

## Appendix B

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

**Product Name: SATELLITE BULLET SPEAKER**

**Test Model: TS-OA1SS-BLK**

#### Environmental Conditions

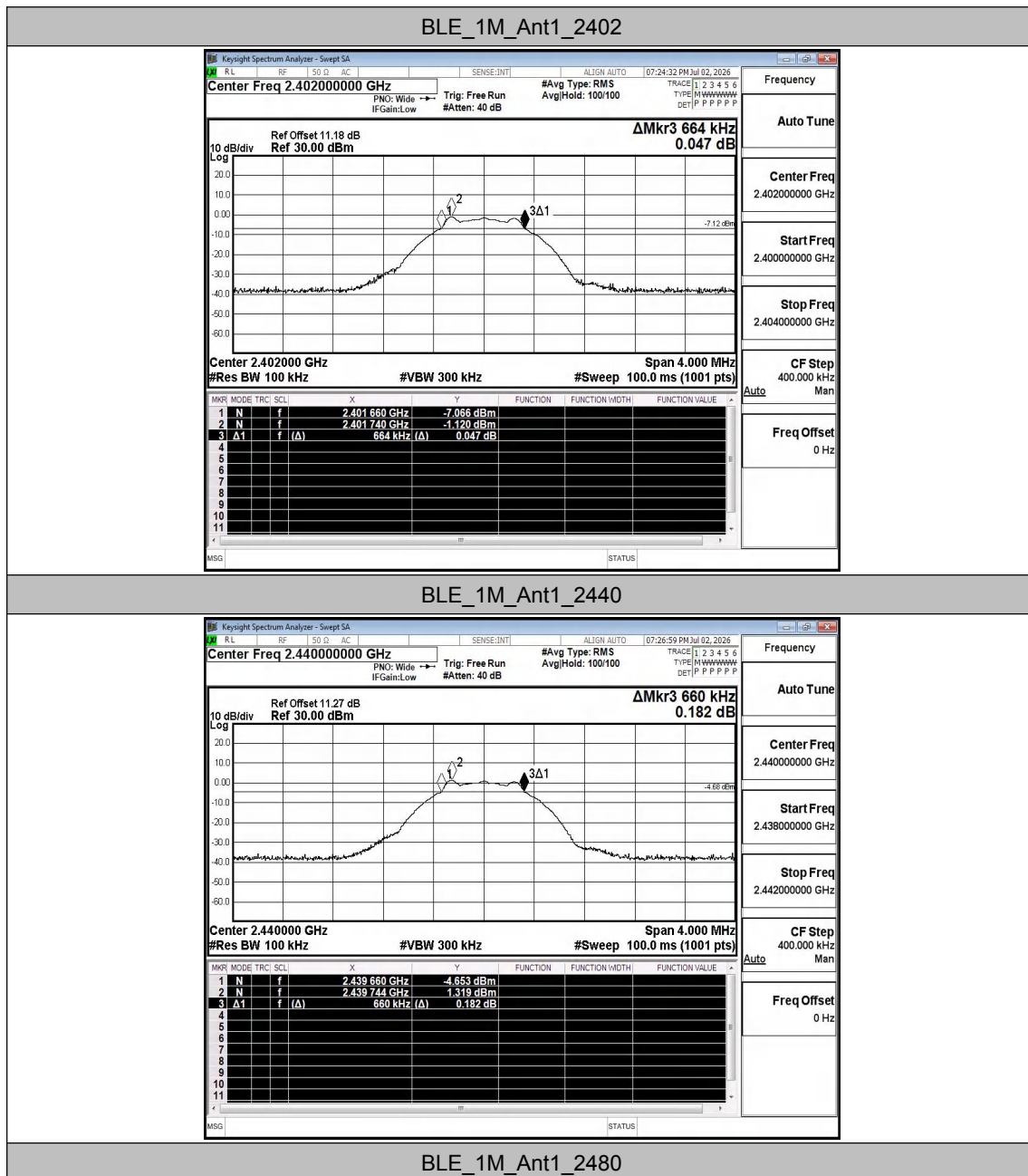
|                    |              |
|--------------------|--------------|
| Temperature:       | 24.2°C       |
| Relative Humidity: | 53.2%        |
| ATM Pressure:      | 100.0 kPa    |
| Test Engineer:     | Zhang hai    |
| Supervised by:     | Fengliu Tang |

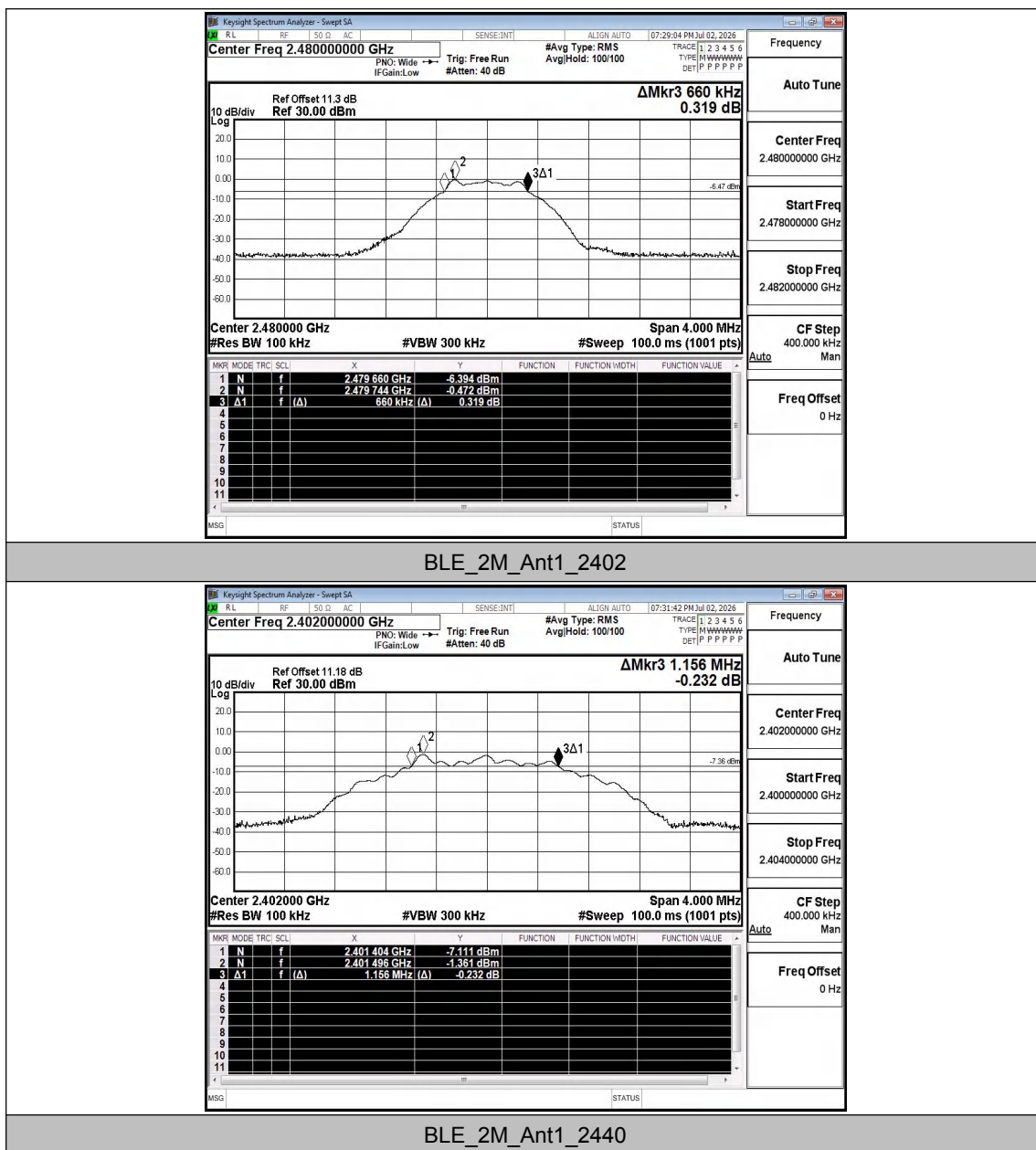
## B.1 DTS Bandwidth

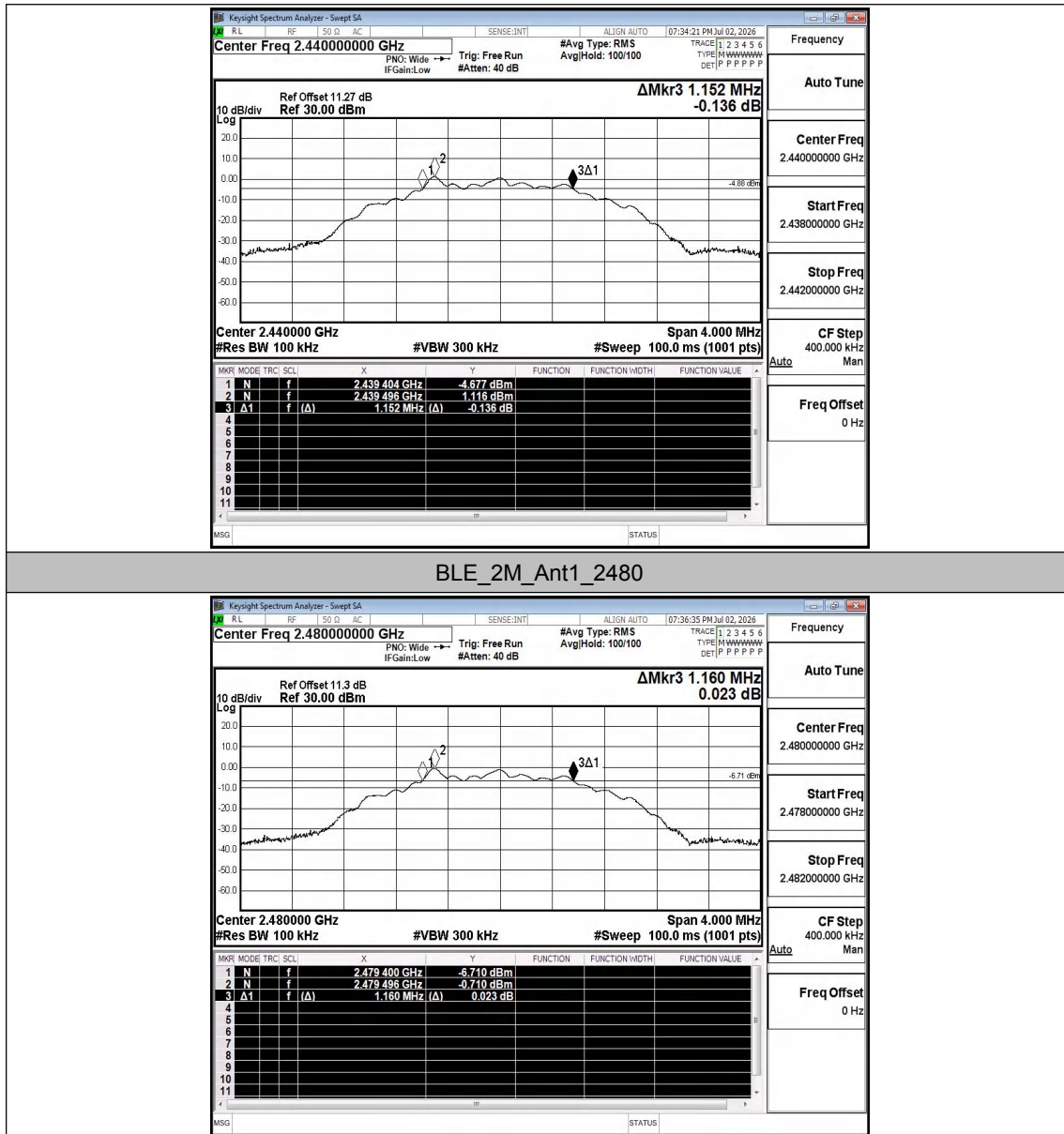
### Test Result

| TestMode | Antenna | Freq(MHz) | DTS BW<br>[MHz] | FL[MHz]  | FH[MHz]  | Limit[MHz] | Verdict |
|----------|---------|-----------|-----------------|----------|----------|------------|---------|
| BLE_1M   | Ant1    | 2402      | 0.664           | 2401.660 | 2402.324 | 0.5        | PASS    |
|          |         | 2440      | 0.660           | 2439.660 | 2440.320 | 0.5        | PASS    |
|          |         | 2480      | 0.660           | 2479.660 | 2480.320 | 0.5        | PASS    |
| BLE_2M   | Ant1    | 2402      | 1.156           | 2401.404 | 2402.560 | 0.5        | PASS    |
|          |         | 2440      | 1.152           | 2439.404 | 2440.556 | 0.5        | PASS    |
|          |         | 2480      | 1.160           | 2479.400 | 2480.560 | 0.5        | PASS    |

