



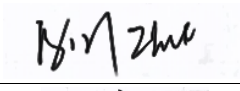
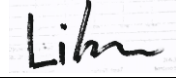
## Appendix B

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

Product Name: Radio Alarm Clock with Wireless Charging

Test Model: WJ-288APP

#### Environmental Conditions

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

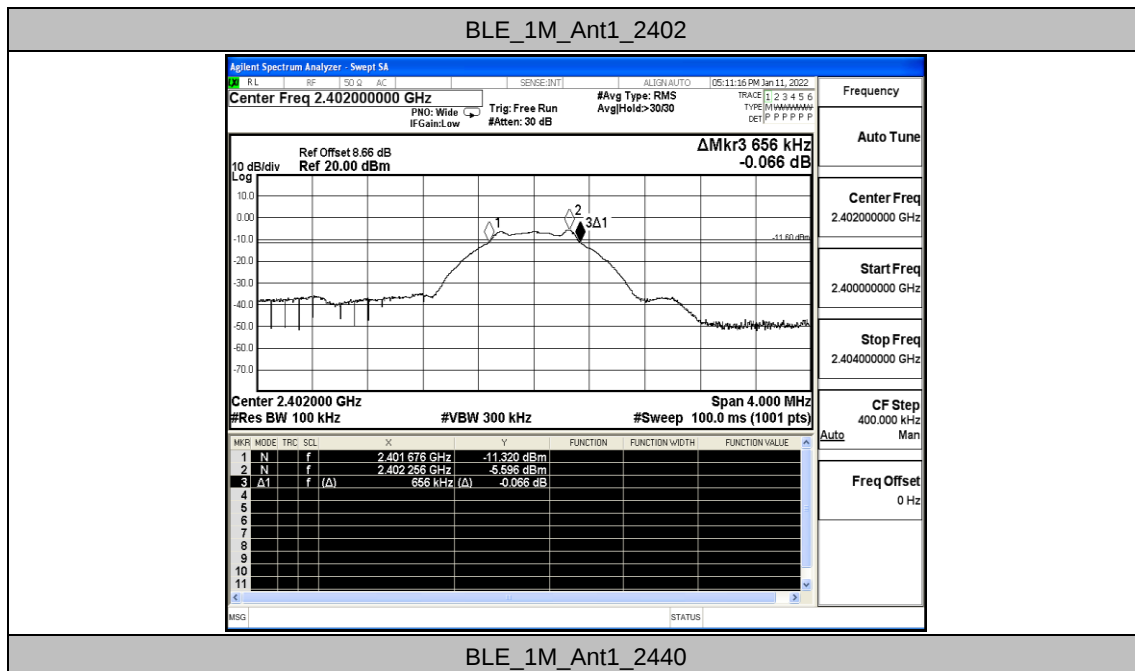


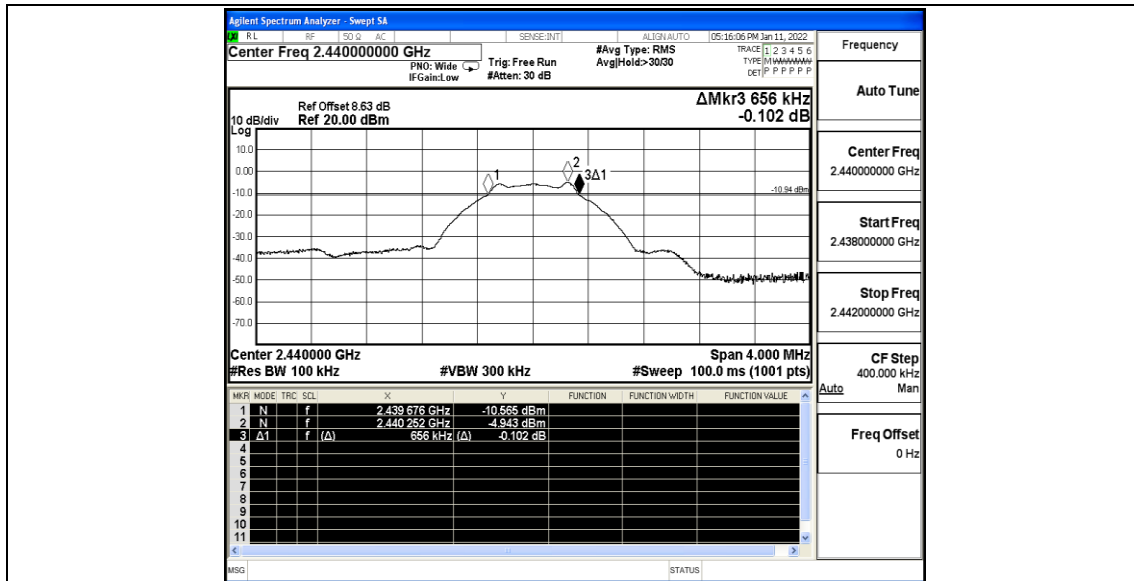
## B.1 DTS Bandwidth

### Test Result

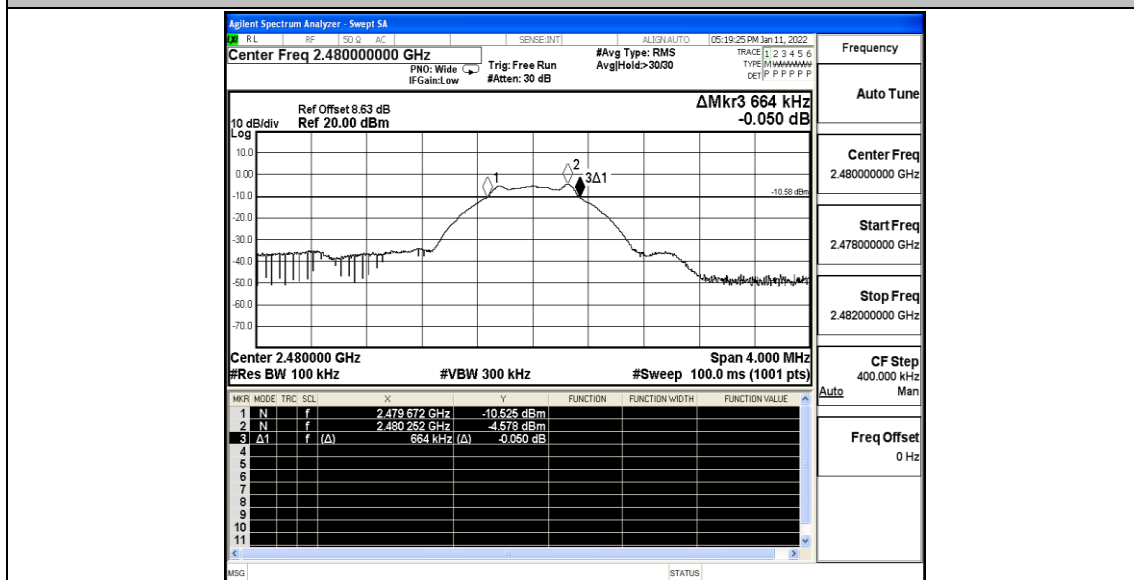
| TestMode | Antenna | Channel | DTS BW [MHz] | FL[MHz]  | FH[MHz]  | Limit[MHz] | Verdict |
|----------|---------|---------|--------------|----------|----------|------------|---------|
| BLE_1M   | Ant1    | 2402    | 0.656        | 2401.676 | 2402.332 | 0.5        | PASS    |
|          |         | 2440    | 0.656        | 2439.676 | 2440.332 | 0.5        | PASS    |
|          |         | 2480    | 0.664        | 2479.672 | 2480.336 | 0.5        | PASS    |
| BLE_2M   | Ant1    | 2402    | 0.656        | 2401.676 | 2402.332 | 0.5        | PASS    |
|          |         | 2440    | 0.656        | 2439.676 | 2440.332 | 0.5        | PASS    |
|          |         | 2480    | 0.652        | 2479.676 | 2480.328 | 0.5        | PASS    |

