

## **FCC Appendix RF Test Data for BLE**

**FCC ID** : 2AY2G-ISCAN5

**Company** : AUTOLAND SCIENTECH CO., LTD

**EUT** : Automotive computer diagnostic instruments

**Model Number** : iSCAN 5

**Report No.** : CTA26051202501

**Reviewed By** : Eric Wang

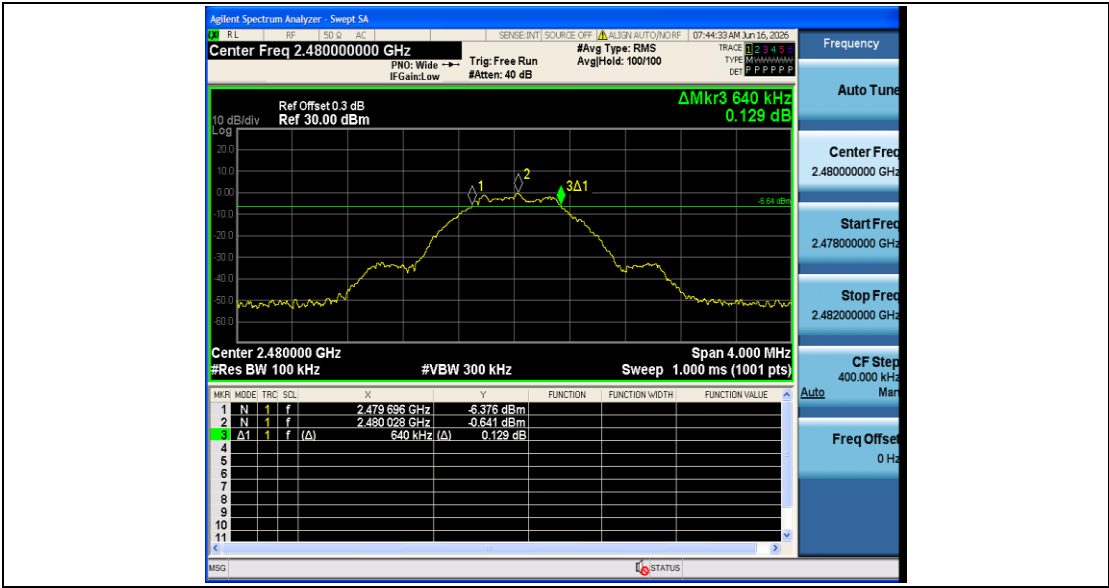
## Appendix A: DTS Bandwidth

### Test Result

| TestMode | Antenna | Freq(MHz) | DTS BW<br>[MHz] | FL[MHz]  | FH[MHz]  | Limit[MHz] | Verdict |
|----------|---------|-----------|-----------------|----------|----------|------------|---------|
| BLE_1M   | Ant1    | 2402      | 0.648           | 2401.688 | 2402.336 | 0.5        | PASS    |
|          |         | 2440      | 0.648           | 2439.692 | 2440.340 | 0.5        | PASS    |
|          |         | 2480      | 0.640           | 2479.696 | 2480.336 | 0.5        | PASS    |

