



## Appendix A

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

Product Name: Bluetooth Humidity&Temperature Monitor

Test Model: TP359

#### Environmental Conditions

|                    |           |
|--------------------|-----------|
| Temperature:       | 21.1 ° C  |
| Relative Humidity: | 52.2%     |
| ATM Pressure:      | 100.0 kPa |
| Test Engineer:     | Mark Chen |
| Supervised by:     | Libin     |

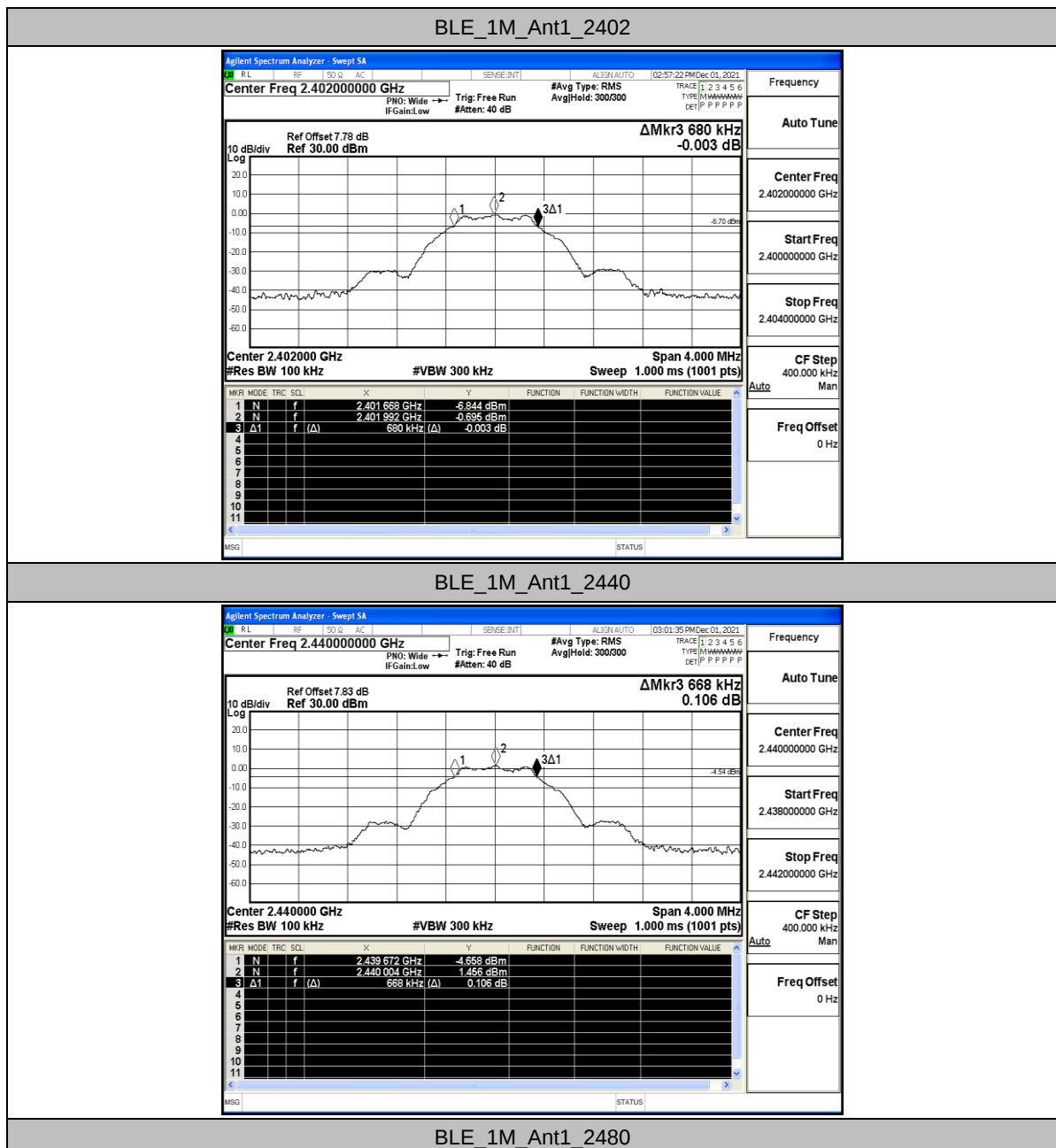


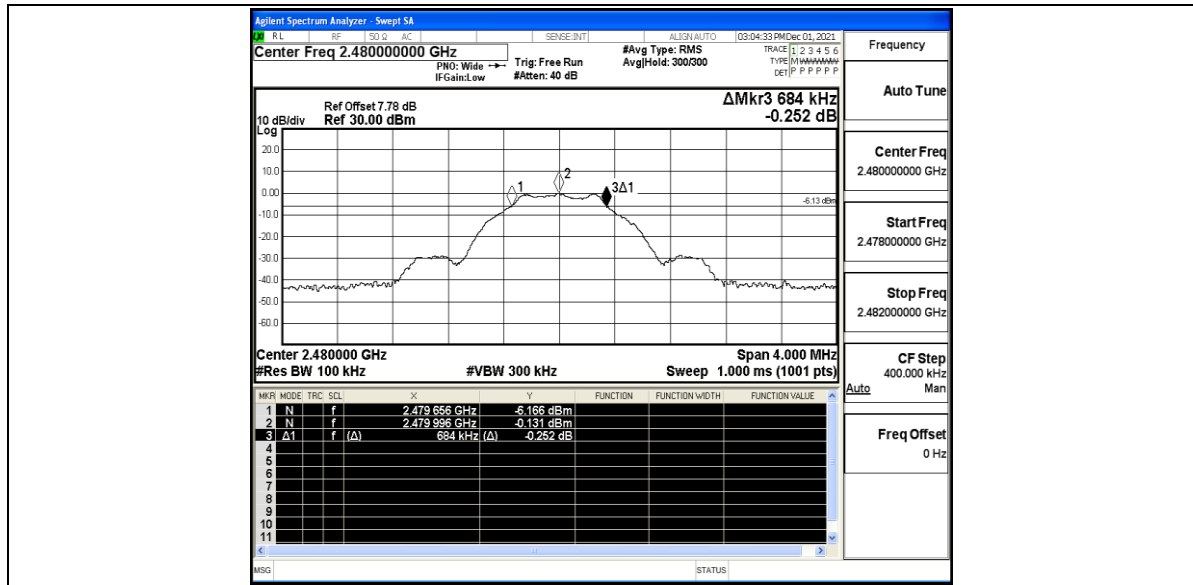
## A.1 6dB Bandwidth

### Test Result

| TestMode | Antenna | Channel | DTS BW [MHz] | FL[MHz]  | FH[MHz]  | Limit[MHz] | Verdict |
|----------|---------|---------|--------------|----------|----------|------------|---------|
| BLE_1M   | Ant1    | 2402    | 0.680        | 2401.668 | 2402.348 | ≥0.5       | PASS    |
|          |         | 2440    | 0.668        | 2439.672 | 2440.340 | ≥0.5       | PASS    |
|          |         | 2480    | 0.684        | 2479.656 | 2480.340 | ≥0.5       | PASS    |

