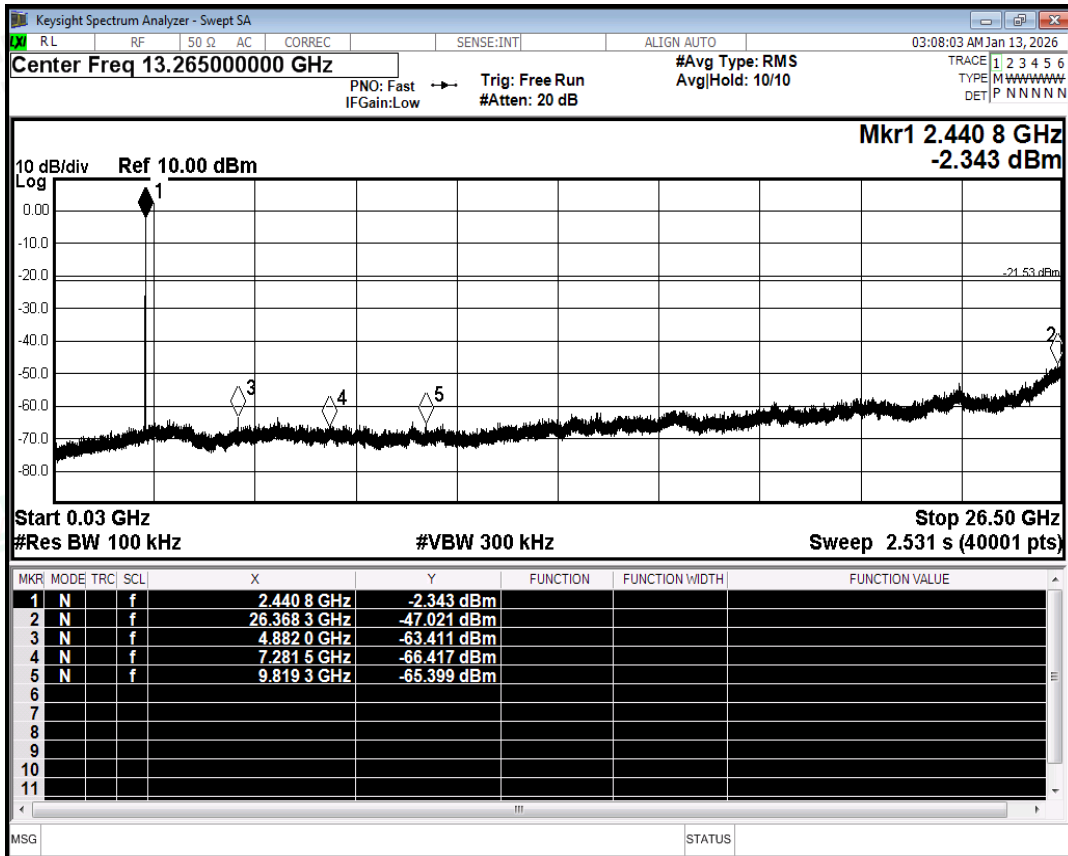


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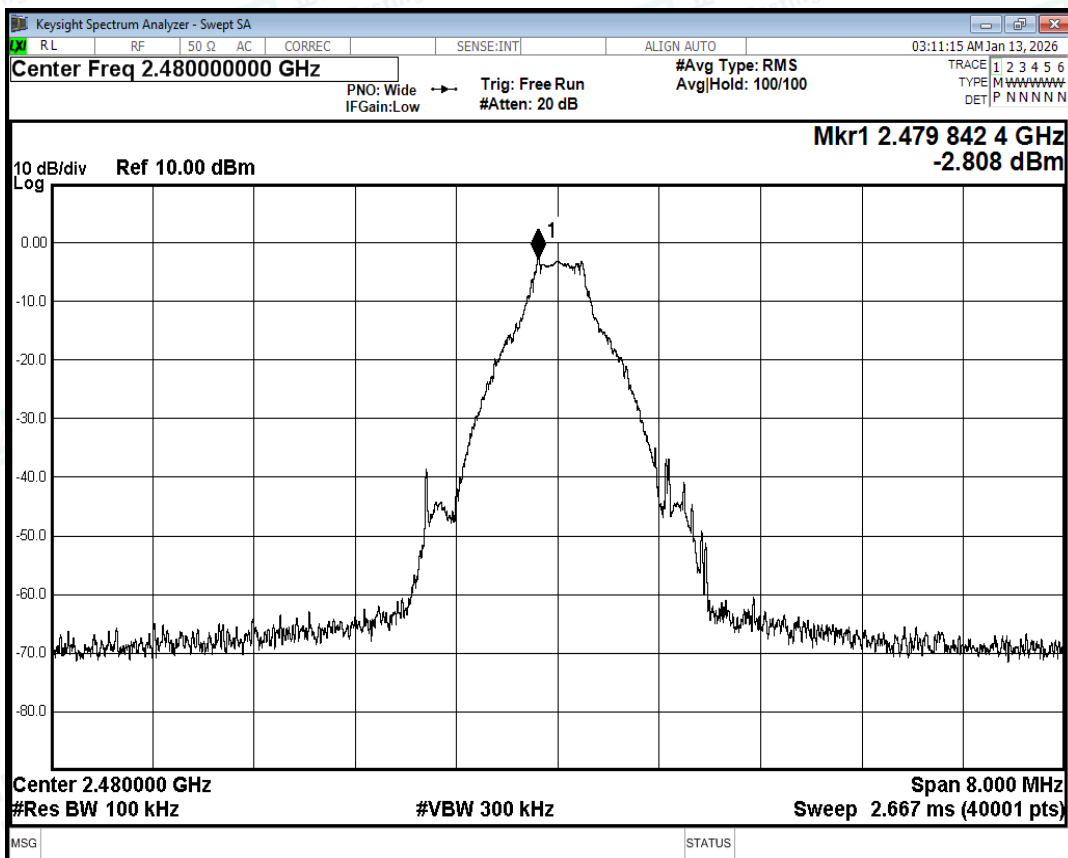
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Tx. Spurious NVNT 2.4G 2441MHz Ant1 Emission



