



## Appendix A

### RF Test Data for BLE (Conducted Measurement)

Product Name: Radiar AR10

Test Model: WCA2CSRNP

#### Environmental Conditions

|                    |           |
|--------------------|-----------|
| Temperature:       | 23.8° C   |
| Relative Humidity: | 52.2%     |
| ATM Pressure:      | 100.0 kPa |
| Test Engineer:     | Ling Zhu  |
| Supervised by:     | Li Huan   |





### A.1 -6dB Bandwidth

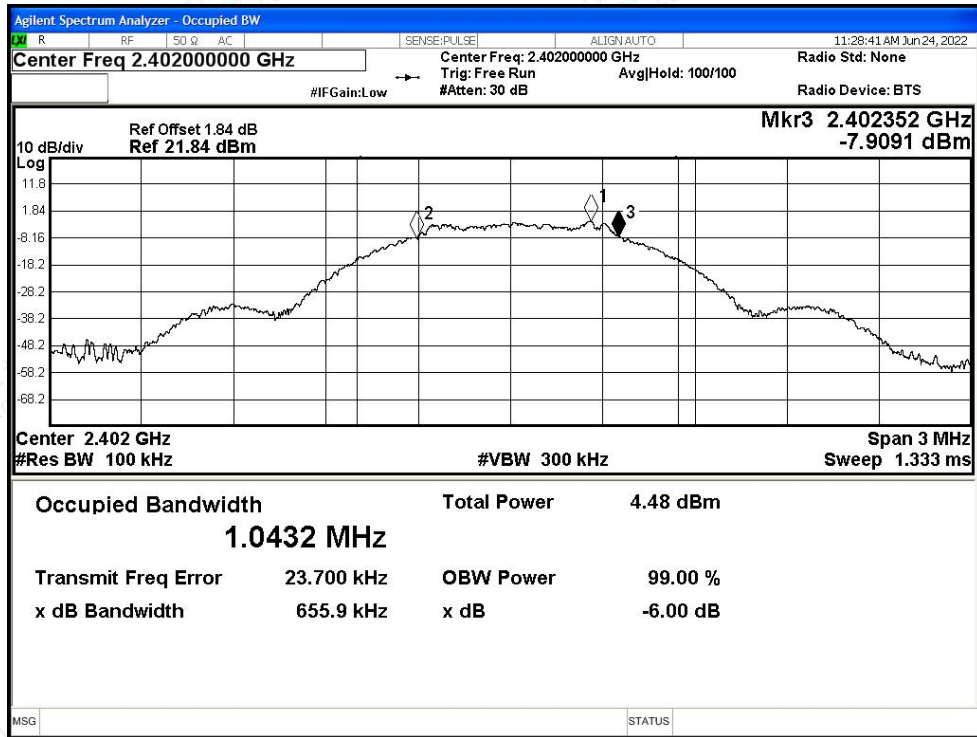
| Condition | Mode   | Frequency (MHz) | Antenna | -6 dB Bandwidth (MHz) | Limit -6 dB Bandwidth (MHz) | Verdict |
|-----------|--------|-----------------|---------|-----------------------|-----------------------------|---------|
| NVNT      | BLE 1M | 2402            | Ant1    | 0.656                 | $\geq 0.5$                  | Pass    |
| NVNT      | BLE 1M | 2440            | Ant1    | 0.69                  | $\geq 0.5$                  | Pass    |
| NVNT      | BLE 1M | 2480            | Ant1    | 0.663                 | $\geq 0.5$                  | Pass    |



