



## Appendix B

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

Product Name: LAVA Guitar

Test Model: LAVA ME PLAY

#### Environmental Conditions

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





## B.1 -6dB Bandwidth

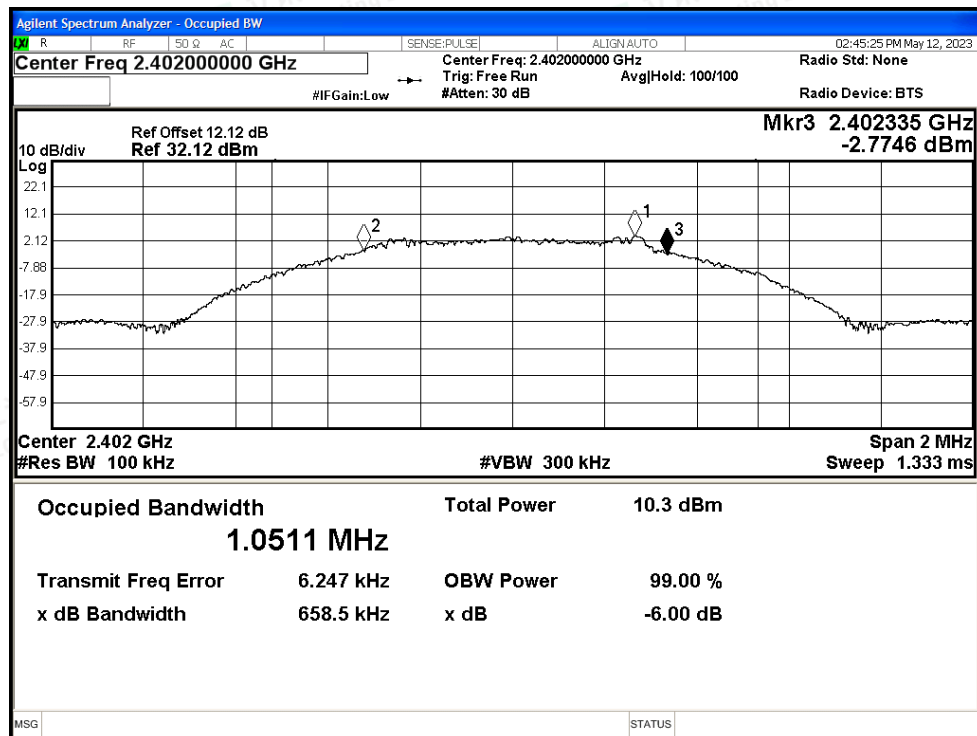
| Condition | Mode   | Frequency (MHz) | Antenna | -6 dB Bandwidth (MHz) | Limit -6 dB Bandwidth (MHz) | Verdict |
|-----------|--------|-----------------|---------|-----------------------|-----------------------------|---------|
| NVNT      | BLE 1M | 2402            | Ant1    | 0.658                 | $\geq 0.5$                  | Pass    |
| LVHT      | BLE 1M | 2440            | Ant1    | 0.714                 | $\geq 0.5$                  | Pass    |
| LVHT      | BLE 1M | 2480            | Ant1    | 0.666                 | $\geq 0.5$                  | Pass    |
| LVHT      | BLE 2M | 2402            | Ant1    | 1.15                  | $\geq 0.5$                  | Pass    |
| LVHT      | BLE 2M | 2440            | Ant1    | 1.218                 | $\geq 0.5$                  | Pass    |
| LVHT      | BLE 2M | 2480            | Ant1    | 1.22                  | $\geq 0.5$                  | Pass    |



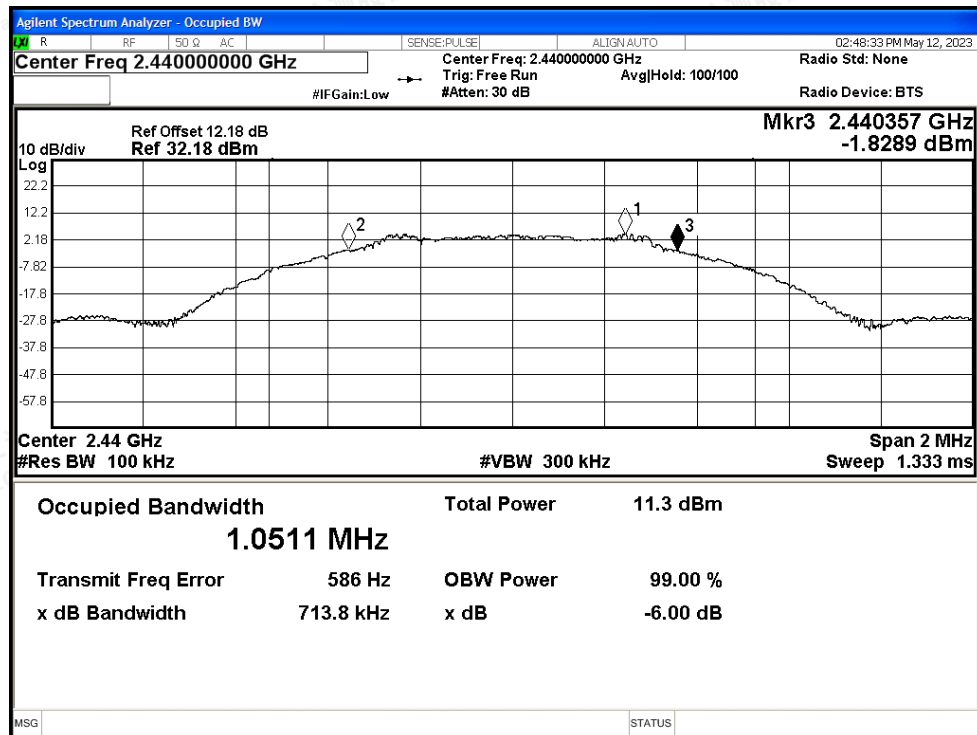


## Test Graphs

-6dB Bandwidth NVNT BLE 1M 2402MHz Ant1



-6dB Bandwidth LVHT BLE 1M 2440MHz Ant1



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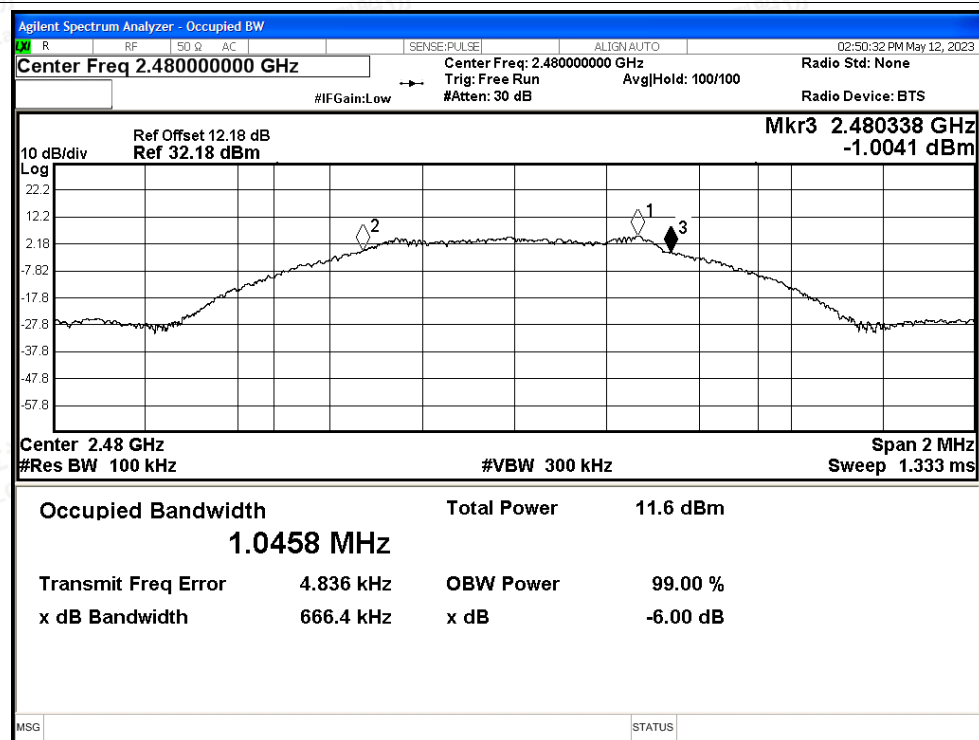
Add: 101, 201 Bldg A &amp; 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China

Tel: +(86) 0755-82591330 | E-mail: webmaster@lcs-cert.com | Web: www.lcs-cert.com