## Test Graphs





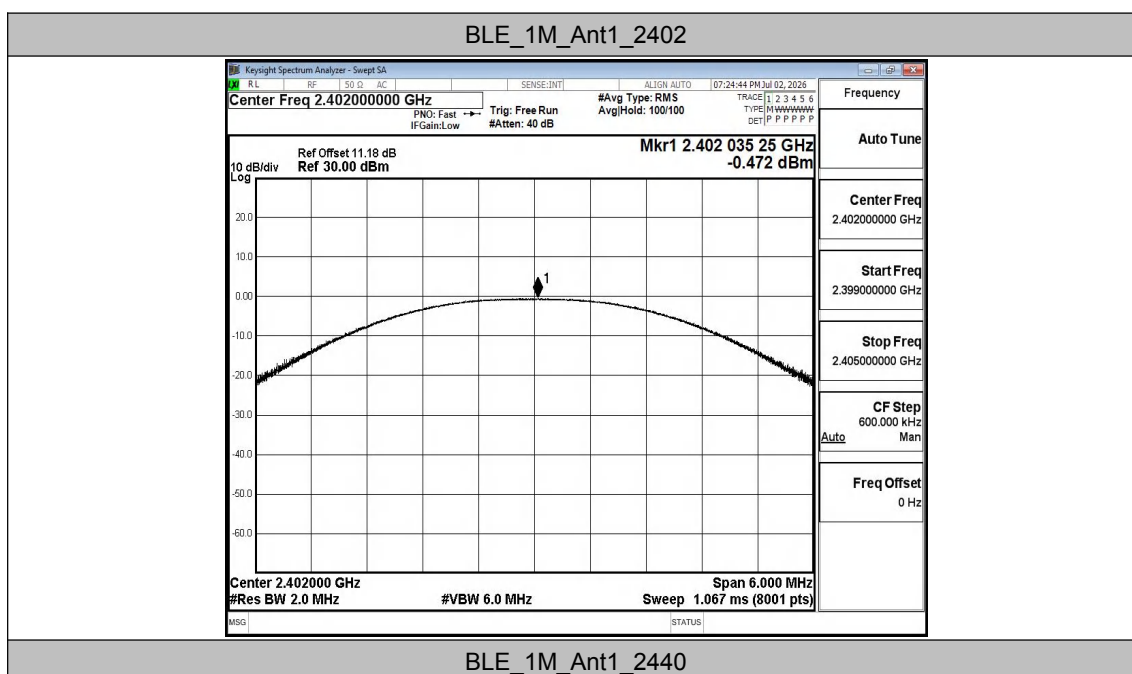


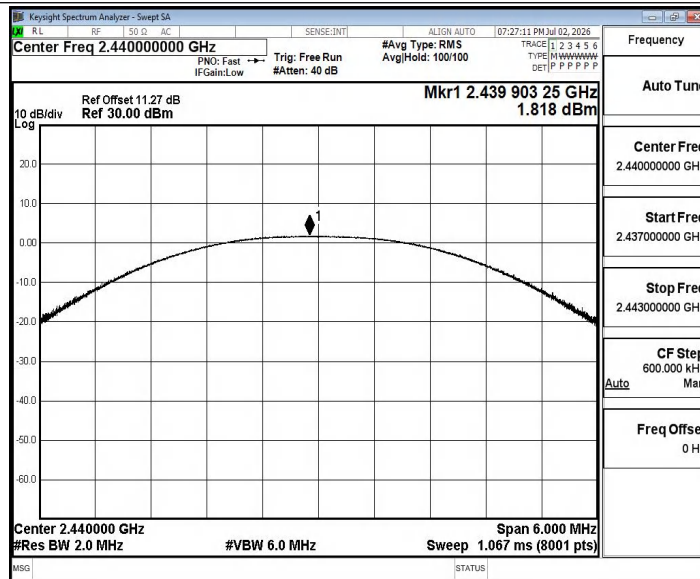
## B.2 Maximum conducted output power

### Test Result Peak

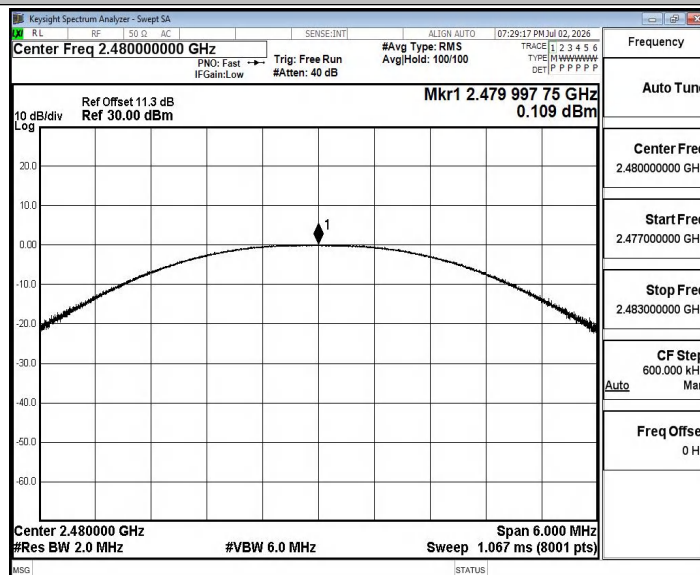
| TestMode | Antenna | Freq(MHz) | Conducted Peak Power[dBm] | Conducted Limit[dBm] | EIRP[dBm] | EIRP Limit[dBm] | Verdict |
|----------|---------|-----------|---------------------------|----------------------|-----------|-----------------|---------|
| BLE_1M   | Ant1    | 2402      | -0.47                     | ≤30                  | -0.47     | ≤36             | PASS    |
|          |         | 2440      | 1.82                      | ≤30                  | 1.82      | ≤36             | PASS    |
|          |         | 2480      | 0.11                      | ≤30                  | 0.11      | ≤36             | PASS    |
| BLE_2M   | Ant1    | 2402      | -0.66                     | ≤30                  | -0.66     | ≤36             | PASS    |
|          |         | 2440      | 1.79                      | ≤30                  | 1.79      | ≤36             | PASS    |
|          |         | 2480      | 0.09                      | ≤30                  | 0.09      | ≤36             | PASS    |