Test Graphs



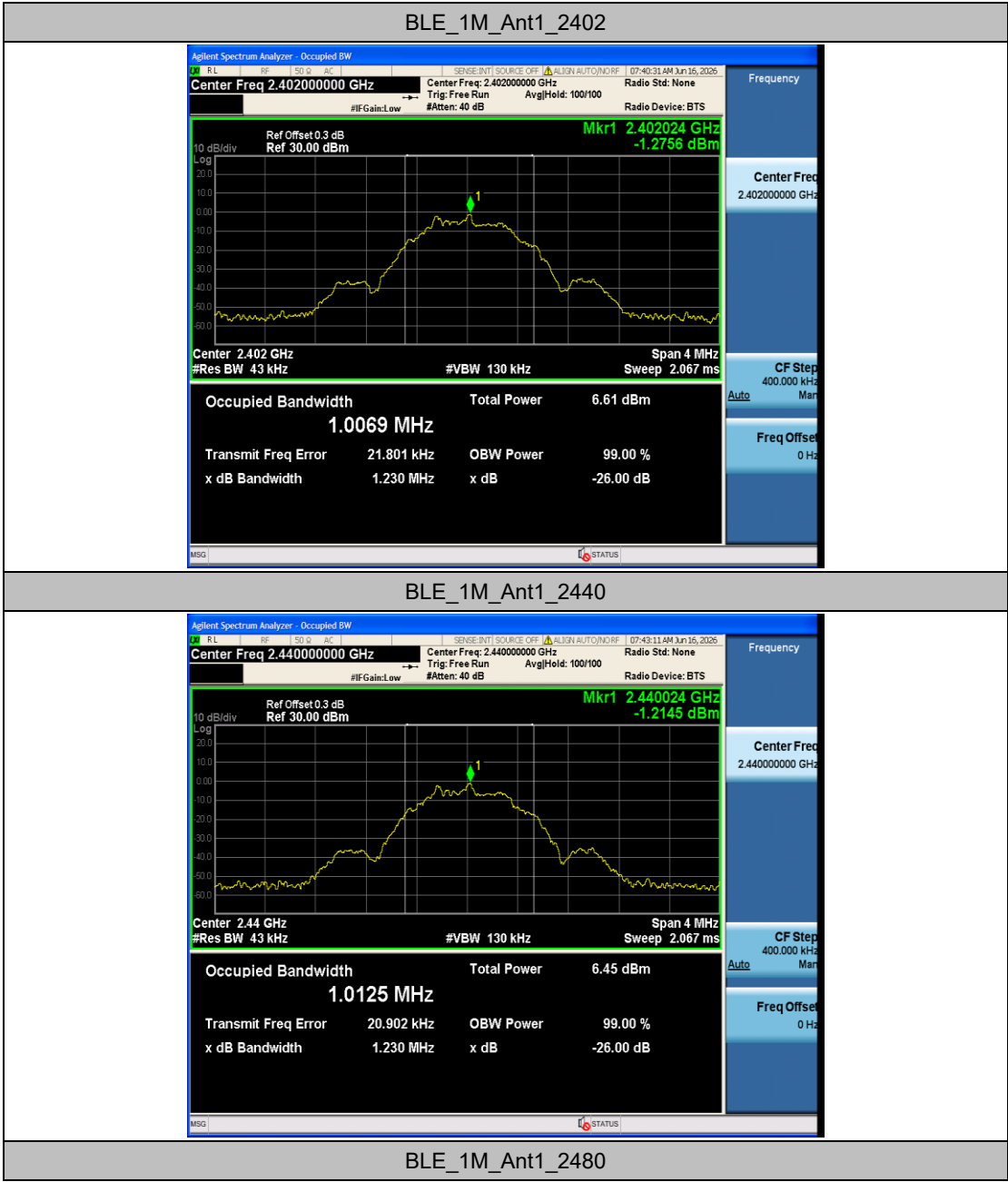


## Appendix B: Occupied Channel Bandwidth

### Test Result

| TestMode | Antenna | Freq(MHz) | OCB [MHz] | FL[MHz]   | FH[MHz]   | Limit[MHz] | Verdict |
|----------|---------|-----------|-----------|-----------|-----------|------------|---------|
| BLE_1M   | Ant1    | 2402      | 1.0069    | 2401.5184 | 2402.5253 | ---        | ---     |
|          |         | 2440      | 1.0125    | 2439.5147 | 2440.5272 | ---        | ---     |
|          |         | 2480      | 1.0090    | 2479.5158 | 2480.5248 | ---        | ---     |

Test Graphs





## Appendix C: Maximum conducted output power

### Test Result Peak

| TestMode | Antenna | Freq(MHz) | Conducted Peak Power[dBm] | Conducted Limit[dBm] | Verdict |
|----------|---------|-----------|---------------------------|----------------------|---------|