### Test Graphs





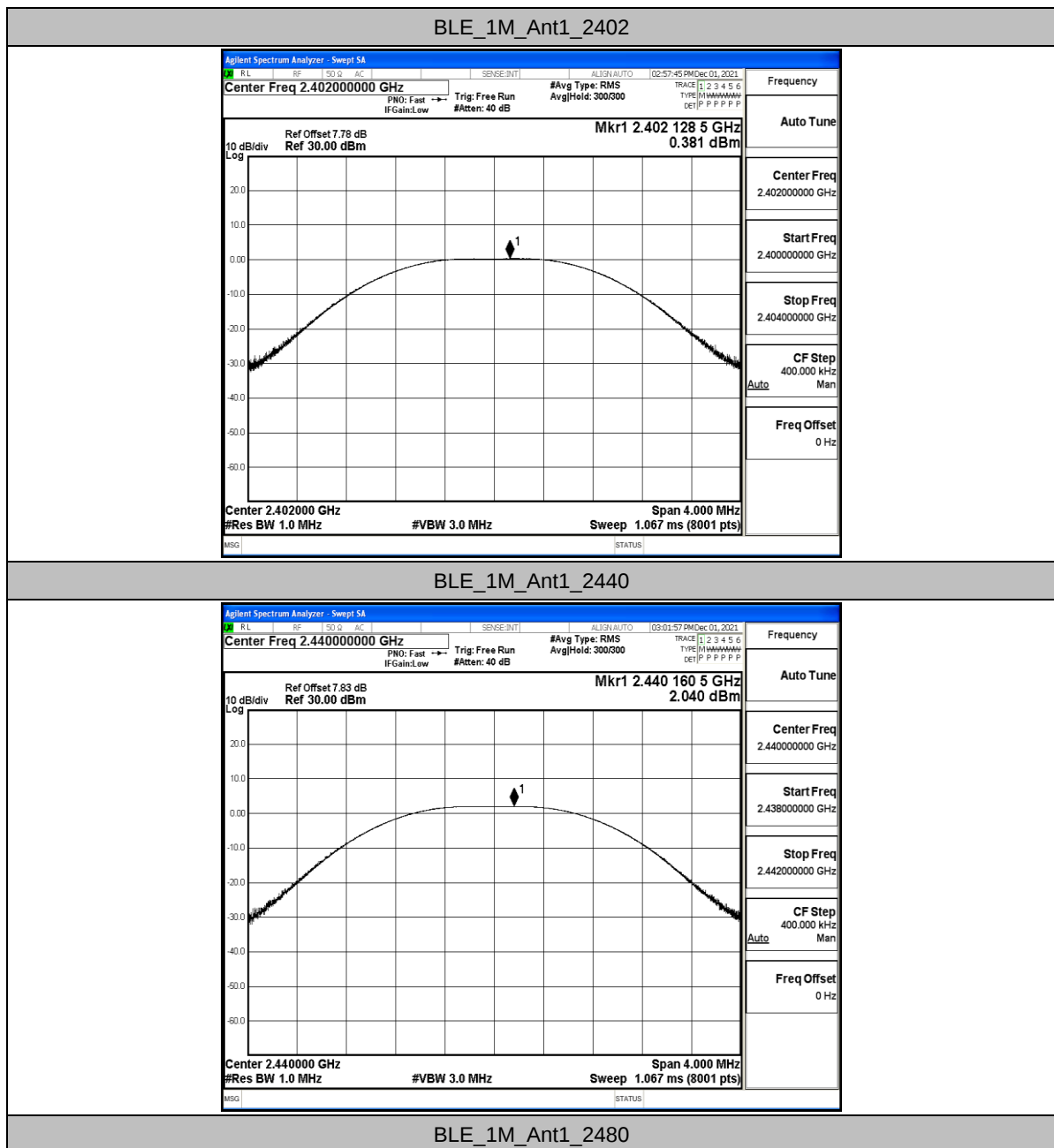


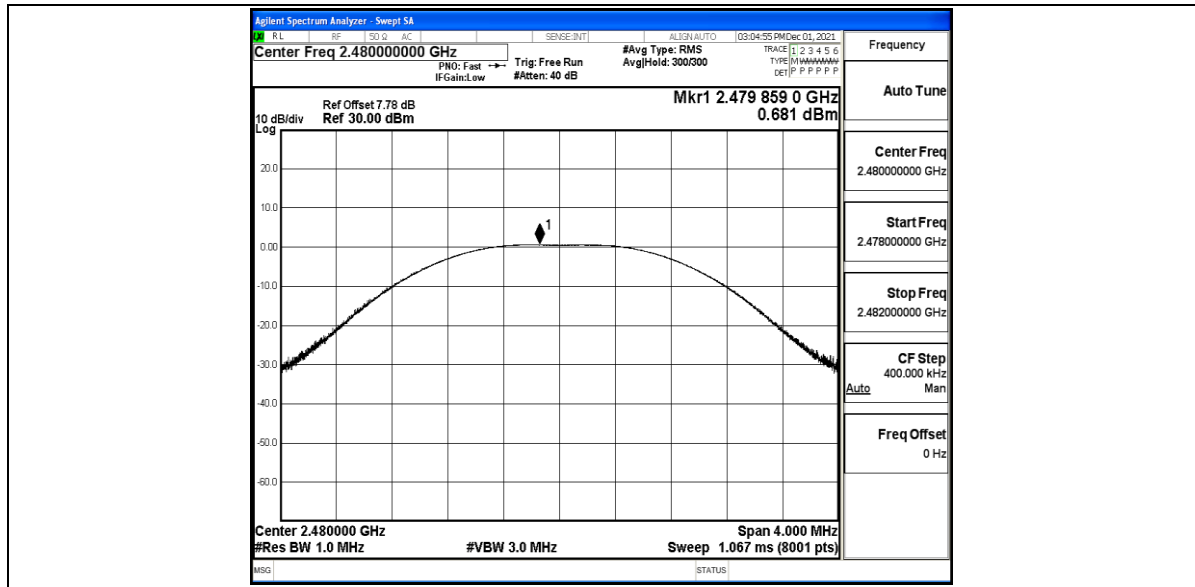
## A.2 Maximum conducted output power

### Test Result

| TestMode | Antenna | Channel | Result[dBm] | Limit[dBm] | Verdict |
|----------|---------|---------|-------------|------------|---------|
| BLE_1M   | Ant1    | 2402    | 0.38        | ≤30        | PASS    |
|          |         | 2440    | 2.04        | ≤30        | PASS    |
|          |         | 2480    | 0.68        | ≤30        | PASS    |