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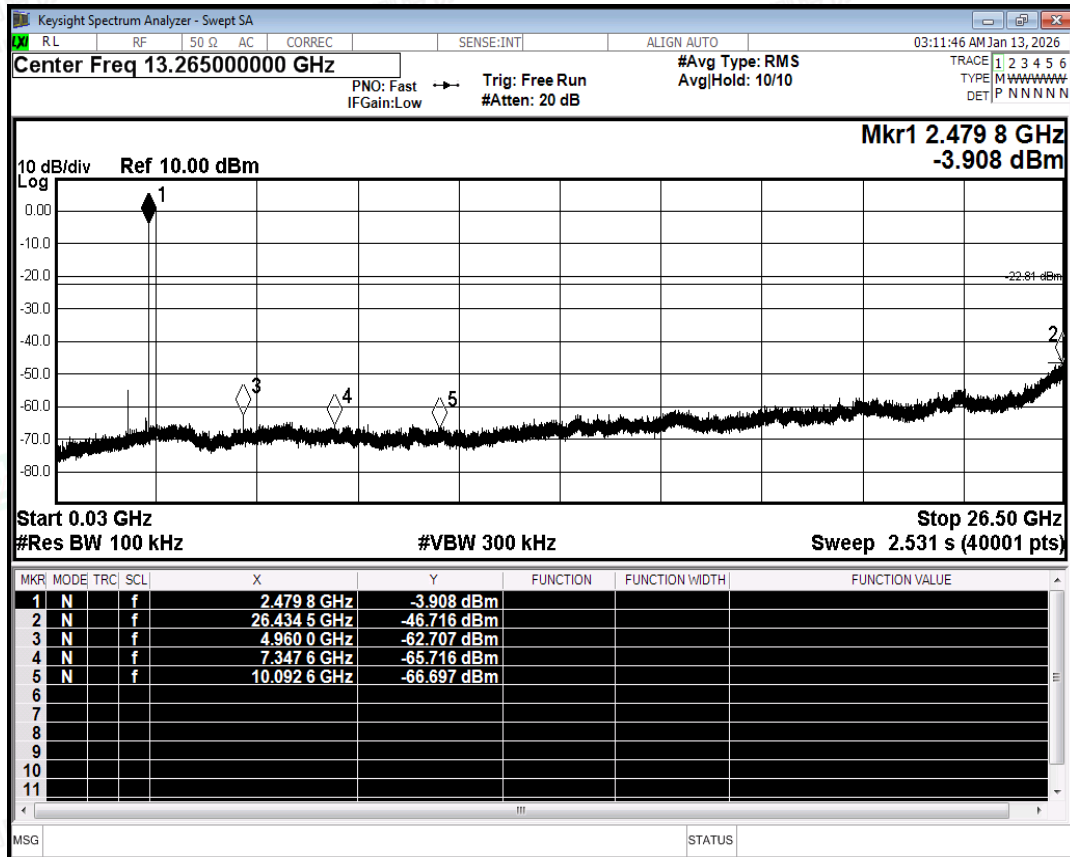
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## Tx. Spurious NVNT 2.4G 2480MHz Ant1 Ref