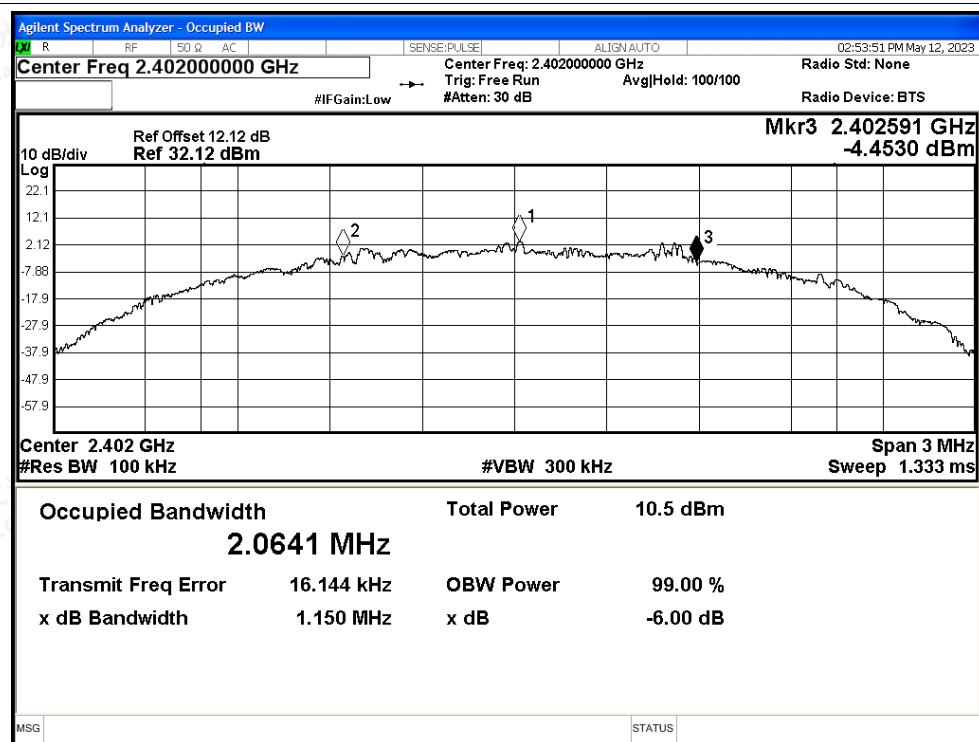
Scan code to check authenticity



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

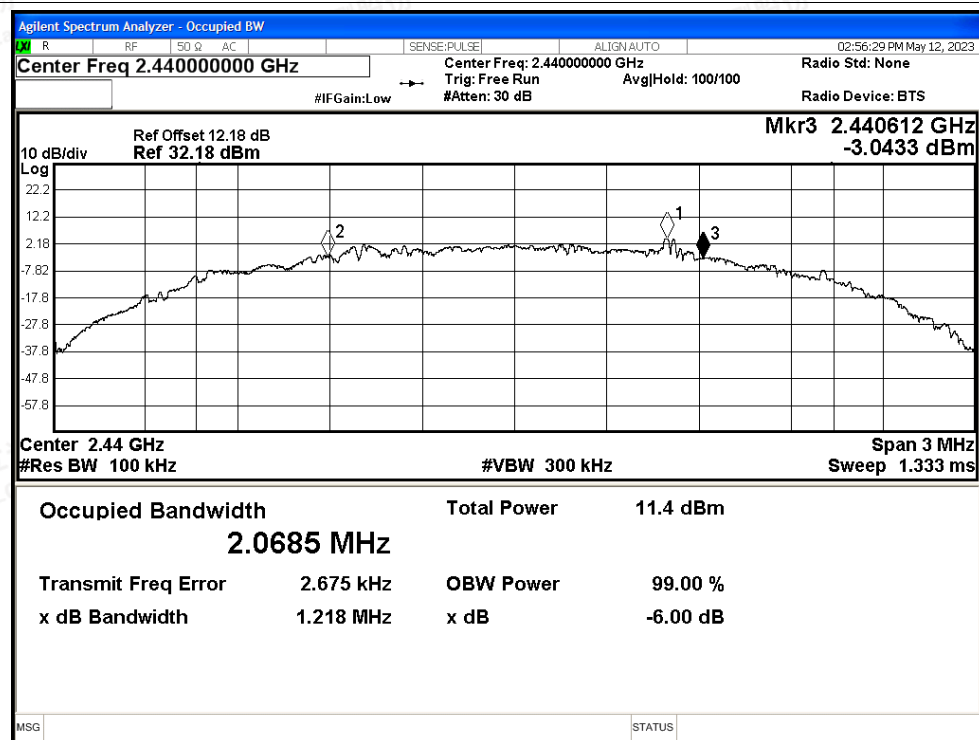


## -6dB Bandwidth LVHT BLE 2M 2402MHz Ant1

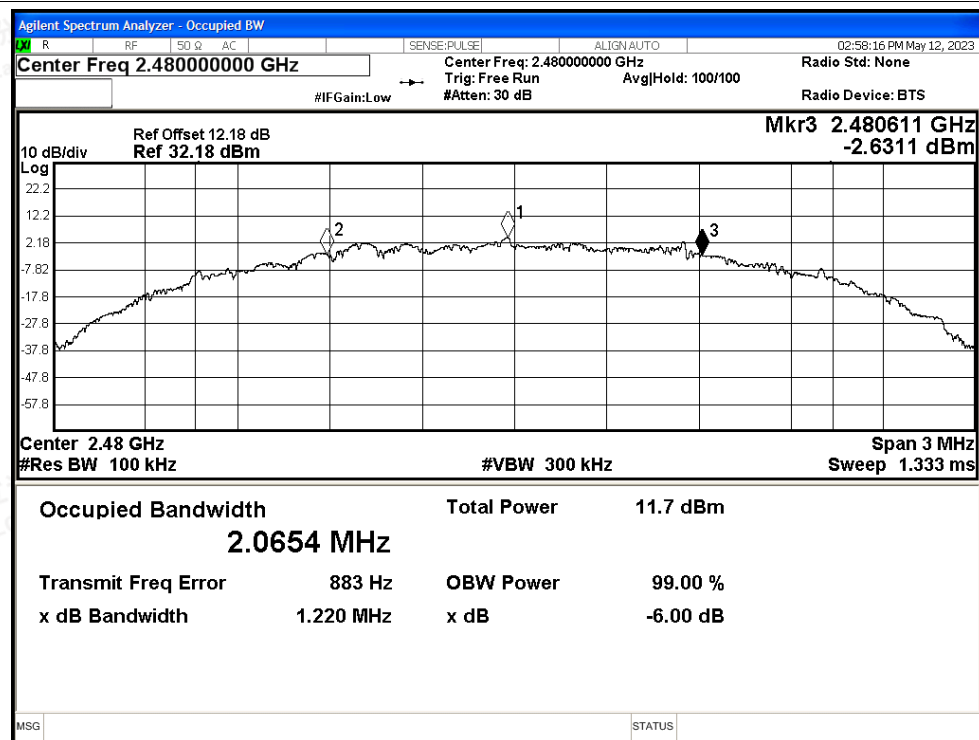




## -6dB Bandwidth LVHT BLE 2M 2440MHz Ant1



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





## B.2 Maximum Conducted Output Power

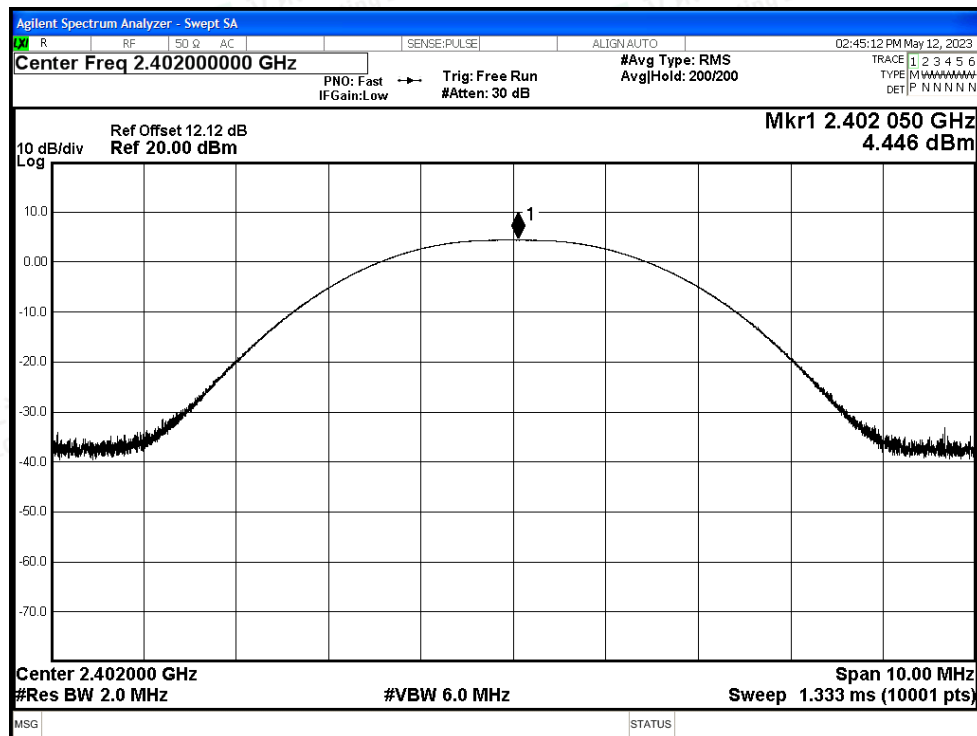
| Condition | Mode   | Frequency (MHz) | Antenna | Total Power (dBm) | Limit (dBm) | Verdict |
|-----------|--------|-----------------|---------|-------------------|-------------|---------|
| NVNT      | BLE 1M | 2402            | Ant1    | 4.45              | 30          | Pass    |
| LVHT      | BLE 1M | 2440            | Ant1    | 5.41              | 30          | Pass    |
| LVHT      | BLE 1M | 2480            | Ant1    | 5.71              | 30          | Pass    |
| LVHT      | BLE 2M | 2402            | Ant1    | 4.37              | 30          | Pass    |
| LVHT      | BLE 2M | 2440            | Ant1    | 5.37              | 30          | Pass    |
| LVHT      | BLE 2M | 2480            | Ant1    | 5.66              | 30          | Pass    |



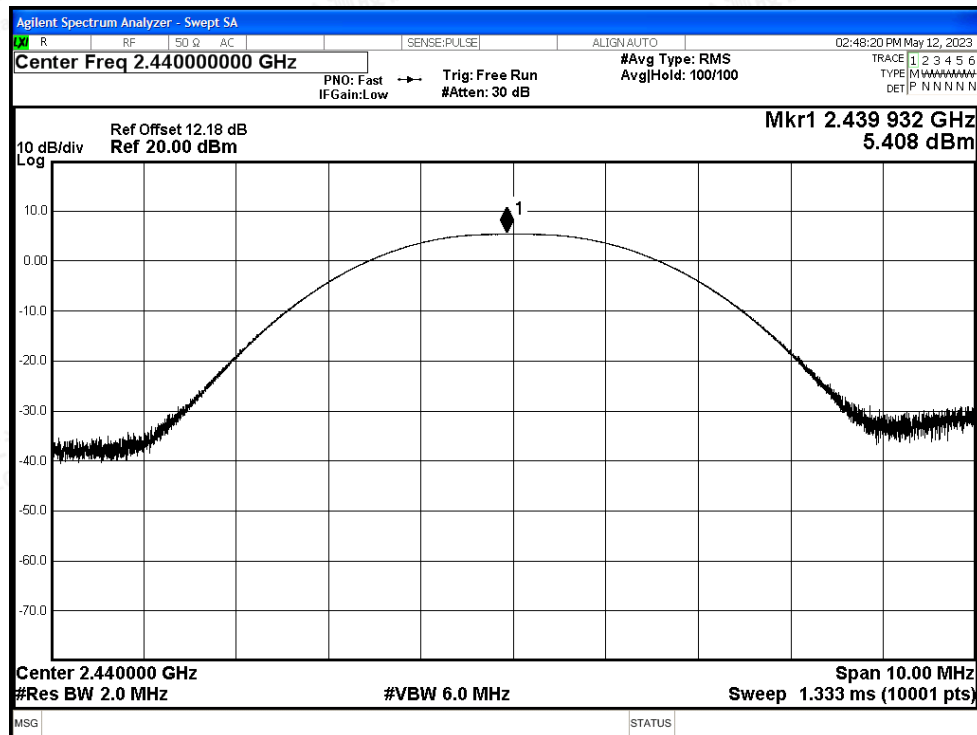


## Test Graphs

Power NVNT BLE 1M 2402MHz Ant1



Power LVHT BLE 1M 2440MHz Ant1

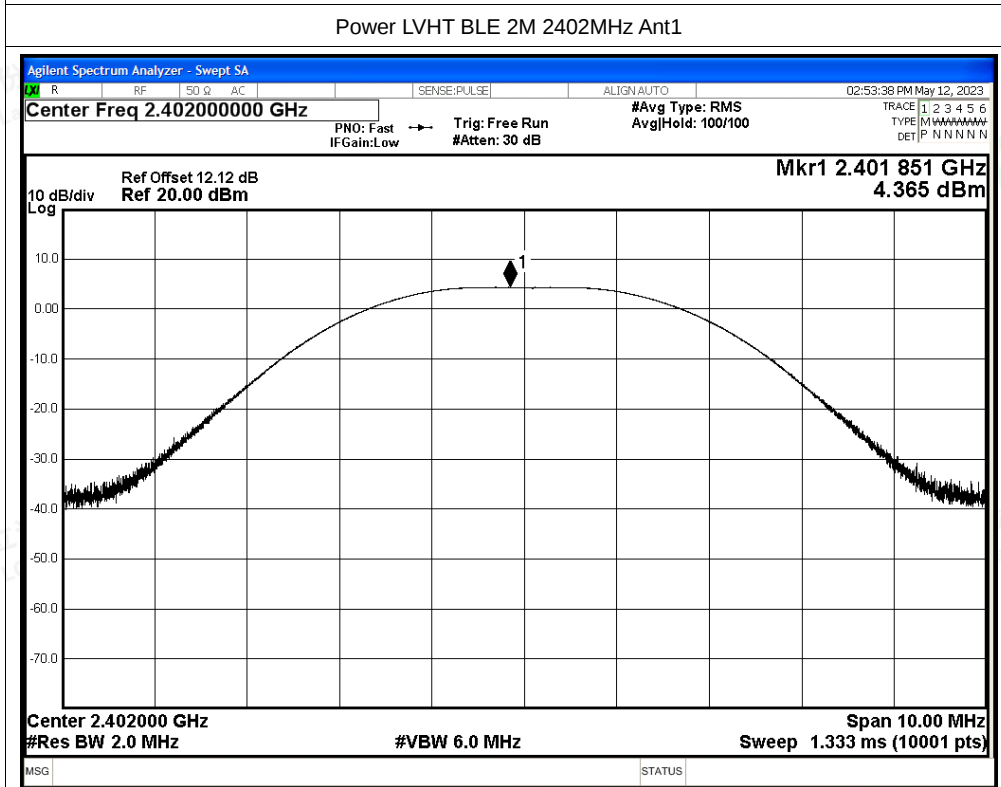
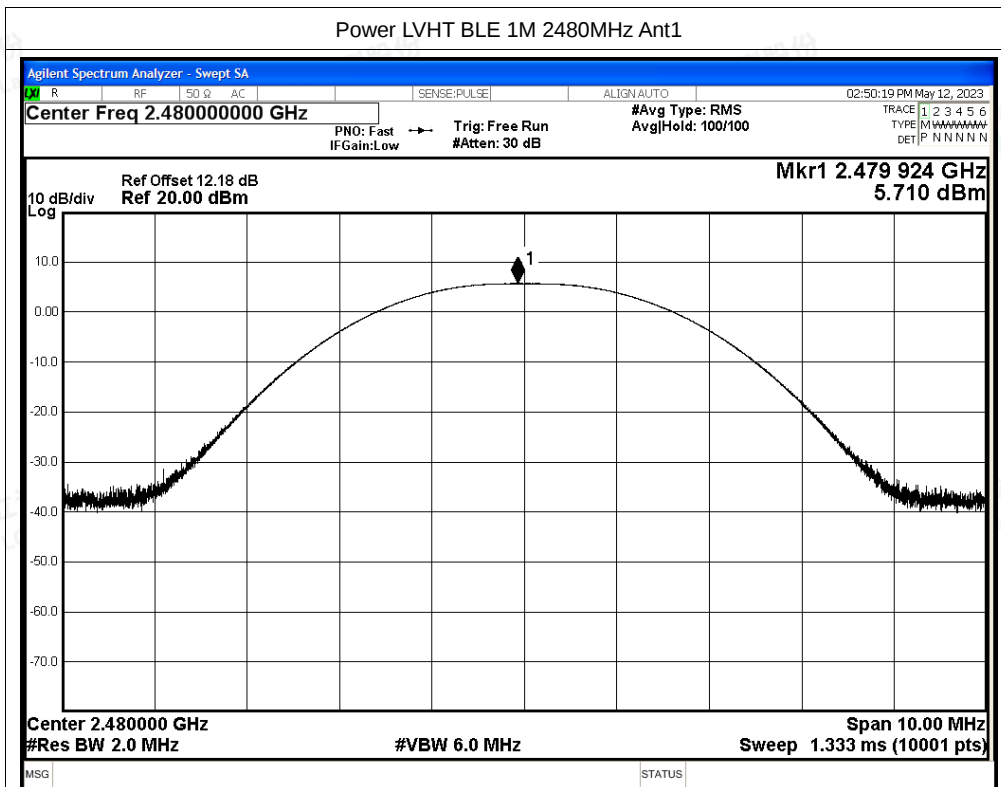


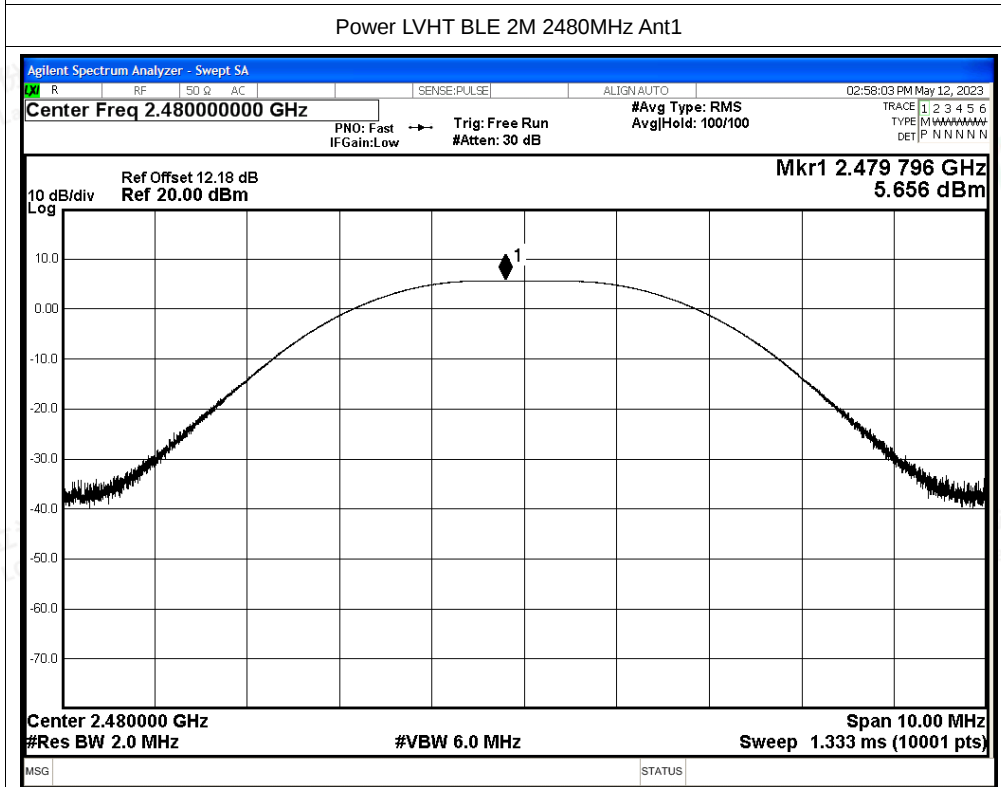
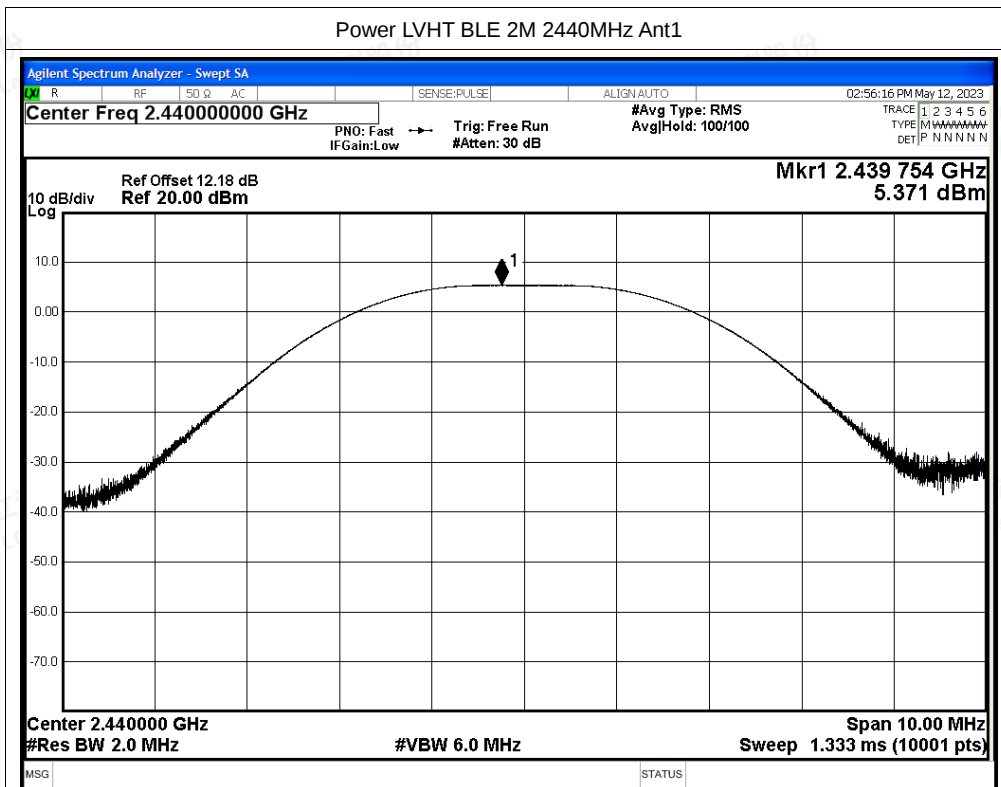
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### B.3 Maximum Power Spectral Density Level