### Test Graphs





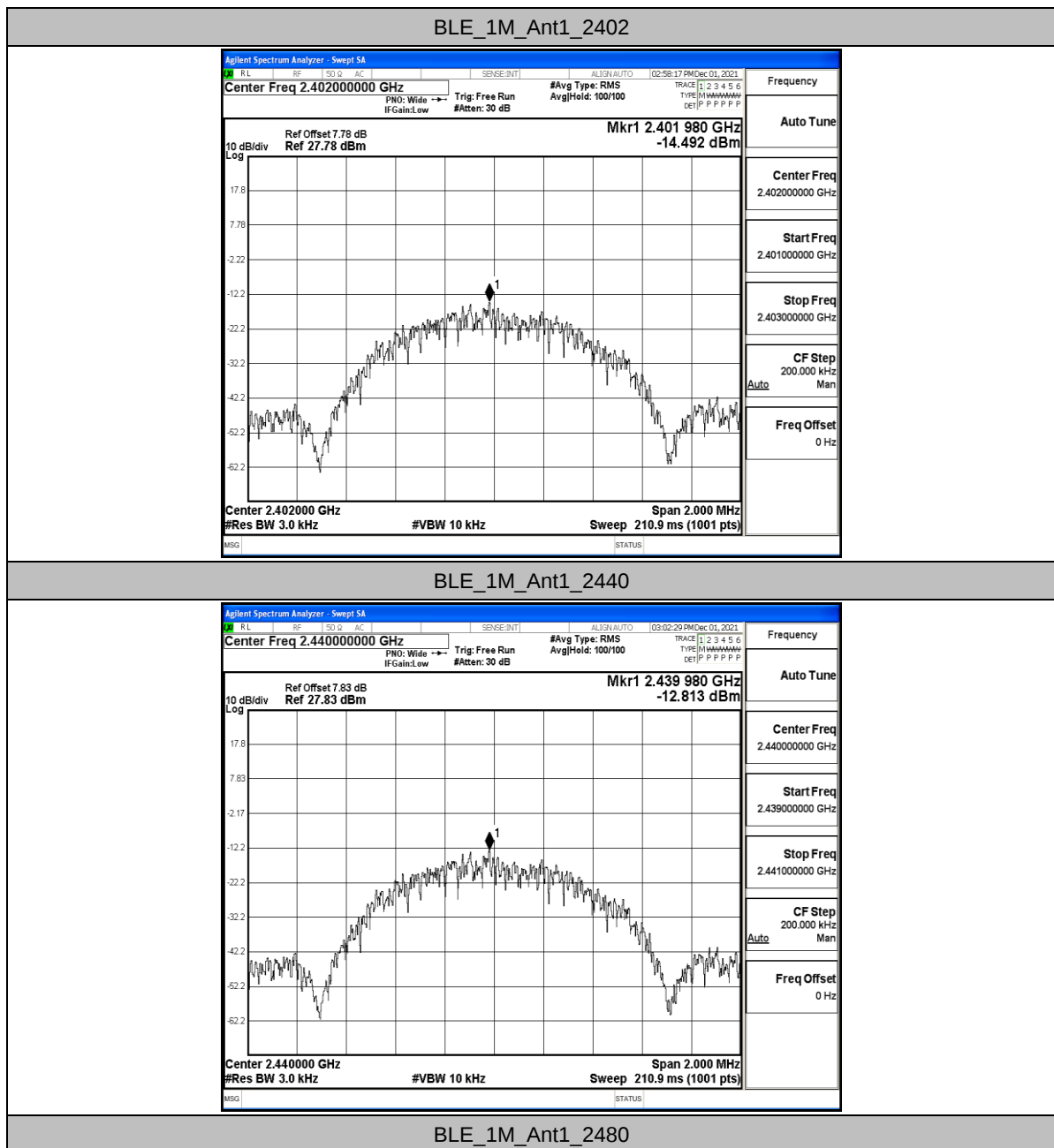


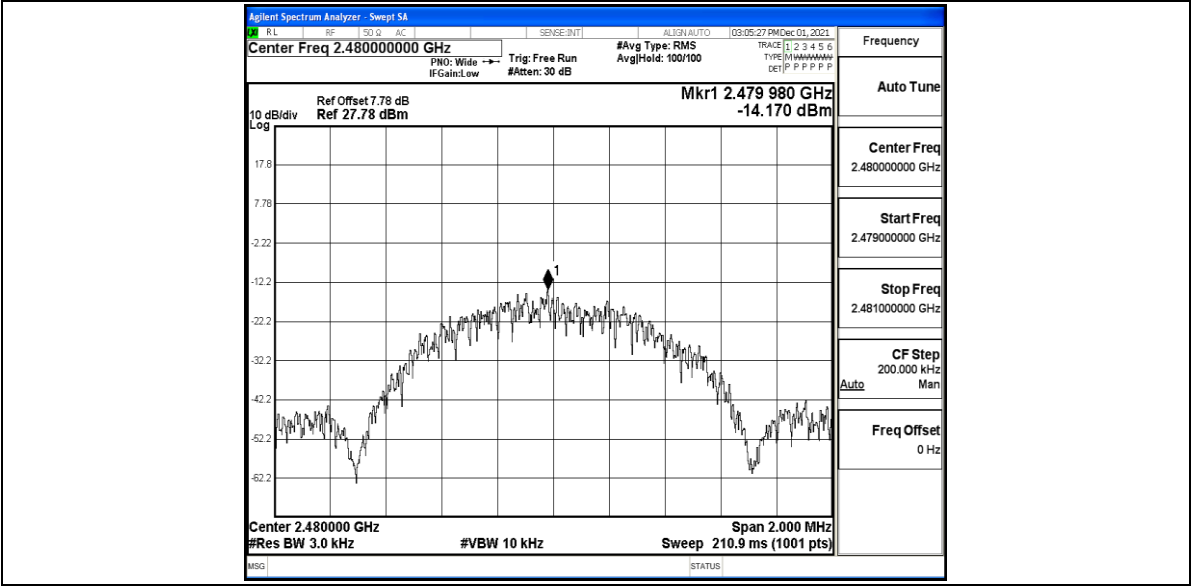
## A.3 power spectral density

### Test Result

| TestMode | Antenna | Channel | Result[dBm/3kHz] | Limit[dBm/3kHz] | Verdict |
|----------|---------|---------|------------------|-----------------|---------|
| BLE_1M   | Ant1    | 2402    | -14.49           | ≤8              | PASS    |
|          |         | 2440    | -12.81           | ≤8              | PASS    |
|          |         | 2480    | -14.17           | ≤8              | PASS    |

