

## **FCC Appendix RF Test Data for BLE**

**FCC ID** : 2BXVG-T29

**Company** : ShenZhen McGRID Industrial Co.,Ltd

**EUT** : OMOX Controller

**Model Number** : T29 ultra

**Report No.** : CTA26081000801

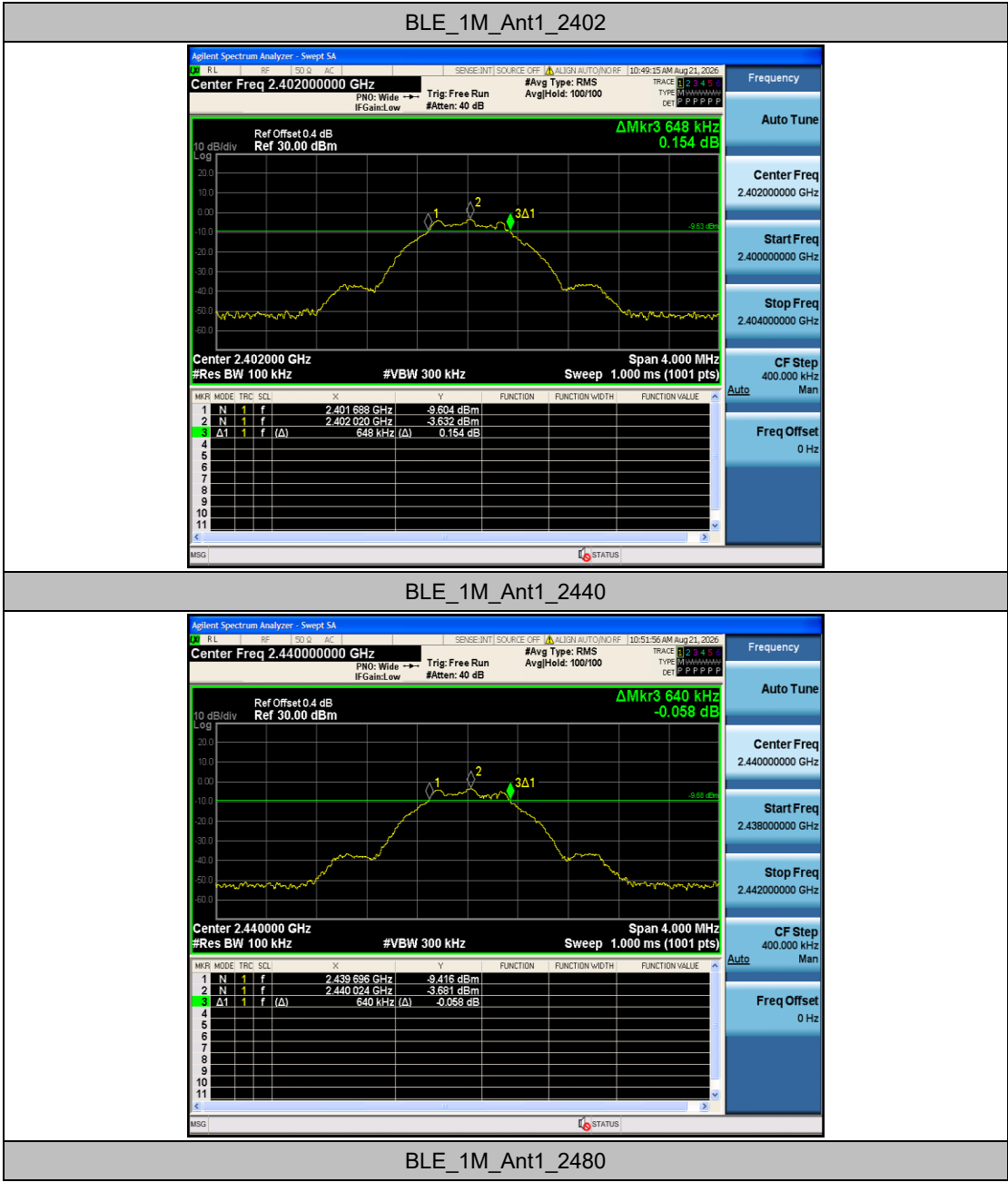
**Reviewed By** : Eric Wang

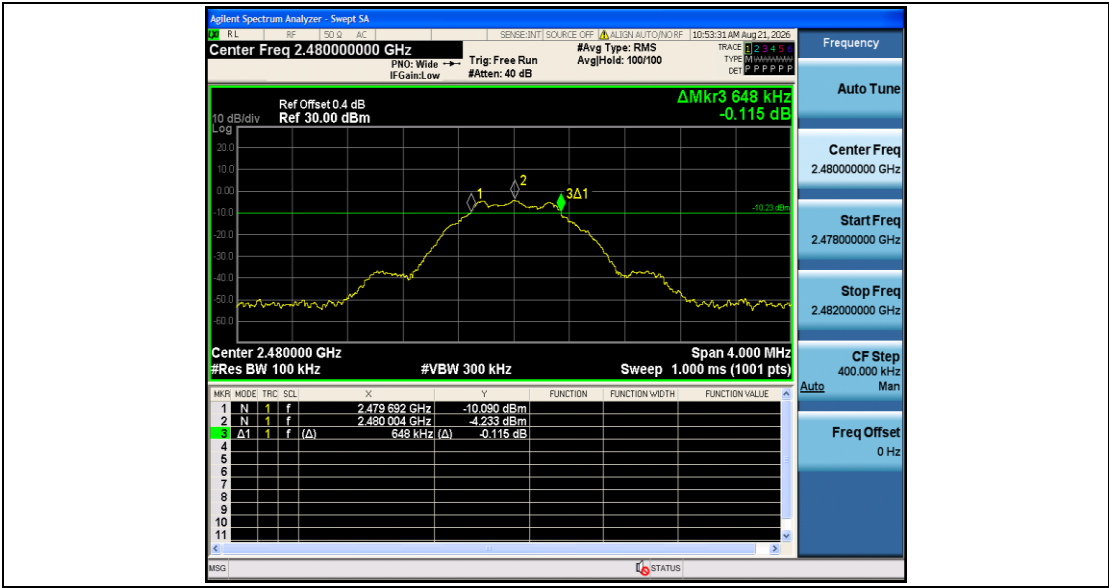
## Appendix A: DTS Bandwidth

### Test Result

| TestMode | Antenna | Freq(MHz) | DTS BW<br>[MHz] | FL[MHz]  | FH[MHz]  | Limit[MHz] | Verdict |
|----------|---------|-----------|-----------------|----------|----------|------------|---------|
| BLE_1M   | Ant1    | 2402      | 0.648           | 2401.688 | 2402.336 | 0.5        | PASS    |
|          |         | 2440      | 0.640           | 2439.696 | 2440.336 | 0.5        | PASS    |
|          |         | 2480      | 0.648           | 2479.692 | 2480.340 | 0.5        | PASS    |

Test Graphs





## Appendix B: Occupied Channel Bandwidth

### Test Result

| TestMode | Antenna | Freq(MHz) | OCB [MHz] | FL[MHz]   | FH[MHz]   | Limit[MHz] | Verdict |
|----------|---------|-----------|-----------|-----------|-----------|------------|---------|
| BLE_1M   | Ant1    | 2402      | 1.0129    | 2401.5156 | 2402.5285 | ---        | ---     |
|          |         | 2440      | 1.0083    | 2439.5177 | 2440.5260 | ---        | ---     |
|          |         | 2480      | 1.0084    | 2479.5177 | 2480.5261 | ---        | ---     |