### Test Graphs

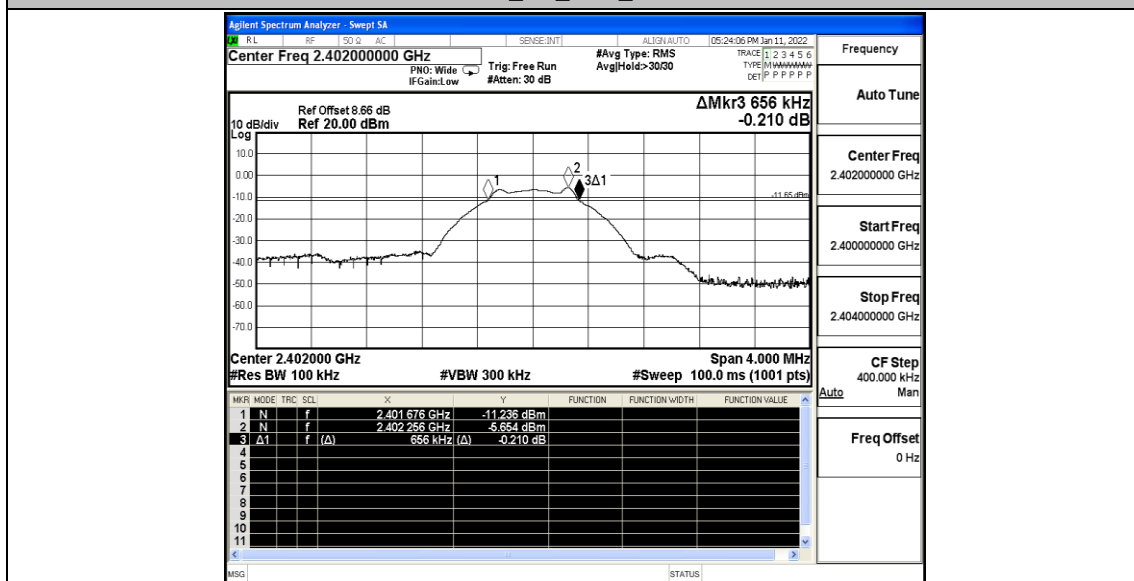




BLE\_1M\_Ant1\_2480

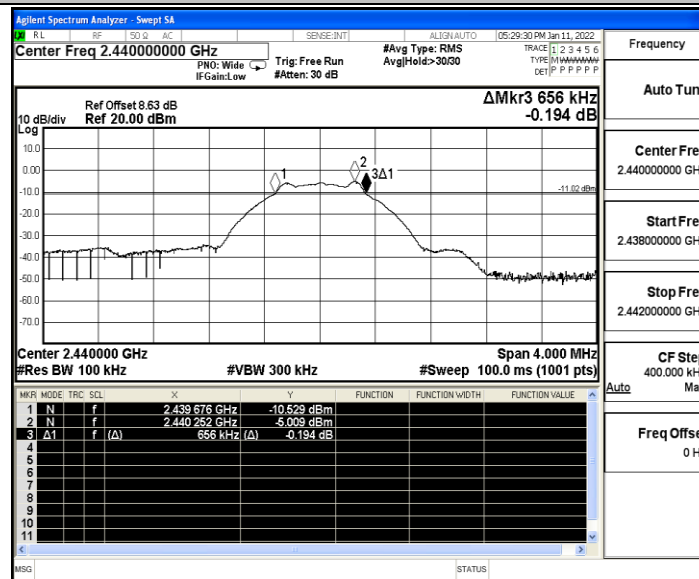


BLE\_2M\_Ant1\_2402

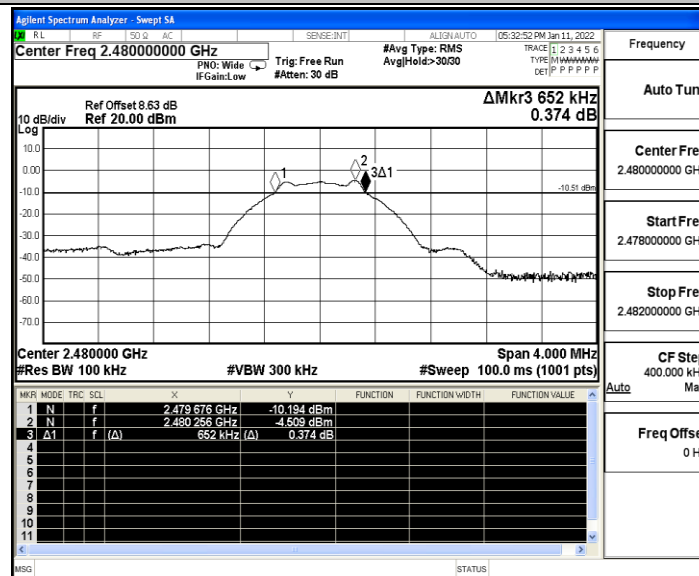




### BLE\_2M\_Ant1\_2440



### BLE\_2M\_Ant1\_2480



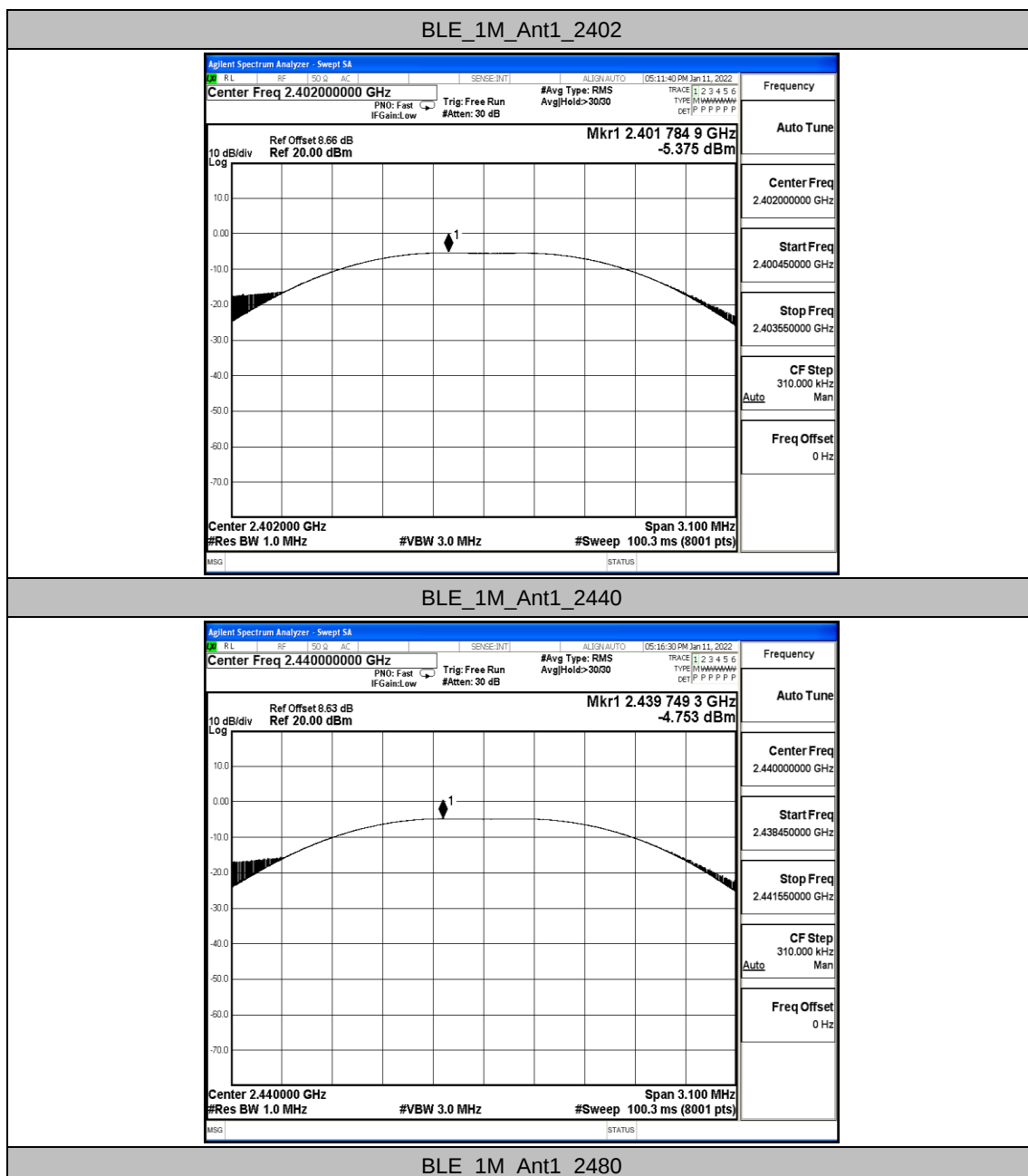


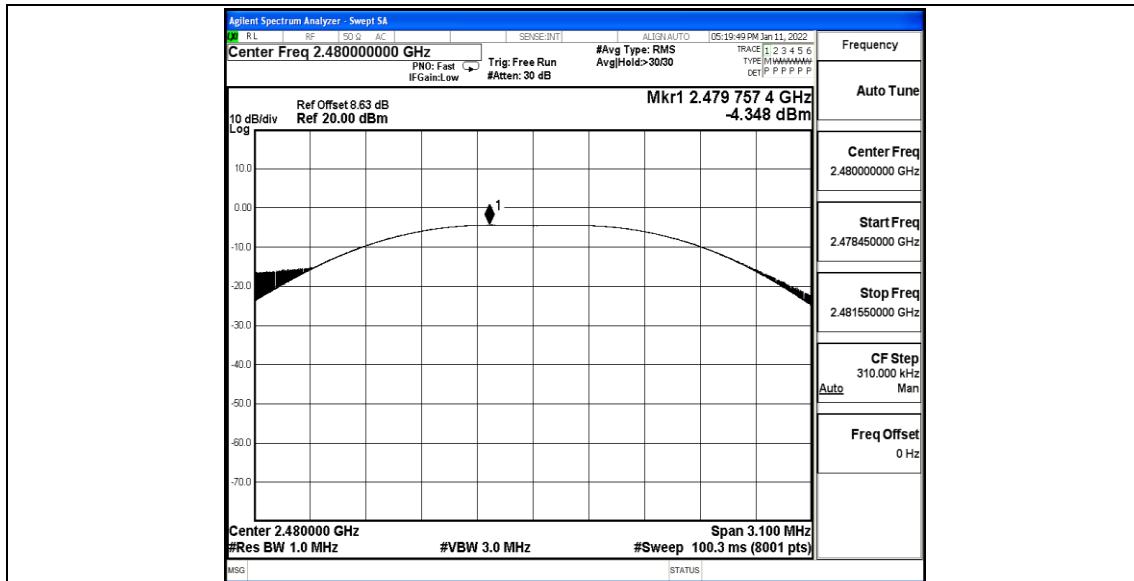
## B.2 Maximum conducted output power

### Test Result

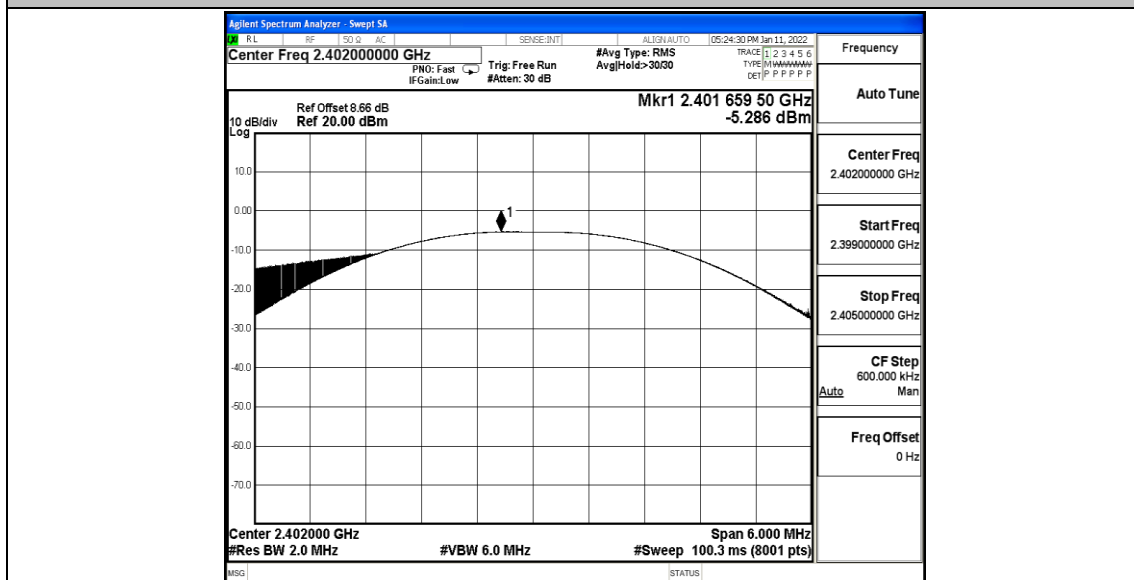
| TestMode | Antenna | Channel | Result[dBm] | Limit[dBm] | Verdict |
|----------|---------|---------|-------------|------------|---------|
| BLE_1M   | Ant1    | 2402    | -5.38       | ≤30        | PASS    |
|          |         | 2440    | -4.75       | ≤30        | PASS    |
|          |         | 2480    | -4.35       | ≤30        | PASS    |
| BLE_2M   | Ant1    | 2402    | -5.29       | ≤30        | PASS    |
|          |         | 2440    | -4.67       | ≤30        | PASS    |
|          |         | 2480    | -4.17       | ≤30        | PASS    |