## Tx. Spurious NVNT 2.4G 2480MHz Ant1 Emission



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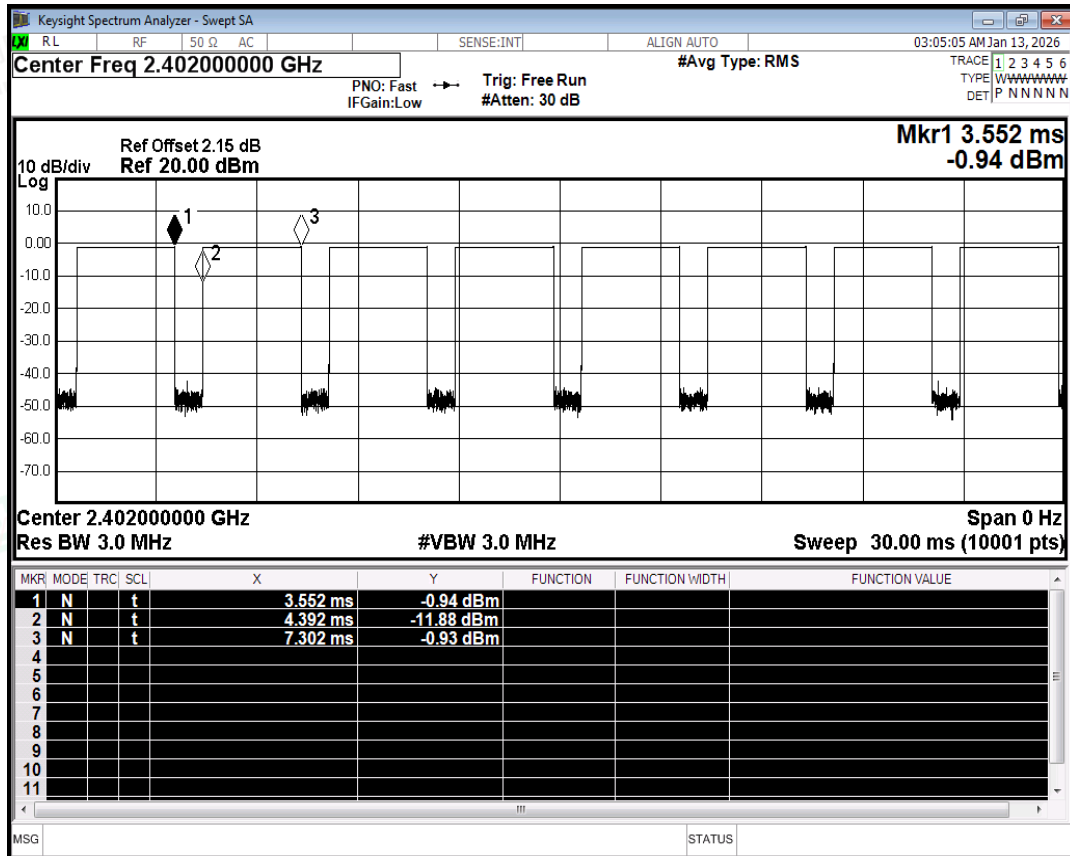
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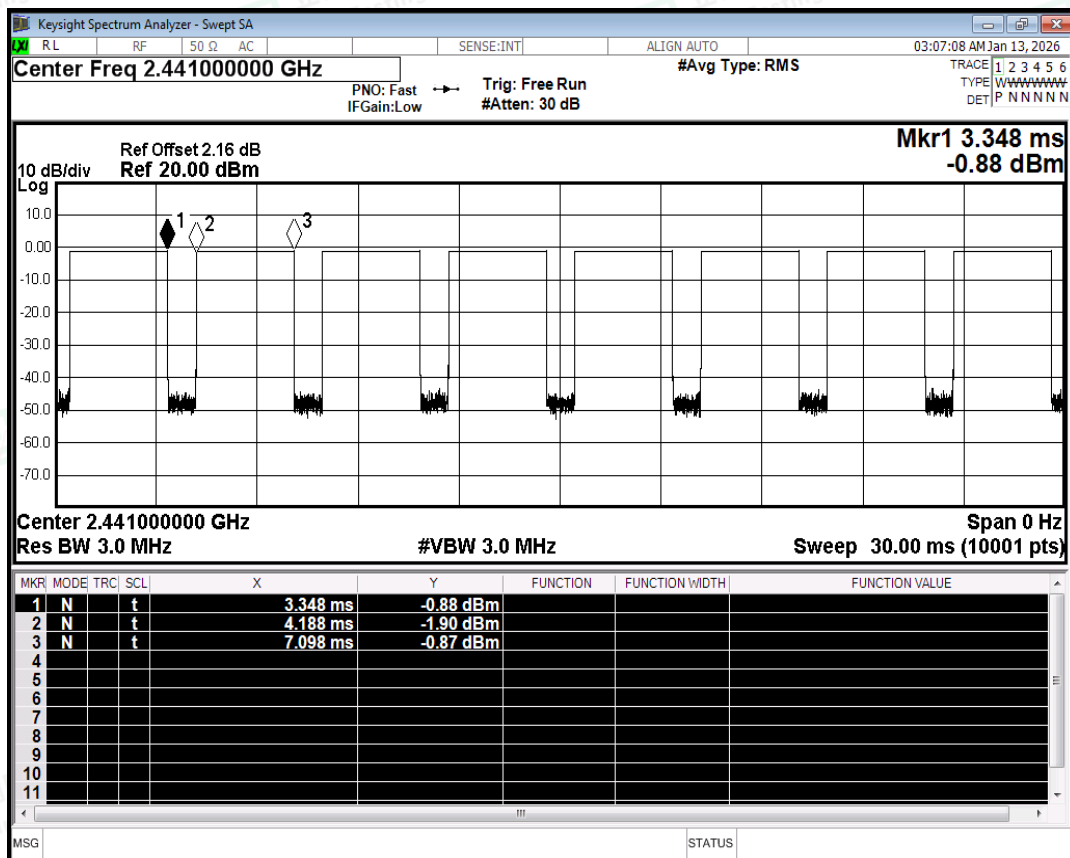
## A.8 Duty Cycle