## Test Graphs

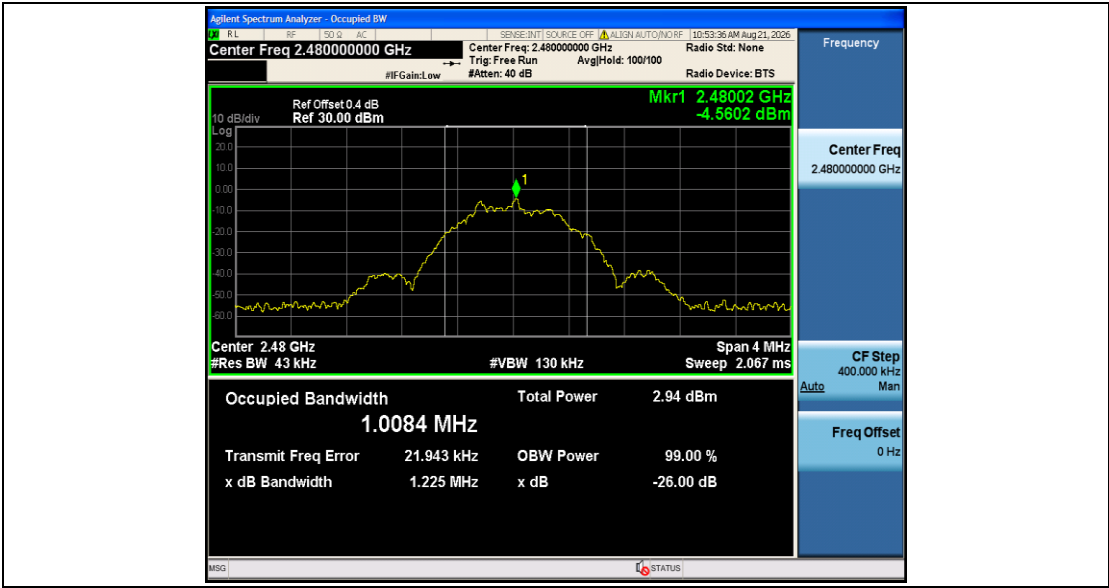
BLE\_1M\_Ant1\_2402



BLE\_1M\_Ant1\_2440



BLE\_1M\_Ant1\_2480



## Appendix C: Maximum conducted output power

### Test Result Peak

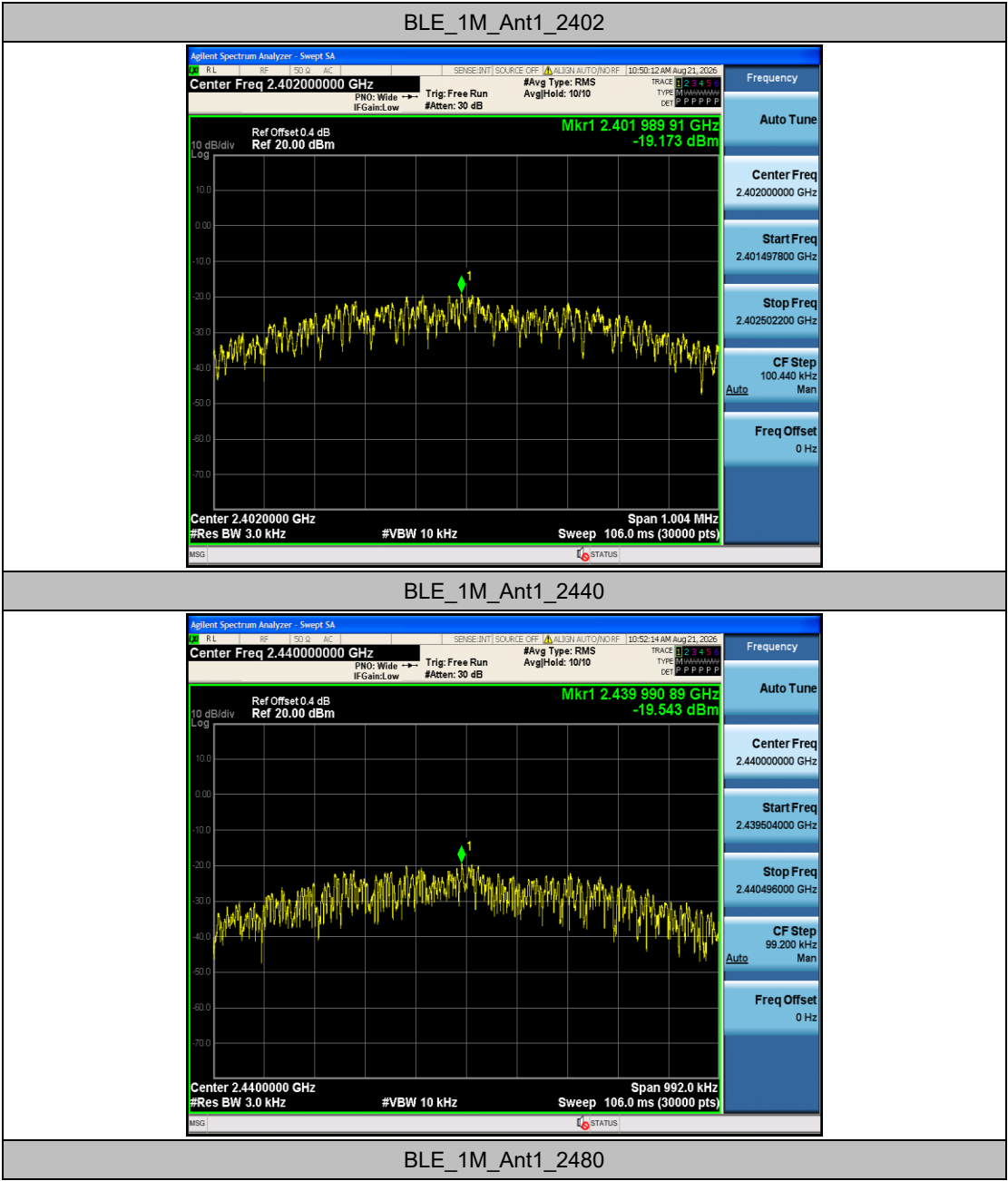
| TestMode | Antenna | Freq(MHz) | Conducted Peak Power[dBm] | Conducted Limit[dBm] | Verdict |
|----------|---------|-----------|---------------------------|----------------------|---------|
| BLE_1M   | Ant1    | 2402      | -3.42                     | ≤30                  | PASS    |
|          |         | 2440      | -3.45                     | ≤30                  | PASS    |
