



Appendix A

RF Test Data for BLE (Conducted Measurement)

Product Name: SOUNDPRO  
Test Model: NDS-4005

Environmental Conditions

|                    |           |
|--------------------|-----------|
| Temperature:       | 23.5° C   |
| Relative Humidity: | 52.2%     |
| ATM Pressure:      | 100.0 kPa |
| Test Engineer:     | Kay Hu    |
| Supervised by:     | Li Huan   |





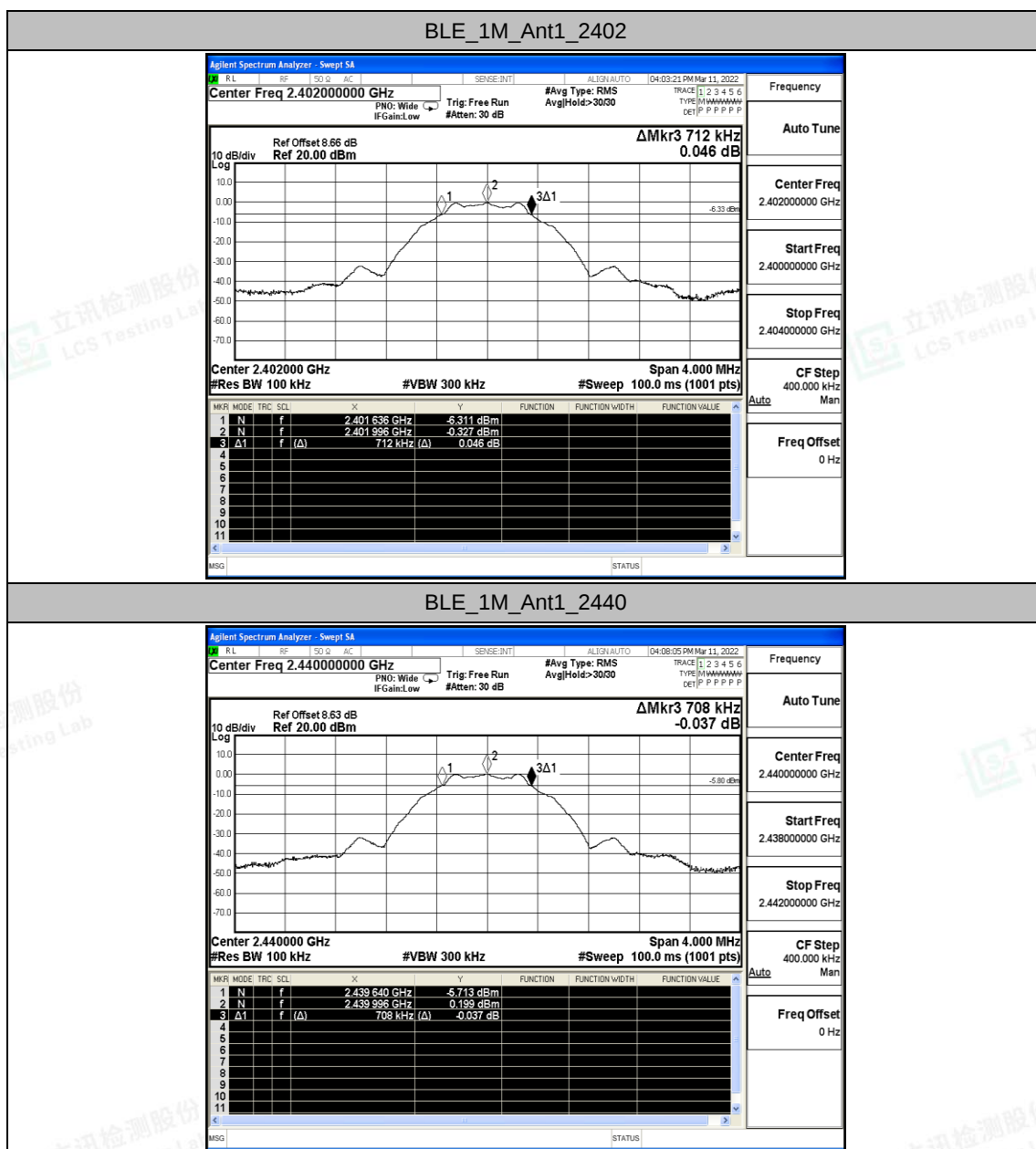
A.1 6dB Bandwidth

Test Result

| TestMode | Antenna | Channel | DTS BW [MHz] | FL[MHz]  | FH[MHz]  | Limit[MHz] | Verdict |
|----------|---------|---------|--------------|----------|----------|------------|---------|
| BLE_1M   | Ant1    | 2402    | 0.712        | 2401.636 | 2402.348 | 0.5        | PASS    |
|          |         | 2440    | 0.708        | 2439.640 | 2440.348 | 0.5        | PASS    |
|          |         | 2480    | 0.708        | 2479.640 | 2480.348 | 0.5        | PASS    |



## Test Graphs

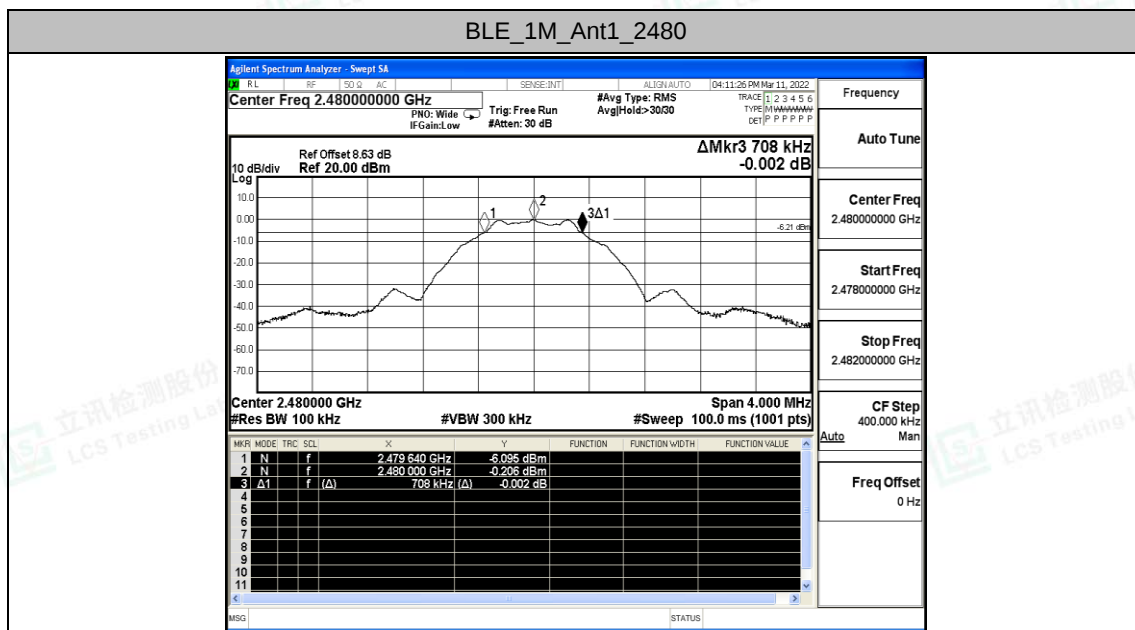


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A.2 Maximum conducted output power