### Test Graphs

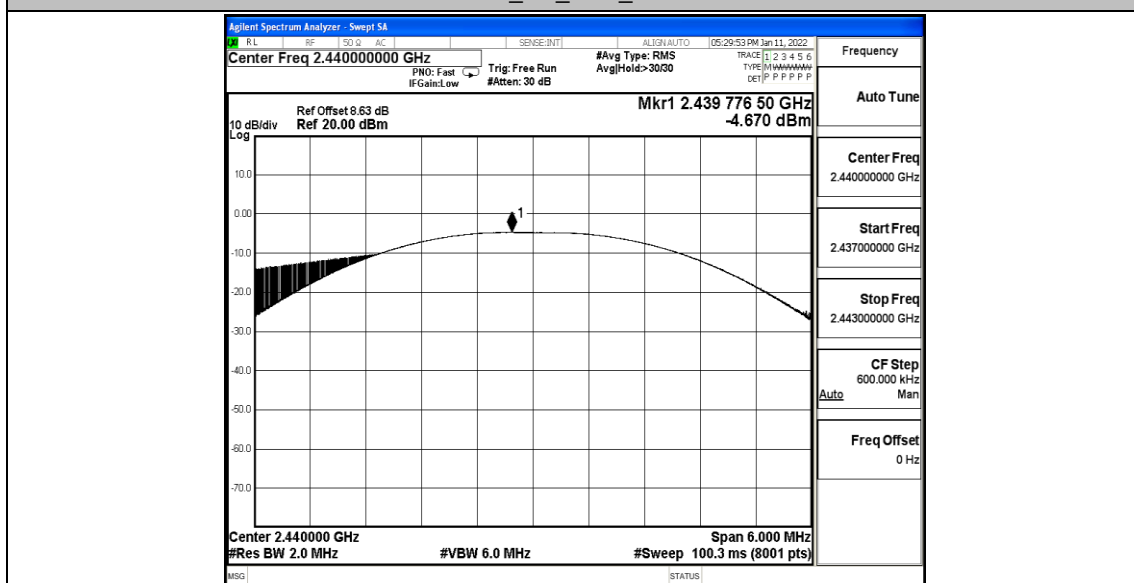




BLE\_2M\_Ant1\_2402

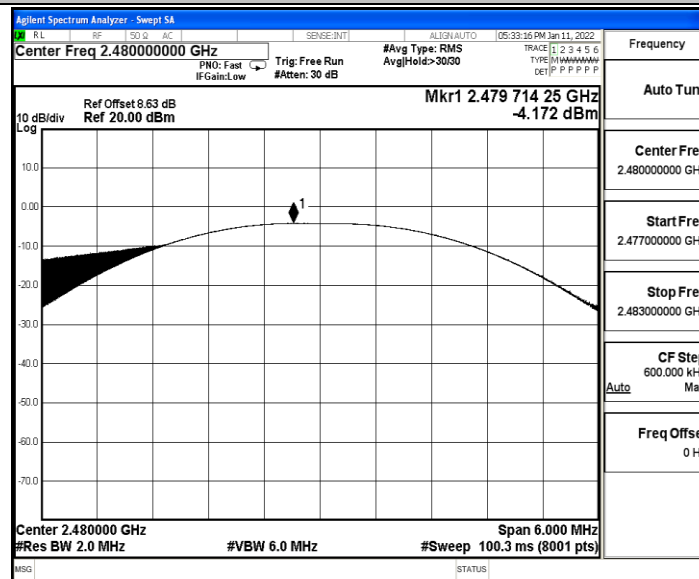


BLE\_2M\_Ant1\_2440





BLE\_2M\_Ant1\_2480



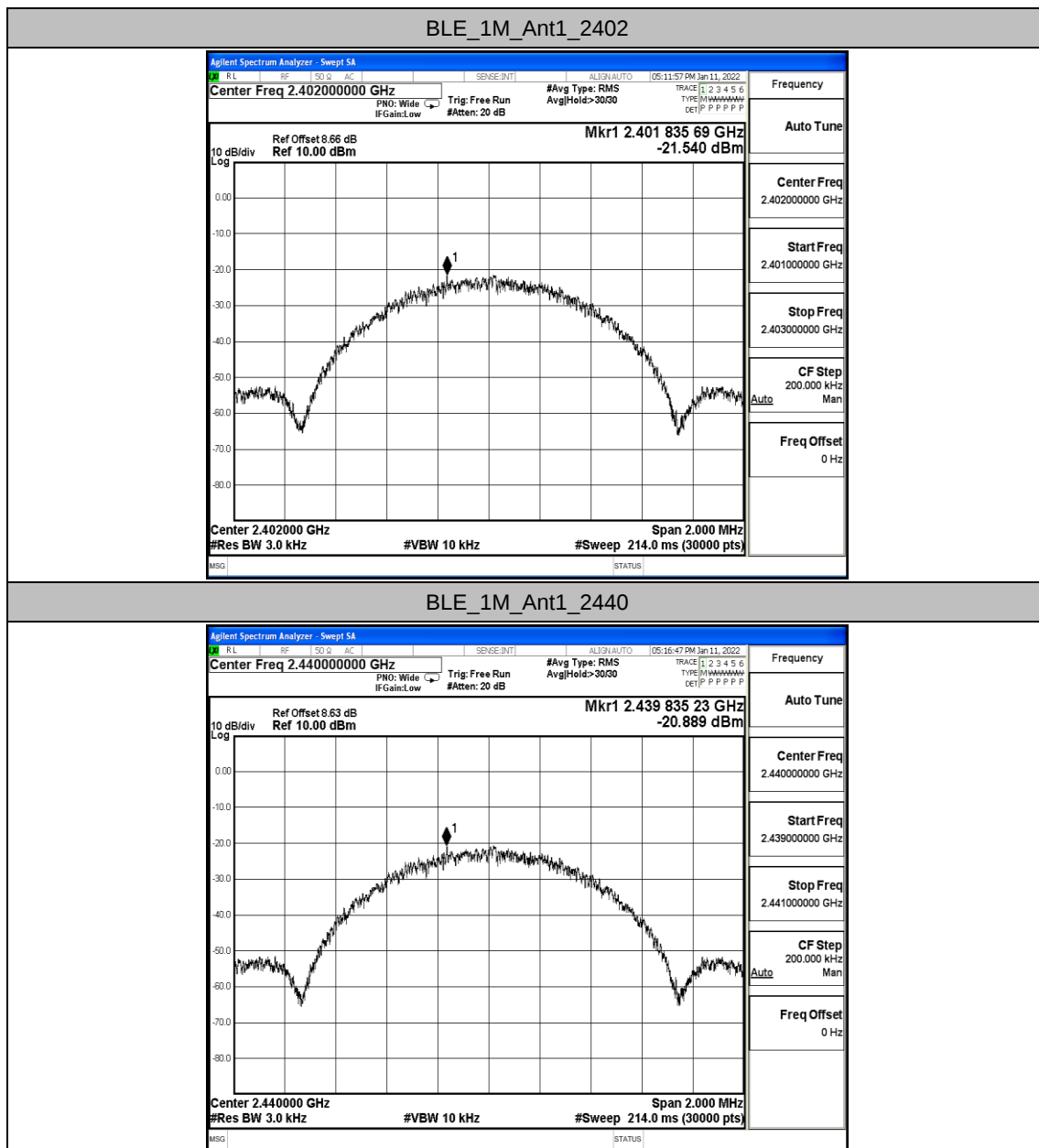


## B.3 Maximum power spectral density

### Test Result

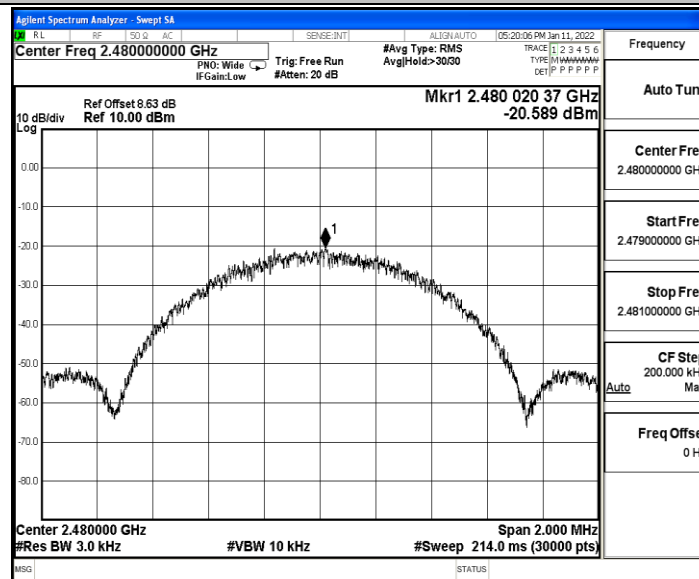
| TestMode | Antenna | Channel | Result[dBm/3-100kHz] | Limit[dBm/3kHz] | Verdict |
|----------|---------|---------|----------------------|-----------------|---------|
| BLE_1M   | Ant1    | 2402    | -21.54               | ≤8.00           | PASS    |
|          |         | 2440    | -20.89               | ≤8.00           | PASS    |
|          |         | 2480    | -20.59               | ≤8.00           | PASS    |
| BLE_2M   | Ant1    | 2402    | -21.63               | ≤8.00           | PASS    |
|          |         | 2440    | -20.98               | ≤8.00           | PASS    |
|          |         | 2480    | -20.46               | ≤8.00           | PASS    |