| Condition | Mode | Frequency (MHz) | Antenna | Duty Cycle (%) | Correction Factor (dB) | 1/T (kHz) |
|-----------|------|-----------------|---------|----------------|------------------------|-----------|
| NVNT      | 2.4G | 2402            | Ant1    | 77.6           | 1.1                    | 0.34      |
| NVNT      | 2.4G | 2441            | Ant1    | 77.6           | 1.1                    | 0.34      |
| NVNT      | 2.4G | 2480            | Ant1    | 77.6           | 1.1                    | 0.34      |





Duty Cycle NVNT 2.4G 2402MHz Ant1



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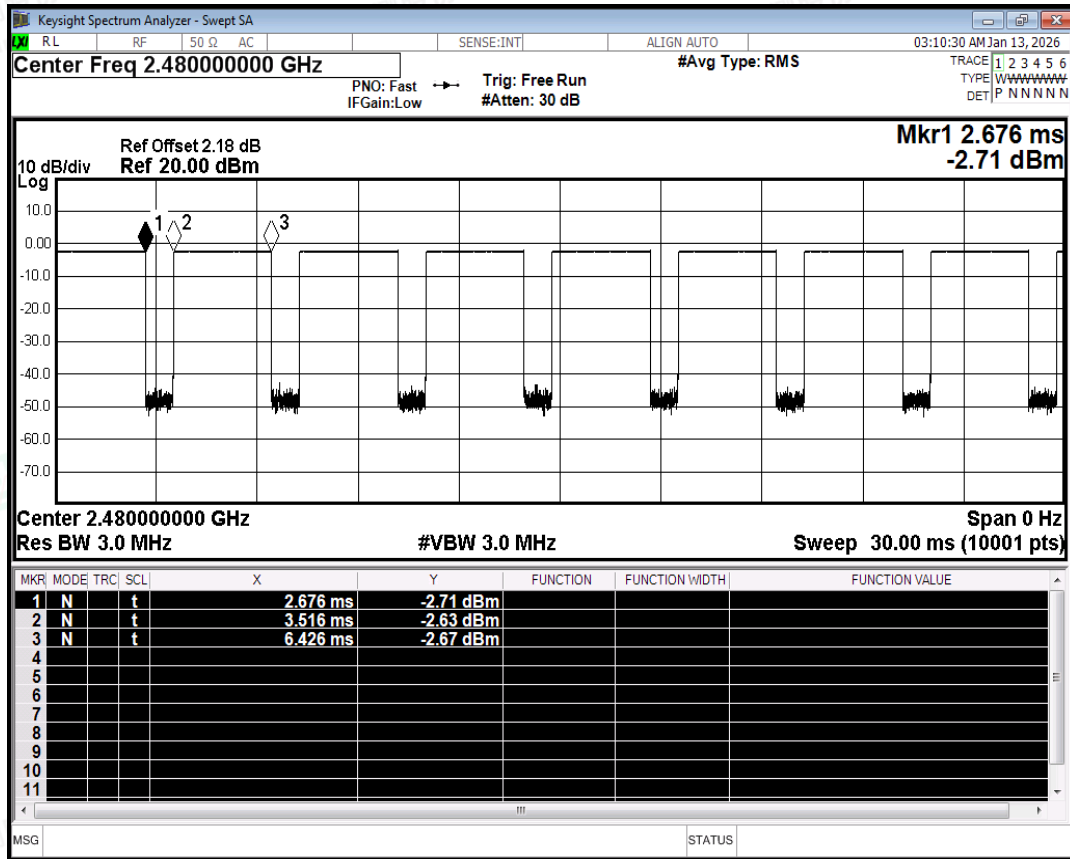
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## Duty Cycle NVNT 2.4G 2441MHz Ant1



## Duty Cycle NVNT 2.4G 2480MHz Ant1



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## A.9 Restrict Band

| Condition | Mode | Frequency (MHz) | Antenna | Hopping Mode | Spur Freq (MHz) | Power (dBm) | Gain (dBi) | E (dBuV/m) | Detector | Limit (dBuV/m) | Verdict |
|-----------|------|-----------------|---------|--------------|-----------------|-------------|------------|------------|----------|----------------|---------|
| NVNT      | 2.4G | 2402            | Ant1    | No-Hopping   | 2310            | -50.39      | 2          | 46.87      | Peak     | 74             | Pass    |
| NVNT      | 2.4G | 2402            | Ant1    | No-Hopping   | 2310            | -57.54      | 2          | 39.72      | Average  | 54             | Pass    |