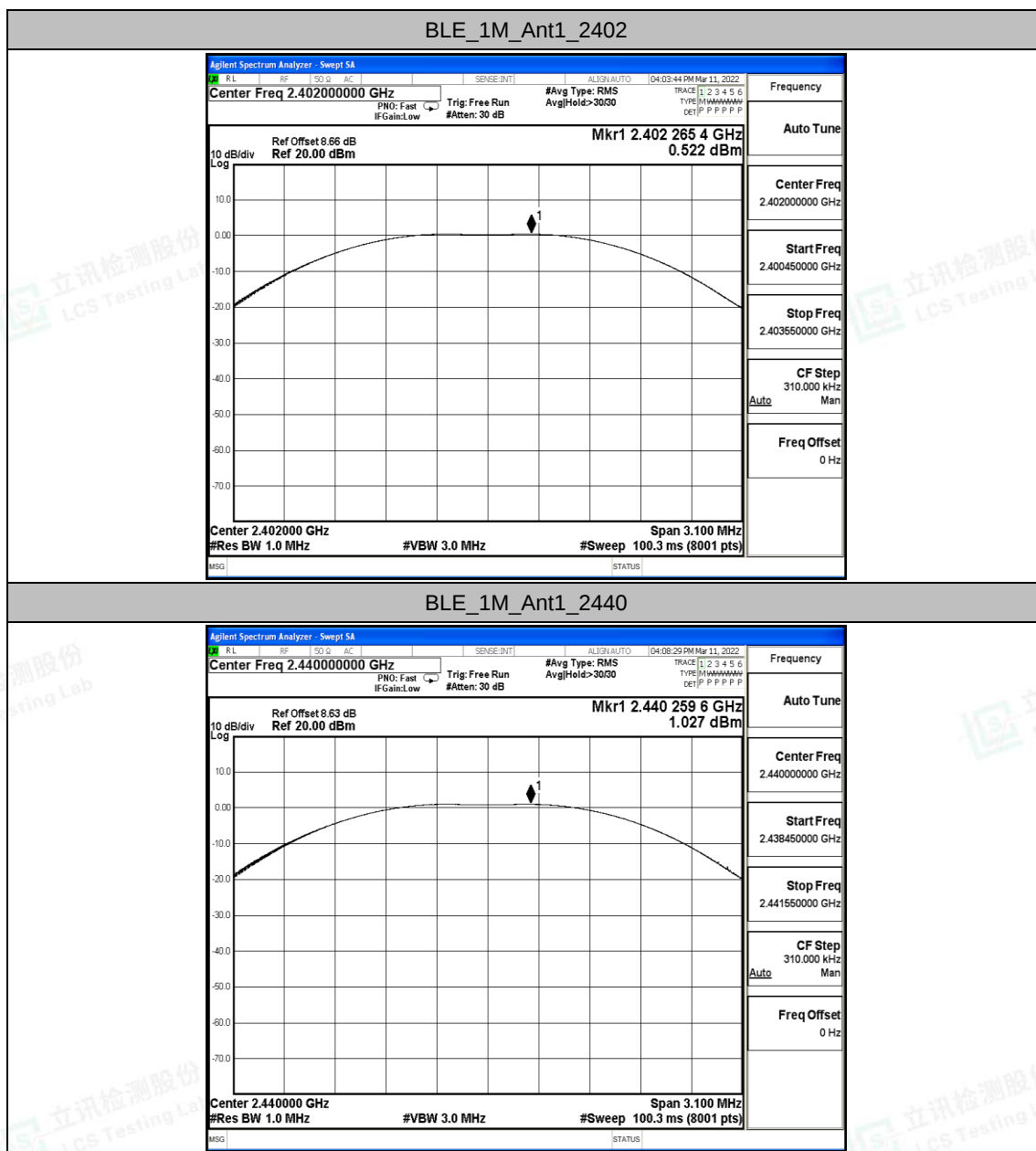
Test Result

| TestMode | Antenna | Channel | Result[dBm] | Limit[dBm] | Verdict |
|----------|---------|---------|-------------|------------|---------|
| BLE_1M   | Ant1    | 2402    | 0.52        | ≤30        | PASS    |
|          |         | 2440    | 1.03        | ≤30        | PASS    |
|          |         | 2480    | 0.6         | ≤30        | PASS    |





## Test Graphs

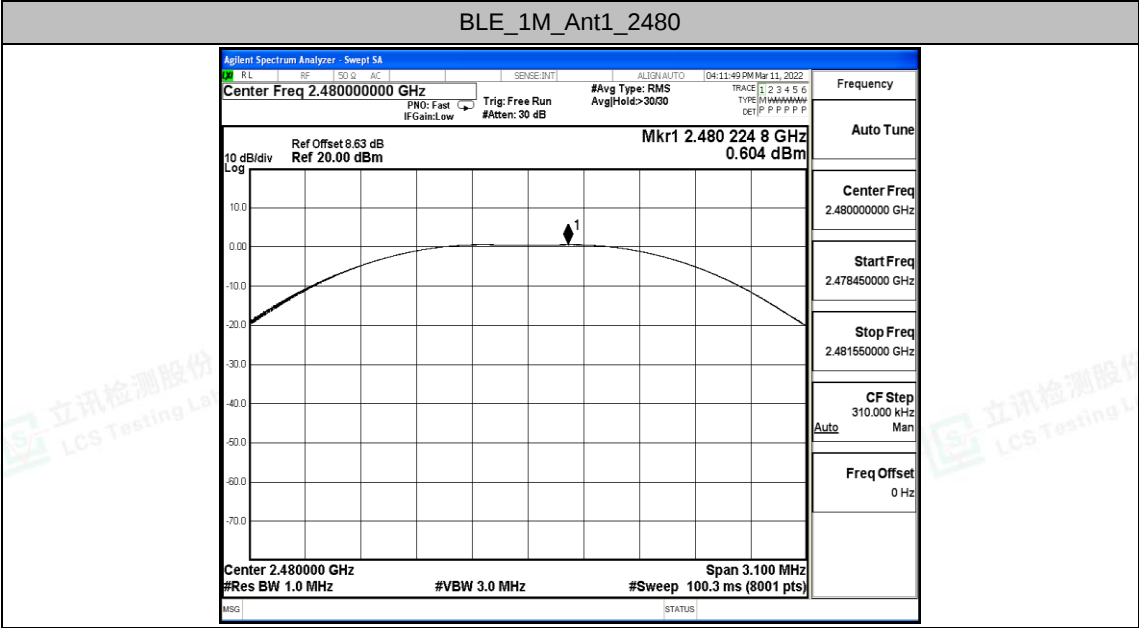


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### A.3 Maximum power spectral density