### Test Graphs

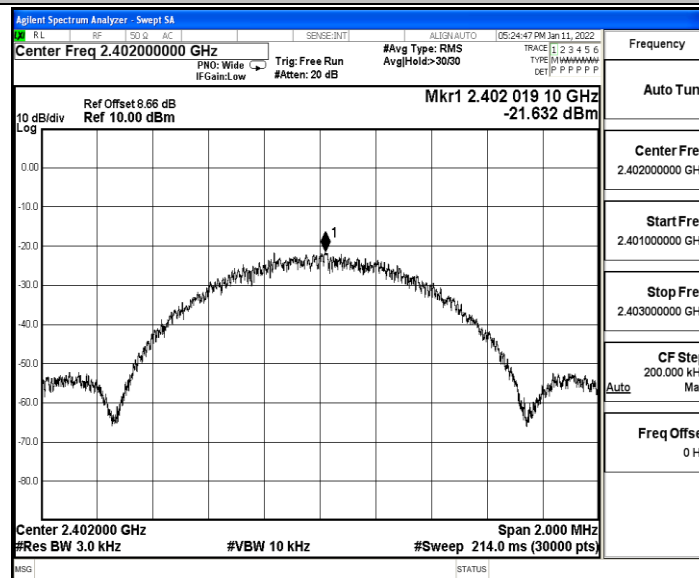




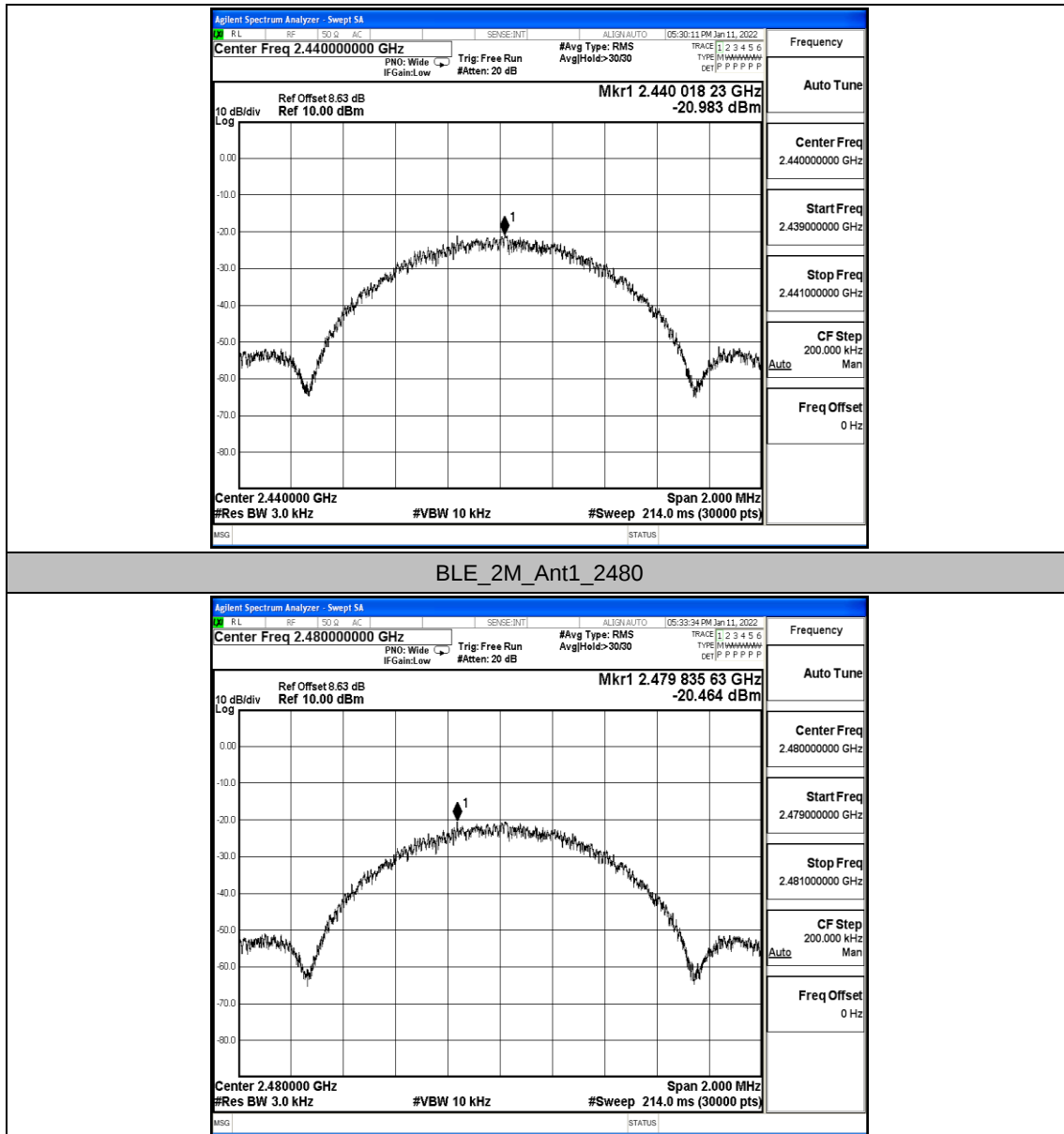
BLE\_1M\_Ant1\_2480



BLE\_2M\_Ant1\_2402



BLE\_2M\_Ant1\_2440



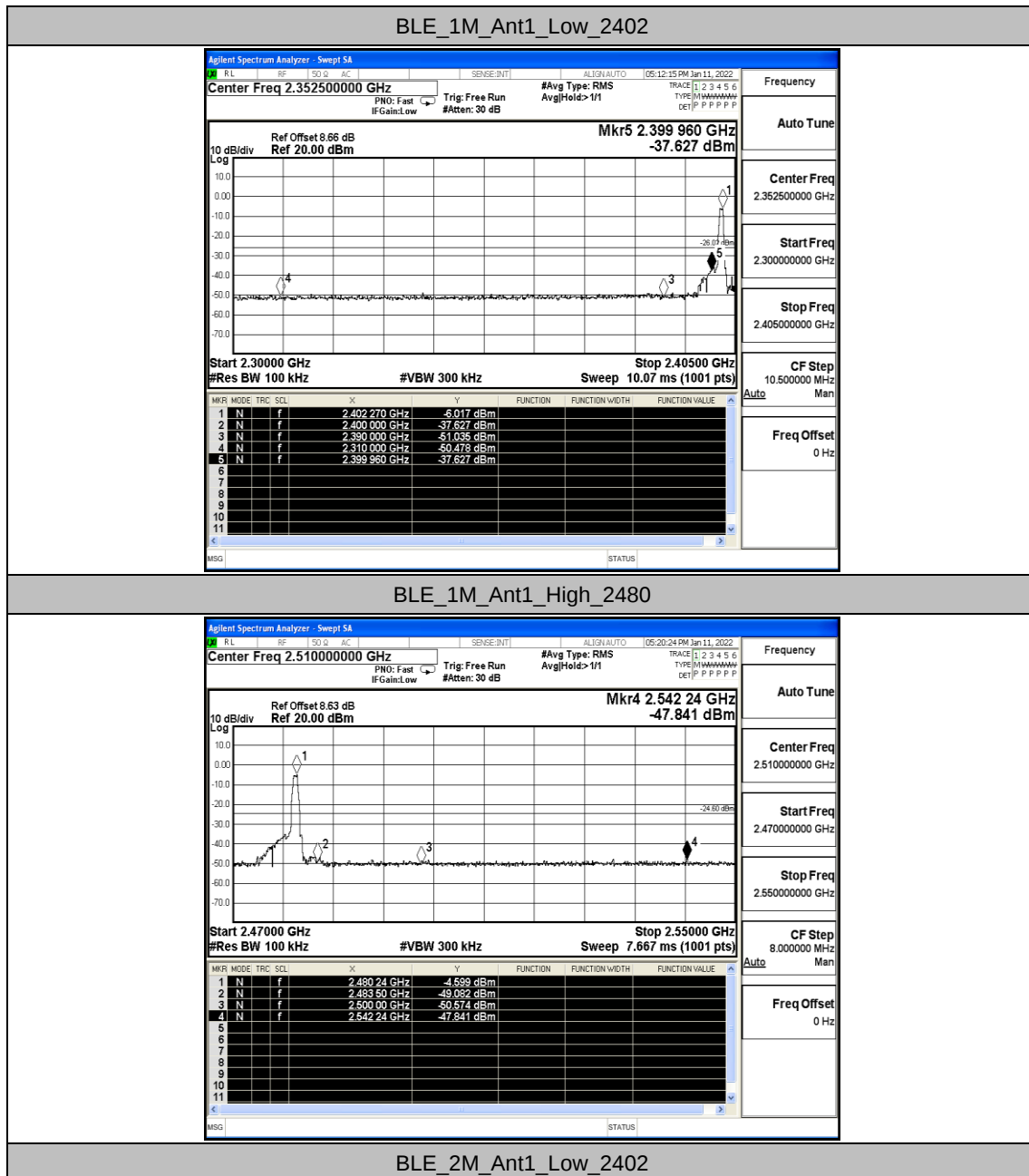


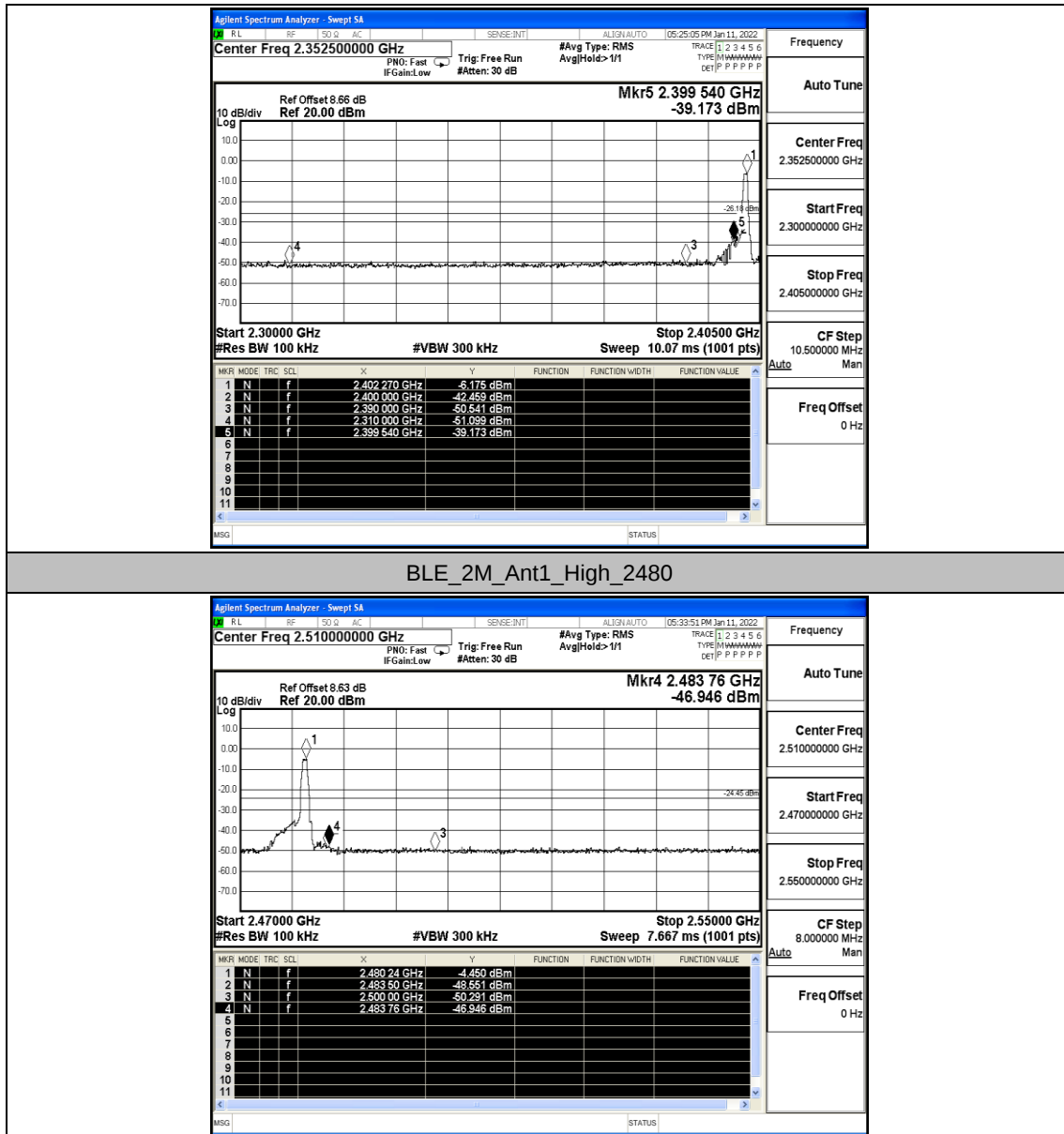
## B.4 Band edge measurements

### Test Result

| TestMode | Antenna | ChName | Channel | RefLevel[dBm] | Result[dBm] | Limit[dBm] | Verdict |
|----------|---------|--------|---------|---------------|-------------|------------|---------|
| BLE_1M   | Ant1    | Low    | 2402    | -6.02         | -37.63      | ≤-26.02    | PASS    |
|          |         | High   | 2480    | -4.60         | -47.84      | ≤-24.6     | PASS    |
| BLE_2M   | Ant1    | Low    | 2402    | -6.18         | -39.17      | ≤-26.18    | PASS    |
|          |         | High   | 2480    | -4.45         | -46.95      | ≤-24.45    | PASS    |

