

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

Product Name: MAIrobotics Gatekeeper

Trade Mark: MAIrobotics

Test Model: Gatekeeper

FCC ID: 2AZYE-GATEKEEPER

### Environmental Conditions

|                    |           |
|--------------------|-----------|
| Temperature:       | 25.5°C    |
| Relative Humidity: | 55.2%     |
| ATM Pressure:      | 100.0 kPa |
| Test Engineer:     | Anna Hu   |
| Supervised by:     | Hugo Chen |
| NOTE               | N/A       |

## Appendix A: DTS Bandwidth

### Test Result

| TestMode | Antenna | Channel | DTS BW<br>[MHz] | FL[MHz]  | FH[MHz]  | Limit[MHz] | Verdict |
|----------|---------|---------|-----------------|----------|----------|------------|---------|
| BLE_1M   | Ant1    | 2402    | 0.652           | 2401.676 | 2402.328 | 0.5        | PASS    |
|          |         | 2440    | 0.640           | 2439.692 | 2440.332 | 0.5        | PASS    |
|          |         | 2480    | 0.652           | 2479.680 | 2480.332 | 0.5        | PASS    |

## Test Graphs

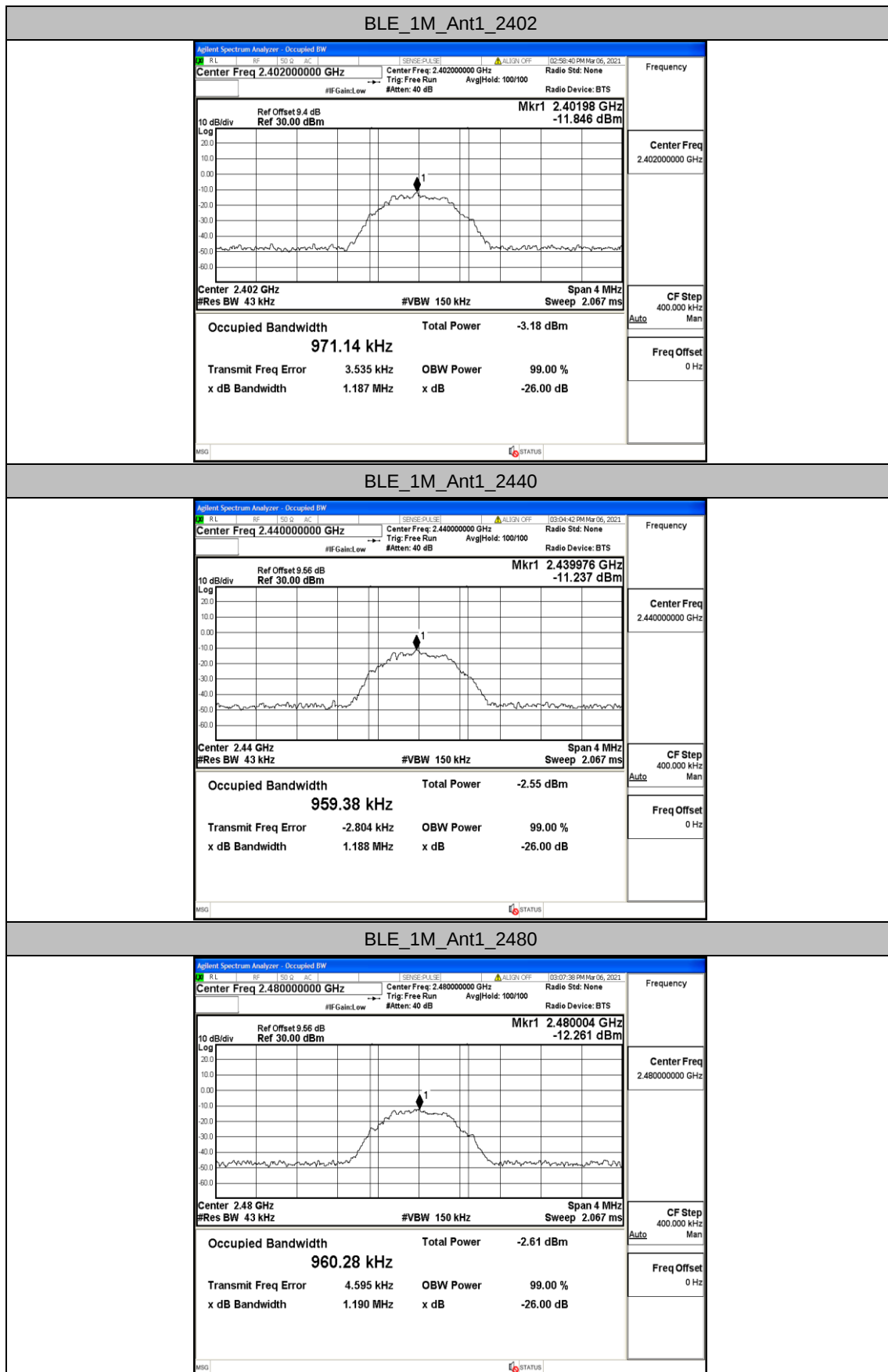


## Appendix B: Occupied Channel Bandwidth

### Test Result

| TestMode | Antenna | Channel | OCB [MHz] | FL[MHz]  | FH[MHz]  | Limit[MHz] | Verdict |
|----------|---------|---------|-----------|----------|----------|------------|---------|
| BLE_1M   | Ant1    | 2402    | 0.97114   | 2401.518 | 2402.489 | ---        | PASS    |
|          |         | 2440    | 0.95938   | 2439.518 | 2440.477 | ---        | PASS    |
|          |         | 2480    | 0.96028   | 2479.524 | 2480.485 | ---        | PASS    |

## Test Graphs

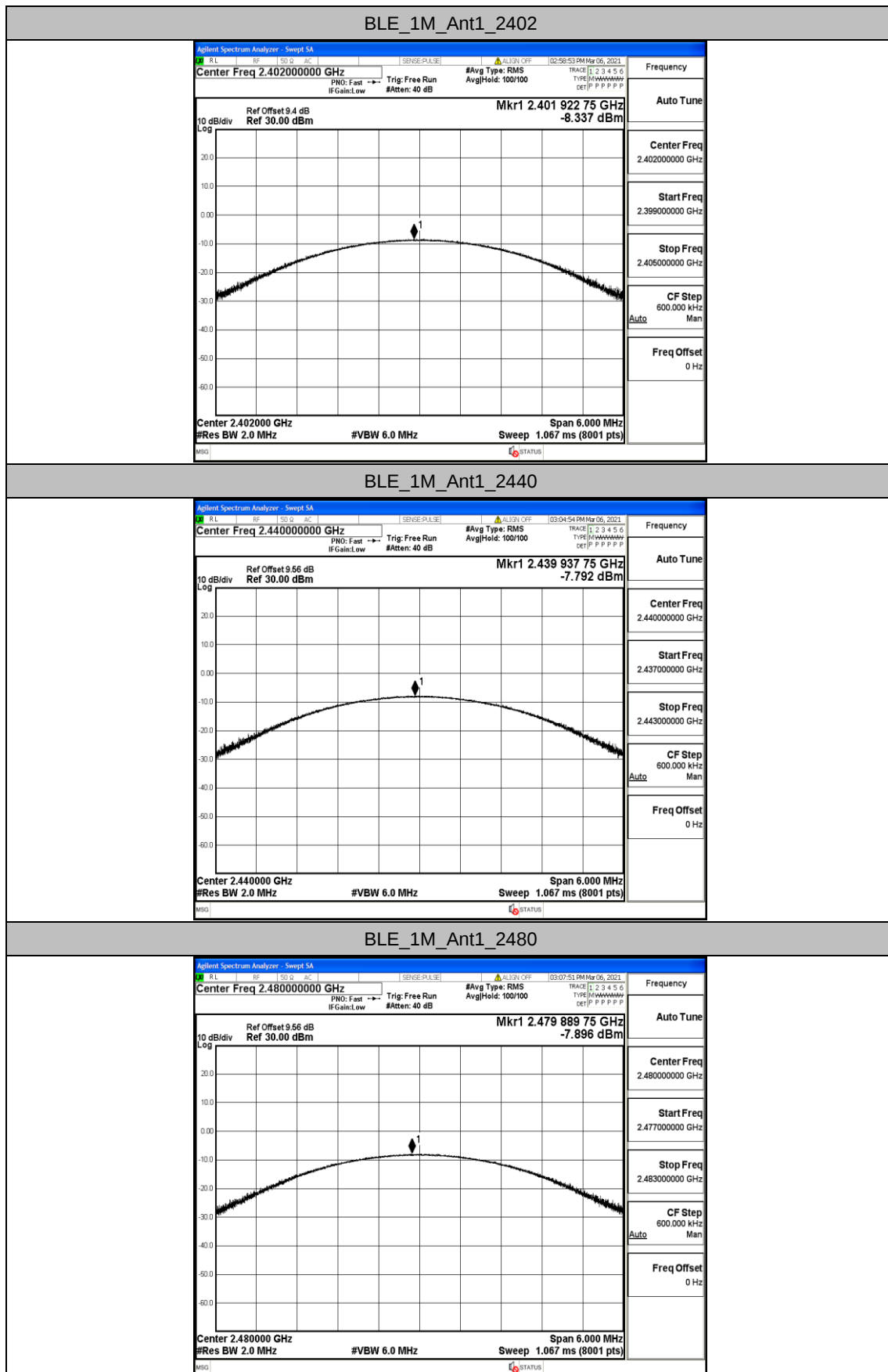


## Appendix C: Maximum conducted output power

### Test Result

| TestMode | Antenna | Channel | Result[dBm] | Limit[dBm] | Verdict |
|----------|---------|---------|-------------|------------|---------|
| BLE_1M   | Ant1    | 2402    | -8.34       | <=30       | PASS    |
|          |         | 2440    | -7.79       | <=30       | PASS    |
|          |         | 2480    | -7.9        | <=30       | PASS    |