### Test Graphs





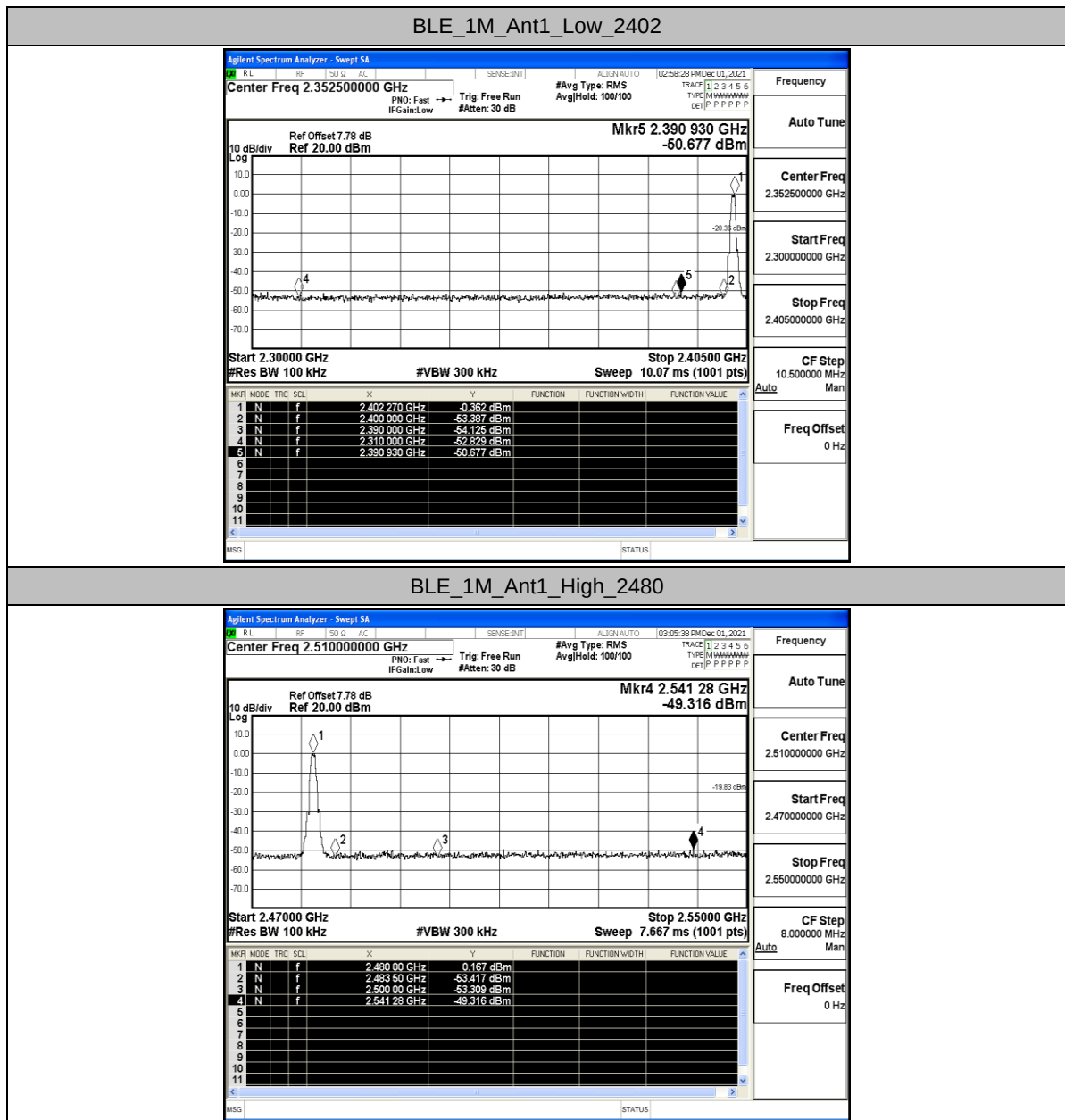


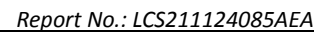
## A.4 Band edge measurements

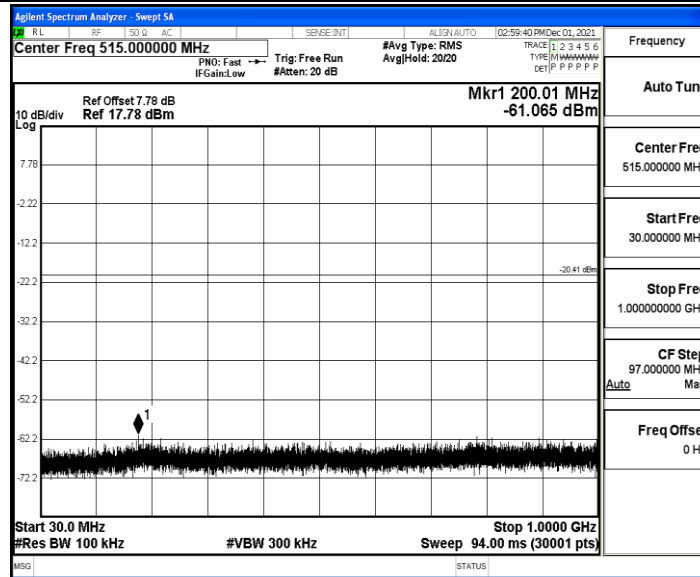
### Test Result

| TestMode | Antenna | ChName | Channel | RefLevel[dBm] | Result[dBm] | Limit[dBm] | Verdict |
|----------|---------|--------|---------|---------------|-------------|------------|---------|
| BLE_1M   | Ant1    | Low    | 2402    | -0.36         | -50.68      | ≤-20.36    | PASS    |
|          |         | High   | 2480    | 0.17          | -49.32      | ≤-19.83    | PASS    |