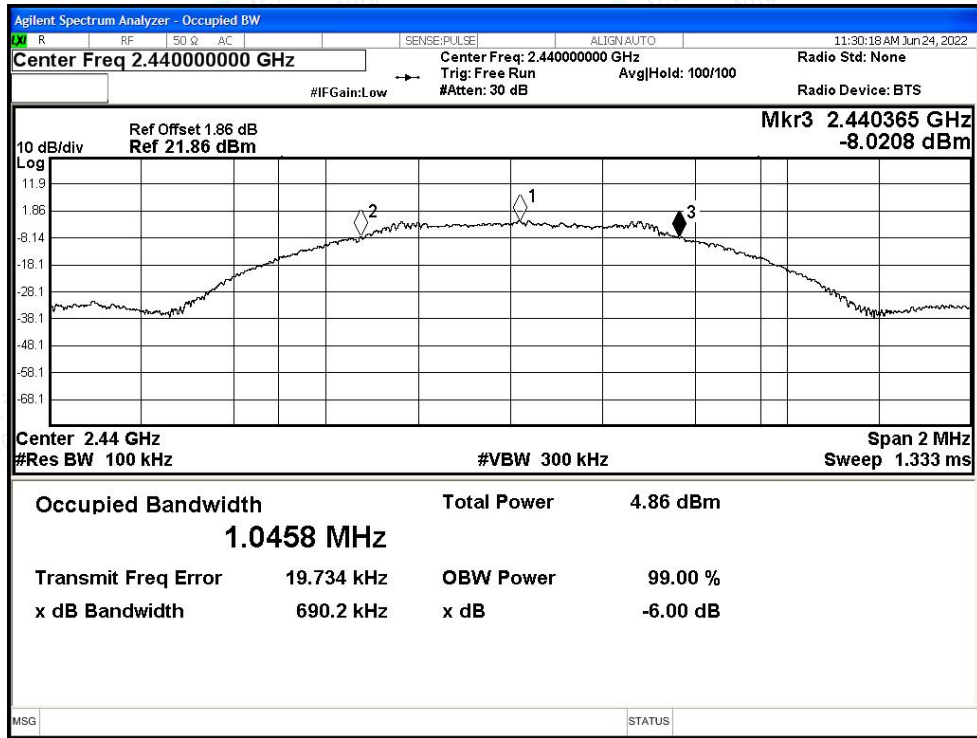


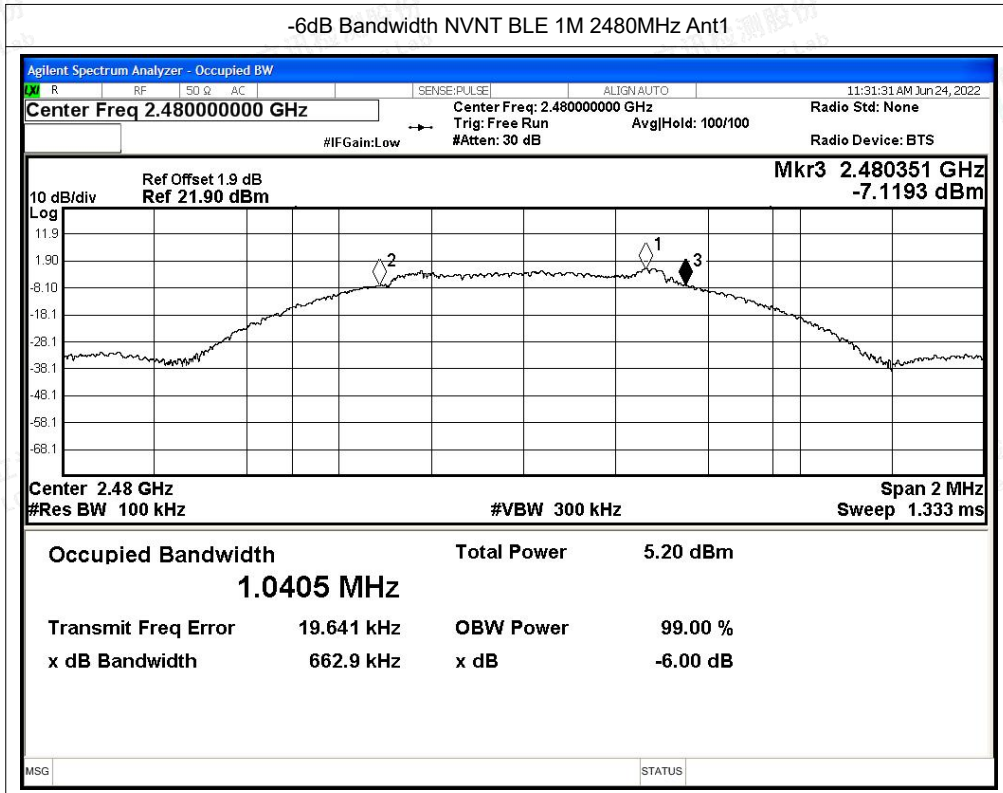
Test Graphs

-6dB Bandwidth NVNT BLE 1M 2402MHz Ant1



-6dB Bandwidth NVNT BLE 1M 2440MHz Ant1







## A.2 Maximum Conducted Output Power

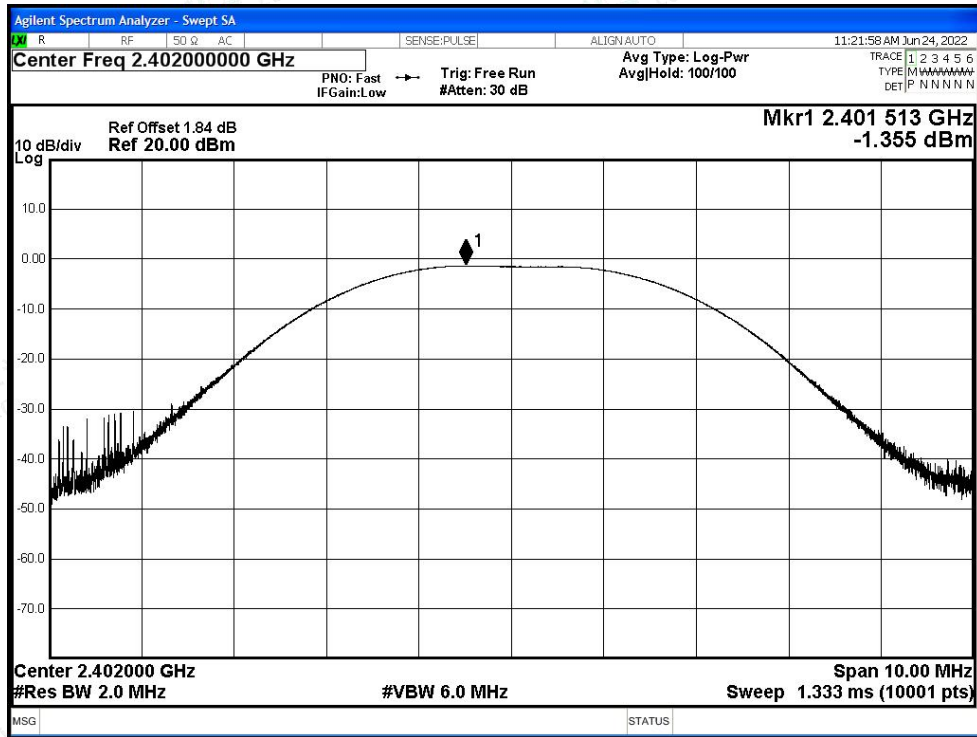
| Condition | Mode   | Frequency (MHz) | Antenna | Conducted Power (dBm) | Duty Factor (dB) | Total Power (dBm) | Limit (dBm) | Verdict |
|-----------|--------|-----------------|---------|-----------------------|------------------|-------------------|-------------|---------|
| NVNT      | BLE 1M | 2402            | Ant1    | -1.36                 | 0                | -1.36             | 30          | Pass    |
| NVNT      | BLE 1M | 2440            | Ant1    | -0.87                 | 0                | -0.87             | 30          | Pass    |
| NVNT      | BLE 1M | 2480            | Ant1    | -0.82                 | 0                | -0.82             | 30          | Pass    |



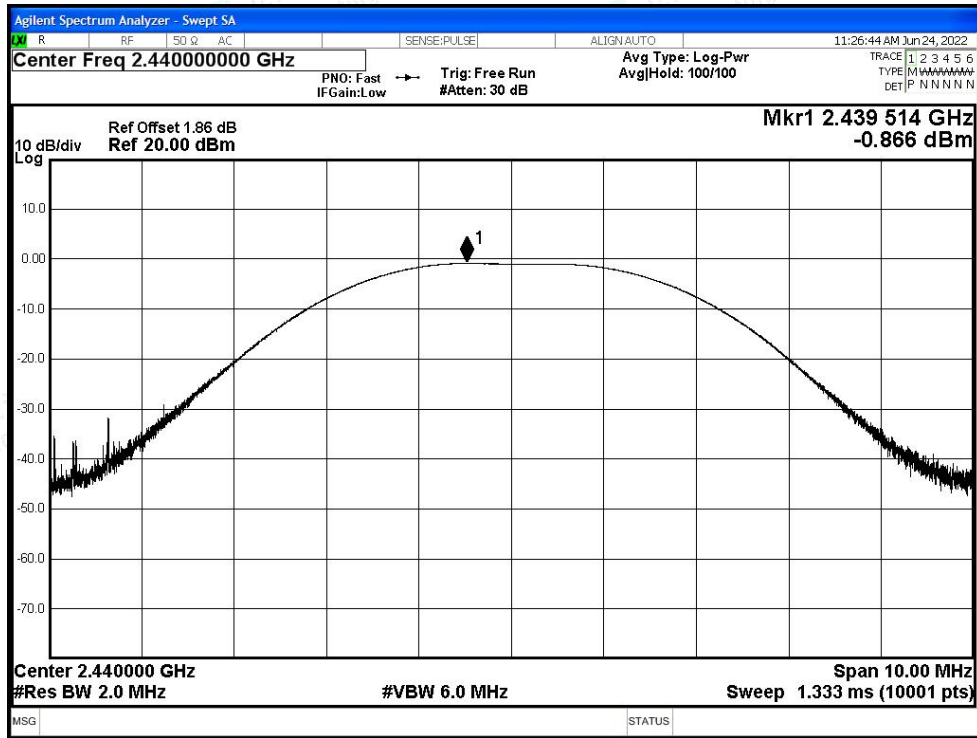


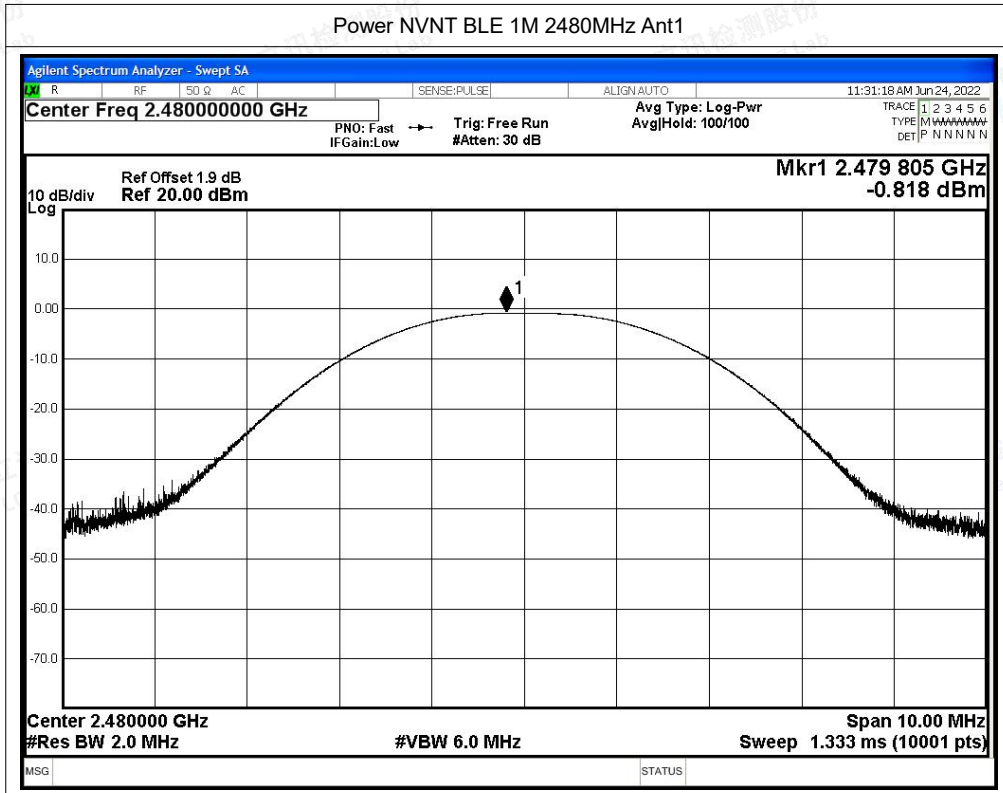
Test Graphs

Power NVNT BLE 1M 2402MHz Ant1



Power NVNT BLE 1M 2440MHz Ant1







### A.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      | BLE 1M | 2402            | Ant1    | -17.95                   | 0                | -17.95               | 8                | Pass    |
| NVNT      | BLE 1M | 2440            | Ant1    | -17.12                   | 0                | -17.12               | 8                | Pass    |
| NVNT      | BLE 1M | 2480            | Ant1    | -17.46                   | 0                | -17.46               | 8                | Pass    |