## Test Graphs

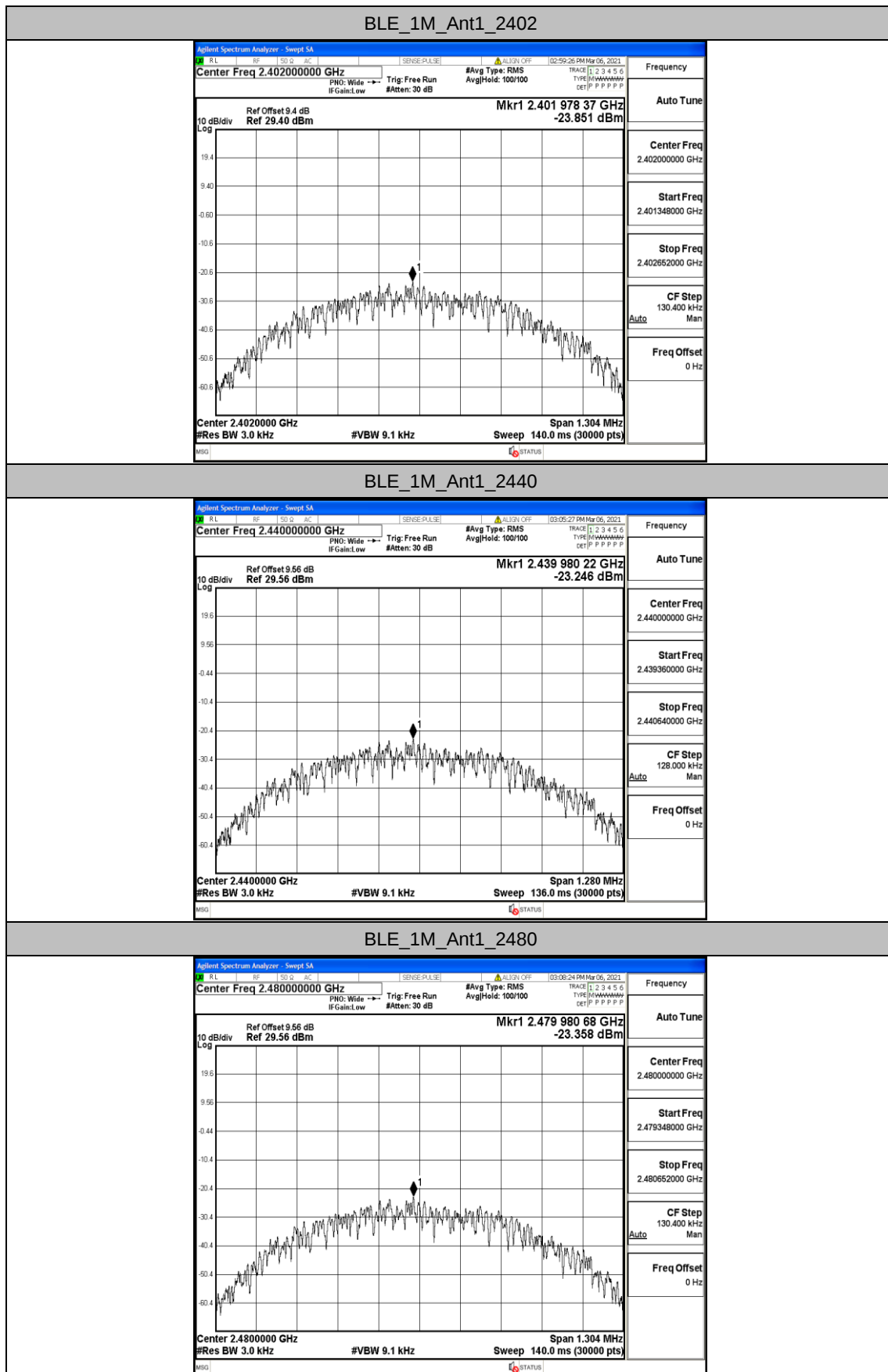


## Appendix D: Maximum power spectral density

### Test Result

| TestMode | Antenna | Channel | Result[dBm/3-100kHz] | Limit[dBm/3kHz] | Verdict |
|----------|---------|---------|----------------------|-----------------|---------|
| BLE_1M   | Ant1    | 2402    | -23.85               | <=8             | PASS    |
|          |         | 2440    | -23.25               | <=8             | PASS    |
|          |         | 2480    | -23.36               | <=8             | PASS    |