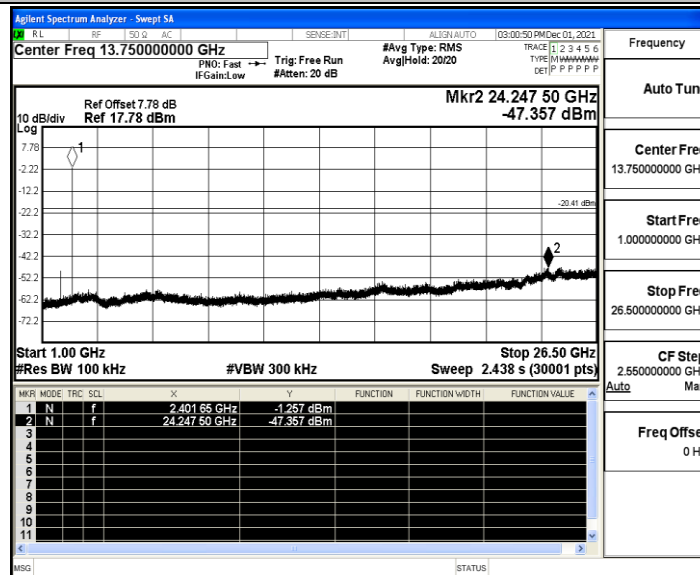
### Test Graphs



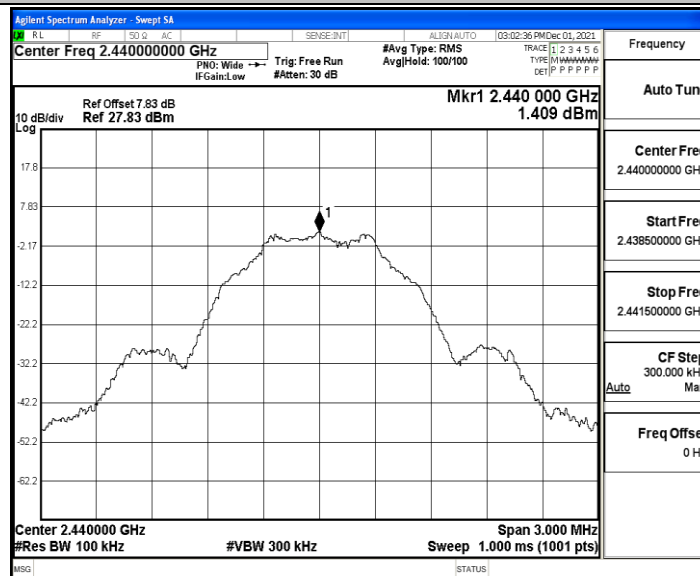




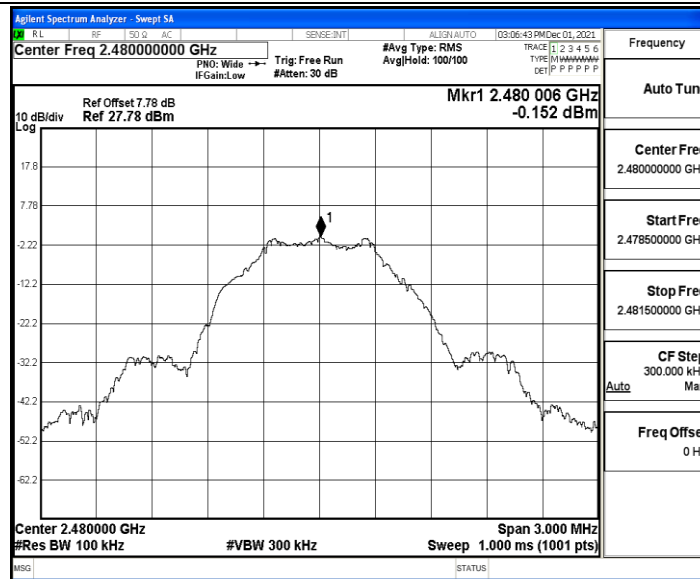
BLE\_1M\_Ant1\_2402\_1000~26500



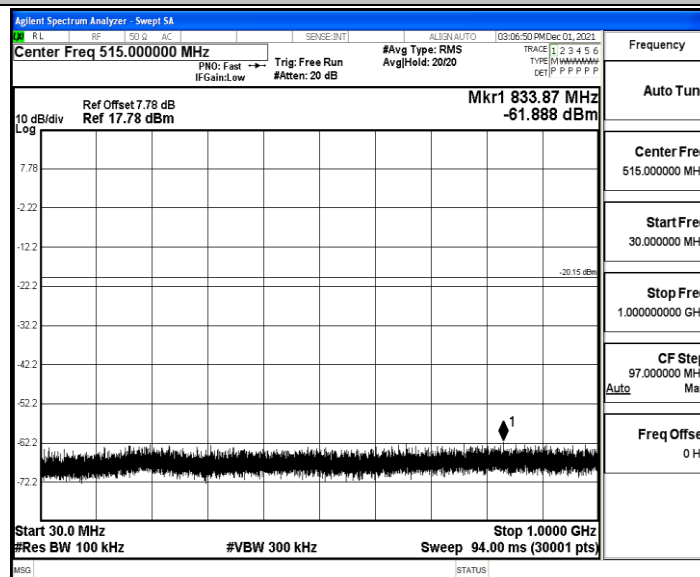
BLE\_1M\_Ant1\_2440\_0-Reference



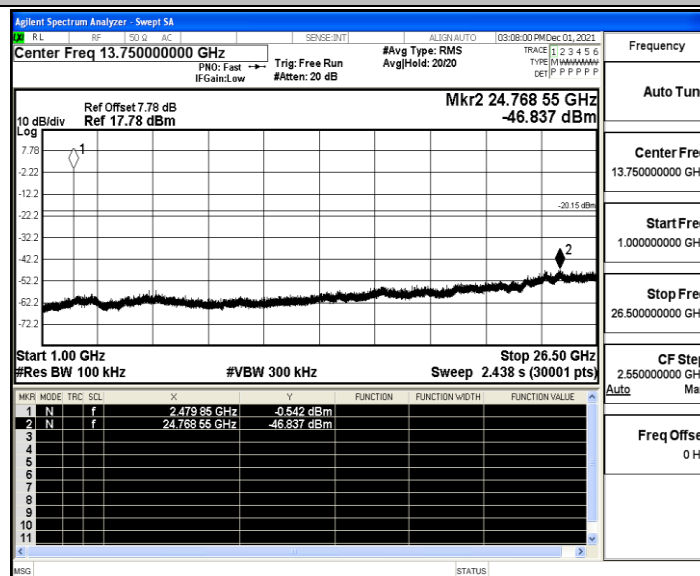




BLE\_1M\_Ant1\_2480\_30~1000



BLE\_1M\_Ant1\_2480\_1000~26500