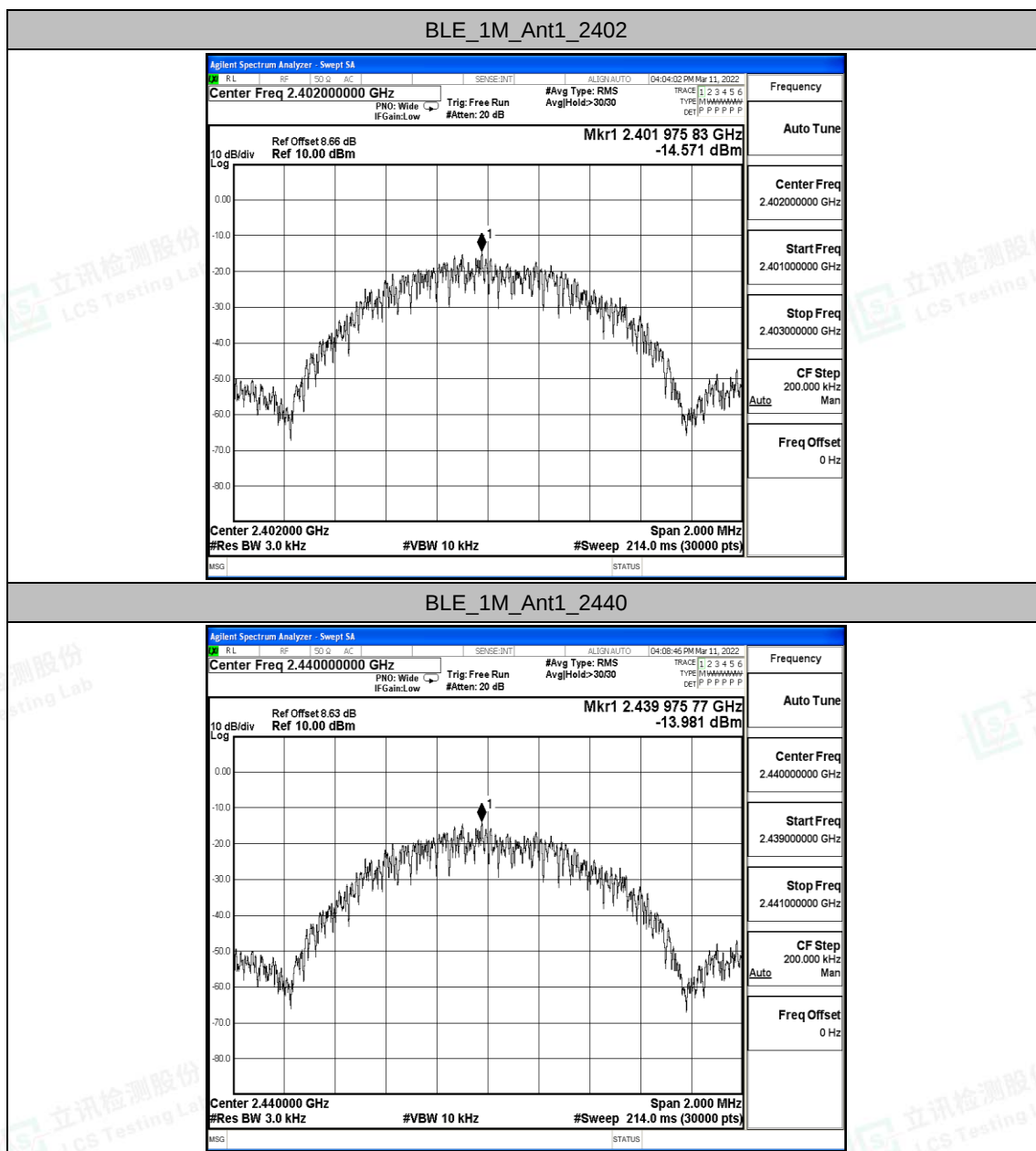
#### Test Result

| TestMode | Antenna | Channel | Result[dBm/3kHz] | Limit[dBm/3kHz] | Verdict |
|----------|---------|---------|------------------|-----------------|---------|
| BLE_1M   | Ant1    | 2402    | -14.57           | ≤8.00           | PASS    |
|          |         | 2440    | -13.98           | ≤8.00           | PASS    |
|          |         | 2480    | -14.46           | ≤8.00           | PASS    |





## Test Graphs



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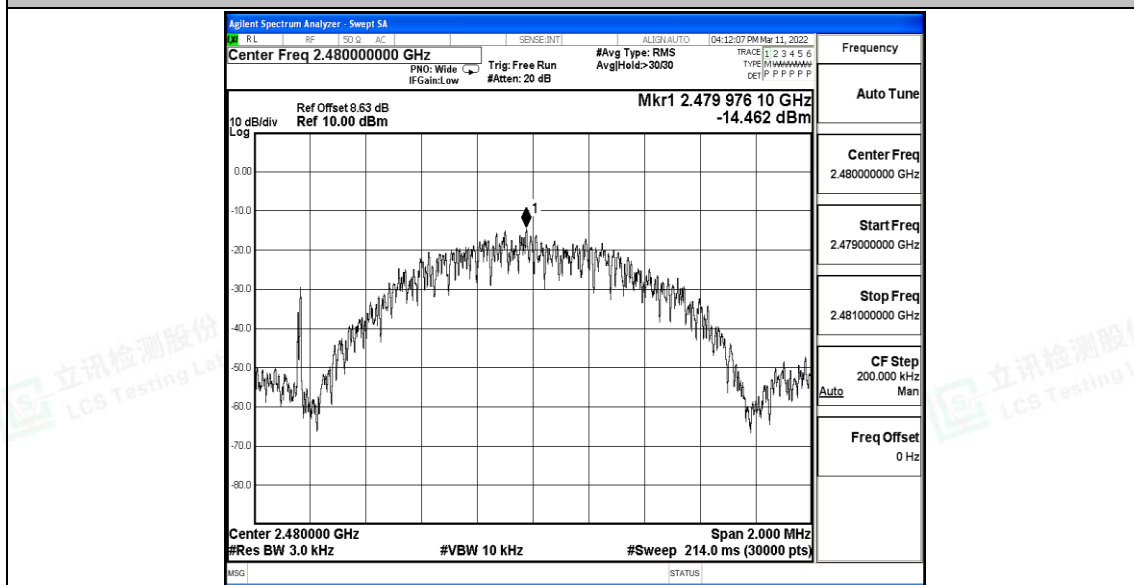
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## BLE\_1M\_Ant1\_2480