|          |         | 2480      | -3.72                     | ≤30                  | PASS    |

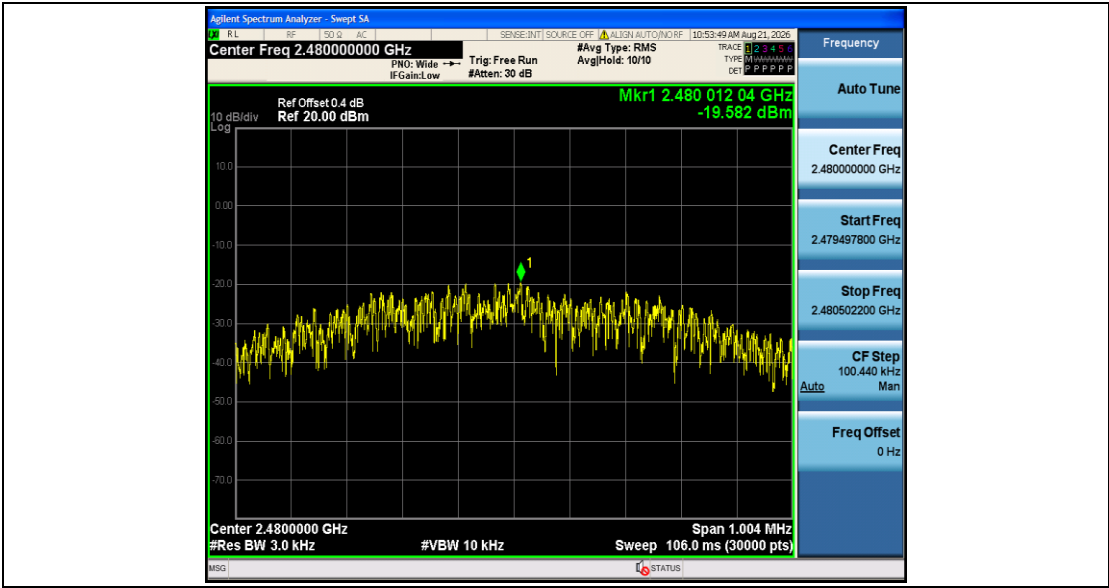
## Appendix D: Maximum power spectral density

### Test Result

| TestMode | Antenna | Freq(MHz) | Result[dBm/3kHz] | Limit[dBm/3kHz] | Verdict |
|----------|---------|-----------|------------------|-----------------|---------|
| BLE_1M   | Ant1    | 2402      | -19.17           | ≤8.00           | PASS    |
|          |         | 2440      | -19.54           | ≤8.00           | PASS    |
|          |         | 2480      | -19.58           | ≤8.00           | PASS    |