### Test Graphs Peak

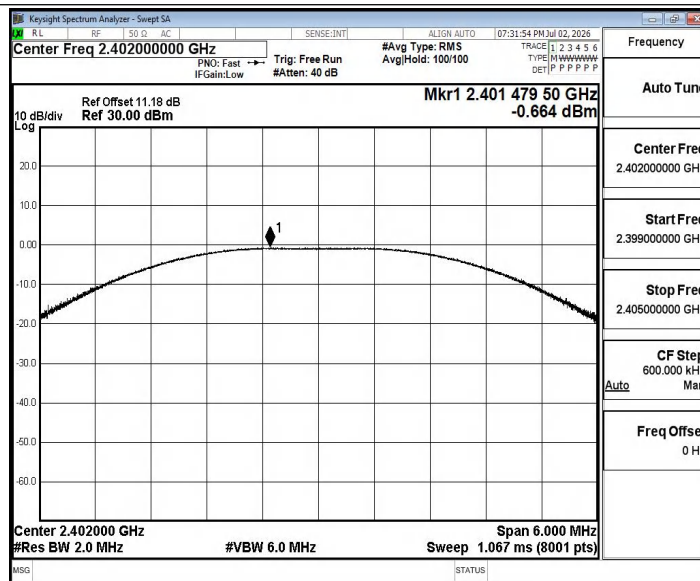




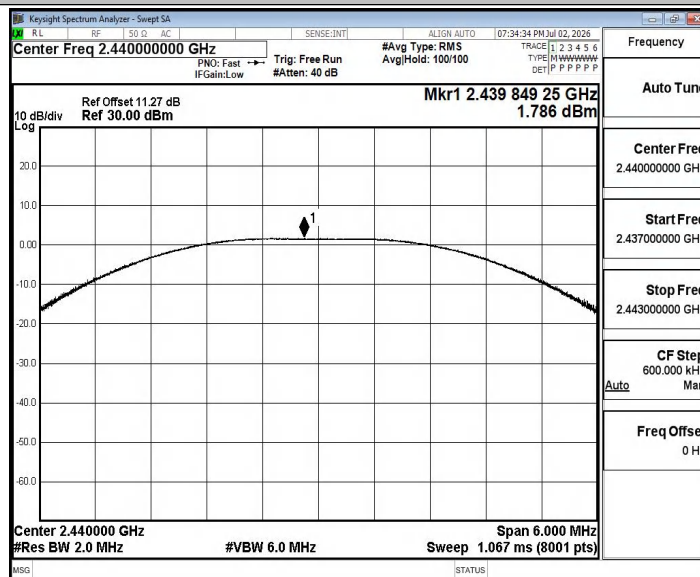
BLE\_1M\_Ant1\_2480



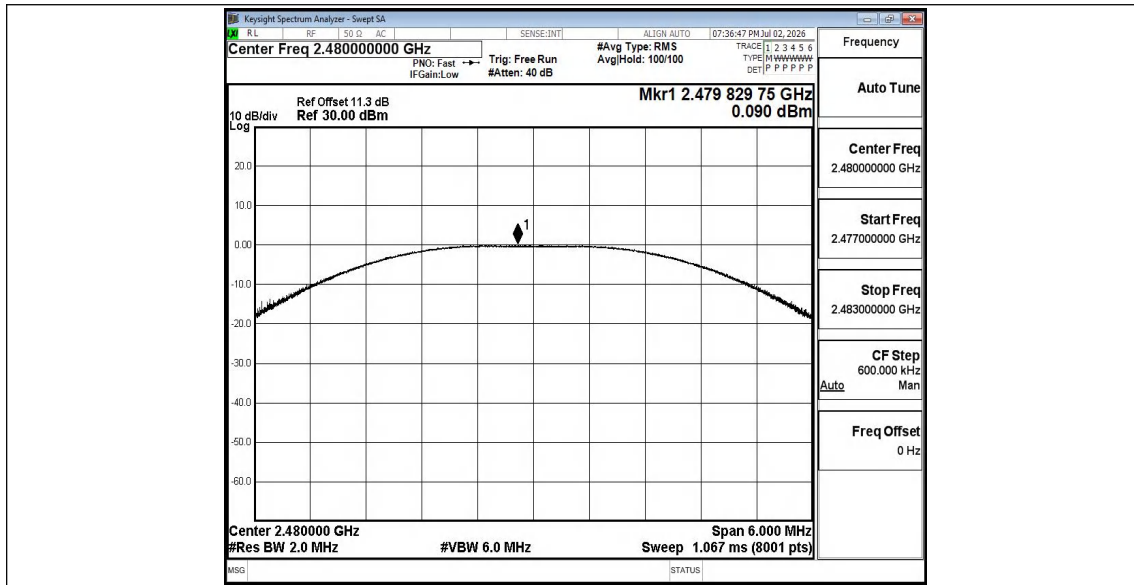
BLE\_2M\_Ant1\_2402



BLE\_2M\_Ant1\_2440



BLE\_2M\_Ant1\_2480

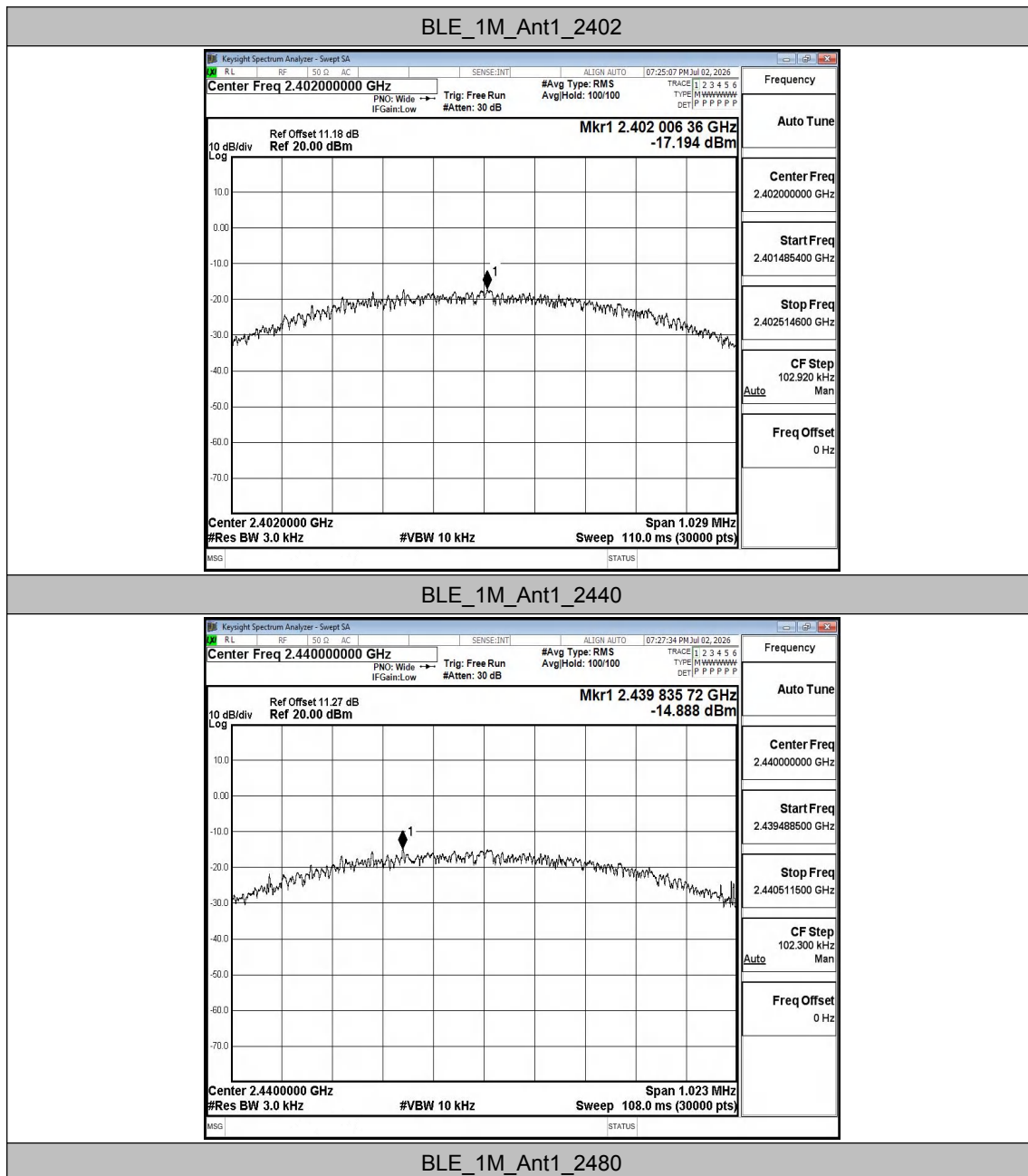


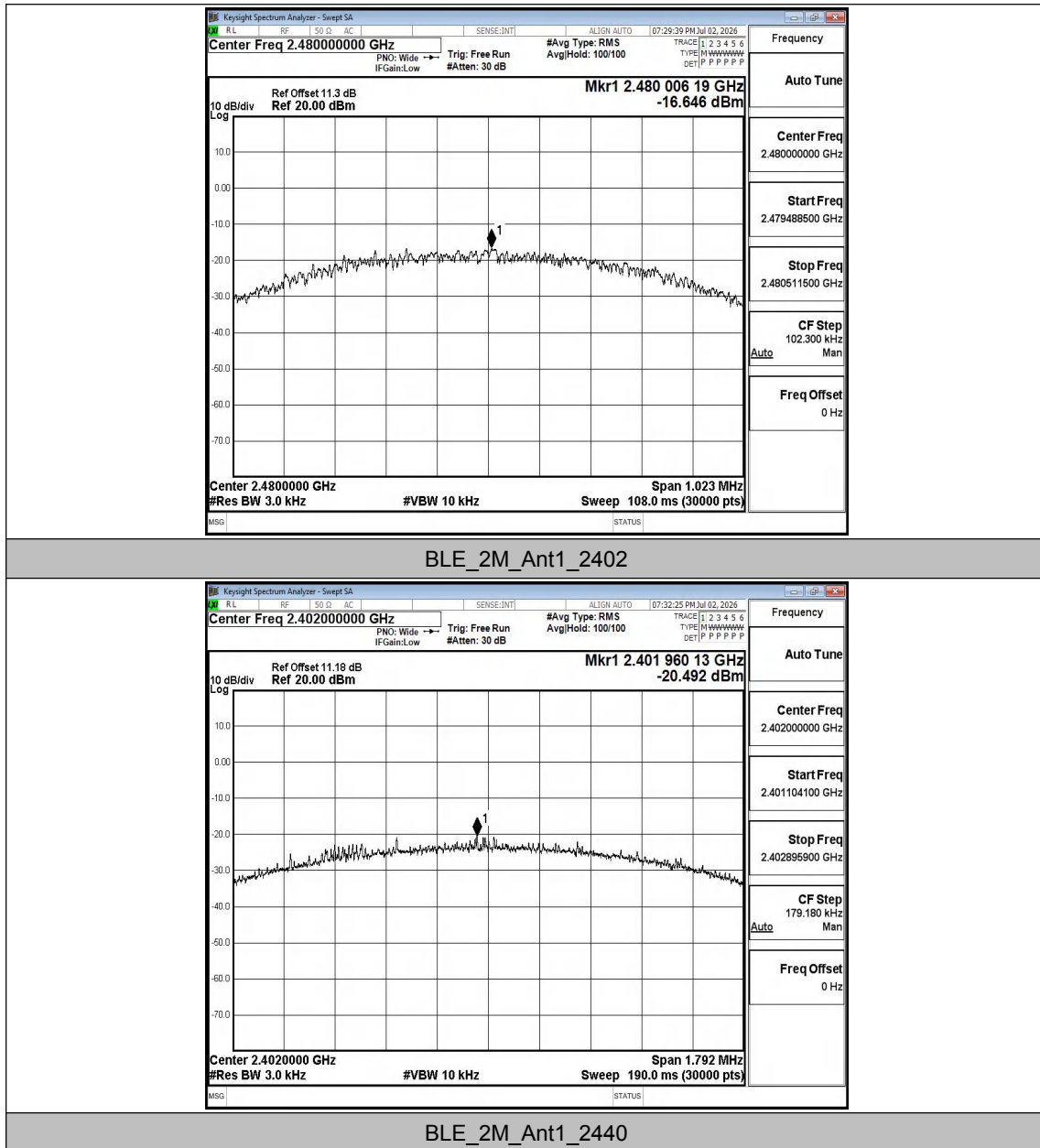
## B.3 Maximum power spectral density

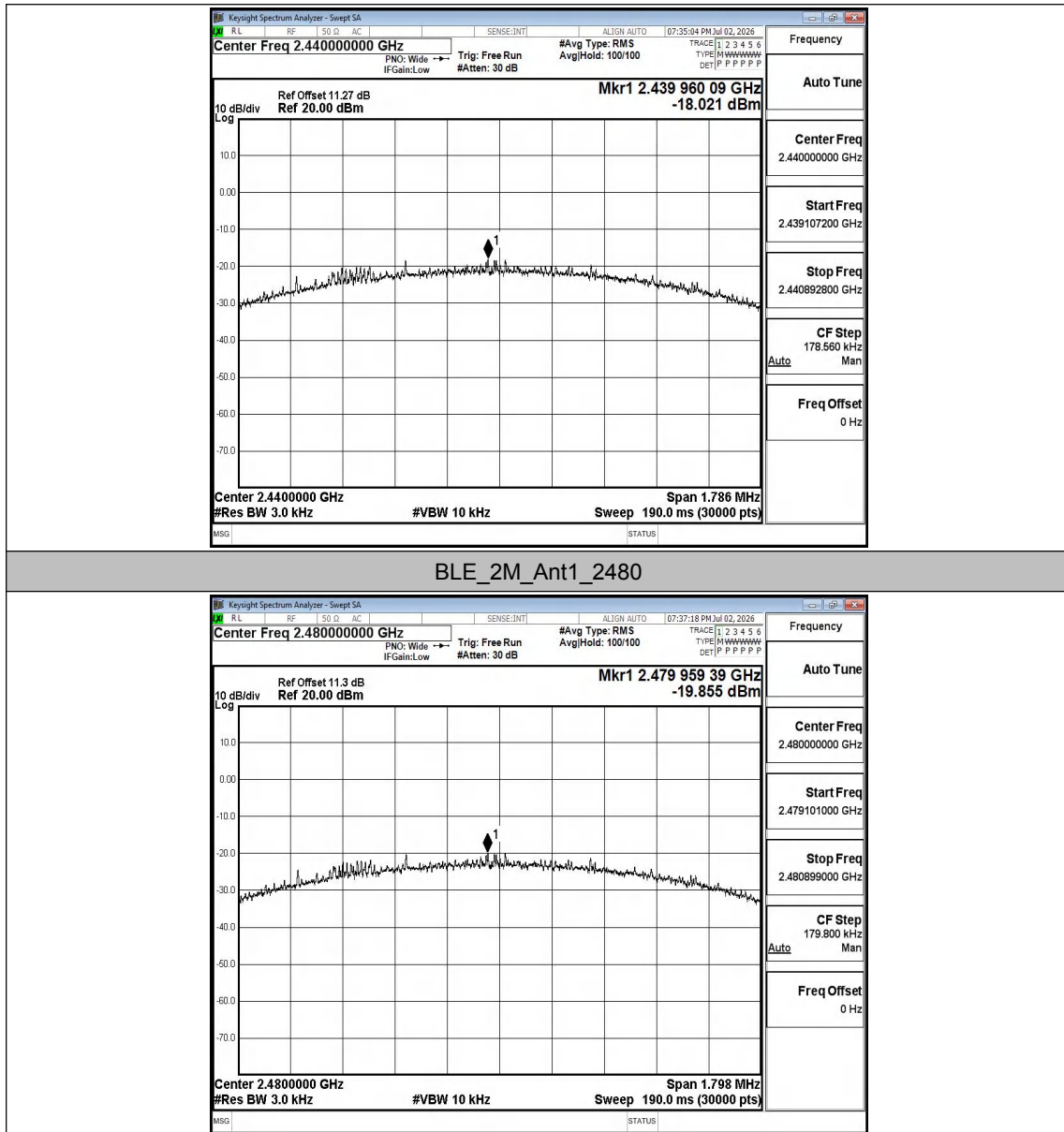
### Test Result

| TestMode | Antenna | Freq(MHz) | Result[dBm/3kHz] | Limit[dBm/3kHz] | Verdict |
|----------|---------|-----------|------------------|-----------------|---------|
| BLE_1M   | Ant1    | 2402      | -17.19           | ≤8.00           | PASS    |
|          |         | 2440      | -14.89           | ≤8.00           | PASS    |
|          |         | 2480      | -16.65           | ≤8.00           | PASS    |
| BLE_2M   | Ant1    | 2402      | -20.49           | ≤8.00           | PASS    |
|          |         | 2440      | -18.02           | ≤8.00           | PASS    |
|          |         | 2480      | -19.86           | ≤8.00           | PASS    |