### Test Graphs







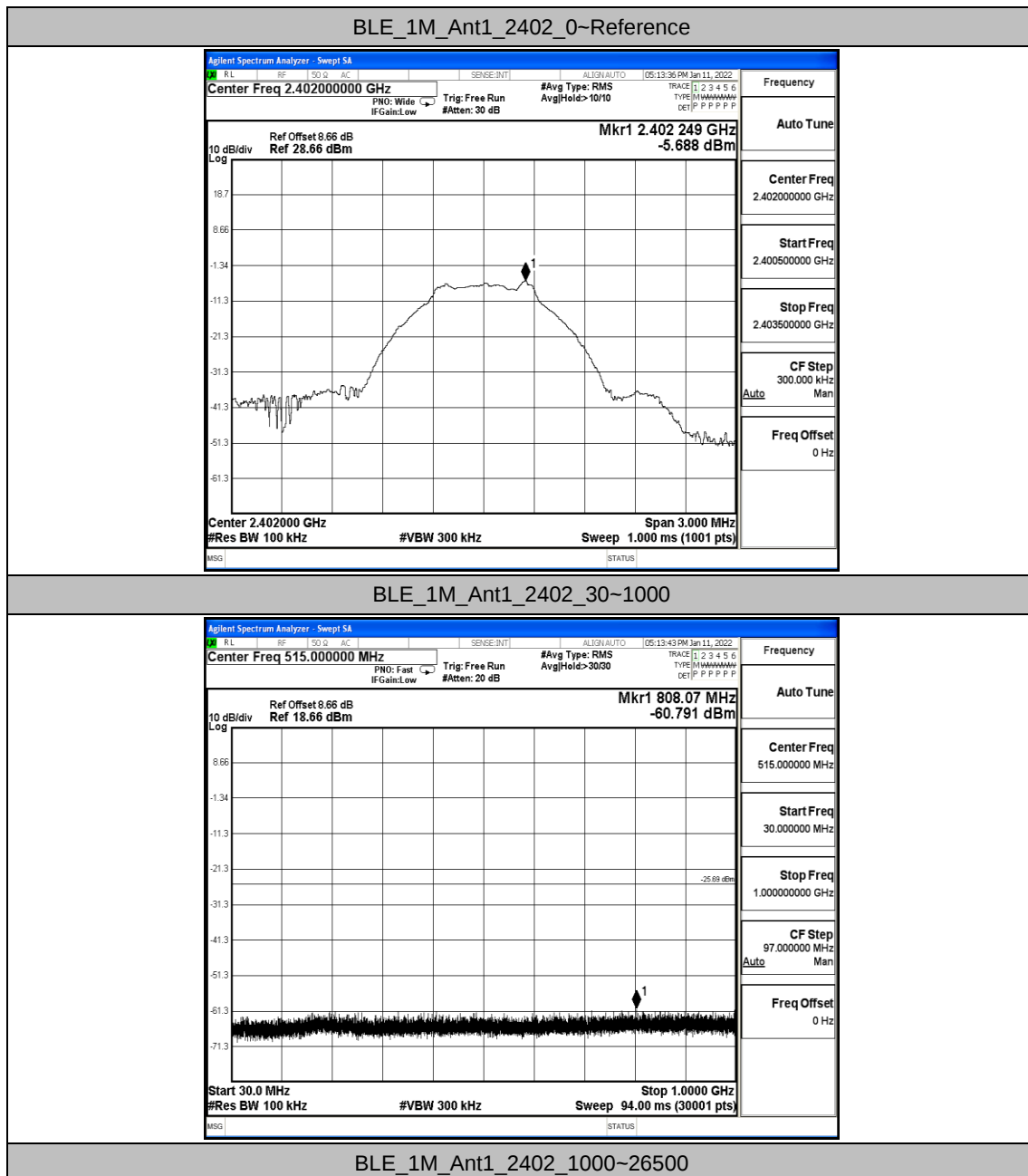
## B.5 Conducted Spurious Emission

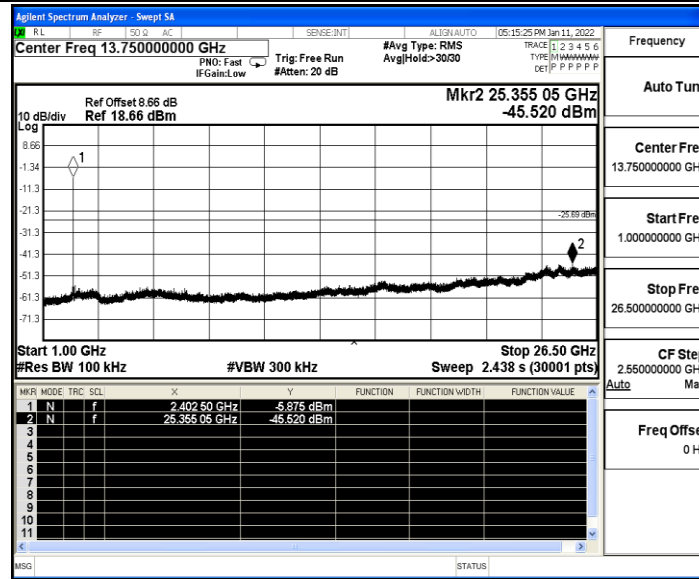
### Test Result

| TestMode | Antenna | Channel | FreqRange<br>[MHz] | RefLevel<br>[dBm] | Result[dBm] | Limit[dBm]    | Verdict |
|----------|---------|---------|--------------------|-------------------|-------------|---------------|---------|
| BLE_1M   | Ant1    | 2402    | Reference          | -5.69             | -5.69       | ---           | PASS    |
|          |         |         | 30~1000            | -5.69             | -60.79      | $\leq -25.69$ | PASS    |
|          |         |         | 1000~26500         | -5.69             | -45.52      | $\leq -25.69$ | PASS    |
|          |         | 2440    | Reference          | -5.01             | -5.01       | ---           | PASS    |
|          |         |         | 30~1000            | -5.01             | -60.2       | $\leq -25.01$ | PASS    |
|          |         |         | 1000~26500         | -5.01             | -46.28      | $\leq -25.01$ | PASS    |
|          |         | 2480    | Reference          | -4.63             | -4.63       | ---           | PASS    |
|          |         |         | 30~1000            | -4.63             | -60.1       | $\leq -24.63$ | PASS    |
|          |         |         | 1000~26500         | -4.63             | -46.04      | $\leq -24.63$ | PASS    |
| BLE_2M   | Ant1    | 2402    | Reference          | -5.67             | -5.67       | ---           | PASS    |
|          |         |         | 30~1000            | -5.67             | -60.6       | $\leq -25.67$ | PASS    |
|          |         |         | 1000~26500         | -5.67             | -46.18      | $\leq -25.67$ | PASS    |
|          |         | 2440    | Reference          | -5.39             | -5.39       | ---           | PASS    |
|          |         |         | 30~1000            | -5.39             | -60.75      | $\leq -25.39$ | PASS    |
|          |         |         | 1000~26500         | -5.39             | -44.86      | $\leq -25.39$ | PASS    |
|          |         | 2480    | Reference          | -5.16             | -5.16       | ---           | PASS    |
|          |         |         | 30~1000            | -5.16             | -60.55      | $\leq -25.16$ | PASS    |
|          |         |         | 1000~26500         | -5.16             | -46.06      | $\leq -25.16$ | PASS    |