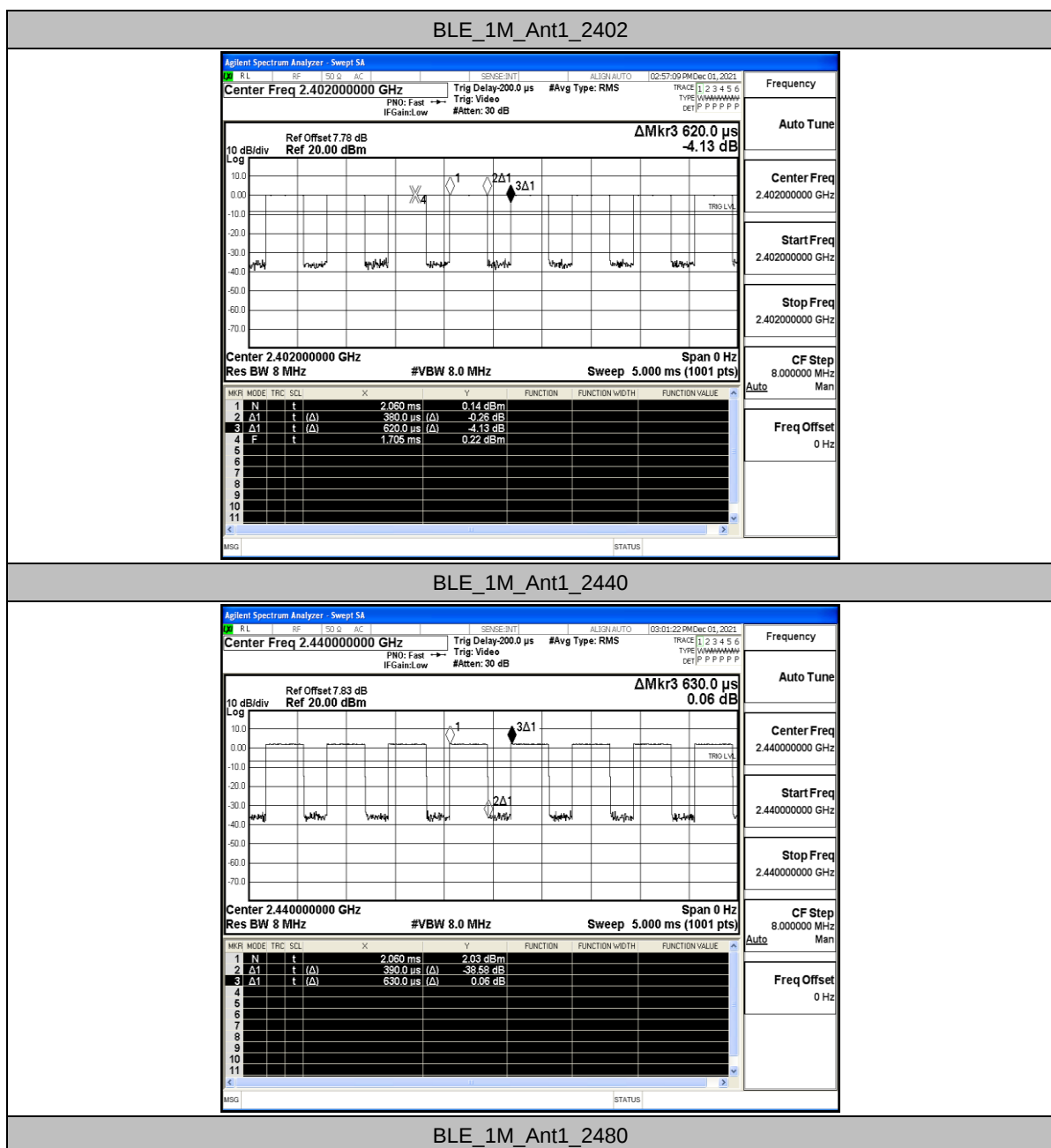


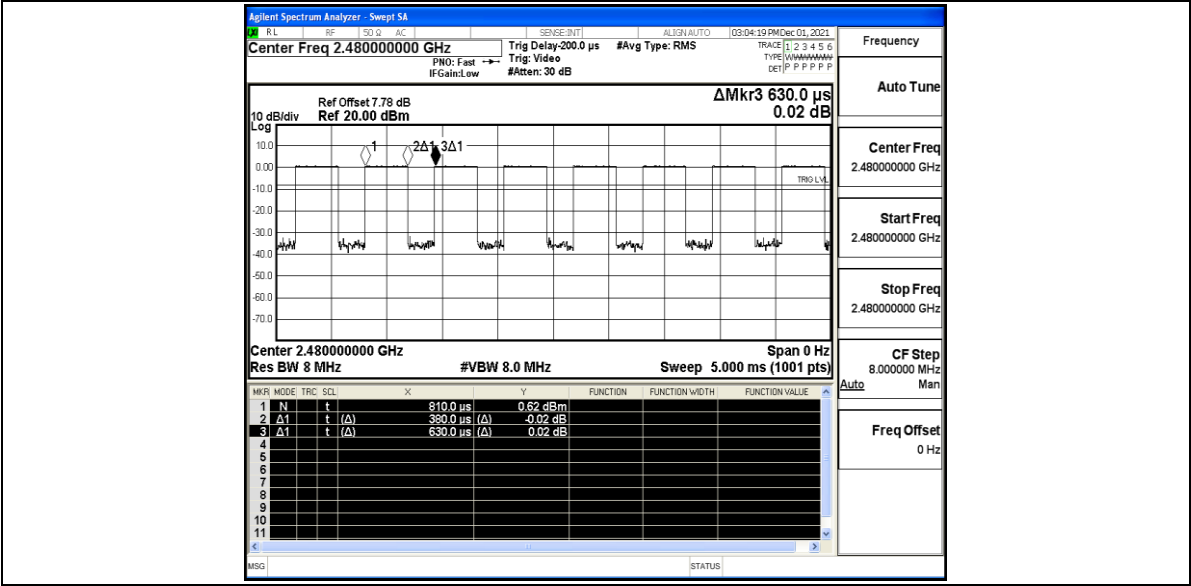
## A.6 Duty Cycle

### Test Result

| TestMode | Antenna | Channel | ON Time<br>[ms] | Period<br>[ms] | X      | DC<br>[%] | xFactor | Limit | Verdict |
|----------|---------|---------|-----------------|----------------|--------|-----------|---------|-------|---------|
| BLE_1M   | Ant1    | 2402    | 0.38            | 0.62           | 0.6129 | 61.29     | 2.13    | ---   | PASS    |
|          |         | 2440    | 0.39            | 0.63           | 0.6190 | 61.90     | 2.08    | ---   | PASS    |
|          |         | 2480    | 0.38            | 0.63           | 0.6032 | 60.32     | 2.20    | ---   | PASS    |

