



## Appendix A

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

Product Name: LED Bulb  
Test Model: XQP009Y4C4001A

#### Environmental Conditions

|                    |           |
|--------------------|-----------|
| Temperature:       | 24.3° C   |
| Relative Humidity: | 51.2%     |
| ATM Pressure:      | 100.0 kPa |
| Test Engineer:     | Kay Hu    |
| Supervised by:     | Li Huan   |

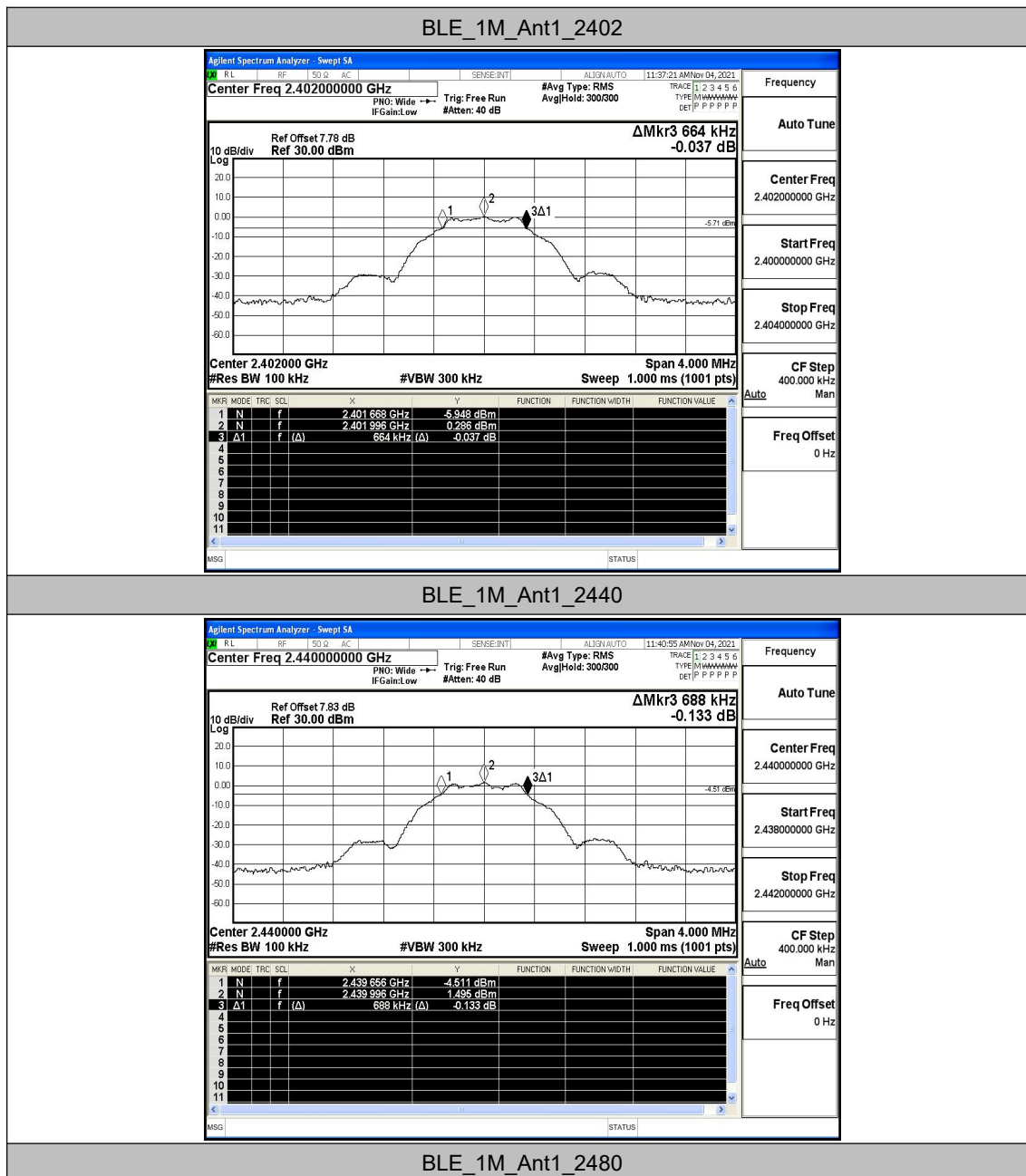


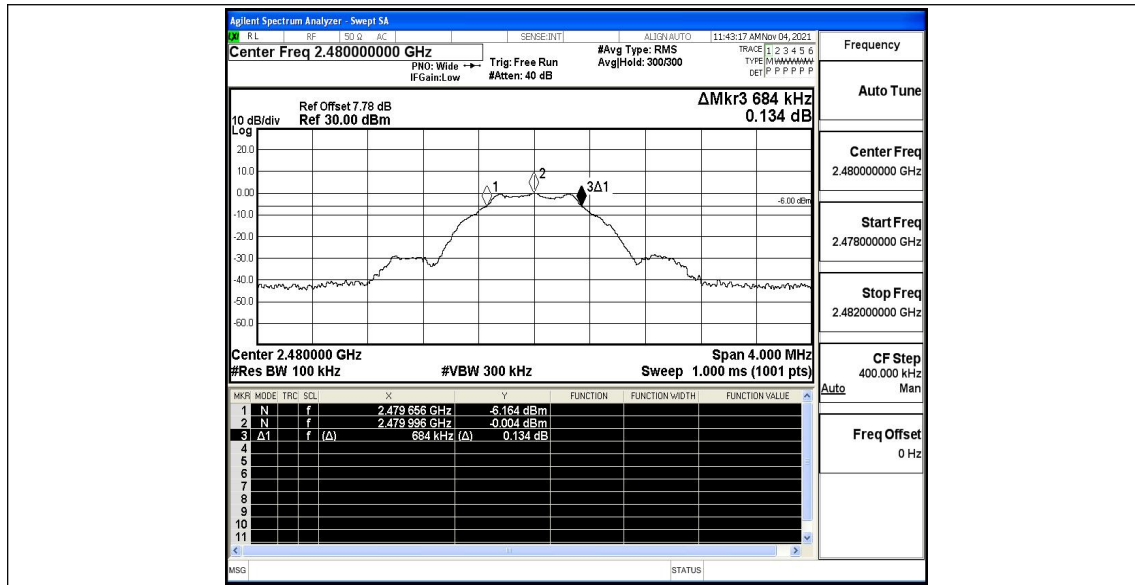
## A.1 6dB Bandwidth

### Test Result

| TestMode | Antenna | Channel | DTS BW [MHz] | FL[MHz]  | FH[MHz]  | Limit[MHz] | Verdict |
|----------|---------|---------|--------------|----------|----------|------------|---------|
| BLE_1M   | Ant1    | 2402    | 0.664        | 2401.668 | 2402.332 | ≥0.5       | PASS    |
|          |         | 2440    | 0.688        | 2439.656 | 2440.344 | ≥0.5       | PASS    |
|          |         | 2480    | 0.684        | 2479.656 | 2480.340 | ≥0.5       | PASS    |