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A.4 Band edge measurements

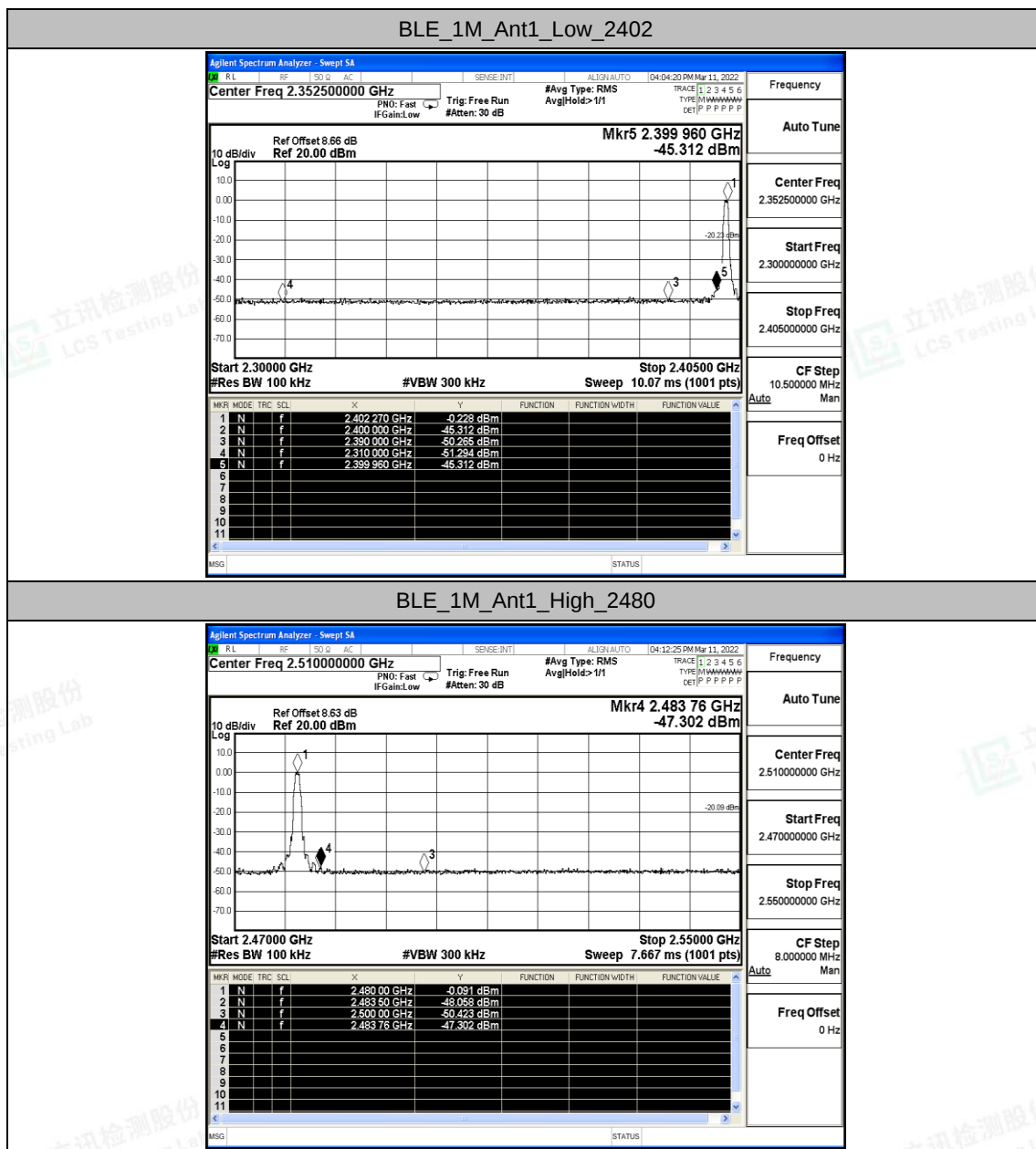
Test Result

| TestMode | Antenna | ChName | Channel | RefLevel[dBm] | Result[dBm] | Limit[dBm] | Verdict |
|----------|---------|--------|---------|---------------|-------------|------------|---------|
| BLE_1M   | Ant1    | Low    | 2402    | -0.23         | -45.41      | ≤-20.23    | PASS    |
|          |         | High   | 2480    | -0.09         | -47.3       | ≤-20.09    | PASS    |





## Test Graphs



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## A.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          | -0.33             | -0.33       | ---        | PASS    |
|          |         |         | 30~1000            | -0.33             | -31.98      | ≤-20.33    | PASS    |
|          |         |         | 1000~26500         | -0.33             | -46.21      | ≤-20.33    | PASS    |
|          |         | 2440    | Reference          | 0.21              | 0.21        | ---        | PASS    |
|          |         |         | 30~1000            | 0.21              | -59.18      | ≤-19.79    | PASS    |
|          |         |         | 1000~26500         | 0.21              | -45.97      | ≤-19.79    | PASS    |
|          |         | 2480    | Reference          | -0.21             | -0.21       | ---        | PASS    |
|          |         |         | 30~1000            | -0.21             | -58.9       | ≤-20.21    | PASS    |
|          |         |         | 1000~26500         | -0.21             | -46.55      | ≤-20.21    | PASS    |