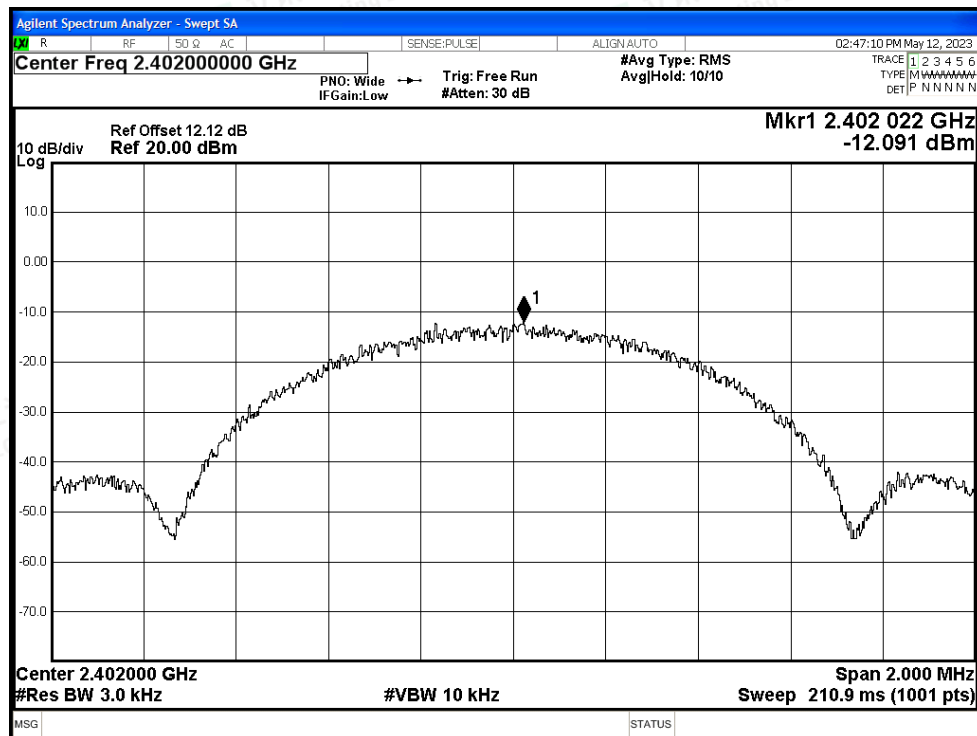
| Condition | Mode   | Frequency (MHz) | Antenna | Total PSD (dBm/3kHz) | Limit (dBm/3kHz) | Verdict |
|-----------|--------|-----------------|---------|----------------------|------------------|---------|
| NVNT      | BLE 1M | 2402            | Ant1    | -12.09               | 8                | Pass    |
| LVHT      | BLE 1M | 2440            | Ant1    | -11.25               | 8                | Pass    |
| LVHT      | BLE 1M | 2480            | Ant1    | -10.99               | 8                | Pass    |
| LVHT      | BLE 2M | 2402            | Ant1    | -15.6                | 8                | Pass    |
| LVHT      | BLE 2M | 2440            | Ant1    | -13.37               | 8                | Pass    |
| LVHT      | BLE 2M | 2480            | Ant1    | -13.26               | 8                | Pass    |



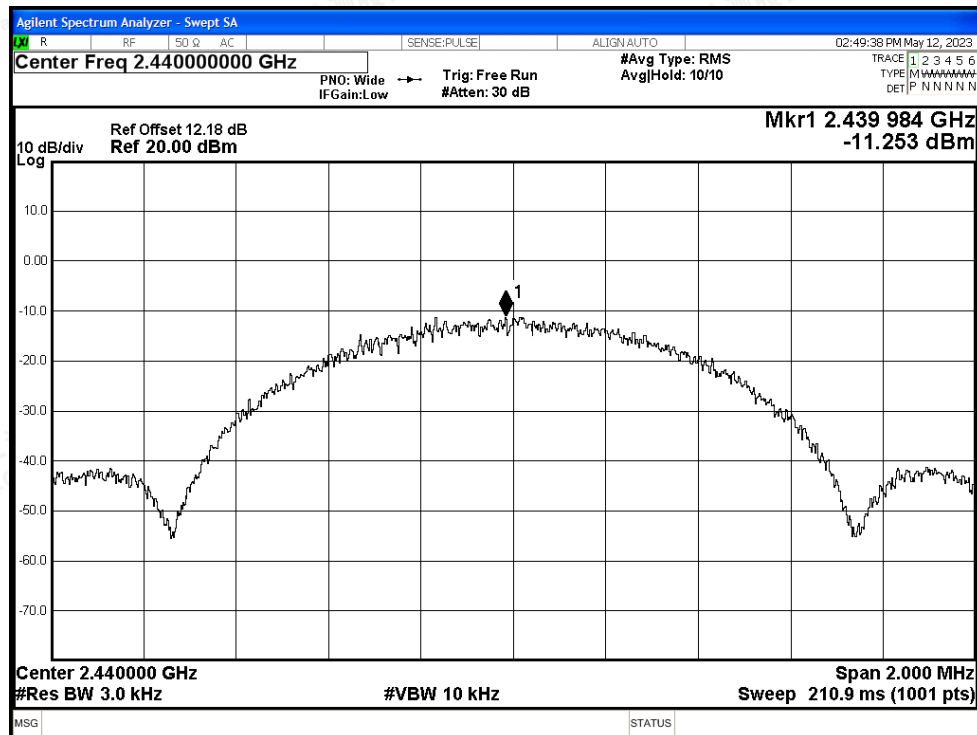


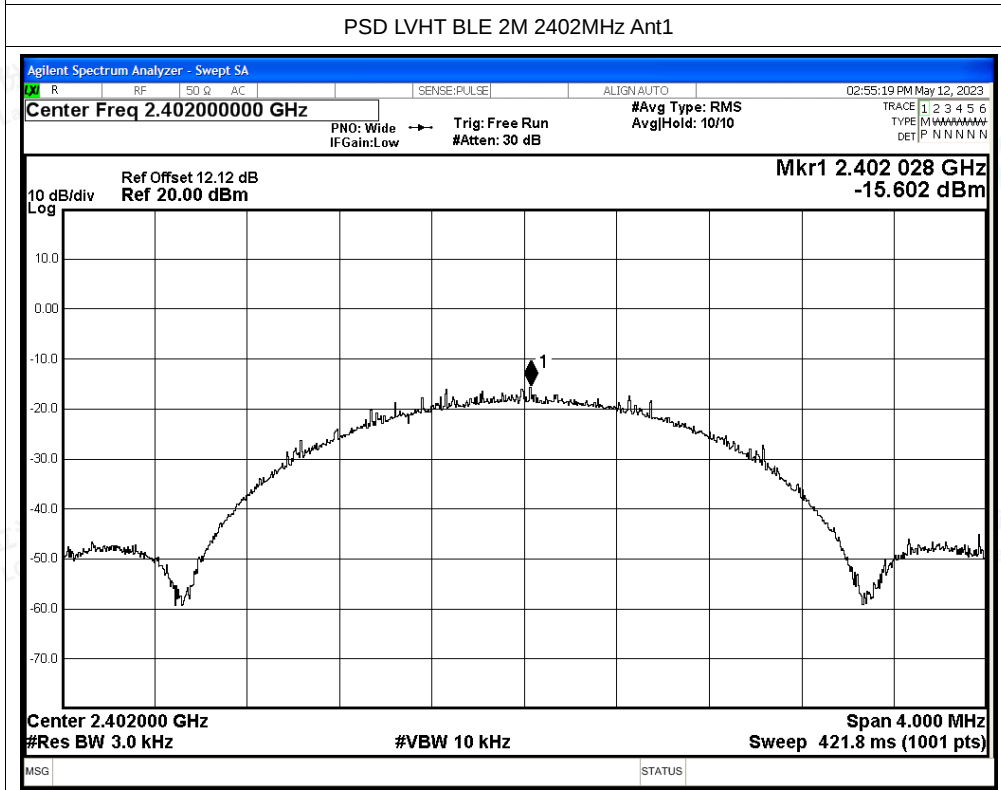
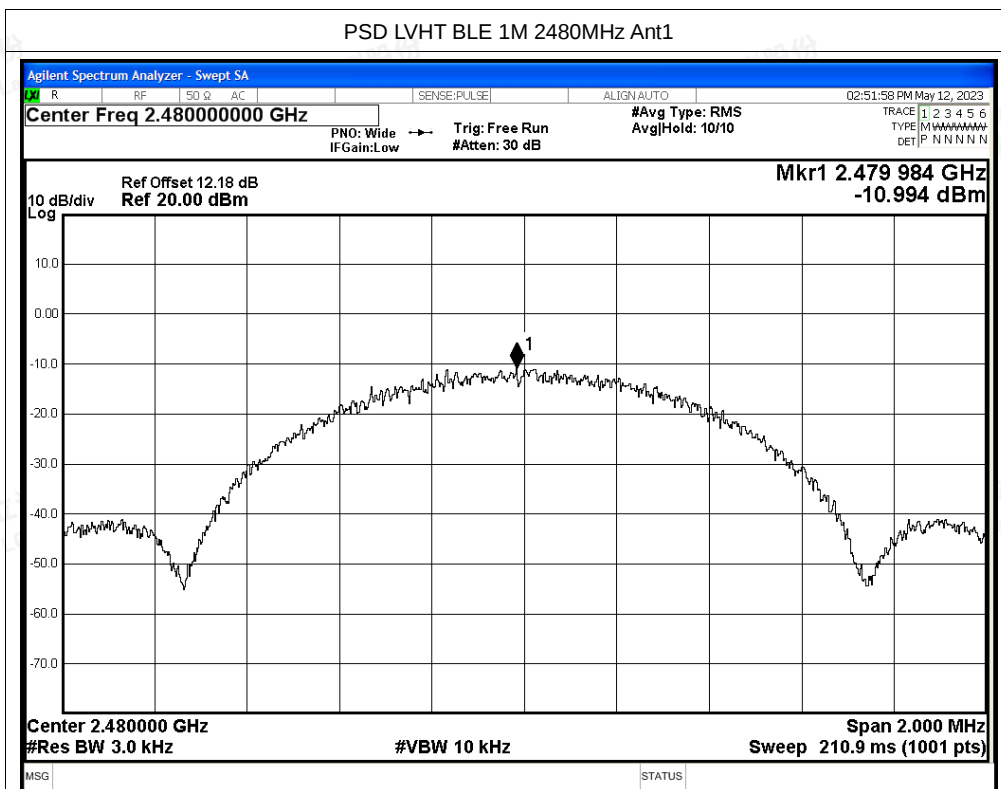
## Test Graphs

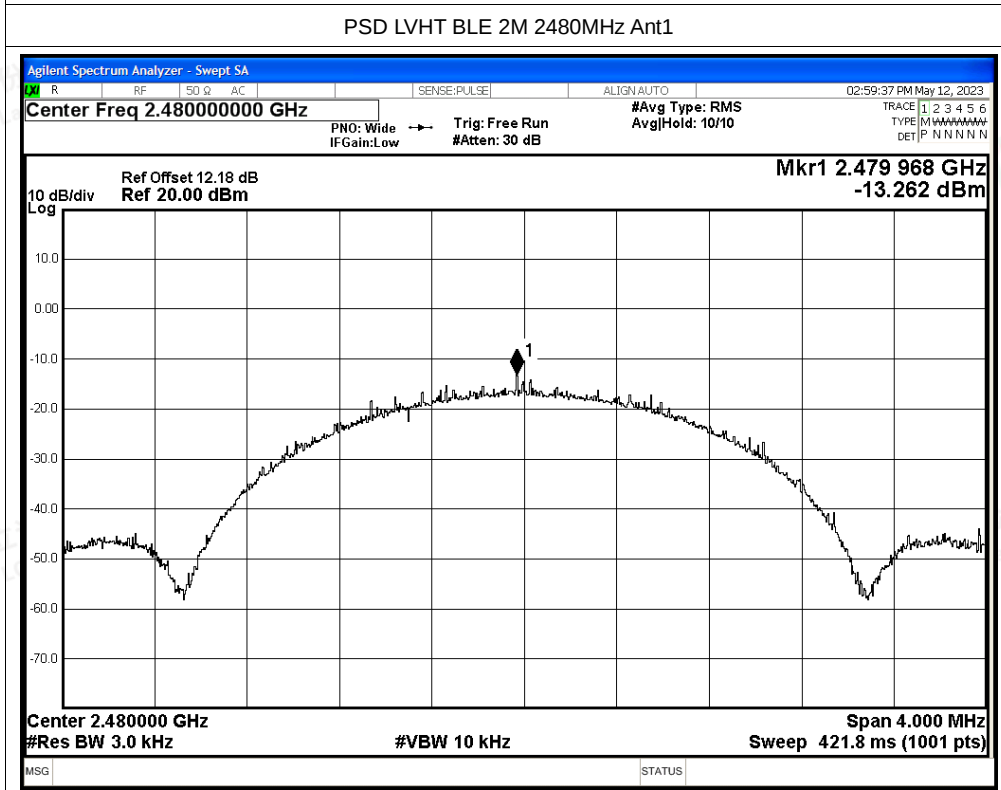
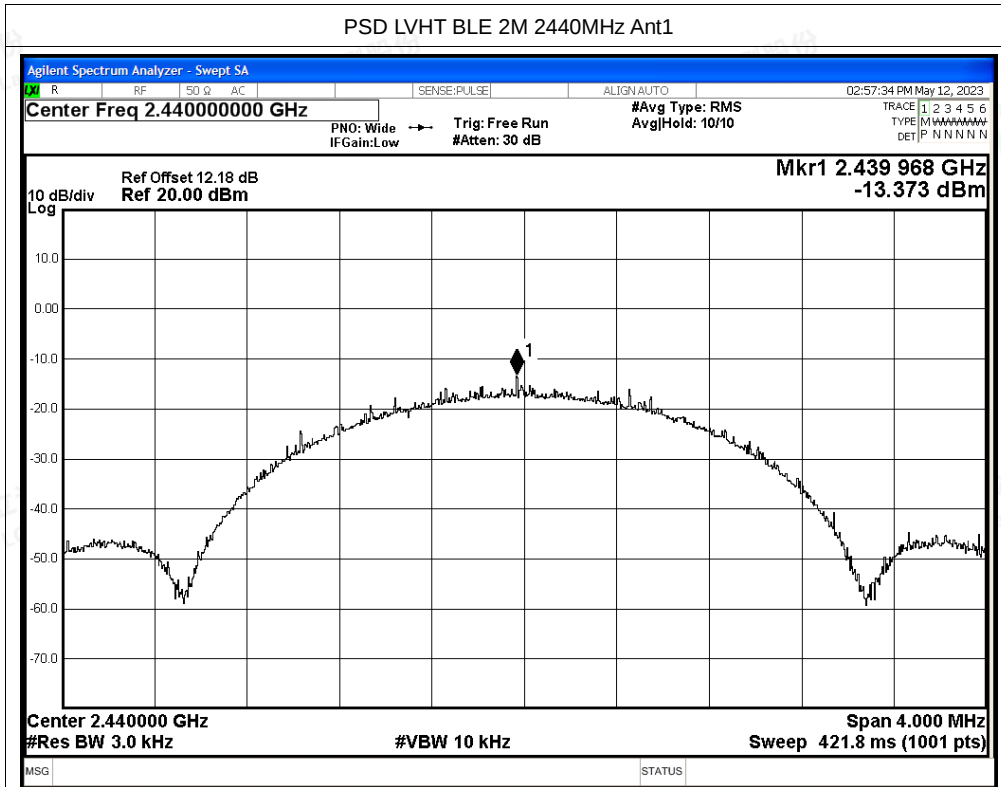
PSD NVNT BLE 1M 2402MHz Ant1