### Test Graphs





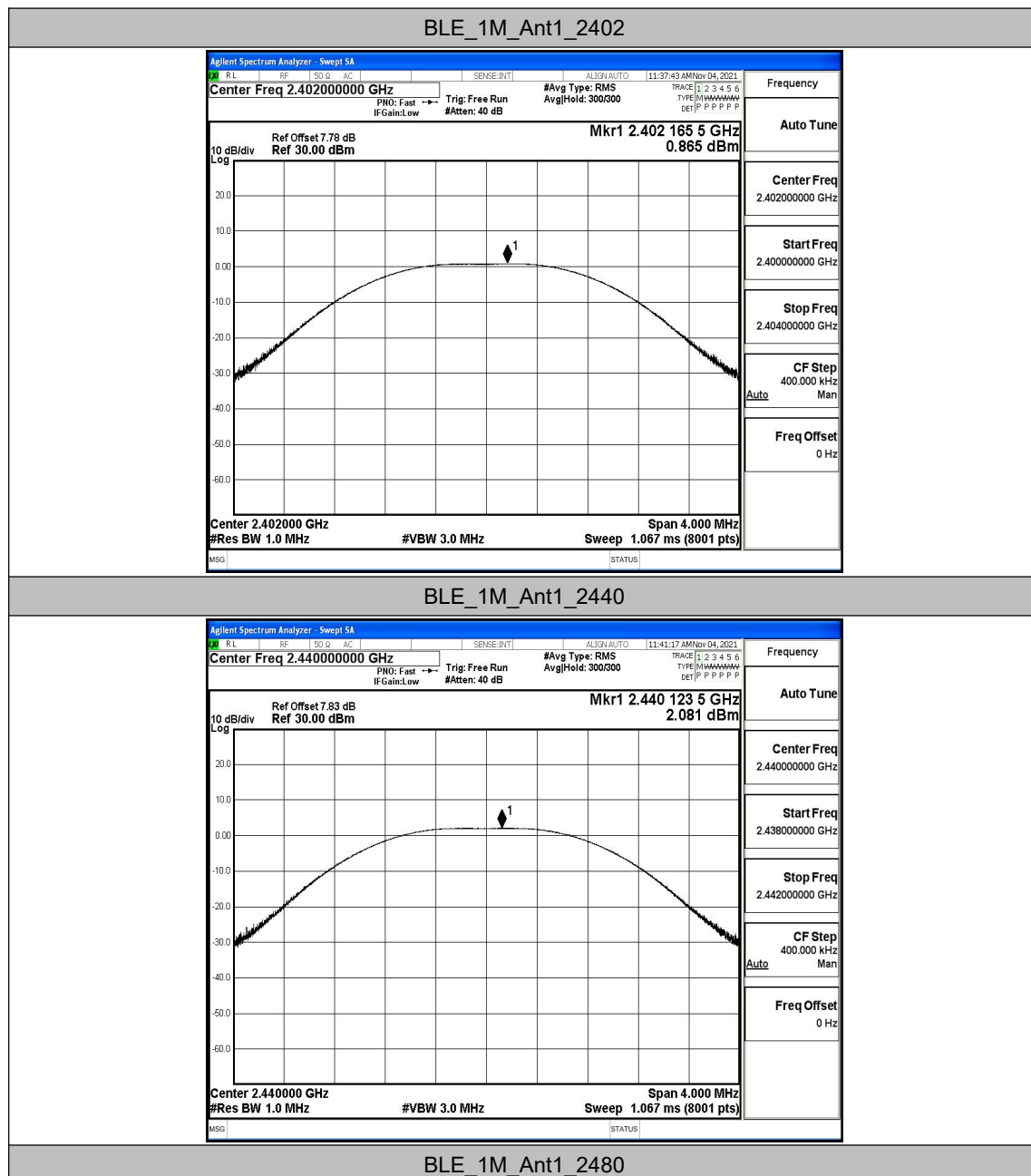


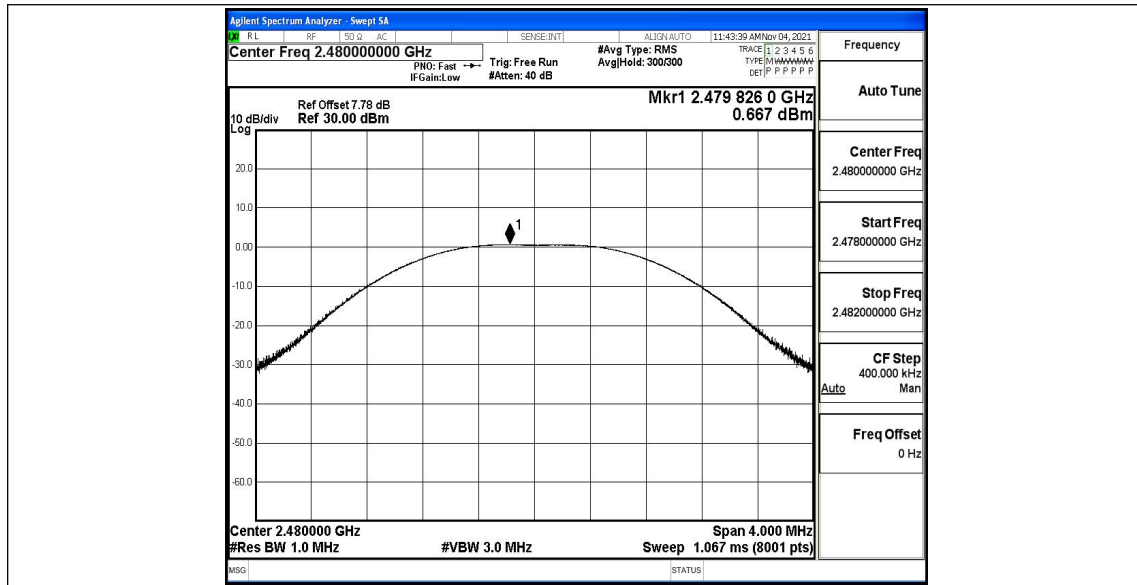
## A.2 Maximum conducted output power

### Test Result

| TestMode | Antenna | Channel | Result[dBm] | Limit[dBm] | Verdict |
|----------|---------|---------|-------------|------------|---------|
| BLE_1M   | Ant1    | 2402    | 0.87        | ≤30        | PASS    |
|          |         | 2440    | 2.08        | ≤30        | PASS    |
|          |         | 2480    | 0.67        | ≤30        | PASS    |