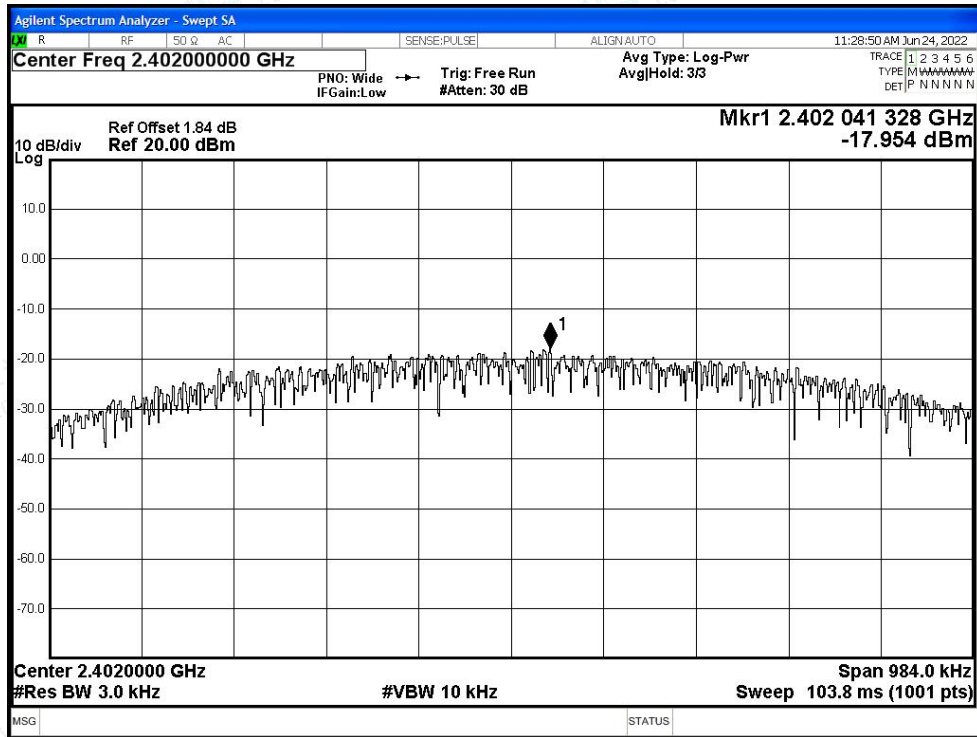




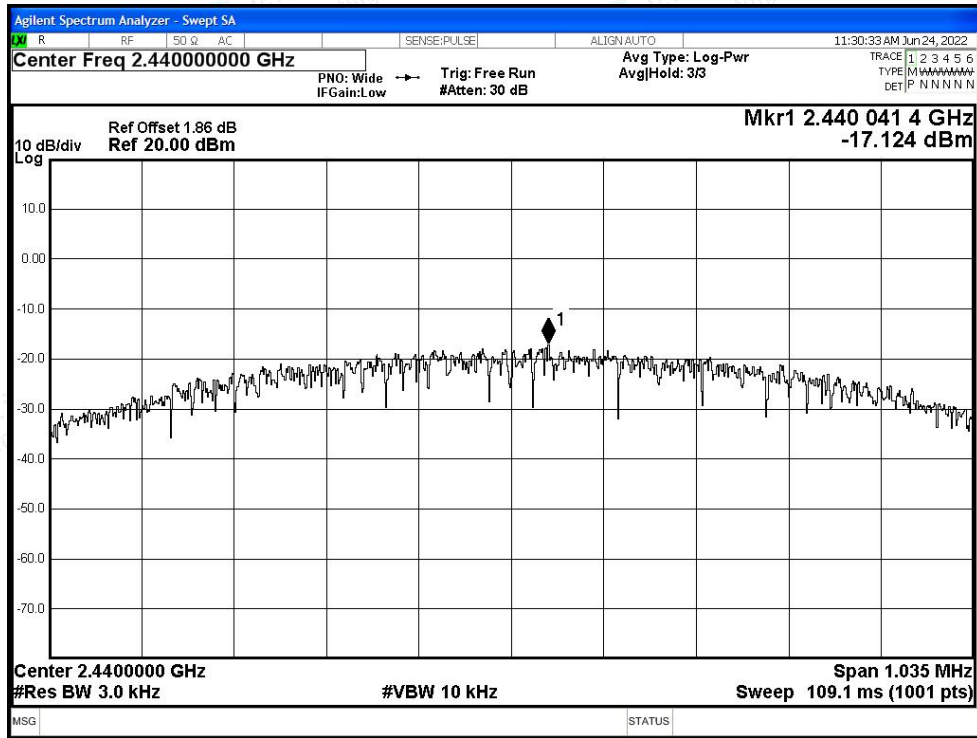


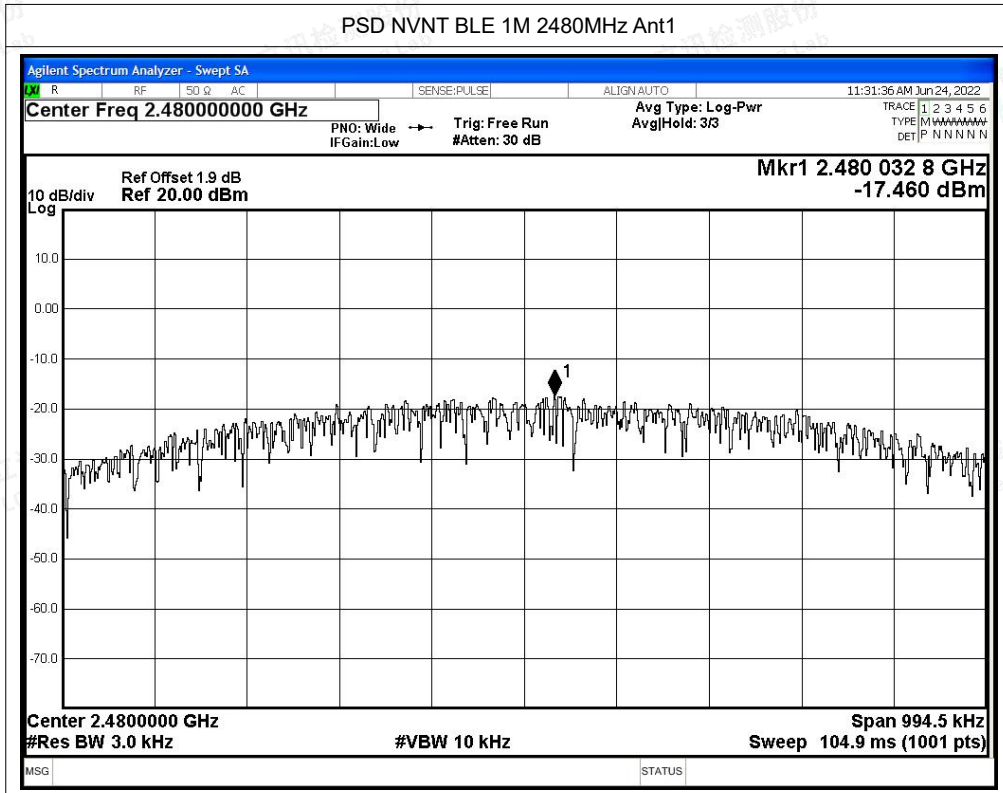
Test Graphs

PSD NVNT BLE 1M 2402MHz Ant1



PSD NVNT BLE 1M 2440MHz Ant1





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### A.4 Band Edge

| Condition | Mode   | Frequency (MHz) | Antenna | Max Value (dBc) | Limit (dBc) | Verdict |
|-----------|--------|-----------------|---------|-----------------|-------------|---------|
| NVNT      | BLE 1M | 2402            | Ant1    | -35.03          | -20         | Pass    |
| NVNT      | BLE 1M | 2480            | Ant1    | -47.77          | -20         | Pass    |