PSD LVHT BLE 1M 2440MHz Ant1









## B.4 Band Edge

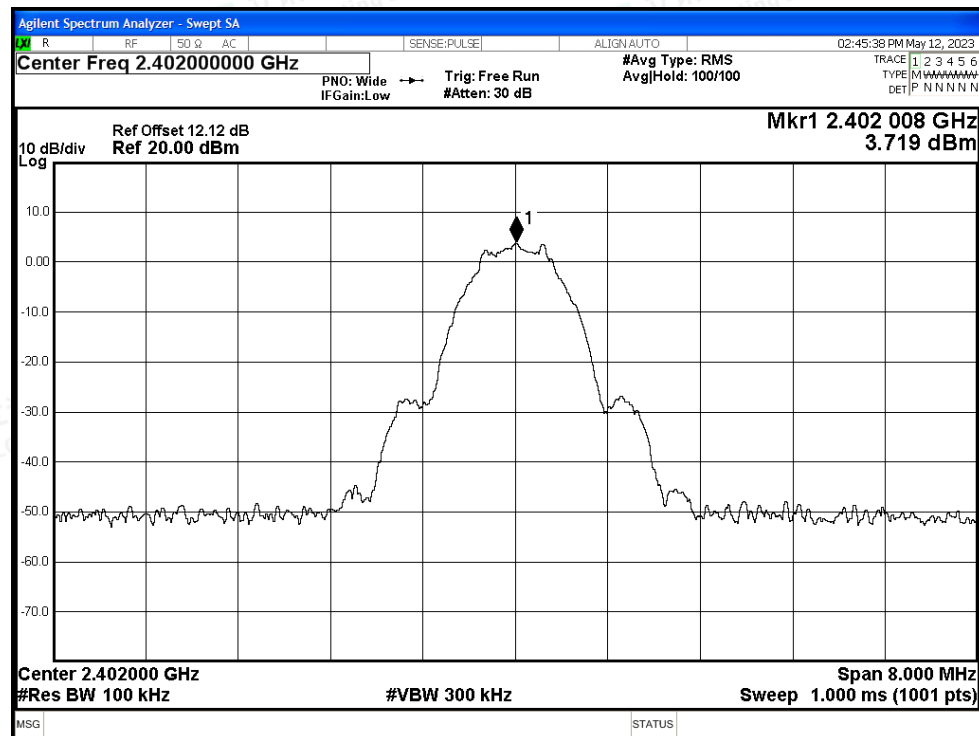
| Condition | Mode   | Frequency (MHz) | Antenna | Max Value (dBc) | Limit (dBc) | Verdict |
|-----------|--------|-----------------|---------|-----------------|-------------|---------|
| NVNT      | BLE 1M | 2402            | Ant1    | -51.16          | -20         | Pass    |
| LVHT      | BLE 1M | 2480            | Ant1    | -52.34          | -20         | Pass    |
| LVHT      | BLE 2M | 2402            | Ant1    | -31.86          | -20         | Pass    |
| LVHT      | BLE 2M | 2480            | Ant1    | -50.15          | -20         | Pass    |



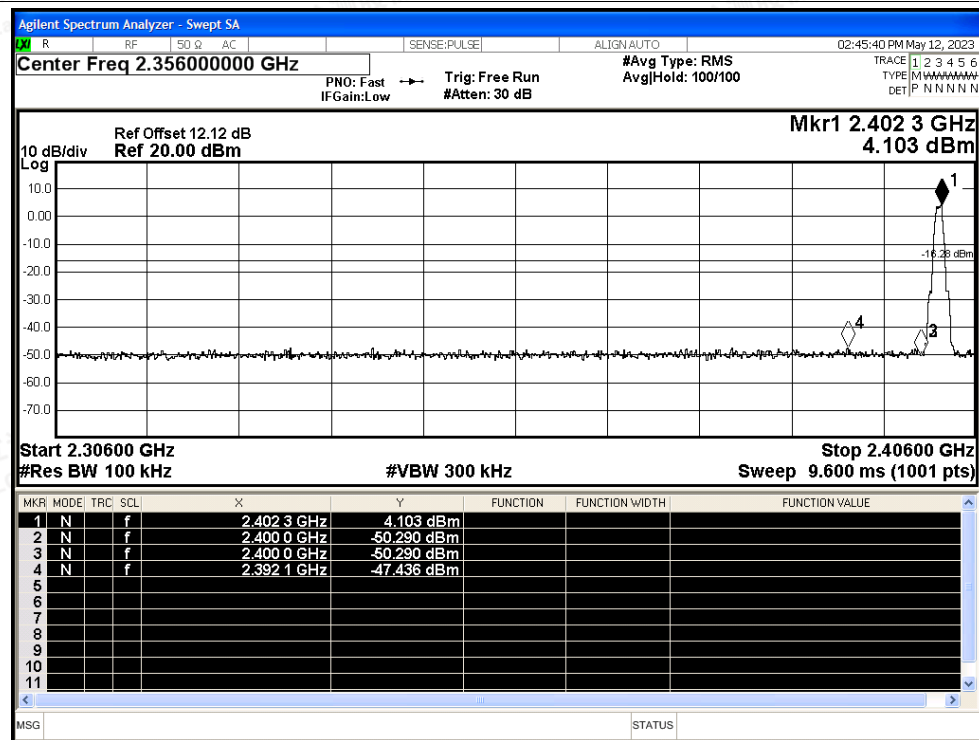


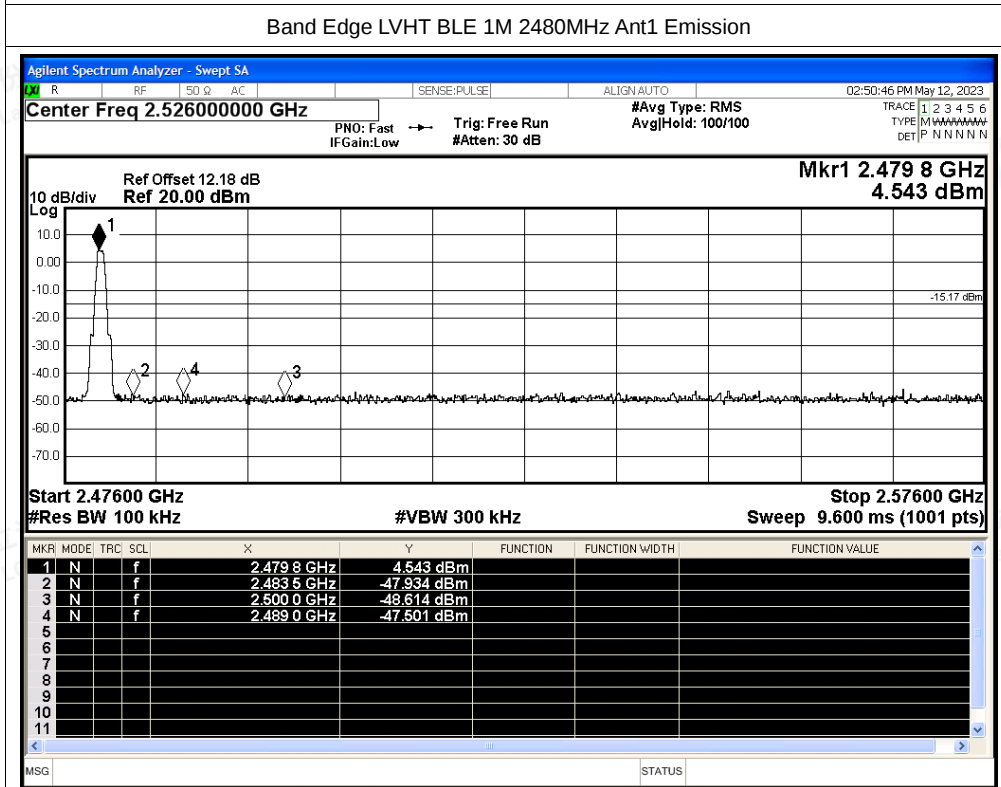
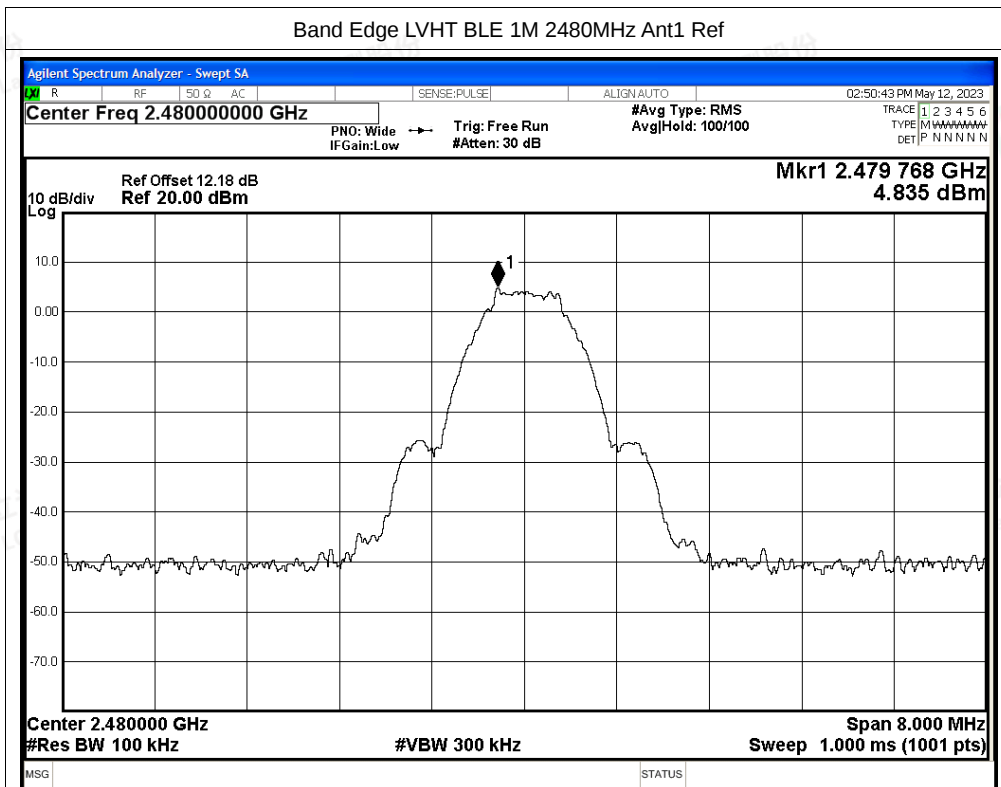
## Test Graphs

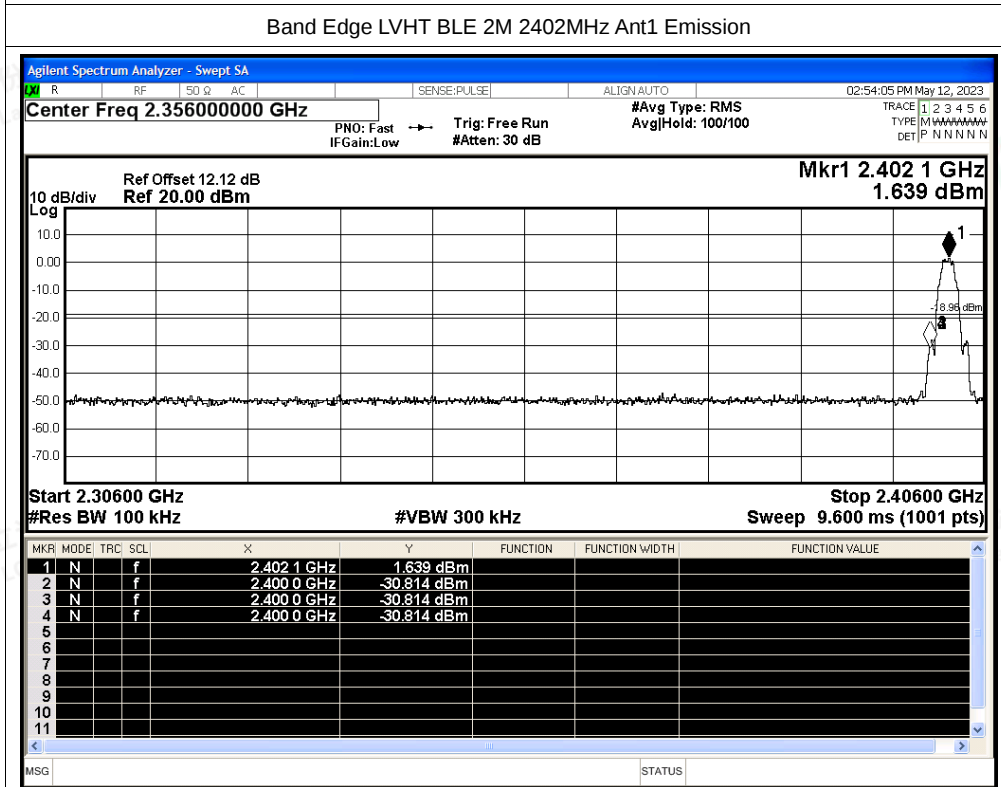
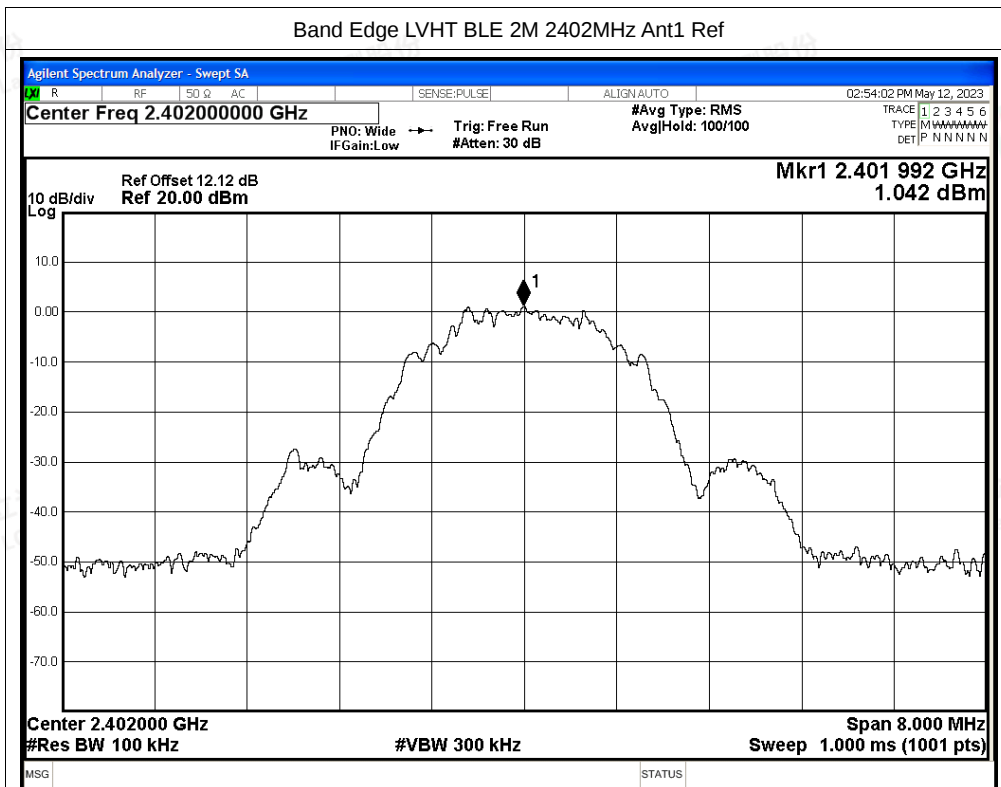
## Band Edge NVNT BLE 1M 2402MHz Ant1 Ref