| BLE_1M   | Ant1    | 2402      | -0.19                     | ≤30                  | PASS    |
|          |         | 2440      | -0.22                     | ≤30                  | PASS    |
|          |         | 2480      | -0.45                     | ≤30                  | PASS    |

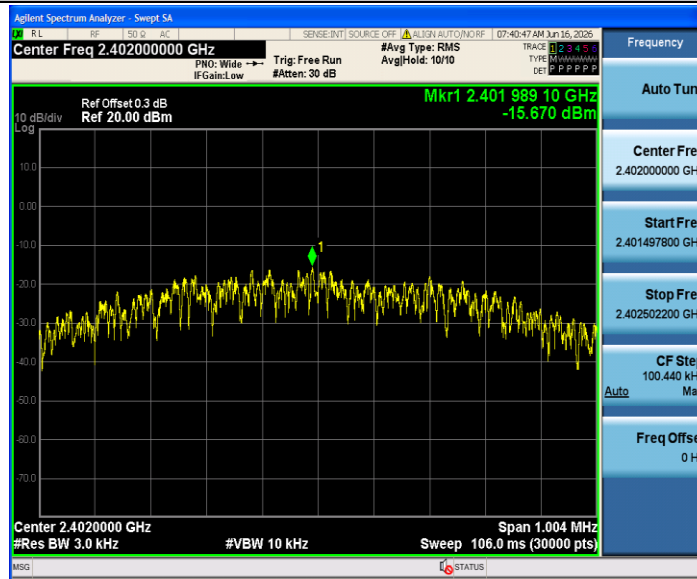
## Appendix D: Maximum power spectral density

### Test Result

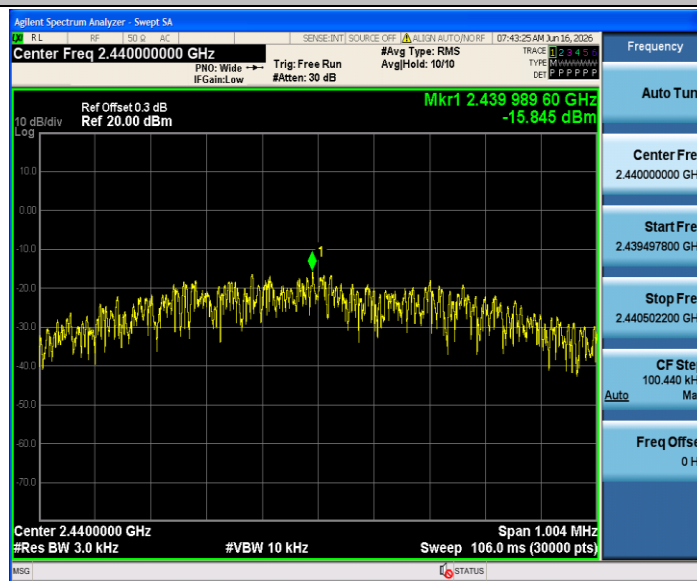
| TestMode | Antenna | Freq(MHz) | Result[dBm/3kHz] | Limit[dBm/3kHz] | Verdict |
|----------|---------|-----------|------------------|-----------------|---------|
| BLE_1M   | Ant1    | 2402      | -15.67           | ≤8.00           | PASS    |
|          |         | 2440      | -15.85           | ≤8.00           | PASS    |
|          |         | 2480      | -16.00           | ≤8.00           | PASS    |