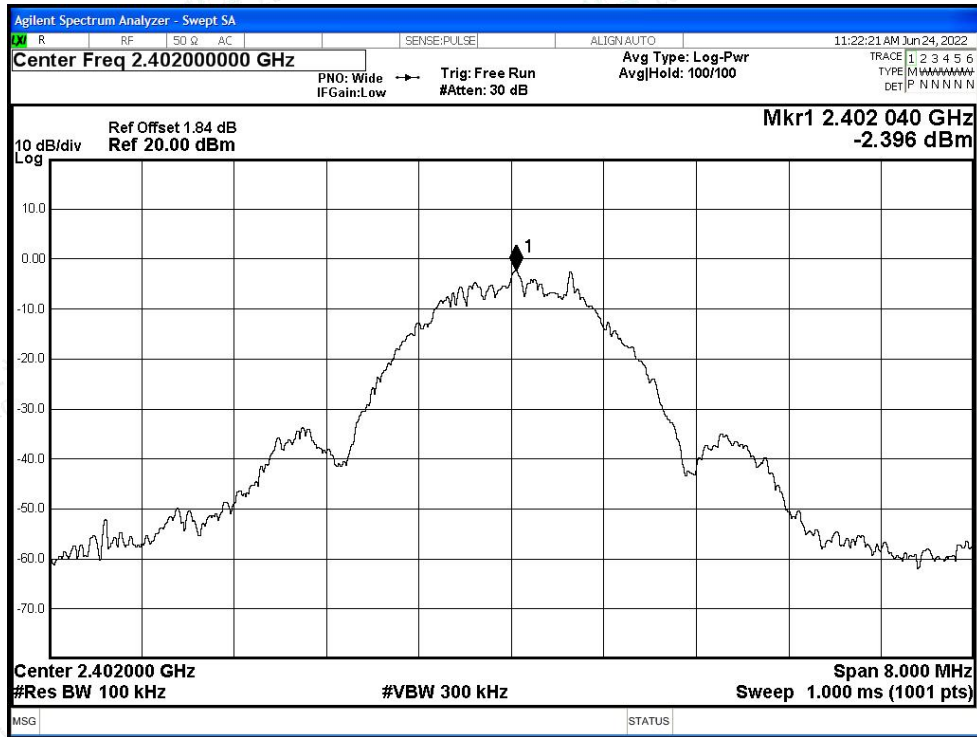


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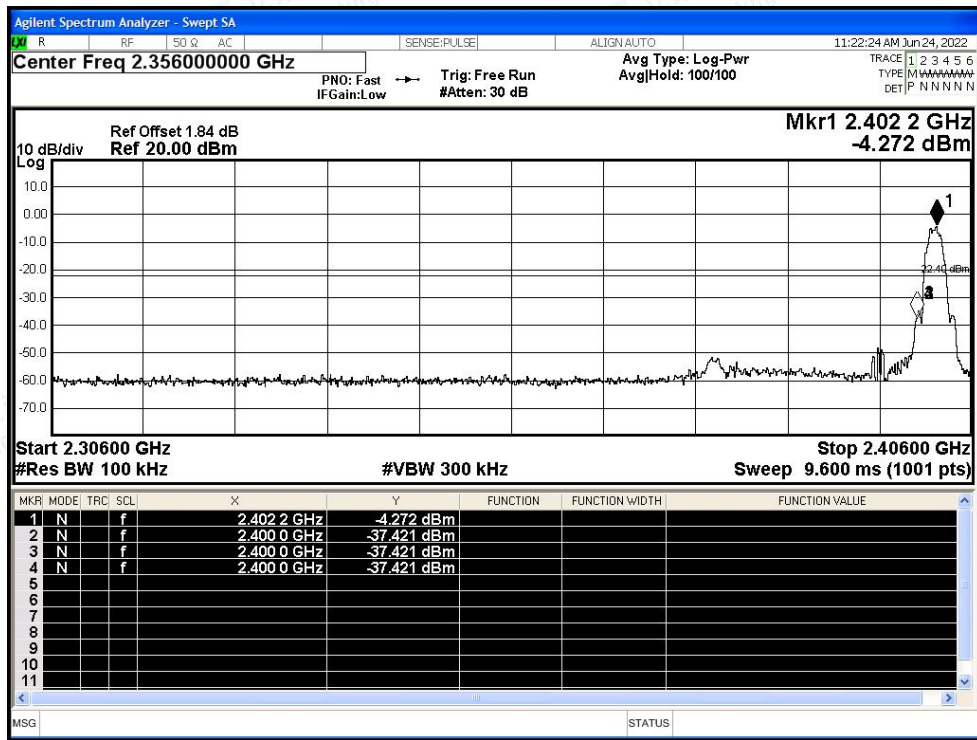