### Test Graphs





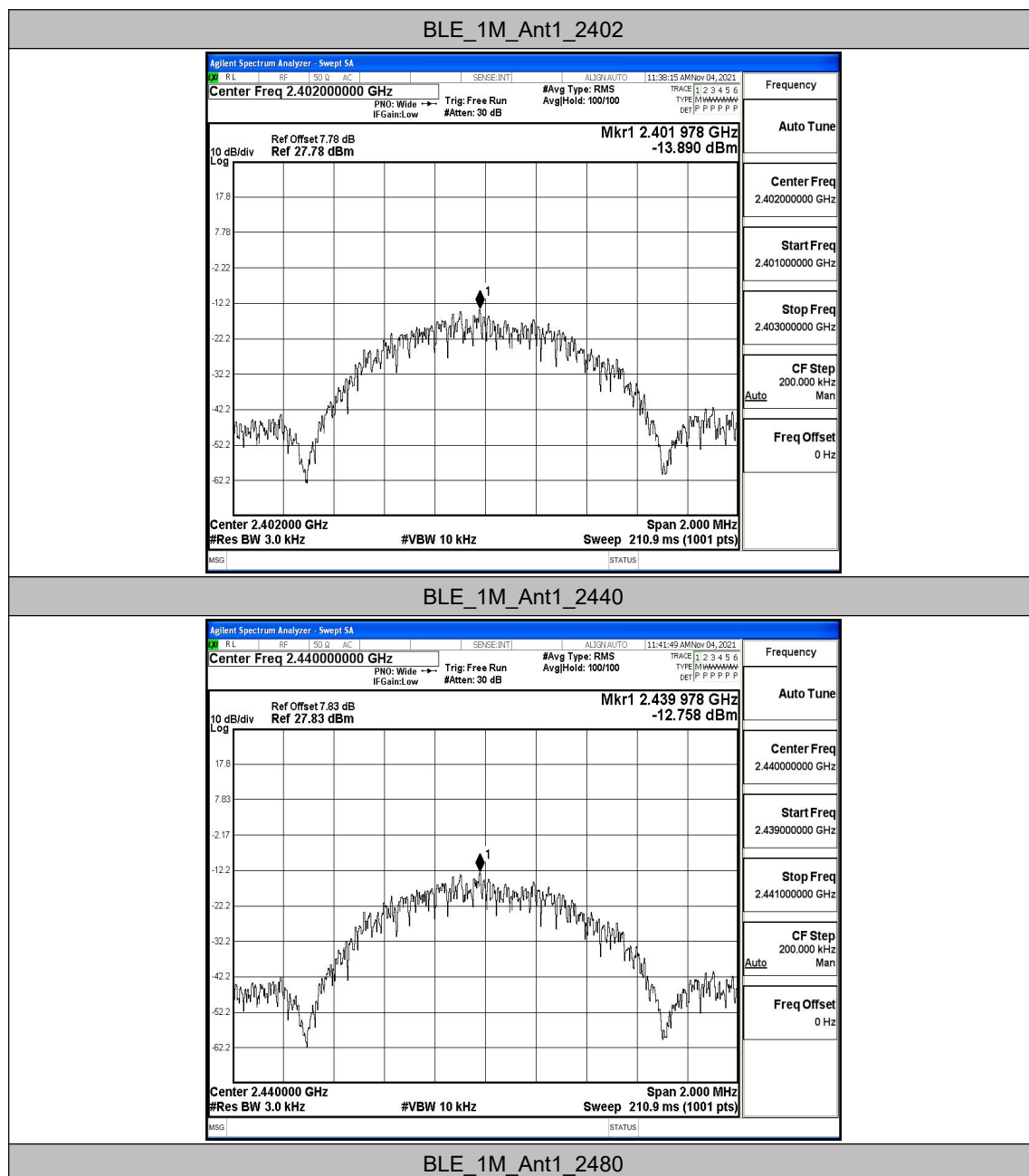


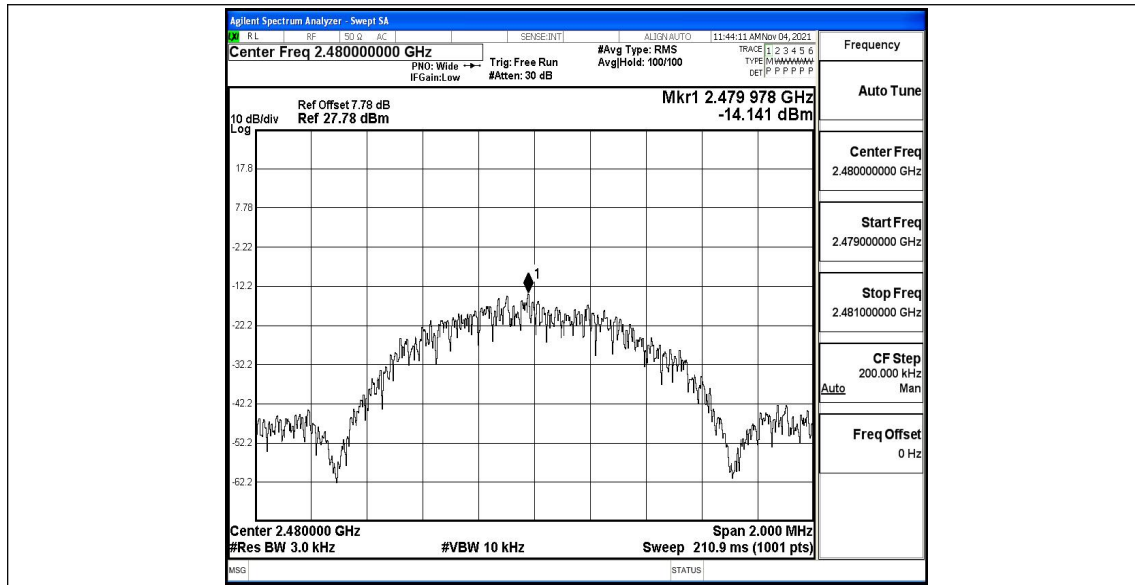
## A.3 Maximum power spectral density

### Test Result

| TestMode | Antenna | Channel | Result[dBm/3-100kHz] | Limit[dBm/3kHz] | Verdict |
|----------|---------|---------|----------------------|-----------------|---------|
| BLE_1M   | Ant1    | 2402    | -13.89               | ≤8              | PASS    |
|          |         | 2440    | -12.76               | ≤8              | PASS    |
|          |         | 2480    | -14.14               | ≤8              | PASS    |