| NVNT      | 2.4G | 2402            | Ant1    | No-Hopping   | 2312.208        | -46.4       | 2          | 50.86      | Peak     | 74             | Pass    |
| NVNT      | 2.4G | 2402            | Ant1    | No-Hopping   | 2310.672        | -57.38      | 2          | 39.88      | Average  | 54             | Pass    |
| NVNT      | 2.4G | 2402            | Ant1    | No-Hopping   | 2390            | -50.82      | 2          | 46.44      | Peak     | 74             | Pass    |
| NVNT      | 2.4G | 2402            | Ant1    | No-Hopping   | 2390            | -57.66      | 2          | 39.6       | Average  | 54             | Pass    |
| NVNT      | 2.4G | 2480            | Ant1    | No-Hopping   | 2483.5          | -48.88      | 2          | 48.38      | Peak     | 74             | Pass    |
| NVNT      | 2.4G | 2480            | Ant1    | No-Hopping   | 2483.5          | -56.48      | 2          | 40.78      | Average  | 54             | Pass    |
| NVNT      | 2.4G | 2480            | Ant1    | No-Hopping   | 2484.136        | -45.59      | 2          | 51.67      | Peak     | 74             | Pass    |
| NVNT      | 2.4G | 2480            | Ant1    | No-Hopping   | 2483.512        | -56.48      | 2          | 40.78      | Average  | 54             | Pass    |
| NVNT      | 2.4G | 2480            | Ant1    | No-Hopping   | 2500            | -48.27      | 2          | 48.99      | Peak     | 74             | Pass    |
| NVNT      | 2.4G | 2480            | Ant1    | No-Hopping   | 2500            | -57.46      | 2          | 39.8       | Average  | 54             | Pass    |