Test Graphs

Band Edge NVNT BLE 1M 2402MHz Ant1 Ref

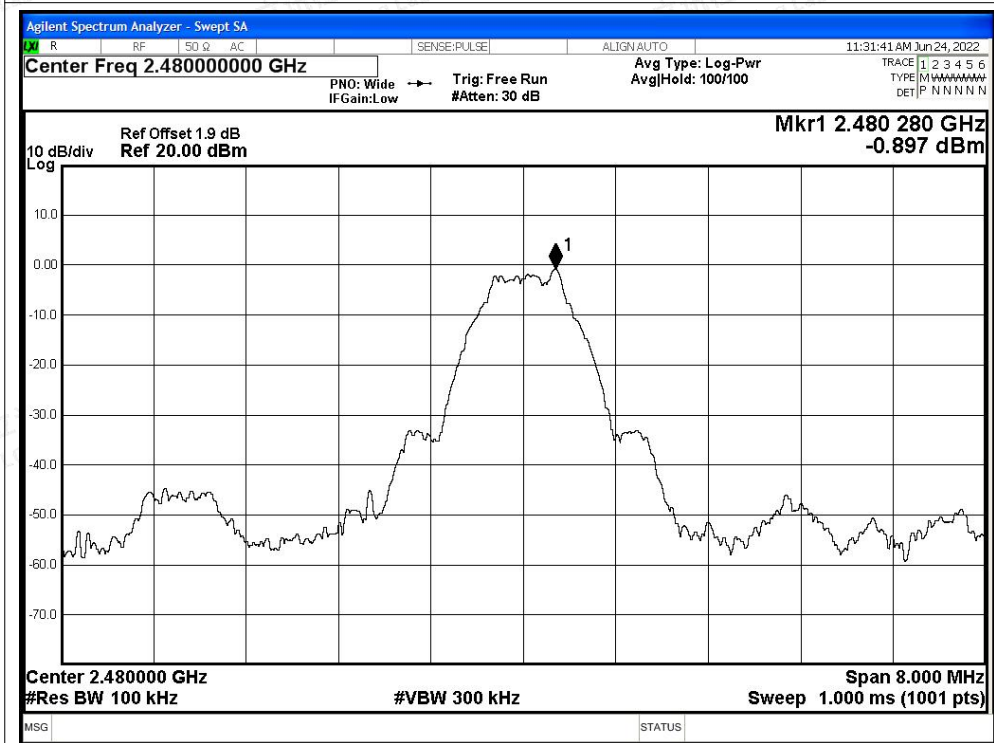


Band Edge NVNT BLE 1M 2402MHz Ant1 Emission

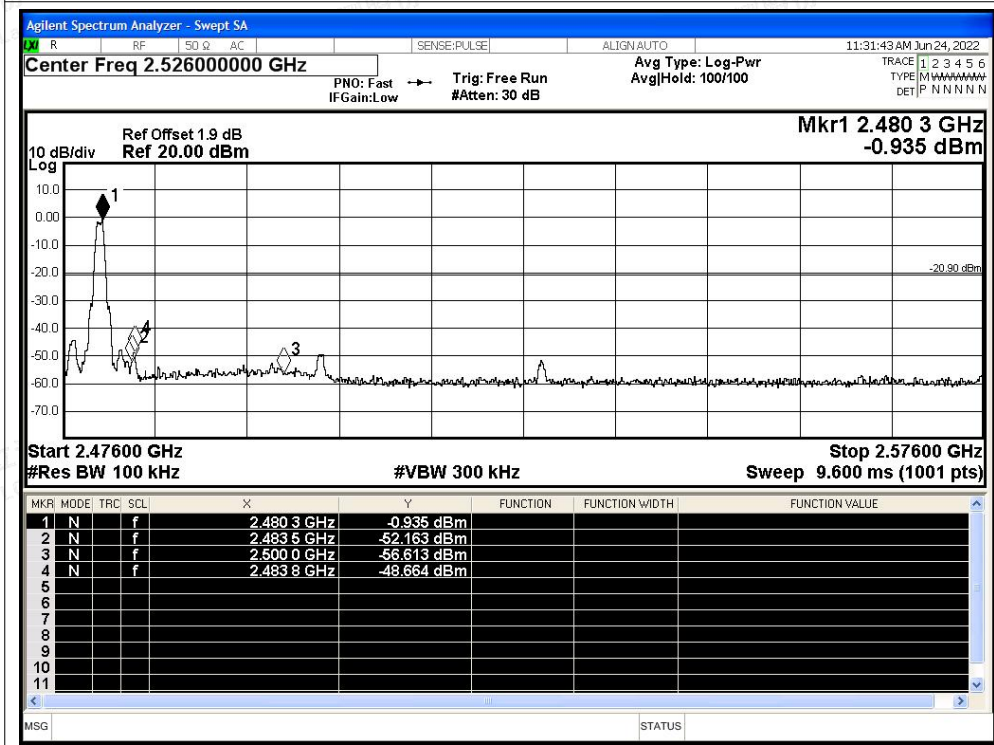




Band Edge NVNT BLE 1M 2480MHz Ant1 Ref



Band Edge NVNT BLE 1M 2480MHz Ant1 Emission





## A.5 Conducted RF Spurious Emission

| Condition | Mode   | Frequency (MHz) | Antenna | Max Value (dBc) | Limit (dBc) | Verdict |
|-----------|--------|-----------------|---------|-----------------|-------------|---------|
| NVNT      | BLE 1M | 2402            | Ant1    | -44.84          | -20         | Pass    |
| NVNT      | BLE 1M | 2440            | Ant1    | -44.51          | -20         | Pass    |
| NVNT      | BLE 1M | 2480            | Ant1    | -44.89          | -20         | Pass    |

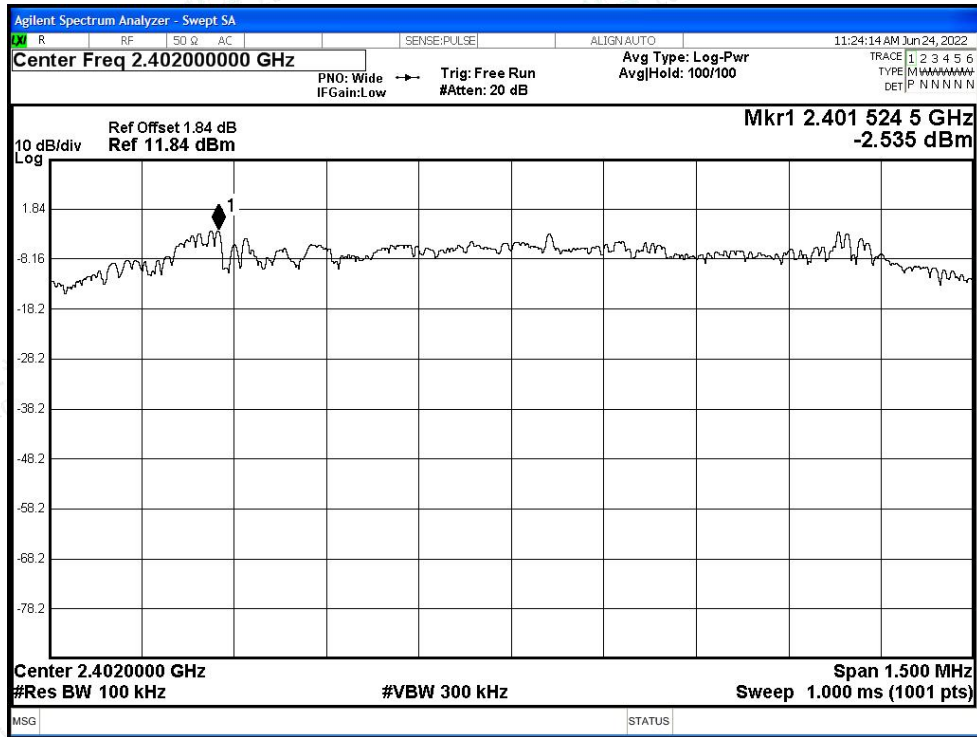


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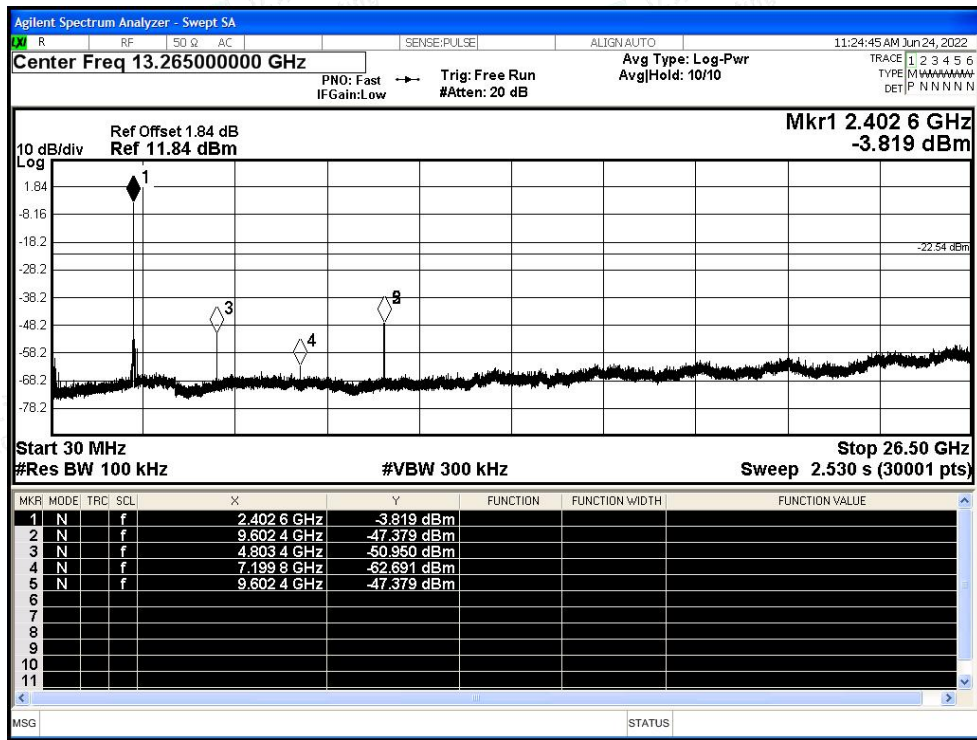