## Test Graphs

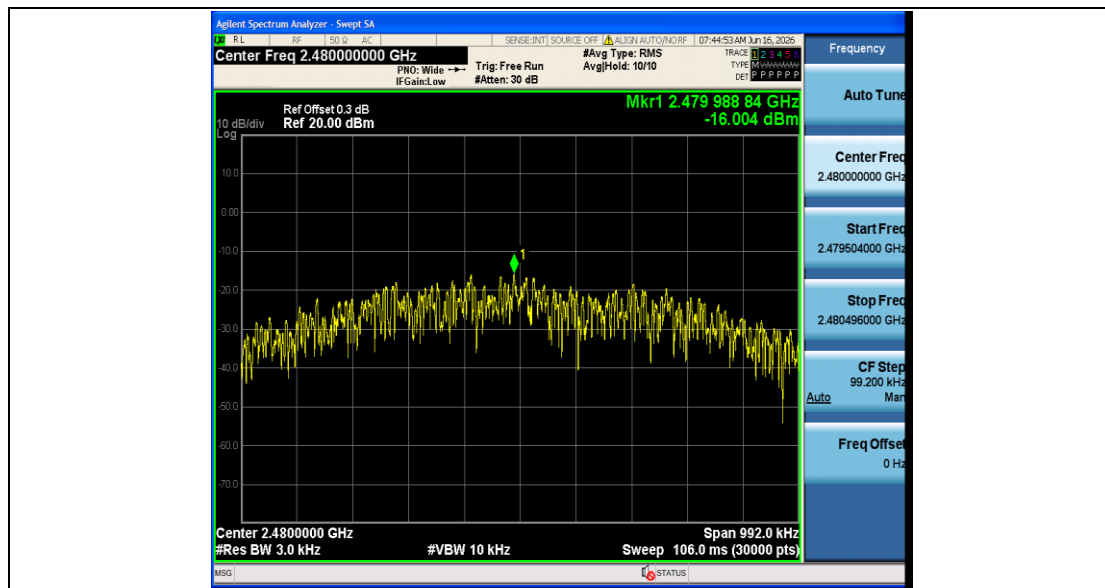
BLE\_1M\_Ant1\_2402



BLE\_1M\_Ant1\_2440



BLE\_1M\_Ant1\_2480

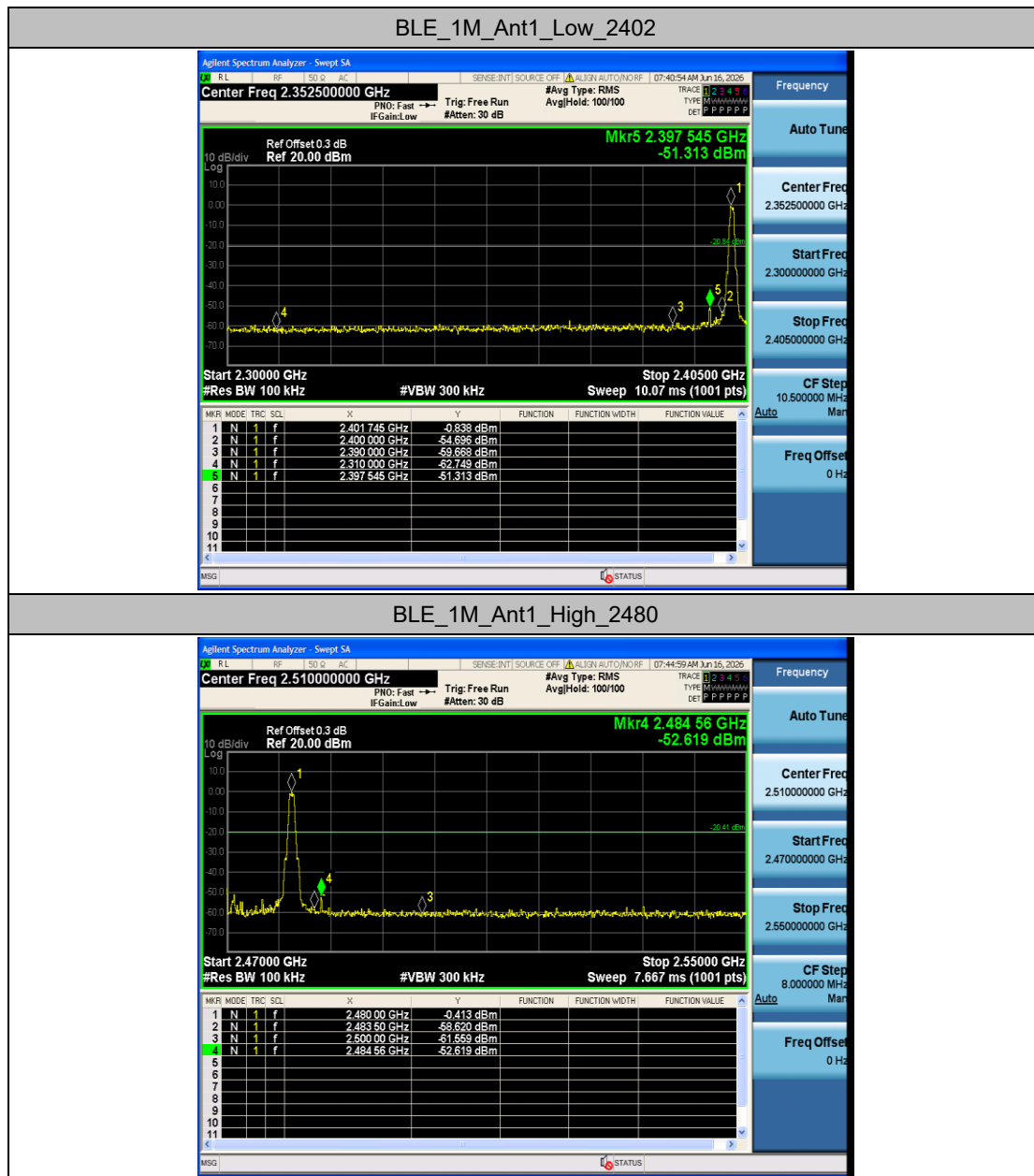


## Appendix E: Band edge measurements

### Test Result

| TestMode | Antenna | Channel | Freq(MHz) | RefLevel[dBm] | Result[dBm] | Limit[dBm] | Verdict |
|----------|---------|---------|-----------|---------------|-------------|------------|---------|
| BLE_1M   | Ant1    | Low     | 2402      | -0.84         | -51.31      | ≤-20.84    | PASS    |
|          |         | High    | 2480      | -0.41         | -52.62      | ≤-20.41    | PASS    |