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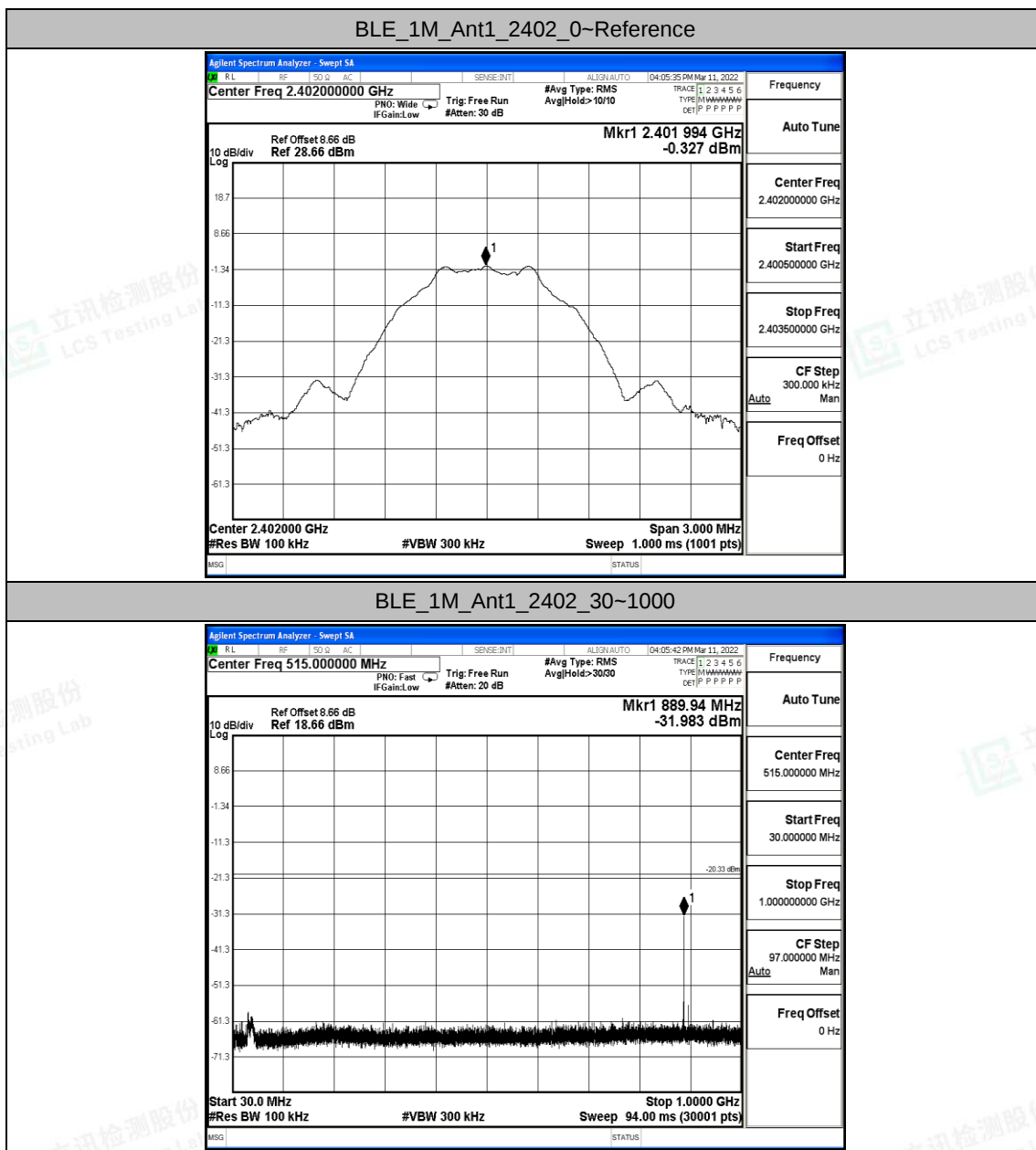
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## Test Graphs



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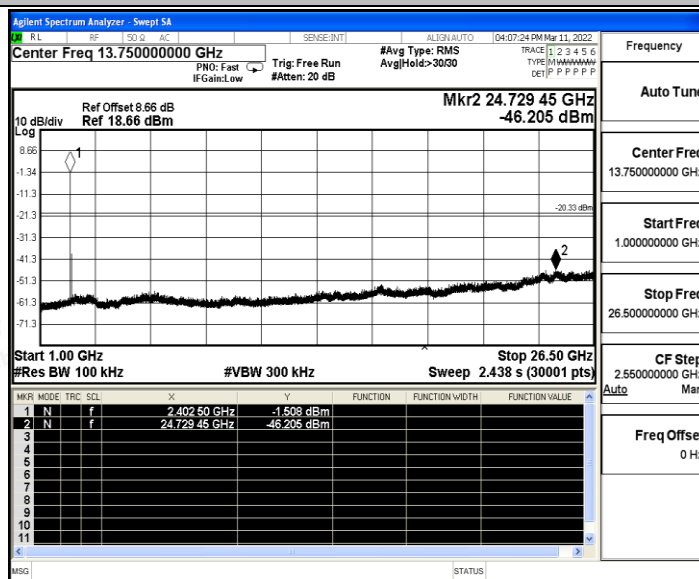
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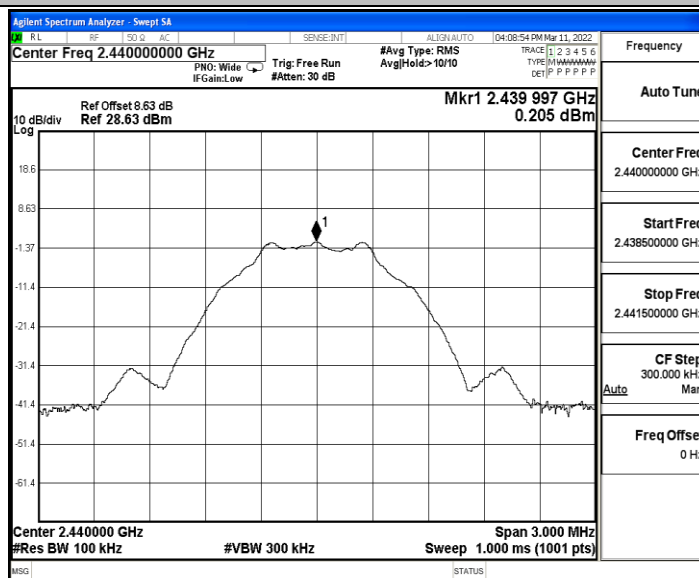
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## BLE\_1M\_Ant1\_2402\_1000~26500



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



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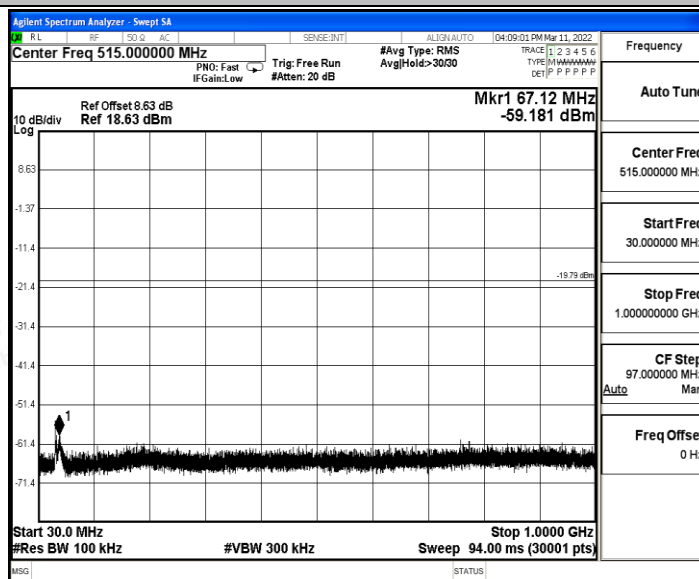
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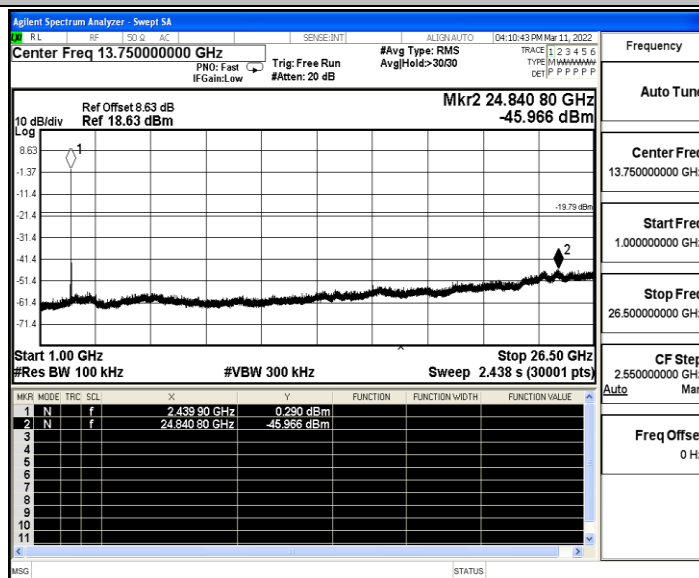
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## BLE\_1M\_Ant1\_2440\_30~1000