### Test Graphs





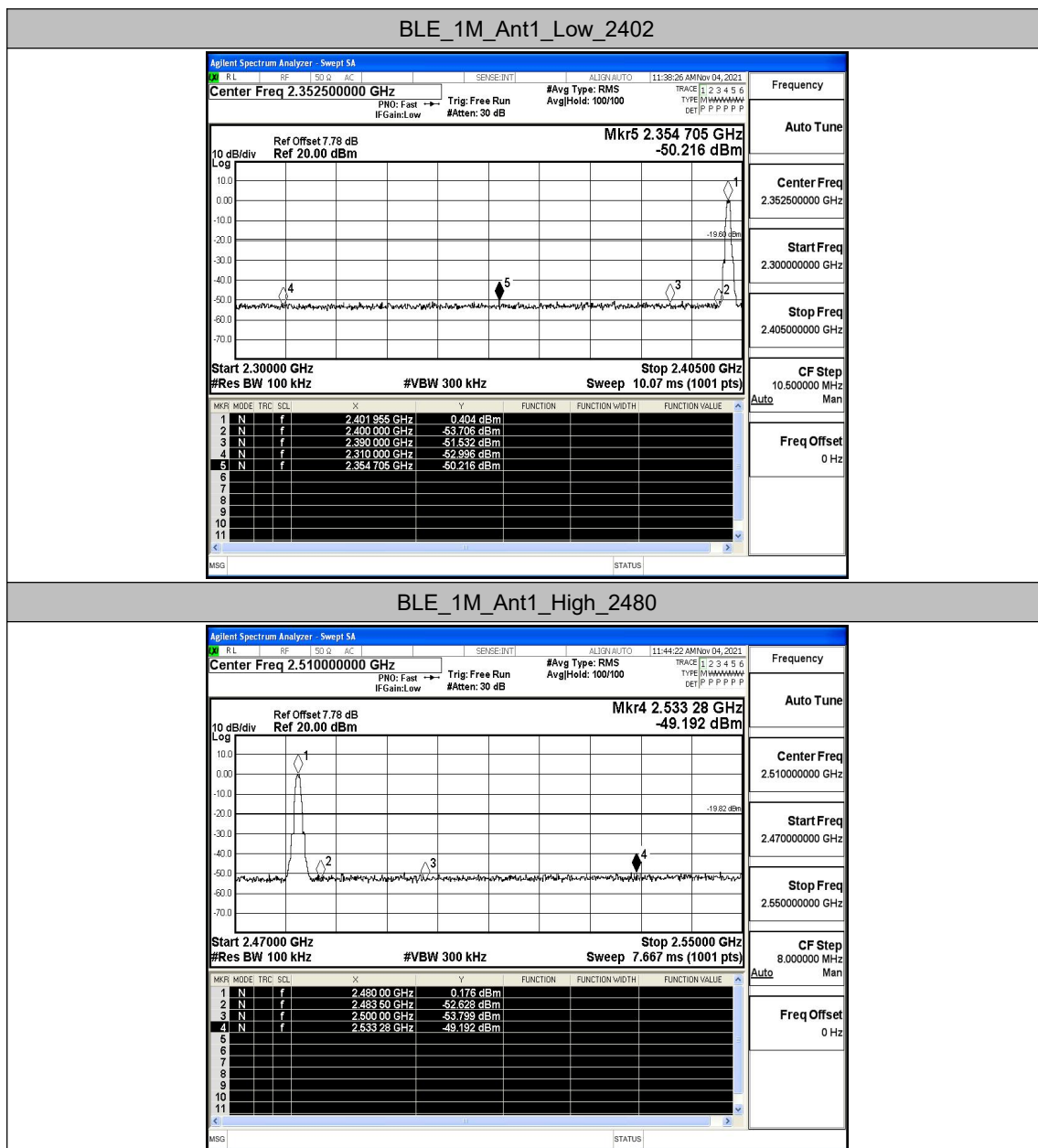


## A.4 Band edge measurements

### Test Result

| TestMode | Antenna | ChName | Channel | RefLevel[dBm] | Result[dBm] | Limit[dBm] | Verdict |
|----------|---------|--------|---------|---------------|-------------|------------|---------|
| BLE_1M   | Ant1    | Low    | 2402    | 0.40          | -50.22      | ≤-19.6     | PASS    |
|          |         | High   | 2480    | 0.18          | -49.19      | ≤-19.82    | PASS    |