## Test Graphs

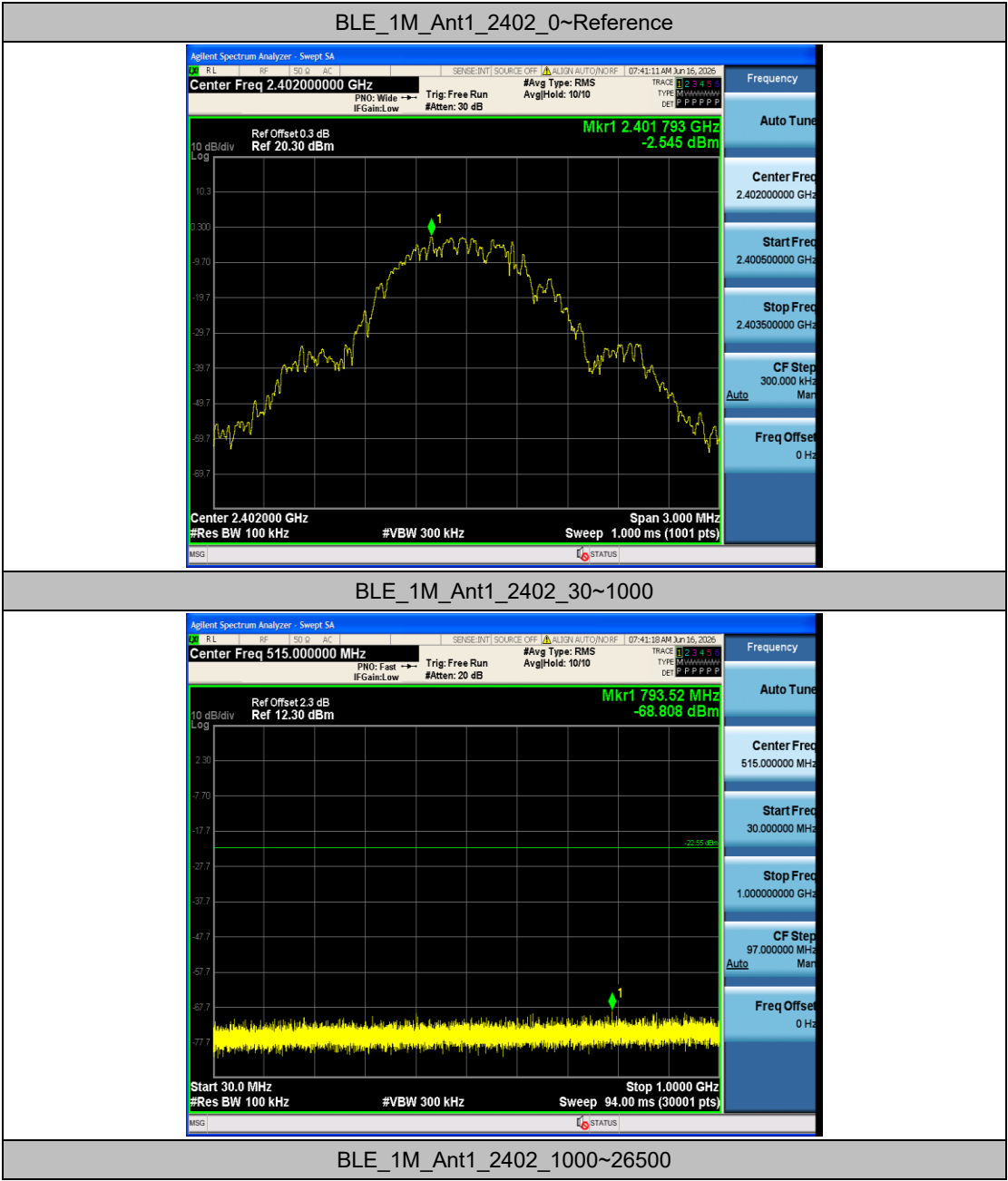


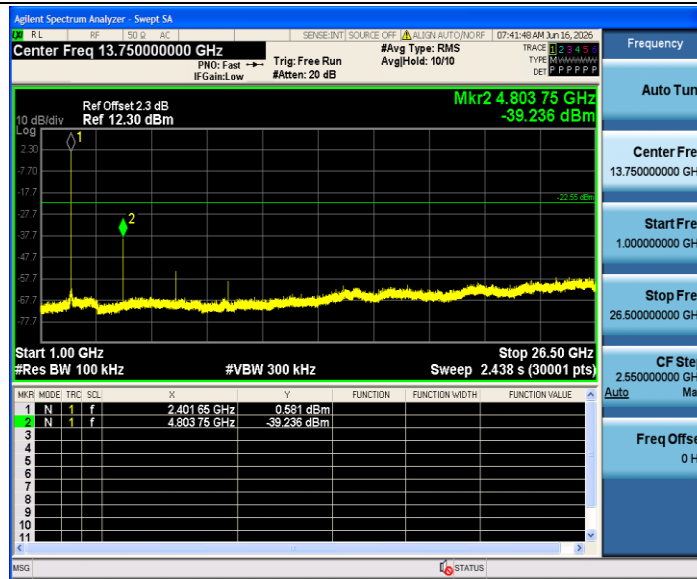
## Appendix F: Conducted Spurious Emission

### Test Result

| TestMode | Antenna | Freq(MHz) | FreqRange<br>[MHz] | RefLevel<br>[dBm] | Result[dBm] | Limit[dBm] | Verdict |
|----------|---------|-----------|--------------------|-------------------|-------------|------------|---------|
| BLE_1M   | Ant1    | 2402      | Reference          | -2.55             | -2.55       | ---        | PASS    |
|          |         |           | 30~1000            | -2.55             | -68.81      | ≤-22.55    | PASS    |
|          |         |           | 1000~26500         | -2.55             | -39.24      | ≤-22.55    | PASS    |
|          |         | 2440      | Reference          | -1.31             | -1.31       | ---        | PASS    |
|          |         |           | 30~1000            | -1.31             | -68.8       | ≤-21.31    | PASS    |
|          |         |           | 1000~26500         | -1.31             | -40.34      | ≤-21.31    | PASS    |
|          |         | 2480      | Reference          | -1.47             | -1.47       | ---        | PASS    |
|          |         |           | 30~1000            | -1.47             | -69.1       | ≤-21.47    | PASS    |
|          |         |           | 1000~26500         | -1.47             | -41.43      | ≤-21.47    | PASS    |