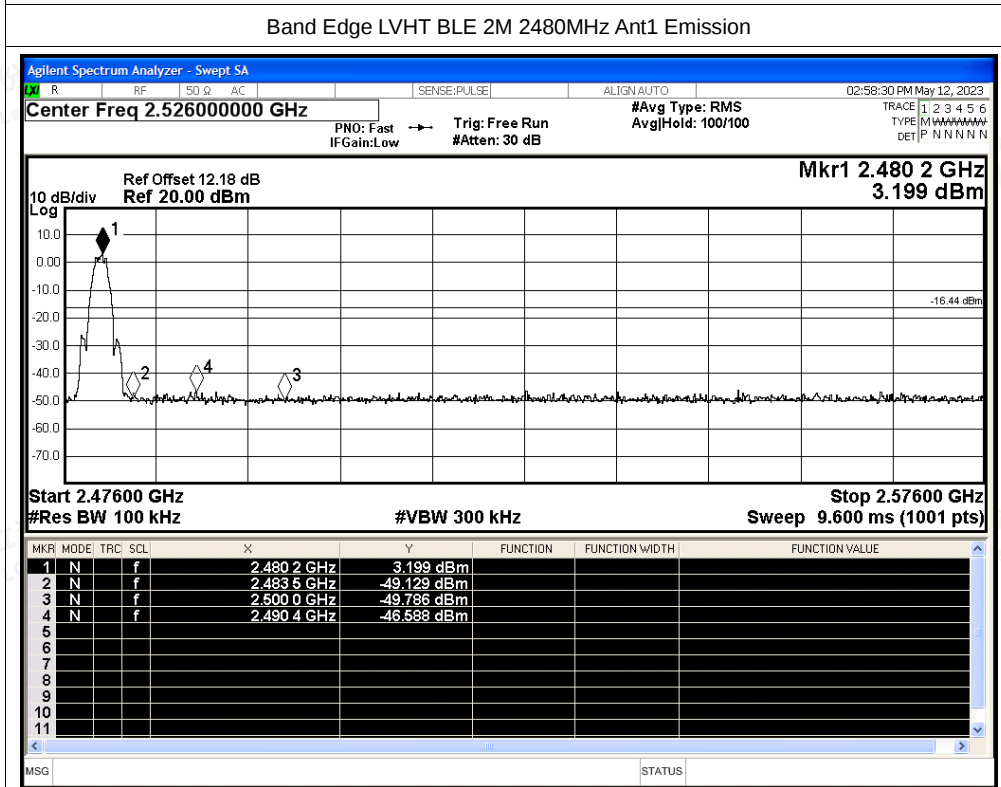
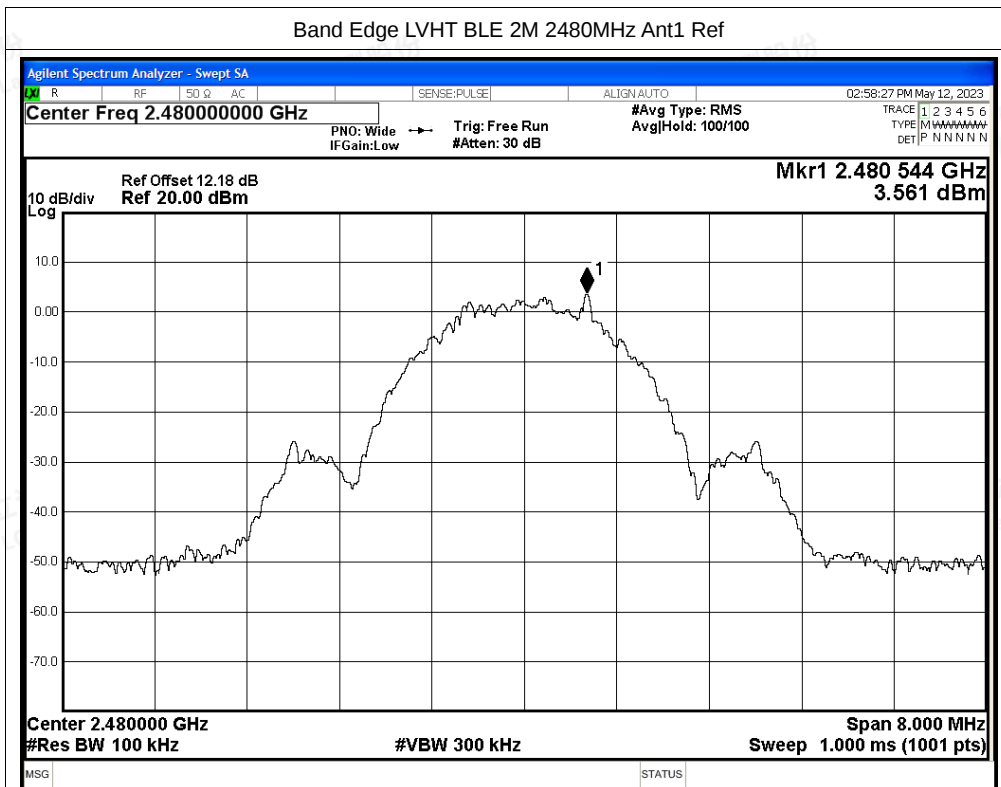


## Band Edge NVNT BLE 1M 2402MHz Ant1 Emission











## B.5 Conducted RF Spurious Emission

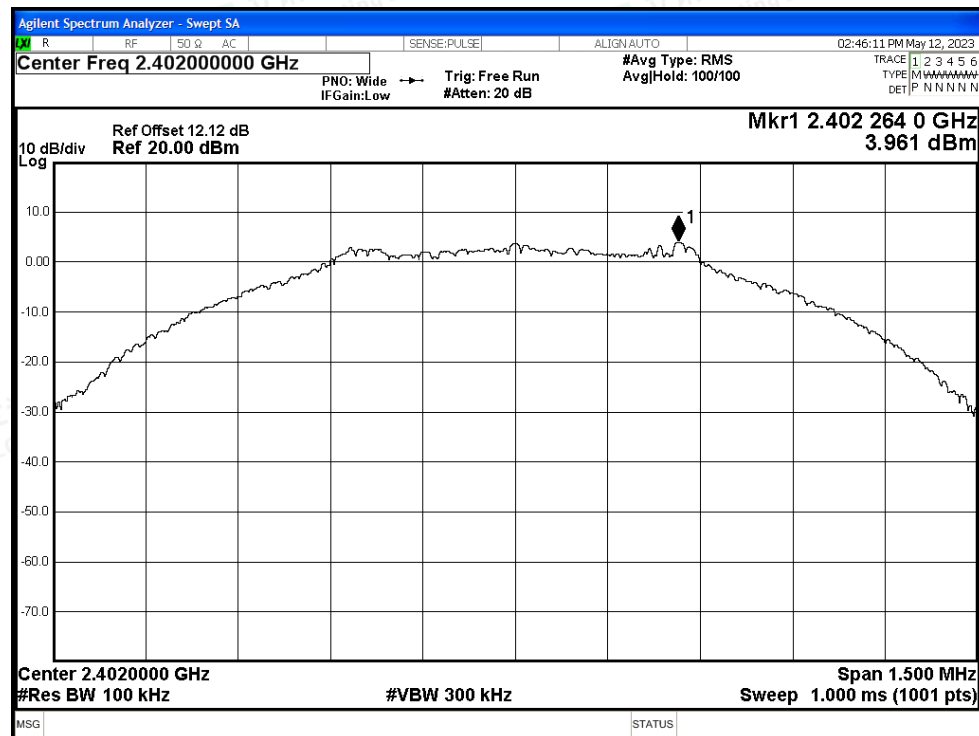
| Condition | Mode   | Frequency (MHz) | Antenna | Max Value (dBc) | Limit (dBc) | Verdict |
|-----------|--------|-----------------|---------|-----------------|-------------|---------|
| NVNT      | BLE 1M | 2402            | Ant1    | -48.47          | -20         | Pass    |
| LVHT      | BLE 1M | 2440            | Ant1    | -50.6           | -20         | Pass    |
| LVHT      | BLE 1M | 2480            | Ant1    | -50.5           | -20         | Pass    |
| LVHT      | BLE 2M | 2402            | Ant1    | -48.81          | -20         | Pass    |
| LVHT      | BLE 2M | 2440            | Ant1    | -46.64          | -20         | Pass    |
| LVHT      | BLE 2M | 2480            | Ant1    | -50.1           | -20         | Pass    |