Test Graphs

Tx. Spurious NVNT BLE 1M 2402MHz Ant1 Ref

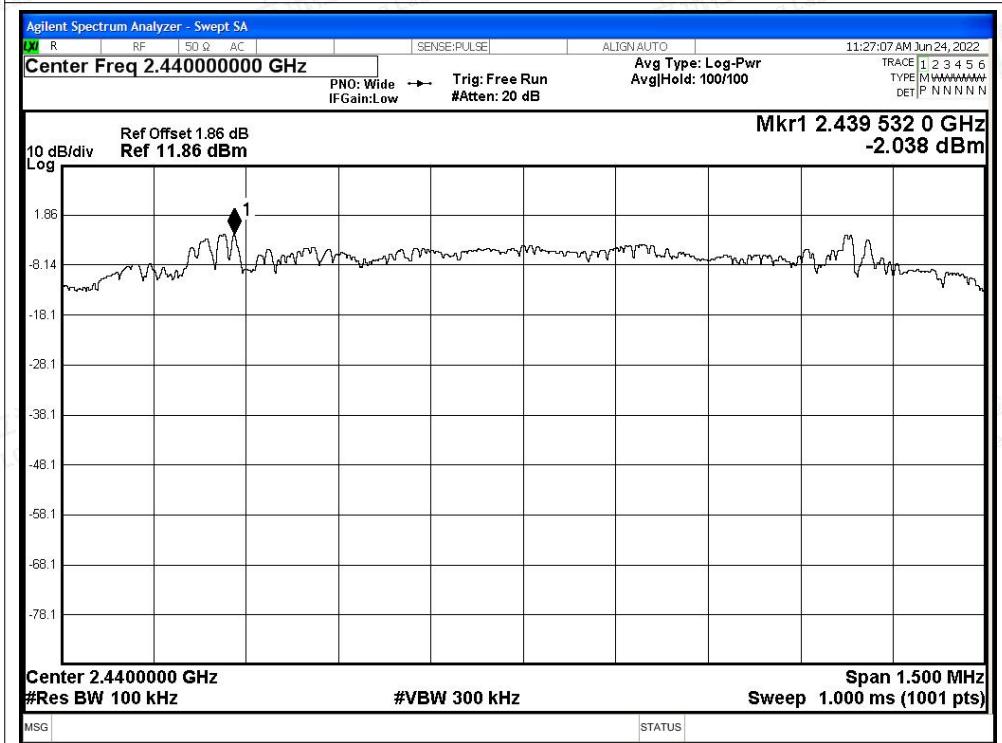


Tx. Spurious NVNT BLE 1M 2402MHz Ant1 Emission

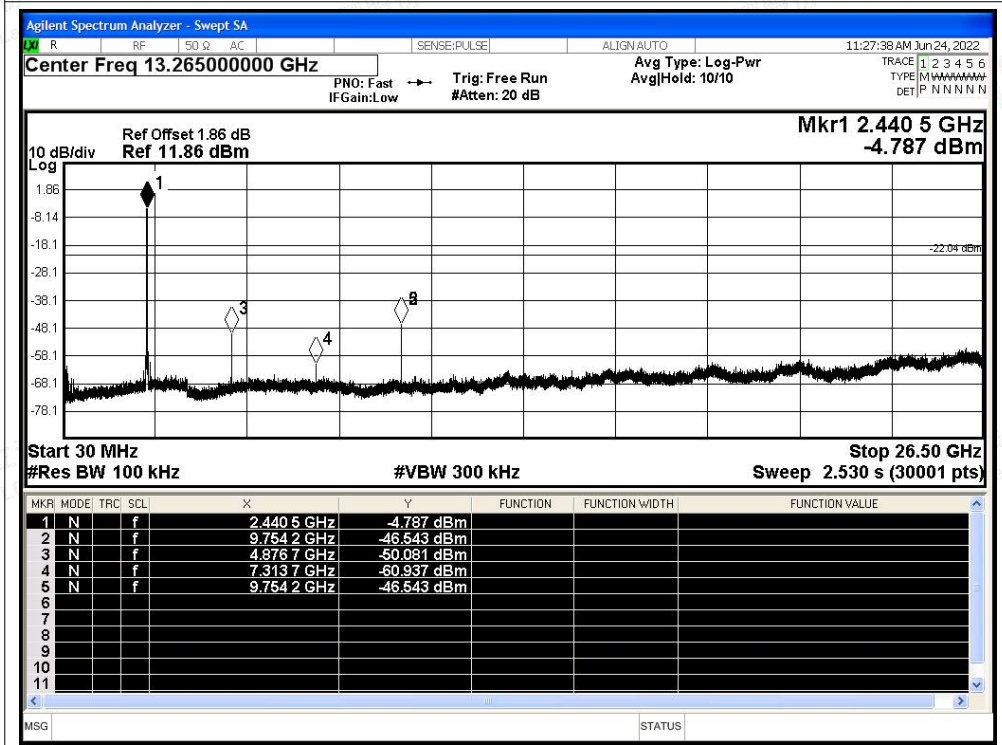




Tx. Spurious NVNT BLE 1M 2440MHz Ant1 Ref



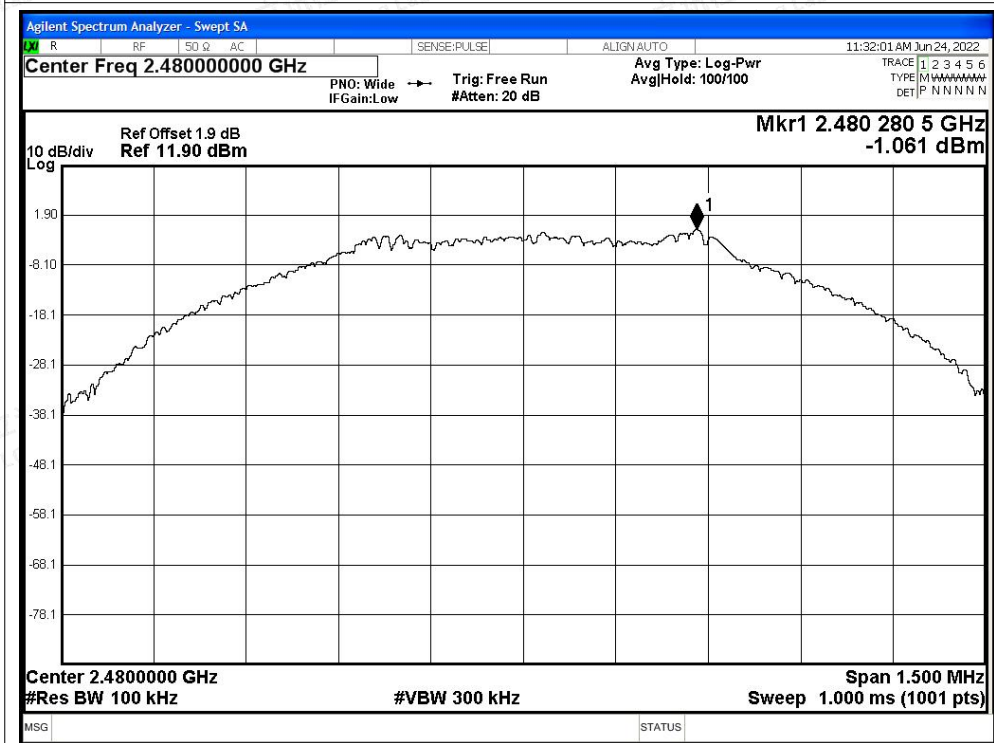
Tx. Spurious NVNT BLE 1M 2440MHz Ant1 Emission