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



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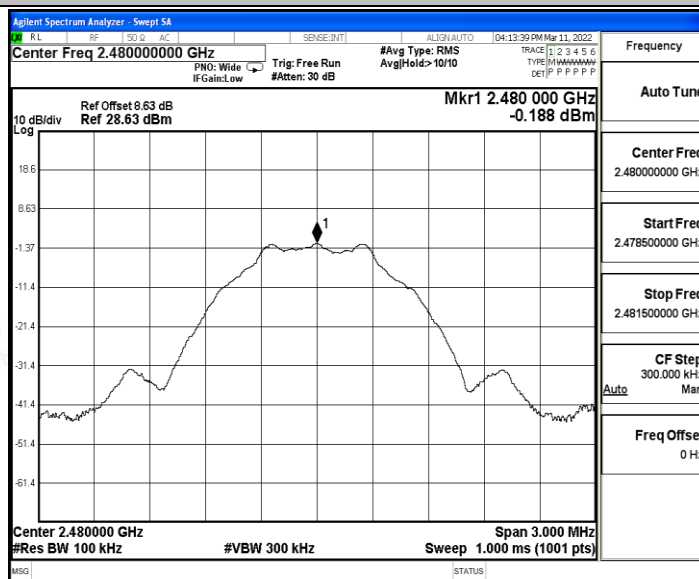
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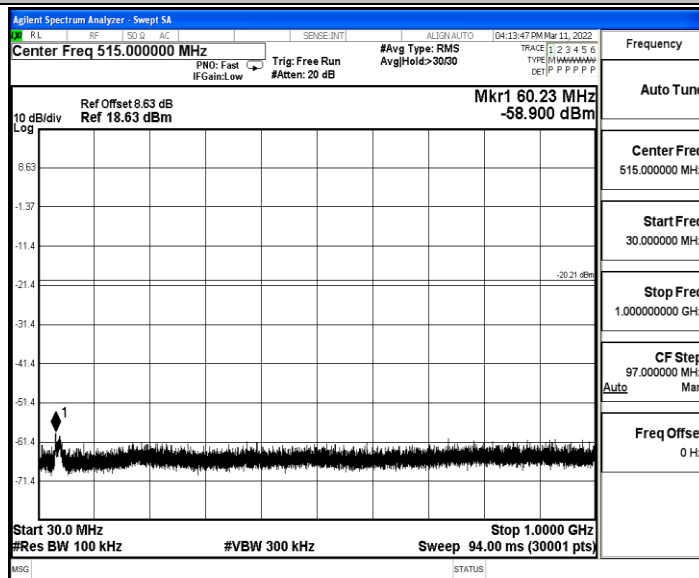
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## BLE\_1M\_Ant1\_2480\_0~Reference



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



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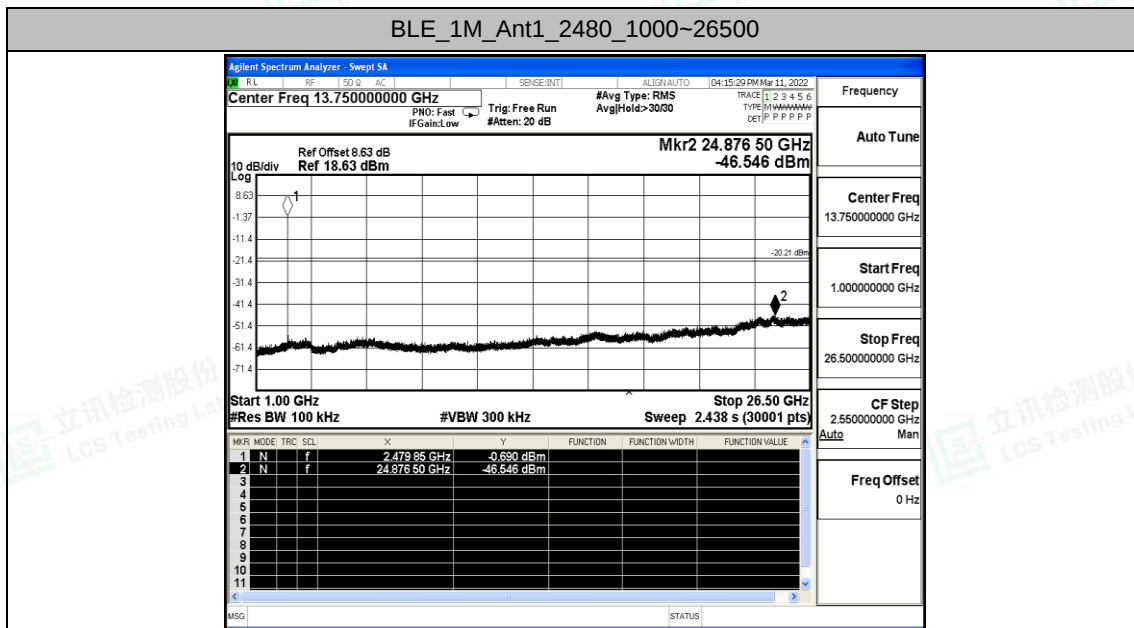
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## BLE\_1M\_Ant1\_2480\_1000-26500



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## 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    | ---   | ---     |
|          |         | 2440    | 0.39            | 0.63           | 0.6190 | 61.90     | 2.08    | ---   | ---     |
|          |         | 2480    | 0.39            | 0.63           | 0.6190 | 61.90     | 2.08    | ---   | ---     |