## Test Graphs

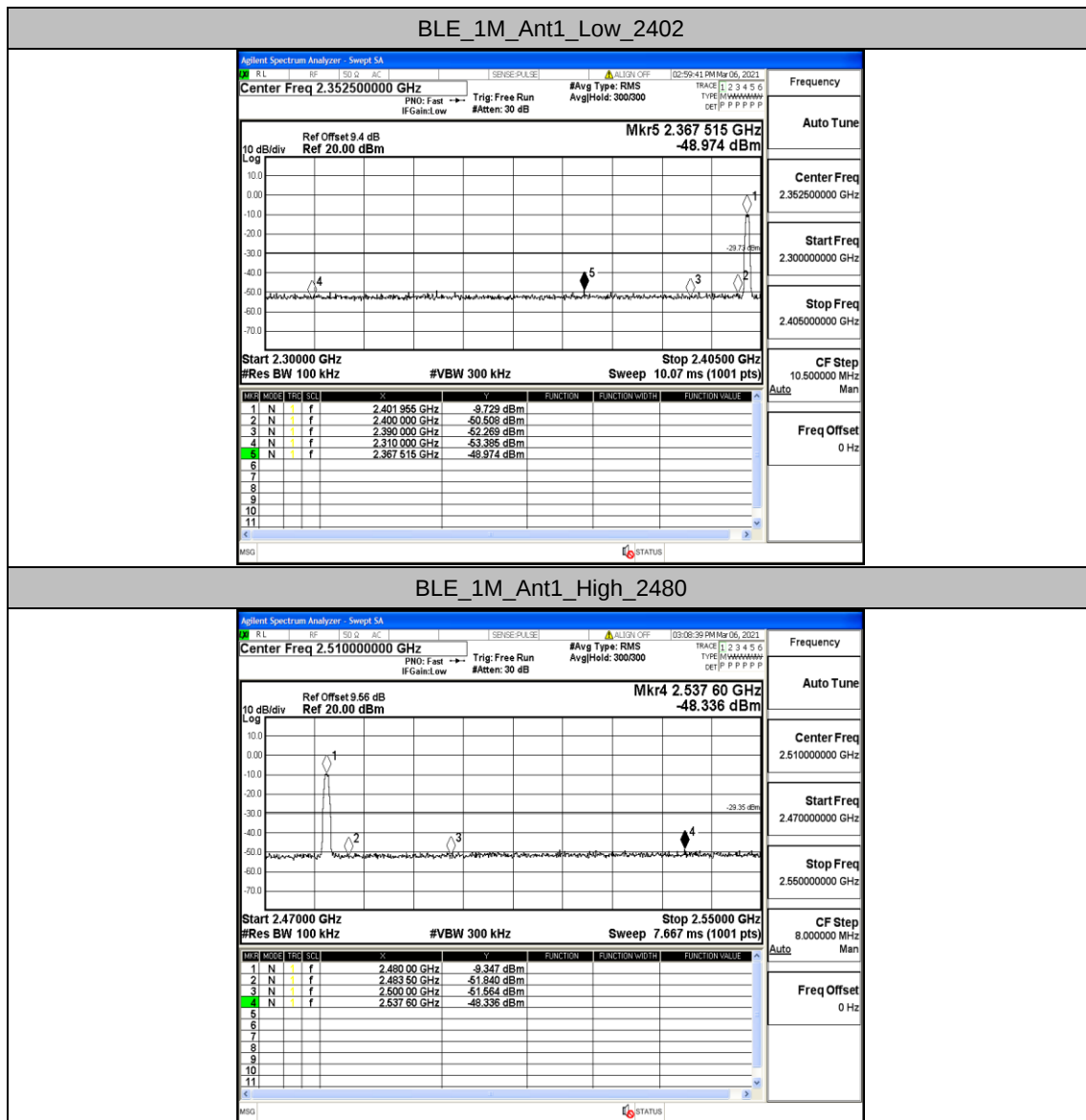


## Appendix E: Band edge measurements

### Test Result

| TestMode | Antenna | ChName | Channel | RefLevel[dBm] | Result[dBm] | Limit[dBm] | Verdict |
|----------|---------|--------|---------|---------------|-------------|------------|---------|
| BLE_1M   | Ant1    | Low    | 2402    | -9.73         | -48.97      | <=-29.73   | PASS    |
|          |         | High   | 2480    | -9.35         | -48.34      | <=-29.35   | PASS    |