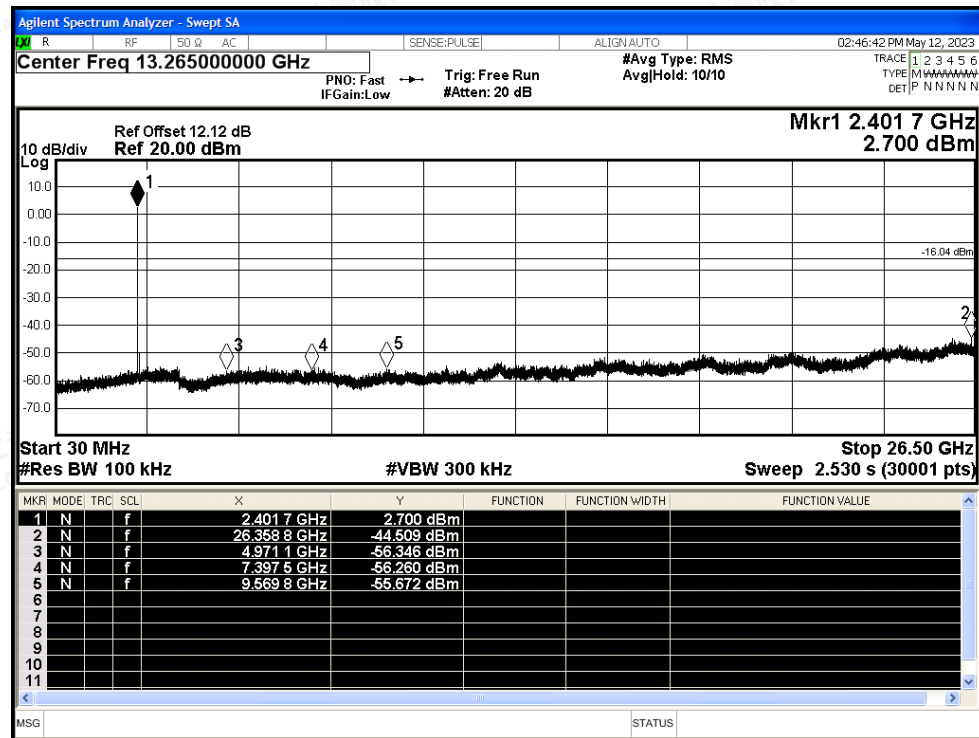


## Test Graphs

Tx. Spurious NVNT BLE 1M 2402MHz Ant1 Ref

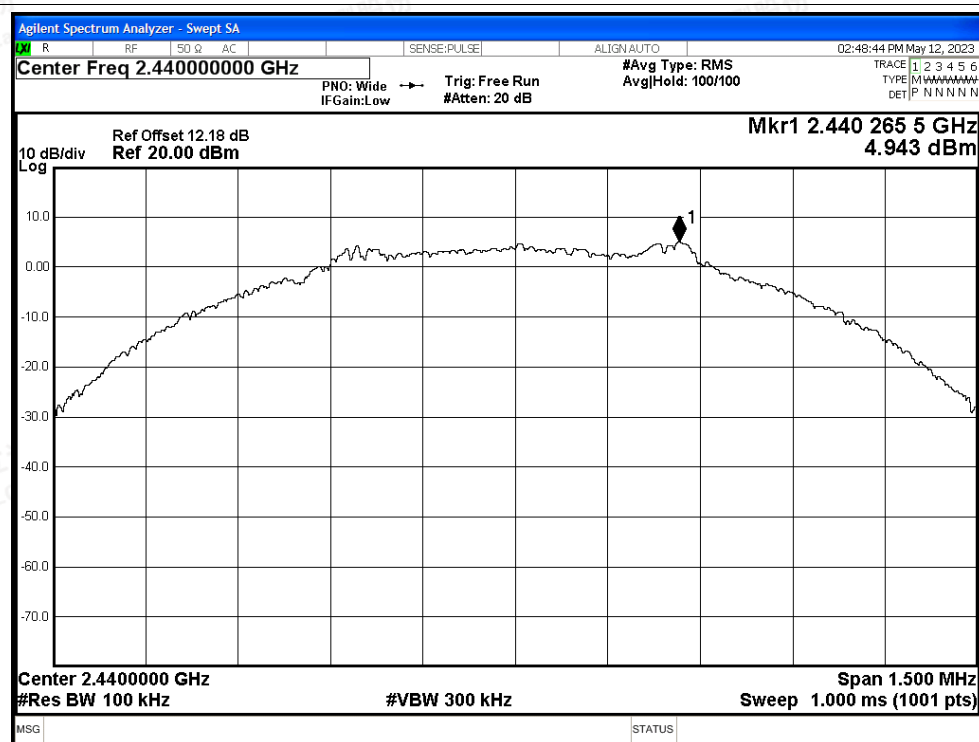


Tx. Spurious NVNT BLE 1M 2402MHz Ant1 Emission

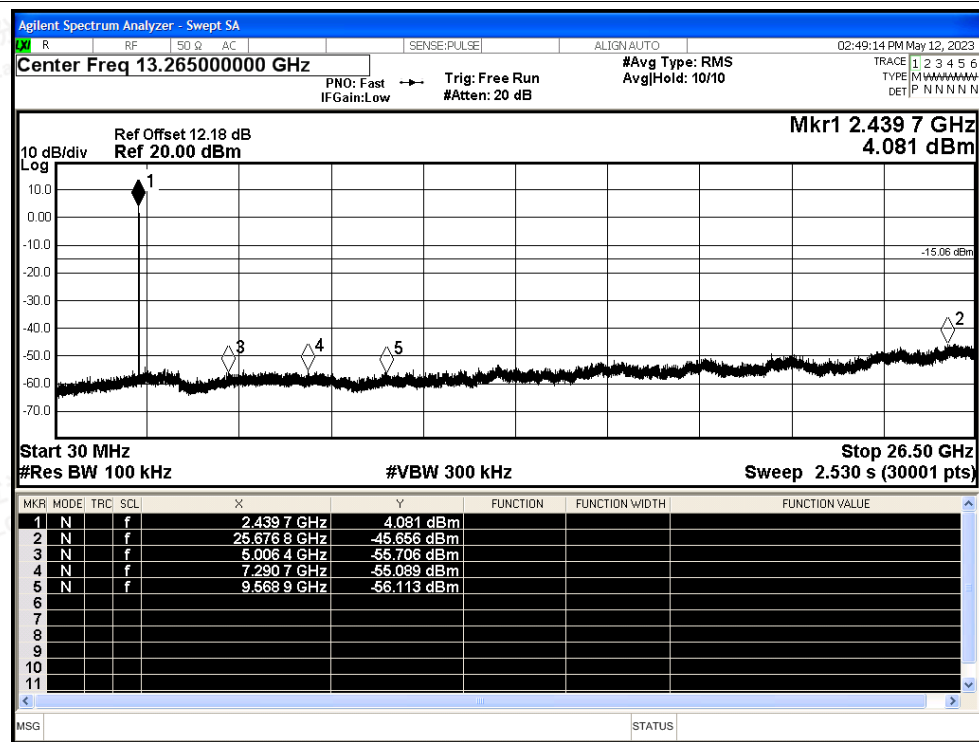




## Tx. Spurious LVHT BLE 1M 2440MHz Ant1 Ref



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

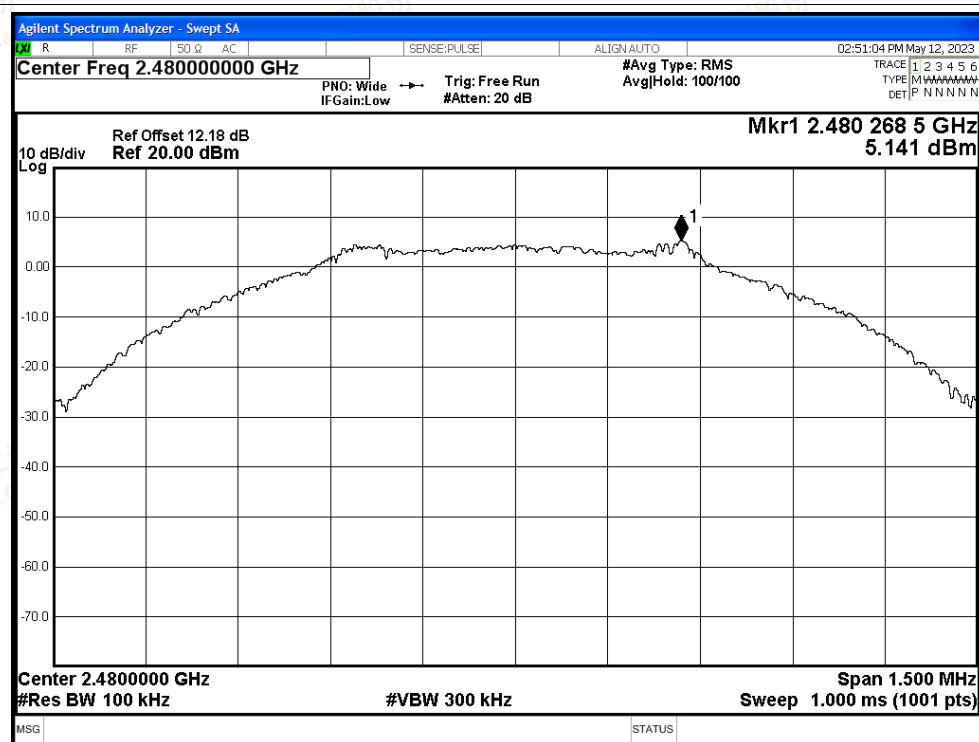


| MKR | MODE | TRC | SCL | X            | Y           | FUNCTION | FUNCTION WIDTH | FUNCTION VALUE |
|-----|------|-----|-----|--------------|-------------|----------|----------------|----------------|
| 1   | N    |     | f   | 2.439 7 GHz  | 4.081 dBm   |          |                |                |
| 2   | N    |     | f   | 25.676 8 GHz | -45.656 dBm |          |                |                |
| 3   | N    |     | f   | 5.006 4 GHz  | -55.706 dBm |          |                |                |
| 4   | N    |     | f   | 7.290 7 GHz  | -55.089 dBm |          |                |                |
| 5   | N    |     | f   | 9.568 9 GHz  | -56.113 dBm |          |                |                |
| 6   |      |     |     |              |             |          |                |                |
| 7   |      |     |     |              |             |          |                |                |
| 8   |      |     |     |              |             |          |                |                |
| 9   |      |     |     |              |             |          |                |                |
| 10  |      |     |     |              |             |          |                |                |
| 11  |      |     |     |              |             |          |                |                |