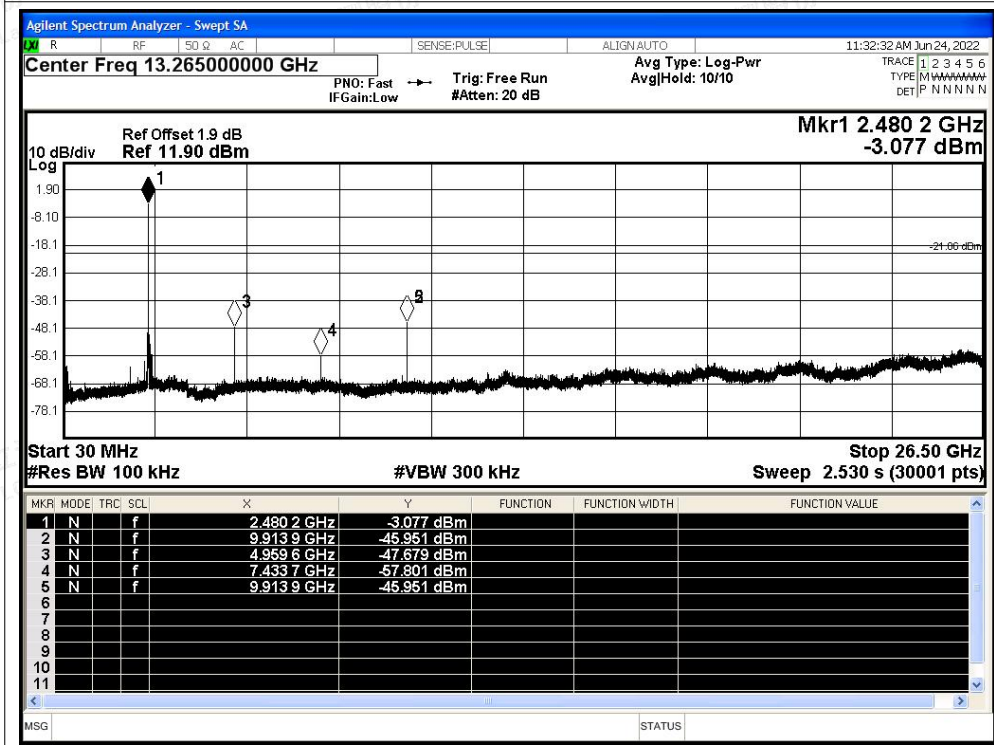




Tx. Spurious NVNT BLE 1M 2480MHz Ant1 Ref



Tx. Spurious NVNT BLE 1M 2480MHz Ant1 Emission





## A.6 Duty Cycle

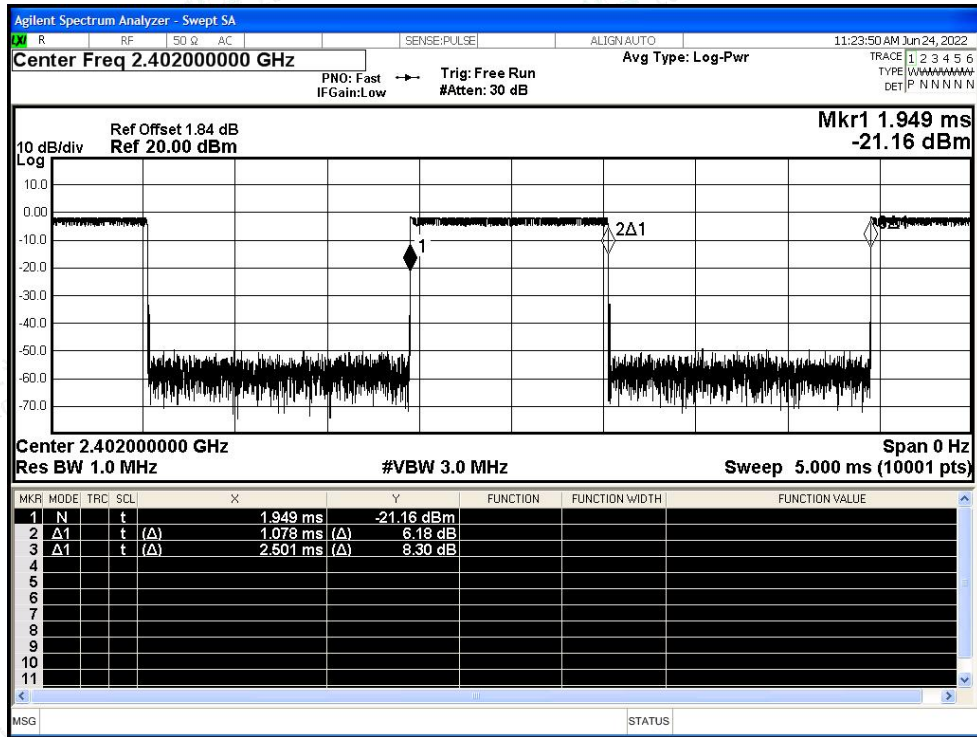
| Condition | Mode   | Frequency (MHz) | Antenna | Duty Cycle (%) | Correction Factor (dB) | 1/T (kHz) |
|-----------|--------|-----------------|---------|----------------|------------------------|-----------|
| NVNT      | BLE 1M | 2402            | Ant1    | 43.09          | 3.66                   | 0.93      |
| NVNT      | BLE 1M | 2440            | Ant1    | 43.12          | 3.65                   | 0         |
| NVNT      | BLE 1M | 2480            | Ant1    | 85.16          | 0.7                    | 0.47      |



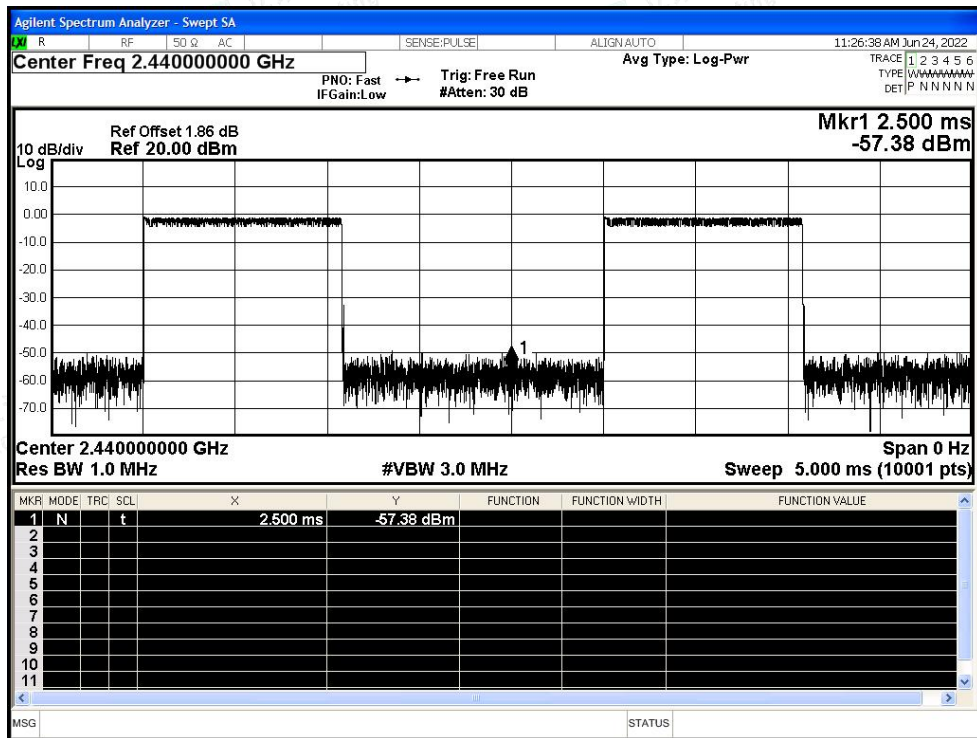


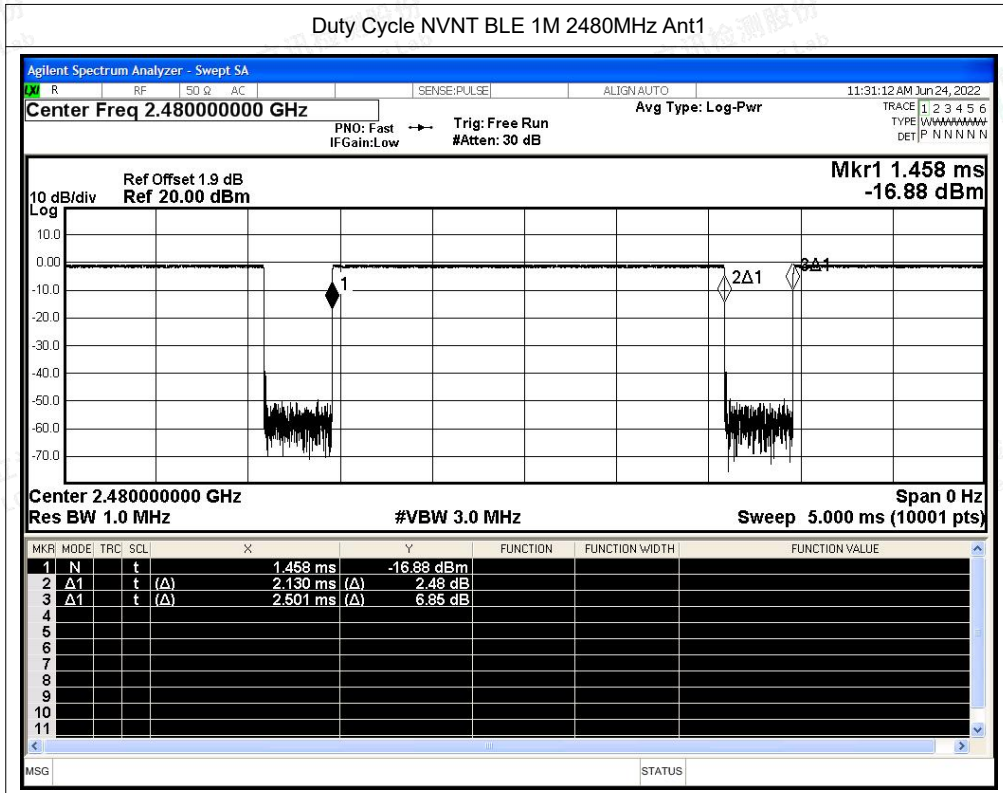
Test Graphs

Duty Cycle NVNT BLE 1M 2402MHz Ant1



Duty Cycle NVNT BLE 1M 2440MHz Ant1







### A.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            | -51.7       | 2          | 45.56      | Peak     | 74             | Pass    |
| NVNT      | BLE 1M | 2402            | Ant1    | 2310            | -60.48      | 2          | 36.78      | Average  | 54             | Pass    |
| NVNT      | BLE 1M | 2402            | Ant1    | 2378.064        | -43.3       | 2          | 53.96      | Peak     | 74             | Pass    |
| NVNT      | BLE 1M | 2402            | Ant1    | 2378.064        | -52.2       | 2          | 45.06      | Average  | 54             | Pass    |
| NVNT      | BLE 1M | 2402            | Ant1    | 2390            | -49.1       | 2          | 48.16      | Peak     | 74             | Pass    |
| NVNT      | BLE 1M | 2402            | Ant1    | 2390            | -60.19      | 2          | 37.07      | Average  | 54             | Pass    |
| NVNT      | BLE 1M | 2480            | Ant1    | 2483.5          | -42.18      | 2          | 55.08      | Peak     | 74             | Pass    |
| NVNT      | BLE 1M | 2480            | Ant1    | 2483.5          | -51.75      | 2          | 45.51      | Average  | 54             | Pass    |
| NVNT      | BLE 1M | 2480            | Ant1    | 2483.872        | -41.81      | 2          | 55.45      | Peak     | 74             | Pass    |
| NVNT      | BLE 1M | 2480            | Ant1    | 2483.512        | -51.75      | 2          | 45.51      | Average  | 54             | Pass    |
| NVNT      | BLE 1M | 2480            | Ant1    | 2500            | -47.24      | 2          | 50.02      | Peak     | 74             | Pass    |
| NVNT      | BLE 1M | 2480            | Ant1    | 2500            | -55.73      | 2          | 41.53      | Average  | 54             | Pass    |