## Test Graphs

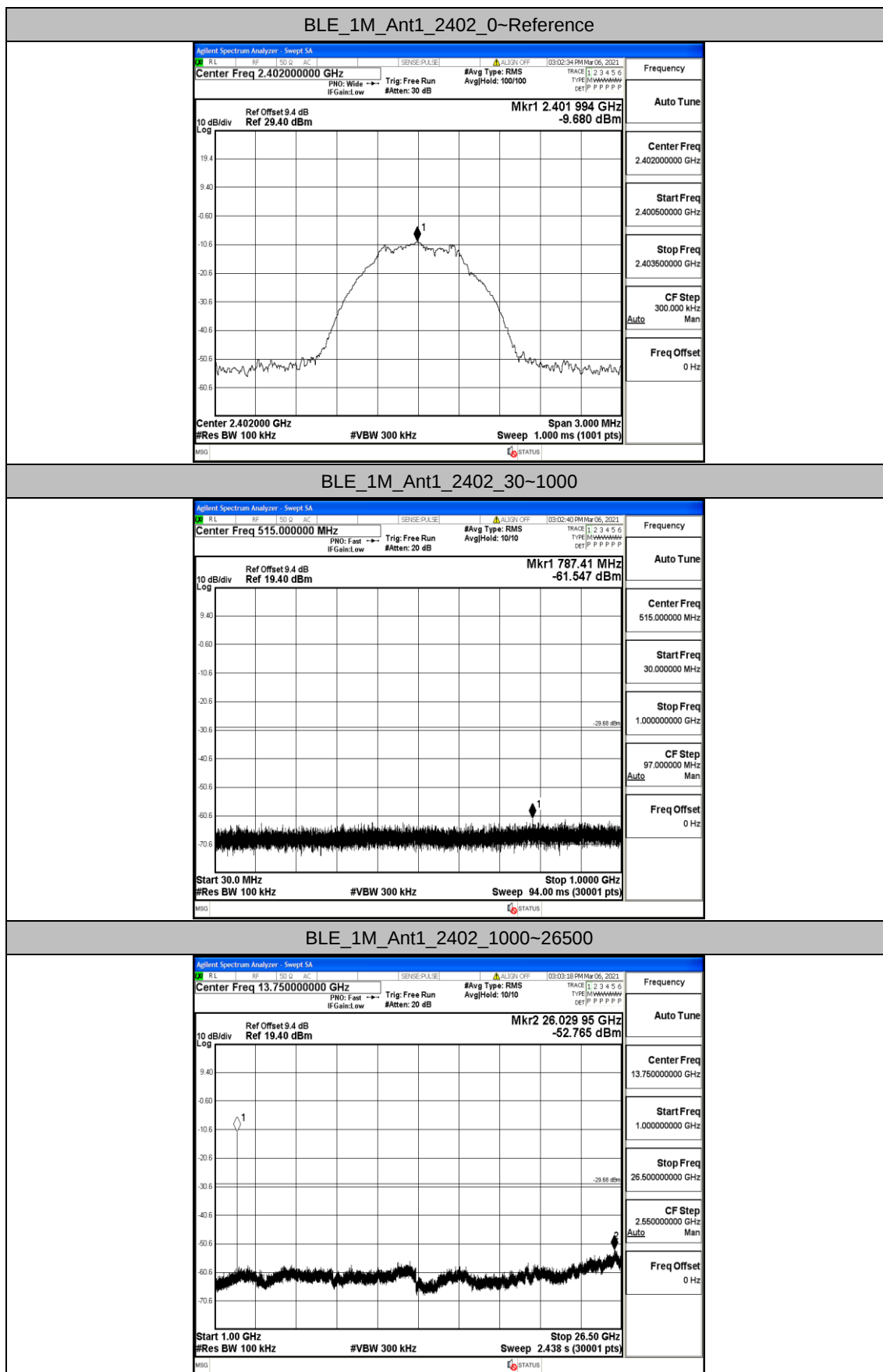


## Appendix F: Conducted Spurious Emission

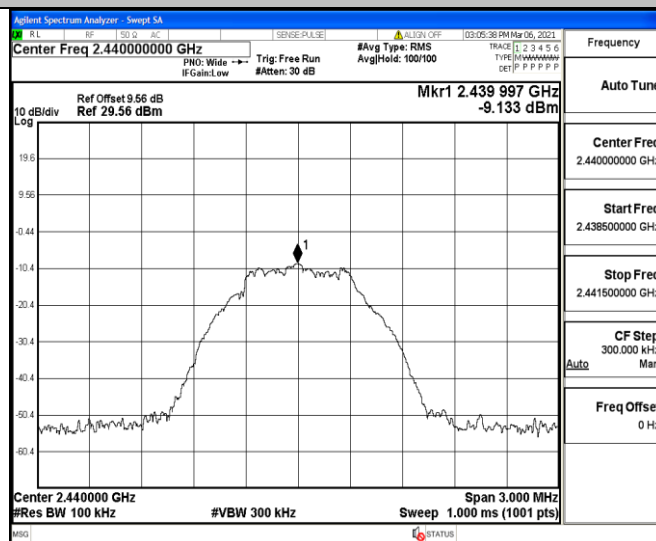
### Test Result

| TestMode | Antenna | Channel | FreqRange<br>[MHz] | RefLevel<br>[dBm] | Result[dBm] | Limit[dBm] | Verdict |
|----------|---------|---------|--------------------|-------------------|-------------|------------|---------|
| BLE_1M   | Ant1    | 2402    | Reference          | -9.68             | -9.68       | ---        | PASS    |
|          |         |         | 30~1000            | -9.68             | -61.55      | <=-29.68   | PASS    |
|          |         |         | 1000~26500         | -9.68             | -52.77      | <=-29.68   | PASS    |
|          |         | 2440    | Reference          | -9.13             | -9.13       | ---        | PASS    |
|          |         |         | 30~1000            | -9.13             | -61.44      | <=-29.13   | PASS    |
|          |         |         | 1000~26500         | -9.13             | -51.92      | <=-29.13   | PASS    |
|          |         | 2480    | Reference          | -9.38             | -9.38       | ---        | PASS    |
|          |         |         | 30~1000            | -9.38             | -61.77      | <=-29.38   | PASS    |
|          |         |         | 1000~26500         | -9.38             | -52.32      | <=-29.38   | PASS    |