Test Graphs



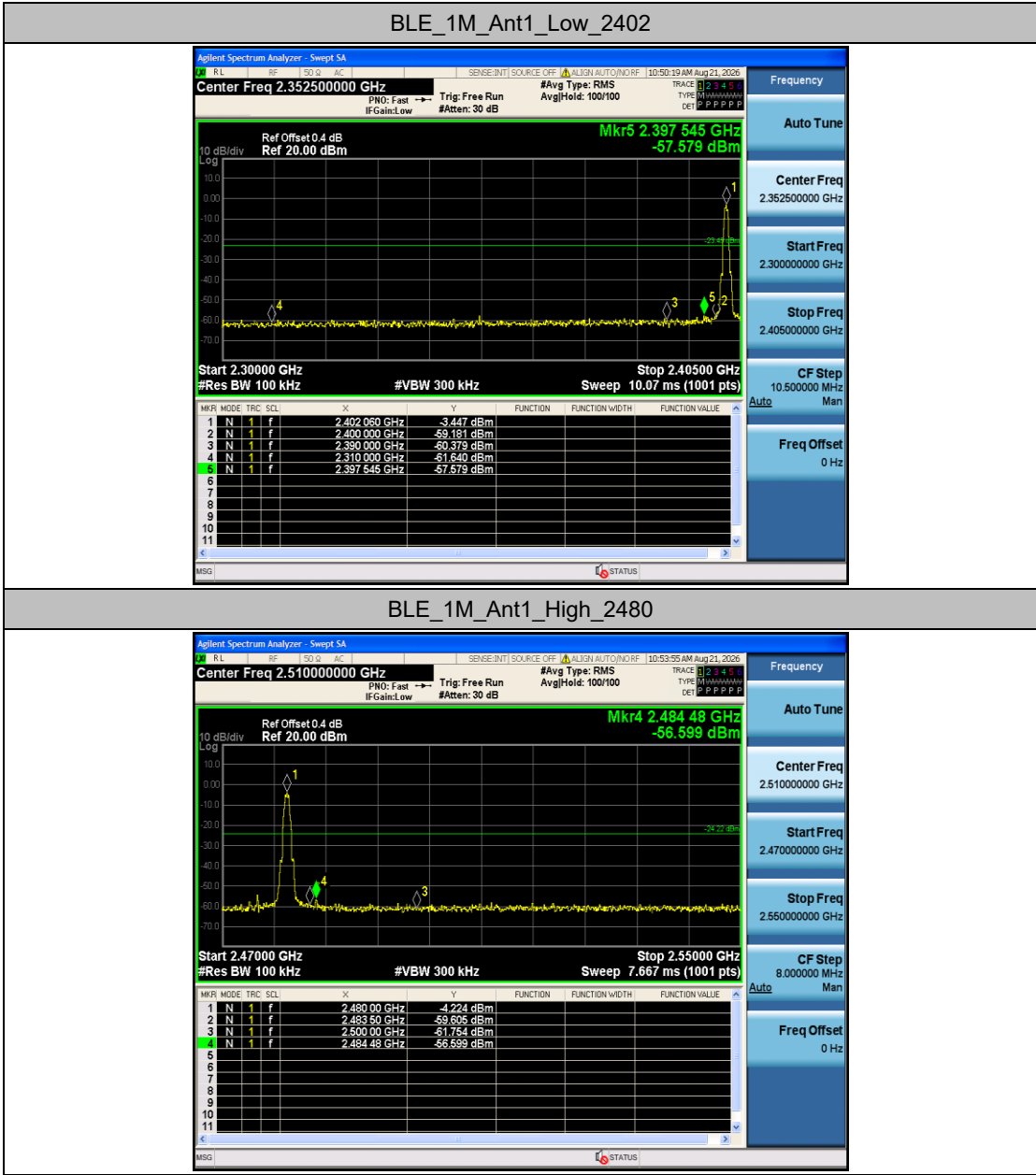


## Appendix E: Band edge measurements

### Test Result

| TestMode | Antenna | Channel | Freq(MHz) | RefLevel[dBm] | Result[dBm] | Limit[dBm] | Verdict |
|----------|---------|---------|-----------|---------------|-------------|------------|---------|
| BLE_1M   | Ant1    | Low     | 2402      | -3.45         | -57.58      | ≤-23.45    | PASS    |
|          |         | High    | 2480      | -4.22         | -56.6       | ≤-24.22    | PASS    |