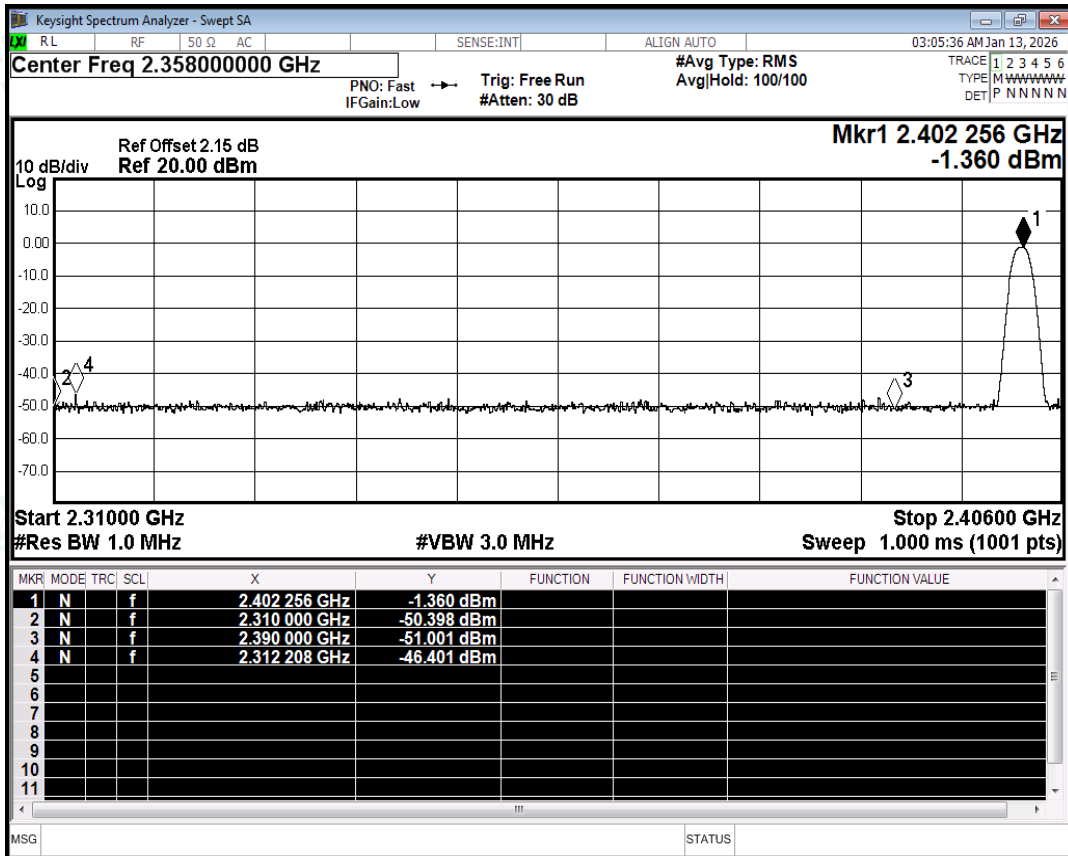


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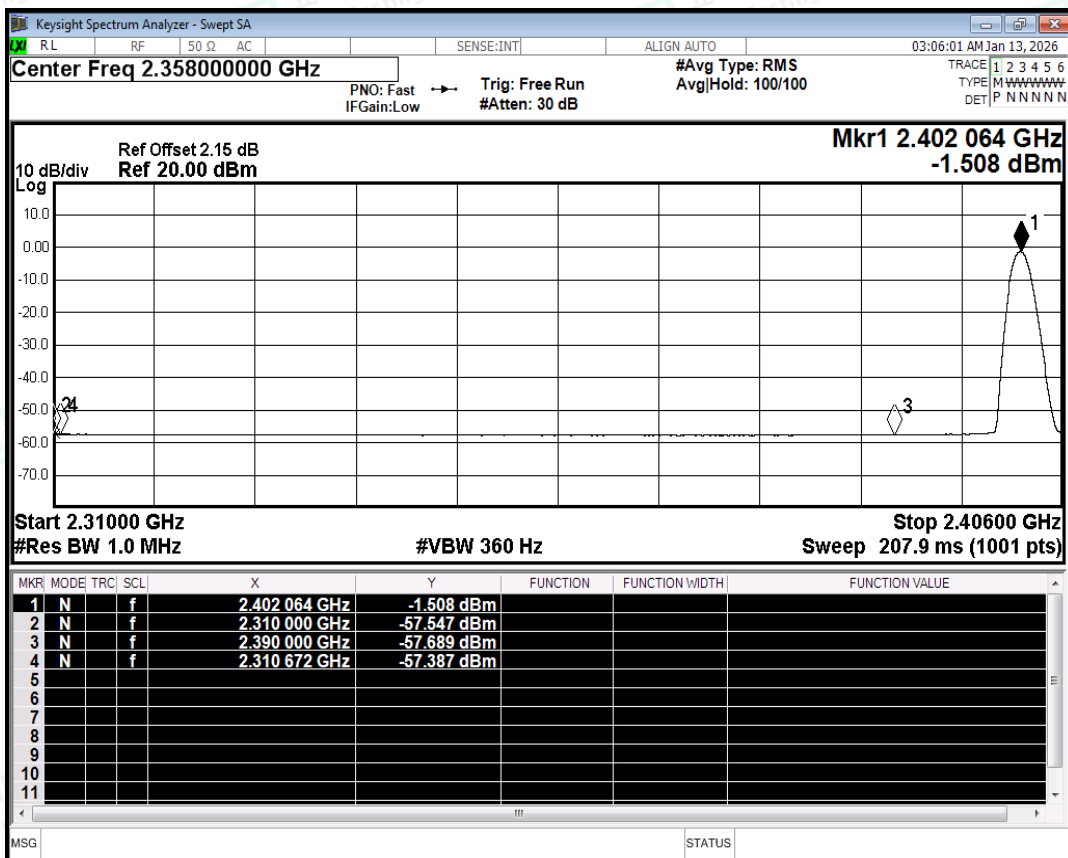
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Restrict Band NVNT 2.4G 2402MHz Ant1 No-Hopping Peak