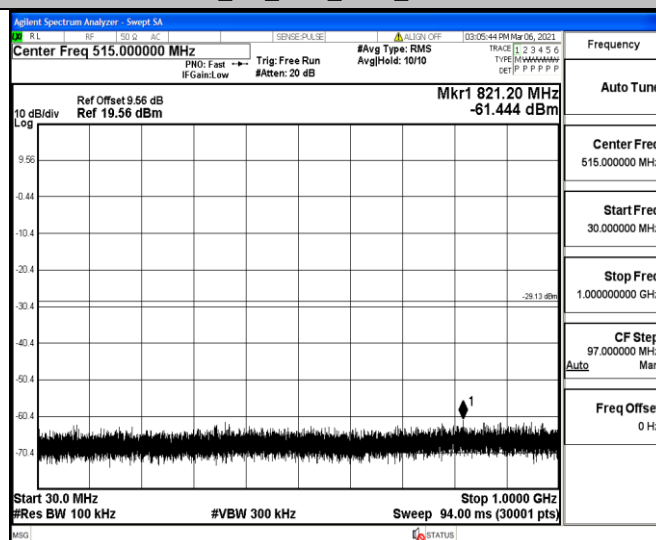
## Test Graphs



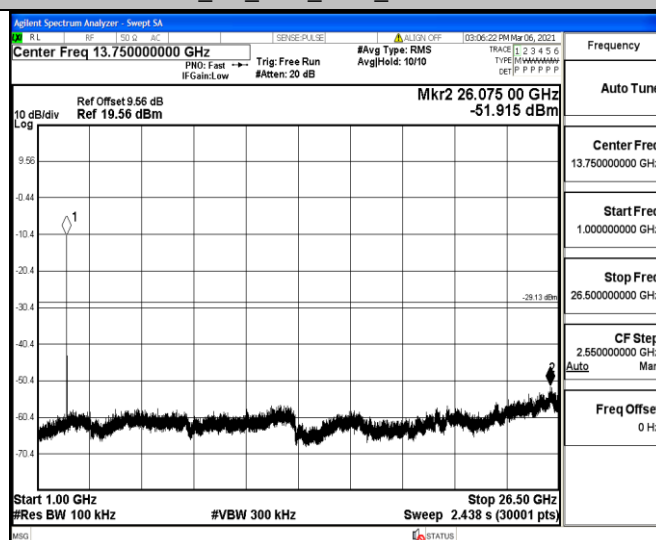
## BLE\_1M\_Ant1\_2440\_0~Reference



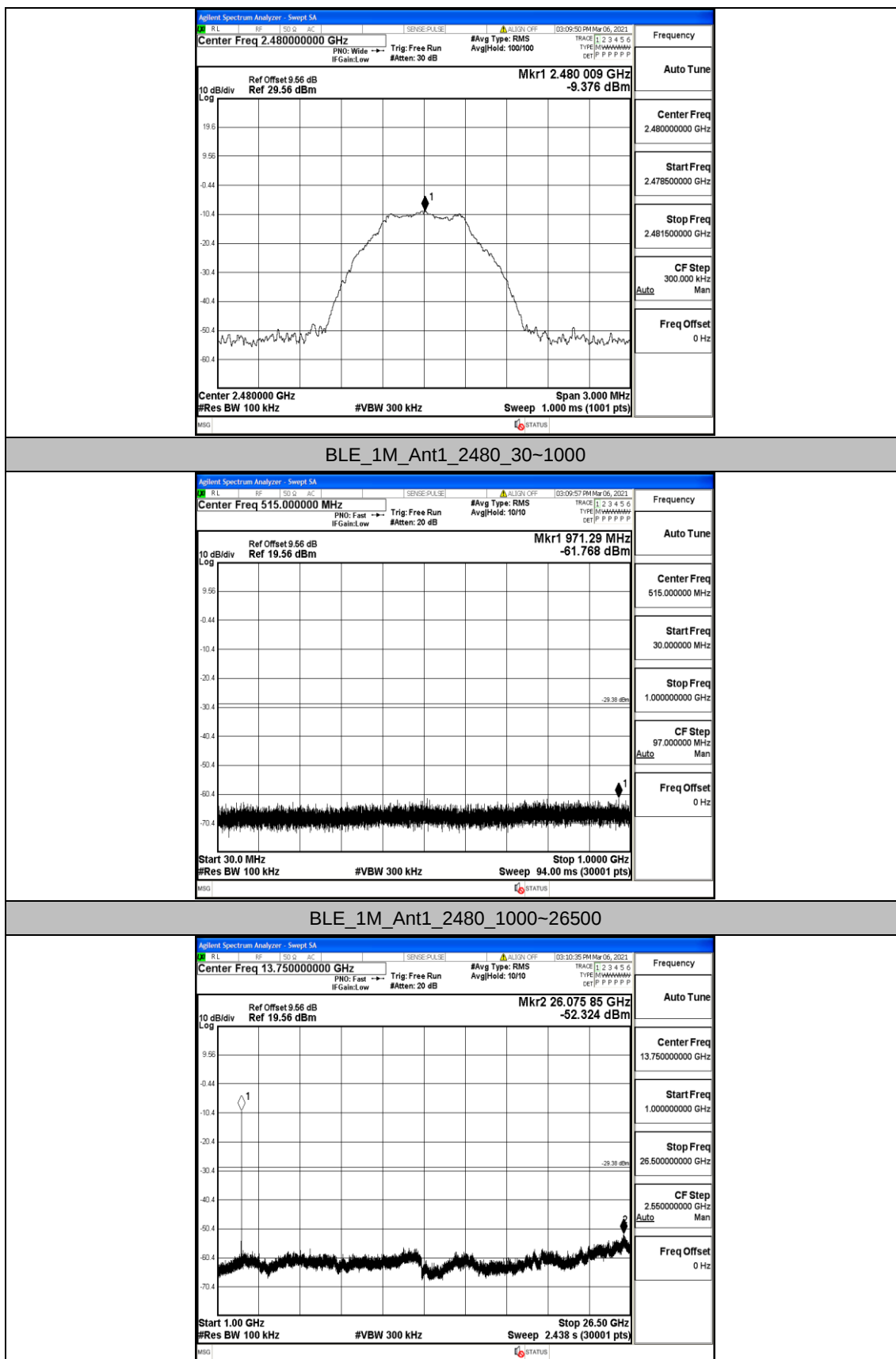
## BLE\_1M\_Ant1\_2440\_30~1000



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



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

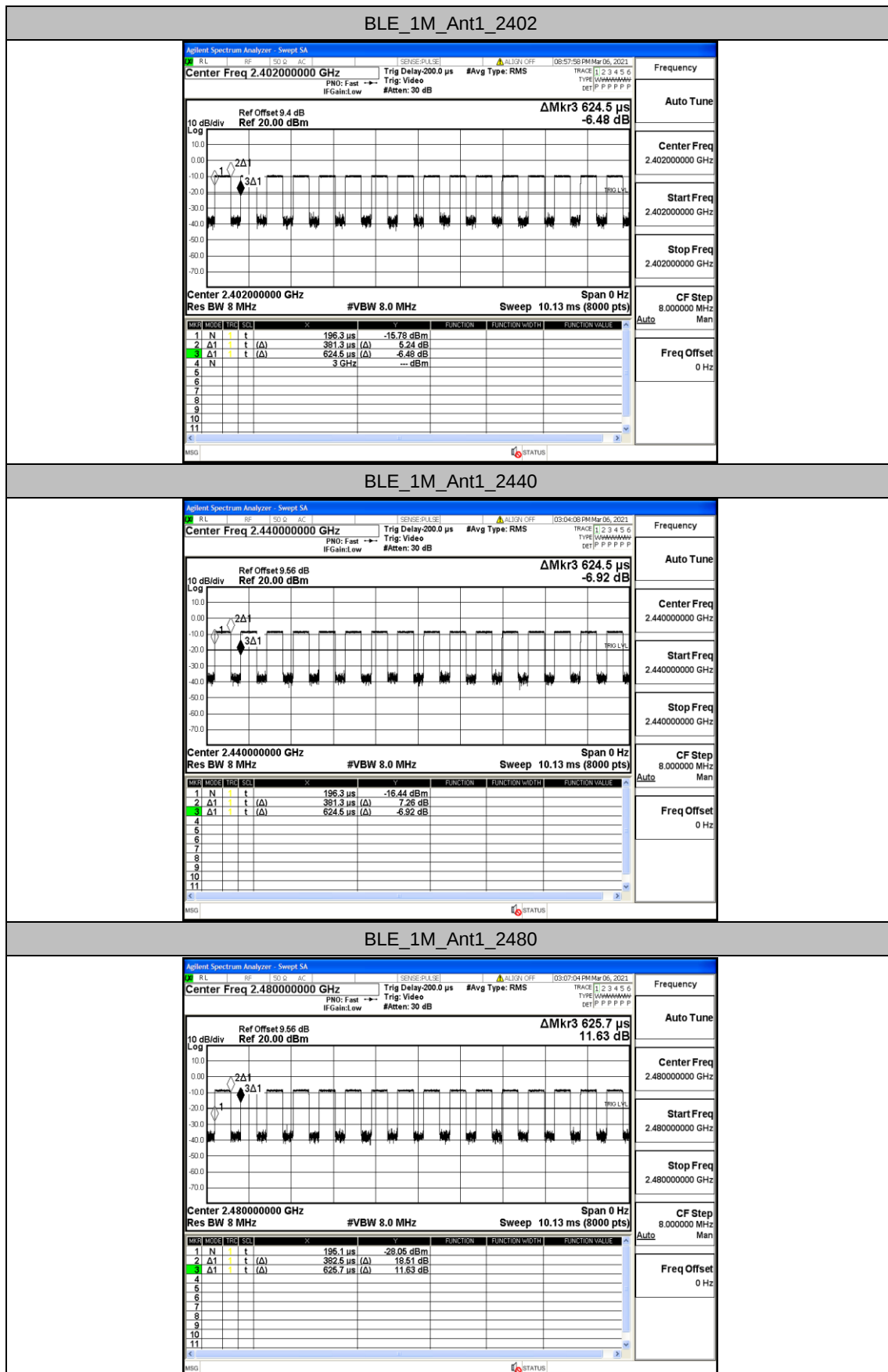


## Appendix G: Duty Cycle

### Test Result

| TestMode  | Antenna | Channel | Transmission<br>Duration [ms] | Transmission<br>Period [ms] | Duty Cycle [%] |
|-----------|---------|---------|-------------------------------|-----------------------------|----------------|
| BLE_BT 1M | Ant3    | 2402    | 0.40                          | 0.63                        | 63.49          |
|           |         | 2440    | 0.40                          | 0.62                        | 64.52          |
|           |         | 2480    | 0.40                          | 0.62                        | 64.52          |