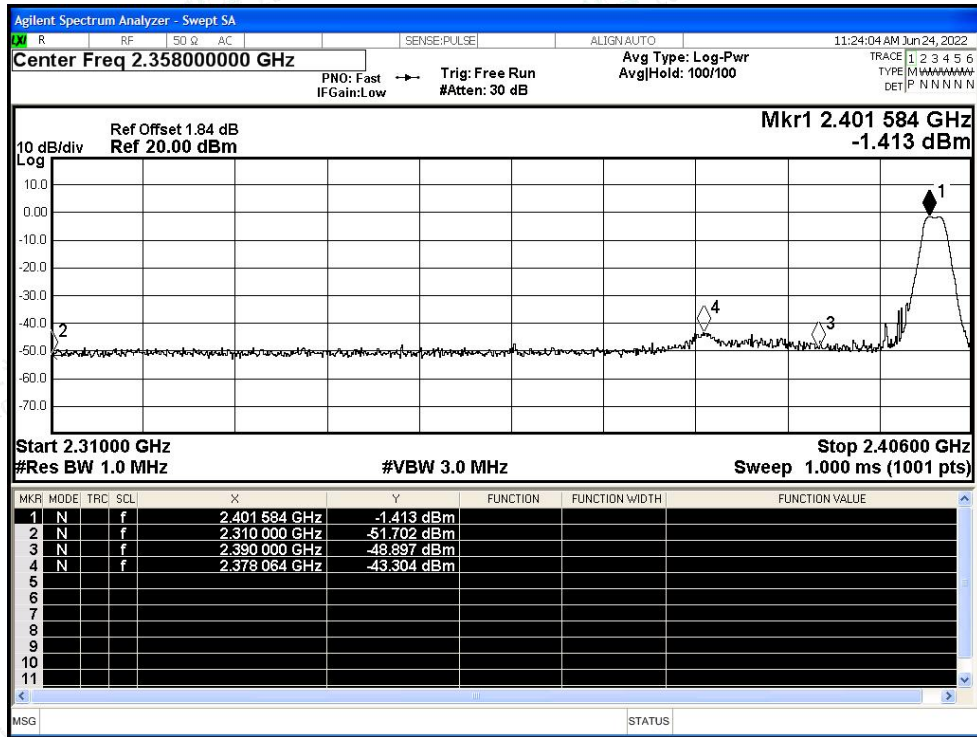


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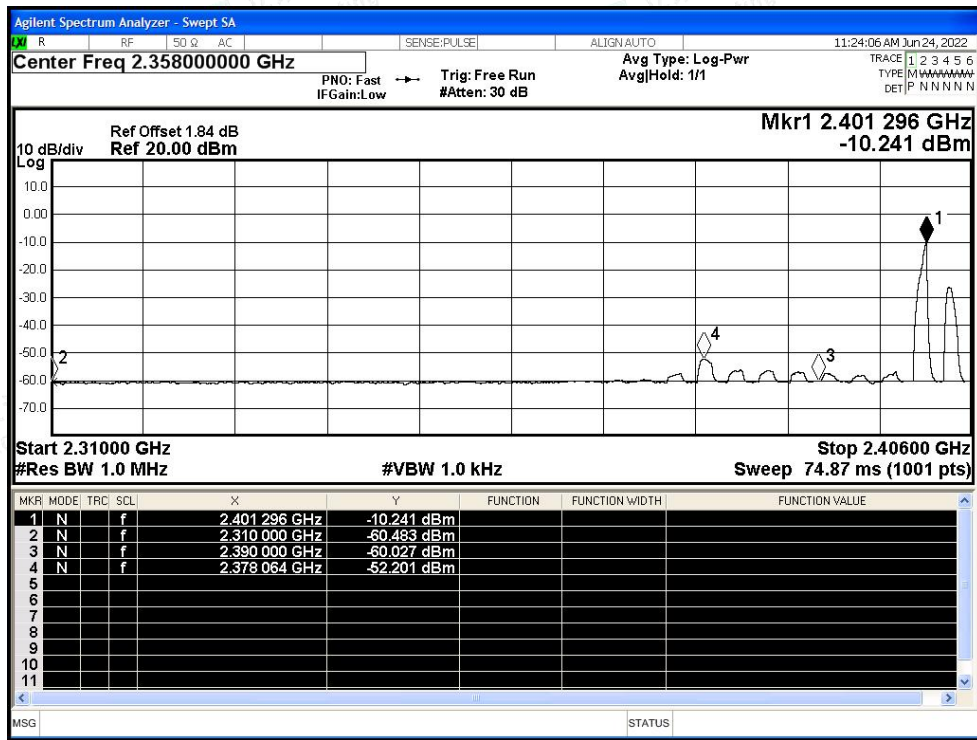


Test Graphs

Restrict Band NVNT BLE 1M 2402MHz Ant1 Peak

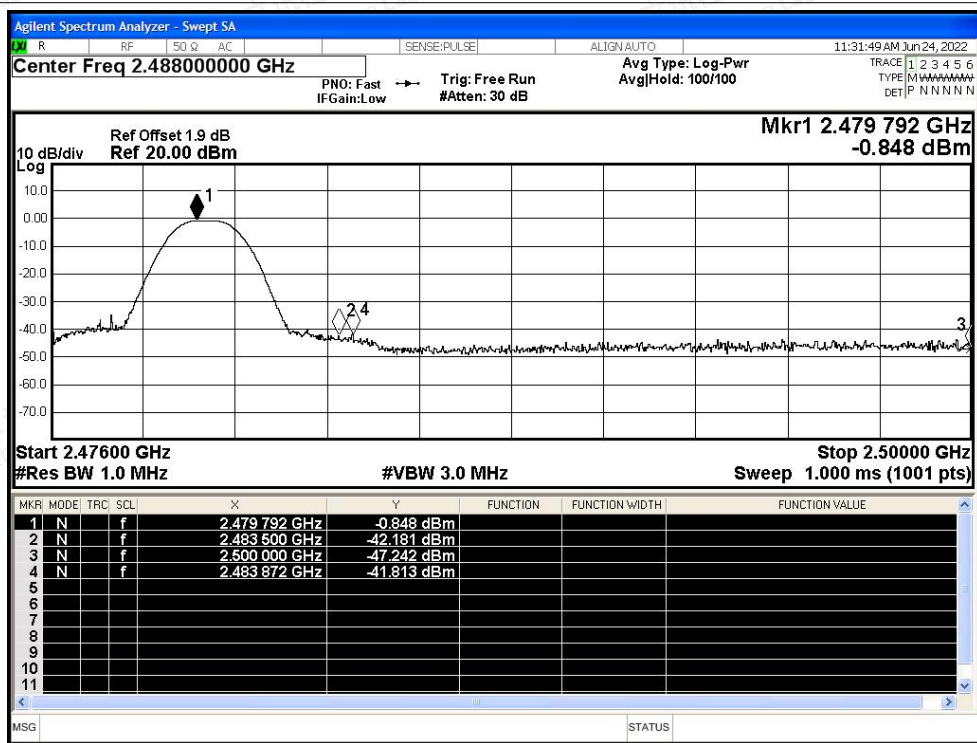


Restrict Band NVNT BLE 1M 2402MHz Ant1 Average





Restrict Band NVNT BLE 1M 2480MHz Ant1 Peak



Restrict Band NVNT BLE 1M 2480MHz Ant1 Average