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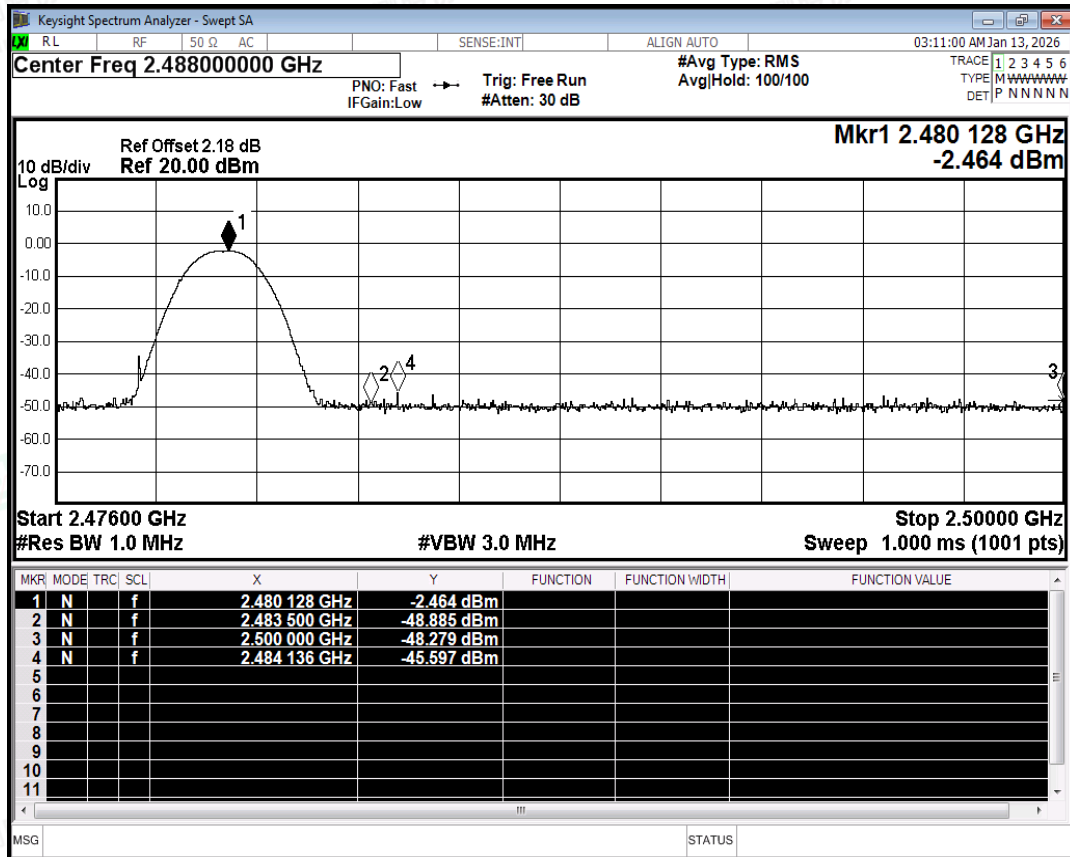
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## Restrict Band NVNT 2.4G 2402MHz Ant1 No-Hopping Average