### Test Graphs





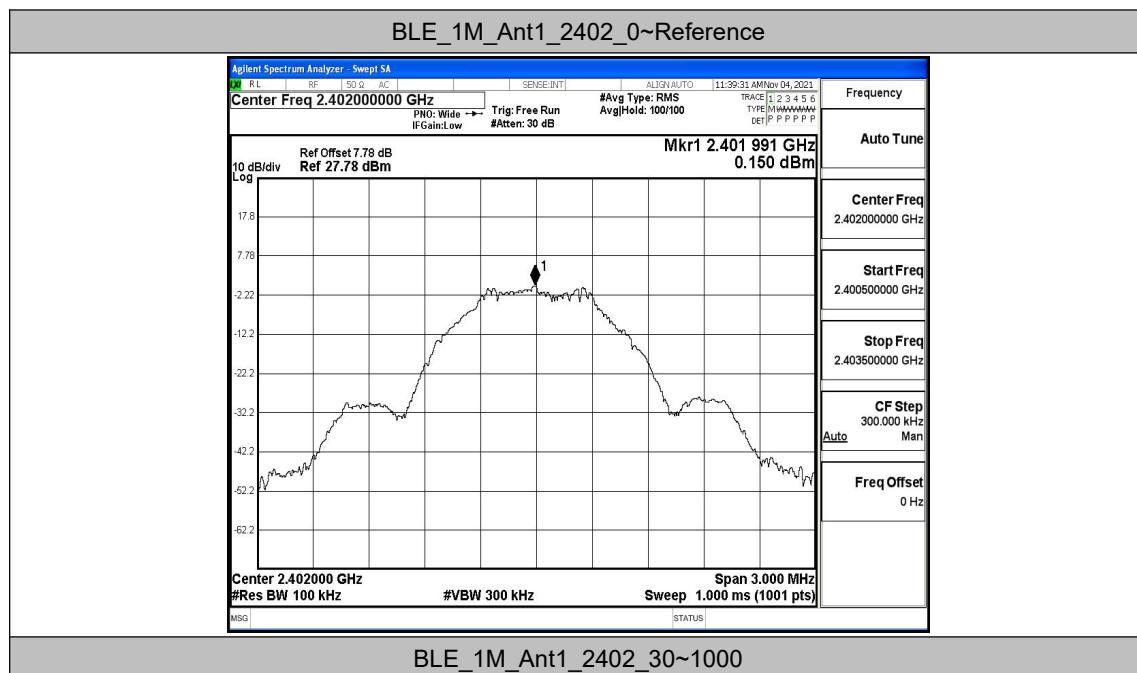


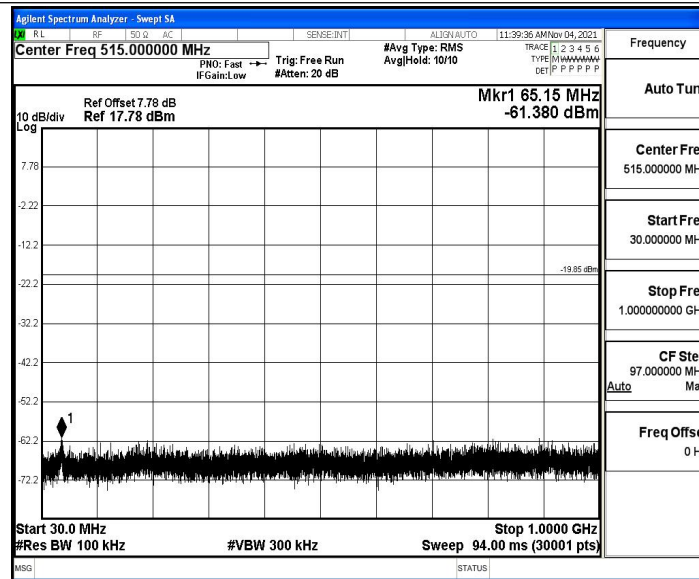
## A.5 Conducted Spurious Emission

### Test Result

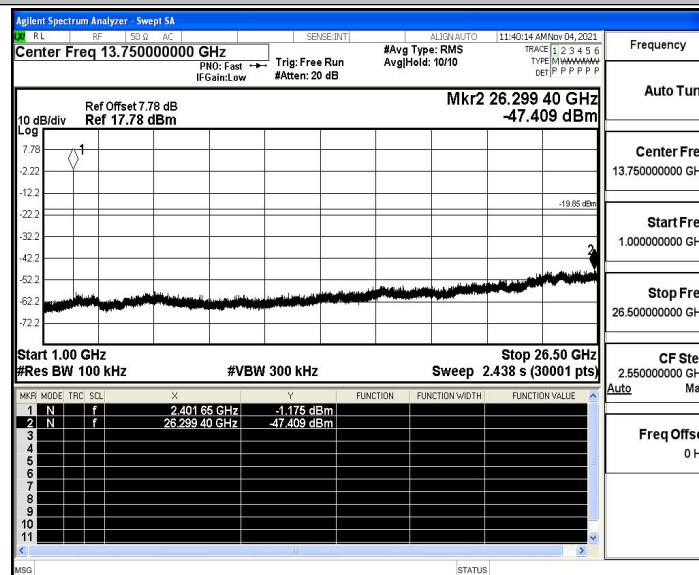
| TestMode | Antenna | Channel | FreqRange [MHz] | RefLevel [dBm] | Result[dBm] | Limit[dBm] | Verdict |
|----------|---------|---------|-----------------|----------------|-------------|------------|---------|
| BLE_1M   | Ant1    | 2402    | Reference       | 0.15           | 0.15        | ---        | PASS    |
|          |         |         | 30~1000         | 0.15           | -61.38      | ≤-19.85    | PASS    |
|          |         |         | 1000~26500      | 0.15           | -47.41      | ≤-19.85    | PASS    |
|          |         | 2440    | Reference       | 1.43           | 1.43        | ---        | PASS    |
|          |         |         | 30~1000         | 1.43           | -60.81      | ≤-18.57    | PASS    |
|          |         |         | 1000~26500      | 1.43           | -47.11      | ≤-18.57    | PASS    |
|          |         | 2480    | Reference       | 0.05           | 0.05        | ---        | PASS    |
|          |         |         | 30~1000         | 0.05           | -61.33      | ≤-19.96    | PASS    |
|          |         |         | 1000~26500      | 0.05           | -47.22      | ≤-19.96    | PASS    |