Test Graphs

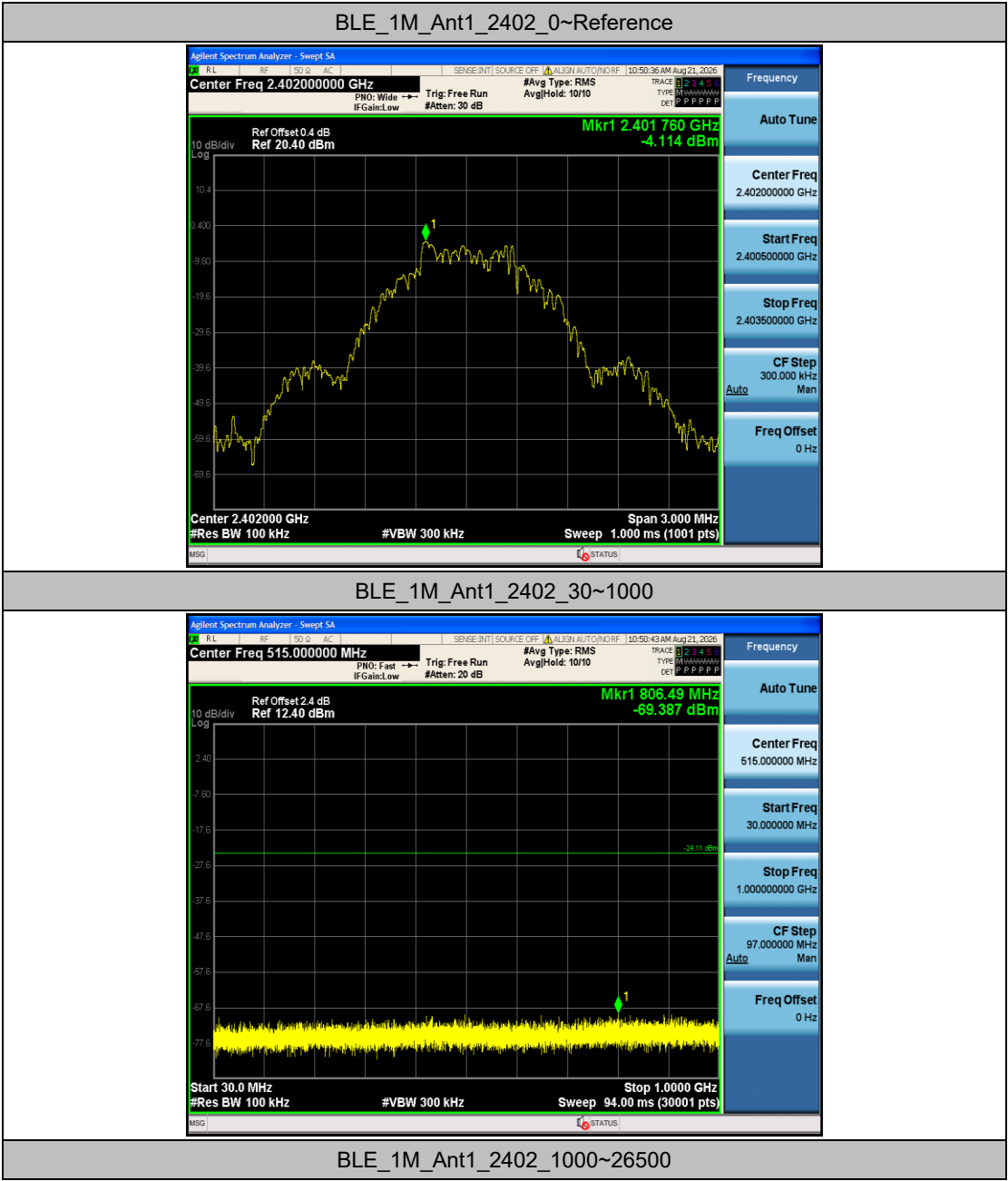


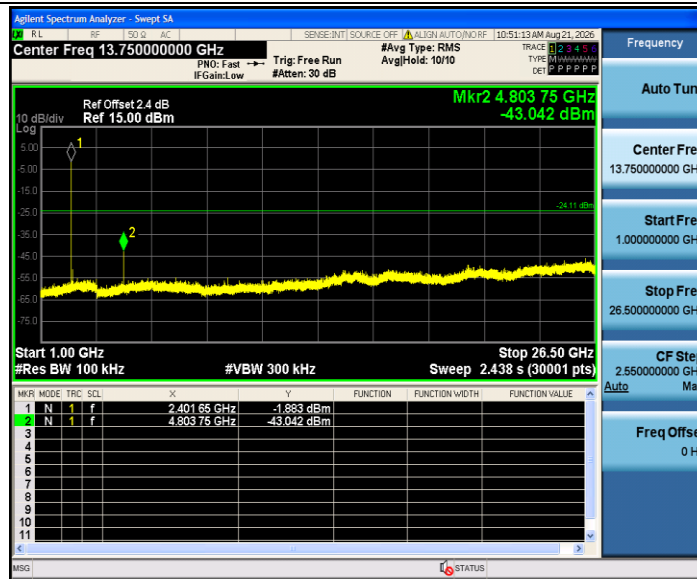
## Appendix F: Conducted Spurious Emission

### Test Result

| TestMode | Antenna | Freq(MHz) | FreqRange<br>[MHz] | RefLevel<br>[dBm] | Result[dBm] | Limit[dBm] | Verdict |
|----------|---------|-----------|--------------------|-------------------|-------------|------------|---------|
| BLE_1M   | Ant1    | 2402      | Reference          | -4.11             | -4.11       | ---        | PASS    |
|          |         |           | 30~1000            | -4.11             | -69.39      | ≤-24.11    | PASS    |
|          |         |           | 1000~26500         | -4.11             | -43.04      | ≤-24.11    | PASS    |
|          |         | 2440      | Reference          | -4.79             | -4.79       | ---        | PASS    |
|          |         |           | 30~1000            | -4.79             | -55.24      | ≤-24.79    | PASS    |
|          |         |           | 1000~26500         | -4.79             | -45.64      | ≤-24.79    | PASS    |
|          |         | 2480      | Reference          | -4.70             | -4.70       | ---        | PASS    |
|          |         |           | 30~1000            | -4.70             | -63.9       | ≤-24.7     | PASS    |
|          |         |           | 1000~26500         | -4.70             | -45.89      | ≤-24.7     | PASS    |