## Test Graphs





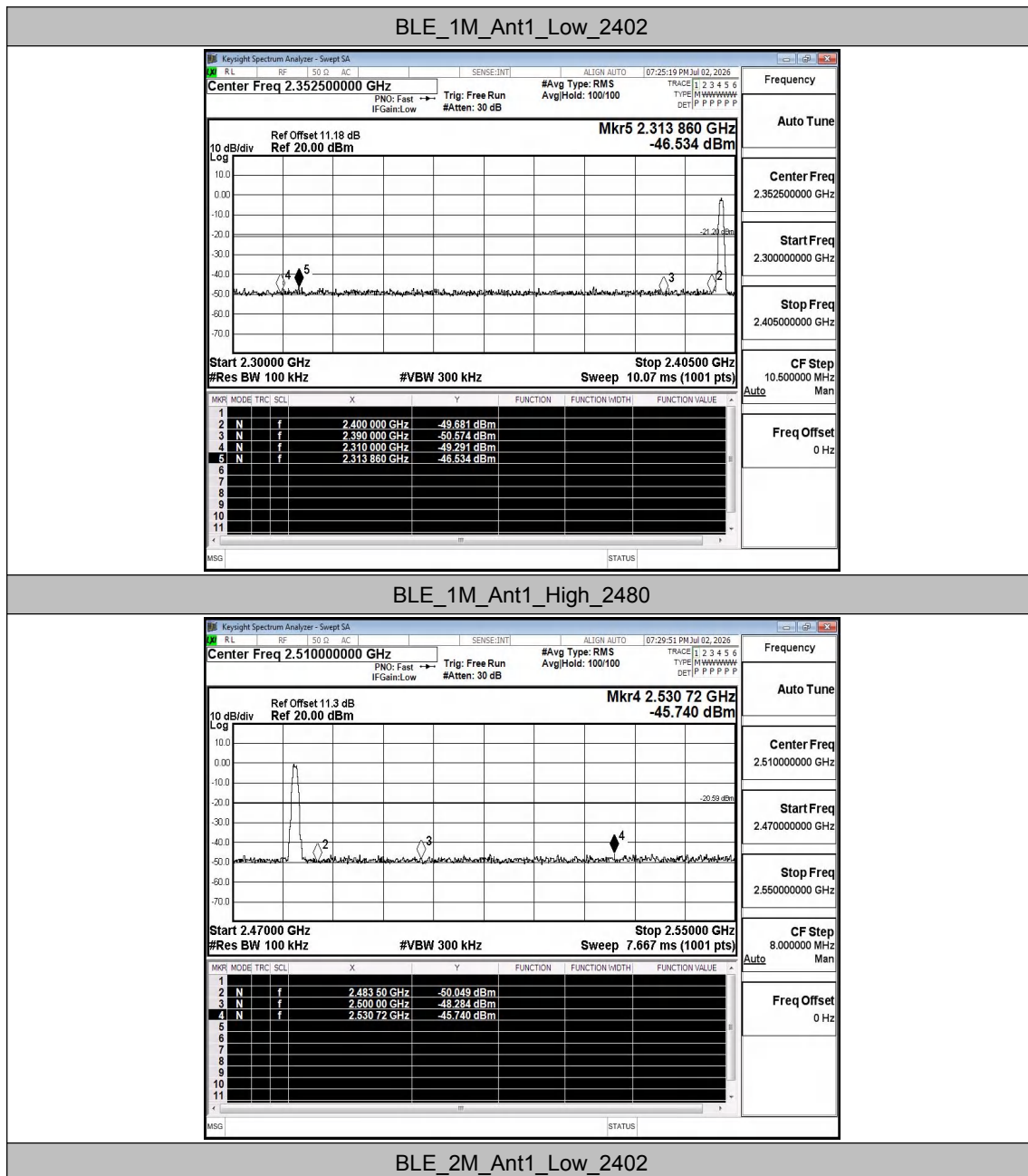


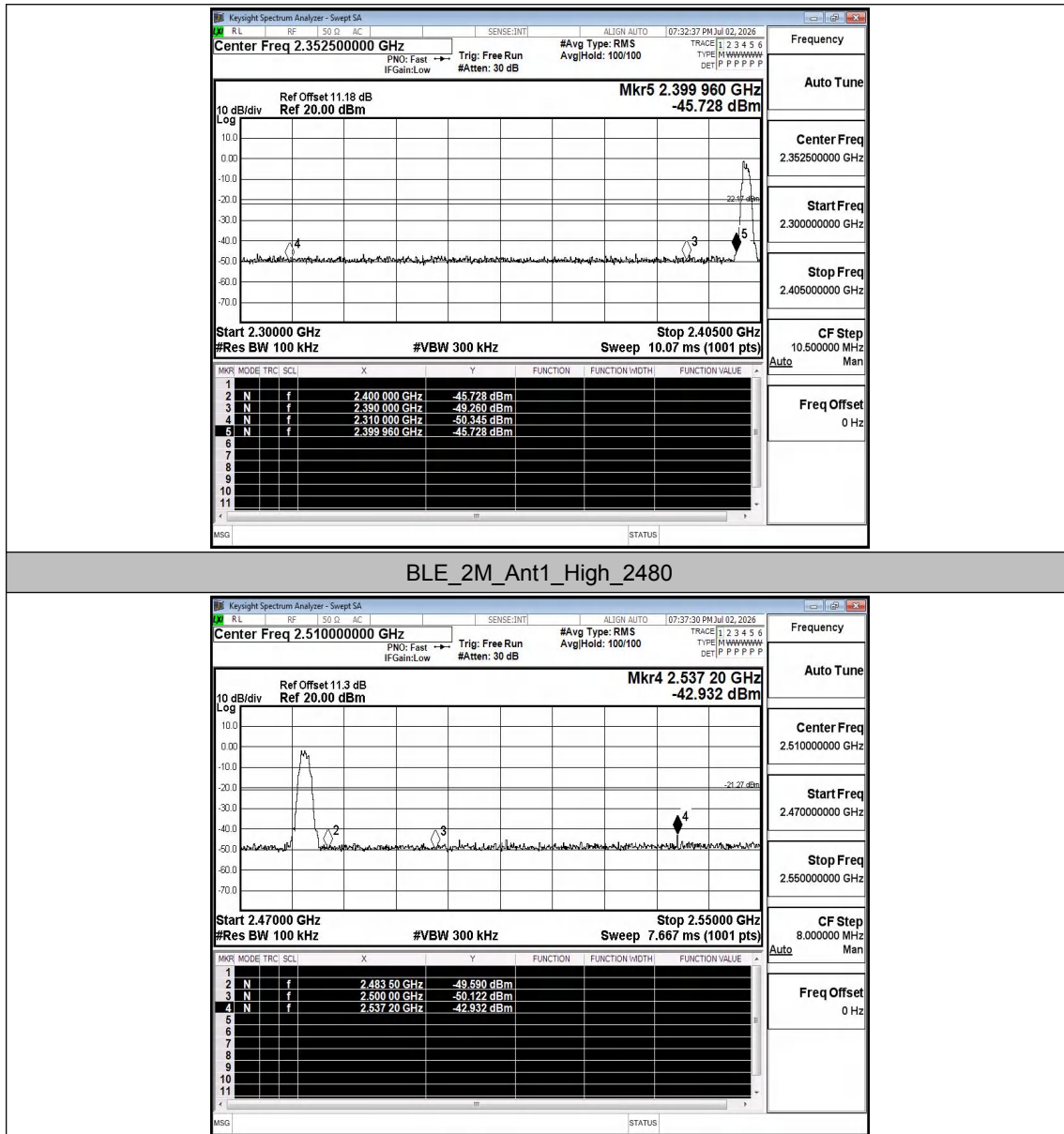
## B.4 Band edge measurements

### Test Result

| TestMode | Antenna | ChName | Freq(MHz) | RefLevel[dBm] | Result[dBm] | Limit[dBm]    | Verdict |
|----------|---------|--------|-----------|---------------|-------------|---------------|---------|
| BLE_1M   | Ant1    | Low    | 2402      | -1.20         | -46.53      | $\leq -21.2$  | PASS    |
|          |         | High   | 2480      | -0.59         | -45.74      | $\leq -20.59$ | PASS    |
| BLE_2M   | Ant1    | Low    | 2402      | -2.17         | -45.73      | $\leq -22.17$ | PASS    |
|          |         | High   | 2480      | -1.27         | -42.93      | $\leq -21.27$ | PASS    |