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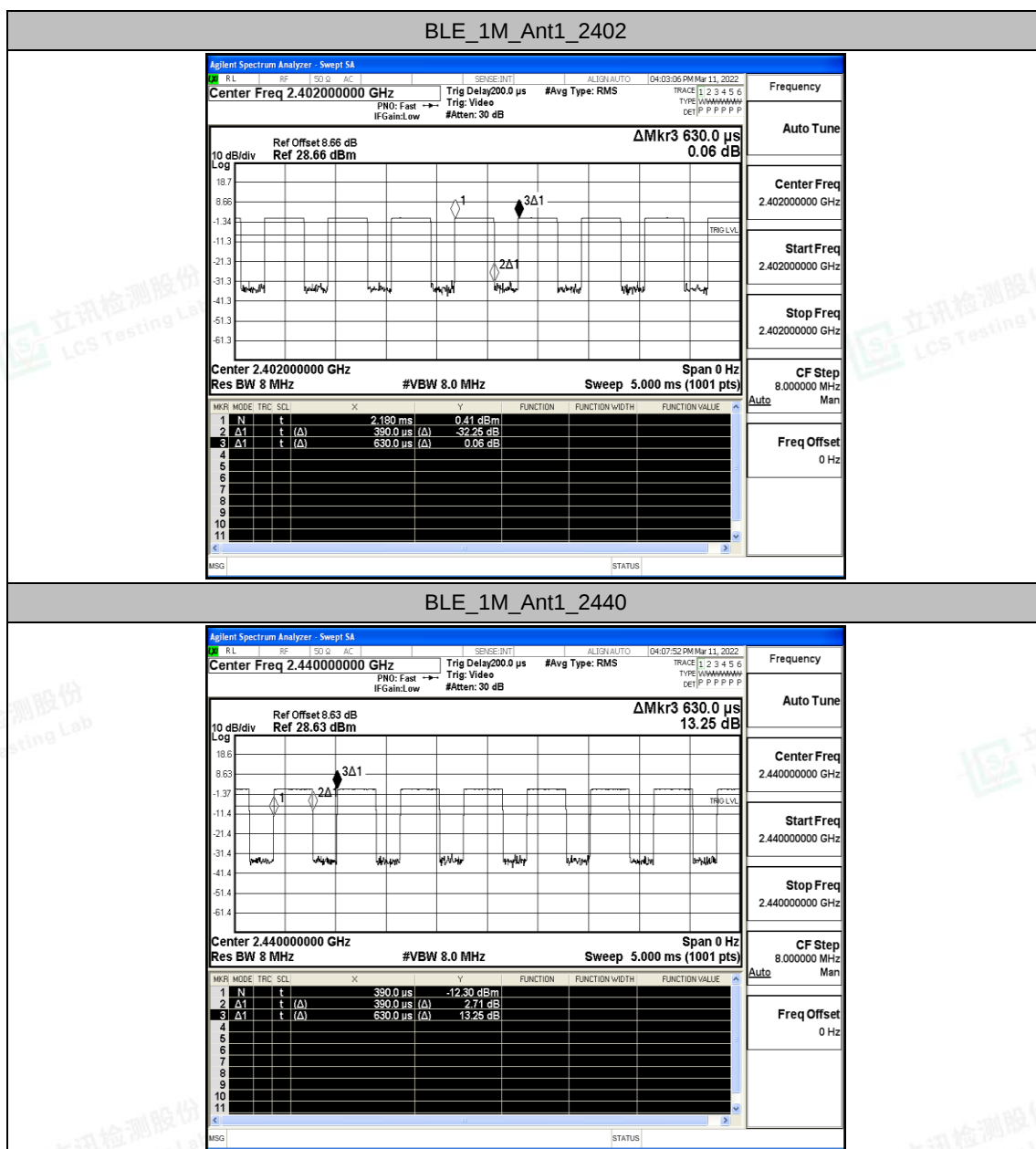
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## Test Graphs

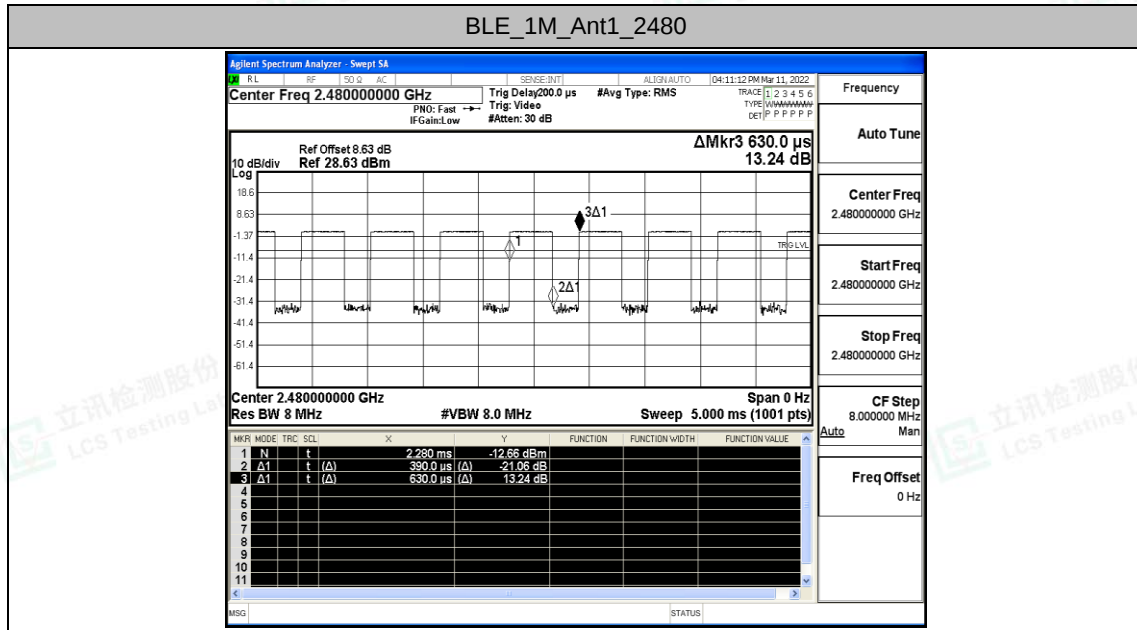


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## A.7 Emissions in Restricted Bands

### 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       | -47.56          | ≤-41.20        | 47.64              | ≤54               | PASS    |
|          |         |        |         | AV       | 2388.935       | -46.87          | ≤-41.20        | 48.33              | ≤54               | PASS    |
|          |         |        |         | AV       | 2390.000       | -47.19          | ≤-41.20        | 48.01              | ≤54               | PASS    |
|          |         |        |         | Peak     | 2310.000       | -39.24          | ≤-21.20        | 55.96              | ≤74               | PASS    |
|          |         |        |         | Peak     | 2373.080       | -36.6           | ≤-21.20        | 58.60              | ≤74               | PASS    |
|          |         |        |         | Peak     | 2390.000       | -38.55          | ≤-21.20        | 56.65              | ≤74               | PASS    |
|          |         | High   | 2480    | AV       | 2483.500       | -46.08          | ≤-41.20        | 49.12              | ≤54               | PASS    |
|          |         |        |         | AV       | 2483.760       | -46.08          | ≤-41.20        | 49.12              | ≤54               | PASS    |
|          |         |        |         | AV       | 2500.000       | -46.74          | ≤-41.20        | 48.46              | ≤54               | PASS    |
|          |         |        |         | Peak     | 2483.500       | -32.42          | ≤-21.20        | 62.78              | ≤74               | PASS    |
|          |         |        |         | Peak     | 2483.760       | -32.27          | ≤-21.20        | 62.93              | ≤74               | PASS    |
|          |         |        |         | Peak     | 2500.000       | -36.97          | ≤-21.20        | 58.23              | ≤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.