### Test Graphs







## A.7 Emissions in Restricted Bands

### Test Result

| TestMode | Antenna | ChName | Channel | Detector | Freq.<br>[MHz] | Result<br>[dBm] | Limit<br>[dBm] | Result<br>[dBuV/m] | Limit<br>[dBuV/m] | Verdict |
|----------|---------|--------|---------|----------|----------------|-----------------|----------------|--------------------|-------------------|---------|
| BLE_1M   | Ant1    | Low    | 2402    | AV       | 2310.000       | -48.44          | ≤-41.20        | 46.76              | ≤54               | PASS    |
|          |         |        |         | AV       | 2381.900       | -47.77          | ≤-41.20        | 47.43              | ≤54               | PASS    |
|          |         |        |         | AV       | 2390.000       | -48.28          | ≤-41.20        | 46.92              | ≤54               | PASS    |
|          |         |        |         | Peak     | 2310.000       | -42.46          | ≤-21.20        | 52.74              | ≤74               | PASS    |
|          |         |        |         | Peak     | 2365.205       | -39.01          | ≤-21.20        | 56.19              | ≤74               | PASS    |
|          |         |        |         | Peak     | 2390.000       | -40.59          | ≤-21.20        | 54.61              | ≤74               | PASS    |
|          |         | High   | 2480    | AV       | 2483.500       | -47.22          | ≤-41.20        | 47.98              | ≤54               | PASS    |
|          |         |        |         | AV       | 2499.040       | -47.02          | ≤-41.20        | 48.18              | ≤54               | PASS    |
|          |         |        |         | AV       | 2500.000       | -47.8           | ≤-41.20        | 47.40              | ≤54               | PASS    |
|          |         |        |         | Peak     | 2483.500       | -40.01          | ≤-21.20        | 55.19              | ≤74               | PASS    |
|          |         |        |         | Peak     | 2491.280       | -38.4           | ≤-21.20        | 56.80              | ≤74               | PASS    |
|          |         |        |         | Peak     | 2500.000       | -40.84          | ≤-21.20        | 54.36              | ≤74               | PASS    |

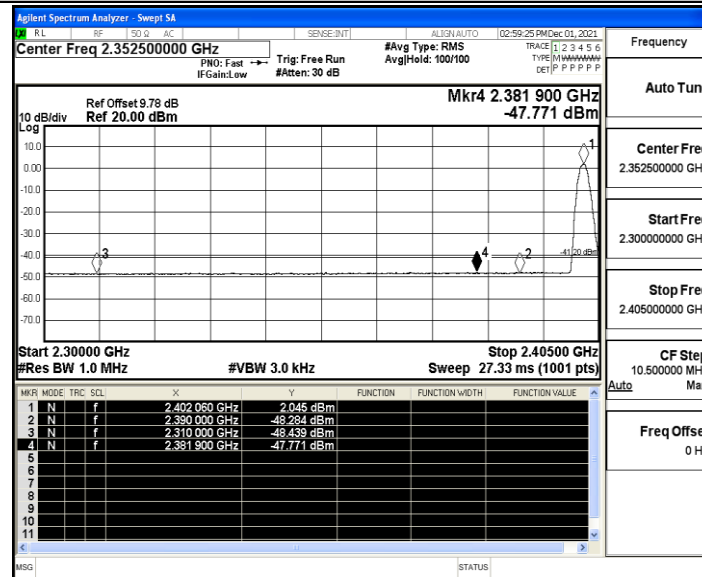
Note:

1. The Antenna Gain is compensated in the graph.
2. 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.

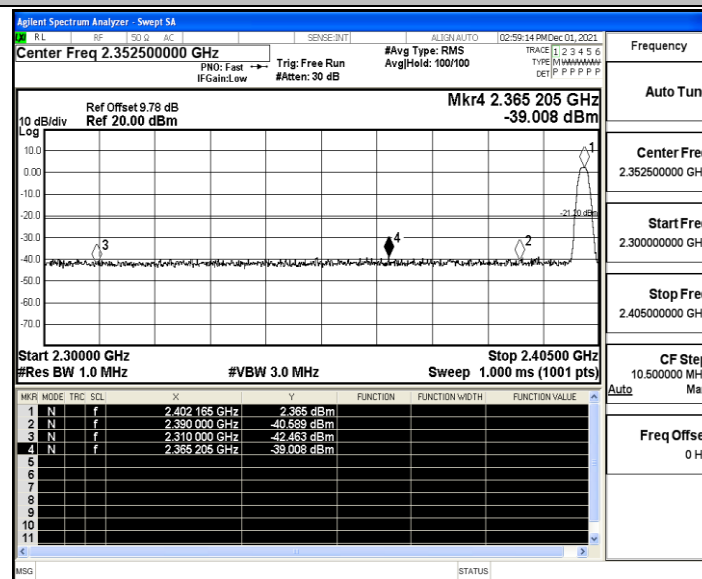


## Test Graphs

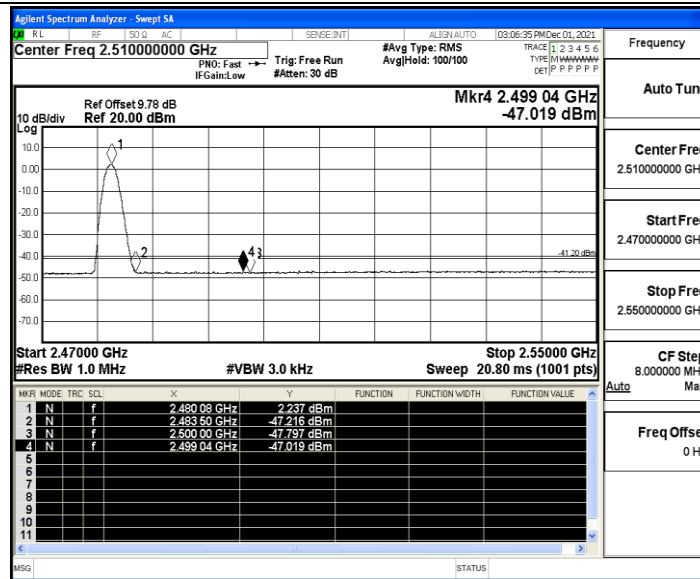
BLE\_1M\_Ant1\_Low\_2402\_AV



BLE\_1M\_Ant1\_Low\_2402\_Peak



BLE\_1M\_Ant1\_High\_2480\_AV



BLE\_1M\_Ant1\_High\_2480\_Peak