Test Graphs

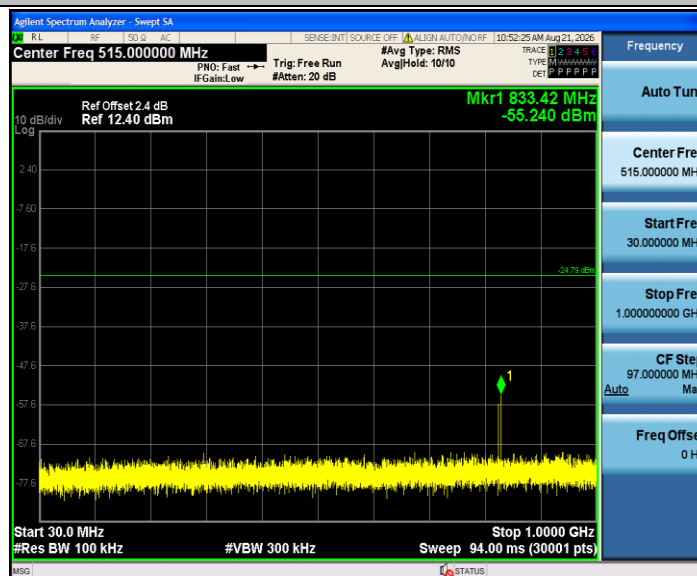




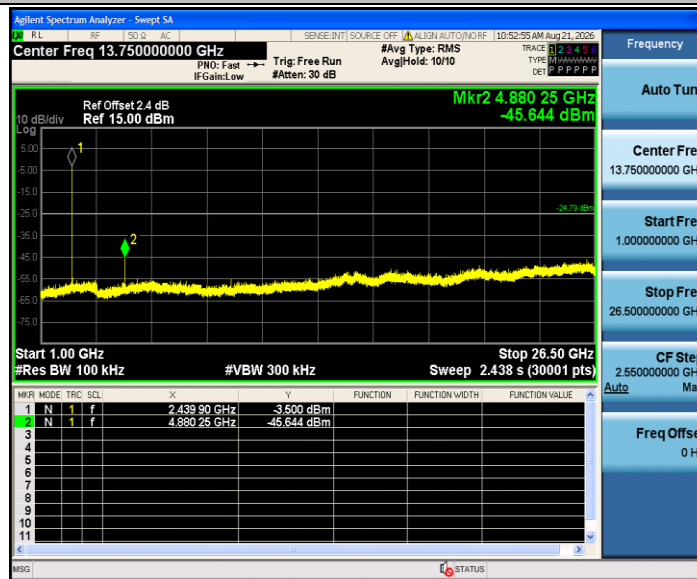
BLE\_1M\_Ant1\_2440\_0~Reference



BLE\_1M\_Ant1\_2440\_30~1000



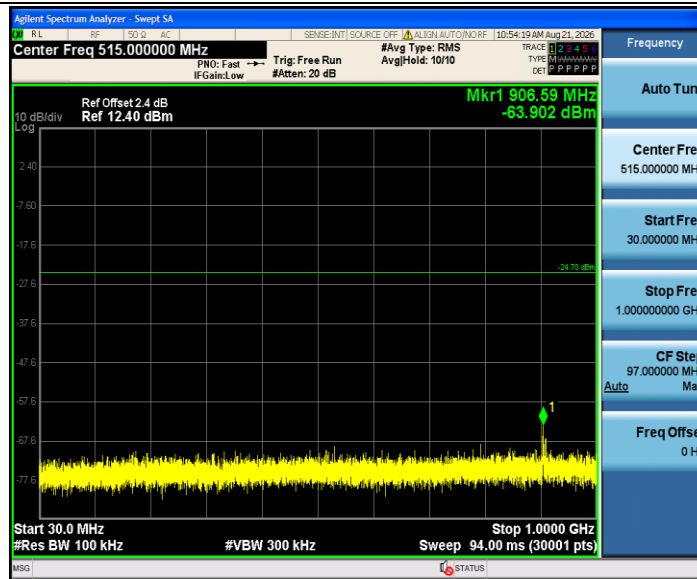
# BLE\_1M\_Ant1\_2440\_1000~26500



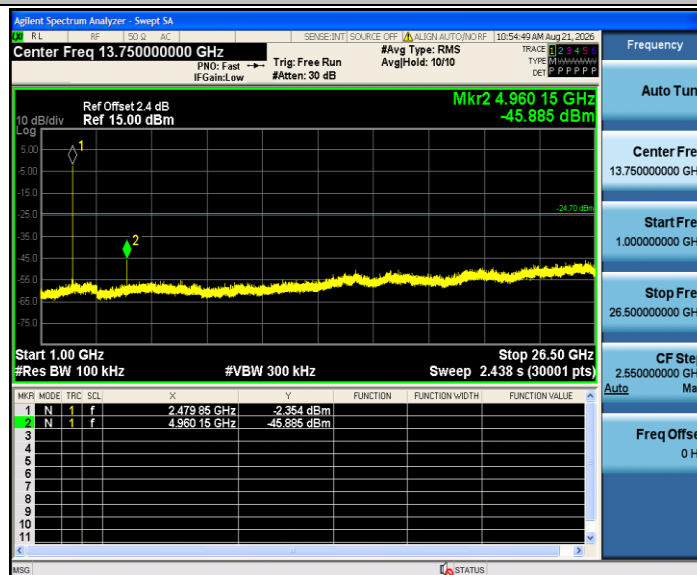
# BLE\_1M\_Ant1\_2480\_0~Reference



# BLE\_1M\_Ant1\_2480\_30~1000



BLE\_1M\_Ant1\_2480\_1000~26500

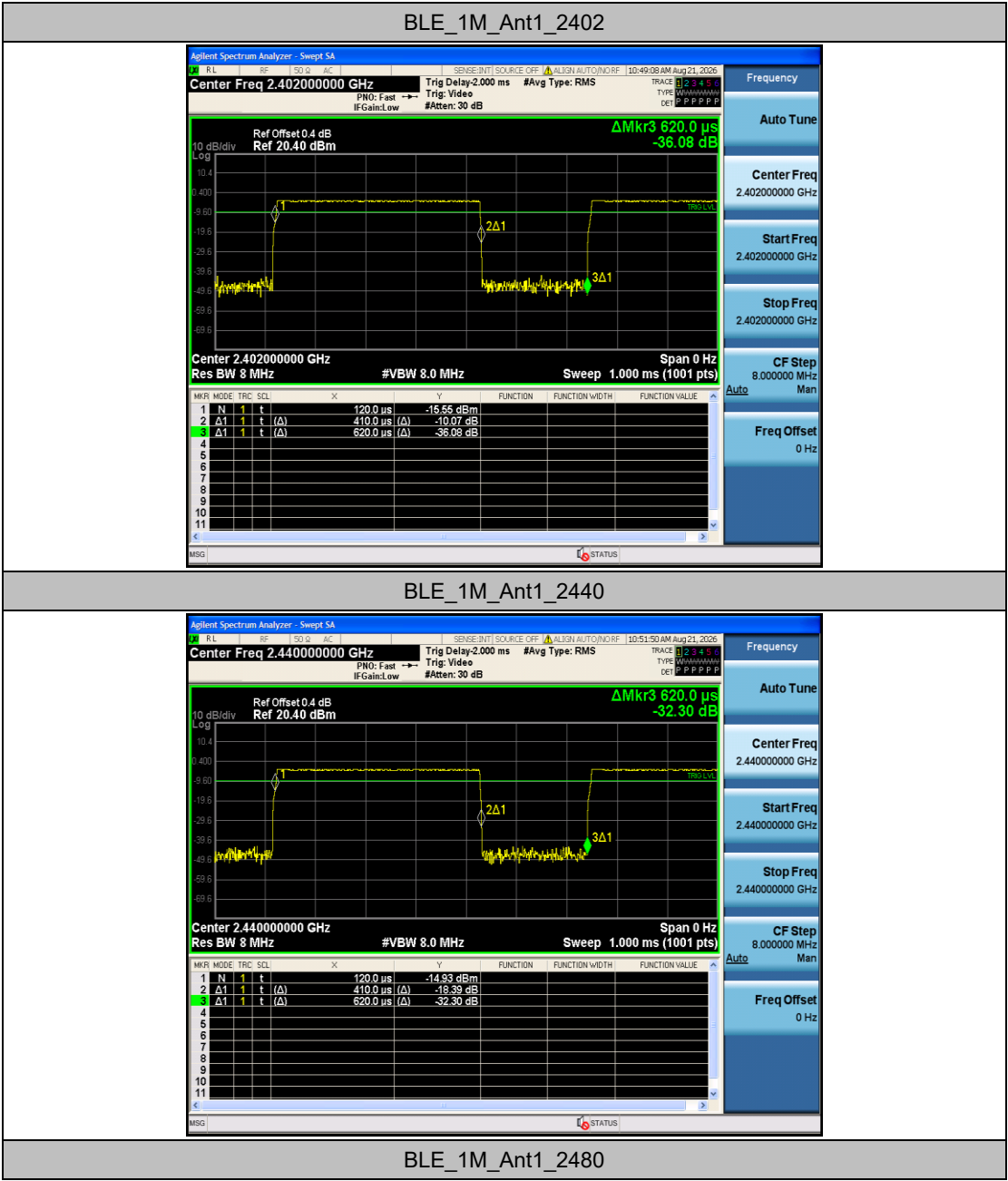


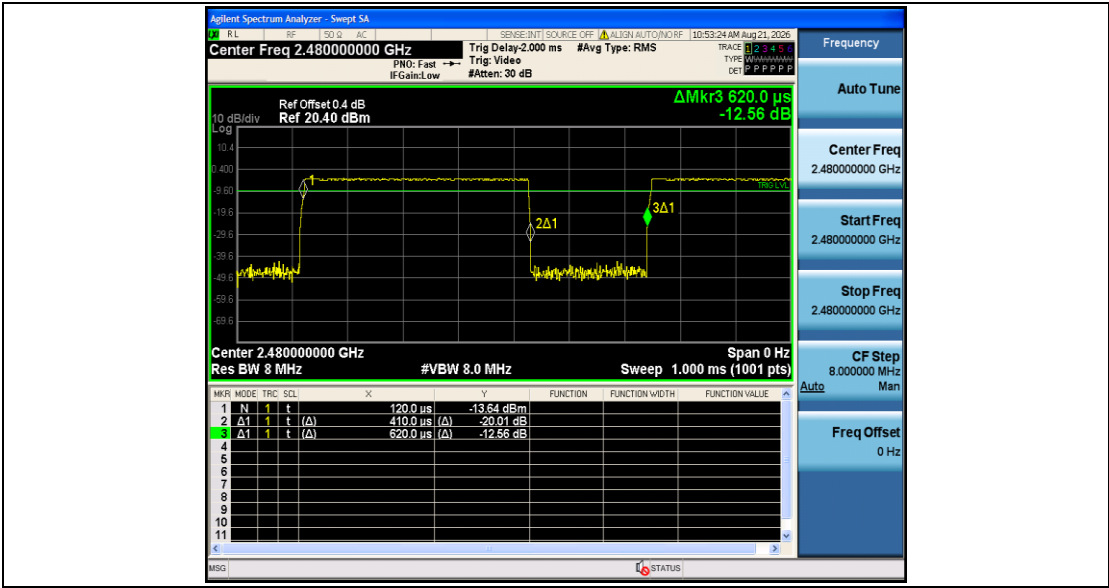
## Appendix G: Duty Cycle

### Test Result

| TestMode | Antenna | Freq(MHz) | ON Time<br>[ms] | Period<br>[ms] | X      | DC<br>[%] | xFactor | Limit | Verdict |
|----------|---------|-----------|-----------------|----------------|--------|-----------|---------|-------|---------|
| BLE_1M   | Ant1    | 2402      | 0.41            | 0.62           | 0.6613 | 66.13     | 1.80    | ---   | ---     |
|          |         | 2440      | 0.41            | 0.62           | 0.6613 | 66.13     | 1.80    | ---   | ---     |
|          |         | 2480      | 0.41            | 0.62           | 0.6613 | 66.13     | 1.80    | ---   | ---     |