## Test Graphs



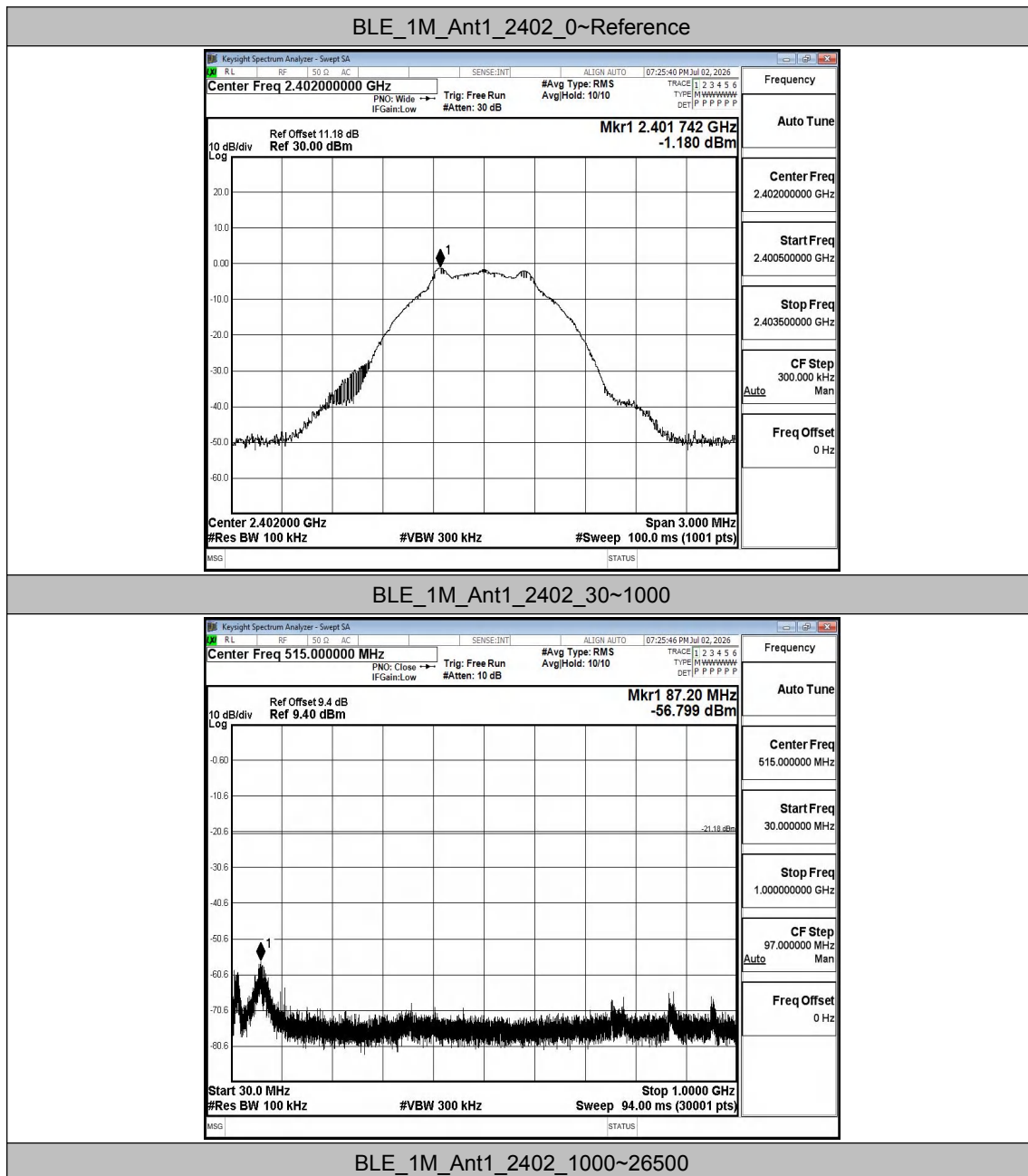


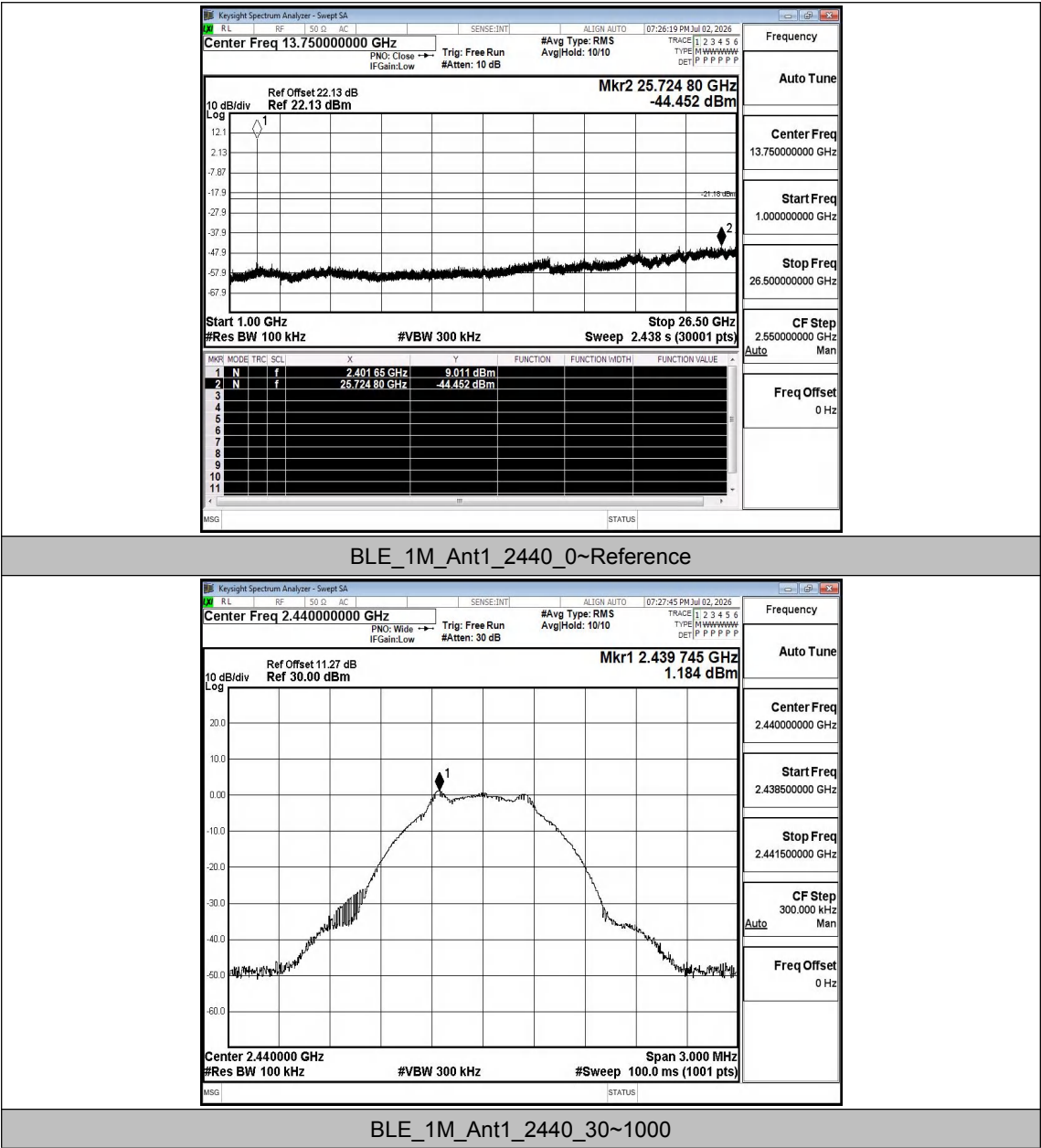
## B.5 Conducted Spurious Emission

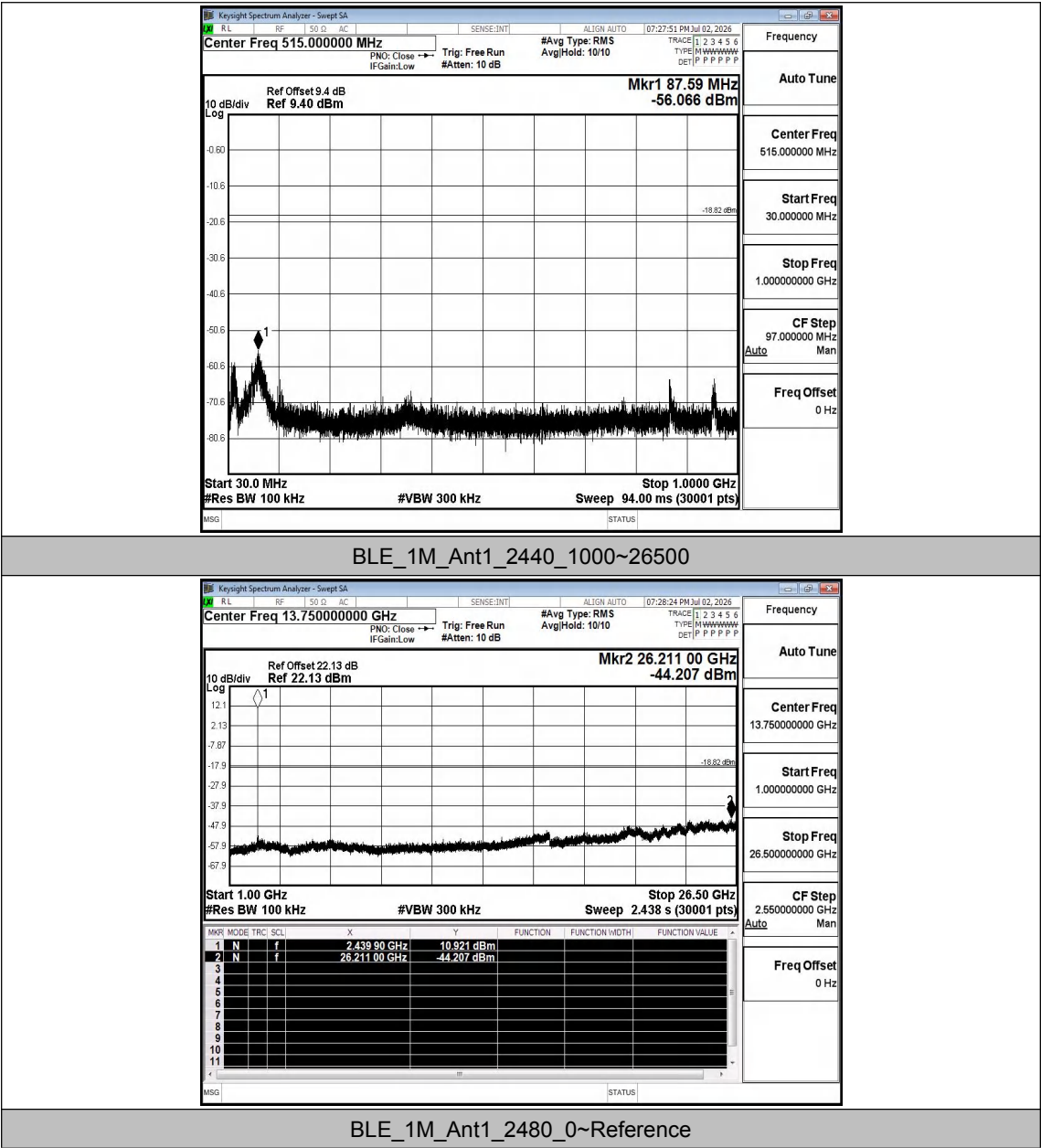
### Test Result

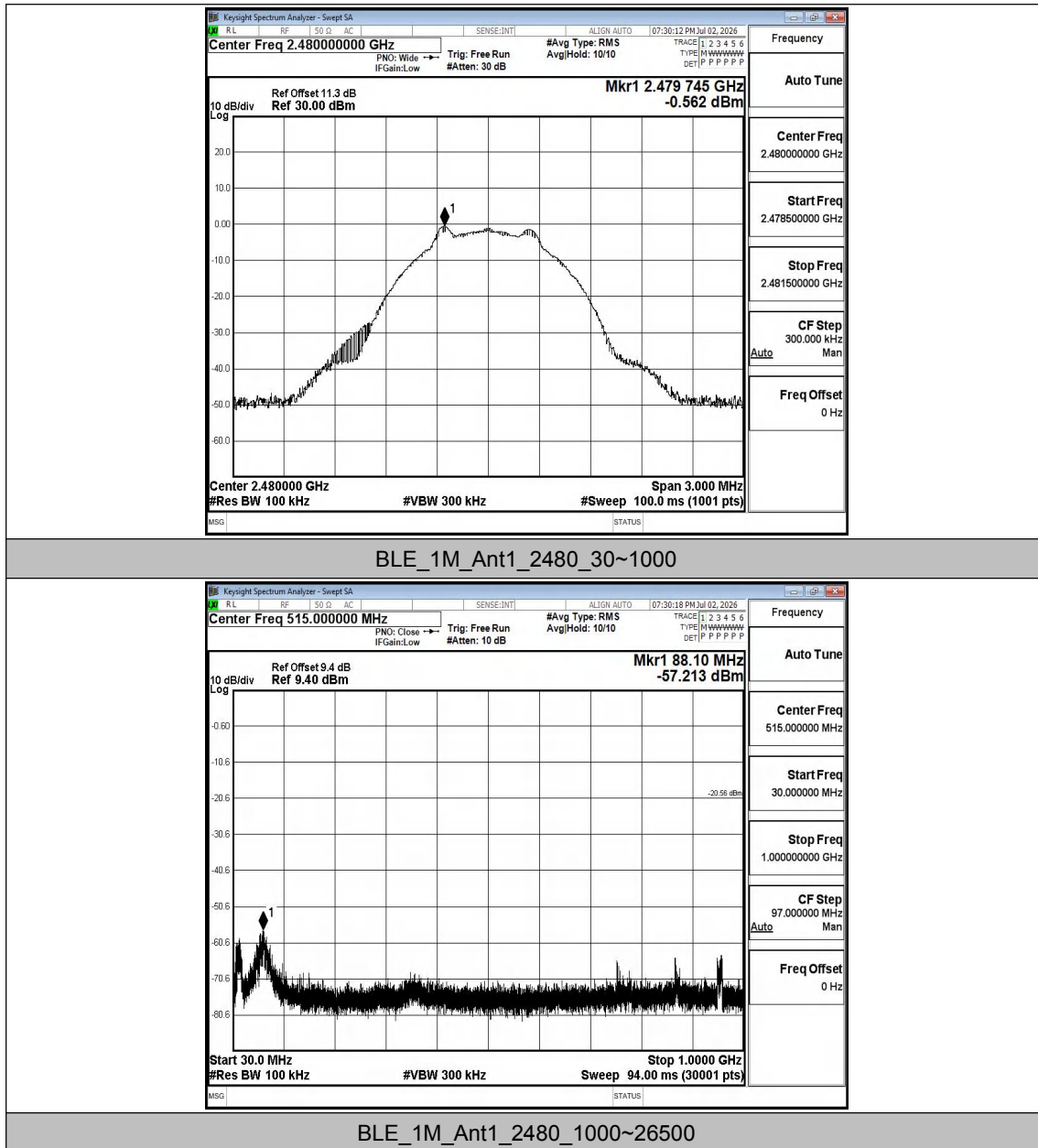
| TestMode | Antenna | Freq(MHz) | FreqRange [MHz] | RefLevel [dBm] | Result[dBm] | Limit[dBm] | Verdict |
|----------|---------|-----------|-----------------|----------------|-------------|------------|---------|
| BLE_1M   | Ant1    | 2402      | Reference       | -1.18          | -1.18       | ---        | PASS    |
|          |         |           | 30~1000         | -1.18          | -56.8       | ≤-21.18    | PASS    |
|          |         |           | 1000~26500      | -1.18          | -44.45      | ≤-21.18    | PASS    |
|          |         | 2440      | Reference       | 1.18           | 1.18        | ---        | PASS    |
|          |         |           | 30~1000         | 1.18           | -56.07      | ≤-18.82    | PASS    |
|          |         |           | 1000~26500      | 1.18           | -44.21      | ≤-18.82    | PASS    |
|          |         | 2480      | Reference       | -0.56          | -0.56       | ---        | PASS    |
|          |         |           | 30~1000         | -0.56          | -57.21      | ≤-20.56    | PASS    |
|          |         |           | 1000~26500      | -0.56          | -45.01      | ≤-20.56    | PASS    |
| BLE_2M   | Ant1    | 2402      | Reference       | -1.46          | -1.46       | ---        | PASS    |
|          |         |           | 30~1000         | -1.46          | -56.38      | ≤-21.46    | PASS    |
|          |         |           | 1000~26500      | -1.46          | -43.7       | ≤-21.46    | PASS    |
|          |         | 2440      | Reference       | 1.01           | 1.01        | ---        | PASS    |
|          |         |           | 30~1000         | 1.01           | -56.03      | ≤-18.99    | PASS    |
|          |         |           | 1000~26500      | 1.01           | -44.82      | ≤-18.99    | PASS    |
|          |         | 2480      | Reference       | -0.76          | -0.76       | ---        | PASS    |
|          |         |           | 30~1000         | -0.76          | -56         | ≤-20.76    | PASS    |
|          |         |           | 1000~26500      | -0.76          | -44.57      | ≤-20.76    | PASS    |