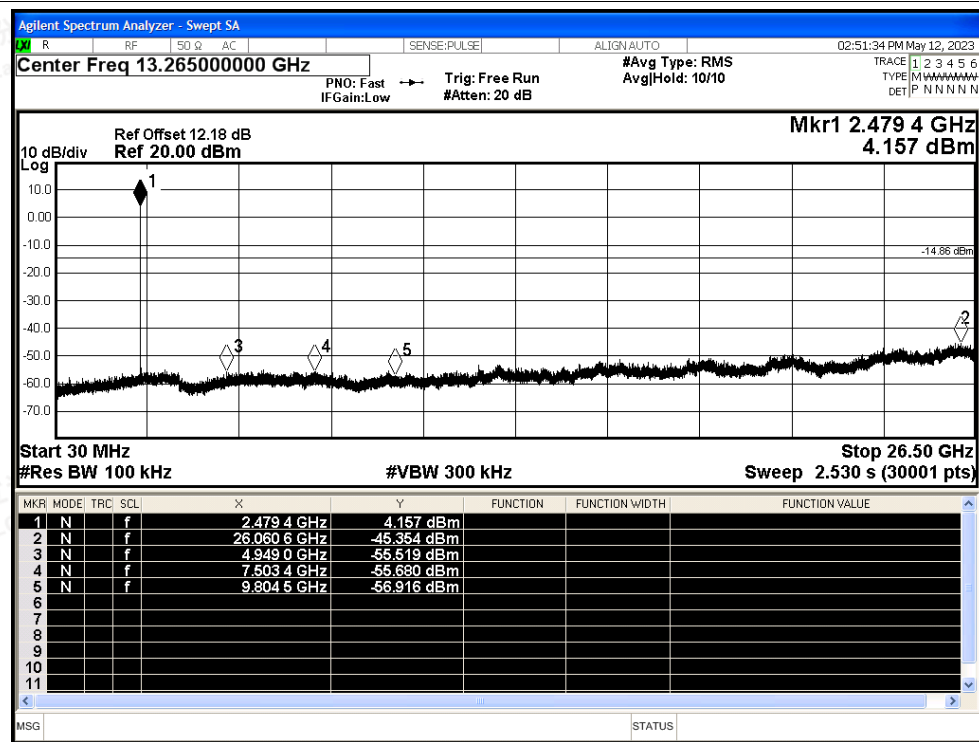




## Tx. Spurious LVHT BLE 1M 2480MHz Ant1 Ref

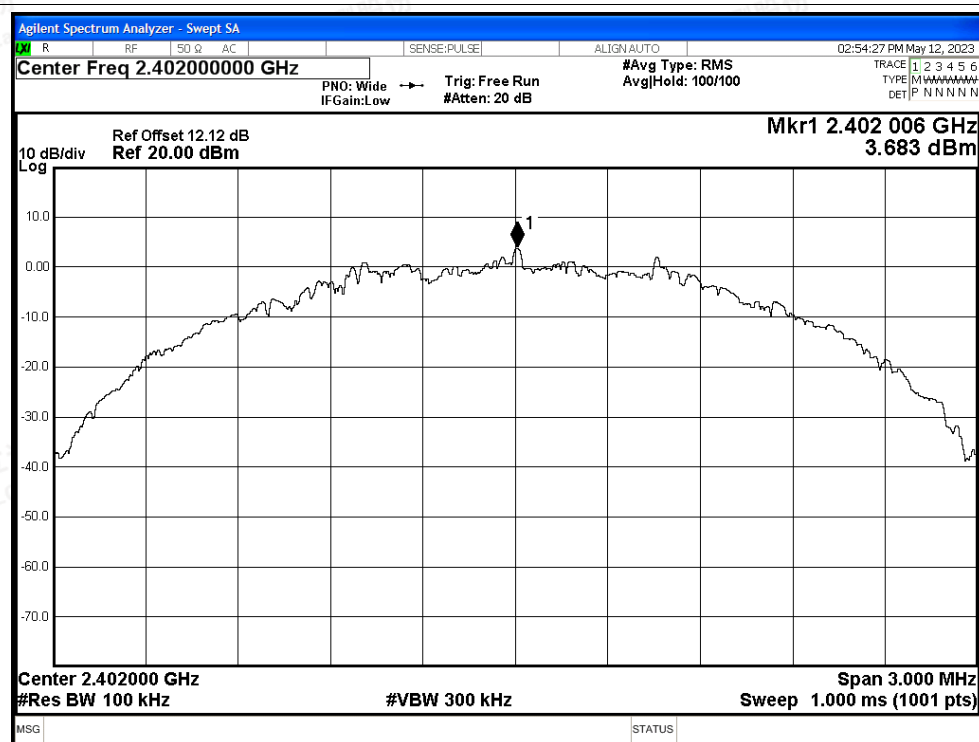


## Tx. Spurious LVHT BLE 1M 2480MHz Ant1 Emission

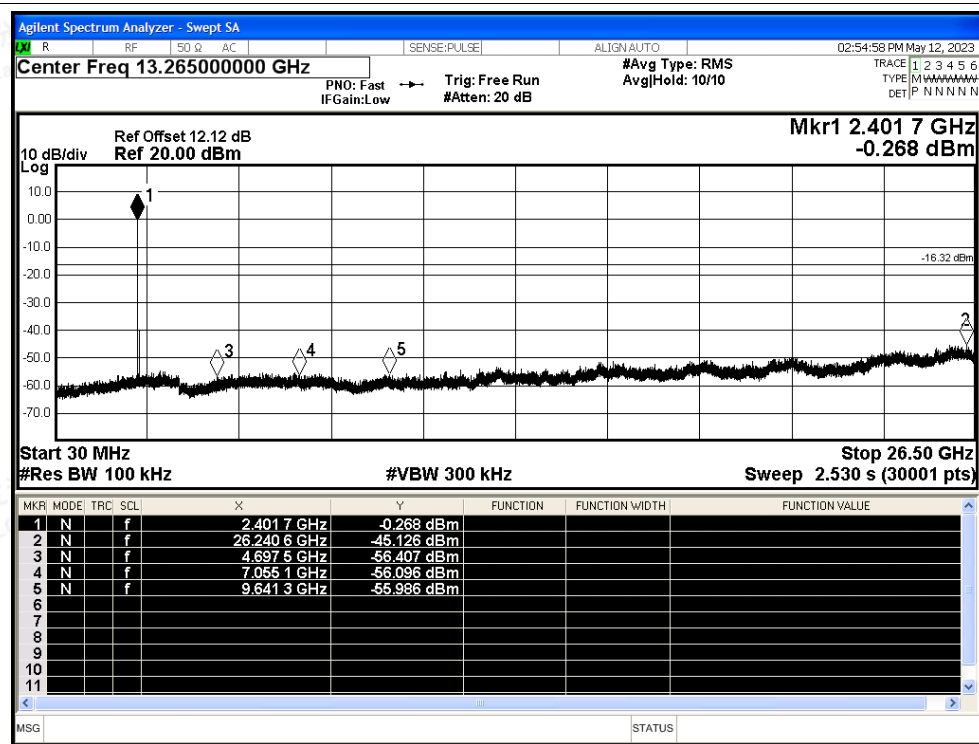




## Tx. Spurious LVHT BLE 2M 2402MHz Ant1 Ref

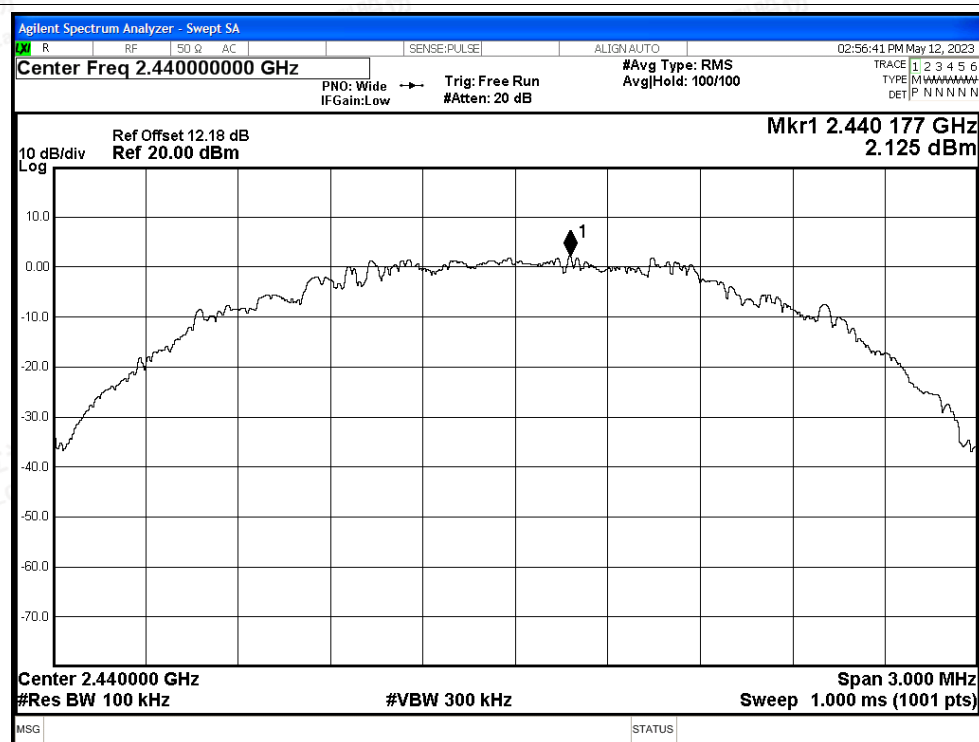


## Tx. Spurious LVHT BLE 2M 2402MHz Ant1 Emission

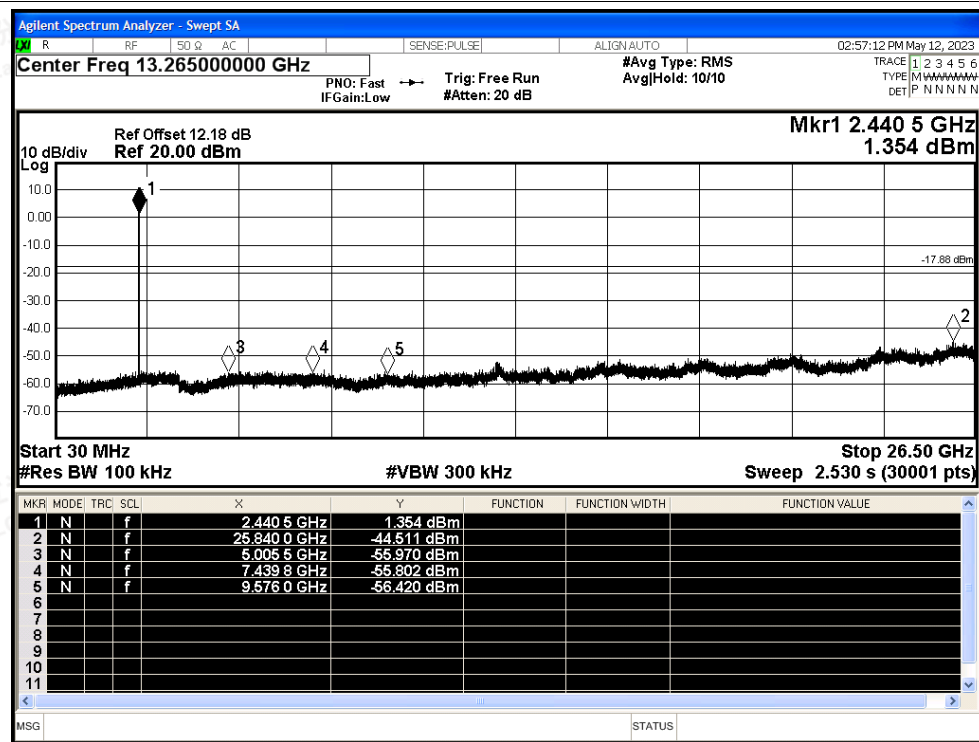




## Tx. Spurious LVHT BLE 2M 2440MHz Ant1 Ref

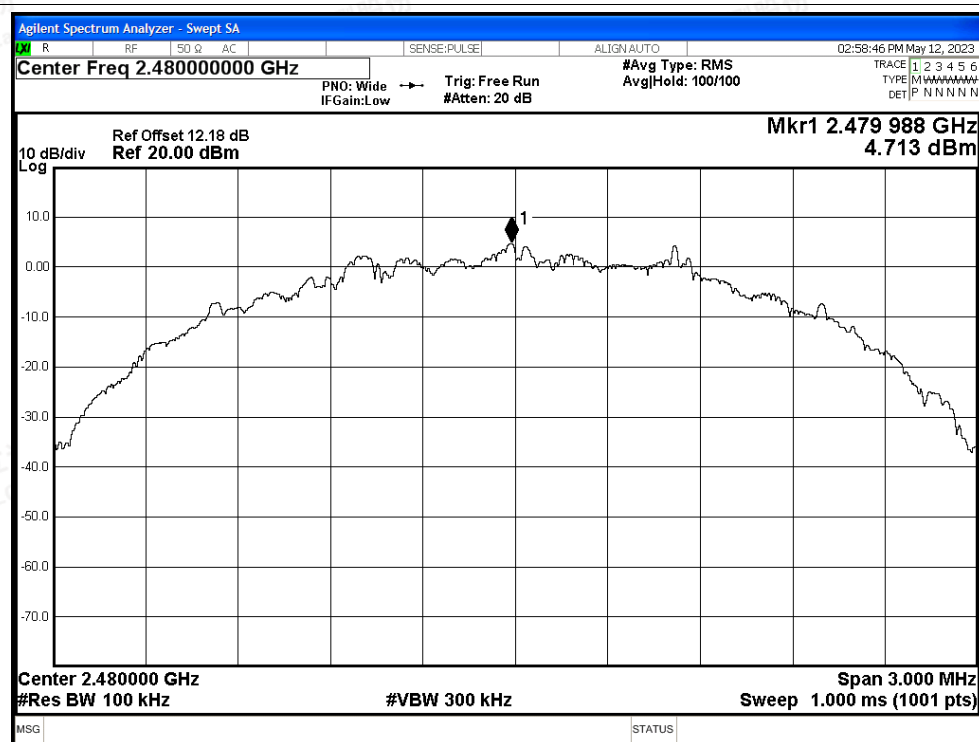


## Tx. Spurious LVHT BLE 2M 2440MHz Ant1 Emission

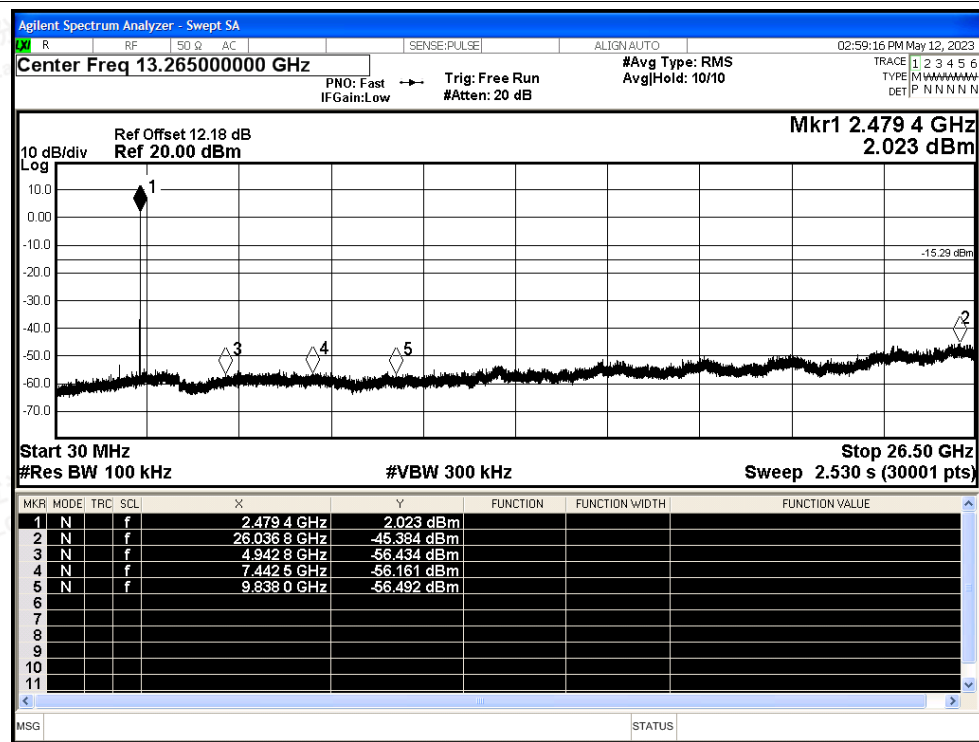




## Tx. Spurious LVHT BLE 2M 2480MHz Ant1 Ref



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





## B.6 Duty Cycle

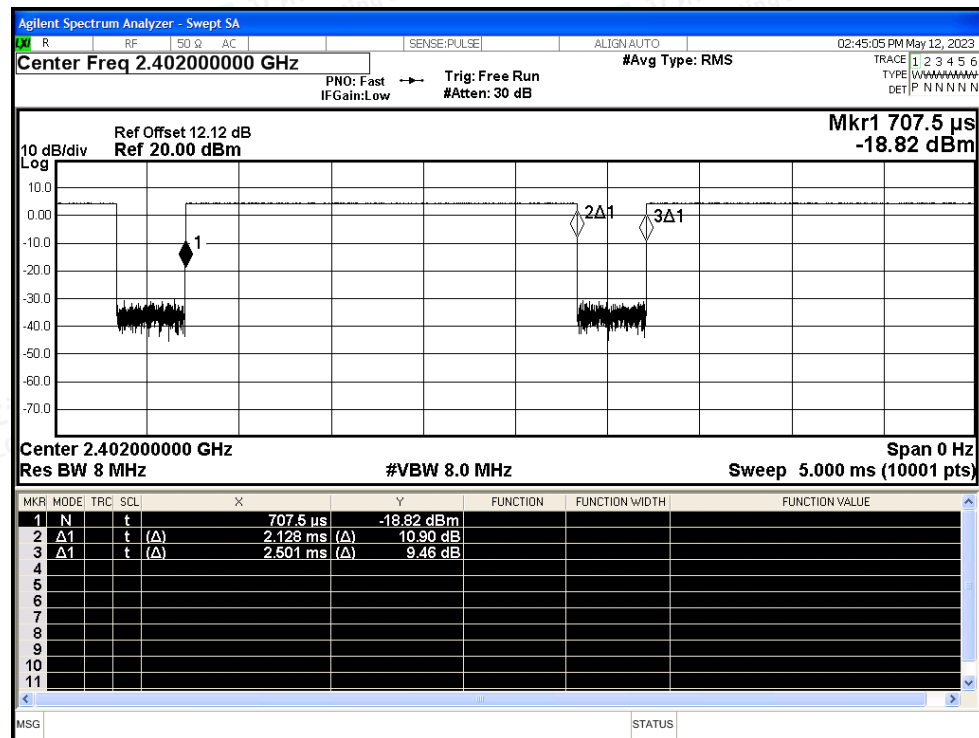
| Condition | Mode   | Frequency (MHz) | Antenna | Duty Cycle (%) | Correction Factor (dB) | 1/T (kHz) |
|-----------|--------|-----------------|---------|----------------|------------------------|-----------|
| NVNT      | BLE 1M | 2402            | Ant1    | 85.1           | 0.7                    | 0.47      |
| LVHT      | BLE 1M | 2440            | Ant1    | 85.13          | 0.7                    | 0         |
| LVHT      | BLE 1M | 2480            | Ant1    | 85.12          | 0.7                    | 0.47      |
| LVHT      | BLE 2M | 2402            | Ant1    | 57.15          | 2.43                   | 0.93      |
| LVHT      | BLE 2M | 2440            | Ant1    | 57.17          | 2.43                   | 0.93      |
| LVHT      | BLE 2M | 2480            | Ant1    | 57.17          | 2.43                   | 0.93      |



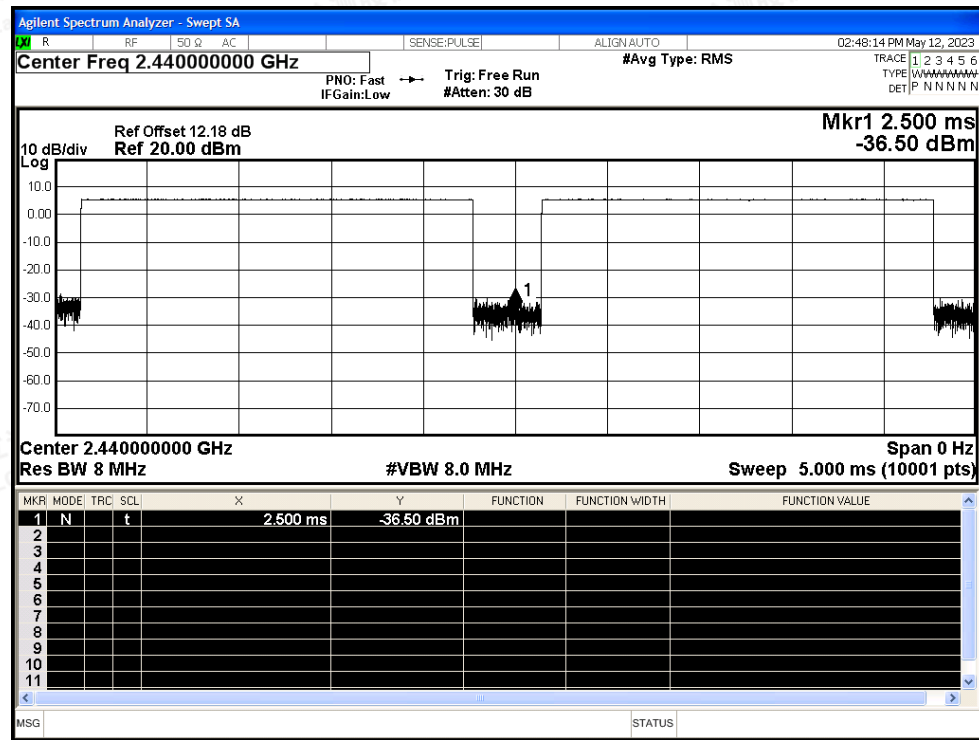


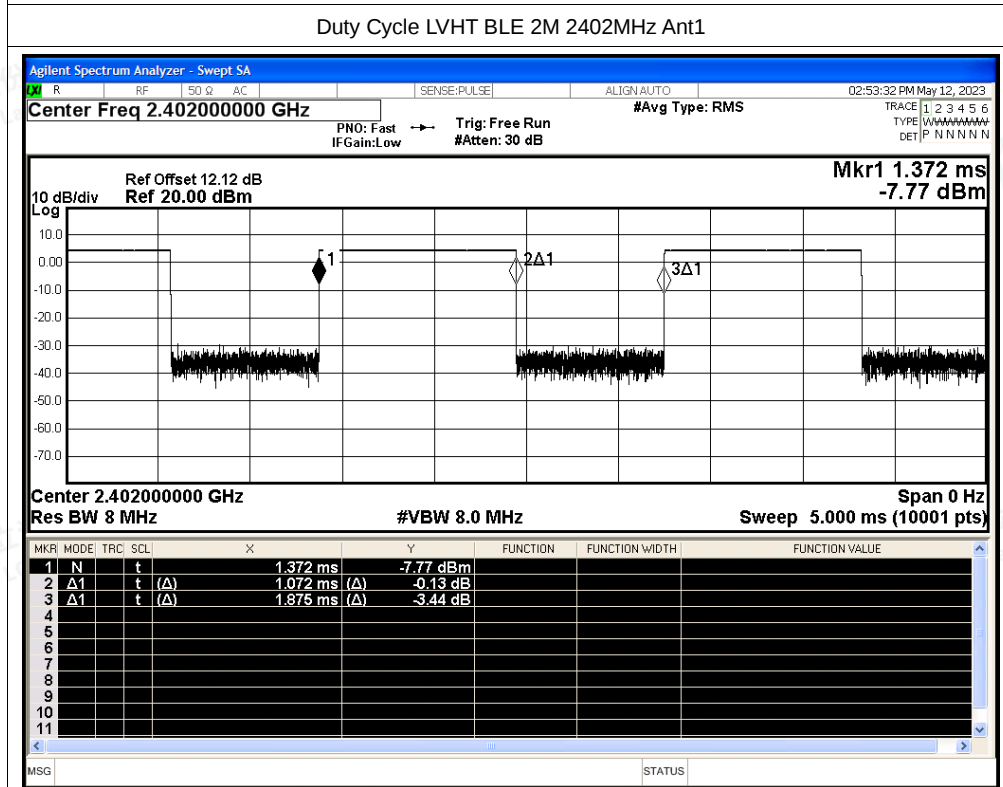
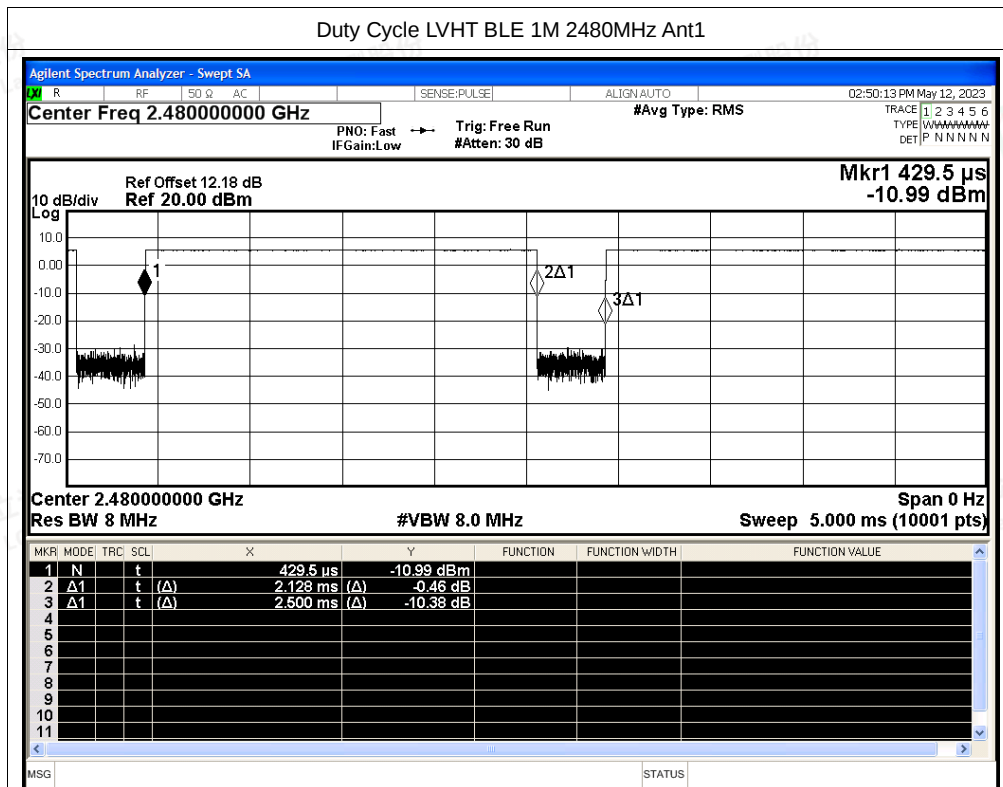
## Test Graphs