Test Graphs

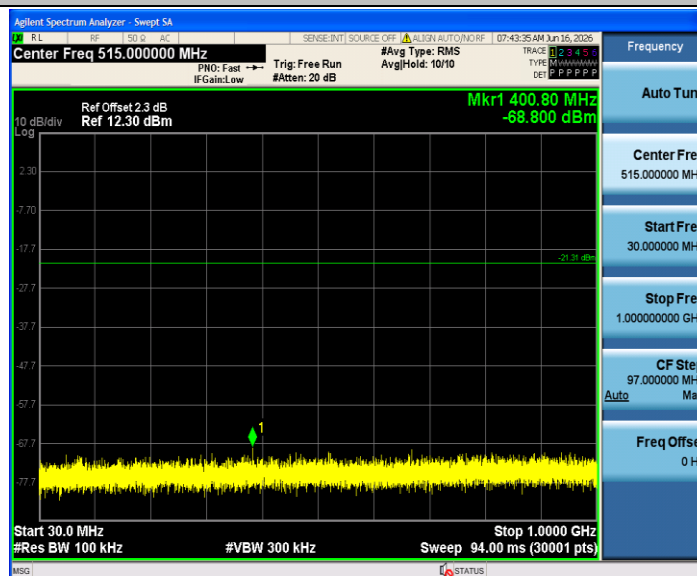




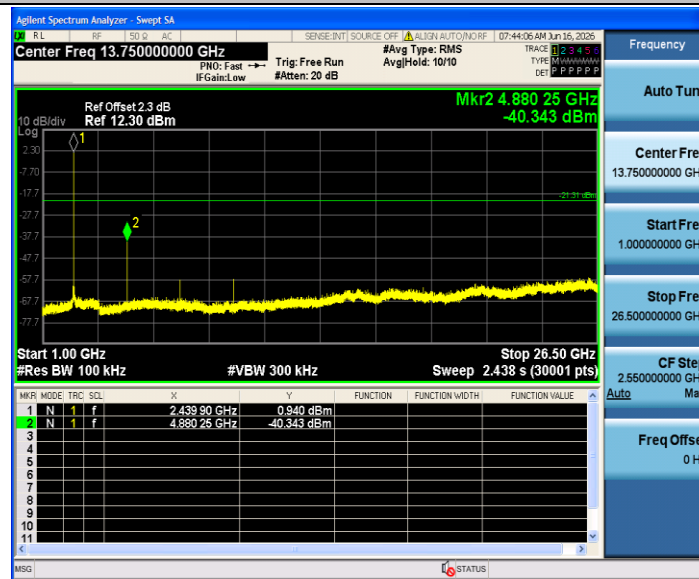
BLE\_1M\_Ant1\_2440\_0~Reference



BLE\_1M\_Ant1\_2440\_30~1000



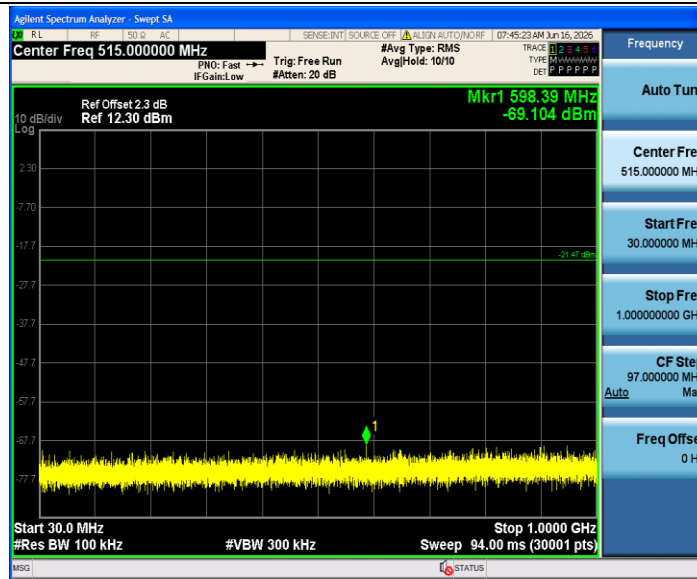
# BLE\_1M\_Ant1\_2440\_1000~26500



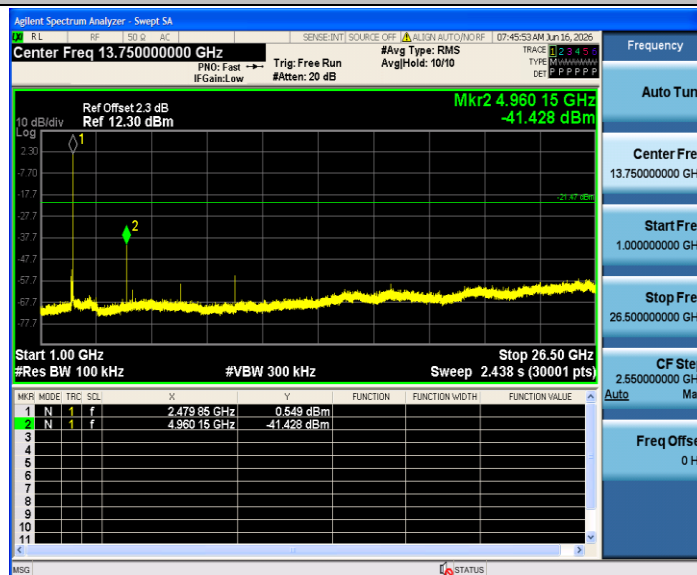
# BLE\_1M\_Ant1\_2480\_0~Reference



# BLE\_1M\_Ant1\_2480\_30~1000



BLE\_1M\_Ant1\_2480\_1000~26500

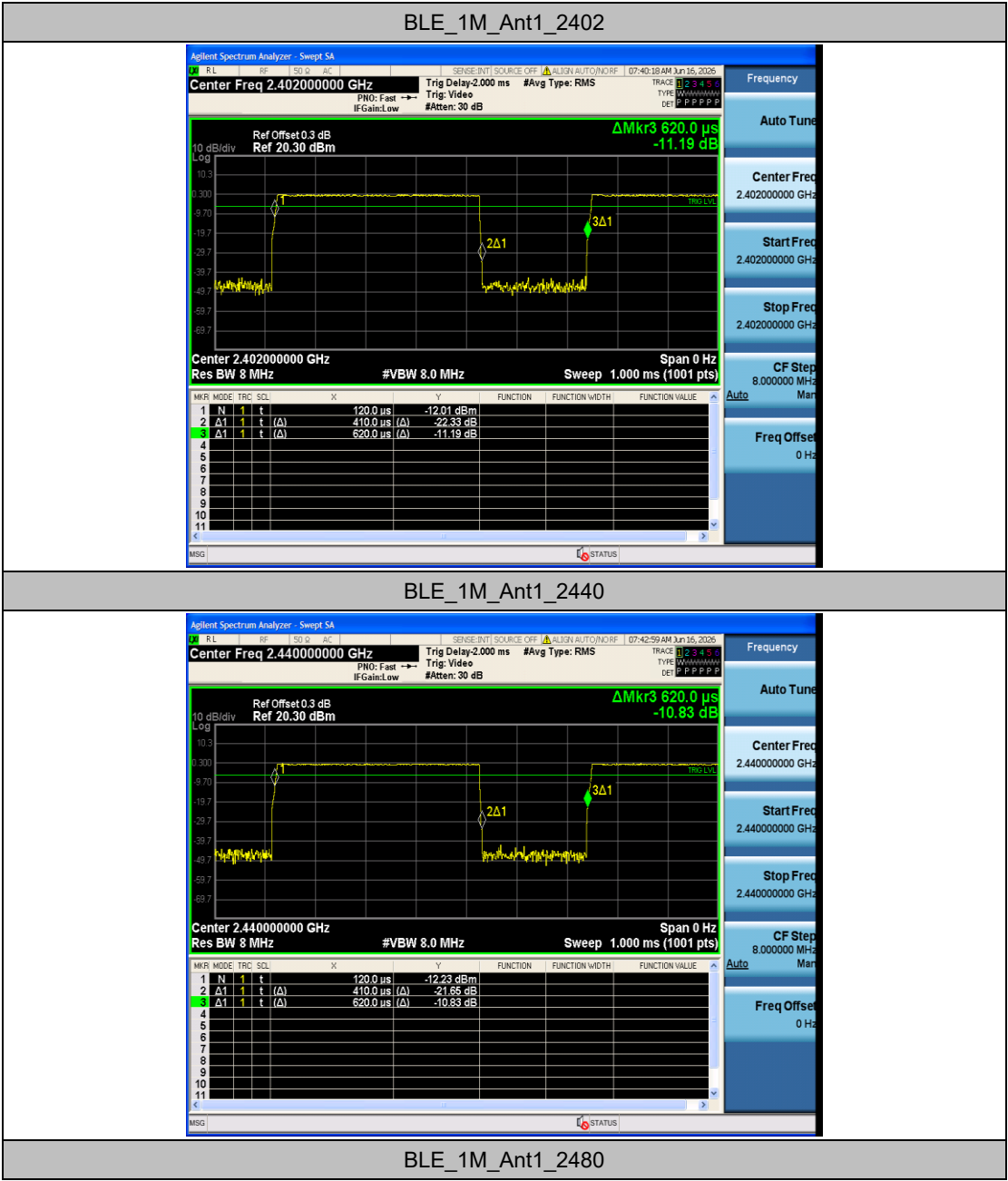


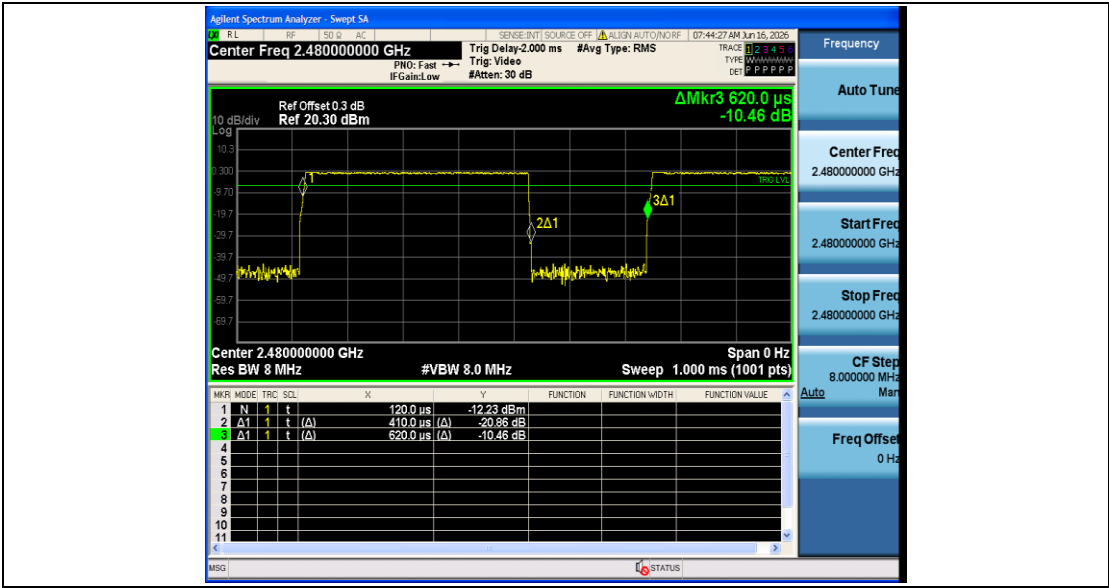
## Appendix G: Duty Cycle

### Test Result

| TestMode | Antenna | Freq(MHz) | ON Time<br>[ms] | Period<br>[ms] | X      | DC<br>[%] | xFactor | Limit | Verdict |
|----------|---------|-----------|-----------------|----------------|--------|-----------|---------|-------|---------|
| BLE_1M   | Ant1    | 2402      | 0.41            | 0.62           | 0.6613 | 66.13     | 1.80    | ---   | ---     |
|          |         | 2440      | 0.41            | 0.62           | 0.6613 | 66.13     | 1.80    | ---   | ---     |
|          |         | 2480      | 0.41            | 0.62           | 0.6613 | 66.13     | 1.80    | ---   | ---     |