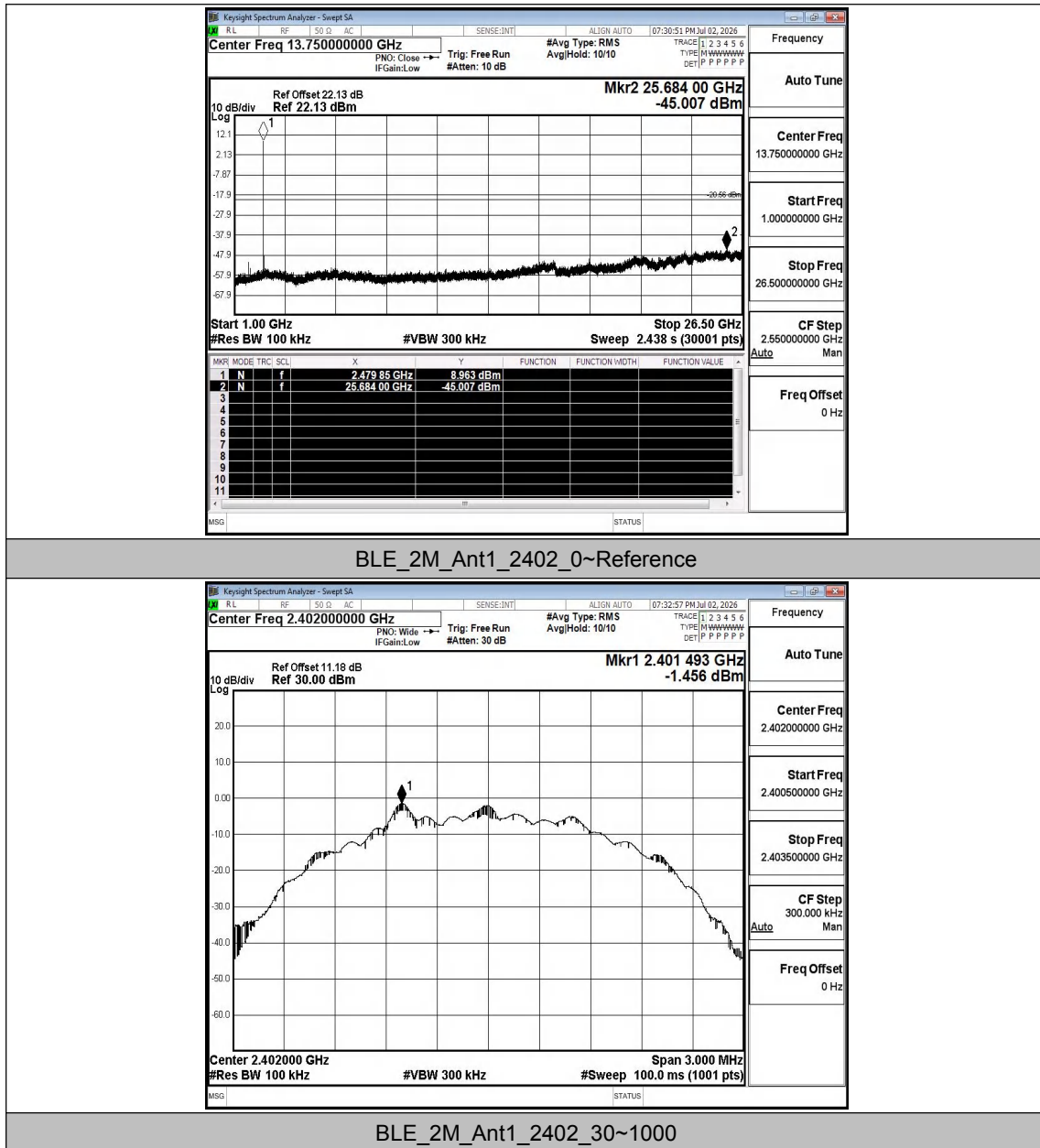
## Test Graphs

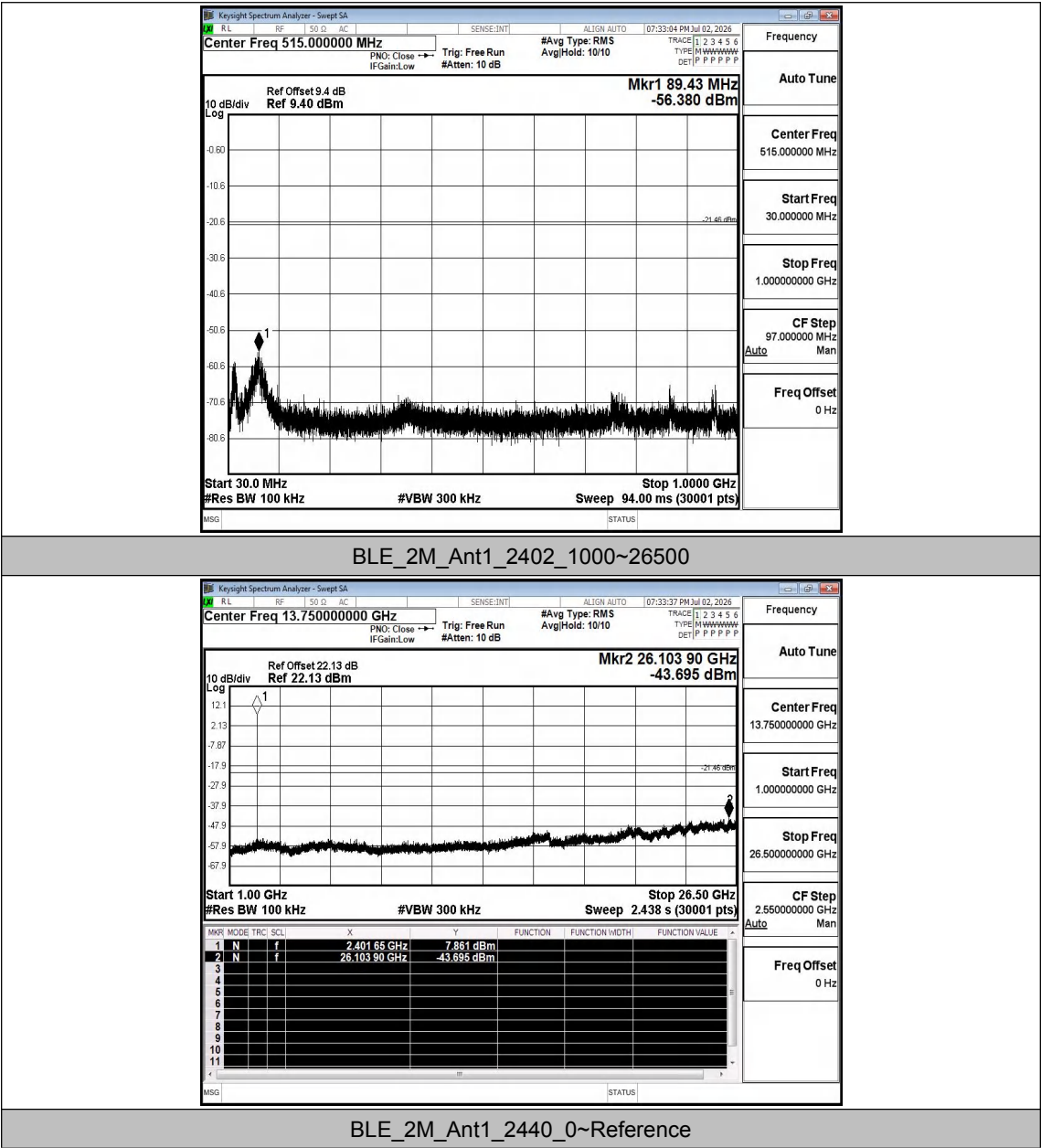


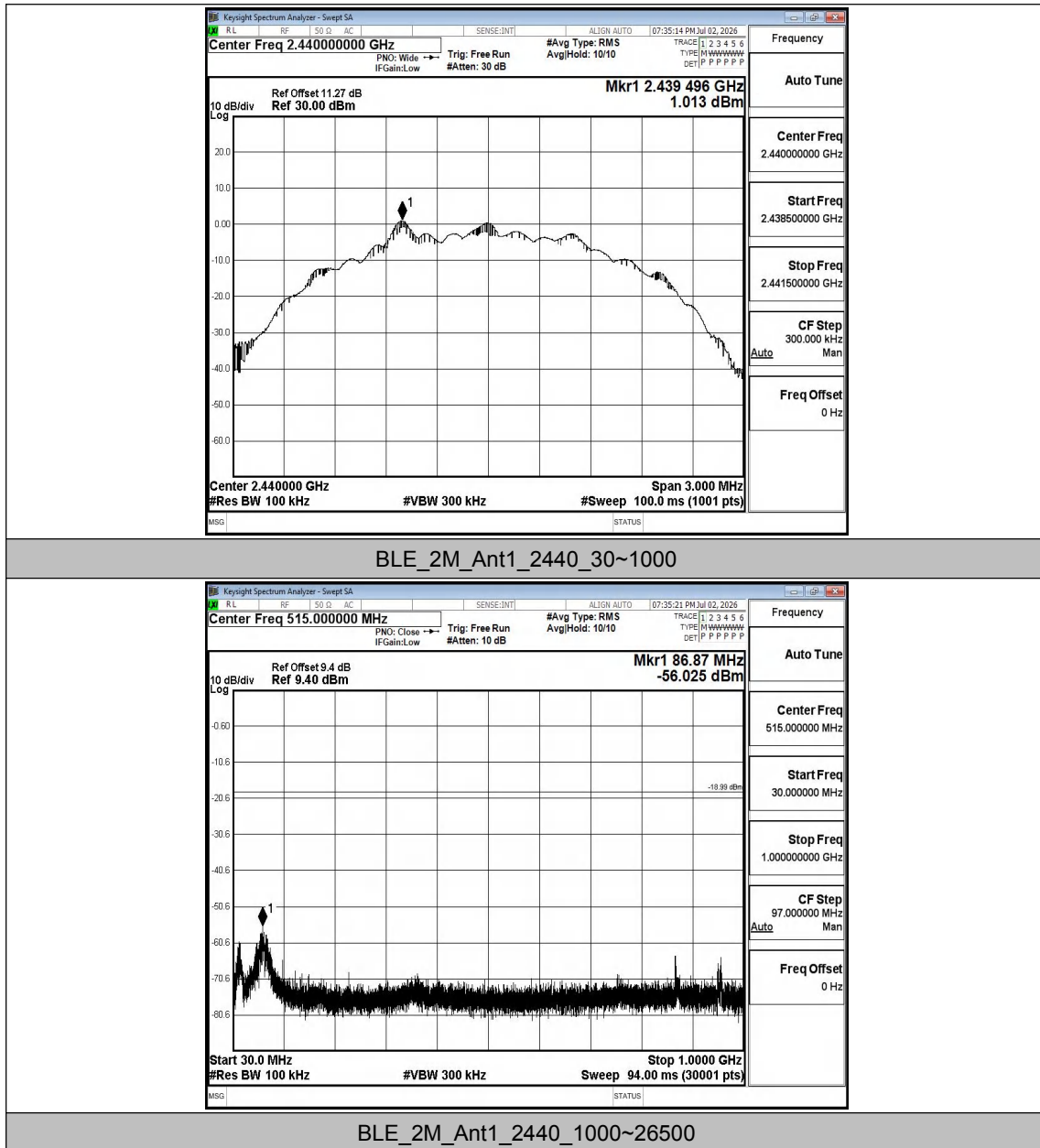


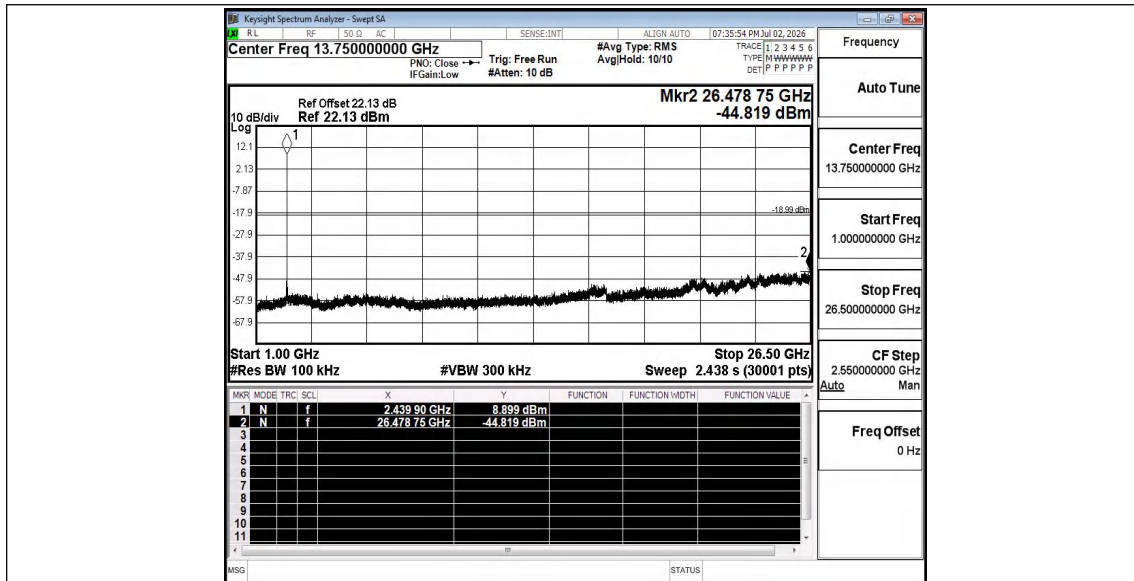




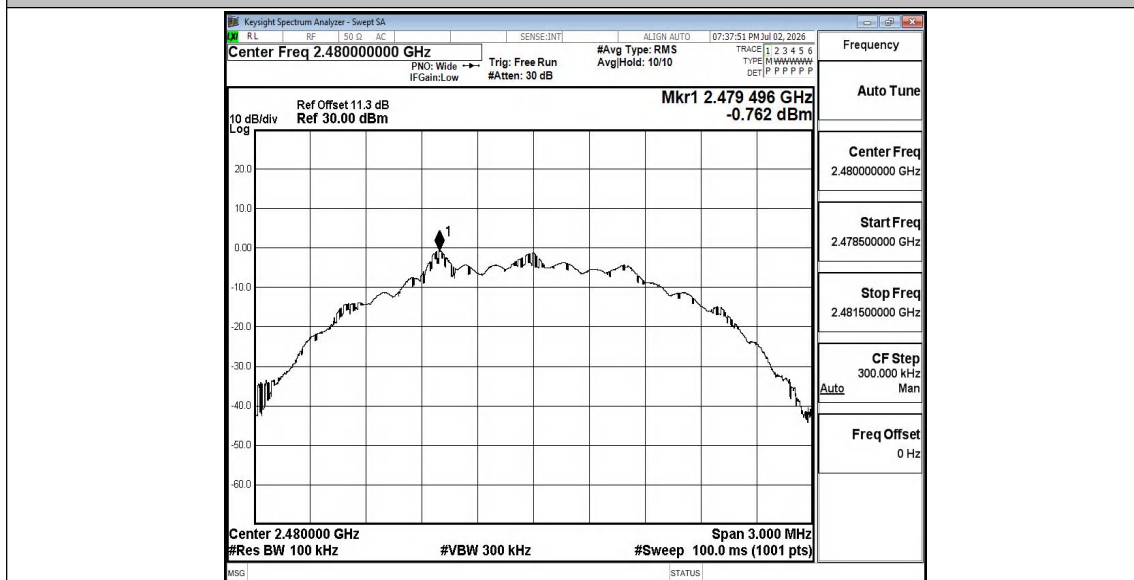




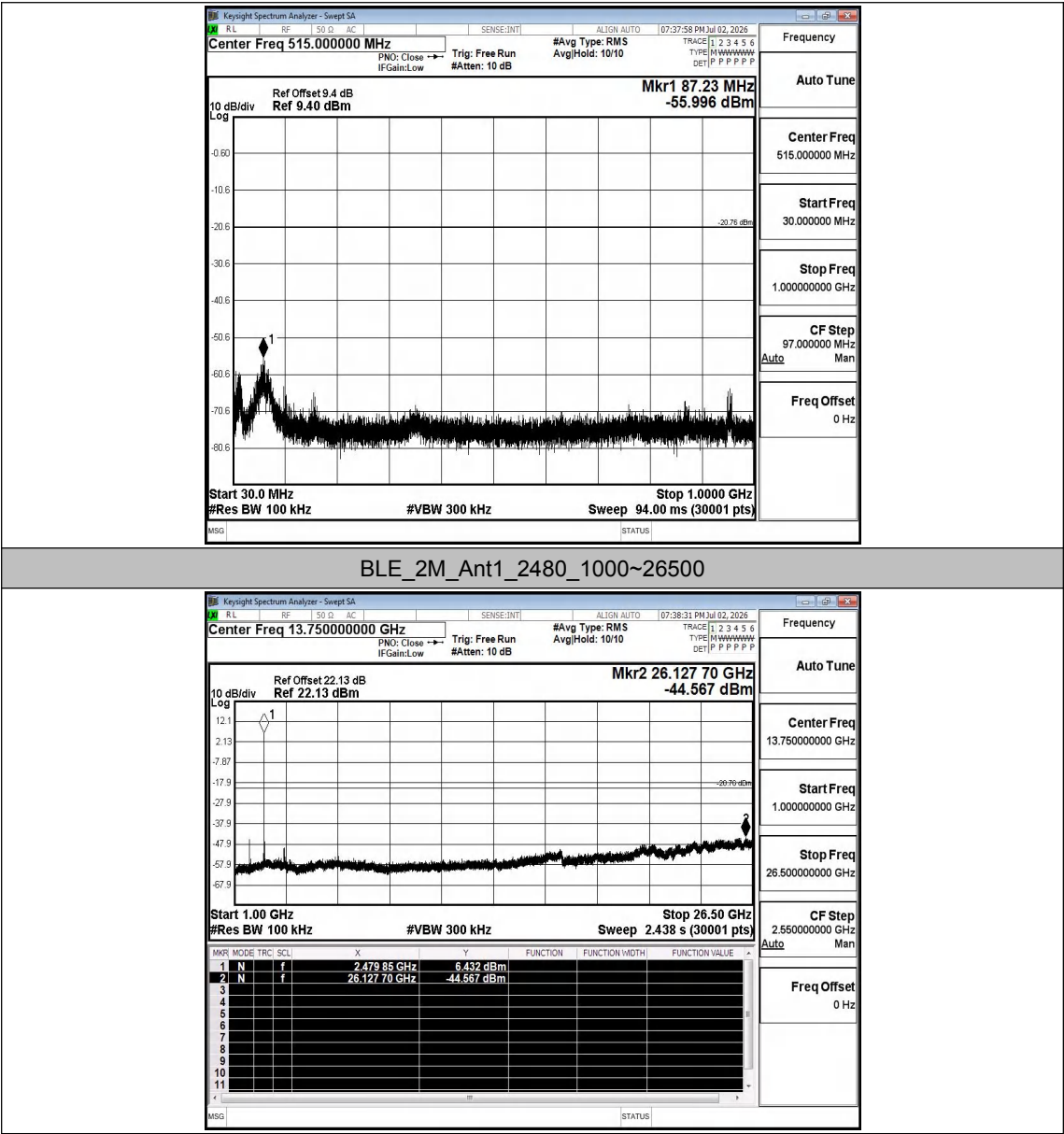




BLE\_2M\_Ant1\_2480\_0~Reference



BLE\_2M\_Ant1\_2480\_30~1000

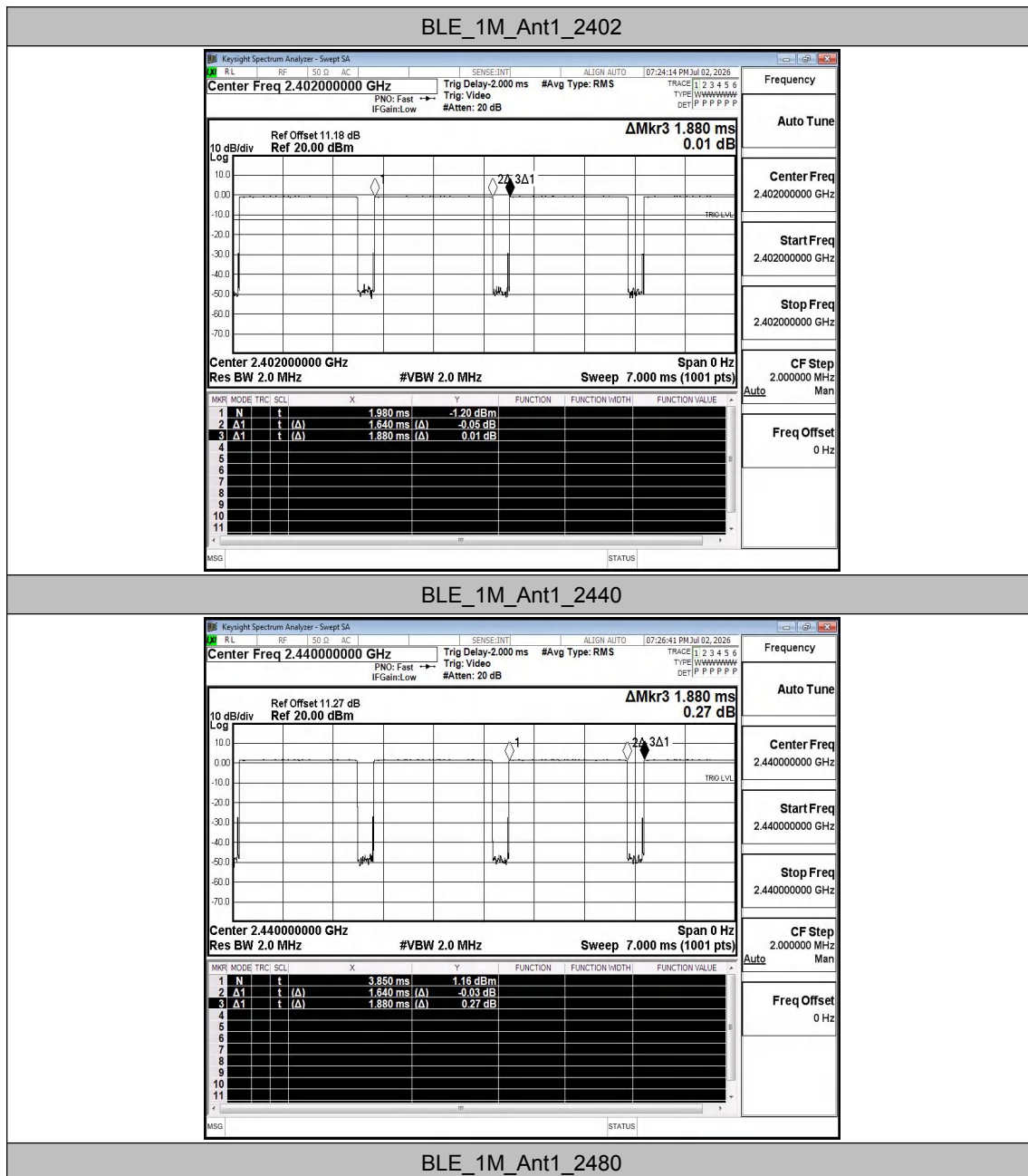


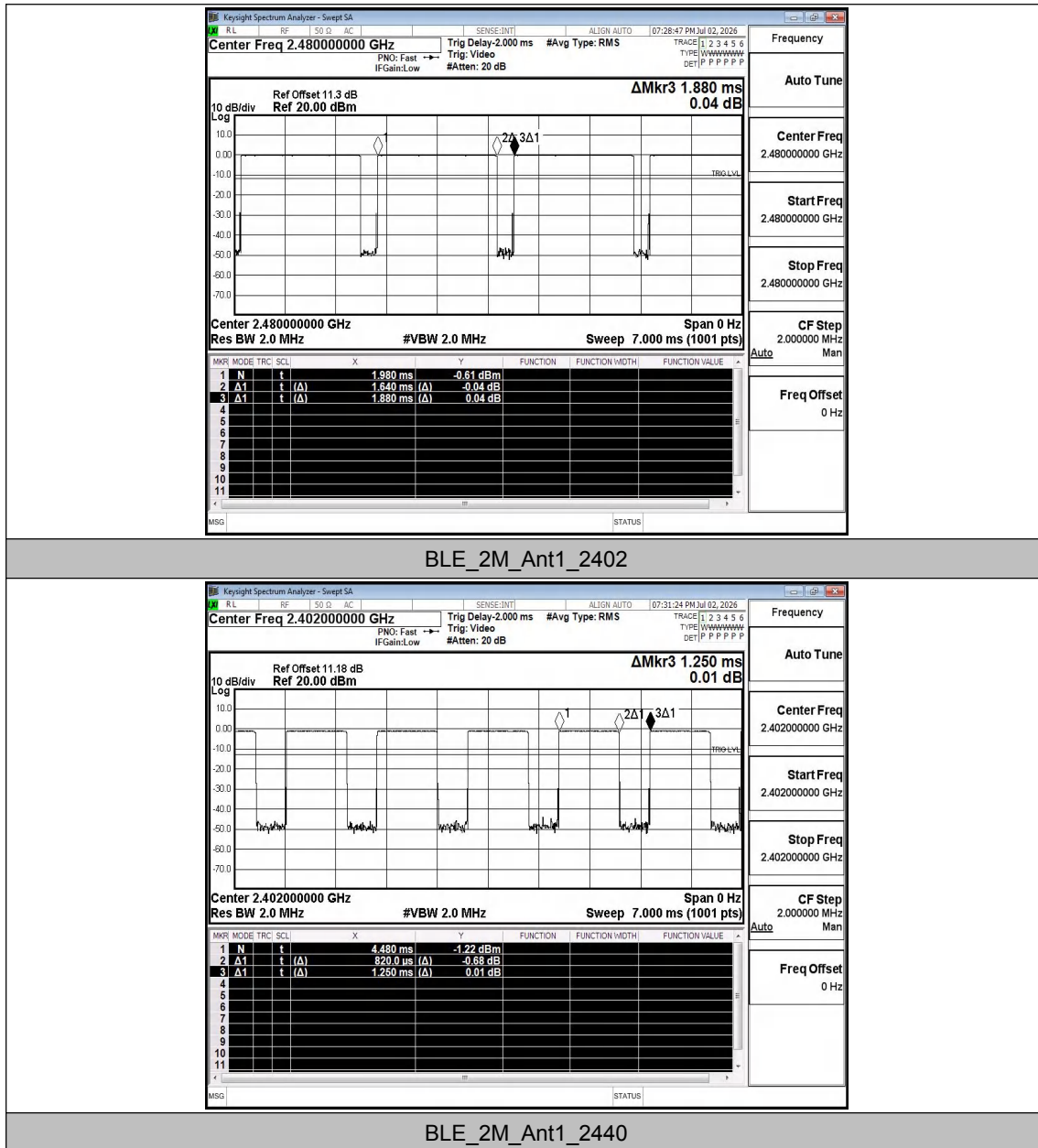
## B.6 Duty Cycle

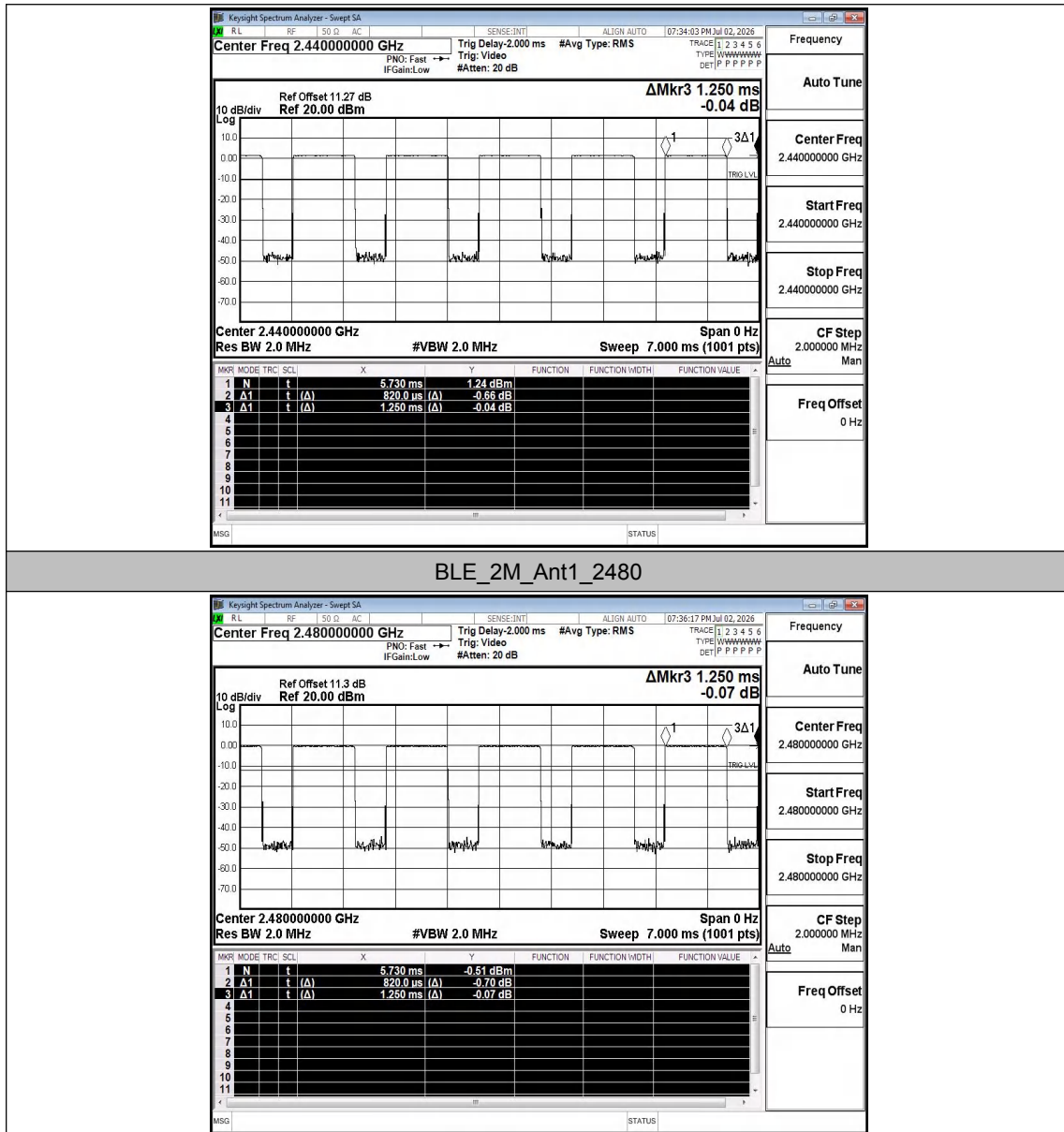
### Test Result

| TestMode | Antenna | Freq(MHz) | ON Time<br>[ms] | Period<br>[ms] | X      | DC<br>[%] | xFactor | Limit | Verdict |
|----------|---------|-----------|-----------------|----------------|--------|-----------|---------|-------|---------|
| BLE_1M   | Ant1    | 2402      | 1.64            | 1.88           | 0.8723 | 87.23     | 0.59    | ---   | ---     |
|          |         | 2440      | 1.64            | 1.88           | 0.8723 | 87.23     | 0.59    | ---   | ---     |
|          |         | 2480      | 1.64            | 1.88           | 0.8723 | 87.23     | 0.59    | ---   | ---     |
| BLE_2M   | Ant1    | 2402      | 0.82            | 1.25           | 0.6560 | 65.60     | 1.83    | ---   | ---     |
|          |         | 2440      | 0.82            | 1.25           | 0.6560 | 65.60     | 1.83    | ---   | ---     |
|          |         | 2480      | 0.82            | 1.25           | 0.6560 | 65.60     | 1.83    | ---   | ---     |

## Test Graphs







## B.7 Emissions in Restricted Bands

### Test Result

| TestMode | Antenna | ChName | Freq(MHz) | Detector | Freq [MHz] | Result [dBm] | Limit [dBm] | Gain [dBi] | DC Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Verdict |
|----------|---------|--------|-----------|----------|------------|--------------|-------------|------------|----------------|-----------------|----------------|---------|
| BLE_1M   | Ant1    | Low    | 2402      | AV       | 2310.000   | -57.9        | ≤-43.79     | 2.00       | 0.59           | 39.89           | ≤54            | PASS    |