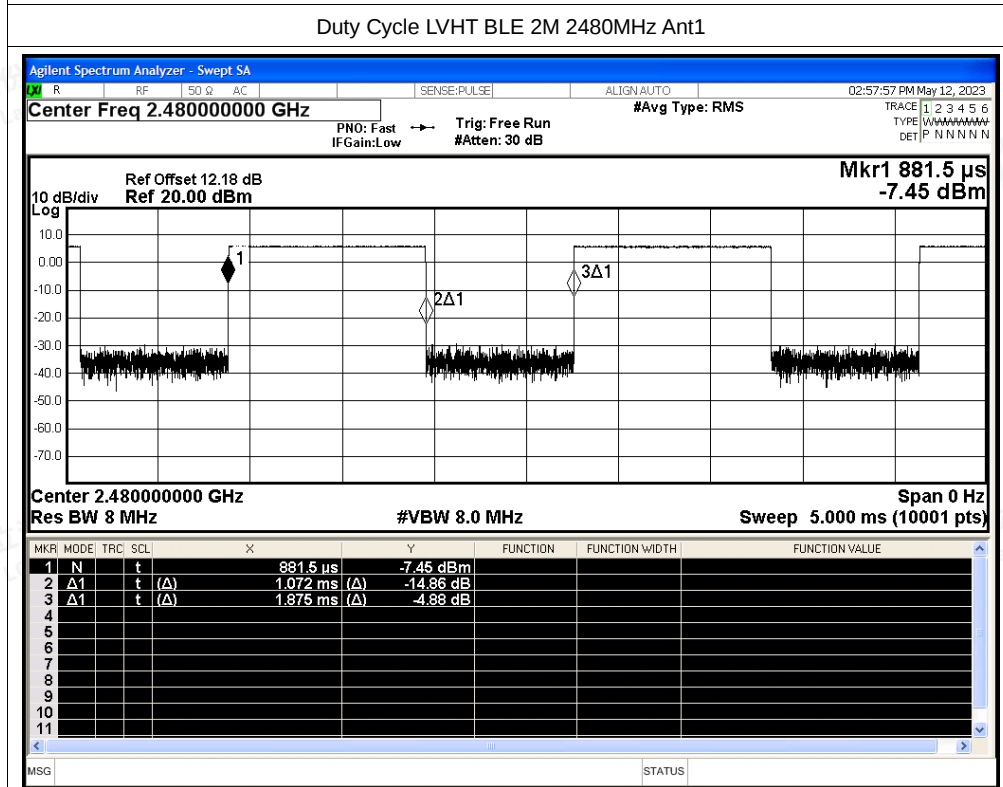
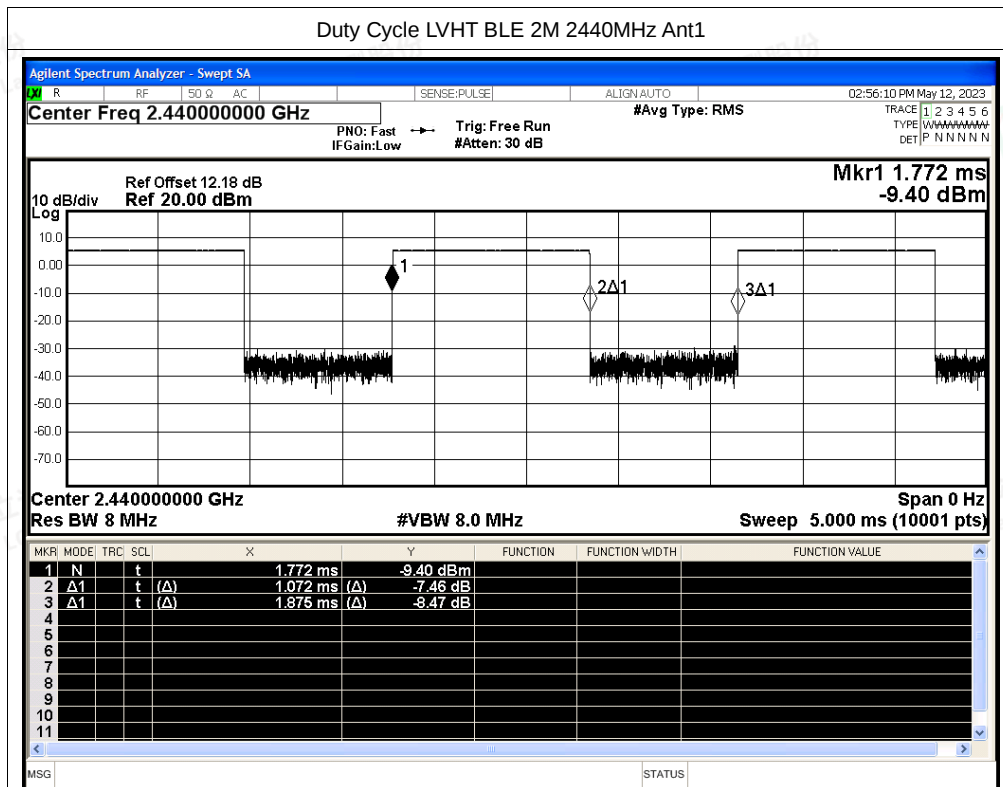
## Duty Cycle NVNT BLE 1M 2402MHz Ant1



## Duty Cycle LVHT BLE 1M 2440MHz Ant1









## B.7 Restrict Band

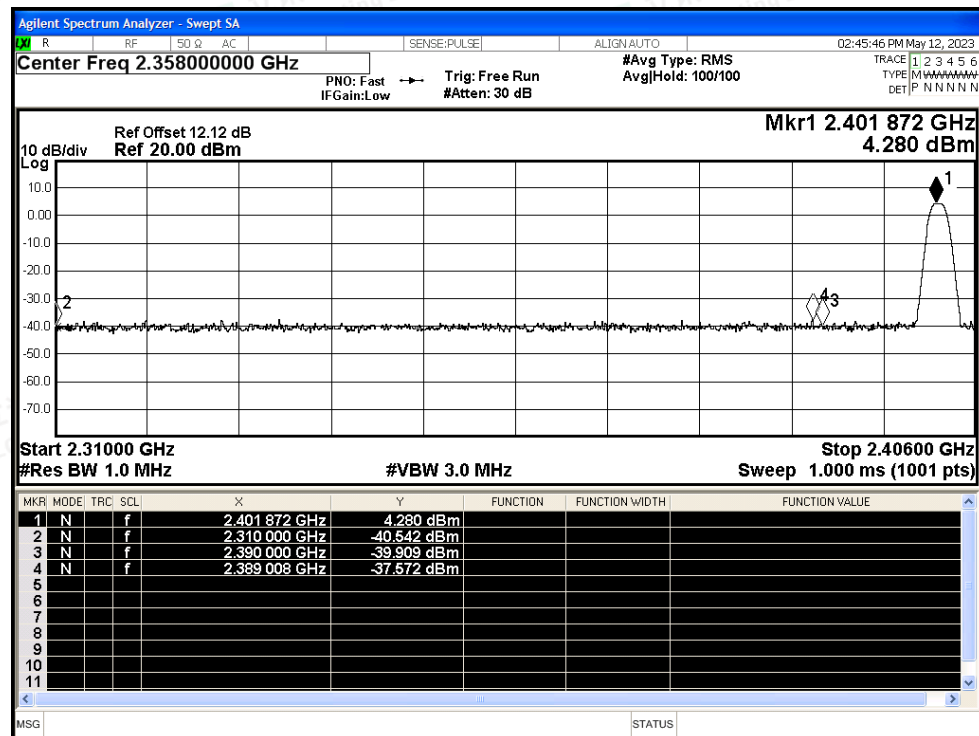
| Condition | Mode   | Frequency (MHz) | Antenna | Spur Freq (MHz) | Power (dBm) | Gain (dBi) | E (dBuV/m) | Detector | Limit (dBuV/m) | Verdict |
|-----------|--------|-----------------|---------|-----------------|-------------|------------|------------|----------|----------------|---------|
| NVNT      | BLE 1M | 2402            | Ant1    | 2310            | -40.54      | 3.9        | 58.62      | Peak     | 74             | Pass    |
| NVNT      | BLE 1M | 2402            | Ant1    | 2310            | -47.8       | 3.9        | 51.36      | Average  | 54             | Pass    |
| NVNT      | BLE 1M | 2402            | Ant1    | 2389.008        | -37.57      | 3.9        | 61.59      | Peak     | 74             | Pass    |
| NVNT      | BLE 1M | 2402            | Ant1    | 2389.392        | -47.32      | 3.9        | 51.84      | Average  | 54             | Pass    |
| NVNT      | BLE 1M | 2402            | Ant1    | 2390            | -39.91      | 3.9        | 59.25      | Peak     | 74             | Pass    |
| NVNT      | BLE 1M | 2402            | Ant1    | 2390            | -47.44      | 3.9        | 51.72      | Average  | 54             | Pass    |
| LVHT      | BLE 1M | 2480            | Ant1    | 2483.5          | -39.35      | 3.9        | 59.81      | Peak     | 74             | Pass    |
| LVHT      | BLE 1M | 2480            | Ant1    | 2483.5          | -46.45      | 3.9        | 52.71      | Average  | 54             | Pass    |
| LVHT      | BLE 1M | 2480            | Ant1    | 2496.832        | -37.04      | 3.9        | 62.12      | Peak     | 74             | Pass    |
| LVHT      | BLE 1M | 2480            | Ant1    | 2483.512        | -46.45      | 3.9        | 52.71      | Average  | 54             | Pass    |
| LVHT      | BLE 1M | 2480            | Ant1    | 2500            | -39.16      | 3.9        | 60.00      | Peak     | 74             | Pass    |
| LVHT      | BLE 1M | 2480            | Ant1    | 2500            | -47.11      | 3.9        | 52.05      | Average  | 54             | Pass    |
| LVHT      | BLE 2M | 2402            | Ant1    | 2310            | -40.36      | 3.9        | 58.80      | Peak     | 74             | Pass    |
| LVHT      | BLE 2M | 2402            | Ant1    | 2310            | -47.53      | 3.9        | 51.63      | Average  | 54             | Pass    |
| LVHT      | BLE 2M | 2402            | Ant1    | 2323.344        | -37.26      | 3.9        | 61.90      | Peak     | 74             | Pass    |
| LVHT      | BLE 2M | 2402            | Ant1    | 2376.624        | -47.07      | 3.9        | 52.09      | Average  | 54             | Pass    |
| LVHT      | BLE 2M | 2402            | Ant1    | 2390            | -40.2       | 3.9        | 58.96      | Peak     | 74             | Pass    |
| LVHT      | BLE 2M | 2402            | Ant1    | 2390            | -47.28      | 3.9        | 51.88      | Average  | 54             | Pass    |
| LVHT      | BLE 2M | 2480            | Ant1    | 2483.5          | -39.12      | 3.9        | 60.04      | Peak     | 74             | Pass    |
| LVHT      | BLE 2M | 2480            | Ant1    | 2483.5          | -47.23      | 3.9        | 51.93      | Average  | 54             | Pass    |
| LVHT      | BLE 2M | 2480            | Ant1    | 2496.904        | -37.33      | 3.9        | 61.83      | Peak     | 74             | Pass    |
| LVHT      | BLE 2M | 2480            | Ant1    | 2483.512        | -47.23      | 3.9        | 51.93      | Average  | 54             | Pass    |
| LVHT      | BLE 2M | 2480            | Ant1    | 2500            | -40.53      | 3.9        | 58.63      | Peak     | 74             | Pass    |
| LVHT      | BLE 2M | 2480            | Ant1    | 2500            | -47.02      | 3.9        | 52.14      | Average  | 54             | Pass    |



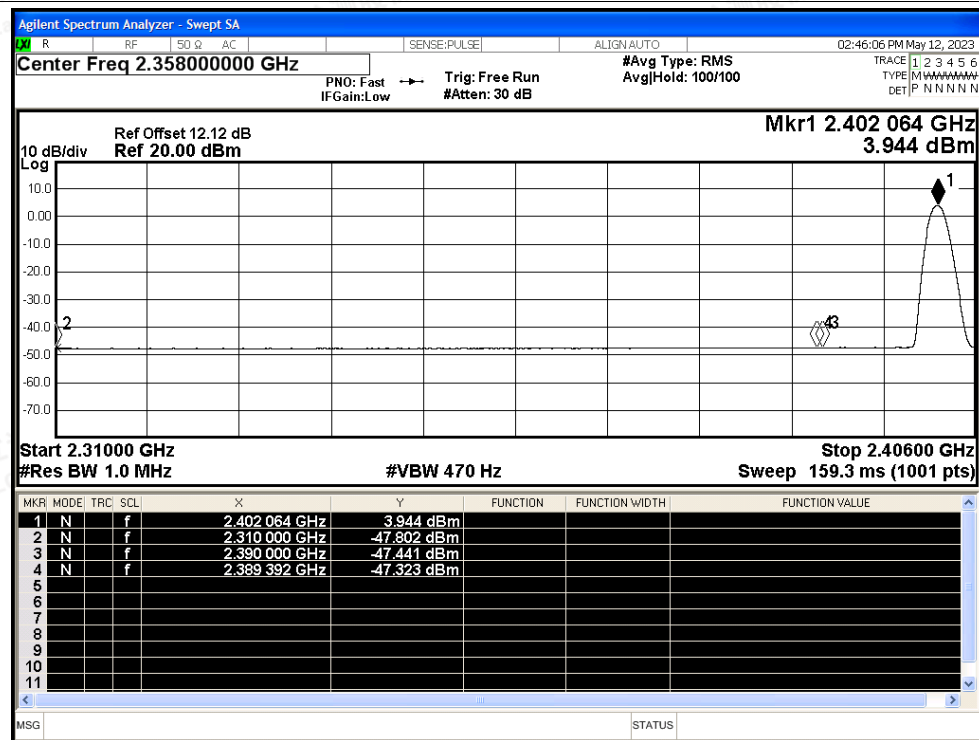


## Test Graphs

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



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



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