## Test Graphs



## Appendix H: Emissions in Restricted Bands

### Test Result

| TestMode | Antenna | ChName | Channel | Detector | Freq.<br>[MHz] | Result<br>[dBm] | Limit<br>[dBm] | Verdict |
|----------|---------|--------|---------|----------|----------------|-----------------|----------------|---------|
| BLE_1M   | Ant1    | Low    | 2402    | AV       | 2310.000       | -49.22          | <=-41.20       | PASS    |
|          |         |        |         | AV       | 2389.670       | -48.94          | <=-41.20       | PASS    |
|          |         |        |         | AV       | 2390.000       | -48.96          | <=-41.20       | PASS    |
|          |         |        |         | Peak     | 2310.000       | -44.96          | <=-21.20       | PASS    |
|          |         |        |         | Peak     | 2339.060       | -39.35          | <=-21.20       | PASS    |
|          |         |        |         | Peak     | 2390.000       | -41.09          | <=-21.20       | PASS    |
|          |         | High   | 2480    | AV       | 2483.500       | -47.51          | <=-41.20       | PASS    |
|          |         |        |         | AV       | 2495.200       | -46.98          | <=-41.20       | PASS    |
|          |         |        |         | AV       | 2500.000       | -47.48          | <=-41.20       | PASS    |
|          |         |        |         | Peak     | 2483.500       | -41.54          | <=-21.20       | PASS    |
|          |         |        |         | Peak     | 2498.400       | -37.75          | <=-21.20       | PASS    |
|          |         |        |         | Peak     | 2500.000       | -38.3           | <=-21.20       | PASS    |

Note:

1. The Antenna Gain is compensated in the graph with 2dBi and Antenna Gain which is Higher.
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