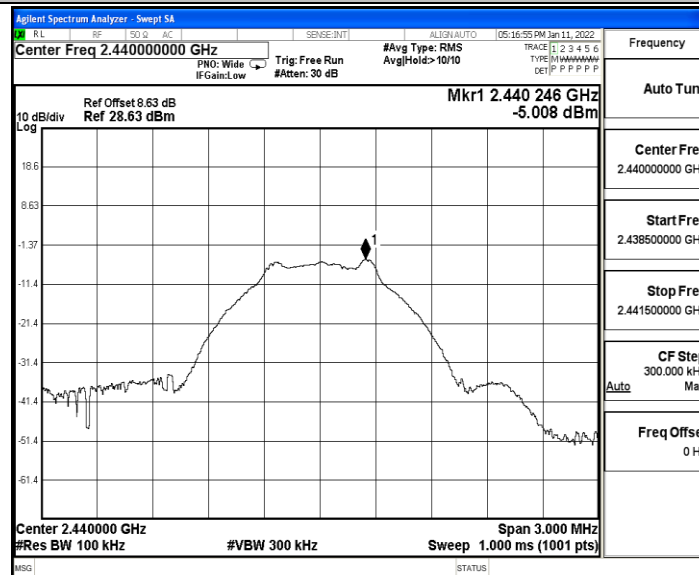


## Test Graphs

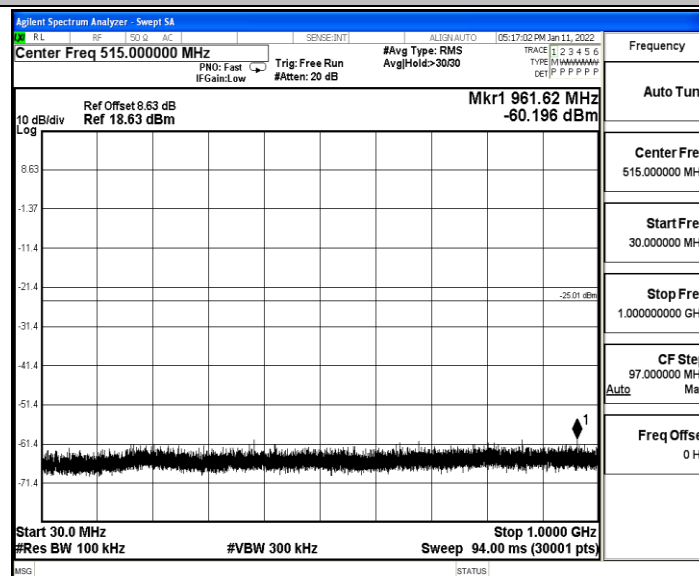




BLE\_1M\_Ant1\_2440\_0~Reference

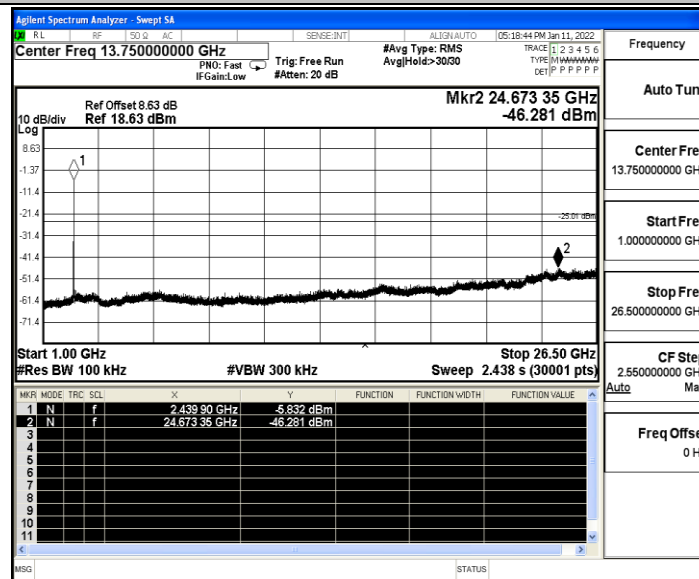


BLE\_1M\_Ant1\_2440\_30~1000

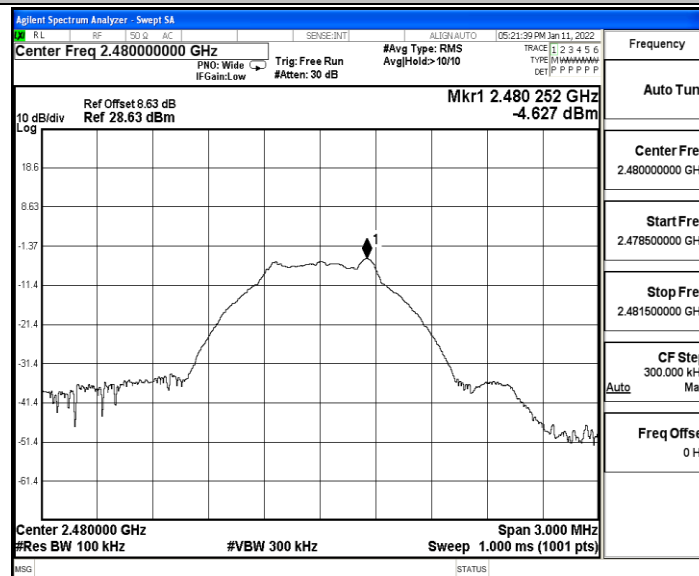




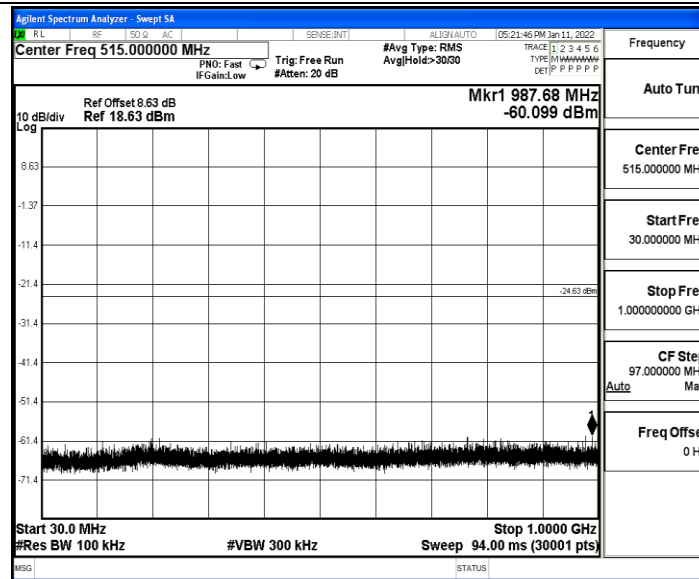
BLE\_1M\_Ant1\_2440\_1000~26500



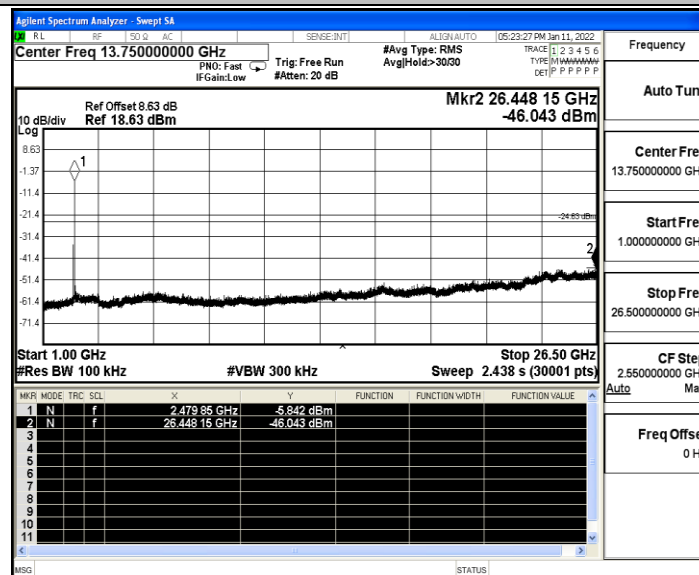
BLE\_1M\_Ant1\_2480\_0~Reference



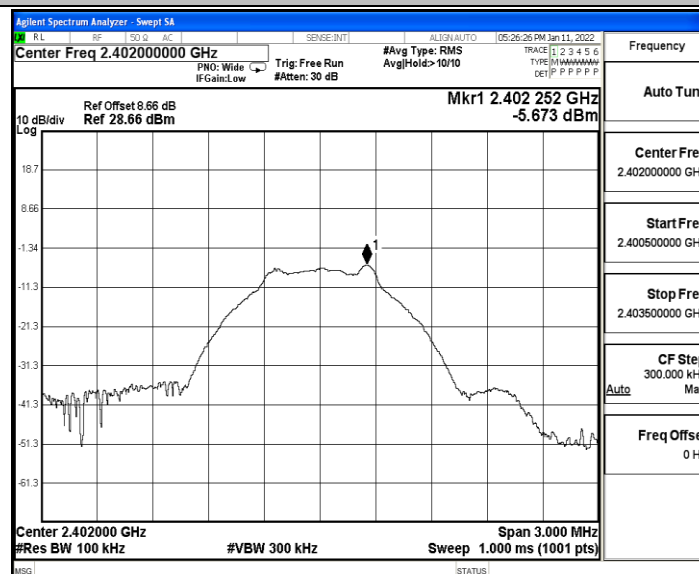
BLE\_1M\_Ant1\_2480\_30~1000



BLE\_1M\_Ant1\_2480\_1000~26500

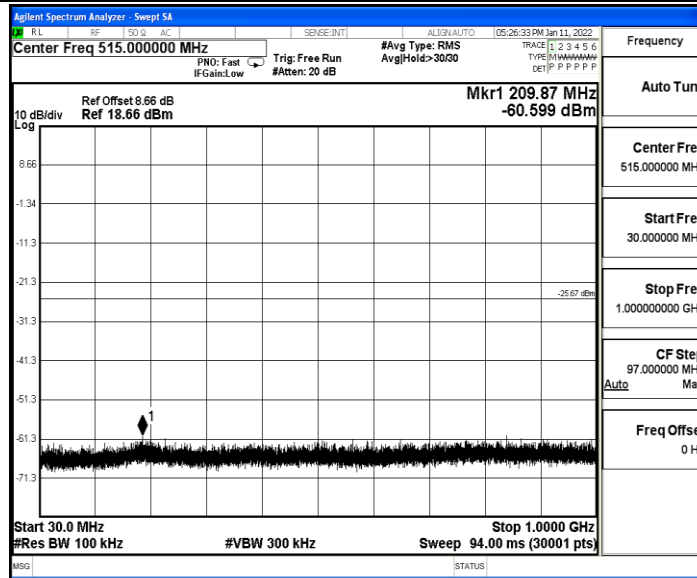


BLE\_2M\_Ant1\_2402\_0~Reference

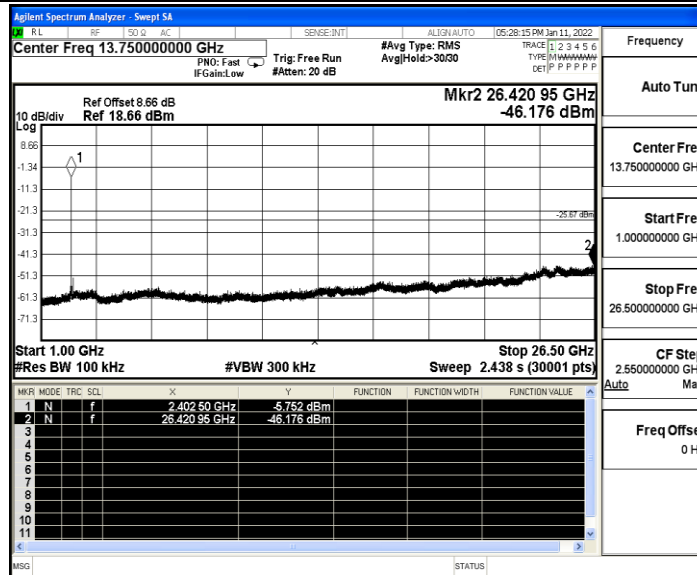




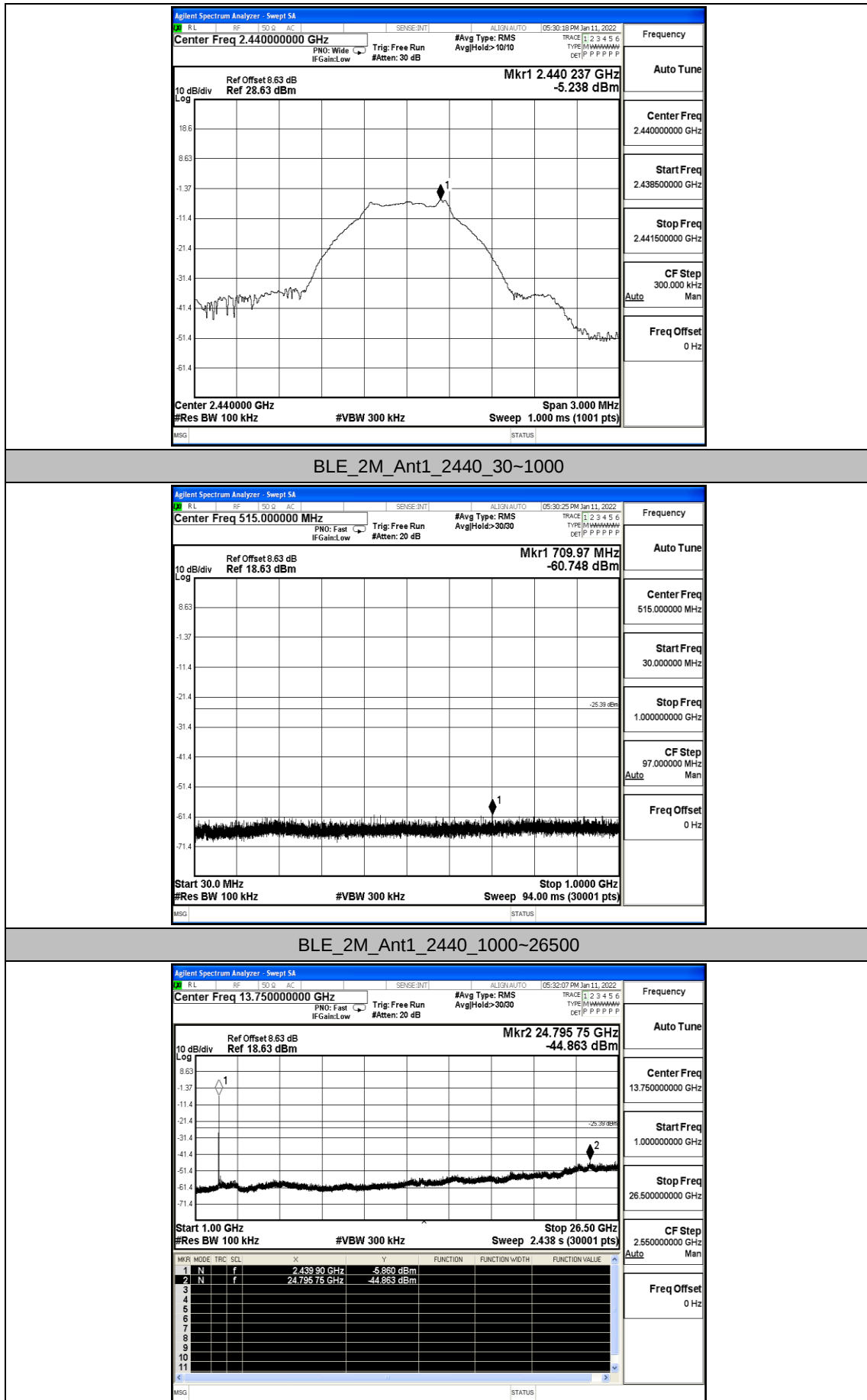
BLE\_2M\_Ant1\_2402\_30~1000



BLE\_2M\_Ant1\_2402\_1000~26500

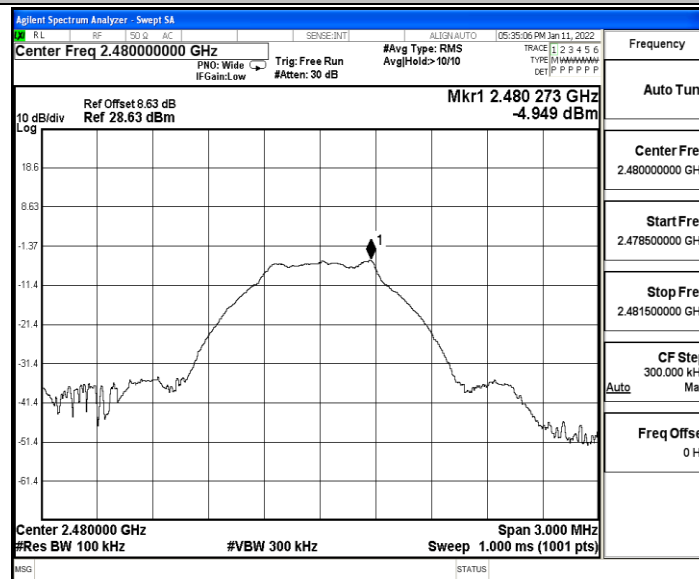


BLE\_2M\_Ant1\_2440\_0~Reference

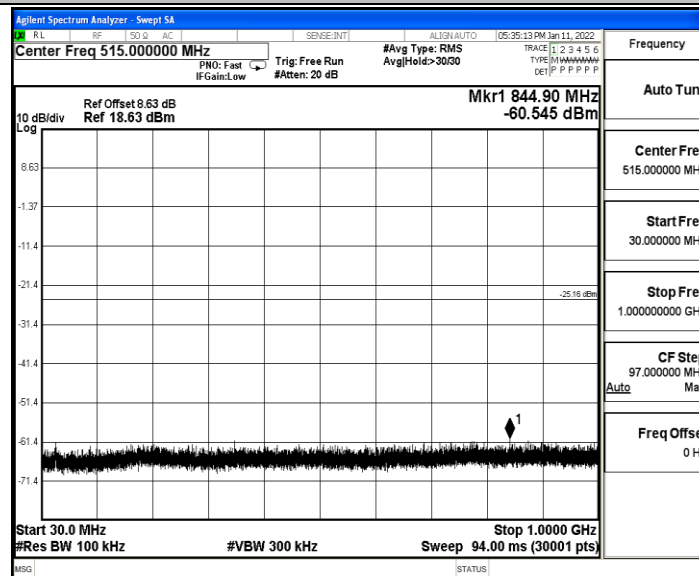




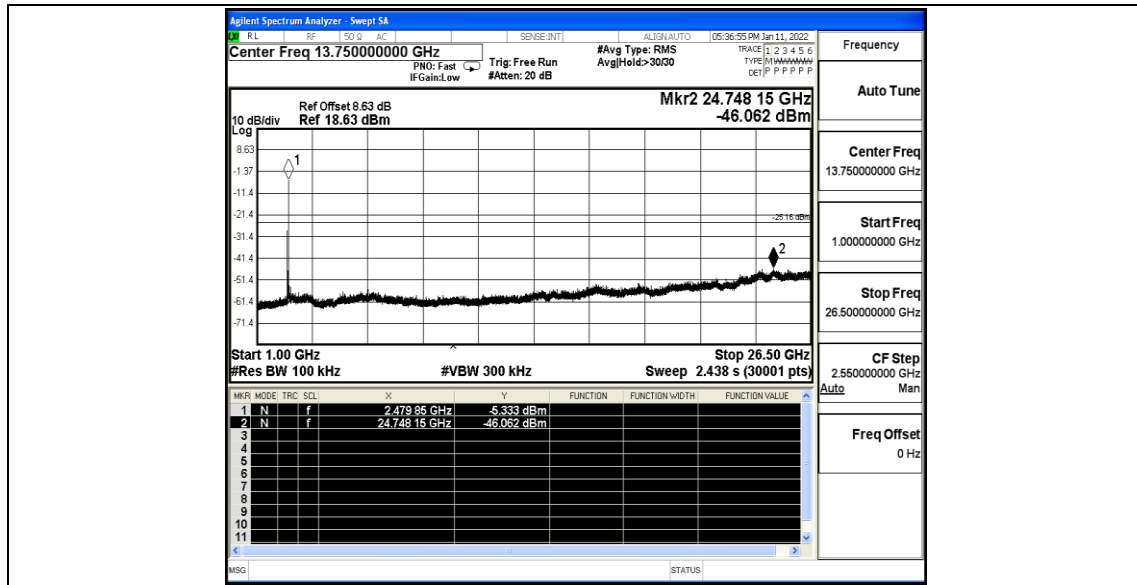
BLE\_2M\_Ant1\_2480\_0~Reference



BLE\_2M\_Ant1\_2480\_30~1000



BLE\_2M\_Ant1\_2480\_1000~26500