Test Graphs





## Appendix H: Emissions in Restricted Bands

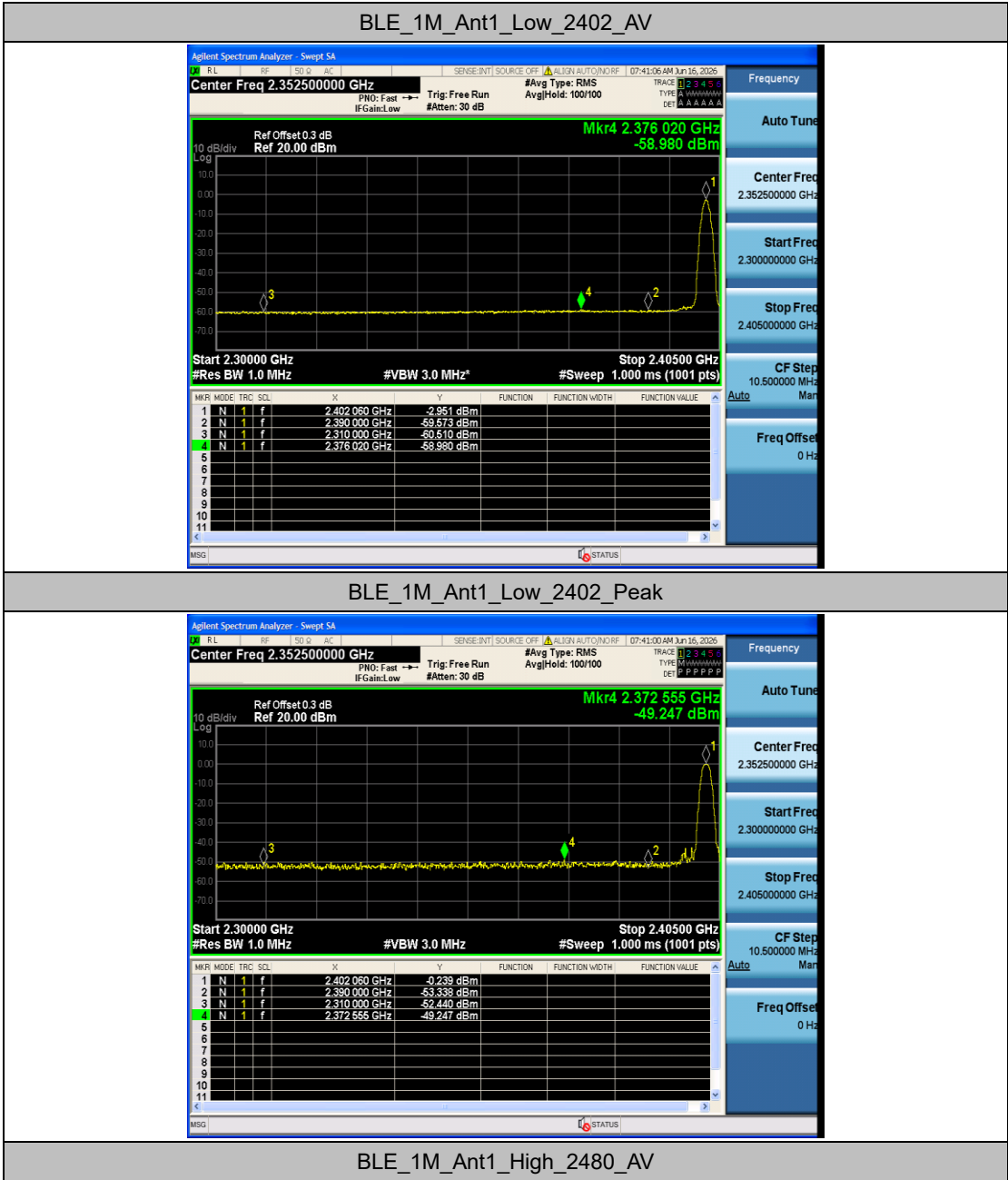
### Test Result

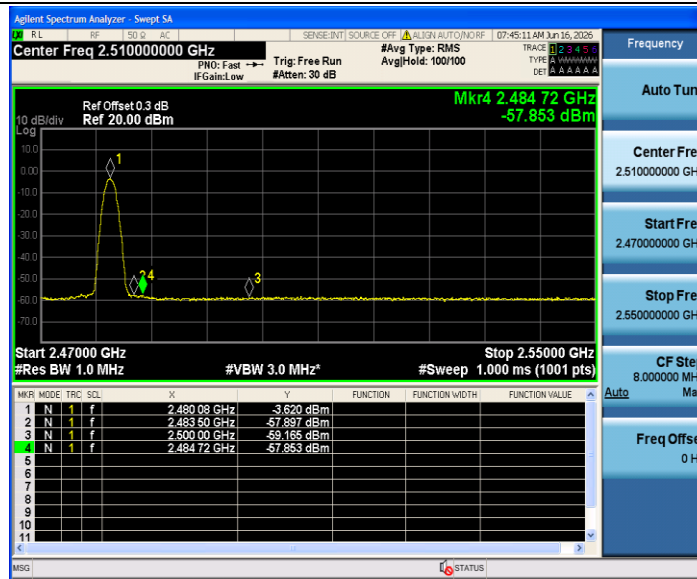
| TestMode | Antenna | Channel Name | Freq(MHz) | Detector | Freq [MHz] | Result [dBm] | Gain [dB] | DC Factor [dB] | Result [dBuV/m] | Limit [dBuV/m] | Verdict |
|----------|---------|--------------|-----------|----------|------------|--------------|-----------|----------------|-----------------|----------------|---------|
| BLE_1M   | Ant1    | Low          | 2402      | AV       | 2310.000   | -60.51       | 2.00      | 1.80           | 38.49           | ≤54            | PASS    |
|          |         |              |           | AV       | 2376.020   | -58.98       | 2.00      | 1.80           | 40.02           | ≤54            | PASS    |
|          |         |              |           | AV       | 2390.000   | -59.57       | 2.00      | 1.80           | 39.43           | ≤54            | PASS    |
|          |         |              |           | Peak     | 2310.000   | -52.44       | 2.00      | 0.00           | 44.76           | ≤74            | PASS    |
|          |         |              |           | Peak     | 2372.555   | -49.25       | 2.00      | 0.00           | 47.95           | ≤74            | PASS    |
|          |         |              |           | Peak     | 2390.000   | -53.34       | 2.00      | 0.00           | 43.86           | ≤74            | PASS    |
|          |         | High         | 2480      | AV       | 2483.500   | -57.9        | 2.00      | 1.80           | 41.10           | ≤54            | PASS    |
|          |         |              |           | AV       | 2484.720   | -57.85       | 2.00      | 1.80           | 41.15           | ≤54            | PASS    |
|          |         |              |           | AV       | 2500.000   | -59.17       | 2.00      | 1.80           | 39.83           | ≤54            | PASS    |
|          |         |              |           | Peak     | 2483.500   | -48.97       | 2.00      | 0.00           | 48.23           | ≤74            | PASS    |
|          |         |              |           | Peak     | 2484.400   | -44.73       | 2.00      | 0.00           | 52.47           | ≤74            | PASS    |
|          |         |              |           | Peak     | 2500.000   | -50.77       | 2.00      | 0.00           | 46.43           | ≤74            | PASS    |

Note:

1. 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\_High\_2480\_Peak