|          |         |        |           | AV       | 2381.270   | -56.91       | ≤-43.79     | 2.00       | 0.59           | 40.88           | ≤54            | PASS    |
|          |         |        |           | AV       | 2390.000   | -58.13       | ≤-43.79     | 2.00       | 0.59           | 39.66           | ≤54            | PASS    |
|          |         |        |           | Peak     | 2310.000   | -48.97       | ≤-23.20     | 2.00       | 0.00           | 48.23           | ≤74            | PASS    |
|          |         |        |           | Peak     | 2385.575   | -46.74       | ≤-23.20     | 2.00       | 0.00           | 50.46           | ≤74            | PASS    |
|          |         |        |           | Peak     | 2390.000   | -49.89       | ≤-23.20     | 2.00       | 0.00           | 47.31           | ≤74            | PASS    |
|          |         | High   | 2480      | AV       | 2483.500   | -57.36       | ≤-43.79     | 2.00       | 0.59           | 40.43           | ≤54            | PASS    |
|          |         |        |           | AV       | 2484.400   | -55.29       | ≤-43.79     | 2.00       | 0.59           | 42.50           | ≤54            | PASS    |
|          |         |        |           | AV       | 2500.000   | -57.7        | ≤-43.79     | 2.00       | 0.59           | 40.09           | ≤54            | PASS    |
|          |         |        |           | Peak     | 2483.500   | -48.45       | ≤-23.20     | 2.00       | 0.00           | 48.75           | ≤74            | PASS    |
|          |         |        |           | Peak     | 2484.080   | -36.66       | ≤-23.20     | 2.00       | 0.00           | 60.54           | ≤74            | PASS    |
|          |         |        |           | Peak     | 2500.000   | -49.82       | ≤-23.20     | 2.00       | 0.00           | 47.38           | ≤74            | PASS    |