### Test Graphs

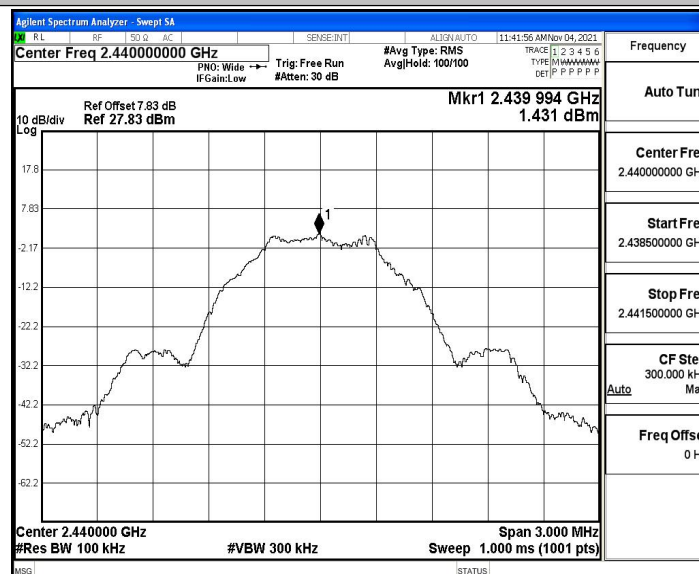




BLE\_1M\_Ant1\_2402\_1000~26500

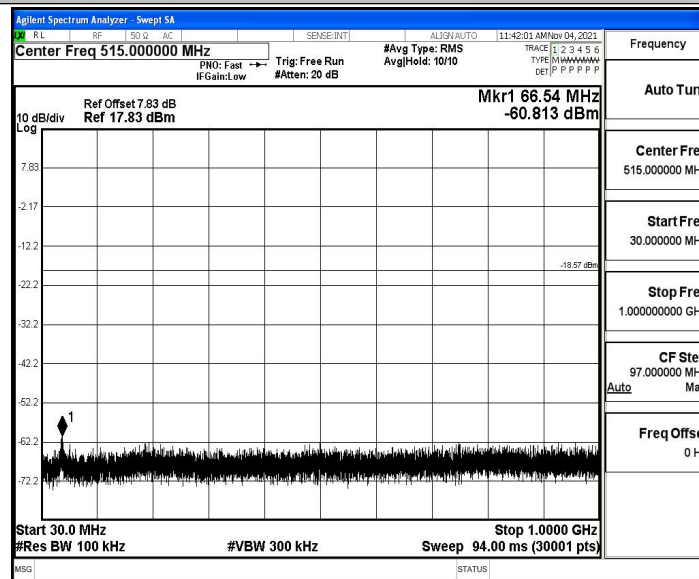


BLE\_1M\_Ant1\_2440\_0~Reference

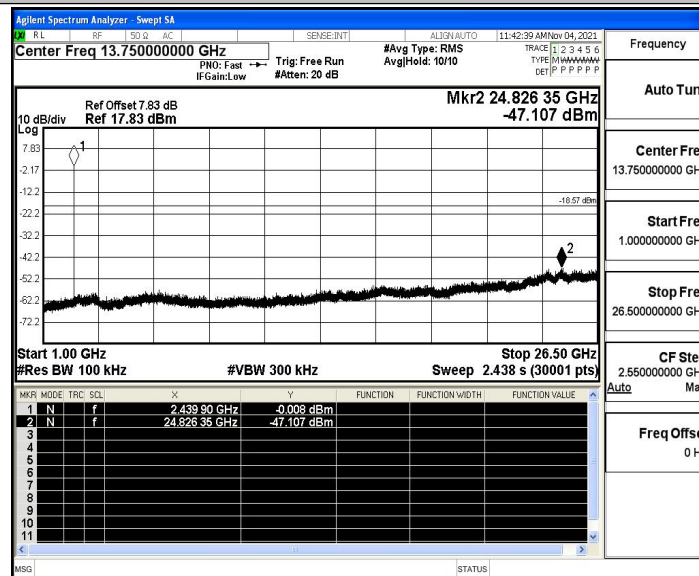




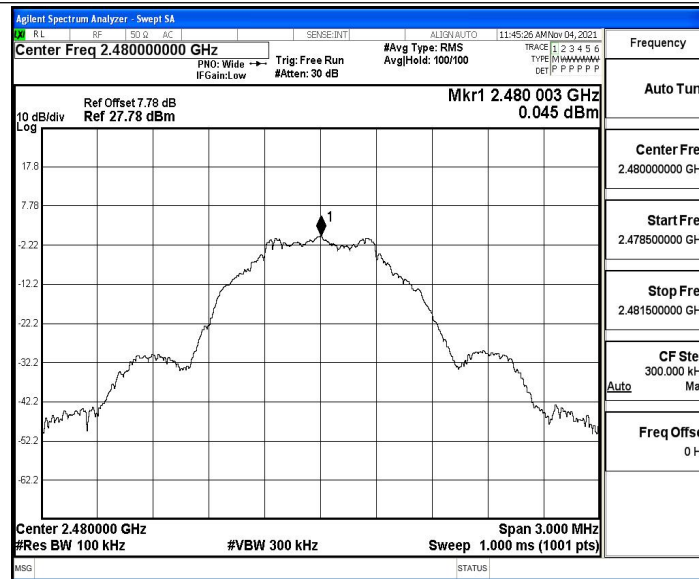
## BLE\_1M\_Ant1\_2440\_30~1000



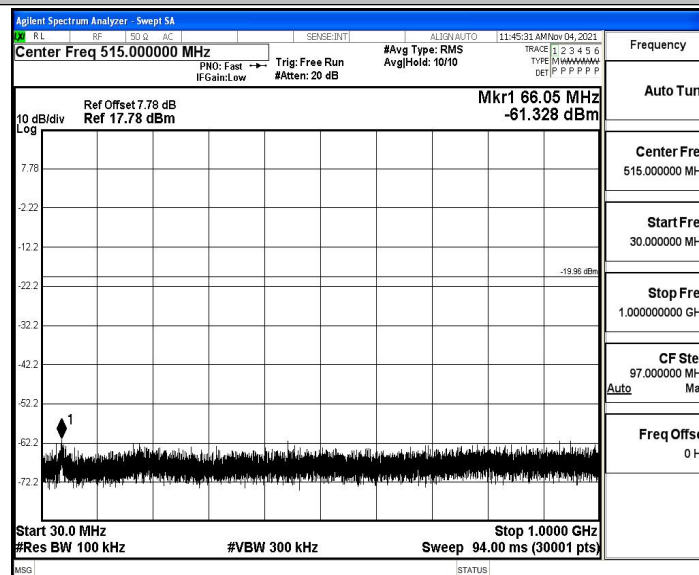
## BLE\_1M\_Ant1\_2440\_1000~26500



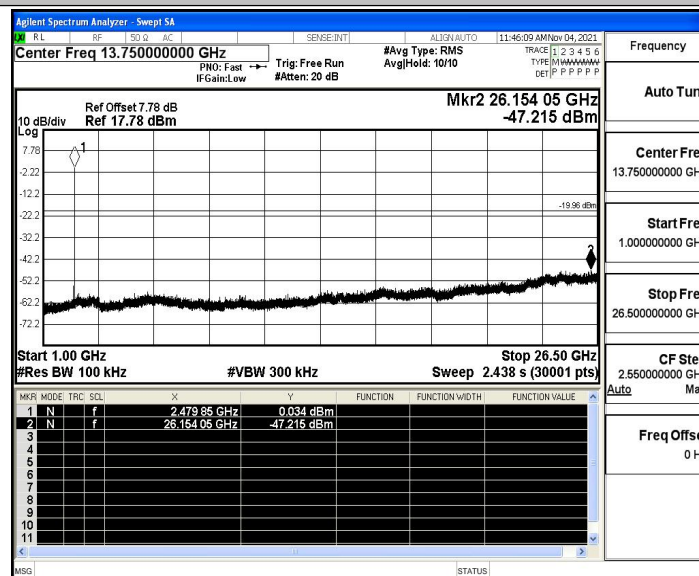
## BLE\_1M\_Ant1\_2480\_0~Reference



BLE\_1M\_Ant1\_2480\_30~1000



BLE\_1M\_Ant1\_2480\_1000~26500



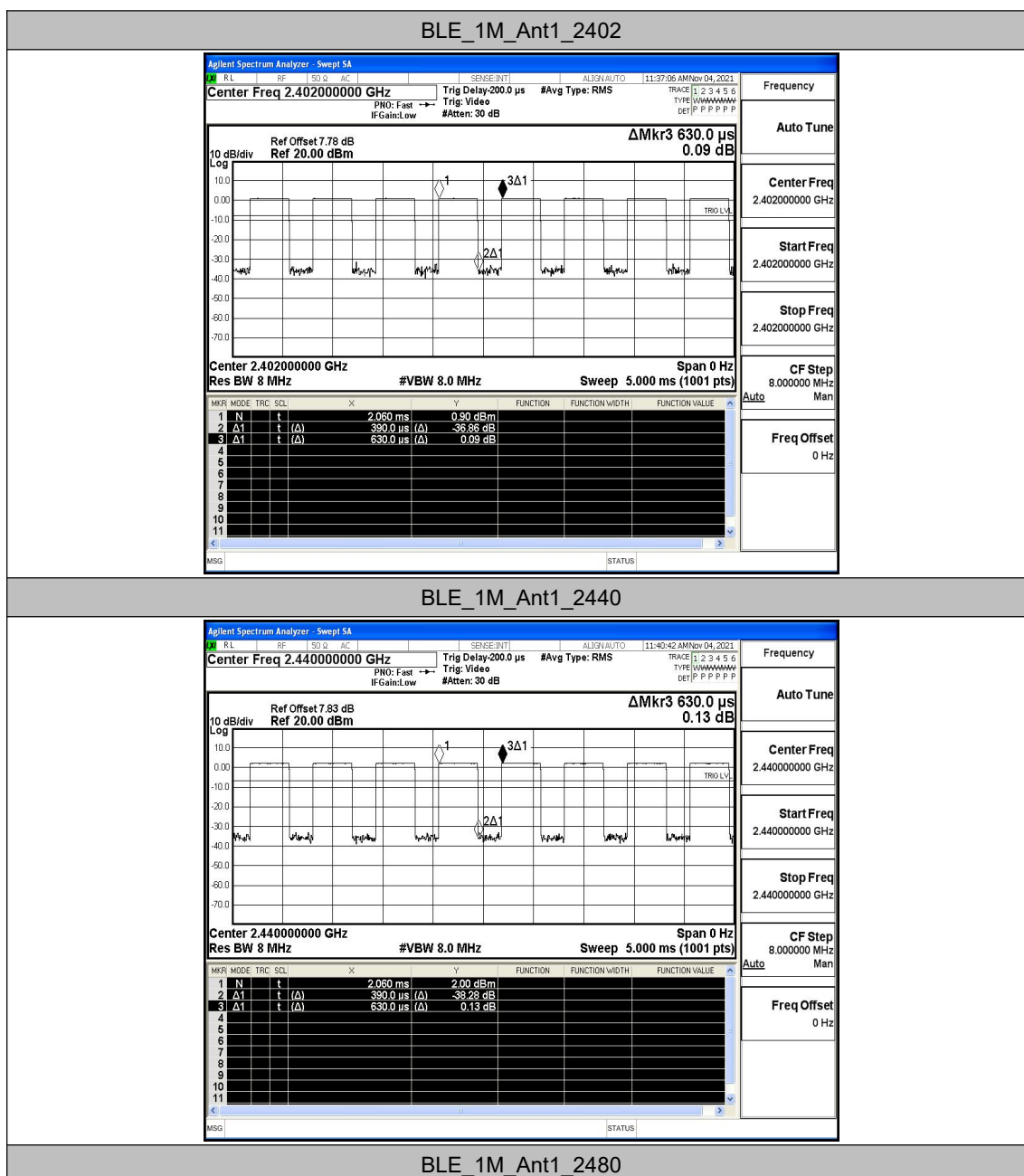


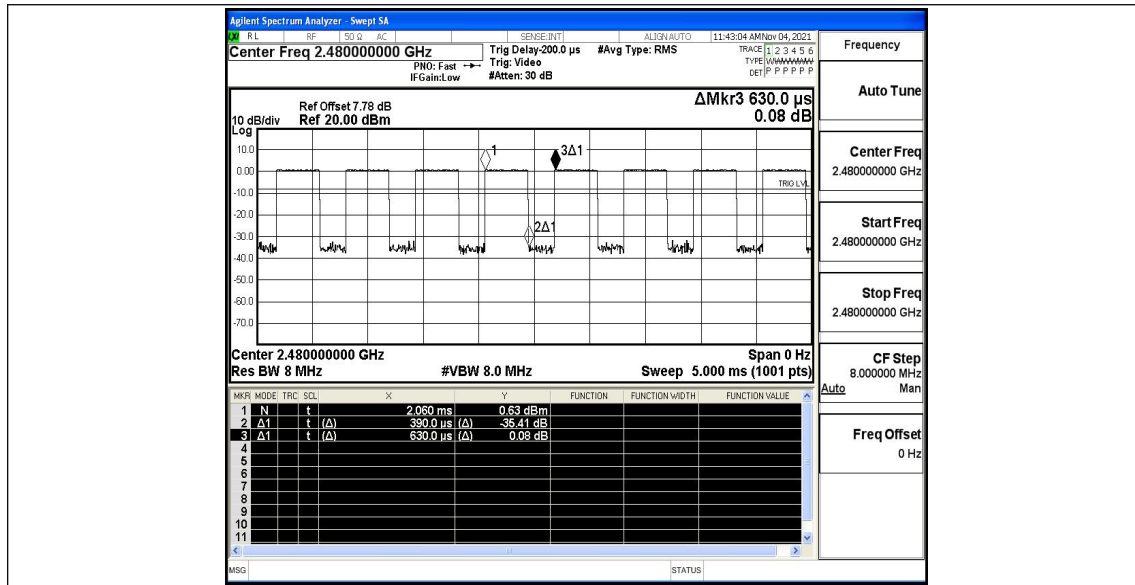
## A.6 Duty Cycle

### Test Result

| TestMode | Antenna | Channel | ON Time<br>[ms] | Period<br>[ms] | X      | DC<br>[%] | xFactor | Limit | Verdict |
|----------|---------|---------|-----------------|----------------|--------|-----------|---------|-------|---------|
| BLE_1M   | Ant1    | 2402    | 0.39            | 0.63           | 0.6190 | 61.90     | 2.08    | ---   | PASS    |
|          |         | 2440    | 0.39            | 0.63           | 0.6190 | 61.90     | 2.08    | ---   | PASS    |