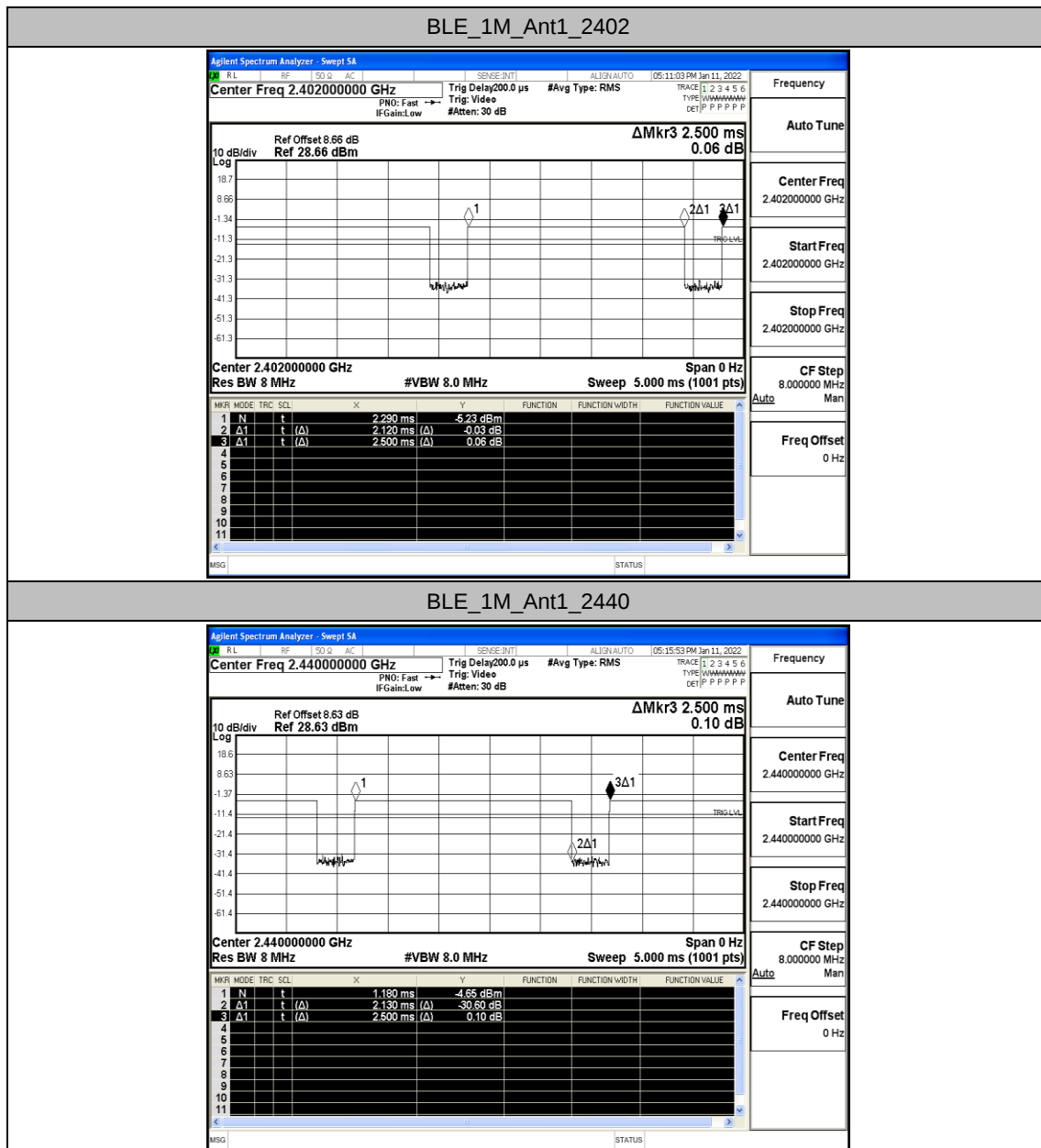


## B.6 Duty Cycle

### Test Result

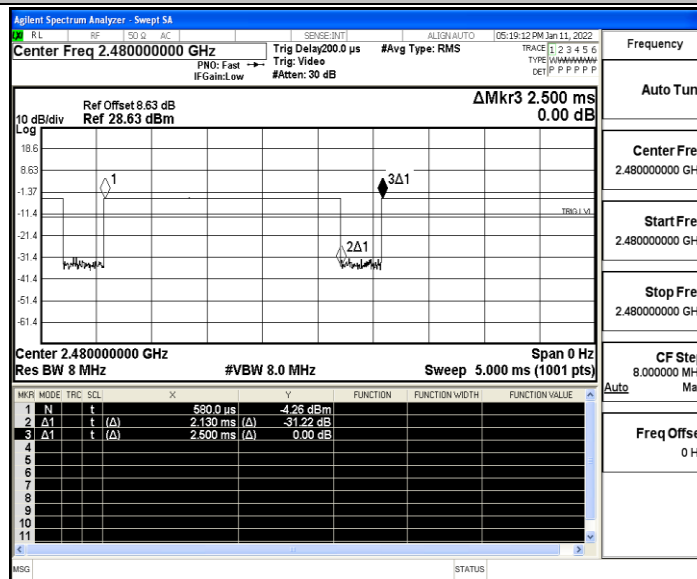
| TestMode | Antenna | Channel | ON Time [ms] | Period [ms] | X      | DC [%] | xFactor | Limit | Verdict |
|----------|---------|---------|--------------|-------------|--------|--------|---------|-------|---------|
| BLE_1M   | Ant1    | 2402    | 2.12         | 2.50        | 0.8480 | 84.80  | 0.72    | ---   | ---     |
|          |         | 2440    | 2.13         | 2.50        | 0.8520 | 85.20  | 0.70    | ---   | ---     |
|          |         | 2480    | 2.13         | 2.50        | 0.8520 | 85.20  | 0.70    | ---   | ---     |
| BLE_2M   | Ant1    | 2402    | 2.12         | 2.50        | 0.8480 | 84.80  | 0.72    | ---   | ---     |
|          |         | 2440    | 2.13         | 2.50        | 0.8520 | 85.20  | 0.70    | ---   | ---     |
|          |         | 2480    | 2.13         | 2.50        | 0.8520 | 85.20  | 0.70    | ---   | ---     |