## Restrict Band NVNT 2.4G 2480MHz Ant1 No-Hopping Peak

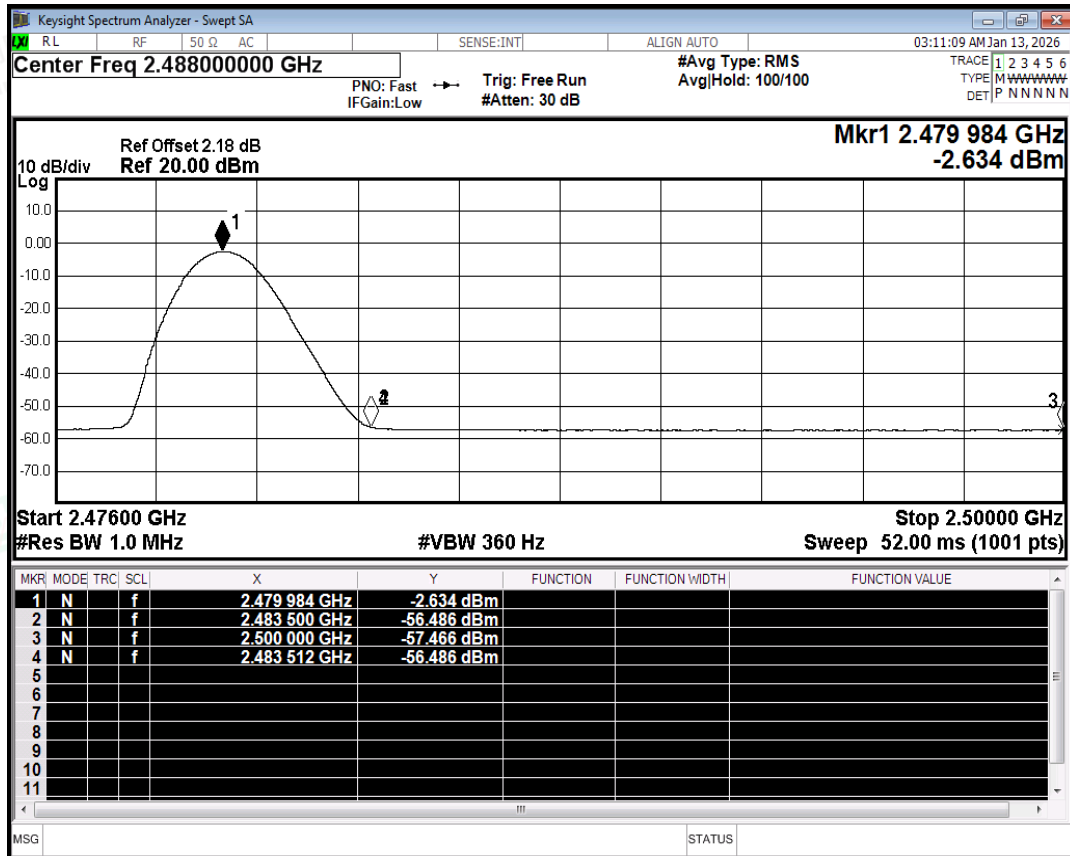


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Restrict Band NVNT 2.4G 2480MHz Ant1 No-Hopping Average



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