| BLE_2M   | Ant1    | Low    | 2402      | AV       | 2310.000   | -58.45       | ≤-45.03     | 2.00       | 1.83           | 40.58           | ≤54            | PASS    |
|          |         |        |           | AV       | 2347.355   | -57.07       | ≤-45.03     | 2.00       | 1.83           | 41.96           | ≤54            | PASS    |
|          |         |        |           | AV       | 2390.000   | -58.06       | ≤-45.03     | 2.00       | 1.83           | 40.97           | ≤54            | PASS    |
|          |         |        |           | Peak     | 2310.000   | -49.59       | ≤-23.20     | 2.00       | 0.00           | 47.61           | ≤74            | PASS    |
|          |         |        |           | Peak     | 2380.640   | -46.87       | ≤-23.20     | 2.00       | 0.00           | 50.33           | ≤74            | PASS    |
|          |         |        |           | Peak     | 2390.000   | -49.37       | ≤-23.20     | 2.00       | 0.00           | 47.83           | ≤74            | PASS    |
|          |         | High   | 2480      | AV       | 2483.500   | -56.77       | ≤-45.03     | 2.00       | 1.83           | 42.26           | ≤54            | PASS    |
|          |         |        |           | AV       | 2484.320   | -55.09       | ≤-45.03     | 2.00       | 1.83           | 43.94           | ≤54            | PASS    |
|          |         |        |           | AV       | 2500.000   | -57.58       | ≤-45.03     | 2.00       | 1.83           | 41.45           | ≤54            | PASS    |
|          |         |        |           | Peak     | 2483.500   | -48.73       | ≤-23.20     | 2.00       | 0.00           | 48.47           | ≤74            | PASS    |
|          |         |        |           | Peak     | 2483.920   | -37.18       | ≤-23.20     | 2.00       | 0.00           | 60.02           | ≤74            | PASS    |
|          |         |        |           | Peak     | 2500.000   | -47.63       | ≤-23.20     | 2.00       | 0.00           | 49.57           | ≤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