|          |         | 2480    | 0.39            | 0.63           | 0.6190 | 61.90     | 2.08    | ---   | 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       | -48.46          | ≤-41.20        | 46.74              | ≤54               | PASS    |
|          |         |        |         | AV       | 2371.505       | -47.55          | ≤-41.20        | 47.65              | ≤54               | PASS    |
|          |         |        |         | AV       | 2390.000       | -48.11          | ≤-41.20        | 47.09              | ≤54               | PASS    |
|          |         |        |         | Peak     | 2310.000       | -42.38          | ≤-21.20        | 52.82              | ≤74               | PASS    |
|          |         |        |         | Peak     | 2353.865       | -38.56          | ≤-21.20        | 56.64              | ≤74               | PASS    |
|          |         |        |         | Peak     | 2390.000       | -42.2           | ≤-21.20        | 53.00              | ≤74               | PASS    |
|          |         | High   | 2480    | AV       | 2483.500       | -47.05          | ≤-41.20        | 48.15              | ≤54               | PASS    |
|          |         |        |         | AV       | 2499.840       | -47             | ≤-41.20        | 48.20              | ≤54               | PASS    |
|          |         |        |         | AV       | 2500.000       | -47.16          | ≤-41.20        | 48.04              | ≤54               | PASS    |
|          |         |        |         | Peak     | 2483.500       | -41.62          | ≤-21.20        | 53.58              | ≤74               | PASS    |
|          |         |        |         | Peak     | 2496.160       | -38.92          | ≤-21.20        | 56.28              | ≤74               | PASS    |
|          |         |        |         | Peak     | 2500.000       | -41.5           | ≤-21.20        | 53.70              | ≤74               | PASS    |

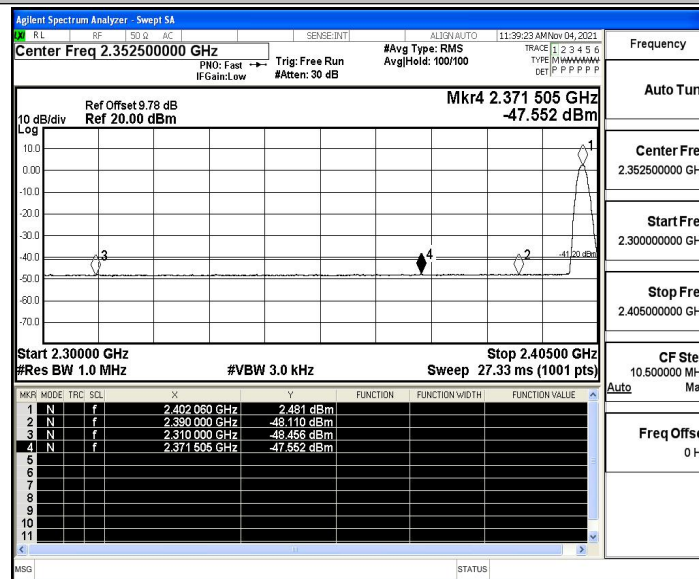
Note:

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.

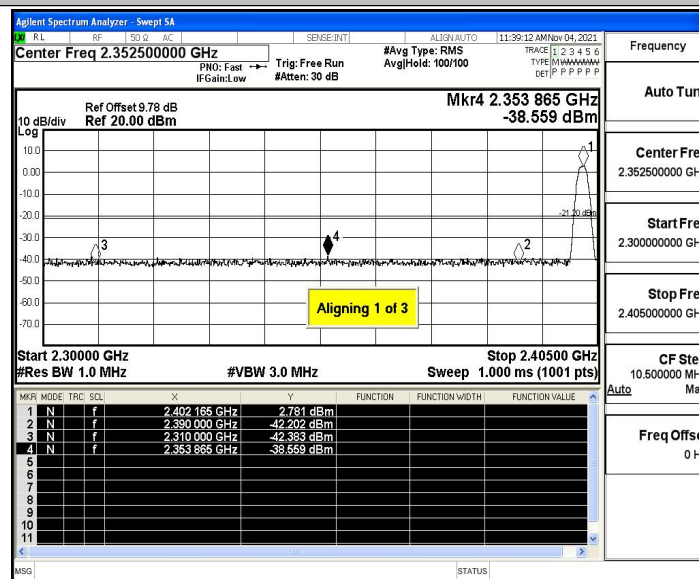


## Test Graphs

BLE\_1M\_Ant1\_Low\_2402\_AV

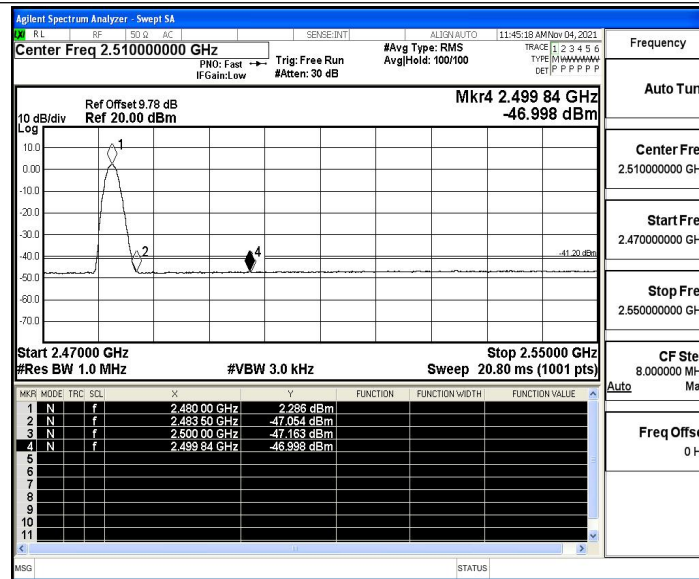


BLE\_1M\_Ant1\_Low\_2402\_Peak



BLE\_1M\_Ant1\_High\_2480\_AV





## BLE\_1M\_Ant1\_High\_2480\_Peak