Test Graphs





## Appendix H: Emissions in Restricted Bands

### Test Result

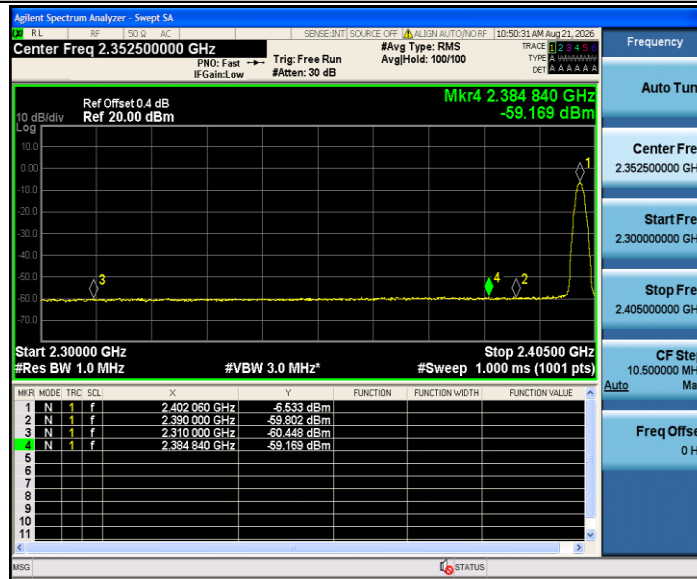
| TestMod<br>e | Antenn<br>a | ChNam<br>e | Freq(MH<br>z) | Detector | Freq<br>[MHz] | Result<br>[dBm] | Gain<br>[dB] | DC<br>Factor<br>[dB] | Result<br>[dBuV/m] | Limit<br>[dBuV/m] | Verdict |
|--------------|-------------|------------|---------------|----------|---------------|-----------------|--------------|----------------------|--------------------|-------------------|---------|
| BLE_1M       | Ant1        | Low        | 2402          | AV       | 2310.000      | -60.45          | 2.00         | 1.80                 | 38.55              | ≤54               | PASS    |
|              |             |            |               | AV       | 2384.840      | -59.17          | 2.00         | 1.80                 | 39.83              | ≤54               | PASS    |
|              |             |            |               | AV       | 2390.000      | -59.8           | 2.00         | 1.80                 | 39.20              | ≤54               | PASS    |
|              |             |            |               | Peak     | 2310.000      | -52.02          | 2.00         | 0.00                 | 45.18              | ≤74               | PASS    |
|              |             |            |               | Peak     | 2350.295      | -49.35          | 2.00         | 0.00                 | 47.85              | ≤74               | PASS    |
|              |             |            |               | Peak     | 2390.000      | -50.99          | 2.00         | 0.00                 | 46.21              | ≤74               | PASS    |
|              |             | High       | 2480          | AV       | 2483.500      | -58.45          | 2.00         | 1.80                 | 40.55              | ≤54               | PASS    |
|              |             |            |               | AV       | 2484.480      | -58.14          | 2.00         | 1.80                 | 40.86              | ≤54               | PASS    |
|              |             |            |               | AV       | 2500.000      | -59.37          | 2.00         | 1.80                 | 39.63              | ≤54               | PASS    |
|              |             |            |               | Peak     | 2483.500      | -49.89          | 2.00         | 0.00                 | 47.31              | ≤74               | PASS    |
|              |             |            |               | Peak     | 2484.080      | -47.13          | 2.00         | 0.00                 | 50.07              | ≤74               | PASS    |
|              |             |            |               | Peak     | 2500.000      | -51.83          | 2.00         | 0.00                 | 45.37              | ≤74               | PASS    |

Note:

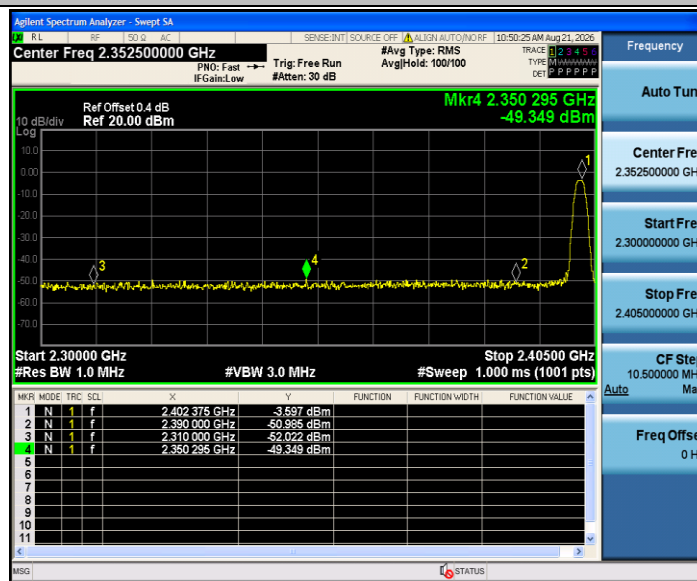
The limit in dBm for average detector is conversion from 54dBuV/m, according to 15.209(a). The limit in dBm for peak detector is 20dB above the limit of average detector in dBm.

## Test Graphs

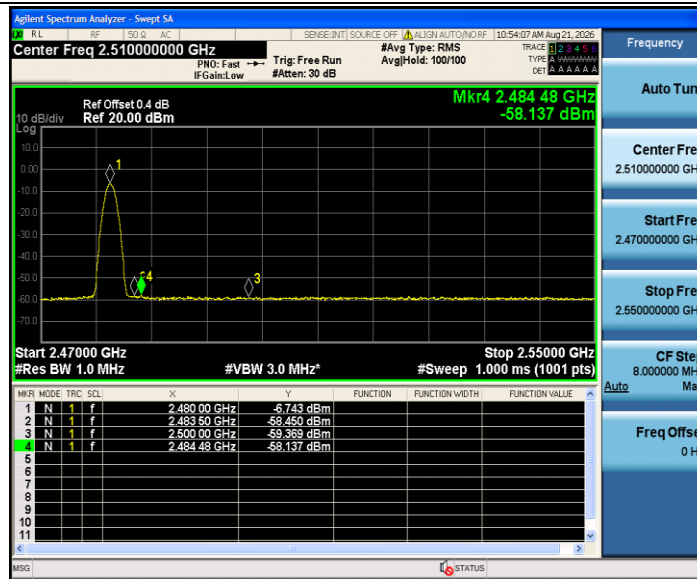
BLE\_1M\_Ant1\_Low\_2402\_AV



BLE\_1M\_Ant1\_Low\_2402\_Peak



BLE\_1M\_Ant1\_High\_2480\_AV



BLE\_1M\_Ant1\_High\_2480\_Peak