### Test Graphs

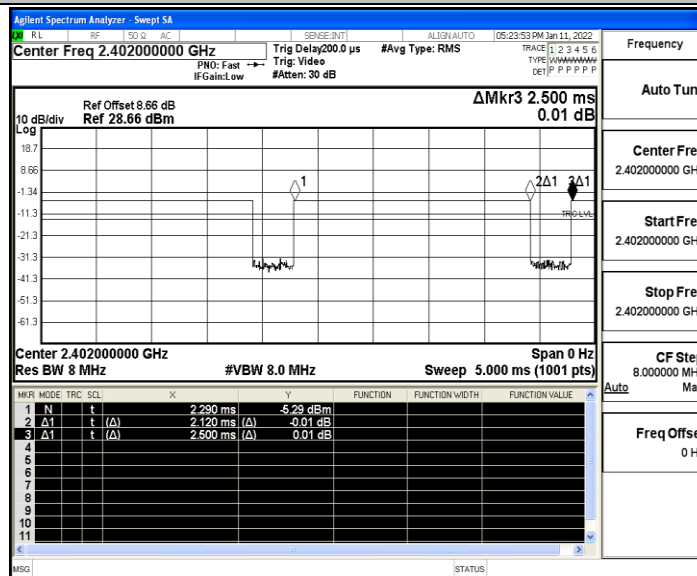




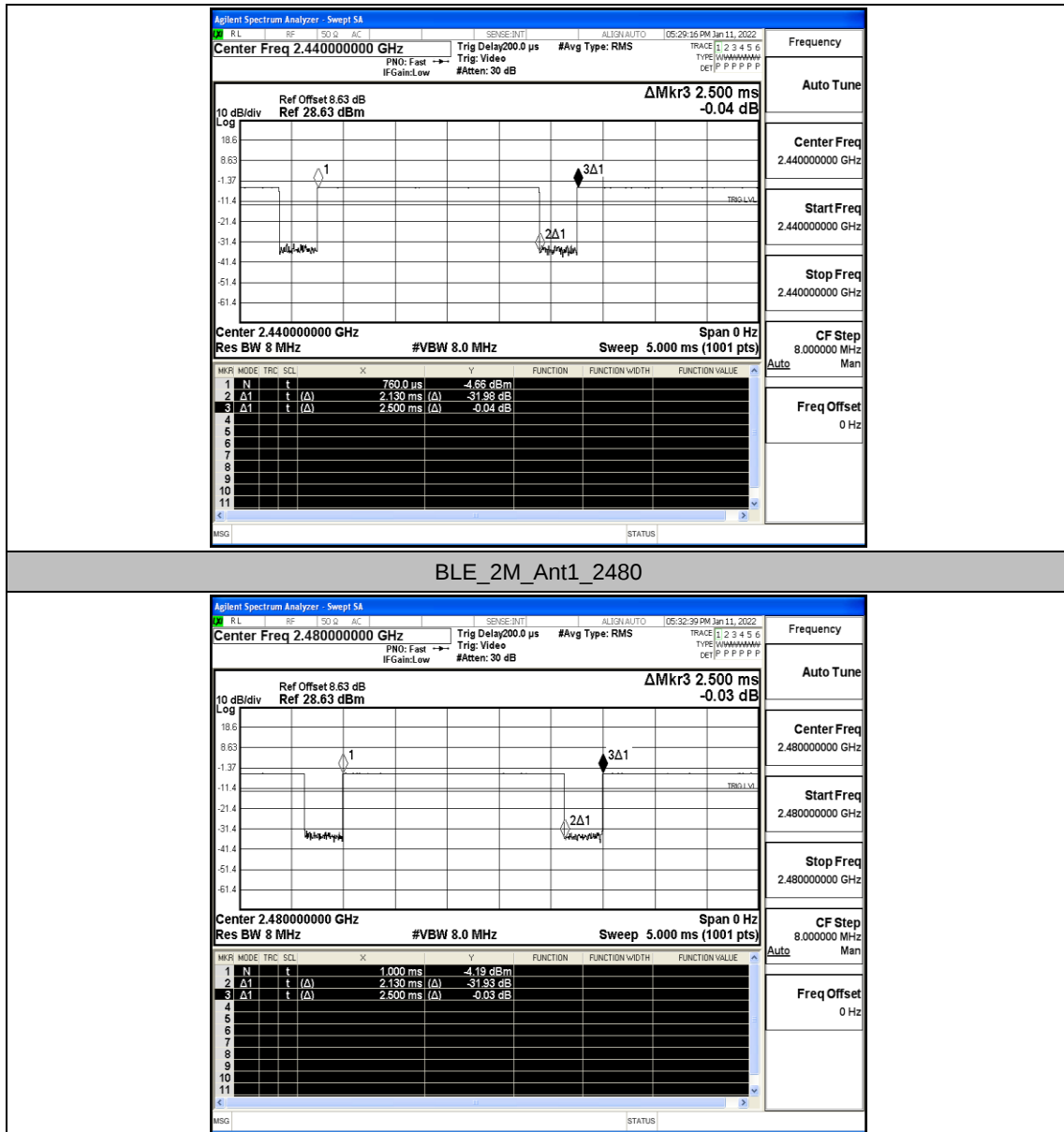
BLE\_1M\_Ant1\_2480



BLE\_2M\_Ant1\_2402



BLE\_2M\_Ant1\_2440





## B.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       | -48.29          | ≤-41.20        | 46.91              | ≤54               | PASS    |
|          |         |        |         | AV       | 2379.485       | -47.31          | ≤-41.20        | 47.89              | ≤54               | PASS    |
|          |         |        |         | AV       | 2390.000       | -47.66          | ≤-41.20        | 47.54              | ≤54               | PASS    |
|          |         |        |         | Peak     | 2310.000       | -38.8           | ≤-21.20        | 56.40              | ≤74               | PASS    |
|          |         |        |         | Peak     | 2387.570       | -33.65          | ≤-21.20        | 61.55              | ≤74               | PASS    |
|          |         |        |         | Peak     | 2390.000       | -36.46          | ≤-21.20        | 58.74              | ≤74               | PASS    |
|          |         | High   | 2480    | AV       | 2483.500       | -46.24          | ≤-41.20        | 48.96              | ≤54               | PASS    |
|          |         |        |         | AV       | 2483.600       | -46.07          | ≤-41.20        | 49.13              | ≤54               | PASS    |
|          |         |        |         | AV       | 2500.000       | -46.79          | ≤-41.20        | 48.41              | ≤54               | PASS    |
|          |         |        |         | Peak     | 2483.500       | -27.57          | ≤-21.20        | 67.63              | ≤74               | PASS    |
|          |         |        |         | Peak     | 2483.520       | -27.57          | ≤-21.20        | 67.63              | ≤74               | PASS    |
|          |         |        |         | Peak     | 2500.000       | -36.81          | ≤-21.20        | 58.39              | ≤74               | PASS    |
| BLE_2M   | Ant1    | Low    | 2402    | AV       | 2310.000       | -48.38          | ≤-41.20        | 46.82              | ≤54               | PASS    |
|          |         |        |         | AV       | 2387.465       | -47.41          | ≤-41.20        | 47.79              | ≤54               | PASS    |
|          |         |        |         | AV       | 2390.000       | -47.69          | ≤-41.20        | 47.51              | ≤54               | PASS    |
|          |         |        |         | Peak     | 2310.000       | -39.31          | ≤-21.20        | 55.89              | ≤74               | PASS    |
|          |         |        |         | Peak     | 2389.250       | -34.54          | ≤-21.20        | 60.66              | ≤74               | PASS    |
|          |         |        |         | Peak     | 2390.000       | -36.81          | ≤-21.20        | 58.39              | ≤74               | PASS    |
|          |         | High   | 2480    | AV       | 2483.500       | -45.97          | ≤-41.20        | 49.23              | ≤54               | PASS    |
|          |         |        |         | AV       | 2483.520       | -45.97          | ≤-41.20        | 49.23              | ≤54               | PASS    |
|          |         |        |         | AV       | 2500.000       | -46.75          | ≤-41.20        | 48.45              | ≤54               | PASS    |
|          |         |        |         | Peak     | 2483.500       | -28.58          | ≤-21.20        | 66.62              | ≤74               | PASS    |
|          |         |        |         | Peak     | 2483.680       | -27.9           | ≤-21.20        | 67.30              | ≤74               | PASS    |
|          |         |        |         | Peak     | 2500.000       | -36.62          | ≤-21.20        | 58.58              | ≤74               | PASS    |

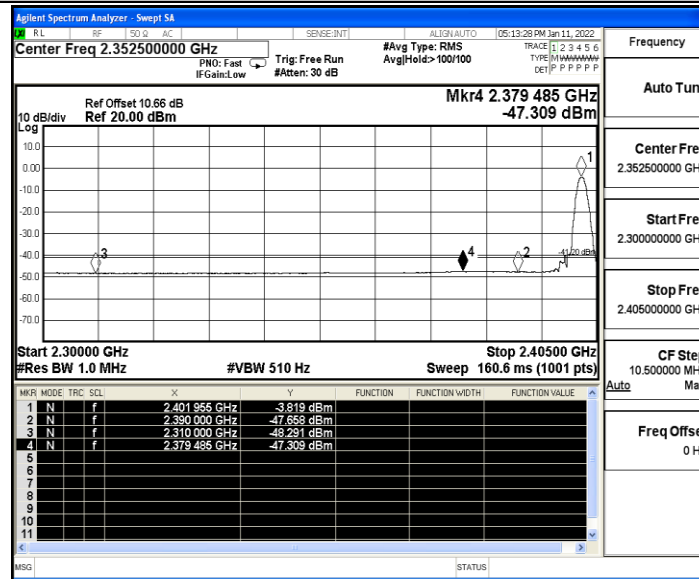
Note:

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.

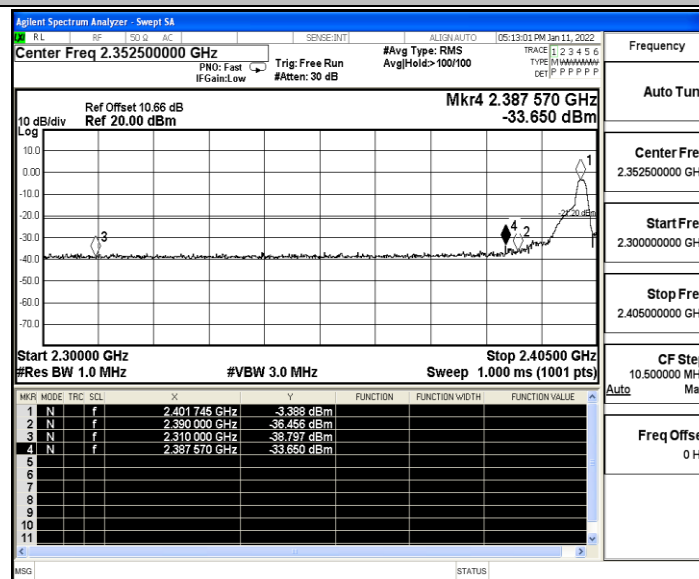


## Test Graphs

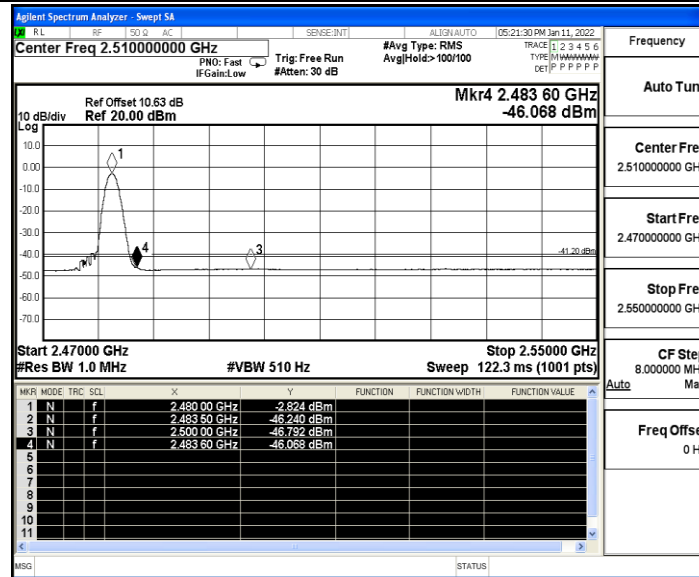
BLE\_1M\_Ant1\_Low\_2402\_AV



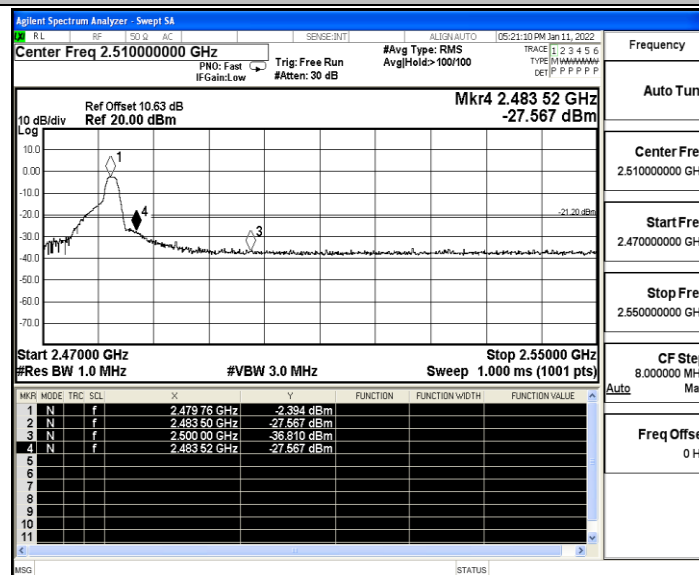
BLE\_1M\_Ant1\_Low\_2402\_Peak



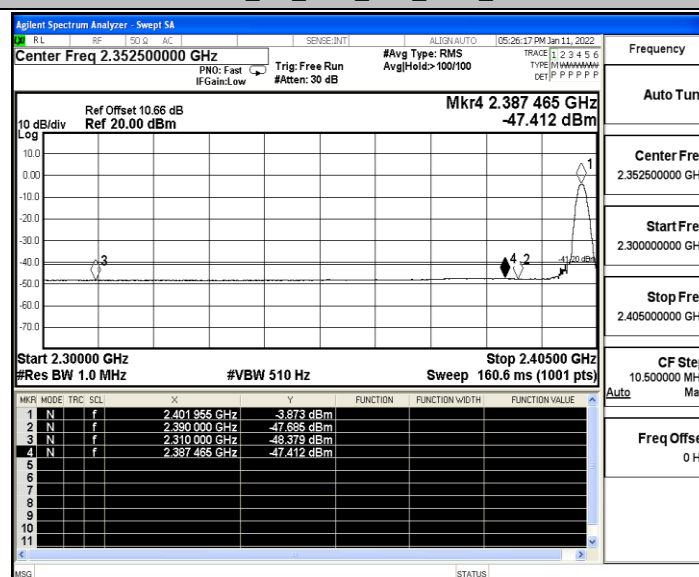
BLE\_1M\_Ant1\_High\_2480\_AV



BLE\_1M\_Ant1\_High\_2480\_Peak

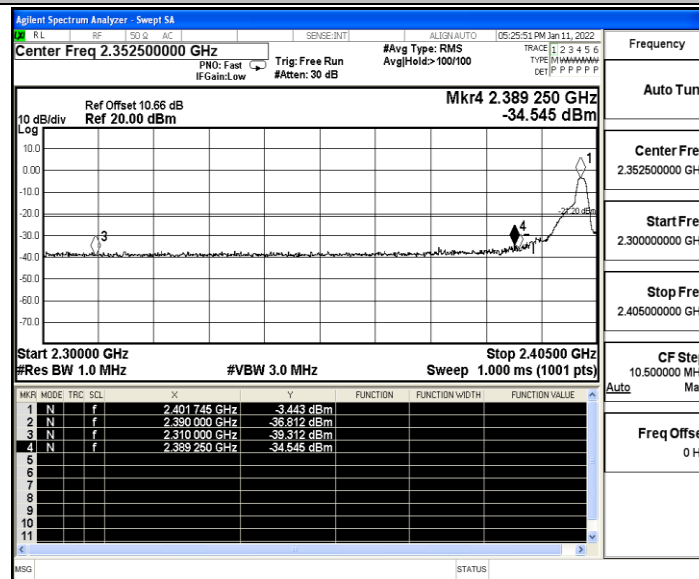


BLE\_2M\_Ant1\_Low\_2402\_AV

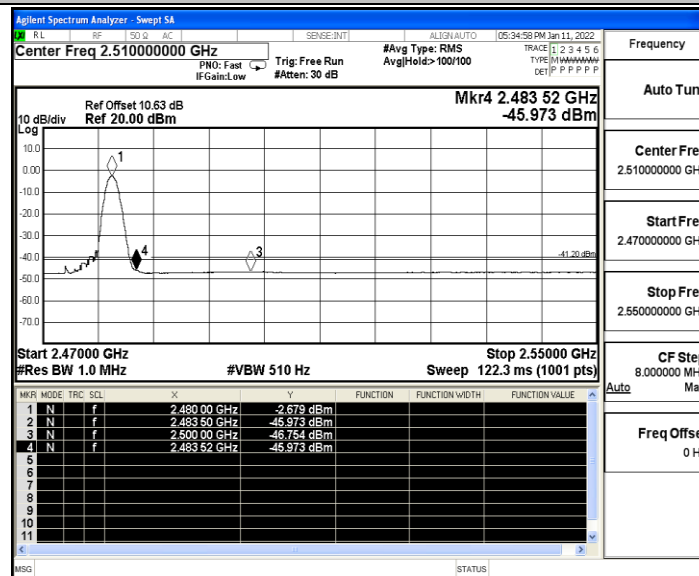




### BLE\_2M\_Ant1\_Low\_2402\_Peak



### BLE\_2M\_Ant1\_High\_2480\_AV



### BLE\_2M\_Ant1\_High\_2480\_Peak