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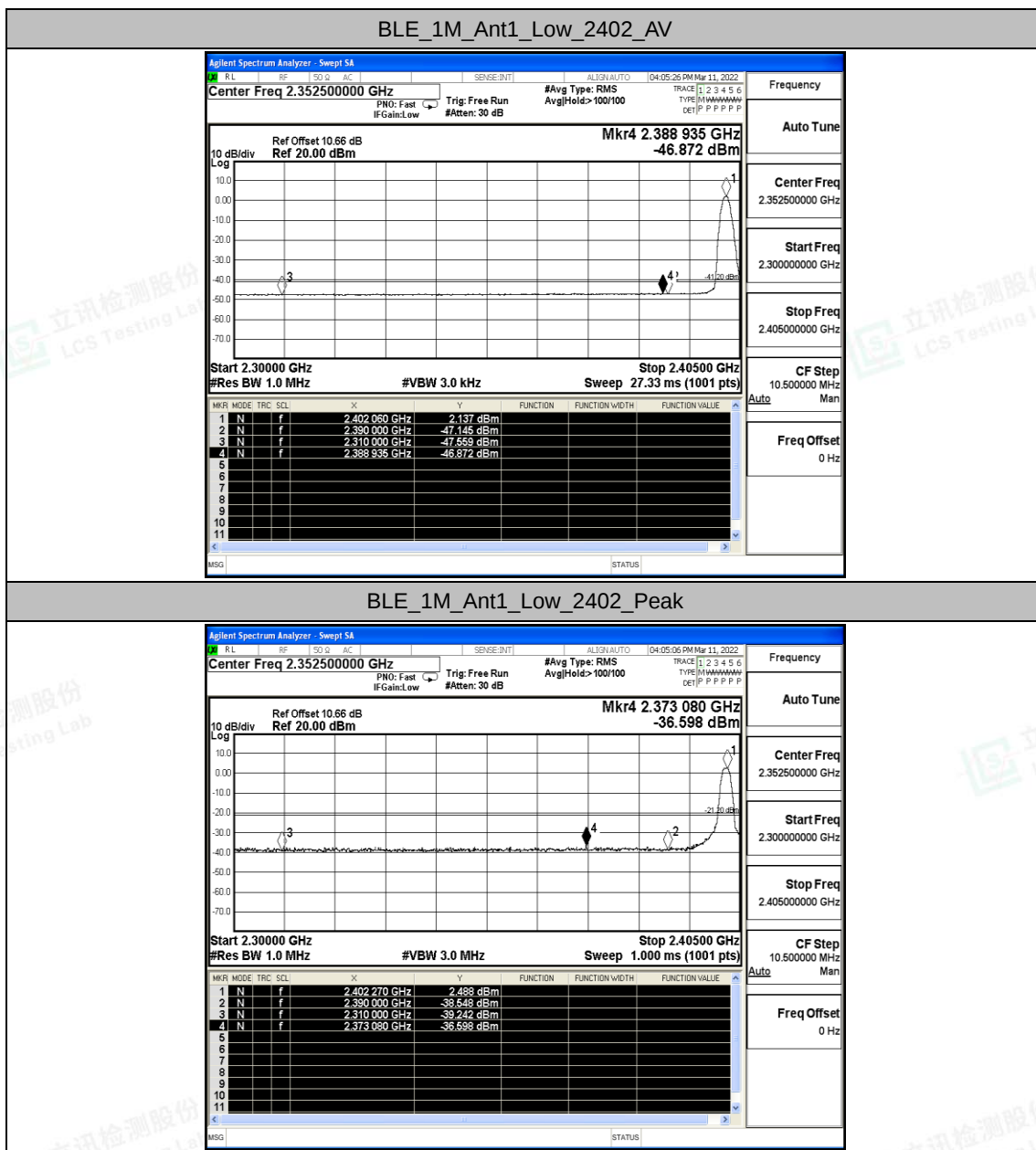
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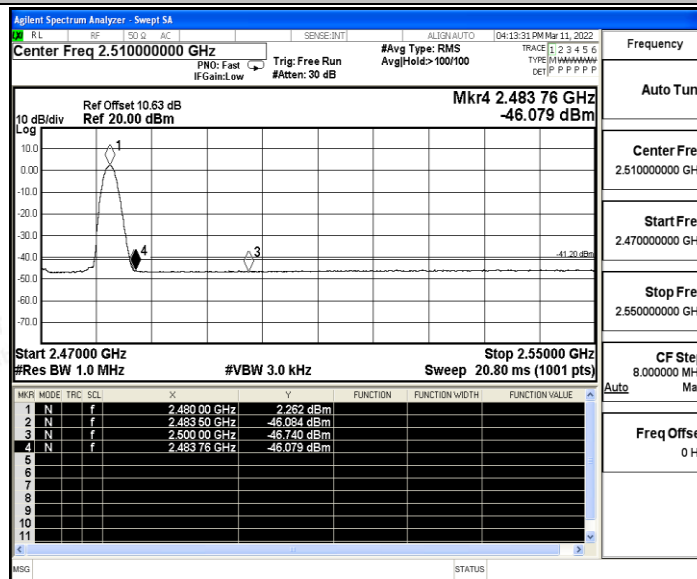
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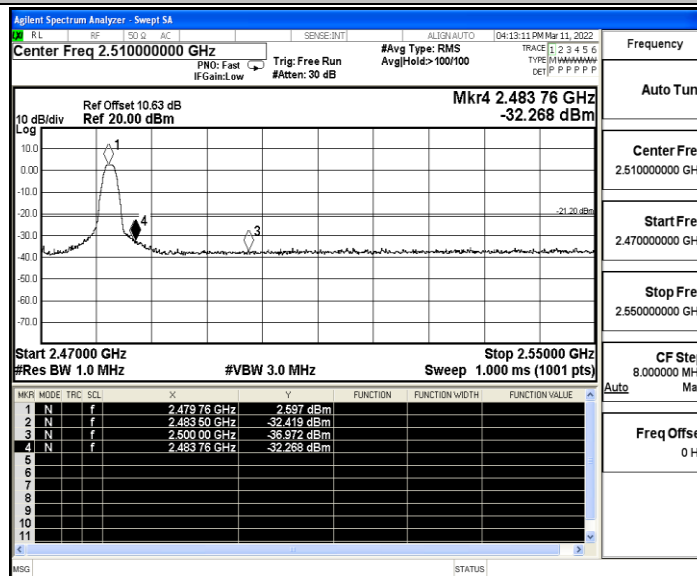
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## BLE\_1M\_Ant1\_High\_2480\_AV



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



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